

Service Manual

Version 1.0

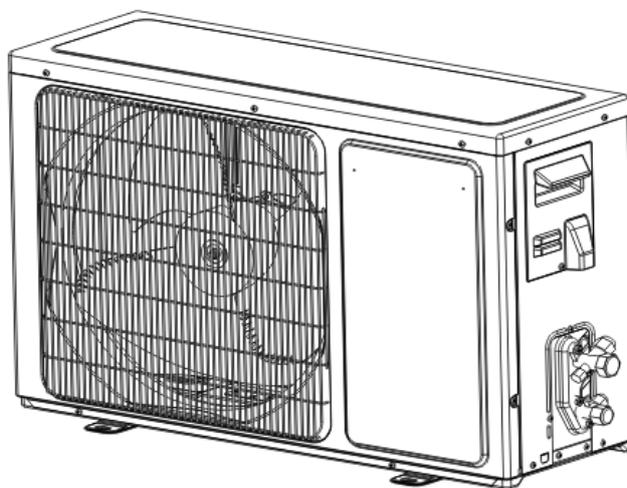
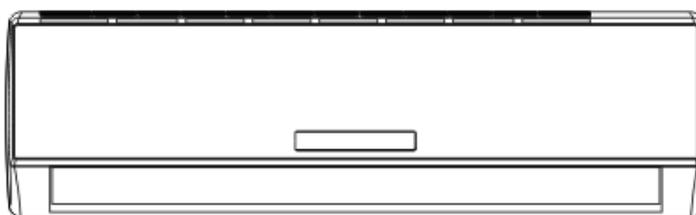


MODEL:

ZE-09UB32

ZE-12UB32

ZE-15UB32



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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.

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



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.

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.

For models using R32 and R454B refrigerant, piping connection should be conducted on outdoor side.

When a flammable refrigerant is used, the requirements for installation or maintenance space of appliance is determined according to following:

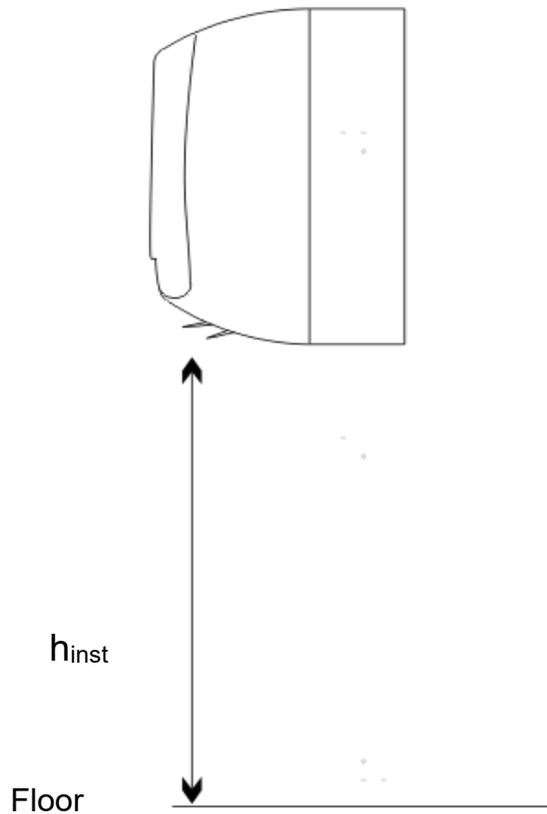
$A_{min}(m^2/ft^2)$	$H_{inst}(m/ft)$				
$M_c(kg/oz)$	1.8/5.9	2/6.6	2.2/7.2	2.4/7.9	2.5/8.2
1.8/63.5	6.56/70.61	5.91/63.61	5.38/57.91	4.94/53.17	4.74/51.02
2/70.5	7.29/78.47	6.56/70.61	5.97/64.26	5.48/58.99	5.26/56.62
2.2/77.6	8.01/86.22	7.22/77.72	6.56/70.61	6.02/64.8	5.78/62.22
2.4/84.7	8.74/94.08	7.87/84.71	7.16/77.07	6.56/70.61	6.3/67.81
2.6/91.7	9.46/101.83	8.52/91.71	7.75/83.42	7.11/76.53	6.83/73.52
2.8/98.8	10.18/109.58	9.17/98.71	8.34/89.77	7.65/82.34	7.35/79.11
3/105.8	10.91/117.43	9.82/105.7	8.93/96.12	8.19/88.16	7.87/84.71

- A_{min} is the required minimum room area in m^2/ft^2

- m_c is the actual refrigerant charge in the system in kg/oz

- h_{inst} is the height of the bottom of the appliance relative to the floor of the room after installation in m/ft.

WARNING: The minimum room area or minimum room area of conditioned space is based on releasable charge and total system refrigerant charge.



Precautions for using R32 refrigerant and R454B 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 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 vapor being present while the work is being performed.

6-3 General work area

- 1) 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.
- 2) 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

- 1) 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.
- 2) 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

- 1) 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.
- 2) Have a dry powder or CO₂ fire extinguisher adjacent to the charging area.

6-6 No ignition sources

- 1) 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.
- 2) 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.
- 3) 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

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

6-8 Checks to the refrigeration equipment

- 1) Where electrical components are being changed, they shall be fit for the purpose and to the correct specification.
- 2) At all times the manufacturer's maintenance and service guidelines shall be followed. If in doubt consult the manufacturer's technical department for assistance.
- 3) 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;

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- 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

- 1) Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures.
- 2) If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with.
- 3) If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution shall be used.
- 4) 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

- 1) 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.
- 2) 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.
- 3) 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.
- 4) This shall include damage to cables, excessive number of connections, terminals not made to original specification, damage to seals, incorrect fitting of glands, etc.
- 5) Ensure that apparatus is mounted securely.
- 6) Ensure that seals or sealing materials have not degraded such that they no longer serve the purpose of preventing the ingress of flammable atmospheres.
- 7) 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

- 1) 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.
- 2) 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.

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- 3) Replace components only with parts specified by the manufacturer.
 - 4) Other parts may result in the ignition of refrigerant in the atmosphere from a leak.

9. Cabling

- 1) Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects.
- 2) 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

- 1) Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks.
- 2) 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

- 1) When breaking into the refrigerant circuit to make repairs – or for any other purpose – conventional procedures shall be used.
 - 2) However, it is important that best practice is followed since flammability is a consideration.
 - 3) 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.
 - 4) The refrigerant charge shall be recovered into the correct recovery cylinders.
 - 5) The system shall be “flushed” with OFN to render the unit safe.
 - 6) This process may need to be repeated several times.
 - 7) Compressed air or oxygen shall not be used for this task.
 - 8) 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.
 - 9) 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.
 - 10) 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

- 1) 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 minimize 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.
- 2) Prior to recharging the system, it shall be pressure tested with OFN.
- 3) The system shall be leak tested on completion of charging but prior to commissioning.
- 4) A follow up leak test shall be carried out prior to leaving the site

14. Decommissioning

- 1) Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail.
- 2) 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.
- 3) 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

- 1) Equipment shall be labelled stating that it has been de-commissioned and emptied of refrigerant.
The label shall be dated and signed.
- 2) Ensure that there are labels on the equipment stating the equipment contains flammable refrigerant.

16. Recovery

- 1) When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good

practice that all refrigerants are removed safely.

- 2) When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed.
- 3) Ensure that the correct number of cylinders for holding the total system charge is available.
- 4) 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).
- 5) Cylinders shall be complete with pressure relief valve and associated shut-off valves in good working order.
- 6) Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.
- 7) 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.
- 8) In addition, a set of calibrated weighing scales shall be available and in good working order.
- 9) Hoses shall be complete with leak-free disconnect couplings and in good condition.
- 10) 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.
- 11) The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant Waste Transfer Note arranged.
- 12) Do not mix refrigerants in recovery units and especially not in cylinders.
- 13) 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.
- 14) The evacuation process shall be carried out prior to returning the compressor to the suppliers.
- 15) Only electric heating to the compressor body shall be employed to accelerate this process.
- 16) When oil is drained from a system, it shall be carried out safely.
- 17) When moving or relocating the air conditioner, consult experienced service technicians for disconnection and reinstallation of the unit.
- 18) Do not place any other electrical products or household belongings under indoor unit or outdoor unit.
- 19) Condensation dripping from the unit might get them wet, and may cause damage or malfunction of your property.
- 20) Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.
- 21) 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).
- 22) Do not pierce or burn.
- 23) Be aware that refrigerants may not contain an odor.
- 24) To keep ventilation opening clear of obstruction.
- 25) The appliance shall be stored in a well-ventilated area where the room size corresponds to the room area as specified for operation.
- 26) 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).
- 27) 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.
- 28) Servicing shall only be performed as recommended by the equipment manufacturer.
- 29) 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.
- 30) Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.
- 31) Appliance shall be installed, operated and stored in a room with a floor area larger than 10 m² / 108 ft².

- 32) The installation of pipe-work shall be kept to a room with a floor area larger than 10 m² / 108 ft².
- 33) The pipe-work shall be compliance with national gas regulations. The maximum refrigerant charge amount is 2.5 kg/88.2oz.
- 34) Mechanical connectors used indoors shall comply with ISO 14903. When mechanical connectors are reused indoors, sealing parts shall be renewed.
- 35) When flared joints are reused indoors, the flare part shall be re-fabricated.
- 36) The installation of pipe-work shall be kept to a minimum.
- 37) Mechanical connections shall be accessible for maintenance purposes.
- 38) The indoor unit shall only be connected to outdoor units suitable for the same refrigerant.
- 39) 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.

	<p>WARNING</p>	<p>This symbol shows that this appliance uses a flammable refrigerant. If the refrigerant is leaked and exposed to an external ignition source, there is a risk of fire.</p>
	<p>CAUTION</p>	<p>This symbol shows that the operation manual should be read carefully.</p>
	<p>CAUTION</p>	<p>This symbol shows that service personnel should be handling this equipment with reference to the installation manual.</p>
	<p>CAUTION</p>	<p>This symbol shows that information is available such as the operating manual or installation manual.</p>
<p>A2L</p>	<p>WARNING</p>	<p>The refrigerant is named according to ASHRAE safety classification, with mild flammability and low toxicity.</p>

2. Product Specifications and dimensions

2-1. Product Specifications

Model No.		AS*-09UW3TBW**00	AS*-12UW3TBW**00
Type		T1, H/P, INVERTER	T1, H/P, INVERTER
Ratings			
Cooling Capacity	BTU	9000	12000
Heating Capacity	BTU	12200	12200
Rated Input-Cooling	W	490	780
Rated Input-Heating	W	780	780
Moisture Removal	L/H.r	1.8/1	1.8/1
SEER2	Btu/ (W.h)	32	30
EER2	W/W	18.35	15.35
HSPF2 [IV]	Btu/ (W.h)	11.8	11.8
COP (5° F)	W/W	2.25	2.25
Refrigerant		R454B	R454B
Refrigerant charge volume	g / oz.	1500/53	1500/53
Additional ref. Volume	oz/ft ~ g/m	30	30
Power Supply			
Voltage, Frequency, Phase	V, Hz, ph	230V~,60Hz,1P	230V~,60Hz,1P
Rated Current	Cooling (A)	2.0	3.5
	Heating (A)	3.46	3.46
System pressures in cooling rated conditions			
Max suction pressure	Mpa/PSIG	1.33/192	1.33/192
Max discharge pressure	Mpa/PSIG	3.79/550	3.79/550
System			
Compressor			
Compressor type		Rotary	Rotary
Compressor Model No.		KTN130D53UFZ3	KTN130D53UFZ3
Compressor MFG		GMCC	GMCC
Liquid Pipe	inch	3/8	1/4
Gas Pipe	inch	5/8	1/2
Ambient Cooling [Maximum ~ Minimum]	°F/°C	64~86/18~30	64~86/18~30
Ambient Heating [Maximum ~ Minimum]	°F/°C	64~86/18~30	64~86/18~30
Indoor Cooling [Maximum ~ Minimum]	°F/°C	5~118/-15~48	5~118/-15~48
Indoor Heating [Maximum ~ Minimum]	°F/°C	-22~75/-30~24	-22~75/-30~24
Net Dimensions WxHxD (mm)/ inch	Indoor Unit	1070×320×230/ 42.13 ×12.60 ×9.06	1070×320×230/ 42.13 ×12.60 ×9.06
	Outdoor Unit	860×310×667/ 37.8×12.2×26.3	860×310×667/ 37.8×12.2×26.3
Net Weight (Kg/lbs)	Indoor Unit	13/29	13/29
	Outdoor Unit	41.5/91.5	41.5/91.5
Packing Dimensions WxHxD (mm)/ inch	Indoor Unit	1170×390×315/ 46 1/16 ×15 3/8 ×12 3/8	1170×390×315/ 46 1/16 ×15 3/8 ×12 3/8
	Outdoor Unit	995×720×420/ 39 3/16×28 3/8×16 1/2	995×720×420/ 39 3/16×28 3/8×16 1/2

Gross Weight (Kg/lbs)	Indoor Unit	15.5/34.2	15.5/34.2
	Outdoor Unit	45/99.2	45/99.2

Note:

- 1、 This table just is for reference, when relate parameters is different from actual specification, please use the parameters of the actual specification which you can get from the product manager.
- 2、 Net Dimensions (Indoor Unit) depend on the panel you used, the panel is different, the Net Dimensions will be different, but they are very close, if you need the accurate data, you can consult the product manager.
- 3、 Packing Dimensions (Indoor Unit) depend on the panel you used, the panel is different, the Packing Dimensions will be different, but they are very close, if you need the accurate data, you can consult the product manager.
- 4、 Gross Weight (Indoor Unit) depend on the panel you used, the panel is different, the Gross Weight will be different, but they are very close, if you need the accurate data, you can consult the product manager.

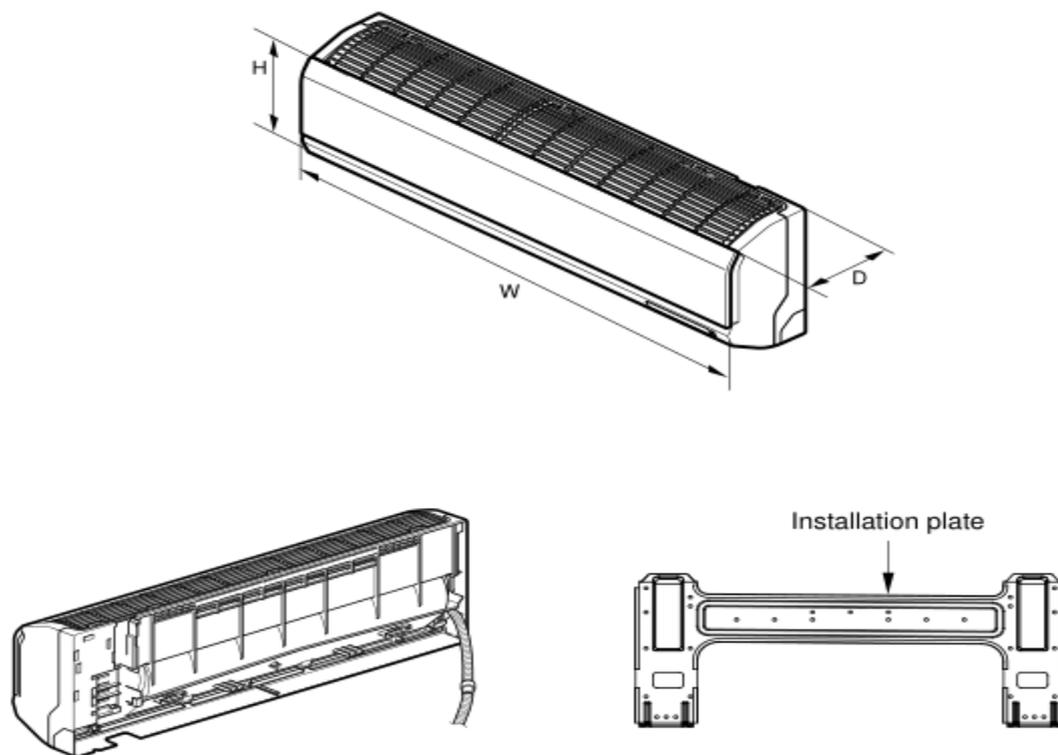
Model No.		AS*-15UW3TBW**00	
Type		T1, H/P, INVERTER	
Ratings			
Cooling Capacity	BTU	15000	
Heating Capacity	BTU	15200	
Rated Input-Cooling	W	1100	
Rated Input-Heating	W	1070	
Moisture Removal	L/H.r	1.5	
SEER2	Btu/ (W.h)	25.60	
EER2	W/W	13.65	
HSPF2 [IV]	Btu/ (W.h)	11.1	
COP (5° F)	W/W	2.25	
Refrigerant		R454B	
Refrigerant charge volume	g / oz.	52.91 / 1500	
Additional ref. Volume	oz/ft ~ g/m	20	
Power Supply			
Voltage, Frequency, Phase	V, Hz, ph	230V~,60Hz,1P	
Rated Current	Cooling (A)	5.0	
	Heating (A)	4.9	
System pressures in cooling rated conditions			
Max suction pressure	Mpa/PSIG	1.33/192	
Max discharge pressure	Mpa/PSIG	3.79/550	
System			
Compressor			
Compressor type		Rotary	
Compressor Model No.		KTN130D53UFZ3	
Compressor MFG		GMCC	
Liquid Pipe	inch	1/4	
Gas Pipe	inch	1/2	
Ambient Cooling [Maximum ~ Minimum]	°F/°C	61~86/16~30	
Ambient Heating [Maximum ~ Minimum]	°F/°C	61~86/16~30	
Indoor Cooling [Maximum ~ Minimum]	°F/°C	5~118/-15~48	
Indoor Heating [Maximum ~ Minimum]	°F/°C	-22~75/-30~24	
Net Dimensions WxHxD (mm)/ inch	Indoor Unit	1069×320×230 42 1/16 ×12 5/8 ×9 1/16	
	Outdoor Unit	860×650×310 33 7/8×25 1/2×12 3/16	
Net Weight (Kg/lbs)	Indoor Unit	13/28.7	
	Outdoor Unit	41.5/91.5	
Packing Dimensions WxHxD (mm)/ inch	Indoor Unit	1170×390×315/ 46 1/16 ×15 3/8 ×12 3/8	
	Outdoor Unit	995×720×420/ 39 3/16×28 3/8×16 1/2	
Gross Weight (Kg/lbs)	Indoor Unit	15.5/34.2	
	Outdoor Unit	45/99.2	

Note:

-
- 1、 This table just is for reference, when relate parameters is different from actual specification, please use the parameters of the actual specification which you can get from the product manager.
 - 2、 Net Dimensions (Indoor Unit) depend on the panel you used, the panel is different, the Net Dimensions will be different, but they are very close, if you need the accurate data, you can consult the product manager.
 - 3、 Packing Dimensions (Indoor Unit) depend on the panel you used, the panel is different, the Packing Dimensions will be different, but they are very close, if you need the accurate data, you can consult the product manager.
 - 4、 Gross Weight (Indoor Unit) depend on the panel you used, the panel is different, the Gross Weight will be different, but they are very close, if you need the accurate data, you can consult the product manager.

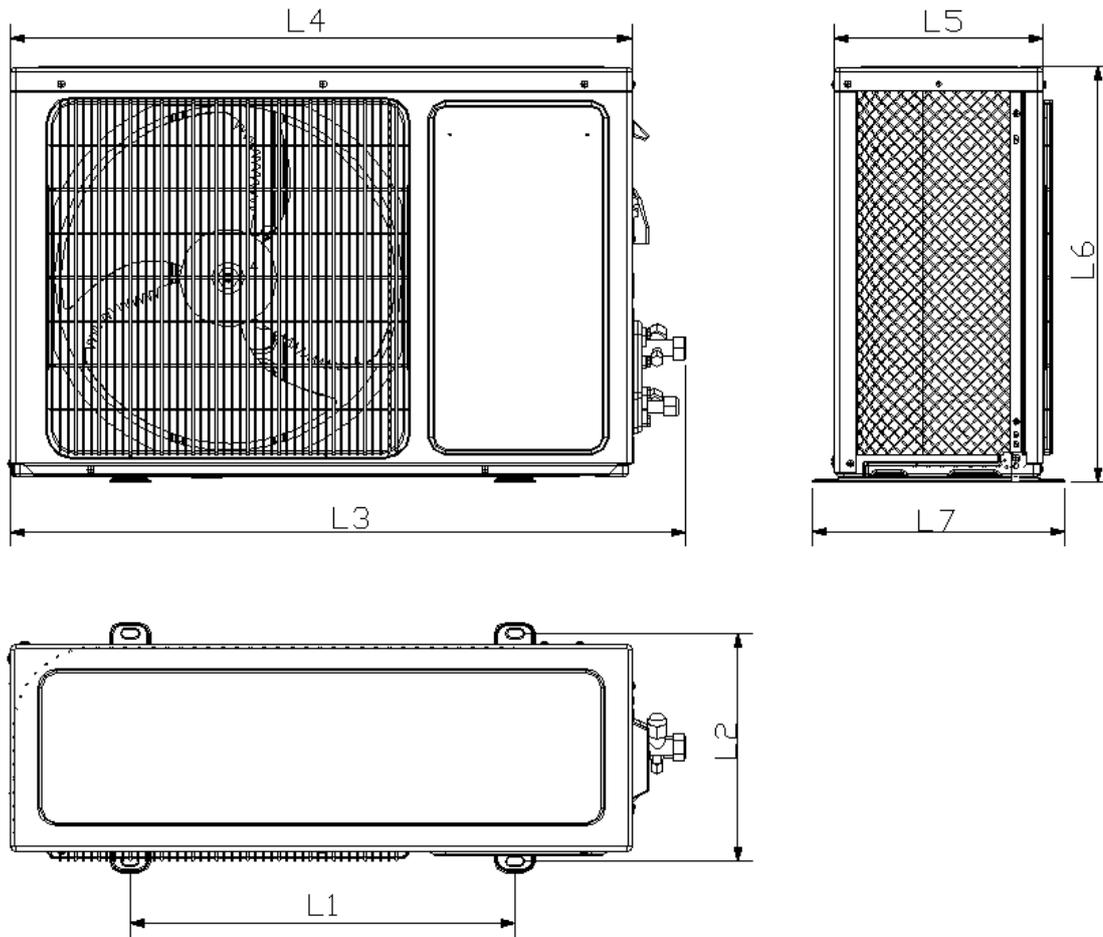
2-2. Product dimensions

Indoor units:



Model	W (mm)/in	H (mm) /in	D (mm) /in
AS*-09UW3TBWHA00	1070/42.1	320/12.60	230/9.1
AS*-12UW3TBWHA00	1070/42.1	320/12.60	230/9.1
AS*-15UW3TBWHA00	1069/42.1	320/12.60	230/9.1

Outdoor units:



Model	L1 (mm)/in	L2 (mm)/in	L3 (mm)/in	L4 (mm)/in	L5 (mm)/in	L6 (mm)/in	L7 (mm)/in
AS*-09UW3TBW**00	542/21.3	341/13.4	935/36.8	860/33.9	310/12.2	667/26.3	368/14.5
AS*-12UW3TBW**00	542/21.3	341/13.4	935/36.8	860/33.9	310/12.2	667/26.3	368/14.5
AS*-15UW3TBW**00	542/21.3	341/13.4	935/36.8	860/33.9	310/12.2	650/25.6	368/14.5

Note: “ ** ” mean code of Front Panel.

2-4. Product capacity parameter

AS*-09UW3TBW**00

Cooling capacity

AFR	m ³ /h	620			620			620			620		
Indoor temperature	°C DB	21.1			23.9			26.7			29.4		
	°C WB	15.0			17.2			19.4			21.7		
Outdoor temperature	°C DB	TC(KW)	SHC(KW)	IP(KW)									
	-15	2.079	1.622	0.271	2.166	1.689	0.272	2.210	1.724	0.275	2.221	1.732	0.276
	-9.4	2.734	2.132	0.261	2.848	2.221	0.262	2.906	2.267	0.265	2.920	2.278	0.266
	-3.9	2.878	2.245	0.388	2.998	2.338	0.390	3.059	2.386	0.394	3.074	2.398	0.394
	1.7	3.029	2.363	0.431	3.155	2.461	0.433	3.220	2.511	0.437	3.236	2.524	0.438
	7.2	3.189	2.487	0.479	3.321	2.591	0.481	3.389	2.644	0.486	3.406	2.657	0.487
	12.8	3.356	2.618	0.532	3.496	2.727	0.534	3.568	2.783	0.540	3.585	2.797	0.541
	18.3	3.533	2.756	0.591	3.680	2.871	0.594	3.755	2.929	0.600	3.774	2.944	0.601
	23.9	3.605	2.812	0.656	3.755	2.929	0.660	3.832	2.989	0.666	3.851	3.004	0.668
	29.4	3.679	2.869	0.821	3.832	2.989	0.825	3.910	3.050	0.833	3.930	3.065	0.835
	35.0	3.754	2.928	0.965	3.910	3.050	0.970	3.990	3.112	0.980	4.010	3.128	0.982
	40.6	3.453	2.694	1.014	3.597	2.806	1.019	3.671	2.863	1.029	3.689	2.878	1.031
46.1	2.935	2.290	0.862	3.058	2.385	0.866	3.120	2.434	0.875	3.136	2.446	0.876	

AFR	CFM	365			365			365			365		
Indoor temperature	°F DB	70			75			80			85		
	°F WB	59			63			67			71		
Outdoor temperature	°F DB	TC(KBtu)	SHC(KBtu)	IP(KW)									
	5	7.094	5.533	0.271	7.390	5.764	0.272	7.541	5.882	0.275	7.578	5.911	0.276
	15	9.328	7.276	0.261	9.716	7.579	0.262	9.915	7.733	0.265	9.964	7.772	0.266
	25	9.819	7.659	0.388	10.228	7.978	0.390	10.436	8.140	0.394	10.489	8.181	0.394
	35	10.335	8.062	0.431	10.766	8.398	0.433	10.986	8.569	0.437	11.041	8.612	0.438
	45	10.879	8.486	0.479	11.333	8.840	0.481	11.564	9.020	0.486	11.622	9.065	0.487
	55	11.452	8.933	0.532	11.929	9.305	0.534	12.173	9.495	0.540	12.233	9.542	0.541
	65	12.055	9.403	0.591	12.557	9.794	0.594	12.813	9.994	0.600	12.877	10.044	0.601
	75	12.301	9.595	0.656	12.813	9.994	0.660	13.075	10.198	0.666	13.140	10.249	0.668
	85	12.552	9.790	0.821	13.075	10.198	0.825	13.342	10.406	0.833	13.408	10.458	0.835
	95	12.808	9.990	0.965	13.342	10.406	0.970	13.614	10.619	0.980	13.682	10.672	0.982
	105	11.783	9.191	1.014	12.274	9.574	1.019	12.525	9.769	1.029	12.587	9.818	1.031
115	10.016	7.812	0.862	10.433	8.138	0.866	10.646	8.304	0.875	10.699	8.345	0.876	

Heating capacity

AFR	m ³ /h	620		620		620		620	
Indoor temperature	°C DB	15.6		18.3		21.1		23.9	
Outdoor temperature	°C WB	TC	IP	TC	IP	TC	IP	TC	IP
		KW							
	-25.0	2.906	1.422	2.821	1.481	2.793	1.496	2.765	1.511
	-20.0	3.418	1.673	3.319	1.742	3.286	1.760	3.253	1.778
	-17.8	3.161	1.496	3.069	1.558	3.039	1.574	3.008	1.590
	-15.0	3.719	1.511	3.611	1.574	3.575	1.590	3.539	1.606
	-12.2	3.764	1.563	3.655	1.629	3.619	1.645	3.582	1.661
	-8.3	3.964	1.616	3.848	1.683	3.810	1.700	3.772	1.717
	-6.7	4.003	1.648	3.887	1.717	3.848	1.734	3.810	1.751
	-1.1	3.318	1.273	3.221	1.326	3.189	1.340	3.157	1.353
	4.4	3.903	1.399	3.790	1.457	3.752	1.472	3.714	1.487
	8.3	4.879	1.521	4.737	1.584	4.690	1.600	4.643	1.616
	10.0	5.123	1.597	4.974	1.663	4.925	1.680	4.875	1.697
	18.3	5.379	1.661	5.222	1.730	5.171	1.747	5.119	1.765

AFR	CFM	365		365		365		365	
Indoor temperature	°F DB	60		65		70		75	
Outdoor temperature	°F DB	TC	IP	TC	IP	TC	IP	TC	IP
		KBtu	KW	KBtu	KW	KBtu	KW	KBtu	KW
	-13	9.914	1.422	9.625	1.481	9.530	1.496	9.435	1.511
	-4	11.664	1.673	11.324	1.742	11.212	1.760	11.100	1.778
	0	10.786	1.496	10.472	1.558	10.368	1.574	10.265	1.590
	5	12.689	1.511	12.320	1.574	12.198	1.590	12.076	1.606
	10	12.844	1.563	12.470	1.629	12.347	1.645	12.223	1.661
	17	13.524	1.616	13.130	1.683	13.000	1.700	12.870	1.717
	20	13.659	1.648	13.261	1.717	13.130	1.734	12.998	1.751
	30	11.320	1.273	10.990	1.326	10.882	1.340	10.773	1.353
	40	13.318	1.399	12.930	1.457	12.802	1.472	12.674	1.487
	47	16.647	1.521	16.162	1.584	16.002	1.600	15.842	1.616
	50	17.480	1.597	16.970	1.663	16.802	1.680	16.634	1.697
	65	18.354	1.661	17.819	1.730	17.643	1.747	17.466	1.765

Remarks:

TC: Total Capacity (Gross) (kBtu/h)

SHC: Sensible Heat Capacity (Gross)

PI: Power Input (including the compressor, evap. fan motor & cond. fan motor) (kW)

DB: Dry Bulb Temperature

WB: Wet Bulb Temperature

Note:

1. The data is for reference only and actual system performance may vary depending on other factors such as pipe losses, altitude, etc.
2. Capacity loss due to white frost and defrost operation is not included.
3. Shows nominal(MAX) capacities and power input

AS*-12UW3TBW00**

Cooling capacity

AFR	m ³ / h	620			620			620			620		
Indoor temperatu re	°C DB	21.1			23.9			26.7			29.4		
	°C WB	15.0			17.2			19.4			21.7		
Outdoor temperature	°C DB	TC(K W)	SHC(K W)	IP(K W)	TC(K W)	SHC(K W)	IP(K W)	TC(K W)	SHC(K W)	IP(K W)	TC(KW)	SHC(K W)	IP(KW)
	-15	2.079	1.622	0.271	2.166	1.689	0.272	2.210	1.724	0.275	2.221	1.732	0.276
	-9.4	2.734	2.132	0.261	2.848	2.221	0.262	2.906	2.267	0.265	2.920	2.278	0.266
	-3.9	2.878	2.245	0.388	2.998	2.338	0.390	3.059	2.386	0.394	3.074	2.398	0.394
	1.7	3.029	2.363	0.431	3.155	2.461	0.433	3.220	2.511	0.437	3.236	2.524	0.438
	7.2	3.189	2.487	0.479	3.321	2.591	0.481	3.389	2.644	0.486	3.406	2.657	0.487
	12.8	3.356	2.618	0.532	3.496	2.727	0.534	3.568	2.783	0.540	3.585	2.797	0.541
	18.3	3.533	2.756	0.591	3.680	2.871	0.594	3.755	2.929	0.600	3.774	2.944	0.601
	23.9	3.605	2.812	0.656	3.755	2.929	0.660	3.832	2.989	0.666	3.851	3.004	0.668
	29.4	3.679	2.869	0.821	3.832	2.989	0.825	3.910	3.050	0.833	3.930	3.065	0.835
	35.0	3.754	2.928	0.965	3.910	3.050	0.970	3.990	3.112	0.980	4.010	3.128	0.982
	40.6	3.453	2.694	1.014	3.597	2.806	1.019	3.671	2.863	1.029	3.689	2.878	1.031
46.1	2.935	2.290	0.862	3.058	2.385	0.866	3.120	2.434	0.875	3.136	2.446	0.876	

AFR	CFM	365			365			365			365		
Indoor temperat ure	°F DB	70			75			80			85		
	°F WB	59			63			67			71		
Outdoor temperature	°F DB	TC(KBt u)	SHC(KB tu)	IP(K W)									
	5	7.094	5.533	0.271	7.390	5.764	0.272	7.541	5.882	0.275	7.578	5.911	0.276
	15	9.328	7.276	0.261	9.716	7.579	0.262	9.915	7.733	0.265	9.964	7.772	0.266
	25	9.819	7.659	0.388	10.228	7.978	0.390	10.436	8.140	0.394	10.489	8.181	0.394
	35	10.335	8.062	0.431	10.766	8.398	0.433	10.986	8.569	0.437	11.041	8.612	0.438
	45	10.879	8.486	0.479	11.333	8.840	0.481	11.564	9.020	0.486	11.622	9.065	0.487
	55	11.452	8.933	0.532	11.929	9.305	0.534	12.173	9.495	0.540	12.233	9.542	0.541
	65	12.055	9.403	0.591	12.557	9.794	0.594	12.813	9.994	0.600	12.877	10.044	0.601
	75	12.301	9.595	0.656	12.813	9.994	0.660	13.075	10.198	0.666	13.140	10.249	0.668
	85	12.552	9.790	0.821	13.075	10.198	0.825	13.342	10.406	0.833	13.408	10.458	0.835
	95	12.808	9.990	0.965	13.342	10.406	0.970	13.614	10.619	0.980	13.682	10.672	0.982
	105	11.783	9.191	1.014	12.274	9.574	1.019	12.525	9.769	1.029	12.587	9.818	1.031
115	10.016	7.812	0.862	10.433	8.138	0.866	10.646	8.304	0.875	10.699	8.345	0.876	

Heating capacity

AFR	m ³ /h	620		620		620		620	
Indoor temperature	°C DB	15.6		18.3		21.1		23.9	
Outdoor temperature	°C WB	TC	IP	TC	IP	TC	IP	TC	IP
		KW							
	-25.0	2.906	1.422	2.821	1.481	2.793	1.496	2.765	1.511
	-20.0	3.418	1.673	3.319	1.742	3.286	1.760	3.253	1.778
	-17.8	3.161	1.496	3.069	1.558	3.039	1.574	3.008	1.590
	-15.0	3.719	1.511	3.611	1.574	3.575	1.590	3.539	1.606
	-12.2	3.764	1.563	3.655	1.629	3.619	1.645	3.582	1.661
	-8.3	3.964	1.616	3.848	1.683	3.810	1.700	3.772	1.717
	-6.7	4.003	1.648	3.887	1.717	3.848	1.734	3.810	1.751
	-1.1	3.318	1.273	3.221	1.326	3.189	1.340	3.157	1.353
	4.4	3.903	1.399	3.790	1.457	3.752	1.472	3.714	1.487
	8.3	4.879	1.521	4.737	1.584	4.690	1.600	4.643	1.616
	10.0	4.928	1.551	4.784	1.616	4.737	1.632	4.690	1.648
	18.3	4.977	1.582	4.832	1.648	4.784	1.665	4.736	1.681

AFR	CFM	365		365		365		365	
Indoor temperature	°F DB	60		65		70		75	
Outdoor temperature	°F DB	TC	IP	TC	IP	TC	IP	TC	IP
		KBtu	KW	KBtu	KW	KBtu	KW	KBtu	KW
	-13	9.914	1.422	9.625	1.481	9.530	1.496	9.435	1.511
	-4	11.664	1.673	11.324	1.742	11.212	1.760	11.100	1.778
	0	10.786	1.496	10.472	1.558	10.368	1.574	10.265	1.590
	5	12.689	1.511	12.320	1.574	12.198	1.590	12.076	1.606
	10	12.844	1.563	12.470	1.629	12.347	1.645	12.223	1.661
	17	13.524	1.616	13.130	1.683	13.000	1.700	12.870	1.717
	20	13.659	1.648	13.261	1.717	13.130	1.734	12.998	1.751
	30	11.320	1.273	10.990	1.326	10.882	1.340	10.773	1.353
	40	13.318	1.399	12.930	1.457	12.802	1.472	12.674	1.487
	47	16.647	1.521	16.162	1.584	16.002	1.600	15.842	1.616
	50	16.814	1.551	16.324	1.616	16.162	1.632	16.001	1.648
	65	16.982	1.582	16.487	1.648	16.324	1.665	16.161	1.681

Remarks:

TC: Total Capacity (Gross) (kBtu/h)

SHC: Sensible Heat Capacity (Gross)

PI: Power Input (including the compressor, evap. fan motor & cond. fan motor) (kW)

DB: Dry Bulb Temperature

WB: Wet Bulb Temperature

Note:

1. The data is for reference only and actual system performance may vary depending on other factors such as pipe losses, altitude, etc.
2. Capacity loss due to white frost and defrost operation is not included.
3. Shows nominal(MAX) capacities and power input

AS*-15UW3TBW00**

Cooling capacity

AFR	m ³ /h	620			620			620			620		
Indoor temperature	°C DB	21.1			23.9			26.7			29.4		
	°C WB	15.0			17.2			19.4			21.7		
Outdoor temperature	°C DB	TC(K W)	SHC(K W)	IP(K W)	TC(K W)	SHC(K W)	IP(K W)	TC(K W)	SHC(K W)	IP(K W)	TC(KW)	SHC(K W)	IP(K W)
	-15.0	2.079	1.622	0.271	2.166	1.689	0.272	2.210	1.724	0.275	2.221	1.732	0.276
	-9.4	3.494	2.726	0.261	3.640	2.839	0.262	3.714	2.897	0.265	3.733	2.912	0.266
	-3.9	3.678	2.869	0.483	3.832	2.989	0.485	3.910	3.050	0.490	3.929	3.065	0.491
	1.7	3.872	3.020	0.536	4.033	3.146	0.539	4.115	3.210	0.544	4.136	3.226	0.545
	7.2	4.076	3.179	0.596	4.245	3.311	0.599	4.332	3.379	0.605	4.354	3.396	0.606
	12.8	4.290	3.346	0.662	4.469	3.486	0.665	4.560	3.557	0.672	4.583	3.575	0.673
	18.3	4.516	3.522	0.735	4.704	3.669	0.739	4.800	3.744	0.747	4.824	3.763	0.748
	23.9	4.608	3.594	0.817	4.800	3.744	0.821	4.898	3.820	0.830	4.923	3.840	0.831
	29.4	4.702	3.668	1.021	4.898	3.820	1.027	4.998	3.898	1.037	5.023	3.918	1.039
	35.0	4.798	3.743	1.202	4.998	3.898	1.208	5.100	3.978	1.220	5.126	3.998	1.222
	40.6	4.414	3.443	1.262	4.598	3.587	1.268	4.692	3.660	1.281	4.715	3.678	1.284
46.1	3.752	2.927	1.073	3.908	3.049	1.078	3.988	3.111	1.089	4.008	3.126	1.091	

AFR	CFM	365			365			365			365		
Indoor temperature	°F DB	70			75			80			85		
	°F WB	59			63			67			71		
Outdoor temperature	°F DB	TC(KBtu)	SHC(KBtu)	IP(K W)									
	5	7.094	5.533	0.271	7.390	5.764	0.272	7.541	5.882	0.275	7.578	5.911	0.276
	15	11.923	9.300	0.261	12.419	9.687	0.262	12.673	9.885	0.265	12.736	9.934	0.266
	25	12.550	9.789	0.483	13.073	10.197	0.485	13.340	10.405	0.490	13.407	10.457	0.491
	35	13.211	10.304	0.536	13.761	10.734	0.539	14.042	10.953	0.544	14.112	11.008	0.545
	45	13.906	10.847	0.596	14.485	11.299	0.599	14.781	11.529	0.605	14.855	11.587	0.606
	55	14.638	11.418	0.662	15.248	11.893	0.665	15.559	12.136	0.672	15.637	12.197	0.673
	65	15.408	12.018	0.735	16.050	12.519	0.739	16.378	12.775	0.747	16.460	12.839	0.748
	75	15.723	12.264	0.817	16.378	12.775	0.821	16.712	13.035	0.830	16.796	13.101	0.831
	85	16.044	12.514	1.021	16.712	13.035	1.027	17.053	13.301	1.037	17.138	13.368	1.039
	95	16.371	12.769	1.202	17.053	13.301	1.208	17.401	13.573	1.220	17.488	13.641	1.222
	105	15.061	11.748	1.262	15.689	12.237	1.268	16.009	12.487	1.281	16.089	12.550	1.284
115	12.802	9.986	1.073	13.336	10.402	1.078	13.608	10.614	1.089	13.676	10.667	1.091	

Heating capacity

AFR	m ³ /h	620		620		620		620	
Indoor temperature	°C DB	15.6		18.3		21.1		23.9	
Outdoor temperature	°C WB	TC	IP	TC	IP	TC	IP	TC	IP
		KW							
	-25.0	2.906	1.422	2.821	1.481	2.793	1.496	2.765	1.511
	-20.0	3.418	1.673	3.319	1.742	3.286	1.760	3.253	1.778
	-17.8	3.161	1.496	3.069	1.558	3.039	1.574	3.008	1.590
	-15.0	3.719	1.511	3.611	1.574	3.575	1.590	3.539	1.606
	-12.2	3.764	1.563	3.655	1.629	3.619	1.645	3.582	1.661
	-8.3	3.964	1.616	3.848	1.683	3.810	1.700	3.772	1.717
	-6.7	4.003	1.648	3.887	1.717	3.848	1.734	3.810	1.751
	-1.1	3.318	1.273	3.221	1.326	3.189	1.340	3.157	1.353
	4.4	3.903	1.399	3.790	1.457	3.752	1.472	3.714	1.487
	8.3	4.879	1.521	4.737	1.584	4.690	1.600	4.643	1.616
	10.0	4.928	1.551	4.784	1.616	4.737	1.632	4.690	1.648
	18.3	4.977	1.582	4.832	1.648	4.784	1.665	4.736	1.681

AFR	CFM	365		365		365		365	
Indoor temperature	°F DB	60		65		70		75	
Outdoor temperature	°F DB	TC	IP	TC	IP	TC	IP	TC	IP
		KBtu	KW	KBtu	KW	KBtu	KW	KBtu	KW
	-13	9.914	1.422	9.625	1.481	9.530	1.496	9.435	1.511
	-4	11.664	1.673	11.324	1.742	11.212	1.760	11.100	1.778
	0	10.786	1.496	10.472	1.558	10.368	1.574	10.265	1.590
	5	12.689	1.511	12.320	1.574	12.198	1.590	12.076	1.606
	10	12.844	1.563	12.470	1.629	12.347	1.645	12.223	1.661
	17	13.524	1.616	13.130	1.683	13.000	1.700	12.870	1.717
	20	13.659	1.648	13.261	1.717	13.130	1.734	12.998	1.751
	30	11.320	1.273	10.990	1.326	10.882	1.340	10.773	1.353
	40	13.318	1.399	12.930	1.457	12.802	1.472	12.674	1.487
	47	16.647	1.521	16.162	1.584	16.002	1.600	15.842	1.616
	50	16.814	1.551	16.324	1.616	16.162	1.632	16.001	1.648
	65	16.982	1.582	16.487	1.648	16.324	1.665	16.161	1.681

Remarks:

TC: Total Capacity (Gross) (kBtu/h)

SHC: Sensible Heat Capacity (Gross)

PI: Power Input (including the compressor, evap. fan motor & cond. fan motor) (kW)

DB: Dry Bulb Temperature

WB: Wet Bulb Temperature

Note:

1. The data is for reference only and actual system performance may vary depending on other factors such as pipe losses, altitude, etc.
2. Capacity loss due to white frost and defrost operation is not included.
3. Shows nominal(MAX) capacities and power input

3. Installation Instruction



WARNING

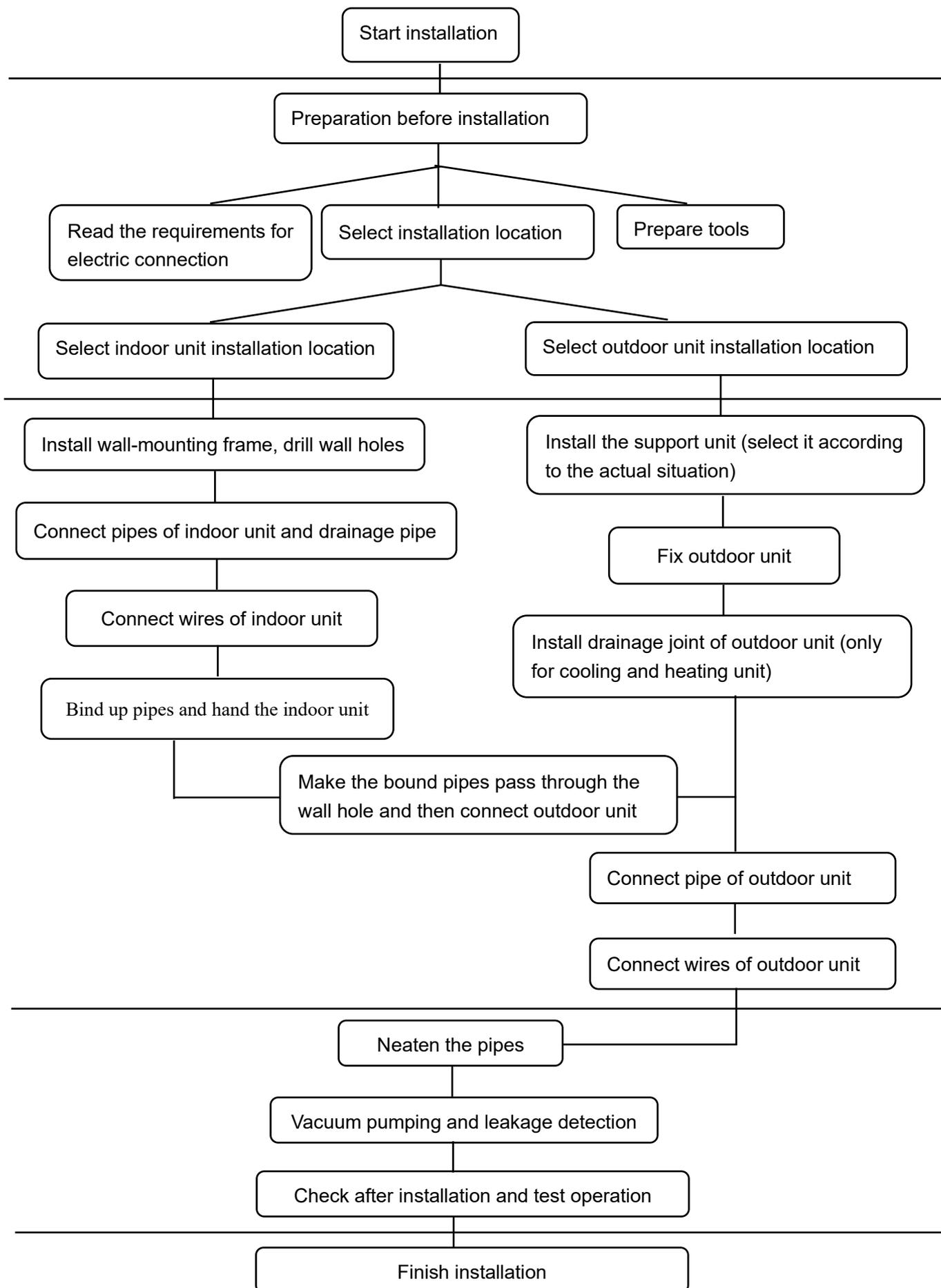
To prevent abnormal heat generation and the possibility of fire, do not place obstacles, enclosures and grilles in front of or surrounding the air conditioner in a way that may block air flow. And, more than 1 meter away from any antenna or power lines or connecting wires used for TV, radio, telephone,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

3-1. Main Tools for Installation and Maintenance

<p>1. Level meter, measuring tape</p> 	<p>2. Screw driver</p> 	<p>3. Impact drill, drill head, electric drill</p> 
<p>4. Electroprobe</p> 	<p>5. Universal meter</p> 	<p>6. Torque wrench, open-end wrench, inner hexagon spanner</p> 
<p>7. Electronic leakage detector</p> 	<p>8. Vacuum pump</p> 	<p>9. Pressure meter</p> 
<p>10. Pipe pliers, pipe cutter</p> 	<p>11. Pipe expander, pipe bender</p> 	<p>12. Soldering appliance, refrigerant container</p> 

Just for reference, some tools may be different from each place, you can use the similar tools to install the products.

3-2. Installation Flow Diagram



Note: this flow is only for reference, the more details please find the manual of Use and installation instructions

3-3. 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)

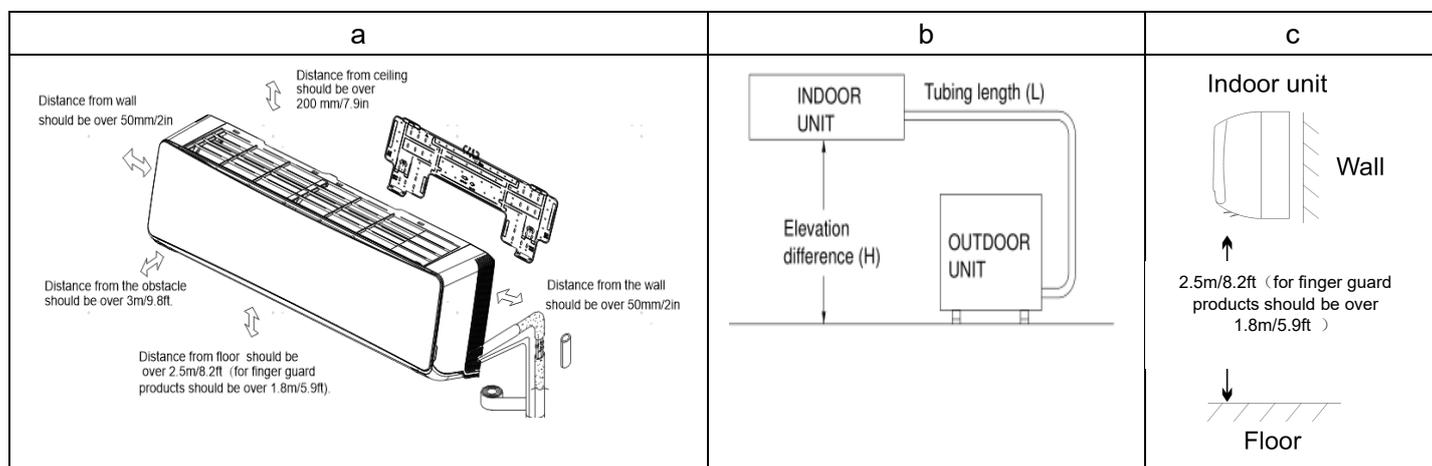


table 1

Capacity(Btu/h)	Standard Length (m / ft)	Max.Elevation B(m / ft)	Max. Length (m / ft)	Min. Length (m / ft)	Additional Refrigerant g/m / oz/ft
09k-12k	7.5/24.6	15/49.2	20/65.6	4/13.1	20/0.22
15k	7.5/24.6	15/49.2	30/98.4	4/13.1	20/0.22

* If total tubing length becomes Standard Length to Max. Length, charge additional refrigerant as the table1 for reference. And no additional compressor oil is necessary.

* If the height or pipe length is different from the specification, please refer to the specification.

* If the height or pipe length is out of the scope of the table, please consult the dealer.

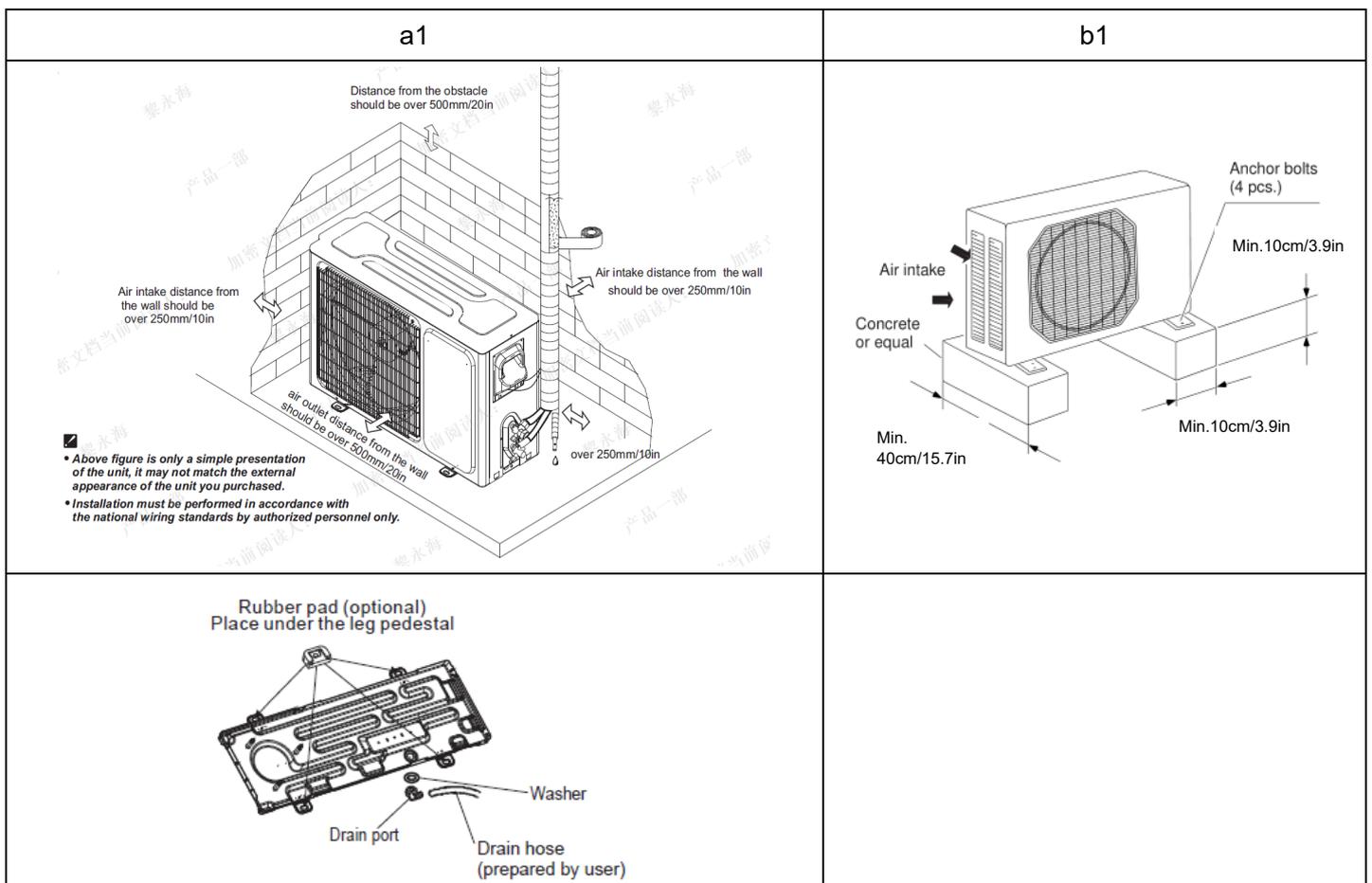
Outdoor unit

Avoid:

- △ Heat sources, exhaust fans, etc.
- △ Damp, humid or uneven locations.

DO:

- △ Choose a place as cool as possible.
- △ Choose a place that is well ventilated.
- △ Allow enough room around the unit for air intake or exhaust and possible maintenance. (see a1 & b1)
- △ Provide a solid base (level concrete pad, concrete block, 10 × 40 cm beams or equal), a minimum of 10 cm above ground level to reduce humidity and protect the unit against possible water damage and decreased service life.
- △ If the installation bag has rubber pads, it is strongly recommended for use to reduce vibration and noise.
- △ Use lug bolts or equal to bolt down unit, reducing vibration and noise.



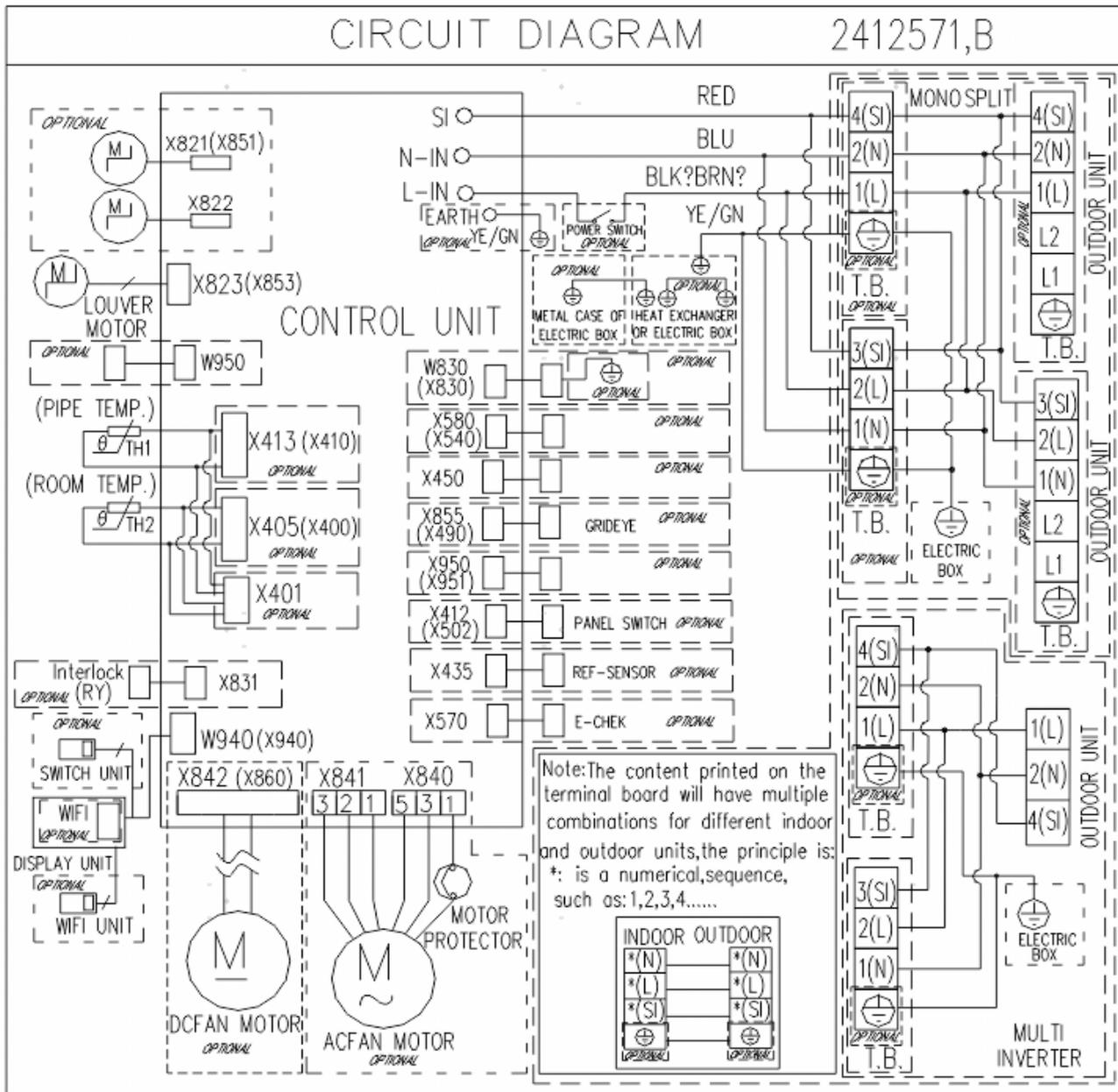
Recommended Wire Diameter:

Capacity size	Power cable recommended wire size (No.x AWG)	Communication cable recommended wire size (No.x AWG)	Max. td fuse/ breaker (A)
9K-15K	3 x 14AWG	4 x 18AWG	Indoor:5A Outdoor:20A

3-4. Electric Wiring Diagram

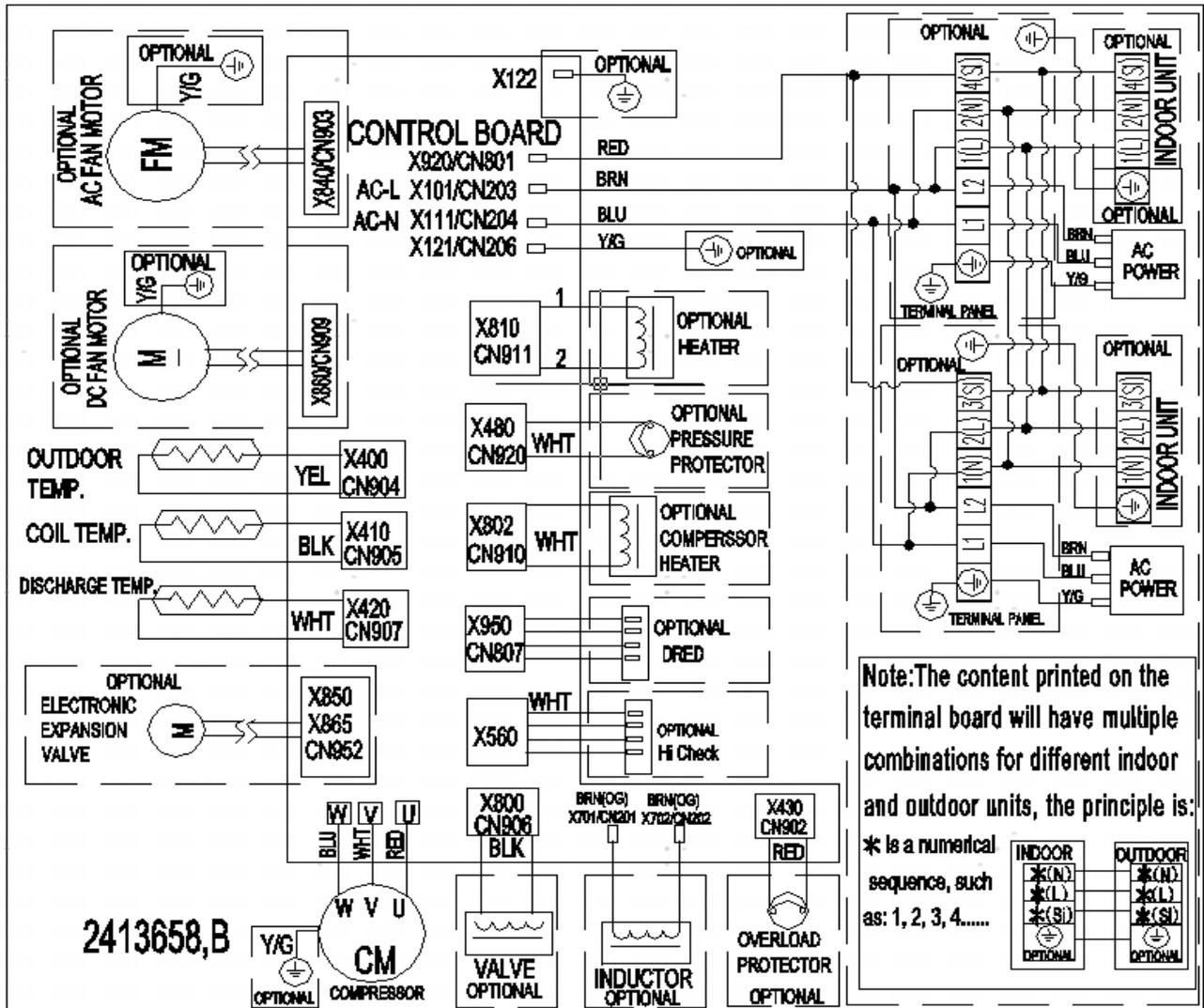
Model	Indoor Unit DIAGRAM	Outdoor Unit DIAGRAM
AS*-09UW3TBW**00	2412571	2413658
AS*-12UW3TBW**00	2412571	2413658
AS*-15UW3TBW**00	2412571	2413658.

Indoor:
2412571



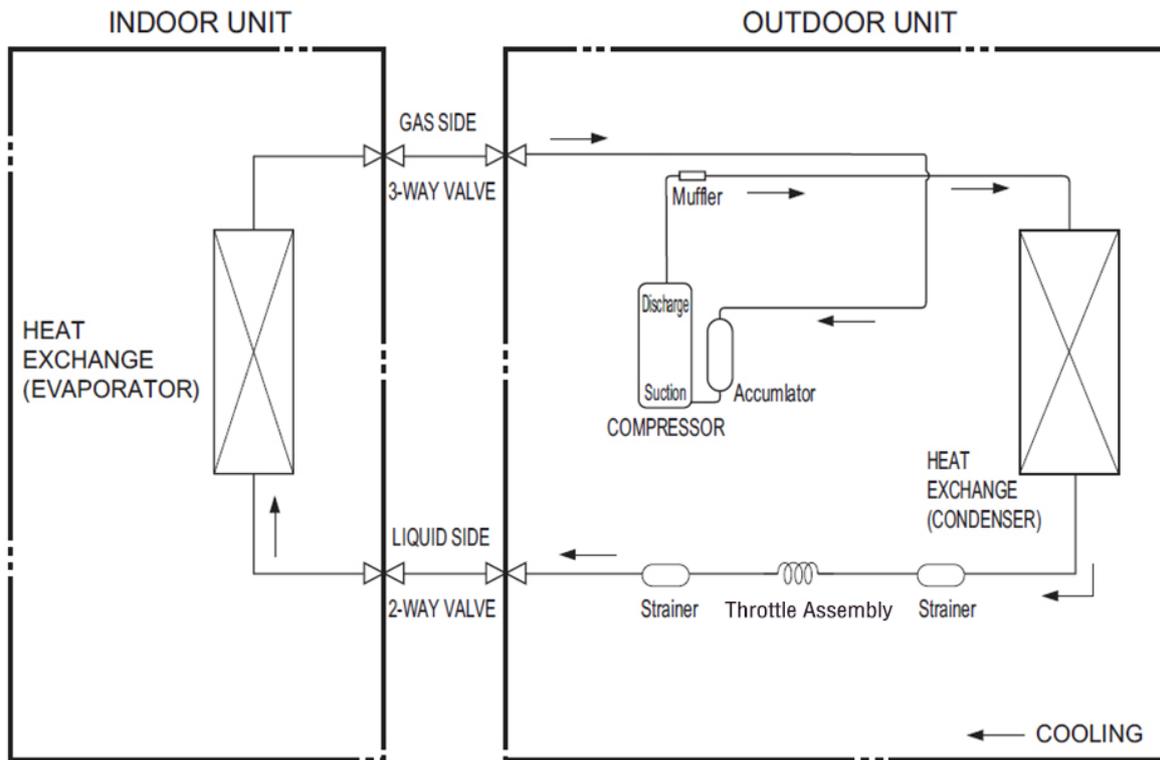
Outdoor:

2413658

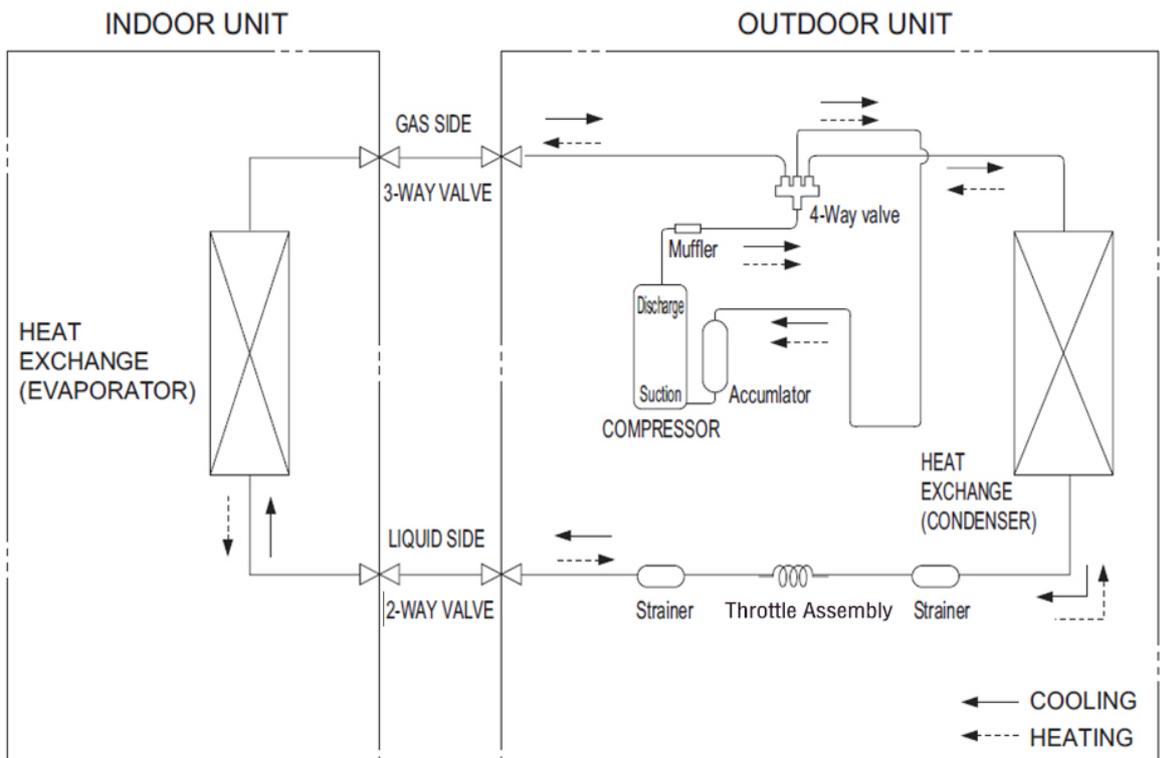


3-5. Refrigerant Flow System

(1) Cooling



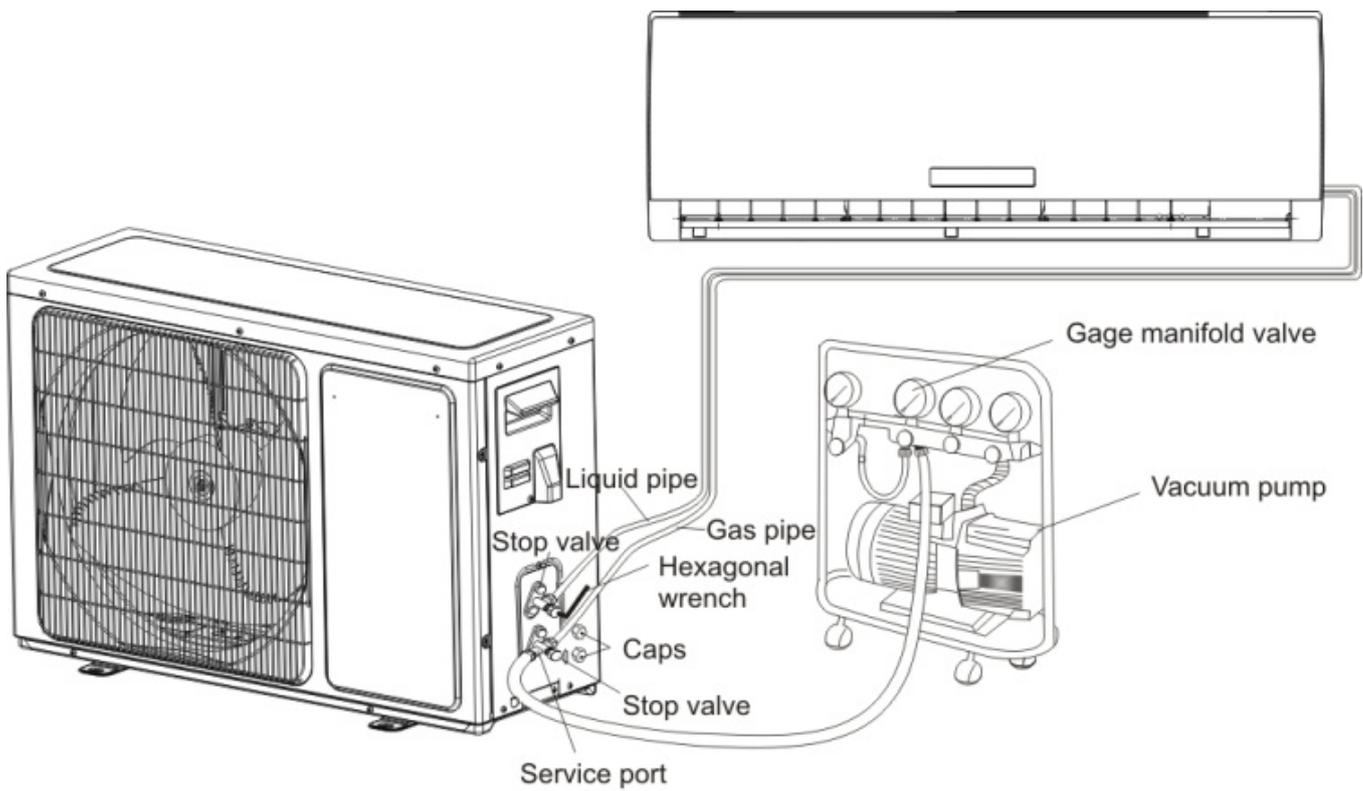
(2) Cooling & Heating



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

3-6. 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 -1.0×10^5 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



3-7. 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.

△Operation 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.

4. Function Operation

4-1. Operation Range (cooling and heating)

Temperature		Cooling operation	Heating operation
Indoor temperature	Max	86°F (30°C)	81°F (27°C)
	Min	70°F (21°C)	45°F (7°C)
outdoor temperature	Max	118°F (48°C)	75°F (24°C)
	Min	5°F(-15°C)	-22°F(-30°C)

*Optimum performance will be achieved within these operating temperature. If air conditioner is used outside of the above conditions, the protective device may trip and stop the appliance.

*For Tropical (T3) Climate condition models, the outdoor max temperature is 131°F (55 °C) instead of 115°F (46 °C)

*For some models, can keep cooling at 5°F(-15 °C) outdoor ambient via unique design. Normally, optimum cooling performance will be achieved above 70°F(21 °C). Please consult the merchant to get more information.

*For R32 refrigerant models, can keep heating at 14°F(-20 °C) outdoor ambient , For 454B refrigerant models can keep heating at -13°F(-25 °C) outdoor ambient, even heat at lower outdoor ambient

The temperature of some products is allowed beyond the range. In specific situation, please consult the merchant. When relative humidity is above 80%, if the air conditioner runs in COOLING or DRY mode with door or window opened for a long time, dew may drip down from the outlet.

4-2. Remote Controller Operation & Function

△Remote Controller Instruction

RTY5-0

1 MODE
Press this button to select the operation mode.

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

6 AI SMART
Used to enter Artificial Intelligence Smart Running Mode .

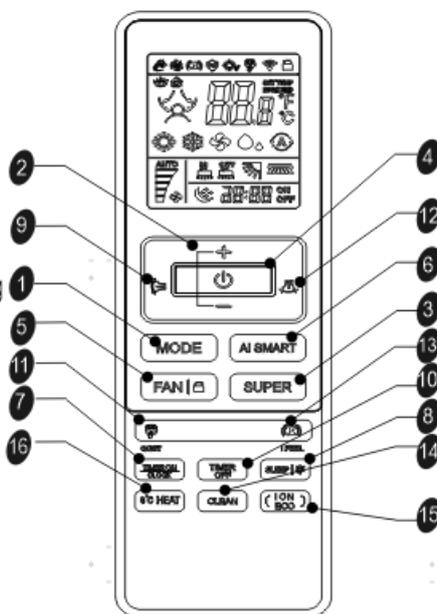
8 SLEEP / DIMMER
Used to set or cancel Sleep Mode operation. Press this button for about 5 seconds once to start DIMMER mode, press this button for about 5 seconds once again to stop it.

7 TIMER ON / CLOCK
Used to set or cancel the timer operation. Used to set the current time.

10 TIMER OFF
Used to set or cancel the timer operation.

11 QUIET
Used to set or cancel Quiet Mode operation.

14 CLEAN
Used to set the Clean operation.



15 ION / ECO
Used to set or cancel ION Mode operation.
Used to set or cancel Economy Mode operation.

16 8°C HEAT
Used to start or stop 8°C HEAT Mode.

2 TEMP + -
Used to adjust the set temperature and the timer, also real time.

4 POWER
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 / LOCK
Used to select fan speed in sequence auto, higher, high, medium, low and lower. Press this button for about 5 seconds once to start LOCK mode. Press this button for about 5 seconds once again to stop it.

9 SWING
Used to adjust vertical adjustment louver swinging and set the desired up/downairflow direction.

12 SWING (optional)
Used to adjust Horizontal adjustment louver swinging and set the desired left/right airflow direction.

13 iFEEL
Used to set or cancel iFEEL Mode. 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.

Cooling indicator	Dry indicator	Fan only indicator	8°C Heating indicator	Heating indicator
Auto fan speed	Higher fan speed	High fan speed	Medium fan speed	Low fan speed
Lower fan speed	Sleep 1 indicator	Sleep 2 indicator	Sleep 3 indicator	Sleep 4 indicator
AI SMART indicator	Quiet indicator	Economy indicator	Super indicator	Display set timer
Signal transmit	Ifeel	Display temperature	Lock	Display current time
Wisdom eye indicator	Airflow Follow You indicator	Airflow Avoid You indicator		
Indoor clean indicator	Outdoor clean indicator	Airflow up and down indicator		
Airflow left and right indicator	Fresh indicator	ION indicator		

△Function Instruction

1. Major general technical parameters

1-1 Remote receiver distance (front of the air conditioner) : 8 m (26ft) .

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

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

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.

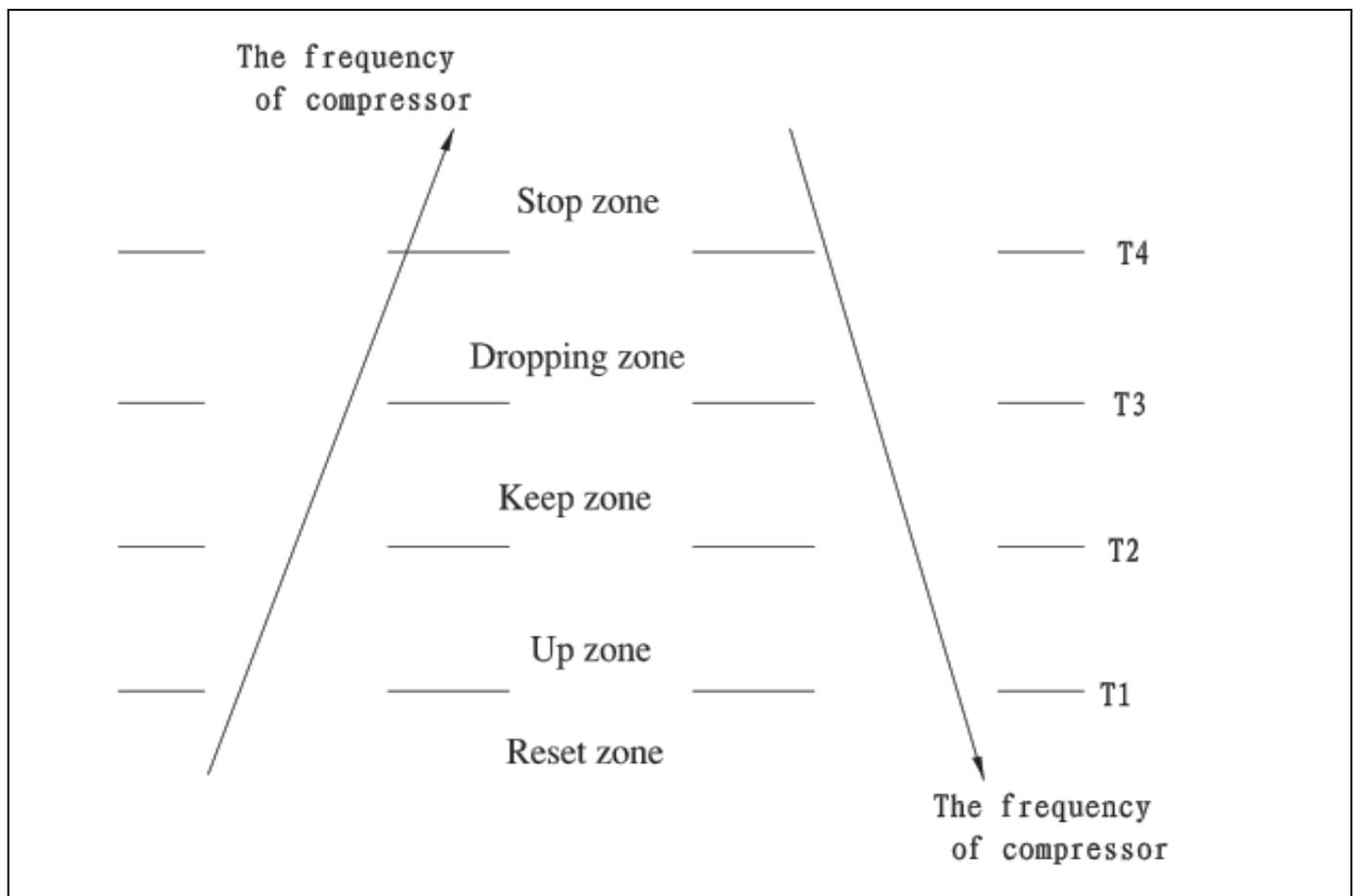
3. Control function

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
$T < T1$	Compressor restart
$T1 < T < T2$	Compressor frequency increasing operation
$T2 < T < T3$	Compressor keeps operating at the current frequency
$T3 < T < T4$	Compressor frequency decreasing operation
$T4 < T$	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

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

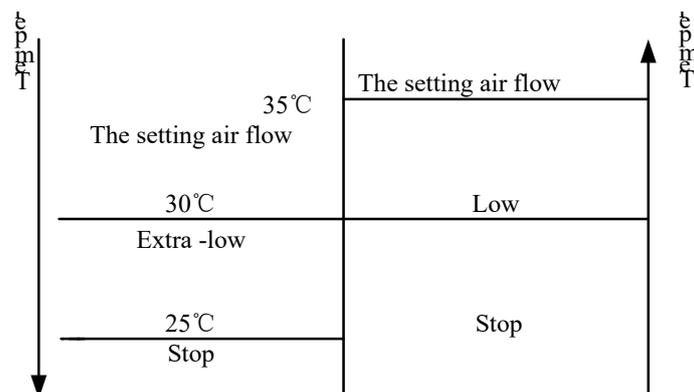
$T2=35^{\circ}\text{C}$

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.
$T1 \leq$ 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

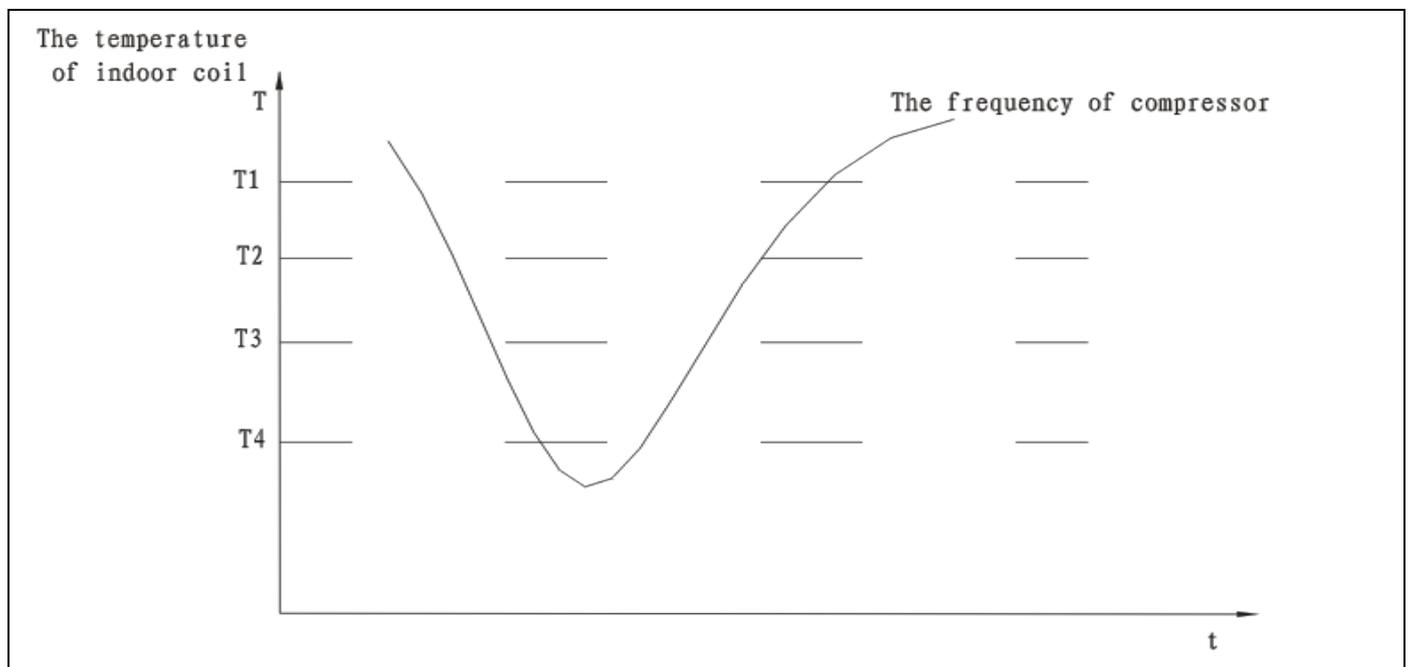
T1: Anti-freeze deactivation temperature

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.



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

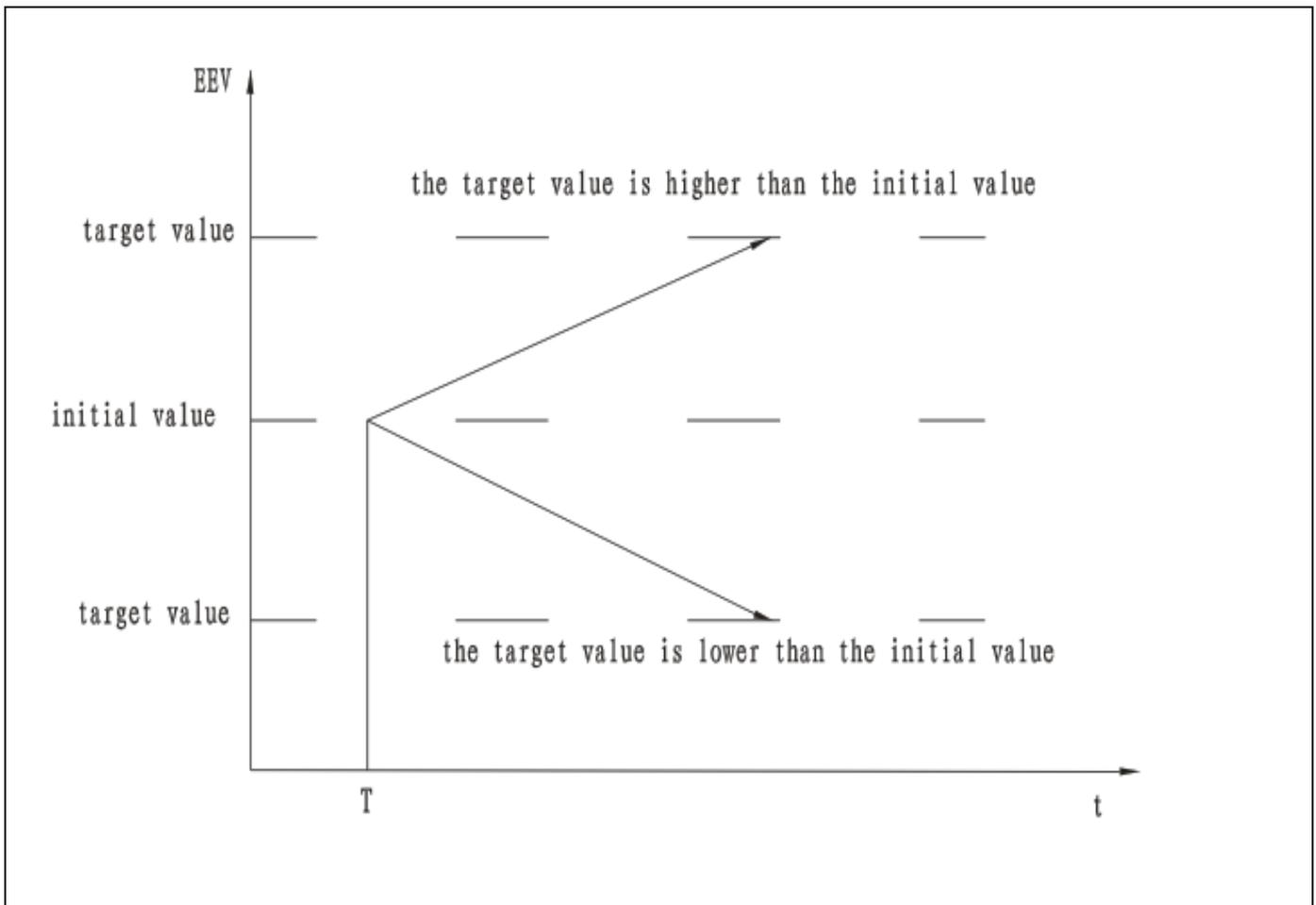
	Outdoor ambient temperature T	Machine operation status
During the cooling operation, the outdoor ambient temperature has an impact on the machine's operation.	$T < T1$	The machine operates at the current control, maintaining the current frequency or increasing/decreasing the frequency.
	$T \geq T1$ for 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: $0^{\circ}\text{C} \leq T \leq 32^{\circ}\text{C}$.	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. The indoor motor operates as follows: If the indoor coil temperature T is less than 32°C , it stops operating. If the indoor coil temperature T is between 32°C and 50°C (inclusive), it operates at a low fan speed for self-cleaning. If the indoor coil temperature T is greater than 50°C , it operates at a medium fan speed for self-cleaning.
	Outdoor Frosting Phase	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. 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.
	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	When the outdoor temperature T is $\leq 10^{\circ}\text{C}$, operate according to the defrosting conditions; When the outdoor temperature T is $> 10^{\circ}\text{C}$, the outdoor motor operates at a high fan speed.

12、 Silent Mode

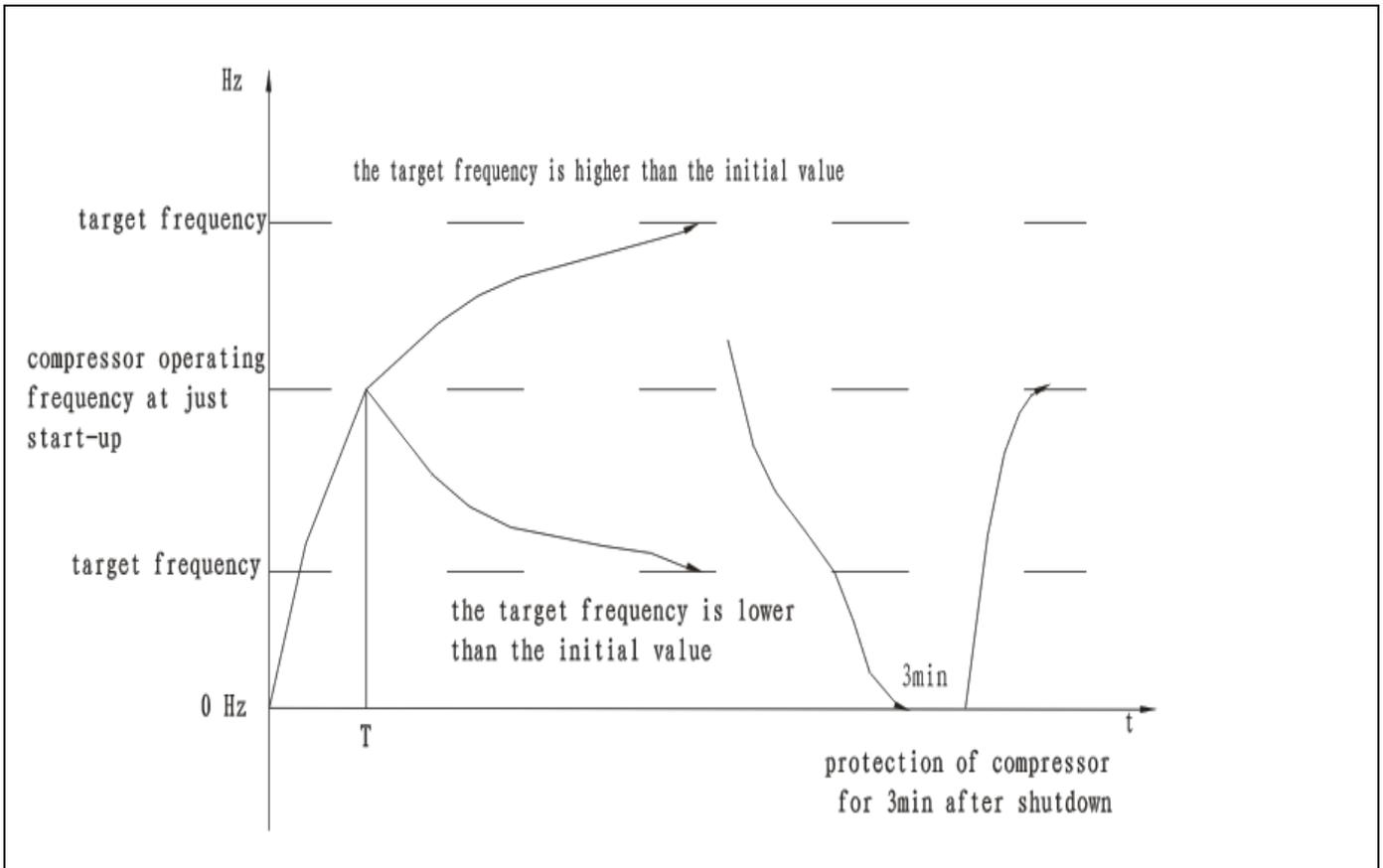
	Components	Operation
Silent Mode	Compressor	Operate within the frequency range set for silent mode
	Indoor Fan	Operate at the silent mode speed setting
	Outdoor Fan	Operate at the silent mode speed setting. During cooling, if the outdoor temperature is high, it will operate at the current speed.

13、 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

14、 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.

15、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.

16、 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.

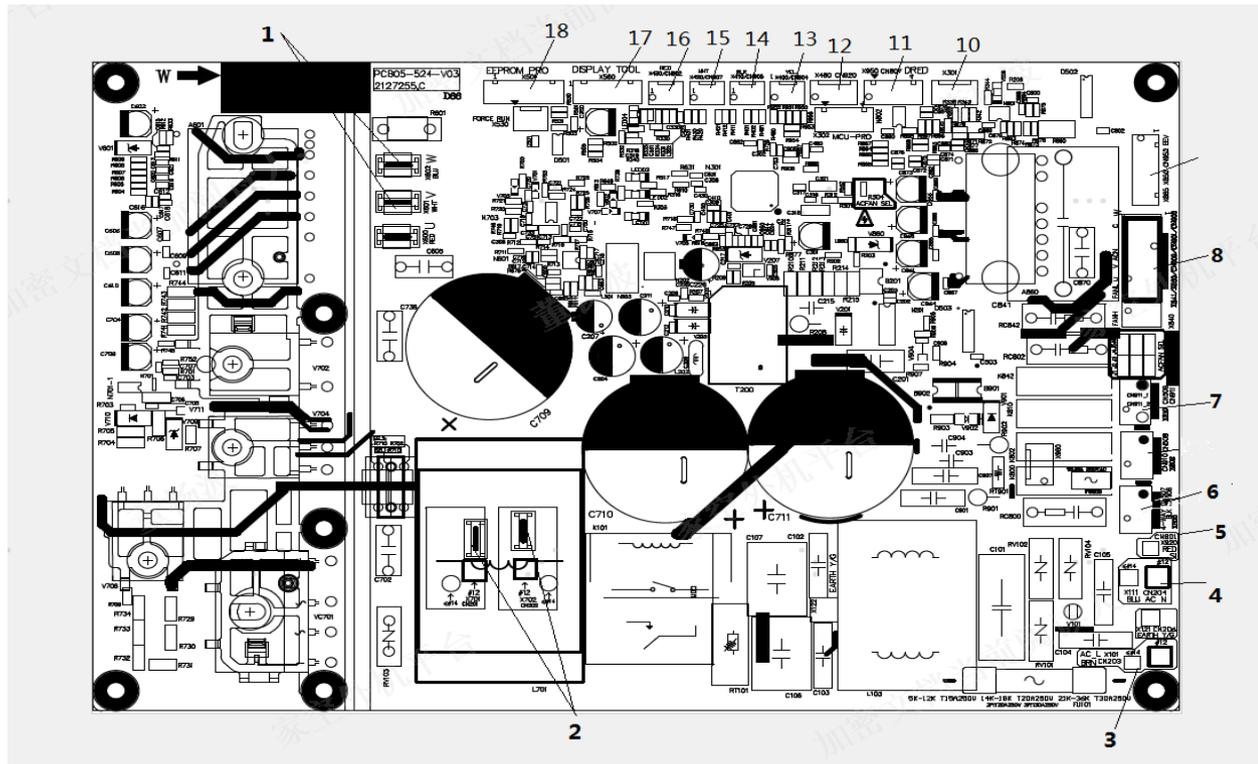
Sleep Mode2				
Cooling	After running for 1 hour, the set temperature value increases by 1 degree.	After running for 2 hours, the set temperature value increases by another 1 degree.	After running for 6 hour, the set temperature value decreases by 1 degree.	After running for 7 hours, the set temperature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

outdoor:

2127255



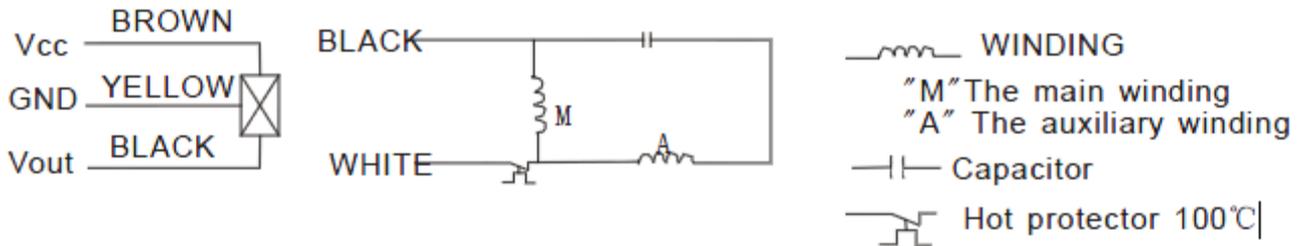
1	Terminal of compressor U/V/W phase (RED/WHITE/BLUE)	6	4-way valve terminal(BLACK)	11	DRED function (OPTIONAL)	16	Terminal of compressor overload protector(RED)
2	Terminal of reactor wire (BROWN/ORANGE)	7	Heater terminal(RED)	12	Over pressure sensor (OPTIONAL)	17	Display tool terminal (WHITE)
3	Terminal of live wire, connect to the terminal panel "L"	8	Terminal of DC/AC fan (RED/WHITE)	13	Outdoor ambient temperature sensor(YELLOW)	18	EEPROM program (WHITE)
4	Terminal of naught wire, connect to the terminal panel "N")"	9	Terminal of electronic expansion valve (WHITE)	14	Outdoor pipe temperature sensor(BLACK)		
5	Terminal of signal wire, connect to the terminal panel "SI"	10	Selector switch (OPTIONAL)	15	Compressor discharge temperature sensor (WHITE)		

5-2. Fan Motor

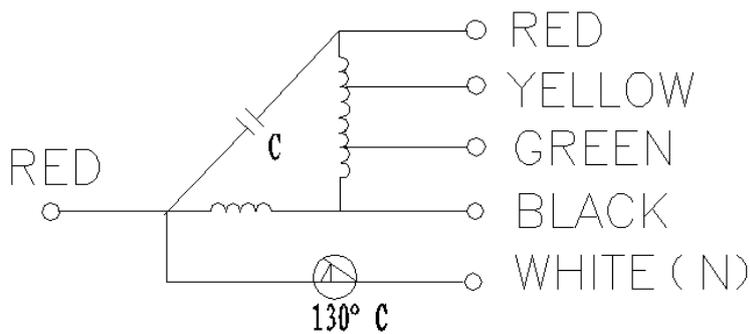
Drawings attached:

Depending on the different motors used in various machine types, there are the first, second, or third types of motor wiring diagrams as mentioned above. There are also corresponding wiring diagrams on the motor housing, and you can directly refer to the wiring diagrams on the motor housing for inspection.

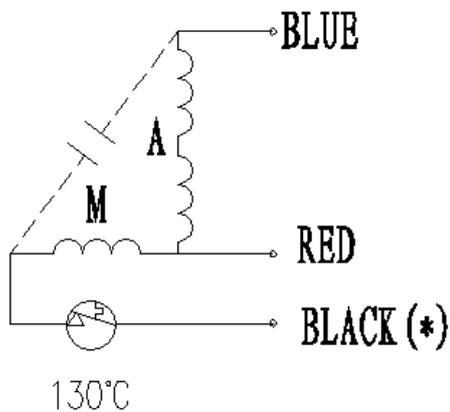
1. Motor Wiring Configuration 1



2. Motor Wiring Configuration 2



3. Motor Wiring Configuration 3



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 ∞ (open circuit) .

Test in voltage

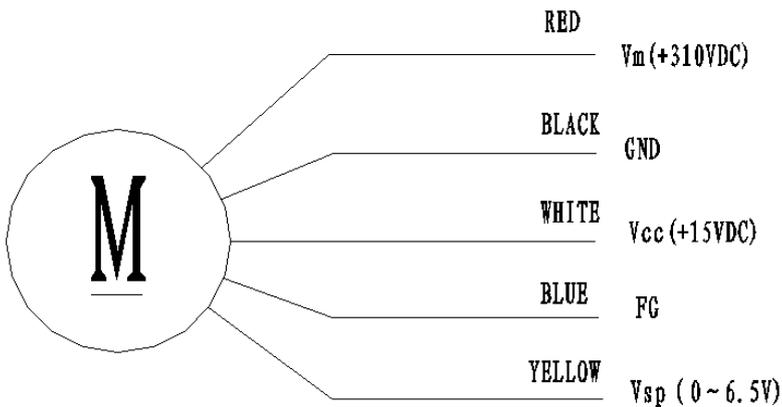
TOOL: Multimeter.

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.

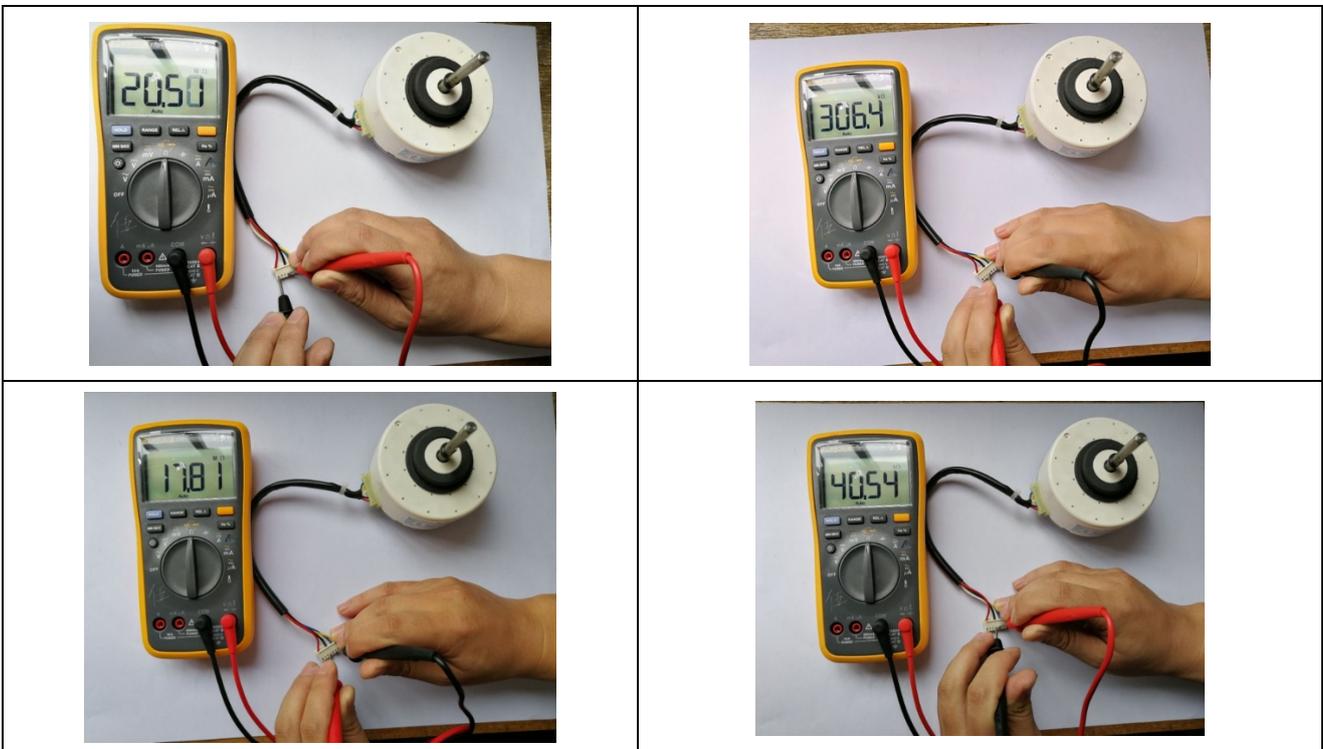
Notes:

- 1) Please don't hold motor by lead wires.
- 2) Please don't plug IN/OUT the motor connecter while power ON.
- 3) Please don't drop hurl 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.

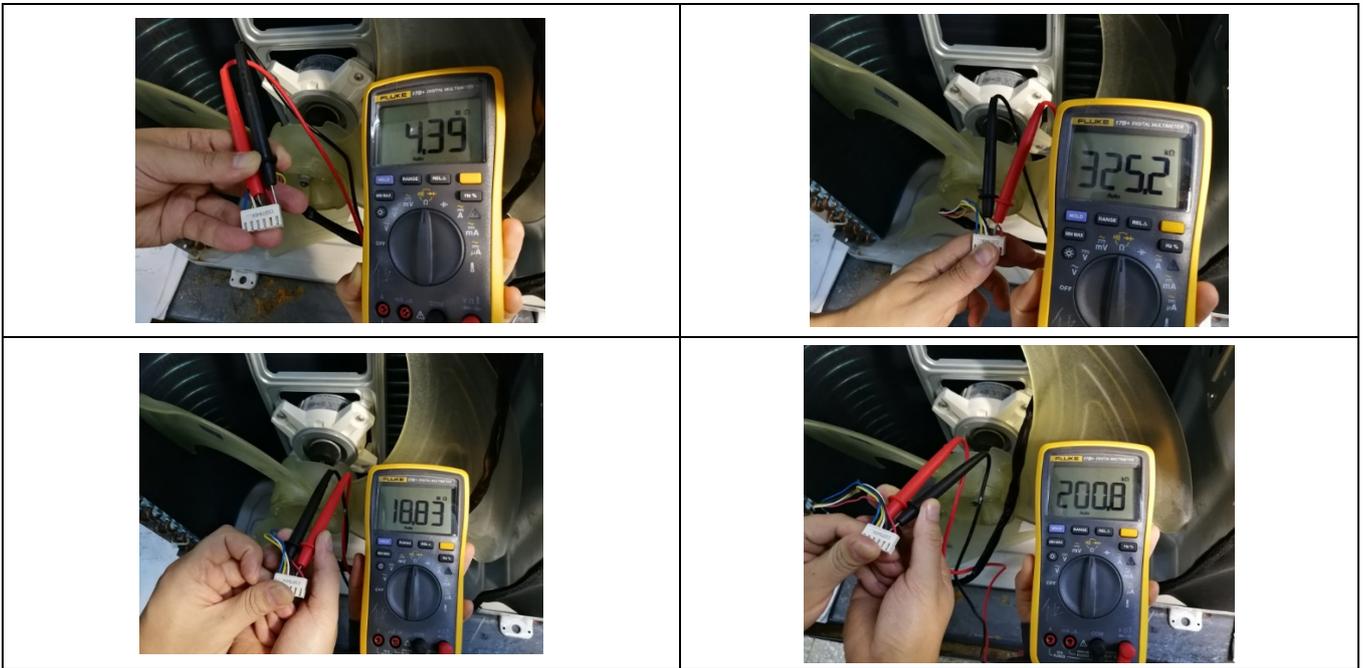
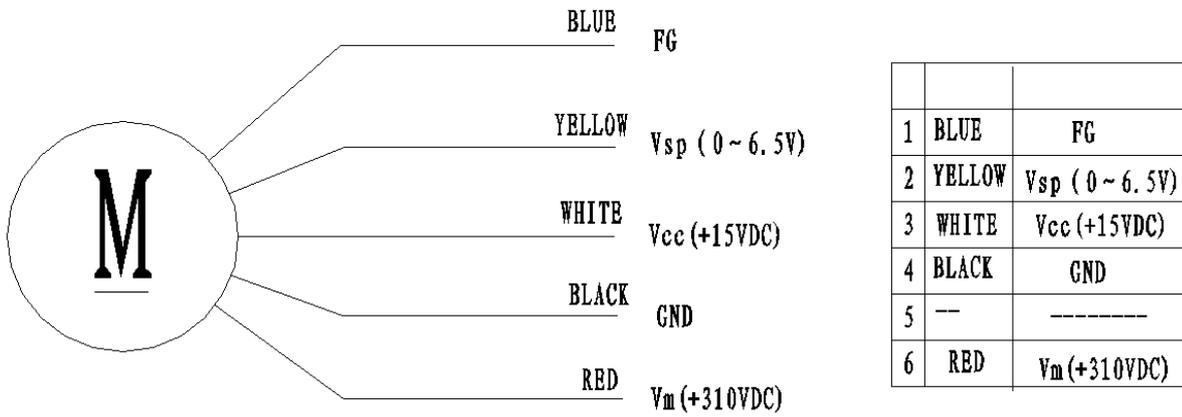
Indoor DC Fan Motor



1	RED	$V_m(+310VDC)$
2	--	-----
3	--	-----
4	BLACK	GND
5	WHITE	$V_{cc}(+15VDC)$
6	BLUE	FG
7	YELLOW	$V_{sp}(0 \sim 6.5V)$



Outdoor DC Fan Motor



5-3. Four way coil

Test in resistance.

TOOL: Multimeter.

Test the resistance of the winding. The four way coil is fault if the resistance of winding 0 (short circuit) or ∞ (open circuit).



5-4. EEV coil

Test in resistance.

TOOL: Multimeter.

use the mutimeter to test resistance between two terminals at 20°C and the values are the same.

brown (com) -white

brown (com) -orange

red (com) -yellow

red (com) -blue

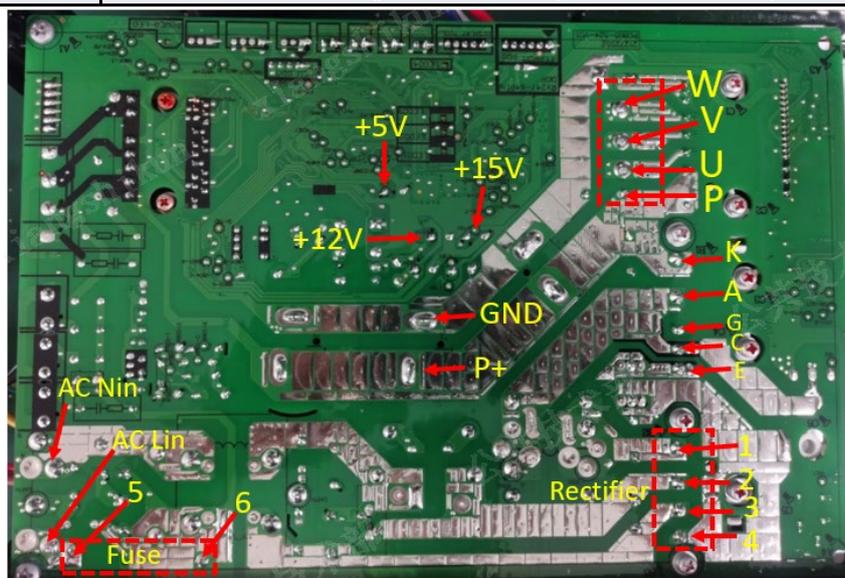


5-5. Electric control board of outdoor unit

Test in voltage

TOOL: Multimeter.

test point	value range	remark
GND and +12V	11.8-12.2V	Power on, connecting the +12V for red pen, GND for black pen with DC voltage mode
GND and +5V	4.95-5.05V	Power on, connecting the +5V for red pen, GND for black pen with DC voltage mode
GND and +15V	14.8-15.2V	Power on, connecting the +15V for red pen, GND for black pen with DC voltage mode
2 and 1	0.480-0.530V	Power off, connecting the 2 for red pen, 1 for black pen with diode mode
3 and 1	0.480-0.530V	Power off, connecting the 3 for red pen, 1 for black pen with diode mode
4 and 2	0.480-0.530V	Power off, connecting the 4 for red pen, 2 for black pen with diode mode
4 and 3	0.480-0.530V	Power off, connecting the 4 for red pen, 2 for black pen with diode mode
P+ and GND	294-326VDC	Power on, connecting the P+ for red pen, GND for black pen with DC voltage mode
5 and 6	0.000-0.002V	Power off, connecting the 5 (4) for red pen, 4 (5) for black pen with Resistance mode mode
AC Lin and AC Nin	208-230V	Power on, connecting the L for red pen, N for black pen with AC voltage mode
U and P	0.3-0.7V	Power off, connecting the P for red pen, U for black pen with diode mode
V and P	0.3-0.7V	Power off, connecting the P for red pen, V for black pen with diode mode
W and P	0.3-0.7V	Power off, connecting the P for red pen, W for black pen with diode mode
E and C	0.3-0.7V	Power off, connecting the E for red pen, C for black pen with diode mode
E and G	0.3-0.7V	Power off, connecting the E for red pen, G for black pen with diode mode
K and A	0.3-0.7V	Power off, connecting the K for red pen, A for black pen with diode mode

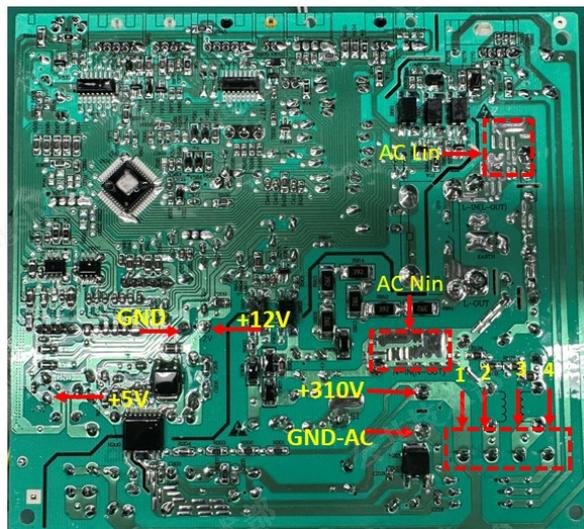


5-6. Electric control board of indoor unit

Test in voltage

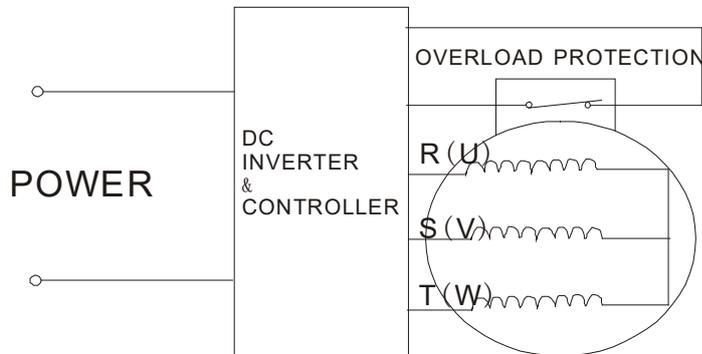
TOOL: Multimeter.

test point	value range	remark
3 and 1	0.480-0.530V	Power off, connecting the 3 for red pen, 1 for black pen with Diode mode
2 and 1	0.480-0.530V	Power off, connecting the 2 for red pen, 1 for black pen with Diode mode
4 and 3	0.480-0.530V	Power off, connecting the 4 for red pen, 3 for black pen with Diode mode
4 and 2	0.480-0.530V	Power off, connecting the 4 for red pen, 2 for black pen with Diode mode
AC Lin and AC Nin	198-242V	Power on, connecting the AC Lin for red pen, AC Nin for black pen with AC voltage mode
+310V and GND-AC	280-342V	Power on, connecting the +310V for red pen, GND-AC for black pen with DC voltage mode
GND and +12V	11.4-12.6V	Power on, connecting the +12V for red pen, GND for black pen with DC voltage mode
GND and +5V	4.95-5.05V	Power on, connecting the +5V for red pen, GND for black pen with DC voltage mode



5-7. Compressor

Drawings attached:



Test in resistance.

TOOL: Multimeter.

Test the resistance of the winding. The compressor is fault if the resistance of winding 0(short circuit)or ∞ (open circuit)

Familiar trouble: 1) Compressor motor lock. 2) Discharge pressure value approaches static pressure value .3) Compressor motor winding abnormality.

Notes: 1) Don't put a compressor on its side or turn over.

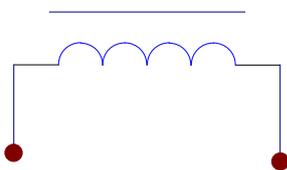
2) Please assembly the compressor in your air conditioner rapidly after removing the plugs. Don't place the compressor in air for a long time.

3) Avoiding compressor running in reverse caused by connecting electrical wire incorrectly.

4) Warning! In case AC voltage is impressed to compressor, the compressor performance will be lower because of its rotor magnetic force decreasing.

5-8. Electric Reactor

Drawings attached:



Familiar error:

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

Test in resistance.

TOOL: Multimeter.

Test the resistance of the winding. The Reactor is fault if the resistance of winding 0(short circuit)or ∞ (open circuit) .

5-9. 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:

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

- Pull the sensor off the control panel.
- Use a multimeter to measure the resistance of the sensor.
- Check with the resistance comparison table in the technical manual and confirm whether the sensor resistance is within the normal range according to the corresponding temperature.



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			

2. THE PARAMETER OF OUTDOOR COMPRESSOR TEMPERATURE SENSOR:

Temperature (°C)	Resistance(k)	Voltage(V)	Temperature (°C)	Resistance (k)	Voltage(V)
-20	542.867	0.06185563	51	19.907	1.273074475
-19	512.839	0.06543004	52	19.148	1.310312934
-18	484.672	0.06917993	53	18.422	1.348029498
-17	458.239	0.07311215	54	17.728	1.386170907
-16	433.423	0.07723358	55	17.065	1.424680494
-15	410.115	0.08155140	56	16.43	1.463624623
-14	388.213	0.08607312	57	15.822	1.502961719
-13	367.625	0.09080590	58	15.241	1.542579738
-12	348.264	0.09575738	59	14.684	1.582573078
-11	330.048	0.10093573	60	14.151	1.622834232
-10	312.904	0.10634837	61	13.64	1.663405088
-9	296.761	0.11200385	62	13.151	1.704175229
-8	281.556	0.11790981	63	12.682	1.745200698

-7	267.227	0.12407536	64	12.233	1.78637104
-6	253.72	0.13050821	65	11.802	1.827760456
-5	240.982	0.13721739	66	11.388	1.869364416
-4	228.965	0.14421140	67	10.992	1.910971223
-3	217.624	0.15149895	68	10.611	1.952788467
-2	206.917	0.15908889	69	10.246	1.994602839
-1	196.805	0.16699001	70	9.896	2.036415908
0	187.25	0.17521257	71	9.559	2.078366648
1	177.957	0.18402550	72	9.236	2.120229484
2	169.186	0.19319719	73	8.925	2.162162162
3	160.903	0.20273937	74	8.627	2.203928178
4	153.179	0.21252789	75	8.341	2.245558418
5	145.685	0.22297275	76	8.065	2.287251934
6	138.696	0.23368340	77	7.8	2.328767123
7	132.086	0.24480509	78	7.546	2.369998606
8	125.833	0.25634646	79	7.301	2.411176512
9	119.916	0.26831655	80	7.065	2.452217815
10	114.315	0.28072493	81	6.843	2.492120501
11	109.01	0.29358432	82	6.624	2.532777116
12	103.984	0.30690352	83	6.414	2.573028606
13	99.222	0.32068816	84	6.212	2.612972641
14	94.708	0.33494897	85	6.017	2.652726847
15	90.427	0.34969710	86	5.829	2.692216328
16	86.366	0.36494000	87	5.648	2.731362468
17	82.512	0.38068793	88	5.474	2.770083102
18	78.854	0.39694585	89	5.306	2.808524698
19	75.381	0.41372093	90	5.144	2.846617549
20	72.082	0.43102355	91	4.988	2.884289108
21	68.948	0.44885674	92	4.837	2.921715219
22	65.968	0.46723835	93	4.692	2.958579882
23	63.136	0.48615877	94	4.552	2.995066949
24	60.443	0.50562884	95	4.417	3.031113488
25	57.88	0.52566481	96	4.286	3.066931265
26	55.367	0.54691396	97	4.161	3.10190676
27	52.978	0.56877112	98	4.039	3.13682074
28	50.707	0.59123237	99	3.922	3.171050177
29	48.547	0.61430611	100	3.776	3.214826021
30	46.492	0.63799445	101	3.703	3.237170332
31	44.537	0.66229036	102	3.602	3.268602192
32	42.676	0.68720188	103	3.501	3.300650422
33	40.904	0.71272849	104	3.409	3.33039475
34	39.217	0.73885738	105	3.317	3.360680043
35	37.609	0.76561057	106	3.228	3.390506582
36	36.077	0.79296593	107	3.141	3.420179056
37	34.616	0.82093877	108	3.058	3.448975451
38	33.224	0.84949031	109	2.977	3.477549351
39	31.895	0.87866649	110	2.899	3.505516033

40	30.628	0.90841082	111	2.823	3.533201704
41	29.419	0.93873381	112	2.749	3.56058226
42	28.264	0.96965549	113	2.678	3.587254695
43	27.162	1.00111890	114	2.609	3.613561484
44	26.109	1.03315203	115	2.542	3.639477628
45	25.103	1.06573050	116	2.477	3.664977902
46	24.142	1.09883007	117	2.414	3.6900369
47	23.223	1.13246511	118	2.353	3.714629083
48	22.345	1.16658089	119	2.294	3.738728832
49	21.505	1.20120120	120	2.237	3.762310501
50	20.701	1.23631868			

5-10. Room Card Control, Fire Protection, ON/OFF Function (Optional)

5-10-1. Instructions for the function setting of room card control, fire protection, ON/OFF function.

1. Factory setting

ON/OFF function is tacitly approved to be invalid when out of factory while both the room card control and fire protection functions are valid.

In case of using or cancelling the room card control / fire protection / (ON/OFF) function, use the wire controller to modify the parameters of indoor unit.

2. Function introduction

1) Room card control: a kind of control mode to control the machine startup & shutdown based on the on & off state of the room card control port.

2) Fire protection: a kind of control mode to control the machine startup & shutdown based on the on & off state of the fire protection port.

3) ON/OFF function: a kind of special control mode to achieve the control of indoor unit startup & shutdown based on the input state of the fire protection port of the indoor unit (no other way can control startup & shutdown) and output the fault status of indoor unit through OUT INPUT port.

3. Function setting

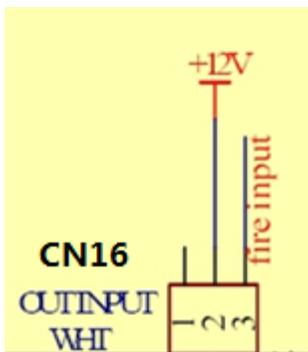


Fig.1 OUT INPUT

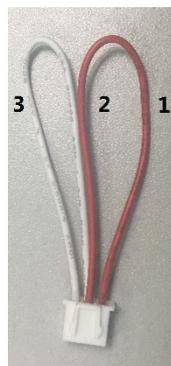


Fig.2 short wiring

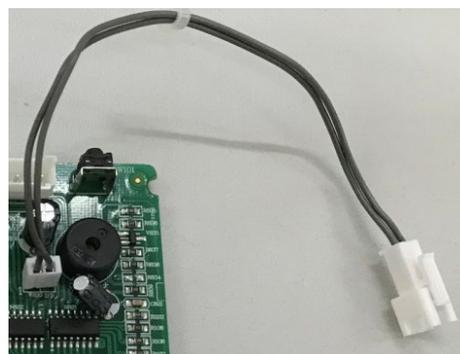


Fig.3 output line

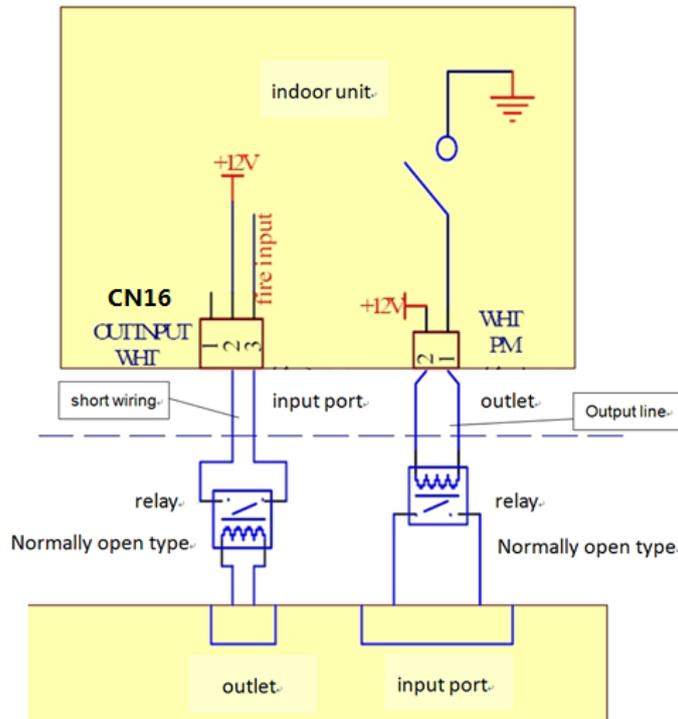


Fig.4 Hardware connection diagram

Pins of the OUT INPUT CN16 socket shown in the electrical wiring diagram of Fig 1 are tacitly approved to be in short circuit state under the factory state (an external short circuit plug shown as Figure 2).

(Illustration: the socket number in circuit is subject to the actual serial number of PCB.)

- 1) When using the room card control, the user cuts off the short wire shown in Figure 2 and connects the red lines to the control switch (supplied by user), and the connecting wire should be 22AWG or above specification. The switch is closed under normal conditions and off under abnormal conditions.
- 2) When using the fire protection , the user cuts off the short wire shown in Figure 2 and connects the White lines to the control switch (supplied by user), and the connecting wire should be 22AWG or above specification. The switch is closed under normal conditions and off under abnormal conditions.
- 3) When using the ON/OFF function, the user cuts off the short wire shown in Figure 2 and connects the White lines to the ON/OFF control switch (supplied by user), and the connecting wire should be 22AWG or above specification. In normal conditions, the machine starts once the switch is closed and the machine shuts down once the switch is off.

4 Setting method

This machine defaults that the room card control is effective, which can be switched between the room card control and ON/OFF function through wire controller. The specific operations are as follows:

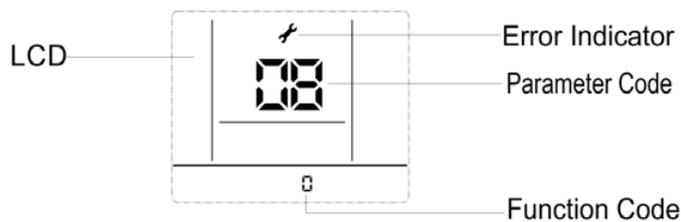


Fig. 1

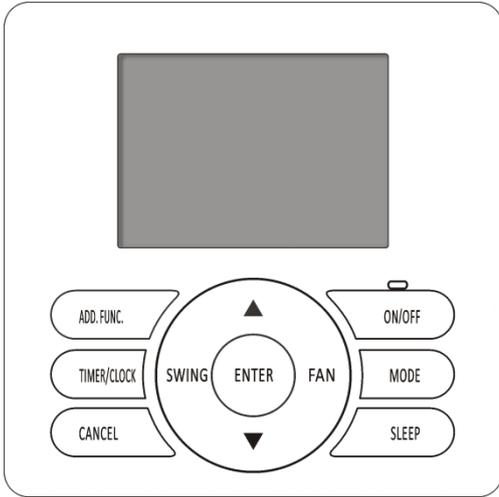


Fig.2 HS-WC01U/ HS-WC02U

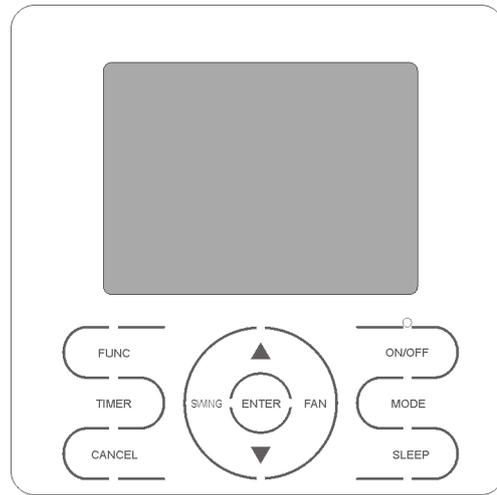


Fig.3 YXE-D01U(E)

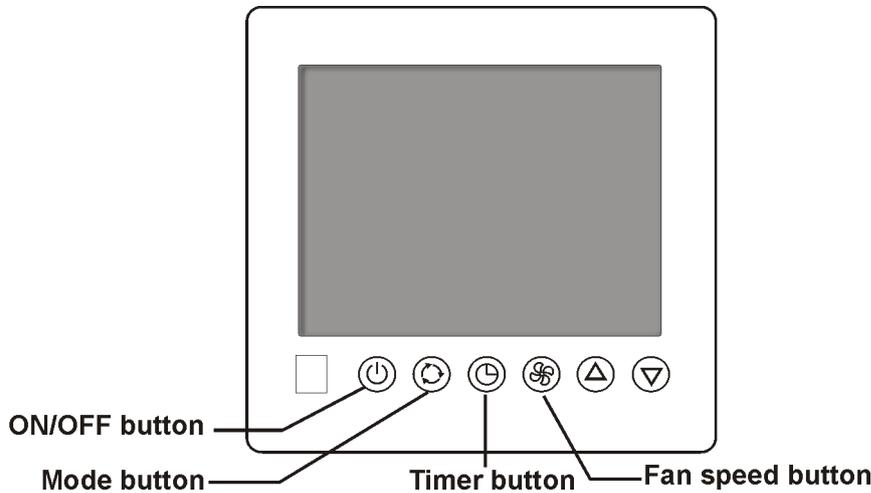


Fig.4 YXE-A03U(E)

The EE address number of ON/OFF function is 25; first enter the parameter number 17, and then adjust to the EE address number 25.

Exhibit 1: Built-in EE settings combination

EE DATA	Red Line (1+2)	White Line (2+3)
0	Void	Void
1	Hotel Room Card Control	Void
2	Void	Fire Protection Control
3	Hotel Room Card Control	Fire Protection Control
4	Void	ON/OFF

Reading and writing EE operations through wire remote controller are as follows:

(1) Operations: In any state, hold down both “MODE” button and “ADD.FUNC.” button for 3 seconds to enter read and write parameters.

Result: The buzzer makes a functional sounds. On display screen, the symbol  and the parameter number flash at the same time.

Note: For YXE-D01U(E), replace “ADD.FUNC.” button with “FUNC” button.

Note: For YXE-A03U(E), replace “ADD.FUNC.” button with “Fan speed” button.

(2) Operations: In a state of that, The symbol  and the parameter number flash at the same time, press ▲ button or ▼ button.

Result: On display screen, the parameter number increases or decreases by 1 correspondingly (0-25), and the parameter data changes correspondingly.

(3) Operations: In a state of that, the symbol  and the parameter number 17 flash at the same time, press “ENTER” button to enter the EE reading.

Result: On display screen, the symbol  does not flash, and the EE address flashes.

Note: For YXE-A03U(E), replace “ENTER” button with “Timer” button.

(4) Operations: In a state of that, the symbol  does not flash, and the EE address flashes, press ▲ button or ▼ button.

Result: On display screen, the EE address increases or decreases by 1 (0-255) correspondingly, and the parameter data changes correspondingly.

(5) Operations: In a state of that, the symbol  does not flash, and the EE address number 25 flash, press “ENTER” button to enter the EE writing.

Result: On display screen, the symbol  and the EE address number 25 do not flash, and the function code corresponding to the EE address flashes.

Note: For YXE-A03U(E), replace “ENTER” button with “Timer” button.

(6) Operations: In a state of that, the symbol  and the EE address number 25 do not flash, and the function code corresponding to the EE address flashes, press ▲ button or ▼ button.

Result: On display screen, the function code corresponding to the EE address increases or decreases by 1.

(7) Operations: In a state of that, the symbol  and the EE address number 25 do not flash, and the function code corresponding to the EE address flashes, press “ENTER” button.

Result: On display screen, the symbol  does not flash, and the EE address number 25 flashes to display the function code of EE after modification.

Note: For YXE-A03U(E), replace “ENTER” button with “Timer” button.

(8) Press “ON/OFF” button or “CANCEL” button to exit.

Note: For YXE-A03U(E), Press “ON/OFF” button to exit.

5-10-2. Instructions for the function setting of room card control, fire protection, ON/OFF function.

1. Factory setting

ON/OFF function is tacitly approved to be invalid when out of factory while both the room card control and fire protection functions are valid.

In case of using or cancelling the room card control / fire protection / (ON/OFF) function, use the wire controller to modify the parameters of indoor unit.

2. Function introduction

(1) Room card control: a kind of control mode to control the machine startup & shutdown based on the on & off state of the room card control port.

(2) Fire protection: a kind of control mode to control the machine startup & shutdown based on the on & off state of the fire protection port.

(3) ON/OFF function: a kind of special control mode to achieve the control of indoor unit startup & shutdown

based on the input state of the fire protection port of the indoor unit (no other way can control startup & shutdown) and output the fault status of indoor unit through OUT INPUT port.

3. Function setting

3.1 Hardware connection

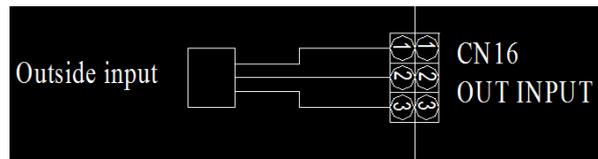


Fig.1 electrical wiring diagram



Fig.2 short wiring (old)

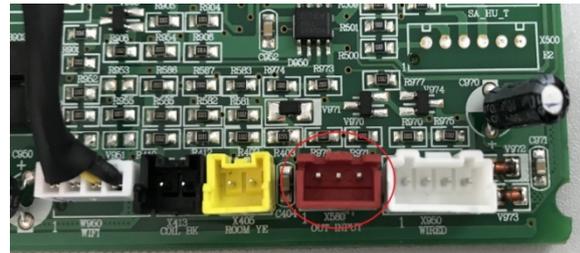


Fig.3 main control board



Fig.2 short wiring (new)



Fig.3 main control board

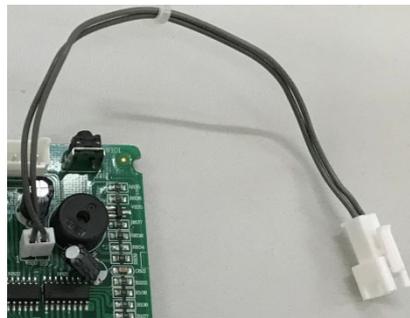


Fig.4 output line

3 pins of the OUT INPUT CN16 socket shown in the electrical wiring diagram of Figure 1 are tacitly approved to be in short circuit state under the factory state (an external short circuit plug shown as Figure 2), and the OUT INPUT CN16 socket of main control board is shown as Figure 3.

(Illustration: the socket number in circuit is subject to the actual serial number of PCB.)

- 4) When using the room card control or fire protection , the user cuts off the short wire shown in Figure 2 and connects the red line and the black line to the control switch (supplied by user), and the connecting wire should be 22AWG or above specification. The switch is closed under normal conditions and off under abnormal conditions.
- 5) When using the ON/OFF function, the user cuts off the short wire shown in Figure 2 and connects the black line and the white line to the ON/OFF control switch (supplied by user), and the connecting wire should be 22AWG or above specification. In normal conditions, the machine starts once the switch is closed and the

machine shuts down once the switch is off.

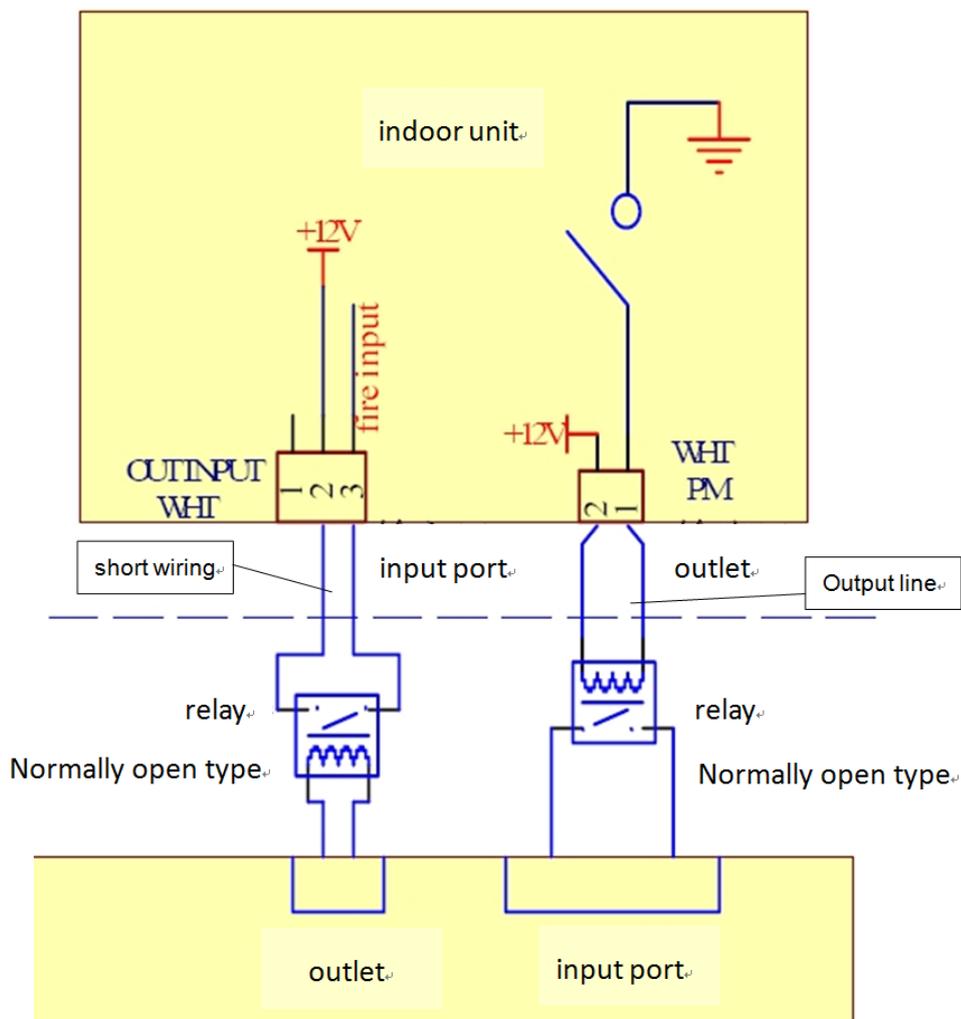


Fig.5 Hardware connection diagram

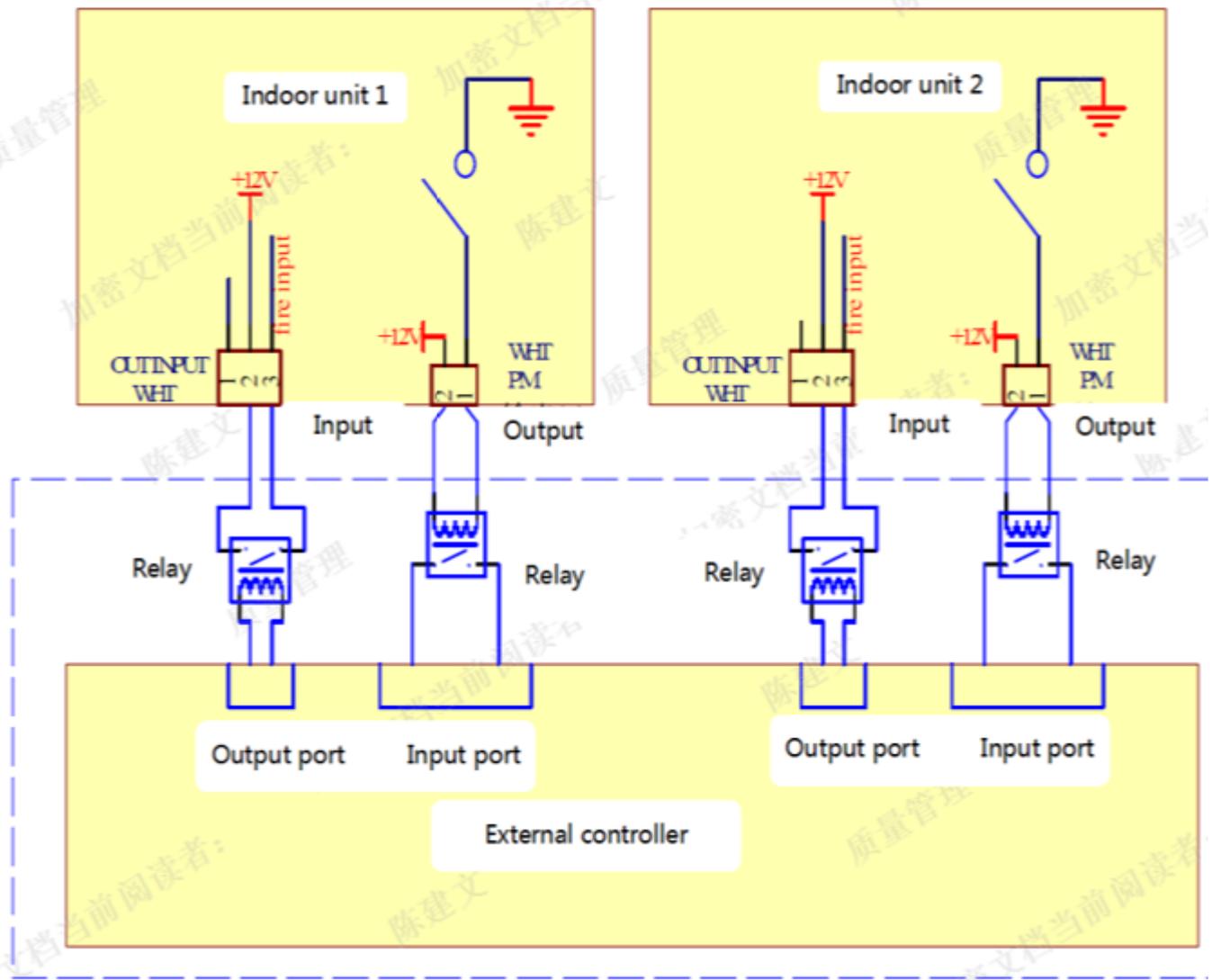
Master slave

1、Indoor unit plan:

- 1) Two indoor units must be the Universal units, and have the ON/OFF function;
- 2) Must set ON/OFF function;

2、Set step:

- 1) Set the indoor unit mode, fan speed, temp. and flap angle;
- 2) Use the wire control remote to set ON/OFF function;
- 3) Cut the white line, and connect the external controller;
- 4) Output line connect the external controller;
- 5) Do the same work to another indoor unit.



Master slave connection diagram

3.2 Timing sequence description:

(1) Room card control:

1) Control of room card disconnection: the air conditioner shall be shut down after the room card control signal is disconnected. In this state, the indoor unit can't be started. If the user performs starting operation, the wire controller shall not respond and displays power-off.

2) Control of room card connection: after the short circuit of room card control interface, release power-on restrictions, the wire controller maintains power-off and the startup & shutdown control is effective.

(2) Fire protection

1) Access to fire protection: the air conditioner shall be shut down after the fire protection signal is disconnected. In this state, the indoor unit can't be started. If the user performs starting operation, the wire controller shall not respond and displays power-off.

2) Cancellation of fire protection: after the short circuit of fire protection signal, release power-on restrictions, the wire controller maintains power-off and the startup & shutdown control is effective.

(3) ON/OFF function

1) In the situation where ON/OFF function is effect, the port is closed and in short circuit, the indoor unit starts; the indoor unit shuts down once the port is disconnected;

2) Other operation information (such as mode, air speed, air door, etc.) except for startup & shutdown can be set through the wire controller, remote-controller and WIFI module;

3) In the mode of ON/OFF function, wire controller, remote-controller, WIFI module and room card control cannot control the machine startup & shutdown, and nor can in the mode of the timing or sleep function.

4) There will be 12V signal output when machine fault occurs.

3.3 Relative priorities of instructions

ON/OFF function has the highest priority. The room card control shall be invalid when ON/OFF function is effective.

The room card control and fire protection can not be selected at the same time, only one can be selected.

5-10-2. Wiring Remote Controller

Model	Installation Manual	Use And Installation Instructions
YXE-C01U	1813253	1813254
YXE-D01U(E)	1898797	1898796
YXE-C02U(E)	1844538	1844539
YXE-A03U(E)	Not available	1967341

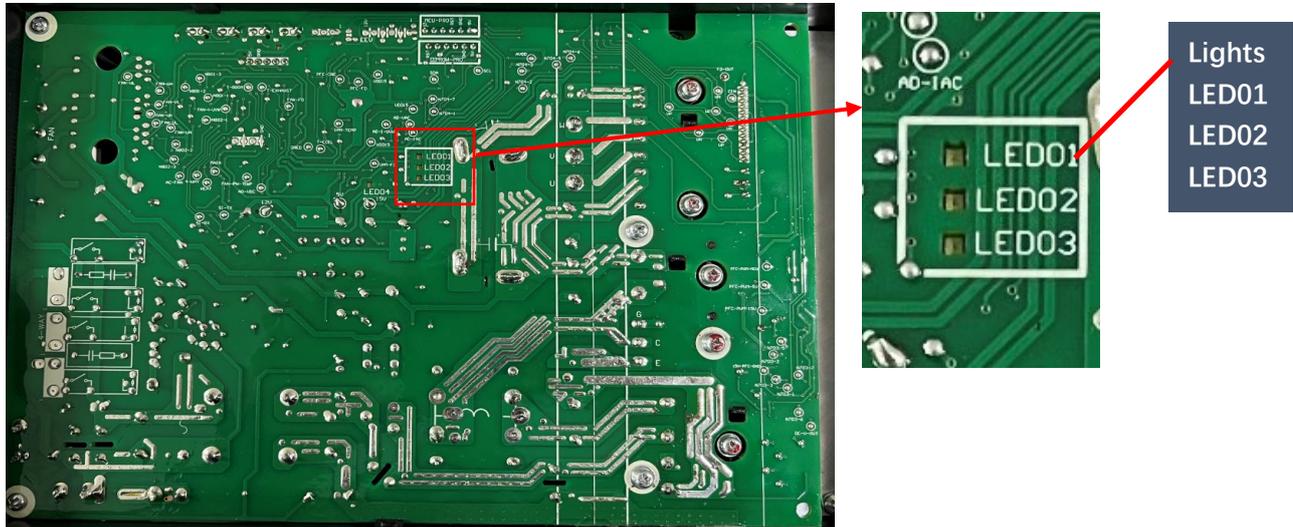
Note: Installation Manual and Use And Installation Instructions are separate documents.

6.Trouble Shooting

6-1. Error Code Table

1.Indication on the outdoor unit:

When the unit has the following trouble and the compressor stops running, The LED of outdoor control board will show the error sequence automatically:



NOTE: This picture is Just for reference, the place of LED in some PCB may be different, you just need to find out the LED lights, they are all line up together.

NOTE: ★: LIGHT O: FLASH x: OFF

Fault description	LED1	LED2	LED3	Possible reasons for abnormality	How to deal with
Normal	★	★	★	Normal	Normal
Normal	O	O	O	Normal	Normal
Outdoor coil temperature sensor in trouble	★	x	★	a. the outdoor coil sensor connect loose; b. the outdoor coil temperature sensor is failure; c. the outdoor control board is failure	a. Reconnect the outdoor coil temperature sensor; b. Replace the outdoor coil temperature sensor components; c. Replace the outdoor control board components.
Compressor exhaust temperature sensor in trouble	★	x	x	a. the compressor exhaust temperature sensor connect loose; b. the compressor exhaust temperature sensor is failure; c. the outdoor control board is failure	a. Reconnect the Compressor exhaust temperature sensor; b. Replace the Compressor exhaust temperature sensor c. Replace the outdoor control board components.
Communication failure between the indoor unit and outdoor unit	x	x	O	a. the communication cable connect loose; b. the communication cable is failure;	a. Reconnect the communication cable;

				<p>c. the connection between the filter board and the outdoor control board is incorrect or loose;</p> <p>d. the connection between the filter board and the terminal is incorrect or loose;</p> <p>e. the indoor control board is failure;</p> <p>f. the PFC board is failure;</p> <p>g. the power board is failure; h. the outdoor control board is failure.</p>	<p>b. Replace the communication cable;</p> <p>c. Reconnect the connection between the filter board and the outdoor control board ;</p> <p>d. Reconnect the connection between the filter board and the terminal ;</p> <p>e. Replace the indoor control board;</p> <p>f. Replace the outdoor control board</p>
Current overload protection	★	○	×	<p>a. the fan motor run abnormally;</p> <p>b. the condenser or and evaporator is dirty;</p> <p>c. the air inlet and outlet is abnormally</p>	<p>a. Replace the fan motor;</p> <p>b. Clean the condenser and evaporator;</p> <p>c. Inspect the air inlet and outlet.</p>
Maximum current protection	★	○	★	<p>a. the outdoor control board is short circuit;</p> <p>b. the drive board is short circuit;</p> <p>c. the other components is short circuit</p>	<p>a. Replace the outdoor control board;</p> <p>b. Inspect the other components and Replace the one witch is short circuit.</p>
Communication trouble between outdoor unit and driver	×	★	★	<p>a. the connection wires connect loose</p> <p>b. the outdoor board or drive board is failure;</p>	<p>a. Reconnect the wires;</p> <p>b. Replace the outdoor control board.</p>
Outdoor EEPROM in trouble	★	★	★	<p>a. he EEPROM chip is loose;</p> <p>b. the EEPROM chip inserted with opposite direction;</p> <p>c. the EEPROM chip is failure</p>	<p>Replace the outdoor control board.</p>
Compressor exhaust temperature too high protection	×	○	★	<p>a. the compressor exhaust temperature sensor is failure;</p> <p>b. the refrigerant of the unit is not enough</p> <p>c. Outdoor ambient temperature exceeds the limit</p>	<p>a. Replace the compressor exhaust temperature sensor ;</p> <p>b. Recharge the refrigerant;</p> <p>c. Reboot the product when the outdoor ambient temperature within operation</p>

					range
Outdoor ambient temperature sensor in trouble	★	★	×	a. the outdoor ambient temperature sensor connect loose; b. the outdoor ambient temperature sensor is failure;	a. Reconnect the outdoor ambient temperature sensor; b. Replace the outdoor ambient temperature sensor;
				c. the outdoor control board is failure	c. Replace the outdoor control board .
Compressor shell temperature too high protection	×	★	○	a. the compressor exhaust temperature sensor connect loose	a. Reconnect the compressor exhaust temperature sensor ;
				b. the refrigerant of the unit is not enough	b. Recharge the refrigerant;
Anti-freeze protection with cooling or overload protection with heating in indoor unit	×	○	○	a. the indoor coil temperature sensor connect loose;	a. Reconnect the indoor coil temperature sensor;
				b. the indoor coil temperature sensor is failure;	b. Replace the indoor coil temperature sensor;
				c. the indoor control board is failure	c. Replace the indoor control board.
				d. the refrigerant system is abnormal.	d. Inspect the refrigerant system
Compressor drive in trouble	○	×	○	a. the outdoor drive board is failure; b. the compressor is failure c. the outdoor control board is failure	Replace the outdoor control board; c. Replace the compressor.
Outdoor fan motor locked rotor protection	○	○	★	a. the connection of the outdoor fan motor is loose; b. there are something block the outdoor fan; c. the fan motor is failure; d. the outdoor control board is failure	a. Reconnect the connection of the outdoor fan motor; b. Remove any obstructions; c. Replace the fan motor; d. Replace the outdoor control board.
Outdoor coil anti-overload protection with cooling	×	★	×	a. the refrigerant is too much; b. the outdoor fan motor is failure; c. the outdoor fan is broken; d. the condenser is dirty; e. the air inlet and air outlet of the indoor unit and the outdoor unit is not normally	a. confirm the refrigerant charging; b. Replace the fan motor; c. Replace the fan; d. Clean the condenser; e. Take inspection of air inlet and air outlet of the indoor unit and the outdoor unit .
IPM module protection	×	○	×	a. The IPM board is failure;	a. Replace the IPM board
				b. The outdoor fan is	b. Replace the outdoor

				broken;	fan ;
				c. The outdoor fan motor is failure;	c. Replace the outdoor fan motor;
				d. The outdoor fan has been blocked ;	d. Remove any obstructions ;
				e. The condenser is dirty;	e. Clean the condenser ;
				f. The outdoor unit has been installed without standard.	f. Reinstall the product with standard.
PFC protection	○	×	×	a. the PFC is failure; b. the outdoor drive board is failure	Replace the outdoor control board.
Compressor pre heating process	○	★	○	it is normal mode in cold weather	/
Chip in outdoor board in trouble	★	×	○	a. Using the wrong drive board;	a. Replace the outdoor control board;
				b. Using the wrong compressor.	b. Replace the compressor.
AC voltage higher or lower protection	★	★	○	a. the supply voltage is higher or lower than normal;	Supply the stable power
				b. the inner supply voltage of the unit is higher or lower than normal	
DC compressor start failure	○	○	×	a. the outdoor drive board is failure; b. the compressor is failure	a. Replace the outdoor control board; b. Replace the compressor.
Outdoor ambient temperature too low or too high protection	★	○	○	a. Outdoor ambient temperature too low or too high	Reboot the product when the outdoor ambient temperature within operation range
There is a leak in the product (Just suitable for some products only)	○	★	★	a. There is a leak in the indoor	Take inspection of refrigeration system
				b. There is a leak in the outdoor	
				c. There is a leak in the connecting pipe	

Mark description: the lights flash every two seconds for the following faults

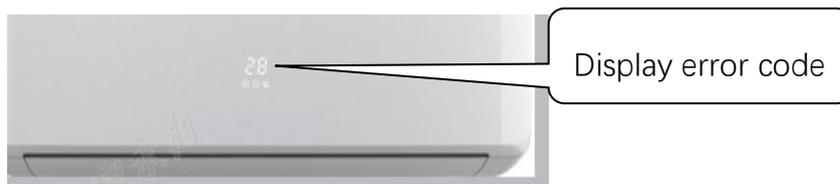
Protection against overheated outdoor radiator	○	×	×	a. Radiator sensors fail	Replace the outdoor control board
				b. Detection circuit of the sensor on the control panel fails	
Protection of the system against too high pressure	○	○	×	a. The pressure switch fails	Replace the switch;
				b. The pressure detection switch on the control panel fails	
				c. The measured value of the system pressure exceeds the limit	c. Turn off the air-condition and reboot it after 3 minute. If the code still remains,

					should comfort the outdoor ambient temperature exceeds the limit or not.
protection of the system abnormal	×	○	★	a. Check whether the outdoor valves are opened.	open the valves
protection of the AU PeakSmart function (Just suitable for AU products only)	○	×	★	a. Check whether the Dred sing required by AU grid PeakSmart function was triggered by mistake.	

When the compressor is in operation:

Mark description: ★: Light○: Flash ×: Off; the flash cycle is 1S				
No.	LED1	LED2	LED3	Reasons for the current operating frequency of the compressor is limited
1	○	○	○	Normal frequency rising and decreasing, no limitation
2	×	×	★	Frequency decreasing or prohibition of frequency rising caused by over-current
3	×	★	★	Frequency decreasing or prohibition of frequency rising caused by anti-freezing of refrigeration or anti-overload in heating
4	★	×	★	Frequency decreasing or prohibition of frequency rising caused by too high compressor discharge temperature
5	★	★	★	Operation at fixed frequency (in the case of capability measuring or compulsory operation at fixed frequency)
6	○	×	×	Protective frequency decreasing against outdoor overload (overpower, over frequency conversion rate, over torque, detection of DC under-voltage)
7	★	×	×	Frequency decreasing caused by indoor and outdoor communication fault
8	×	★	○	Frequency decreasing or prohibition of frequency rising protection against overload of outdoor coiled pipe
9	×	★	×	Frequency decreasing or prohibition of frequency rising for power-saving when it is being used simultaneously with other appliances

2. Indication by the indoor unit:



NOTE: This picture is Just for reference, the place of the 7-segment tube in some models may be different.

2.1. 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 (Zephyr's new design remote controller), when using to check the error codes only takes effect for pressing the sleep key 10 times in ten seconds instead of 4 times.

Fault code	Fault description	Possible reasons for abnormality	How to deal with
0	Normal	Normal	Normal
1	The failure for temperature sensor of outdoor coil	a. The outdoor temperature sensor loose;	a. Reconnect the outdoor coil temperature sensor;
		b. the outdoor temperature sensor is failure;	b. Replace the outdoor coil temperature sensor components;
		c. The outdoor control board is failure	c. Replace the outdoor control board components.
2	Compressor exhaust temperature sensor in trouble	a. the compressor exhaust temperature sensor connect loose;	a. Reconnect the Compressor exhaust temperature sensor;
		b. the compressor exhaust temperature sensor is failure;	b. Replace the Compressor exhaust temperature sensor
		c. the outdoor control board is failure	c. Replace the outdoor control board components.
5	IPM module protection	a. The IPM board is failure;	a. Replace the IPM board
		b. The outdoor fan is broken;	b. Replace the outdoor fan ;
		c. The outdoor fan motor is failure;	c. Replace the outdoor fan motor;
		d. The outdoor fan has been blocked ;	d. Remove any obstructions ;
		e. The condenser is dirty;	e. Clean the condenser ;
		f. The outdoor unit has been installed without standard.	f. Reinstall the product with standard.
6	AC voltage higher or lower protection	a. the supply voltage is higher or lower than normal;	Supply the stable power
		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;	a. Reconnect the communication cable;
		b. the communication cable is failure;	b. Replace the communication cable;

		c. the connection between the filter board and the outdoor control board is incorrect or loose;	c. Reconnect the connection between the filter board and the outdoor control board ;
		d. the connection between the filter board and the terminal is incorrect or loose;	d. Reconnect the connection between the filter board and the terminal ;
		e. the indoor control board is failure;	e. Replace the indoor control board;
		f. the outdoor control board is failure.	f. Replace the outdoor control board
8	Current overload protection	a. the fan motor run abnormally;	a. Replace the fan motor;
		b. the condenser and evaporator is dirty;	b. Clean the condenser and evaporator;
		c. the air inlet and outlet is abnormally	c. Inspect the air inlet and outlet.
9	Maximum current protection	a. the outdoor control board is short circuit;	a. Replace the outdoor control board;
		b. the other components is short circuit	b. Inspect the other components and Replace the one witch is short circuit.
10	Communication trouble between outdoor unit and driver	a. the connection wires connect loose	a. Reconnect the wires;
		b. the outdoor board or drive board is failure;	b. Replace the outdoor control board.
11	Outdoor EEPROM in trouble	a. the EEPROM chip is loose;	Replace the outdoor control board.
		b. the EEPROM chip inserted with opposite direction;	
		c. the EEPROM chip is failure	
12	Outdoor ambient temperature too low or too high protection	Outdoor ambient temperature too low or too high	Reboot the product when the outdoor ambient temperature within opration range
13	Compressor exhaust temperature too high protection	a. the compressor exhaust temperature sensor is failure;	a. Replace the compressor exhaust temperature sensor ;
		b. the refrigerant of the unit is not enough;	b. Recharge the refrigerant;
		c. Outdoor ambient temperature exceeds the limit	c. Reboot the product when the outdoor ambient temperature within opration range
14	Outdoor ambient temperature sensor in trouble	a. the outdoor ambient temperature sensor connect loose;	a. Reconnect the outdoor ambient temperature sensor;
		b. the outdoor ambient temperature sensor is failure;	b. Replace the outdoor ambient temperature sensor;
		c. the outdoor control board is failure	c. Replace the outdoor control board .
15	Compressor shell temperature too high protection	a. the compressor exhaust temperature sensor connect loose	a. Reconnect the compressor exhaust temperature sensor ;
		b. the refrigerant of the unit is not	b. Recharge the refrigerant;

		enough	
16	Anti-freeze protection with cooling or overload protection with heating	a. the indoor coil temperature sensor connect loose;	a. Reconnect the indoor coil temperature sensor;
		b. the indoor coil temperature sensor is failure;	b. Replace the indoor coil temperature sensor;
		c. the indoor control board is failure	c. Replace the indoor control board.
		d. the refrigerant system is abnormal.	d. Inspect the refrigerant system
17	PFC protection	a. the PFC is failure;	Replace the outdoor control board.
		b. the outdoor drive board is failure	
18	DC compressor start failure	a. the outdoor drive board is failure; b. the compressor is failure	a. Replace the outdoor control board; b. Replace the compressor.
19	Compressor drive in trouble	a. the outdoor drive board is failure;	Replace the outdoor control board; c. Replace the compressor.
		b. the outdoor control board is failure;	
		c. the compressor is failure	
20	Outdoor fan motor locked rotor protection	a. the connection of the outdoor fan motor is loose;	a. Reconnect the connection of the outdoor fan motor;
		b. there are something block the outdoor fan;	b. Remove any obstructions;
		c. the fan motor is failure;	c. Replace the fan motor;
		d. the outdoor control board is failure	d. Replace the outdoor control board.
21	Outdoor coil anti-overload protection with cooling	a. the outdoor fan motor is failure;	a. Replace the fan motor;
		b. the outdoor fan is broken;	b. Replace the fan;
		c. the condenser is dirty;	c. Clean the condenser;
		d. the air inlet and air outlet of the indoor unit and the outdoor unit is not normally	d. Take inspection of air inlet and air outlet of the indoor unit and the outdoor unit .
22	Compressor pre heating process	it is normal mode in cold weather	
23	There is a leak in the product (suitable for some models)	a. There is a leak in the indoor	Take inspection of refrigeration system
		b. There is a leak in the outdoor	
		c. There is a leak in the connecting pipe	
24	Chip in outdoor board in trouble	a. Using the wrong drive board;	a. Replace the outdoor control board;
		b. Using the wrong compressor.	b. Replace the compressor.
26	Overheated outdoor radiator	a. Radiator sensor fails	Replace the outdoor control board
		b. Detection circuit of the sensor on the control panel fails	
27	Protection the	a. The pressure switch fails	Replace the switch;

	system of overpressure	b. The pressure detection switch on the control panel fails	
		c. The measured value of system pressure exceeds the limit	c. Turn off the air-condition and reboot it after 3 minute. If the code still remains, should comfort the outdoor ambient temperature exceeds the limit or not.
33	The failure for temperature sensor of indoor room	a. The indoor room temperature sensor loose;	a. Reconnect the indoor room temperature sensor;
		b. The indoor room temperature sensor is failure;	b. Replace the indoor room temperature sensor components;
		c. The indoor control board is failure.	c. Replace the indoor control board components.
34	The failure for temperature sensor of indoor coil temperature	a. The indoor coil temperature sensor loose;	a. Reconnect the indoor coil temperature sensor;
		b. The indoor coil temperature sensor is failure;	b. Replace the indoor coil temperature sensor components;
		c. The indoor control board is failure.	c. Replace the indoor control board components.
36	Communication failure between the indoor unit and outdoor unit	a. the communication cable connect loose;	a. Reconnect the communication cable;
		b. the communication cable is failure;	b. Replace the communication cable;
		c. the connection between the filter board and the outdoor control board is incorrect or loose;	c. Reconnect the communication between the filter board and the outdoor control board;
		d. the connection between the filter board and the terminal is incorrect or loose;	d. Reconnect the communication between the filter board and the terminal;
		e. the indoor control board is failure;	e.f.g. Replace the indoor control board;
		f. the PFC board is failure;	
		g. the power board is failure;	
h. the outdoor control board is failure.	h. Replace the outdoor control board.		
38	Indoor EEPROM failure	a. The EEPROM chip loose;	Replace the indoor control board
		b. The indoor control board is failure	
39	Indoor fan motor run abnormally	a. There are something block the indoor fan motor;	a. Take inspection of motor;
		b. The fan motor cord connect loose;	b. Reconnect the connecting line;
		c. The fan motor is failure;	c. Replace the motor;
		d. The indoor control board is failure	d. Replace the indoor control board.
41	The failure for Indoor grounding protective	The indoor control board is failure	Replace the indoor control board

46	The failure for humidity sensor of indoor room	a. The indoor room humidity sensor is failure;	a. Replace the indoor room humidity sensor components;
		b. The indoor control board is failure.	b. Replace the indoor control board components.
50	Fresh air failure (suitable for some models)	a. The connecting line is loose;	a. Reconnect the connecting line;
		b. the fresh air motor is failure;	b. Replace the fresh air motor;
		c. The indoor control board is failure.	c. Replace the indoor control board.
70	Light sensation failure (suitable for some models)	a. the connecting line is loose;	a. Reconnect the light sensation;
		b. The display control board is failure;	b. Replace the display control board ;
		c. The indoor control board is failure.	c. Replace the indoor control board.
74	CO2 failure (suitable for some models))	a. The connecting line is loose;	a. Reconnect the sensor;
		b. the sensor is failure;	b. Replace the sensor ;
		c. The indoor control board is failure.	c. Replace the indoor control board.
83	Over-temperature protection for the outdoor fan's IPM module	a. The excessive ambient temperature of outside unit and inadequate heat dissipation of the controller have led to the over-temperature of the fan's IPM module.	a.To ensure proper operation, please confirm that the current outdoor ambient temperature does not exceed the maximum allowable temperature for the machine. If the ambient temperature exceeds the maximum allowable operating temperature, the temperature must be lowered to within the allowable range before restarting the machine.
		b. The high pressure within the air conditioning system and inadequate heat dissipation have resulted in excessive current and over-temperature of outdoor fan's IPM module	b.1 After shutting down the machine for 3 minutes, restart it. If no fault codes are displayed, the machine should be able to operate normally. If the fault codes persist, please proceed with the following troubleshooting steps: 1. Check if there is any blockage in the air conditioning refrigeration system. 2.Check if the outdoor condenser is dirty or blocked.
		c. A fault has occurred in the outdoor electrical control board	c.Replace the outdoor electrical control board

3. Refrigerant leakage fault (Suitable for models with refrigerant Sensor):

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

Error code	Content	The root cause is may be one of the following
56	There is a leak in the product	a. There is a leak in the indoor b. There is a leak in the connecting pipe
57	the error code will display when the communication between refrigerant Sensor and indoor control board have in trouble	a. The connection between the refrigerant Sensor and control board is loose; b. The indoor control board is failure. c. The wiring of the refrigerant Sensor is failure.

Note:

1. When the refrigerant leakage fails, the fault code 56 is displayed actively. The indoor fan is forced to run at the highest speed, and the outdoor unit stops. Other controls do not respond except for the exit the 56 fault operations:

3.2. How to exit the fault

After the fault repair is completed, the whole machine will still alarm and prompt, must be through the special operation of the remote controller to clear the fault prompt, the steps are as follows:

Step 1: Press one time mode button, and the buzzer ring 1 sounds;

Step 2: Press three times up and down swing button, and the buzzer ring 3 sounds;

Step 3: Press one time mode button again, and the buzzer ring 1 sounds;

After the preceding steps, the buzzer rings four times, indicating that the 56 fault is rectified. If you do not perform the preceding steps, the buzzer does not ring four times, and the 56 fault cannot be cleared, need to repeat steps 1 to 3 above.

After the refrigerant leakage fault is removed, the indoor fan runs at the maximum speed for 5 minutes, and then the machine will run in the mode currently set.

6-2. Test the jumper terminals

Note:

When the whole machine is powered up, if the external unit does not work, to rule out the communications failures, adopt screening method such as short circuit on the jumper terminals to see if the external unit can be started normally or similar method.



There are two blue terminals on the outdoor control panel, as shown above.

Application: Short out the terminals, and power up the outdoor unit, then the outdoor unit may run independently. It can be determined that there is no internal and external communication faults.

When the environment temperature is lower than 18°C (64F), you can't run the unit under the cool mode, but if you need run the unit at this moment ,such as add the gas or do more test, at this moment you can use this function,

Under this function, the outdoor motor and compressor will be forced to run until reaching a fixed frequency (general is 50~55Hz).

6-3. Trouble Diagnosis of Protection

Protection diagnosis of the complete machine (all types of protection during operation, i.e. under-voltage, over-voltage and overcurrent protection)

Note: List all types of protection that may occur to the complete machine and describe the conditions and signs of the start, course and end of such protection.

Voltage protection

Protection against AC input over-voltage/under-voltage

1.Conditions for protection against AC input over-voltage/under-voltage:

If the input AC voltage is greater than “protective over-voltage value” or less than “protective under-voltage value” for five seconds, over-voltage/under-voltage protection starts.

2.Protection actions against AC input over-voltage/under-voltage

The system stops operation.

3. Conditions for ending AC input over-voltage/under-voltage:

If the input AC voltage is lower than “the protective over-voltage value” -10V, or higher than “the protective under-voltage value” +10V, the over-voltage/under-voltage protection will be released.

Current protection:

1.Protection against over-current

Conditions for over-current protection: if the current is equal to or greater than “current value for starting the refrigeration current protection (E2 value)” for six seconds, over-current protection starts.

Protection actions against over-current: indoor display screen and outdoor indicator give indications, the

compressor and outdoor fan stop, but indoor fan runs normally.

Condition for ending over-current protection: when the current drops below “current value for releasing the refrigeration current protection (E2 value)”, over-current protection will be released.

2.Frequency decreasing for over-current

Conditions for over-current **frequency decreasing**: if the current is equal to or greater than “current value for starting the refrigeration current protective frequency decreasing (E2 value)”, over-current **frequency decreasing** starts.

Over-current **frequency decreasing** actions: the compressor will decrease frequency at rate of (E2 value) Hz/S. The indoor and outdoor fans run.

Conditions for ending over-current **frequency decreasing**: when the current drops below “current value for starting the refrigeration current protective prohibition of frequency rising (E2 value)”, over-current under-clocking will be released.

3.Prohibition of frequency increasing of compressor exhausting

Conditions for prohibition of frequency rising of compressor discharge

Condition 1: in the case of frequency decreasing of compressor discharge, the discharge temperature of the compressor drops below X4°C.

Condition 2: in normal operation, the discharge temperature of compressor reaches X5°C.

Either of the above two conditions is met, prohibition of frequency rising of compressor discharge begins.

Actions relates to prohibition of frequency rising of compressor discharge: the frequency of compressor maintains at the current level, which may decrease as the case requires while cannot rise. The indoor and outdoor fans run.

Condition for ending prohibition of frequency rising of compressor discharge: if the temperature of compressor discharge drops below X6°C, prohibition of frequency rising of compressor discharge will be released.

4. Prohibition of frequency for anti-overload of outdoor coiled pipe

Condition for anti-overload prohibition of frequency of outdoor coiled pipe: in the case of anti-overload frequency decreasing of outdoor coiled pipe, anti-overload prohibition of frequency of the unit begins when the temperature of outdoor coiled pipe drops below “the anti-overload frequency decreasing temperature of outdoor coiled pipe”.

Actions relates to anti-overload prohibition of frequency of outdoor coiled pipe: the frequency of compressor maintains at the current level, which may decrease as the case requires while cannot rise. The indoor and outdoor fans run.

Condition for ending anti-overload prohibition of frequency of outdoor coiled pipe: if the temperature of outdoor coiled pipe drops below “temperature to release the anti-overload state of outdoor coiled pipe”, anti-overload prohibition of frequency of outdoor coiled pipe will be released.

6-4. Trouble Diagnosis of Compressor

Judging the connecting terminals of inverter compressor:

It is impossible to identify terminals U, V and W of inverter compressor with multi-meter. Just connect the terminals in the same way as the original unit when replacing the compressor. A wrong connection will lead to reverse and loud noise of the compressor.

Resistance of compressor coil:

Measure the resistance between any two terminals, which are about a few Ohms, three phases having the same resistance.



6-5. Trouble Diagnosis of Electric Communication

Step one: to determine whether the connecting cables and tether cables of indoor/outdoor units are correctly wired. If not, change wiring order and test connection.

Step two: to determine whether there is loose connection.

Fasten the connection in the case of loose connection and then conduct verification.

Step three: measure the voltage between SI and N with multi-meter and see whether the voltage fluctuates between 0V and 24V. Please directly replace indoor and outdoor control boards if there are not voltage fluctuations.



6-6. Diagnosis and Solution

1. The indoor unit fails to start.

Error code: Indoor displays: / outdoor displays: /

Method of Malfunction Detection:

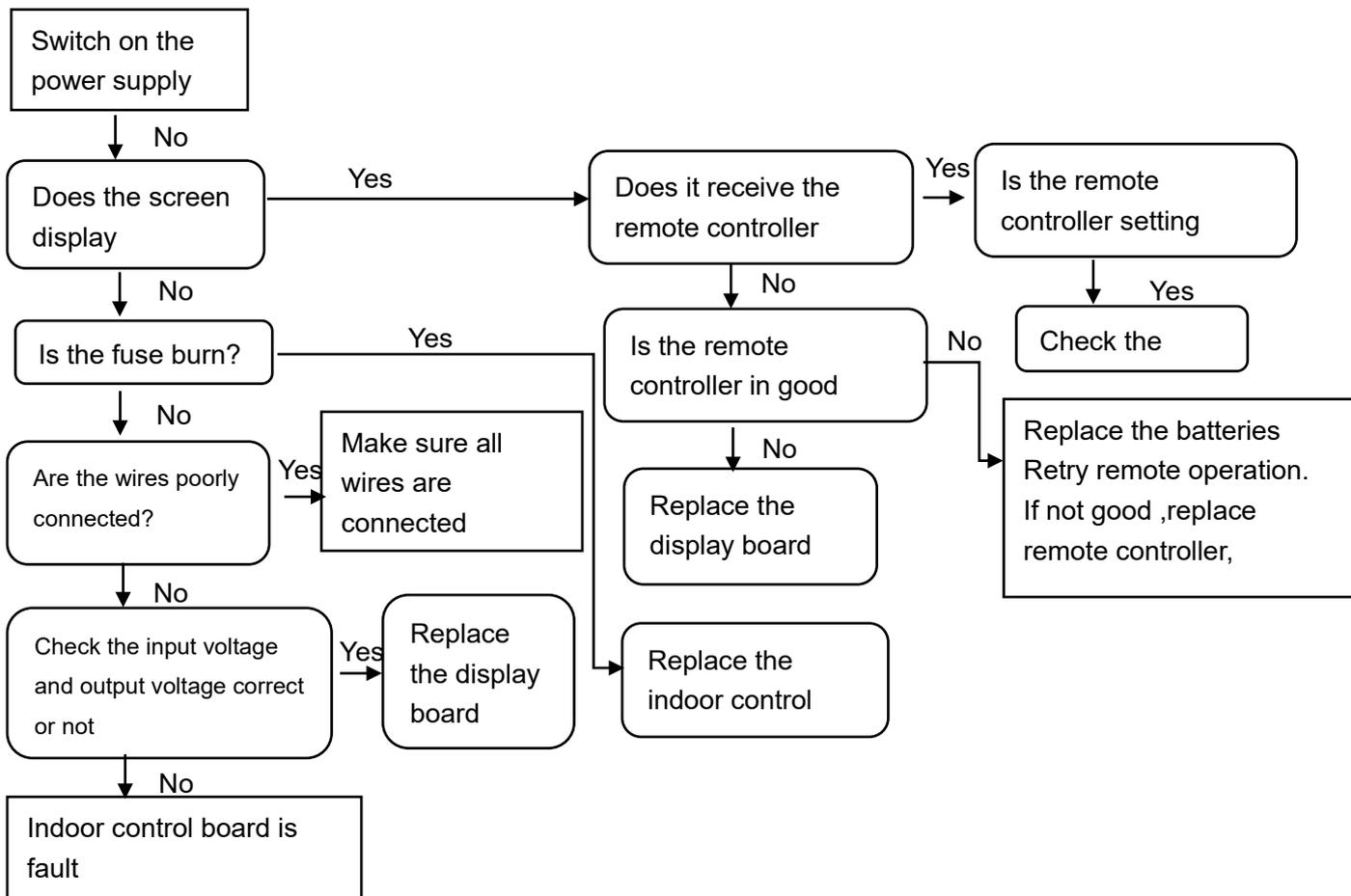
The machine fails to detect a power source or there is a malfunction within its internal components, preventing it from executing the startup and operational commands.

Supposed Causes:

- a. The remote control has malfunctioned and is unable to transmit signals properly.
- b. The machine's interconnection cable or power cord has become loose, preventing effective power supply to the internal components of the machine.
- c. The display component has failed, rendering it unable to display or receive signals.
- d. There is an error in the power supply, providing either too high or too low voltage to the machine.
- e. The indoor electronic control board has malfunctioned.

Solution to Malfunction:

- a. Check the remote control to confirm that its settings, batteries, and other functions are normal.
- b. Inspect the connecting cables or power cords and secure them tightly.
- c. Replace the display component.
- d. Provide a normal voltage that the machine can operate within.
- e. Replace the indoor control board.



2.Error code 39 (Indoor fan motor in trouble)

Error code: Indoor displays: 39 outdoor displays: /

Method of Malfunction Detection:

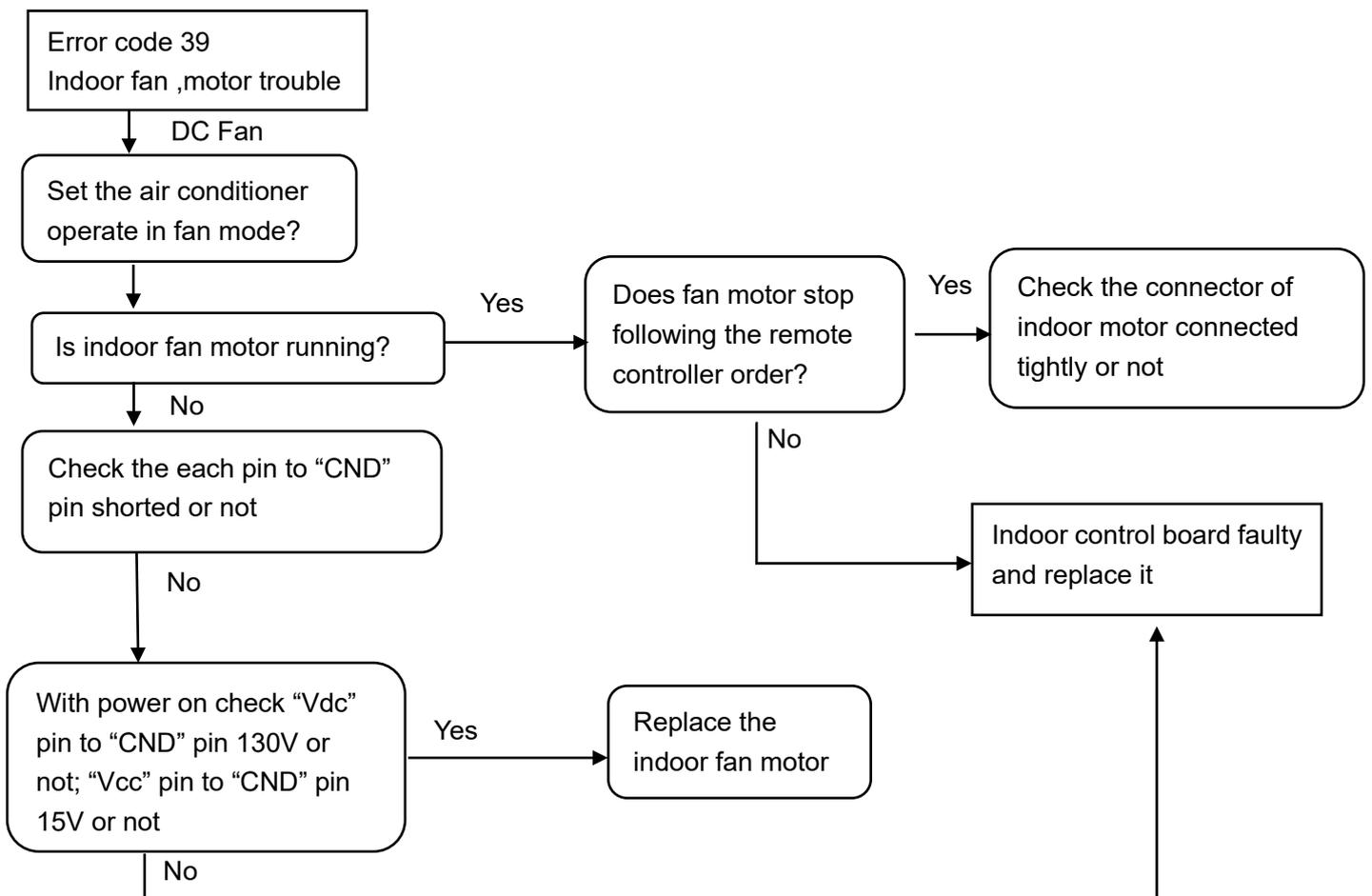
The indoor control board has detected abnormal operation of the indoor motor.

Supposed Causes:

- There are something block the indoor fan motor
- The fan motor cord connects loose
- The fan motor is failure
- The indoor control board is failure

Solution to Malfunction:

- Take inspection of motor
- Reconnect the connecting line
- Replace the motor
- Replace the indoor control board.



3.Error code 9 (Maximum current protection)

Error code: Indoor displays: 9 outdoor displays: /

Method of Malfunction Detection:

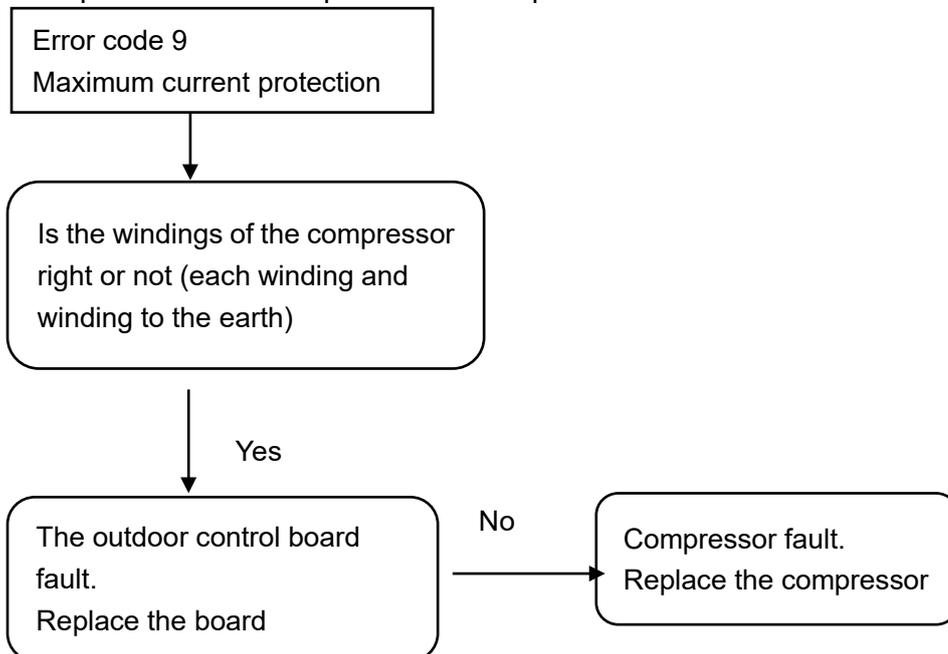
The outdoor electrical control board detects that the overall current value of the machine is greater than the current value set in its parameters.

Supposed Causes:

- a. the outdoor control board is short circuit
- b. the drive board is short circuit
- c. the other components is short circuit

Solution to Malfunction:

- a. Replace the outdoor control board
- b. Replace the outdoor control board
- c. Inspect the other components and Replace the one witch is short circuit



4. Error code 13 (Compressor over heat protection)

Error code: Indoor displays: 13 outdoor displays: /

Method of Malfunction Detection:

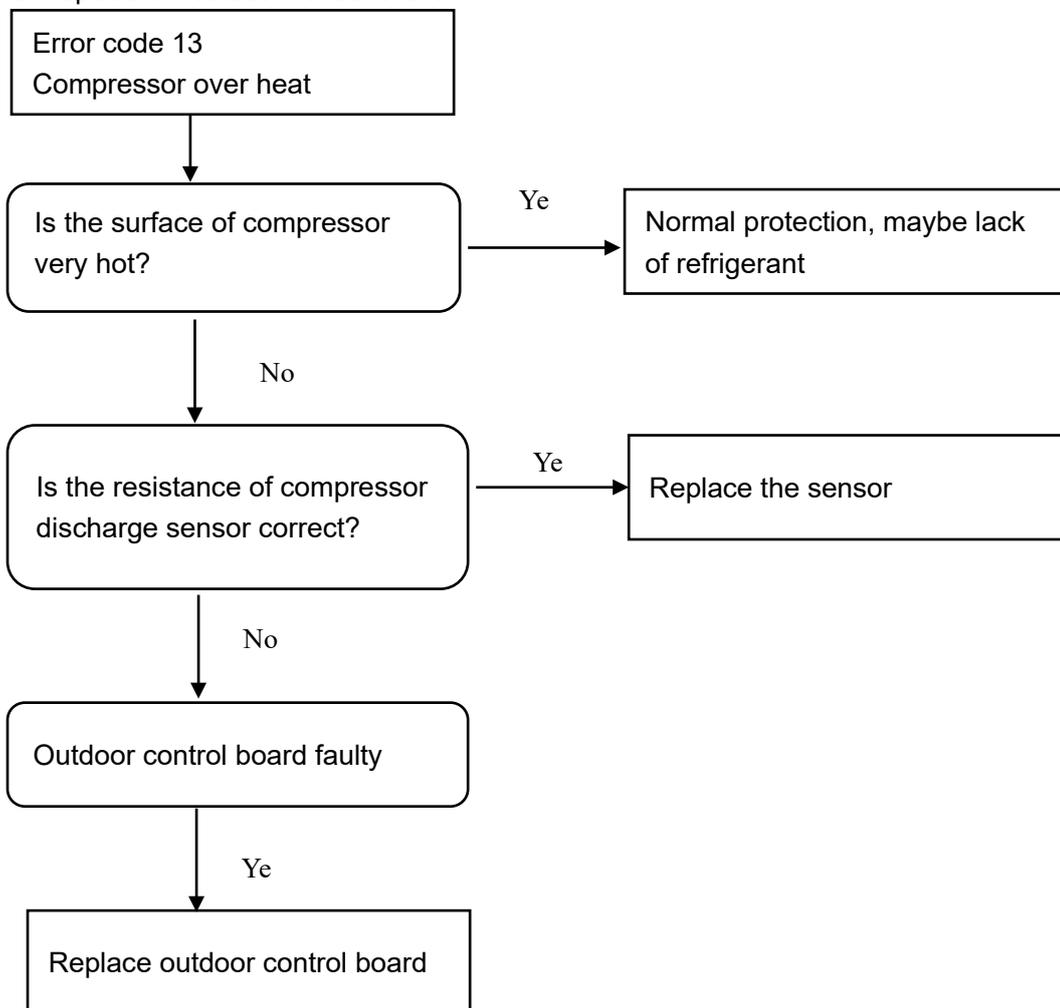
The outdoor exhaust temperature sensor detects that the compressor exhaust temperature exceeds the value set in the parameters.

Supposed Causes:

- a. The compressor exhaust temperature sensor is failure
- b. The refrigerant of the unit is not enough
- c. Outdoor ambient temperature exceeds the limit
- d. The outdoor control board is failure

Solution to Malfunction:

- a. Replace the compressor exhaust temperature sensor
- b. Recharge the refrigerant
- c. Reboot the product when the outdoor ambient temperature within operation range
- d. Replace the outdoor control board



5. Error code 8 (Current overload protection)

Error code: Indoor displays: 8 outdoor displays: /

Method of Malfunction Detection:

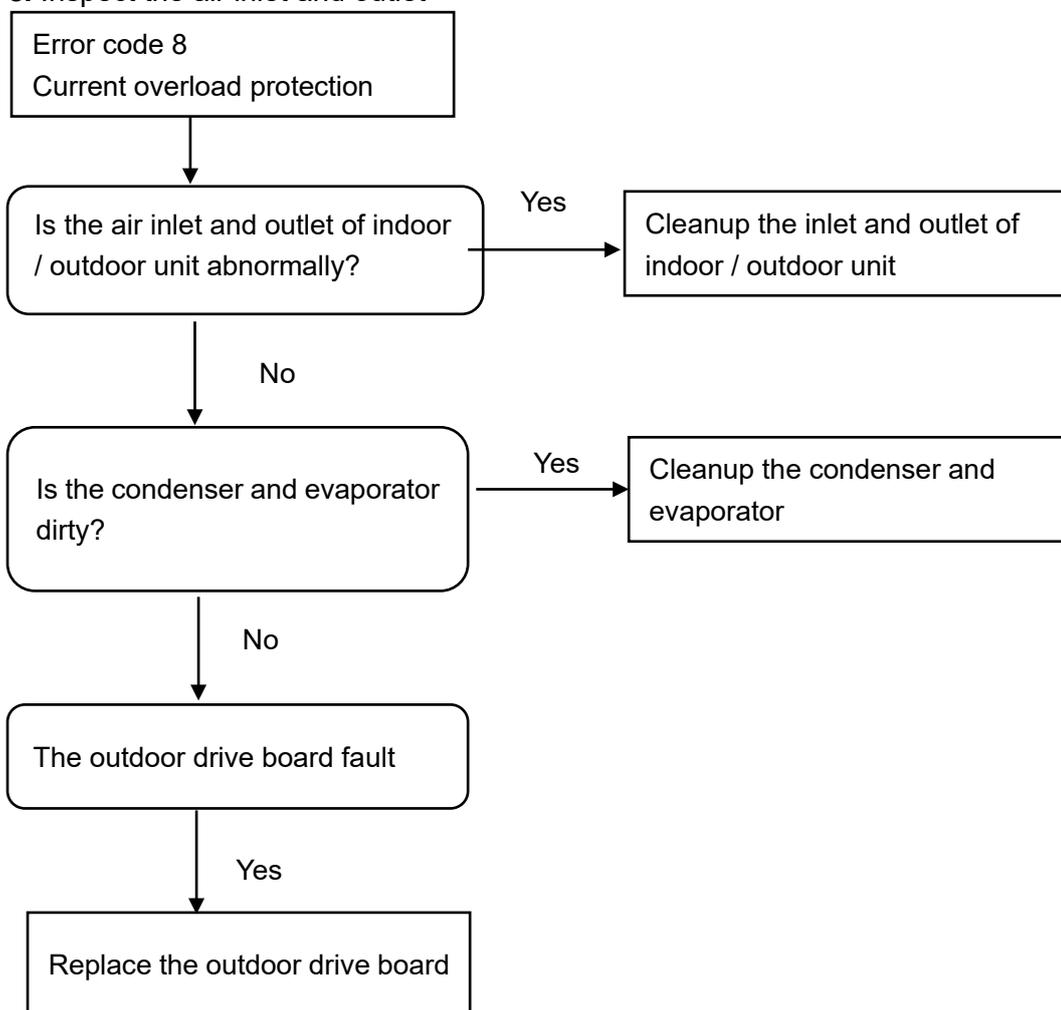
The outdoor control board monitors the overall current of the machine and detects that the current value exceeds the parameter-set current value

Supposed Causes:

- a. The fan motor run abnormally
- b. The condenser and evaporator is dirty
- c. The air inlet and outlet is abnormally

Solution to Malfunction:

- a. Replace the fan motor
- b. Clean the condenser and evaporator
- c. Inspect the air inlet and outlet



6. Error code 16 (Cooling mode Anti-freeze protection indoor unit)

Error code: Indoor displays: 16 outdoor displays: /

Method of Malfunction Detection:

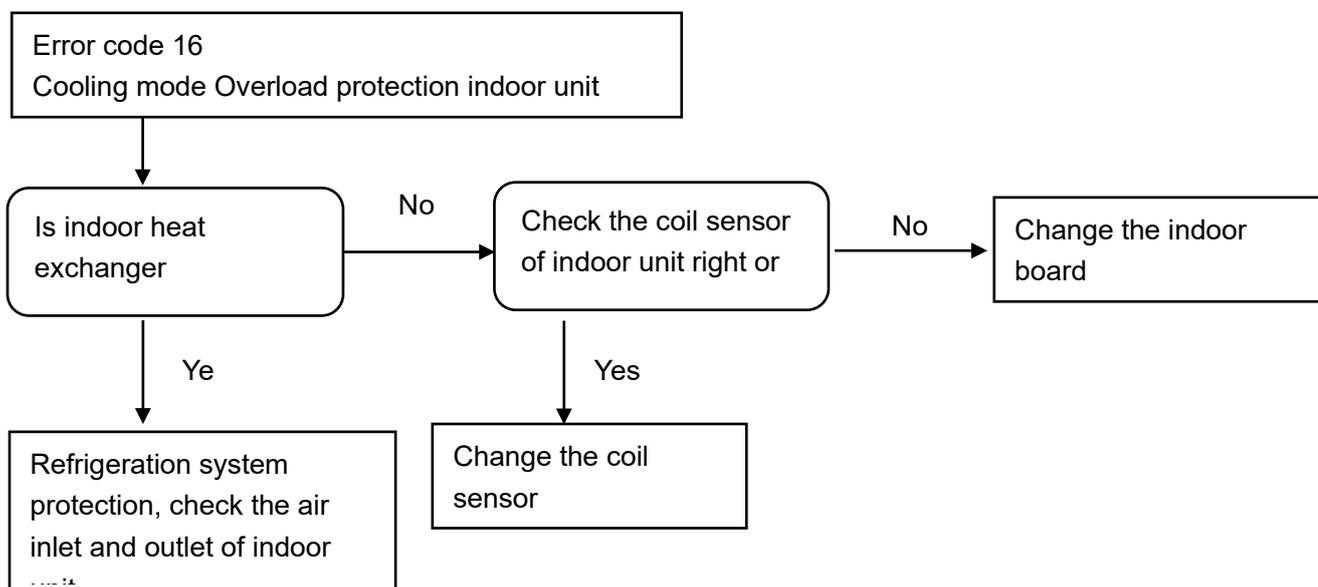
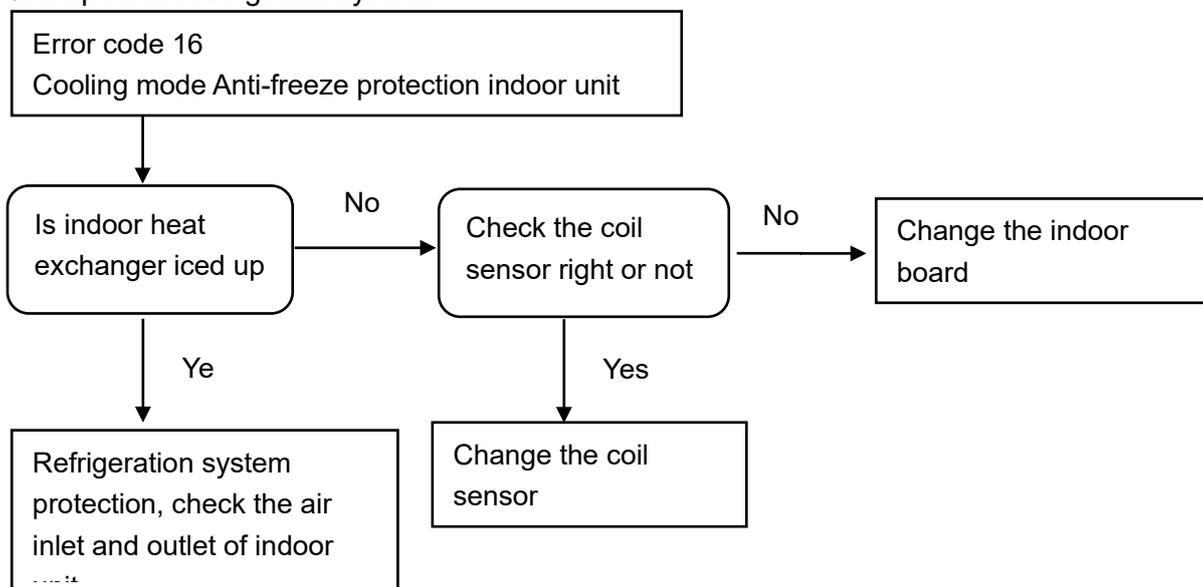
During cooling, the indoor electrical control board detects that the indoor coil temperature is less than the parameter-set value, or during heating, the indoor electrical control board detects that the indoor coil temperature is greater than the parameter-set value.

Supposed Causes:

- a. The indoor coil temperature sensor connect loose
- b. The indoor coil temperature sensor is failure
- c. The indoor control board is failure
- d. The refrigerant system is abnormal

Solution to Malfunction:

- a. Reconnect the indoor coil temperature sensor
- b. Replace the indoor coil temperature sensor
- c. Replace the indoor control board
- d. Inspect the refrigerant system



7. Error code 21 (Outdoor coil anti-overload protection)

Error code: Indoor displays: 21 outdoor displays: /

Method of Malfunction Detection:

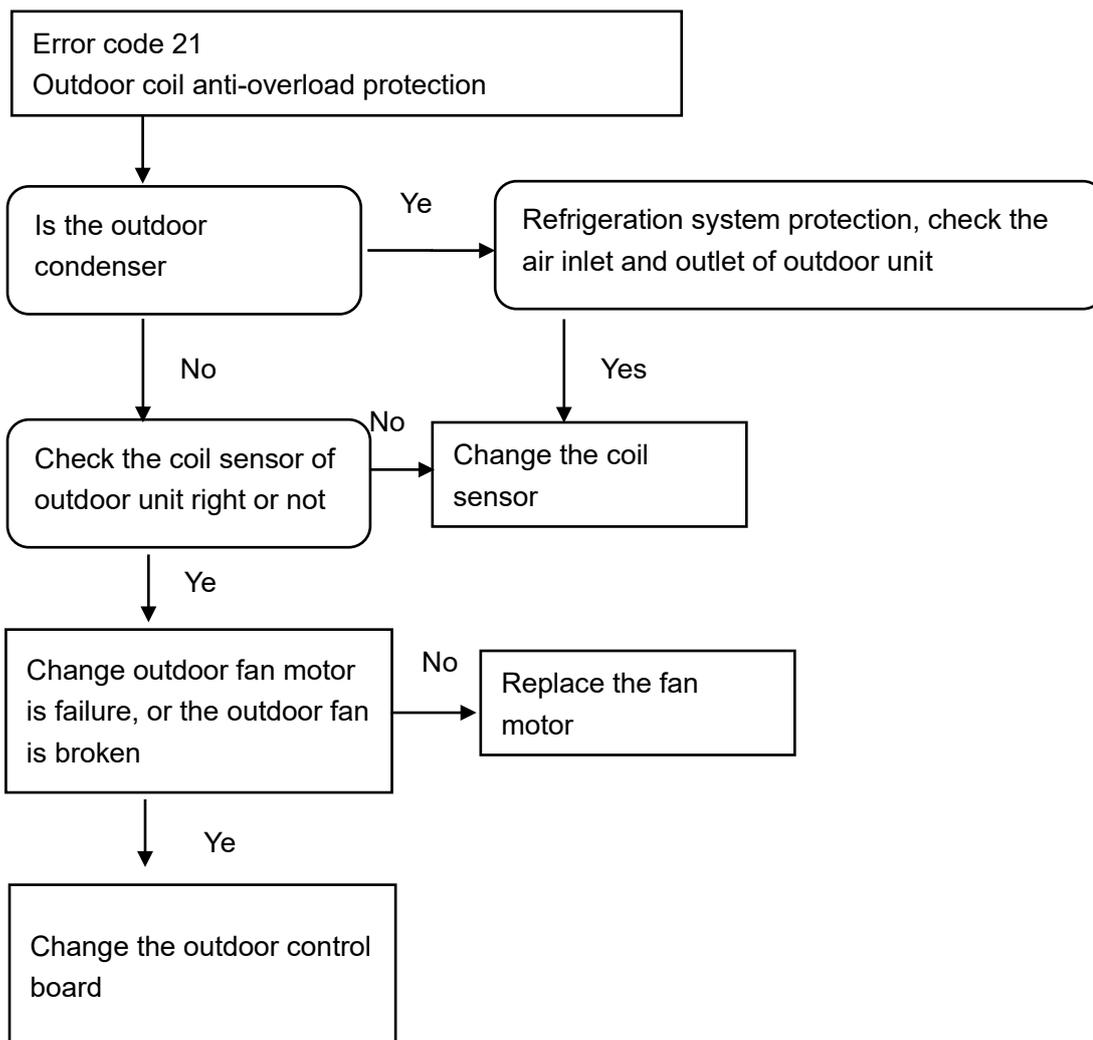
The outdoor control board detects that the outdoor coil temperature is greater than the parameter-set value.

Supposed Causes:

- a. The outdoor fan motor is failure, or the outdoor fan is broken
- b. The coil sensor of outdoor unit is failure
- c. The condenser is dirty
- d. The air inlet and air outlet of the indoor unit and the outdoor unit is not normally
- e. The outdoor control board is failure

Solution to Malfunction:

- a. Replace the fan motor
- b. Replace the fan
- c. Clean the condenser
- d. Take inspection of air inlet and air outlet of the indoor unit and the outdoor unit
- e. Replace the outdoor control board



8. Error code 11 (Outdoor EEPROM IN in trouble)

Error code: Indoor displays: 11 outdoor displays: /

Method of Malfunction Detection:

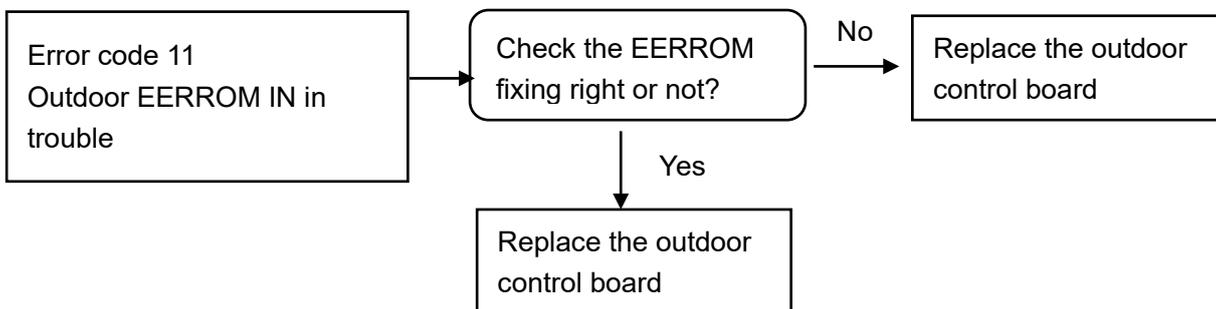
The outdoor control board is unable to properly read the outdoor EEPROM parameters.

Supposed Causes:

- a. The EEPROM chip is loose
- b. The EEPROM chip inserted with opposite direction
- c. The EEPROM chip is failure

Solution to Malfunction:

- a. Replace the outdoor control board
- b. Replace the outdoor control board
- c. Replace the outdoor control board



9. Error code 20 (Outdoor fan motor locked rotor protection)

Error code: Indoor displays: 20 outdoor displays: /

Method of Malfunction Detection:

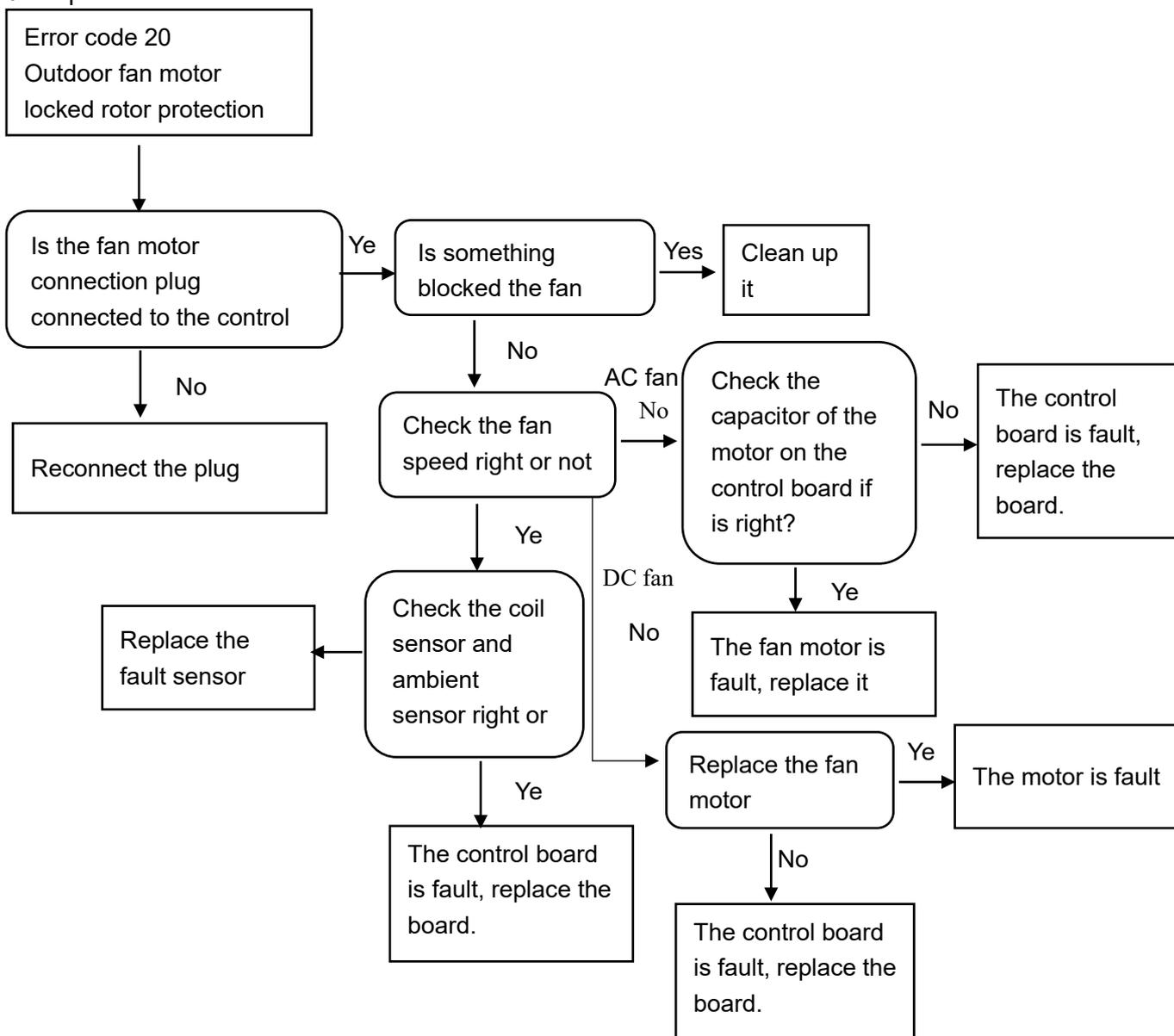
The outdoor control board detects abnormal operation of the outdoor motor.

Supposed Causes:

- a. the connection of the outdoor fan motor is loose
- b. there are something block the outdoor fan
- c. the fan motor is failure
- d. the outdoor control board is failure

Solution to Malfunction:

- a. Reconnect the connection of the outdoor fan motor
- b. Remove any obstructions
- c. Replace the fan motor
- d. Replace the outdoor control board



10. Error code 33 & 34 & 14 & 1 & 2 (temperature sensor trouble)

Error code: Indoor displays: 33 / 34 / 14 / 1 / 2 outdoor displays: /

Method of Malfunction Detection:

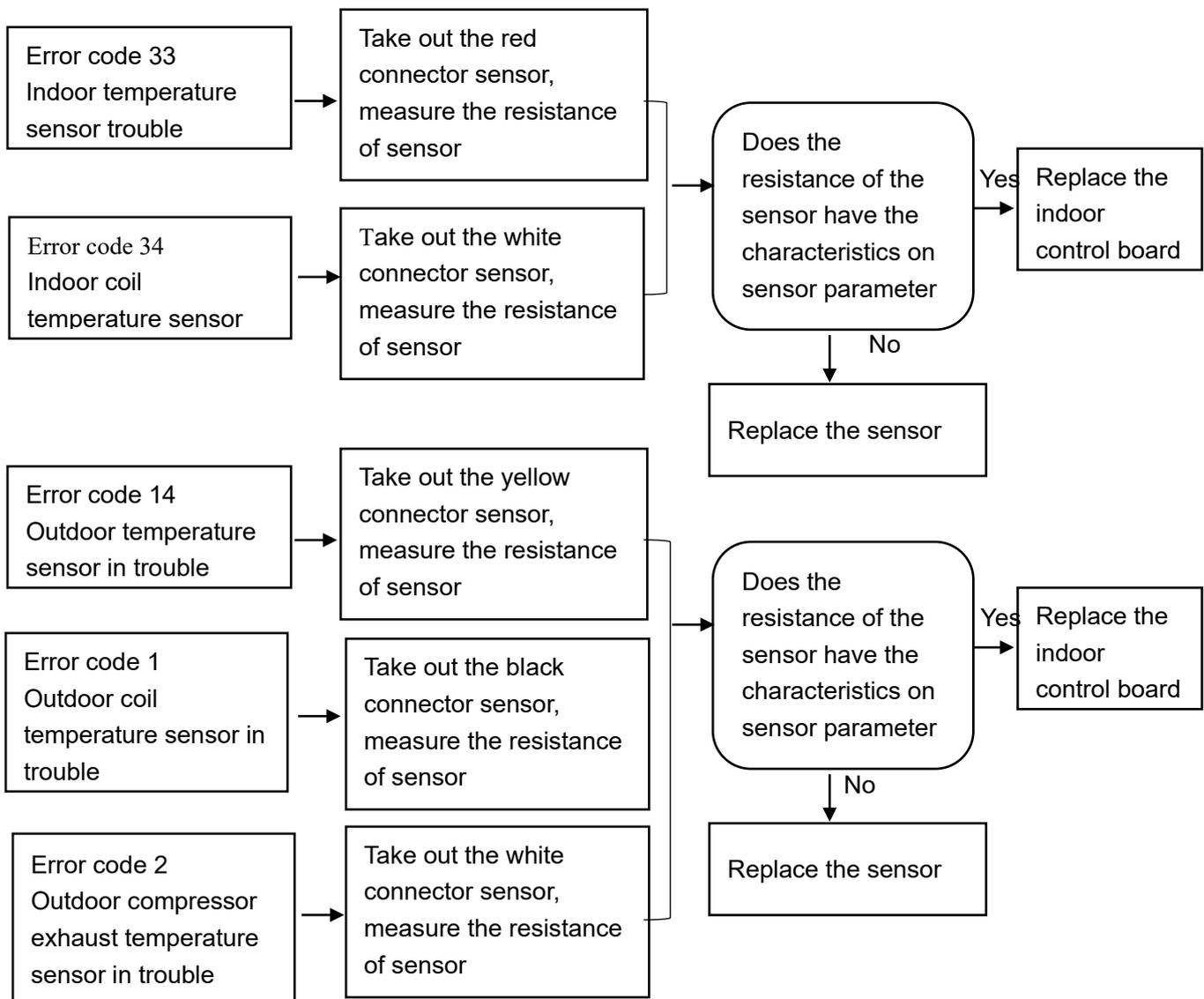
The indoor and outdoor control boards are unable to read the indoor and outdoor temperature sensors.

Supposed Causes:

- a. The temperature sensor loose
- b. The temperature sensor is failure
- c. The control board is failure

Solution to Malfunction:

- a. Reconnect the temperature sensor
- b. Replace the temperature sensor
- c. Replace the control board.



11. Error code 6 (AC voltage higher or lower protection)

Error code: Indoor display: 6 outdoor displays: /

Method of Malfunction Detection:

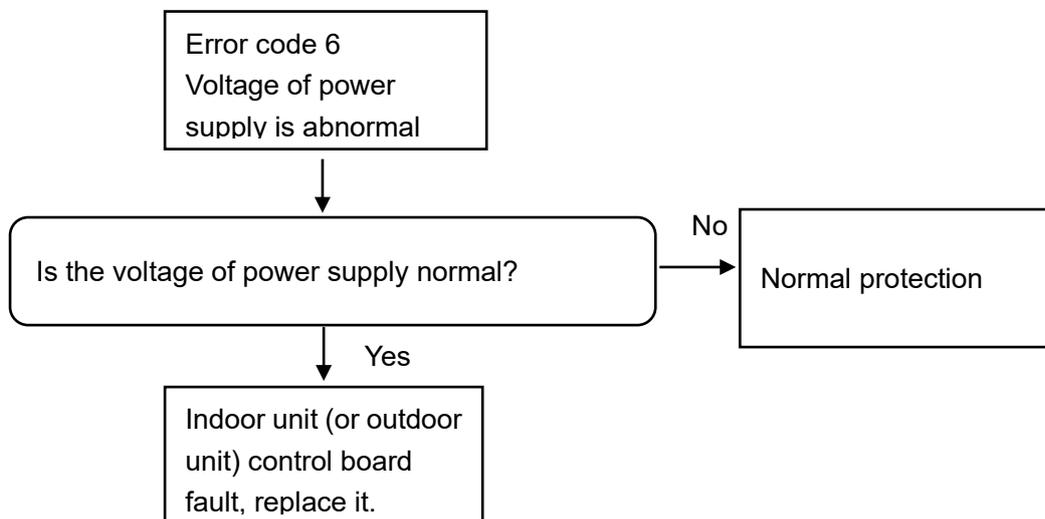
The outdoor or outdoor control board detects that the supplied voltage is either above or below the parameter-set value.

Supposed Causes:

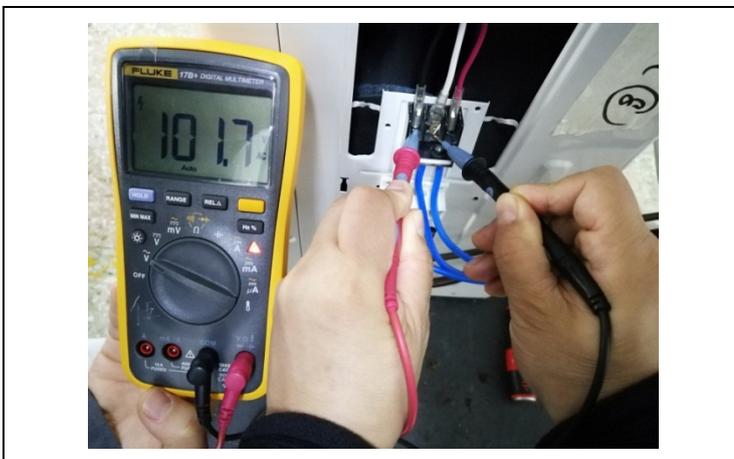
- a. The supply voltage is higher or lower than normal
- b. The inner supply voltage of the unit is higher or lower than normal
- c. The indoor unit (or outdoor unit) control board is failure

Solution to Malfunction:

- a. Supply the stable power
- b. Supply the stable power
- c. Replace the indoor unit (or outdoor unit) control board.



AC voltage test point:



The voltage protection values is different according to the model

12. Error code 19 (Compressor driver in trouble)

Error code: Indoor display: 19 outdoor displays: /

Method of Malfunction Detection:

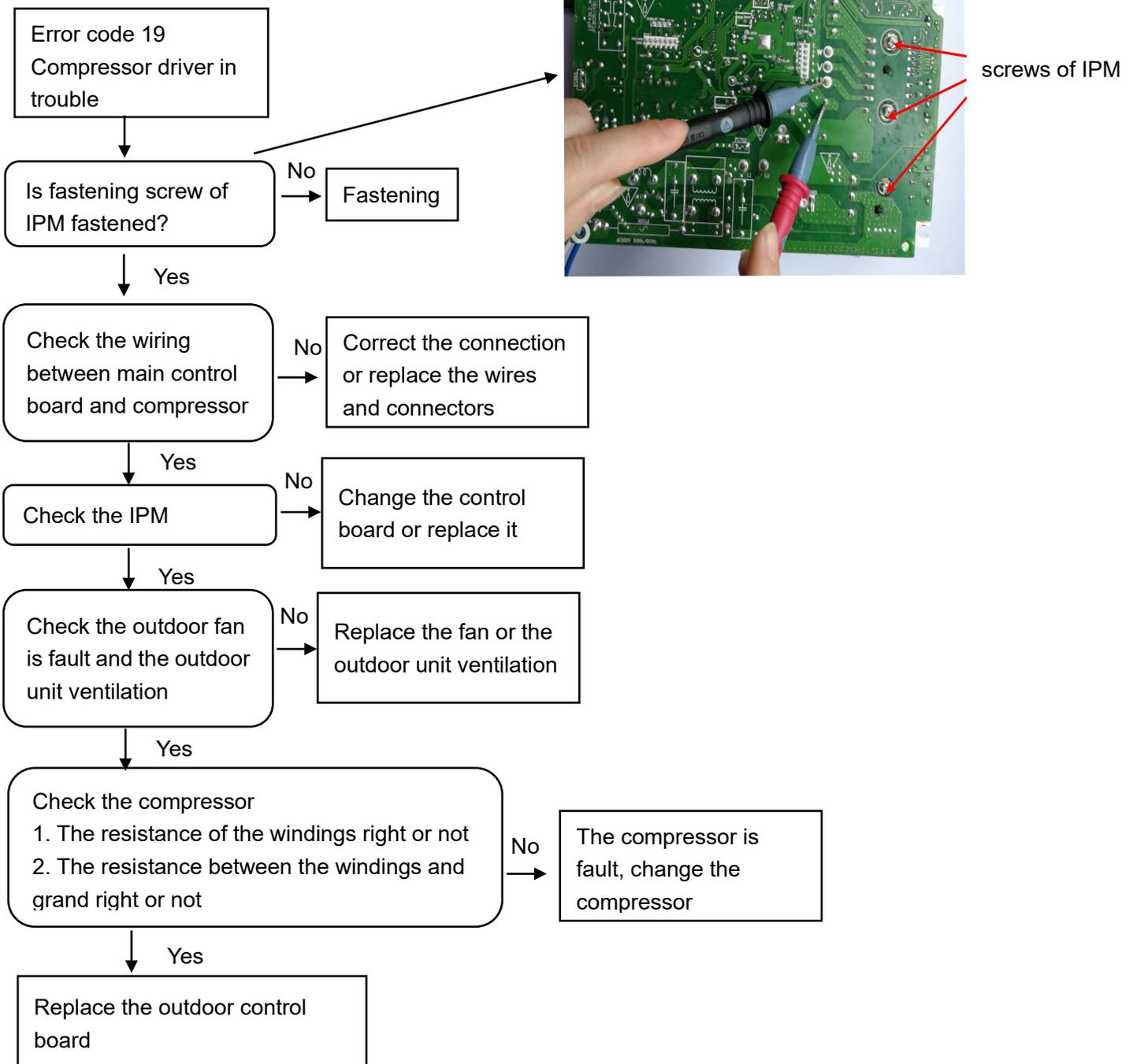
The outdoor control board detects an abnormality in the drive module, preventing it from normally driving the compressor to operate.

Supposed Causes:

- a. the outdoor drive board is failure;
- b. the compressor is failure
- c. the outdoor control board is failure

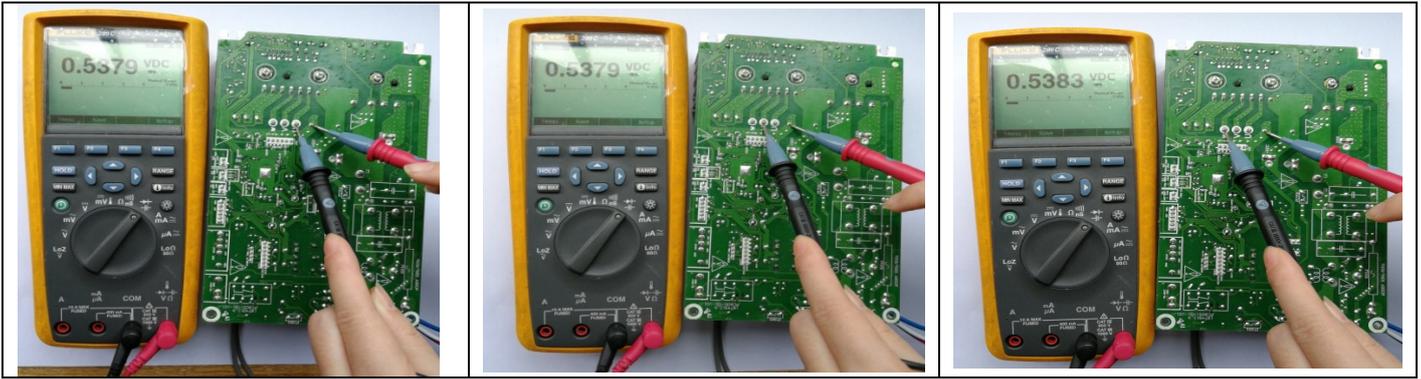
Solution to Malfunction:

- a. Replace the outdoor control board
- b. Replace the outdoor control board
- c. Replace the compressor

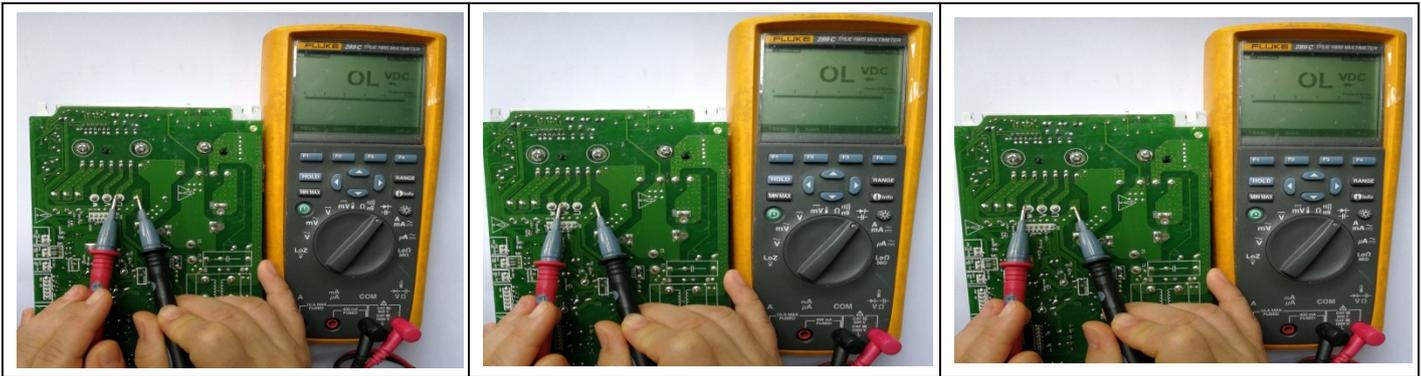


test point:

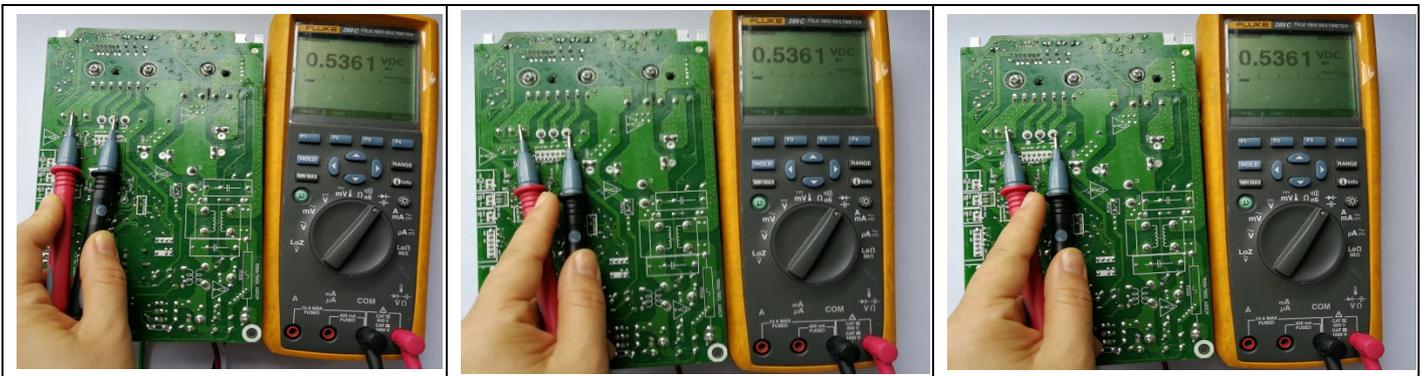
Forward of IPM P-U/P-V/P-W test :



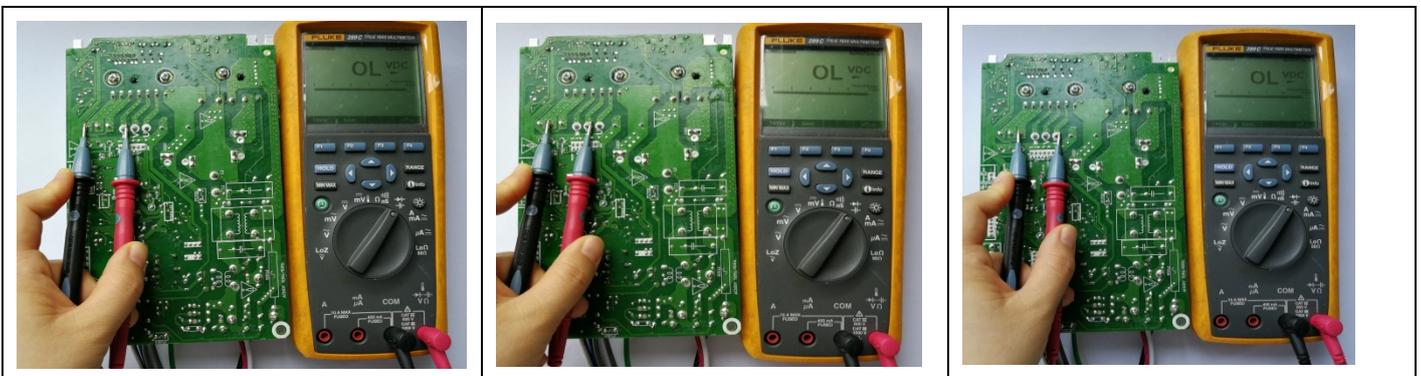
Reverse of IPM P-U/P-V/P-W test:



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

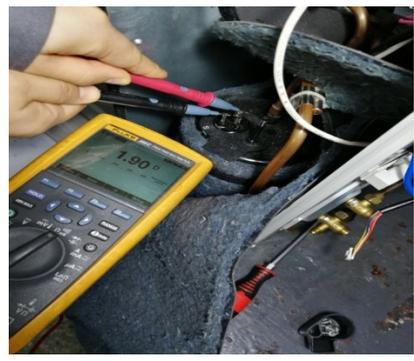
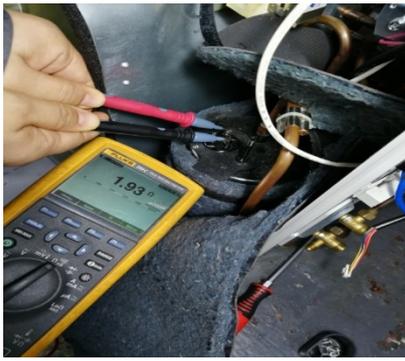


Reverse of IPM N-U/N-V/N-W test :



test point:

The resistance of the compressor U-WV-W



13.Error code 36 (Communication in trouble)

Error code: Indoor display: 36 outdoor displays: /

Method of Malfunction Detection:

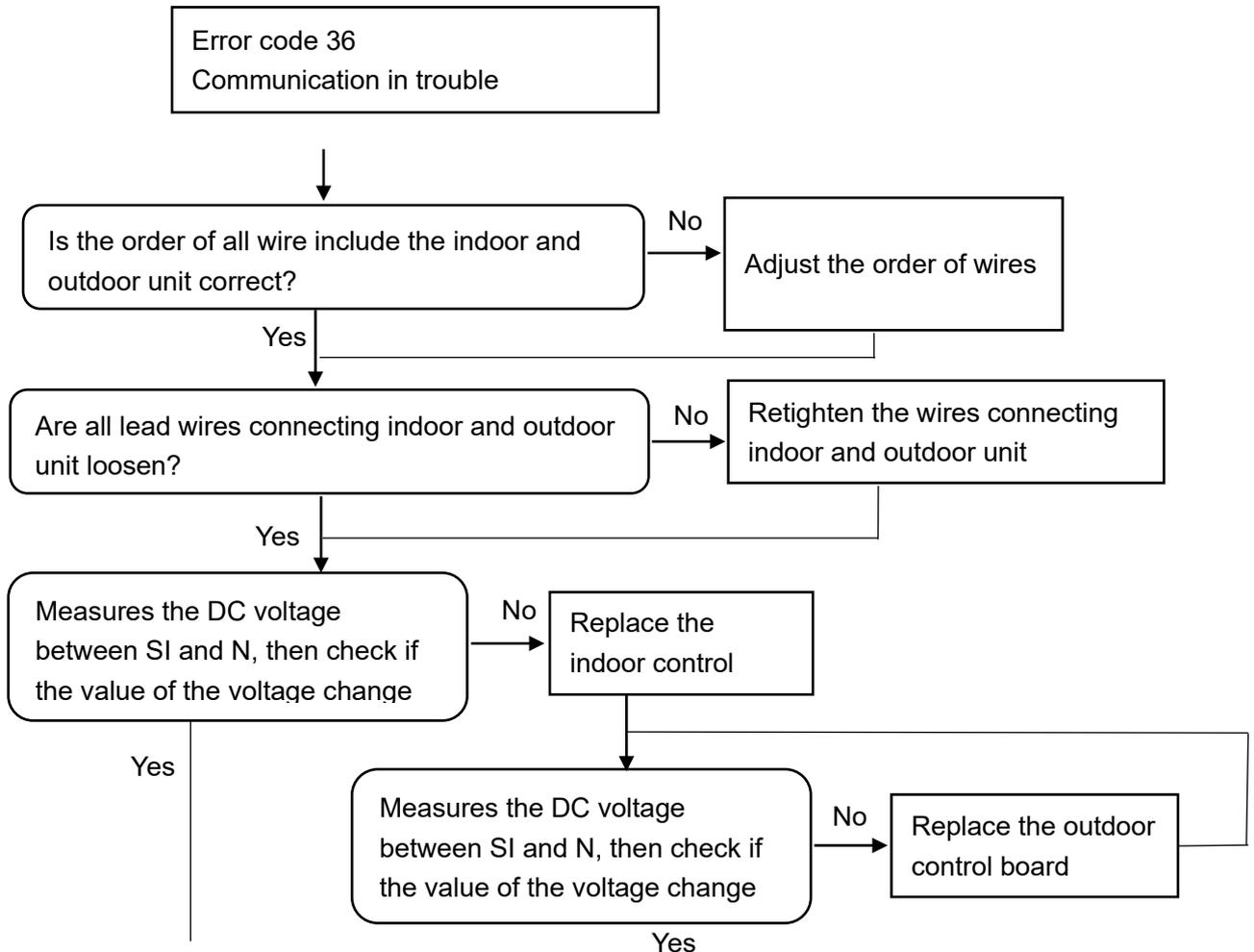
The indoor and outdoor control boards are unable to establish communication, and the indoor control board cannot read the signals from the outdoor control board.

Supposed Causes:

- a. the communication cable connects loose
- b. the communication cable is failure
- c. the connection between the filter board and the outdoor control board is incorrect or loose
- d. the connection between the filter board and the terminal is incorrect or loose
- e. the indoor control board is failure
- f. the PFC board is failure
- g. the power board is failure
- h. the outdoor control board is failure

Solution to Malfunction:

- a. Reconnect the communication cable
- b. Replace the communication cable
- c. Reconnect the communication between the filter board and the outdoor control board
- d. Reconnect the communication between the filter board and the terminal
- e. Replace the indoor control board
- f. Replace the indoor control board
- g. Replace the indoor control board
- h. Replace the outdoor control board



End

SI and N test point:

