

R454B IDU Service Manual



Service Manual

1. Safety
2. Structure
3. Wiring and Fan Speed Setting
4. PCB Board
5. ID Unit fault control
6. ID Unit fault troubleshooting
7. Troubleshooting guidelines

Safety Signs



This is the general warning sign. It is used to alert the user to potential hazards. All safety messages that follow this sign shall be obeyed to avoid possible harm.



DANGER

Indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.



WARNING

Indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.



CAUTION

Indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.



NOTE

A situation that may cause damage to the equipment or loss of property.



WARNING

Work on the refrigerant circuit with flammable refrigerant in safety group A2L may only be carried out by authorized contractors. These heating contractors must be trained in accordance with UL 60335-2-40, Section HH. The certificate of competence from an industry accredited body is required.

Work on electrical equipment may only be carried out by a qualified electrician.

Before initial commissioning, all safety – related points must be checked by the particular certified heating contractors. The system must be commissioned by the system installer or a qualified person authorized by the installer.

For installation of the indoor unit, refer to the corresponding installation and operation manual. If an indoor unit is installed in an unventilated area, the area shall be so constructed that should any refrigerant leak, it will not stagnate so as to create a fire or explosion hazard.

The appliance shall be stored so as to prevent mechanical damage from occurring.

Do not stack combustible materials on the surface of the indoor unit.



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

The appliance shall be stored in a room that does not have continuously operating ignition sources (for example: open flames, an operating gas appliance or an operating electric heater).

Do not pierce or burn the unit.

Be aware that refrigerants may not contain an odour.

If refrigerant gas leaks during installation, ventilate the area immediately.

Comply with national gas regulations.

Safety Precautions



This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or persons who lack experience and knowledge, unless they are supervised or have been given instructions concerning the use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.

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

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

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

Prior to beginning work on systems containing flammable refrigerants, safety checks are necessary to minimize the risk of ignition.

When repairing the refrigerating system, comply with the following precautions prior to conducting work on the system:

- shall be undertaken according to controlled procedures so as to minimize the risk of the presence of flammable gases or vapors while the work is being performed.
- All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided.
- The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially toxic or flammable environment. Ensure that the leak detection equipment being used is suitable for use with all applicable refrigerants, i.e. non-sparking, adequately sealed or intrinsically safe.
- If any hot work is to be conducted on the refrigerating equipment or any associated parts, appropriate fire extinguishing equipment shall be available and easily accessible. Have a dry powder or CO₂ fire extinguisher adjacent to the charging area.
- When carrying out work in relation to a refrigerating system that involves exposing any pipe work, no sources of ignition shall be used in such a manner that it may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repair, or removal and disposal of the unit, during which refrigerant can possibly be released into the surrounding space. Prior to beginning work, 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 clearly displayed. Ensure that the area is in the open or that it is adequately ventilated before opening the system or conducting any hot work. A degree of ventilation shall continue during the period that the work is carried out. The ventilation should safely disperse any released refrigerant and preferably expel it externally into the surroundings.

Where electrical components are being changed, they shall be fit according to their purpose and to the correct specification. At all times the manufacturer’s maintenance and service guidelines shall be followed. If in doubt, consult the manufacturer’s technical department for assistance. The following checks shall be applied to installations using flammable refrigerants:

- The actual refrigerant charge is in accordance with the room size within which the refrigerant containing parts are installed;
 - The ventilation machinery and outlets are operating adequately and are not obstructed.
 - If an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant.
 - Equipment marking must remain visible and legible. Markings and signs that are illegible shall be corrected.
- Refrigerating pipe or components are installed in a position where they are unlikely to be exposed to any substances which may corrode refrigerant containing components, unless the components are constructed of materials that are inherently resistant to corrosion or are suitably protected against corrosion.
- Repair and maintenance of electrical components shall include initial safety checks and component inspection procedures. If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until the fault has been dealt with satisfactorily.

Safety Precautions



If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution shall be used. This shall be reported to the owner of the equipment so that all parties are advised. Initial safety checks shall include:

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

Sealed electrical components shall be replaced. Intrinsically safe components must be replaced.

Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects. The check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans.

Under no circumstances shall potential sources of ignition be used while searching for or detection of refrigerant leaks. A halide torch (or any other detector using a naked flame) shall not be used.

Electronic leak detectors may be used to detect refrigerant leaks but, in the case of flammable refrigerants, 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 for the refrigerant employed, and the appropriate percentage of gas (25 % maximum) is confirmed.

If a leak is suspected, all naked flames shall be removed/extinguished. If a leakage of refrigerant which requires brazing is found, 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.

Leak detection fluids are also 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.

NOTE: Examples of leak detection fluids are

- bubble method,
- fluorescent method agents.

When breaking into the refrigerant circuit to make repairs - or for any other purpose-conventional procedures shall be used. However, for flammable refrigerants it is important that best practice be followed, since flammability is a consideration. The following procedure shall be adhered to:

- safely remove refrigerant following local and national regulations.
- evacuate.
- purge the circuit with inert gas .
- evacuate.
- continuously flush or purge with inert gas when using flame to open circuit, and.
- open the circuit.

The refrigerant charge shall be recovered into the correct recovery cylinders if venting is not allowed by local and national codes. For appliances containing flammable refrigerants, the system shall be purged with oxygen-free nitrogen to render the appliance safe for flammable refrigerants. This process might need to be repeated several times. Compressed air or oxygen shall not be used for purging refrigerant systems.

For appliances containing flammable refrigerants, refrigerants purging shall be achieved by breaking the vacuum in the system with oxygen-free nitrogen and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum. This process shall be repeated until no refrigerant is within the system .When the final oxygen-free nitrogen charge is used, the system shall be vented down to atmospheric pressure to enable work to take place.

The outlet for the vacuum pump shall not be close to any potential ignition sources, and ventilation shall be available.

Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses or lines shall be as short as possible to minimise the amount of refrigerant they contain.

Cylinders shall be kept upright. Ensure that the refrigeration system is grounded prior to charging the system with refrigerant.

Label the system when charging is complete (if it is not already labeled).

Take extreme care not to overfill the refrigeration system.

Safety Precautions



WARNING

Prior to recharging the system, it shall be pressure-tested with the appropriate purging gas. The system shall be leak-tested on completion of charging but prior to commissioning. A follow up leak test shall be carried out prior to leaving the site.

Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail. It is recommended that all refrigerants are recovered safely. Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to re-use of reclaimed refrigerant. It is essential that electrical power is available before the task is commenced.

- a) Become familiar with the equipment and its operation.
- b) Isolate system electrically.
- c) Before attempting the procedure ensure that:
 - mechanical handling equipment is available, if required, for handling refrigerant cylinders;
 - all personal protective equipment is available and being used correctly;
 - the recovery process is supervised at all times by a competent person;
 - recovery equipment and cylinders conform to the appropriate standards.
- d) Pump down refrigerant system, if possible.
- e) If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.
- f) Make sure that the cylinder is situated on the scales before recovery takes place.
- g) Start the recovery machine and operate it in accordance with the 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 has been 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.

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

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

When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. Ensure that the correct number of cylinders for holding the total system charge is available. All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i.e. special cylinders for the recovery of refrigerant). Cylinders shall be complete with pressure-relief valve and associated shut-off valves in good working order. Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.

The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of the flammable refrigerant. If in doubt, the manufacturer should be consulted. In addition, a set of calibrated weighing scales shall be available and in good working order. Hoses shall be complete with leak-free disconnect couplings and in good condition.

The recovered refrigerant shall be processed according to local legislation in the correct recovery cylinder, and the relevant waste transfer note arranged. Do not mix refrigerants in recovery units and especially not in cylinders.

If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant. The compressor body shall not be heated by an open flame or other ignition sources to accelerate this process. When oil is drained from a system, it shall be carried out safely.

Do not use the air conditioner for other purposes. In order to avoid any quality deterioration, do not use the unit for the cooling of precision instruments, food, plants, animals or works of art. Before cleaning, be sure to stop the operation, turn the breaker off or unplug the supply cord. Otherwise, electric shock and injury may occur. In order to avoid electric shock or fire, make sure that an earth leak detector is installed.

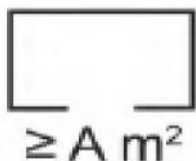
Never touch the air outlet or the horizontal blades while the swing flap is in operation. Your fingers may be come caught or the unit may break down.

Safety Precautions



Never put any objects into the air inlet or outlet.
Objects touching the fan at high speed can be dangerous.
Never inspect or service the unit by yourself.
Ask a qualified service person to perform this task.
Do not dispose of this product as unsorted municipal waste. This waste should be collected separately for special treatment. Do not dispose of electrical appliances as unsorted municipal waste. Use separate collection facilities. Contact your local government for information regarding the connection systems available.
If electrical appliances are disposed of in landfills or dumps, hazardous substances can leak into the groundwater and get into the food chain, harming your health and well-being.
To prevent refrigerant leak, contact your dealer. When the system is installed and operates in a small room, it is required to maintain the concentration of the refrigerant below the limit, in case a leak occurs. Otherwise, oxygen in the room may be affected, resulting in a serious accident.
The refrigerant in the air conditioner is safe and normally does not leak.
If the refrigerant leaks into the room and comes into contact with the fire of a burner, a heater or a cooker, a harmful gas could be released.
Turn off any combustible heating devices, ventilate the room, and contact the dealer where you purchased the unit.
Do not use the air conditioner until a service person confirms that the refrigerant leak is repaired.
Keep ventilation openings clear of obstruction.
Be sure the air conditioner is earthed.
In order to avoid electric shock, make sure that the unit is earthed and that the earth wire is not connected to a gas or water pipe, lightning conductor or telephone earth wire.
Do not operate the air conditioner with a wet hands. An electric shock may happen.
Do not touch the heat exchanger fins. These fins are sharp and could cut you.
To avoid oxygen deficiency, ventilate the room sufficiently if equipment with a burner is used together with the air conditioner.
Arrange the drain hose to ensure smooth drainage. Incomplete drainage may cause wetting of the building, furniture, etc.
Never touch the internal parts of the controller.
Do not remove the blower access panel. Some parts inside are dangerous to touch, and machine troubles may occur.
Attention is drawn to the fact that additional transportation regulations may exist with respect to equipment containing flammable gas. The maximum number of pieces of equipment or the configuration of the equipment permitted to be transported together will be determined by the applicable transport regulations.
Signs for similar appliances used in a work area are generally addressed by local regulations and give the minimum requirements for the provision of safety and/or health signs for a work location.
All required signs are to be maintained and employers should ensure that employees receive suitable and sufficient instruction and training on the meaning of appropriate safety signs and the actions that need to be taken in connection with these signs. The effectiveness of signs should not be diminished by too many signs being placed together. Any pictograms used should be as simple as possible and contain only essential details.
The storage of the appliance should be in accordance with the applicable regulations or instructions, whichever is more stringent.
Storage package protection should be constructed such a way 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.
Do not operate the air conditioner when using a room fumigation - type insecticide. Failure to observe this precaution could cause the chemicals to become deposited in the unit, which could endanger the health of those who are hypersensitive to chemicals. It may also cause the refrigerant sensor to alarm.
Do not place appliances which produce open flame in places exposed to the air flow from the unit or under the indoor unit. It may cause incomplete combustion or deformation of the unit due to the heat.
Do not install the air conditioner in a location where flammable gas may leak out. If the gas leaks out and stays around the air conditioner, a fire may break out.

Safety Precautions



The appliance shall be installed, operated and stored in a room with a floor area not less than the minimum room area. Refer to the installation instructions for the minimum room area required to install the appliance.



The suction pipe and liquid pipe of the indoor unit need to be protected and cannot be grabbed when moving the indoor unit.

The pipe-work including piping material, pipe routing, and installation shall include protection from physical damage in operation and service, and be in compliance with national and local codes and standards, such as ASHRAE 15, ASHRAE 15.2, IAPMO Uniform Mechanical Code, ICC International Mechanical Code. inspection prior to being covered or enclosed; or CSA B52. All field joints shall be accessible for inspection prior to being covered or enclosed.

All joints made in the installation between parts of the refrigerating system, with at least one part charged, shall be made in accordance with the following:

- A brazed, welded, or mechanical connection shall be made before opening the valves to permit refrigerant to flow between the refrigerating system parts. A vacuum valve shall be provided to evacuate the interconnecting pipe or any uncharged refrigerating system part.
- Mechanical connectors used indoors shall comply with ISO 14903. When mechanical connectors are reused indoors, sealing parts shall be renewed. When flared joints are reused indoors, the flare part shall be refabricated.

- Refrigerant tubing shall be protected or enclosed to avoid damage.

- Flexible refrigerant connectors (such as connecting lines between the indoor and outdoor unit) that may be displaced during normal operation shall be protected against mechanical damage.

Compliance is checked according to the installation instructions and a trial installation, if necessary.

Field-made refrigerant joints indoors shall be tightness tested. The test method shall have a sensitivity of 5 grams per year of refrigerant or better under a pressure of at least 0,25 times the maximum allowable pressure. No leak shall be detected.

After completion of field piping for split systems, the field pipework shall be pressure tested with an inert gas and then vacuum tested prior to refrigerant charging, according to the following requirements.

The minimum test pressure for the low side of the system shall be the low side design pressure and the minimum test pressure for the high side of the system shall be the high side design pressure, unless the high side of the system, cannot be isolated from the low side of the system in which case the entire system shall be pressure tested to the low side design pressure.

Field-made refrigerant joints indoors shall be tightness tested. The test method shall have a sensitivity of 5 grams per year of refrigerant or better under a pressure of at least 0,25 times the maximum allowable pressure. No leak shall be detected.

- mechanical joints in compliance with ISO 14903 or UL 207 (U.S. only).
- welded or brazed joints.
- joints in enclosures that vent to the unit or to the outside. Compliance is checked by inspection and tests.

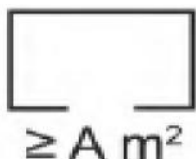
Components and accessories from the units are not part of ordinary domestic waste.

Complete units, compressors, motors etc. are only to be disposed of via qualified disposal specialists.

This unit uses flammable refrigerant R454B. Please contact the dealer when you want to dispose of this unit.

Law requires that the collection, transportation and disposal of refrigerants must conform with the regulations governing the collection and destruction of hydrofluorocarbons.

Safety Precautions



The appliance shall be installed, operated and stored in a room with a floor area not less than the minimum room area. Refer to the installation instructions for the minimum room area required to install the appliance.



The refrigerant leakage sensor can only use the factory model or the specified model indicated in the corresponding manual.

The R454B refrigerant leakage sensor must be used to activate the refrigerant shut-off device, the alarm device, incorporated circulation airflow or other emergency controls, which shall give an electrical signal at a predetermined alarm set point in response to leaked refrigerant.

The location of leakage sensors shall be chosen in relation to the different installation scenarios. Please refer to the indoor unit installation manual for specific requirements.

The installation of the refrigerant leakage sensor shall allow access for checking, repair or replacement by an authorized person.

The refrigerant leakage sensor shall be installed so its function can be verified easily.

The refrigerant leakage sensor shall be protected to prevent tampering or unauthorized resetting of the pre-set value.

To be effective, the refrigerant leakage sensor must be electrically powered at all times after installation, other than when servicing.

If the refrigerant leakage sensor detects a refrigerant leak, the fan will be turned on to the maximum, the compressor will stop running. you should immediately leave the leak area and notify a professional for handling.

The service life of the refrigerant sensor is 15 years, and it should be replaced after the service life.

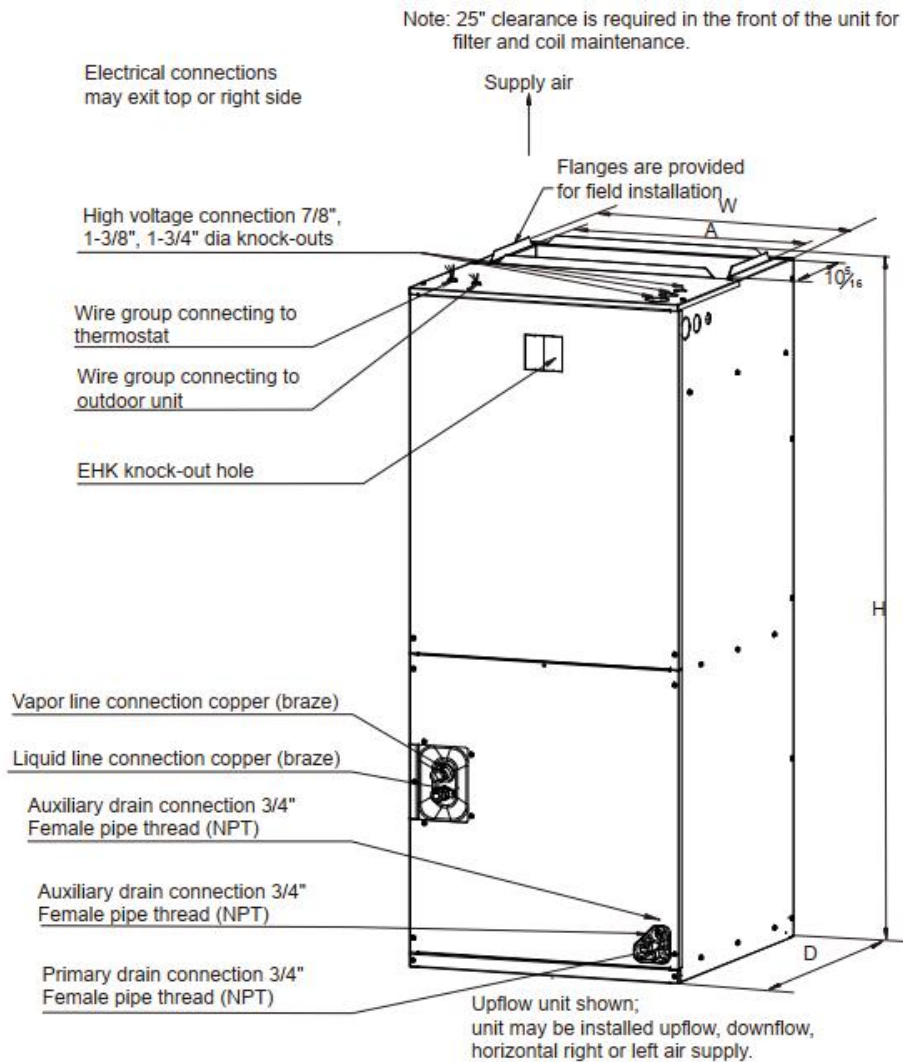
LEAK DETECTION SYSTEM installed on indoor unit. Unit must be powered except for service.

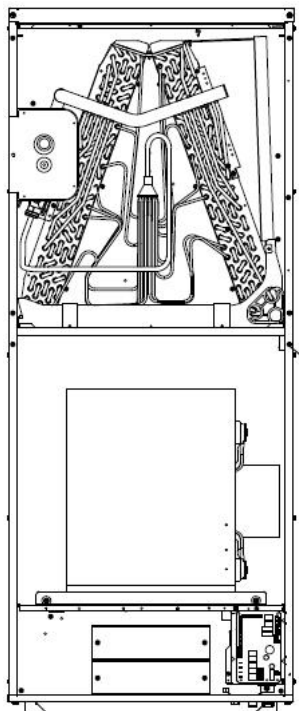
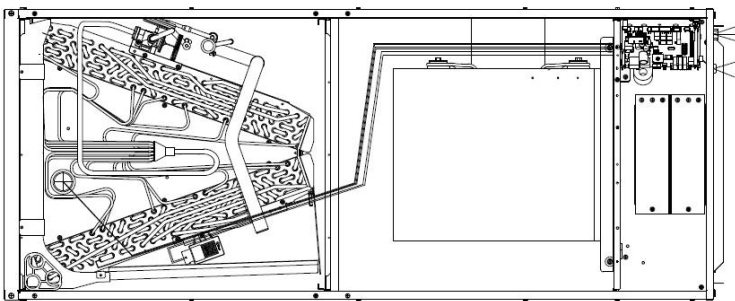
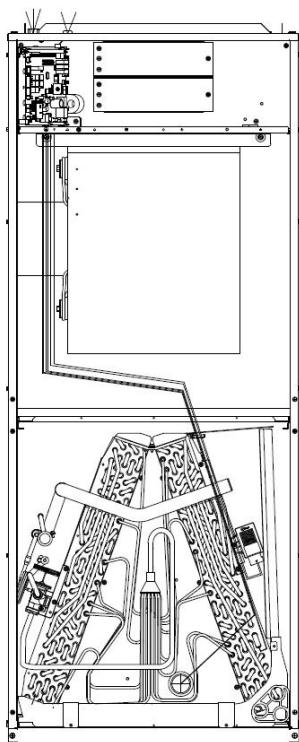


For appliances connected via an air duct system to one or more rooms, auxiliary devices which may be a potential ignition source shall not be installed in the duct work. Examples of such potential ignition sources are hot surfaces with a temperature exceeding 700° C and electric switching devices.

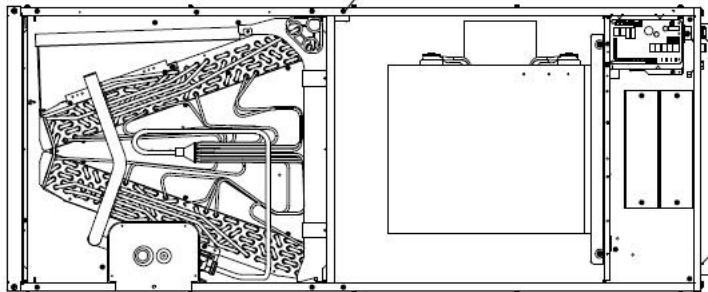
For appliances connected via an air duct system to one or more rooms, only auxiliary devices approved by the appliance manufacturer or declared suitable with the refrigerant shall be installed in connecting ductwork.

2. Structure



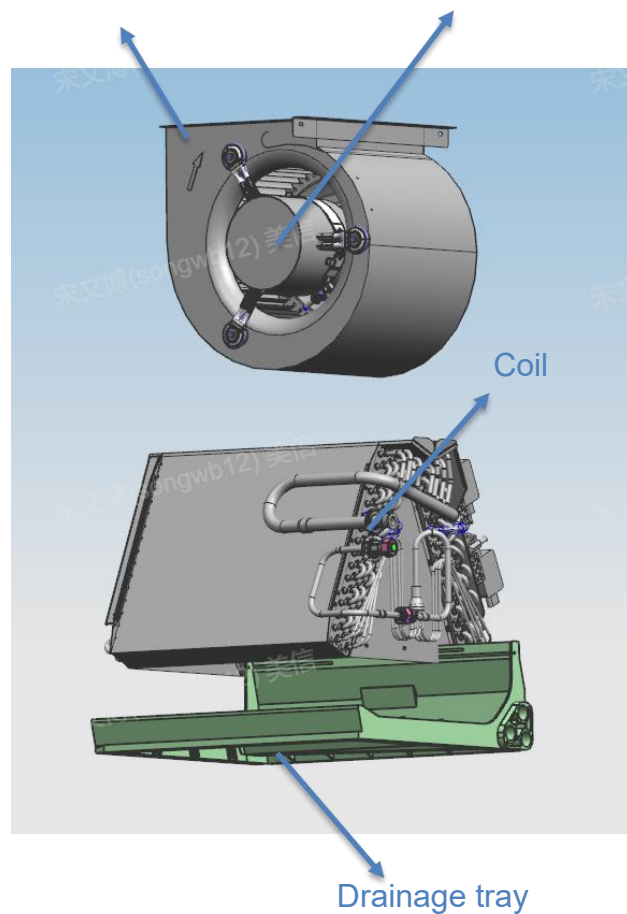
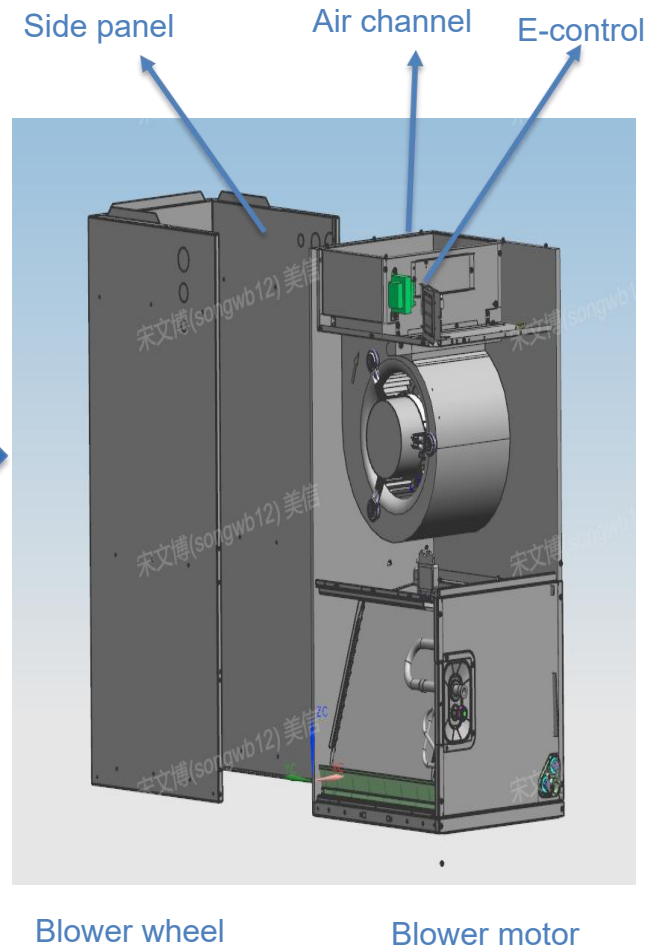
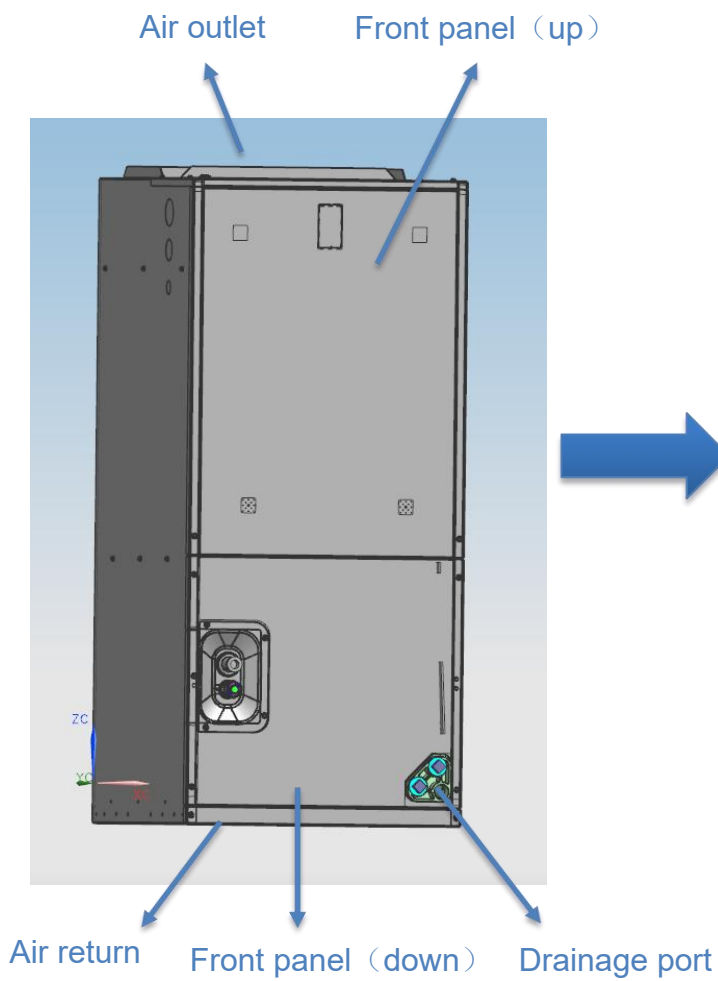


R454B
Refrigerant
Sensor

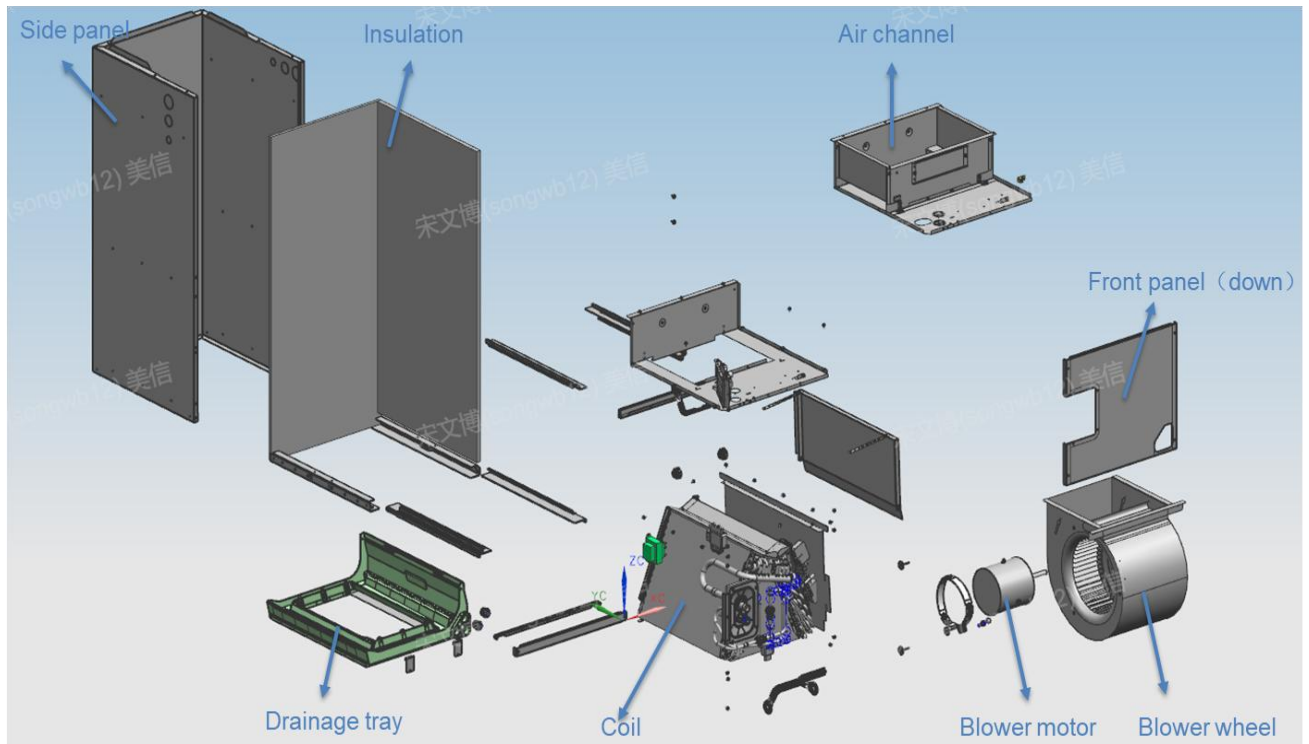


R454B
Refrigerant
Sensor

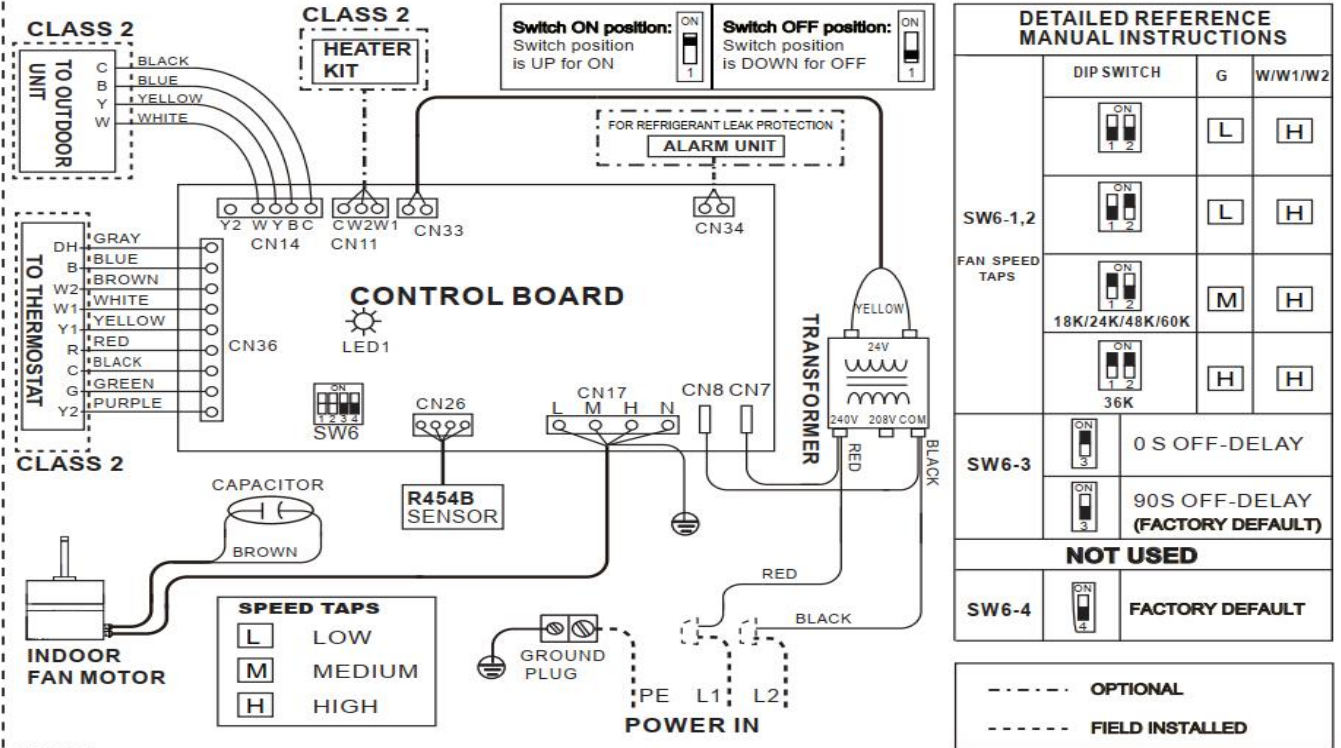
Air-handler exploded view



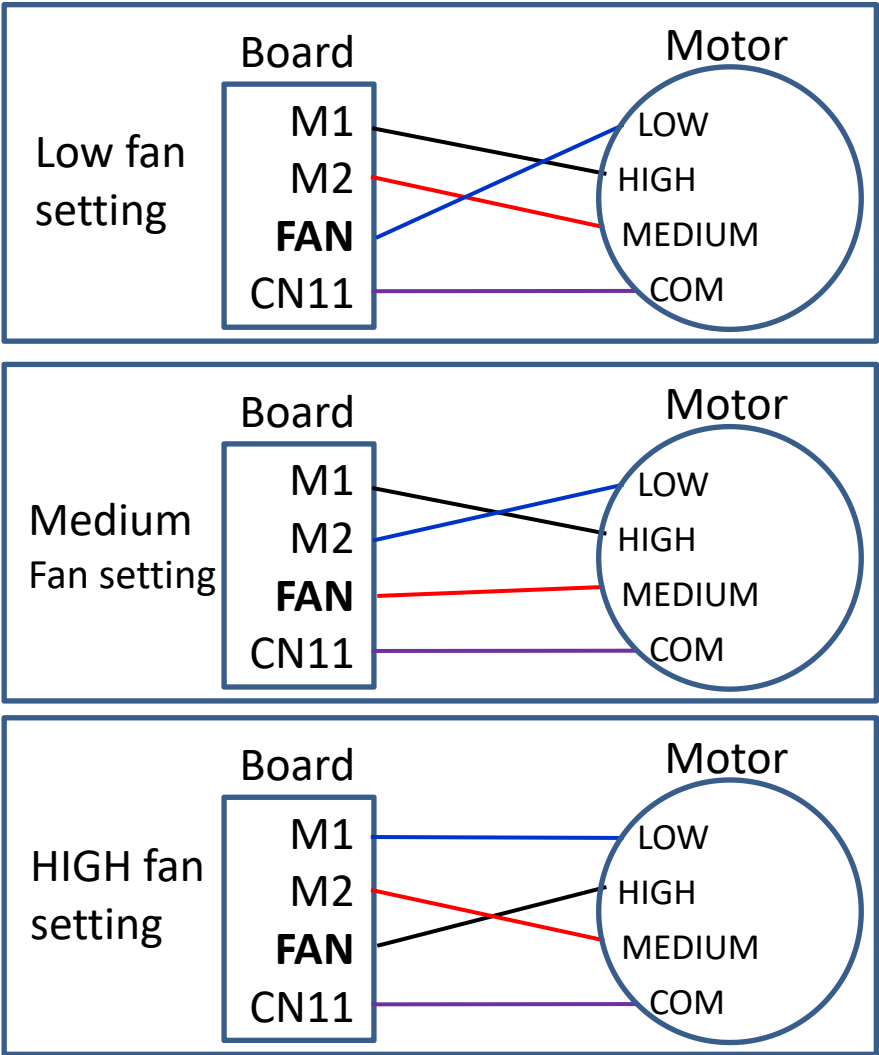
Air-handler exploded view



PSC Motor Type

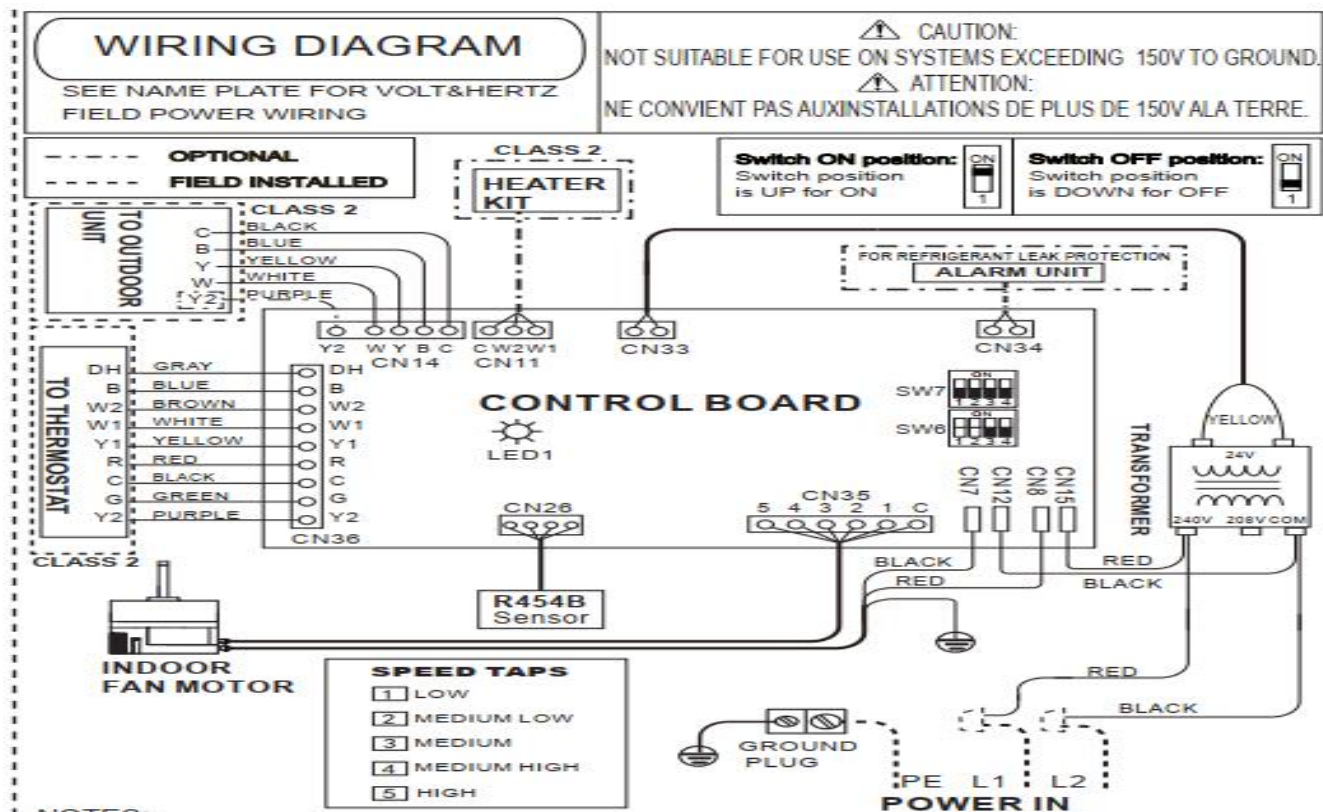


Fan speed setting

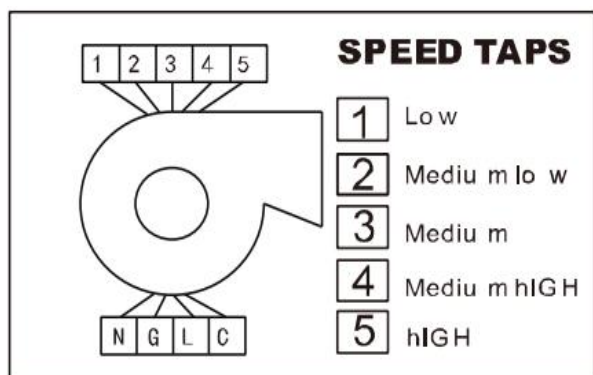


ECM Motor Type

Wiring diagram













Fan speed setting



LED light indication



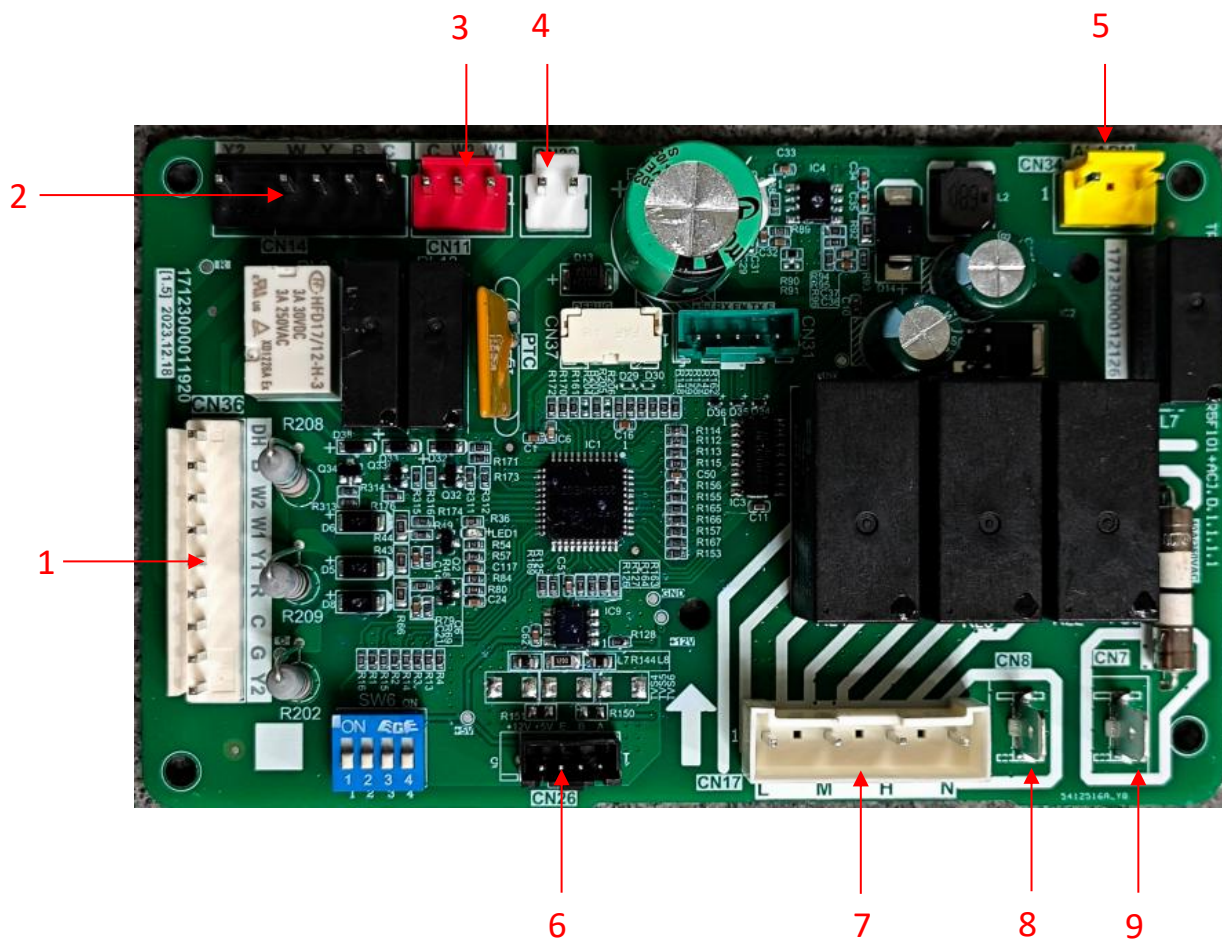
DIP-switch functions

DETAILED REFERENCE MANUAL INSTRUCTIONS				
1-STAGE CONTROLLER				
SW6-1,2 FAN SPEED TAPS	DIP SWITCH	Y1 OR G	W/W1/W2	
		2	3	
	 48K	3	4	
	 24K/36K	4	5	
	 60K	5	5	
2-STAGE CONTROLLER				
SW6-1,2 FAN SPEED TAPS	DIP SWITCH	Y1 OR G (MIN)	Y1-Y2 OR W/ W1/W2(MAX)	
		COOL	1	2
		HEAT	1	3
		COOL	1	3
		HEAT	2	4
		COOL	2	4
		HEAT	3	5
		COOL	3	5
HEAT		3	5	
NOT USED				
SW6-3,4		FACTORY DEFAULT		
SW7-1,2 SW7-3,4		FACTORY DEFAULT		

Note: LED 4 light on indicates the unit is normal,
if not on indicates power off or abnormal.

4 PCB Board

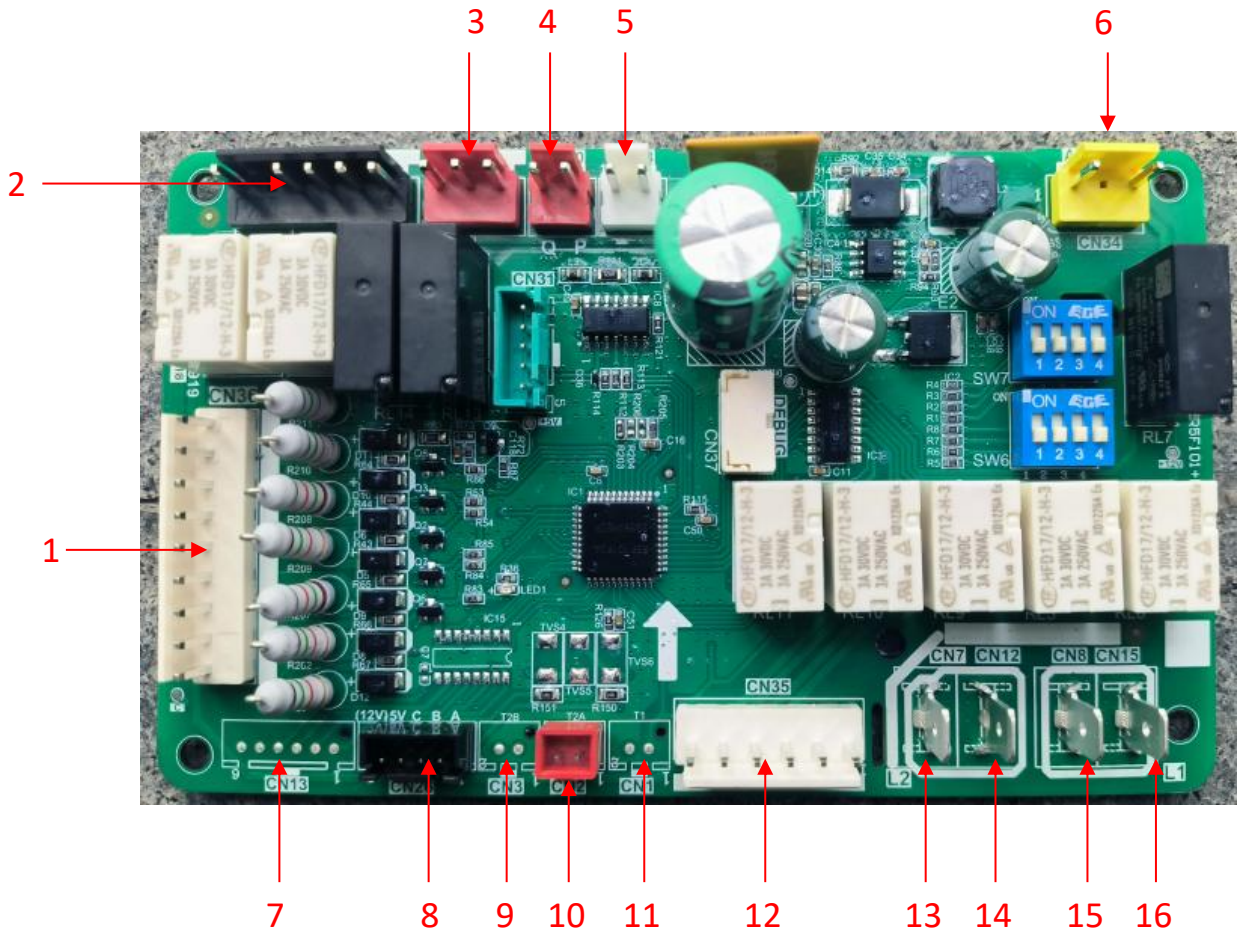
4.1 PCB Board for PSC ID unit



1. Thermostat wire connections
2. Outdoor unit control port
3. Heating kit control port
4. Transformer output
5. Alarm connection (Reserve)
6. R454B refrigerant sensor port
7. Indoor fan motor control port
8. Power in (L2)
9. Power in (L1)

4 PCB Board

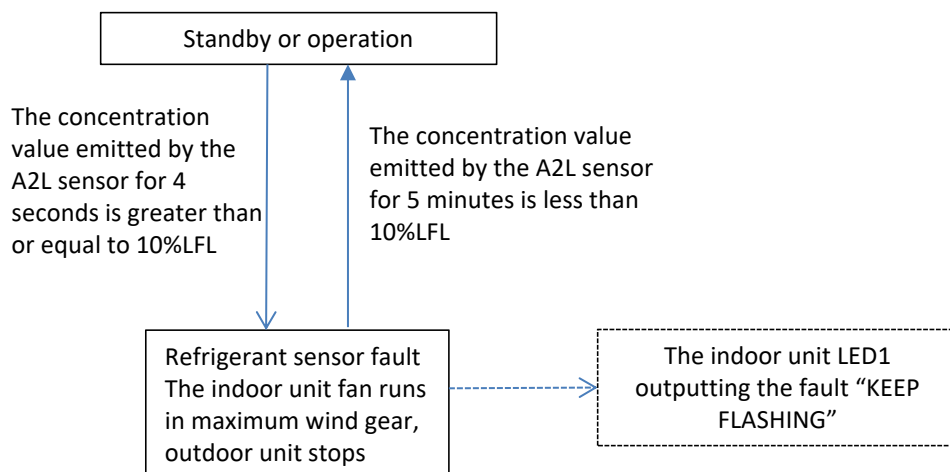
4.2 PCB Board for ECM ID unit



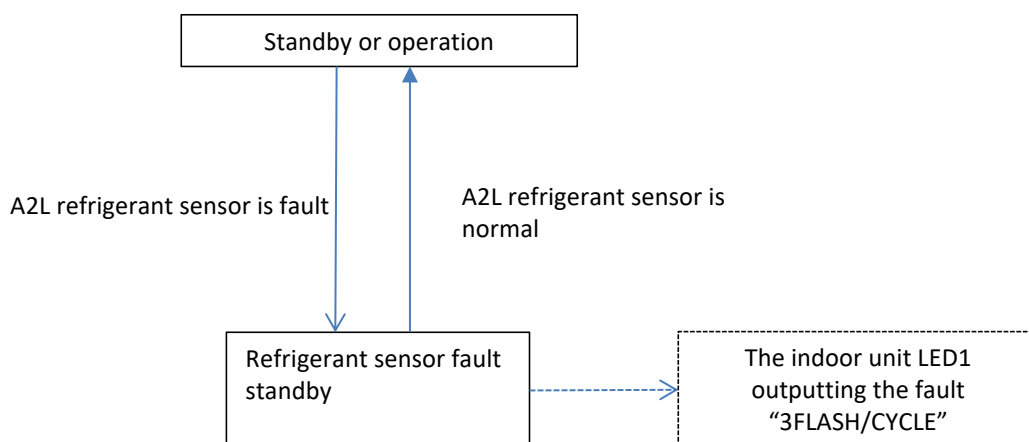
1. Thermostat wire connections
2. Outdoor unit control port
3. Heating kit control port
4. Outdoor unit communication port
5. Transformer output
6. Alarm connection (Reserve)
7. EEV port
8. R454B refrigerant sensor port
9. T2B sensor port
10. T2 sensor port
11. T1 sensor port
12. Indoor fan motor control port
13. Power in (L2)
14. Power in (L2)
15. Power in (L1)
16. Power in (L1)

No.	LED light flash	Fault code description	Supposed cause
3	3FLASH/CYCLE	A2L REFRIGERANT SENSOR FAULT	A2L sensor fault
4	4FLASH/CYCLE	A2L REFRIGERANT SENSOR COMMUNICATION FAULT	Wiring error/ A2L sensor fault
7	KEEP FLASHING	REFRIGERANT LEAK PROTECTION	Refrigerant leak
8	8FLASH/CYCLE	A2L SENSOR OVER SERVICE LIFE	Refrigerant sensors are used for more than 15 years

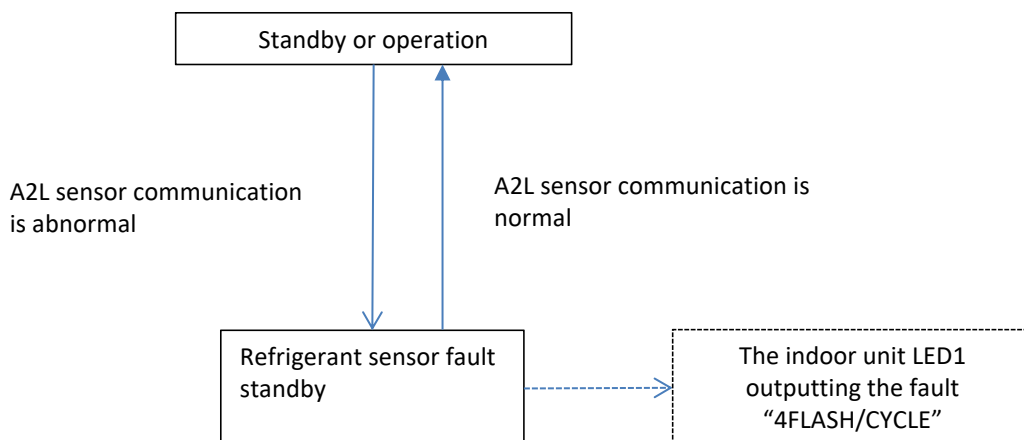
(1) Refrigerant leakage fault in indoor unit



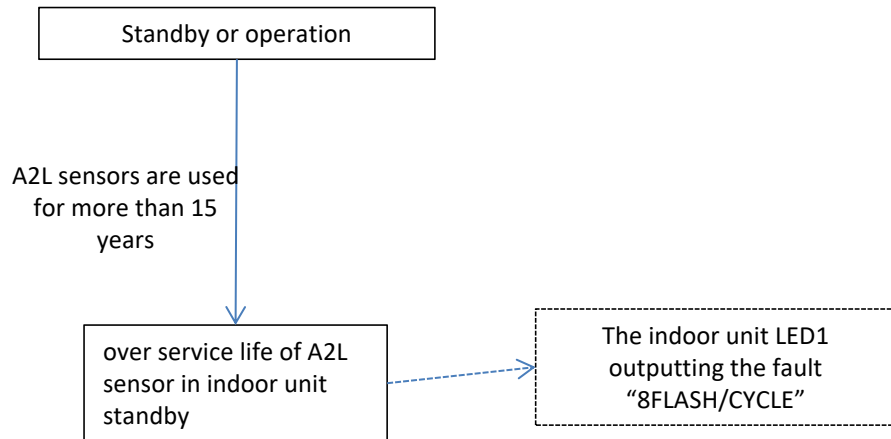
(2) A2L refrigerant sensor fault (A2L sensor)



(3) A2L sensor communication fault (A2L sensor)

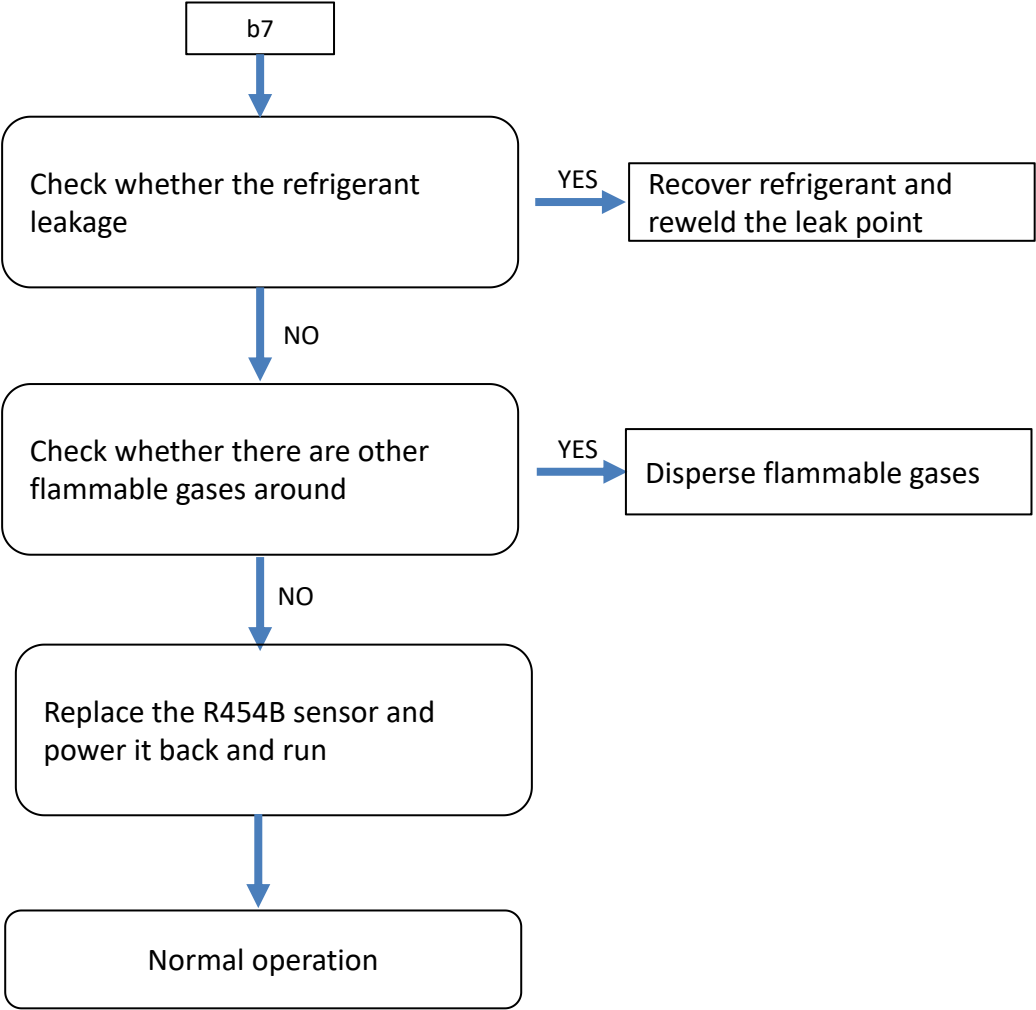


(4) A2L sensor over service life in indoor unit



Faulty code	<i>Keep flashing</i>
Model	All
Name	Refrigerant leakage fault
Classify	Refrigerant leakage
Possible cause	<ul style="list-style-type: none">• Refrigerant leakage

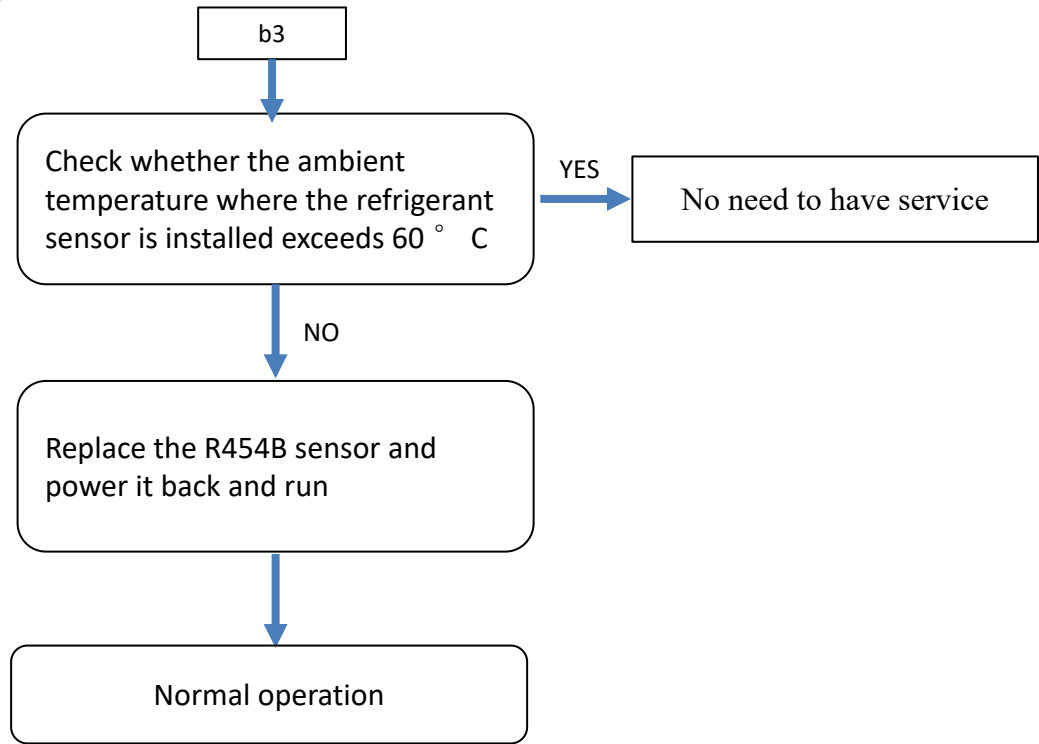
Troubleshooting



6. ID Unit fault troubleshooting

Faulty code	<i>3 flash/cycle</i>
Model	All
Name	R454B sensor fault in IDU
Classify	Sensor fault
Possible cause	<ul style="list-style-type: none">• Sensors failed• Beyond the normal operating temperature range

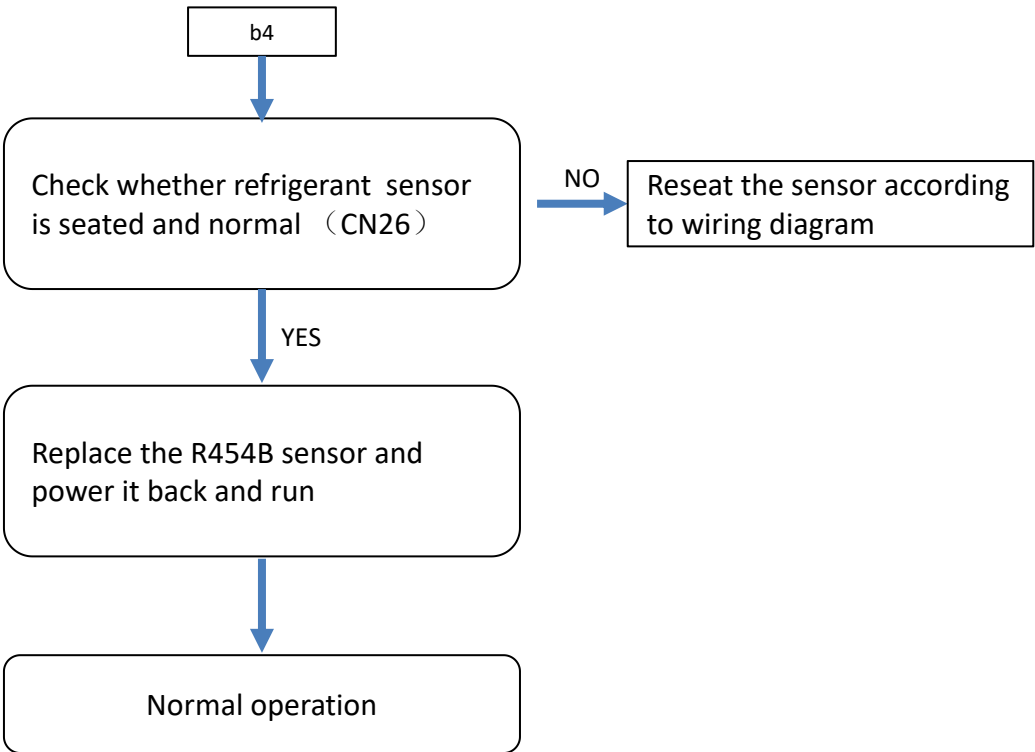
Troubleshooting



6. ID Unit fault troubleshooting

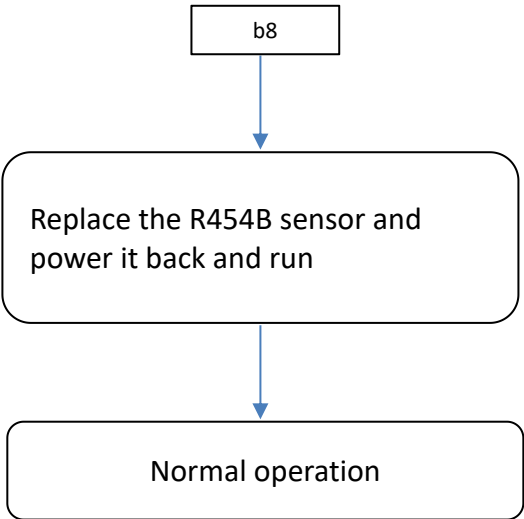
Faulty code	<i>4 flash/cycle</i>
Model	IDU
Name	R454B sensor communication fault in IDU
Classify	Electric issue
Possible cause	<ul style="list-style-type: none">· refrigerant sensor line connection in IDU abnormal: refrigerant sensor signal line in IDU is not properly plugged (CN26)· Refrigerant sensor in IDU abnormal: damaged

Troubleshooting

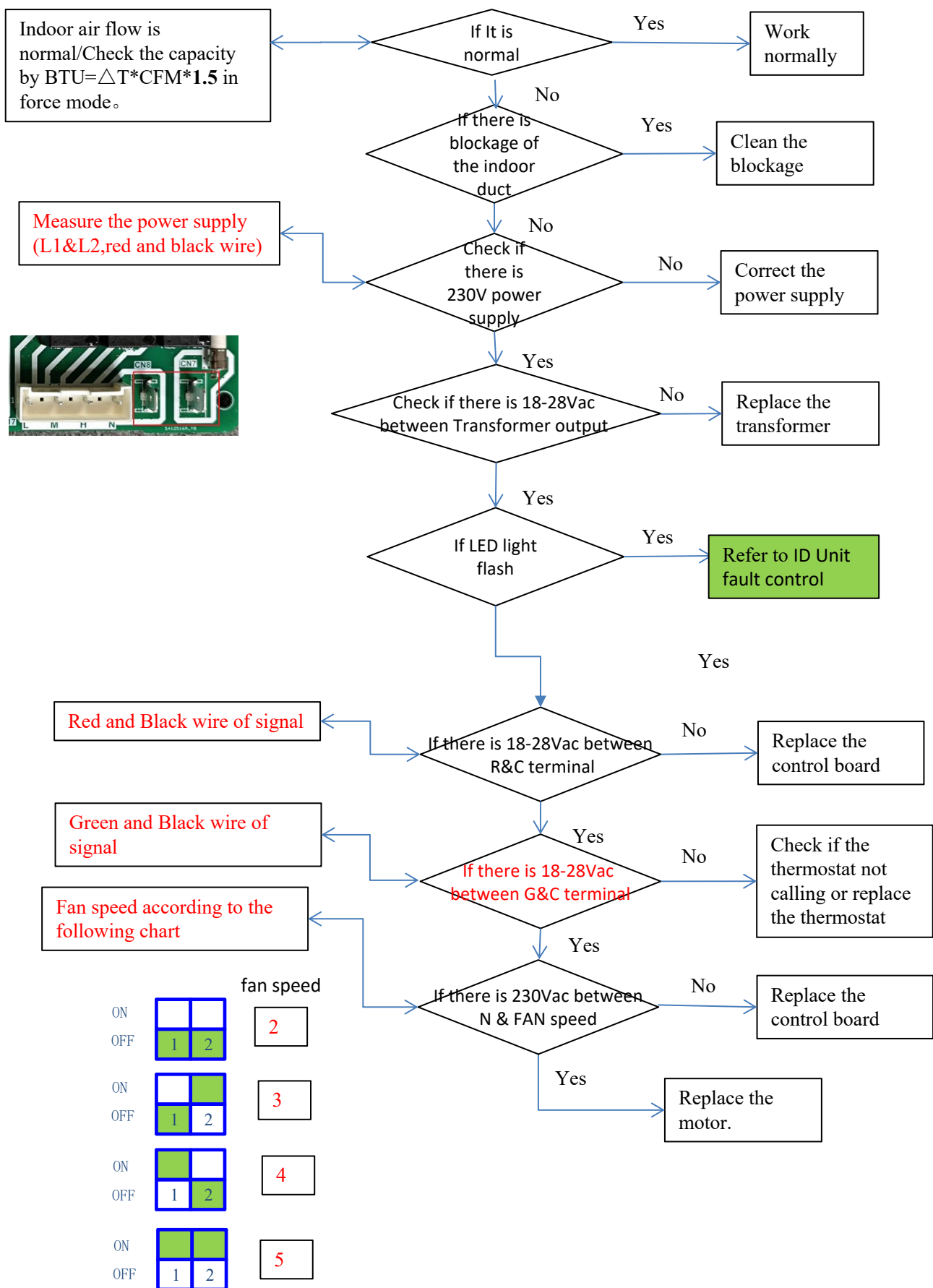


Faulty code	8 flash/cycle
Model	All
Name	R454B sensor over service life
Classify	Sensor fault
Possible cause	<ul style="list-style-type: none">• Over service

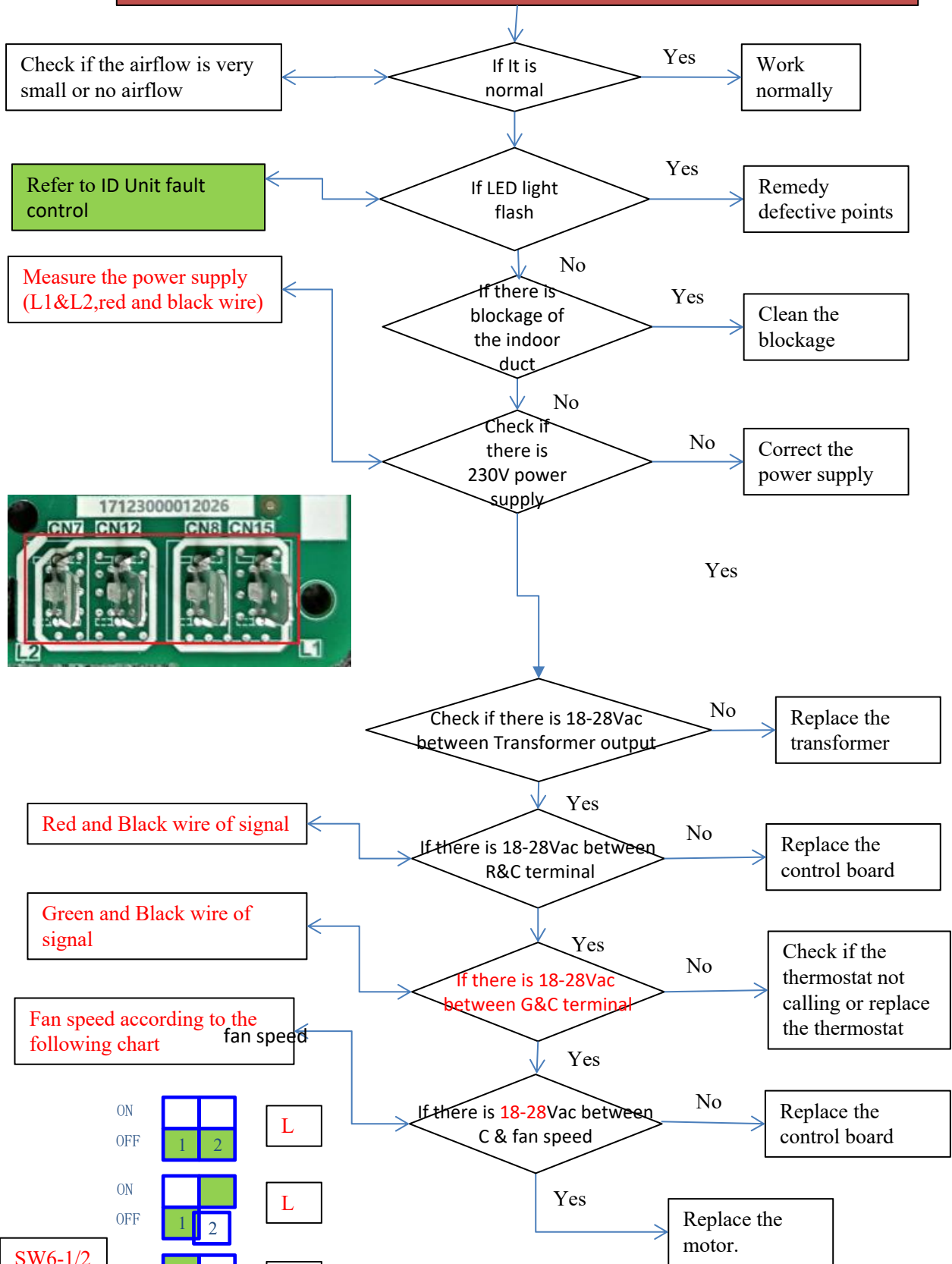
Troubleshooting



Check for indoor PSC unit status



Indoor air flow:

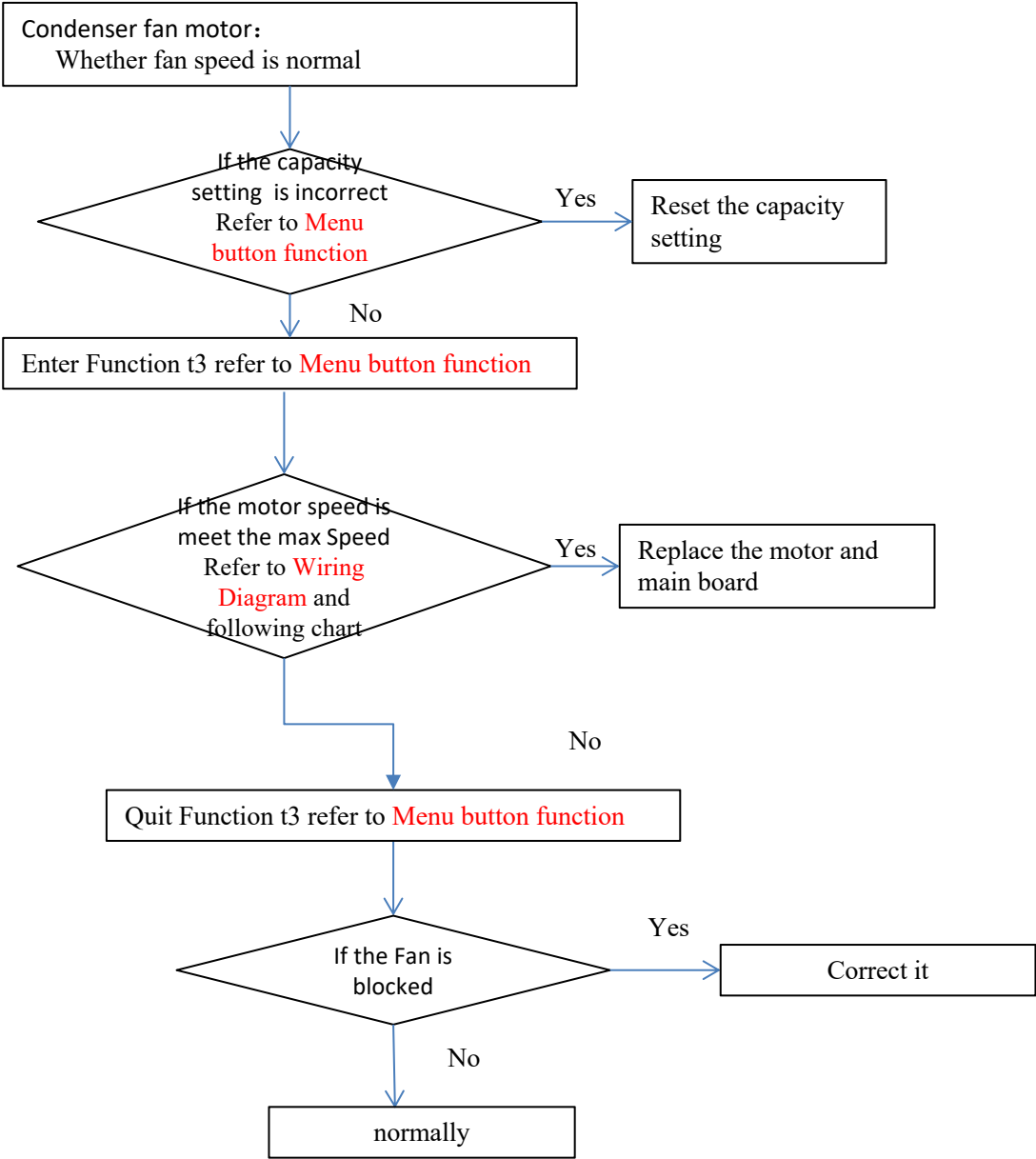
Indoor air flow is normal/Check the capacity by $BTU = \Delta T * CFM * 1.5$ in force mode


Fan speed according to the following chart

ON	<div><div></div><div></div></div>		L
OFF	<div><div>1</div><div>2</div></div>		L
ON	<div><div></div><div></div></div>		L
OFF	<div><div>1</div><div>2</div></div>		L
ON	<div><div></div><div></div></div>		M
OFF	<div><div>1</div><div>2</div></div>		M
ON	<div><div></div><div></div></div>		H
OFF	<div><div>1</div><div>2</div></div>		H

SW6-1/2

Check for Condenser fan motor Speed



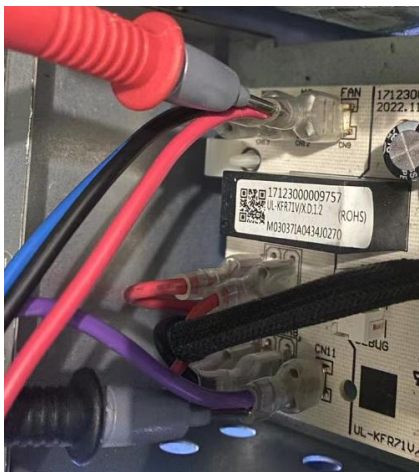
CAPACITY SETTING	MODEL	18K 1.5TON	24K 2TON	30K 2.5TON	36K 3TON	42K 3.5TON	48K 4TON	60K 5TON	61K 5TON
	15.2AC FIN	010,0	001,0	001,0	010,1	011,1	100,1	100,1	100,1
	15.2AC MC	010,0	001,0	010,1	010,1	011,1	100,1	100,1	/
	15.2HP	011,0	001,0	001,0	010,1	011,1	100,1	100,1	100,1

Capacity setting	0010	0100	0110	0101	0111	1001
Max Speed	850	930	980	930	980	1050

PSC Fan check

If the PSC fan motor doesn't run properly,

1. Measure the motor input voltage, use multi-meter to measure voltage between terminals **FAN**(on board) and **CN11**(on transformer) , the normal voltage should be around 220V AC.
2. Measure resistance of motor windings, between **COM&HIGH**, **COM&MEDIUM**, **COM&LOW**, their normal resistance value should be 5~100 Ω (depends on different models).



Measure input voltage to motor

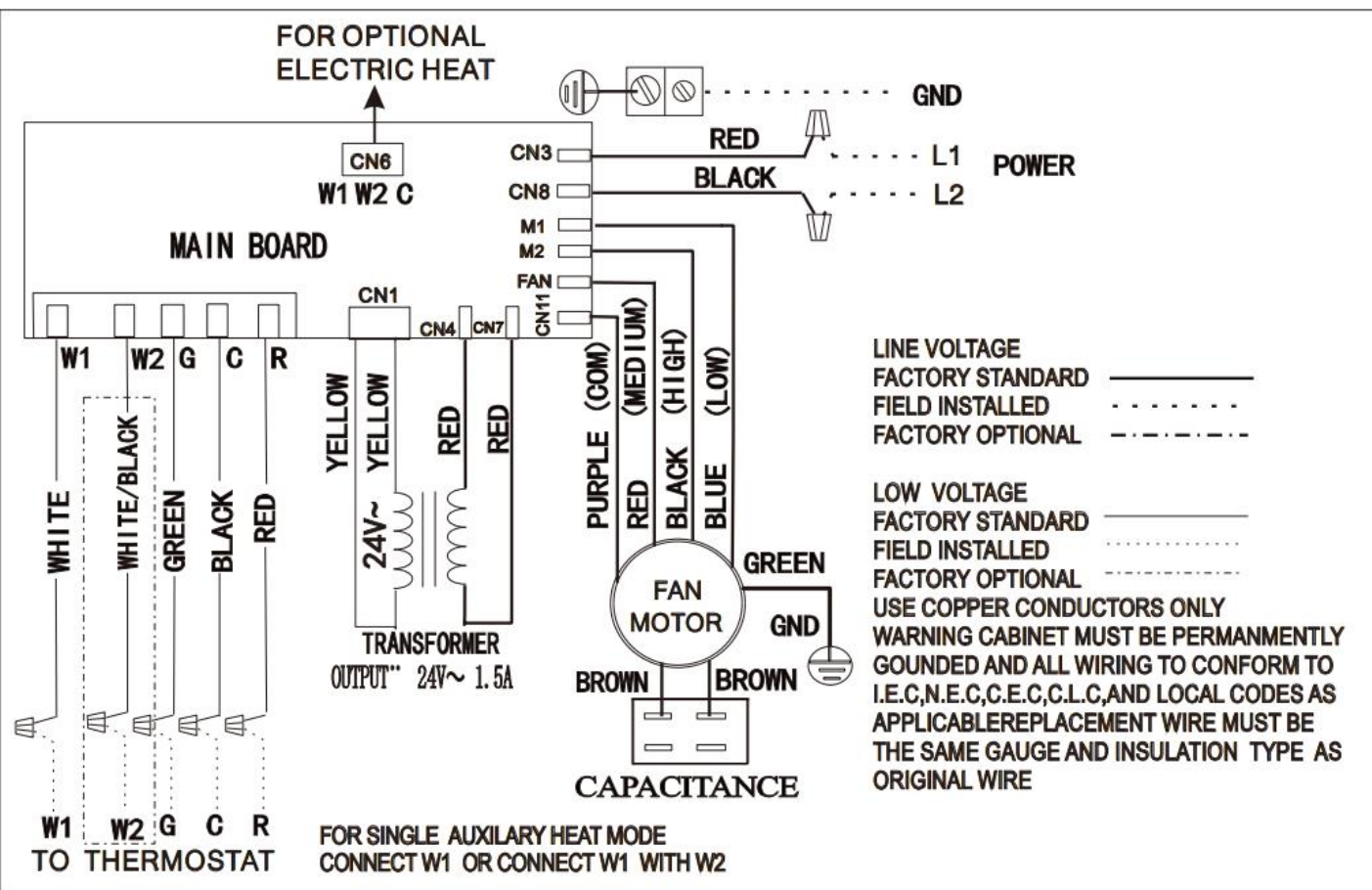


Example: Measure resistance of motor winding

PSC Fan check

If the PSC fan motor doesn't run properly,

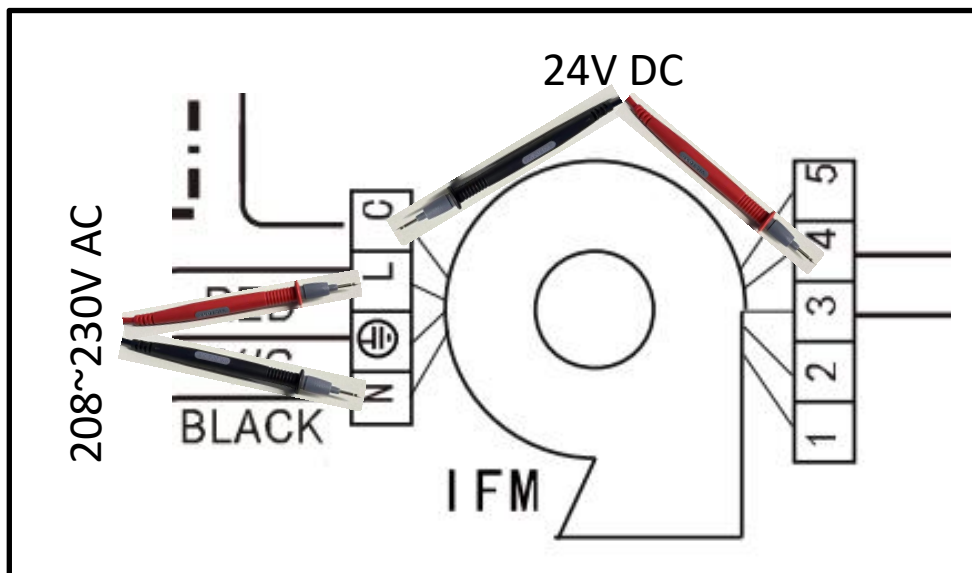
3. Measure the capacitor: discharged the capacitor then disconnect it then measure, it's normal value is nominal capacitance $\pm 20\%$.



ECM Fan check

If the ECM fan motor doesn't run properly,

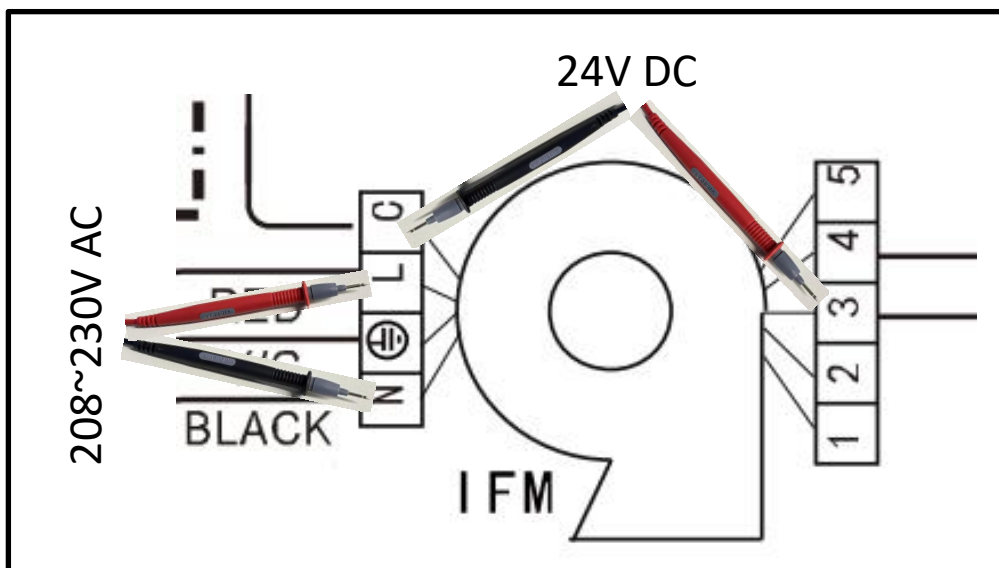
1. Measure the motor speed signal, use multi-meter to measure voltage between terminals **C&3** or **C&4**, the normal voltage should be 24V DC when the fan turns on.



When terminal 4 energized

OR

(Depends on terminal 3 or 4 energized)

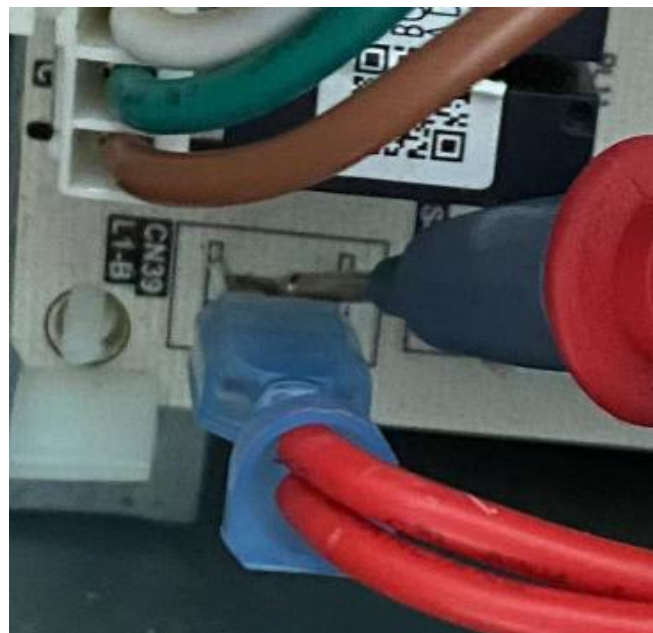


When terminal 3 energized

ECM Fan check

If the ECM fan motor doesn't run properly,

2. Measure the motor input voltage, use multi-meter to measure voltage between terminals **CN39**(on board) and **COM**(on transformer) , the normal voltage should be around 220V AC.
3. Measure the resistance of motor winding, the normal resistance value should be 5~100Ω



Control Board Replacement



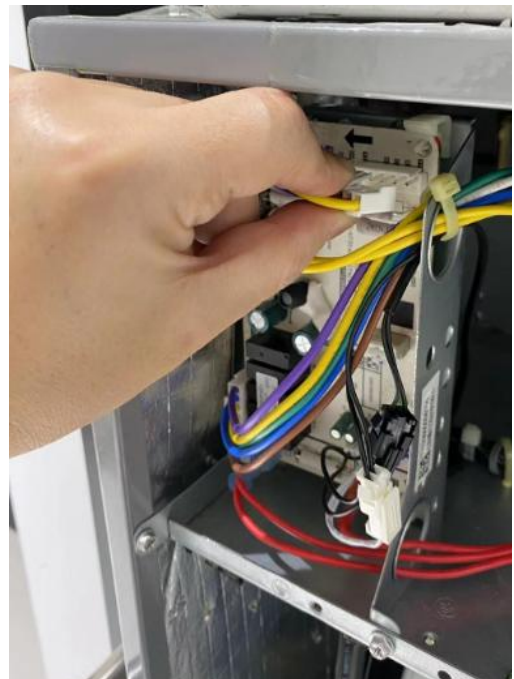
1. Remove front panel screws



2. Remove front panel

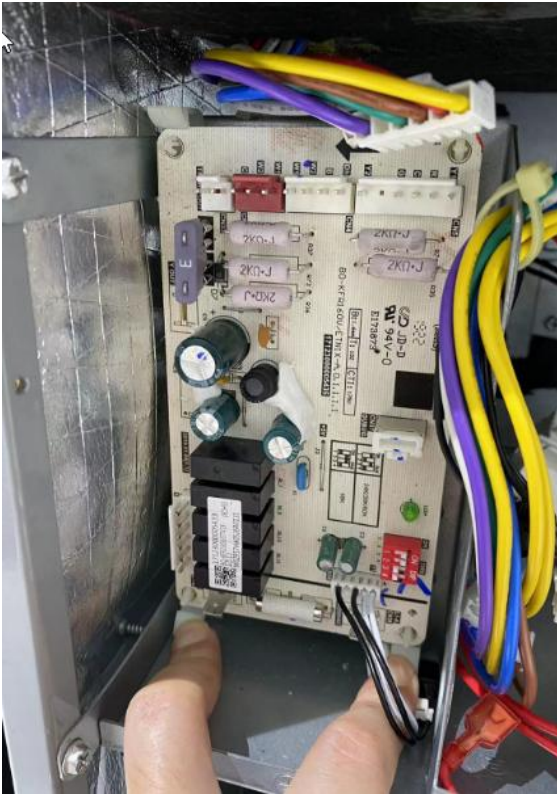


3. Take picture of wiring

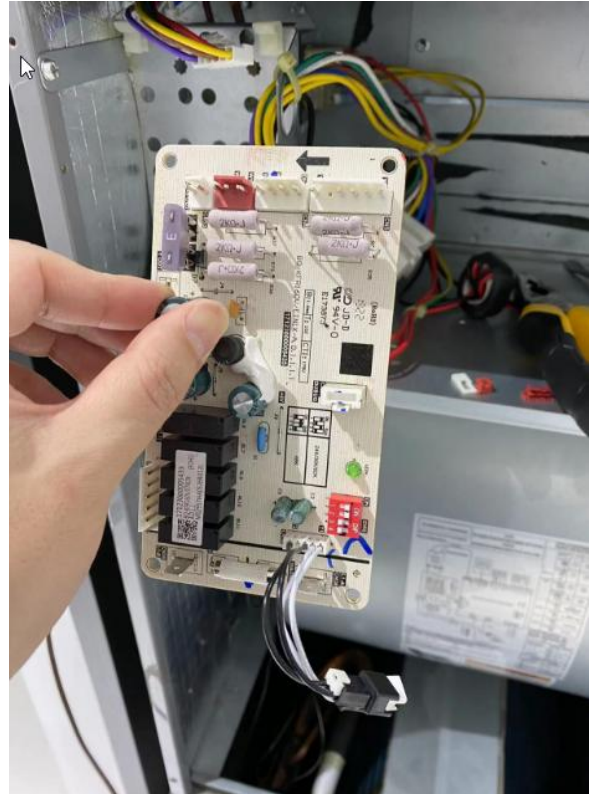


4. Detach all wires

Control Board Replacement



5. Press the fixture and loosen the board



6. Take out the board



7. Install a new board, set the capacity dip-switch per the wire diagram on the unit.

Refrigerant sensor repair and replacement guidelines separately

Remove the screws that fix the Refrigerant sensor and replace the Refrigerant sensor.
Reuse screw to secure the Refrigerant sensor.



Use zip cable ties to reattach the sensor wire body to the left side of the Refrigerant sensor and the wire buckle.



Instructions for replacing Refrigerant sensor during reverse installation of evaporators

Remove the screws that secure the water collection tray assembly, extract the evaporator components from the box, reverse the evaporator components by 180 degrees, and push them back into the unit along the guide rails on both sides of the unit.

Remove the screws that fix the Refrigerant sensor and replace the Refrigerant sensor.
Reuse screw to secure the Refrigerant sensor.

Use zip cable ties to reattach the sensor wire body to the left side of the Refrigerant sensor and the wire buckle.

