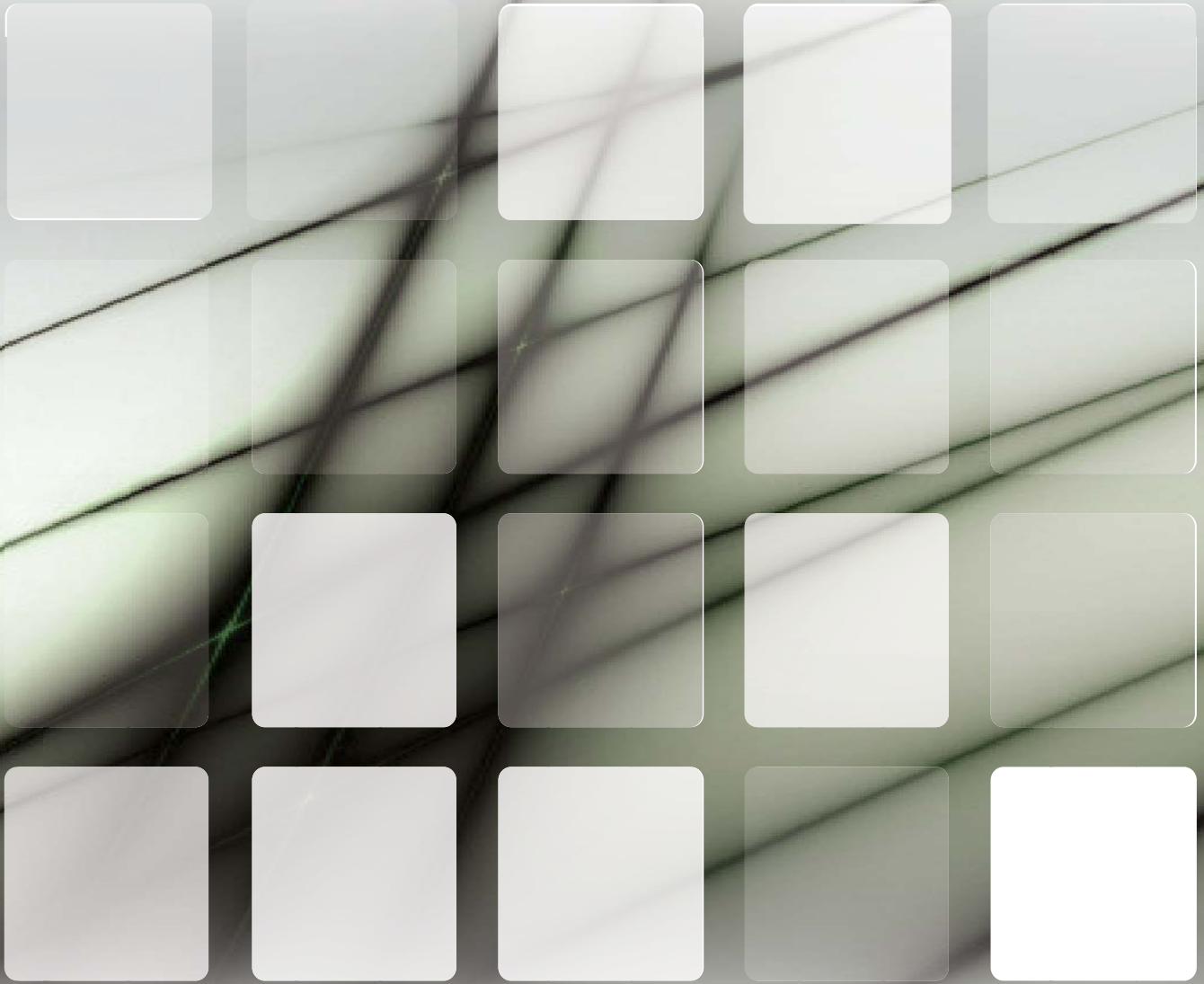


IEWB/ICHB Series

19 SEER Certified Mini Split

Service Manual

208~230V/1/60Hz



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1. Safety Precautions

Read Safety Precautions Before Installation

Incorrect installation due to ignoring instructions can cause serious damage or injury.

The seriousness of potential damage or injuries is classified as either a WARNING or CAUTION.



Warning

This symbol indicates that ignoring instructions may cause death or serious injury.



Caution

This symbol indicates that ignoring instructions may cause moderate injury to you or damage to your appliance or other property.



Warning

This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.

I. Installation Warnings

- Ask an authorized dealer to install this air conditioner. Inappropriate installation may cause water leakage, electric shock, or fire.
- All repairs, maintenance and relocation of the unit must be performed by an authorized service technician. Inappropriate repairs can lead to serious injury or product failure.

II. Warnings for product use

- If an abnormal situation arises (like a burning smell), immediately turn off the unit and pull the power plug.
- Call your dealer for instructions to avoid electric shock, fire or injury.
- Do not insert fingers, rods or other objects into the air inlet or outlet. This may cause injury, since the fan may be rotating at high speeds.
- Do not use flammable sprays such as hair spray, lacquer or paint near the unit. This may cause fire or combustion.
- Do not operate the air conditioner in places near or around combustible gases. Emitted gas may collect around the unit and cause explosion.
- Do not operate the air conditioner in a wet room (e.g., bath room or laundry room). This can cause electrical shock and cause the product to deteriorate.
- Do not expose your body directly to cool air for a prolonged period of time.

III. Electrical Warnings

- Only use the specified power cord. If the power cord is damaged, it must be replaced by the manufacturer or certified service agent.
- Keep power plug clean. Remove any dust or grime that accumulates on or around the plug. Dirty plugs can cause fire or electric shock.
- Do not pull power cord to unplug unit. Hold the plug firmly and pull it from the outlet. Pulling directly on the cord can damage it, which can lead to fire or electric shock.
- Do not use an extension cord, manually extend the power cord, or connect other appliances to the same outlet as the air conditioner. Poor electrical connections, poor insulation, and insufficient voltage can cause fire.

IV. Cleaning and Maintenance Warnings

- Turn off the device and pull the plug before cleaning. Failure to do so can cause electrical shock.
- Do not clean the air conditioner with excessive amounts of water.
- Do not clean the air conditioner with combustible cleaning agents. Combustible cleaning agents can cause fire or deformation.



Caution

- If the air conditioner is used together with burners or other heating devices, thoroughly ventilate the room to avoid oxygen deficiency.
- Turn off the air conditioner and unplug the unit if you are not going to use it for a long time.
- Turn off and unplug the unit during storms.
- Make sure that water condensation can drain unhindered from the unit.
- Do not operate the air conditioner with wet hands. This may cause electric shock.
- Do not use device for any other purpose than its intended use.
- Do not climb onto or place objects on top of the outdoor unit.
- Do not allow the air conditioner to operate for long periods of time with doors or windows open, or if the humidity is very high.

2 Specifications

2.1 Model Reference

Refer to the following table to determine the specific indoor and outdoor unit model number of your purchased equipment.

Cooling only

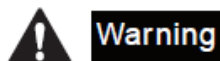
| Indoor unit model | Outdoor unit model | Capacity (Btu/h) | Power supply |
|----------------------|----------------------|------------------|-------------------|
| IEWB009I1A-CWJ026CWA | ICHB009I1A-CTJ026GFA | 9K | 115V/60Hz/1Ph |
| IEWB012I1A-CWJ035CWA | ICHB012I1A-CTJ035GFA | 12K | |
| IEWB009I2A-CWJ026CWA | ICHB009I0A-CTJ026GFA | 9K | 208~230V/60Hz/1Ph |
| IEWB012I2A-CWJ035CWA | ICHB012I0A-CTJ035GFA | 12K | |
| IEWB018I2A-CWJ053CWA | ICHB018I0A-CTJ053GFA | 18K | |
| IEWB024I2A-CWJ070CWA | ICHB024I0A-CTJ070GFA | 24K | |

Heat pump

| Indoor unit model | Outdoor unit model | Capacity (Btu/h) | Power supply |
|----------------------|----------------------|------------------|-------------------|
| IEWB009J1A-CWJ026CWA | ICHB009J1A-CTJ026GFA | 9K | 115V/60Hz/1Ph |
| IEWB012J1A-CWJ035CWA | ICHB012J1A-CTJ035GFA | 12K | |
| IEWB009J0A-CWJ026CWA | ICHB009J0A-CTJ026GFA | 9K | 208~230V/60Hz/1Ph |
| IEWB012J0A-CWJ035CWA | ICHB012J0A-CTJ035GFA | 12K | |
| IEWB018J2A-CWJ053CWA | ICHB018J0A-CTJ053GFA | 18K | |
| IEWB024J0A-CWJ070CWA | ICHB024J0A-CTJ070GFA | 24K | |

2 Troubleshooting

2.1 Safety caution



- Be sure to turn off all power supplies or disconnect all wires to avoid electric shock. While checking indoor/outdoor PCB, please equip oneself with antistatic gloves or wrist strap to avoid damage to the board.
- Electricity remains in capacitors even when the power supply is off.
- Ensure the capacitors are fully discharged before troubleshooting.
(Test the voltage between P and N on back of the main PCB with multimeter. If the voltage is lower than 36V, the capacitors are fully discharged.)

2.2 Error diagnosis and solution without error code

Some phenomena are easily thought as error, but actually not.

| Phenomena | Reasons |
|--|--|
| The unit can't be restarted just after shut down. (RUN lamp is ON) | Restart stop for 3 minutes after shut down to protect the unit. Three minutes protection timer incorporated in the microcomputer actuates automatically. Except that power is connected, this function does not actuate. |
| Air is not blown out at starting of heating operation. | Air blow is stopped to prevent blowing out cold air when the indoor heat exchanger is not warmed enough. (2 to 5 min) |
| Air is not blown out for 6 to 12 min in heating mode | When outdoor temperature is low and humidity is high, the unit sometimes performs defrosting mode automatically. Please wait. During defrosting mode, water or steam are raising from the outdoor unit. |
| The unit will not stop blowing out the air immediately after shut down at cooling operation (some model) | The drying function may be activated, please wait for the end of the operation or use the remote control to turn off the drying function. The louver will not close down until after 30 seconds. |
| Air is not blown out at dehumidification operation. | Indoor fan is sometimes stopped to prevent moisture from evaporating and to save energy. |

| | |
|--------------------------------------|---|
| Mist is blown out. | When the room humidity is relatively high, the cooling operation or heating operation defrosting ends, the air outlet may blow out water mist, which is a normal physical phenomenon. |
| Water may on the air outlet grilles. | <ul style="list-style-type: none"> • When the ambient humidity is relatively high, water droplets will be generated in the air outlet, panel and other parts, which is a normal physical phenomenon; • Long-term cooling operation in an open space will produce water droplets, please close the doors and windows. • If the panel is not tightly closed, causing air leakage, water droplets may be generated on the panel. Please close the panel securely. |
| Stop after some time running | <ul style="list-style-type: none"> • Reach setting temperature • In defrosting mode • Timer OFF is set |
| Strange sound in indoor unit | <ul style="list-style-type: none"> • The dust filter accumulates too much dust. Please clean the dust filter in time; • When the plastic parts of the indoor unit expand and contract with heat, it may produce frictional sound. • After the "TURBO" function is turned on, the wind noise is loud. • The indoor unit panel is not closed tightly or the air inlet is obstructed. Please close the panel again or remove the obstruction of the air inlet. |
| Strange sound in outdoor unit | <ul style="list-style-type: none"> • The sound of refrigerant flowing when it is running or just stopped, which is a normal phenomenon. • After running for a period of time, a "puff" sound is made, which is the sound of the four-way valve reversing when the outdoor unit turns to defrosting mode, which is a normal phenomenon. |

2.3 Error code list

2.2.1 Indoor unit error code

| Definitions of malfunction | Error code |
|---|------------|
| Communication failure between indoor and outdoor unit | E1 |
| T1 room temperature sensor fault | E2 |
| T2 temperature sensor fault | E3 |
| T2B temperature sensor fault | E4 |
| Outdoor unit fault | E5 |
| Zero-crossing detection fault | E6 |
| EEPROM error | E7 |
| PG fan motor stall protection | E8 |
| Communication fault of wired controller | E9 |
| Room card port disconnected port | HC |

When it shows E5, press to show more error code.

| Definitions of malfunction | Error code |
|---|------------|
| Communication failure between indoor and outdoor unit | E2 |
| T4 ambient temperature sensor fault | E4 |
| T5 discharge temperature sensor fault | E5 |
| T3 condenser pipe temperature sensor fault | E6 |
| Indoor unit EEPROM error | E7 |
| AC over-voltage / under-voltage protection | E9 |
| Outdoor unit EEPROM error | E10 |
| Indoor unit fan motor fault | E11 |
| IPM temperature sensor fault | E12 |
| Outdoor unit fan motor fault | E2x |
| Compressor fault | H2x |
| PFC fault | H3x |

| | |
|--|-----|
| Primary / secondary over-current protection | P3 |
| High discharge temperature protection | P4 |
| High condenser temperature protection | P5 |
| IPM module fault | P6 |
| IDU anti-frosting protection | P7 |
| High IPM temperature protection | P8 |
| Outdoor unit fan motor stall protection | P9 |
| High evaporator temperature protection | P11 |
| DC bus low voltage protection | L1 |
| DC bus high voltage protection | L2 |
| MCE fault / sync / compressor start fault | L4 |
| Zero speed protection | L5 |
| Phase sequence error protection | L7 |
| Compressor stall fault | L8 |
| Frequency limitation because of voltage | LA |
| Frequency limitation because of evaporator temperature | LB |
| Frequency limitation because of condenser temperature | LC |
| Frequency limitation because of discharge temperature | LD |
| Frequency limitation because of high IPM temperature | LE |
| Frequency limitation because of current | LF |

2.4 Spot check

- Method 1: After powering on 5s, long press the button in indoor unit PCB for 5s, to enter spot check. And then short press this button to read more parameters.
- Method 2: After powering on, press “up & down swing” and “left & right swing” button alternately 5 times within 10 seconds to enter spot check. Press “up & down swing” and “left & right swing” button to read more parameters.
- Spot check table:

| No. | Content |
|-----|--|
| 0- | Setting temperature |
| 1- | Indoor temperature (T1), |
| 2- | Indoor unit evaporator temperature (T2 or T2B) |
| 3- | EEPROM code |
| 4- | Software code |
| 5- | Outdoor unit error code |
| 6- | Outdoor unit running frequency |
| 7- | Outdoor unit condenser temperature (T3) |
| 8- | Outdoor ambient temperature (T4) |
| 9- | Indoor unit fan speed (f0 means 1500rpm, a1 means 1010rpm) |

2.4 Troubleshooting by error code

Indoor unit error

2.4.1 E1 (IDU) Communication failure between indoor and outdoor unit

Description: the indoor unit didn't receive feedback from outdoor unit within 1 minute.

Possible reason:

- Bad connection of communication wire
- Fault indoor or outdoor unit PCB

Troubleshooting and repair:

- Check if the wiring connection between outdoor and indoor unit is loose.
- Power off and then repower on the unit after 3 minutes. If error code disappear, problem is solved. If not, go to next step.
- Measure the DC voltage between P and N on back of the main PCB with multi meter.

2.4.2 E2, E3, E4 (IDU) temperature sensor fault

Description: the sampling voltage is lower than 0.06V or higher than 4.94V.

Possible reason:

- Open circuit or short circuit of relevant port.
- Faulty temperature sensor

-
- Faulty PCB

Troubleshooting and repair:

- a) Check the connection between temperature sensor and PCB.
- b) Measure the resistance of sensor, and compare it with appendix table.
- c) If above items are no problem, replace a new PCB.

2.4.3 E6 (IDU) Zero-crossing detection fault

Description: When PCB does not receive zero crossing signal feedback for 4 minutes or the zero crossing signal time interval is abnormal.

Possible reason:

- Wrong connection
- Faulty PCB

Troubleshooting and repair:

- a) Check the wire connections one by one according to wiring diagram.
- b) Check power supply.
- c) Change a new indoor unit PCB.

2.4.4 E7 (IDU) EEPROM error

Description: Indoor PCB main chip does not receive feedback from EEPROM chip.

Possible reason:

- Faulty indoor unit PCB

Troubleshooting and repair:

- a) Cut off the power supply and then repower on the unit after 3 minutes.
- b) If the error still occurs, change a new PCB.

2.4.5 E8 (IDU) PG fan motor stall protection

Description: When the indoor fan speed is below 300rpm or over 2100rpm for 50s, the unit will stop and show E8 error.

Possible reason:

- Wrong wires connection
- Faulty fan assembly
- Faulty fan motor
- Faulty PCB

Troubleshooting and repair:

- a) Cut off the power supply and then repower on the unit after 3 minutes. If it still has problem, go to next step.

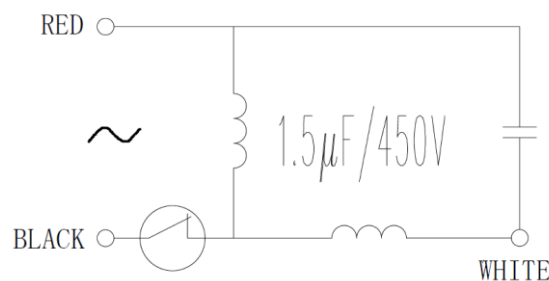
- b) Cut off the power supply and rotate the fan blade by hand. If it can't rotate smoothly, check if there is any block. Otherwise, go to next step.
- c) Check the wiring of fan motor.
- d) Measure the voltage of fan motor from PCB. If the parameters are normal, replace a new fan motor. If not, replace indoor unit PCB.

Note:

- DC fan motor voltage: Measure the voltage when the unit is in standby.

| No. | Color | Signal | Voltage |
|-----|--------|--------|----------|
| 1 | Red | Vdc | 150~340V |
| 2 | -- | -- | |
| 3 | Black | GND | 0V |
| 4 | White | Vcc | 14~17.5V |
| 5 | Yellow | Vsp | 0~5.6V |
| 6 | Blue | FG | 14~17.5V |

- AC fan motor voltage: Power on and set the unit running in fan mode at high fan speed. After running for 15 seconds, measure the voltage of red and black wire. If the value of the voltage is less than 100V (208~240V power supply), the PCB must has problems and need to be replaced.



2.4.6 E9 (IDU) Communication fault of wired controller

Troubleshooting and repair:

- a) Check the connection between wired controller and indoor PCB.
- b) Change another wired controller.
- c) Change a new indoor PCB.

2.4.7 HC Room card port disconnected port

Possible reason:

- Short circuit is not connected in CN2 port

-
- Faulty problem

Troubleshooting and repair:

- a) Check if there is a short circuit in CN2 port.
- b) Change a new PCB.

Outdoor unit error

2.4.8 E2 (ODU) Communication failure between indoor and outdoor unit

Same as 5.4.1

2.4.9 E4, E5, E6 (ODU) temperature sensor fault

Same as 5.4.2

2.4.10 E9 (ODU) AC over-voltage / under-voltage protection

Description: Abnormal increases or decreases in voltage are detected by checking the specified voltage of detection circuit.

Possible reason:

- Power supply error
- Refrigerant system leakage or block
- Faulty outdoor unit PCB

Troubleshooting and repair:

- a) Check the power supply and measure the voltage.
- b) Repower on the unit and measure the voltage between P and N. When the unit is in standby, is the voltage between P and N about 310VDC, 340VDC or 380VDC? When start up the unit, is it in 220V~400V? If not, replace a new outdoor PCB. If yes, go to next step.
- c) Check the reactor.

2.4.11 E10 (ODU) Outdoor unit EEPROM error

Same as 5.4.4

2.4.12 E11 (ODU) Indoor unit fan motor fault

Please refer to 5.4.5

2.4.13 E12 (ODU) IPM temperature sensor fault

Description: the sampling voltage is not at 5V

Possible reason:

- Power supply error

-
- Refrigerant system leakage or block
 - Faulty outdoor unit PCB
 - Connection problem

Troubleshooting and repair:

- a) Check the power supply.
- b) Check the fastening screws on the PCB and IPM radiator. If they are not fixed tightly, tighten the screws and apply silicon grease. Otherwise, go to next step.
- c) Change a new outdoor unit PCB.

2.4.14 E2x Outdoor unit fan motor fault

Description: When the chip detects the fan IPM overcurrent, it reports a fault

Troubleshooting and repair:

- a) Cut off power supply and then rotate the fan blade by hand, to check whether the fan is blocked or the screws are not tightened.
- b) Check the connection between fan motor and PCB
- c) Change a new PCB

2.4.15 H2x Compressor fault

Description: An abnormal inverter compressor drive is detected by a special detection circuit, including communication signal detection, voltage detection, current detection, compressor rotation speed signal detection and so on.

Possible reason:

- Wrong wiring connection
- IPM malfunction
- Compressor malfunction
- Faulty outdoor unit PCB
- Outdoor unit fan motor

Troubleshooting and repair:

- a) Check the wiring between PCB and compressor according to wiring diagram.
- b) Check the outdoor unit fan and outdoor unit ventilation.
- c) Check the compressor resistance
- d) If all are no problem, change the outdoor PCB.

2.4.16 P3 Primary / secondary over-current protection

Description: detected current is higher than setting value.

Possible reason:

-
- Refrigerant is too much
 - Liquid side is block
 - Heat exchanging in outdoor unit is not good
 - Compressor malfunction

2.4.17 P4 High discharge temperature protection

Description: discharge temperature is higher than 115°C.

Possible reason:

- Lack of refrigerant
- High ambient temperature or heat exchanging in condenser side is bad
- There is air or N2 or water in refrigerant system
- Block in low pressure side

Troubleshooting and repair:

- Check the refrigerant charging record and check if there is any leakage point.
- Whether it is too dirty in outdoor coil? Improve the ventilation condition.
- Check whether the fan motor can work normally.

2.4.18 P5 High condenser temperature protection

Description: in cooling mode or dry mode, the T3 temperature is higher than setting value.

Possible reason:

- Bad ventilation
- Faulty temperature sensor
- Faulty PCB

Troubleshooting and repair:

- Check the heat exchange of outdoor unit condenser is good or not.
- Check the temperature sensor resistance.

2.4.19 P6 IPM module fault

Description: Below table shows detailed error code about P6.

| | |
|---|----|
| DC bus low voltage protection | L1 |
| DC bus high voltage protection | L2 |
| MCE fault / sync / compressor start fault | L4 |
| Zero speed protection | L5 |

| | |
|---------------------------------|----|
| Phase sequence error protection | L7 |
| Compressor stall fault | L8 |

Possible reason:

- Wrong wire connection
- IPM malfunction
- Compressor malfunction
- Faulty PCB

Troubleshooting and repair:

- a) Check the wiring between PCB and compressor.
- b) Check the outdoor unit fan and ventilation.
- c) Check the IPM in PCB.
- d) Check the resistance of compressor.
- e) If all are normal, change a new PCB.

2.4.20 P7 IDU anti-frosting protection

Description: indoor unit evaporator temperature T2 is lower than 0°C.

Possible reason:

- Filter or evaporator is dirty
- Indoor fan motor can't work normally or the flap is closed

Troubleshooting and repair:

- a) Clear the filter and evaporator
- b) Check the fan motor

2.4.21 P8 High IPM temperature protection

Description: the detected temperature of IPM is higher than 100°C.

Possible reason:

- Power supply issue
- System leakage or block
- Faulty outdoor unit PCB
- Connection problem

Troubleshooting and repair:

- d) Check the power supply.
- e) Check the fastening screws on the PCB and IPM radiator. If they are not fixed tightly, tighten the screws and apply silicon grease. Otherwise, go to next step.

f) Change a new outdoor unit PCB.

2.4.22 P9 Outdoor unit fan motor stall protection

Please refer to 5.4.5

2.4.23 P11 High evaporator temperature protection

Description: Indoor unit evaporator temperature (T2) is higher than 65°C.

Possible reason:

- Abnormal T2 temperature sensor
- Faulty 4-way valve
- Bad ventilation
- Refrigerant is not enough

Troubleshooting and repair:

- a) Measure the resistance of T2 sensor
- b) Check the 4-way valve connection. If unit is in heating mode, there is a 220V output in 4-way valve port.
- c) Check if evaporator is too dirty.
- d) Confirm the refrigerant volume.



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