Service Manual

Inverter Pair
Wall Mounted Type FTX-N Series
Floor Standing Type FVXS-N Series

[Applied Models]
- Inverter Pair : Heat Pump
Inverter Pair
Wall Mounted Type
FTX-N Series
Floor Standing Type
FVXS-N Series

Heat Pump

Indoor Unit
FTX09NMVJU   FVXS09NVJU
FTX12NMVJU   FVXS12NVJU
FTX15NMVJU   FVXS15NVJU

Outdoor Unit
RXL09QMVJU
RXL12QMVJU
RXL15QMVJU
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   1.1 Warnings and Cautions Regarding Safety of Workers
   1.2 Warnings and Cautions Regarding Safety of Users
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1. Safety Cautions

Be sure to read the following safety cautions before conducting repair work. After the repair work is complete, be sure to conduct a test operation to ensure that the equipment operates normally, and explain the cautions for operating the product to the customer.

Caution Items

The caution items are classified into `⚠️ Warning` and `⚠️ Caution`. The `⚠️ Warning` items are especially important since death or serious injury can result if they are not followed closely. The `⚠️ Caution` items can also lead to serious accidents under some conditions if they are not followed. Therefore, be sure to observe all the safety caution items described below.

Pictograms

⚠️ This symbol indicates an item for which caution must be exercised.

The pictogram shows the item to which attention must be paid.

☒ This symbol indicates a prohibited action.

The prohibited item or action is shown in the illustration or near the symbol.

❑ This symbol indicates an action that must be taken, or an instruction.

The instruction is shown in the illustration or near the symbol.

1.1 Warnings and Cautions Regarding Safety of Workers

<table>
<thead>
<tr>
<th>⚠️ Warning</th>
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<tbody>
<tr>
<td>Do not store equipment in a room with fire sources (e.g., naked flames, gas appliances, electric heaters).</td>
</tr>
</tbody>
</table>

⚠️ Be sure to disconnect the power cable from the socket before disassembling equipment for repair. Working on equipment that is connected to the power supply may cause an electrical shock. If it is necessary to supply power to the equipment to conduct the repair or inspect the circuits, do not touch any electrically charged sections of the equipment.

⚠️ If refrigerant gas is discharged during repair work, do not touch the discharged refrigerant gas. Refrigerant gas may cause frostbite.

⚠️ When disconnecting the suction or discharge pipe of the compressor at the welded section, evacuate the refrigerant gas completely at a well-ventilated place first. If there is gas remaining inside the compressor, the refrigerant gas or refrigerating machine oil discharges when the pipe is disconnected, and it may cause injury.

⚠️ If refrigerant gas leaks during repair work, ventilate the area. Refrigerant gas may generate toxic gases when it contacts flames.

⚠️ Be sure to discharge the capacitor completely before conducting repair work. The step-up capacitor supplies high-voltage electricity to the electrical components of the outdoor unit. A charged capacitor may cause an electrical shock.
### Warning

<table>
<thead>
<tr>
<th>Warning</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Do not turn the air conditioner on or off by plugging in or unplugging the power cable.</strong></td>
<td></td>
</tr>
<tr>
<td>Plugging in or unplugging the power cable to operate the equipment may cause an electrical shock or fire.</td>
<td></td>
</tr>
<tr>
<td><strong>Be sure to wear a safety helmet, gloves, and a safety belt when working in a high place (more than 2 m).</strong></td>
<td></td>
</tr>
<tr>
<td>Insufficient safety measures may cause a fall.</td>
<td></td>
</tr>
<tr>
<td><strong>In case of R-32 / R-410A refrigerant models, be sure to use pipes, flare nuts and tools intended for the exclusive use with the R-32 / R-410A refrigerant.</strong></td>
<td></td>
</tr>
<tr>
<td>The use of materials for R-22 refrigerant models may cause a serious accident, such as a damage of refrigerant cycle or equipment failure.</td>
<td></td>
</tr>
<tr>
<td><strong>Do not mix air or gas other than the specified refrigerant (R-32 / R-410A / R-22) in the refrigerant system.</strong></td>
<td></td>
</tr>
<tr>
<td>If air enters the refrigerant system, an excessively high pressure results, causing equipment damage and injury.</td>
<td></td>
</tr>
</tbody>
</table>

### Caution

<table>
<thead>
<tr>
<th>Caution</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Do not repair electrical components with wet hands.</strong></td>
<td></td>
</tr>
<tr>
<td>Working on the equipment with wet hands may cause an electrical shock.</td>
<td></td>
</tr>
<tr>
<td><strong>Do not clean the air conditioner with water.</strong></td>
<td></td>
</tr>
<tr>
<td>Washing the unit with water may cause an electrical shock.</td>
<td></td>
</tr>
<tr>
<td><strong>Be sure to provide an earth / grounding when repairing the equipment in a humid or wet place, to avoid electrical shocks.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Be sure to turn off the power switch and unplug the power cable when cleaning the equipment.</strong></td>
<td></td>
</tr>
<tr>
<td>The internal fan rotates at a high speed, and may cause injury.</td>
<td></td>
</tr>
<tr>
<td><strong>Be sure to conduct repair work with appropriate tools.</strong></td>
<td></td>
</tr>
<tr>
<td>The use of inappropriate tools may cause injury.</td>
<td></td>
</tr>
</tbody>
</table>
## 1.2 Warnings and Cautions Regarding Safety of Users

<table>
<thead>
<tr>
<th>Caution</th>
<th>Warning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Be sure to check that the refrigerating cycle section has cooled down</td>
<td>Do not store the equipment in a room with fire sources (e.g., naked</td>
</tr>
<tr>
<td>enough before conducting repair work. Working on the unit when the</td>
<td>flames, gas appliances, electric heaters).</td>
</tr>
<tr>
<td>refrigerating cycle section is hot may cause burns.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Be sure to use parts listed in the service parts list of the applicable</td>
</tr>
<tr>
<td></td>
<td>model and appropriate tools to conduct repair work. Never attempt to</td>
</tr>
<tr>
<td></td>
<td>modify the equipment. The use of inappropriate parts or tools may</td>
</tr>
<tr>
<td></td>
<td>cause an electrical shock, excessive heat generation or fire.</td>
</tr>
<tr>
<td></td>
<td>If the power cable and lead wires are scratched or have deteriorated,</td>
</tr>
<tr>
<td></td>
<td>be sure to replace them. Damaged cable and wires may cause an</td>
</tr>
<tr>
<td></td>
<td>electrical shock, excessive heat generation or fire.</td>
</tr>
<tr>
<td></td>
<td>Do not use a joined power cable or extension cable, or share the same</td>
</tr>
<tr>
<td></td>
<td>power outlet with other electrical appliances, since it may cause an</td>
</tr>
<tr>
<td></td>
<td>electrical shock, excessive heat generation or fire.</td>
</tr>
<tr>
<td></td>
<td>Be sure to use an exclusive power circuit for the equipment, and follow</td>
</tr>
<tr>
<td></td>
<td>the local technical standards related to the electrical equipment, the</td>
</tr>
<tr>
<td></td>
<td>internal wiring regulations, and the instruction manual for</td>
</tr>
<tr>
<td></td>
<td>installation when conducting electrical work. Insufficient power</td>
</tr>
<tr>
<td></td>
<td>circuit capacity and improper electrical work may cause an electrical</td>
</tr>
<tr>
<td></td>
<td>shock or fire.</td>
</tr>
<tr>
<td></td>
<td>Be sure to use the specified cable for wiring between the indoor and</td>
</tr>
<tr>
<td></td>
<td>outdoor units. Make the connections securely and route the cable</td>
</tr>
<tr>
<td></td>
<td>properly so that there is no force pulling the cable at the</td>
</tr>
<tr>
<td></td>
<td>connection terminals. Improper connections may cause excessive heat</td>
</tr>
<tr>
<td></td>
<td>generation or fire.</td>
</tr>
</tbody>
</table>
When wiring between the indoor and outdoor units, make sure that the terminal cover does not lift off or dismount because of the cable. If the cover is not mounted properly, the terminal connection section may cause an electrical shock, excessive heat generation or fire.

Do not damage or modify the power cable. Damaged or modified power cables may cause an electrical shock or fire. Placing heavy items on the power cable, or heating or pulling the power cable may damage it.

Do not mix air or gas other than the specified refrigerant (R-32 / R-410A / R-22) in the refrigerant system. If air enters the refrigerant system, an excessively high pressure results, causing equipment damage and injury.

If the refrigerant gas leaks, be sure to locate the leaking point and repair it before charging the refrigerant. After charging the refrigerant, make sure that there is no leak. If the leaking point cannot be located and the repair work must be stopped, be sure to pump-down, and close the service valve, to prevent refrigerant gas from leaking into the room. Refrigerant gas itself is harmless, but it may generate toxic gases when it contacts flames, such as those from fan type and other heaters, stoves and ranges.

When relocating the equipment, make sure that the new installation site has sufficient strength to withstand the weight of the equipment. If the installation site does not have sufficient strength or the installation work is not conducted securely, the equipment may fall and cause injury.

Check to make sure that the power cable plug is not dirty or loose, then insert the plug into a power outlet securely. If the plug is dusty or has a loose connection, it may cause an electrical shock or fire.

When replacing the coin battery in the remote controller, be sure to dispose of the old battery to prevent children from swallowing it. If a child swallows the coin battery, see a doctor immediately.
<table>
<thead>
<tr>
<th>Caution</th>
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</tr>
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<tbody>
<tr>
<td>Installation of a leakage breaker is necessary in some cases depending on the conditions of the installation site, to prevent electrical shocks.</td>
<td></td>
</tr>
<tr>
<td>Do not install the equipment in a place where there is a possibility of combustible gas leaks. If combustible gas leaks and remains around the unit, it may cause a fire.</td>
<td></td>
</tr>
<tr>
<td>Check to see if parts and wires are mounted and connected properly, and if connections at the soldered or crimped terminals are secure. Improper installation and connections may cause excessive heat generation, fire or an electrical shock.</td>
<td></td>
</tr>
<tr>
<td>If the installation platform or frame has corroded, replace it. A corroded installation platform or frame may cause the unit to fall, resulting in injury.</td>
<td></td>
</tr>
<tr>
<td>Check the earth / grounding, and repair it if the equipment is not properly earthed / grounded. Improper earth / grounding may cause an electrical shock.</td>
<td></td>
</tr>
<tr>
<td>Be sure to measure insulation resistance after the repair, and make sure that the resistance is 1 MΩ or higher. Faulty insulation may cause an electrical shock.</td>
<td></td>
</tr>
<tr>
<td>Be sure to check the drainage of the indoor unit after the repair. Faulty drainage may cause water to enter the room and wet the furniture and floor.</td>
<td></td>
</tr>
<tr>
<td>Do not tilt the unit when removing it. The water inside the unit may spill and wet the furniture and floor.</td>
<td></td>
</tr>
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</table>
## 2. Icons Used

The following icons are used to attract the attention of the reader to specific information.

<table>
<thead>
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<th>Type of Information</th>
<th>Description</th>
</tr>
</thead>
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<tr>
<td>⚠️ Warning</td>
<td>Warning</td>
<td>A <strong>Warning</strong> is used when there is danger of personal injury.</td>
</tr>
<tr>
<td>⚠️ Caution</td>
<td>Caution</td>
<td>A <strong>Caution</strong> is used when there is danger that the reader, through incorrect manipulation, may damage equipment, lose data, get an unexpected result or have to restart (part of) a procedure.</td>
</tr>
<tr>
<td>📚 Note:</td>
<td>Note</td>
<td>A <strong>Note</strong> provides information that is not indispensable, but may nevertheless be valuable to the reader, such as tips and tricks.</td>
</tr>
<tr>
<td>📚 Reference</td>
<td>Reference</td>
<td>A <strong>Reference</strong> guides the reader to other places in this binder or in this manual, where he/she will find additional information on a specific topic.</td>
</tr>
</tbody>
</table>
Part 1
List of Functions

1. Functions.....................................................................................................2
## 1. Functions

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<th>Functions</th>
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<td>Photocatalytic deodorizing filter</td>
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<td>Operation limit for cooling (°FDB) 50 – 114.8</td>
<td></td>
<td>Air-purifying filter with photocatalytic</td>
</tr>
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<td>Operation limit for heating (°CW) -25 – 15.6</td>
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<td>deodorizing function</td>
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<td>Operation limit for heating (°FW) -13 – 60</td>
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<td>Titanium apatite photocatalytic air-purifying</td>
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<td>Rotary compressor</td>
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<td>Chargeless</td>
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<td></td>
<td>32.8 ft (10 m)</td>
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<td></td>
<td>Either side drain (right or left)</td>
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<td></td>
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</tr>
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<td>Self-diagnosis (R/C, LED)</td>
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Note: ●: Available
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Part 2
Specifications

1. Specifications ........................................................................................................5
## 1. Specifications

### 60 Hz, 208 - 230V

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<thead>
<tr>
<th>Model</th>
<th>Indoor Unit</th>
<th>Outdoor Unit</th>
<th>FTX09NMVJU</th>
<th>FTX12NMVJU</th>
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<td>760 (230 - 1,440)</td>
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<td>12.5 (17.6 - 9.2)</td>
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<td>Gas</td>
<td>Drain</td>
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<td>m³/min (cfm)</td>
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<td>M</td>
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<td>21-5/8 x 26-9/16 x 11-3/16 (550 x 765 x 284)</td>
<td>21-5/8 x 26-9/16 x 11-3/16 (550 x 765 x 284)</td>
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### Note:
- The data are based on the conditions shown in the table below.
- Conversion Formulae:
  - \( \text{kcal/h} = \text{kW} \times 860 \)
  - \( \text{Btu/h} = \text{kW} \times 3412 \)
  - \( \text{cfm} = \text{m³/min} \times 35.3 \)

### Conversion Table
- \( \text{kcal/h} = \text{kW} \times 860 \)
- \( \text{Btu/h} = \text{kW} \times 3412 \)
- \( \text{cfm} = \text{m³/min} \times 35.3 \)
## Specifications

### 60 Hz, 208 - 230V

<table>
<thead>
<tr>
<th>Model</th>
<th>Outdoor Unit</th>
<th>Indoor Unit</th>
<th>FTX15NMVJU</th>
<th>RXL15QMVJU</th>
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<td>FTX15NMVJU</td>
<td>RXL15QMVJU</td>
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</table>

### Cooling

- **Capacity**: Rated (Min. – Max.) kW (Blu/h) 4.40 (15,000) to 5.40 (18,400) 5.35 (18,300) to 6.30 (24,600)
- **Moisture Removal**: gal/h 0.63 0.66
- **Running Current (Rated)**: A 5.92 - 5.35 5.61 - 5.14
- **Power Consumption**: Rated (Min. – Max.) W 1,150 to 1,630 1,300 to 1,780
- **Power Factor (Rated)**: % 93.5 - 93.5 94.6 - 94.6
- **COP**: Rated (Min. – Max.) 3.82 (5.86) to 3.30 (4.36) 4.00 (4.36) to 3.12 (4.36)
- **EER**: Rated (Min. – Max.) Btu/h·W 13.7 (14.9) to 10.6 (11.3)
- **SEER / HSPF**: 20.0 12.5
- **Piping Connections**: Liquid in. (mm) φ 1/4 (φ 6.4) Gas in. (mm) φ 1/2 (φ 12.7) Drain in. (mm) φ 5/8 (φ 16.0)
- **Heat Insulation**: Both Liquid and Gas Pipes
- **Max. Interunit Piping Length**: ft (m) 98-1/2 (30)
- **Max. Interunit Height Difference**: ft (m) 65-5/8 (20)
- **Amount of Additional Charge of Refrigerant**: oz/ft (g/m) 0.21 (20)
- **Front Panel Color**: White
- **Airflow Rate**:
  - H m³/min (cfm) 16.8 (593)
  - M 14.3 (505)
  - L 12.2 (431)
  - SL 10.4 (367)
- **Fan**: Type Cross Flow Fan
- **Temperature Control**: Microcomputer Control
- **Dimensions**: (H × W × D) in. (mm) 11-5/8 × 39 × 10-3/8 (295 × 990 × 263)
- **Packaged Dimensions**: (H × W × D) in. (mm) 14-9/16 × 42-1/2 × 15-3/8 (370 × 1,080 × 390)
- **Weight**: Lbs (kg) 27 (12)
- **Sound Pressure Level**: H / M / L / SL dB(A) 45 / 41 / 36 / 33
- **Outdoor Unit**: RXL15QMVJU
- **Casing Color**: Ivory White
- **Compressor**: Type Hermetically Sealed Swing Type
  - Model 2YC36PXD
  - Motor Output W 1,100
- **Refrigerant Oil**: Type PVC50K
  - Charge oz (L) 21.5 (0.650)
- **Refrigerant**: Type R-410A
  - Charge Lbs (kg) 37 (17)
- **Airflow Rate**:
  - H m³/min (cfm) 57.9 (2,044)
  - SL 49.9 (1,762)
- **Fan**: Type Propeller
  - Motor Output W 71
- **Running Current (Rated)**: A 5.69 - 5.14 6.56 - 5.93
- **Power Consumption**: Rated (Min. – Max.) W 1,177 - 1,117 1,302 - 1,202
- **Power Factor (Rated)**: % 94.4 - 94.5 95.4 - 95.5
- **Dimensions**: (H × W × D) in. (mm) 28-15/16 × 34-1/4 × 12-5/8 (735 × 870 × 320)
- **Packaged Dimensions**: (H × W × D) in. (mm) 31-7/8 × 41-9/16 × 18-1/4 (810 × 1,056 × 464)
- **Weight**: Lbs (kg) 108 (49)
- **Sound Pressure Level**: H dB(A) 50
- **Drawing No.**: C: 3D101716

### Note:
- The data are based on the conditions shown in the table below.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Indoor Unit</th>
<th>Outdoor Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooling</td>
<td>80°FDB (26.7°CDB) / 67°FWB (19.4°CWB)</td>
<td>70°FDB (21°CDB) / 60°FWB (15.6°CWB)</td>
</tr>
<tr>
<td>Heating</td>
<td>67°FDB (19.4°CDB) / 60°FWB (15.6°CWB)</td>
<td>67°FDB (19.4°CDB) / 60°FWB (15.6°CWB)</td>
</tr>
<tr>
<td>Piping Length</td>
<td>24-5/8 ft (7.5 m)</td>
<td>24-5/8 ft (7.5 m)</td>
</tr>
</tbody>
</table>

### Conversion Formule:
- kcal/h = kW × 860
- Btu/h = kW × 3412
- cfm = m³/min ÷ 35.3
## Specifications

**60 Hz, 208 - 230V**

### Indoor Unit - FVXS09NVJU
- **Model**: FVXS09NVJU
- **Running Current (Rated)**: A
- **Power Consumption (Rated)**: W
- **Power Factor (Rated)**: %
- **COP Rated (Min. ~ Max.)**: WW
- **EER Rated (Min. ~ Max.)**: Btu/h·W
- **SEER / HSPF**: 20.0

### Indoor Unit - FVXS12NVJU
- **Model**: FVXS12NVJU
- **Running Current (Rated)**: A
- **Power Consumption (Rated)**: W
- **Power Factor (Rated)**: %
- **COP Rated (Min. ~ Max.)**: WW
- **EER Rated (Min. ~ Max.)**: Btu/h·W
- **SEER / HSPF**: 20.0

### Outdoor Unit - RXL09QMVJU
- **Model**: RXL09QMVJU
- **Casing Color**: White
- **Compressor Type**: Hermetically Sealed Swing Type
- **Motor Output**: W
- **Refrigerant Oil Type**: FVC50K
- **Refrigerant Type**: R-410A
- **Airflow Rate H m³/min (cfm)**: 8.2 (290)
- **Power Consumption (Rated)**: W
- **Running Current (Rated)**: A
- **Dimensions (H × W × D)**: in. (mm)
- **Packaged Dimensions (H × W × D)**: in. (mm)
- **Weight Lbs (kg)**: 31 (14)
- **Sound Pressure Level H dB(A)**: 38 / 32 / 26 / 23

### Outdoor Unit - RXL12QMVJU
- **Model**: RXL12QMVJU
- **Casing Color**: Ivory White
- **Compressor Type**: Hermetically Sealed Swing Type
- **Motor Output**: W
- **Refrigerant Oil Type**: FVC50K
- **Refrigerant Type**: R-410A
- **Airflow Rate H m³/min (cfm)**: 31.3 (1,105)
- **Power Consumption (Rated)**: W
- **Running Current (Rated)**: A
- **Dimensions (H × W × D)**: in. (mm)
- **Packaged Dimensions (H × W × D)**: in. (mm)
- **Weight Lbs (kg)**: 40 (18)
- **Sound Pressure Level H dB(A)**: 38 / 32 / 26 / 23

### Conversion Formulas:
- kcal/h = kW × 860
- Btu/h = kW × 3412
- cfm = m³/min × 35.3
## Specifications

### 60 Hz, 208 - 230V

<table>
<thead>
<tr>
<th>Model</th>
<th>Indoor Unit</th>
<th>Outdoor Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>FVXS15NVJU</td>
<td>RXL15QMVJU</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cooling</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capacity Rated (Min. – Max.)</td>
<td>kW</td>
<td>4.40 (1.70 – 5.00)</td>
</tr>
<tr>
<td>Moisture Removal</td>
<td>gal/h</td>
<td>0.63</td>
</tr>
<tr>
<td>Running Current (Rated)</td>
<td>A</td>
<td>6.06 – 5.48</td>
</tr>
<tr>
<td>Power Consumption Rated (Min. – Max.)</td>
<td>W</td>
<td>1,200 (320 – 1,560)</td>
</tr>
<tr>
<td>Power Factor (Rated)</td>
<td>%</td>
<td>95.2 – 95.2</td>
</tr>
<tr>
<td>COP Rated (Min. – Max.)</td>
<td>WW</td>
<td>3.66 (3.30 – 3.20)</td>
</tr>
<tr>
<td>EER Rated (Min. – Max.)</td>
<td>Btu/h·W</td>
<td>12.5 (8.1 – 11.0)</td>
</tr>
<tr>
<td><strong>SEER / HSPF</strong></td>
<td></td>
<td>20.0</td>
</tr>
<tr>
<td><strong>Piping Connections</strong></td>
<td></td>
<td>Liquid in. (mm)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gas in. (mm)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Drain in. (mm)</td>
</tr>
<tr>
<td><strong>Heat Insulation</strong></td>
<td>Both Liquid and Gas Pipes</td>
<td></td>
</tr>
<tr>
<td><strong>Max. Interunit Piping Length</strong></td>
<td>ft (m)</td>
<td>98-1/2 (30)</td>
</tr>
<tr>
<td><strong>Max. Interunit Height Difference</strong></td>
<td>ft (m)</td>
<td>65-5/8 (20)</td>
</tr>
<tr>
<td><strong>Chargeless</strong></td>
<td>ft (m)</td>
<td>32-13/16 (10)</td>
</tr>
<tr>
<td><strong>Amount of Additional Charge of Refrigerant</strong></td>
<td>oz/ft (g/m)</td>
<td>0.21 (20)</td>
</tr>
<tr>
<td><strong>Indoor Unit</strong></td>
<td></td>
<td>FVXS15NVJU</td>
</tr>
<tr>
<td><strong>Airflow Rate</strong></td>
<td></td>
<td>H m³/min (cfm)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M m³/min (cfm)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>L m³/min (cfm)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SL m³/min (cfm)</td>
</tr>
<tr>
<td><strong>Fan</strong></td>
<td>Turbo Fan</td>
<td></td>
</tr>
<tr>
<td><strong>Motor Output Speed Steps</strong></td>
<td>W</td>
<td>23.3</td>
</tr>
<tr>
<td><strong>Air Direction Control</strong></td>
<td></td>
<td>Right, Left, Horizontal, Downward</td>
</tr>
<tr>
<td><strong>Air Filter</strong></td>
<td>Removable, Washable, Mildew Proof</td>
<td></td>
</tr>
<tr>
<td><strong>Running Current (Rated)</strong></td>
<td>A</td>
<td>0.19 – 0.17</td>
</tr>
<tr>
<td><strong>Power Consumption (Rated)</strong></td>
<td>W</td>
<td>27 – 27</td>
</tr>
<tr>
<td><strong>Power Factor (Rated)</strong></td>
<td>%</td>
<td>68.3 – 68.1</td>
</tr>
<tr>
<td><strong>Temperature Control</strong></td>
<td>Microcomputer Control</td>
<td></td>
</tr>
<tr>
<td><strong>Dimensions (H × W × D)</strong></td>
<td>in. (mm)</td>
<td>23-5/8 × 27-9/16 × 8-1/4 (600 × 700 × 210)</td>
</tr>
<tr>
<td><strong>Packaged Dimensions (H × W × D)</strong></td>
<td>in. (mm)</td>
<td>27-3/8 × 30-15/16 × 11 (696 × 786 × 280)</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>Lbs (kg)</td>
<td>31 (14)</td>
</tr>
<tr>
<td><strong>Sound Pressure Level</strong></td>
<td>H / M / L / SL dB(A)</td>
<td>44 / 40 / 36 / 32</td>
</tr>
<tr>
<td><strong>Outdoor Unit</strong></td>
<td></td>
<td>RXL15QMVJU</td>
</tr>
<tr>
<td><strong>Casing Color</strong></td>
<td>Ivory White</td>
<td></td>
</tr>
<tr>
<td><strong>Compressor Type</strong></td>
<td>Hermetically Sealed Swing Type</td>
<td></td>
</tr>
<tr>
<td><strong>Model</strong></td>
<td>2YC36PXD</td>
<td></td>
</tr>
<tr>
<td><strong>Motor Output W</strong></td>
<td>1,100</td>
<td></td>
</tr>
<tr>
<td><strong>Refrigerant Oil Type</strong></td>
<td>PVC50K</td>
<td></td>
</tr>
<tr>
<td><strong>Refrigerant Charge oz (L)</strong></td>
<td>21.5 (0.650)</td>
<td></td>
</tr>
<tr>
<td><strong>Refrigerant Type</strong></td>
<td>R-410A</td>
<td></td>
</tr>
<tr>
<td><strong>Charge Lbs (kg)</strong></td>
<td>3.20 (1.45)</td>
<td></td>
</tr>
<tr>
<td><strong>Airflow Rate</strong></td>
<td>H m³/min (cfm)</td>
<td>57.9 (2,044)</td>
</tr>
<tr>
<td></td>
<td>SL m³/min (cfm)</td>
<td>49.9 (1,762)</td>
</tr>
<tr>
<td><strong>Fan Type</strong></td>
<td>Propeller</td>
<td></td>
</tr>
<tr>
<td><strong>Motor Output W</strong></td>
<td>71</td>
<td></td>
</tr>
<tr>
<td><strong>Running Current (Rated)</strong></td>
<td>A</td>
<td>5.87 – 5.31</td>
</tr>
<tr>
<td><strong>Power Consumption (Rated)</strong></td>
<td>W</td>
<td>1,173 – 1,173</td>
</tr>
<tr>
<td><strong>Power Factor (Rated)</strong></td>
<td>%</td>
<td>96.1 – 96.0</td>
</tr>
<tr>
<td><strong>Dimensions (H × W × D)</strong></td>
<td>in. (mm)</td>
<td>28-15/16 × 34-1/4 × 12-5/8 (735 × 870 × 320)</td>
</tr>
<tr>
<td><strong>Packaged Dimensions (H × W × D)</strong></td>
<td>in. (mm)</td>
<td>31-7/8 × 41-13/16 × 18-1/4 (810 × 1,056 × 464)</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>Lbs (kg)</td>
<td>108 (49)</td>
</tr>
<tr>
<td><strong>Sound Pressure Level</strong></td>
<td>H dB(A)</td>
<td>50</td>
</tr>
<tr>
<td><strong>Drawing No.</strong></td>
<td>C: 3D101718</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** The data are based on the conditions shown in the table below.

<table>
<thead>
<tr>
<th>Cooling</th>
<th>Indoor: 80°FDB (26.7°CDB) / 67°FWB (18.4°CWB)</th>
<th>Outdoor: 95°FDB (35°CDB) / 75°FWB (24°CWB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heating</td>
<td>Indoor: 70°FDB (21°CDB) / 60°FWB (15.6°CWB)</td>
<td>Outdoor: 47°FDB (8.3°CDB) / 43°FWB (6°CWB)</td>
</tr>
</tbody>
</table>

**Conversion Formulae**

- kcal/h = kW × 860
- Btu/h = kW × 3412
- cfm = m³/min × 35.3
Part 3
Printed Circuit Board Connector Wiring Diagram

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   2.2 RXL12QMVJU .................................................................................................................. 17
   2.3 RXL15QMVJU................................................................................................................... 18
1. Indoor Unit
1.1 FTX09/12NMVJU

Control PCB (PCB1)

1) S6  Connector for swing motor (horizontal blade)
2) S26  Connector for display PCB
3) S32  Connector for indoor heat exchanger thermistor
4) S200  Connector for DC fan motor
5) H1, H2, H3, FG  Connector for terminal board
6) FU1  Fuse (3.15 A, 250 V)
7) V2  Varistor
## Display PCB (PCB2)

1. **S27**  
   Connector for control PCB
2. **SW1 (S1W)**  
   Forced cooling operation **ON/OFF** button  
   *Refer to page 115 for detail.*
3. **LED1 (H1P)**  
   LED for operation (green)
4. **LED2 (H2P)**  
   LED for timer (yellow)
5. **RTH1 (R1T)**  
   Room temperature thermistor

![Diagram of Display PCB](image)

### Note:
The symbols in the parenthesis are the names on the appropriate wiring diagram.
1.2 FTX15NMVJU

Control PCB (PCB2)

1) S6  Connector for swing motor (horizontal blade)
2) S26 Connector for display PCB
3) S32 Connector for indoor heat exchanger thermistor
4) S200 Connector for DC fan motor
5) S900 Connector for filter PCB
Filter PCB (PCB1)

1) S100 Connector for terminal board
2) S800 Connector for control PCB
3) FG, HE Connector for ground
4) FU1 Fuse (3.15 A, 250 V)
5) V2 Varistor

Display PCB (PCB3)

1) S27 Connector for control PCB
2) SW1 (S1W) Forced cooling operation ON/OFF button
   ∗ Refer to page 115 for detail.
3) LED1 (H1P) LED for operation (green)
4) LED2 (H2P) LED for timer (yellow)
5) RTH1 (R1T) Room temperature thermistor

Note: The symbols in the parenthesis are the names on the appropriate wiring diagram.
1.3  FVXS09/12/15NVJU

Control PCB (PCB2)

1) S1  Connector for fan motor
2) S21 Connector for centralized control (HA)
3) S26 Connector for service PCB
4) S32 Indoor heat exchanger thermistor
5) S41 Connector for lower air outlet motor
6) S42 Connector for swing motor
7) S46 Connector for display PCB
8) S48 Connector for sensor PCB
9) H1, H2, H3 Connector for terminal board
10) E1 Terminal for ground wire
11) JA Address setting jumper
   * Refer to page 119 for detail.
12) JB Fan speed setting when compressor stops for thermostat OFF
    * Refer to page 121 for detail.
13) JC Power failure recovery function
    * Refer to page 121 for detail.
14) FU1 (F1U), FU2 (F2U) Fuse (3.15 A, 250 V)
15) LED A LED for service monitor (green)
16) V1, V2 Varistor

![Printed Circuit Board Connector Wiring Diagram](2P383711-1)

**Caution**  Replace the PCB if you accidentally cut a wrong jumper.
Jumpers are necessary for electronic circuit. Improper operation may occur if you cut any of them.

**Note:** The symbols in the parenthesis are the names on the appropriate wiring diagram.
Sensor PCB (PCB1)

1) S49 Connector for control PCB
2) RTH2 (R1T) Room temperature thermistor

Service PCB (PCB3)

1) S27 Connector for control PCB
2) SW2 (S2W)-4 Switch for upward airflow limit setting
   * Refer to page 121 for detail.
   * Keep the other switches as factory setting.
3) SW4 (S4W) Switch for airflow selection
   * Refer to page 23 for detail.

Display PCB (PCB4)

1) S47 Connector for control PCB
2) SW1 (S1W) Forced cooling operation ON/OFF button
3) LED1 (H1P) LED for operation (green)
4) LED2 (H2P) LED for timer (yellow)

Note: The symbols in the parenthesis are the names on the appropriate wiring diagram.
2. Outdoor Unit

2.1 RXL09QMVJU

Main PCB (PCB1)

1) S20  Connector for electronic expansion valve coil
2) S30  Connector for compressor
3) S40  Connector for overload protector
4) S71  Connector for DC fan motor
5) S80  Connector for four way valve coil
6) S90  Connector for thermistors
       (outdoor temperature, outdoor heat exchanger, discharge pipe)
7) HL1, HN1, S  Connector for terminal board
8) E1, E2  Terminal for ground wire
9) HR1, HR2  Connector for reactor
10)FU1, FU2  Fuse (3.15 A, 250 V)
11)FU3  Fuse (20 A, 250 V)
12)J6  Jumper for facility setting
       * Refer to page 121 for detail.
12)LED A  LED for service monitor (green)
13)V2, V3, V150  Varistor

Caution  Replace the PCB if you accidentally cut a wrong jumper.
Jumpers are necessary for electronic circuit. Improper operation may occur if you cut any of them.
### 2.2 RXL12QMVJU

**Main PCB**

1. **S20** Connector for electronic expansion valve coil
2. **S40** Connector for overload protector
3. **S70** Connector for DC fan motor
4. **S80** Connector for four way valve coil
5. **S90** Connector for thermistors
   - (outdoor temperature, outdoor heat exchanger, discharge pipe)
6. **HL1, HN1, S** Connector for terminal board
7. **E1, E2** Terminal for ground wire
8. **U, V, W** Connector for compressor
9. **FU1, FU2** Fuse (3.15 A, 250 V)
10. **FU3** Fuse (20 A, 250 V)
11. **J6** Jumper for facility setting
   - *Refer to page 121 for detail.*
12. **LED A** LED for service monitor (green)
13. **V2, V3, V150** Varistor

---

**Caution** Replace the PCB if you accidentally cut a wrong jumper.

Jumpers are necessary for electronic circuit. Improper operation may occur if you cut any of them.
2.3 RXL15QMVJU

Main PCB

1) S20  Connector for electronic expansion valve coil
2) S40  Connector for overload protector
3) S70  Connector for DC fan motor
4) S80  Connector for four way valve coil
5) S90  Connector for thermistors
   (outdoor temperature, outdoor heat exchanger, discharge pipe)
6) HL1, HN1, S  Connector for terminal board
7) E1, E2  Terminal for ground
8) U, V, W  Connector for compressor
9) FU1, FU2  Fuse (3.15 A, 250 V)
10)FU3  Fuse (30 A, 250 V)
11)J6  Jumper for facility setting
   * Refer to page 121 for detail.
12)LED A  LED for service monitor (green)
13)V1, V2, V3  Varistor

Caution  Replace the PCB if you accidentally cut a wrong jumper.
Jumpers are necessary for electronic circuit. Improper operation may occur if you cut any of them.
# Part 4

## Functions and Control

### 1. Main Functions

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1. Main Functions

1.1 Temperature Control

**Definitions of Temperatures**

The definitions of temperatures are classified as following.

- Room temperature: temperature of lower part of the room
- Set temperature: temperature set by remote controller
- Room thermistor temperature: temperature detected by room temperature thermistor
- Target temperature: temperature determined by microcomputer

**Temperature Control**

The temperature of the room is detected by the room temperature thermistor. However, there is a difference between the temperature detected by room temperature thermistor and the temperature of lower part of the room, depending on the type of the indoor unit or installation condition. Practically, the temperature control is done by the target temperature appropriately adjusted for the indoor unit and the temperature detected by room temperature thermistor.

1.2 Frequency Principle

**Control Parameters**

The frequency of the compressor is controlled by the following 2 parameters:

- The load condition of the operating indoor unit
- The difference between the room thermistor temperature and the target temperature

The target frequency is adapted by additional parameters in the following cases:

- Frequency restrictions
- Initial settings
- Forced cooling operation

**Inverter Principle**

To regulate the capacity, a frequency control is needed. The inverter makes it possible to control the rotation speed of the compressor. The following table explains the inverter principle:

<table>
<thead>
<tr>
<th>Phase</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The supplied AC power source is converted into the DC power source for the present.</td>
</tr>
</tbody>
</table>
| 2     | The DC power source is reconverted into the three phase AC power source with variable frequency.  
      | When the frequency increases, the rotation speed of the compressor increases resulting in an increase of refrigerant circulation. This leads to a larger amount of heat exchange per unit.  
      | When the frequency decreases, the rotation speed of the compressor decreases resulting in a decrease of refrigerant circulation. This leads to a smaller amount of heat exchange per unit. |
Inverter Features
The inverter provides the following features:
- The regulating capacity can be changed according to the changes in the outdoor temperature and cooling / heating load.
- Quick heating and quick cooling
  The rotation speed of the compressor is increased when starting the heating (or cooling). This enables to reach the set temperature quickly.
- Even during extreme cold weather, high capacity is achieved. It is maintained even when the outdoor temperature is 2°C (35.6 °F).
- Comfortable air conditioning
  A fine adjustment is integrated to keep the room temperature constant.
- Energy saving heating and cooling
  Once the set temperature is reached, the energy saving operation enables to maintain the room temperature at low power.

Frequency Limits
The following functions regulate the minimum and maximum frequency:

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>■ Four way valve operation compensation. Refer to page 44.</td>
</tr>
</tbody>
</table>
| High      | ■ Compressor protection function. Refer to page 44.  
            ■ Discharge pipe temperature control. Refer to page 45.  
            ■ Input current control. Refer to page 46.  
            ■ Freeze-up protection control. Refer to page 47.  
            ■ Heating peak-cut control. Refer to page 47.  
            ■ Defrost control. Refer to page 49. |

Forced Cooling Operation
Refer to page 115 for details.
1.3 Airflow Direction Control

**Power-Airflow (Dual) Flap(s)**

The large flap sends a large volume of air downward to the floor and provides an optimum control in cooling, dry, and heating operation.

**Cooling/Dry**

During cooling or dry operation, the flap retracts into the indoor unit. Then, cool air can be blown far and distributed all over the room.

**Heating**

During heating operation, the large flap directs airflow downward to spread the warm air to the entire room.

**Wide-Angle Louvers**

The louvers, made of elastic synthetic resin, provide a wide range of airflow that guarantees comfortable air distribution.

**Auto-Swing**

The following tables explain the auto-swing process for cooling, dry, heating, and fan:

### FTX Series

<table>
<thead>
<tr>
<th>Flap (up and down)</th>
<th>Cooling/Dry</th>
<th>Heating</th>
<th>Fan</th>
</tr>
</thead>
<tbody>
<tr>
<td>09/12 class</td>
<td><img src="R21048" alt="Diagram" /></td>
<td><img src="R21049" alt="Diagram" /></td>
<td><img src="R21050" alt="Diagram" /></td>
</tr>
<tr>
<td>15 class</td>
<td><img src="R21651" alt="Diagram" /></td>
<td><img src="R21652" alt="Diagram" /></td>
<td><img src="R21653" alt="Diagram" /></td>
</tr>
</tbody>
</table>

### FVXS Series

<table>
<thead>
<tr>
<th>Flap (up and down)</th>
<th>Cooling/Dry</th>
<th>Heating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upward airflow limit OFF</td>
<td><img src="R6831" alt="Diagram" /></td>
<td><img src="R6829" alt="Diagram" /></td>
</tr>
<tr>
<td>Upward airflow limit ON</td>
<td><img src="R6832" alt="Diagram" /></td>
<td><img src="R6830" alt="Diagram" /></td>
</tr>
</tbody>
</table>
COMFORT AIRFLOW
Operation

FTX Series
The flap is controlled not to blow the air directly at the people in the room.

<table>
<thead>
<tr>
<th></th>
<th>Cooling</th>
<th>Heating</th>
</tr>
</thead>
<tbody>
<tr>
<td>09/12 class</td>
<td>0˚°</td>
<td>65˚°</td>
</tr>
<tr>
<td>15 class</td>
<td>10˚°</td>
<td></td>
</tr>
</tbody>
</table>

Airflow Selection setting

FVXS Series
Airflow direction can be set with the airflow selection switch.

- Open the front panel.

Caution: Before opening the front panel, be sure to stop the operation and turn the breaker off. Do not touch the aluminum fins (indoor heat exchanger) inside of the indoor unit, as it may result in injury.
When setting the airflow selection switch to  
- Air conditioner automatically decides the appropriate blowing pattern depending on the operating mode/situation.

<table>
<thead>
<tr>
<th>Operating mode</th>
<th>Situation</th>
<th>Blowing pattern</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooling</td>
<td>When the operation is activated or when the room is not fully cooled.</td>
<td>Air is blown from the upper and lower air outlets in order to reach the set temperature quickly.</td>
</tr>
<tr>
<td></td>
<td>When the room has become fully cool, or when 1 hour has passed since turning on the air conditioner.</td>
<td>Air is blown only from the upper air outlet so that air does not come into direct contact with people and indoor temperature is equalized.</td>
</tr>
<tr>
<td>Heating</td>
<td>When the operation is activated or when air emitted is of low temperature.</td>
<td>Air is blown only from the upper air outlet so that air does not come into direct contact with people.</td>
</tr>
<tr>
<td></td>
<td>At times other than the above situations.</td>
<td>Air is blown from the upper and lower air outlets so that warm air is spread throughout the whole room.</td>
</tr>
<tr>
<td>Dry</td>
<td>Whenever in DRY mode.</td>
<td>Air is blown only from the upper air outlet so that air does not come into direct contact with people.</td>
</tr>
<tr>
<td>Fan</td>
<td>Whenever in FAN mode.</td>
<td></td>
</tr>
<tr>
<td>Automatic</td>
<td>Operates in the actual operation mode of the air conditioner according to the descriptions in this table. (COOL or HEAT)</td>
<td></td>
</tr>
</tbody>
</table>

- During dry operation, air is blown upper air outlet, so that cold air does not come into direct contact with people.

When setting the airflow selection switch to  
- Regardless of the operating mode or situation, air is blown from the upper air outlet.
- Use this switch when you do not want air coming out of the lower air outlet (e.g., while sleeping).
1.4 Fan Speed Control for Indoor Unit

Outline
Phase control and fan speed control contains 9 steps: LLL, LL, SL, L, ML, M, MH, H, and HH. The airflow rate can be automatically controlled depending on the difference between the room thermistor temperature and the target temperature.

Automatic Fan Speed Control
In automatic fan speed operation, the step SL is not available.

<table>
<thead>
<tr>
<th>Step</th>
<th>Cooling</th>
<th>Heating</th>
</tr>
</thead>
<tbody>
<tr>
<td>LLL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ML</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MH</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HH (POWERFUL)</td>
<td>(R11681)</td>
<td>(R6834)</td>
</tr>
</tbody>
</table>

↔ = The airflow rate is automatically controlled within this range when the FAN button is set to automatic.

Cooling
The following drawing explains the principle of fan speed control for cooling.

*The upper limit is M tap for 30 minutes from the operation start.

Heating
In heating operation, the fan speed is regulated according to the indoor heat exchanger temperature and the difference between the room thermistor temperature and the target temperature.

Note: The fan stops during defrost control.

COMFORT AIRFLOW Operation
FTX Series
- The fan speed is controlled automatically within the following steps.
  - Cooling
    L tap ~ MH tap (same as automatic)
  - Heating
    L tap ~ M tap

- The latest command has the priority between POWERFUL and COMFORT AIRFLOW.
1.5 Program Dry Operation

Outline
Program dry operation removes humidity while preventing the room temperature from lowering. Since the microcomputer controls both the temperature and airflow rate, the temperature adjustment and FAN setting buttons are inoperable.

Detail
The microcomputer automatically sets the temperature and airflow rate. The difference between the room thermistor temperature at start-up and the target temperature is divided into two zones. Then, the unit operates in an appropriate capacity for each zone to maintain the temperature and humidity at a comfortable level.

<table>
<thead>
<tr>
<th>Room thermistor temperature at start-up</th>
<th>Target temperature X</th>
<th>Thermostat OFF point Y</th>
<th>Thermostat ON point Z ★</th>
</tr>
</thead>
<tbody>
<tr>
<td>24°C or more (75.2°F or more)</td>
<td>Room thermistor</td>
<td>X - 2.5°C (X - 4.5°F)</td>
<td>X - 0.5°C (X - 0.9°F)</td>
</tr>
<tr>
<td>18 ~ 23.5°C (64.4 ~ 74.3°F)</td>
<td>temperature at start-up</td>
<td>X - 2.0°C (X - 3.6°F)</td>
<td>X - 0.5°C (X - 0.9°F)</td>
</tr>
<tr>
<td>17.5°C or less (63.5°F or less)</td>
<td>18°C (64.4°F)</td>
<td>X - 2.0°C (X - 3.6°F)</td>
<td>X - 0.5°C = 17.5°C (X - 0.9°F = 63.5°F)</td>
</tr>
</tbody>
</table>

★ Thermostat turns on also when the room temperature is in the zone B for 10 min.
### 1.6 Automatic Operation

**Outline**

**Automatic Cooling / Heating Function**

When the automatic operation is selected with the remote controller, the microcomputer automatically determines the operation mode as cooling or heating according to the room temperature and the set temperature at start-up. The unit automatically switches the operation mode to maintain the room temperature at the set temperature.

**Detail**

Ts: set temperature (set by remote controller)
Tt: target temperature (determined by microcomputer)
Tr: room thermistor temperature (detected by room temperature thermistor)
C: correction value

1. The set temperature (Ts) determines the target temperature (Tt).
   \( Ts = 18 \sim 30°C, 64.4 \sim 86°F \).
2. The target temperature (Tt) is calculated as;
   \[ Tt = Ts + C \]
   where C is the correction value.
   \( C = 0°C \) (0°F)
3. Thermostat ON/OFF point and operation mode switching point are as follows. Tr means the room thermistor temperature.
   (1) Heating → Cooling switching point:
   \( Tr \geq Tt + 3.0°C (+5.4°F) \)
   (2) Cooling → Heating switching point:
   \( Tr < Tt - 3.0°C (-5.4°F) \)
   (3) Thermostat ON/OFF point is the same as the ON/OFF point of cooling or heating operation.
4. During initial operation
   \( Tr \geq Ts \): Cooling operation
   \( Tr < Ts \): Heating operation

---

**Ex:** When the target temperature is 25°C (77°F)

- **Cooling** → 23°C (73.4°F): Thermostat OFF → 22°C (71.6°F): Switch to heating
- **Heating** → 27°C (80.6°F): Thermostat OFF → 28°C (82.4°F): Switch to cooling
1.7 Thermostat Control

Outline
Thermostat control is based on the difference between the room thermistor temperature and the target temperature.

Detail
Thermostat OFF Condition
- The temperature difference is in the zone A.

Thermostat ON Conditions
- The temperature difference returns to the zone C after being in the zone A.
- The system resumes from defrost control in any zones except A.
- The operation turns on in any zones except A.
- The monitoring time has passed while the temperature difference is in the zone B. (Cooling: 10 minutes, Dry: 7.5 minutes, Heating: 10 seconds)

Cooling/Dry

<table>
<thead>
<tr>
<th>Zone</th>
<th>Room thermistor temperature – target temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>Cooling: –2.0˚C (<del>-3.6˚F) Dry: –2.5 ~ –2.0˚C (</del>-4.5 ~ -3.6˚F)</td>
</tr>
<tr>
<td>B</td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>-1.5˚C (~-2.7˚F)</td>
</tr>
</tbody>
</table>

Heating

FTX Series

<table>
<thead>
<tr>
<th>Zone</th>
<th>Room thermistor temperature – target temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>0˚C (0˚F)</td>
</tr>
<tr>
<td>B</td>
<td>1.5˚C (2.7˚F)</td>
</tr>
<tr>
<td>A</td>
<td>2.0˚C (3.6˚F)</td>
</tr>
</tbody>
</table>

FVXS Series

<table>
<thead>
<tr>
<th>Zone</th>
<th>Room thermistor temperature – target temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>0˚C (0˚F)</td>
</tr>
<tr>
<td>B</td>
<td>1.0˚C (1.8˚F)</td>
</tr>
<tr>
<td>A</td>
<td>1.5˚C (2.7˚F)</td>
</tr>
</tbody>
</table>

Refer to Temperature Control on page 20 for details.
1.8 NIGHT SET Mode

Outline
When the OFF TIMER is set, NIGHT SET Mode is automatically activated. NIGHT SET Mode keeps the airflow rate setting.

Detail
NIGHT SET Mode continues operation at the target temperature for the first one hour, then automatically raises the target temperature slightly in the case of cooling, or lowers it slightly in the case of heating. This prevents excessive cooling in summer and excessive heating in winter to ensure comfortable sleeping conditions, and also conserves electricity.

Cooling

<table>
<thead>
<tr>
<th>Target temperature</th>
<th>0.5°C (0.9°F)</th>
<th>1 hour</th>
<th>Operation stops at the set hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIMER operation</td>
<td>NIGHT SET Mode ON</td>
<td>+0.5°C (+0.9°F)</td>
<td>temperature shift</td>
</tr>
</tbody>
</table>

Heating

<table>
<thead>
<tr>
<th>Target temperature</th>
<th>2°C (3.6°F)</th>
<th>1 hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIMER operation</td>
<td>NIGHT SET Mode ON</td>
<td>−2°C (−3.6°F)</td>
</tr>
</tbody>
</table>

1.9 ECONO Operation

Outline
ECONO operation reduces the maximum power consumption. This operation is particularly convenient for energy-saving. It is also a major bonus when breaker capacity does not allow the use of multiple electrical devices and air conditioners.

It can be easily activated by pushing ECONO button on the wireless remote controller.

Detail
- When this function is activated, the maximum capacity also decreases.
- The remote controller can send the ECONO command when the unit is in cooling, heating, dry, or automatic operation. This function can only be set when the unit is running. Press ON/OFF button on the remote controller to cancel the function.
- This function and POWERFUL operation cannot be used at the same time. The latest command has the priority.
1.10 Inverter POWERFUL Operation

Outline

In order to exploit the cooling and heating capacity to full extent, the air conditioner can be operated by increasing the indoor fan rotating speed and the compressor frequency.

Detail

When **POWERFUL** button is pressed, the fan speed and target temperature are converted to the following states for 20 minutes.

<table>
<thead>
<tr>
<th>Operation mode</th>
<th>Fan speed</th>
<th>Target temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>COOL</td>
<td>H tap + A rpm</td>
<td>18°C (64.4°F)</td>
</tr>
<tr>
<td>DRY</td>
<td>Dry rotating speed + A rpm</td>
<td>Lowered by 2.5°C (4.5°F)</td>
</tr>
<tr>
<td>HEAT</td>
<td>H tap + A rpm</td>
<td>31°C (87.8°F)</td>
</tr>
<tr>
<td>FAN</td>
<td>H tap + A rpm</td>
<td>—</td>
</tr>
<tr>
<td>AUTO</td>
<td>Same as cooling / heating in POWERFUL operation</td>
<td>The target temperature is kept unchanged.</td>
</tr>
</tbody>
</table>

A = 09/12 class: 80 rpm
15 class: 50 rpm

Ex: POWERFUL operation in cooling

![Diagram of POWERFUL operation in cooling](DIAGRAM)

It should be the lower limit of cooling temperature.

It counts 20 minutes also in the remote controller.

Ending condition:
1. After the lapse of 20 minutes.
2. Operation OFF
3. POWERFUL operation is OFF.

**Note:** POWERFUL operation cannot be used together with ECONO or COMFORT AIRFLOW operation.
1.11 Clock setting

The clock can be set by taking the following steps:

1. Press Clock button.
   → 0:00 is displayed and MON and 2 blink.
2. Press Select ▲ or Select ▼ button to set the clock to the current day of the week.
3. Press Clock button.
   → 2 blinks.
4. Press Select ▲ or Select ▼ button to adjust the clock to the present time.
   Holding down Select ▲ or Select ▼ button increases or decreases the time display rapidly.
5. Press Clock button to set the clock. (Point the remote controller at the indoor unit when pressing the button.)
   → 2 blinks and clock setting is completed.
1.12 WEEKLY TIMER Operation (FVXS Series)

Outline
Up to 4 timer settings can be saved for each day of the week (up to 28 settings in total). The 3 items: ON/OFF, temperature, and time can be set.

Detail

Setting example of the WEEKLY TIMER

The same timer settings are used from Monday through Friday, while different timer settings are used for the weekend.

[Monday]
Make timer settings for programs 1-4.

<table>
<thead>
<tr>
<th>Time</th>
<th>Program 1</th>
<th>Program 2</th>
<th>Program 3</th>
<th>Program 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>6:00</td>
<td>ON 77°F (25°C)</td>
<td>OFF</td>
<td>ON 81°F (27°C)</td>
<td>OFF</td>
</tr>
<tr>
<td>8:30</td>
<td>ON</td>
<td>OFF</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17:30</td>
<td>ON</td>
<td>OFF</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22:00</td>
<td>OFF</td>
<td>OFF</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

[Tuesday] to [Friday]
Use the copy mode to make settings for Tuesday to Friday, because these settings are the same as those for Monday.

<table>
<thead>
<tr>
<th>Time</th>
<th>Program 1</th>
<th>Program 2</th>
<th>Program 3</th>
<th>Program 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>6:00</td>
<td>ON 77°F (25°C)</td>
<td>OFF</td>
<td>ON 81°F (27°C)</td>
<td>OFF</td>
</tr>
<tr>
<td>8:30</td>
<td>ON</td>
<td>OFF</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17:30</td>
<td>ON</td>
<td>OFF</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22:00</td>
<td>OFF</td>
<td>OFF</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

[Saturday]
No timer settings

[Sunday]
Make timer settings for programs 1-4.

<table>
<thead>
<tr>
<th>Time</th>
<th>Program 1</th>
<th>Program 2</th>
<th>Program 3</th>
<th>Program 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00</td>
<td>ON 77°F (25°C)</td>
<td>OFF</td>
<td>81°F (27°C)</td>
<td>OFF</td>
</tr>
<tr>
<td>10:00</td>
<td>OFF</td>
<td>OFF</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19:00</td>
<td>OFF</td>
<td>OFF</td>
<td>81°F (27°C)</td>
<td></td>
</tr>
<tr>
<td>21:00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Up to 4 reservations per day and 28 reservations per week can be set using the WEEKLY TIMER. The effective use of the copy mode simplifies timer programming.
- The use of ON-ON-ON-ON settings, for example, makes it possible to schedule operating mode and set temperature changes. Furthermore, by using OFF-OFF-OFF-OFF settings, only the turn off time of each day can be set. This will turn off the air conditioner automatically if you forget to turn it off.
To use WEEKLY TIMER operation

Setting mode

• Make sure the day of the week and time are set.
  If not, set the day of the week and time.

![Setting Displays](image)

1. Press .
   • The day of the week and the reservation number of the current day will be displayed.
   • 1 to 4 settings can be made per day.

2. Press to select the desired day of the week and reservation number.
   • Pressing changes the reservation number and the day of the week.

3. Press .
   • The day of the week and reservation number will be set.
   • "WEEKLY" and "ON" blink.

4. Press to select the desired mode.
   • Pressing changes the "ON" or "OFF" setting in sequence.

   ![Sequence](image)
   • In case the reservation has already been set, selecting "blank" deletes the reservation.
   • Proceed to STEP 9 if "blank" is selected.
   • To return to the day of the week and reservation number setting, press .

5. Press .
   • The ON/OFF TIMER mode will be set.
   • "WEEKLY" and the time blink.
6. Press \( \mathbb{A} \) to select the desired time.
   • The time can be set between 0:00 and 23:50 in 10-minute intervals.
   • To return to the ON/OFF TIMER mode setting, press \( \mathbb{B} \).
   • Proceed to STEP 9 when setting the OFF TIMER.

7. Press \( \mathbb{C} \).
   • The time will be set.
   • \( \mathbb{D} \) and the temperature blink.

8. Press \( \mathbb{E} \) to select the desired temperature.
   • The temperature can be set between 50˚F (10˚C) and 90˚F (32˚C).
   - COOL or AUTO: The unit operates at 64˚F (18˚C) even if it is set at 50˚F (10˚C) to 63˚F (17˚C).
   - HEAT or AUTO: The unit operates at 86˚F (30˚C) even if it is set at 87˚F (31˚C) to 90˚F (32˚C).
   • To return to the time setting, press \( \mathbb{F} \).
   • The set temperature is only displayed when the mode setting is on.

9. Press \( \mathbb{G} \).
   • The temperature will be set and go to the next reservation setting.
   • The temperature is set while in ON TIMER operation, and the time is set while in OFF TIMER operation.
   • The next reservation screen will appear.
   • To continue further settings, repeat the procedure from STEP 4.

10. Press \( \mathbb{H} \) to complete the setting.
    • Be sure to direct the remote controller toward the indoor unit and check for a receiving tone and blinking of the OPERATION lamp.
    • \( \mathbb{I} \) is displayed on the LCD and WEEKLY TIMER operation is activated.
    • The TIMER lamp lights orange.

    \[ \text{Display} \]

    • A reservation made once can be easily copied and the same settings used for another day of the week. Refer to [Copy mode].

**NOTE**

- Do not forget to set the clock on the remote controller first.
- The day of the week, ON/OFF TIMER mode, time and set temperature (only for ON TIMER mode) can be set with the WEEKLY TIMER.
- Other settings for the ON TIMER are based on the settings just before the operation.
- WEEKLY TIMER and ON/OFF TIMER operation cannot be used at the same time. The ON/OFF TIMER operation has priority if it is set while WEEKLY TIMER is still active. The WEEKLY TIMER will enter the standby state, and \( \mathbb{J} \) will disappear from the LCD. When the ON/OFF TIMER is up, the WEEKLY TIMER will automatically become active.
- Only the time and set temperature with the WEEKLY TIMER are sent with the \( \mathbb{K} \). Set the WEEKLY TIMER only after setting the operation mode, the airflow rate and the airflow direction ahead of time.
- Turning off the circuit breaker, power failure, and other similar events will render operation of the indoor unit's internal clock inaccurate. Reset the clock.
- \( \mathbb{K} \) can be used only for the time and temperature settings. It cannot be used to go back to the reservation number.
1. Press \( \text{COPY} \).

2. Press \( \text{ON} \) to confirm the day of the week to be copied.

3. Press \( \text{OFF} \).

4. Press \( \text{ON} \) to select the destination day of the week.

5. Press \( \text{OFF} \).

6. Press \( \text{ON} \) to complete the setting.

**NOTE**

- “WEEKLY” is displayed on the LCD and WEEKLY TIMER operation is activated.

**Note on COPY MODE**

- The entire reservation of the source day of the week is copied in the copy mode.
- In the case of making a reservation change for any day of the week individually after copying the content of weekly reservations, press \( \text{OFF} \) and change the settings in the steps of Setting mode.
Confirming a reservation

- The reservation can be confirmed.

### Setting Displays

![Setting Displays](image)

1. Press .
   - The day of the week and the reservation number of the current day will be displayed.

2. Press to select the day of the week and the reservation number to be confirmed.
   - Pressing displays the reservation details.
   - To change the confirmed reserved settings, select the reservation number and press .
     The mode is switched to setting mode. Proceed to Setting mode STEP 4.

3. Press to exit the confirmation mode.
   - "O WEEKLY" is displayed on the LCD and WEEKLY TIMER operation is activated.
   - The TIMER lamp lights orange.

To deactivate WEEKLY TIMER operation

- Press while “O WEEKLY” is displayed on the LCD.
  - "O WEEKLY" disappears from the LCD.
  - The TIMER lamp goes off.
  - To reactivate the WEEKLY TIMER operation, press again.
  - If a reservation deactivated with is activated once again, the last reservation mode will be used.

**NOTE**

- If not all the reservation settings are reflected, deactivate the WEEKLY TIMER operation once. Then press again to reactivate the WEEKLY TIMER operation.
To delete reservations

An individual reservation

1. Press .
   • The day of the week and the reservation number will be displayed.

2. Press to select the day of the week and the reservation number to be deleted.

3. Press .
   • "ON TIMER" and "OFF" blink.

4. Press until no icon is displayed.
   • Pressing changes the ON/OFF TIMER mode in sequence.
   • Selecting "blank" will cancel any reservation you may have.

5. Press .
   • The selected reservation will be deleted.

6. Press .
   • If there are still other reservations, WEEKLY TIMER operation will be activated.

Reservations for each day of the week

• This function can be used for deleting reservations for each day of the week.
• It can be used while confirming or setting reservations.

1. Press .
   • The day of the week and the reservation number will be displayed.

2. Press to select the day of the week to be deleted.

3. Hold for about 5 seconds.
   • The reservation of the selected day of the week will be deleted.

4. Press .
   • If there are still other reservations, WEEKLY TIMER operation will be activated.

All reservations

Hold for about 5 seconds with the normal display.
• Be sure to direct the remote controller toward the indoor unit and check for a receiving tone.
• This operation cannot be used for the WEEKLY TIMER setting display.
• All reservations will be deleted.
1.13 Other Functions

1.13.1 Hot-Start Function
In order to prevent the cold air blast that normally occurs when heating operation starts, the temperature of the indoor heat exchanger is detected, and the airflow is either stopped or significantly weakened resulting in comfortable heating.

<i>Note:</i> The cold air blast is prevented using similar control when defrost control starts or when the thermostat is turned ON.

1.13.2 Signal Receiving Sign
When the indoor unit receives a signal from the remote controller, the unit emits a signal receiving sound.

1.13.3 Indoor Unit ON/OFF Button
ON/OFF button is provided on the display of the unit.
- Press ON/OFF button once to start operation. Press once again to stop it.
- ON/OFF button is useful when the remote controller is missing or the battery has run out.

<table>
<thead>
<tr>
<th>Mode</th>
<th>Temperature setting</th>
<th>Airflow rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUTO</td>
<td>25°C (77°F)</td>
<td>Automatic</td>
</tr>
</tbody>
</table>

*FTX Series*

![ON/OFF button](R21052)

*FVXS Series*

![ON/OFF button](R23001)

**Forced Cooling Operation**
Forced cooling operation can be started by pressing ON/OFF button for 5 to 9 seconds while the unit is not operating.
Refer to page 115 for details.

<i>Note:</i> When ON/OFF button is pressed for 10 seconds or more, the forced cooling operation is stopped.

1.13.4 Auto-restart Function
If a power failure (including one for just a moment) occurs during the operation, the operation restarts automatically when the power is restored in the same condition as before the power failure.

<i>Note:</i> It takes 3 minutes to restart the operation because the 3-minute standby function is activated.
2. Thermistor Functions

(1) Outdoor Heat Exchanger Thermistor

1. The outdoor heat exchanger thermistor is used for controlling the target discharge pipe temperature. The system sets the target discharge pipe temperature according to the outdoor and indoor heat exchanger temperature, and controls the electronic expansion valve opening so that the target discharge pipe temperature can be obtained.

2. In cooling operation, the outdoor heat exchanger thermistor is used for detecting the disconnection of the discharge pipe thermistor. When the discharge pipe temperature drops below the outdoor heat exchanger temperature by more than a certain value, the discharge pipe thermistor is judged as disconnected.

3. In cooling operation, the outdoor heat exchanger thermistor is used for high pressure protection.

(2) Discharge Pipe Thermistor

1. The discharge pipe thermistor is used for controlling discharge pipe temperature. If the discharge pipe temperature (used in place of the inner temperature of the compressor) rises abnormally, the operating frequency becomes lower or the operation halts.

2. The discharge pipe thermistor is used for detecting disconnection of the discharge pipe thermistor.

(3) Indoor Heat Exchanger Thermistor

1. The indoor heat exchanger thermistor is used for controlling the target discharge pipe temperature. The system sets the target discharge pipe temperature according to the outdoor and indoor heat exchanger temperature, and controls the electronic expansion valve opening so that the target discharge pipe temperature can be obtained.

2. In cooling operation, the indoor heat exchanger thermistor is used for freeze-up protection control. If the indoor heat exchanger temperature drops abnormally, the operating frequency becomes lower or the operation halts.

3. In heating operation, the indoor heat exchanger thermistor is used for detecting the disconnection of the discharge pipe thermistor. When the discharge pipe temperature drops below the indoor heat exchanger temperature by more than a certain value, the discharge pipe thermistor is judged as disconnected.
3. Control Specification

3.1 Mode Hierarchy

Outline
The air conditioner control has normal operation mode, forced operation mode, and power transistor test mode for installation and servicing.

Detail
Heat Pump Model

- Air conditioner control mode
  - Forced operation mode
    - Forced cooling operation (for pump down operation)
  - Power transistor test mode
  - Normal operation mode
    - Fan
    - Cooling (includes drying)
    - Heating
      - Heating
      - Defrosting
    - Stop (indoor unit: OFF)
      - Preheating control
      - Discharging from capacitor
      - Stop

Note: Unless specified otherwise, a dry operation command is regarded as cooling operation.
3.2 Frequency Control

Outline
The compressor frequency is determined according to the difference between the room thermistor temperature and the target temperature.

When the shift of the frequency is less than zero (ΔF<0) by PI control, the target frequency is used as the command frequency.

Detail

1. Determine command frequency
   Command frequency is determined in the following order of priority.
   1. Limiting defrost control time
   2. Forced cooling
   3. Indoor frequency command

2. Determine upper limit frequency
   The minimum value is set as an upper limit frequency among the frequency upper limits of the following functions:
   Compressor protection, input current, discharge pipe temperature, heating peak-cut, freeze-up protection, defrost control.

3. Determine lower limit frequency
   The maximum value is set as a lower limit frequency among the frequency lower limits of the following functions:
   Four way valve operation compensation, draft prevention, pressure difference upkeep.

4. Determine prohibited frequency
   There is a certain prohibited frequency such as a power supply frequency.
Initial Frequency

When starting the compressor, the frequency is initialized according to the $\Delta D$ value of the indoor unit.

$\Delta D$ signal: Indoor frequency command

The difference between the room thermistor temperature and the target temperature is taken as the $\Delta D$ value and is used for $\Delta D$ signal of frequency command.

<table>
<thead>
<tr>
<th>Temperature difference</th>
<th>$\Delta D$ signal</th>
<th>Temperature difference</th>
<th>$\Delta D$ signal</th>
<th>Temperature difference</th>
<th>$\Delta D$ signal</th>
</tr>
</thead>
<tbody>
<tr>
<td>–2.0°C (–3.6°F)</td>
<td>*OFF</td>
<td>0°C (0°F)</td>
<td>4</td>
<td>2.0°C (3.6°F)</td>
<td>8</td>
</tr>
<tr>
<td>–1.5°C (–2.7°F)</td>
<td>1</td>
<td>0.5°C (0.9°F)</td>
<td>5</td>
<td>2.5°C (4.5°F)</td>
<td>9</td>
</tr>
<tr>
<td>–1.0°C (–1.8°F)</td>
<td>2</td>
<td>1.0°C (1.8°F)</td>
<td>6</td>
<td>3.0°C (5.4°F)</td>
<td>A</td>
</tr>
<tr>
<td>–0.5°C (–0.9°F)</td>
<td>3</td>
<td>1.5°C (2.7°F)</td>
<td>7</td>
<td>3.5°C (6.3°F)</td>
<td>B</td>
</tr>
</tbody>
</table>

*OFF = Thermostat OFF

PI Control

1. P control
   The $\Delta D$ value is calculated in each sampling time (20 seconds), and the frequency is adjusted according to its difference from the frequency previously calculated.

2. I control
   If the operating frequency does not change for more than a certain fixed time, the frequency is adjusted according to the $\Delta D$ value.
   When the $\Delta D$ value is low, the frequency is lowered.
   When the $\Delta D$ value is high, the frequency is increased.

3. Frequency control when other controls are functioning
   - When frequency is dropping;
     Frequency control is carried out only when the frequency drops.
   - For limiting lower limit;
     Frequency control is carried out only when the frequency rises.

4. Upper and lower limit of frequency by PI control
   The frequency upper and lower limits are set according to the command of the indoor unit.
   When the indoor or outdoor unit quiet operation command comes from the indoor unit, the upper limit frequency is lower than the usual setting.
3.3 Controls at Mode Changing / Start-up

3.3.1 Preheating Control

Outline
The inverter operation in open phase starts with the conditions of the outdoor temperature, the discharge pipe temperature, the radiation fin temperature and the preheating command from the indoor unit.

Detail
Outdoor temperature ≥ –2.5°C (27.5°F) → Control A (preheating for normal state)
Outdoor temperature < –2.5°C (27.5°F) → Control B (preheating of increased capacity)

Control A
- **ON condition**
  - Discharge pipe temperature < 0°C (32.0°F)
  - Radiation fin temperature < 85°C (185°F)
- **OFF condition**
  - Discharge pipe temperature > 2°C (35.6°F)
  - Radiation fin temperature ≥ 90°C (194°F)

Control B
- **ON condition**
  - Discharge pipe temperature < 10°C (50.0°F)
  - Radiation fin temperature < 85°C (185°F)
- **OFF condition**
  - Discharge pipe temperature > 12°C (53.6°F)
  - Radiation fin temperature ≥ 90°C (194°F)

3.3.2 Four Way Valve Switching

Outline
The four way valve coil is energized / not energized depending on the operation mode. (Heating: ON, Cooling / Dry / Defrost: OFF)
In order to eliminate the switching sound as the four way valve coil switches from ON to OFF when the heating is stopped, the OFF delay switch of the four way valve is carried out.

Detail
OFF delay switch of four way valve
The four way valve coil is energized for 160 seconds after the operation is stopped.
### 3.3.3 Four Way Valve Operation Compensation

**Outline**

At the beginning of operation as the four way valve is switched, the pressure difference to activate the four way valve is acquired when the output frequency is higher than a certain fixed frequency for a certain fixed time.

**Detail**

**Starting Conditions**

1. When the compressor starts and the four way valve switches from OFF to ON
2. When the four way valve switches from ON to OFF during operation
3. When the compressor starts after resetting
4. When the compressor starts after the fault of four way valve switching

The lower limit of frequency keeps A Hz for B seconds with any conditions 1 through 4 above. When the outdoor temperature is above C °C in heating, the frequency decreases depending on the outdoor temperature.

<table>
<thead>
<tr>
<th></th>
<th>09 class</th>
<th>12 class</th>
<th>15 class</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A (Hz)</strong></td>
<td>40</td>
<td>54</td>
<td>24</td>
</tr>
<tr>
<td><strong>B (seconds)</strong></td>
<td>60</td>
<td>60</td>
<td>70</td>
</tr>
<tr>
<td><strong>C (°C)</strong></td>
<td>10</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td><strong>C (°F)</strong></td>
<td>50</td>
<td>50</td>
<td>59</td>
</tr>
</tbody>
</table>

### 3.3.4 3-Minute Standby

Turning on the compressor is prohibited for 3 minutes after turning it off. (The function is not activated when defrosting.)

### 3.3.5 Compressor Protection Function

When turning the compressor from OFF to ON, the upper limit of frequency is set as follows. (The function is not activated when defrosting.)

<table>
<thead>
<tr>
<th></th>
<th>09 class</th>
<th>12 class</th>
<th>15 class</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A (Hz)</strong></td>
<td>40</td>
<td>24</td>
<td>52</td>
</tr>
<tr>
<td><strong>B (Hz)</strong></td>
<td>54</td>
<td>34</td>
<td>68</td>
</tr>
<tr>
<td><strong>C (Hz)</strong></td>
<td>72</td>
<td>44</td>
<td>80</td>
</tr>
<tr>
<td><strong>D (Hz)</strong></td>
<td>90</td>
<td>56</td>
<td>98</td>
</tr>
<tr>
<td><strong>E (Hz)</strong></td>
<td>100</td>
<td>78</td>
<td>—</td>
</tr>
<tr>
<td><strong>F (seconds)</strong></td>
<td>180</td>
<td>180</td>
<td>300</td>
</tr>
<tr>
<td><strong>G (seconds)</strong></td>
<td>420</td>
<td>420</td>
<td>200</td>
</tr>
<tr>
<td><strong>H (seconds)</strong></td>
<td>180</td>
<td>180</td>
<td>460</td>
</tr>
<tr>
<td><strong>J (seconds)</strong></td>
<td>120</td>
<td>120</td>
<td>200</td>
</tr>
<tr>
<td><strong>K (seconds)</strong></td>
<td>400</td>
<td>180</td>
<td>—</td>
</tr>
</tbody>
</table>

*: Values refer to 15 class only, when outside temperature is lower than -15°C (5°F)
3.4 Discharge Pipe Temperature Control

Outline
The discharge pipe temperature is used as the internal temperature of the compressor. If the discharge pipe temperature rises above a certain level, the upper limit of frequency is set to keep the discharge pipe temperature from rising further.

Detail

<table>
<thead>
<tr>
<th>Zone</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stop zone</td>
<td>When the temperature reaches the stop zone, the compressor stops.</td>
</tr>
<tr>
<td>Dropping zone</td>
<td>The upper limit of frequency decreases.</td>
</tr>
<tr>
<td>Keep zone</td>
<td>The upper limit of frequency is kept.</td>
</tr>
<tr>
<td>Up zone</td>
<td>The upper limit of frequency increases.</td>
</tr>
<tr>
<td>Reset zone</td>
<td>The upper limit of frequency is canceled.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Zone</th>
<th>Discharge pipe temperature (°C)</th>
<th>Discharge pipe temperature (°F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>110</td>
<td>230.0</td>
</tr>
<tr>
<td>B</td>
<td>103</td>
<td>217.4</td>
</tr>
<tr>
<td>C</td>
<td>98</td>
<td>208.4</td>
</tr>
<tr>
<td>D</td>
<td>93</td>
<td>199.4</td>
</tr>
<tr>
<td>E</td>
<td>88</td>
<td>190.4</td>
</tr>
</tbody>
</table>
3.5 Input Current Control

Outline

The microcomputer calculates the input current while the compressor is running, and sets the frequency upper limit based on the input current. In case of heat pump models, this control is the upper limit control of frequency and takes priority over the lower limit control of four way valve operation compensation.

Detail

Frequency control in each zone

Stop zone
- After the input current remains in the stop zone for 2.5 seconds, the compressor is stopped.

Dropping zone
- The upper limit of the compressor frequency is defined as operation frequency – 2 Hz.
- After this, the output frequency is lowered by 2 Hz every second until it reaches the keep zone.

Keep zone
- The present maximum frequency goes on.

Reset zone
- Limit of the frequency is canceled.

<table>
<thead>
<tr>
<th></th>
<th>09 class</th>
<th></th>
<th>12 class</th>
<th></th>
<th>15 class</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cooling</td>
<td>Heating</td>
<td>Cooling</td>
<td>Heating</td>
<td>Cooling</td>
</tr>
<tr>
<td>A (A)</td>
<td>12</td>
<td>13</td>
<td>11</td>
<td>12</td>
<td>18</td>
</tr>
<tr>
<td>B (A)</td>
<td>7.5</td>
<td>8.5</td>
<td>11.5</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>C (A)</td>
<td>6.5</td>
<td>7.5</td>
<td>10.75</td>
<td>11.25</td>
<td>11</td>
</tr>
</tbody>
</table>

Limitation of current dropping and stop value according to the outdoor temperature
- The current drops when outdoor temperature becomes higher than a certain level (depending on the model).
### 3.6 Freeze-up Protection Control

During cooling operation, the signal sent from the indoor unit determines the frequency upper limit and prevents freezing of the indoor heat exchanger. (The signal from the indoor unit is divided into zones.)

The operating frequency limitation is judged with the indoor heat exchanger temperature.

![Diagram of Freeze-up Protection Control](image)

### 3.7 Heating Peak-cut Control

During heating operation, the indoor heat exchanger temperature determines the frequency upper limit to prevent abnormal high pressure.

The operating frequency limitation is judged with the indoor heat exchanger temperature.

![Diagram of Heating Peak-cut Control](image)

<table>
<thead>
<tr>
<th>Zone</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stop zone</td>
<td>When the temperature reaches the stop zone, the compressor stops.</td>
</tr>
<tr>
<td>Dropping zone</td>
<td>The upper limit of frequency decreases.</td>
</tr>
<tr>
<td>Keep zone</td>
<td>The upper limit of frequency is kept.</td>
</tr>
<tr>
<td>Up zone</td>
<td>The upper limit of frequency increases.</td>
</tr>
<tr>
<td>Reset zone</td>
<td>The upper limit of frequency is canceled.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Zone</th>
<th>09/12 class</th>
<th>15 class</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(°C)</td>
<td>(°F)</td>
</tr>
<tr>
<td>A</td>
<td>59</td>
<td>138.2</td>
</tr>
<tr>
<td>B ★</td>
<td>55</td>
<td>131.0</td>
</tr>
<tr>
<td>C ★</td>
<td>52</td>
<td>125.6</td>
</tr>
<tr>
<td>D ★</td>
<td>50</td>
<td>122.0</td>
</tr>
<tr>
<td>E</td>
<td>45</td>
<td>113.0</td>
</tr>
</tbody>
</table>

*: The values might drop when the outdoor temperature is low to protect the compressor.
3.8 Outdoor Fan Control

1. Fan ON control to cool down the electrical box
   The outdoor fan is turned ON when the electrical box temperature is high while the compressor is OFF.

2. Fan OFF control during defrosting
   The outdoor fan is turned OFF during defrosting.

3. Fan OFF delay when stopped
   The outdoor fan is turned OFF 60 ~ 70 seconds after the compressor stops.

4. Fan speed control for pressure difference upkeep
   The rotation speed of the outdoor fan is controlled for keeping the pressure difference during cooling operation with low outdoor temperature.
   - When the pressure difference is low, the rotation speed of the outdoor fan is reduced.
   - When the pressure difference is high, the rotation speed of the outdoor fan is controlled as well as normal operation.

5. Fan speed control during forced cooling operation
   The outdoor fan is controlled as well as normal operation during forced cooling operation.

6. Fan speed control during POWERFUL operation
   The rotation speed of the outdoor fan is increased during POWERFUL operation.

7. Fan speed control during indoor / outdoor unit quiet operation
   The rotation speed of the outdoor fan is reduced by the command of the indoor / outdoor unit quiet operation.

8. Fan ON/OFF control when operation (cooling, heating, dry) starts / stops
   The outdoor fan is turned ON when the operation starts. The outdoor fan is turned OFF when the operation stops.

3.9 Liquid Compression Protection Function

Outline
In order to increase the dependability of the compressor, the compressor is stopped according to the outdoor temperature.

Detail
Operation stops depending on the outdoor temperature
Compressor turns off under the conditions that the system is in cooling operation and outdoor temperature is below −20°C (−4°F).
3.10 Defrost Control

Outline
Defrosting is carried out by the cooling cycle (reverse cycle). The defrosting time or outdoor heat exchanger temperature must be more than a certain value to finish defrosting.

Detail

**Conditions for Starting Defrost**
- The starting conditions are determined with the outdoor temperature and the outdoor heat exchanger temperature.
- The system is in heating operation.
- The compressor operates for 6 minutes.
- More than A minutes (depending on the duration of the previous defrost control) of accumulated time have passed since the start of the operation, or ending the previous defrosting.

**Conditions for Canceling Defrost**
The judgment is made with the outdoor heat exchanger temperature (B°C).

![Diagram showing frequency, compressor, four way valve, and fan](image-url)

<table>
<thead>
<tr>
<th></th>
<th>09 class</th>
<th>12 class</th>
<th>15 class</th>
</tr>
</thead>
<tbody>
<tr>
<td>A (minute)</td>
<td>20</td>
<td>20</td>
<td>25</td>
</tr>
<tr>
<td>B (°C)</td>
<td>2 ~ 20</td>
<td>2 ~ 20</td>
<td>6 ~ 30</td>
</tr>
<tr>
<td>B (°F)</td>
<td>35.6 ~ 68.0</td>
<td>35.6 ~ 68.0</td>
<td>42.8 ~ 86.0</td>
</tr>
<tr>
<td>C (Hz)</td>
<td>64 ★</td>
<td>40 ★</td>
<td>48</td>
</tr>
<tr>
<td>D (Hz)</td>
<td>64 ★</td>
<td>40 ★</td>
<td>42</td>
</tr>
<tr>
<td>E (seconds)</td>
<td>40</td>
<td>40 ★</td>
<td>60 ★</td>
</tr>
<tr>
<td>F (seconds)</td>
<td>60</td>
<td>60</td>
<td>60 ★</td>
</tr>
<tr>
<td>G (seconds)</td>
<td>510</td>
<td>510</td>
<td>340</td>
</tr>
<tr>
<td>H (seconds)</td>
<td>50</td>
<td>50</td>
<td>90</td>
</tr>
<tr>
<td>J (seconds)</td>
<td>8</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>K (pulse)</td>
<td>400</td>
<td>400</td>
<td>450</td>
</tr>
<tr>
<td>L (pulse)</td>
<td>300</td>
<td>300</td>
<td>300 ~ 450</td>
</tr>
<tr>
<td>M (pulse)</td>
<td>350</td>
<td>350</td>
<td>200</td>
</tr>
</tbody>
</table>

★: The same value continues.
3.11 Electronic Expansion Valve Control

Outline

The following items are included in the electronic expansion valve control.

Electronic expansion valve is fully closed
1. Electronic expansion valve is fully closed when turning on the power.
2. Pressure equalizing control

Open Control
1. Electronic expansion valve control when starting operation
2. Electronic expansion valve control when the frequency changes
3. Electronic expansion valve control for defrosting
4. Electronic expansion valve control when the discharge pipe temperature is abnormally high
5. Electronic expansion valve control when the discharge pipe thermistor is disconnected

Feedback Control
Target discharge pipe temperature control

Detail

The followings are the examples of electronic expansion valve control which function in each operation mode.

<table>
<thead>
<tr>
<th>Status</th>
<th>Power on</th>
<th>Compressor stop</th>
<th>Operation start</th>
<th>Frequency change under starting control</th>
<th>Frequency change under target discharge pipe temperature control</th>
<th>Discharge pipe thermistor disconnection control</th>
<th>Frequency change under discharge pipe thermistor connection control</th>
<th>During defrost control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Starting operation control</td>
<td>—</td>
<td>—</td>
<td>●</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Control when the frequency changes</td>
<td>—</td>
<td>—</td>
<td>●</td>
<td>●</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Target discharge pipe temperature control</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>●</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Discharge pipe thermistor disconnection control</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>●</td>
<td>●</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>High discharge pipe temperature control</td>
<td>—</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Defrost control (heating only)</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>●</td>
<td>—</td>
<td>●</td>
</tr>
<tr>
<td>Pressure equalizing control</td>
<td>●</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Opening limit control</td>
<td>—</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>—</td>
</tr>
</tbody>
</table>

● : Available
— : Not available
3.11.1 Fully Closing with Power ON
The electronic expansion valve is initialized when turning on the power. The opening position is set
and the pressure is equalized.

3.11.2 Pressure Equalizing Control
When the compressor is stopped, the pressure equalizing control is activated. The electronic
expansion valve opens and the pressure is equalized.

3.11.3 Opening Limit Control
The maximum and minimum opening of the electronic expansion valve are limited.

<table>
<thead>
<tr>
<th></th>
<th>09/12 class</th>
<th>15 class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum opening</td>
<td>470</td>
<td>480</td>
</tr>
<tr>
<td>(pulse)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum opening</td>
<td>32</td>
<td>52</td>
</tr>
<tr>
<td>(pulse)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The electronic expansion valve is fully closed when cooling operation stops, and is opened at a
fixed degree during defrosting.

3.11.4 Starting Operation Control
The electronic expansion valve opening is controlled when the operation starts, thus preventing the
superheating or liquid compression.

3.11.5 Control when the frequency changes
When the target discharge pipe temperature control is active, if the target frequency changes to a
specified value in a certain time period, the target discharge pipe temperature control is canceled
and the target opening of the electronic expansion valve is changed according to the frequency
shift.

3.11.6 High Discharge Pipe Temperature Control
When the compressor is operating, if the discharge pipe temperature exceeds a certain value, the
electronic expansion valve opens and the refrigerant runs to the low pressure side. This procedure
lowers the discharge pipe temperature.

3.11.7 Discharge Pipe Thermistor Disconnection Control

Outline
The disconnection of the discharge pipe thermistor is detected by comparing the discharge pipe
temperature with the condensation temperature. If the discharge pipe thermistor is disconnected,
the electronic expansion valve opens according to the outdoor temperature and the operation
frequency, operates for a specified time, and then stops.
After 3 minutes, the operation restarts and checks if the discharge pipe thermistor is disconnected.
If the discharge pipe thermistor is disconnected, the system stops after operating for a specified
time.
If the disconnection is detected repeatedly, the system is shut down. When the compressor runs for
60 minutes without any error, the error counter is reset.

Detail
Determining thermistor disconnection
When the starting control finishes, the detection timer for disconnection of the discharge pipe
thermistor (A seconds) starts. When the timer is over, the following adjustment is made.
1. When the operation mode is cooling
   When the following condition is fulfilled, the discharge pipe thermistor disconnection is
   ascertained.
   Discharge pipe temperature +6°C (+10.8°F) < outdoor heat exchanger temperature
2. When the operation mode is heating
   When the following condition is fulfilled, the discharge pipe thermistor disconnection is ascertained.
   Discharge pipe temperature +6°C (+10.8°F) < indoor heat exchanger temperature

<table>
<thead>
<tr>
<th>A (seconds)</th>
<th>09/12 class</th>
<th>15 class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other than below</td>
<td>720</td>
<td>540</td>
</tr>
<tr>
<td>Heating (when outdoor temperature is below -15°C (5°F))</td>
<td>1200</td>
<td>1800</td>
</tr>
</tbody>
</table>

When the thermistor is disconnected
When the disconnection is ascertained, the compressor continues operation for 9 minutes and then stops.
If the compressor stops repeatedly, the system is shut down.

3.11.8 Target Discharge Pipe Temperature Control
The target discharge pipe temperature is obtained from the indoor and outdoor heat exchanger temperature, and the electronic expansion valve opening is adjusted so that the actual discharge pipe temperature becomes close to the target discharge pipe temperature. (Indirect SH (superheating) control using the discharge pipe temperature)

The electronic expansion valve opening and the target discharge pipe temperature are adjusted every A seconds. The opening degree of the electronic expansion valve is adjusted by the followings.
- Target discharge pipe temperature
- Actual discharge pipe temperature
- Previous discharge pipe temperature

<table>
<thead>
<tr>
<th>A (seconds)</th>
<th>All outdoor units</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10 ~ 30 ★</td>
</tr>
</tbody>
</table>
★ The time depends on the opening of the electronic expansion valve.
3.12 Malfunctions

3.12.1 Sensor Malfunction Detection

Sensor malfunction can be detected in the following thermistor:
1. Outdoor heat exchanger thermistor
2. Discharge pipe thermistor
3. Radiation fin thermistor
4. Outdoor temperature thermistor

3.12.2 Detection of Overcurrent and Overload

Outline
An excessive output current is detected and the OL temperature is observed to protect the compressor.

Detail
- If the OL (compressor head) temperature exceeds 120 ~ 130°C (248 ~ 266°F) (depending on the model), the system shuts down the compressor.
- If the inverter current exceeds 12.0 ~ 18.0 A (depending on the model), the system shuts down the compressor.
  The upper limit of the current decreases when the outdoor temperature exceeds a certain level.
Part 5
Remote Controller

1. FTX Series ................................................................................................55
2. FVXS Series..............................................................................................57
1. FTX Series

**Signal transmitter**
- To use the remote controller, aim the transmitter at the indoor unit. If there is anything blocking the signals between the unit and the remote controller, such as a curtain, the unit may not operate.
- The maximum transmission distance is about 23 ft (7 m).

**Display (LCD)**
- Displays the current settings.
  (In this illustration, each section is shown with all its displays on for the purpose of explanation.)

**OFF button**
- Press this button to stop the operation.

**AUTO** button
- Automatically selects an appropriate operation mode (COOL or HEAT) based on the indoor temperature and starts the operation.

**Direct operation buttons**
- Starts the COOL, DRY, HEAT or FAN ONLY operation.

Reference
Refer to the following pages for details.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>★1</td>
<td>Automatic operation</td>
</tr>
</tbody>
</table>

**Note:**
Refer to the operation manual of applicable model for details. You can download operation manuals from Daikin Business Portal:
(URL: https://global1d.daikin.com/business_portal/login/)
TEMPERATURE adjustment button
- Changes the temperature setting.

<table>
<thead>
<tr>
<th>Setting</th>
<th>Description</th>
<th>Range</th>
<th>Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUTO</td>
<td>AUTO</td>
<td>64 ~ 86°F (18 ~ 30°C)</td>
<td>Yes</td>
</tr>
<tr>
<td>DRY</td>
<td>DRY</td>
<td>64 ~ 90°F (18 ~ 32°C)</td>
<td>No</td>
</tr>
<tr>
<td>COOL</td>
<td>COOL</td>
<td>50 ~ 86°F (10 ~ 30°C)</td>
<td>No</td>
</tr>
<tr>
<td>HEAT</td>
<td>HEAT</td>
<td>Not available</td>
<td></td>
</tr>
<tr>
<td>FAN</td>
<td>FAN</td>
<td>Not available</td>
<td></td>
</tr>
</tbody>
</table>

COMFORT*\(^2\) button
- Starts COMFORT AIRFLOW operation.

POWERFUL*\(^3\) button
- Starts POWERFUL operation.

ON TIMER button
- Adjusts the ON TIMER setting.
- The timer can be set 1 ~ 12 hours.

OFF TIMER button
- Adjusts the OFF TIMER setting.
- The timer can be set 1 ~ 12 hours.

FAN setting button
- Selects the airflow rate setting. Every time you press this button.

ECONO*\(^4\) button
- Starts ECONO operation.

SWING*\(^5\) button
- Adjusts the airflow direction.
- When you press the SWING button, the flap moves up and down. The flap stops when you press the SWING button again.

TIMER CANCEL button
- Cancels the timer setting.

Reference
Refer to the following pages for details.

<table>
<thead>
<tr>
<th>Button</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>★2</td>
<td>COMFORT AIRFLOW operation</td>
<td>P.23</td>
</tr>
<tr>
<td></td>
<td>COMFORT AIRFLOW operation</td>
<td>P.25</td>
</tr>
<tr>
<td>★3</td>
<td>Inverter POWERFUL operation</td>
<td>P.30</td>
</tr>
<tr>
<td>★4</td>
<td>ECONO operation</td>
<td>P.29</td>
</tr>
<tr>
<td>★5</td>
<td>Auto-swing</td>
<td>P.22</td>
</tr>
</tbody>
</table>

Note:
Refer to the operation manual of applicable model for details. You can download operation manuals from Daikin Business Portal:
2. FVXS Series

Signal transmitter

- To use the remote controller, aim the transmitter at the indoor unit. If there is anything blocking the signals between the unit and the remote controller, such as a curtain, the unit may not operate.
- The maximum transmission distance is about 23 ft (7 m).

Fan setting button
- Selects the airflow rate setting every time you press this button.
- In indoor unit quiet operation, operation sound becomes weak. (The airflow rate also decreases.)
- In DRY operation, the airflow rate setting is not available.

Display (LCD)
- Displays the current settings. (In this illustration, each section is shown with all its displays on for the purpose of explanation.)

Temperature adjustment buttons
- Changes the temperature setting.

On/Off button
- Press this button once to start operation. Press once again to stop it.

Powerful*1 button
- Starts POWERFUL operation.

Reference
Refer to the following pages for details.

*1 Inverter POWERFUL operation P.30

Note: Refer to the operation manual of applicable model for details. You can download operation manuals from Daikin Business Portal:
(URL: https://global1d.daikin.com/business_portal/login/)
Open the Front Cover

Mode button
- Selects the operation mode.

Quiet button
- OUTDOOR UNIT QUIET operation.
- OUTDOOR UNIT QUIET operation is not available in FAN and DRY operation.
- OUTDOOR UNIT QUIET operation and POWERFUL operation cannot be used at the same time. Priority is given to the function you pressed last.

Off Timer button
- Press this button and adjust the day and time with the Select button. Press this button again to complete TIMER setting.

Timer Cancel button
- Cancels the timer setting.
- Cannot be used for the WEEKLY TIMER operation.

Econo\(^2\) button
- Starts ECONO operation.

Swing\(^3\) button
- Adjusts the airflow direction.
- When you press the Swing button, the flap moves up and down. The flap stops when you press the Swing button again.

Weekly button
- : Weekly button
- : Program button
- : Copy button
- : Back button
- : Next button
- WEEKLY TIMER\(^4\) operation.

On Timer button
- Press this button and adjust the day and time with the Select button. Press this button again to complete TIMER setting.

Select button
- It changes the ON/OFF TIMER and WEEKLY TIMER settings.

Clock\(^5\) button

Reference
Refer to the following pages for details.

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>*2</td>
<td>ECONO operation</td>
<td>P.29</td>
</tr>
<tr>
<td>*3</td>
<td>Auto-swing</td>
<td>P.22</td>
</tr>
<tr>
<td>*4</td>
<td>WEEKLY TIMER operation</td>
<td>P.32</td>
</tr>
<tr>
<td>*5</td>
<td>Clock setting</td>
<td>P.31</td>
</tr>
</tbody>
</table>

Note: Refer to the operation manual of applicable model for details. You can download operation manuals from Daikin Business Portal:
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Service Diagnosis

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### 1. General Problem Symptoms and Check Items

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Check Item</th>
<th>Details</th>
<th>Reference Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>The unit does not operate.</td>
<td>Check the power supply.</td>
<td>Check if the rated voltage is supplied.</td>
<td>—</td>
</tr>
<tr>
<td>Check the type of the indoor unit.</td>
<td>Check if the indoor unit type is compatible with the outdoor unit.</td>
<td></td>
<td>—</td>
</tr>
<tr>
<td>Check the outdoor temperature.</td>
<td>Heating operation is not available when the outdoor temperature is -25°CWB (-13°FWB) or higher, and cooling operation is not available when the outdoor temperature is below 10°CDB (50°FDB).</td>
<td></td>
<td>—</td>
</tr>
<tr>
<td>Diagnose with remote controller indication.</td>
<td></td>
<td></td>
<td>69</td>
</tr>
<tr>
<td>Check the remote controller addresses.</td>
<td>Check if address settings for the remote controller and indoor unit are correct.</td>
<td></td>
<td>119</td>
</tr>
<tr>
<td>Operation sometimes stops.</td>
<td>Check the power supply.</td>
<td>A power failure of 2 to 10 cycles stops air conditioner operation. (Operation lamp OFF)</td>
<td>—</td>
</tr>
<tr>
<td>Check the outdoor temperature.</td>
<td>Heating operation is not available when the outdoor temperature is -25°CWB (-13°FWB) or higher, and cooling operation is not available when the outdoor temperature is below 10°CDB (50°FDB).</td>
<td></td>
<td>—</td>
</tr>
<tr>
<td>Diagnose with remote controller indication.</td>
<td></td>
<td></td>
<td>69</td>
</tr>
<tr>
<td>The unit operates but does not cool, or does not heat.</td>
<td>Check for wiring and piping errors in the connection between the indoor unit and outdoor unit.</td>
<td></td>
<td>—</td>
</tr>
<tr>
<td>Check for thermistor detection errors.</td>
<td>Check if the thermistor is mounted securely.</td>
<td></td>
<td>—</td>
</tr>
<tr>
<td>Check for faulty operation of the electronic expansion valve.</td>
<td>Set the unit to cooling operation, and check the temperature of the liquid pipe to see if the electronic expansion valve works.</td>
<td></td>
<td>—</td>
</tr>
<tr>
<td>Diagnose with remote controller indication.</td>
<td></td>
<td></td>
<td>69</td>
</tr>
<tr>
<td>Diagnose by service port pressure and operating current.</td>
<td>Check for refrigerant shortage.</td>
<td></td>
<td>—</td>
</tr>
<tr>
<td>Large operating noise and vibrations</td>
<td>Check the output voltage of the power module.</td>
<td></td>
<td>—</td>
</tr>
<tr>
<td>Check the power module.</td>
<td></td>
<td></td>
<td>—</td>
</tr>
<tr>
<td>Check the installation condition.</td>
<td>Check if the required spaces for installation (specified in the installation manual) are provided.</td>
<td></td>
<td>—</td>
</tr>
</tbody>
</table>
2. Troubleshooting with LED

2.1 Indoor Unit

Operation Lamp

The operation lamp blinks when any of the following errors is detected.

1. When a protection device of the indoor or outdoor unit is activated, or when the thermistor malfunctions.
2. When a signal transmission error occurs between the indoor and outdoor units.

In either case, conduct the diagnostic procedure described in the following pages.

FTX Series

FVXS Series

2.2 Outdoor Unit

The outdoor unit has one green LED (LED A) on the PCB. When the microcomputer works in order, the LED A blinks. However, the LED A turns OFF while the standby electricity saving function is activated and the power supply is OFF. (Refer to page 16, 17, 18 for the location of LED A.)
3. Service Diagnosis

3.1 ARC480 Series

Method 1

1. When **TIMER CANCEL** button is held down for 5 seconds, 00 is displayed on the temperature display screen.

![Remote controller with TIMER CANCEL button highlighted.](R21665)

2. Press **TIMER CANCEL** button repeatedly until a long beep sounds.

- The code indication changes in the sequence shown below.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>00</td>
<td>16</td>
<td>A3</td>
<td>31</td>
<td>UF</td>
</tr>
<tr>
<td>2</td>
<td>A5</td>
<td>17</td>
<td>H8</td>
<td>32</td>
<td>UH</td>
</tr>
<tr>
<td>3</td>
<td>E7</td>
<td>18</td>
<td>H9</td>
<td>33</td>
<td>P4</td>
</tr>
<tr>
<td>4</td>
<td>F3</td>
<td>19</td>
<td>E9</td>
<td>34</td>
<td>H7</td>
</tr>
<tr>
<td>5</td>
<td>F6</td>
<td>20</td>
<td>E8</td>
<td>35</td>
<td>U2</td>
</tr>
<tr>
<td>6</td>
<td>L3</td>
<td>21</td>
<td>J4</td>
<td>36</td>
<td>E9</td>
</tr>
<tr>
<td>7</td>
<td>L4</td>
<td>22</td>
<td>J5</td>
<td>37</td>
<td>H8</td>
</tr>
<tr>
<td>8</td>
<td>L5</td>
<td>23</td>
<td>J3</td>
<td>38</td>
<td>F8</td>
</tr>
<tr>
<td>9</td>
<td>U4</td>
<td>24</td>
<td>J6</td>
<td>39</td>
<td>E8</td>
</tr>
<tr>
<td>10</td>
<td>E6</td>
<td>25</td>
<td>J8</td>
<td>40</td>
<td>E9</td>
</tr>
<tr>
<td>11</td>
<td>H6</td>
<td>26</td>
<td>E5</td>
<td>41</td>
<td>J9</td>
</tr>
<tr>
<td>12</td>
<td>H0</td>
<td>27</td>
<td>J1</td>
<td>42</td>
<td>E3</td>
</tr>
<tr>
<td>13</td>
<td>A6</td>
<td>28</td>
<td>E2</td>
<td>43</td>
<td>H3</td>
</tr>
<tr>
<td>14</td>
<td>U0</td>
<td>29</td>
<td>U3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>U7</td>
<td>30</td>
<td>U3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note:

1. A short beep and two consecutive beeps indicate non-corresponding codes.
2. To return to the normal mode, hold **TIMER CANCEL** button down for 5 seconds. When the remote controller is left untouched for 60 seconds, it also returns to the normal mode.
3. Not all the error codes are displayed. When you cannot find the error code, try method 2.

(→ Refer to page 64.)
Method 2

1. Press the center of TEMP button and OFF button at the same time.

   ![Image](R21666)

   0C is displayed on the LCD.

   ![Image](R21059)

2. Select 0C (service check) with TEMP ▲ or TEMP ▼ button.
3. Press FAN button to enter the service check mode.

   ![Image](R21667)

   00 is displayed and the left-side number blinks.

   ![Image](R21061)

4. Press TEMP ▲ or TEMP ▼ button and change the number until you hear the two consecutive beeps or the long beep.

   ![Image](R21668)
5. Diagnose by the sound.
   ★ beep: The left-side number does not correspond with the error code.
   ★ two consecutive beeps: The left-side number corresponds with the error code but the right-side number does not.
   ★ long beep: Both the left-side and right-side numbers correspond with the error code.
   (The numbers indicated when you hear the long beep are the error code. Refer to page 69.)

6. Press FAN button.

   The right-side number blinks.

7. Press TEMP ▲ or TEMP ▼ button and change the number until you hear the long beep.

8. Diagnose by the sound.
   ★ beep: The left-side number does not correspond with the error code.
   ★ two consecutive beeps: The left-side number corresponds with the error code but the right-side number does not.
   ★ long beep: Both the left-side and right-side numbers correspond with the error code.

9. Determine the error code.
   The numbers indicated when you hear the long beep are the error code.
   Error codes and description → Refer to page 69.

10. Press FAN button for 5 seconds to exit from the service check mode.
   (When the remote controller is left untouched for 60 seconds, it returns to the normal mode also.)
3.2 ARC466 Series

Method 1

1. When Timer Cancel button is held down for 5 seconds, 00 is displayed on the temperature display screen.

2. Press Timer Cancel button repeatedly until a long beep sounds.
   - The code indication changes in the sequence shown below.

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>00</td>
<td>14</td>
<td>U0</td>
<td>27</td>
<td>U8</td>
</tr>
<tr>
<td>2</td>
<td>A5</td>
<td>15</td>
<td>C7</td>
<td>28</td>
<td>UH</td>
</tr>
<tr>
<td>3</td>
<td>E7</td>
<td>16</td>
<td>A3</td>
<td>29</td>
<td>P4</td>
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<td>4</td>
<td>F3</td>
<td>17</td>
<td>H8</td>
<td>30</td>
<td>H7</td>
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<td>5</td>
<td>F6</td>
<td>18</td>
<td>H9</td>
<td>31</td>
<td>U2</td>
</tr>
<tr>
<td>6</td>
<td>L3</td>
<td>19</td>
<td>I9</td>
<td>32</td>
<td>EA</td>
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<td>7</td>
<td>L4</td>
<td>20</td>
<td>C4</td>
<td>33</td>
<td>H1</td>
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<td>8</td>
<td>L5</td>
<td>21</td>
<td>E5</td>
<td>34</td>
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<td>9</td>
<td>L6</td>
<td>22</td>
<td>J3</td>
<td>35</td>
<td>H3</td>
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<td>10</td>
<td>E6</td>
<td>23</td>
<td>J6</td>
<td>36</td>
<td>R3</td>
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<tr>
<td>11</td>
<td>H6</td>
<td>24</td>
<td>E5</td>
<td>37</td>
<td>E3</td>
</tr>
<tr>
<td>12</td>
<td>R2</td>
<td>25</td>
<td>R1</td>
<td>38</td>
<td>R3</td>
</tr>
<tr>
<td>13</td>
<td>R6</td>
<td>26</td>
<td>E1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note:
1. A short beep or two consecutive beeps indicate non-corresponding codes.
2. To return to the normal mode, hold Timer Cancel button down for 5 seconds. When the remote controller is left untouched for 60 seconds, it also returns to the normal mode.
3. Not all the error codes are displayed. When you cannot find the error code, try method 2.
   (Refer to page 67.)
Method 2

1. Press the center of Temp button and Mode button at the same time.

   ![Diagram](R11669)

   Sc is displayed on the LCD.

   ![Diagram](R116821)

2. Select Sc (service check) with Temp ▲ or Temp ▼ button.

3. Press Mode button to enter the service check mode.

   ![Diagram](R11672)

   The left-side number blinking.

   ![Diagram](R11670)

4. Press Temp ▲ or Temp ▼ button and change the number until you hear the two consecutive beeps or the long beep.

   ![Diagram](R11671)
5. Diagnose by the sound.
   ★ beep: The left-side number does not correspond with the error code.
   ★ two consecutive beeps: The left-side number corresponds with the error code but the right-side number does not.
   ★ long beep: Both the left-side and right-side numbers correspond with the error code.
   The numbers indicated when you hear the long beep are the error code.
   Refer to page 69.

6. Press **Mode** button.

7. Press **Temp ▲ or Temp ▼** button and change the number until you hear the long beep.

8. Diagnose by the sound.
   ★ beep: The left-side number does not correspond with the error code.
   ★ two consecutive beeps: The left-side number corresponds with the error code but the right-side number does not.
   ★ long beep: Both the left-side and right-side numbers correspond with the error code.

9. Determine the error code.
   The numbers indicated when you hear the long beep are the error code.
   Refer to page 69.

10. Press **Mode** button for 5 seconds to exit from the service check mode.
    (When the remote controller is left untouched for 60 seconds, it returns to the normal mode also.)
## 4. Troubleshooting

### 4.1 Error Codes and Description

<table>
<thead>
<tr>
<th>Error Codes</th>
<th>Description</th>
<th>Reference Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>System</td>
<td></td>
<td></td>
</tr>
<tr>
<td>00</td>
<td>Normal</td>
<td>—</td>
</tr>
<tr>
<td>U2</td>
<td>Low-voltage detection or over-voltage detection</td>
<td>76</td>
</tr>
<tr>
<td>U4</td>
<td>Signal transmission error (between indoor unit and outdoor unit)</td>
<td>78</td>
</tr>
<tr>
<td>U8</td>
<td>Unspecified voltage (between indoor unit and outdoor unit)</td>
<td>80</td>
</tr>
<tr>
<td>Indoor Unit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R1</td>
<td>Indoor unit PCB abnormality</td>
<td>70</td>
</tr>
<tr>
<td>R5</td>
<td>Freeze-up protection control / heating peak-cut control</td>
<td>71</td>
</tr>
<tr>
<td>R6</td>
<td>Fan motor (DC motor) or related abnormality</td>
<td>72</td>
</tr>
<tr>
<td>R4</td>
<td>Indoor heat exchanger thermistor or related abnormality</td>
<td>75</td>
</tr>
<tr>
<td>R9</td>
<td>Room temperature thermistor or related abnormality</td>
<td>75</td>
</tr>
<tr>
<td>Outdoor Unit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E1</td>
<td>Outdoor unit PCB abnormality</td>
<td>81</td>
</tr>
<tr>
<td>E5</td>
<td>OL activation (compressor overload)</td>
<td>82</td>
</tr>
<tr>
<td>E6</td>
<td>Compressor lock</td>
<td>84</td>
</tr>
<tr>
<td>E7</td>
<td>DC fan lock</td>
<td>85</td>
</tr>
<tr>
<td>E8</td>
<td>Input overcurrent detection</td>
<td>86</td>
</tr>
<tr>
<td>E8</td>
<td>Four way valve abnormality</td>
<td>87</td>
</tr>
<tr>
<td>E3</td>
<td>Discharge pipe temperature control</td>
<td>89</td>
</tr>
<tr>
<td>E6</td>
<td>High pressure control in cooling</td>
<td>90</td>
</tr>
<tr>
<td>H0</td>
<td>Compressor system sensor abnormality</td>
<td>92</td>
</tr>
<tr>
<td>H6</td>
<td>Position sensor abnormality</td>
<td>93</td>
</tr>
<tr>
<td>H3</td>
<td>Outdoor temperature thermistor or related abnormality</td>
<td>95</td>
</tr>
<tr>
<td>H3</td>
<td>Discharge pipe thermistor or related abnormality</td>
<td>95</td>
</tr>
<tr>
<td>H6</td>
<td>Outdoor heat exchanger thermistor or related abnormality</td>
<td>95</td>
</tr>
<tr>
<td>L3</td>
<td>Electrical box temperature rise</td>
<td>97</td>
</tr>
<tr>
<td>L4</td>
<td>Radiation fin temperature rise</td>
<td>98</td>
</tr>
<tr>
<td>L5</td>
<td>Output overcurrent detection</td>
<td>99</td>
</tr>
<tr>
<td>L8</td>
<td>Radiation fin thermistor or related abnormality</td>
<td>95</td>
</tr>
</tbody>
</table>

★: Displayed only when system-down occurs.
4.2 Indoor Unit PCB Abnormality

Error Code A1

Method of Error Detection
The system checks if the circuit works properly within the microcomputer of the indoor unit.

Error Decision Conditions
The system cannot set the internal settings.

Supposed Causes
- Wrong models interconnected
- Defective indoor unit PCB
- Disconnection of connector
- Reduction of power supply voltage

Troubleshooting

Caution
Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.

Combination of the indoor and outdoor unit matched?
YES
NO

Check the connection of connectors (See Note.).

OK?
YES
NO

Correct the connection.

Error repeats?
YES
NO

Check the power supply voltage.
Voltage as rated?
YES
NO
Correct the power supply.
Start operation.

Error repeats?
YES
NO

Replace the indoor unit PCB (control PCB).
Completed.

Voltage as rated?
YES
NO
Correct the power supply.
Start operation.

Replace the indoor unit PCB (control PCB).
Completed.

Note:
Check the following connector.

<table>
<thead>
<tr>
<th>Model Type</th>
<th>Connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>09/12 class</td>
<td>Terminal board ~ Control PCB (H1, H2, H3)</td>
</tr>
<tr>
<td>15 class</td>
<td>Terminal board ~ Filter PCB (S100)</td>
</tr>
</tbody>
</table>
4.3 **Freeze-up Protection Control / Heating Peak-cut Control**

### Error Code

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A5</td>
<td></td>
</tr>
</tbody>
</table>

#### Method of Error Detection

- **Freeze-up protection control**
  During cooling operation, the freeze-up protection control (operation halt) is activated according to the temperature detected by the indoor heat exchanger thermistor.

- **Heating peak-cut control**
  During heating operation, the temperature detected by the indoor heat exchanger thermistor is used for the heating peak-cut control (operation halt, outdoor fan stop, etc.)

#### Error Decision Conditions

- **Freeze-up protection control**
  During cooling operation, the indoor heat exchanger temperature is below 0°C (32°F).

- **Heating peak-cut control**
  During heating operation, the indoor heat exchanger temperature is above about 60°C (140°F) (depending on the model).

#### Supposed Causes

- Short-circuited air
- Clogged air filter of the indoor unit
- Dust accumulation on the indoor heat exchanger
- Defective indoor heat exchanger thermistor
- Defective indoor unit PCB

#### Troubleshooting

- **Check No. 01**
  Refer to P.101

  ![Flowchart Diagram](image)

  **Caution**: Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.
### 4.4 Fan Motor (DC Motor) or Related Abnormality

<table>
<thead>
<tr>
<th>Error Code</th>
<th>A6</th>
</tr>
</thead>
</table>

**Method of Error Detection**
The rotation speed detected by the Hall IC during fan motor operation is used to determine abnormal fan motor operation.

**Error Decision Conditions**
The detected rotation speed does not reach the demanded rotation speed of the target tap, and is less than 50% of the maximum fan motor rotation speed.

**Supposed Causes**
- Remarkable decrease in power supply voltage
- Layer short inside the fan motor winding
- Breaking of wire inside the fan motor
- Breaking of the fan motor lead wires
- Defective capacitor of the fan motor
- Defective indoor unit PCB
Troubleshooting

FTX Series

Check No. 03
Refer to P. 102

Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.

Caution

Turn off the power supply.
(Unplug the power cable or turn the breaker off.)

Check the connector for connection.

OK?

NO

YES

Foreign matters in or around the fan?

NO

YES

Rotate the fan by hand.

Fan rotates smoothly?

NO

Abnormal sound occurs?

YES

Check No. 03
Check the fan motor for breakdown or short circuit.

Resistance OK?

NO

YES

Turn the power on again.

Check No. 03
Check the motor control voltage.

Is the motor control voltage 15 VDC generated?

NO

YES

Check No. 03
Check the indoor unit PCB for rotation pulse.

Is the rotation pulse generated?

NO

YES

Replace the indoor unit PCB (control PCB).

Note: The motor may break when the motor connector is disconnected with the power supply on.
(Turn off the power supply before connecting the connector also.)

* To secure the connection, once disconnect the connector and then reconnect it.

Correct the position of rubber cushion or replace the rubber cushion.

Replace the indoor fan motor.

Replace the indoor unit PCB (control PCB).

Replace the bearing rubber cushion.

Correct the position of rubber cushion or replace the rubber cushion.

Replace the indoor fan motor.

Correct the connection.

Remove the foreign matters.

FTX Series

Foreign matters in or around the fan?

Is the rotation pulse generated?

NO

YES

Replace the indoor fan motor.

Replace the indoor unit PCB (control PCB).

Replace the bearing rubber cushion.

Correct the position of rubber cushion or replace the rubber cushion.

Replace the indoor unit PCB (control PCB).

Replace the indoor fan motor.

Replace the bearing rubber cushion.

Replace the indoor fan motor.

FTX Series

Is the rubber cushion properly fitted?

YES

Correct the position of rubber cushion or replace the rubber cushion.

Replace the indoor unit PCB (control PCB).

Replace the indoor fan motor.

Replace the bearing rubber cushion.

Correct the position of rubber cushion or replace the rubber cushion.

Replace the indoor fan motor.

Replace the indoor unit PCB (control PCB).

Replace the bearing rubber cushion.

Correct the position of rubber cushion or replace the rubber cushion.

Replace the indoor fan motor.

Replace the indoor unit PCB (control PCB).

Replace the bearing rubber cushion.

Correct the position of rubber cushion or replace the rubber cushion.

Replace the indoor fan motor.

Replace the indoor unit PCB (control PCB).

Replace the bearing rubber cushion.

Correct the position of rubber cushion or replace the rubber cushion.

Replace the indoor fan motor.

Replace the indoor unit PCB (control PCB).

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Correct the position of rubber cushion or replace the rubber cushion.

Replace the indoor fan motor.

Replace the indoor unit PCB (control PCB).

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Correct the position of rubber cushion or replace the rubber cushion.

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Correct the position of rubber cushion or replace the rubber cushion.

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Correct the position of rubber cushion or replace the rubber cushion.

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Replace the bearing rubber cushion.

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Replace the indoor fan motor.

Replace the indoor unit PCB (control PCB).

Replace the bearing rubber cushion.

Correct the position of rubber cushion or replace the rubber cushion.

Replace the indoor fan motor.

Replace the indoor unit PCB (control PCB).

Replace the bearing rubber cushion.

Correct the position of rubber cushion or replace the rubber cushion.

Replace the indoor fan motor.

Replace the indoor unit PCB (control PCB).

Replace the bearing rubber cushion.

Correct the position of rubber cushion or replace the rubber cushion.

Replace the indoor fan motor.

Replace the indoor unit PCB (control PCB).
Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.

Check the power supply voltage.

Turn off the power and rotate the fan by hand.

Check the output of the fan motor connector.

Stop the fan motor.

Note: The rotation pulse is the feedback signal from the indoor fan motor.
4.5 Thermistor or Related Abnormality (Indoor Unit)

Error Code

C4, C9

Method of Error Detection

The temperatures detected by the thermistors determine thermistor errors.

Error Decision Conditions

The voltage between the both ends of the thermistor is 4.96 V and more or 0.04 V and less during compressor operation.

Supposed Causes

- Disconnection of connector
- Thermistor corresponding to the error code is defective.
- Defective indoor unit PCB

Troubleshooting

Check No. 01
Refer to P.101

Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.

Check the connection of connectors.

Normal? NO

Correct the connection.

YES

Check No. 01
Check the thermistor resistance value.

Normal? NO

Replace the defective thermistor.

YES

Replace the indoor unit PCB (control PCB).

C4 : Indoor heat exchanger thermistor
C9 : Room temperature thermistor
4.6 Low-voltage Detection or Over-voltage Detection

<table>
<thead>
<tr>
<th>Error Code</th>
<th>U2</th>
</tr>
</thead>
</table>

**Method of Error Detection**

- **Low-voltage detection:** An abnormal voltage drop is detected by the DC voltage detection circuit.
- **Over-voltage detection:** An abnormal voltage rise is detected by the over-voltage detection circuit.

**Error Decision Conditions**

- **Low-voltage detection:**
  - The voltage detected by the DC voltage detection circuit is below 180 ~ 196 V (depending on the model).
  - The compressor stops if the error occurs, and restarts automatically after 3-minute standby.

- **Over-voltage detection:**
  - An over-voltage signal is fed from the over-voltage detection circuit to the microcomputer (over 458 ~ 500 V, depending on the model).
  - The compressor stops if the error occurs, and restarts automatically after 3-minute standby.

**Supposed Causes**

- Power supply voltage is not as specified.
- Defective DC voltage detection circuit
- Defective over-voltage detection circuit
- Defective PAM control part
- Disconnection of compressor harness
- Short circuit inside the fan motor winding
- Noise
- Momentary drop of voltage
- Momentary power failure
- Defective outdoor unit PCB
Troubleshooting

**Caution**  Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.

- Check the power supply voltage.

- Is the voltage fluctuation within ±10% from the rated value?
  - NO  Correct the power supply.
  - YES
    - Check the connection of the compressor harness.
    - Loose or disconnected?
      - YES  Reconnect the harness.
      - NO
        - Does the outdoor fan rotate smoothly?
          - NO  Replace the outdoor fan motor and the outdoor unit PCB (main PCB).
          - YES
            - Turn on the power. System restarted? (Repeat a few times.)
              - YES  Check for such factors for a long term.
              - NO
                - Replace the outdoor unit PCB (main PCB).
        - (Precaution before turning on the power again)
          Make sure the power has been off for at least 30 seconds.
4.7 Signal Transmission Error (Between Indoor Unit and Outdoor Unit)

<table>
<thead>
<tr>
<th>Error Code</th>
<th>Error Code</th>
<th>U4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Method of Error Detection</td>
<td>The data received from the outdoor unit in signal transmission is checked whether it is normal.</td>
<td></td>
</tr>
<tr>
<td>Error Decision Conditions</td>
<td>The data sent from the outdoor unit cannot be received normally, or the content of the data is abnormal.</td>
<td></td>
</tr>
<tr>
<td>Supposed Causes</td>
<td>Power supply voltage is not as specified.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reduction of power supply voltage</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wiring error</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Breaking of the connecting wires between the indoor and outdoor units (wire No. 3)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Defective outdoor unit PCB</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Short circuit inside the fan motor winding</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Defective indoor unit PCB</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Disturbed power supply waveform</td>
<td></td>
</tr>
</tbody>
</table>
Check No.11 Refer to P.103

Check the power supply waveform.

- Is there any disturbance?
  - NO: Replace the indoor unit PCB (control PCB).
  - YES: Locate the cause of the disturbance of the power supply waveform, and correct it.

- Is the voltage fluctuation within ±10% from the rated value?
  - NO: Correct the power supply.
  - YES: Check the indoor unit - outdoor unit connection wires.

- Is there any wiring error?
  - NO: Replace the connection wires between the indoor unit and outdoor unit.
  - YES: Correct the indoor unit - outdoor unit connection wires.

- Check the voltage of the connection wires on the indoor terminal board between No. 1 and No. 3, and between No. 2 and No. 3.

- Properly insulated?
  - NO: Replace the outdoor unit PCB (main PCB).
  - YES: Correct the power supply.

- Check the LED A on the outdoor unit PCB.

- Is LED A blinking?
  - Continuously ON or OFF: Replace the outdoor unit PCB (main PCB).
  - Blink: Replace the outdoor fan motor and the outdoor unit PCB (main PCB).

- Rotate the outdoor fan by hand. Does the outdoor fan rotate smoothly?
  - NO: Replace the outdoor unit PCB (main PCB).
  - YES: Correct the power supply.

Caution

- Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.
- Before you check the LED A, cancel the standby electricity saving function by starting fan operation with the remote controller.
- Wait at least for 7 sec. after turning on the power.
- Is there any wiring error?
- Properly insulated?
- Continuously ON or OFF
- Blink
- Rotate the outdoor fan by hand. Does the outdoor fan rotate smoothly?
- Is there any disturbance?
4.8 Unspecified Voltage (Between Indoor Unit and Outdoor Unit)

Error Code

Method of Error Detection
The supply power is detected for its requirements (pair type is different from multi type) by the indoor / outdoor transmission signal.

Error Decision Conditions
The pair type and multi type are interconnected.

Supposed Causes
- Wrong models interconnected
- Wrong wiring of connecting wires
- Wrong indoor unit PCB or outdoor unit PCB mounted
- Defective indoor unit PCB
- Defective outdoor unit PCB

Troubleshooting

Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.

Check the combination of the indoor and outdoor unit.

OK? NO
MATCH THE COMPATIBLE MODELS.

YES
Are the connecting wires connected properly?

NO YES

Correct the connection.

Check the code numbers (2P012345, for example) of the indoor and outdoor unit PCB with the Parts List. If not matched, change for the correct PCB.

(R20435)
4.9 Outdoor Unit PCB Abnormality

Error Code

Method of Error Detection
- The system checks if the microprocessor is working in order.
- The system checks if the zero-cross signal comes in properly.

Error Decision Conditions
- The microprocessor program runs out of control.
- The zero-cross signal is not detected.

Supposed Causes
- Defective outdoor unit PCB
- Noise
- Momentary drop of voltage
- Momentary power failure

Troubleshooting

Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.

* Before you check the LED A, cancel the standby electricity saving function by starting fan operation with the remote controller.
* Wait at least for 7 sec. after turning on the power.

Turn on the power again.

Is LED A blinking?

Blink

Check if the outdoor unit is grounded.

Grounded?

NO

YES

Continuously ON or OFF

Replace the outdoor unit PCB (main PCB).

Replace the outdoor unit PCB (main PCB).

Ground the system.

Zero-cross signal abnormality.

(R21201)
### 4.10 OL Activation (Compressor Overload)

<table>
<thead>
<tr>
<th>Error Code</th>
<th>E5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Method of Error Detection</strong></td>
<td>A compressor overload is detected through compressor OL.</td>
</tr>
</tbody>
</table>
| **Error Decision Conditions** | - If the error repeats, the system is shut down.  
- Reset condition: Continuous run for about 60 minutes without any other error |
| **Supposed Causes** | - Disconnection of discharge pipe thermistor  
- Defective discharge pipe thermistor  
- Disconnection of connector S40  
- Disconnection of 2 terminals of OL (Q1L)  
- Defective OL (Q1L)  
- Broken OL harness  
- Defective electronic expansion valve or coil  
- Defective four way valve or coil  
- Defective outdoor unit PCB  
- Refrigerant shortage  
- Water mixed in refrigerant  
- Defective stop valve |
Troubleshooting

**Check No. 01**
Refer to P.101

**Check No. 12**
Refer to P.103

**Check No. 13**
Refer to P.104

**Check No. 14**
Refer to P.104

---

**Note:**
OL (Q1L) activating temperature: 120 ~ 130°C (248 ~ 266°F)
OL (Q1L) recovery temperature: 95°C (203°F)
## 4.11 Compressor Lock

<table>
<thead>
<tr>
<th>Error Code</th>
<th>E6</th>
</tr>
</thead>
</table>

### Method of Error Detection
A compressor lock is detected by the current waveform generated when applying high-frequency voltage to the motor.

### Error Decision Conditions
- If the error repeats, the system is shut down.
- Reset condition: Continuous run for about 11 minutes without any other error

### Supposed Causes
- Closed stop valve
- Compressor locked
- Disconnection of compressor harness

### Troubleshooting

#### Check No.12
Refer to P.103

#### Check No.15
Refer to P.105

**Caution**
Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.

*(Precaution before turning on the power again)*
Make sure the power has been off for at least 30 seconds.

```
Stop valve closed?  YES  
NO

Turn off the power. Disconnect the harnesses U, V, and W.

Check No.15
Check with the inverter analyzer.

* Inverter analyzer: RSUK0917C

Any LED off?  NO

Turn off the power and reconnect the harnesses. Turn on the power again and restart the system.

Emergency stop without compressor running?  YES
NO

System shut down after errors repeated several times?  NO

Correct the power supply or replace the outdoor unit PCB (main PCB).

Any LED off?  NO

Check the electronic expansion valve coil. Go to Check No. 12.

YES

Replace the compressor.

(Precaution before turning on the power again) Make sure the power has been off for at least 30 seconds.
```

Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.

*(Precaution before turning on the power again)*
Make sure the power has been off for at least 30 seconds.

**Correct the power supply or replace the outdoor unit PCB (main PCB).**

**Check the electronic expansion valve coil. Go to Check No. 12.**

**Replace the compressor.**

(Precaution before turning on the power again) Make sure the power has been off for at least 30 seconds.

**Replace the compressor.**
4.12 DC Fan Lock

Error Code

Method of Error Detection
An error is determined with the high-voltage fan motor rotation speed detected by the Hall IC.

Error Decision Conditions
- The fan does not start in 15 ~ 30 seconds even when the fan motor is running.
- If the error repeats, the system is shut down.
- Reset condition: Continuous run for about 11 minutes without any other error

Supposed Causes
- Disconnection of the fan motor
- Foreign matter stuck in the fan
- Defective fan motor
- Defective outdoor unit PCB

Troubleshooting

Check No. 16
Refer to P.107

**Caution**
Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.

```
  Fan motor connector disconnected?  YES
    NO

  Foreign matters in or around the fan?  NO
    YES

  Turn on the power.

  Rotate the fan.

  Fan rotates smoothly?  NO
    YES

  Check No. 16
  Check the rotation pulse input on the outdoor unit PCB (main PCB).

  Pulse signal generated?  NO
    YES

  Is the fuse (★) for the fan motor blown?  NO
    YES

  Replace the outdoor fan motor.

  Replace the fuse.

  Replace the outdoor unit PCB (main PCB).

★ FU2
```
4.13 Input Overcurrent Detection

**Error Code**

E8

**Method of Error Detection**

An input overcurrent is detected by checking the input current value with the compressor running.

**Error Decision Conditions**

The current exceeds about 12.0 ~ 18.0 A (depending on the model and operation mode) for 2.5 seconds with the compressor running.

(The upper limit of the current decreases when the outdoor temperature exceeds a certain level.)

**Supposed Causes**

- Outdoor temperature is out of operation range.
- Defective compressor
- Defective power module
- Defective outdoor unit PCB
- Short circuit

**Troubleshooting**

Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.

* An input overcurrent may result from wrong internal wiring. If the system is interrupted by an input overcurrent after the wires have been disconnected and reconnected for part replacement, check the wiring again.

Check No. 15
Refer to P.105

Check No. 17
Refer to P.108

Check No. 18
Refer to P.108

**Caution**

Start operation and measure the input current.

Input current flowing above its stop level?

YES

Turn off the power and disconnect the harnesses U, V, and W.

Check No. 15
Check with the inverter analyzer.

Any LED off?

YES

Correct the power supply or replace the outdoor unit PCB (main PCB).

NO

Replace the outdoor unit PCB (main PCB).

NO

Turn off the power, and reconnect the harnesses. Turn on the power again and start operation.

Check No. 18
Check the discharge pressure.
### 4.14 Four Way Valve Abnormality

**Error Code**

- **EA**

**Method of Error Detection**

The room temperature thermistor and the indoor heat exchanger thermistor are checked if they function within their normal ranges in each operation mode.

**Error Decision Conditions**

A following condition continues over 10 minutes after operating for 5 minutes.

- **Cooling / Dry**
  - \( A - B < -5°C \) (\( A - B < -9°F \))

- **Heating**
  - \( B - A < -5°C \) (\( B - A < -9°F \))

- \( A \): Room thermistor temperature
- \( B \): Indoor heat exchanger temperature

<table>
<thead>
<tr>
<th>Outdoor temperature</th>
<th>C (seconds)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(-15°C(5°F)) or higher</td>
<td>600 ★</td>
</tr>
<tr>
<td>Lower than (-15°C(5°F))</td>
<td>600 ★</td>
</tr>
<tr>
<td>09 class</td>
<td>600 ★</td>
</tr>
<tr>
<td>12 class</td>
<td>600 ★</td>
</tr>
<tr>
<td>15 class</td>
<td>1400 ★</td>
</tr>
</tbody>
</table>

★: The same value continues.

- If the error repeats, the system is shut down.
- Reset condition: Continuous run for about 60 minutes without any other error

**Supposed Causes**

- Disconnection of four way valve coil
- Defective four way valve, coil, or harness
- Defective outdoor unit PCB
- Defective thermistor
- Refrigerant shortage
- Water mixed in refrigerant
- Defective stop valve
### Troubleshooting

**Check No. 01**
Refer to P. 101

- **Four way valve coil disconnected (loose)?**
  - YES: Correct the four way valve coil.
  - NO: Harness disconnected?
    - YES: Reconnect the harness.
    - NO: Check the continuity of the four way valve coil and harness.

- Disconnect the harness from the connector.

- Resistance between harnesses about 1000 ~ 2000 Ω?
  - NO: Replace the four way valve coil.
  - YES: Check No. 13

- **Check No. 13**
  - Check the four way valve switching output.
    - NG: Replace the outdoor unit PCB (main PCB).
    - OK: Any thermistor disconnected?
      - YES: Reconnect the thermistor(s).
      - NO: Check No. 01

- **Check No. 01**
  - Check the thermistors.
    - NG: Replace the defective thermistor(s).
    - OK: Check No. 14

- **Check No. 14**
  - Check the refrigerant line.
    - NG: Refer to the refrigerant line check procedure.
      - Refrigerant shortage
      - Water mixed
      - Stop valve
    - OK: Replace the four way valve (defective or dust-clogged).

---

**Caution**

Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.

(R20405)
4.15 Discharge Pipe Temperature Control

<table>
<thead>
<tr>
<th>Error Code</th>
<th>( F3 )</th>
</tr>
</thead>
</table>

**Method of Error Detection**

An error is determined with the temperature detected by the discharge pipe thermistor.

**Error Decision Conditions**

- If the temperature detected by the discharge pipe thermistor rises above \( A \), the compressor stops.
- The error is cleared when the discharge pipe temperature has dropped below \( B \).

### 09 class

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>°C</td>
<td>°F</td>
</tr>
<tr>
<td>110</td>
<td>230</td>
</tr>
<tr>
<td>°C</td>
<td>°F</td>
</tr>
<tr>
<td>88</td>
<td>190.4</td>
</tr>
</tbody>
</table>

★ If the frequency drops, the temperature is lowered in compensation.

### 12/15 class

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>°C</td>
<td>°F</td>
</tr>
<tr>
<td>110</td>
<td>230</td>
</tr>
<tr>
<td>°C</td>
<td>°F</td>
</tr>
<tr>
<td>95</td>
<td>203</td>
</tr>
</tbody>
</table>

- If the error repeats, the system is shut down.
- Reset condition: Continuous run for about 60 minutes without any other error

**Supposed Causes**

- Defective discharge pipe thermistor
  (Defective outdoor heat exchanger thermistor or outdoor temperature thermistor)
- Defective electronic expansion valve or coil
- Refrigerant shortage
- Defective four way valve
- Water mixed in refrigerant
- Defective stop valve
- Defective outdoor unit PCB

**Troubleshooting**

Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.

Check No.01
Refer to P.101

Check the thermistors.
- NG
  - Discharge pipe thermistor
  - Outdoor heat exchanger thermistor
  - Outdoor temperature thermistor
- OK

Check No.12
Refer to P.103

Check the electronic expansion valve.
- NG
  - Replace the electronic expansion valve or the coil.
- OK

Check No.14
Refer to P.104

Check the refrigerant line.
- NG
  - Refer to the refrigerant line check procedure.
  - Refrigerant shortage
  - Four way valve
  - Water mixed
  - Stop valve
- OK

Replace the defective thermistor(s).

Replace the outdoor unit PCB (main PCB).
4.16 High Pressure Control in Cooling

Error Code  F6

Method of Error Detection  High-pressure control (operation halt, frequency drop, etc.) is activated in cooling operation if the temperature sensed by the outdoor heat exchanger thermistor exceeds the limit.

Error Decision Conditions  ■ The temperature sensed by the outdoor heat exchanger thermistor rise above 59 ~ 61°C (138.2 ~ 141.8°F) (depending on the model).
■ The error is cleared when the temperature drops below 51 ~ 52°C (123.8 ~ 125.6°F) (depending on the model).

Supposed Causes  ■ The installation space is not large enough.
■ Dirty outdoor heat exchanger
■ Defective outdoor fan motor
■ Defective stop valve
■ Defective electronic expansion valve or coil
■ Defective outdoor heat exchanger thermistor
■ Defective outdoor unit PCB
Check No. 01  
Refer to P.101

Check No. 12  
Refer to P.103

Check No. 17  
Refer to P.108

Check No. 18  
Refer to P.108

Check No. 19  
Refer to P.109

Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.
4.17 Compressor System Sensor Abnormality

<table>
<thead>
<tr>
<th>Error Code</th>
<th>H0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Method of Error Detection</td>
<td>The system checks the DC current before the compressor starts.</td>
</tr>
</tbody>
</table>
| Error Decision Conditions | - The voltage converted from the DC current before compressor start-up is out of the range 0.5 ~ 4.5 V.  
- The DC voltage before compressor start-up is below 50 V. |
| Supposed Causes | - Broken or disconnected harness  
- Defective outdoor unit PCB |
| Troubleshooting | 

Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.

- Check the harness for the compressor.
- Is the harness broken?  
  - YES: Replace the harness.  
  - NO: Turn off the power. Then, turn on the power to restart the system.
- Restart operation and error displayed again?  
  - NO: No problem. Keep on running.  
  - YES: Replace the outdoor unit PCB (main PCB).
### 4.18 Position Sensor Abnormality

<table>
<thead>
<tr>
<th>Error Code</th>
<th>H6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Method of Error Detection</td>
<td>A compressor start-up failure is detected by checking the compressor running condition through the position detection circuit.</td>
</tr>
<tr>
<td>Error Decision Conditions</td>
<td></td>
</tr>
<tr>
<td>- If the error repeats, the system is shut down.</td>
<td></td>
</tr>
<tr>
<td>- Reset condition: Continuous run for about 11 minutes without any other error</td>
<td></td>
</tr>
<tr>
<td>Supposed Causes</td>
<td></td>
</tr>
<tr>
<td>- Power supply voltage is not as specified.</td>
<td></td>
</tr>
<tr>
<td>- Disconnection of the compressor harness</td>
<td></td>
</tr>
<tr>
<td>- Defective compressor</td>
<td></td>
</tr>
<tr>
<td>- Defective outdoor unit PCB</td>
<td></td>
</tr>
<tr>
<td>- Start-up failure caused by the closed stop valve</td>
<td></td>
</tr>
<tr>
<td>- Input voltage is outside the specified range.</td>
<td></td>
</tr>
</tbody>
</table>
Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.

**Caution**

1. **Check No.15**
   - Turn off the power.
   - Check the power supply voltage.

2. **Check No.18**
   - Is the power supply voltage fluctuation within ±10% from the rated value?
     - NO: Correct the power supply.
     - YES: Check No. 18
       - Check the discharge pressure.

3. **Check No.20**
   - Check the short circuit of the diode bridge.
     - Normal?
       - NO: Replace the outdoor unit PCB (main PCB).
       - YES: Check the connection.
         - Electrical components or compressor harnesses connected as specified?
           - NO: Reconnect the electrical components or compressor harnesses as specified.
           - YES: Turn on the power. Check the electrolytic capacitor voltage.
             - Within 320 - 100 VDC?
               - NO: Replace the outdoor unit PCB (main PCB).
               - YES: Turn off the power. Disconnect the harnesses U, V, and W.
                 - Check No.15
                   - Check with the inverter analyzer.
                     - Any LED Off?
                       - NO: Replace the compressor.
                       - YES: Correct the power supply or replace the outdoor unit PCB (main PCB).
4.19 Thermistor or Related Abnormality (Outdoor Unit)

<table>
<thead>
<tr>
<th>Error Code</th>
<th>H9, J3, J6, P4</th>
</tr>
</thead>
</table>

**Method of Error Detection**
This fault is identified based on the thermistor input voltage to the microcomputer. A thermistor fault is identified based on the temperature sensed by each thermistor.

**Error Decision Conditions**
- The voltage between the both ends of the thermistor is above 4.96 V or below 0.04 V with the power on.
- J3 error is judged if the discharge pipe temperature is lower than the heat exchanger temperature.

**Supposed Causes**
- Disconnection of the connector for the thermistor
- Thermistor corresponding to the error code is defective.
- Defective heat exchanger thermistor in the case of J3 error (outdoor heat exchanger thermistor in cooling operation, or indoor heat exchanger thermistor in heating operation)
- Defective outdoor unit PCB

**Troubleshooting**

*In case of P4*

⚠️ **Caution**
Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.

Replace the outdoor unit PCB (main PCB).

P4 : Radiation fin thermistor
**Troubleshooting**

**Check No.01**
Refer to P.101

In case of **H9, J3, J6**

⚠️ **Caution**
Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.

1. **Turn on the power again.**

   - **Error displayed again on remote controller?**
     - **NO**
       - **Reconnect the connectors or thermistors.**
     - **YES**
       - **Check No. 01**
         - Check the thermistor resistance value.

   - **Normal?**
     - **NO**
       - Replace the defective thermistor(s) of the following thermistors.
         - Outdoor temperature thermistor
         - Discharge pipe thermistor
         - Outdoor heat exchanger thermistor
     - **YES**
       - **Check No. 01**
         - Check the indoor heat exchanger thermistor resistance value in the heating operation.

   - **Indoor heat exchanger thermistor functioning?**
     - **NO**
       - Replace the indoor heat exchanger thermistor.
     - **YES**
       - Replace the outdoor unit PCB (main PCB).

**H9**: Outdoor temperature thermistor
**J3**: Discharge pipe thermistor
**J6**: Outdoor heat exchanger thermistor
4.20 Electrical Box Temperature Rise

Error Code L3

Method of Error Detection
An electrical box temperature rise is detected by checking the radiation fin thermistor with the compressor off.

Error Decision Conditions
- With the compressor off, the radiation fin temperature is above A.
- The error is cleared when the radiation fin temperature drops below B.
- To cool the electrical components, the outdoor fan starts when the radiation fin temperature rises above C and stops when the radiation fin temperature drops below B.

<table>
<thead>
<tr>
<th></th>
<th>°C</th>
<th>°F</th>
<th>°C</th>
<th>°F</th>
<th>°C</th>
<th>°F</th>
</tr>
</thead>
<tbody>
<tr>
<td>09 class</td>
<td>82</td>
<td>179.6</td>
<td>65</td>
<td>149</td>
<td>70</td>
<td>158</td>
</tr>
<tr>
<td>12 class</td>
<td>90</td>
<td>194</td>
<td>75</td>
<td>167</td>
<td>81</td>
<td>177.8</td>
</tr>
<tr>
<td>15 class</td>
<td>90</td>
<td>194</td>
<td>64</td>
<td>147.2</td>
<td>81</td>
<td>177.8</td>
</tr>
</tbody>
</table>

*: The same value continues.

Supposed Causes
- Defective outdoor fan motor
- Short circuit
- Defective radiation fin thermistor
- Disconnection of connector
- Defective outdoor unit PCB

Troubleshooting

Check No.17 Refer to P.108
Check No.19 Refer to P.109

Caution
Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.

Check No.17 Refer to P.108

Check No. 19
Check the outdoor fan.

Error again or outdoor fan activated?
YES

Check the radiation fin temperature.

Above A?
NO
Replace the outdoor unit PCB (main PCB).

YES

Replace the outdoor fan motor. Correct the connectors and fan motor lead wire. Replace the outdoor unit PCB (main PCB).

No"

OK

Radiation fin dirty?
NO

Replace the outdoor unit PCB (main PCB).

Above A?
NO
Replace the outdoor unit PCB (main PCB).

YES

Check the installation condition. Go to Check No. 17.

Clean up the radiation fin.
4.21 Radiation Fin Temperature Rise

Error Code

Method of Error Detection
A radiation fin temperature rise is detected by checking the radiation fin thermistor with the compressor on.

Error Decision Conditions

- If the radiation fin temperature with the compressor on is above A.
- The error is cleared when the radiation fin temperature drops below B.
- If the error repeats, the system is shut down.
- Reset condition: Continuous run for about 60 minutes without any other error

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>˚C</td>
<td>˚F</td>
</tr>
<tr>
<td>09 class</td>
<td>99</td>
</tr>
<tr>
<td>12 class</td>
<td>90</td>
</tr>
<tr>
<td>15 class</td>
<td>100</td>
</tr>
</tbody>
</table>

Supposed Causes
- Defective outdoor fan motor
- Short circuit
- Defective radiation fin thermistor
- Disconnection of connector
- Defective outdoor unit PCB
- Silicone grease is not applied properly on the radiation fin after replacing the outdoor unit PCB.

Troubleshooting

Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.

Check No. 17
Refer to P.108

Check No. 19
Refer to P.109

Note: Refer to Silicone Grease on Power Transistor / Diode Bridge on page 122 for details.
4.22 Output Overcurrent Detection

<table>
<thead>
<tr>
<th>Error Code</th>
<th>L5</th>
</tr>
</thead>
</table>

Method of Error Detection

An output overcurrent is detected by checking the current that flows in the inverter DC section.

Error Decision Conditions

- A position signal error occurs while the compressor is running.
- A rotation speed error occurs while the compressor is running.
- An output overcurrent signal is fed from the output overcurrent detection circuit to the microcomputer.
- If the error repeats, the system is shut down.
- Reset condition: Continuous run for about 11 minutes without any other error

Supposed Causes

- Poor installation condition
- Closed stop valve
- Defective power module
- Wrong internal wiring
- Abnormal power supply voltage
- Defective outdoor unit PCB
- Power supply voltage is not as specified.
- Defective compressor
**Troubleshooting**

**Check No. 15**
Refer to P. 105

**Check No. 17**
Refer to P. 108

**Check No. 18**
Refer to P. 108

**Check No. 22**
Refer to P. 111

---

**Caution**
Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.

* An output overcurrent may result from wrong internal wiring. If the system is interrupted by an output overcurrent after the wires have been disconnected and reconnected for part replacement, check the wiring again.

---

**Check No. 17**
Check the installation condition.

- **Stop valve fully open?**
  - **NO**
  - Fully open the stop valve.
  - **YES**

- **Turn off the power.** Then, turn on the power to restart the system. See if the same error occurs.

- **Error again?**
  - **NO**
  - **YES**

- **Turn off the power and disconnect the harnesses U, V, and W.**

---

**Check No. 15**
Check with the inverter analyzer.

- **Any LED off?**
  - **YES**
  - Correct the power supply or replace the outdoor unit PCB (main PCB).
  - **NO**

---

**Check No. 22**
Check the power module.

- **Normal?**
  - **NO**
  - Replace the outdoor unit PCB (main PCB).
  - **YES**

- **Turn off the power, and reconnect the harnesses.** Turn on the power again and start operation.

- **Check the power supply voltage.**

- **Voltage as rated?**
  - **NO**
  - Correct the power supply.
  - **YES**

- **Short circuit or wire breakage between compressor's coil phases?**
  - **NO**
  - Check the discharge pressure. Go to Check No. 18.
  - **YES**

---

* Inverter analyzer: RSUK0917C

---

**Check the power module.**

**Check the installation condition.**

**Check the discharge pressure.**

*(R21438)*
5. Check

5.1 Thermistor Resistance Check

Check No.01

Disconnect the connectors of the thermistors from the PCB, and measure the resistance of each thermistor using multimeter.

<table>
<thead>
<tr>
<th>Thermistor temperature</th>
<th>Resistance (kΩ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>°C</td>
<td>°F</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>−20</td>
<td>−4</td>
</tr>
<tr>
<td>−15</td>
<td>5</td>
</tr>
<tr>
<td>−10</td>
<td>14</td>
</tr>
<tr>
<td>−5</td>
<td>23</td>
</tr>
<tr>
<td>0</td>
<td>32</td>
</tr>
<tr>
<td>5</td>
<td>41</td>
</tr>
<tr>
<td>10</td>
<td>50</td>
</tr>
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<td>15</td>
<td>59</td>
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<td>20</td>
<td>68</td>
</tr>
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<td>25</td>
<td>77</td>
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</tr>
<tr>
<td>35</td>
<td>95</td>
</tr>
<tr>
<td>40</td>
<td>104</td>
</tr>
<tr>
<td>45</td>
<td>113</td>
</tr>
<tr>
<td>50</td>
<td>122</td>
</tr>
</tbody>
</table>

(R25°C (77°F) = 10 kΩ, B = 3435 K)

(R25°C (77°F) = 20 kΩ, B = 3950 K)

- When the room temperature thermistor is soldered on a PCB, remove the PCB from the control PCB to measure the resistance.
- When the connector of indoor heat exchanger thermistor is soldered on a PCB, remove the thermistor and measure the resistance.
5.2 Indoor Fan Motor Connector Output Check

Check No.03  FTX Series

- Fan motor wire breakdown / short circuit check
  1. Check the connector for connection.
  2. Turn the power off.
  3. Check if each resistance at the phases U - V and V - W is $90 \, \Omega \sim 100 \, \Omega$ (between the pins 12 - 9, and between 9 - 6).

- Motor control voltage check
  1. Check the connector for connection.
  2. Check the motor control voltage is generated (between the pins 2 - 3).

- Rotation pulse check
  1. Check the connector for connection.
  2. Turn the power on and stop the operation.
  3. Check if the Hall IC generates the rotation pulse 4 times when the fan motor is manually rotated once (between the pins 1 - 3).

![Diagram of FTX Series connections]

Check No.02  FVXS Series

1. Check the connection of connector.
2. Check motor power supply voltage output (pins 4 - 7).
3. Check motor control voltage (pins 4 - 3).
4. Check rotation command voltage output (pins 4 - 2).
5. Check rotation pulse input (pins 4 - 1).

![Diagram of FVXS Series connections]
5.3 Power Supply Waveforms Check

Check No.11

Measure the power supply waveform between No. 1 and No. 2 on the terminal board, and check the waveform disturbance.
- Check if the power supply waveform is a sine wave (Fig.1).
- Check if there is waveform disturbance near the zero-cross (sections circled in Fig.2).

![Fig.1](R1736)  ![Fig.2](R1444)

5.4 Electronic Expansion Valve Check

Check No.12

Conduct the followings to check the electronic expansion valve (EV).
1. Check if the EV connector is correctly connected to the PCB.
2. Turn the power off and on again, and check to see if the EV generates a latching sound.
3. If the EV does not generate a latching sound in the above step 2, disconnect the connector and check the continuity using a multimeter.
4. Check the continuity between the pins 1 - 6, 2 - 6, 3 - 6, and 4 - 6 (between the pins 1 - 5, 2 - 5, 3 - 5, 4 - 5 for the 5P connector models). If there is no continuity between the pins, the EV coil is faulty.
5. If the continuity is confirmed in step 3, the outdoor unit PCB (main PCB) is faulty.
5.5 Four Way Valve Performance Check

Check No.13

- Turn the power off and then on again.
- Start heating operation.
- NO
  - Four way valve coil
  - Cooling / Dry / Defrost: Not energized
  - Heating: energized
- YES
  - Disconnect the four way valve coil from the connector and check the continuity.
  - NO
    - Replace the outdoor unit PCB (main PCB).
  - YES
    - Four way valve coil resistance at 1000 ~ 2000 Ω?
      - NO
        - Replace the four way valve coil.
      - YES
        - Replace the four way valve.

(Fig. 1)

Voltage at S80

208 - 230 VAC

Compressor ON

Time

(R1674)

5.6 Inverter Unit Refrigerant System Check

Check No.14

- Refrigerant system check
- Is the discharge pipe thermistor disconnected from the holder?
  - YES
    - Reconnect the thermistor.
  - NO
    - Check for refrigerant leakage. See the service diagnosis on refrigerant shortage (U4).

(R15833)
5.7 Inverter Analyzer Check

Check No. 15

■ Characteristics

Inverter analyzer: RSUK0917C

If an abnormal stop occurs due to compressor startup failure or overcurrent output when using an inverter unit, it is difficult to judge whether the stop is caused by the compressor failure or some other failure (main PCB, power module, etc.). The inverter analyzer makes it possible to judge the cause of trouble easily and securely. (Connect an inverter analyzer as a quasi-compressor instead of compressor and check the output of the inverter.)

■ Operation Method

Step 1

Be sure to turn off the power.

Step 2

Install an inverter analyzer instead of a compressor.

Note:
Make sure the charged voltage of the built-in smoothing electrolytic capacitor drops to 10 VDC or below before carrying out the service work.

Reference:
If the terminals of the compressor are not FASTON terminals (difficult to remove the wire on the terminals), it is possible to connect wires available on site to the outdoor unit from output side of PCB. (Do not connect them to the compressor at the same time, otherwise it may result in incorrect detection.)
Step 3
Activate power transistor test operation from the indoor unit.

(1) Turn the power on.
(2) Press the center of TEMP button and OFF button on the remote controller at the same time.
(3) Select T° with TEMP ▲ or TEMP ▼ button.
(4) Press FAN button.
(5) Press FAN ONLY button to start the power transistor test operation.

■ Diagnose method (Diagnose according to 6 LEDs lighting status.)
(1) If all the LEDs are lit uniformly, the compressor is defective.
   → Replace the compressor.
(2) If the LEDs are not lit uniformly, check the power module.
   → Refer to Check No.22.
(3) If NG in Check No.22, replace the power module.
   (Replace the main PCB. The power module is united with the main PCB.)
   If OK in Check No.22, check if there is any solder cracking on the PCB.
(4) If any solder cracking is found, replace the PCB or repair the soldered section.
   If there is no solder cracking, replace the PCB.

Caution
(1) When the output frequency is low, the LEDs blink slowly. As the output frequency increases, the LEDs blink quicker. (The LEDs look like they are lit.)
(2) On completion of the inverter analyzer diagnosis, be sure to re-crimp the FASTON terminals. Otherwise, the terminals may be burned due to loosening.
5.8 Rotation Pulse Check on the Outdoor Unit PCB

Check No.16

Make sure that the voltage of 320 + 100 V ~ 320 - 50 V is applied.
1. Set operation off and power off. Disconnect the connector S70 or S71.
2. Check that the voltage between the pins 4 - 7 is 320 VDC.
3. Check that the control voltage between the pins 3 - 4 is 15 VDC.
4. Check that the rotation command voltage between the pins 2 - 4 is 0 ~ 6.5 VDC.
5. Keep operation off and power off. Connect the connector S70 or S71.
6. Check whether 4 rotation pulses (0 ~ 15 VDC) are input at the pins 1 - 4 when the fan motor is rotated 1 turn by hand.

When the fuse is melted, check the outdoor fan motor for proper function.
   If NG in step 2 → Defective PCB → Replace the outdoor unit PCB (main PCB).
   If NG in step 4 → Defective Hall IC → Replace the outdoor fan motor.
   If OK in both steps 2 and 4 → Replace the outdoor unit PCB (main PCB).

---

![Diagram](R20507)

- S70 or S71
- PCB
- Actual rotation pulse input (0 ~ 15 VDC)
- Rotation command voltage (0 ~ 6.5 VDC)
- Control voltage 15 VDC
- 320 VDC
5.9 Installation Condition Check

Check No.17

- Installation condition check
- Check the allowable dimensions of the air suction and discharge area.
  - OK
  - NG
    - Change the installation location or direction.
- Is the discharged air short-circuited?
  - YES
    - Change the installation location or direction.
  - NO
- Is the outdoor heat exchanger very dirty?
  - YES
    - Clean the outdoor heat exchanger.
  - NO
- Is the airflow blocked by obstacles or winds blowing in the opposite direction?
  - YES
    - Change the installation location or direction.
  - NO
- Check the outdoor temperature.
  - The outdoor temperature should be within the operation range.
  - Change the installation location or direction.

5.10 Discharge Pressure Check

Check No.18

- Discharge pressure check
- High?
  - YES
    - Replace the compressor.
  - NO
    - Replace the pipe installed at the site.
- Is the stop valve open?
  - YES
    - Replace the compressor.
  - NO
    - Clean the dirty air filter or indoor / outdoor heat exchanger.
- Is the connection pipe deformed?
  - YES
    - Replace the compressor.
  - NO
- Is the air filter or indoor / outdoor heat exchanger dirty?
  - YES
    - Replace the compressor.
  - NO
5.11 Outdoor Fan System Check

Check No.19 DC motor

Check the outdoor fan system.

- Is the outdoor fan running? YES
  - Outdoor fan system is functioning.
  
- Fan motor lead wire connector disconnected? NO
  - Go to Check No. 16.
  
- Fan motor lead wire connector disconnected? YES
  - Reconnect the connector.

(R21195)

5.12 Main Circuit Short Check

Check No.20

Check to make sure that the voltage between (+) and (–) of the diode bridge (DB1) is approximately 0 V before checking.

- Measure the resistance between the pins of the DB1 referring to the table below.
- If the resistance is ∞ or less than 1 kΩ, short circuit occurs on the main circuit.

<table>
<thead>
<tr>
<th>Positive terminal (+) of digital multimeter</th>
<th>~ (2, 3)</th>
<th>+ (4)</th>
<th>~ (2, 3)</th>
<th>− (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negative terminal (–) of digital multimeter</td>
<td>+ (4)</td>
<td>~ (2, 3)</td>
<td>− (1)</td>
<td>~ (2, 3)</td>
</tr>
<tr>
<td>Resistance is OK.</td>
<td>several kΩ ~ several MΩ</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resistance is NG.</td>
<td>0 Ω or ∞</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

09 class
12 class

15 class

Multimeter

(R23024)

(R20701)
5.13 Power Module Check

Check No.22

Check to make sure that the voltage between (+) and (–) of the power module is approximately 0 V before checking.

- Disconnect the compressor harness connector from the outdoor unit PCB. To disengage the connector, press the protrusion on the connector.
- Follow the procedure below to measure resistance between the terminals of the power module and the terminals of the compressor with a multimeter. Evaluate the measurement results referring to the following table.

<table>
<thead>
<tr>
<th>Positive terminal (+) of digital multimeter</th>
<th>Power module (+)</th>
<th>UVW</th>
<th>Power module (–)</th>
<th>UVW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negative terminal (–) of digital multimeter</td>
<td>UVW</td>
<td></td>
<td>UVW</td>
<td></td>
</tr>
<tr>
<td>Resistance is OK.</td>
<td>several kΩ ~ several MΩ</td>
<td></td>
<td>Resistance is NG.</td>
<td>0 Ω or ∞</td>
</tr>
</tbody>
</table>

09 class

12 class

Pin 20: –
Pin 21: W
Pin 22: V
Pin 23: U
Pin 24: +

15 class

DC_P1: +
DC_N1: –
Part 7
Trial Operation and Field Settings

1. Pump Down Operation .................................................................................. 114
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3. Trial Operation .......................................................................................... 116
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5. Silicone Grease on Power Transistor / Diode Bridge ............................... 122
1. Pump Down Operation

Outline
In order to protect the environment, be sure to conduct pump down operation when relocating or disposing of the unit.

Detail
1. Remove the valve caps from the liquid stop valve and the gas stop valve.
2. Carry out forced cooling operation.
3. After 5 to 10 minutes, close the liquid stop valve with a hexagonal wrench.
4. After 2 to 3 minutes, close the gas stop valve and stop the forced cooling operation.

Refer to Forced Cooling Operation on page 115 for details.
## 2. Forced Cooling Operation

<table>
<thead>
<tr>
<th>Item</th>
<th>Forced Cooling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conditions</td>
<td>The forced cooling operation is allowed when both the following conditions are met.</td>
</tr>
<tr>
<td></td>
<td>1) The outdoor unit is not abnormal and not in the 3-minute standby mode.</td>
</tr>
<tr>
<td></td>
<td>2) The outdoor unit is not operating.</td>
</tr>
<tr>
<td>Start</td>
<td>Press the forced cooling operation <strong>ON/OFF</strong> button (SW1) on the indoor unit for 5 seconds.</td>
</tr>
</tbody>
</table>
| Command frequency | 09 class: 58 Hz  
|            | 12/15 class: 30 Hz                                                           |
| End       | The forced cooling operation ends when any of the following conditions is fulfilled. |
|           | 1) The operation ends automatically after 15 minutes.                        |
|           | 2) Press the forced cooling operation **ON/OFF** button (SW1) on the indoor unit again. |
|           | 3) Press **ON/OFF** button on the remote controller.                         |
| Others    | Protection functions have priority over all other functions during forced cooling operation. |

**Indoor Unit**  
**FTX Series**  
吸入性
ON/OFF button (SW1)

**FTXV Series**  
吸入性
ON/OFF button (SW1)
3. Trial Operation

Outline
Carry out the trial operation in accordance with the operation manual to ensure that all functions and parts, such as flap movement, are working properly.

Trial operation should be carried out in either cooling or heating operation.

Detail
1. Measure the power supply voltage and make sure that it falls within the specified range.
2. In cooling operation, select the lowest programmable temperature (18°C, 64°F); in heating operation, select the highest programmable temperature (30°C, 86°F).
   - Trial operation may be disabled in either operation mode depending on the room temperature.
   - After trial operation is complete, set the temperature to a normal level (26 ~ 28°C, 78 ~ 82°F in cooling, 20 ~ 24°C, 68 ~ 75°F in heating operation).
   - For protection, the system does not start for 3 minutes after it is turned off.

ARC480 Series
(1) Press the center of TEMP button and OFF button on the remote controller at the same time.
(2) Select ° (trial operation) with TEMP or TEMP button.
(3) Press FAN button to enter the trial operation mode.
(4) Press COOL or HEAT button to start trial operation.
(5) Trial operation terminates in about 30 minutes and switches into the normal mode. To quit trial operation, press OFF button.
ARC466 Series
(1) Press On/Off button to turn on the system.
(2) Press the center of Temp button and Mode button at the same time.
(3) Select ‘ Trial operation with Temp ▲ or Temp ▼ button.
(4) Press Mode button to start the trial operation.
(5) Press Mode button and select operation mode.
(6) Trial operation terminates in about 30 minutes and switches into normal mode. To quit trial operation, press On/Off button.
4. Field Settings
4.1 Temperature Display Switch

ARC480A8
- You can select Fahrenheit or Celsius for temperature display.
- Press TEMP▲ and ON TIMER buttons simultaneously for 5 seconds to change the unit of temperature display.
- You can also change the unit of temperature display by pressing TEMP▲ and ▼ buttons simultaneously for 5 seconds.

ARC466A21
- Press the upper side of Temp button and On button at the same time for 5 seconds to change the unit of temperature display.
4.2 When 2 Units are Installed in 1 Room

Outline
When 2 indoor units are installed in 1 room, 1 of the 2 indoor units and the corresponding wireless remote controller can be set for different addresses.

FTX Series
(1) Remove the battery cover of the remote controller.
(2) Cut the address jumper.
(3) Press the center of TEMP button and OFF button on the remote controller at the same time.
(4) Select 8 (address setting) with TEMP or TEMP button.
(5) Press FAN button to enter the address setting mode.
→ The indoor unit operation lamp blinks for 1 minute.
(6) Press indoor unit ON/OFF button while the operation lamp is blinking.
(7) Press FAN button on the remote controller for 5 seconds to return to the normal mode.

Caution
Replace the remote controller if you accidentally cut a wrong jumper.
Jumpers are necessary for electronic circuit. Improper operation may occur if you cut any of them.
FVXS Series

(1) Remove the front grille.
(2) Lift the sensor PCB fixing plate and remove the front shield plate.
(3) Disconnect the connectors S1, S41, S42.
(4) Remove the electric box (1 screw).
(5) Pull out the indoor heat exchanger thermistor.
(6) Remove the shield plate (8 tabs).
(7) Cut the address setting jumper JA on the indoor unit PCB.

Caution Replace the PCB if you accidentally cut a wrong jumper. Jumpers are necessary for electronic circuit. Improper operation may occur if you cut any of them.
4.3 Jumper and Switch Settings

FVXS Series Jumper

<table>
<thead>
<tr>
<th>Jumper (on indoor unit PCB)</th>
<th>Function</th>
<th>When connected (factory setting)</th>
<th>When cut</th>
</tr>
</thead>
<tbody>
<tr>
<td>JB</td>
<td>Fan speed setting when compressor stops for thermostat OFF. (effective only at cooling operation)</td>
<td>Fan speed setting; Remote controller setting</td>
<td>The fan stops.</td>
</tr>
<tr>
<td>JC</td>
<td>Power failure recovery function</td>
<td>Auto-restart</td>
<td>The unit does not resume operation after recovering from a power failure. Timer settings are cleared.</td>
</tr>
</tbody>
</table>

FVXS Series Switch

<table>
<thead>
<tr>
<th>Switch (on indoor unit PCB)</th>
<th>Function</th>
<th>OFF (factory setting)</th>
<th>ON</th>
</tr>
</thead>
<tbody>
<tr>
<td>SW2-4</td>
<td>Upward airflow limit setting</td>
<td>Exposed or half embedded installation</td>
<td>Set the switch to ON position when you install the indoor unit embedded in the wall to avoid condensation.</td>
</tr>
</tbody>
</table>

For the location of the jumper and the switch, refer to page 14.

4.4 Facility Setting Switch (cooling at low outdoor temperature)

Outline

This function is limited to use for facilities (where the target of air conditioning is equipment, such as in a server room). Never use it in a residence or office where there are people present.

Detail

You can expand the operation range to –15°C (5°F) by cutting the jumper on the outdoor unit PCB. Note that the operation may stop if the outdoor temperature drops below –15°C (5°F). If the outdoor temperature rises, the operation starts again.

For the location of the jumper, refer to page 16, 17, 18.

Caution Replace the PCB if you accidentally cut a wrong jumper. Jumpers are necessary for electronic circuit. Improper operation may occur if you cut any of them.

Caution

1. If the outdoor unit is installed where the outdoor heat exchanger of the unit is exposed to direct wind, provide a windbreak wall.
2. Intermittent noises may be produced by the indoor unit due to the outdoor fan turning on and off when using facility settings.
3. Do not place humidifiers or other items which might raise the humidity in rooms where facility settings are being used. A humidifier might cause dew jumping from the indoor unit outlet vent.
4. Cutting jumper sets the indoor fan tap to the highest position.
5. Silicone Grease on Power Transistor / Diode Bridge

Outline
Apply the specified silicone grease to the heat radiation part of a power transistor / diode bridge when you replace an outdoor unit PCB. The silicone grease encourages the heat radiation of a power transistor / diode bridge.

Detail
1. Wipe off the old silicone grease completely.
2. Apply the silicone grease evenly. See the illustrations below for examples of application.
3. Tighten the screws of the power transistor / diode bridge.
4. Make sure that the heat radiation parts are firmly contacted to the radiation fin.

Note: Smoke emission may be caused by bad heat radiation when the silicone grease is not appropriately applied.

■ OK: Evenly applied

■ NG: Not evenly applied

■ NG: Foreign matter is stuck.
Part 8
Appendix

1. Piping Diagrams
   1.1 Indoor unit
   1.2 Outdoor Unit

2. Wiring Diagrams
   2.1 Indoor Unit
   2.2 Outdoor Unit
1. Piping Diagrams

1.1 Indoor unit

1.1.1 Heat Pump

FTX09/12NMVJU

FTX15NMVJU

FVXS09/12NVJU

FVXS15NVJU

1/4 CuT

3/8 CuT

COOLING

HEATING

INDOOR UNIT

HEAT EXCHANGER

THERMISTOR

ON HEAT EXCH.

SINGLE UNION

JOINT

FIELD PIPING

(1/4 CuT)

FIELD PIPING

(3/8 CuT)

REFRIGERANT FLOW

DISTRIBUTOR

HEAT EXCHANGER

1/4 CuT

1/2 CuT

1/2 CuT

COOLING

HEATING

TURBO FAN

FAN MOTOR

THERMISTOR

ON HEAT EXCH.

FIELD PIPING

(1/4 CuT)

FIELD PIPING

(1/2 CuT)

4D091794

4D091795A

4D091708A

4D091769C

Appendix

124
1.2 Outdoor Unit

RXL09QMVJU
2. Wiring Diagrams

2.1 Indoor Unit

FTX09/12NMVJU

Note:
- PCB1: Control PCB
- PCB2: Display PCB
- Refer to Part 3 for Printed Circuit Board Connector Wiring Diagram.
FTX15NMVJU

WIRING DIAGRAM

CAUTION
NOTE THAT OPERATION WILL RESTART AUTOMATICALLY IF THE MAIN POWER SUPPLY IS TURNED OFF AND THEN BACK ON AGAIN.

P:CPCB 3
----
| LED1  H1P |
| LED2  H2P |
| S1W     |
| R1T     |

SIGNAL RECEIVER

WIRELESS REMOTE CONTROLLER

PCB 1

---
| L301 | Z2C | FG |
|      |     |     |
|      |     |     |
|      |     |     |
|      |     |     |

RECTIFIER

PCB 2

---
| S200 | S403 |
| S32  | S26  |
|      |      |
|      |      |
|      |      |
|      |      |

TRANSMISSION CIRCUIT

PCB 3

---
| MR10 | Z1C |
| HE   |     |

NOTE: PCB1: Filter PCB
PCB2: Control PCB
PCB3: Display PCB
Refer to Part 3 for Printed Circuit Board Connector Wiring Diagram.
Note: PCB1: Sensor PCB
PCB2: Control PCB
PCB3: Service PCB
PCB4: Display PCB
Refer to Part 3 for Printed Circuit Board Connector Wiring Diagram.

CAUTION
NOTE THAT OPERATION WILL
RESTART AUTOMATICALLY IF
THE MAIN POWER SUPPLY IS
TURNED OFF AND THEN BACK
ON AGAIN.

WIRING DIAGRAM

C: 3D090604A
2.2 Outdoor Unit

RXL09QMVJU

---

**Note:**

Refer to Part 3 for Printed Circuit Board Connector Wiring Diagram.

---

C: 3D099947
NOTE
1. REFER TO THE NAMEPLATE FOR THE POWER.

PCB: Main PCB
Refer to Part 3 for Printed Circuit Board Connector Wiring Diagram.
Refer to Part 3 for Printed Circuit Board Connector Wiring Diagram.
## Revision History

<table>
<thead>
<tr>
<th>Month / Year</th>
<th>Version</th>
<th>Revised contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>02 / 2016</td>
<td>SiUS091601E</td>
<td>First edition</td>
</tr>
</tbody>
</table>
Warning

- Daikin products are manufactured for export to numerous countries throughout the world. Prior to purchase, please confirm with your local authorized importer, distributor and/or retailer whether this product conforms to the applicable standards, and is suitable for use, in the region where the product will be used. This statement does not purport to exclude, restrict or modify the application of any local legislation.

- Ask a qualified installer or contractor to install this product. Do not try to install the product yourself. Improper installation can result in water or refrigerant leakage, electrical shock, fire or explosion.

- Use only those parts and accessories supplied or specified by Daikin. Ask a qualified installer or contractor to install those parts and accessories. Use of unauthorized parts and accessories or improper installation of parts and accessories can result in water or refrigerant leakage, electrical shock, fire or explosion.

- Read the user’s manual carefully before using this product. The user’s manual provides important safety instructions and warnings. Be sure to follow these instructions and warnings. If you have any inquiries, please contact your local importer, distributor and/or retailer.

Cautions on product corrosion

1. Air conditioners should not be installed in areas where corrosive gases, such as acid gas or alkaline gas, are produced.

2. If the outdoor unit is to be installed close to the sea shore, direct exposure to the sea breeze should be avoided. If you need to install the outdoor unit close to the sea shore, contact your local distributor.