Service Manual

Multi-Split Type Air Conditioners

2/3MXL-Q Series

[Applied Models]

- Inverter Multi : Heat Pump
Multi-Split Type
Air Conditioners
2/3MXL-Q Series

Heat Pump
Indoor Unit

CTXS07LVJU  FDXS09LVJU  FVXS09NVJU  FFQ09LVJU
FTXS09LVJU  FDXS12LVJU  FVXS12NVJU  FFQ12LVJU
FTXS12LVJU  CDXS15LVJU  FVXS15NVJU  FFQ15LVJU
FTXS15LVJU  CDXS18LVJU  FVXS18NVJU  FFQ18LVJU
FTXS18LVJU

Outdoor Unit

2MXL18QMVJU
3MXL24QMVJU
2.3 Freeze Prevention Control ................................................................. 56
2.4 Hot Start Control (In Heating Operation Only) .................................. 57

3. Control Specification ........................................................................ 58
  3.1 Thermistor Functions ................................................................. 58
  3.2 Mode Hierarchy ................................................................. 60
  3.3 Frequency Control ................................................................. 61
  3.4 Controls at Mode Changing/Start-up ........................................ 63
  3.5 Discharge Pipe Temperature Control ........................................ 64
  3.6 Input Current Control ................................................................. 65
  3.7 Freeze-up Protection Control ...................................................... 66
  3.8 Heating Peak-cut Control .............................................................. 66
  3.9 Outdoor Fan Control ................................................................. 67
  3.10 Liquid Compression Protection Function ..................................... 67
  3.11 Defrost Control ................................................................. 68
  3.12 Low Hz High Pressure Limit ..................................................... 69
  3.13 Electronic Expansion Valve Control ........................................ 69
  3.14 Malfunctions ................................................................. 70

Part 5 Remote Controller ...................................................................... 76
  1. CTXS, FTXS Series ........................................................................ 77
  2. CDXS, FDXS Series ........................................................................ 79
  3. FVXS Series ............................................................................... 81
  4. FFQ Series .................................................................................. 83
    4.1 <BRC1E71> Wired Remote Controller ........................................ 83
    4.2 <BRC1E72/73> Wired Remote Controller ...................................... 88
    4.3 <BRC7E830> Wireless Remote Controller ...................................... 94

Part 6 Service Diagnosis ...................................................................... 95
  1. General Problem Symptoms and Check Items .................................. 97
  2. Troubleshooting with LED .......................................................... 98
    2.1 Indoor Unit .............................................................................. 98
    2.2 Outdoor Unit ........................................................................... 99
  3. Service Diagnosis ........................................................................ 100
    3.1 CTXS, FTXS, CDXS, FDXS, FVXS Series .................................... 100
    3.2 FFQ Series ............................................................................. 106
  4. Code Indication on Remote Controller ........................................ 112
    4.1 CTXS, FTXS, CDXS, FDXS, FVXS Series .................................... 112
    4.2 FFQ Series ............................................................................. 112
    4.3 Outdoor Unit ........................................................................... 113
  5. Troubleshooting for CTXS, FTXS, CDXS, FDXS, FVXS Series .......... 114
    5.1 Indoor Unit PCB Abnormality .................................................. 114
    5.2 Freeze-up Protection Control/Heating Peak-cut Control .............. 116
    5.3 Fan Motor or Related Abnormality ........................................... 117
    5.4 Thermistor or Related Abnormality ........................................... 121
    5.5 Signal Transmission Error (Between Indoor Unit and Outdoor Unit) 122
    5.6 Unspecified Voltage (Between Indoor Unit and Outdoor Unit) .... 124
6. Troubleshooting for FFQ Series..............................................................125
  6.1 Indoor Unit PCB Abnormality .......................................................... 125
  6.2 Drain Level Control System Abnormality ........................................ 126
  6.3 Fan Motor (AC Motor) or Related Abnormality ............................... 127
  6.4 Drain System Abnormality ............................................................... 128
  6.5 Thermistor or Related Abnormality ............................................... 129
  6.6 Remote Controller Thermistor Abnormality .................................... 130
  6.7 Signal Transmission Error
      (Between Indoor Unit and Remote Controller) .......................... 131
  6.8 Signal Transmission Error
      (Between MAIN Remote Controller and SUB Remote Controller) .. 132
  6.9 Field Setting Abnormality .............................................................. 133

7. Troubleshooting for Outdoor Unit.........................................................134
  7.1 Refrigerant Shortage ........................................................................ 134
  7.2 Low-voltage Detection or Over-voltage Detection ........................... 136
  7.3 Wiring Error Check Unexecuted ...................................................... 138
  7.4 Unspecified Voltage (Between Indoor Unit and Outdoor Unit)/
      Anti-icing Control in Other Rooms ............................................... 139
  7.5 Anti-icing Control for Indoor Unit .................................................. 140
  7.6 Outdoor Unit PCB Abnormality ....................................................... 142
  7.7 OL Activation (Compressor Overload) .......................................... 143
  7.8 Compressor Lock ............................................................................ 145
  7.9 DC Fan Lock .................................................................................. 146
  7.10 Input Overcurrent Detection .......................................................... 147
  7.11 Four Way Valve Abnormality ........................................................ 148
  7.12 Discharge Pipe Temperature Control ............................................ 150
  7.13 High Pressure Control in Cooling ................................................ 151
  7.14 Compressor Sensor System Abnormality ....................................... 152
  7.15 Position Sensor Abnormality ........................................................ 154
  7.16 CT or Related Abnormality ........................................................... 156
  7.17 Thermistor or Related Abnormality (Outdoor Unit) ...................... 158
  7.18 Electrical Box Temperature Rise ................................................. 160
  7.19 Radiation Fin Temperature Rise .................................................. 161
  7.20 Output Overcurrent Detection ...................................................... 162

8. Check ...................................................................................................164
  8.1 Thermistor Resistance Check .......................................................... 164
  8.2 Indoor Fan Motor Connector Check ............................................... 165
  8.3 Hall IC Check .................................................................................. 165
  8.4 Power Supply Waveform Check ...................................................... 166
  8.5 Electronic Expansion Valve Check ................................................ 167
  8.6 Four Way Valve Performance Check .............................................. 168
  8.7 Inverter Unit Refrigerant System Check ......................................... 168
  8.8 Inverter Analyzer Check ................................................................. 169
  8.9 Rotation Pulse Check on the Outdoor Unit PCB ............................ 170
  8.10 Installation Condition Check ........................................................ 171
  8.11 Discharge Pressure Check ............................................................. 171
  8.12 Outdoor Fan System Check ........................................................... 172
  8.13 Main Circuit Short Check ............................................................. 172
  8.14 Capacitor Voltage Check ............................................................... 173
8.15 Power Module Check ................................................................................................. 174

Part 7 Trial Operation and Field Settings ................................................................. 175
   1. Pump Down Operation ...................................................................................... 176
   2. Wiring Error Check Function ........................................................................ 177
   3. Trial Operation .................................................................................................. 179
      3.1 CTXS, FTXS, CDXS, FDXS, FVXS Series ...................................................... 179
      3.2 FFQ Series .................................................................................................. 181
   4. Field Settings ................................................................................................... 183
      4.1 Outdoor Unit ............................................................................................... 183
      4.2 CTXS, FTXS, CDXS, FDXS, FVXS Series ...................................................... 185
      4.3 FFQ Series .................................................................................................. 190
   5. Silicone Grease on Power Transistor / Diode Bridge ...................................... 197

Part 8 Appendix ........................................................................................................... 198
   1. Piping Diagrams ............................................................................................... 199
     1.1 Indoor Unit ................................................................................................... 199
     1.2 Outdoor Unit ............................................................................................... 201
   2. Wiring Diagrams ............................................................................................... 202
     2.1 Indoor Unit ................................................................................................... 202
     2.2 Outdoor Unit ............................................................................................... 207
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 \(\text{Warning}\) and \(\text{Caution}\). The \(\text{Warning}\) items are especially important since death or serious injury can result if they are not followed closely. The \(\text{Caution}\) 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

\(\text{△}\) This symbol indicates an item for which caution must be exercised. The pictogram shows the item to which attention must be paid.

\(\text{○}\) This symbol indicates a prohibited action. The prohibited item or action is shown in the illustration or near the symbol.

\(\text{●}\) 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>(\text{Warning})</th>
<th>Do not store equipment in a room with fire sources (e.g., naked flames, gas appliances, electric heaters).</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Be sure to disconnect the power cable from the socket before disassembling equipment for repair.</td>
</tr>
<tr>
<td></td>
<td>Working on equipment that is connected to the power supply may cause an electrical shock.</td>
</tr>
<tr>
<td></td>
<td>If it is necessary to supply power to the equipment to conduct the repair or inspect the circuits,</td>
</tr>
<tr>
<td></td>
<td>do not touch any electrically charged sections of the equipment.</td>
</tr>
<tr>
<td></td>
<td>If refrigerant gas is discharged during repair work, do not touch the discharged refrigerant gas.</td>
</tr>
<tr>
<td></td>
<td>Refrigerant gas may cause frostbite.</td>
</tr>
<tr>
<td></td>
<td>When disconnecting the suction or discharge pipe of the compressor at the welded section, evacute</td>
</tr>
<tr>
<td></td>
<td>the refrigerant gas completely at a well-ventilated place first.</td>
</tr>
<tr>
<td></td>
<td>If there is gas remaining inside the compressor, the refrigerant gas or refrigerating machine oil</td>
</tr>
<tr>
<td></td>
<td>discharges when the pipe is disconnected, and it may cause injury.</td>
</tr>
<tr>
<td></td>
<td>If refrigerant gas leaks during repair work, ventilate the area.</td>
</tr>
<tr>
<td></td>
<td>Refrigerant gas may generate toxic gases when it contacts flames.</td>
</tr>
<tr>
<td></td>
<td>Be sure to discharge the capacitor completely before conducting repair work.</td>
</tr>
<tr>
<td></td>
<td>The step-up capacitor supplies high-voltage electricity to the electrical components of the outdoor</td>
</tr>
<tr>
<td></td>
<td>unit. A charged capacitor may cause an electrical shock.</td>
</tr>
<tr>
<td><strong>Warning</strong></td>
<td></td>
</tr>
<tr>
<td>-------------</td>
<td></td>
</tr>
</tbody>
</table>
| **Do not turn the air conditioner on or off by plugging in or unplugging the power cable.**  
Plugging in or unplugging the power cable to operate the equipment may cause an electrical shock or fire. |
| **Be sure to wear a safety helmet, gloves, and a safety belt when working in a high place (more than 2 m).**  
Insufficient safety measures may cause a fall. |
| **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.**  
The use of materials for R-22 refrigerant models may cause a serious accident, such as a damage of refrigerant cycle or equipment failure. |
| **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. |

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

<table>
<thead>
<tr>
<th>Caution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conduct welding work in a well-ventilated place. Using a welder in an enclosed room may cause oxygen deficiency.</td>
</tr>
</tbody>
</table>

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

**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.

### Caution

**Installation of a leakage breaker is necessary in some cases depending on the conditions of the installation site, to prevent electrical shocks.**

**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.

**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.

**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.
### Caution

<table>
<thead>
<tr>
<th>Check the earth / grounding, and repair it if the equipment is not properly earthed / grounded.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improper earth / grounding may cause an electrical shock.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Be sure to measure insulation resistance after the repair, and make sure that the resistance is 1 MΩ or higher.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faulty insulation may cause an electrical shock.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Be sure to check the drainage of the indoor unit after the repair.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faulty drainage may cause water to enter the room and wet the furniture and floor.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Do not tilt the unit when removing it.</th>
</tr>
</thead>
<tbody>
<tr>
<td>The water inside the unit may spill and wet the furniture and floor.</td>
</tr>
</tbody>
</table>
2. Icons Used

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

<table>
<thead>
<tr>
<th>Icon</th>
<th>Type of Information</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>![Icon]</td>
<td>Warning</td>
<td>A <strong>Warning</strong> is used when there is danger of personal injury.</td>
</tr>
<tr>
<td>![Icon]</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>![Icon]</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>![Icon]</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

<table>
<thead>
<tr>
<th>Category</th>
<th>Functions</th>
<th>CTXS07/LVJU</th>
<th>FTCX09/12/15/18/LVJU</th>
<th>Category</th>
<th>Functions</th>
<th>CTXS07/LVJU</th>
<th>FTCX09/12/15/18/LVJU</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Basic Functions</strong></td>
<td>Inverter (with inverter power control)</td>
<td>∗</td>
<td>∗</td>
<td>Health &amp; Cleanliness</td>
<td>Air-purifying filter</td>
<td>−</td>
<td>−</td>
</tr>
<tr>
<td></td>
<td>Operation limit for cooling (°CDB)</td>
<td>−</td>
<td>−</td>
<td></td>
<td>Photocatalytic deodorizing filter</td>
<td>−</td>
<td>−</td>
</tr>
<tr>
<td></td>
<td>Operation limit for cooling (°FDB)</td>
<td>−</td>
<td>−</td>
<td></td>
<td>Air-purifying filter with photocatalytic deodorizing function</td>
<td>−</td>
<td>−</td>
</tr>
<tr>
<td></td>
<td>Operation limit for heating (°CWB)</td>
<td>−</td>
<td>−</td>
<td></td>
<td>Titanium apatite photocatalytic air-purifying filter</td>
<td>∗</td>
<td>∗</td>
</tr>
<tr>
<td></td>
<td>Operation limit for heating (°FWB)</td>
<td>−</td>
<td>−</td>
<td></td>
<td></td>
<td>−</td>
<td>−</td>
</tr>
<tr>
<td></td>
<td>PAM control</td>
<td>−</td>
<td>−</td>
<td></td>
<td></td>
<td>−</td>
<td>−</td>
</tr>
<tr>
<td><strong>Compressor</strong></td>
<td>Oval scroll compressor</td>
<td>−</td>
<td>−</td>
<td></td>
<td>Longlife filter (option)</td>
<td>−</td>
<td>−</td>
</tr>
<tr>
<td></td>
<td>Swing compressor</td>
<td>−</td>
<td>−</td>
<td></td>
<td>Air filter (prefilter)</td>
<td>∗</td>
<td>(∗)</td>
</tr>
<tr>
<td></td>
<td>Rotary compressor</td>
<td>−</td>
<td>−</td>
<td></td>
<td>Wipe-clean flat panel</td>
<td>∗</td>
<td>∗</td>
</tr>
<tr>
<td></td>
<td>Reluctance DC motor</td>
<td>−</td>
<td>−</td>
<td></td>
<td>Washable grille</td>
<td>−</td>
<td>−</td>
</tr>
<tr>
<td><strong>Comfortable Airflow</strong></td>
<td>Power-airflow flap (horizontal blade)</td>
<td>−</td>
<td>−</td>
<td>Timer</td>
<td>WEEKLY TIMER operation</td>
<td>∗</td>
<td>∗</td>
</tr>
<tr>
<td></td>
<td>Power-airflow dual flaps</td>
<td>∗</td>
<td>∗</td>
<td></td>
<td>24-hour ON/OFF TIMER</td>
<td>∗</td>
<td>∗</td>
</tr>
<tr>
<td></td>
<td>Power-airflow diffuser</td>
<td>−</td>
<td>−</td>
<td></td>
<td>NIGHT SET mode</td>
<td>∗</td>
<td>∗</td>
</tr>
<tr>
<td></td>
<td>Wide-angle louvers (vertical blades)</td>
<td>∗</td>
<td>∗</td>
<td></td>
<td>Worry Free (Reliability &amp; Durability)</td>
<td>∗</td>
<td>∗</td>
</tr>
<tr>
<td></td>
<td>Auto-swing (up and down)</td>
<td>∗</td>
<td>∗</td>
<td></td>
<td>Auto-restart (after power failure)</td>
<td>∗</td>
<td>∗</td>
</tr>
<tr>
<td></td>
<td>Auto-swing (right and left)</td>
<td>∗</td>
<td>∗</td>
<td></td>
<td>Self-diagnosis (R/C, LED)</td>
<td>∗</td>
<td>∗</td>
</tr>
<tr>
<td></td>
<td>3-D airflow</td>
<td>∗</td>
<td>∗</td>
<td></td>
<td>Wiring error check function</td>
<td>−</td>
<td>−</td>
</tr>
<tr>
<td></td>
<td>COMFORT AIRFLOW operation</td>
<td>∗</td>
<td>∗</td>
<td></td>
<td></td>
<td>−</td>
<td>−</td>
</tr>
<tr>
<td><strong>Comfort Control</strong></td>
<td>Auto fan speed</td>
<td>∗</td>
<td>∗</td>
<td></td>
<td>Anti-corrosion treatment of outdoor heat exchanger</td>
<td>−</td>
<td>−</td>
</tr>
<tr>
<td></td>
<td>Indoor unit quiet operation</td>
<td>∗</td>
<td>∗</td>
<td></td>
<td></td>
<td>−</td>
<td>−</td>
</tr>
<tr>
<td></td>
<td>NIGHT QUIET mode (automatic)</td>
<td>−</td>
<td>−</td>
<td>Flexibility</td>
<td>Multi-split / split type compatible indoor unit</td>
<td>−</td>
<td>∗</td>
</tr>
<tr>
<td></td>
<td>OUTDOOR UNIT QUIET operation (manual)</td>
<td>∗</td>
<td>∗</td>
<td></td>
<td>Flexible power supply correspondence</td>
<td>−</td>
<td>−</td>
</tr>
<tr>
<td></td>
<td>INTELLIGENT EYE operation</td>
<td>∗</td>
<td>∗</td>
<td></td>
<td>High ceiling application</td>
<td>−</td>
<td>−</td>
</tr>
<tr>
<td></td>
<td>Quick warming function</td>
<td>−</td>
<td>−</td>
<td></td>
<td>Chargeless</td>
<td>−</td>
<td>−</td>
</tr>
<tr>
<td></td>
<td>Hot-start function</td>
<td>∗</td>
<td>∗</td>
<td></td>
<td>Either side drain (right or left)</td>
<td>∗</td>
<td>∗</td>
</tr>
<tr>
<td></td>
<td>Automatic defrosting</td>
<td>−</td>
<td>−</td>
<td></td>
<td>Power selection</td>
<td>−</td>
<td>−</td>
</tr>
<tr>
<td><strong>Operation</strong></td>
<td>Automatic operation</td>
<td>∗</td>
<td>∗</td>
<td></td>
<td>°F/°C changeover R/C temperature display (factory setting: °F)</td>
<td>∗</td>
<td>∗</td>
</tr>
<tr>
<td></td>
<td>Program dry function</td>
<td>∗</td>
<td>∗</td>
<td></td>
<td></td>
<td>−</td>
<td>−</td>
</tr>
<tr>
<td></td>
<td>Fan only</td>
<td>∗</td>
<td>∗</td>
<td>Remote Control</td>
<td>5-room centralized controller (option)</td>
<td>∗</td>
<td>∗</td>
</tr>
<tr>
<td><strong>Lifestyle Convenience</strong></td>
<td>New POWERFUL operation (non-inverter)</td>
<td>−</td>
<td>−</td>
<td></td>
<td>Remote control adaptor (normal open pulse contact) (option)</td>
<td>∗</td>
<td>∗</td>
</tr>
<tr>
<td></td>
<td>Inverter POWERFUL operation</td>
<td>∗</td>
<td>∗</td>
<td></td>
<td>Remote control adaptor (normal open pulse contact) (option)</td>
<td>∗</td>
<td>∗</td>
</tr>
<tr>
<td></td>
<td>Priority-room setting</td>
<td>−</td>
<td>−</td>
<td></td>
<td>DIII-NET compatible (adaptor) (option)</td>
<td>∗</td>
<td>∗</td>
</tr>
<tr>
<td></td>
<td>COOL/HEAT mode lock</td>
<td>−</td>
<td>−</td>
<td></td>
<td></td>
<td>−</td>
<td>−</td>
</tr>
<tr>
<td></td>
<td>HOME LEAVE operation</td>
<td>−</td>
<td>−</td>
<td>Remote Controller</td>
<td>Wireless</td>
<td>−</td>
<td>−</td>
</tr>
<tr>
<td></td>
<td>ECONO operation</td>
<td>∗</td>
<td>∗</td>
<td></td>
<td>Wired (option)</td>
<td>−</td>
<td>−</td>
</tr>
<tr>
<td></td>
<td>Indoor unit ON/OFF button</td>
<td>∗</td>
<td>∗</td>
<td></td>
<td></td>
<td>−</td>
<td>−</td>
</tr>
<tr>
<td></td>
<td>Signal receiving sign</td>
<td>∗</td>
<td>∗</td>
<td></td>
<td></td>
<td>−</td>
<td>−</td>
</tr>
<tr>
<td></td>
<td>R/C with back light</td>
<td>∗</td>
<td>∗</td>
<td></td>
<td></td>
<td>−</td>
<td>−</td>
</tr>
<tr>
<td></td>
<td>Temperature display</td>
<td>−</td>
<td>−</td>
<td></td>
<td></td>
<td>−</td>
<td>−</td>
</tr>
</tbody>
</table>

**Note:**  
− : Not available  
∗ : Available
<table>
<thead>
<tr>
<th>Category</th>
<th>Functions</th>
<th>FDXS09/12LVJU</th>
<th>CDXS15/18LVJU</th>
<th>Category</th>
<th>Functions</th>
<th>FDXS09/12LVJU</th>
<th>CDXS15/18LVJU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Functions</td>
<td>Inverter (with inverter power control)</td>
<td>●</td>
<td>●</td>
<td>Health &amp; Cleanliness</td>
<td>Air-purifying filter</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Operation limit for cooling (°CDB)</td>
<td>—</td>
<td>—</td>
<td></td>
<td>Photocatalytic deodorizing filter</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Operation limit for cooling (°FDB)</td>
<td>—</td>
<td>—</td>
<td></td>
<td>Air-purifying filter with photocatalytic deodorizing function</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Operation limit for heating (°CWB)</td>
<td>—</td>
<td>—</td>
<td></td>
<td>Titanium apatite photocatalytic air-purifying filter</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Operation limit for heating (°FWB)</td>
<td>—</td>
<td>—</td>
<td></td>
<td></td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>PAM control</td>
<td>—</td>
<td>—</td>
<td></td>
<td></td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Compressor</td>
<td>Oval scroll compressor</td>
<td>—</td>
<td>—</td>
<td></td>
<td>Longlife filter (option)</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Swing compressor</td>
<td>—</td>
<td>—</td>
<td></td>
<td>Air filter (prefilter)</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>Rotary compressor</td>
<td>—</td>
<td>—</td>
<td></td>
<td>Wipe-clean flat panel</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Reluctance DC motor</td>
<td>—</td>
<td>—</td>
<td></td>
<td>Washable grille</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Comfortable Airflow</td>
<td>Power-airflow flap (horizontal blade)</td>
<td>—</td>
<td>—</td>
<td></td>
<td>Filter cleaning indicator</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Power-airflow dual flaps</td>
<td>—</td>
<td>—</td>
<td></td>
<td>Good-night cooling operation</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Power-airflow diffuser</td>
<td>—</td>
<td>—</td>
<td></td>
<td>Timer</td>
<td>WEEKLY TIMER operation</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Wide-angle louvers (vertical blades)</td>
<td>—</td>
<td>—</td>
<td></td>
<td>24-hour ON/OFF TIMER</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>Auto-swing (up and down)</td>
<td>—</td>
<td>—</td>
<td></td>
<td>NIGHT SET mode</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>Auto-swing (right and left)</td>
<td>—</td>
<td>—</td>
<td></td>
<td>Worry Free (Reliability &amp; Durability)</td>
<td>Auto-restart (after power failure)</td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>3-D airflow</td>
<td>—</td>
<td>—</td>
<td></td>
<td>Self-diagnosis (R/C, LED)</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>COMFORT AIRFLOW operation</td>
<td>—</td>
<td>—</td>
<td></td>
<td>Wiring error check function</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Comfort</td>
<td>Auto fan speed</td>
<td>●</td>
<td>●</td>
<td></td>
<td>Anti-corrosion treatment of outdoor heat exchanger</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Control</td>
<td>Indoor unit quiet operation</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>NIGHT QUIET mode (automatic)</td>
<td>—</td>
<td>—</td>
<td></td>
<td></td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>OUTDOOR UNIT QUIET operation (manual)</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>INTELLIGENT EYE operation</td>
<td>—</td>
<td>—</td>
<td></td>
<td></td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Quick warming function</td>
<td>—</td>
<td>—</td>
<td></td>
<td></td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Hot-start function</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Automatic defrosting</td>
<td>—</td>
<td>—</td>
<td></td>
<td></td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Operation</td>
<td>Automatic operation</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Program dry function</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Fan only</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>5-room centralized controller (option)</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Remote Control</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Lifestyle Convenience</td>
<td>New POWERFUL operation (non-inverter)</td>
<td>—</td>
<td>—</td>
<td></td>
<td></td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Inverter POWERFUL operation</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Priority-room setting</td>
<td>—</td>
<td>—</td>
<td></td>
<td></td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>COOL/HEAT mode lock</td>
<td>—</td>
<td>—</td>
<td></td>
<td></td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>HOME LEAVE operation</td>
<td>—</td>
<td>—</td>
<td></td>
<td></td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>ECONO operation</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Indoor unit ON/OFF button</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Signal receiving sign</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>R/C with back light</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Temperature display</td>
<td>—</td>
<td>—</td>
<td></td>
<td></td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

**Note:**  ● : Available  
— : Not available
<table>
<thead>
<tr>
<th>Category</th>
<th>Functions</th>
<th>Category</th>
<th>Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Basic Functions</strong></td>
<td>Inverter (with inverter power control)</td>
<td>Health &amp; Cleanliness</td>
<td>Air-purifying filter</td>
</tr>
<tr>
<td></td>
<td>Operation limit for cooling (°CDB) — Photocatalytic deodorizing filter</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Operation limit for cooling (°FDB) — Air-purifying filter with photocatalytic deodorizing function</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Operation limit for heating (°CWB)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Operation limit for heating (°FWB) — Titanium apatite photocatalytic air-purifying filter</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PAM control</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Compressor</strong></td>
<td>Oval scroll compressor</td>
<td>Longlife filter (option)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Swing compressor</td>
<td>Air filter (prefilter)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rotary compressor</td>
<td>Wipe-clean flat panel</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reluctance DC motor</td>
<td>Washable grille</td>
<td></td>
</tr>
<tr>
<td><strong>Comfortable Airflow</strong></td>
<td>Power-airflow flap (horizontal blade)</td>
<td>Filter cleaning indicator</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Power-airflow dual flaps</td>
<td>Good-sleep cooling operation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Power-airflow diffuser</td>
<td>Timer</td>
<td>WEEKLY TIMER operation</td>
</tr>
<tr>
<td></td>
<td>Wide-angle louvers (vertical blades)</td>
<td>24-hour ON/OFF TIMER</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Auto-swing (up and down)</td>
<td>NIGHT SET mode</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Auto-swing (right and left)</td>
<td>Auto-restart (after power failure)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3-D airflow</td>
<td>Self-diagnosis (R/C, LED)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>COMFORT AIRFLOW operation</td>
<td>Wiring error check function</td>
<td></td>
</tr>
<tr>
<td><strong>Comfort Control</strong></td>
<td>Auto fan speed</td>
<td>Anti-corrosion treatment of outdoor heat exchanger</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Indoor unit quiet operation</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>NIGHT QUIET mode (automatic)</td>
<td>Flexibility</td>
<td>Multi-split / split type compatible indoor unit</td>
</tr>
<tr>
<td></td>
<td>OUTDOOR UNIT QUIET operation (manual)</td>
<td></td>
<td>Flexible power supply correspondence</td>
</tr>
<tr>
<td></td>
<td>INTELLIGENT EYE operation</td>
<td></td>
<td>High ceiling application</td>
</tr>
<tr>
<td></td>
<td>Quick warming function</td>
<td></td>
<td>Chargeless</td>
</tr>
<tr>
<td></td>
<td>Hot-start function</td>
<td></td>
<td>Either side drain (right or left)</td>
</tr>
<tr>
<td></td>
<td>Automatic defrosting</td>
<td></td>
<td>Power selection</td>
</tr>
<tr>
<td><strong>Operation</strong></td>
<td>Automatic operation</td>
<td>°F/°C changeover R/C temperature display (factory setting: °F)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Program dry function</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fan only</td>
<td>Remote Control</td>
<td>5-room centralized controller (option)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Lifestyle Convenience</strong></td>
<td>New POWERFUL operation (non-inverter)</td>
<td>Remote control adaptor</td>
<td>(normal open pulse contact) (option)</td>
</tr>
<tr>
<td></td>
<td>Inverter POWERFUL operation</td>
<td>Remote control adaptor</td>
<td>(normal open pulse contact) (option)</td>
</tr>
<tr>
<td></td>
<td>Priority-room setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>COOL/HEAT mode lock</td>
<td>DIII-NET compatible (adaptor) (option)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>HOME LEAVE operation</td>
<td>Remote Controller</td>
<td>Wireless</td>
</tr>
<tr>
<td></td>
<td>ECONO operation</td>
<td></td>
<td>Wired (option)</td>
</tr>
<tr>
<td></td>
<td>Indoor unit ON/OFF button</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Signal receiving sign</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>R/C with back light</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Temperature display</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:**  ● : Available  
— : Not available
<table>
<thead>
<tr>
<th>Category</th>
<th>Functions</th>
<th>FFQ9/12/15/18LVJU</th>
<th>Category</th>
<th>Functions</th>
<th>FFQ9/12/15/18LVJU</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Basic Functions</strong></td>
<td>Inverter (with inverter power control)</td>
<td>●</td>
<td>Health &amp; Cleanliness</td>
<td>Air-purifying filter</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Operation limit for cooling (°CDB)</td>
<td>—</td>
<td></td>
<td>Photocatalytic deodorizing filter</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Operation limit for cooling (°FDB)</td>
<td>—</td>
<td></td>
<td>Air-purifying filter with photocatalytic deodorizing function</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Operation limit for heating (°CWB)</td>
<td>—</td>
<td></td>
<td>Titanium apatite photocatalytic air-purifying filter</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Operation limit for heating (°FWB)</td>
<td>—</td>
<td></td>
<td>PAM control</td>
<td>—</td>
</tr>
<tr>
<td><strong>Compressor</strong></td>
<td>Oval scroll compressor</td>
<td>—</td>
<td></td>
<td>Longlife filter (option)</td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>Swing compressor</td>
<td>—</td>
<td></td>
<td>Air filter (prefilter)</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Rotary compressor</td>
<td>—</td>
<td></td>
<td>Washable grille</td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>Reluctance DC motor</td>
<td>—</td>
<td></td>
<td>Compressor Oval scroll compressor</td>
<td>—</td>
</tr>
<tr>
<td><strong>Comfortable Airflow</strong></td>
<td>Power-airflow flap (horizontal blade)</td>
<td>—</td>
<td></td>
<td>Filter cleaning indicator</td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>Power-airflow dual flaps</td>
<td>—</td>
<td></td>
<td>Good-sleep cooling operation</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Power-airflow diffuser</td>
<td>—</td>
<td></td>
<td>Timer</td>
<td>WEEKLY TIMER operation ●</td>
</tr>
<tr>
<td></td>
<td>Wide-angle louvers (vertical blades)</td>
<td>—</td>
<td></td>
<td>24-hour ON/OFF TIMER</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Auto-swing (up and down)</td>
<td>●</td>
<td></td>
<td>72-hour ON/OFF TIMER ●</td>
<td>★1</td>
</tr>
<tr>
<td></td>
<td>Auto-swing (right and left)</td>
<td>—</td>
<td></td>
<td>NIGHT SET mode</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>3-D airflow</td>
<td>—</td>
<td></td>
<td>Auto-restart (after power failure)</td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>COMFORT AIRFLOW operation</td>
<td>—</td>
<td></td>
<td>Self-diagnosis (R/C, LED)</td>
<td>●</td>
</tr>
<tr>
<td><strong>Comfort Control</strong></td>
<td>Auto fan speed</td>
<td>—</td>
<td></td>
<td>Wiring error check function</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Indoor unit quiet operation</td>
<td>—</td>
<td></td>
<td>Anti-corrosion treatment of outdoor heat exchanger</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>NIGHT QUIET mode (automatic)</td>
<td>—</td>
<td></td>
<td>OUTDOOR UNIT QUIET operation (manual)</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>INTELLIGENT EYE operation</td>
<td>—</td>
<td></td>
<td>Multi-split / split type compatible indoor unit</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Quick warming function</td>
<td>—</td>
<td></td>
<td>Flexible power supply correspondence</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Hot-start function</td>
<td>●</td>
<td></td>
<td>High ceiling application</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Automatic defrosting</td>
<td>—</td>
<td></td>
<td>Chargeless</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td></td>
<td>—</td>
<td></td>
<td>Either side drain (right or left)</td>
<td>—</td>
</tr>
<tr>
<td><strong>Operation</strong></td>
<td>Automatic operation</td>
<td>●</td>
<td></td>
<td>Power selection</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Program dry function</td>
<td>●</td>
<td></td>
<td>&quot;°F/°C changeover R/C temperature display (factory setting: °F)&quot;</td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>Fan only</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Lifestyle Convenience</strong></td>
<td>New POWERFUL operation (non-inverter)</td>
<td>—</td>
<td></td>
<td>Remote Control</td>
<td>5-room centralized controller (option)</td>
</tr>
<tr>
<td></td>
<td>Inverter POWERFUL operation</td>
<td>—</td>
<td></td>
<td>Remote control adaptor (normal open pulse contact) (option)</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Priority-room setting</td>
<td>—</td>
<td></td>
<td>Remote control adaptor (normal open contact) (option)</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>COOL/HEAT mode lock</td>
<td>—</td>
<td></td>
<td>DIII-NET compatible (adaptor) (option)</td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>HOME LEAVE operation</td>
<td>—</td>
<td></td>
<td>ECONO operation</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>ON/OFF button</td>
<td>●</td>
<td></td>
<td>Remote Controller</td>
<td>Wireless (option)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>—</td>
<td></td>
<td>Indoor unit ON/OFF button</td>
<td>Wired (option)</td>
</tr>
<tr>
<td></td>
<td>Signal receiving sign</td>
<td>●</td>
<td></td>
<td>R/C with back light</td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>Temperature display</td>
<td>—</td>
<td></td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

**Note:**
- ●: Available
- —: Not available
- ★1: With wireless remote controller
- ★2: With wired remote controller
<table>
<thead>
<tr>
<th>Category</th>
<th>Functions</th>
<th>2M XL18QMVJU</th>
<th>3M XL24QMVJU</th>
<th>Category</th>
<th>Functions</th>
<th>2M XL18QMVJU</th>
<th>3M XL24QMVJU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Functions</td>
<td>Inverter (with inverter power control)</td>
<td>-</td>
<td>-</td>
<td>Health &amp; Cleanliness</td>
<td>Air-purifying filter</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Operation limit for cooling (°CDB) -10 - 46</td>
<td>-10 - 46</td>
<td>-10 - 46</td>
<td></td>
<td>Photocatalytic deodorizing filter</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Operation limit for cooling (°FDB) 14 - 114.8</td>
<td>14 - 114.8</td>
<td>14 - 114.8</td>
<td></td>
<td>Air-purifying filter with photocatalytic deodorizing function</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Operation limit for heating (°CWB) -25 - 15.6</td>
<td>-25 - 15.6</td>
<td>-25 - 15.6</td>
<td></td>
<td>Titanium apatite photocatalytic air-purifying filter</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Operation limit for heating (°FWB) -13 - 60</td>
<td>-13 - 60</td>
<td>-13 - 60</td>
<td></td>
<td>Longlife filter (option)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>PAM control</td>
<td>-</td>
<td>-</td>
<td></td>
<td>Air filter (prefilter)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Standby electricity saving</td>
<td>-</td>
<td>-</td>
<td></td>
<td>Wipe-clean flat panel</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Compressor</td>
<td>Oval scroll compressor</td>
<td>-</td>
<td>-</td>
<td></td>
<td>Filter cleaning indicator</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Swing compressor</td>
<td>-</td>
<td>-</td>
<td></td>
<td>Good-sleep cooling operation</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Rotary compressor</td>
<td>-</td>
<td>-</td>
<td>Timer</td>
<td>WEEKLY TIMER operation</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Reluctance DC motor</td>
<td>-</td>
<td>-</td>
<td></td>
<td>24-hour ON/OFF timer</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Comfortable Airflow</td>
<td>Power-airflow flap (horizontal blade)</td>
<td>-</td>
<td>-</td>
<td></td>
<td>NIGHT SET mode</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Power-airflow dual flaps</td>
<td>-</td>
<td>-</td>
<td>Worry Free (Reliability &amp; Durability)</td>
<td>Auto-restart (after power failure)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Power-airflow diffuser</td>
<td>-</td>
<td>-</td>
<td></td>
<td>Self-diagnosis (R/C, LED)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Wide-angle louvers (vertical blades)</td>
<td>-</td>
<td>-</td>
<td></td>
<td>Wiring error check function</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Auto-swing (up and down)</td>
<td>-</td>
<td>-</td>
<td></td>
<td>Anti-corrosion treatment of outdoor heat exchanger</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Auto-swing (right and left)</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>3-D airflow</td>
<td>-</td>
<td>-</td>
<td></td>
<td>Multi-split / split type compatible indoor unit</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>COMFORT AIRFLOW operation</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Comfort Control</td>
<td>Auto fan speed</td>
<td>-</td>
<td>-</td>
<td></td>
<td>Flexible power supply correspondence</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Indoor unit quiet operation</td>
<td>-</td>
<td>-</td>
<td></td>
<td>High ceiling application</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>NIGHT QUIET mode (automatic)</td>
<td>-</td>
<td>-</td>
<td></td>
<td>Chargeless</td>
<td>98.4 ft</td>
<td>131.2 ft</td>
</tr>
<tr>
<td></td>
<td>OUTDOOR UNIT QUIET operation (manual)</td>
<td>-</td>
<td>-</td>
<td></td>
<td>Either side drain (right or left)</td>
<td>(30 m)</td>
<td>(40 m)</td>
</tr>
<tr>
<td></td>
<td>INTELLIGENT EYE operation</td>
<td>-</td>
<td>-</td>
<td></td>
<td>Power selection</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Quick warming function</td>
<td>-</td>
<td>-</td>
<td></td>
<td>°F/°C changeover R/C temperature display (factory setting: °F)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Hot-start function</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Automatic defrosting</td>
<td>-</td>
<td>-</td>
<td>Remote Control</td>
<td>5-room centralized controller (option)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Operation</td>
<td>Automatic operation</td>
<td>-</td>
<td>-</td>
<td></td>
<td>Remote control adaptor</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Program dry function</td>
<td>-</td>
<td>-</td>
<td></td>
<td>(normal open pulse contact) (option)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Fan only</td>
<td>-</td>
<td>-</td>
<td></td>
<td>Remote control adaptor</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td></td>
<td>(normal open contact)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Lifestyle Convenience</td>
<td>New POWERFUL operation (non-inverter)</td>
<td>-</td>
<td>-</td>
<td></td>
<td>DIII-NET compatible (adaptor) (option)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Inverter POWERFUL operation</td>
<td>-</td>
<td>-</td>
<td></td>
<td>Wireless</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Priority-room setting</td>
<td>-</td>
<td>-</td>
<td></td>
<td>Wired (option)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>COOL/HEAT mode lock</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>HOME LEAVE operation</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>ECONO operation</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Indoor unit ON/OFF button</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Signal receiving sign</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>R/C with back light</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Temperature display</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Note:**
- • : Available
- — : Not available
Part 2
Specifications

1. Indoor Unit
2. Outdoor Unit
### 1. Indoor Unit

**Model:** CTXS07LVJU

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Cooling</th>
<th>Heating</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rated Capacity</strong></td>
<td>7 kBtu/h Class</td>
<td>12 kBtu/h Class</td>
</tr>
<tr>
<td><strong>Front Panel Color</strong></td>
<td>White</td>
<td>White</td>
</tr>
<tr>
<td><strong>Airflow Rate</strong></td>
<td>H</td>
<td>332 (9.4)</td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>261 (7.4)</td>
</tr>
<tr>
<td></td>
<td>L</td>
<td>194 (5.5)</td>
</tr>
<tr>
<td></td>
<td>SL</td>
<td>145 (4.1)</td>
</tr>
<tr>
<td><strong>Fan Type</strong></td>
<td>Cross Flow Fan</td>
<td></td>
</tr>
<tr>
<td><strong>Motor Output</strong></td>
<td>W</td>
<td>23</td>
</tr>
<tr>
<td><strong>Speed Steps</strong></td>
<td>5 Steps, Quiet, Auto</td>
<td>5 Steps, Quiet, Auto</td>
</tr>
<tr>
<td><strong>Air Direction Control</strong></td>
<td>Right, Left, Horizontal, Downward</td>
<td>Right, Left, Horizontal, Downward</td>
</tr>
<tr>
<td><strong>Running Current (Rated)</strong></td>
<td>A</td>
<td>0.09 - 0.08</td>
</tr>
<tr>
<td><strong>Power Consumption (Rated)</strong></td>
<td>W</td>
<td>18 - 18</td>
</tr>
<tr>
<td><strong>Power Factor (Rated)</strong></td>
<td>%</td>
<td>96.2 - 97.8</td>
</tr>
<tr>
<td><strong>Sound Pressure Level</strong></td>
<td>H / M / L / SL</td>
<td>38 / 32 / 25 / 22</td>
</tr>
<tr>
<td><strong>Sound Power Level</strong></td>
<td>dB(A)</td>
<td>54</td>
</tr>
</tbody>
</table>

**Heat Insulation:** Both Liquid and Gas Pipes

**Piping Connections:**
- Liquid in. (mm): ø 1/4 (ø 6.4)
- Gas in. (mm): ø 3/8 (ø 9.5)
- Drain in. (mm): ø 5/8 (ø 16.0)

**Drawing No.:** 3D075490

### 2. Indoor Unit

**Model:** CTXS07LVJU

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Cooling</th>
<th>Heating</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rated Capacity</strong></td>
<td>9 kBtu/h Class</td>
<td>12 kBtu/h Class</td>
</tr>
<tr>
<td><strong>Front Panel Color</strong></td>
<td>White</td>
<td>White</td>
</tr>
<tr>
<td><strong>Airflow Rate</strong></td>
<td>H</td>
<td>381 (10.8)</td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>279 (7.9)</td>
</tr>
<tr>
<td></td>
<td>L</td>
<td>194 (5.5)</td>
</tr>
<tr>
<td></td>
<td>SL</td>
<td>145 (4.1)</td>
</tr>
<tr>
<td><strong>Fan Type</strong></td>
<td>Cross Flow Fan</td>
<td>Cross Flow Fan</td>
</tr>
<tr>
<td><strong>Motor Output</strong></td>
<td>W</td>
<td>23</td>
</tr>
<tr>
<td><strong>Speed Steps</strong></td>
<td>5 Steps, Quiet, Auto</td>
<td>5 Steps, Quiet, Auto</td>
</tr>
<tr>
<td><strong>Air Direction Control</strong></td>
<td>Right, Left, Horizontal, Downward</td>
<td>Right, Left, Horizontal, Downward</td>
</tr>
<tr>
<td><strong>Running Current (Rated)</strong></td>
<td>A</td>
<td>0.09 - 0.08</td>
</tr>
<tr>
<td><strong>Power Consumption (Rated)</strong></td>
<td>W</td>
<td>18 - 18</td>
</tr>
<tr>
<td><strong>Power Factor (Rated)</strong></td>
<td>%</td>
<td>96.2 - 97.8</td>
</tr>
<tr>
<td><strong>Sound Pressure Level</strong></td>
<td>H / M / L / SL</td>
<td>41 / 33 / 25 / 22</td>
</tr>
<tr>
<td><strong>Sound Power Level</strong></td>
<td>dB(A)</td>
<td>57</td>
</tr>
</tbody>
</table>

**Heat Insulation:** Both Liquid and Gas Pipes

**Piping Connections:**
- Liquid in. (mm): ø 1/4 (ø 6.4)
- Gas in. (mm): ø 3/8 (ø 9.5)
- Drain in. (mm): ø 5/8 (ø 16.0)

**Drawing No.:** 3D075491

---

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

60 Hz, 208 - 230 V

#### FTXS15LVJU
- **Model:** FTXS15LVJU
- **Ratings:**
  - **Cooling:** 15 kBtu/h Class
  - **Heating:** 18 kBtu/h Class

<table>
<thead>
<tr>
<th>Airflow Rate</th>
<th>cfm (m³/min)</th>
<th>Cooling</th>
<th>Heating</th>
<th>Cooling</th>
<th>Heating</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>568 (16.1)</td>
<td>593 (16.6)</td>
<td>583 (16.5)</td>
<td>625 (17.7)</td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>477 (13.5)</td>
<td>505 (14.3)</td>
<td>484 (13.7)</td>
<td>520 (14.9)</td>
<td></td>
</tr>
<tr>
<td>L</td>
<td>395 (10.9)</td>
<td>417 (11.8)</td>
<td>395 (10.9)</td>
<td>431 (12.2)</td>
<td></td>
</tr>
<tr>
<td>SL</td>
<td>360 (10.2)</td>
<td>371 (10.5)</td>
<td>360 (10.2)</td>
<td>399 (11.3)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fan Type</th>
<th>Cross Flow Fan</th>
<th>Cross Flow Fan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor Output</td>
<td>W</td>
<td>W</td>
</tr>
<tr>
<td>Speed</td>
<td>48 Steps</td>
<td>48 Steps</td>
</tr>
<tr>
<td>Air Direction Control</td>
<td>Right, Left, Horizontal, Downward</td>
<td>Right, Left, Horizontal, Downward</td>
</tr>
<tr>
<td>Running Current (Rated)</td>
<td>A 0.31 - 0.29</td>
<td>A 0.32 - 0.30</td>
</tr>
<tr>
<td>Power Consumption (Rated)</td>
<td>W 38 - 38</td>
<td>W 38 - 38</td>
</tr>
<tr>
<td>Power Factor (Rated)</td>
<td>% 58.9 - 57.0</td>
<td>% 57.1 - 55.1</td>
</tr>
<tr>
<td>Temperature Control</td>
<td>Microcomputer Control</td>
<td>Microcomputer Control</td>
</tr>
<tr>
<td>Dimensions (H x W x D)</td>
<td>13-3/8 x 41-5/16 x 9-3/4 (340 x 1,050 x 248)</td>
<td>13-3/8 x 41-5/16 x 9-3/4 (340 x 1,050 x 248)</td>
</tr>
<tr>
<td>Weight (Mass)</td>
<td>Lbs (kg) 31 (14)</td>
<td>Lbs (kg) 31 (14)</td>
</tr>
<tr>
<td>Sound Pressure Level</td>
<td>dB(A) 45 / 40 / 35 / 32</td>
<td>dB(A) 46 / 41 / 36 / 33</td>
</tr>
<tr>
<td>Sound Power Level</td>
<td>61</td>
<td>62</td>
</tr>
</tbody>
</table>

#### FTXS18LVJU
- **Model:** FTXS18LVJU
- **Ratings:**
  - **Cooling:** 18 kBtu/h Class
  - **Heating:** 22 kBtu/h Class

<table>
<thead>
<tr>
<th>Airflow Rate</th>
<th>cfm (m³/min)</th>
<th>Cooling</th>
<th>Heating</th>
<th>Cooling</th>
<th>Heating</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>607 (17.2)</td>
<td>632 (17.7)</td>
<td>625 (17.7)</td>
<td>661 (18.3)</td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>516 (14.6)</td>
<td>544 (15.1)</td>
<td>516 (14.6)</td>
<td>552 (15.5)</td>
<td></td>
</tr>
<tr>
<td>L</td>
<td>433 (11.9)</td>
<td>456 (12.4)</td>
<td>433 (11.9)</td>
<td>467 (13.2)</td>
<td></td>
</tr>
<tr>
<td>SL</td>
<td>399 (11.3)</td>
<td>415 (11.6)</td>
<td>399 (11.3)</td>
<td>421 (12.3)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fan Type</th>
<th>Cross Flow Fan</th>
<th>Cross Flow Fan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor Output</td>
<td>W</td>
<td>W</td>
</tr>
<tr>
<td>Speed</td>
<td>48 Steps</td>
<td>48 Steps</td>
</tr>
<tr>
<td>Air Direction Control</td>
<td>Right, Left, Horizontal, Downward</td>
<td>Right, Left, Horizontal, Downward</td>
</tr>
<tr>
<td>Running Current (Rated)</td>
<td>A 0.31 - 0.29</td>
<td>A 0.32 - 0.30</td>
</tr>
<tr>
<td>Power Consumption (Rated)</td>
<td>W 38 - 38</td>
<td>W 38 - 38</td>
</tr>
<tr>
<td>Power Factor (Rated)</td>
<td>% 58.9 - 57.0</td>
<td>% 57.1 - 55.1</td>
</tr>
<tr>
<td>Temperature Control</td>
<td>Microcomputer Control</td>
<td>Microcomputer Control</td>
</tr>
<tr>
<td>Dimensions (H x W x D)</td>
<td>13-3/8 x 41-5/16 x 9-3/4 (340 x 1,050 x 248)</td>
<td>13-3/8 x 41-5/16 x 9-3/4 (340 x 1,050 x 248)</td>
</tr>
<tr>
<td>Weight (Mass)</td>
<td>Lbs (kg) 31 (14)</td>
<td>Lbs (kg) 31 (14)</td>
</tr>
<tr>
<td>Sound Pressure Level</td>
<td>dB(A) 45 / 40 / 35 / 32</td>
<td>dB(A) 46 / 41 / 36 / 33</td>
</tr>
<tr>
<td>Sound Power Level</td>
<td>61</td>
<td>62</td>
</tr>
</tbody>
</table>

#### FDXS09LVJU
- **Model:** FDXS09LVJU
- **Ratings:**
  - **Cooling:** 9 kBtu/h Class
  - **Heating:** 12 kBtu/h Class

<table>
<thead>
<tr>
<th>Airflow Rate</th>
<th>cfm (m³/min)</th>
<th>Cooling</th>
<th>Heating</th>
<th>Cooling</th>
<th>Heating</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>305 (8.6)</td>
<td>305 (8.6)</td>
<td>305 (8.6)</td>
<td>305 (8.6)</td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>280 (7.9)</td>
<td>280 (7.9)</td>
<td>280 (7.9)</td>
<td>280 (7.9)</td>
<td></td>
</tr>
<tr>
<td>L</td>
<td>260 (7.4)</td>
<td>260 (7.4)</td>
<td>260 (7.4)</td>
<td>260 (7.4)</td>
<td></td>
</tr>
<tr>
<td>SL</td>
<td>235 (6.7)</td>
<td>235 (6.7)</td>
<td>235 (6.7)</td>
<td>235 (6.7)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fan Type</th>
<th>Sirocco Fan</th>
<th>Sirocco Fan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor Output</td>
<td>W 62</td>
<td>W 62</td>
</tr>
<tr>
<td>Speed</td>
<td>Steps 5</td>
<td>Steps 5</td>
</tr>
<tr>
<td>Running Current (Rated)</td>
<td>A 0.58 - 0.52</td>
<td>A 0.58 - 0.52</td>
</tr>
<tr>
<td>Power Consumption (Rated)</td>
<td>W 72 - 72</td>
<td>W 72 - 72</td>
</tr>
<tr>
<td>Power Factor (Rated)</td>
<td>% 59.7 - 60.2</td>
<td>% 59.7 - 60.2</td>
</tr>
<tr>
<td>Temperature Control</td>
<td>Microcomputer Control</td>
<td>Microcomputer Control</td>
</tr>
<tr>
<td>Dimensions (H x W x D)</td>
<td>7-7/8 x 27-9/16 x 24-7/16 (200 x 700 x 620)</td>
<td>7-7/8 x 27-9/16 x 24-7/16 (200 x 700 x 620)</td>
</tr>
<tr>
<td>Weight (Mass)</td>
<td>Lbs (kg) 55 (25)</td>
<td>Lbs (kg) 55 (25)</td>
</tr>
<tr>
<td>Sound Pressure Level</td>
<td>dB(A) 35 / 33 / 31</td>
<td>dB(A) 35 / 33 / 31</td>
</tr>
<tr>
<td>Sound Power Level</td>
<td>51</td>
<td>51</td>
</tr>
</tbody>
</table>

#### FDXS12LVJU
- **Model:** FDXS12LVJU
- **Ratings:**
  - **Cooling:** 12 kBtu/h Class
  - **Heating:** 18 kBtu/h Class

<table>
<thead>
<tr>
<th>Airflow Rate</th>
<th>cfm (m³/min)</th>
<th>Cooling</th>
<th>Heating</th>
<th>Cooling</th>
<th>Heating</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>305 (8.6)</td>
<td>305 (8.6)</td>
<td>305 (8.6)</td>
<td>305 (8.6)</td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>280 (7.9)</td>
<td>280 (7.9)</td>
<td>280 (7.9)</td>
<td>280 (7.9)</td>
<td></td>
</tr>
<tr>
<td>L</td>
<td>260 (7.4)</td>
<td>260 (7.4)</td>
<td>260 (7.4)</td>
<td>260 (7.4)</td>
<td></td>
</tr>
<tr>
<td>SL</td>
<td>235 (6.7)</td>
<td>235 (6.7)</td>
<td>235 (6.7)</td>
<td>235 (6.7)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fan Type</th>
<th>Sirocco Fan</th>
<th>Sirocco Fan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor Output</td>
<td>W 62</td>
<td>W 62</td>
</tr>
<tr>
<td>Speed</td>
<td>Steps 5</td>
<td>Steps 5</td>
</tr>
<tr>
<td>Running Current (Rated)</td>
<td>A 0.58 - 0.52</td>
<td>A 0.58 - 0.52</td>
</tr>
<tr>
<td>Power Consumption (Rated)</td>
<td>W 72 - 72</td>
<td>W 72 - 72</td>
</tr>
<tr>
<td>Power Factor (Rated)</td>
<td>% 59.7 - 60.2</td>
<td>% 59.7 - 60.2</td>
</tr>
<tr>
<td>Temperature Control</td>
<td>Microcomputer Control</td>
<td>Microcomputer Control</td>
</tr>
<tr>
<td>Dimensions (H x W x D)</td>
<td>7-7/8 x 27-9/16 x 24-7/16 (200 x 700 x 620)</td>
<td>7-7/8 x 27-9/16 x 24-7/16 (200 x 700 x 620)</td>
</tr>
<tr>
<td>Weight (Mass)</td>
<td>Lbs (kg) 55 (25)</td>
<td>Lbs (kg) 55 (25)</td>
</tr>
<tr>
<td>Sound Pressure Level</td>
<td>dB(A) 35 / 33 / 31</td>
<td>dB(A) 35 / 33 / 31</td>
</tr>
<tr>
<td>Sound Power Level</td>
<td>51</td>
<td>51</td>
</tr>
</tbody>
</table>

### Conversion Formulae
- \( \text{kcal/h} = \text{kW} \times 860 \)
- \( \text{Btu/h} = \text{kW} \times 3412 \)
- \( \text{cfm} = \text{m}^3/\text{min} \times 35.3 \)
### Indoor Unit Specifications

#### CDXS15LVJU

- **Model:** CDXS15LVJU
- **Rated Capacity:** 15 kBtu/h Class
- **Cooling:**
  - H: 424 (12.0) cfm
  - M: 388 (11.0) cfm
  - L: 353 (10.0) cfm
  - SL: 297 (8.4) cfm
- **Heating:**
  - H: 424 (12.0) cfm
  - M: 388 (11.0) cfm
  - L: 353 (10.0) cfm
  - SL: 297 (8.4) cfm
- **Fan:** Sirocco Fan
- **Motor Output:** W 130
- **Power Consumption (Rated):** W 172
- **Temperature Control:** Microcomputer Control
- **Dimensions (H x W x D):** in. (mm) 7-7/8 x 35-7/16 x 24-7/16 (200 x 900 x 620)
- **Packaged Dimensions (H x W x D):** in. (mm) 10-1/2 x 43-9/16 x 29-9/16 (266 x 1,106 x 751)
- **Weight (Mass):** Lbs (kg) 60 (27)
- **Sound Pressure Level:** H/M/L/SL dB(A) 37 / 35 / 33 / 31
- **Pipe Connections:**
  - Liquid: 1/4 in. (φ 6.4)
  - Gas: 1/2 in. (φ 12.7)
  - Drain: VP20 (O.D. φ 1-1/32, I.D. φ 25/32)

#### CDXS18LVJU

- **Model:** CDXS18LVJU
- **Rated Capacity:** 18 kBtu/h Class
- **Cooling:**
  - H: 424 (12.0) cfm
  - M: 388 (11.0) cfm
  - L: 353 (10.0) cfm
  - SL: 297 (8.4) cfm
- **Heating:**
  - H: 424 (12.0) cfm
  - M: 388 (11.0) cfm
  - L: 353 (10.0) cfm
  - SL: 297 (8.4) cfm
- **Fan:** Sirocco Fan
- **Motor Output:** W 130
- **Power Consumption (Rated):** W 172
- **Temperature Control:** Microcomputer Control
- **Dimensions (H x W x D):** in. (mm) 7-7/8 x 35-7/16 x 24-7/16 (200 x 900 x 620)
- **Packaged Dimensions (H x W x D):** in. (mm) 10-1/2 x 43-9/16 x 29-9/16 (266 x 1,106 x 751)
- **Weight (Mass):** Lbs (kg) 60 (27)
- **Sound Pressure Level:** H/M/L/SL dB(A) 37 / 35 / 33 / 31
- **Pipe Connections:**
  - Liquid: 1/4 in. (φ 6.4)
  - Gas: 1/2 in. (φ 12.7)
  - Drain: VP20 (O.D. φ 1-1/32, I.D. φ 25/32)

#### FVXS09NVJU

- **Model:** FVXS09NVJU
- **Rated Capacity:** 9 kBtu/h Class
- **Front Panel Color:** White
- **Airflow Rate:**
  - H: 290 (8.2) cfm
  - M: 230 (6.5) cfm
  - L: 169 (4.8) cfm
  - SL: 145 (4.1) cfm
- **Fan:** Turbo Fan
- **Motor Output:** W 12.3
- **Power Consumption (Rated):** W —
- **Temperature Control:** Microcomputer Control
- **Dimensions (H x W x D):** in. (mm) 23-5/8 x 27-9/16 x 8-1/4 (600 x 700 x 210)
- **Packaged Dimensions (H x W x D):** in. (mm) 27-3/8 x 30-15/16 x 11 (695 x 786 x 279)
- **Weight (Mass):** Lbs (kg) 31 (14)
- **Sound Pressure Level:** H/M/L/SL dB(A) 38 / 32 / 26 / 23
- **Pipe Connections:**
  - Liquid: φ 1/4 (6.4)
  - Gas: φ 3/8 (9.5)
  - Drain: φ 13/16 (20.0)

#### FVXS12NVJU

- **Model:** FVXS12NVJU
- **Rated Capacity:** 12 kBtu/h Class
- **Front Panel Color:** White
- **Airflow Rate:**
  - H: 311 (8.8) cfm
  - M: 244 (6.9) cfm
  - L: 177 (5.0) cfm
  - SL: 155 (4.4) cfm
- **Fan:** Turbo Fan
- **Motor Output:** W 13.4
- **Power Consumption (Rated):** W —
- **Temperature Control:** Microcomputer Control
- **Dimensions (H x W x D):** in. (mm) 23-5/8 x 27-9/16 x 8-1/4 (600 x 700 x 210)
- **Packaged Dimensions (H x W x D):** in. (mm) 27-3/8 x 30-15/16 x 11 (695 x 786 x 279)
- **Weight (Mass):** Lbs (kg) 31 (14)
- **Sound Pressure Level:** H/M/L/SL dB(A) 38 / 32 / 26 / 23
- **Pipe Connections:**
  - Liquid: φ 1/4 (6.4)
  - Gas: φ 3/8 (9.5)
  - Drain: φ 13/16 (20.0)

#### Conversion Formulæ

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

#### FVXS15NVJU, FVXS18NVJU

<table>
<thead>
<tr>
<th>Model</th>
<th>Rated Capacity</th>
<th>Front Panel Color</th>
<th>Airflow Rate</th>
<th>Fan</th>
<th>Motor Output</th>
<th>Speed</th>
<th>Power Consumption</th>
<th>Power Factor</th>
<th>Temperature Control</th>
<th>Dimensions (H x W x D)</th>
<th>Weight (Mass)</th>
<th>Gross Weight (Gross Mass)</th>
<th>Sound Pressure Level</th>
<th>Heat Insulation</th>
<th>Piping Connections</th>
<th>Drawing No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>FVXS18NVJU</td>
<td>18 kBtu/h Class</td>
<td>White</td>
<td>M: 325 (9.2)</td>
<td>Turbo Fan</td>
<td>W: 23.3</td>
<td>5 Steps</td>
<td>45 / 40 / 36 / 32</td>
<td>—</td>
<td>Microcomputer Control</td>
<td>23-5/8 × 27-9/16 × 27-9/16</td>
<td>31 (14)</td>
<td>40 (18)</td>
<td>45 / 40 / 36 / 32</td>
<td>Both Liquid and Gas Pipes</td>
<td>Liquid: ø 1/2 (φ 12.7) / ø 1/2 (φ 12.7)</td>
<td>3D094866</td>
</tr>
</tbody>
</table>

#### FFQ09LVJU, FFQ12LVJU

<table>
<thead>
<tr>
<th>Model</th>
<th>Rated Capacity</th>
<th>Decoration Panel</th>
<th>Airflow Rate</th>
<th>Fan</th>
<th>Motor Output</th>
<th>Speed</th>
<th>Power Consumption</th>
<th>Power Factor</th>
<th>Temperature Control</th>
<th>Dimensions (H x W x D)</th>
<th>Weight (Mass)</th>
<th>Gross Weight (Gross Mass)</th>
<th>Sound Pressure Level</th>
<th>Heat Insulation</th>
<th>Piping Connections</th>
<th>Drawing No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>FFQ09LVJU</td>
<td>9 kBtu/h Class</td>
<td>White</td>
<td>H: 318 (9.0)</td>
<td>Turbo Fan</td>
<td>W: 55</td>
<td>2 Steps</td>
<td>44.0 / 36 / 32</td>
<td>—</td>
<td>Microcomputer Control</td>
<td>11-1/4 × 22-5/8 × 22-5/8</td>
<td>39.6 (17.5)</td>
<td>46 (21)</td>
<td>36.0 / 29.5</td>
<td>Both Liquid and Gas Pipes</td>
<td>Liquid: ø 1/4 (φ 6.4) / ø 1/4 (φ 6.4)</td>
<td>3D080635A</td>
</tr>
<tr>
<td>FFQ12LVJU</td>
<td>12 kBtu/h Class</td>
<td>White</td>
<td>L: 230 (6.5)</td>
<td>Turbo Fan</td>
<td>W: 55</td>
<td>2 Steps</td>
<td>45.0 / 36 / 32</td>
<td>—</td>
<td>Microcomputer Control</td>
<td>11-1/4 × 22-5/8 × 22-5/8</td>
<td>39.6 (17.5)</td>
<td>46 (21)</td>
<td>38.5 / 29.0</td>
<td>Both Liquid and Gas Pipes</td>
<td>Liquid: ø 3/8 (φ 9.5) / ø 3/8 (φ 9.5)</td>
<td>3D080636A</td>
</tr>
</tbody>
</table>

**Conversion Formulae**

- \( \text{kcal/h} = \text{kW} \times 860 \)
- \( \text{Btu/h} = \text{kW} \times 3412 \)
- \( \text{cfm} = \text{m}^3/\text{min} \times 35.3 \)
## Indoor Unit Specifications

### Model: FFQ15LVJU and FFQ18LVJU

<table>
<thead>
<tr>
<th>Model</th>
<th>FFQ15LVJU</th>
<th>FFQ18LVJU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated Capacity</td>
<td>15 kBtu/h</td>
<td>18 kBtu/h</td>
</tr>
</tbody>
</table>

### Model Information
- **Model:** FFQ6063W1, BYFQ6063W1
- **Color:** White
- **Dimensions (H x W x D):** 2-5/32 x 27-9/16 x 27-9/16 (55 x 700 x 700)
- **Weight (Mass):** 6 Lbs (2.7 kg)

### Airflow Rate
- **H (cfm):** 424 (12.0), 530 (15.0)
- **L (m³/min):** 283 (8.0), 353 (10.0)

### Fan
- **Type:** Turbo Fan
- **Motor Output:** W 55, 55
- **Speed Steps:** 2 Steps

### Temperature Control
- **Control:** Microcomputer Control
- **Dimensions (H x W):** 11-1/4 x 22-5/8 in. (285 x 575 mm)
- **Weight (Mass):** 38.8 Lbs (17.5 kg)
- **Gross Weight (Mass):** 46 (21)
- **Sound Pressure Level H / L:** 42.5 / 31.5, 46.0 / 37.5
- **Heat Insulation:** Both Liquid and Gas Pipes
- **Piping Connections:** Liquid Ø 1/4 (6.4 mm), Gas Ø 1/2 (12.7 mm), Drain VP20 (O.D. Ø 1-1/32 (26) / I.D. Ø 25/32 (0.20))
- **Drawing No.:** 3D060628A, 3D060629A

### Conversion Formulae
- kcal/h = kW x 860
- Btu/h = kW x 3412
- cfm = m³/min x 35.3
## 2. Outdoor Unit

### Specifications

**Model**: 2MXL18GVMJU

**Outdoor Unit**: 60 Hz, 208 - 230 V

### Notes:

1. ★ Max.: for the combination of CTXS, FTXS series indoor units
   Min.: for the combination of CDXS, FDXS series indoor units
2. The data are based on the conditions shown in the table below.

### Conversion Formulae

- kcal/h = kW × 860
- Btu/h = kW × 3412
- cfm = ft³/min × 35.3

### Table: Outdoor Unit Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>2MXL18GVMJU</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>COP</strong></td>
<td>WW 4.20</td>
</tr>
<tr>
<td><strong>EER</strong></td>
<td>Btu/h-W 12.7</td>
</tr>
<tr>
<td><strong>SEER / HSPF</strong></td>
<td>17.0 / 10.3</td>
</tr>
</tbody>
</table>

### Casing Color

- Ivory White

### Compressor

- **Type**: Hermetically Sealed Swing Type
- **Model**: 2Y056AAXD
- **Motor Output**: W 1,920

### Refrigerant Oil

- **Model**: FVC50K
- **Charge**: oz (L) 29.7 (0.9)

### Refrigerant

- **Type**: R-410A
- **Charge**: Lbs (kg) 6.17 (2.8)

### Airflow Rate

<table>
<thead>
<tr>
<th>H cfm</th>
<th>2,150</th>
<th>1,963</th>
</tr>
</thead>
<tbody>
<tr>
<td>M cfm</td>
<td>2,150</td>
<td>1,963</td>
</tr>
<tr>
<td>L m³/min</td>
<td>1,949</td>
<td>1,006</td>
</tr>
<tr>
<td>H m³/min</td>
<td>60.9</td>
<td>55.6</td>
</tr>
<tr>
<td>M m³/min</td>
<td>60.9</td>
<td>55.6</td>
</tr>
<tr>
<td>L m³/min</td>
<td>55.2</td>
<td>28.5</td>
</tr>
</tbody>
</table>

### Fan

- **Type**: Propeller
- **Motor Output**: W 51
- **Running Current**: A
  - H: 0.32 / M: 0.32 / L: 0.27
  - H: 0.33 / M: 0.33 / L: 0.07
- **Power Consumption**: W
  - H: 62 / M: 62 / L: 54
  - H: 65 / M: 65 / L: 14
- **Starting Current**: A 15.5
- **Dimension (H × W × D)**: in. (mm)
  - 28-15/16 × 34-1/4 × 12-5/8 (735 × 870 × 320)
- **Packaged Dimension (H × W × D)**: in. (mm)
  - 31-7/8 × 41-3/8 × 17-1/2 (810 × 1,050 × 444)
- **Weight (Mass)**: Lbs (kg)
  - 139 (63)
- **Gross Weight (Gross Mass)**: Lbs (kg)
  - 155 (71)
- **Sound Pressure Level dB(A)**: 50 / 51
- **Piping Connections**
  - **Liquid** in. (mm)
    - ø 1/4 x 2 (ø 6.4 x 2)
  - **Gas** in. (mm)
    - ø 3/8 x 1, ø 1/2 x 1 (ø 9.5 x 1, ø 12.7 x 1)
  - **Drain** in. (mm)
    - ø 5/8 (ø 15.9)
- **Heat Insulation**: Both Liquid and Gas Pipes
- **No. of Wiring Connections**: 3 for Power Supply, 4 for Interunit Wiring (Including Ground Wiring)
- **Max. Interunit Piping Length**: ft (m)
  - 164 (50) (for Total of Each Room)
  - 82 (25) (for One Room)
- **Amount of Additional Charge of Refrigerant**: oz/ft (g/m)
  - 0.21 (20) (98-7/16 ft (30 m) or more)
- **Max. Installation Height Difference**: ft (m)
  - 49-1/4 (15) (between Indoor Unit and Outdoor Unit)
  - 24-5/8 (7.5) (between Indoor Units)
- **Drawing No.**: C: 3D101750

### Conversion Formulae:

<table>
<thead>
<tr>
<th>Unit</th>
<th>Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>kcal/h</td>
<td>kW × 860</td>
</tr>
<tr>
<td>Btu/h</td>
<td>kW × 3412</td>
</tr>
<tr>
<td>cfm</td>
<td>ft³/min × 35.3</td>
</tr>
</tbody>
</table>
### Specifications

**Outdoor Unit**

#### SIUS121602E

- **Model**: 3MXL24OMVJJU
- **Rated Voltage**: 60 Hz, 208 - 230 V

#### Notes:

1. Max.: for the combination of CTXS, FTXS series indoor units
   Min.: for the combination of CDXS, FDXS series indoor units
2. The data are based on the conditions shown in the table below.

<table>
<thead>
<tr>
<th>Specification</th>
<th>Cooling</th>
<th>Heating</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>COP</strong></td>
<td>W/W</td>
<td>4.56</td>
</tr>
<tr>
<td><strong>EER</strong></td>
<td>Blw/h-W</td>
<td>—</td>
</tr>
<tr>
<td><strong>SEER / HSPF</strong></td>
<td></td>
<td>12.7</td>
</tr>
<tr>
<td><strong>Casing Color</strong></td>
<td>Ivory White</td>
<td>12.5</td>
</tr>
<tr>
<td><strong>Compressor</strong></td>
<td>Model</td>
<td>2YCG3AAAD</td>
</tr>
<tr>
<td></td>
<td>Type</td>
<td>Hermetically Sealed Swing Type</td>
</tr>
<tr>
<td><strong>Refrigerant Oil</strong></td>
<td>Model</td>
<td>PVC50K</td>
</tr>
<tr>
<td><strong>Refrigerant</strong></td>
<td>Charge oz (L)</td>
<td>29.7 (0.9)</td>
</tr>
<tr>
<td><strong>Airflow Rate</strong></td>
<td>H: cfm 2,094</td>
<td>1,886</td>
</tr>
<tr>
<td></td>
<td>M: cfm 2,094</td>
<td>1,780</td>
</tr>
<tr>
<td></td>
<td>L: 1,977</td>
<td>1,006</td>
</tr>
<tr>
<td><strong>Motor Output</strong></td>
<td>W</td>
<td>1,920</td>
</tr>
<tr>
<td><strong>Motor Output</strong></td>
<td>W</td>
<td>58</td>
</tr>
<tr>
<td><strong>Running Current</strong></td>
<td>A H: 0.38 / M: 0.38 / L: 0.33</td>
<td>H: 0.38 / M: 0.33 / L: 0.07</td>
</tr>
<tr>
<td><strong>Starting Current</strong></td>
<td>A</td>
<td>17.5</td>
</tr>
<tr>
<td><strong>Dimension (H x W x D)</strong></td>
<td>in. (mm)</td>
<td>28-15/16 x 34-1/4 x 12-5/8 (725 x 870 x 320)</td>
</tr>
<tr>
<td><strong>Packaged Dimension (H x W x D)</strong></td>
<td>in. (mm)</td>
<td>31-7/8 x 41-3/8 x 17-1/2 (810 x 1,050 x 444)</td>
</tr>
<tr>
<td><strong>Weight (Mass)</strong></td>
<td>Lbs (kg)</td>
<td>140 (63)</td>
</tr>
<tr>
<td><strong>Gross Weight (Mass)</strong></td>
<td>Lbs (kg)</td>
<td>156 (71)</td>
</tr>
<tr>
<td><strong>Sound Pressure Level</strong></td>
<td>dBA</td>
<td>52</td>
</tr>
<tr>
<td><strong>Piping Connections</strong></td>
<td>Liquid &amp; Gas Pipes</td>
<td>Both Liquid and Gas Pipes</td>
</tr>
<tr>
<td><strong>Max. Interunit Piping Length</strong></td>
<td>ft (m)</td>
<td>230 (70) (for Total of Each Room)</td>
</tr>
<tr>
<td><strong>Amount of Additional Charge of Refrigerant</strong></td>
<td>oz/ft (g/m)</td>
<td>0.21 (20) (131-1/4 ft (40 m) or more)</td>
</tr>
<tr>
<td><strong>Max. Installation Height Difference</strong></td>
<td>ft (m)</td>
<td>49-1/4 (15) (between Indoor Unit and Outdoor Unit)</td>
</tr>
<tr>
<td><strong>Drawing No.</strong></td>
<td>C: 3D101754</td>
<td></td>
</tr>
</tbody>
</table>

### Conversion Formulae:

- kcal/h = kW × 860
- Btu/h = kW × 3412
- cfm = m³/min × 35.3
- Cooling Indoor: 80°FDB (26.7°CDB) / 67°FWB (19.4°CWB)
  Heating Indoor: 70°FDB (21°CDB) / 60°FWB (15.6°CWB)
  Outdoor: 47°FDB (8.3°CDB) / 43°FWB (6°CWB)
- Piping Length: 24-5/8 ft (7.5 m)
Part 3
Printed Circuit Board Connector Wiring Diagram

1. Indoor Unit........................................................................................................... 16
   1.1 CTXS07LVJU, FTXS09/12LVJU ................................................................. 16
   1.2 FTXS15/18LVJU ......................................................................................... 18
   1.3 FDXS09/12LVJU, CDXS15/18LVJU .......................................................... 20
   1.4 FVXS09/12/15/18NVJU ............................................................... 22
   1.5 FFQ09/12/15/18LVJU ........................................................................... 24
2. Wired Remote Controller.................................................................................. 25
   2.1 BRC1E71 .................................................................................................. 25
   2.2 BRC1E72/73 ............................................................................................. 26
3. Wireless Remote Controller ........................................................................... 27
   3.1 BRC7E830 ............................................................................................... 27
4. Outdoor Unit...................................................................................................... 28
1. Indoor Unit

1.1 CTXS07LVJU, FTXS09/12LVJU

<table>
<thead>
<tr>
<th>Connector</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) S1</td>
<td>Connector for DC fan motor</td>
</tr>
<tr>
<td>2) S21</td>
<td>Connector for centralized control (HA)</td>
</tr>
<tr>
<td>3) S25</td>
<td>Connector for INTELLIGENT EYE sensor PCB</td>
</tr>
<tr>
<td>4) S32</td>
<td>Indoor heat exchanger thermistor</td>
</tr>
<tr>
<td>5) S41</td>
<td>Connector for swing motors</td>
</tr>
<tr>
<td>6) S46</td>
<td>Connector for display PCB</td>
</tr>
<tr>
<td>7) S47</td>
<td>Connector for signal receiver PCB</td>
</tr>
<tr>
<td>8) H1, H2, H3, FG</td>
<td>Connector for terminal board</td>
</tr>
<tr>
<td>9) JA</td>
<td>Address setting jumper</td>
</tr>
<tr>
<td>10) JB</td>
<td>Fan speed setting when compressor stops for thermostat OFF</td>
</tr>
<tr>
<td>11) JC</td>
<td>Power failure recovery function (auto-restart)</td>
</tr>
<tr>
<td>12) LED A</td>
<td>LED for service monitor (green)</td>
</tr>
<tr>
<td>13) FU1 (F1U), FU2 (F2U)</td>
<td>Fuse (3.15 A, 250 V)</td>
</tr>
<tr>
<td>14) V1</td>
<td>Varistor</td>
</tr>
</tbody>
</table>

**Caution:** Replace the PCB if you accidentally cut a wrong jumper. Jumper 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.
Signal Receiver PCB (PCB2)

1) S48 Connector for control PCB

Display PCB (PCB3)

1) S49 Connector for control PCB
2) SW1 Forced cooling operation ON/OFF button
3) LED1 (H1P) LED for operation (green)
4) LED2 (H2P) LED for timer (yellow)
5) LED3 (H3P) LED for INTELLIGENT EYE (green)
6) RTH1 (R1T) Room temperature thermistor

INTELLIGENT EYE Sensor PCB (PCB4)

1) S26 Connector for control PCB

Note: The symbols in the parenthesis are the names on the appropriate wiring diagram.
1.2 FTXS15/18LVJU

Control PCB (PCB1)

1) S1  
Connector for DC fan motor

2) S21  
Connector for centralized control (HA)

3) S25  
Connector for INTELLIGENT EYE sensor PCB

4) S32  
Indoor heat exchanger thermistor

5) S41  
Connector for swing motors

6) S46  
Connector for display PCB

7) S47  
Connector for signal receiver PCB

8) H1, H2, H3, FG  
Connector for terminal board

9) JA  
Address setting jumper  
* Refer to page 187 for detail.

10) JB  
Fan speed setting when compressor stops for thermostat OFF  
* Refer to page 189 for detail.

11) JC  
Power failure recovery function (auto-restart)  
* Refer to page 189 for detail.

12) LED A  
LED for service monitor (green)

13) FU1 (F1U), FU2  
Fuse (3.15 A, 250 V)

14) V1  
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.

Note: The symbols in the parenthesis are the names on the appropriate wiring diagram.
Signal Receiver PCB (PCB2)

1) S48  Connector for control PCB

Display PCB (PCB3)

1) S49  Connector for control PCB
2) SW1  Forced cooling operation **ON/OFF** button
3) LED1 (H1P)  LED for operation (green)
4) LED2 (H2P)  LED for timer (yellow)
5) LED3 (H3P)  LED for INTELLIGENT EYE (green)
6) RTH1 (R1T)  Room temperature thermistor

INTELLIGENT EYE Sensor PCB (PCB4)

1) S36  Connector for control PCB

**Note:** The symbols in the parenthesis are the names on the appropriate wiring diagram.
1.3 FDXS09/12LVJU, CDXS15/18LVJU

Control PCB (A1P)

1) S1  Connector for AC fan motor
2) S7  Connector for AC fan motor (Hall IC)
3) S21 Connector for centralized control (HA)
4) S26 Connector for display PCB
5) S32 Connector for indoor heat exchanger thermistor
6) H1, H2, H3 Connector for terminal board
7) FG (GND) Connector for terminal board (ground)
8) JA  Address setting jumper
        * Refer to page 187 for detail.
9) JB  Fan speed setting when compressor stops for thermostat OFF
        * Refer to page 189 for detail.
10) JC Power failure recovery function (auto-restart)
        * Refer to page 189 for detail.
11) LED A LED for service monitor (green)
12) FU1 (F1U) Fuse (3.15 A, 250 V)
13) V1 (V1TR) 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.

Note: The symbols in the parenthesis are the names on the appropriate wiring diagram.
Display PCB (A2P)

1) S1  Connector for control PCB
2) SW1 (S1W)  Forced cooling operation ON/OFF button
3) LED2 (H2P)  LED for timer (yellow)
4) LED3 (H3P)  LED for operation (green)
5) RTH1 (R1T)  Room temperature thermistor

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

LED 1 does not function.
1.4 FVXS09/12/15/18NVJU

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 187 for detail.
12) JB Fan speed setting when compressor stops for thermostat OFF
    * Refer to page 189 for detail.
13) JC Power failure recovery function
    * Refer to page 189 for detail.
14) FU1 (F1U), FU2 Fuse (3.15 A, 250 V)
15) LED A LED for service monitor (green)
16) V1, V2 Varistor

Faulty PCBs should be replaced if they are accidentally cut with the wrong jumper.

Jumper wires are necessary for electronic circuit. Improper operation may occur if any of them are cut.

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 189 for detail.
   * Keep the other switches as factory setting.
3) SW4 (S4W)  Switch for airflow selection
   * Refer to page 36 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)

* LED3 does not function.

**Note:** The symbols in the parenthesis are the names on the appropriate wiring diagram.
Control PCB

1) X5A  Connector for terminal board (for wired remote controller)
2) X10A, X11A  Connector for transformer
3) X15A  Connector for float switch
4) X17A, X18A  Connector for indoor heat exchanger thermistor
5) X19A  Connector for room temperature thermistor
6) X20A  Connector for fan motor
7) X24A  Connector for signal receiver PCB
   (when the wireless remote controller is used)
8) X25A  Connector for drain pump motor
9) X27A  Connector for terminal board (for inter-unit wiring)
10) X33A  Connector for wiring adaptor PCB (option)
11) X35A  Connector for group control adaptor (option)
12) X36A  Connector for swing motor
13) X40A  Connector for ON/OFF input from outside (option)
14) HAP  LED for service monitor (green)
15) SS1  Selector switch for emergency
2. Wired Remote Controller

2.1 BRC1E71

<table>
<thead>
<tr>
<th>Wired Remote Controller PCB</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) P1, P2</td>
<td>Terminal for indoor unit</td>
</tr>
<tr>
<td>2) R1T</td>
<td>Room temperature thermistor</td>
</tr>
</tbody>
</table>
2.2 BRC1E72/73

Wired Remote Controller PCB

1) P1, P2  Terminal for indoor unit
2) R1T  Room temperature thermistor
3. Wireless Remote Controller

3.1 BRC7E830

Signal Receiver PCB

1) X1A Connector for display PCB
2) X2A Connector for control PCB
3) SS1 MAIN/SUB setting switch  
   * Refer to page 194 for detail.
4) SS2 Address setting switch  
   * Refer to page 194 for detail.

Display PCB

1) X1A Connector for signal receiver PCB
2) BS1 Forced cooling operation ON/OFF button
3) LED1 (H1P) LED for operation (red)
4) LED2 (H2P) LED for timer (green)
5) LED3 (H3P) LED for filter cleaning sign (red)
6) LED4 (H4P) LED for defrost operation (orange)

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

**Main PCB (PCB1)**

1. **S**  
   Connector for terminal board (indoor - outdoor transmission)
2. **S15**  
   Connector for COOL/HEAT mode lock  
   * Refer to page 184 for detail.
3. **S20 (white)**  
   Connector for electronic expansion valve coil A port
4. **S21 (red)**  
   Connector for electronic expansion valve coil B port
5. **S22 (blue)**  
   Connector for electronic expansion valve coil C port (24 class)
6. **S40**  
   Connector for overload protector
7. **S70**  
   Connector for DC fan motor
8. **S80**  
   Connector for four way valve coil
9. **S90**  
   Connector for thermistors  
   (outdoor temperature, outdoor heat exchanger, discharge pipe)
10. **S92**  
    Connector for gas pipe thermistor
11. **S93**  
    Connector for liquid pipe thermistor
12. **S201, S202**  
    Connector for service monitor PCB
13. **HL1, HN1**  
    Connector for terminal board (power supply)
14. **E1, E2**  
    Connector for ground wire
15. **U, V, W**  
    Connector for compressor
16. **FU1, FU2**  
    Fuse (3.15 A, 250 V)
17. **FU3**  
    Fuse (30 A, 250 V)
18. **V2, V3, V401**  
    Varistor
Service Monitor PCB (PCB2)

1) S501, S502  Connector for main PCB
2) LED A  LED for service monitor (green)
3) LED1 - LED5  LED for service monitor (red)
4) SW1  Forced cooling operation ON/OFF switch
   * Refer to page 176 for detail.
5) SW2  Operation mode switch
   * Refer to page 176 for detail.
6) SW3  Wiring error check switch
   * Refer to page 177 for detail.
7) SW4  Priority room setting switch
   * Refer to page 183 for detail.
8) SW6-1  NIGHT QUIET mode setting switch
   * Refer to page 184 for detail.

* SW6-2 and all the switches of SW5 have no function. Keep them OFF.
# Functions and Control

1. Functions for CTXS, FTXS, CDXS, FDXS, FVXS Series ......................... 32
   1.1 Temperature Control ........................................................................... 32
   1.2 Frequency Principle ........................................................................... 32
   1.3 Airflow Direction Control (CTXS, FTXS, FVXS Series) ....................... 34
   1.4 Fan Speed Control for Indoor Unit ....................................................... 37
   1.5 Program Dry Operation ....................................................................... 38
   1.6 Automatic Operation .......................................................................... 39
   1.7 Thermostat Control ............................................................................ 40
   1.8 NIGHT SET Mode ................................................................................ 41
   1.9 ECONO Operation ............................................................................... 41
   1.10 INTELLIGENT EYE Operation (CTXS, FTXS Series) ......................... 42
   1.11 Inverter POWERFUL Operation ........................................................ 43
   1.12 Clock Setting ..................................................................................... 44
   1.13 WEEKLY TIMER Operation (CTXS, FTXS, FVXS Series) .................... 45
   1.14 Other Functions ............................................................................... 51

2. Functions for FFQ Series ....................................................................... 52
   2.1 Drain Pump Control ............................................................................ 52
   2.2 Thermostat Sensor in Remote Controller ............................................ 54
   2.3 Freeze Prevention Control .................................................................. 56
   2.4 Hot Start Control (In Heating Operation Only) ..................................... 57

3. Control Specification ............................................................................. 58
   3.1 Thermistor Functions .......................................................................... 58
   3.2 Mode Hierarchy .................................................................................. 60
   3.3 Frequency Control .............................................................................. 61
   3.4 Controls at Mode Changing/Start-up ................................................... 63
   3.5 Discharge Pipe Temperature Control .................................................. 64
   3.6 Input Current Control .......................................................................... 65
   3.7 Freeze-up Protection Control .............................................................. 66
   3.8 Heating Peak-cut Control ................................................................... 66
   3.9 Outdoor Fan Control .......................................................................... 67
   3.10 Liquid Compression Protection Function ............................................ 67
   3.11 Defrost Control ................................................................................ 68
   3.12 Low Hz High Pressure Limit .............................................................. 69
   3.13 Electronic Expansion Valve Control ................................................... 70
   3.14 Malfunctions .................................................................................... 75
1. Functions for CTXS, FTXS, CDXS, FDXS, FVXS Series

1.1 Temperature Control

Definitions of Temperatures

- 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

The illustration is for CTXS, FTXS series as representative.

Temperature Control

The temperature of the room is detected by the room temperature thermistor. However, there is 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. |

The following drawing shows a schematic view of the inverter principle:

![Inverter Principle Diagram]

---

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.
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 63.</td>
</tr>
<tr>
<td>High</td>
<td>Compressor protection function. Refer to page 64.</td>
</tr>
<tr>
<td></td>
<td>Discharge pipe temperature control. Refer to page 64.</td>
</tr>
<tr>
<td></td>
<td>Input current control. Refer to page 65.</td>
</tr>
<tr>
<td></td>
<td>Freeze-up protection control. Refer to page 66.</td>
</tr>
<tr>
<td></td>
<td>Heating peak-cut control. Refer to page 66.</td>
</tr>
<tr>
<td></td>
<td>Defrost control. Refer to page 68.</td>
</tr>
</tbody>
</table>

Forced Cooling Operation

Refer to page 176 for detail.

1.3 Airflow Direction Control (CTXS, FTXS, FVXS Series)

Power-Airflow Dual Flaps

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 a comfortable air distribution.

Auto-Swing

The following table explains the auto-swing process for cooling, dry, heating, and fan:

### CTXS, FTXS Series

<table>
<thead>
<tr>
<th>Flap (up and down)</th>
<th>Louver (right and left)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooling / Dry</td>
<td>Heating</td>
</tr>
<tr>
<td>07/09/12 class</td>
<td>15° 45° 65° 75°</td>
</tr>
<tr>
<td>(R13903)</td>
<td>(R11402)</td>
</tr>
<tr>
<td>15/18 class</td>
<td>15° 25° 50° 60° 75°</td>
</tr>
<tr>
<td>(R9303)</td>
<td>(R9304)</td>
</tr>
</tbody>
</table>
### 3-D Airflow

**CTXS, FTXS Series**

Alternative repetition of vertical and horizontal swing motions enables uniform air-conditioning of the entire room.

When the horizontal swing and vertical swing are both set to automatic operation, the airflow becomes 3-D airflow. The horizontal and vertical swing motions are alternated and the airflow direction changes in the order shown in the following diagram.

1. The louvers move from the right to the left.
2. The flaps move downward.
3. The louvers move from the left to the right.
4. The flaps move upward.

![Diagram of 3-D Airflow](image)

### COMFORT AIRFLOW Operation

**CTXS, FTXS Series**

The flaps are controlled not to blow the air directly at the people in the room.

<table>
<thead>
<tr>
<th>Function</th>
<th>Cooling</th>
<th>Heating</th>
</tr>
</thead>
<tbody>
<tr>
<td>07/09/12 class</td>
<td><img src="image" alt="Cooling Diagram" /></td>
<td><img src="image" alt="Heating Diagram" /></td>
</tr>
<tr>
<td>15/18 class</td>
<td><img src="image" alt="Cooling Diagram" /></td>
<td><img src="image" alt="Heating Diagram" /></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 

- The 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 operation</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 from the upper air outlet, so that air does not come into direct contact with people, and room temperature is equalized.</td>
</tr>
<tr>
<td></td>
<td>At the start of operation or when the room is not fully cooled.</td>
<td></td>
</tr>
<tr>
<td>Heating operation</td>
<td>Normal time</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(R17867)</td>
</tr>
<tr>
<td></td>
<td>At the start or when air temperature is low.</td>
<td>Air is blown from the upper and lower air outlets for high speed cooling during cooling operation, and for filling the room with warm air during heating operation.</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 control, 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.

![Diagram of fan speed control for cooling](image)

*The upper limit is M tap in 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 operation.

CTXS, FTXS Series
- The fan speed is controlled automatically within the following steps.
  
  **Cooling**
  L tap ~ MH tap (same as AUTOMATIC)
  
  **Heating**
  ML tap ~ MH 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: ThermostatOFF and ON Point

<table>
<thead>
<tr>
<th>Room thermistor temperature at start-up</th>
<th>Target temperature</th>
<th>Thermostat OFF point</th>
<th>Thermostat ON point</th>
</tr>
</thead>
<tbody>
<tr>
<td>24°C or more (75.2°F or more)</td>
<td>Room thermistor temperature at start-up</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>18°C (64.4°F)</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>Zone A = Thermostat OFF</td>
<td>X – 1.0°C (1.8°F)</td>
<td>X – 1.0°C (1.8°F)</td>
</tr>
</tbody>
</table>

★ Thermostat turns on also when the room temperature is in the zone B for 10 minutes.
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 ~ 30°C, 64.4 ~ 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.
   1. Heating → Cooling switching point:
      \[ Tr \geq Tt + 3.0°C (+5.4°F) \] (CTXS, FTXS series)
      \[ Tr \geq Tt + 2.5°C (+4.5°F) \] (CDXS, FDXS, FVXS series)
   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
   \[ Tr \geq Ts : \text{Cooling operation} \]
   \[ Tr < Ts : \text{Heating operation} \]

CTXS, FTXS series

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

CDXS, FDXS, FVXS series

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 → 26.5°C (79.7°F): Thermostat OFF → 27.5°C (81.5°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 Condition**
- 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 / Dry: 10 minutes, Heating: 10 seconds)

**Cooling / Dry**

```
Zone C
Zone B
Zone A
```

<table>
<thead>
<tr>
<th>Room thermistor temperature – target temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooling : –0.5˚C (–0.9˚F)</td>
</tr>
<tr>
<td>Dry : –0.5˚C (–0.9˚F)</td>
</tr>
<tr>
<td>Cooling : –2.0˚C (–3.6˚F)</td>
</tr>
<tr>
<td>Dry : –2.5 – –2.0˚C (–4.5 – –3.6˚F)</td>
</tr>
</tbody>
</table>

**Heating**

CTXS, FTXS series

```
Zone A
Zone B
Zone C
```

<table>
<thead>
<tr>
<th>Room thermistor temperature – target temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.0˚C (3.6˚F)</td>
</tr>
<tr>
<td>0.5˚C (0.9˚F)</td>
</tr>
</tbody>
</table>

CDXS, FDXS, FVXS series

```
Zone A
Zone B
Zone C
```

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

Refer to Temperature Control on page 32 for detail.
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 cooling, or lowers it slightly in heating. This prevents excessive cooling or heating to ensure comfortable sleeping conditions, and also conserves electricity.

- **Cooling**
  - Target temperature
  - Operation stops at the set hours
  - Operation continues at target temperature + 0.5°C (+0.9°F) for 1 hour

- **Heating**
  - Target temperature
  - Operation continues at target temperature – 2°C (–3.6°F) for 1 hour

1.9 ECONO Operation

Outline
ECONO operation reduces the maximum operating current and the 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 the 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 the 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 INTELLIGENT EYE Operation (CTXS, FTXS Series)

Outline

This function detects the presence of humans in the room with a motion sensor and reduces the capacity when there is nobody in the room in order to save electricity.

Detail

1. INTELLIGENT EYE detection method

- The motion sensor detects human motion by receiving infrared rays and displays the pulse wave output.
- The microcomputer in the indoor unit carries out a sampling every 20 msec. and if the motion sensor detects 10 cycles of the wave in 1 second in total, the motion sensor judges humans are in the room as the human detection signal is ON.
- The motion sensor may detect human motion with up to 20 msec. latency.

2. Motions (in cooling)

- In FAN operation, the fan speed is reduced by 60 rpm when no one is in the area.
- When the microcomputer does not have a signal from the motion sensor in 20 minutes, the motion sensor judges that nobody is in the room and operates the unit at a temperature shifted from the target temperature. (Cooling / Dry: 1 ~ 2°C (1.8 ~ 3.6°F) higher, Heating: 2°C (3.6°F) lower, Auto: according to the operation mode at that time.)

Note:

For dry operation, the temperature cannot be set with a remote controller, but the target temperature is shifted internally.
1.11 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 ~ 2.5°C (3.6 ~ 4.5°F)</td>
</tr>
<tr>
<td>HEAT</td>
<td>H tap + A rpm</td>
<td>30 ~ 31.5°C (86 ~ 88.7°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 = 50 ~ 90 rpm (depending on the model)

Ex: POWERFUL operation in cooling

**Note:** POWERFUL operation cannot be used together with ECONO or COMFORT AIRFLOW operation.
1.12 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.)
   → : blinks and clock setting is completed.
1.13 WEEKLY TIMER Operation (CTXS, FTXS, 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
★ The illustrations are for FVXS series as representative.

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

[Saturday]
No timer settings

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

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

[Monday]

<table>
<thead>
<tr>
<th>Time</th>
<th>Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>6:00</td>
<td>77°F (25°C)</td>
</tr>
<tr>
<td>8:30</td>
<td>81°F (27°C)</td>
</tr>
<tr>
<td>17:30</td>
<td></td>
</tr>
<tr>
<td>22:00</td>
<td></td>
</tr>
</tbody>
</table>

Programs:

- Program 1: ON
- Program 2: OFF
- Program 3: ON
- Program 4: OFF

Setting Displays

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.
   - "ON Wekly" and "ON" blink.

4. Press [ ] to select the desired mode.
   - Pressing [ ] changes the "ON" or "OFF" setting in sequence.
   - 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 [Back].

5. Press [ ].
   - The ON/OFF TIMER mode will be set.
   - "ON Weekly" and the time blink.
6. Press \( \text{button} \) 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 \( \text{button} \).
   - Proceed to STEP 9 when setting the OFF TIMER.

7. Press \( \text{button} \).
   - The time will be set.
   - "\( \text{Operation lamp} \) and the temperature blink.

8. Press \( \text{button} \) 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 \( \text{button} \).
   - The set temperature is only displayed when the mode setting is on.

9. Press \( \text{button} \).
   - 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 \( \text{button} \) 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.
    - "\( \text{Operation lamp} \) is displayed on the LCD and WEEKLY TIMER operation is activated.
    - The TIMER lamp lights orange.
    - A reservation made once can be easily copied and the same settings used for another day of the week. Refer to Copy mode.

**NOTE**

---

**Notes on WEEKLY TIMER operation**

- 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 "\( \text{Operation lamp} \) 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 \( \text{button} \). 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.
- \( \text{button} \) can be used only for the time and temperature settings. It cannot be used to go back to the reservation number.
---
Copy mode

- A reservation made once can be copied to another day of the week. The whole reservation of the selected day of the week will be copied.

[Monday]

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

[Thursday] to [Friday]

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

Setting Displays

- Confirmation
- Copy
- Paste
- Normal

1. Press \[\bigcirc\].

2. Press \[\bigcirc\] to confirm the day of the week to be copied.

3. Press \[\bigcirc\].
   - The whole reservation of the selected day of the week will be copied.

4. Press \[\bigcirc\] to select the destination day of the week.

5. Press \[\bigcirc\].
   - The reservation will be copied to the selected day of the week. The whole reservation of the selected day of the week will be copied.
   - To continue copying the settings to other days of the week, repeat STEP 4 and STEP 5.

6. Press \[\bigcirc\] to complete the setting.
   - "WEEKLY" is displayed on the LCD and WEEKLY TIMER operation is activated.

NOTE

- 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 \[\bigcirc\] and change the settings in the steps of Setting mode.
Confirming a reservation

• The reservation can be confirmed.

![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.
   • "WEEKLY" is displayed on the LCD and WEEKLY TIMER operation is activated.
   • The TIMER lamp lights orange.

![Display](image)

To deactivate WEEKLY TIMER operation

Press while “WEEKLY” is displayed on the LCD.

• “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 \(\text{Weekly} \) 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 .
   - “” and “ON” or “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.
1.14 Other Functions

1.14.1 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.

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

1.14.2 Signal Receiving Sign

When the indoor unit receives a signal from the remote controller, the unit emits a signal receiving sound.

1.14.3 Indoor Unit ON/OFF Button

An **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>Operation 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>

- In the case of multi system operation, there are times when the unit does not activate with this button.

Ex: CTXS, FTXS series

1.14.4 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.

**Note:** It takes 3 minutes to restart the operation because the 3-minute standby function is activated.
2. Functions for FFQ Series

2.1 Drain Pump Control

2.1.1 Normal Operation

- The float switch is OFF in normal operation.
- When cooling operation starts (thermostat ON), the drain pump turns ON simultaneously.
- After the thermostat turns OFF, the drain pump continues to operate for another 5 minutes.
- The aim of residual operation after thermostat OFF is to eliminate the dew that condenses on the indoor heat exchanger during cooling operation.

2.1.2 If the Float Switch is ON with the Thermostat ON in Cooling Operation

- When the float switch turns ON, the thermostat turns OFF simultaneously.
- After the thermostat turns OFF, the drain pump continues to operate for another 5 minutes.
- If the float switch turns OFF again during the residual operation of the drain pump, cooling operation also turns on again (thermostat ON).
- If the float switch remains ON even after the residual operation of the drain pump has ended, the error code A3 is displayed on the remote controller.
- The drain pump turns OFF once residual operation has ended, then turns ON again after 5 seconds.
- After A3 is displayed and the unit comes to an abnormal stop, the thermostat will remain OFF even if the float switch turns OFF again.
2.1.3 If the Float Switch is ON with the Thermostat OFF in Cooling Operation

- When the float switch turns ON, the drain pump turns ON simultaneously.
- If the float switch remains ON even after the residual operation of the drain pump has ended, the error code \( \text{A3} \) is displayed on the remote controller.
- The drain pump turns OFF once residual operation has ended, then turns ON again after 5 seconds.

2.1.4 If the Float Switch Turns ON and OFF Continuously, or the Float Switch Turns ON While \( \text{AF} \) Displayed

- When the float switch turns ON, the drain pump turns ON simultaneously.
- If the float switch continues to turn ON and OFF 5 times consecutively, it is judged as a drain system error and the error code \( \text{AF} \) is displayed on the remote controller.
- The drain pump continues to turn ON/OFF in accordance with the float switch ON/OFF even after \( \text{AF} \) is displayed on the remote controller.
- While the error code \( \text{AF} \) is displayed, if the float switch remains ON even after the residual operation of the drain pump has ended, the error code \( \text{A3} \) will be displayed on the remote controller.
2.2 Thermostat Sensor in Remote Controller

Outline

Temperature is controlled by both the thermostat sensor in remote controller and air suction thermostat in the indoor unit. (This is however limited to when the field setting for the thermostat sensor in remote controller is set to Use.)

Cooling

If there is a significant difference in the set temperature and the suction temperature, fine adjustment control is carried out using a body thermostat sensor, or using the sensor in the remote controller near the position of the user when the suction temperature is near the set temperature.

- Assuming the set temperature in the figure above is 24°C (75.2°F), and the suction temperature has changed from 18°C (64.4°F) to 30°C (86°F) (A → F):
  (This example also assumes there are several other air conditioners, and the suction temperature changes even when the thermostat sensor is off.)
  18 → 23°C (64.4 → 73.4°F) (A → C): Body thermostat sensor is used.
  23 → 27°C (73.4 → 80.6°F) (C → E): Remote controller thermostat sensor is used.
  27 → 30°C (80.6 → 86°F) (E → F): Body thermostat sensor is used.

- Assuming suction temperature has changed from 30°C (86°F) to 18°C (64.4°F) (F → A):
  30 → 25°C (86 → 77°F) (F → D): Body thermostat sensor is used.
  25 → 21°C (77 → 69.8°F) (D → B): Remote controller thermostat sensor is used.
  21 → 18°C (69.8 → 64.4°F) (B → A): Body thermostat sensor is used.
**Heating**

When heating, the hot air rises to the top of the room, resulting in the temperature being lower near the floor where the occupants are. When controlling by body thermostat sensor only, the indoor unit may therefore be turned off by the thermostat before the lower part of the room reaches the set temperature. The temperature can be controlled so the lower part of the room where the occupants are does not become cold by widening the range in which thermostat sensor in remote controller can be used so that suction temperature is higher than the set temperature.

- **Assuming the set temperature in the figure above is 24°C (75.2°F), and the suction temperature has changed from 18°C (64.4°F) to 28°C (82.4°F) (A → D):**
  (This example also assumes there are several other air conditioners, and the suction temperature changes even when the thermostat sensor is off.)
  18 → 25°C (64.4 → 77°F) (A → C): Body thermostat sensor is used.
  25 → 28°C (77 → 82.4°F) (C → D): Remote controller thermostat sensor is used.

- **Assuming suction temperature has changed from 28°C (82.4°F) to 18°C (64.4°F) (D → A):**
  28 → 23°C (82.4 → 73.4°F) (D → B): Remote controller thermostat sensor is used.
  23 → 18°C (73.4 → 64.4°F) (B → A): Body thermostat sensor is used.
2.3 Freeze Prevention Control

Outline When the temperature detected by liquid pipe thermistor (R2T) of the indoor heat exchanger drops too low, the unit enters freeze prevention control in accordance with the following conditions, and is also set in accordance with the conditions given below.

Detail

**Conditions for starting:**
- Liquid pipe temperature $\leq -1^\circ C$ (30.2°F) (for total of 40 minutes)
  
  or
  
  Liquid pipe temperature $\leq -5^\circ C$ (23°F) (for total of 10 minutes)

**Condition for cancelling:**
- Liquid pipe temperature $\geq 7^\circ C$ (44.6°F) (for 10 minutes continuously)

![Diagram showing freeze prevention control conditions](R22275)
2.4 Hot Start Control (In Heating Operation Only)

Outline
At startup with thermostat ON or after the completion of defrosting in heating operation, the indoor unit fan is controlled to prevent cold air from blasting out and ensure startup capacity.

Detail

<table>
<thead>
<tr>
<th>Hot start control</th>
<th>Hot start in progress</th>
<th>Normal operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defrost ending or oil return ending or Thermostat ON</td>
<td>H/L remote controller setting</td>
<td>LL OFF</td>
</tr>
<tr>
<td>Hot start ending conditions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>lapse of 3 minutes</td>
<td>TH₂ &gt; 34°C (93.2°F)</td>
<td>Tc &gt; 52°C (125.6°F)</td>
</tr>
</tbody>
</table>

TH₂: Temperature detected by the gas thermistor
Tc: High pressure equivalent saturation temperature
3. Control Specification

3.1 Thermistor Functions

The illustration is for the 3-room models as representative and have 3 lines of indoor unit system (A ~ C). The 2-room models have 2 lines (A ~ B).

**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) Gas Pipe Thermistor**

In cooling operation, the gas pipe thermistor is used for gas pipe isothermal control. The system controls electronic expansion valve opening so that the gas pipe temperature in each room becomes equal.
**(4) 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 cooling operation, the indoor heat exchanger thermistor is used for anti-icing function. If any of the following conditions are met in the room where operation halts, it is assumed as icing. The conditions are:
   \[
   T_c \leq -1^\circ C \text{ (30.2}^\circ \text{F)} \\
   T_a - T_c \geq 10^\circ C \text{ (18}^\circ \text{F)}
   \]
   where \(T_a\) is the room temperature and \(T_c\) is the indoor heat exchanger temperature.

4. In heating operation, the indoor heat exchanger thermistor is used for heating peak-cut control. If the indoor heat exchanger temperature rises abnormally, the operating frequency becomes lower or the operation halts.

5. 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 highest indoor heat exchanger temperature by more than a certain value, the discharge pipe thermistor is judged as disconnected.

6. When only one indoor unit is operating, the indoor heat exchanger thermistor is used for subcooling control. The actual subcool is calculated with the liquid pipe temperature and the indoor heat exchanger temperature. The system controls the electronic expansion valve openings to obtain the target subcool.

7. The indoor heat exchanger thermistor is used for wiring error check function. The refrigerant flows in order from the port A to detect the indoor heat exchanger temperature one by one, and then wiring and piping can be checked.

**(5) Liquid Pipe Thermistor**

1. When only one indoor unit is in heating, the liquid pipe thermistor is used for subcooling control. The actual subcool is calculated with the liquid pipe temperature and the maximum indoor heat exchanger temperature. The system controls the electronic expansion valve openings to obtain the target subcool.

2. In heating operation, the liquid pipe thermistor is used for liquid pipes isothermal control. The system controls the electronic expansion valve opening so that the liquid pipe temperatures in each room become equal.
3.2 Mode Hierarchy

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

Detail

Air conditioner control mode
  - Forced operation mode
    - Forced cooling operation (for pump down operation)
    - Forced heating operation
    - Wiring error check 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.
- Indoor fan operation cannot be made in multiple indoor units. (A forced fan command is made during forced cooling operation.)

Determine Operation Mode
The system judges the operation mode command which is set by each room in accordance with the procedure, and determines the operation mode of the system.
The following procedure is taken when the modes conflict with each other.
*1. The system follows the mode which is set first. (First-push, first-set)
*2. For the rooms where the different mode is set, standby mode is activated. (The operation lamp blinks.)
3.3 Frequency Control

Outline

Frequency that corresponds to each room’s capacity is determined according to the difference between the target temperature and the temperature of each room.

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

Detail

The compressor’s frequency is determined by taking the following steps.

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

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

3. **Determine lower limit frequency**
   The maximum value is set as the 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.
Parameters

Q value
Indoor unit output determined from indoor unit volume, airflow rate and other factors.

S value: Indoor Unit Capacity
An S value is the capacity of the indoor unit, and is used for frequency command.

<table>
<thead>
<tr>
<th>Capacity</th>
<th>S value</th>
<th>Capacity</th>
<th>S value</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 kBtu/h</td>
<td>25</td>
<td>18 kBtu/h</td>
<td>50</td>
</tr>
<tr>
<td>12 kBtu/h</td>
<td>35</td>
<td>24 kBtu/h</td>
<td>60</td>
</tr>
</tbody>
</table>

ΔD signal: Indoor frequency command
The difference between the room thermistor temperature and the target temperature is taken as the ΔD value and is used for ΔD signal of frequency command.

<table>
<thead>
<tr>
<th>Temperature difference</th>
<th>ΔD signal</th>
<th>Temperature difference</th>
<th>ΔD signal</th>
<th>Temperature difference</th>
<th>ΔD 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>

Values depend on the type of indoor unit.
*OFF = Thermostat OFF

Initial Frequency
When starting the compressor, or when conditions are varied due to a change of operating rooms, the frequency must be initialized according to a total of the maximum ΔD value of each room and a total Q value (ΣQ) of the operating room (the room in which the thermostat is set to ON).

PI Control

1. P control
The ΣΔD 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 ΣΔD value.
When the ΣΔD value is low, the frequency is lowered.
When the ΣΔD value is high, the frequency is increased.

3. Limit of frequency increasing range
When the difference between the input current and the dropping value of the input current is less than 1.5 A, the frequency increasing range must be limited.

4. 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.

5. Upper and lower limit of frequency by PI control
The frequency upper and lower limits are set according to the total of S values. When the indoor unit quiet operation commands come from more than one room or when the outdoor unit quiet operation commands come from all the rooms, the upper limit frequency is lower than the usual setting.
3.4 Controls at Mode Changing/Start-up

3.4.1 Preheating Control

Outline

The inverter operation in open phase starts with the conditions of the outdoor temperature and the preheating command from the indoor unit.

Detail

**ON Condition**
- When the outdoor temperature is below 6°C (42.8°F), the inverter operation in open phase starts.

**OFF Condition**
- When the outdoor temperature is higher than 8°C (46.4°F), the inverter operation in open phase stops.

3.4.2 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 150 seconds after the operation is stopped.

3.4.3 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 70 seconds with any conditions 1 through 4 above.

<table>
<thead>
<tr>
<th>A (Hz)</th>
<th>Cooling</th>
<th>Heating</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>42</td>
<td>26</td>
</tr>
</tbody>
</table>

3.4.4 3-Minute Standby

Turning on the compressor is prohibited for 3 minutes after turning off.
(The function is not used when defrosting.)
### 3.4.5 Compressor Protection Function

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

![Compressor Protection Function Diagram]

<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>Reset zone</td>
<td>The upper limit of frequency is canceled.</td>
</tr>
</tbody>
</table>

### 3.5 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>Temperature Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stop zone</td>
<td>120°C (248°F)</td>
</tr>
<tr>
<td>Dropping zone</td>
<td>111°C (231.8°F)</td>
</tr>
<tr>
<td>Keep zone</td>
<td>109°C (228.2°F)</td>
</tr>
<tr>
<td>Reset zone</td>
<td>107°C (224.6°F) ★</td>
</tr>
</tbody>
</table>

★ The same value continues.
3.6 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>18 class Cooling</th>
<th>18 class Heating</th>
<th>24 class Cooling</th>
<th>24 class Heating</th>
</tr>
</thead>
<tbody>
<tr>
<td>A (A)</td>
<td>15.5</td>
<td>17.5</td>
<td>15.5</td>
<td>18.5</td>
</tr>
<tr>
<td>B (A)</td>
<td>14.0</td>
<td>15.5</td>
<td>14.0</td>
<td>17.5</td>
</tr>
<tr>
<td>C (A)</td>
<td>13.0</td>
<td>14.5</td>
<td>13.0</td>
<td>16.5</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).
3.7 Freeze-up Protection Control

Outline
During cooling operation, the signals sent from the indoor units control the operating frequency limitation and prevent freezing of the indoor heat exchanger. (The signals from the indoor units are divided into zones.)

Detail
The operating frequency limitation is judged with the indoor heat exchanger temperature 2 seconds after operation starts and 30 seconds after the number of operation room is changed.

3.8 Heating Peak-cut Control

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

Detail
- The operating frequency is judged with the indoor heat exchanger temperature 2 minutes after the operation starts and $F$ seconds after the number of operation room is changed.
- The maximum value of the indoor heat exchanger temperature controls the following (excluding stopped rooms).

<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>

Discharge pipe temperature

<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>
3.9 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 while defrosting.

3. Fan OFF delay when stopped
   The outdoor fan is turned OFF 60 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 control when the number of heating room decreases
   When the outdoor temperature is more than 10°C (50°F), the fan is turned off for 30 seconds.

6. Fan speed control during forced operation
   The outdoor fan is controlled as well as normal operation during the forced operation.

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

8. 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.

9. 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.

3.10 Liquid Compression Protection Function

Outline
The compressor stops according to the outdoor temperature for protection.

Detail
Operation stops depending on the outdoor temperature.
The compressor turns off under the conditions that the system is in cooling operation and the outdoor temperature is below –12°C (10.4°F).
3.11 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 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 (C°F))
3.12 Low Hz High Pressure Limit

Outline

The system controls the upper limit of the frequency to prevent abnormal high pressure while the frequency is low. Control is carried out according to three zones.

Detail

<table>
<thead>
<tr>
<th></th>
<th>All outdoor units</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>26 (minutes)</td>
</tr>
<tr>
<td>B</td>
<td>4 - 12 (°C)</td>
</tr>
<tr>
<td>C</td>
<td>39.2 - 53.6 (°F)</td>
</tr>
<tr>
<td>D</td>
<td>58 (Hz)</td>
</tr>
<tr>
<td>E</td>
<td>42 (Hz)</td>
</tr>
<tr>
<td>F</td>
<td>90 (seconds)</td>
</tr>
<tr>
<td>G</td>
<td>60 (seconds)</td>
</tr>
<tr>
<td>H</td>
<td>530 (seconds)</td>
</tr>
<tr>
<td>J</td>
<td>40 (seconds)</td>
</tr>
<tr>
<td>K</td>
<td>400 (pulse)</td>
</tr>
<tr>
<td>L</td>
<td>250 (pulse)</td>
</tr>
<tr>
<td>M</td>
<td>300 (pulse)</td>
</tr>
<tr>
<td>N</td>
<td>400 (pulse)</td>
</tr>
<tr>
<td>P</td>
<td>50 (pulse)</td>
</tr>
<tr>
<td>Q</td>
<td>0 (pulse)</td>
</tr>
</tbody>
</table>

The highest indoor heat exchanger temperature among operating rooms is used to determine the control zones:

- **Reset zone**: A
- **Keep zone**: B
- **Dropping zone**: C

<table>
<thead>
<tr>
<th></th>
<th>All outdoor units</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>52°C (125.6°F)</td>
</tr>
<tr>
<td>B</td>
<td>51°C (123.8°F)</td>
</tr>
<tr>
<td>C</td>
<td>48°C (118.4°F)</td>
</tr>
</tbody>
</table>
3.13 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

Room Distribution Control
1. Gas pipe isothermal control
2. SC (subcooling) control
3. Liquid pipe temperature control (with all ports connected and all rooms being air-conditioned)
4. Liquid pipe temperature control for stopped rooms
5. Dew prevention control for indoor rotor

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 for oil recovery
5. Electronic expansion valve control when a discharge pipe temperature is abnormally high
6. Electronic expansion valve control when the discharge pipe thermistor is disconnected
7. Electronic expansion valve control for indoor unit freeze-up protection

Feedback Control
Target discharge pipe temperature control
The followings are the examples of electronic expansion valve control which function in each operation mode.

<table>
<thead>
<tr>
<th>Operation pattern</th>
<th>Gas pipe isothermal control</th>
<th>SC (subcooling) control</th>
<th>Control when the frequency changes</th>
<th>Control for abnormally high discharge pipe temperature</th>
<th>Oil recovery control</th>
<th>Indoor freeze-up protection control</th>
<th>Liquid pipe temperature control for non-operating units</th>
<th>Dew prevention control for indoor rotor</th>
</tr>
</thead>
<tbody>
<tr>
<td>When power is turned on</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fully closed when power is turned on</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cooling, 1 room operation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Open control when starting</td>
<td></td>
<td></td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Control of target discharge pipe temperature)</td>
<td></td>
<td></td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cooling, 2 rooms operation to Heating, 4 rooms operation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control when the operating room is changed</td>
<td></td>
<td></td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Control of target discharge pipe temperature)</td>
<td></td>
<td></td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stop</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>Heating, 1 room operation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Open control when starting</td>
<td></td>
<td></td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Control of target discharge pipe temperature)</td>
<td></td>
<td></td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heating, 2 rooms operation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control when the operating room is changed</td>
<td></td>
<td></td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Control of target discharge pipe temperature)</td>
<td></td>
<td></td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stop</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Defrost control)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heating operation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Open control when starting</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>Continue</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>
</tbody>
</table>

★1: When all the indoor units are operating, liquid pipe temperature control is conducted.
★2: SC (subcooling) control is conducted for the operating indoor units, when some of the units are not operating.
★3: Liquid pipe temperature control for stopped room is conducted for the non-operating indoor units.
3.13.1 Fully Closing with Power On
The electronic expansion valve is initialized when the power is turned on. The opening position is set and the pressure is equalized.

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

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

Detail
- Maximum electronic expansion valve opening in the operating room: 450 pulse
- Minimum electronic expansion valve opening in the operating room: 64 pulse
The electronic expansion valve is fully closed in a room where cooling operation is stopped and is opened at a fixed degree during defrosting.

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

3.13.5 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.

3.13.6 Oil Recovery Function
Outline
The electronic expansion valve opening in the cooling stopped room is set as to open for a certain time at a specified interval so that the oil in the cooling stopped room may not be accumulated.

Detail
During cooling operation, every 1 hour continuous operation, the electronic expansion valves in the operation stopped room is opened by 80 pulses for specified time.

3.13.7 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.
3.13.8 Discharge Pipe Thermistor Disconnection Control

**Outline**

The disconnection of the discharge pipe thermistor is detected by comparing the discharge pipe temperature with the condensing 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 (630 seconds) finishes, 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.
   
   \[
   \text{Discharge pipe temperature} + 6°C (10.8°F) < \text{outdoor heat exchanger temperature}
   \]

2. **When the operation mode is heating**
   - When the following condition is fulfilled, the discharge pipe thermistor disconnection is ascertained.
   
   \[
   \text{Discharge pipe temperature} + 6°C (10.8°F) < \text{highest indoor heat exchanger temperature}
   \]

**When the thermistor is disconnected**

When the disconnection is ascertained, the compressor continues operation for 9 minutes and then stops.

3.13.9 Gas Pipe Isothermal Control During Cooling

When the units are operating in multiple rooms, the gas pipe temperature is detected and the electronic expansion valve opening is adjusted so that the temperature of the gas pipe in each room becomes equal.

- **When the gas pipe temperature > the average gas pipe temperature,**
  
  → the opening degree of electronic expansion valve in the corresponding room increases.

- **When the gas pipe temperature < the average gas pipe temperature,**
  
  → the opening degree of electronic expansion valve in the corresponding room decreases.

The temperatures are monitored every 40 seconds.
3.13.10 SC (Subcooling) Control

Outline
The liquid pipe temperature and the heat exchanger temperature are detected and the electronic expansion valve opening is compensated so that the SC of each room becomes the target SC.
- When the actual SC is > target SC, open the electronic expansion valve of the room.
- When the actual SC is < target SC, close the electronic expansion valve of the room.

Detail
Start Conditions
After finishing the starting control (630 seconds), (all) the electronic expansion valve(s) for the operating room is/are controlled.

Determine Electronic Expansion Valve Opening
The electronic expansion valve opening is adjusted so that the temperature difference between the maximum heat exchanger temperature of connected room and the liquid pipe temperature thermistor becomes constant.

3.13.11 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 20 seconds. The target discharge pipe temperature is controlled by indoor heat exchanger temperature and outdoor heat exchanger temperature. The opening degree of the electronic expansion valve is controlled by the followings.
- Target discharge pipe temperature
- Actual discharge pipe temperature
- Previous discharge pipe temperature
3.14 Malfunctions

3.14.1 Sensor Malfunction Detection

Sensor malfunction may occur either in the thermistor or current transformer (CT) system.

**Relating to Thermistor Malfunction**

1. Outdoor heat exchanger thermistor
2. Discharge pipe thermistor
3. Radiation fin thermistor
4. Gas pipe thermistor
5. Outdoor temperature thermistor
6. Liquid pipe thermistor

**Relating to CT Malfunction**

Refer to CT or related abnormality on page 156 for detail.

3.14.2 Detection of Overcurrent and Overload

**Outline**

In order to protect the inverter, an excessive output current is detected and the OL temperature is observed to protect the compressor.

**Detail**

- If the inverter current exceeds 15.5 ~ 18.5 A (depending on the model), the system shuts down the compressor.
- If the OL (compressor head) temperature exceeds 130°C (266°F), the compressor stops.

3.14.3 Refrigerant Shortage Control

**Outline**

If the power consumption is below the specified value and the frequency is higher than the specified frequency, it is regarded as refrigerant shortage.

The power consumption is low comparing with that in the normal operation when refrigerant is insufficient, and refrigerant shortage is detected by checking power consumption.

Refer to Refrigerant shortage on page 134 for detail.

3.14.4 Anti-icing Function

During cooling, if the indoor heat exchanger temperature in the operation stopped room drops below the specified temperature for a specified time, the electronic expansion valve is opened in the operation stopped room as specified, and the fully closed operation is carried out. After this, if freezing abnormality occurs longer than a specified time, the system is shut down.
Part 5
Remote Controller

1. CTXS, FTXS Series .................................................................77
2. CDXS, FDXS Series ...............................................................79
3. FVXS Series .......................................................................81
4. FFQ Series ........................................................................83
   4.1 <BRC1E71> Wired Remote Controller ...............................83
   4.2 <BRC1E72/73> Wired Remote Controller ...........................88
   4.3 <BRC7E830> Wireless Remote Controller ........................94
1. CTXS, FTXS Series

**Signal transmitter**

- To use the remote controller, aim the transmitter at the indoor unit. If there is anything to block signals between the unit and the remote controller, such as a curtain, the unit will not operate.
- Do not drop the remote controller. Do not get it wet.
- The maximum distance for communication is approximately 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.

<table>
<thead>
<tr>
<th>Setting</th>
<th>Temp Range</th>
<th>(°C/°F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUTO</td>
<td>18 ~ 30 °C</td>
<td>(64 ~ 86 °F)</td>
</tr>
<tr>
<td>DRY</td>
<td>Not available</td>
<td></td>
</tr>
<tr>
<td>COOL</td>
<td>18 ~ 32 °C</td>
<td>(64 ~ 90 °F)</td>
</tr>
<tr>
<td>HEAT</td>
<td>10 ~ 30 °C</td>
<td>(50 ~ 86 °F)</td>
</tr>
<tr>
<td>FAN</td>
<td>Not available</td>
<td></td>
</tr>
</tbody>
</table>

**ON/OFF button**

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

**POWERFUL*¹ button**

- POWERFUL operation.

---

**Reference**

Refer to the following pages for detail.

- ★1 Inverter POWERFUL operation P.43

**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.

| AUTO | DRY | COOL | HEAT | FAN |

**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.

**ECONO button**
- ECONO operation.

**SWING button**
- Adjusts the airflow direction.
- When you press the SWING button, the flap moves up and down, or (and) the louver moves right and left. The flap (louver) stops when you press the SWING button again.

**WEEKLY button**
- WEEKLY button
- PROGRAM button
- COPY button
- BACK button
- NEXT button
- WEEKLY TIMER operation.

**OFF TIMER button**
- Press this button and adjust the day and time with the SELECT button.
- Press this button again to complete TIMER setting.

**COMFORT/SENSOR button**
- Every time you press the COMFORT/SENSOR button, the setting changes in the following order.

<table>
<thead>
<tr>
<th>COMFORT AIRFLOW</th>
<th>INTELLIGENT EYE</th>
</tr>
</thead>
<tbody>
<tr>
<td>blank</td>
<td>No Setting</td>
</tr>
</tbody>
</table>

**ON TIMER button**
- Press this button and adjust the day and time with the SELECT button.
- Press this button again to complete TIMER setting.

**CLOCK button**
- Changes the ON/OFF TIMER and WEEKLY TIMER settings.

**SELECT button**
- Changes the ON/OFF TIMER and WEEKLY TIMER settings.

**TIMER CANCEL button**
- Cancels the timer setting.
- Cannot be used for the WEEKLY TIMER operation.

Reference
Refer to the following pages for detail.

- 2 COMFORT AIRFLOW operation P.35, 37
- 3 INTELLIGENT EYE operation P.42
- 4 ECONO operation P.41
- 5 Auto-swing P.34
- 6 WEEKLY TIMER operation P.45
- 7 Clock setting P.44

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

Signal transmitter

- To use the remote controller, aim the transmitter at the indoor unit. If there is anything to block signals between the unit and the remote controller, such as a curtain, the unit will not operate.
- Do not drop the remote controller. Do not get it wet.
- The maximum distance for communication is approximately 13 ft (4 m).

Receiver

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

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.

ON/OFF button
- Press this button once to start operation. Press once again to stop it.

POWERFUL* button
- POWERFUL operation.

Receiver

To use the remote controller, aim the transmitter at the indoor unit. If there is anything to block signals between the unit and the remote controller, such as a curtain, the unit will not operate.

Do not drop the remote controller. Do not get it wet.

The maximum distance for communication is approximately 13 ft (4 m).

FAN setting button

- Auto
- Indoor unit quiet
- Low
- Middle low
- High
- Middle high
- Middle

TEMPERATURE adjustment buttons
- Changes the temperature setting.

- AUTO: 18 ~ 30 °C (64 ~ 86 °F)
- DRY: Not available
- COOL: 18 ~ 32 °C (64 ~ 90 °F)
- HEAT: 10 ~ 30 °C (50 ~ 86 °F)
- FAN: Not available

ON/OFF button

Reference
Refer to the following pages for detail.

Inverter POWERFUL operation P.43

Note: Refer to the operation manual of applicable model for details. You can download operation manuals from Daikin Business Portal: Daikin Business Portal → Document Search → Item Category → Installation/Operation Manual (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.

ECONO*2 button
• ECONO operation.

SELECT button
• Changes the ON/OFF TIMER settings.

ON TIMER button
• Press this button and adjust the time with the SELECT button. Press this button again to complete TIMER setting.

OFF TIMER button
• Press this button and adjust the time with the SELECT button. Press this button again to complete TIMER setting.

CLOCK*3 button

TIMER CANCEL button
• Cancels the timer setting.

** Reference **
Refer to the following pages for detail.

★2 ECONO operation P.41
★3 Clock setting P.44

** Note:**
Refer to the operation manual of applicable model for details. You can download operation manuals from Daikin Business Portal:
3. 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.
  - Auto
  - Indoor unit quiet
  - Low
  - Middle low
  - High
  - Middle high
  - Middle

- 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.

<table>
<thead>
<tr>
<th>Setting</th>
<th>Temperature Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUTO</td>
<td>18 ~ 30 °C (64 ~ 86 °F)</td>
</tr>
<tr>
<td>DRY</td>
<td>Not available</td>
</tr>
<tr>
<td>COOL</td>
<td>18 ~ 32 °C (64 ~ 90 °F)</td>
</tr>
<tr>
<td>HEAT</td>
<td>10 ~ 30 °C (50 ~ 86 °F)</td>
</tr>
<tr>
<td>FAN</td>
<td>Not available</td>
</tr>
</tbody>
</table>

**On/Off button**

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

**Powerful**

- Starts POWERFUL operation.

---

**Reference**

Refer to the following pages for detail.

- Inverter POWERFUL operation P.43

---

**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.

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.

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

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

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.

Reference
Refer to the following pages for detail.

<table>
<thead>
<tr>
<th>#</th>
<th>Feature</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>★2</td>
<td>ECONO operation</td>
<td>P.41</td>
</tr>
<tr>
<td>★3</td>
<td>Auto-swing</td>
<td>P.34</td>
</tr>
<tr>
<td>★4</td>
<td>WEEKLY TIMER operation</td>
<td>P.45</td>
</tr>
<tr>
<td>★5</td>
<td>Clock setting</td>
<td>P.44</td>
</tr>
</tbody>
</table>

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

4.1 <BRC1E71> Wired Remote Controller

![Remote Controller Diagram]

1. Operation mode selector button
2. Fan speed control button
3. Menu/OK button
4. Up button ▲
5. Down button ▼
6. Right button ►
7. Left button ◀
8. On/Off button
9. Operation lamp
10. Cancel button
11. LCD (with backlight)
1. **Operation mode selector button**
   - Press this button to select the operation mode of your preference.
   - Available modes vary with the indoor unit model.

2. **Fan speed control button**
   - Press this button to select the fan speed of your preference.
   - Available fan speeds vary with the indoor unit model.

3. **Menu/OK button**
   - Used to indicate the main menu.
   - Used to enter the selected item.

4. **Up button ▲**
   - Used to raise the setpoint.
   - The item above the current selection will be highlighted.
   - The highlighted items will be scrolled continuously when the button is continuously pressed.
   - Used to change the selected item.

5. **Down button ▼**
   - Used to lower the setpoint.
   - The item below the current selection will be highlighted.
   - The highlighted items will be scrolled continuously when the button is continuously pressed.
   - Used to change the selected item.

6. **Right button ▶**
   - Used to highlight the next items on the right-hand side.
   - Each screen is scrolled in the right-hand direction.

7. **Left button ◀**
   - Used to highlight the next items on the left-hand side.
   - Each screen is scrolled in the left-hand direction.

8. **On/Off button**
   - Press this button and system will start.
   - Press this button again to stop the system.

9. **Operation lamp (Green)**
   - This lamp illuminates solid during normal operation.
   - This lamp blinks if an error occurs.

10. **Cancel button**
    - Used to return to the previous screen.

11. **LCD (with backlight)**
    - The backlight will be illuminated for approximately 30 seconds by pressing any button.
    - If two remote controllers are used to control a single indoor unit, only the controller to be accessed first will have backlight functionality.
Liquid Crystal Display

- Two types of liquid crystal display (LCD) are available. The standard display is set by default.
- Detailed display can be selected in the main menu.
- The displayed contents of the screen vary with the operation mode of the indoor unit model. (The following display will appear when the indoor unit is in automatic operation.)

**Standard display**

1. Operation mode
2. Fan Speed
6. Ventilation
9. Under centralized control
10. Changeover controlled by the master indoor unit
11. Setback
12. Air Flow Direction
13. Current Day/time (12/24 hour time display)
14. Detailed selection

**Detailed Display**

- The air flow direction, clock, and detailed selection items appear on the detailed display screen in addition to the items appearing on the standard display.

**No Fan speed display** (with no fan speed control function)
**No Air Flow Direction display** (with no air flow direction settings)
**No Clock display** (when the clock has not been set)
**No Detailed item display** (with no detailed items selected)
1. **Operation mode**
   - Used to display the current operation mode: Cool, Heat, Vent, Fan, Dry or Auto.

2. **Fan Speed**
   - Used to display the fan speed that is set for the indoor unit.
   - The fan speed will not be displayed if the connected model does not have fan speed control functionality.

3. **Setpoint display**
   - Used to display the setpoint for the indoor unit.
   - Use the Celsius/Fahrenheit item in the main menu to select the temperature unit (Celsius or Fahrenheit).

4. **Stand by for Defrost/Hot start**
   - Indicates that an energy recovery ventilator is connected.
   - For details, refer to the Operation Manual of the ERV.

5. **Message**
   - The following messages may be displayed.
     - **“Error: Push Menu button”**
     - **“Warning: Push Menu button”**
       - Displayed if an error or warning is detected.
     - **“Time to clean filter”**
     - **“Time to clean element”**
     - **“Time to clean filter & element”**
       - Displayed as a reminder when it is time to clean the filter or element.

6. **Ventilation**
   - Displayed when a energy recovery ventilator is connected.
   - **Ventilation Mode icon (ERV, BYPASS)**
     - These icons indicate the current ventilation mode (ERV only) (AUTO, ERV, BYPASS).
   - **Air Purify ICON**
     - This icon indicates that the air purifying unit (option) in operation.

7. **Display**
   - Displayed when the key lock is set.

8. **Display**
   - Displayed if the Schedule or Off timer is enabled.

9. **Under Centralized control**
   - Displayed if the system is under the management of a multi zone controller (option) and the operation of the system through the remote controller is limited.

10. **Changeover controlled by the master indoor unit**
    - **(VRV only)**
      - Displayed when another indoor unit on the system has the authority to change the operation mode between cool and heat.
11. Setback "SETBACK"

- The setback icon flashes when the unit is turned on under the setback control.

12. Air Flow Direction "CF"

- Displayed when the air flow direction and swing are set.
- If the connected indoor unit model does not include oscillating louvers this item will not be displayed.

13. Current Day/Time (12/24 hour time display)

- Displayed if the clock is set.
- If the clock is not set, "-- : --" will be displayed.
- 12 hour time format is displayed by default.
- Select 12/24 hour time display option in the main menu under “Clock & Calendar”.

14. Detailed selection

- Displayed if the detailed display item is selected.
- Detailed items are not selected by default.

15. Display

- Displayed when the clock needs to be set.
- The schedule function will not work unless the clock is set.
4.2  <BRC1E72/73> Wired Remote Controller

1. Operation mode selector button
2. Fan speed control button
3. Menu/OK button
4. Up button ▲
5. Down button ▼
6. Right button ►
7. Left button ◄
8. On/Off button
9. Operation lamp
10. Cancel button
11. LCD (with backlight)
1. **Operation mode selector button**
   - Press this button to select the operation mode of your preference.
   * Available modes vary with the indoor unit model.

2. **Fan speed control button**
   - Press this button to select the fan speed of your preference.
   * Available fan speeds vary with the indoor unit model.

3. **Menu/OK button**
   - Used to enter the main menu.
   - Used to enter the selected item.

4. **Up button ▲**
   - Used to raise the setpoint.
   - The item above the current selection will be highlighted.
   (The highlighted items will be scrolled continuously when the button is continuously pressed.)
   - Used to change the selected item.

5. **Down button ▼**
   - Used to lower the setpoint.
   - The item below the current selection will be highlighted.
   (The highlighted items will be scrolled continuously when the button is continuously pressed.)
   - Used to change the selected item.

6. **Right button ►**
   - Used to highlight the next items on the right-hand side.
   - Each screen is scrolled in the right-hand direction.

7. **Left button ◀**
   - Used to highlight the next items on the left-hand side.
   - Each screen is scrolled in the left-hand direction.

8. **On/Off button**
   - Press this button and system will start.
   - Press this button again to stop the system.

9. **Operation lamp**
   - This lamp illuminates solid green during normal operation.
   - This lamp flashes if an error occurs.

10. **Cancel button**
    - Used to return to the previous screen.

11. **LCD (with backlight)**
    - The backlight will be illuminated for approximately 30 seconds by pressing any button.
    - If two remote controllers are used to control a single indoor unit, only the controller accessed first will have backlight functionality.
Liquid Crystal Display

- Three types of display mode (Standard, Detailed and Simple) are available.
- Standard display is set by default.
- Detailed and Simple displays can be selected in the main menu.

**Standard display**

1. **Operation mode**
2. **Fan Speed**
3. **Setpoint**
4. **Stand by for Defrost/Hot start**
5. **Message**
6. **Ventilation**
7. **(→) Key Lock**
8. **(⊕) Scheduled**
9. **Under centralized control**
10. **Changeover controlled by the master indoor unit**
11. **Setback**

**Detailed display**

- The airflow direction, clock, and selectable item appear on Detailed display screen in addition to the items appearing on Standard display.

12. **Airflow Direction** (Displayed only when the indoor unit is turned on.)
13. **Current Day/Time** (12/24 hour time display)
14. **Selectable Display Item**

- No Fan speed display (with no fan speed control function)
- No Airflow Direction display (with no airflow direction settings)
- No Clock display (when the clock has not been set yet)
- No Selectable Display Item (with no selectable display item selected)
Simple display

1. Operation mode
- Auto
- Cool
- Set to Heat
- 70°F
- 74°F
- Cool
- 74°F

2. Fan speed
- STAND BY
- BACK

3. Setpoint
- Room
- 74°F

4. Stand by for Defrost/Hot start

11. Setback

14. Selectable Display Item

Note for all display modes

- Depending on the field settings, while the indoor unit is stopped, OFF may be displayed instead of the operation mode and/or the setpoint may not be displayed.
1. **Operation mode**
   - Used to display the current operation mode: Cool, Heat, Vent, Fan, Dry, or Auto.
   - In Auto mode, the actual operation mode (Cool or Heat) will also be displayed.
   - Operation mode cannot be changed when OFF is displayed.
   - Operation mode can be changed after starting operation.

2. **Fan Speed**
   - Used to display the fan speed that is set for the indoor unit.
   - The fan speed will not be displayed if the connected model does not have fan speed control functionality.

3. **Setpoint**
   - Used to display the setpoint for the indoor unit.
   - Use the Celsius/Fahrenheit item in the main menu to select the temperature unit (Celsius or Fahrenheit).

4. **Stand by for Defrost/Hot start**
   - “**STANDBY**”
     - If ventilation icon is displayed in this field:
       - Indicates that an energy recovery ventilator (ERV) is connected.
       - For details, refer to the Operation Manual of the ERV.

5. **Message**
   - The following messages may be displayed.
     - “**This function is not available**”
     - Displayed for a few seconds when an Operation button is pressed and the indoor unit does not provide the corresponding function.
     - In a remote control group, the message will not appear if at least one of the indoor units provides the corresponding function.

   - “**Error: Push Menu button**”
   - “**Warning: Push Menu button**”
     - Displayed if an error or warning is detected.

   - “**Time to clean filter**”
   - “**Time to clean element**”
   - “**Time to clean filter & element**”
     - Displayed as a reminder when it is time to clean the filter and/or element.

6. **Ventilation**
   - Displayed when an energy recovery ventilator is connected.
   - **Ventilation Mode icon.**
   - **ERV** ERV BYPASS
     - These icons indicate the current ventilation mode (ERV only) (AUTO, ERV, BYPASS).
   - **Air Purify ICON “AIRPUR”**
     - This icon indicates that the air purifying unit (Optional) is in operation.

7. **Key Lock**
   - **Key Lock**
     - Displayed when the key lock is set.

8. **Scheduled**
   - **Schedule**
     - Displayed if the Schedule or Off timer is enabled.

9. **Under Centralized control “**
   - **Centralized control**
     - Displayed if the system is under the management of a multi-zone controller (Optional) and the operation of the system through the remote controller is limited.

10. **Changeover controlled by the master indoor unit “**
    - (VRV only)
      - Displayed when another indoor unit on the system has the authority to change the operation mode between cool and heat.
11. Setback “SETBACK”
   - The setback icon flashes when the unit is turned on by the setback control.

12. Airflow Direction “✓✓”
   - Displayed when the airflow direction and swing are set.
   - If the connected indoor unit model does not include oscillating louvers this item will not be displayed.

13. Current Day/Time (12/24 hour time display)
   - Displayed if the clock is set.
   - If the clock is not set, “-- : --” will be displayed.
   - 12 hour time format is displayed by default.
   - Select 12/24 hour time display option in the main menu under “Clock & Calendar”.

14. Selectable Display Item
   - Room temperature is selected by default.
   - For other choices see the operation manual.

15. Unable to schedule
   - Displayed when the clock needs to be set.
   - The schedule function will not work unless the clock is set.
### 4.3 <BRC7E830> Wireless Remote Controller

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>DISPLAY ▲ (SIGNAL TRANSMISSION)</strong>&lt;br&gt;This lights up when a signal is being transmitted.</td>
</tr>
<tr>
<td>2</td>
<td><strong>DISPLAY ◇, ◯, ◵, ◲, ◳ (OPERATION MODE)</strong>&lt;br&gt;This display shows the current operation mode.</td>
</tr>
<tr>
<td>3</td>
<td><strong>DISPLAY ◩ (SET TEMPERATURE)</strong>&lt;br&gt;This display shows the set temperature.</td>
</tr>
<tr>
<td>4</td>
<td><strong>DISPLAY ◤ ◢ ◡ ◠ (PROGRAMMED TIME)</strong>&lt;br&gt;This display shows programmed time of the system start or stop.</td>
</tr>
<tr>
<td>5</td>
<td><strong>DISPLAY ◯ (AIRFLOW FLAP)</strong>&lt;br&gt;The display shows the set fan speed.</td>
</tr>
<tr>
<td>6</td>
<td><strong>DISPLAY ◈ (FAN SPEED)</strong>&lt;br&gt;The display shows the set fan speed.</td>
</tr>
<tr>
<td>7</td>
<td><strong>DISPLAY ◐ TEST (INSPECTION/TEST OPERATION)</strong>&lt;br&gt;When the INSPECTION/TEST button is pressed, the display shows the system mode is in.</td>
</tr>
<tr>
<td>8</td>
<td><strong>ON/OFF BUTTON</strong>&lt;br&gt;Press the button and the system will start. Press the button again and the system will stop.</td>
</tr>
<tr>
<td>9</td>
<td><strong>FAN BUTTON</strong>&lt;br&gt;Press this button to select the fan speed, HIGH or LOW, of your choice.</td>
</tr>
<tr>
<td>10</td>
<td><strong>TEMPERATURE SETTING BUTTON</strong>&lt;br&gt;Use this button for setting temperature (Operates with the front cover of the remote controller closed.)</td>
</tr>
<tr>
<td>11</td>
<td><strong>PROGRAMMING TIMER BUTTON</strong>&lt;br&gt;Use this button for programming start and/or stop time. (Operates with the front cover of the remote controller opened.)</td>
</tr>
<tr>
<td>12</td>
<td><strong>TIMER MODE START/STOP BUTTON</strong></td>
</tr>
<tr>
<td>13</td>
<td><strong>TIMER RESERVE/CANCEL BUTTON</strong></td>
</tr>
<tr>
<td>14</td>
<td><strong>SWING BUTTON</strong></td>
</tr>
<tr>
<td>15</td>
<td><strong>OPERATION MODE SELECTOR BUTTON</strong>&lt;br&gt;Press this button to select operation mode.</td>
</tr>
<tr>
<td>16</td>
<td><strong>FILTER SIGN RESET BUTTON</strong></td>
</tr>
<tr>
<td>17</td>
<td><strong>INSPECTION/TEST BUTTON</strong>&lt;br&gt;This button is used only by qualified service persons for maintenance purposes.</td>
</tr>
<tr>
<td>18</td>
<td><strong>EMERGENCY OPERATION SWITCH</strong>&lt;br&gt;This switch is readily used if the remote controller does not work.</td>
</tr>
<tr>
<td>19</td>
<td><strong>RECEIVER</strong>&lt;br&gt;This receives the signals from the remote controller.</td>
</tr>
<tr>
<td>20</td>
<td><strong>OPERATING INDICATOR LAMP (Red)</strong>&lt;br&gt;This lamp stays lit while the air conditioner runs. It flashes when the unit is in trouble.</td>
</tr>
<tr>
<td>21</td>
<td><strong>TIMER INDICATOR LAMP (Green)</strong>&lt;br&gt;This lamp stays lit while the timer is set.</td>
</tr>
<tr>
<td>22</td>
<td><strong>AIR FILTER CLEANING TIME INDICATOR LAMP (Red)</strong>&lt;br&gt;Lights up when it is time to clean the air filter.</td>
</tr>
<tr>
<td>23</td>
<td><strong>DEFROST LAMP (Orange)</strong>&lt;br&gt;Lights up when the defrosting operation has started.</td>
</tr>
</tbody>
</table>
Part 6

Service Diagnosis

1. General Problem Symptoms and Check Items ............................................. 97
2. Troubleshooting with LED ........................................................................ 98
   2.1 Indoor Unit ............................................................................................. 98
   2.2 Outdoor Unit .......................................................................................... 99
3. Service Diagnosis .................................................................................. 100
   3.1 CTXS, FTXS, CDXS, FDXS, FVXS Series .............................................. 100
   3.2 FFQ Series ............................................................................................ 106
4. Code Indication on Remote Controller .................................................... 112
   4.1 CTXS, FTXS, CDXS, FDXS, FVXS Series .............................................. 112
   4.2 FFQ Series ............................................................................................ 112
   4.3 Outdoor Unit .......................................................................................... 113
5. Troubleshooting for CTXS, FTXS, CDXS, FDXS, FVXS Series ............. 114
   5.1 Indoor Unit PCB Abnormality ................................................................ 114
   5.2 Freeze-up Protection Control/Heating Peak-cut Control ....................... 116
   5.3 Fan Motor or Related Abnormality ....................................................... 117
   5.4 Thermistor or Related Abnormality ....................................................... 121
   5.5 Signal Transmission Error (Between Indoor Unit and Outdoor Unit) ...... 122
   5.6 Unspecified Voltage (Between Indoor Unit and Outdoor Unit) .......... 124
6. Troubleshooting for FFQ Series .............................................................. 125
   6.1 Indoor Unit PCB Abnormality ................................................................ 125
   6.2 Drain Level Control System Abnormality ............................................. 126
   6.3 Fan Motor (AC Motor) or Related Abnormality ................................... 127
   6.4 Drain System Abnormality .................................................................... 128
   6.5 Thermistor or Related Abnormality ....................................................... 129
   6.6 Remote Controller Thermistor Abnormality ......................................... 130
   6.7 Signal Transmission Error (Between Indoor Unit and Remote Controller) .......................................... 131
   6.8 Signal Transmission Error (Between MAIN Remote Controller and SUB Remote Controller) ........... 132
   6.9 Field Setting Abnormality ..................................................................... 133
7. Troubleshooting for Outdoor Unit ............................................................ 134
   7.1 Refrigerant Shortage ............................................................................ 134
   7.2 Low-voltage Detection or Over-voltage Detection ............................... 136
   7.3 Wiring Error Check Unexecuted ............................................................ 138
   7.4 Unspecified Voltage (Between Indoor Unit and Outdoor Unit)/ Anti-icing Control in Other Rooms ........ 139
   7.5 Anti-icing Control for Indoor Unit ....................................................... 140
   7.6 Outdoor Unit PCB Abnormality ............................................................ 142
   7.7 OL Activation (Compressor Overload) .................................................. 143
   7.8 Compressor Lock ................................................................................. 145
   7.9 DC Fan Lock ........................................................................................ 146
7.10 Input Overcurrent Detection ................................................................. 147
7.11 Four Way Valve Abnormality ............................................................... 148
7.12 Discharge Pipe Temperature Control .................................................. 150
7.13 High Pressure Control in Cooling ....................................................... 151
7.14 Compressor Sensor System Abnormality ............................................. 152
7.15 Position Sensor Abnormality ............................................................... 154
7.16 CT or Related Abnormality ................................................................. 156
7.17 Thermistor or Related Abnormality (Outdoor Unit) ............................. 158
7.18 Electrical Box Temperature Rise ....................................................... 160
7.19 Radiation Fin Temperature Rise ......................................................... 161
7.20 Output Overcurrent Detection ............................................................ 162

8. Check ..................................................................................................... 164
8.1 Thermistor Resistance Check ............................................................... 164
8.2 Indoor Fan Motor Connector Check ..................................................... 165
8.3 Hall IC Check ..................................................................................... 165
8.4 Power Supply Waveform Check .......................................................... 166
8.5 Electronic Expansion Valve Check ....................................................... 167
8.6 Four Way Valve Performance Check .................................................... 168
8.7 Inverter Unit Refrigerant System Check .............................................. 168
8.8 Inverter Analyzer Check ...................................................................... 169
8.9 Rotation Pulse Check on the Outdoor Unit PCB ................................. 170
8.10 Installation Condition Check ............................................................... 171
8.11 Discharge Pressure Check ................................................................. 171
8.12 Outdoor Fan System Check ............................................................... 172
8.13 Main Circuit Short Check .................................................................... 172
8.14 Capacitor Voltage Check ................................................................... 173
8.15 Power Module Check .......................................................................... 174
## 1. General Problem Symptoms and Check Items

<table>
<thead>
<tr>
<th>Problem Symptom</th>
<th>Check Item</th>
<th>Details</th>
<th>Reference Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>None of the units operates.</td>
<td>Check the power supply.</td>
<td>Check if the rated voltage is supplied.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Check the types of the indoor units.</td>
<td>Check if the indoor unit type is compatible with the outdoor unit.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Check the outdoor temperature.</td>
<td>Heating operation is not available when the outdoor temperature is 15.5°CWB (59.9°F WB) or higher, and cooling operation is not available when the outdoor temperature is below −10°CDB (14°F DB).</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Diagnose with remote controller indication</td>
<td></td>
<td>112, 113</td>
</tr>
<tr>
<td></td>
<td>Check the remote controller addresses.</td>
<td>Check if address settings for the remote controller and indoor unit are correct.</td>
<td>187</td>
</tr>
<tr>
<td>Operation sometimes stops.</td>
<td>Check the power supply.</td>
<td>A power failure of 2 to 10 cycles can stop air conditioner operation. (Operation lamp OFF)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Check the outdoor temperature.</td>
<td>Heating operation is not available when the outdoor temperature is 15.5°CWB (59.9°F WB) or higher, and cooling operation is not available when the outdoor temperature is below −10°CDB (14°F DB).</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Diagnose with remote controller indication</td>
<td></td>
<td>112, 113</td>
</tr>
<tr>
<td>Some indoor units do not operate.</td>
<td>Check the type of the indoor units.</td>
<td>Check if the indoor unit type is compatible with the outdoor unit.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Diagnose with remote controller indication</td>
<td></td>
<td>112, 113</td>
</tr>
<tr>
<td>Units operate but do not cool, or do not heat.</td>
<td>Check for wiring and piping errors in the connection between the indoor and outdoor units.</td>
<td>Check the piping. Conduct the wiring error check described on the product diagnosis nameplate.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Check for thermistor detection errors.</td>
<td>Check if the thermistor is mounted securely.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Check for faulty operation of the electronic expansion valve.</td>
<td>Set all the units to cooling operation, and compare the temperatures of the liquid pipes to see if the each electronic expansion valve works.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Diagnose with remote controller indication</td>
<td></td>
<td>112, 113</td>
</tr>
<tr>
<td></td>
<td>Diagnose by service port pressure and operating current.</td>
<td>Check for refrigerant shortage.</td>
<td>134</td>
</tr>
<tr>
<td>Large operating noise and vibrations</td>
<td>Check the output voltage of the power module.</td>
<td></td>
<td>174</td>
</tr>
<tr>
<td></td>
<td>Check the power module.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Check the installation condition.</td>
<td>Check if the required spaces for installation (specified in the installation manual) are provided.</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.

CTXS/FTXS series

CDXS/FDXS series

FVXS series

BRC1E71/72/73

BRC7E830

In case of wireless remote controller, a signal receiver PCB and a display PCB are installed on indoor unit. When the error occurs, the operation lamp on the display PCB blinks.
Caution: When operation stops suddenly and the operation lamp blinks, it could be operation mode conflict.
1) Check if the operation modes all the same for the indoor units connected to multi system outdoor unit?
2) If not, set all the indoor units to the same operation mode and confirm that the operation lamp is not blinking.
3) Moreover, when the operation mode is automatic, set all the indoor unit operation mode as cooling or heating and check again if the operation lamp is normal.
   If the lamp stops blinking after the above steps, there is no malfunction.

*Operation stops and operation lamp blinks only for the indoor unit that has a different operation mode set later. (The first set operation mode has priority.)

Service Monitor
The indoor unit has a green LED (LED A or HAP) on the control PCB. When the microcomputer works in order, the LED blinks. (Refer to page 16, 18, 20, 22, 24 for the location of LED.)

2.2 Outdoor Unit
The outdoor unit has a green LED (LED A) and red LEDs (LED 1 – LED 5) on the PCB. When the microcomputer works in order, the LED A blinks, and when the system is in normal condition, the red LEDs are OFF.
Even after the error is canceled and the unit operates in normal condition, the LED indication remains.
3. Service Diagnosis

3.1 CTXS, FTXS, CDXS, FDXS, FVXS Series

3.1.1 ARC452 Series Remote Controller

Method 1

1. When TIMER CANCEL button is held down for 5 seconds, °C 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>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ØØ</td>
<td>13</td>
<td>ØØ</td>
<td>25</td>
<td>UA</td>
</tr>
<tr>
<td>2</td>
<td>U4</td>
<td>14</td>
<td>R3</td>
<td>26</td>
<td>UH</td>
</tr>
<tr>
<td>3</td>
<td>L5</td>
<td>15</td>
<td>H8</td>
<td>27</td>
<td>P4</td>
</tr>
<tr>
<td>4</td>
<td>E6</td>
<td>16</td>
<td>H9</td>
<td>28</td>
<td>L3</td>
</tr>
<tr>
<td>5</td>
<td>H6</td>
<td>17</td>
<td>C9</td>
<td>29</td>
<td>L4</td>
</tr>
<tr>
<td>6</td>
<td>H0</td>
<td>18</td>
<td>C4</td>
<td>30</td>
<td>L4</td>
</tr>
<tr>
<td>7</td>
<td>A6</td>
<td>19</td>
<td>C5</td>
<td>31</td>
<td>U2</td>
</tr>
<tr>
<td>8</td>
<td>E7</td>
<td>20</td>
<td>J3</td>
<td>32</td>
<td>E5</td>
</tr>
<tr>
<td>9</td>
<td>U0</td>
<td>21</td>
<td>A1</td>
<td>33</td>
<td>F3</td>
</tr>
<tr>
<td>10</td>
<td>F3</td>
<td>22</td>
<td>E5</td>
<td>34</td>
<td>FA</td>
</tr>
<tr>
<td>11</td>
<td>R5</td>
<td>23</td>
<td>R!</td>
<td>35</td>
<td>A!</td>
</tr>
<tr>
<td>12</td>
<td>F6</td>
<td>24</td>
<td>E!</td>
<td>36</td>
<td>P9</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 101.)
Method 2

1. Press the 3 buttons (TEMP▲, TEMP▼, MODE) at the same time to enter the diagnosis mode.

   The left-side number blinks.

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

3. 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 number correspond with the error code.
   The numbers indicated when you hear the long beep are the error code. Refer to page 112, 113.

4. Press MODE button.

   The right-side number blinks.
5. Press **TEMP ▲** or **TEMP ▼** button and change the number until you hear the long beep.

6. 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 number corresponds with the error code.

7. Determine the error code.
   The numbers indicated when you hear the long beep are the error code.
   Refer to page 112, 113.

8. Press **MODE** button to exit from the diagnosis mode.

9. Press **ON/OFF** button twice to return to the normal mode.

**Note:** When the remote controller is left untouched for 60 seconds, it returns to the normal mode.
3.1.2 ARC466 Series Remote Controller

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>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</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>
</tr>
<tr>
<td>4</td>
<td>F3</td>
<td>17</td>
<td>H8</td>
<td>30</td>
<td>H7</td>
</tr>
<tr>
<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>C9</td>
<td>32</td>
<td>EA</td>
</tr>
<tr>
<td>7</td>
<td>L4</td>
<td>20</td>
<td>A3</td>
<td>33</td>
<td>H1</td>
</tr>
<tr>
<td>8</td>
<td>L5</td>
<td>21</td>
<td>S5</td>
<td>34</td>
<td>FR</td>
</tr>
<tr>
<td>9</td>
<td>U4</td>
<td>22</td>
<td>J3</td>
<td>35</td>
<td>H1</td>
</tr>
<tr>
<td>10</td>
<td>E5</td>
<td>23</td>
<td>J5</td>
<td>36</td>
<td>P3</td>
</tr>
<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>H0</td>
<td>25</td>
<td>R1</td>
<td>38</td>
<td>H3</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 104.)
Method 2

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

2. Select S\(\text{C}\) (service check) with Temp \(\uparrow\) or Temp \(\downarrow\) button.

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

4. Press Temp \(\uparrow\) or Temp \(\downarrow\) button and change the number until you hear the two consecutive beeps or the long beep.
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 112, 113.

6. Press **Mode** button.

   ![Mode button](R11672)

   The right-side number blinks.

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

   ![Temp buttons](R11673)

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 112, 113.

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.)

   ![Mode button](R11672)
3.2 FFQ Series
3.2.1 BRC1E71/72/73

Note: The illustrations are for BRC1E72 as representative.

Relations Between Modes

<Main Menu>
- Airflow Direction
- Quick Start
- Schedule
- Off Timer
- Celsius / Fahrenheit
- Maintenance Information
- Configuration
- Current Settings
- Clock & Calendar
- Daylight Saving Time
- Language

<Basic Screen>
- Operation mode changeover
- Fan speed control
- Menu display
- Confirmation of each setting
- On
- Off
- Cancel
- Operation lamp

Cool
Set to 68°F

<Service Settings>
- Test Operation
- Maintenance Contact
- Field Settings
- Energy Saving Options
- Prohibit Function
- Min Setpoints Differential

<Maintenance Menu>
- Model Name
- Operation Hours
- Indoor Unit Status
- Outdoor Unit Status
- Forced Defrost
- Error Display
- Swap Unit No.
- Addressed Sensor Value

(R21931)
Service Check Function

The following message is displayed on the screen when an error (or a warning) occurs during operation.
Check the error code and take the corrective action specified for the particular model.

(1) Check if it is error or warning.

<table>
<thead>
<tr>
<th>Operation status</th>
<th>Display</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abnormal shutdown</td>
<td>The operation lamp (green) starts to blink. The message <strong>Error: Push Menu button</strong> blinks at the bottom of the screen.</td>
</tr>
<tr>
<td></td>
<td><img src="R18817" alt="Abnormal Shutdown Image" /></td>
</tr>
<tr>
<td>Warning</td>
<td>The system continues its operation.</td>
</tr>
<tr>
<td></td>
<td>The operation lamp (green) remains on. The message <strong>Warning: Push Menu button</strong> blinks at the bottom of the screen.</td>
</tr>
<tr>
<td></td>
<td><img src="R18971" alt="Warning Image" /></td>
</tr>
</tbody>
</table>

(2) Take corrective action.

- Press **Menu/OK** button to check the error code.

- Take the corrective action specific to the model.

![Error Code Image](R18820)
### 3.2.2 BRC7E830

#### Relations Between Modes

The following modes can be selected by using the **INSPECTION/TEST** button on the remote controller.

1. **Field setting mode**
   - Press **INSPECTION/TEST** button once.
   - Indoor unit settings can be made.
   - Filter cleaning sign time
   - Others

2. **Service mode**
   - Press **INSPECTION/TEST** button for more than 4 seconds.
   - Service data can be obtained.
   - Error code history
   - Temperature data of various sections
   - Service settings can be made.
   - Forced fan ON
   - Airflow rate setting

3. **Normal mode**
   - Press **INSPECTION/TEST** button once.
   - Thermostat is forcibly turned on.

4. **Inspection mode**
   - Press **INSPECTION/TEST** button once.
   - Field setting mode
   - Service mode
   - Following codes can be checked.
   - Error codes
   - Indoor model code

5. **Test operation mode**
   - Press **INSPECTION/TEST** button once or leave the remote controller untouched for 30 minutes.
   - Service data can be obtained.
   - Error code history
   - Temperature data of various sections
   - Service settings can be made.
   - Forced fan ON
   - Airflow rate setting

#### Service Check Function

To find the error code, proceed as follows:

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Press <strong>INSPECTION/TEST</strong> button to enter the inspection mode. Then the figure 0 blinks on the UNIT No. display.</td>
</tr>
</tbody>
</table>
### Step 2
Press **UP** or **DOWN** button and change the UNIT No. until the receiver of the remote controller starts to beep.

![Remote Controller Diagram](R15408)

<table>
<thead>
<tr>
<th>If you hear...</th>
<th>Then...</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 short beeps</td>
<td>Follow all steps below.</td>
</tr>
<tr>
<td>1 short beep</td>
<td>Follow steps 3 and 4. Continue the operation in step 4 until you hear a continuous beep. This continuous beep indicates that the error code is confirmed.</td>
</tr>
<tr>
<td>1 continuous beep</td>
<td>There is no abnormality.</td>
</tr>
</tbody>
</table>

### Step 3
Press **MODE** button. The left 3 (upper digit) indication of the error code blinks.

![Remote Controller Diagram](R15410)
4. Press **UP** or **DOWN** button to change the error code upper digit until the receiver of the remote controller starts to beep.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Press <strong>UP</strong> or <strong>DOWN</strong> button to change the error code upper digit until the receiver of the remote controller starts to beep.</td>
</tr>
</tbody>
</table>

**If you hear...** | **Then...** |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2 short beeps</td>
<td>The upper digit matches.</td>
</tr>
<tr>
<td>1 short beep</td>
<td>No digits match.</td>
</tr>
<tr>
<td>1 continuous beep</td>
<td>Both upper and lower digits match.</td>
</tr>
</tbody>
</table>

5. Press **MODE** button. The right 0 (lower digit) indication of the error code blinks.

(R15412)
<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Press <strong>UP</strong> or <strong>DOWN</strong> button and change the error code lower digit until the receiver of the remote controller generates a continuous beep.</td>
</tr>
</tbody>
</table>

---

**UP** button

**DOWN** button

(R15413)

| 7 | Press **MODE** button to return to the normal mode. If you do not press any button for 1 minute, the remote controller automatically returns to the normal mode. |

---

**MODE** button

(R18821)
4. Code Indication on Remote Controller

4.1 CTXS, FTXS, CDXS, FDXS, FVXS Series

<table>
<thead>
<tr>
<th>Error Codes</th>
<th>Description</th>
<th>Reference Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Normal condition</td>
<td>—</td>
</tr>
<tr>
<td>01</td>
<td>Indoor unit PCB abnormality</td>
<td>114</td>
</tr>
<tr>
<td>05</td>
<td>Freeze-up protection control/heating peak-cut control</td>
<td>116</td>
</tr>
<tr>
<td>06</td>
<td>Fan motor or related abnormality DC motor (CTXS, FTXS, FVXS series)</td>
<td>117</td>
</tr>
<tr>
<td>07</td>
<td>Fan motor or related abnormality AC motor (CDXS, FDXS series)</td>
<td>119</td>
</tr>
<tr>
<td>04</td>
<td>Indoor heat exchanger thermistor or related abnormality</td>
<td>121</td>
</tr>
<tr>
<td>08</td>
<td>Room temperature thermistor or related abnormality</td>
<td>121</td>
</tr>
<tr>
<td>04</td>
<td>Signal transmission error (between indoor unit and outdoor unit)</td>
<td>122</td>
</tr>
<tr>
<td>08</td>
<td>Unspecified voltage (between indoor unit and outdoor unit)</td>
<td>124</td>
</tr>
</tbody>
</table>

4.2 FFQ Series

<table>
<thead>
<tr>
<th>Error Codes</th>
<th>Description</th>
<th>Reference Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Normal condition</td>
<td>—</td>
</tr>
<tr>
<td>01</td>
<td>Indoor unit PCB abnormality</td>
<td>125</td>
</tr>
<tr>
<td>03</td>
<td>Drain level control system abnormality</td>
<td>126</td>
</tr>
<tr>
<td>06</td>
<td>Fan motor (AC motor) or related abnormality (See the Note below.)</td>
<td>127</td>
</tr>
<tr>
<td>06</td>
<td>Drain system abnormality</td>
<td>128</td>
</tr>
<tr>
<td>04</td>
<td>Indoor heat exchanger thermistor 1 or related abnormality</td>
<td>129</td>
</tr>
<tr>
<td>05</td>
<td>Indoor heat exchanger thermistor 2 or related abnormality</td>
<td>129</td>
</tr>
<tr>
<td>09</td>
<td>Room temperature thermistor or related abnormality</td>
<td>129</td>
</tr>
<tr>
<td>06</td>
<td>Remote controller thermistor abnormality</td>
<td>130</td>
</tr>
<tr>
<td>05</td>
<td>Signal transmission error (between indoor unit and remote controller)</td>
<td>131</td>
</tr>
<tr>
<td>08</td>
<td>Signal transmission error (between MAIN remote controller and SUB remote controller)</td>
<td>132</td>
</tr>
<tr>
<td>09</td>
<td>Field setting abnormality</td>
<td>133</td>
</tr>
</tbody>
</table>

: Error code displays automatically and system stops. Inspect and solve the error.

: In the case of the shaded error codes, inspection is not displayed. The system operates, but be sure to inspect and solve the error.

Note: When there is a possibility of open phase power supply, also check power supply.
## 4.3 Outdoor Unit

* ⊘: ON, ●: OFF, ◯: Blinks

<table>
<thead>
<tr>
<th>Outdoor Unit LED Indication</th>
<th>Error Codes</th>
<th>Description</th>
<th>Reference Page</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Green</strong></td>
<td><strong>Red</strong></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>⊘</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>⊘</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>⊘</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Note:

1. The error codes in the parenthesis ( ) are displayed only when the system is shut down.
2. When a sensor error occurs, check the remote controller display to determine which sensor is malfunctioning.
   
   If the remote controller does not indicate the error code, conduct the following procedure.
   
   * Turn the power off and then on again. If the same LED indication appears again immediately after the power is turned on, the fault is in the thermistor.
   
   * If the above condition does not result, the fault is in the CT.
3. The indoor unit error code may take the precedence in the remote controller display.
4. Turn the power off and then on again. If the same LED indication appears again, outdoor unit PCB is faulty. Replace the outdoor unit PCB.
5. Troubleshooting for CTXS, FTXS, CDXS, FDXS, FVXS Series

5.1 Indoor Unit PCB Abnormality

<table>
<thead>
<tr>
<th>Error Code</th>
<th>A1</th>
</tr>
</thead>
</table>

**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 for CTXS, FTXS, CDXS, FDXS, FVXS Series

**Caution**
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: Check the connection of connectors (See Note.).

- **OK?**
  - YES: Check the power supply voltage.
  - NO: Correct the connection.

- **Error repeats?**
  - YES: Check the power supply voltage.
  - NO: Correct the power supply.

**Note:**
Check the following connector.

<table>
<thead>
<tr>
<th>Model Type</th>
<th>Connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTXS, FTXS, CDXS, FDXS, FVXS series</td>
<td>Terminal board ~ Control PCB (H1, H2, H3)</td>
</tr>
</tbody>
</table>
5.2 Freeze-up Protection Control/Heating Peak-cut Control

Error Code: A5

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 65°C (149°F).

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
Check the indoor heat exchanger thermistor.

As described in the thermistor characteristic chart?
- YES: Replace the indoor heat exchanger thermistor.
- NO: Check the air passage.

Is there any short circuit?
- YES: Provide sufficient air passage.
- NO: Check the air filter.

Dirty?
- YES: Clean the air filter.
- NO: Check the dust accumulation on the indoor heat exchanger.

Dirty?
- YES: Clean the indoor heat exchanger.
- NO: Check the air passage. (R21064)

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

#### 5.3.1 DC Motor (CTXS, FTXS, FVXS Series)

<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 determines 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

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

Check No.02
Refer to P.165

Check the power supply voltage.

Is the voltage fluctuation within ±10% from the rated value?

NO
Correct the power supply.

YES
Turn off the power and rotate the fan by hand.

Does the fan rotate smoothly?

NO
Replace the indoor fan motor.

YES
Turn on the power and start operation.

Does the fan rotate?

NO
Turn off the power and disconnect the fan motor connector, then turn the power on.

YES
Check No.02
Check the output of the fan motor connector.

Motor power supply voltage 310 – 340 VDC?

NO
Replace the indoor unit PCB (control PCB).

YES
Motor control voltage 15 VDC generated?

NO
Replace the indoor unit PCB (control PCB).

YES
Rotation command voltage 1 – 6.5 VDC?

NO
Replace the indoor unit PCB (control PCB).

YES
Indoor fan motor rotation pulse generated?

NO
Replace the indoor fan motor.

YES
Indoor fan motor rotation pulse generated?

NO

YES
Replace the indoor unit PCB (control PCB).

Check No.02
Check the output of the fan motor connector.

Note: The motor may break when the motor connector is disconnected while the power is turned on. (Be sure to turn off the power before reconnecting the connector.)

Note: The rotation pulse is the feedback signal from the indoor fan motor.
### 5.3.2 AC Motor (CDXS, FDXS Series)

<table>
<thead>
<tr>
<th>Error code</th>
<th>A6</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Method of Error Detection</strong></td>
<td>The rotation speed detected by the Hall IC during fan motor operation determines abnormal fan motor operation.</td>
</tr>
<tr>
<td><strong>Error Decision Conditions</strong></td>
<td>The detected rotation speed does not reach the demanded rotation speed of the target tap.</td>
</tr>
</tbody>
</table>
| **Supposed Causes** | ■ Power supply voltage is not as specified.  
■ 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

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

Check No.04
Refer to P.165

Check the power supply voltage.

Is the voltage fluctuation within ±10% from the rated value?

NO
Correct the power supply.

YES
Start operation.

Does the fan rotate?

YES

NO
Turn off the power and rotate the fan by hand.

Does the fan rotate smoothly?

YES

NO
Check No. 04
Check Hall IC

Is there an output?

NO
Replace the indoor fan motor or the indoor unit PCB (control PCB).

YES
Replace the indoor fan motor.

Turn on the power and check the fan motor voltage. (immediately after restart)

Voltage as rated? *

NO
Replace the indoor unit PCB (control PCB).

YES
Replace the indoor fan motor.

* Measure the voltage between the black and white lead wires of the fan motor, and check if the maximum voltage reaches the rated voltage.

Voltage as rated? *

NO

YES
Check the capacitor's continuity.

Is there continuity?

NO
Replace the indoor fan motor.

YES
Replace the capacitor. (Replace the indoor unit PCB (control PCB).)

(R22267)
5.4 Thermistor or Related Abnormality

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.164

Check the connection of connectors.

Normal?

NO → Correct the connection.

YES → Check the thermistor resistance value.

Check No. 01

Check the thermistor resistance value.

Normal?

NO → Replace the defective thermistor.

YES → Replace the indoor unit PCB (control PCB).

\( \text{C4} \): Indoor heat exchanger thermistor

\( \text{C9} \): Room temperature thermistor

Caution

Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.
### 5.5 Signal Transmission Error (Between Indoor Unit and Outdoor Unit)

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

Check No.11
Refer to P.166

![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?

YES

Check the indoor unit - outdoor unit connection wires.

Is there any wiring error?

YES

Correct the indoor unit - outdoor unit connection wires.

NO

Correct the power supply.

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?

YES

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

Rotate the outdoor fan by hand. Does the outdoor fan rotate smoothly?

NO

Replace the outdoor fan motor and the outdoor unit PCB (main PCB).

YES

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?

YES

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

Rotate the outdoor fan by hand. Does the outdoor fan rotate smoothly?

NO

Replace the outdoor fan motor and the outdoor unit PCB (main PCB).

YES

Check No.11
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.
5.6 **Unspecified Voltage (Between Indoor Unit and Outdoor Unit)**

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

**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**

![Caution](https://via.placeholder.com/150)
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 Correct the connection.
    - YES 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)
# 6. Troubleshooting for FFQ Series

## 6.1 Indoor Unit PCB Abnormality

<table>
<thead>
<tr>
<th>Error Code</th>
<th>A1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Method of Error Detection</td>
<td>The system checks the data from EEPROM.</td>
</tr>
<tr>
<td>Error Decision Conditions</td>
<td>The data from the EEPROM is not received correctly.</td>
</tr>
</tbody>
</table>
| Supposed Causes | □ Defective indoor unit PCB  
□ External factor (noise etc.) |

### Troubleshooting

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

![Flowchart](image)

- **Normal?**
  - **YES**
    - External factor other than malfunction (for example, noise etc.)
  - **NO**
    - Replace the indoor unit PCB (control PCB).
6.2 Drain Level Control System Abnormality

**Error Code**

\[ R^3 \]

**Method of Error Detection**

The float switch detects error.

**Error Decision Conditions**

The water level reaches its upper limit and the float switch turns OFF.

**Supposed Causes**

- Defective drain pump
- Improper drain piping work
- Clogged drain piping
- Defective float switch
- Defective indoor unit PCB
- Defective short circuit connector X15A on indoor unit PCB

**Troubleshooting**

**Caution**

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

```
Is the drain pump connected to the indoor unit PCB?  
  NO → Connect the drain pump.  
  YES

Does the drain pump work after restarting operation?  
  NO → Replace the indoor unit PCB (control PCB).  
  YES

Is the drain water level abnormally high?  
  NO → Replace the drain pump.  
  YES → There is a drain system abnormality.

Is the float switch connected to X15A?  
  NO → Connect the float switch.  
  YES

Remove the float switch from X15A, short circuit X15A, and restart operation.

Does R^3 appear on the remote controller display?  
  NO → Replace the float switch.  
  YES → Replace the indoor unit PCB (control PCB).
```

**Note:** For the location of the switch (SS1), refer to page 24.
6.3 Fan Motor (AC Motor) or Related Abnormality

**Error Code**
A6

**Method of Error Detection**
The signal from the fan motor detects abnormal fan speed.

**Error Decision Conditions**
The fan rotations are not detected while the output voltage to the fan is at its maximum.

**Supposed Causes**
- Disconnection, short circuit or disengagement of connector in fan motor harness
- Defective fan motor (disconnection, poor insulation)
- Abnormal signal from fan motor (faulty circuit)
- Defective indoor unit PCB
- Momentary fluctuation of power supply voltage
- Fan motor lock (Caused by motor or other external factors)
- Fan does not rotate due to tangled foreign matters

**Troubleshooting**

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

Turn off the power.

Is there any foreign matter around the fan?  
**YES**
Remove the foreign matter.

**NO**

Is the harness from the fan motor correctly connected to the indoor unit PCB?  
**NO**
Connect the connector (X20A) correctly.

**YES**

Check the fan motor connector. (See the Note.)

Is there short circuit between the terminals?  
**NO**
Replace the indoor fan motor.

**YES**
Replace the indoor unit PCB (control PCB).

**Note:**
1. Check the connector of fan motor. (Power supply cable)
2. Turn OFF the power.
3. Measure the resistance between the terminals at the motor side connectors to check that there is no short circuit, while the connector is disconnected.

<table>
<thead>
<tr>
<th>Measuring points</th>
<th>Resistance for judgement</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) - (3)</td>
<td>88.2 Ω ± 10%</td>
</tr>
<tr>
<td>(2) - (3)</td>
<td>85.5 Ω ± 10%</td>
</tr>
</tbody>
</table>

(R18060)
6.4 Drain System Abnormality

Error Code

Method of Error Detection
Water leakage is detected based on the float switch ON/OFF changeover while the compressor is not operating.

Error Decision Conditions
The float switch changes from ON to OFF while the compressor is OFF.

Supposed Causes
- Error in the drain pipe installation
- Defective float switch
- Defective indoor unit PCB

Troubleshooting

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

- Are the float switch and the drain pipe normal?
  - YES
  - NO

- Is the water drain system normal?
  - YES
  - NO

The float switch may be defective. Check if the drain-up height and the horizontal pipe length exceed the specifications.

Clogged water drain system, clogged drain pump, or faulty float switch
Replace the indoor unit PCB. Check if the drain-up height and the horizontal pipe length exceed the specifications. (R16022)
6.5 Thermistor or Related Abnormality

<table>
<thead>
<tr>
<th>Error Code</th>
<th>C4, C5, C9</th>
</tr>
</thead>
</table>

**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**
If the cause of the problem is related to the thermistors, the thermistors should be checked prior to changing the indoor unit PCB.

To check the thermistors, proceed as follows:

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Disconnect the thermistor from the indoor unit PCB.</td>
</tr>
<tr>
<td>2</td>
<td>Read the temperature and the resistance value.</td>
</tr>
<tr>
<td>3</td>
<td>Check if the measured values correspond with the values in the table of thermistor resistance check.</td>
</tr>
</tbody>
</table>

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

Check No.01
Refer to P.164

Check the connection of connectors.

- Normal? NO → Correct the connection.
- Normal? YES → Check the thermistor resistance value.

Check No. 01
Check the thermistor resistance value.

- Normal? NO → Replace the defective thermistor.
- Normal? YES → Replace the indoor unit PCB (control PCB).

\( \text{C}4 \): Indoor heat exchanger thermistor 1 (liquid pipe) (R2T)
\( \text{C}5 \): Indoor heat exchanger thermistor 2 (R3T)
\( \text{C}9 \): Room temperature thermistor (R1T)
6.6 Remote Controller Thermistor Abnormality

**Error Code**

**Method of Error Detection**

Even if remote controller thermistor is faulty, system is possible to operate by system thermistor. Malfunction detection is carried out by the temperature detected by the remote controller thermistor.

**Error Decision Conditions**

The remote controller thermistor is disconnected or shorted while the unit is running.

**Supposed Causes**

- Defective thermistor
- Broken wire

**Troubleshooting**

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

To delete the record of error codes, press ON/OFF button for 4 seconds or more while the error code is displayed in the inspection mode.
6.7 Signal Transmission Error (Between Indoor Unit and Remote Controller)

<table>
<thead>
<tr>
<th>Error Code</th>
<th>U5</th>
</tr>
</thead>
</table>

**Method of Error Detection**

In case of controlling with 2 remote controllers, check the system using microcomputer if signal transmission between indoor unit and remote controller (main and sub) is normal.

**Error Decision Conditions**

Normal transmission does not continue for specified period.

**Supposed Causes**

- Connection of 2 main remote controllers (when using 2 remote controllers)
- Defective indoor unit PCB
- Defective remote controller
- Transmission error caused by noise

**Troubleshooting**

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

- Using 2 remote controllers? YES
- Is SS1 of both remote controllers set to MAIN? YES

  - Set one remote controller to SUB; turn the power supply off once and then back on.

  - Does operation return to normal when the power is turned off momentarily? NO

  - Replace the indoor unit PCB (control PCB).

  - Replace the indoor unit PCB.

  - Return to normal? YES

  - Return to normal? NO

- Using 2 remote controllers? NO

  - Do the service monitors of all the indoor units blink? YES

    - Replace the remote controller.

    - Return to normal? YES

    - Return to normal? NO

- Using 2 remote controllers? NO

  - Does operation return to normal when the power is turned off momentarily? NO

  - Replace the indoor unit PCB (control PCB).

  - Return to normal? YES

  - Return to normal? NO

There is possibility of malfunction caused by noise. Check the surrounding area and turn on again.

(|R22251|)
6.8 Signal Transmission Error (Between MAIN Remote Controller and SUB Remote Controller)

<table>
<thead>
<tr>
<th>Error Code</th>
<th>U8</th>
</tr>
</thead>
</table>

**Method of Error Detection**
In case of controlling with 2 remote controllers, check the system using microcomputer if signal transmission between MAIN remote controller and SUB remote controller is normal.

**Error Decision Conditions**
Normal transmission does not continue for specified period.

**Supposed Causes**
- Remote controller is set to SUB when using 1 remote controller
- Connection of 2 sub remote controllers (when using 2 remote controllers)
- Defective remote controller PCB

**Troubleshooting**

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

- Using 2 remote controllers?
  - NO
    - Is SS1 of remote controller PCB set to SUB?
      - NO
        - Set SS1 to MAIN; turn the power supply off once and then back on.
      - YES
        - Turn the power off and then back on. If a malfunction occurs, replace the remote controller PCB.
  - YES
    - Is SS1 of both remote controllers set to SUB?
      - NO
        - Turn the power off and then back on. If a malfunction occurs, replace the remote controller PCB.
      - YES
        - Set one remote controller to MAIN; turn the power supply off once and then back on.

(R21113)
6.9 Field Setting Abnormality

Error Code: UA

Error Decision Conditions: Incorrect field setting

Supposed Causes:
- Defective indoor unit PCB
- Defective outdoor unit PCB
- Improper power supply
- Indoor-outdoor, indoor-indoor unit transmission wiring
- Defective remote controller wiring

Troubleshooting:

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

- Is the remote controller connected to one or more indoor units?
  - YES: Connect the remote controller correctly.
  - NO: Is the remote controller wiring jumped between indoor units?
    - YES: Remove the jumper.
    - NO: Is the field setting correct?
      - YES: Set the field setting correctly.
      - NO: Continuously ON or OFF.

- Do the service monitors of all the indoor units blink?
  - Blink: Turn off the power. Then, turn on the power to restart the system.
  - NO: Are the wirings between indoor unit and outdoor unit correctly connected?
    - YES: Connect the wirings correctly.
    - NO: Could be incorrect wiring. Check again.

- Is 220~240 VAC between No.1 and 3 of the terminal board for transmission (indoor unit)?
  - NO: Check the power supply system inside the indoor unit.
  - YES: Are the wirings between indoor unit and outdoor unit correctly connected?
    - YES: Replace the indoor unit PCB (control PCB).
    - NO: Connect the wirings correctly.

(R22125)
7. Troubleshooting for Outdoor Unit

7.1 Refrigerant Shortage

<table>
<thead>
<tr>
<th>Error Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>U0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Outdoor Unit LED Display</th>
<th>A 1 2 3 4 5</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Method of Error Detection</th>
<th>Refrigerant shortage is detected by checking the input current value and the compressor output frequency. If the refrigerant is short, the input current is smaller than the normal value.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Error Decision Conditions</th>
<th>The following conditions continue for 7 minutes.</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>Input current ≤ A \times \text{output frequency} + B</td>
</tr>
<tr>
<td></td>
<td>Output frequency &gt; C</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>A (°C)</th>
<th>B (A)</th>
<th>C (Hz)</th>
</tr>
</thead>
<tbody>
<tr>
<td>27/1000</td>
<td>2</td>
<td>40</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

<table>
<thead>
<tr>
<th>Supposed Causes</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>Disconnection of the discharge pipe thermistor, indoor or outdoor heat exchanger thermistor, room or outdoor temperature thermistor</td>
</tr>
<tr>
<td></td>
<td>Closed stop valve</td>
</tr>
<tr>
<td></td>
<td>Refrigerant shortage (refrigerant leakage)</td>
</tr>
<tr>
<td></td>
<td>Poor compression performance of compressor</td>
</tr>
<tr>
<td></td>
<td>Defective electronic expansion valve</td>
</tr>
</tbody>
</table>


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

Troubleshooting

Check No. 01
Refer to P. 164

Check No. 12
Refer to P. 167

---

1. Any thermistor disconnected? YES → Replace the thermistor(s) in position.
   NO → Stop valve closed?
       YES → Open the stop valve.
       NO → Check for refrigerant shortage.

2. Oil oozing at relay pipe connections? YES → Repair the pipe flare or replace the union.
   NO → Oil oozing at internal piping?
       YES → Compressor vibrating too much?
           NO → Check the pipes for improper contact and correct them as required. Replace the cracked pipe.
           YES → Check the power transistor harness for loosening. Correct it as required. Also replace the cracked pipe.
       NO → Check No. 12
           NO → Electronic expansion valve functioning?
               YES → Replace the electronic expansion valve.
               NO → Refrigerant shortage error again?
                   NO → Completed.
                   YES → Check No. 01
                       NG → Replace the defective thermistor(s).
                       OK → Replace the outdoor unit PCB (main PCB).

3. Error again? NO → Completed.
   YES → Replace the compressor.

(R20401)
### 7.2 Low-voltage Detection or Over-voltage Detection

<table>
<thead>
<tr>
<th>Error Code</th>
<th>U2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Outdoor Unit LED Display</strong></td>
<td><img src="image" alt="Diagram" /></td>
</tr>
<tr>
<td><strong>Method of Error Detection</strong></td>
<td><img src="image" alt="Diagram" /></td>
</tr>
<tr>
<td><strong>Error Decision Conditions</strong></td>
<td><img src="image" alt="Diagram" /></td>
</tr>
<tr>
<td><strong>Supposed Causes</strong></td>
<td><img src="image" alt="Diagram" /></td>
</tr>
</tbody>
</table>

#### Error Code
- **U2**

#### Outdoor Unit LED Display
- ![Diagram](image)

#### Method of Error Detection
- **Indoor Unit**
  - The zero-cross detection of the power supply is evaluated by the indoor unit PCB.
- **Outdoor Unit**
  - **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
- **Indoor Unit**
  - There is no zero-cross detection in approximately 10 seconds.
- **Outdoor Unit**
  - **Low-voltage detection:**
    - The voltage detected by the DC voltage detection circuit is below 150 V for 0.1 second.
    - If the error repeats, the system is shut down.
    - Reset condition: Continuous run for about 60 minutes without any other error
  - **Over-voltage detection:**
    - An over-voltage signal is fed from the over-voltage detection circuit to the microcomputer.
    - 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
- Defective indoor unit PCB
Troubleshooting

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

1. 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.

2. Check the connection of the compressor harness.

   - Loose or disconnected? 
     - Yes: Reconnect the harness.
     - No: Does the outdoor fan rotate smoothly?

3. Does the outdoor fan rotate smoothly?

   - Yes: (Precaution before turning on the power again) Make sure the power has been off for at least 30 seconds.
     - Turn on the power. System restarted? (Repeat a few times.)
       - Yes: Disturbance factors
         - Noise
         - Power supply distortion
         - Check for such factors for a long term.
       - No: Error again within 3 minutes after turning on the power?
         - Yes: Replace the outdoor unit PCB (main PCB).
         - No: Replace the indoor unit PCB (control PCB).

   - No: Replace the indoor unit PCB (control PCB).
7.3  **Wiring Error Check Unexecuted**

<table>
<thead>
<tr>
<th>Error Code</th>
<th>U3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outdoor Unit LED Display</td>
<td>A 1 2 3 4 5</td>
</tr>
</tbody>
</table>

**Method of Error Detection**
The system checks if wiring error check is executed after clearing the memory.

**Error Decision Conditions**
An error is determined when the unit is operated by the remote controller without executing wiring error check after the memory was cleared.

**Supposed Causes**
The wiring error switch (SW3) may have been pressed for 10 seconds or more and the memory may have been deleted. The unit cannot be operated unless wiring error check is executed.

**Troubleshooting**

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

- Wiring error check executed?
  - NO
    - Conduct wiring error check. Refer to P.177 for detail.
  - YES
    - Wiring error check may not have been finished because of the trouble of indoor / outdoor unit. Conduct wiring error check again.

(R22429)
7.4 Unspecified Voltage (Between Indoor Unit and Outdoor Unit)/Anti-icing Control in Other Rooms

<table>
<thead>
<tr>
<th>Error Code</th>
<th>UA, UH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outdoor Unit LED Display</td>
<td>A 1 2 3 4 5</td>
</tr>
<tr>
<td>Method of Error Detection</td>
<td>A wrong connection is detected by checking the combination of indoor and outdoor units on the microcomputer.</td>
</tr>
<tr>
<td>Error Decision Conditions</td>
<td>Anti-icing control in other rooms</td>
</tr>
<tr>
<td></td>
<td>Unspecified internal and/or external voltages</td>
</tr>
<tr>
<td></td>
<td>Mismatching of indoor and outdoor units</td>
</tr>
<tr>
<td>Supposed Causes</td>
<td>Anti-icing function in other rooms</td>
</tr>
<tr>
<td></td>
<td>Power supply voltage is not as specified.</td>
</tr>
<tr>
<td></td>
<td>Wrong models interconnected</td>
</tr>
<tr>
<td></td>
<td>Wrong indoor unit PCB or outdoor unit PCB mounted</td>
</tr>
<tr>
<td>Troubleshooting</td>
<td>Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.</td>
</tr>
</tbody>
</table>

- Error displayed while operating? YES
  - Power supply voltage as specified? YES
    - Check the model combination.
  - Power supply voltage as specified? NO
    - Correct the power supply voltage.
- Error displayed while operating? NO
  - The anti-icing function is activated in other rooms. Refer to A5.

| Note: | Refer to Anti-icing control for indoor unit on page 140 for detail. |
7.5 **Anti-icing Control for Indoor Unit**

<table>
<thead>
<tr>
<th>Error Code</th>
<th>A5</th>
</tr>
</thead>
</table>

| Outdoor Unit LED Display | A ● 1 ● 2 ● 3 ● 4 ● 5 ● |

**Method of Error Detection**

During cooling operation, indoor unit icing is detected by checking the temperatures sensed by the indoor heat exchanger thermistor and room temperature thermistor that are located in a shut-down room.

**Error Decision Conditions**

- In cooling operation, the both conditions (A) and (B) are met for 5 minutes.
  - (A) Room temperature – Indoor heat exchanger temperature \( \geq 10^\circ \text{C} \) (18°F)
  - (B) Indoor heat exchanger temperature \( \leq -1^\circ \text{C} \) (30.2°F)
- If the error repeats, the system is shut down.
- Reset condition: 3-minute standby is over and the indoor heat exchanger temperature is above \( 0^\circ \text{C} \) (32°F)

**Supposed Causes**

- Wrong wiring or piping
- Defective electronic expansion valve
- Short-circuited air
- Defective indoor heat exchanger thermistor
- Defective room temperature thermistor
Troubleshooting

Check No. 01
Check the wiring and piping.

Check No. 12
Check the electronic expansion valve.

Check No. 01
Check the outdoor heat exchanger thermistor.

Check No. 01
Check the room temperature thermistor.

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

Replace the outdoor heat exchanger thermistor.

Replace the room temperature thermistor.

Replace the indoor unit PCB (control PCB) and then start the wiring error check function.

Replace the room temperature thermistor or indoor heat exchanger thermistor. Do the vacuum drying.

(R21923)
### 7.6 Outdoor Unit PCB Abnormality

<table>
<thead>
<tr>
<th>Error Code</th>
<th>E !</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outdoor Unit LED Display</td>
<td>A 1 2 3 4 5</td>
</tr>
<tr>
<td>Method of Error Detection</td>
<td>Detect within the program of the microcomputer.</td>
</tr>
<tr>
<td>Error Decision Conditions</td>
<td>The program of the microcomputer is in abnormal running order.</td>
</tr>
</tbody>
</table>

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

#### Troubleshooting

![Caution]

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

Turn on the power.

Error again?

- YES → Replace the outdoor unit PCB (main PCB).
- NO → Check if the outdoor unit is grounded.

Grounded?

- NO → Ground the system.
- YES → The cause can be external factors other than malfunction. Investigate the cause of noise.

(R21809)
7.7 OL Activation (Compressor Overload)

<table>
<thead>
<tr>
<th>Error Code</th>
<th>E5</th>
</tr>
</thead>
</table>

| Outdoor Unit LED Display | A Ḧ 1 Ḧ 2 ● 3 Ḧ 4 ● 5 ● |

| Method of Error Detection | A compressor overload is detected through compressor OL. |

| 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 for Outdoor Unit

**Check No.01**
Refer to P.164

**Check No.12**
Refer to P.167

**Check No.13**
Refer to P.168

**Check No.14**
Refer to P.168

**Note:** OL (Q1L) activating temperature: 130°C (266°F)
OL (Q1L) recovery temperature: 95°C (203°F)

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

- **Discharge pipe thermistor disconnected?**
  - YES: Insert the thermistor in position.
  - NO:
    - NG: Replace the discharge pipe thermistor.
    - OK:
      - Check the discharge pipe thermistor.

- **Is the connector S40 properly connected?**
  - NO: Connect the connector S40 properly.
  - YES: Disconnect the connector S40 from the PCB.

- **Check the resistance between the 2 terminals on connector S40.**
  - Nearly 0 Ω:
    - Disconnect the 2 terminals of the OL (Q1L).
    - Check the resistance between the 2 terminals of the OL (Q1L).
    - Nearly 0 Ω: Replace the OL harness.
    - Resistance ∞: Replace the OL (Q1L).

- **Check No. 12**
  - NG: Replace the electronic expansion valve or the coil.
  - OK:
    - Check No. 13
      - NG: Replace the four way valve or the coil. Replace the outdoor unit PCB (main PCB).
      - OK:
        - Check No. 14
          - NG: Refer to the refrigerant line check procedure.
          - OK: Replace the outdoor unit PCB (main PCB).

- **Replace the OL harness.**

- **Check the electronic expansion valve.**
  - NG: Replace the electronic expansion valve or the coil.
  - OK:
    - Check the four way valve.
    - NG: Replace the four way valve or the coil. Replace the outdoor unit PCB (main PCB).
    - OK:
      - Check the refrigerant line.
      - NG: Refrigerant shortage, Water mixed, Stop valve
      - OK: Refer to the refrigerant line check procedure.
7.8 Compressor Lock

Error Code: E6

Outdoor Unit LED Display: A 1 2 3 4 5

Method of Error Detection: A compressor lock is detected by checking the compressor running condition through the position detection circuit.

Error Decision Conditions:
- Judging from the current waveform generated when high-frequency voltage is applied to the compressor.
- If the error repeats, the system is shut down.
- Reset condition: Continuous run for about 5 minutes without any other error

Supposed Causes:
- Closed stop valve
- Defective outdoor unit PCB
- Defective compressor
- Defective electronic expansion valve

Troubleshooting:

Check No. 12 Refer to P.167
Check No. 15 Refer to P.169

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.

Caution:

Stop valve closed? YES

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

NO

Check No. 15
Check with the inverter analyzer.

Inverter analyzer: RSUK0917C

Any LED off? YES

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

NO

Emergency stop without compressor running? YES

Replace the compressor.

NO

System shut down after errors repeated several times? YES

Replace the compressor.

NO

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

(P21067)
7.9 DC Fan Lock

Error Code

Outdoor Unit LED Display

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 30 seconds even when the fan motor is running.
- If the error repeats, the system is shut down.
- Reset condition: Continuous run for about 5 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.170

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? YES
NO

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.

Reconnect the connector.

Remove the foreign matters.

Replace the outdoor fan motor.

Replace the outdoor unit PCB (main PCB).

★ FU2
7.10 Input Overcurrent Detection

Error Code  
E8

Outdoor Unit LED Display  
A 1 2 3 4 5

Method of Error Detection  
Detected by checking the input current value

Error Decision Conditions  
- The input current is at a certain value (depending on the condition) for 2.5 seconds.
- The compressor halts if the error occurs, and restarts automatically after 3-minute standby.

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

Troubleshooting

Check No. 15  
Refer to P.169

Check No. 17  
Refer to P.171

Check No. 18  
Refer to P.171

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.

![Flowchart Image]

Check No. 17  
Check the installation condition.

Start operation and measure the input current.

Input current flowing above its stop level?

NO  
Replace the outdoor unit PCB (main PCB).

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

Check No. 15  
Check with the inverter analyzer.

* Inverter analyzer: RSUK0917C

Any LED off?

YES  
Correct the power supply or 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.
7.11 Four Way Valve Abnormality

**Error Code**

EA

**Outdoor Unit LED Display**

A 1 2 3 4 5

**Method of Error Detection**

The liquid pipe thermistor and the outdoor heat exchanger thermistor are checked to see if they function within their normal ranges in the operating mode.

**Error Decision Conditions**

A following condition continues for A seconds after the compressor has started.

<table>
<thead>
<tr>
<th>Condition</th>
<th>A (seconds)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other than below</td>
<td>240</td>
</tr>
<tr>
<td>Heating (when outdoor temperature is below -15°C (5°F))</td>
<td>460</td>
</tr>
</tbody>
</table>

- **Cooling operation**
  - The lowest liquid pipe temperature among the rooms in operation – Tde > 45°C (81°F)
- **Heating operation**
  - The highest liquid pipe temperature among the rooms in operation – Tde < 0°C (0°F)

Tde: outdoor heat exchanger temperature

**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.164

Check No.13
Refer to P.168

Check No.14
Refer to P.168

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

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 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 the thermistors.

NG → Replace the defective thermistor(s).

OK

Check No. 14
Check the refrigerant line.

NG

* Refrigerant shortage
* Water mixed
* Stop valve

Refer to the refrigerant line check procedure.

OK → Replace the four way valve (defective or dust-clogged).

(R20405)
7.12 Discharge Pipe Temperature Control

Error Code

<table>
<thead>
<tr>
<th>Outdoor Unit LED Display</th>
</tr>
</thead>
<tbody>
<tr>
<td>A 1 2 3 4 5</td>
</tr>
</tbody>
</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 is dropped below B.

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>120°C (248°F)</td>
<td>107°C (224.6°F)</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.164

Check No.12

Refer to P.167

Check No.14

Refer to P.168

Caution

- Discharge pipe thermistor
- Outdoor heat exchanger thermistor
- Outdoor temperature thermistor
- Refrigerant shortage
- Four way valve
- Water mixed
- Stop valve

Replace the defective thermistor(s).

Replace the electronic expansion valve or the coil.

Refer to the refrigerant line check procedure.

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

Error Code: F6

Outdoor Unit LED Display: A 1 2 3 4 5

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 rises above 65°C (149°F).
- The error is cleared when the temperature drops below about 49°C (120.2°F).

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

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.164
Check the outdoor heat exchanger thermistor.

Check No. 12
Refer to P.167
Check the discharge pressure.

Check No. 17
Refer to P.171
Check the installation condition.

Check No. 18
Refer to P.171
Check the electronic expansion valve.

Check No. 19
Refer to P.172
Check the outdoor fan.

Check No. 01
Check the outdoor heat exchanger thermistor.

NG

OK

NG

OK

NG

OK

NG

OK

NG

OK

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

**Error Code**

**Outdoor Unit LED Display**

[A] 1 2 3 4 5

**Method of Error Detection**

- The system checks the power supply voltage and the DC voltage before the compressor starts.
- The system checks the DC current of the compressor right after the compressor starts.

---

**Error Decision Conditions**

- The power supply voltage and the DC voltage is obviously low or high.
- The DC current of the compressor does not flow when the compressor starts.

**Supposed Causes**

- Disconnection of reactor
- Disconnection of compressor harness
- Defective outdoor unit PCB
- Defective compressor
Troubleshooting

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

- Turn off the power.
  - Check the connection of the reactor.
    - Connection OK?
      - NO: Connect the reactor properly.
      - YES: Check the connection of the compressor.
        - Connection OK?
          - NO: Connect the compressor properly.
          - YES: Disconnect the reactor from the outdoor unit PCB and measure the resistance value between reactor terminals with multimeter.
            - 10 Ω or less?
              - NO: Replace the reactor.
              - YES: Check the compressor.
                - 10 Ω or less between each terminal?
                  - NO: Replace the compressor or the compressor relay harness.
                  - YES: Restart the operation again and if the error occurs again, replace the outdoor unit PCB (main PCB).

- Check the connection of the compressor.
  - Connection OK?
    - NO: Disconnect the compressor relay harness from the outdoor unit PCB and measure the resistance value between the each 3 terminals of the compressor with multimeter.
    - YES: Replace the compressor.

Caution
### 7.15 Position Sensor Abnormality

<table>
<thead>
<tr>
<th>Error Code</th>
<th>H6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outdoor Unit LED Display</td>
<td>A 1 2 3 4 5</td>
</tr>
</tbody>
</table>

#### Method of Error Detection
A compressor start-up failure is detected by checking the compressor running condition through the position detection circuit.

#### Error Decision Conditions
- If the error repeats, the system is shut down.
- Reset condition: Continuous run for about 5 minutes without any other error

#### Supposed Causes
- Power supply voltage is not as specified.
- Disconnection of the compressor harness
- Defective compressor
- Defective outdoor unit PCB
- Start-up failure caused by the closed stop valve
- Input voltage is outside the specified range.
Troubleshooting

Check No.15 Refer to P.169

Check No.18 Refer to P.171

Check No.20 Refer to P.172

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

- **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). (R22270)

- **Check No.18** Check the discharge pressure.

  - OK?
    - NO: Replace the stop valve.
    - YES: Normal?

  - NO: Replace the outdoor unit PCB (main PCB).
  - YES: Check the connection.

- **Check No. 20** Check the short circuit of the diode bridge.

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

  - * Inverter analyzer: RSUK0917C

- **Check No. 18** Check the discharge pressure.

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

  - NO: Replace the stop valve.
  - YES: Normal?
7.16 CT or Related Abnormality

<table>
<thead>
<tr>
<th>Error Code</th>
<th>H8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outdoor Unit LED Display</td>
<td>A 1 2 3 4 5</td>
</tr>
</tbody>
</table>

Method of Error Detection
A CT or related error is detected by checking the compressor running frequency and CT-detected input current.

Error Decision Conditions
- The compressor running frequency is more than A Hz and input current is less than B A.

<table>
<thead>
<tr>
<th>A (Hz)</th>
<th>B (A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>55</td>
<td>0.5</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 power module
- Broken or disconnected wiring
- Defective reactor
- Defective outdoor unit PCB
Troubleshooting

Check No. 15
Refer to P.169
Turn off the power. Then, turn on the power to restart the system.

Check No. 21
Refer to P.173
Start operation.

* Running current as shown at right with relay cable 1 or 2?

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

YES
Capacitor charged when the indoor unit or outdoor unit main relay turns on

NO

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

Measure the rectifier input voltage.

Within 320 ± 100 VDC?

NO

Check No. 15
Check with the inverter analyzer.

* Inverter analyzer: RSUK0917C

YES

Turn off the power and reconnect the harnesses. Then turn on the power again and restart operation.

Any LED OFF?

NO

Compressor running?

NO

Replace the compressor.

YES

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

Voltage within the allowable range (Power supply voltage ± 15%)?

NO

Replace the outdoor unit PCB (main PCB).

YES

Replace the outdoor unit PCB (main PCB).

(R22271)
7.17 Thermistor or Related Abnormality (Outdoor Unit)

<table>
<thead>
<tr>
<th>Error Code</th>
<th>J8, J3, J6, J8, J9, P4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outdoor Unit LED Display</td>
<td>A 1 2 3 4 5</td>
</tr>
</tbody>
</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.
- The system is shut down if all the units are judged as the J8 error.

**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

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

In case of H9, J3, J6, J8, J9

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

Check No. 01
Refer to P.164

Check the thermistor resistance value.

Check No. 01
Check the indoor heat exchanger thermistor resistance value in the heating operation.

Error displayed again on remote controller?

Turn on the power again.

NO

YES

Reconnect the connectors or thermistors.

Normal?

NO

YES

Replace the defective thermistor(s).

Outdoor temperature thermistor
Discharge pipe thermistor
Outdoor heat exchanger thermistor
Liquid pipe thermistor
Gas pipe thermistor

Cooling: Outdoor heat exchanger thermistor
Heating: Indoor heat exchanger thermistor

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
J8: Liquid pipe thermistor
J9: Gas pipe thermistor

(R21118)
# 7.18 Electrical Box Temperature Rise

**Error Code**

L3

**Outdoor Unit LED Display**

A 1 2 3 4 5

**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 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>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>100°C (212°F)</td>
<td>70°C (158°F)</td>
<td>85°C (185°F)</td>
</tr>
</tbody>
</table>

**Supposed Causes**

- Defective outdoor fan motor
- Short circuit
- Defective radiation fin thermistor
- Disconnection of connector
- 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. 17** Refer to P.171
- **Check No. 19** Refer to P.172

**Caution**

Turn off the power. Then, turn on the power to restart the system.

**WARNING**

To cool the electrical components, the outdoor fan starts when the radiation fin temperature rises above C. The outdoor fan stops when the radiation fin temperature drops below B.

- Error again or outdoor fan activated?
  - YES: Check the radiation fin temperature.
  - NO: Check the installation condition. Go to Check No. 17.
- 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).
- Check No. 19
  - Check the outdoor fan.
  - NG: Replace the outdoor unit PCB (main PCB).
  - OK: Check the installation condition. Go to Check No. 17.
  - Radiation fin dirty?
    - YES: Clean up the radiation fin.
    - NO: Check the radiation fin temperature.
### 7.19 Radiation Fin Temperature Rise

**Error Code**

| [L 4] |

**Outdoor Unit LED Display**

A 1 2 3 4 5

**Method of Error Detection**

A radiation fin temperature rise is detected by checking the radiation fin temperature with the compressor on.

**Error Decision Conditions**

- The radiation fin temperature with the compressor on is above \( A \).
- The error is cleared when the temperature drops below \( B \).

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>90°C (194°F)</td>
<td>85°C (185°F)</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 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**

![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.171

**Check No. 19**

Refer to P.172

1. Error displayed again?
   - NO
   - YES Has the PCB been replaced?
     - NO
     - YES Check if silicone grease is applied properly on the radiation fin. If not, apply the silicone grease.
     - NO Check the radiation fin temperature.
       - Above \( A \) °C?
         - NO Replace the outdoor unit PCB (main PCB).
         - YES
2. Check No. 19
   - Check the outdoor fan.
     - NG Replace the outdoor fan motor. Correct the connectors and fan motor leads. Replace the outdoor unit PCB (main PCB).
     - OK
       - Radiation fin dirty?
         - NO Check the installation condition. Go to Check No. 17.
         - YES Clean up the radiation fin.

**Note:** Refer to Silicone Grease on Power Transistor / Diode Bridge on page 197 for detail.
7.20 Output Overcurrent Detection

<table>
<thead>
<tr>
<th>Error Code</th>
<th>L5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outdoor Unit LED Display</td>
<td>A 1 2 3 4 5</td>
</tr>
</tbody>
</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 5 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
- Supply voltage is not as specified.
- Defective compressor
Troubleshooting

Check No.15
Refer to P.169

Check No.17
Refer to P.171

Check No.18
Refer to P.171

Check No.22
Refer to P.174

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

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

Replace the compressor.

* Inverter analyzer: RSUK0917C

Monitor the power supply voltage, discharge and suction pressures, and other factors for a long term.

Possible causes

* Momentary drop of power supply voltage
* Compressor overload
* Short circuit

Error again?

NO

Not a malfunction. Keep observing. Check the connectors and other components.

YES

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

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

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

Service Diagnosis
8. Check

8.1 Thermistor Resistance Check

Check No.01 Disconnect the connectors of the thermistors from the PCB, and measure the resistance of each thermistor using multimeter.

The data is for reference purpose only.

<table>
<thead>
<tr>
<th>Thermistor temperature</th>
<th>Resistance (kΩ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>°C</td>
<td>°F</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>
<tr>
<td>15</td>
<td>59</td>
</tr>
<tr>
<td>20</td>
<td>68</td>
</tr>
<tr>
<td>25</td>
<td>77</td>
</tr>
<tr>
<td>30</td>
<td>86</td>
</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) = 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.
8.2 Indoor Fan Motor Connector Check

Check No.02 CTXS, FTXS, 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).

S1

7  Motor power supply voltage (310 – 340 VDC)
6  Unused
5  Unused
4  GND
3  Motor control voltage (15 VDC)
2  Rotation command voltage (1 – 6.5 VDC)
1  Rotation pulse input

8.3 Hall IC Check

Check No.04 CDXS, FDXS Series
1. Check the connector connection.
2. With the power on, operation off, and the connector connected, check the following.
   (1) Output voltage of about 5 V between pins 1 and 3.
   (2) Generation of 3 pulses between pins 2 and 3 when the indoor fan motor is operating.

If NG in step (1) → Defective PCB → Replace the PCB (control PCB).
If NG in step (2) → Defective Hall IC → Replace the indoor fan motor.
If OK in both steps (1) and (2) → Replace the PCB (control PCB).

S7

1  Gray (power supply)
2  Purple (signals)
3  Blue (grounding)
8.4 Power Supply Waveform 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]  [Fig.2]
### 8.5 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 inserted in the PCB. Match the EV unit number and the connector number.
2. Turn the power off and on again, and check if all the EVs generate a latching sound.
3. If any of the EVs does not generate a latching sound in the above step 2, disconnect that connector and check the continuity using a multimeter. Check the continuity between the pins 1 - 6, 3 - 6, 2 - 5, 4 - 5 (between the pins 1 - 5, 2 - 5, 3 - 5, 4 - 5 for the harness 5P models). If there is no continuity between the pins, the EV coil is faulty.
4. If no EV generates a latching sound in the above step 2, the outdoor unit PCB is faulty.
5. If the continuity is confirmed in the above step 3, mount a good coil (which generated a latching sound) in the EV unit that did not generate a latching sound, and check if that EV generates a latching sound.
   - If a latching sound is generated, the outdoor unit PCB is faulty.
   - If a latching sound is not generated, the EV unit is faulty.

**Note:**

Please note that the latching sound varies depending on the valve type.

If the system keeps operating with a defective electronic expansion valve, the following problem may occur.

<table>
<thead>
<tr>
<th>Valve opening position</th>
<th>Possible problem</th>
<th>Check method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open</td>
<td>Cooling:</td>
<td>Reset power supply and conduct cooling operation unit by unit.</td>
</tr>
<tr>
<td></td>
<td>■ Flowing noise of refrigerant in the unit which is not in operation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>■ Water leakage at the unit which is not in operation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>■ Operation half due to anti-icing function</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Heating:</td>
<td>Check the liquid pipe temperature of no-operation unit.</td>
</tr>
<tr>
<td></td>
<td>■ Flowing noise of refrigerant in the unit which is not in operation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>■ The unit does not heat the room.</td>
<td></td>
</tr>
<tr>
<td>Close</td>
<td>Cooling:</td>
<td>Reset power supply and conduct cooling operation unit by unit.</td>
</tr>
<tr>
<td></td>
<td>■ The problem unit does not cool the room.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>■ Only the problem unit is in operation, the unit starts pump down. (The low pressure of the unit becomes vacuum.)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>■ Abnormal discharge pipe temperature</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Heating:</td>
<td>Check the low pressure.</td>
</tr>
<tr>
<td></td>
<td>■ Refrigerant shortage due to stagnation of liquid refrigerant inside the faulty indoor unit</td>
<td></td>
</tr>
<tr>
<td></td>
<td>■ The unit does not heat the room.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>■ Abnormal discharge pipe temperature</td>
<td></td>
</tr>
</tbody>
</table>

---

(R16019) 

(R16020)
### 8.6 Four Way Valve Performance Check

**Check No.13**

- **Turn off the power. Then, turn on the power to restart the system.**

- **Start heating operation.**

  - Four way valve coil
    - Cooling / Dry / Defrost: Not energized
    - Heating: energized

  - S80 voltage at 208 - 230 VAC with compressor on? (Fig. 1)
    - **NO** → Replace the outdoor unit PCB (main PCB).
    - **YES** → Disconnect the four way valve coil from the connector and check the continuity.

  - Four way valve coil resistance at 1000 ~ 2000 Ω?
    - **NO** → Replace the four way valve coil.
    - **YES** → Replace the four way valve.

**Note:**
- (Fig. 1) Voltage at S80 208 - 230 VAC

### 8.7 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 section on refrigerant shortage detection.

**Note:**
- Replace the refrigerant.
8.8 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 the power off.

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 the power transistor test operation from the outdoor unit.
1) Press the forced cooling operation ON/OFF switch for 5 seconds. (Refer to page 176 for the position.)
   → Power transistor test operation starts.
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 (IPM1) 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.

8.9 Rotation Pulse Check on the Outdoor Unit PCB

Check No.16
<Outdoor fan motor>
Make sure that the voltage of 320 V is applied.
1. Set operation off and power off. Disconnect the connector S70.
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 ~ 15 VDC.
5. Keep operation off and power off. Connect the connector S70.
6. Check whether 4 pulses (0 ~ 15 VDC) are input at the pins 1 - 4 when the outdoor 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).
### 8.10 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.)

### 8.11 Discharge Pressure Check

**Check No. 18**

Discharge pressure check

- **High?**
  - **NO**
    - Replace the compressor.
  - **YES**

- Is the stop valve open?
  - **NO**
    - Open the stop valve.
  - **YES**

- Is the connection pipe deformed?
  - **YES**
    - Replace the pipe installed at the site.
  - **NO**

- Is the air filter or indoor / outdoor heat exchanger dirty?
  - **YES**
    - Clean the dirty air filter or indoor / outdoor heat exchanger.
  - **NO**

(R21121)

(R19394)
8.12 Outdoor Fan System Check

Check No.19 DC motor

Check the outdoor fan system.

Is the outdoor fan running?

Yes

No

Fan motor lead wire connector disconnected?

Yes

No

Go to Check No. 16.

Outdoors fan system is functioning.

Reconnect the connector.

8.13 Main Circuit Short Check

Check No.20

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

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

<table>
<thead>
<tr>
<th>Resistance is OK.</th>
<th>Resistance is NG.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive terminal (+) of digital multimeter</td>
<td>~ (2, 3)</td>
</tr>
<tr>
<td>Negative terminal (–) of digital multimeter</td>
<td>+ (4)</td>
</tr>
<tr>
<td>Resistance is OK.</td>
<td>several k$\Omega$ ~ several M$\Omega$</td>
</tr>
<tr>
<td>Resistance is NG.</td>
<td>0 $\Omega$ or $\infty$</td>
</tr>
</tbody>
</table>

(R21195)
8.14 Capacitor Voltage Check

Check No.21

Before this check, be sure to check the main circuit for short circuit. With the circuit breaker still on, measure the voltage according to the drawing of the model in question. Be careful never to touch any live parts.

- To prevent an electrical shock, use a multimeter to check that the voltage between FU2 and DC– is 50 V or less.
- The surface of the test points (DC–) may be covered with the coating. Be sure to make firm contact between the multimeter probes and the test points.
8.15 Power Module Check

Check No.22  Check to make sure that the voltage between (+) and (–) of the power module is about 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 (+) or (–) terminal of the power module and the U, V, or W terminal 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>Power module (–)</td>
<td>UVW</td>
<td>Power module (+)</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>

![Diagram of the power module and compressor connections](image)
Part 7
Trial Operation and Field Settings

1. Pump Down Operation ................................................................. 176
2. Wiring Error Check Function ......................................................... 177
3. Trial Operation ............................................................................ 179
   3.1 CTXS, FTXS, CDXS, FDXS, FVXS Series ................................. 179
   3.2 FFQ Series ............................................................................. 181
4. Field Settings ............................................................................... 183
   4.1 Outdoor Unit ........................................................................... 183
   4.2 CTXS, FTXS, CDXS, FDXS, FVXS Series ................................. 185
   4.3 FFQ Series ............................................................................. 190
5. Silicone Grease on Power Transistor / Diode Bridge .................. 197
1. Pump Down Operation

Pump Down Operation

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

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

Forced cooling operation

| Procedure | 1. Turn the power off.  
| 2. Remove the switch cover.  
| 3. Turn off all the switches of SW5 and SW6 on the service monitor PCB.  
| 4. Set the operation mode switch (SW2) to COOL.  
| 5. Screw the switch cover again.  
| 6. Turn the power on.  
| 7. Wait until the 3-minute standby mode finishes.  
| 8. Press the forced cooling operation ON/OFF switch (SW1). |

Command frequency | 30 Hz

Ending conditions | 1. Press the forced cooling operation ON/OFF switch (SW1) again.  
2. The operation ends automatically after 60 minutes.
2. Wiring Error Check Function

Outline
Wiring error check function is designed for the microcomputer to correct wiring errors itself. If local wiring is unclear in the case of buried piping, for example, just press the wiring error check switch on the outdoor unit. Even if the connections for Room A and Room B are confused, the system may run without a hassle. Note that this check function does not work in the following cases.
- For 3-minute standby period after the power is turned on or after the compressor has stopped.
- When the outdoor temperature is below 5°C (41°F).
- If the indoor unit is in trouble (also in case of all-room transmission failure).
When the piping and wiring are perfect, there is no need to use this function.

Procedure
1. Press the wiring error check switch (SW3) on the service monitor PCB of the outdoor unit, and the wiring error check function is activated.
2. In about 15 ~ 20 minutes, the check finishes automatically.
3. When the check is over, the service monitor LED indicators start blinking.

<table>
<thead>
<tr>
<th>LED</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Judgment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status</td>
<td>Blinking one after another</td>
<td>Self-correction completed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>All blinking</td>
<td>Self-correction impossible</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Any of the LEDs stay on</td>
<td>Emergency stop</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Self-correction completed...The LED indicators 1 ~ 2 (18 class), or 1 ~ 3 (24 class) blink one after another.
- Self-correction impossible...The LED indicators blink all at the same time.
  - Transmission failure occurs at any of the indoor units.
  - The indoor heat exchanger thermistor is disconnected.
  - An indoor unit is in trouble (if a trouble occurs during the wiring error checking).
- Emergency stop...If any of the LED indicators stay on, follow the diagnostic procedure.
Wiring Error Check Function

Details

- Refrigerant flows from Port A and on. The indoor heat exchanger temperatures are detected one by one to check up the matching between the piping and wiring.
- With this function on, freezing (crackling) noise may be heard from the indoor unit. This is not a problem. (This is because the indoor heat exchanger temperature is made to drop below 0°C (32°F) in order to increase the detection accuracy.)
- The indoor fan turns on or off during wiring checking.
- The results can be checked by looking at the service monitor LED indicators, when the wiring error checking is over. The LED indicators stop blinking when the ordinary operation starts.
  
  LED1...Room A wiring, LED2...Room B wiring
  1st blinking LED...Port A piping, 2nd blinking LED...Port B piping
  The 1st blinking LED means the room that is connected with Port A. The 2nd blinking LED means the one connected with Port B.

Ex: Suppose the LED indicators are blinking as follows.

The above means that Port A is connected with Room B, and Port B with Room A (or self-corrected this way.)

Note:

1. Wrongly connected liquid and gas pipes cannot be self-corrected. Be sure to make the liquid pipe and the gas pipe in pairs.
2. To cancel the wiring error check procedure halfway, press the wiring error check switch again.
   In this case, the memory of the microcomputer returns to its initial status (Room A wiring → Port A piping, Room B wiring → Port B piping).
3. When replacing the outdoor unit PCB, be sure to use this function.
4. Make the priority room setting after wiring error check. If you set the priority room before wiring error check, the prioritized room may be changed after self-correction.
3. Trial Operation

3.1 CTXS, FTXS, CDXS, FDXS, FVXS Series

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).
   - For protection, the system does not start for 3 minutes after it is turned off.

ARC452 Series
(1) Press ON/OFF button to turn on the system.
(2) Press both of TEMP buttons and MODE button at the same time.
(3) Press MODE button twice.
   (T appears on the display to indicate that trial operation is selected.)
(4) Press MODE button and select the operation mode.
(5) Trial operation terminates in about 30 minutes and switches into normal mode. To quit trial operation, press ON/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 "t" (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.
3.2 FFQ Series

3.2.1 Checkpoints

To carry out test operation, check the following:
- Check that the temperature setting of the remote controller is at the lowest level in cooling operation or use test operation mode.
- Go through the following checklist:

<table>
<thead>
<tr>
<th>Checkpoints</th>
<th>Cautions or warnings</th>
</tr>
</thead>
</table>
| Are all units securely installed? | • Dangerous for turning over during storm  
                                   • Possible damage to pipe connections |
| Is the ground wire installed according to the applicable local standard? | Dangerous if electric leakage occurs. |
| Are all air inlets and outlets of the indoor and outdoor units unobstructed? | • Poor cooling  
                                   • Poor heating |
| Does the drain flow out smoothly? | Water leakage |
| Is piping adequately heat-insulated? | Water leakage |
| Have the connections been checked for refrigerant leakage? | • Poor cooling  
                                   • Poor heating  
                                   • Stop |
| Is the power supply voltage conform to the specifications on the name plate? | Incorrect operation |
| Are the cable sizes as specified and according to local regulations? | Damage of cables |
| Are the remote controller signals received by the unit? | No operation |

3.2.2 Test operation

BRC1E71/72/73

Note: The illustrations are for BRC1E72 as representative.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
<th>Remote controller</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before test operation</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Turn on the power supply more than 6 hours before test operation.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Open the gas stop valve.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Open the liquid stop valve.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>How to activate test operation</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Press and hold Cancel button for 4 seconds to enter Service Settings menu.</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Use the ▼ buttons to select Test Operation and push Menu/OK button.</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Test Operation is displayed on the bottom of the basic screen.</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Push On/Off button within 10 seconds to start the test operation.</td>
<td></td>
</tr>
</tbody>
</table>
### How to check airflow direction

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Push <strong>Menu/OK</strong> button to enter <strong>Main Menu</strong>.</td>
</tr>
<tr>
<td>9</td>
<td>Use ▼ buttons to select <strong>Airflow Direction</strong> and push <strong>Menu/OK</strong> button.</td>
</tr>
<tr>
<td>10</td>
<td>Check that the airflow direction is actuated according to the setting and push <strong>Menu/OK</strong> button.</td>
</tr>
</tbody>
</table>

### How to deactivate test operation

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>Press and hold <strong>Cancel</strong> button for 4 seconds to enter <strong>Service Settings</strong> menu.</td>
</tr>
<tr>
<td>12</td>
<td>Use ▼ buttons to select <strong>Test Operation</strong> in the menu and push <strong>Menu/OK</strong> button.</td>
</tr>
</tbody>
</table>

---

**BRC7E830**

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Turn on the power supply more than 6 hours before test operation.</td>
</tr>
<tr>
<td>2</td>
<td>Open the gas stop valve.</td>
</tr>
<tr>
<td>3</td>
<td>Open the liquid stop valve.</td>
</tr>
<tr>
<td>4</td>
<td>Set to cooling operation with the remote controller and start operation by pressing <strong>ON/OFF</strong> button.</td>
</tr>
<tr>
<td>5</td>
<td>Press <strong>INSPECTION/TEST</strong> button ( ✂️TEST ✂️) 2 times and operate at test operation mode for 3 minutes.</td>
</tr>
<tr>
<td>6</td>
<td>Press <strong>SWING</strong> button to make sure the unit is in operation.</td>
</tr>
<tr>
<td>7</td>
<td>Press <strong>INSPECTION/TEST</strong> button ( ✂️TEST ✂️) and operate normally.</td>
</tr>
<tr>
<td>8</td>
<td>Confirm all the function of unit according to the operation manual.</td>
</tr>
<tr>
<td>9</td>
<td>If the decoration panel has not been installed, turn off the power after the test operation.</td>
</tr>
</tbody>
</table>
4. Field Settings

4.1 Outdoor Unit

4.1.1 Priority Room Setting

Outline

1. Operation mode
   The operation mode of the prioritized room takes precedence. For example, when the
   prioritized indoor unit starts cooling operation, the other indoor units which have been in heating
   operation enter the standby mode. Heating operation will resume if the prioritized indoor unit
   stops cooling operation.

2. POWERFUL operation
   The electronic expansion valves are controlled to provide more capacity to the prioritized room
   and the capacities for the other indoor units will be slightly reduced.

3. OUTDOOR UNIT QUIET operation
   When the OUTDOOR UNIT QUIET operation is selected in the prioritized room, the outdoor
   unit runs quietly.
   (Without priority room setting, OUTDOOR UNIT QUIET operation starts only when the function
   is set for all the operating indoor units.)

Procedure

1. Turn the circuit breaker off before changing the setting.
2. Turn on the one of the switches of the SW4 on the service monitor PCB.
   Only one room can be set as the priority room.
3. Turn the power on.

(R22006)
4.1.2 COOL/HEAT Mode Lock

Use S15 connector to set the unit to cooling only or heating only.
Setting to heating only (H): Short-circuit the pins 1 and 3 of the connector S15.
Setting to cooling only (C): Short-circuit the pins 3 and 5 of the connector S15.
The following specifications apply to the connector housing and pins.

- JST products:
  - Housing: VHR-5N
  - Pin: SVH-21T-1, 1

Note that forced operation is also possible in cooling/heating mode.

4.1.3 NIGHT QUIET Mode

Outline

If NIGHT QUIET mode is to be used, initial settings must be made when the unit is installed.
Explain the function of NIGHT QUIET mode, as described below, to the customer, and confirm whether or not the customer wants to use NIGHT QUIET mode.

NIGHT QUIET mode function reduces operating noise of the outdoor unit at nighttime. This function is useful if the customer is worried about the effects of the operating noise on the neighbors. However, if NIGHT QUIET mode is running, cooling capacity is reduced.

Procedure

Turn on the SW6-1 on the service monitor PCB of the outdoor unit.
4.2 CTXS, FTXS, CDXS, FDXS, FVXS Series

4.2.1 Model Type Setting

ARC452A21, ARC452A23

- The remote controller is common to the heat pump model and cooling only model.
- Make sure the DIP switch is set to the left side. The heating operation will not be available when the DIP switch is set to the right side.

Caution: Replace the remote controller if you cut the jumper on the left side. The heating operation will not be available when the jumper on the left side is cut.

ARC466A21

- The remote controller is common to the heat pump model and cooling only model.

Caution: Never cut this jumper.

(R18201) (R18451)
### 4.2.2 Temperature Display Switch

You can select Fahrenheit or Celsius for temperature display.

**ARC452A21, ARC452A23**
- Press TEMP\(\uparrow\) and TEMP\(\downarrow\) buttons at the same time for 5 seconds to change the unit of temperature display.

**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.
4.2.3 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 address. Both the indoor unit PCB and the wireless remote controller need alteration.

The method of address setting varies depending on the type of indoor unit and the series of wired remote controller. Refer to the following pages for the appropriate indoor unit and wireless remote controller.

CTXS, FTXS Series

(1) Remove the front grille.
(2) Remove the electrical box.
(3) Remove the shield plate of the electrical box.
(4) Cut the address setting jumper JA on the PCB.

CTXS07LVJU, FTXS09/12LVJU  FTXS15/18LVJU

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.

CDXS, FDXS Series

Cut the jumper JA on 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.
**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.
Wireless Remote Controller

(1) Remove the cover and take it off.
(2) Cut the address setting jumper.

**ARC452 series**

![Jumper Diagram](R12065)

**ARC466 series**

![Jumper Diagram](R18416)

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

### 4.2.4 Jumper Settings

<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

<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, refer to the following pages.

- CCTX07LVJU, FTXS09/12LVJU: page 16
- FTXS15/18LVJU: page 18
- FDXS09/12LVJU, CDXS15/18LVJU: page 20
- FVXS09/12/15/18NVJU: page 22
4.3 FFQ Series

4.3.1 How to Change the Field Settings

Outline

If optional accessories are mounted on the indoor unit, the indoor unit setting may have to be changed. Refer to the instruction manual for each optional accessory.

BRC1E71/72/73

Note: The illustrations are for BRC1E72 as representative.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
<th>Remote controller</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Press and hold Cancel button for 4 seconds to enter Service Settings menu.</td>
<td><img src="R18831" alt="Service Settings menu" /></td>
</tr>
<tr>
<td>2</td>
<td>Use ▼▲ buttons to select Field Settings and push Menu/OK button.</td>
<td><img src="R18832" alt="Field Settings menu" /></td>
</tr>
<tr>
<td>3</td>
<td>Use ▼▲ buttons to select the desired Mode.</td>
<td><img src="R18831" alt="Field Settings menu" /></td>
</tr>
<tr>
<td>4</td>
<td>During group control, when setting by each indoor unit (Mode 20, 21, 22 or 23 have been selected), push the ▼ button to highlight and ▲ buttons to select the Unit No. to be set. This operation is unnecessary when setting by group.</td>
<td><img src="R18833" alt="Field Settings menu" /></td>
</tr>
</tbody>
</table>
| 5    | Highlight the second code No. to be changed using ◄► buttons, and use ▼▲ buttons to select the desired second code No. | ![Field Settings menu](R18833) When setting by group, all of the second code No. that may be set are displayed as *.

<table>
<thead>
<tr>
<th>a Unit No.</th>
<th>b First code No.</th>
<th>c Second code No.</th>
<th>d Mode</th>
</tr>
</thead>
</table>

(R18831)
To set the field settings, you have to change:
- Mode No.
- First code No.
- Second code No.

### Step 1: Press INSPECTION/TEST button for 4 seconds during normal mode to enter the field setting mode.

### Step 2: Press MODE button to select the desired mode No.

### Step 3: Press UP button to select the first code No.

### Step 4: Press DOWN button to select the second code No.

### Step 5: Press RESERVE button to confirm the setting.

### Step 6: Press INSPECTION/TEST button to return to the normal mode.
### 4.3.2 Overview of the Field Settings

<table>
<thead>
<tr>
<th>Mode No.</th>
<th>First Code No.</th>
<th>Description of setting</th>
<th>Second Code No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>01</td>
</tr>
<tr>
<td>0</td>
<td>10 (20)</td>
<td>Filter cleaning sign interval</td>
<td>Ultra longlife filter</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>Longlife filter type</td>
<td>Longlife filter</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>Remote controller thermistor</td>
<td>Enabled</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>Filter cleaning sign</td>
<td>Display</td>
</tr>
<tr>
<td>0</td>
<td>11 (21)</td>
<td>Indoor unit number of simultaneous operation system</td>
<td>Pair</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>Simultaneous operation system individual setting</td>
<td>Unified setting</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>Fan OFF at thermostat OFF</td>
<td>Standard</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>External static pressure setting</td>
<td>Airflow adjustment is OFF</td>
</tr>
<tr>
<td>0</td>
<td>12 (22)</td>
<td>Optional accessories output selection (field selection of output for adaptor for wiring)</td>
<td>Compressor</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>Forced ON/OFF function</td>
<td>Forced OFF</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>Thermostat differential changeover (setting for when using remote sensor)</td>
<td>1°C (1.8°F)</td>
</tr>
<tr>
<td>0</td>
<td>13 (23)</td>
<td>High air outlet velocity (for high ceiling applications)</td>
<td>≤ 8-7/8 ft (2.7 m)</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>Selection of airflow direction (setting for when a blocking pad kit has been installed)</td>
<td>4-way flow</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>Selection of airflow function (setting for when using a decoration panel for outlet)</td>
<td>Equipped</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>Airflow direction range setting</td>
<td>Upper</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>External static pressure</td>
<td>Standard</td>
</tr>
<tr>
<td>15</td>
<td>25</td>
<td>Drain pump operation with humidifying</td>
<td>Not equipped</td>
</tr>
</tbody>
</table>

**Note:** Any function that is not available on the indoor unit is not displayed.
4.3.3 MAIN/SUB Setting when Using 2 Wired Remote Controllers

Outline
The MAIN/SUB setting is necessary when 1 indoor unit is controlled by 2 remote controllers. When you use 2 remote controllers (control panel and separate remote controller), set one to MAIN and the other to SUB.

Detail
The remote controllers are factory set to MAIN, so you only have to change one remote controller from MAIN to SUB.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
<th>Remote controller</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Put on the power for both remote controllers.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Determine which one is the sub/main remote controller.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>When Checking the connection. Please stand by. is displayed on both remote controllers, push and hold Mode button of the sub remote controller for 4 seconds.</td>
<td><img src="R18973" alt="Checking the connection. Please stand by." /></td>
</tr>
<tr>
<td>4</td>
<td>The sub remote controller now displays Sub RC. Note) The main remote controller still displays Main RC.</td>
<td><img src="R18974" alt="Checking the connection. Please stand by." /></td>
</tr>
<tr>
<td>5</td>
<td>After a few seconds, the basic screen is displayed.</td>
<td></td>
</tr>
</tbody>
</table>
4.3.4 Address and MAIN/SUB Setting for Wireless Remote Controller

Outline

If several wireless remote controller units are used together in the same room (including the case where both group control and individual remote controller control are used together), be sure to set the addresses for the receiver and wireless remote controller. (For group control, see the attached installation manual for the indoor unit.) If using together with a wired remote controller, you have to change the MAIN/SUB setting on the signal receiver PCB.

Signal Receiver PCB

Set the address setting switch (SS2) on the signal receiver PCB according to the table below.

<table>
<thead>
<tr>
<th>Unit No.</th>
<th>No.1</th>
<th>No.2</th>
<th>No.3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address setting switch (SS2)</td>
<td>1 2 3 (S1935)</td>
<td>1 2 3 (S1936)</td>
<td>1 2 3 (S1937)</td>
</tr>
</tbody>
</table>

When using both a wired and a wireless remote controller for 1 indoor unit, the wired controller should be set to MAIN. Therefore, set the MAIN/SUB setting switch (SS1) on the signal receiver PCB to SUB.

<table>
<thead>
<tr>
<th>MAIN</th>
<th>SUB</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAIN/SUB setting switch (SS1)</td>
<td>S (S1938)</td>
</tr>
</tbody>
</table>

After completing setting, seal off the opening of the address setting switch (SS2) and the MAIN/SUB setting switch (SS1) with the attached sealing pad.
1. Hold down **FILTER SIGN RESET** button and **INSPECTION/TEST** button at the same time for at least 4 seconds to enter the field setting mode. (SETTING is indicated on the display).

2. Press **FAN** button and select A or b. Each time the button is pressed, the display switches between A and b.

3. Press **UP** button and **DOWN** button to set the address.

   - Address can be set from 1 ~ 6, but set it to 1 ~ 3 and to same address as the receiver. (The receiver does not work with address 4 ~ 6.)

4. Press **RESERVE** button to confirm the setting.

5. Hold down **INSPECTION/TEST** button for at least 1 second to exit the field setting mode and return to the normal display.

---

**Multiple Settings A or B**

When the indoor unit is controlled by an outside controller (central remote controller, etc.), it sometimes does not respond to ON/OFF command or temperature setting command from the remote controller. Check what setting the customer needs and make the multiple setting as shown below.

<table>
<thead>
<tr>
<th>Remote Controller</th>
<th>Indoor Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Multiple Setting</strong></td>
<td><strong>Remote Controller Display</strong></td>
</tr>
<tr>
<td>A: Standard</td>
<td>All items are displayed.</td>
</tr>
<tr>
<td>B: Multiple display</td>
<td>Operations set only is displayed shortly after execution.</td>
</tr>
</tbody>
</table>
After Setting

Stick the unit No. label at the decoration panel air discharge outlet as well as on the back of the wireless remote controller.

**Note:** Set the unit No. of the receiver and the wireless remote controller to be the same. If the settings differ, the signal from the remote controller cannot be received.
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 ................................................................. 199
   1.1 Indoor Unit .................................................................. 199
   1.2 Outdoor Unit ................................................................ 201

2. Wiring Diagrams ............................................................. 202
   2.1 Indoor Unit .................................................................. 202
   2.2 Outdoor Unit ................................................................ 207
1. Piping Diagrams

1.1 Indoor Unit

CTXS07LVJU, FTXS09/12LVJU

- Indoor Unit
- Heat Exchanger
- Cross Flow Fan
- Field Piping
- Fan Motor
- Refrigerant Flow
- Cooling
- Heating

FDXS09/12LVJU

- Indoor Unit
- Heat Exchanger
- Cross Flow Fan
- Field Piping
- Fan Motor
- Refrigerant Flow
- Cooling
- Heating

CDXS15/18LVJU

- Indoor Unit
- Heat Exchanger
- Cross Flow Fan
- Field Piping
- Fan Motor
- Refrigerant Flow
- Cooling
- Heating
### FFQ09/12/15/18LVJU

#### Indoor Unit Diagram

- Indoor heat exchanger
- Field piping φA C1220T-O
- Field piping φB C1220T-O
- To Outdoor unit

#### Refrigerant Flow

- Cooling
- Heating

#### Field Piping

- (1/4 CuT)
- (3/8 CuT)

#### Indoor Unit

- Muffler Assy
- Heat Exchanger
- Turbo Fan
- Fan Motor

#### Refrigerant Flow

- Cooling
- Heating

#### Model Specifications

<table>
<thead>
<tr>
<th>MODEL</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>FFQ09-12LVJU</td>
<td>1/4</td>
<td>3/8</td>
</tr>
<tr>
<td>FFQ15-18LVJU</td>
<td>1/4</td>
<td>1/2</td>
</tr>
</tbody>
</table>

### Diagram References

- 4D091794
- 4D091795A

---

200 Appendix
1.2 Outdoor Unit

2MXL18QMVJU

3MXL24QMVJU
Note:  
PCB1: Control PCB  
PCB2: Signal receiver PCB  
PCB3: Display PCB  
PCB4: INTELLIGENT EYE sensor PCB  
Refer to Part 3 for Printed Circuit Board Connector Wiring Diagram.
Note:  
PCB1: Control PCB  
PCB2: Signal receiver PCB  
PCB3: Display PCB  
PCB4: INTELLIGENT EYE sensor PCB  
Refer to Part 3 for Printed Circuit Board Connector Wiring Diagram.
FDXS09/12LVJU, CDXS15/18LVJU

**Note:**
A1P: Control PCB  
A2P: 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.
Note: For the location of the switch (SS1) on the control PCB (A1P), refer to page 24.
2.2 Outdoor Unit

2MXL18QMVJU

Note:

PCB1: Main PCB
PCB2: Service monitor PCB
Refer to Part 3 for Printed Circuit Board Connector Wiring Diagram.
Note:

PCB1: Main PCB
PCB2: Service monitor PCB

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>03 / 2016</td>
<td>SiUS121602E</td>
<td>First edition</td>
</tr>
</tbody>
</table>
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.