Table of Contents
1. Precaution
2. Part Names And Functions
3. Specification
4. Dimension
5. Refrigerant Cycle Diagram
6. Wiring Diagram
7. Installation Details
8. Operation Characteristics
9. Electronic Function
10. Troubleshooting
11. Exploded View
12. Disassembly Instructions
## CONTENTS

1. Precaution .......................................................................................................................... 1  
   1.1 Safety Precaution......................................................................................................... 1  
   1.2 Warning...................................................................................................................... 1  

2. Part Names And Functions .................................................................................................. 4  
   2.1 Model Names of Indoor/Outdoor units ...................................................................... 4  
   2.2 Part names of Indoor/Outdoor units .......................................................................... 5  
   2.3 Functions of Indoor/Outdoor units ............................................................................. 6  

3. Dimension .......................................................................................................................... 8  
   3.1 Indoor Unit................................................................................................................ 8  
   4.2 Outdoor Unit.............................................................................................................. 10  

4. Refrigerant Cycle Diagram ............................................................................................... 12  

5. Wiring Diagram ................................................................................................................ 14  
   5.1 Indoor Unit................................................................................................................ 14  
   5.2 Outdoor Unit.............................................................................................................. 17  

6 Installation Details ........................................................................................................... 21  
   6.2 Connecting the cables............................................................................................... 21  
   6.3 Pipe length and the elevation .................................................................................... 21  
   6.4 Installation for the first time ..................................................................................... 23  
   7.5 Adding the refrigerant after running the system for many years ............................ 24  
   7.6 Re-installation while the indoor unit need to be repaired ....................................... 24  
   7.7 Re-installation while the outdoor unit need to be repaired ...................................... 25  

7. Operation Characteristics ................................................................................................. 27  

8. Electronic Function ........................................................................................................... 28  
   8.1 Abbreviation ............................................................................................................. 28  
   8.2 Display function ......................................................................................................... 28  
   8.3 Main Protection ......................................................................................................... 29  
   8.4 Operation Modes and Functions .............................................................................. 30  

9. Troubleshooting ............................................................................................................. 36  
   9.1 Indoor Unit Error Display ......................................................................................... 37  
   9.2 Outdoor unit error display ........................................................................................ 38  
   9.3 Diagnosis and Solution ............................................................................................ 42  

10. Exploded View ............................................................................................................... 63  
    10.1 Indoor unit ............................................................................................................. 63  
    11.2 Outdoor unit........................................................................................................... 63
1. Precaution

1.1 Safety Precaution

 To prevent injury to the user or other people and property damage, the following instructions must be observed carefully.
 Incorrect operation due to ignoring instructions will cause harm or damage.
 Before servicing the unit, be sure to read this service manual entirely.

1.2 Warning

 Installation
 Do not use a defective or underrated circuit breaker. Use this appliance on a dedicated circuit.
There is risk of fire or electric shock.
 For electrical work, contact the dealer, seller, a qualified electrician, or an authorized service center.
Do not disassemble or repair the product, there is risk of fire or electric shock.
 Always ground the product.
There is risk of fire or electric shock.
 Install the panel and the cover of control box securely.
There is risk of fire of electric shock.
 Always install a dedicated circuit and properly rated breaker.
Improper wiring or installation may cause electric shock.
 Use the correctly rated breaker or fuse.
There is risk of fire or electric shock.
 Do not modify or extend the power cable.
There is risk of fire or electric shock.
 Do not install, remove or reinstall the unit by yourself (End User).
There is risk of fire, electric shock, explosion, or injury.
 Be cautious when unpacking and installing the product.

Sharp edges could cause injury, be especially careful of the case edges and the fins on the condenser and evaporator.
 For installation, always contact the dealer or an authorized service center.
 Do not install the product on weak or defective structures or stands.
 Be sure the installation area does not deteriorate with age.
If the base collapses, the air conditioner could fall with it, causing property damage, product failure, and personal injury.
 Do not let the air conditioner run for a long time when the humidity is very high and a door or a window is left open.
 Take care to ensure that power cable could not be pulled out or damaged during operation.
There is risk of fire or electric shock.
 Do not place anything on the power cable.
There is risk of fire or electric shock.
 Do not plug or unplug the power supply during operation.
There is risk of fire or electric shock.
 Do not touch the product with wet hands during operation.
 Do not place a heater or other appliance near the power cable.
There is risk of fire and electric shock.
 Do not allow water to run into electrical parts.
It may cause fire, failure of the product, or electric shock.
 Do not store or use flammable gas or combustibles near the product.
There is risk of fire or failure of product.
 Do not use the product in a tightly closed space for a long time.
Oxygen deficiency could occur.
 When flammable gas leaks, turn off the gas and open a window for ventilation before turning the product on.
 If strange sounds or smoke comes from product, turn the breaker off or disconnect the power supply cable.
There is risk of electric shock or fire.

- Stop operation and disconnect the power during storm or hurricane. If possible, further secure the product before the hurricane arrives.
  
  There is risk of property damage, failure of product, or electric shock.

- Do not open the inlet grill of the product during operation. (Do not touch the electrostatic filter, if the unit is so equipped.)
  
  There is risk of physical injury, electric shock, or product failure.

- If the indoor section gets wet, contact an authorized service center.
  
  There is risk of fire or electric shock.

- Be cautious that water should not enter the product.
  
  There is risk of fire, electric shock, or product damage.

- Ventilate the product from time to time when operating it together with a nearby stove etc.
  
  There is risk of fire or electric shock.

- Turn the main power off when cleaning or maintaining the product.
  
  There is risk of electric shock.

- When the product will not be used for a long time, disconnect the power supply by turning off the breaker.
  
  There is risk of product damage or failure, or unintended operation.

- Take care to ensure that nobody could step on or fall onto the outdoor unit.
  
  This could result in personal injury and product damage.

**CAUTION**

- Always check several times for refrigerant leakage after installation or repairing the product.
  
  Low refrigerant levels may cause failure of product.

- Install the drain hose to ensure that water is drained away properly.
  
  A bad connection may cause water leakage.

- Keep perfect level when installing the product.
  
  To avoid vibration of water leakage.

- Do not install the product where the noise or hot air from the outdoor unit could disturb the neighbors.
  
  It may cause disturbance for your neighbors.

- Use two or more people to lift and transport the product.

- Do not install the product where it will be exposed to sea wind (salt spray) directly.
  
  It may cause corrosion on the product. Corrosion, particularly on the condenser and evaporator fins, could cause product malfunction or inefficient operation.

**Operational**

- Do not expose the skin directly to cool air for long time. (Do not sit in the path of the air draft).

- Do not use the product for special purposes, such as preserving foods, works of art etc. It is a consumer air conditioner, not a precision refrigeration system.
  
  There is risk of damage or loss of property.

- Do not block the inlet or outlet of air flow.

- Use a soft cloth to clean. Do not use harsh detergents, solvents, etc.
  
  There is risk of fire, electric shock, or damage to the plastic parts of the product.

- Do not touch the metal parts of the product when removing the air filter. They are very sharp.

- Do not step on or put anything on the product. (outdoor unit)

- Always insert the filter securely.

- Clean the filter every two weeks or more often if necessary.
  
  A dirty filter reduces the efficiency of the air conditioner and could cause product malfunction or damage.

- Do not insert hands or other objects through air inlet or outlet while the product is operating.

- Do not drink the condensate water drained from the product.
Use a firm stool or ladder when cleaning or maintaining the product. Be careful and avoid personal injury.

Replace the all batteries in the remote control with new ones of the same type. Do not mix old and new batteries or different types of batteries. There is risk of fire or explosion.

Do not recharge or disassemble the batteries. Do not dispose of batteries in a fire. They may burn or explode.

If the liquid from the batteries gets onto your skin or clothes, wash it well with clean water. Do not use the remote if the batteries have leaked.
# Part Names And Functions

## 2.1 Model Names of Indoor/Outdoor units

<table>
<thead>
<tr>
<th>Series</th>
<th>Capacity</th>
<th>Indoor units</th>
<th>Outdoor units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inverter</td>
<td>9k</td>
<td>WE009AMFI15CLD</td>
<td>AN009AMFI15RPD</td>
</tr>
<tr>
<td></td>
<td></td>
<td>WE009AMFI15HLD</td>
<td>YN009AMFI15RPD</td>
</tr>
<tr>
<td></td>
<td></td>
<td>WE009GMFI15HLD</td>
<td>YN009GMFI15RPD</td>
</tr>
<tr>
<td></td>
<td>12k</td>
<td>WE012AMFI15CLD</td>
<td>AN012AMFI15RPD</td>
</tr>
<tr>
<td></td>
<td></td>
<td>WE012AMFI15HLD</td>
<td>YN012AMFI15RPD</td>
</tr>
<tr>
<td></td>
<td></td>
<td>WE012GMFI15CLD</td>
<td>AN012GMFI15RPD</td>
</tr>
<tr>
<td></td>
<td></td>
<td>WE012GMFI15HLD</td>
<td>YN012GMFI15RPD</td>
</tr>
<tr>
<td></td>
<td>18k</td>
<td>WE018GMFI15CLD</td>
<td>AN018GMFI15RPD</td>
</tr>
<tr>
<td></td>
<td></td>
<td>WE018GMFI15HLD</td>
<td>YN018GMFI15RPD</td>
</tr>
<tr>
<td></td>
<td>24k</td>
<td>WE024GMFI15CLD</td>
<td>AN024GMFI15RPD</td>
</tr>
<tr>
<td></td>
<td></td>
<td>WE024GMFI15HLD</td>
<td>YN024GMFI15RPD</td>
</tr>
</tbody>
</table>
2.2 Part names of Indoor/Outdoor units

**Names of parts**

**Indoor unit**
1. Front panel
2. Air inlet
3. Air filter
4. Air outlet
5. Horizontal air flow grille
6. Vertical air flow louver (inside)
7. Display panel

**Outdoor unit**
8. Connecting pipe
9. Connecting cable
10. Stop valve
2.3 Functions of Indoor/Outdoor units

- Filter
  - Cold Catalyst Filter
  - Ionizer(O)
  - Silver Ion Filter
  - Vitamin C Filter(O)
  - 3M HAF Filter(O)
  - Bio Filter(O)
  - Golden Fin(O)
  - Self Clean(O)
  - Follow Me(O)

- Louver Position Memory Function
- Refrigerant Leakage Detect
- 8 Degree Heating(O)
- Heat Compensation(O)
- Self-diag. Function
- PTC Heating Belt(O)
- Compressor Crankcase Heater (standard for MS11D-22HRDN1-MN10W)

O: optional function
- Cold Catalyst Filter: Eliminate formaldehyde and other volatile organic compounds as well as harmful gases and odors.
- Ionizer: Release negative ions, eliminate odor, dust, smoke and pollen particles to give you fresh and healthy air.
- Silver Ion Filter: Sterilize bacteria effectively by decomposing cell wall of bacteria.
- Vitamin C Filter: Release Vitamin C which can eliminate active oxygen to beautify the skin.
- 3M HAM Filter: Open-hole-structure with charged electrostatic effectively capture dust and particles, ensure maximum air flow and minimum pressure drop.
- Bio Filter(O): Bio filter consists of a specialized biological enzyme and Eco filter. The Eco filter catches very small airborne dust particles and bacteria, fungi and microbes. Biological enzyme kills bacteria by dissolving their cell wall thus eliminating the problem of re-pollution.
- Golden Fin: The Golden hydrophilic condenser can improve the heating efficiency by accelerating the defrosting process. The unique anticorrosive golden coating on the condenser can withstand the salty air, rain and other corrosive elements.
- Self Clean: When this function is activated, firstly the indoor unit operates as Fan-only mode with low fan speed, during this period the condensed water will take some dust on evaporator fins away. After that the unit turns to heating operation with low fan speed which dries the inside of indoor unit. Finally it turns to fan-only mode and blows away the wet air. The whole process cleans the internal side of indoor unit and prevents the breeding of bacteria.
- Follow me: With this technology, a temperature sensor is built in the remote control when you stay close to the remote control, the unit will automatically change the operation mode to supply comfortable temperature just like the air conditioner is following you.
- Louver position memory function: When starting the unit again after shutting down, its louver will restore to the angle originally set by the user.
- Refrigerant leakage detect: The refrigerant leakage detect function can better prevent the compressor being damaged by refrigerant leakage or compressor overload.
- Self-diag. Function: Monitoring some abnormal operations or parts failures, microcomputer of the air conditioner will switch off and protect the system automatically. Meanwhile, the error or protection code will be displayed on the indoor unit.
- PTC heating belt: With a PTC heating belt fitted on the base plate of the outdoor unit, the rain, snow or defrosted water accumulating on the base plate is avoided.
- Compressor crankcase heater: The oil dissolves easily in refrigerant, especially in low temperature condition. The crankcase heating belt can heat the bottom of the compressor to avoid pumping out too much oil with the refrigerant, which helps to protect the compressor.
3. Dimension

3.1 Indoor Unit

<table>
<thead>
<tr>
<th>Model</th>
<th>W</th>
<th>D</th>
<th>H</th>
</tr>
</thead>
<tbody>
<tr>
<td>WE009AMFI15CLD</td>
<td>680mm (26.8in)</td>
<td>178mm (7.0in)</td>
<td>255mm (10.0in)</td>
</tr>
<tr>
<td>WE009AMFI15HLD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WE009GMFI15HLD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WE012AMFI15CLD</td>
<td>770mm (30.3in)</td>
<td>188mm (7.4in)</td>
<td>255mm (10.0in)</td>
</tr>
<tr>
<td>WE012AMFI15HLD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WE012GMFI15CLD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WE012GMFI15HLD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WE018GMFI15CLD</td>
<td>905mm (35.6in)</td>
<td>198mm (7.8in)</td>
<td>275mm (10.8in)</td>
</tr>
<tr>
<td>WE018GMFI15HLD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WE024GMFI15CLD</td>
<td>1030mm (40.6in)</td>
<td>218mm (8.6in)</td>
<td>315mm (12.4in)</td>
</tr>
<tr>
<td>WE024GMFI15HLD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model</td>
<td>R</td>
<td>L</td>
<td>H</td>
</tr>
<tr>
<td>---------------------</td>
<td>-------</td>
<td>-------</td>
<td>-------</td>
</tr>
<tr>
<td>WE009AMFI15CLD</td>
<td>92mm</td>
<td>170mm</td>
<td>45mm</td>
</tr>
<tr>
<td></td>
<td>(3.6in)</td>
<td>(6.7in)</td>
<td>(1.8in)</td>
</tr>
<tr>
<td>WE009AMFI15HLD</td>
<td>95mm</td>
<td>170mm</td>
<td>45mm</td>
</tr>
<tr>
<td></td>
<td>(3.7in)</td>
<td>(6.7in)</td>
<td>(1.8in)</td>
</tr>
<tr>
<td>WE009GMFI15HLD</td>
<td>92mm</td>
<td>170mm</td>
<td>45mm</td>
</tr>
<tr>
<td></td>
<td>(3.6in)</td>
<td>(6.7in)</td>
<td>(1.8in)</td>
</tr>
<tr>
<td>WE012AMFI15CLD</td>
<td>95mm</td>
<td>170mm</td>
<td>45mm</td>
</tr>
<tr>
<td></td>
<td>(3.7in)</td>
<td>(6.7in)</td>
<td>(1.8in)</td>
</tr>
<tr>
<td>WE012AMFI15HLD</td>
<td>95mm</td>
<td>170mm</td>
<td>45mm</td>
</tr>
<tr>
<td></td>
<td>(3.7in)</td>
<td>(6.7in)</td>
<td>(1.8in)</td>
</tr>
<tr>
<td>WE012GMFI15CLD</td>
<td>92mm</td>
<td>170mm</td>
<td>45mm</td>
</tr>
<tr>
<td></td>
<td>(3.6in)</td>
<td>(6.7in)</td>
<td>(1.8in)</td>
</tr>
<tr>
<td>WE012GMFI15HLD</td>
<td>92mm</td>
<td>170mm</td>
<td>45mm</td>
</tr>
<tr>
<td></td>
<td>(3.6in)</td>
<td>(6.7in)</td>
<td>(1.8in)</td>
</tr>
<tr>
<td>WE018GMFI15CLD</td>
<td>80mm</td>
<td>100mm</td>
<td>45mm</td>
</tr>
<tr>
<td></td>
<td>(3.1in)</td>
<td>(3.9in)</td>
<td>(1.8in)</td>
</tr>
<tr>
<td>WE018GMFI15HLD</td>
<td>80mm</td>
<td>100mm</td>
<td>45mm</td>
</tr>
<tr>
<td></td>
<td>(3.1in)</td>
<td>(3.9in)</td>
<td>(1.8in)</td>
</tr>
<tr>
<td>WE024GMFI15CLD</td>
<td>163mm</td>
<td>293mm</td>
<td>45mm</td>
</tr>
<tr>
<td></td>
<td>(6.4in)</td>
<td>(11.5in)</td>
<td>(1.8in)</td>
</tr>
<tr>
<td>WE024GMFI15HLD</td>
<td>163mm</td>
<td>293mm</td>
<td>45mm</td>
</tr>
<tr>
<td></td>
<td>(6.4in)</td>
<td>(11.5in)</td>
<td>(1.8in)</td>
</tr>
</tbody>
</table>
4.2 Outdoor Unit

Note: The above drawing is only for reference. The appearance of your units may be different.

<table>
<thead>
<tr>
<th>Model</th>
<th>W</th>
<th>H</th>
<th>D</th>
<th>W1</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>YN009GMFI15RPD</td>
<td>700mm</td>
<td>240mm</td>
<td>540mm</td>
<td>757mm</td>
<td>458mm</td>
<td>250mm</td>
</tr>
<tr>
<td></td>
<td>(27.6in)</td>
<td>(9.4in)</td>
<td>(21.3in)</td>
<td>(29.8in)</td>
<td>(18.0in)</td>
<td>(9.8in)</td>
</tr>
<tr>
<td>AN009AMFI15RPD</td>
<td>660mm</td>
<td>265mm</td>
<td>540mm</td>
<td>732mm</td>
<td>458mm</td>
<td>276mm</td>
</tr>
<tr>
<td></td>
<td>(26.0in)</td>
<td>(10.4in)</td>
<td>(21.3in)</td>
<td>(28.8in)</td>
<td>(18.0in)</td>
<td>(10.9in)</td>
</tr>
<tr>
<td>YN009AMFI15RPD</td>
<td>660mm</td>
<td>265mm</td>
<td>540mm</td>
<td>732mm</td>
<td>458mm</td>
<td>276mm</td>
</tr>
<tr>
<td></td>
<td>(26.0in)</td>
<td>(10.4in)</td>
<td>(21.3in)</td>
<td>(28.8in)</td>
<td>(18.0in)</td>
<td>(10.9in)</td>
</tr>
<tr>
<td>YN012AMFI15RPD</td>
<td>660mm</td>
<td>265mm</td>
<td>540mm</td>
<td>732mm</td>
<td>458mm</td>
<td>276mm</td>
</tr>
<tr>
<td></td>
<td>(26.0in)</td>
<td>(10.4in)</td>
<td>(21.3in)</td>
<td>(28.8in)</td>
<td>(18.0in)</td>
<td>(10.9in)</td>
</tr>
<tr>
<td>Model</td>
<td>Width (mm)</td>
<td>Height (mm)</td>
<td>Depth (mm)</td>
<td>Width (in)</td>
<td>Height (in)</td>
<td>Depth (in)</td>
</tr>
<tr>
<td>---------------</td>
<td>------------</td>
<td>-------------</td>
<td>------------</td>
<td>------------</td>
<td>-------------</td>
<td>------------</td>
</tr>
<tr>
<td>AN012AMFI15RPD</td>
<td>660</td>
<td>265</td>
<td>540</td>
<td>26</td>
<td>10</td>
<td>21</td>
</tr>
<tr>
<td>YN012GMFI15RPD</td>
<td>780</td>
<td>250</td>
<td>540</td>
<td>30</td>
<td>10</td>
<td>21</td>
</tr>
<tr>
<td>AN012GMFI15RPD</td>
<td>780</td>
<td>250</td>
<td>540</td>
<td>30</td>
<td>10</td>
<td>21</td>
</tr>
<tr>
<td>AN018GMFI15RPD</td>
<td>760</td>
<td>285</td>
<td>590</td>
<td>29</td>
<td>11</td>
<td>23</td>
</tr>
<tr>
<td>YN018GMFI15RPD</td>
<td>760</td>
<td>285</td>
<td>590</td>
<td>29</td>
<td>11</td>
<td>23</td>
</tr>
<tr>
<td>AN024GMFI15RPD</td>
<td>845</td>
<td>320</td>
<td>700</td>
<td>33</td>
<td>12</td>
<td>27</td>
</tr>
<tr>
<td>YN024GMFI15RPD</td>
<td>845</td>
<td>320</td>
<td>700</td>
<td>33</td>
<td>12</td>
<td>27</td>
</tr>
</tbody>
</table>
4. Refrigerant Cycle Diagram

For cooling only models:

INDOOR

OUTDOOR

LIQUID SIDE

CAPILARY TUBE

HEAT EXCHANGE (EVAPORATOR)

HEAT EXCHANGE (CONDENSER)

GAS SIDE

COMPRESSOR
For heat pump models:

**INDOOR**

- Heat Exchange (Evaporator)
- Liquid Side
- 2-Way Valve
- Gas Side
- 3-Way Valve
- Accumulator

**OUTDOOR**

- Heat Exchange (Condenser)
- Check Valve (Heating Model only)
- Capillary Tube
- Reversing Valve (Heating Model only)
- Cooling
- Heating
- Compressor
5. Wiring Diagram

5.1 Indoor Unit

9000 BTU, 115V, Cool Only / 9000 BTU, 115V, Heat Pump

12000 BTU, 115V, Cool Only / 12000 BTU, 115V, Heat Pump

18000 BTU, 230V, Cool Only / 18000 BTU, 230V, Heat Pump
24000 BTU, 230V, Cool Only / 24000 BTU, 230V, Heat Pump
5.2 Outdoor Unit


9000 BTU, 115V, Cool Only / 9000 BTU, 115V, Heat Pump

12000 BTU, 115V, Cool Only / 12000 BTU, 115V, Heat Pump
18000 BTU, 230V, Cool Only / 18000 BTU, 230V, Heat Pump

OUTDOOR WIRING DIAGRAM

24000 BTU, 230V, Cool Only / 24000 BTU, 230V, Heat Pump

OUTDOOR WIRING DIAGRAM

For 18000 BTU, 230V, Cool Only / 18000 BTU, 230V, Heat Pump:

For 24000 BTU, 230V, Cool Only / 24000 BTU, 230V, Heat Pump:
6 Installation Details

6.1 Wrench torque sheet for installation

<table>
<thead>
<tr>
<th>Outside diameter</th>
<th>Torque</th>
<th>Additional tightening torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ф6.35mm 1/4in</td>
<td>1500N.cm (11 Lbf.Ft.)</td>
<td>1600N.cm (12 Lbf.Ft.)</td>
</tr>
<tr>
<td>Ф9.52mm 3/8in</td>
<td>2500N.cm (18 Lbf.Ft.)</td>
<td>2600N.cm (19 Lbf.Ft.)</td>
</tr>
<tr>
<td>Ф12.7mm 1/2in</td>
<td>3500N.cm (26 Lbf.Ft.)</td>
<td>3600N.cm (27 Lbf.Ft.)</td>
</tr>
<tr>
<td>Ф15.9mm 5/8in</td>
<td>4500N.cm (33 Lbf.Ft.)</td>
<td>4700N.cm (35 Lbf.Ft.)</td>
</tr>
<tr>
<td>Ф19mm 3/4in</td>
<td>6500N.cm (48 Lbf.Ft.)</td>
<td>6700N.cm (50 Lbf.Ft.)</td>
</tr>
</tbody>
</table>

6.2 Connecting the cables

The power cord should be selected according to the following specifications sheet.

<table>
<thead>
<tr>
<th>Appliance Amps</th>
<th>AWG Wire Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>18</td>
</tr>
<tr>
<td>13</td>
<td>16</td>
</tr>
<tr>
<td>18</td>
<td>14</td>
</tr>
<tr>
<td>25</td>
<td>12</td>
</tr>
<tr>
<td>30</td>
<td>10</td>
</tr>
</tbody>
</table>

6.3 Pipe length and the elevation

<table>
<thead>
<tr>
<th>Models</th>
<th>Pipe size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Gas</td>
</tr>
<tr>
<td>WE009AMFI15CLD + AN009AMFI15RPD</td>
<td>3/8in (9.52mm)</td>
</tr>
<tr>
<td>WE009AMFI15HLD + YN009AMFI15RPD</td>
<td>3/8in (9.52mm)</td>
</tr>
<tr>
<td>WE009GMFI15HLD + YN009GMFI15RPD</td>
<td>3/8in (9.52mm)</td>
</tr>
<tr>
<td>WE012AMFI15CLD + AN012AMFI15RPD</td>
<td>1/2in (12.7mm)</td>
</tr>
<tr>
<td>WE012AMFI15HLD + YN012AMFI15RPD</td>
<td>1/2in (12.7mm)</td>
</tr>
<tr>
<td>WE012GMFI15CLD + AN012GMFI15RPD</td>
<td>3/8in (9.52mm)</td>
</tr>
<tr>
<td>WE012GMFI15HLD + YN012GMFI15RPD</td>
<td>1/2in (12.7mm)</td>
</tr>
<tr>
<td>WE018GMFI15CLD + AN018GMFI15RPD</td>
<td>1/2in (12.7mm)</td>
</tr>
<tr>
<td>WE018GMFI15HLD + YN018GMFI15RPD</td>
<td>5/8in (15.9mm)</td>
</tr>
<tr>
<td>WE024GMFI15CLD + AN024GMFI15RPD</td>
<td>5/8in (15.9mm)</td>
</tr>
</tbody>
</table>

The cable size and the current of the fuse or switch are determined by the maximum current indicated on the nameplate which located on the side panel of the unit. Please refer to the nameplate before selecting the cable, fuse and switch.
<table>
<thead>
<tr>
<th>Product Code</th>
<th>Length</th>
<th>Width</th>
<th>Roll Length</th>
<th>Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>WE012GMF15HLD +</td>
<td>7.5m</td>
<td>10m</td>
<td>25m</td>
<td>15g/m</td>
</tr>
<tr>
<td>YN012GMF15RPD</td>
<td>(24.6ft)</td>
<td>(32.8ft)</td>
<td>(82.0ft)</td>
<td>(0.16oz/ft)</td>
</tr>
<tr>
<td>WE018GMF15CLD +</td>
<td>7.5m</td>
<td>20m</td>
<td>30m</td>
<td>15g/m</td>
</tr>
<tr>
<td>AN018GMF15RPD</td>
<td>(24.6ft)</td>
<td>(65.6ft)</td>
<td>(98.4ft)</td>
<td>(0.16oz/ft)</td>
</tr>
<tr>
<td>WE018GMF15HLD +</td>
<td>7.5m</td>
<td>20m</td>
<td>30m</td>
<td>15g/m</td>
</tr>
<tr>
<td>YN018GMF15RPD</td>
<td>(24.6ft)</td>
<td>(65.6ft)</td>
<td>(98.4ft)</td>
<td>(0.16oz/ft)</td>
</tr>
<tr>
<td>WE024GMF15CLD +</td>
<td>7.5m</td>
<td>25m</td>
<td>50m</td>
<td>30g/m</td>
</tr>
<tr>
<td>AN024GMF15RPD</td>
<td>(24.6ft)</td>
<td>(82.0ft)</td>
<td>(164ft)</td>
<td>(0.32oz/ft)</td>
</tr>
<tr>
<td>WE024GMF15HLD +</td>
<td>7.5m</td>
<td>25m</td>
<td>50m</td>
<td>30g/m</td>
</tr>
<tr>
<td>YN024GMF15RPD</td>
<td>(24.6ft)</td>
<td>(82.0ft)</td>
<td>(164ft)</td>
<td>(0.32oz/ft)</td>
</tr>
</tbody>
</table>
6.4 Installation for the first time

Air and moisture in the refrigerant system will cause undesirable effects as below:

- Pressure in the system rises.
- Operating current rises.
- Cooling or heating efficiency drops.
- Moisture in the refrigerant circuit may freeze and block capillary tubing.
- Water may lead to corrosion of parts in the refrigerant system (compressor damage).

Therefore, the indoor units and the pipes between indoor and outdoor units must be leak tested and evacuated to remove the air and moisture from the system.

Gas leak check (Soap water method):

Apply soap water or a liquid neutral detergent on the indoor unit connections or outdoor unit connections by a soft brush to check for leakage of the connecting points of the piping. If bubbles come out, the pipes have leakage.

1. Air evacuation using a vacuum pump

1) Completely tighten the flare nuts of the indoor and outdoor units, confirm that both the 2-way and 3-way valves are set to the closed position.
2) Connect the charging manifold’s Low Side hose with the push pin to the 3-way valve’s gas service port. (it is a 5/16” SAE Port).
3) Connect the charging manifold’s Center hose the vacuum pump.
4) Fully open the Low Side Valve of the manifold.
5) Operate the vacuum pump to evacuate.
6) Make evacuation for 30 minutes and check whether the compound meter indicates -0.1Mpa(14.5Psi). If the meter does not indicate -0.1Mpa(14.5Psi) after pumping 30 minutes, it should be pumped 20 minutes more. If the pressure can’t achieve -0.1Mpa(14.5Psi) after pumping 50 minutes, please check if there are some leakage points. Fully close the Low side valve of the manifold and stop the vacuum pump. Confirm that the gauge needle does not rise (approximately 15 minutes after turning off the vacuum pump).
7) Turn the 3-way valve’s stem about 45° counterclockwise to open a little for 6 or 7 seconds. Then tighten the valve stem again. Make sure the pressure display in the pressure indicator is a higher than the atmosphere pressure. Then remove the charge hose from the 3 way valve.
8) Fully open the 2 way valve and 3 way valve and securely tighten the caps of both valves. CHECK FOR LEAKS AGAIN.

2. Air purging by refrigerant

Procedure:

1). Confirm that both the 2-way and 3-way valves are set to the closed position.
2). Connect the charge manifold set and a charging cylinder to the service port of the 3-way valve (5/16” SAE Port).
3). Air purging.

Open the valves on the charging cylinder and the charge manifold set. Purge the air by loosening the flare nut on the 2-way valve approximately 45’ for 3 seconds then closing it for 1 minute; repeat 3 times.
After purging the air, use a torque wrench to tighten the flare nut on the 2-way valve.

4) Check for gas leakage.
Check the flare connections for gas leakage.

5) Discharge the refrigerant.
Close the valve on the charging cylinder and discharge the refrigerant by loosening the flare nut on the 2-way valve approximately 45° until the gauge indicates 0.3Mpa(43.5Psi) to 0.5 Mpa(72.5Psi).

6) Disconnect the charge set and the charging cylinder, and open both the 2-way and 3-way valves to the fully open position.
Be sure to use proper sized hexagonal (Allen) wrench to operate the valve stems.

7) Mount the valve stem caps and the service port cap.
Be sure to use a torque wrench to tighten the service port cap to a torque 18N·m.
Be sure to check the gas leakage.

7.5 Adding the refrigerant after running the system for many years (Only recommended for systems that lack 10% of less of their total refrigerant volume. If more refrigerant needs to be added, than remove the remaining refrigerant and recharge entirely).

Procedure
1) Connect the charge hose to the 3-way valve's service port, while the 2-way valve and the 3-way valves are fully open.
Connect the charge hose to the valve at the bottom of the cylinder. If the refrigerant is R410A, make the cylinder upside down to ensure liquid charge.

2) Purge the air from the charge hose.
Open the valve at the bottom of the cylinder and press the check valve on the charge set to purge the air (be careful of the liquid refrigerant).

3) Put the charging cylinder onto the electronic scale and record the weight.

4) Operate the air conditioner at the cooling mode.

5) Open the valves (Low side) on the charging manifold set and charge the system with liquid refrigerant.

6) When the electronic scale displays the proper weight (refer to the gauge and the pressure of the low side), disconnect the charge hose from the 3-way valve’s service port immediately and turn off the air conditioner before disconnecting the hose.

7) Mount the valve stem caps and the service port cap.
Use torque wrench to tighten the service port cap to a torque of 18N·m.
Be sure to check for gas leakage.

7.6 Re-installation while the indoor unit needs to be repaired

1. Collecting the refrigerant into the outdoor unit

Procedure
1) Confirm that both the 2-way and 3-way valves are set to the opened position.
Remove the valve stem caps and confirm that the valve stems are in the opened position.
Be sure to use a proper size hexagonal (Allen) wrench to operate the valve stems.

2) Connect the Low side hose of the charging...
manifold hose with the push pin to the 3-way valve's gas service port.

3). Air purge of the charge hose.
Open the Low side valve of the manifold slightly to purge air from the charge hose for 5 seconds and then close it quickly.

4). Set the 2-way valve to the close position.

5). Operate the air conditioner at the cooling cycle and stop it when the gauge indicates 0.1Mpa(14.5Psi).

6). Set the 3-way valve to the closed position immediately
Do this quickly so that the gauge ends up indicating 0.3Mpa(43.5Psi) to 0.5 Mpa(72.5Psi).

Disconnect the charge set, and tighten the 2-way and 3-way valve's stem nuts.
Use a torque wrench to tighten the 3-way valves service port cap to a torque of 18N.m.
Be sure to check for gas leakage.

2. Air purging by the refrigerant

Procedure:
1). Confirm that both the 2-way and 3-way valves are set to the closed position.
2). Connect the charge set and a charging cylinder to the service port of the 3-way valve Leave the valve on the charging cylinder closed.
3). Air purging.
Open the valves on the charging cylinder and the charge set. Purge the air by loosening the flare nut on the 2-way valve approximately 45' for 3 seconds then closing it for 1 minute; repeat 3 times.
After purging the air, use a torque wrench to tighten the flare nut on the 2-way valve.
4). Check the gas leakage
Check the flare connections for gas leakage.

5). Discharge the refrigerant.
Close the valve on the charging cylinder and discharge the refrigerant by loosening the flare nut on the 2-way valve approximately 45' until the gauge indicates 0.3Mpa(43.5Psi) to 0.5 Mpa(72.5Psi).

6). Disconnect the charge set and the charging cylinder, and set the 2-way and 3-way valves to the fully open position
Be sure to use a proper size hexagonal (Allen) wrench to operate the valve stems.

7). Mount the valve stems nuts and the service port cap
Be sure to use a torque wrench to tighten the service port cap to a torque 18N.m.
Be sure to check the gas leakage.

7.7 Re-installation while the outdoor unit needs to be repaired

1. Evacuation for the whole system

Procedure:
1). Confirm that both the 2-way and 3-way valves are set to the opened position.
2). Connect the vacuum pump to 3-way valve's service port.
3). Evacuate for approximately one hour. Confirm that the pressure gauge indicates -0.1Mpa(14.5Psi).
4). Close the valve (Low side) on the charge set, turn off the vacuum pump, and confirm that the gauge needle does not move up (approximately 15 minutes after turning off the vacuum pump).
5). Disconnect the charging hose from the vacuum pump.
2. Refrigerant charging

Procedure:
1). Connect the charge hose to the charging cylinder, open the 2-way valve and the 3-way valve.
Connect the charge hose which you disconnected from the vacuum pump to the valve at the bottom of the cylinder. If the refrigerant is R410A, make the cylinder upside down to ensure liquid charge.
2). Purge the air from the charging hose
Open the valve at the bottom of the cylinder and press the check valve on the charge set to purge the air (be careful of the liquid refrigerant).
3) Put the charging cylinder onto the electronic scale and record the weight.
4). Open the valve (Low side) on the charge set and charge the system with liquid refrigerant.
ASSURE TO CHARGE a little at a time (approximately 150g or 5 Ounces each time), while operating the air conditioner in the cooling cycle; wait approximately 1 minute in between each charging load and then repeat the procedure.
5). When the electronic scale displays the proper weight, disconnect the charge hose from the 3-way valve’s service port immediately.
If the system has been charged with liquid refrigerant while operating the air conditioner, turn off the air conditioner before disconnecting the hose.
6). Mount the valve stem caps and the service port. Use torque wrench to tighten the service port cap to a torque of 18N.m. Be sure to check for gas leakage.
7. Operation Characteristics

<table>
<thead>
<tr>
<th>Mode</th>
<th>Temperature</th>
<th>Cooling operation</th>
<th>Heating operation</th>
<th>Drying operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Room temperature</td>
<td>≥17°C (62°F)</td>
<td>≤30°C (86°F)</td>
<td>&gt; 10°C (50°F)</td>
<td></td>
</tr>
<tr>
<td>Outdoor temperature</td>
<td>0°C ~ 50°C (32°F ~ 122°F)</td>
<td>-15°C ~ 30°C (5°F ~ 86°F)</td>
<td>0°C ~ 50°C (32°F ~ 122°F)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-15°C ~ 50°C (5°F ~ 122°F)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(For the models with low ambient cooling option)

Notes:

<table>
<thead>
<tr>
<th>°C</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
<th>20</th>
<th>21</th>
<th>22</th>
<th>23</th>
<th>24</th>
<th>25</th>
<th>26</th>
<th>27</th>
</tr>
</thead>
<tbody>
<tr>
<td>°F</td>
<td>50</td>
<td>50</td>
<td>52</td>
<td>54</td>
<td>56</td>
<td>58</td>
<td>60</td>
<td>62</td>
<td>64</td>
<td>66</td>
<td>68</td>
<td>70</td>
<td>72</td>
<td>74</td>
<td>76</td>
<td>78</td>
<td>80</td>
<td>82</td>
</tr>
<tr>
<td>°C</td>
<td>28</td>
<td>29</td>
<td>30</td>
<td>31</td>
<td>32</td>
<td>33</td>
<td>34</td>
<td>35</td>
<td>36</td>
<td>37</td>
<td>38</td>
<td>39</td>
<td>40</td>
<td>41</td>
<td>42</td>
<td>43</td>
<td></td>
<td></td>
</tr>
<tr>
<td>°F</td>
<td>84</td>
<td>86</td>
<td>86</td>
<td>90</td>
<td>92</td>
<td>94</td>
<td>96</td>
<td>98</td>
<td>98</td>
<td>99</td>
<td>100</td>
<td>102</td>
<td>104</td>
<td>106</td>
<td>108</td>
<td>109</td>
<td></td>
<td></td>
</tr>
<tr>
<td>°C</td>
<td>44</td>
<td>45</td>
<td>46</td>
<td>47</td>
<td>48</td>
<td>49</td>
<td>50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>°F</td>
<td>111</td>
<td>113</td>
<td>115</td>
<td>117</td>
<td>118</td>
<td>120</td>
<td>122</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\[
\Delta T(°F) = \frac{9\Delta T(°C)}{5}
\]

CAUTION:

1. If the air conditioner is used beyond the above conditions, certain safety protection features may come into operation and cause the unit to operate abnormally.

2. The room relative humidity should be less than 80%. If the air conditioner operates beyond this figure, the surface of the air conditioner may attract condensation. Please set the vertical air flow louver to its maximum angle (vertically to the floor), and set HIGH fan mode.

3. The optimum performance will be achieved during this operating temperature zone.
8. Electronic Function

8.1 Abbreviation
T1: Indoor room temperature
T2: Coil temperature of evaporator
T3: Coil temperature of condenser
T4: Outdoor ambient temperature
T5: Compressor discharge temperature

8.2 Display function

8.2.1 Icon explanation on indoor display board.

<table>
<thead>
<tr>
<th>Defrost Indicator</th>
<th>This indicator illuminates when the air conditioner starts defrosting automatically or while the warm air control feature (warm-start) is activate in heating mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Run indicator</td>
<td>Flash every 2 seconds when the unit is standby. Illuminate when the unit is turned on.</td>
</tr>
<tr>
<td>Timer indicator</td>
<td>This indicator illuminates when TIMER is set ON/OFF.</td>
</tr>
<tr>
<td>Temperature indicator</td>
<td>Displays the temperature settings when the air conditioner is operational. Also displays the malfunction code.</td>
</tr>
</tbody>
</table>
8.3 Main Protection

8.3.1 Three minutes delay at restart for compressor
1 minute delay for the 1st time start-up and 3 minute delay for subsequent starts.

8.3.2 Temperature protection of compressor top surface.
The unit will stop working when the compressor top temp. protector activates, and will restart after the compressor top temp. protector resets.

8.3.3 Temperature protection of compressor discharge pipe
When the compressor discharge temp. is getting higher, the running frequency will be limited as per the below rules:
--- Compressor discharge temp. T5>115℃ for 5s, compressor stops.
--- 108<T5<115℃, decrease the frequency to one lower level every 3 minutes.
--- 90<T5<105℃, keep running at the current frequency.
--- T5<90℃, no limit for frequency.

8.3.4 Fan speed is out of control
When Indoor Fan Speed is measured too low (<300 RPM) for certain time, the unit will stop and the LED will display the failure.

8.3.5 Inverter module protection
The Inverter module has a protection function based on current, voltage and temperature. If these protections activate, the corresponding code will display on the indoor unit and the unit will stop working.

8.3.6 Indoor fan delayed start function
When the unit starts up, the louver will be activated immediately and the indoor fan will start 10s later.
If the unit runs in heating mode, the indoor fan will be also controlled by anti-cold draft (Warm Start) function. Indoor fan will start operating only after the indoor coil's surface temperature becomes hot enough. During this delay period, the defrost light will be illuminated.

8.3.7 Compressor preheating functions
Preheating permitting condition:
If T4 (outdoor ambient temperature)<3℃ and compressor has stopped for over 3 hours, the compressor heating circuit will activate.
Preheating mode:
A weak current flow through the coil of compressor through the wiring terminal of the compressor, then the compressor is kept warm without operating.
Preheating release condition:
If T4>5℃ or the compressor starts running, the preheating function will stop.

8.3.8 Zero crossing detection error protection
If IC detects that time interval is not correct continuously for 240s, the unit will stop and the LED will display the failure. The correct zero crossing signal time interval should be between 6-13ms.

8.3.9 Condenser temperature protection
--- 55℃<T3<60℃, the compressor frequency will decrease to the lower level until to F1 and then runs at F1. If T3<54℃, the compressor will keep running at the current frequency.
--- T3<52℃, the compressor will not limit the frequency and resume to the former frequency.
--- T3>60℃ for 5 seconds, the compressor will stop until T3<52℃.

8.3.10 Evaporator temperature protection
--- T2<0℃, the compressor will stop and restart when T2>=5℃.
--- 0℃<T2<4℃, the compressor frequency will be limited and decreased to the lower level.
--- 4℃<T2<7℃, the compressor will keep the current frequency.
--- T2>7℃, the compressor frequency will not be limited.
8.4 Operation Modes and Functions

8.4.1 Fan only mode
(1) Outdoor fan and compressor stop.
(2) Temperature setting function is disabled, and no set temperature is displayed.
(3) Indoor fan can be set to high/med/low/auto.
(4) The louver operates same as in cooling mode.
(5) Auto fan:

Fmax: The maximum operation frequency of compressor.
F1~F8: The detailed value of the compressor operation frequency.

If users switch on the unit by remote controller, the compressor will run at the Fmax frequency for 7 minutes according to the outdoor ambient temp. During the 7 minutes, the frequency limitation is active. 7 minutes later, the compressor running frequency will be controlled as below:

While the zones of A,B,C... are corresponding to different compressor running frequencies.

Note:
When T1-Ts stays in the same temp. zone for 3 minutes, the compressor will run as the below rules:
A~E: Increase the frequency to the higher level until reaching F8.
F: Keep the current frequency.
G: Decrease the frequency to the lower level until reaching F1.
H: Run at F1 for 1h. (if T1-Ts<-2℃, the compressor will stop)
Meanwhile, the compressor running frequency is limited by the current.
I3COOL, I2COOL, I1COOL mean different running current value.
Off: Compressor stops.
Decrease: Decrease the running frequency to the lower level.
Hold: Keep the current frequency.
Resume: No limitation for frequency.

**Note:**
When AC is in “hold” zone for 3 minutes, the compressor frequency will rise to the higher level. (frequency will increase twice at most)

### 9.4.2.2 Outdoor fan running rules

### 9.4.2.3 Indoor fan running rules

In cooling mode, indoor fan runs all the time and the speed can be selected as high, medium, low and auto.
Auto fan in cooling mode acts as follow:

Fmax: The maximum operation frequency of compressor.
F1~F8: The detailed value of the compressor operation frequency.
If users switch on the unit by remote controller, the compressor will run at the Fmax frequency for 7 minutes according to outdoor ambient
temp. During the 7 minutes, the frequency limitation is active.
7 minutes later, the compressor running frequency will be controlled as below:

While the zones of A, B, C... are corresponding to different compressor running frequency.
\( \Delta T = 0 \degree C \) as default.

**Note:**
When T1-Ts keeps in the same temp. zone for 3 minutes, the compressor will run as per the below rules:
A~E: Increase the frequency to the higher level until reaching F10.
F: Keep the current frequency.
G: Decrease the frequency to the lower level until reaching F1.
H: Run at F1 for 1h. (if T1-Ts-\( \Delta T > 6 \degree C \), the compressor will stop)
Meanwhile, the compressor running frequency is limited by the current.

**8.4.3.2 Outdoor fan running rules**
8.4.3.3 Indoor fan running rules

If the compressor stops due to the room temperature rise, the indoor fan will be forced to run 127 seconds with breeze speed. During this period, the anti-cold (warm Start) is disabled.

If the machine runs in rating capacity test mode, the indoor fan will run with rated speed and the anti-cold (warn Start) function is disabled.

Auto fan action in heating mode:

8.4.3.4 Defrosting mode

Condition of defrosting:

----T4 > 0°C,

When the units are running, if the following two items are satisfied, the units start defrosting:

The units run with T3 < 3°C for 80 minutes and T3 stays lower than TCDI+2°C for more than 3 minutes.

----T4 < 0°C,

If the 1st condition and 2nd condition items are satisfied, then the program judges if T2 has decreased more than 5°C. When T2 has decreased more than 5°C, system will enter the defrost mode.

----No matter what value T4 is, if the machine runs with T3 < 3°C for more than 120 minutes and T3 keeps lower than TCDI+4°C for more than 3 minutes, the machine will enter the defrost mode no matter if T2 drops by more than 5°C or not.

Condition of ending defrosting:

If any one of the following items is satisfied, the defrosting will finish and the machine will turn to normal heating mode.

----T3 rises to be higher than TCDE1°C.

----T3 keeps to be higher than TCDE2°C for 80 seconds.

----The machine has run for 10 minutes in defrosting mode.

Defrosting action:

For 9k, 12k models:

xx=60s.
For 18k, 24k models:

- Compressor
  - Frequency F2
  - Frequency F8
- 4-way valve
  - on
  - off
- Outdoor fan
  - on
  - off
- Indoor fan
  - on
  - off
  - Indoor fan breeze (10s)
  - xx
  - 10s
  - no longer than 10m
  - 30s

XX=60 for 18k model, XX=90 for 24k model.

8.4.3.5 Evaporator coil temperature protection

- T2 > TEH2 ℃, the compressor running frequency decreases to the lower level and runs for 20s.

When the frequency decreases to F2 and the T2 is still over TEH2 ℃ for 3 minutes, the compressor will stop.

- T2 < 48 ℃ or T2 stays in 48 ℃ ~ TEH2 ℃ for 6 minutes, the frequency will not be limited by T2.

- T2 > 60 ℃, the compressor will stop and restart when T2 < 48 ℃.

8.4.4 Auto-mode

This mode can be chosen with remote controller and the setting temperature can be changed between 17~30 ℃.

In auto mode, the machine will choose cooling, heating or fan-only mode according to ΔT (ΔT = T1 - Ts).

<table>
<thead>
<tr>
<th>ΔT=T1-Ts</th>
<th>Running mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>ΔT &gt; 1 ℃</td>
<td>Cooling</td>
</tr>
<tr>
<td>-1 &lt; ΔT ≤ 1 ℃</td>
<td>Fan-only</td>
</tr>
<tr>
<td>ΔT ≤ -1 ℃</td>
<td>Heating</td>
</tr>
</tbody>
</table>

Indoor fan will run at auto fan of the relevant mode.

The louver operates same as in relevant mode. If the machine switches mode between heating and cooling, the compressor will stop for 15 minutes and then choose mode according to T1-Ts.

If the setting temperature is modified, the machine will re-determine the running function again.

8.4.5 Drying mode

8.4.5.1 Indoor fan speed is fixed at breeze speed and can’t be changed. The louver angle is the same as in cooling mode.

8.4.5.2 Compressor running rules

8.4.5.3 Low indoor room temperature protection

In drying mode, if room temperature is lower than 10 ℃, the compressor will stop and not resume until room temperature exceeds 12 ℃.

8.4.5.4 Evaporator anti-freezing protection, condenser high temperature protection and outdoor unit frequency limit are active and the same as that in cooling mode.

8.4.5.5 The outdoor fan operates the same as in cooling mode.

8.4.6 Forced operation function

8.4.6.1 Enter forced operation function:

When the machine is off, pressing the EMERGENCY touch button will switch the unit into forced auto mode. While in Auto Mode, pressing and holding the button once again within 5 seconds, will switch the unit into forced cooling mode. In forced auto, forced cooling or any other operation mode, pressing touch button will turn off the system.
8.4.6.2 In forced operation mode, all general protections and remote control is available.
8.4.6.3 Operation rules:
Forced cooling mode:
The compressor runs at F2 frequency and indoor fan runs as breeze speed. After running for 30 minutes, the machine will turn to auto mode with 24°C setting temperature.
Forced auto mode:
The action of forced auto mode is the same as normal auto mode with 24°C setting temperature.

8.4.7 Timer function
8.4.7.1 Timing adjustable range is 24 hours.
8.4.7.2 Timer on. The system will turn on automatically when reaching the set time.
8.4.7.3 Timer off. The system will turn off automatically when reaching the set time.
8.4.7.4 Timer on/off. The system will turn on automatically when reaching the set “on” time, and then turn off automatically when reaching the set “off” time.
8.4.7.5 Timer off/on. The system will turn off automatically when reaching the set “off” time, and then turn on automatically when reaching the set “on” time.
8.4.7.6 The timer function will not change the unit’s current operation mode. If the unit is off now, it will not start after setting the “timer off” function. And when reaching the setting time, the timer LED will be off and the running mode will not be changed.
8.4.7.7 The setting time is relative time.

8.4.8 Sleep function mode
8.4.8.1 Operation time in sleep mode is 7 hours. After 7 hours the system quits this mode and turns off.
8.4.8.2. Operation process in sleep mode is as follows:
When cooling, the setting temperature rises 1°C (if room is lower than 30°C) every one hour, 2 hours later the setting temperature stops rising and indoor fan is fixed as low speed.
When heating, the setting temperature decreases 1°C (if room is higher than 17°C) every one hour, 2 hours later the setting temperature stops rising and indoor fan is fixed as low speed. (Warm-Start function has the priority)
8.4.8.3 Timer setting is available
8.4.8.4 When user uses timer off function in sleep mode (or sleep function in timer off mode), if the timing is less than 7 hours, sleep function will be cancelled when reaching the setting time. If the timing is more than 7 hours, the machine will not stop until reaching the set time in sleep mode.

8.4.9 Auto-Restart function
The indoor unit is equipped with auto-restart function, which is carried out through an auto-restart memory module. In case of a sudden power failure, the module memorizes the setting conditions before the power failure. The unit will resume the previous operation setting (not including swing function) automatically after 3 minutes when power returns.
If the auto restart condition occurs in forced cooling mode, the unit will run in cooling mode for 30 minutes and turn to auto mode at 24°C set temp.
If system is off before power goes out it will stay off. When the unit is started up by the user, the compressor will have 1 minute delay. For other conditions, the compressor will have 3 minutes delay when restarts.

8.4.10 8°C Heating (Vacation Mode - Optional)
In heating operation, the preset temperature of the air conditioner can be as lower as 8°C, which keeps the room temperature steady at 8°C and prevents household items from freezing when the house is unoccupied for a long time in severe cold weather (Vacation Mode)
9. Troubleshooting

Safety

Electricity power is still kept in capacitors even the power supply is shut off. Do not forget to discharge the electricity power in capacitor.

For other models, please connect discharge resistance (approx. 100Ω 40W) or soldering iron (plug) between +, - terminals of the electrolytic capacitor on the contrary side of the outdoor PCB.

Note: The picture above is only for reference. The plug of your side may be different.
### 9.1 Indoor Unit Error Display

<table>
<thead>
<tr>
<th>Operation lamp</th>
<th>Timer lamp</th>
<th>Display</th>
<th>LED STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>☆ 1 time</td>
<td>X</td>
<td>E0</td>
<td>Indoor unit EEPROM parameter error</td>
</tr>
<tr>
<td>☆ 2 times</td>
<td>X</td>
<td>E1</td>
<td>Indoor / outdoor units communication error</td>
</tr>
<tr>
<td>☆ 3 times</td>
<td>X</td>
<td>E2</td>
<td>Zero-crossing signal detection error</td>
</tr>
<tr>
<td>☆ 4 times</td>
<td>X</td>
<td>E3</td>
<td>Indoor fan speed has been out of control</td>
</tr>
<tr>
<td>☆ 5 times</td>
<td>X</td>
<td>E4</td>
<td>Indoor room temperature sensor T1 open circuit or short circuit</td>
</tr>
<tr>
<td>☆ 6 times</td>
<td>X</td>
<td>E5</td>
<td>Evaporator coil temperature sensor T2 open circuit or short circuit</td>
</tr>
<tr>
<td>☆ 7 times</td>
<td>X</td>
<td>EC</td>
<td>Refrigerant leakage detection</td>
</tr>
<tr>
<td>☆ 2 times</td>
<td>O</td>
<td>F1</td>
<td>Outdoor temperature sensor T4 open circuit or short circuit</td>
</tr>
<tr>
<td>☆ 3 times</td>
<td>O</td>
<td>F2</td>
<td>Condenser coil temperature sensor T3 open circuit or short circuit</td>
</tr>
<tr>
<td>☆ 4 times</td>
<td>O</td>
<td>F3</td>
<td>Compressor discharge temperature sensor T5 open circuit or short circuit</td>
</tr>
<tr>
<td>☆ 5 times</td>
<td>O</td>
<td>F4</td>
<td>Outdoor unit EEPROM parameter error</td>
</tr>
<tr>
<td>☆ 1 times</td>
<td>☆</td>
<td>P0</td>
<td>IPM malfunction or IGBT over-strong current protection</td>
</tr>
<tr>
<td>☆ 2 times</td>
<td>☆</td>
<td>P1</td>
<td>Over voltage or Under voltage protection</td>
</tr>
<tr>
<td>☆ 3 times</td>
<td>☆</td>
<td>P2</td>
<td>High temperature protection of compressor top</td>
</tr>
<tr>
<td>☆ 5 times</td>
<td>☆</td>
<td>P4</td>
<td>Inverter compressor drive error</td>
</tr>
</tbody>
</table>
9.2 Outdoor unit error display


There's a LED light on the outdoor PCB which is blue color. After power on, it will be slow flash (once 5 secs) when the unit is in standby and quick flash (2.5 per sec) if the unit has some problems.

There's a LED light on the outdoor PCB which is blue color. After power on, it will be slow flash (once 5 secs) when the unit is in standby and quick flash (2.5 per sec) if the unit has some problems.
For 18000 BTU, 230V, Cool Only / 18000 BTU, 230V, Heat Pump:

- LED2 slow flashing on
- LED1 on
  - The picture of PCB above is only for reference.
  - LED 1 is a red light and for the PCB POWER display.
  - LED 2 is a yellow light. After power on, it will be slow flash (once every 5 secs) when the unit is in standby and quick flash (2.5 per sec) if the unit has some problems, it will be always on when the unit is in operation.
  - LED 4 (green) and LED3 (red) are two lights controlled by the compressor driver chip. Below are the meanings for those lights.

<table>
<thead>
<tr>
<th></th>
<th>standby</th>
<th>operating</th>
</tr>
</thead>
<tbody>
<tr>
<td>LED2</td>
<td>slow flashing</td>
<td>on</td>
</tr>
<tr>
<td>LED1</td>
<td>on</td>
<td>on</td>
</tr>
</tbody>
</table>

The picture of PCB above is only for reference.
<table>
<thead>
<tr>
<th>No.</th>
<th>Problems</th>
<th>LED3 (Green)</th>
<th>LED4 (Red)</th>
<th>IU display</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>standby for normal</td>
<td>O</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Operation normal</td>
<td>X</td>
<td>O</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>IPM malfunction or IGBT over-strong current protection</td>
<td>☆</td>
<td>X</td>
<td>P0</td>
</tr>
<tr>
<td>4</td>
<td>Over voltage or too low voltage protection</td>
<td>O</td>
<td>O</td>
<td>P1</td>
</tr>
<tr>
<td>5</td>
<td>Over voltage or too low voltage protection</td>
<td>O</td>
<td>☆</td>
<td>P1</td>
</tr>
<tr>
<td>6</td>
<td>Inverter compressor drive error</td>
<td>X</td>
<td>☆</td>
<td>P4</td>
</tr>
<tr>
<td>7</td>
<td>Inverter compressor drive error</td>
<td>☆</td>
<td>O</td>
<td>P4</td>
</tr>
<tr>
<td>8</td>
<td>Inverter compressor drive error</td>
<td>☆</td>
<td>☆</td>
<td>P4</td>
</tr>
</tbody>
</table>

O (light)  X (off)  ☆ (2.5Hz flash)

For 24000 BTU, 230V, Cool Only / 24000 BTU, 230V, Heat Pump:

There's a LED light on the outdoor PCB which is blue color. After power on, it will be slow flash (once 5 secs) when the unit is in standby and quick flash (2.5 per sec) if the unit has some problems.
9.3 Diagnosis and Solution
9.3.1 EEPROM parameter error diagnosis and solution (E0/F4)

<table>
<thead>
<tr>
<th>Error Code</th>
<th>E0/F4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malfunction decision conditions</td>
<td>Indoor or outdoor PCB main chip does not receive feedback from EEPROM chip.</td>
</tr>
<tr>
<td>Supposed causes</td>
<td>Installation mistake, PCB faulty</td>
</tr>
</tbody>
</table>

Trouble shooting:

Shut off the power supply and turn it on 5 seconds later. Is it still displaying the error code?

Yes

If the EEPROM chip is welded on main PCB, replace the main PCB directly. Otherwise, check whether the EEPROM chip plugged in main PCB well?

No

Correct the connection.

Yes

Replace the main PCB.

EEPROM: a read-only memory whose contents can be erased and reprogrammed using a pulsed voltage. For the location of EEPROM chip, please refer to the below photos.

Note: The two photos above are only for reference, it's may be not same totally with the ones on your system.
### 9.3.2 Indoor / outdoor unit’s communication diagnosis and solution (E1)

<table>
<thead>
<tr>
<th>Error Code</th>
<th>E1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Malfunction decision conditions</strong></td>
<td>Indoor unit does not receive the feedback from outdoor unit during 110 seconds and this condition happens four times continuously.</td>
</tr>
</tbody>
</table>
| **Supposed causes** | • Wiring mistake  
• Indoor or outdoor PCB faulty |

#### Trouble shooting:

- **Power off, then turn on the unit 5 seconds later (reconnect the power wire). Is the error still displaying after several minutes?**
  - **Yes**
    - **Measure \( V_s \), is it moving alternately with positive value?**
      - \( V_s \) is the voltage between L2 and S of outdoor unit. Connect the red pin of multimeter with L2 port, black pin with S port
        - **Yes**
          - **Check all the wiring with outdoor units. Is the wiring to the outdoor main PCB connected correctly? Is the reactor connected well?**
            - **Yes**
              - **Measure the resistance of the reactor (The one without capacitor). If it is zero, follow the below step. If not, replace a new reactor.**
                - **Replace the outdoor main PCB.**
                  - **Power on. Is the error extinguished?**
                    - **No**
                      - **Replace the indoor main PCB.**
                    - **Yes**
                      - **Replace the indoor main PCB.**
                        - **Power on. Is the error extinguished?**
                          - **No**
                            - **Replace the outdoor main PCB.**
                          - **Yes**
                            - **Replace the indoor main PCB.**

  - **No**

**NOTE:** Measure the voltage between N and S Terminals (instead of L2 and S as indicated above) for the 115 VAC Models. L2 terminal is available only on the 230 VAC Systems.
Remark:
Use a multimeter to test the DC voltage between L2 (or N on 115 V Models) port and S port of outdoor unit. The red pin of multimeter connects with L2 (or N on 115 V Models) port while the black pin is for S port.

When AC is normally running, the voltage will move alternately between -50V to 50V.

If the outdoor unit has malfunction, the voltage will move alternately with positive value.

While if the indoor unit has malfunction, the voltage will be a certain value.

Remark:
Use a multimeter to test the resistance of the reactor (one that is not connected with a capacitor. The normal value should be around zero ohm. Otherwise, the reactor must have malfunction and need to be replaced.
9.4.3 Zero crossing detection error diagnosis and solution (E2)

<table>
<thead>
<tr>
<th>Error Code</th>
<th>E2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malfunction decision conditions</td>
<td>When PCB does not receive zero crossing signal feedback for 4 minutes or the zero crossing signal time interval is abnormal.</td>
</tr>
</tbody>
</table>
| Supposed causes | ● Connection mistake  
● PCB faulty |

Trouble shooting:

- **Check if the connections and power supply is normal?**
  - **No**  Correct the connections. Turn on the unit when the power supply is good.
  - **Yes**  Indoor main PCB is defective. Replace indoor main PCB.
9.4.4 Fan speed has been out of control diagnosis and solution (E3)

<table>
<thead>
<tr>
<th>Error Code</th>
<th>E3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malfunction decision conditions</td>
<td>When indoor fan speed stays too low (&lt;300RPM) for certain time, the unit will stop and the LED will display the failure.</td>
</tr>
</tbody>
</table>
| Supposed causes | ● Wiring mistake  
● Fan assembly fault (check for rubbing/misalignment)  
● Fan motor faulty  
● PCB faulty |

Trouble shooting:

- Shut off the power supply and turn it on 5 seconds later. Is it still displaying the error code?
  - No → The unit operates normally.
  - Yes → Shut off the power supply, rotate the fan by hand. Does it rotate properly?
    - No → Find out the cause and have it solved. For example, check whether the fan is blocked or the bearing is broken?
    - Yes → Check the wires of fan motor. Are all the connections good?
      - No → Correct the connections.
      - Yes → Check whether the fan motor is normal through index 1?
        - No → Replace the fan motor
          - No → Replace the main PCB.
            - The malfunction is solved?
              - No → Replace the main PCB.
                - Yes → If the malfunction is still existing, replace the main PCB.
              - Yes → Replace the main PCB.
                - No → Replace the main PCB.
                  - Yes → Replace the main PCB.
                    - No → Replace the main PCB.
                      - Yes → Replace the main PCB.
                        - No → Replace the main PCB.
                          - Yes → Replace the main PCB.
                            - No → Replace the main PCB.
                              - Yes → Replace the main PCB.
                                - No → Replace the main PCB.
                                  - Yes → Replace the main PCB.
                                    - No → Replace the main PCB.
                                      - Yes → Replace the main PCB.
                                        - No → Replace the main PCB.
                                          - Yes → Replace the main PCB.
                                            - No → Replace the main PCB.
                                              - Yes → Replace the main PCB.
                                                - No → Replace the main PCB.
                                                  - Yes → Replace the main PCB.
                                                    - No → Replace the main PCB.
                                                      - Yes → Replace the main PCB.
                                                        - No → Replace the main PCB.
                                                          - Yes → Replace the main PCB.
                                                            - No → Replace the main PCB.
                                                              - Yes → Replace the main PCB.
                                                                - No → Replace the main PCB.
                                                                  - Yes → Replace the main PCB.
                                                                    - No → Replace the main PCB.
                                                                      - Yes → Replace the main PCB.
                                                                        - No → Replace the main PCB.
                                                                          - Yes → Replace the main PCB.
                                                                            - No → Replace the main PCB.
                                                                              - Yes → Replace the main PCB.
                                                                                - No → Replace the main PCB.
                                                                                  - Yes → Replace the main PCB.
                                                                                    - No → Replace the main PCB.
                                                                                      - Yes → Replace the main PCB.
                                                                                        - No → Replace the main PCB.
                                                                                          - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
                                                                                        - Yes → Replace the main PCB.
                                                                                       - No → Replace the main PCB.
Index 1:
1. Indoor AC fan motor
Measure the resistance value of each winding by using the tester.

For the definite value of the resistance, refer to page 61 and page 64.

Index 2:
1: Indoor AC fan motor
Power on and set the unit running in fan mode at high fan speed. After running for 15 seconds, measure the voltage of pin1 and pin2. If the value of the voltage is less than 100V (208~240V power supply) or 50V (115V power supply), the PCB must have problems and need to be replaced.
9.4.5 Open circuit or short circuit of temperature sensor diagnosis and solution (E5)

<table>
<thead>
<tr>
<th>Error Code</th>
<th>E5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malfunction decision conditions</td>
<td>If the sampling voltage is lower than 0.06V or higher than 4.94V, the LED will display the failure.</td>
</tr>
</tbody>
</table>
| Supposed causes | • Wiring mistake  
• Sensor faulty |

Trouble shooting:

Check the connections between temperature sensor and main PCB. Are the connections good?

- No → Correct the connections.
- Yes →

Check the resistance value of the sensor via table 1 (p64) and table 2 (p65), is it normal?

- Yes → Replace indoor or outdoor main PCB.
- No →

Replace the sensor and check if the problem happen again?
9.4.6 Refrigerant Leakage Detection diagnosis and solution (EC)

<table>
<thead>
<tr>
<th>Error Code</th>
<th>EC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malfunction decision conditions</td>
<td>Define the evaporator coil temp. T2 of the compressor just starts running as Tcool. In the beginning 5 minutes after the compressor starts up, if T2 &lt; Tcool - 2°C does not keep continuous 4 seconds and this situation happens 3 times, the display area will show “EC” and AC will turn off.</td>
</tr>
</tbody>
</table>
| Supposed causes | ● T2 sensor faulty  
● Indoor PCB faulty  
● System problems, such as leakage or blocking. |

Trouble shooting:

1. Shut off the power supply and turn it on 5 seconds later. Is it still displaying the error code?
   - Yes
     - Is there cool air blowing out from indoor air outlet?
       - Yes
       - Check if T2 sensor is well fixed. Correct the installation or replace T2 sensor. Does the problem remain again?
       - Yes
         - Replace indoor PCB.
       - No
         - Is there any leakage? Especially the connection parts, such as the gas valve and the liquid valve.
           - Yes
             - Repair the leakage and recharge the refrigerant.
           - No
             - Is there any blocking? (Such as the capillary or the welded points of the pipes.)
               - Yes
                 - Clear the blocking.
               - No
### 9.4.7 IPM malfunction or IGBT over-strong current protection diagnosis and solution(P0)

<table>
<thead>
<tr>
<th>Error Code</th>
<th>P0</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Malfunction decision conditions</strong></td>
<td>When the voltage signal that IPM send to compressor drive chip is abnormal, the display LED will show “P0” and AC will turn off.</td>
</tr>
<tr>
<td><strong>Supposed causes</strong></td>
<td>Wiring mistake; IPM malfunction; Outdoor fan ass'y faulty Compressor malfunction; Outdoor PCB faulty</td>
</tr>
</tbody>
</table>

**Trouble shooting:**

1. Check if the wiring between main PCB and compressor connected by error and if the wires and connectors are broken?
   - Yes: Correct the connection or replace the wires and connectors.
   - No: IPM continuity check. Check if the IPM terminal resistance values are uniform. Refer to page 64.
     - Yes: Check if the outdoor fan runs properly or the outdoor unit ventilation is good.
       - Yes: Check if the compressor resistance values are uniform. Refer to page 63.
         - Yes: Replace the outdoor main PCB if the main PCB and IPM are separate.
         - No: Replace the compressor.
       - No: please refer to the below remark, check whether the resistance of the fan motor is normal. If not, replace the fan motor.
     - No: Replace the IPM board or replace the main PCB if the IPM board and main PCB are integrated together.

**Remark:**

1. 9000 BTU, 230 VAC both Cool Only and Heat Pump models: Measure the **black** pin and **red** pin of the motor connector, the resistance should be around 385Ω at 20℃ (68℉)
2. 9000 BTU and 12000 BTU, 115 VAC both Cool Only and Heat Pump models: Measure the **black** pin and **red** pin of the motor connector, the resistance should be around 50Ω at 20℃ (68℉)
3. 12000 BTU, 230 VAC both Cool Only and Heat Pump models: Measure the **black** pin and **red** pin of the motor connector, the resistance should be around 293Ω at 20℃ (68℉)
4. 18000 BTU, 230 VAC both Cool Only and Heat Pump models: Measure the **black** pin and **red** pin of the motor connector, the resistance should be around 84.5Ω at 20℃ (68℉)
5. 24000 BTU, 230 VAC both Cool Only and Heat Pump models: Measure the **black** pin and **red** pin of the motor connector, the resistance should be around 88.5Ω at 20℃ (68℉)
9.4.8 Over voltage or too low voltage protection diagnosis and solution (P1)

<table>
<thead>
<tr>
<th>Error Code</th>
<th>P1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malfunction decision conditions</td>
<td>An abnormal voltage rise or drop is detected by checking the specified voltage detection circuit.</td>
</tr>
</tbody>
</table>
| Supposed causes | ● Power supply problems.  
● System leakage or block  
● PCB faulty |

Trouble shooting:

- **Check if the power supply is normal.**
  - **No**: Disconnect the unit with power supply and try to restart the unit when power supply gets normal.
  - **Yes**: Check if all the connections and wires are good?
    - **No**: Correct the connections or replace the wires.
    - **Yes**: Power on and when the unit is in standby, check if the voltage between P and N is around DC 310V or 340V or 380V? For different kinds of units, the voltage differs. Consult with technical engineer to get definite value. Then start up the unit, measure the voltage between P and N. Is it in 220V~400V?
      - **No**: Replace the IPM board if it is separate with main PCB.
      - **Yes**: Replace outdoor main PCB.

**Remark:**
Measure the DC voltage between P and N (P and L2 for 230V Systems) port. The normal value should be around 310V.
9.4.9 High temperature protection of compressor top diagnosis and solution (P2)

<table>
<thead>
<tr>
<th>Error Code</th>
<th>P2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malfunction decision conditions</td>
<td>If the sampling voltage is not 5V, the LED will display the failure.</td>
</tr>
</tbody>
</table>
| Supposed causes | ● Power supply problems.  
                ● System leakage or block  
                ● PCB faulty |

Trouble shooting:

- Check if the air flow system of indoor and outdoor units are obstructed?
  - Yes: Clear up the air inlet and outlet or the heat exchanger of indoor and outdoor units.
  - No: Turn off the power supply and turn it on 10 minutes later.

- Check if the unit can start normally.
  - Yes: Check if all the connection, especially the connection of OLP (Over Load Protector) sensor is good.
    - Yes: Correct the connection.
    - No: Measure the resistance between the two ports of the OLP. Is it zero?
      - Yes: Replace the OLP.
      - No: Replace the outdoor control PCB.
  - No: Recharge the correct refrigerant volume.

- Refrigerant system is blocked, such as capillary or welded point of pipes.
### 9.4.10 Inverter compressor drive error diagnosis and solution(P4)

<table>
<thead>
<tr>
<th>Error Code</th>
<th>P4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malfunction decision conditions</td>
<td>An abnormal inverter compressor drive is detected by a special detection circuit, including communication signal detection, voltage detection, compressor rotation speed signal detection and so on.</td>
</tr>
<tr>
<td>Supposed causes</td>
<td>Wiring mistake; IPM malfunction; Outdoor fan ass'y faulty Compressor malfunction; Outdoor PCB faulty</td>
</tr>
</tbody>
</table>

#### Trouble shooting:

1. **Check if the wiring between main PCB and compressor connected by error and if the wires and connectors are broken?**
   - **Yes** → Correct the connection or replace the wires and connectors.
   - **No** → IPM continuity check. Check if the IPM terminal resistance values are uniform. Refer to page 64.

2. **IPM continuity check. Check if the IPM terminal resistance values are uniform. Refer to page 64.**
   - **No** → Replace the IPM board or replace the main PCB if the IPM board and main PCB are integrated together.
   - **Yes** → Check if the outdoor fan runs properly or the outdoor unit ventilation is good.

3. **Check if the outdoor fan runs properly or the outdoor unit ventilation is good.**
   - **Yes** → Check if the compressor resistance values are uniform. Refer to page 63.
   - **No** → Replace the compressor.
   - **Yes** → Replace the outdoor main PCB if the main PCB and IPM are separate.

### Remark:

1. 9000 BTU, Heat Pump, 230V model: Measure the **black** pin and **red** pin of the motor connector, the resistance should be around **385Ω** at 20°C (68°F).
2. 9000 BTU and 12000 BTU 115 VAC Models, Both Cool Only and Heat Pump: Measure the **black** pin and **red** pin of the motor connector, the resistance should be around **50Ω** at 20°C (68°F).
3. 12000 BTU 230 VAC Models, Both Cool Only and Heat Pump: Measure the **black** pin and **red** pin of the motor connector, the resistance should be around **293Ω** at 20°C (68°F).
4. 18000 BTU 230 VAC Models, Both Cool Only and Heat Pump: Measure the **black** pin and **red** pin of the motor connector, the resistance should be around **84.5Ω** at 20°C (68°F).
5. 24000 BTU 230 VAC Models, Both Cool Only and Heat Pump: Measure the **black** pin and **red** pin of the motor connector, the resistance should be around **88.5Ω** at 20°C (68°F).
Main parts check

1. Temperature sensor checking
   Disconnect the temperature sensor from PCB, measure the resistance value with a tester.

   ![Tester]

   Temperature Sensors.
   Room temp.(T1) sensor,
   Indoor coil temp.(T2) sensor,
   Outdoor coil temp.(T3) sensor,
   Outdoor ambient temp.(T4) sensor,
   Compressor discharge temp.(T5) sensor.
   Measure the resistance value of each winding by using the multi-meter.
### Appendix 1: Temperature Sensor Resistance Value Table for T1, T2, T3, T4 (°C→K)

<table>
<thead>
<tr>
<th>°C</th>
<th>°F</th>
<th>K Ohm</th>
<th>°C</th>
<th>°F</th>
<th>K Ohm</th>
<th>°C</th>
<th>°F</th>
<th>K Ohm</th>
</tr>
</thead>
<tbody>
<tr>
<td>-20</td>
<td>-4</td>
<td>115.266</td>
<td>20</td>
<td>68</td>
<td>12.6431</td>
<td>60</td>
<td>140</td>
<td>2.35774</td>
</tr>
<tr>
<td>-19</td>
<td>-2</td>
<td>108.146</td>
<td>21</td>
<td>70</td>
<td>12.0561</td>
<td>61</td>
<td>142</td>
<td>2.27249</td>
</tr>
<tr>
<td>-18</td>
<td>0</td>
<td>101.517</td>
<td>22</td>
<td>72</td>
<td>11.5</td>
<td>62</td>
<td>144</td>
<td>2.19073</td>
</tr>
<tr>
<td>-17</td>
<td>1</td>
<td>96.3423</td>
<td>23</td>
<td>73</td>
<td>10.9731</td>
<td>63</td>
<td>145</td>
<td>2.11241</td>
</tr>
<tr>
<td>-16</td>
<td>3</td>
<td>89.5865</td>
<td>24</td>
<td>75</td>
<td>10.4736</td>
<td>64</td>
<td>147</td>
<td>2.03732</td>
</tr>
<tr>
<td>-15</td>
<td>5</td>
<td>84.219</td>
<td>25</td>
<td>77</td>
<td>10</td>
<td>65</td>
<td>149</td>
<td>1.96532</td>
</tr>
<tr>
<td>-14</td>
<td>7</td>
<td>79.311</td>
<td>26</td>
<td>79</td>
<td>9.55074</td>
<td>66</td>
<td>151</td>
<td>1.89627</td>
</tr>
<tr>
<td>-13</td>
<td>9</td>
<td>74.536</td>
<td>27</td>
<td>81</td>
<td>9.12445</td>
<td>67</td>
<td>153</td>
<td>1.83003</td>
</tr>
<tr>
<td>-12</td>
<td>10</td>
<td>70.168</td>
<td>28</td>
<td>82</td>
<td>8.71983</td>
<td>68</td>
<td>155</td>
<td>1.76647</td>
</tr>
<tr>
<td>-11</td>
<td>12</td>
<td>66.0889</td>
<td>29</td>
<td>84</td>
<td>8.33666</td>
<td>69</td>
<td>157</td>
<td>1.70547</td>
</tr>
<tr>
<td>-10</td>
<td>14</td>
<td>62.2756</td>
<td>30</td>
<td>86</td>
<td>7.97078</td>
<td>70</td>
<td>159</td>
<td>1.64961</td>
</tr>
<tr>
<td>-9</td>
<td>16</td>
<td>58.7079</td>
<td>31</td>
<td>88</td>
<td>7.62411</td>
<td>71</td>
<td>161</td>
<td>1.59068</td>
</tr>
<tr>
<td>-8</td>
<td>18</td>
<td>56.3694</td>
<td>32</td>
<td>90</td>
<td>7.29464</td>
<td>72</td>
<td>163</td>
<td>1.53668</td>
</tr>
<tr>
<td>-7</td>
<td>19</td>
<td>52.2438</td>
<td>33</td>
<td>91</td>
<td>6.98142</td>
<td>73</td>
<td>165</td>
<td>1.48481</td>
</tr>
<tr>
<td>-6</td>
<td>21</td>
<td>49.3161</td>
<td>34</td>
<td>93</td>
<td>6.68355</td>
<td>74</td>
<td>167</td>
<td>1.43498</td>
</tr>
<tr>
<td>-5</td>
<td>23</td>
<td>46.5725</td>
<td>35</td>
<td>95</td>
<td>6.40021</td>
<td>75</td>
<td>169</td>
<td>1.38703</td>
</tr>
<tr>
<td>-4</td>
<td>25</td>
<td>44</td>
<td>36</td>
<td>97</td>
<td>6.13059</td>
<td>76</td>
<td>171</td>
<td>1.34105</td>
</tr>
<tr>
<td>-3</td>
<td>27</td>
<td>41.5878</td>
<td>37</td>
<td>99</td>
<td>5.87359</td>
<td>77</td>
<td>173</td>
<td>1.29078</td>
</tr>
<tr>
<td>-2</td>
<td>28</td>
<td>39.8239</td>
<td>38</td>
<td>100</td>
<td>5.62961</td>
<td>78</td>
<td>175</td>
<td>1.24232</td>
</tr>
<tr>
<td>-1</td>
<td>30</td>
<td>37.1988</td>
<td>39</td>
<td>102</td>
<td>5.39689</td>
<td>79</td>
<td>177</td>
<td>1.21333</td>
</tr>
<tr>
<td>0</td>
<td>32</td>
<td>35.2024</td>
<td>40</td>
<td>104</td>
<td>5.17519</td>
<td>80</td>
<td>179</td>
<td>1.17393</td>
</tr>
<tr>
<td>1</td>
<td>34</td>
<td>33.3269</td>
<td>41</td>
<td>106</td>
<td>4.96392</td>
<td>81</td>
<td>181</td>
<td>1.13604</td>
</tr>
<tr>
<td>2</td>
<td>36</td>
<td>31.5635</td>
<td>42</td>
<td>108</td>
<td>4.76253</td>
<td>82</td>
<td>183</td>
<td>1.09958</td>
</tr>
<tr>
<td>3</td>
<td>37</td>
<td>29.9058</td>
<td>43</td>
<td>110</td>
<td>4.5705</td>
<td>83</td>
<td>185</td>
<td>1.06448</td>
</tr>
<tr>
<td>4</td>
<td>39</td>
<td>28.3459</td>
<td>44</td>
<td>112</td>
<td>4.38736</td>
<td>84</td>
<td>187</td>
<td>1.03069</td>
</tr>
<tr>
<td>5</td>
<td>41</td>
<td>26.8778</td>
<td>45</td>
<td>114</td>
<td>4.21263</td>
<td>85</td>
<td>189</td>
<td>0.99815</td>
</tr>
<tr>
<td>6</td>
<td>43</td>
<td>25.4954</td>
<td>46</td>
<td>116</td>
<td>4.04589</td>
<td>86</td>
<td>191</td>
<td>0.96681</td>
</tr>
<tr>
<td>7</td>
<td>45</td>
<td>24.1932</td>
<td>47</td>
<td>118</td>
<td>3.88673</td>
<td>87</td>
<td>193</td>
<td>0.93662</td>
</tr>
<tr>
<td>8</td>
<td>46</td>
<td>22.6662</td>
<td>48</td>
<td>118</td>
<td>3.73476</td>
<td>88</td>
<td>195</td>
<td>0.90753</td>
</tr>
<tr>
<td>9</td>
<td>48</td>
<td>21.0904</td>
<td>49</td>
<td>120</td>
<td>3.58962</td>
<td>89</td>
<td>197</td>
<td>0.87951</td>
</tr>
<tr>
<td>10</td>
<td>50</td>
<td>20.7184</td>
<td>50</td>
<td>122</td>
<td>3.45097</td>
<td>90</td>
<td>199</td>
<td>0.85248</td>
</tr>
<tr>
<td>11</td>
<td>52</td>
<td>19.6891</td>
<td>51</td>
<td>124</td>
<td>3.31847</td>
<td>91</td>
<td>201</td>
<td>0.82643</td>
</tr>
<tr>
<td>12</td>
<td>54</td>
<td>18.7177</td>
<td>52</td>
<td>126</td>
<td>3.19183</td>
<td>92</td>
<td>203</td>
<td>0.80132</td>
</tr>
<tr>
<td>13</td>
<td>55</td>
<td>17.8005</td>
<td>53</td>
<td>127</td>
<td>3.07075</td>
<td>93</td>
<td>205</td>
<td>0.77709</td>
</tr>
<tr>
<td>14</td>
<td>57</td>
<td>16.9341</td>
<td>54</td>
<td>129</td>
<td>2.95896</td>
<td>94</td>
<td>207</td>
<td>0.75373</td>
</tr>
<tr>
<td>15</td>
<td>59</td>
<td>16.1156</td>
<td>55</td>
<td>131</td>
<td>2.84421</td>
<td>95</td>
<td>209</td>
<td>0.73119</td>
</tr>
<tr>
<td>16</td>
<td>61</td>
<td>15.3418</td>
<td>56</td>
<td>133</td>
<td>2.73823</td>
<td>96</td>
<td>211</td>
<td>0.70944</td>
</tr>
<tr>
<td>17</td>
<td>63</td>
<td>14.6181</td>
<td>57</td>
<td>135</td>
<td>2.63682</td>
<td>97</td>
<td>213</td>
<td>0.68844</td>
</tr>
<tr>
<td>18</td>
<td>64</td>
<td>13.918</td>
<td>58</td>
<td>136</td>
<td>2.53973</td>
<td>98</td>
<td>215</td>
<td>0.66818</td>
</tr>
<tr>
<td>19</td>
<td>66</td>
<td>13.2631</td>
<td>59</td>
<td>138</td>
<td>2.44677</td>
<td>99</td>
<td>217</td>
<td>0.64862</td>
</tr>
</tbody>
</table>

The table provides resistance values in K Ohm for temperatures ranging from -20°C to 19°C, converted to Fahrenheit (°F) and Kelvin (K). The values are shown in increments of 2°C, with corresponding resistance values in 2°C intervals. This table is useful for understanding the relationship between temperature and resistance in temperature sensors, which is crucial for various applications in temperature control and monitoring systems.
## Appendix 2 Temperature Sensor Resistance Value Table for T5 (°C -- K)

<table>
<thead>
<tr>
<th>°C</th>
<th>°F</th>
<th>K Ohm</th>
<th>°C</th>
<th>°F</th>
<th>K Ohm</th>
<th>°C</th>
<th>°F</th>
<th>K Ohm</th>
<th>°C</th>
<th>°F</th>
<th>K Ohm</th>
</tr>
</thead>
<tbody>
<tr>
<td>-20</td>
<td>-4</td>
<td>542.7</td>
<td>20</td>
<td>68</td>
<td>68.66</td>
<td>60</td>
<td>140</td>
<td>13.59</td>
<td>100</td>
<td>212</td>
<td>3.702</td>
</tr>
<tr>
<td>-19</td>
<td>-2</td>
<td>511.9</td>
<td>21</td>
<td>70</td>
<td>65.62</td>
<td>61</td>
<td>142</td>
<td>13.11</td>
<td>101</td>
<td>214</td>
<td>3.595</td>
</tr>
<tr>
<td>-18</td>
<td>0</td>
<td>483</td>
<td>22</td>
<td>72</td>
<td>62.73</td>
<td>62</td>
<td>144</td>
<td>12.65</td>
<td>102</td>
<td>216</td>
<td>3.492</td>
</tr>
<tr>
<td>-17</td>
<td>1</td>
<td>455.9</td>
<td>23</td>
<td>73</td>
<td>59.98</td>
<td>63</td>
<td>145</td>
<td>12.21</td>
<td>103</td>
<td>217</td>
<td>3.392</td>
</tr>
<tr>
<td>-16</td>
<td>3</td>
<td>430.5</td>
<td>24</td>
<td>75</td>
<td>57.37</td>
<td>64</td>
<td>147</td>
<td>11.79</td>
<td>104</td>
<td>219</td>
<td>3.296</td>
</tr>
<tr>
<td>-15</td>
<td>5</td>
<td>406.7</td>
<td>25</td>
<td>77</td>
<td>54.89</td>
<td>65</td>
<td>149</td>
<td>11.38</td>
<td>105</td>
<td>221</td>
<td>3.203</td>
</tr>
<tr>
<td>-14</td>
<td>7</td>
<td>384.3</td>
<td>26</td>
<td>79</td>
<td>52.53</td>
<td>66</td>
<td>151</td>
<td>10.99</td>
<td>106</td>
<td>223</td>
<td>3.113</td>
</tr>
<tr>
<td>-13</td>
<td>9</td>
<td>363.3</td>
<td>27</td>
<td>81</td>
<td>50.28</td>
<td>67</td>
<td>153</td>
<td>10.61</td>
<td>107</td>
<td>225</td>
<td>3.025</td>
</tr>
<tr>
<td>-12</td>
<td>10</td>
<td>343.6</td>
<td>28</td>
<td>82</td>
<td>48.14</td>
<td>68</td>
<td>154</td>
<td>10.25</td>
<td>108</td>
<td>226</td>
<td>2.941</td>
</tr>
<tr>
<td>-11</td>
<td>12</td>
<td>325.1</td>
<td>29</td>
<td>84</td>
<td>46.11</td>
<td>69</td>
<td>156</td>
<td>9.902</td>
<td>109</td>
<td>228</td>
<td>2.86</td>
</tr>
<tr>
<td>-10</td>
<td>14</td>
<td>307.7</td>
<td>30</td>
<td>86</td>
<td>44.17</td>
<td>70</td>
<td>158</td>
<td>9.569</td>
<td>110</td>
<td>230</td>
<td>2.781</td>
</tr>
<tr>
<td>-9</td>
<td>16</td>
<td>291.3</td>
<td>31</td>
<td>88</td>
<td>42.33</td>
<td>71</td>
<td>160</td>
<td>9.248</td>
<td>111</td>
<td>232</td>
<td>2.704</td>
</tr>
<tr>
<td>-8</td>
<td>18</td>
<td>275.9</td>
<td>32</td>
<td>90</td>
<td>40.57</td>
<td>72</td>
<td>162</td>
<td>8.94</td>
<td>112</td>
<td>234</td>
<td>2.63</td>
</tr>
<tr>
<td>-7</td>
<td>19</td>
<td>261.4</td>
<td>33</td>
<td>91</td>
<td>38.89</td>
<td>73</td>
<td>163</td>
<td>8.643</td>
<td>113</td>
<td>235</td>
<td>2.559</td>
</tr>
<tr>
<td>-6</td>
<td>21</td>
<td>247.8</td>
<td>34</td>
<td>93</td>
<td>37.3</td>
<td>74</td>
<td>165</td>
<td>8.358</td>
<td>114</td>
<td>237</td>
<td>2.489</td>
</tr>
<tr>
<td>-5</td>
<td>23</td>
<td>234.9</td>
<td>35</td>
<td>95</td>
<td>35.78</td>
<td>75</td>
<td>167</td>
<td>8.084</td>
<td>115</td>
<td>239</td>
<td>2.422</td>
</tr>
<tr>
<td>-4</td>
<td>25</td>
<td>222.8</td>
<td>36</td>
<td>97</td>
<td>34.32</td>
<td>76</td>
<td>169</td>
<td>7.82</td>
<td>116</td>
<td>241</td>
<td>2.357</td>
</tr>
<tr>
<td>-3</td>
<td>27</td>
<td>211.4</td>
<td>37</td>
<td>99</td>
<td>32.94</td>
<td>77</td>
<td>171</td>
<td>7.566</td>
<td>117</td>
<td>243</td>
<td>2.294</td>
</tr>
<tr>
<td>-2</td>
<td>28</td>
<td>200.7</td>
<td>38</td>
<td>100</td>
<td>31.62</td>
<td>78</td>
<td>172</td>
<td>7.321</td>
<td>118</td>
<td>244</td>
<td>2.233</td>
</tr>
<tr>
<td>-1</td>
<td>30</td>
<td>190.5</td>
<td>39</td>
<td>102</td>
<td>30.36</td>
<td>79</td>
<td>174</td>
<td>7.086</td>
<td>119</td>
<td>246</td>
<td>2.174</td>
</tr>
<tr>
<td>0</td>
<td>32</td>
<td>180.9</td>
<td>40</td>
<td>104</td>
<td>29.15</td>
<td>80</td>
<td>176</td>
<td>6.859</td>
<td>120</td>
<td>248</td>
<td>2.117</td>
</tr>
<tr>
<td>1</td>
<td>34</td>
<td>171.9</td>
<td>41</td>
<td>106</td>
<td>28</td>
<td>81</td>
<td>178</td>
<td>6.641</td>
<td>121</td>
<td>250</td>
<td>2.061</td>
</tr>
<tr>
<td>2</td>
<td>36</td>
<td>163.3</td>
<td>42</td>
<td>108</td>
<td>26.9</td>
<td>82</td>
<td>180</td>
<td>6.43</td>
<td>122</td>
<td>252</td>
<td>2.007</td>
</tr>
<tr>
<td>3</td>
<td>37</td>
<td>155.2</td>
<td>43</td>
<td>109</td>
<td>25.86</td>
<td>83</td>
<td>181</td>
<td>6.228</td>
<td>123</td>
<td>253</td>
<td>1.955</td>
</tr>
<tr>
<td>4</td>
<td>39</td>
<td>147.6</td>
<td>44</td>
<td>111</td>
<td>24.85</td>
<td>84</td>
<td>183</td>
<td>6.033</td>
<td>124</td>
<td>255</td>
<td>1.905</td>
</tr>
<tr>
<td>5</td>
<td>41</td>
<td>140.4</td>
<td>45</td>
<td>113</td>
<td>23.89</td>
<td>85</td>
<td>185</td>
<td>5.844</td>
<td>125</td>
<td>257</td>
<td>1.856</td>
</tr>
<tr>
<td>6</td>
<td>43</td>
<td>133.5</td>
<td>46</td>
<td>115</td>
<td>22.89</td>
<td>86</td>
<td>187</td>
<td>5.663</td>
<td>126</td>
<td>259</td>
<td>1.808</td>
</tr>
<tr>
<td>7</td>
<td>45</td>
<td>127.1</td>
<td>47</td>
<td>117</td>
<td>21.1</td>
<td>87</td>
<td>189</td>
<td>5.488</td>
<td>127</td>
<td>261</td>
<td>1.762</td>
</tr>
<tr>
<td>8</td>
<td>46</td>
<td>121</td>
<td>48</td>
<td>118</td>
<td>21.26</td>
<td>88</td>
<td>190</td>
<td>5.3</td>
<td>128</td>
<td>262</td>
<td>1.717</td>
</tr>
<tr>
<td>9</td>
<td>48</td>
<td>115.2</td>
<td>49</td>
<td>120</td>
<td>20.46</td>
<td>89</td>
<td>192</td>
<td>5.157</td>
<td>129</td>
<td>264</td>
<td>1.674</td>
</tr>
<tr>
<td>10</td>
<td>50</td>
<td>109.8</td>
<td>50</td>
<td>122</td>
<td>19.69</td>
<td>90</td>
<td>194</td>
<td>5</td>
<td>130</td>
<td>266</td>
<td>1.632</td>
</tr>
<tr>
<td>11</td>
<td>52</td>
<td>104.6</td>
<td>51</td>
<td>124</td>
<td>18.96</td>
<td>91</td>
<td>196</td>
<td>4.849</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>54</td>
<td>99.69</td>
<td>52</td>
<td>126</td>
<td>18.26</td>
<td>92</td>
<td>198</td>
<td>4.703</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>55</td>
<td>95.05</td>
<td>53</td>
<td>127</td>
<td>17.58</td>
<td>93</td>
<td>199</td>
<td>4.562</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>57</td>
<td>90.66</td>
<td>54</td>
<td>129</td>
<td>16.94</td>
<td>94</td>
<td>201</td>
<td>4.426</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>59</td>
<td>86.49</td>
<td>55</td>
<td>131</td>
<td>16.32</td>
<td>95</td>
<td>203</td>
<td>4.294</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>61</td>
<td>82.54</td>
<td>56</td>
<td>133</td>
<td>15.73</td>
<td>96</td>
<td>205</td>
<td>4.167</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>63</td>
<td>78.79</td>
<td>57</td>
<td>135</td>
<td>15.16</td>
<td>97</td>
<td>207</td>
<td>4.045</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>64</td>
<td>75.24</td>
<td>58</td>
<td>136</td>
<td>14.62</td>
<td>98</td>
<td>208</td>
<td>3.927</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>66</td>
<td>71.86</td>
<td>59</td>
<td>138</td>
<td>14.09</td>
<td>99</td>
<td>210</td>
<td>3.812</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Appendix 3:

<table>
<thead>
<tr>
<th>°C</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
<th>20</th>
<th>21</th>
<th>22</th>
<th>23</th>
<th>24</th>
<th>25</th>
<th>26</th>
<th>27</th>
</tr>
</thead>
<tbody>
<tr>
<td>°F</td>
<td>50</td>
<td>50</td>
<td>52</td>
<td>54</td>
<td>56</td>
<td>58</td>
<td>60</td>
<td>62</td>
<td>64</td>
<td>66</td>
<td>68</td>
<td>70</td>
<td>72</td>
<td>74</td>
<td>76</td>
<td>78</td>
<td>80</td>
<td>82</td>
</tr>
<tr>
<td>°C</td>
<td>28</td>
<td>29</td>
<td>30</td>
<td>31</td>
<td>32</td>
<td>33</td>
<td>34</td>
<td>35</td>
<td>36</td>
<td>37</td>
<td>38</td>
<td>39</td>
<td>40</td>
<td>41</td>
<td>42</td>
<td>43</td>
<td></td>
<td></td>
</tr>
<tr>
<td>°F</td>
<td>84</td>
<td>86</td>
<td>86</td>
<td>90</td>
<td>92</td>
<td>94</td>
<td>96</td>
<td>98</td>
<td>98</td>
<td>99</td>
<td>100</td>
<td>102</td>
<td>104</td>
<td>106</td>
<td>108</td>
<td>109</td>
<td></td>
<td></td>
</tr>
<tr>
<td>°C</td>
<td>44</td>
<td>45</td>
<td>46</td>
<td>47</td>
<td>48</td>
<td>49</td>
<td>50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>°F</td>
<td>111</td>
<td>113</td>
<td>115</td>
<td>117</td>
<td>118</td>
<td>120</td>
<td>122</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\[
\Delta T(°F) = \frac{9\Delta T(°C)}{5}
\]
2. Compressor checking

Measure the resistance value of each winding by using the tester.

<table>
<thead>
<tr>
<th>Position</th>
<th>Resistance Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue - Red</td>
<td>DA108X1C-23EZ 1.1Ω (20°C/68°F)</td>
</tr>
<tr>
<td>Blue - Black</td>
<td>DA108X1C-20FZ3 0.71Ω (20°C/68°F)</td>
</tr>
<tr>
<td>Red - Blue</td>
<td>DA130M1C-31FZ 1.77Ω (20°C/68°F)</td>
</tr>
<tr>
<td></td>
<td>DA150S1C-20FZ 0.95Ω (20°C/68°F)</td>
</tr>
</tbody>
</table>

![Image of compressor checking setup]
3. IPM continuity check
Turn off the power, let the large capacity electrolytic capacitors discharge completely, and dismount the IPM. Use a digital tester to measure the resistance between P and UVWN; UVW and N.

<table>
<thead>
<tr>
<th>Digital tester</th>
<th>Normal resistance value</th>
<th>Digital tester</th>
<th>Normal resistance value</th>
</tr>
</thead>
<tbody>
<tr>
<td>(+)Red</td>
<td>(-)Black</td>
<td>(+)Red</td>
<td>(-)Black</td>
</tr>
<tr>
<td>N</td>
<td>∞</td>
<td>U</td>
<td>∞</td>
</tr>
<tr>
<td>U</td>
<td>(Several MΩ)</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>V</td>
<td></td>
<td>W</td>
<td></td>
</tr>
<tr>
<td>W</td>
<td>(+)Red</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4: Indoor AC Fan Motor
Measure the resistance value of each winding by using the tester.

<table>
<thead>
<tr>
<th>Position</th>
<th>Resistance Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black - Red</td>
<td>530Ω±8% (20°C/68°F) (Brand: Weiling)</td>
</tr>
<tr>
<td></td>
<td>75Ω±8% (20°C/68°F) (Brand: Weiling)</td>
</tr>
<tr>
<td></td>
<td>381Ω±8% (20°C/68°F) (Brand: Weiling)</td>
</tr>
<tr>
<td></td>
<td>183.6Ω±8% (20°C/68°F) (Brand: Weiling)</td>
</tr>
<tr>
<td></td>
<td>112Ω±8% (20°C/68°F) (Brand: Dayang)</td>
</tr>
<tr>
<td></td>
<td>118.5Ω±8% (20°C/68°F) (Brand: Dayang)</td>
</tr>
<tr>
<td>White - Black</td>
<td>315Ω±8% (20°C/68°F) (Brand: Weiling)</td>
</tr>
<tr>
<td></td>
<td>150Ω±8% (20°C/68°F) (Brand: Weiling)</td>
</tr>
<tr>
<td></td>
<td>267Ω±8% (20°C/68°F) (Brand: Weiling)</td>
</tr>
<tr>
<td></td>
<td>206Ω±8% (20°C/68°F) (Brand: Weiling)</td>
</tr>
<tr>
<td></td>
<td>82Ω±8% (20°C/68°F) (Brand: Dayang)</td>
</tr>
<tr>
<td></td>
<td>78.5Ω±8% (20°C/68°F) (Brand: Dayang)</td>
</tr>
</tbody>
</table>
### Pressure On Service Port

#### Cooling chart:

<table>
<thead>
<tr>
<th>°F (℃)</th>
<th>ODT</th>
<th>IDT</th>
<th>75 (23.89)</th>
<th>85 (29.44)</th>
<th>95 (35)</th>
<th>105 (40.56)</th>
<th>115 (46.11)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAR</td>
<td>70/59</td>
<td>8.2</td>
<td>7.8</td>
<td>8.1</td>
<td>8.6</td>
<td>10.1</td>
<td></td>
</tr>
<tr>
<td>BAR</td>
<td>75/63</td>
<td>8.6</td>
<td>8.3</td>
<td>8.7</td>
<td>9.1</td>
<td>10.7</td>
<td></td>
</tr>
<tr>
<td>BAR</td>
<td>80/67</td>
<td>9.3</td>
<td>8.9</td>
<td>9.1</td>
<td>9.6</td>
<td>11.2</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>°F (℃)</th>
<th>ODT</th>
<th>IDT</th>
<th>75 (23.89)</th>
<th>85 (29.44)</th>
<th>95 (35)</th>
<th>105 (40.56)</th>
<th>115 (46.11)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSI</td>
<td>70/59</td>
<td>119</td>
<td>113</td>
<td>117</td>
<td>125</td>
<td>147</td>
<td></td>
</tr>
<tr>
<td>PSI</td>
<td>75/63</td>
<td>124</td>
<td>120</td>
<td>126</td>
<td>132</td>
<td>155</td>
<td></td>
</tr>
<tr>
<td>PSI</td>
<td>80/67</td>
<td>135</td>
<td>129</td>
<td>132</td>
<td>140</td>
<td>162</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>°F (℃)</th>
<th>ODT</th>
<th>IDT</th>
<th>75 (23.89)</th>
<th>85 (29.44)</th>
<th>95 (35)</th>
<th>105 (40.56)</th>
<th>115 (46.11)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPA</td>
<td>70/59</td>
<td>0.82</td>
<td>0.78</td>
<td>0.81</td>
<td>0.86</td>
<td>1.01</td>
<td></td>
</tr>
<tr>
<td>MPA</td>
<td>75/63</td>
<td>0.86</td>
<td>0.83</td>
<td>0.87</td>
<td>0.91</td>
<td>1.07</td>
<td></td>
</tr>
<tr>
<td>MPA</td>
<td>80/67</td>
<td>0.93</td>
<td>0.89</td>
<td>0.91</td>
<td>0.96</td>
<td>1.12</td>
<td></td>
</tr>
</tbody>
</table>

![Graph showing temperature and pressure values](image-url)
### Heating Chart:

<table>
<thead>
<tr>
<th>°F (℃)</th>
<th>57/53 (13.89/11.67)</th>
<th>47/43 (8.33/6.11)</th>
<th>37/33 (2.78/0.56)</th>
<th>27/23 (-2.78/-5)</th>
<th>17/13 (-8.33/-10.56)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAR 55</td>
<td>30.3</td>
<td>28.5</td>
<td>25.3</td>
<td>22.8</td>
<td>20.8</td>
</tr>
<tr>
<td>BAR 65</td>
<td>32.5</td>
<td>30.0</td>
<td>26.6</td>
<td>25.4</td>
<td>23.3</td>
</tr>
<tr>
<td>BAR 75</td>
<td>33.8</td>
<td>31.5</td>
<td>27.8</td>
<td>26.3</td>
<td>24.9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>°F (℃)</th>
<th>57/53 (13.89/11.67)</th>
<th>47/43 (8.33/6.11)</th>
<th>37/33 (2.78/0.56)</th>
<th>27/23 (-2.78/-5)</th>
<th>17/13 (-8.33/-10.56)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSI 55</td>
<td>439</td>
<td>413</td>
<td>367</td>
<td>330</td>
<td>302</td>
</tr>
<tr>
<td>PSI 65</td>
<td>471</td>
<td>435</td>
<td>386</td>
<td>368</td>
<td>339</td>
</tr>
<tr>
<td>PSI 75</td>
<td>489</td>
<td>457</td>
<td>403</td>
<td>381</td>
<td>362</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>°F (℃)</th>
<th>57/53 (13.89/11.67)</th>
<th>47/43 (8.33/6.11)</th>
<th>37/33 (2.78/0.56)</th>
<th>27/23 (-2.78/-5)</th>
<th>17/13 (-8.33/-10.56)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPA 55</td>
<td>3.03</td>
<td>2.85</td>
<td>2.53</td>
<td>2.28</td>
<td>2.08</td>
</tr>
<tr>
<td>MPA 65</td>
<td>3.25</td>
<td>3.00</td>
<td>2.66</td>
<td>2.54</td>
<td>2.33</td>
</tr>
<tr>
<td>MPA 75</td>
<td>3.38</td>
<td>3.15</td>
<td>2.78</td>
<td>2.63</td>
<td>2.49</td>
</tr>
</tbody>
</table>

10. Exploded Component Views:

Please refer to the separate document available covering the Exploded Component Views for this product line.