Service Manual

Inverter Pair
Wall Mounted Type D-Series

[Applied Models]
- Inverter Pair : Heat Pump
# Inverter Pair D-Series

- **Heat Pump**

**Indoor Unit**
- FTXS09DVJU
- FTXS12DVJU
- FTXS15DVJU
- FTXS18DVJU
- FTXS24DVJU

**Outdoor Unit**
- RXS09DVJU
- RXS12DVJU
- RXS15DVJU
- RXS18DVJU
- RXS24DVJU
# Table of Contents

1. Introduction ................................................................. vi
   1.1 Safety Cautions ......................................................... vi

- Part 1  List of Functions ........................................... 1
  1. List of Functions ....................................................... 2

- Part 2  Specifications ................................................. 5
  1. Specifications .......................................................... 6

- Part 3  Printed Circuit Board Connector Wiring Diagram .......... 11
  1. Printed Circuit Board Connector Wiring Diagram ............ 12
     1.1 FTXS09/12DVJU .................................................. 12
     1.2 FTXS15/18/24DVJU ............................................ 14
     1.3 FDXS09/12DVJU ................................................ 16
     1.4 RXS09/12DVJU .................................................. 18
     1.5 RXS15/18/24DVJU ......................................... 20

- Part 4  Function and Control ....................................... 23
  1. Main Functions ........................................................ 25
     1.1 Frequency Principle ............................................. 25
     1.2 Power-Airflow Dual Flaps, Wide-Angle Louvres and Auto-Swing (Only for the Single Split Duct-Free System) .............. 27
     1.3 Fan Speed Control for Indoor Units ............................. 28
     1.4 Program Dry Function ........................................... 29
     1.5 Automatic Operation ............................................. 30
     1.6 Thermostat Control ............................................... 31
     1.7 NIGHT SET Mode ................................................ 32
     1.8 INTELLIGENT EYE .............................................. 33
     1.9 HOME LEAVE Operation ...................................... 35
     1.10 Inverter Powerful Operation .................................. 36
     1.11 Other Functions .................................................. 37

  2. Function of Thermistor ............................................. 39
     2.1 Heat Pump Model ................................................. 39

  3. Control Specification (09/12 Class) ........................... 40
     3.1 Mode Hierarchy ..................................................... 40
     3.2 Frequency Control ............................................... 41
     3.3 Controls at Mode Changing / Start-up ......................... 43
     3.4 Discharge Pipe Control .......................................... 44
     3.5 Input Current Control ............................................ 45
     3.6 Freeze-up Protection Control .................................. 45
     3.7 Heating Peak-cut Control ...................................... 46
     3.8 Fan Control ........................................................ 46
     3.9 Liquid Compression Protection Function 2 .................. 46
     3.10 Defrost Control ................................................... 47
     3.11 Electronic Expansion Valve Control ......................... 48
     3.12 Malfunctions ...................................................... 51
3.13 Forced Operation Mode ................................................................. 52
3.14 Additional Function .................................................................. 52
4. Control Specification (15/18/24 Class) ......................................... 53
  4.1 Mode Hierarchy .......................................................................... 53
  4.2 Frequency Control ..................................................................... 54
  4.3 Controls at Mode Changing / Start-up ........................................ 56
  4.4 Discharge Pipe Temperature Control ........................................... 57
  4.5 Input Current Control ................................................................. 58
  4.6 Freeze-up Protection Control ...................................................... 59
  4.7 Heating Peak-cut Control ............................................................ 59
  4.8 Fan Control ................................................................................ 60
  4.9 Liquid Compression Protection Function 2 ................................. 60
  4.10 Low Hz High Pressure Limit ..................................................... 61
  4.11 Defrost Control .......................................................................... 61
  4.12 Electronic Expansion Valve Control ............................................ 62
  4.13 Malfunctions ............................................................................ 65
  4.14 Forced Operation Mode ............................................................ 66
  4.15 Additional Function .................................................................. 66

Part 5 System Configuration ............................................................ 67
  1. System Configuration .................................................................. 68
  2. Instruction .................................. .................................................... 69
    2.1 Safety Precautions .................................................................. 69
    2.2 The Single Split Duct-Free System FTXS09/12DVJU ................. 71
    2.3 The Single Split Duct-Free System FTXS15/18/24DVJU .......... 96
    2.4 The Slim Duct Built-in System FDXS09/12DVJU ................. 121

Part 6 Service Diagnosis ................................................................. 141
  1. Caution for Diagnosis ................................................................. 142
  2. Problem Symptoms and Measures .............................................. 144
  3. Service Check Function ............................................................ 145
  4. Troubleshooting ........................................................................ 148
    4.1 Error Codes and Description .................................................. 148
    4.2 Indoor Unit PCB Abnormality .................................................. 149
    4.3 Freeze-up Protection Control or High Pressure Control .......... 150
    4.4 Fan Motor or Related Abnormality ......................................... 152
    4.5 Thermistor or Related Abnormality (Indoor Unit) .................... 155
    4.6 Signal Transmission Error (between Indoor and Outdoor Unit) .. 156
    4.7 OL Activation (Compressor Overload) .................................... 157
    4.8 Compressor Lock ................................................................. 158
    4.9 DC Fan Lock ........................................................................ 160
    4.10 Input Over Current Detection ............................................... 161
    4.11 Four Way Valve Abnormality ............................................... 164
    4.12 Discharge Pipe Temperature Control ................................. 168
    4.13 High Pressure Control in Cooling ........................................ 170
    4.14 Position Sensor Abnormality ................................................. 174
    4.15 DC Voltage / Current Sensor Abnormality ...................... 176
# Part 7 Removal Procedure

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. FTXS09/12DVJU</td>
<td>206</td>
</tr>
<tr>
<td>1.1 Removal of Air Filter</td>
<td>206</td>
</tr>
<tr>
<td>1.2 Removal of Front Grille</td>
<td>209</td>
</tr>
<tr>
<td>1.3 Removal of Horizontal Blade and Vertical Blade</td>
<td>212</td>
</tr>
<tr>
<td>1.4 Removal of Electrical Box, PCB and Swing Motor</td>
<td>214</td>
</tr>
<tr>
<td>1.5 Removal of Heat Exchanger</td>
<td>220</td>
</tr>
<tr>
<td>1.6 Install of Drain Plug</td>
<td>223</td>
</tr>
<tr>
<td>1.7 Removal of Fan Rotor and Fan Motor</td>
<td>225</td>
</tr>
<tr>
<td>2. FTXS15/18/24DVJU</td>
<td>229</td>
</tr>
<tr>
<td>2.1 Removal of the Air Filter / Front Panel</td>
<td>229</td>
</tr>
<tr>
<td>2.2 Removal of the Front Grille</td>
<td>233</td>
</tr>
<tr>
<td>2.3 Removal of the Horizontal Blades / Vertical Blades</td>
<td>236</td>
</tr>
<tr>
<td>2.4 Removal of the Electrical Box / PCB / Swing Motor</td>
<td>239</td>
</tr>
<tr>
<td>2.5 Removal of the Heat Exchanger</td>
<td>247</td>
</tr>
<tr>
<td>2.6 Removal of the Fan Rotor / Fan Motor</td>
<td>250</td>
</tr>
<tr>
<td>3. RXS09/12DVJU</td>
<td>253</td>
</tr>
<tr>
<td>3.1 Removal of Panels and Fan Motor</td>
<td>253</td>
</tr>
<tr>
<td>3.2 Removal of Electrical Box</td>
<td>261</td>
</tr>
<tr>
<td>3.3 Removal of Reactor and Partition Plate</td>
<td>263</td>
</tr>
<tr>
<td>3.4 Removal of Sound Blanket</td>
<td>265</td>
</tr>
<tr>
<td>3.5 Removal of Four Way Valve</td>
<td>268</td>
</tr>
<tr>
<td>3.6 Removal of Compressor</td>
<td>270</td>
</tr>
<tr>
<td>3.7 Removal of PCB</td>
<td>273</td>
</tr>
<tr>
<td>4. RXS15/18/24DVJU</td>
<td>276</td>
</tr>
<tr>
<td>4.1 Removal of the Panels and Plates</td>
<td>276</td>
</tr>
<tr>
<td>4.2 Removal of the Fan Motor / Propeller Fan</td>
<td>281</td>
</tr>
<tr>
<td>4.3 Removal of the PCB / Electrical Box</td>
<td>285</td>
</tr>
<tr>
<td>4.4 Removal of the Reactor</td>
<td>294</td>
</tr>
<tr>
<td>4.5 Removal of the Sound Blanket</td>
<td>296</td>
</tr>
<tr>
<td>4.6 Removal of the Four Way Valve</td>
<td>299</td>
</tr>
<tr>
<td>4.7 Removal of the Electronic Expansion Valve</td>
<td>300</td>
</tr>
<tr>
<td>4.8 Removal of the Compressor</td>
<td>301</td>
</tr>
</tbody>
</table>
**Part 8 Others**  
1. Others ........................................................... 304  
   1.1 Test Run from the Remote Controller ................. 304  
   1.2 Jumper Settings ............................................ 305  

**Part 9 Appendix**  
1. Piping Diagrams................................................. 308  
   1.1 Indoor Units ................................................. 308  
   1.2 Outdoor Units .............................................. 309  
2. Wiring Diagrams................................................ 311  
   2.1 Indoor Units ................................................. 311  
   2.2 Outdoor Units .............................................. 313  

**Index** ................................................................. i  

**Drawings & Flow Charts** ...................................... v
1. Introduction

1.1 Safety Cautions

Cautions and Warnings

- Be sure to read the following safety cautions before conducting repair work.
- The caution items are classified into “⚠ Warning” and “⚠ Caution”. The “⚠ Warning” items are especially important since they can lead to death or serious injury if they are not followed closely. The “⚠ Caution” items can also lead to serious accidents under some conditions if they are not followed. Therefore, be sure to observe all the safety caution items described below.
- About the pictograms
  - △ This symbol indicates an item for which caution must be exercised.
    - The pictogram shows the item to which attention must be paid.
  - ○ This symbol indicates a prohibited action.
    - The prohibited item or action is shown inside or near the symbol.
  - ● This symbol indicates an action that must be taken, or an instruction.
    - The instruction is shown inside or near the symbol.
- 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.

1.1.1 Caution in Repair

<table>
<thead>
<tr>
<th>⚠ Warning</th>
</tr>
</thead>
</table>

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

If the refrigerant gas discharges during the repair work, do not touch the discharging refrigerant gas. The refrigerant gas can cause frostbite.

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

If the refrigerant gas leaks during the repair work, ventilate the area. The refrigerant gas can generate toxic gases when it contacts flames.

The step-up capacitor supplies high-voltage electricity to the electrical components of the outdoor unit. Be sure to discharge the capacitor completely before conducting repair work. A charged capacitor can cause an electrical shock.
1.1.2 Cautions Regarding Products after Repair

Warning

Do not start or stop the air conditioner operation by plugging or unplugging the power cable plug. Plugging or unplugging the power cable plug to operate the equipment can cause an electrical shock or fire.

Do not repair the electrical components with wet hands. Working on the equipment with wet hands can cause an electrical shock.

Do not clean the air conditioner by splashing water. Washing the unit with water can cause an electrical shock.

Be sure to provide the 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 cause injury.

Do not tilt the unit when removing it. The water inside the unit can spill and wet the furniture and floor.

Be sure to check that the refrigerating cycle section has cooled down sufficiently before conducting repair work. Working on the unit when the refrigerating cycle section is hot can cause burns.

Use the welder in a well-ventilated place. Using the welder in an enclosed room can cause oxygen deficiency.

Warning

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 can cause an electrical shock, excessive heat generation or fire.

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 and if the installation work is not conducted securely, the equipment can fall and cause injury.
### Warning

| Be sure to install the product correctly by using the provided standard installation frame. Incorrect use of the installation frame and improper installation can cause the equipment to fall, resulting in injury. | For integral units only |
| Be sure to install the product securely in the installation frame mounted on a window frame. If the unit is not securely mounted, it can fall and cause injury. | For integral units only |
| Be sure to use an exclusive power circuit for the equipment, and follow the 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 can cause an electrical shock or fire. | |
| Be sure to use the specified cable to connect 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 can cause excessive heat generation or fire. | |
| When connecting the cable 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 can cause an electrical shock, excessive heat generation or fire. | |
| Do not damage or modify the power cable. Damaged or modified power cable can cause an electrical shock or fire. Placing heavy items on the power cable, and heating or pulling the power cable can damage the cable. | |
| Do not mix air or gas other than the specified refrigerant (R-410A / R22) in the refrigerant system. If air enters the refrigerating system, an excessively high pressure results, causing equipment damage and injury. | |
| If the refrigerant gas leaks, be sure to locate the leak and repair it before charging the refrigerant. After charging refrigerant, make sure that there is no refrigerant leak. If the leak cannot be located and the repair work must be stopped, be sure to perform pump-down and close the service valve, to prevent the refrigerant gas from leaking into the room. The refrigerant gas itself is harmless, but it can generate toxic gases when it contacts flames, such as fan and other heaters, stoves and ranges. | |
| When replacing the coin battery in the remote controller, be sure to disposed 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 a combustible gas leaks and remains around the unit, it can cause a fire. | |
| Be sure to install the packing and seal on the installation frame properly. If the packing and seal are not installed properly, water can enter the room and wet the furniture and floor. | For integral units only |
1.1.3 Inspection after Repair

<table>
<thead>
<tr>
<th>Warning</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Warning</strong></td>
</tr>
<tr>
<td>Check to make sure that the power cable plug is not dirty or loose, then insert the plug into a power outlet all the way. If the plug has dust or loose connection, it can cause an electrical shock or fire.</td>
</tr>
<tr>
<td>!</td>
</tr>
<tr>
<td>If the power cable and lead wires have scratches or deteriorated, be sure to replace them. Damaged cable and wires can cause an electrical shock, excessive heat generation or fire.</td>
</tr>
<tr>
<td>!</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 can cause an electrical shock, excessive heat generation or fire.</td>
</tr>
<tr>
<td>☒</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Caution</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Caution</strong></td>
</tr>
<tr>
<td>Check to see if the parts and wires are mounted and connected properly, and if the connections at the soldered or crimped terminals are secure. Improper installation and connections can cause excessive heat generation, fire or an electrical shock.</td>
</tr>
<tr>
<td>!</td>
</tr>
<tr>
<td>If the installation platform or frame has corroded, replace it. Corroded installation platform or frame can cause the unit to fall, resulting in injury.</td>
</tr>
<tr>
<td>!</td>
</tr>
<tr>
<td>Check the grounding, and repair it if the equipment is not properly grounded. Improper grounding can cause an electrical shock.</td>
</tr>
<tr>
<td>⚠️</td>
</tr>
<tr>
<td>Be sure to measure the insulation resistance after the repair, and make sure that the resistance is 1 Mohm or higher. Faulty insulation can cause an electrical shock.</td>
</tr>
<tr>
<td>!</td>
</tr>
<tr>
<td>Be sure to check the drainage of the indoor unit after the repair. Faulty drainage can cause the water to enter the room and wet the furniture and floor.</td>
</tr>
<tr>
<td>🔌</td>
</tr>
</tbody>
</table>

1.1.4 Using Icons

Icons are used to attract the attention of the reader to specific information. The meaning of each icon is described in the table below:

1.1.5 Using Icons List

<table>
<thead>
<tr>
<th>Icon</th>
<th>Type of Information</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>📝 Note:</td>
<td>Note</td>
<td>A “note” provides information that is not indispensable, but may nevertheless be valuable to the reader, such as tips and tricks.</td>
</tr>
<tr>
<td>⚠️ Caution</td>
<td>Caution</td>
<td>A “caution” is used when there is danger that the reader, through incorrect manipulation, may damage equipment, lose data, get an unexpected result or has to restart (part of) a procedure.</td>
</tr>
<tr>
<td>Icon</td>
<td>Type of Information</td>
<td>Description</td>
</tr>
<tr>
<td>-------</td>
<td>---------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>⚠️ Warning</td>
<td>Warning</td>
<td>A “warning” is used when there is danger of personal injury.</td>
</tr>
<tr>
<td>🔄 Reference</td>
<td>Reference</td>
<td>A “reference” 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. List of Functions .............................................................................................................2
## 1. List of Functions

<table>
<thead>
<tr>
<th>Category</th>
<th>Functions</th>
<th>FTXS09-12DVJU</th>
<th>RXS09-12DVJU</th>
<th>FTXS15-1824DVJU</th>
<th>RXS15-1824DVJU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Function</td>
<td>Inverter (with Inverter Power Control)</td>
<td>O</td>
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<td></td>
<td>Operation Limit for Cooling (°FDB)</td>
<td>14–115</td>
<td>14–115</td>
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<tr>
<td></td>
<td>Operation Limit for Heating (°FWB)</td>
<td>5–64</td>
<td>5–64</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>PAM Control</td>
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</tr>
<tr>
<td>Compressor</td>
<td>Oval Scroll Compressor</td>
<td>—</td>
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</tr>
<tr>
<td></td>
<td>Swing Compressor</td>
<td>O</td>
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</tr>
<tr>
<td></td>
<td>Rotary Compressor</td>
<td>—</td>
<td>—</td>
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</tr>
<tr>
<td></td>
<td>Reluctance DC Motor</td>
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<tr>
<td>Comfortable Airflow</td>
<td>Power-Airflow Flap</td>
<td>—</td>
<td>—</td>
<td>O</td>
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</tr>
<tr>
<td></td>
<td>Power-Airflow Dual Flaps</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>Power-Airflow Diffuser</td>
<td>—</td>
<td>—</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>Wide-Angle Louvers</td>
<td>O</td>
<td>O</td>
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<td>O</td>
</tr>
<tr>
<td></td>
<td>Vertical Auto-Swing (Up and Down)</td>
<td>O</td>
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</tr>
<tr>
<td></td>
<td>Horizontal Auto-Swing (Right and Left)</td>
<td>—</td>
<td>O</td>
<td>O</td>
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</tr>
<tr>
<td></td>
<td>3-D Airflow</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>Comfort Airflow Mode</td>
<td>—</td>
<td>—</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>3-Step Airflow (H/P Only)</td>
<td>—</td>
<td>—</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Comfort Control</td>
<td>Auto Fan Speed</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>Indoor Unit Silent Operation</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>Night Quiet Mode (Automatic)</td>
<td>—</td>
<td>—</td>
<td>O</td>
<td>O</td>
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<tr>
<td></td>
<td>Outdoor Unit Silent Operation (Manual)</td>
<td>O</td>
<td>O</td>
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<td>O</td>
</tr>
<tr>
<td></td>
<td>Intelligent Eye</td>
<td>O</td>
<td>O</td>
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<td>O</td>
</tr>
<tr>
<td></td>
<td>Quick Warming Function</td>
<td>O</td>
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<tr>
<td></td>
<td>Hot-Start Function</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>Automatic Defrosting</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Operation</td>
<td>Automatic Operation</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>Program Dry Function</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>Fan Only</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>New Powerful Operation (Non-Inverter)</td>
<td>—</td>
<td>—</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>Inverter Powerful Operation</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>Priority-Room Setting</td>
<td>—</td>
<td>—</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Lifestyle Convenience</td>
<td>Cooling / Heating Mode Lock</td>
<td>—</td>
<td>—</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td></td>
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**Note:**
- O : Holding Functions
- — : No Functions
- ★ : Digital Only

Air Purifying Filter with Bacteriostatic, Virustatic Functions
Photocatalytic Deodorizing Filter
Air Purifying Filter with Photocatalytic Deodorizing Function
Titanium Apatite Photocatalytic Air-Purifying Filter
Mold Proof Air Filter
Washable Grille
Filter Cleaning Indicator
Good-Sleep Cooling Operation
24-Hour On/Off Timer
Night Set Mode
Auto-Start (after Power Failure)
Self-Diagnosis (Digital, LED) Display
Wiring Error Check
Anticorrosion Treatment of Outdoor Heat Exchanger
Multi-Split / Split Type Compatible Indoor Unit
Flexible Voltage Correspondence
High Ceiling Application
Chargeless 33ft
Either Side Drain (Right or Left)
Power Selection
5-Rooms Centralized Controller (Option)
Remote Control Adapter (Normal Open-Pulse Contact) (Option)
Remote Control Adapter (Normal Open Contact) (Option)
DIII-NET Compatible (Adapter) (Option)
Wireless
Wired
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**Note:**
- O: Holding Functions
- -: No Functions
- ★: Digital Only
Part 2
Specifications

1. Specifications ................................................................. 6
### 1. Specifications

#### The Single Split Duct-Free System

#### 60Hz 208-230V

<table>
<thead>
<tr>
<th>Models</th>
<th>Indoor Units</th>
<th>Cooling</th>
<th>Heating</th>
<th>Indoor Units</th>
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<th>Heating</th>
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#### Conversion Formulae

- kcal/h = kW×860
- Btu/h = kW×3414
- cfm = m³/min×35.3

---

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

#### 60Hz 208-230V

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<tr>
<th>Model</th>
<th>Indoor Units</th>
<th>Outdoor Units</th>
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<tr>
<td></td>
<td>FTXS18DVJU</td>
<td>RXS18DVJU</td>
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</table>

#### Capacity
- **Rated (Min.-Max.)**
  - **Btu/h**
    - **Cooling**
      - Indoor: 15,000 (3,200~15,000)
      - Outdoor: 18,000 (3,200~21,200)
    - **Heating**
      - Indoor: 18,000 (3,200~18,000)
      - Outdoor: 21,600 (3,200~24,000)

#### Moisture Removal
- **Pts/h**
  - Indoor: 3.4
  - Outdoor: —

#### Power Consumption Rated (Min.-Max.)
- **W**
  - Indoor: 1,230 (450~1,230)
  - Outdoor: 1,570 (450~2,540)
  - Indoor: 1,590 (450~1,590)
  - Outdoor: 2,000 (450~2,620)

#### Power Factor
- **%**
  - Indoor: 95.1
  - Outdoor: 97.8

#### EER (Rated)
- **Btu/h/W**
  - Indoor: 12.2
  - Outdoor: —

#### COP (Rated)
- **W/W**
  - Indoor: 3.36
  - Outdoor: —

#### Energy Efficiency
- **SEER**
  - Indoor: 17.0
  - Outdoor: —

#### HSPF
- **—**

#### Piping Connections
- **Liquid inches**
  - Indoor: 1/4
  - Outdoor: 1/2
- **Gas inches**
  - Indoor: 1/4
  - Outdoor: 1/2
- **Drain inches**
  - Indoor: 11/16
  - Outdoor: 11/16

#### Heat Insulation
- **Both Liquid and Gas Pipes**

#### Max. Interunit Piping Length
- **feet**
  - Indoor: 98.4
  - Outdoor: 98.4

#### Min. Interunit Piping Length
- **feet**
  - Indoor: 4.9
  - Outdoor: 4.9

#### Max. Interunit Height Difference
- **feet**
  - Indoor: 65.6
  - Outdoor: 65.6

#### Chargeless
- **feet**
  - Indoor: 33
  - Outdoor: 33

#### Amount of Additional Charge of Refrigerant
- **oz/ft**
  - Indoor: 0.22
  - Outdoor: 0.22

#### Indoor Unit
- **FTXS15DVJU**
  - **Front Panel Color**
    - White
  - **Air Flow Rate**
    - **H**: 519 (14.7)
    - **M**: 436 (12.3)
    - **L**: 353 (10.0)
  - **Fan Type**
    - Cross Flow Fan
  - **Motor Output**
    - W: 43
  - **Speed**
    - Steps: 5 Steps, Silent and Auto
  - **Air Direction Control**
    - Right, Left, Horizontal and Downward
  - **Air Filter**
    - Removable / Washable / Mildew Proof
  - **Power Consumption (Rated)**
    - W: 40
  - **Power Factor**
    - %: 96.6
  - **Temperature Control**
    - Microcomputer Control
  - **Dimensions (H×W×D)**
    - inch: 11-7/16×41-5/16×9-3/8
  - **Weight**
    - Lbs: 26.5
  - **Gross Weight**
    - Lbs: 38.0
  - **Operation Sound**
    - H/M/L: 45 / 41 / 36

#### Outdoor Unit
- **RXS15DVJU**
  - **Front Panel Color**
    - White
  - **Air Flow Rate**
    - **H**: 515 (14.6)
    - **M**: 459 (13.0)
    - **L**: 402 (11.4)
  - **Fan Type**
    - Cross Flow Fan
  - **Motor Output**
    - W: 40
  - **Speed**
    - Steps: 5 Steps, Silent and Auto
  - **Air Direction Control**
    - Right, Left, Horizontal and Downward
  - **Air Filter**
    - Removable / Washable / Mildew Proof
  - **Power Consumption (Rated)**
    - W: 40
  - **Power Factor**
    - %: 96.6
  - **Temperature Control**
    - Microcomputer Control
  - **Dimensions (H×W×D)**
    - inch: 11-7/16×41-5/16×9-3/8
  - **Weight**
    - Lbs: 26.5
  - **Gross Weight**
    - Lbs: 38.0
  - **Operation Sound**
    - H/M/L: 44 / 40 / 35

### Conversion Formulae
- kcal/h = kW×860
- Btu/h = kW×3414
- cfm = m³/min×35.3

---

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

<table>
<thead>
<tr>
<th>Condition</th>
<th>Cooling</th>
<th>Heating</th>
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<tbody>
<tr>
<td>Indoor: 80°FDB/67°FWB</td>
<td>25R</td>
<td>25R</td>
</tr>
<tr>
<td>Outdoor: 95°FDB/75°FWB</td>
<td>25R</td>
<td>25R</td>
</tr>
<tr>
<td>Indoor: 70°FDB/60°FWB</td>
<td>25R</td>
<td>25R</td>
</tr>
<tr>
<td>Outdoor: 47°FDB/33°FWB</td>
<td>25R</td>
<td>25R</td>
</tr>
<tr>
<td>25R</td>
<td>25R</td>
<td></td>
</tr>
</tbody>
</table>
### Specifications

#### Indoor Units

<table>
<thead>
<tr>
<th>Model</th>
<th>FTXS24DVJU</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Capacity</strong>&lt;br&gt;Rated (Min.–Max.)</td>
<td>Btu/h</td>
</tr>
<tr>
<td><strong>Moisture Removal</strong>&lt;br&gt;Pt/h</td>
<td>6.3</td>
</tr>
<tr>
<td><strong>Running Current (Rated)</strong>&lt;br&gt;A</td>
<td>10.3</td>
</tr>
<tr>
<td><strong>Power Consumption (Rated)</strong>&lt;br&gt;W</td>
<td>2,360 (450–2,360)</td>
</tr>
<tr>
<td><strong>Power Factor</strong>&lt;br&gt;%</td>
<td>97.7</td>
</tr>
<tr>
<td><strong>EER (Rated)</strong>&lt;br&gt;Btu/h/W</td>
<td>9.3</td>
</tr>
<tr>
<td><strong>COP (Rated)</strong>&lt;br&gt;W/W</td>
<td>—</td>
</tr>
<tr>
<td><strong>Energy Efficiency</strong>&lt;br&gt;SEER</td>
<td>15.0</td>
</tr>
<tr>
<td><strong>Piping Connections</strong>&lt;br&gt;Liquid inch</td>
<td>1/4</td>
</tr>
<tr>
<td><strong>Gas inch</strong></td>
<td>1/4</td>
</tr>
<tr>
<td><strong>Drain inch</strong></td>
<td>—</td>
</tr>
<tr>
<td><strong>Heat Insulation</strong>&lt;br&gt;Both Liquid and Gas Pipes</td>
<td>98.4</td>
</tr>
<tr>
<td><strong>Max. Interunit Piping Length</strong>&lt;br&gt;feet</td>
<td>4.9</td>
</tr>
<tr>
<td><strong>Min. Interunit Height Difference</strong>&lt;br&gt;feet</td>
<td>33</td>
</tr>
<tr>
<td><strong>Amount of Additional Charge of Refrigerant</strong>&lt;br&gt;oz/ft</td>
<td>0.22</td>
</tr>
<tr>
<td><strong>Front Panel Color</strong></td>
<td>White</td>
</tr>
<tr>
<td><strong>Air Flow Rate</strong>&lt;br&gt;cfm (m³/min)</td>
<td>H</td>
</tr>
<tr>
<td></td>
<td>M</td>
</tr>
<tr>
<td></td>
<td>L</td>
</tr>
<tr>
<td><strong>Fan Type</strong></td>
<td>Cross Flow Fan</td>
</tr>
<tr>
<td><strong>Motor Output</strong>&lt;br&gt;W</td>
<td>43</td>
</tr>
<tr>
<td><strong>Speed</strong>&lt;br&gt;Steps</td>
<td>5</td>
</tr>
<tr>
<td><strong>Air Direction Control</strong>&lt;br&gt;Right, Left, Horizontal and Downward</td>
<td>—</td>
</tr>
<tr>
<td><strong>Air Filter</strong>&lt;br&gt;Removable / Washable / Mildew Proof</td>
<td>—</td>
</tr>
<tr>
<td><strong>Running Current (Rated)</strong>&lt;br&gt;A</td>
<td>0.20</td>
</tr>
<tr>
<td><strong>Power Consumption (Rated)</strong>&lt;br&gt;W</td>
<td>45</td>
</tr>
<tr>
<td><strong>Power Factor</strong>&lt;br&gt;%</td>
<td>97.8</td>
</tr>
<tr>
<td><strong>Temperature Control</strong>&lt;br&gt;Microcomputer Control</td>
<td>—</td>
</tr>
<tr>
<td><strong>Dimensions (H×W×D)</strong>&lt;br&gt;inch</td>
<td>11-7/16×41-5/16×9-3/8</td>
</tr>
<tr>
<td><strong>Weight</strong>&lt;br&gt;Lbs</td>
<td>26.5</td>
</tr>
<tr>
<td><strong>Gross Weight</strong>&lt;br&gt;Lbs</td>
<td>—</td>
</tr>
<tr>
<td><strong>Operation Sound</strong>&lt;br&gt;dBA</td>
<td>46 / 42 / 37</td>
</tr>
</tbody>
</table>

#### Outdoor Units

<table>
<thead>
<tr>
<th>Model</th>
<th>RXS24DVJU</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Compressor Type</strong>&lt;br&gt;Hermetically Sealed Swing Type</td>
<td>—</td>
</tr>
<tr>
<td><strong>Model</strong></td>
<td>2YCD5EXDHE</td>
</tr>
<tr>
<td><strong>Motor Output</strong>&lt;br&gt;W</td>
<td>1,900</td>
</tr>
<tr>
<td><strong>Refrigerant Oil Model</strong>&lt;br&gt;FVC50K</td>
<td>—</td>
</tr>
<tr>
<td><strong>Charged Charge</strong>&lt;br&gt;oz</td>
<td>25.2</td>
</tr>
<tr>
<td><strong>Refrigerant Model</strong>&lt;br&gt;R-410A</td>
<td>—</td>
</tr>
<tr>
<td><strong>Charged Charge</strong>&lt;br&gt;Lbs</td>
<td>3.75</td>
</tr>
<tr>
<td><strong>Air Flow Rate</strong>&lt;br&gt;cfm (m³/min)</td>
<td>H</td>
</tr>
<tr>
<td></td>
<td>L</td>
</tr>
<tr>
<td><strong>Fan Type</strong>&lt;br&gt;Propeller</td>
<td>—</td>
</tr>
<tr>
<td><strong>Motor Output</strong>&lt;br&gt;W</td>
<td>53</td>
</tr>
<tr>
<td><strong>Running Current (Rated)</strong>&lt;br&gt;A</td>
<td>10.1</td>
</tr>
<tr>
<td><strong>Power Consumption (Rated)</strong>&lt;br&gt;W</td>
<td>2,315</td>
</tr>
<tr>
<td><strong>Power Factor</strong>&lt;br&gt;%</td>
<td>99.7</td>
</tr>
<tr>
<td><strong>Starting Current</strong>&lt;br&gt;A</td>
<td>—</td>
</tr>
<tr>
<td><strong>Dimensions (H×W×D)</strong>&lt;br&gt;inch</td>
<td>28-15/16×32-1/2×11-13/16</td>
</tr>
<tr>
<td><strong>Packaged Dimensions (H×W×D)</strong>&lt;br&gt;inch</td>
<td>13-1/4×45-3/16×14-7/16</td>
</tr>
<tr>
<td><strong>Weight</strong>&lt;br&gt;Lbs</td>
<td>221.0</td>
</tr>
<tr>
<td><strong>Gross Weight</strong>&lt;br&gt;Lbs</td>
<td>—</td>
</tr>
<tr>
<td><strong>Operation Sound</strong>&lt;br&gt;dBA</td>
<td>54 / —</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Cooling</th>
<th>Heating</th>
<th>Piping Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indoor : 80°FDB/67°FWB</td>
<td>Indoor : 70°FDB/60°FWB</td>
<td>25 ft</td>
</tr>
<tr>
<td>Outdoor : 95°FDB/75°FWB</td>
<td>Outdoor : 47°FDB/43°FW</td>
<td>25 ft</td>
</tr>
</tbody>
</table>

### Conversion Formulae

- kcal/h = kW × 860
- Btu/h = kW × 3414
- cfm = m³/min × 35.3
# The Slim Duct Built-in System

## Specifications

### 60Hz 208-230V

<table>
<thead>
<tr>
<th>Models</th>
<th>Indoor Units</th>
<th>FDXS09DVJU</th>
<th>FDXS12DVJU</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Cooling</td>
<td>Heating</td>
</tr>
<tr>
<td>Capacity Rated (Min.-Max.)</td>
<td>Blu/h</td>
<td>8,500 (4,400~8,500)</td>
<td>10,000 (4,400~10,000)</td>
</tr>
<tr>
<td>Moisture Removal</td>
<td>P/h</td>
<td>2.5</td>
<td>—</td>
</tr>
<tr>
<td>Running Current (Rated)</td>
<td>A</td>
<td>4.2</td>
<td>4.5</td>
</tr>
<tr>
<td>Power Consumption (Min.-Max.)</td>
<td>W</td>
<td>770(300~770)</td>
<td>950(290~1,220)</td>
</tr>
<tr>
<td>Power Factor</td>
<td>%</td>
<td>79.7</td>
<td>91.8</td>
</tr>
<tr>
<td>EER (Rated)</td>
<td>Blu/ h-W</td>
<td>10.9</td>
<td>—</td>
</tr>
<tr>
<td>COP (Rated)</td>
<td>W/W</td>
<td>—</td>
<td>3.0</td>
</tr>
<tr>
<td>Energy Efficiency</td>
<td>SEER</td>
<td>13.0</td>
<td>—</td>
</tr>
<tr>
<td>Piping Connections</td>
<td>Liquid</td>
<td>inch</td>
<td>φ 1/4</td>
</tr>
<tr>
<td></td>
<td>Gas</td>
<td>inch</td>
<td>φ 3/8</td>
</tr>
<tr>
<td>Heat Insulation</td>
<td>Both Liquid and Gas Pipes</td>
<td>Both Liquid and Gas Pipes</td>
<td></td>
</tr>
<tr>
<td>Max. Interunit Piping Length</td>
<td>feet</td>
<td>65</td>
<td>65</td>
</tr>
<tr>
<td>Max. Interunit Height Difference</td>
<td>feet</td>
<td>49</td>
<td>49</td>
</tr>
<tr>
<td>Chargeless</td>
<td>feet</td>
<td>33</td>
<td>33</td>
</tr>
<tr>
<td>Amount of Additional Charge of Refrigerant</td>
<td>oz/ft</td>
<td>0.22</td>
<td>0.22</td>
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</table>

### Indoor Units

<table>
<thead>
<tr>
<th>FDXS09DVJU</th>
<th>FDXS12DVJU</th>
</tr>
</thead>
<tbody>
<tr>
<td>External Static Pressure</td>
<td>Pa</td>
</tr>
<tr>
<td>Air Flow Rate</td>
<td>cfm</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Fan Type</td>
<td>Sirocco Fan</td>
</tr>
<tr>
<td>Motor Output</td>
<td>W</td>
</tr>
<tr>
<td>Speed Steps</td>
<td>5 Steps, Silent, Auto</td>
</tr>
<tr>
<td>Air Filter</td>
<td>Removable / Washable / Mildew Proof</td>
</tr>
<tr>
<td>Running Current (Rated)</td>
<td>A</td>
</tr>
<tr>
<td>Power Consumption (Rated)</td>
<td>W</td>
</tr>
<tr>
<td>Power Factor</td>
<td>%</td>
</tr>
<tr>
<td>Temperature Control</td>
<td>Microcomputer Control</td>
</tr>
<tr>
<td>Dimensions (HxWxD)</td>
<td>inch</td>
</tr>
<tr>
<td>Packaged Dimensions (HxWxD)</td>
<td>inch</td>
</tr>
<tr>
<td>Weight</td>
<td>Lbs</td>
</tr>
<tr>
<td>Gross Weight</td>
<td>Lbs</td>
</tr>
<tr>
<td>Operation Sound</td>
<td>H/M/L</td>
</tr>
</tbody>
</table>

### Outdoor Units

<table>
<thead>
<tr>
<th>RXS09DVJU</th>
<th>RXS12DVJU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Casing Color</td>
<td>Ivory White</td>
</tr>
<tr>
<td>Compressor Type</td>
<td>Hermetically Sealed Swing Type</td>
</tr>
<tr>
<td>Model</td>
<td>YC23NX05EA</td>
</tr>
<tr>
<td>Motor Output</td>
<td>W</td>
</tr>
<tr>
<td>Refrigerant Oil Type</td>
<td>FVC50K</td>
</tr>
<tr>
<td>Charge oz</td>
<td>12.6</td>
</tr>
<tr>
<td>Refrigerant Type</td>
<td>R-410A</td>
</tr>
<tr>
<td>Charge Lbs</td>
<td>1.76</td>
</tr>
<tr>
<td>Air Flow Rate (m³/min)</td>
<td>H</td>
</tr>
<tr>
<td></td>
<td>L</td>
</tr>
<tr>
<td>Fan Type</td>
<td>Propeller</td>
</tr>
<tr>
<td>Motor Output</td>
<td>W</td>
</tr>
<tr>
<td>Running Current (Rated)</td>
<td>A</td>
</tr>
<tr>
<td>Power Consumption (Rated)</td>
<td>W</td>
</tr>
<tr>
<td>Power Factor</td>
<td>%</td>
</tr>
<tr>
<td>Dimensions (HxWxD)</td>
<td>inch</td>
</tr>
<tr>
<td>Packaged Dimensions (HxWxD)</td>
<td>inch</td>
</tr>
<tr>
<td>Weight</td>
<td>Lbs</td>
</tr>
<tr>
<td>Gross Weight</td>
<td>Lbs</td>
</tr>
<tr>
<td>Operation Sound</td>
<td>H / L</td>
</tr>
</tbody>
</table>

### Drawing No.

<table>
<thead>
<tr>
<th>FDXS09DVJU</th>
<th>FDXS12DVJU</th>
</tr>
</thead>
<tbody>
<tr>
<td>3D051781A</td>
<td>3D051782A</td>
</tr>
</tbody>
</table>

### Note:

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

<table>
<thead>
<tr>
<th>Indoor</th>
<th>Heating</th>
<th>Piping Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indoor ; 80°FDB/67°FWB</td>
<td>80°FDB/60°FWB</td>
<td>25ft</td>
</tr>
<tr>
<td>Outdoor ; 95°FDB/75°FWB</td>
<td>47°FDB/43°FWB</td>
<td></td>
</tr>
</tbody>
</table>

### Conversion Formulae

- kcal/h = kW × 860
- Btu/h = kW × 3414
- cfm = m³/min ÷ 35.3
Part 3
Printed Circuit Board Connector Wiring Diagram

1. Printed Circuit Board Connector Wiring Diagram................................. 12
   1.1 FTXS09/12DVJU....................................................................................... 12
   1.2 FTXS15/18/24DVJU.................................................................................. 14
   1.3 FDXS09/12DVJU ...................................................................................... 16
   1.4 RXS09/12DVJU......................................................................................... 18
   1.5 RXS15/18/24DVJU.................................................................................... 20
1. Printed Circuit Board Connector Wiring Diagram

1.1 FTXS09/12DVJU

Connectors

1) S1  Connector for fan motor
2) S6  Connector for swing motor (horizontal blades)
3) S7  Connector for fan motor (Hall IC)
4) S21 Connector for centralized control (HA)
5) S26 Connector for signal receiver PCB
6) S27, S36 Connector for control PCB
7) S32 Connector for heat exchanger thermistor
8) S35 Connector for INTELLIGENT EYE sensor PCB

Note:
Other designations

1) V1  Varistor
2) JA  Address setting jumper
        JB  Fan speed setting when compressor is OFF on thermostat
        JC  Power failure recovery function (auto-restart)
            * Refer to page 305 for detail.
3) SW7  Forced operation ON / OFF switch
4) LED1 LED for operation (green)
5) LED2 LED for timer (yellow)
6) LED3 LED for HOME LEAVE operation (red)
7) FU1  Fuse (3.15A)
8) RTH1 Room temperature thermistor
9) LED A LED for service monitor (green)
PCB Detail

PCB(1): Control PCB
PCB(2): Signal Receiver PCB

PCB(3): INTELLIGENT EYE sensor PCB
### 1.2 FTXS15/18/24DVJU

#### Connectors

<table>
<thead>
<tr>
<th>No.</th>
<th>Connector</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>S1</td>
<td>Connector for fan motor</td>
</tr>
<tr>
<td>2</td>
<td>S6</td>
<td>Connector for swing motor (horizontal blades)</td>
</tr>
<tr>
<td>3</td>
<td>S8</td>
<td>Connector for swing motor (vertical blades)</td>
</tr>
<tr>
<td>4</td>
<td>S21</td>
<td>Connector for centralized control (HA)</td>
</tr>
<tr>
<td>5</td>
<td>S26, S37</td>
<td>Connector for buzzer PCB</td>
</tr>
<tr>
<td>6</td>
<td>S27, S29, S36</td>
<td>Connector for control PCB</td>
</tr>
<tr>
<td>7</td>
<td>S28</td>
<td>Connector for signal receiver PCB</td>
</tr>
<tr>
<td>8</td>
<td>S32</td>
<td>Connector for heat exchanger thermistor</td>
</tr>
<tr>
<td>9</td>
<td>S35</td>
<td>Connector for Intelligent Eye sensor PCB</td>
</tr>
<tr>
<td>10</td>
<td>S38</td>
<td>Connector for display PCB</td>
</tr>
</tbody>
</table>

#### Note:

Other designations

<table>
<thead>
<tr>
<th>No.</th>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>V1</td>
<td>Varistor</td>
</tr>
<tr>
<td>2</td>
<td>JA</td>
<td>Address setting jumper</td>
</tr>
<tr>
<td></td>
<td>JB</td>
<td>Fan speed setting when compressor is OFF on thermostat</td>
</tr>
<tr>
<td></td>
<td>JC</td>
<td>Power failure recovery function</td>
</tr>
<tr>
<td></td>
<td></td>
<td>* Refer to page 305 for detail.</td>
</tr>
<tr>
<td>3</td>
<td>SW1</td>
<td>Forced operation ON / OFF switch</td>
</tr>
<tr>
<td>4</td>
<td>LED1</td>
<td>LED for operation (green)</td>
</tr>
<tr>
<td>5</td>
<td>LED2</td>
<td>LED for timer (yellow)</td>
</tr>
<tr>
<td>6</td>
<td>LED3</td>
<td>LED for Home Leave operation (red)</td>
</tr>
<tr>
<td>7</td>
<td>FU1</td>
<td>Fuse (3.15A)</td>
</tr>
<tr>
<td>8</td>
<td>RTH1</td>
<td>Room temperature thermistor</td>
</tr>
<tr>
<td>9</td>
<td>LED A</td>
<td>LED for service monitor (green)</td>
</tr>
</tbody>
</table>
PCB Detail

PCB(1): Control PCB (indoor unit)

PCB(2): Signal Receiver PCB

PCB(3): Buzzer PCB

PCB(4): Display PCB

PCB(5): Intelligent Eye sensor PCB
1.3 FDXS09/12DVJU

Connectors

PCB (1) (Control PCB)
1) S1 Connector for fan motor
2) S7 Connector for fan motor
3) S21 Connector for centralized control
4) S26 Connector for display PCB
5) S32 Connector for room temp/heat exchanger thermistor

PCB (2) (Display PCB)
1) S1 Connector for control PCB

Note: Other designations

PCB (1) (Control PCB)
1) V1 Varistor
2) JA Address setting jumper
   JB Fan speed setting when compressor is OFF on thermostat.
   JC Power failure recovery function.
   * Refer to page 305 for more detail.
3) LED A LED for service monitor (green)
4) FU1 Fuse (3.15A)

PCB (2) (Display PCB)
1) SW1 Forced operation ON/OFF switch
2) LED1 LED for operation (Green)
3) LED2 LED for timer (Yellow)
4) LED3 LED for HOME LEAVE Operations (Red)
5) RTH1 Room temperature thermistor

PCB Detail

PCB (1): Control PCB
PCB Detail

PCB (2): Display PCB

![Printed Circuit Board Connector Wiring Diagram](image-url)
## 1.4 RXS09/12DVJU

<table>
<thead>
<tr>
<th>Connectors</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCB(1)(Filter PCB)</td>
<td>1) S11 Connector for control PCB</td>
</tr>
<tr>
<td></td>
<td>2) FU3 Fuse (20A)</td>
</tr>
<tr>
<td></td>
<td>3) V2, V3 Varistor</td>
</tr>
<tr>
<td>PCB(2)(Control PCB)</td>
<td>1) S10 Connector for filter PCB</td>
</tr>
<tr>
<td></td>
<td>2) S20 Connector for electronic expansion valve coil</td>
</tr>
<tr>
<td></td>
<td>3) S30 Connector for compressor motor</td>
</tr>
<tr>
<td></td>
<td>4) S40 Connector for overload protector</td>
</tr>
<tr>
<td></td>
<td>5) S70 Connector for fan motor</td>
</tr>
<tr>
<td></td>
<td>6) S80 Connector for four way valve coil</td>
</tr>
<tr>
<td></td>
<td>7) S90 Connector for thermistors (outdoor air, heat exchanger, discharge pipe)</td>
</tr>
<tr>
<td></td>
<td>8) HC3, HC4, HL3, HN3 Connector for filter PCB</td>
</tr>
</tbody>
</table>

**Note:**
Other designations

<table>
<thead>
<tr>
<th>PCB(1)(Filter PCB)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) FU1, FU2</td>
<td>Fuse (3.15A)</td>
</tr>
<tr>
<td>2) LED A</td>
<td>Service monitor LED</td>
</tr>
<tr>
<td>3) V1</td>
<td>Varistor</td>
</tr>
</tbody>
</table>
PCB Detail

PCB(1): Filter PCB

PCB(2): Control PCB (outdoor unit)
### 1.5 RXS15/18/24DVJU

#### Connectors

<table>
<thead>
<tr>
<th>PCB(1) (Control PCB)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) S10, AC2</td>
<td>Connector for terminal strip</td>
</tr>
<tr>
<td>2) S20</td>
<td>Connector for electronic expansion valve coil</td>
</tr>
<tr>
<td>3) S31, S32</td>
<td>Connector for SPM</td>
</tr>
<tr>
<td>4) S33, S71</td>
<td>Connector for MID</td>
</tr>
<tr>
<td>5) S40</td>
<td>Connector for overload protector</td>
</tr>
<tr>
<td>6) S51, S101</td>
<td>Connector for service monitor PCB</td>
</tr>
<tr>
<td>7) S80</td>
<td>Connector for four way valve coil</td>
</tr>
<tr>
<td>8) S90</td>
<td>Connector for thermistors (outdoor air, heat exchanger, and discharge pipe)</td>
</tr>
<tr>
<td>9) S91</td>
<td>Connector for fin thermistor</td>
</tr>
<tr>
<td>10) AC1, E</td>
<td>Connector for power supply PCB</td>
</tr>
<tr>
<td>11) H1, H2</td>
<td>Connector for diode bridge</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PCB(2) (Power Supply PCB)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) HL</td>
<td>Connector for terminal strip</td>
</tr>
<tr>
<td>2) HAC1, HE1</td>
<td>Connector for control PCB</td>
</tr>
<tr>
<td>3) HE2</td>
<td>Connector for earth</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PCB(3) (Service Monitor PCB)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) S52, S102</td>
<td>Connector for control PCB</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MID</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) S34, S72</td>
<td>Connector for control PCB</td>
</tr>
<tr>
<td>2) S70</td>
<td>Connector for fan motor</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SPM</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) CN11, CN14</td>
<td>Connector for control PCB</td>
</tr>
<tr>
<td>2) L1, L2</td>
<td>Connector for reactor</td>
</tr>
</tbody>
</table>

#### Note:

**Other Designations**

**PCB(1) (Control PCB)**

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) FU2</td>
</tr>
</tbody>
</table>

**PCB(2) (Power Supply PCB)**

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) FU1</td>
</tr>
<tr>
<td>2) V3</td>
</tr>
</tbody>
</table>

**PCB(3) (Service Monitor PCB)**

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) LED A</td>
</tr>
<tr>
<td>2) SW1</td>
</tr>
</tbody>
</table>

**MID**

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) FU201</td>
</tr>
</tbody>
</table>
PCB Detail

PCB(1): Control PCB (outdoor unit)

PCB(2): Power Supply PCB

Service Monitor PCB
Part 4

Function and Control

1. Main Functions
   1.1 Frequency Principle
   1.2 Power-Airflow Dual Flaps, Wide-Angle Louvres and Auto-Swing
       (Only for the Single Split Duct-Free System)
   1.3 Fan Speed Control for Indoor Units
   1.4 Program Dry Function
   1.5 Automatic Operation
   1.6 Thermostat Control
   1.7 NIGHT SET Mode
   1.8 INTELLIGENT EYE
   1.9 HOME LEAVE Operation
   1.10 Inverter Powerful Operation
   1.11 Other Functions

2. Function of Thermistor
   2.1 Heat Pump Model

3. Control Specification (09/12 Class)
   3.1 Mode Hierarchy
   3.2 Frequency Control
   3.3 Controls at Mode Changing / Start-up
   3.4 Discharge Pipe Control
   3.5 Input Current Control
   3.6 Freeze-up Protection Control
   3.7 Heating Peak-cut Control
   3.8 Fan Control
   3.9 Liquid Compression Protection Function 2
   3.10 Defrost Control
   3.11 Electronic Expansion Valve Control
   3.12 Malfunctions
   3.13 Forced Operation Mode
   3.14 Additional Function

4. Control Specification (15/18/24 Class)
   4.1 Mode Hierarchy
   4.2 Frequency Control
   4.3 Controls at Mode Changing / Start-up
   4.4 Discharge Pipe Temperature Control
   4.5 Input Current Control
   4.6 Freeze-up Protection Control
   4.7 Heating Peak-cut Control
   4.8 Fan Control
   4.9 Liquid Compression Protection Function 2
   4.10 Low Hz High Pressure Limit
4.11 Defrost Control ................................................................. 61
4.12 Electronic Expansion Valve Control .................................... 62
4.13 Malfunctions ................................................................. 65
4.14 Forced Operation Mode ..................................................... 66
4.15 Additional Function .......................................................... 66
1. Main Functions

Note: See the list of functions for the functions applicable to different models.

1.1 Frequency Principle

Main Control Parameters

The compressor is frequency-controlled during normal operation. The target frequency is set by the following 2 parameters coming from the operating indoor unit:
- The load condition of the operating indoor unit
- The difference between the room temperature and the set temperature

Additional Control Parameters

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 vary the rotation speed of the compressor. The following table explains the conversion 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 increased refrigerant circulation. This leads to a higher amount of the heat exchange per unit.  
- When the frequency decreases, the rotation speed of the compressor decreases resulting in a decreased refrigerant circulation. This leads to a lower amount of the heat exchange per unit. |

Drawing of Inverter

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

The inverter provides the following features:

- The regulating capacity can be changed according to the changes in the outdoor air temperature and cooling/heating load.
- Quick heating and quick cooling
  The compressor rotational speed is increased when starting the heating (or cooling). This enables a quick set temperature.
- Even during extreme cold weather, the high capacity is achieved. It is maintained even when the outdoor air temperature is 36°F.
- Comfortable air conditioning
  A detailed adjustment is integrated to ensure a fixed room temperature. It is possible to air condition with a small room temperature variation.
- Energy saving heating and cooling
  Once the set temperature is reached, the energy saving operation enables to maintain the room temperature at low power.

**Frequency Limits**

The following table shows the functions that define the minimum and maximum frequency:

<table>
<thead>
<tr>
<th>Frequency limits</th>
<th>Limited during the activation of following functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>■ Four way valve operation compensation. Refer to page 43.</td>
</tr>
</tbody>
</table>
| High             | ■ Input current control. Refer to page 45.  
|                  | ■ Compressor protection function. Refer to page 44.  
|                  | ■ Heating peak-cut control. Refer to page 46.  
|                  | ■ Freeze-up protection control. Refer to page 45.  
|                  | ■ Defrost control. Refer to page 47. |

**Forced Cooling Operation**

For more information, refer to “Forced operation mode” on page 52.
1.2 Power-Airflow Dual Flaps, Wide-Angle Louvres and Auto-Swing (Only for the Single Split Duct-Free System)

**Power-Airflow Dual Flaps**
The large flaps send a large volume of air downwards to the floor. The flap provides an optimum control area in cooling, heating and dry mode.

**Heating Mode**
During heating mode, the large flap enables direct warm air straight downwards. The flap presses the warm air above the floor to reach the entire room.

**Cooling Mode**
During cooling mode, the flap retracts into the indoor unit. Then, cool air can be blown far and pervaded all over the room.

**Wide-Angle Louvres**
The louvres, 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 heating, cooling, dry and fan:

### 09/12 Class

<table>
<thead>
<tr>
<th>Vertical Swing (up and down)</th>
<th>Horizontal Swing (right and left: manual)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooling / Dry / Fan</td>
<td>Heating</td>
</tr>
<tr>
<td>Heating</td>
<td>Heating, Cooling</td>
</tr>
</tbody>
</table>

**15/18/24 Class**

<table>
<thead>
<tr>
<th>Vertical Swing (up and down)</th>
<th>Horizontal Swing (right and left)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heating</td>
<td>Cooling</td>
</tr>
<tr>
<td>Dry</td>
<td>Fan</td>
</tr>
<tr>
<td>Fan</td>
<td>Heating, Cooling</td>
</tr>
</tbody>
</table>

**Outline of 3-D Airflow**
Alternative repetition of vertical and horizontal swing motions enables uniform air-conditioning of the entire room. This function is effective for starting the air conditioner.

**Detail of the Action**
When the horizontal swing and vertical swing are both set to auto mode, the airflow become 3-D airflow and the horizontal swing and vertical swing motions are alternated. The order of swing motion is such that it turns counterclockwise, starting from the right upper point as viewed to the front side of the indoor unit.
1.3 **Fan Speed Control** for Indoor Units

**Control Mode**
The airflow rate can be automatically controlled depending on the difference between the set temperature and the room temperature. This is done through phase control and Hall IC control.

For more information about Hall IC, refer to trouble shooting for fan motor on page 152.

**Phase Steps**

<table>
<thead>
<tr>
<th>Step</th>
<th>Cooling</th>
<th>Heating</th>
<th>Dry mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>LLL (Heating thermostat OFF)</td>
<td></td>
<td>09/12 class : 500 - 860 rpm</td>
<td></td>
</tr>
<tr>
<td>LL (Cooling thermostat OFF)</td>
<td></td>
<td>(During powerful operation : 850 - 910 rpm)</td>
<td></td>
</tr>
<tr>
<td>SL (Silent)</td>
<td></td>
<td>15/18/24 class : 750 - 1000 rpm</td>
<td></td>
</tr>
<tr>
<td>L</td>
<td></td>
<td>(During powerful operation : 1050 rpm)</td>
<td></td>
</tr>
<tr>
<td>ML</td>
<td></td>
<td>(R4085)</td>
<td></td>
</tr>
<tr>
<td>M</td>
<td></td>
<td>(R4085)</td>
<td></td>
</tr>
<tr>
<td>MH</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HH (Powerful)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

= Within this range the airflow rate is automatically controlled when the FAN setting button is set to automatic.

**Note:**
1. During powerful operation, fan operate H tap + 50 - 90 rpm.
2. Fan stops during defrost operation.

**Automatic Air Flow Control for Heating**
The following drawing explains the principle for fan speed control for heating:

**Automatic Air Flow Control for Cooling**
The following drawing explains the principle of fan speed control for cooling:
1.4 Program Dry Function

Program dry function removes humidity while preventing the room temperature from lowering. Since the microcomputer controls both the temperature and air flow volume, the temperature adjustment and fan adjustment buttons are inoperable in this mode.

In Case of Inverter Units

The microcomputer automatically sets the temperature and fan settings. The difference between the room temperature at startup and the temperature set by the microcomputer is divided into two zones. Then, the unit operates in the dry mode with an appropriate capacity for each zone to maintain the temperature and humidity at a comfortable level.

<table>
<thead>
<tr>
<th>Room temperature at startup</th>
<th>Temperature (ON point) at which operation starts</th>
<th>Frequency switching point</th>
<th>Temperature difference for operation stop</th>
</tr>
</thead>
<tbody>
<tr>
<td>75°F</td>
<td>Room temperature at startup</td>
<td>Δ0.9°F</td>
<td>Δ2.7°F</td>
</tr>
<tr>
<td>64°F</td>
<td>64°F</td>
<td></td>
<td>Δ1.8°F</td>
</tr>
<tr>
<td>63°F</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

LHz indicates low frequency. Item marked with ※ varies depending on models.
1.5 **Automatic Operation**

**Automatic Cooling / Heating Function (Heat Pump Only)**

When the AUTO mode is selected with the remote controller, the microcomputer automatically determines the operation mode from cooling and heating according to the room temperature and setting temperature at the time of the operation startup, and automatically operates in that mode. The unit automatically switches the operation mode to cooling or heating to maintain the room temperature at the main unit setting temperature.

**Detailed Explanation of the Function**

1. Remote controller setting temperature is set as automatic cooling / heating setting temperature (64 to 86°F).
2. Main unit setting temperature equals remote controller setting temperature plus correction value (correction value / cooling: Δ0°F, heating: Δ3.6°F).
3. Operation ON / OFF point and mode switching point are as follows.
   ① Heating → Cooling switching point:
   Room temperature ≥ Main unit setting temperature + Δ4.5°F
   ② Cooling → Heating switching point:
   Room temperature < Main unit setting temperature − Δ4.5°F
   ③ Thermostat ON / OFF point is the same as the ON / OFF point of cooling or heating operation.
4. During initial operation
   Room temperature ≥ Remote controller setting temperature: Cooling operation
   Room temperature < Remote controller setting temperature: Heating operation

![Diagram showing heating/cooling switching points and compressor capacity](image-url)
1.6 **Thermostat Control**

Thermostat control is based on the difference between the room temperature and the setpoint.

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

**Thermostat ON Condition**
- The temperature difference is above 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**

![Cooling / Dry Diagram]

**Heating**

![Heating Diagram]
1.7 NIGHT SET Mode

When the OFF timer is set, the NIGHT SET circuit automatically activates. The NIGHT SET circuit maintains the airflow setting made by users.

The NIGHT SET Circuit

The NIGHT SET circuit continues heating or cooling the room at the set temperature for the first one hour, then automatically raises the temperature setting slightly in the case of cooling, or lowers it slightly in the case of heating, for economical operations. This prevents excessive heating in winter and excessive cooling in summer to ensure comfortable sleeping conditions, and also conserves electricity.

Cooling Operation

Heating Operation
1.8 INTELLIGENT EYE

This is the function that detects existence of humans in the room by a human motion sensor (INTELLIGENT EYE) and reduces the capacity when there is no human in the room in order to save electricity.

Processing

1. Detection method by INTELLIGENT EYE

- This sensor detects human motion by receiving infrared rays and displays the pulse wave output.
- A microcomputer in an indoor unit carries out a sampling every 20 msec. and if it detects 10 cycles of the wave in one second in total (corresponding to 20msec. × 10 = 100msec.), it judges human is in the room as the motion signal is ON.

2. The motions (for example: in cooling)

- When a microcomputer doesn’t have a signal from the sensor in 20 minutes, it judges that nobody is in the room and operates the unit in temperature sifted \( \Delta 3.6^\circ F \) from the set temperature. (COOL: \( \Delta 3.6^\circ F \) higher, DRY: \( \Delta 1.8^\circ F \) higher, AUTO: according to the operation mode at that time.)

\*1 In case of FAN mode, the fan speed reduces by 50 rpm.
- Since the set temperature is shifted by $\Delta 3.6^\circ F$ higher for 40 minutes, compressor speed becomes low and can realize energy saving operation. But as thermostat is prone to be off by the fact that the set temperature has been shifted, the thermostat-off action is prohibited in 40 minutes so as to prevent this phenomena. After this 40 minutes, the prohibition of the thermostat-off is cancelled and it can realize the conditions to conduct thermostat-off depending on the room temperature. In or after this forty minutes, if the sensor detects human motion detection signal, it let the set temperature and the fan speed return to the original set point, keeping a normal operation.

**Others**

- The dry operation can’t command the setting temperature with a remote controller, but internally the set temperature is shifted by $\Delta 1.8^\circ F$. 
1.9 HOME LEAVE Operation

Outline
In order to respond to the customer's need for immediate heating and cooling of the room after returning home or for house care, a measure to switch the temperature and air volume from that for normal time over to outing time by one touch is provided. (This function responds also to the need for keeping up with weak cooling or heating.)

This time, we seek for simplicity of operation by providing the special temperature and air volume control for outing to be set by the exclusive button.

Detail of the Control

1. Start of Function
The function starts when the [HOME LEAVE] button is pressed in cooling mode or heating mode (including stopping and powerful operation). If this button is pressed while the operation is stopped, the function becomes effective when the operation is started. If this button is pressed in powerful operation, the powerful operation is reset and this function becomes effective.
- The [HOME LEAVE] button is ineffective in dry mode and fan mode.

2. Details of Function
A mark representing [HOME LEAVE] is indicated on the liquid crystal display of the remote controller. The indoor unit is operated according to the set temperature and air volume for HOME LEAVE which were pre-set in the memory of the remote controller.

The LED (Red) of indoor unit representing [HOME LEAVE] lights up. (It goes out when the operation is stopped.)

3. End of Function
The function ends when the [HOME LEAVE] button is pressed again during [HOME LEAVE] operation or when the powerful operation button is pressed.

Others
The set temperature and set air volume are memorized in the remote controller. When the remote controller is reset due to replacement of battery, it is necessary to set the temperature and air volume again for [HOME LEAVE].
1.10 Inverter **Powerful Operation**

**Outline**
In order to exploit the cooling and heating capacity to full extent, operate the air conditioner by increasing the indoor fan rotating speed and the compressor frequency.

**Details of the Control**
When POWERFUL button is pushed in each operation mode, the fan speed / setting temperature will be converted to the following states in a period of twenty minutes.

<table>
<thead>
<tr>
<th>Operation mode</th>
<th>Fan speed</th>
<th>Target set temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>COOL</td>
<td>H tap + 90 rpm</td>
<td>64°F</td>
</tr>
<tr>
<td>DRY</td>
<td>Dry rotating speed + 50 rpm</td>
<td>Normally targeted temperature in dry operation; Approx. –Δ3.6°F</td>
</tr>
<tr>
<td>HEAT</td>
<td>H tap + 90 rpm</td>
<td>86°F</td>
</tr>
<tr>
<td>FAN</td>
<td>H tap + 90 rpm</td>
<td>—</td>
</tr>
<tr>
<td>AUTO</td>
<td>Same as cooling / heating in Powerful operation</td>
<td>The target is kept unchanged</td>
</tr>
</tbody>
</table>

Ex.) : Powerful operation in cooling mode.

- Target temp. 
- Set temp. 
- 64°F 
- Powerful ON 
- Powerful OFF 
- Fan 
- H tap 
- Set tap 
- 20min.

It should be the lower limit of cooling temperature.

It counts 20 min. also in the remote controller.

Ending condition: "or" in 1 to 3
1. After the lapse of 20 minutes. 
2. Stop 
3. Powerful operation is OFF.
1.11 Other Functions

1.11.1 Hot Start Function

Heat Pump Only

In order to prevent the cold air blast that normally comes when heating is started, the temperature of the heat exchanger of the indoor unit is detected, and either the air flow is stopped or is made very weak thereby carrying out comfortable heating of the room.

*The cold air blast is also prevented using a similar control when the defrosting operation is started or when the thermostat gets turned ON.

1.11.2 Signal Receiving Sign

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

1.11.3 ON/OFF Button on Indoor Unit

An ON/OFF switch is provided on the front panel of the unit. Use this switch when the remote controller is missing or if its battery has run out.

Every press of the switch changes from Operation to Stop or from Stop to Operation

In case of the Single Split Duct-Free System

Push this button once to start operation. Push once again to stop it.

This button is useful when the remote controller is missing.

The operation mode refers to the following table.

<table>
<thead>
<tr>
<th>Mode</th>
<th>Temperature setting</th>
<th>Air flow rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat Pump</td>
<td>AUTO</td>
<td>77°F</td>
</tr>
</tbody>
</table>

In the case of multi system operation, there are times when the unit does not activate with this button.
1.11.4 **Air Purifying Filter with Photocatalytic Deodorizing Function**

   **The Single Split Duct-Free System Only**
   This filter incorporates the benefits of the Air Purifying Filter and Photocatalytic Deodorizing Filter in a single unit. Combining the two filters in this way increases the active surface area of the new filter. This larger surface area allows the filter to effectively trap microscopic particles, decompose odours and deactivate bacteria and viruses even for the high volume of air required to air-condition large living rooms. The filter can be used for approximately 3 years if periodic maintenance is performed.

1.11.5 **Mold Proof Air Filter**

   **The Single Split Duct-Free System Only**
   The air filter net is impregnated with a safe, odourless mould preventative to make the filter virtually immune to mould.

1.11.6 **Self-Diagnosis Digital Display**

   The microcomputer continuously monitors main operating conditions of the indoor unit, outdoor unit and the entire system. When an abnormality occurs, the LCD remote controller displays error code. These indications allow prompt maintenance operations.

1.11.7 **Auto-restart Function**

   Even if a power failure (including one for just a moment) occurs during the operation, the operation restarts in the condition before power failure automatically when power is restored. (Note) It takes 3 minutes to restart the operation because the 3-minutes standby function is activated.
2. Function of Thermistor

2.1 Heat Pump Model

A Outdoor Heat Exchanger Thermistor (DCB)

1. The outdoor heat exchanger thermistor is used for controlling target discharge temperature. Set a target discharge temperature depending on the outdoor and indoor heat exchanger temperature. Control the electronic expansion valve opening so that the target discharge temperature can be obtained.
2. The outdoor heat exchanger thermistor is used for detecting the discharge thermistor disconnected when cooling. When the temperature of the discharge piping is lower than the temperature of outdoor heat exchanger, a disconnected discharge thermistor can be detected.
3. The outdoor heat exchanger thermistor is used for high pressure protection during cooling operation.

B Discharge Pipe Thermistor (DOT)

1. The discharge pipe thermistor is used to control the discharge pipe. If the temperature of discharge pipe (used in place of the inner temperature of the compressor) rises abnormally, the operating frequency drops or the operation must be halted.
2. The discharge pipe thermistor is used for detecting the discharge thermistor disconnected.

C Indoor Heat Exchanger Thermistor (DCN)

1. The indoor heat exchanger thermistor is used for controlling target discharge pipe temperature. Set a target discharge pipe temperature according to the outdoor and indoor heat exchanger temperature. Control the electronic expansion valve so that the target discharge pipe temperature can be obtained.
2. The indoor heat exchanger thermistor is used to prevent freezing. During the cooling operation, if the temperature drops abnormally, the operating frequency becomes lower, then the operation must be halted.
3. The indoor heat exchanger thermistor is used for anti-icing control. During the cooling operation, if the heat exchanger temperature in the room where operation is halted becomes 30°F, or if the room temperature - heat exchanger temperature in the room where operation is halted becomes ≥18°F, it is assumed as icing.
4. During heating: the indoor heat exchanger thermistor is used for detecting the discharge pipe thermistor disconnected. When the discharge pipe temperature become lower than an indoor heat exchanger temperature, a disconnected discharge pipe thermistor can be detected.
3. Control Specification (09/12 Class)

3.1 Mode Hierarchy

Outline

There are two modes; the mode selected in user's place (normal air conditioning mode) and forced operation mode for installation and providing service.

Detail

For heat pump model

There are following modes; stop, cooling (includes drying), heating (include defrosting)

- Air conditioner control mode
  - Forced operating mode
    - Forced cooling (for Pump Down Operation)
  - Normal operating mode
    - Cooling
    - Heating
    - Defrosting
    - Stop mode (except for cooling/heating modes by indoor command)
      - Preheat operation
      - During C (capacitor) is discharging
      - Stop

Note: Unless specified otherwise, an indoor dry operation command must be regarded as cooling operation.
3.2 Frequency Control

Outline
Frequency will be determined according to the difference between room and set temperature. The function is explained as follows.
1. How to determine frequency.
2. Frequency command from an indoor unit. (The difference between a room temperature and the temperature set by the remote controller.)
3. Frequency command from an indoor unit.
4. Frequency initial setting.
5. PI control.

Detail
How to Determine Frequency
The compressor's frequency will finally be determined by taking the following steps.

For Heat Pump Model

1. Determine command frequency
   - Command frequency will be determined in the following order of priority.
     1.1 Limiting frequency by drooping function
     - Input current, discharge pipes, peak cutting, freeze-up protection, dew prevention, fin thermistor temperature.
     1.2 Limiting defrost control time
     1.3 Forced cooling
     1.4 Indoor frequency command

2. Determine upper limit frequency
   - Set a minimum value as an upper limit frequency among the frequency upper limits of the following functions:
     Compressor protection, input current, discharge pipes, peak cutting, freeze-up protection, defrost.

3. Determine lower limit frequency
   - Set a maximum value as an lower limit frequency among the frequency lower limits of the following functions:
     Four way valve operating compensation, draft prevention, pressure difference upkeep.

4. Determine prohibited frequency
   - There is a certain prohibited frequency such as a power supply frequency.
Indoor Frequency Command (ΔD signal)

The difference between a room temperature and the temperature set by the remote controller will be taken as the “ΔD signal” and is used for 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>
<th>Temperature difference</th>
<th>ΔD signal</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>*Th OFF</td>
<td>2.0</td>
<td>4</td>
<td>8</td>
<td>6.0</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>0.5</td>
<td>1</td>
<td>2.5</td>
<td>5</td>
<td>9</td>
<td>6.5</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>1.0</td>
<td>2</td>
<td>3.0</td>
<td>6</td>
<td>5.0</td>
<td>A</td>
<td>7.0</td>
<td>E</td>
</tr>
<tr>
<td>1.5</td>
<td>3</td>
<td>3.5</td>
<td>7</td>
<td>5.5</td>
<td>B</td>
<td>7.5</td>
<td>F</td>
</tr>
</tbody>
</table>

*Th OFF = Thermostat OFF

Frequency Initial Setting

<Outline>

When starting the compressor, or when conditions are varied due to the change of the room, the frequency must be initialized according to the ΔD value of the indoor unit and the Q value of the indoor unit.

Q value: Indoor unit output determined from indoor unit volume, air flow rate and other factors.

PI Control (Determine Frequency Up / Down by ΔD Signal)

1. **P control**
   - Calculate ΔD value in each sampling time (20 seconds), and adjust the frequency according to its difference from the frequency previously calculated.

2. **I control**
   - If the operating frequency is not change more than a certain fixed time, adjust the frequency up and down according to the ΔD value, obtaining the fixed ΔD value.
   - When the ΔD value is small...lower the frequency.
   - When the ΔD value is large...increase the frequency.

3. Frequency management when other controls are functioning
   - When frequency is drooping; Frequency management is carried out only when the frequency droops.
   - For limiting lower limit Frequency management is carried out only when the frequency rises.

4. **Upper and lower limit of frequency by PI control**
   - The frequency upper and lower limits are set depending on indoor unit.
   - When low noise commands come from the indoor unit or when outdoor unit low noise or quiet commands come from indoor unit, the upper limit frequency must be lowered than the usual setting.
3.3 Controls at Mode Changing / Start-up

3.3.1 Preheating Operation

Outline
Operate the inverter in the open phase operation with the conditions including the preheating command from the discharge pipe temperature.

Detail

Preheating ON Condition
- When the discharge pipe temperature is below 50ºF, inverter in open phase operation starts.

OFF Condition
- When the discharge pipe temperature is higher than 54ºF, inverter in open phase operation stops.

3.3.2 Four Way Valve Switching

Outline of Heating Operation

Heat Pump Only
During the heating operation current must be conducted and during cooling and defrosting current must not be conducted. In order to eliminate the switching sound (as the four way valve coil switches from ON to OFF) when the heating is stopped, the delay switch of the four way valve must be carried out after the operation stopped.

Detail
The OFF delay of four way valve
Energize the coil for 160 sec after unit operation is stopped.

3.3.3 Four Way Valve Operation Compensation

Outline
Heat Pump Only
At the beginning of the operation as the four way valve is switched, acquire the differential pressure required for activating the four way valve by having output the operating frequency, which is more than a certain fixed frequency, for a certain fixed time.

Detail

Starting Conditions
1. When starting compressor for heating.
2. When the operating mode changes to cooling from heating.
3. When starting compressor for rushing defrosting or resetting.
4. When starting compressor for the first time after the reset with the power is ON.
5. When starting compressor for heating next to the suspension of defrosting.
6. When starting compressor next to the fault of switching over cooling / heating.
Set the lower limit frequency to 68 (model by model) Hz for 45 seconds with any conditions 1 through 4 above.
3.3.4 **3-minutes Standby**
Prohibit to turn ON the compressor for 3 minutes after turning it off.
(except when defrosting)

3.3.5 **Compressor Protection Function**
When turning the compressor from OFF to ON, the upper limit of frequency must be set as follows.
(The function must not be used when defrosting.)

<table>
<thead>
<tr>
<th>FCG 3</th>
<th>88</th>
</tr>
</thead>
<tbody>
<tr>
<td>FCG 2</td>
<td>64</td>
</tr>
<tr>
<td>FCG 1</td>
<td>48</td>
</tr>
<tr>
<td>TCG1</td>
<td>240</td>
</tr>
<tr>
<td>TCG2</td>
<td>360</td>
</tr>
<tr>
<td>TCG3</td>
<td>180</td>
</tr>
</tbody>
</table>

3.4 **Discharge Pipe Control**

**Outline**
The discharge pipe temperature is used as the compressor's internal temperature. If the discharge pipe temperature rises above a certain level, the operating frequency upper limit is set to keep this temperature from going up further.

**Detail**

**Divide the Zone**

<table>
<thead>
<tr>
<th>Zone</th>
<th>Control contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stop zone</td>
<td>When the temperature reaches the stop zone, stop the compressor and correct abnormality.</td>
</tr>
<tr>
<td>Drooping zone</td>
<td>Start the timer, and the frequency will be drooping.</td>
</tr>
<tr>
<td>Keep zone</td>
<td>Keep the upper limit of frequency.</td>
</tr>
<tr>
<td>Return / Reset zone</td>
<td>Cancel the upper limit of frequency.</td>
</tr>
</tbody>
</table>
3.5 Input Current Control

Outline
Detect an input current by the CT during the compressor is running, and set the frequency upper limit from such input current.
In case of heat pump model, this control is the upper limit control function of the frequency which takes priority of the lower limit of four way valve activating compensation.

Detail
The frequency control will be made within the following zones.

When a “stop current” continues for 2.5 seconds after rushing on the stop zone, the compressor operation stops.
If a “drooping current” is continues for 1.0 second after rushing on the drooping zone, the frequency will be 2 Hz drooping.
Repeating the above drooping continues until the current rushes on the drooping zone without change.
In the keep zone, the frequency limit will remain.
In the return / reset zone, the frequency limit will be cancelled.

Limitation of current drooping and stop value according to the outdoor air temperature
1. In case the operation mode is cooling
   ♦ The current droops when outdoor air temperature becomes higher than a certain level (model by model).
2. In case the operation mode is heating
   ♦ The current droops when outdoor air temperature becomes higher than a certain level (model by model).

3.6 Freeze-up Protection Control

Outline
During cooling operation, the signals being sent from the indoor unit allow the operating frequency limitation and then prevent freezing of the indoor heat exchanger. (The signal from the indoor unit must be divided into the zones as the followings.)

Detail
Conditions for Start Controlling
Judge the controlling start with the indoor heat exchanger temperature after 2 sec from operation start.
Control in Each Zone
3.7 Heating Peak-cut Control

Outline

Heat Pump Only
During heating operation, the signals being sent from the indoor unit allow the operating frequency limitation and prevent abnormal high pressure. (The signal from the indoor unit must be divided as follows.)

Detail

Conditions for Start Controlling
Judge the controlling start with the indoor heat exchanger temperature after 2 sec. from operation start.

Control in Each Zone
The heat exchange intermediate temperature of indoor unit controls the following.

3.8 Fan Control

Outline

Fan control is carried out according to the following priority.
1. Fan control when defrosting
2. Fan OFF delay when stopped
3. ON/OFF control when cooling operation
4. Tap control when drooping function is working
5. Fan control when forced operation
6. Fan control in low noise mode
7. Fan control during heating operation
8. Fan control in the quiet mode
9. Fan control in the powerful mode
10. Fan control for pressure difference upkeep

Detail

Fan OFF Control when Stopped
- Fan OFF delay for 60 seconds must be made when the compressor is stopped.

3.9 Liquid Compression Protection Function 2

Outline

In order to obtain the dependability of the compressor, the compressor must be stopped according to the conditions of the temperature of the outdoor air and outdoor heat exchanger.

Detail

- Operation stop depending on the outdoor air temperature
  Compressor operation turns OFF under the conditions that the system is in cooling operation and outdoor air temperature is below 14°F.
3.10 **Defrost Control**

**Outline**

**Heat Pump Only**
Defrosting is carried out by the cooling cycle (reverse cycle). The defrosting time or outdoor heat exchanger temperature must be more than its fixed value when finishing.

**Detail**

**Conditions for Starting Defrost**
The starting conditions must be made with the outdoor air temperature and heat exchanger temperature. Under the conditions that the system is in heating operation, 6 minutes after the compressor is started and more than 44 minutes of accumulated time pass since the start of the operation or ending the defrosting.

**Conditions for Canceling Defrost**
The judgment must be made with heat exchanger temperature. (39°F~72°F)
### 3.11 Electronic Expansion Valve Control

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

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

**Open Control**
1. Electronic expansion valve control when starting operation
2. Control when frequency changed
3. Control for defrosting (only for heat pump model)
4. Control when a discharge pipe temperature is abnormally high
5. Control when the discharge pipe thermistor is disconnected

**Feedback Control**
1. Discharge pipe temperature control

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

![Diagram of control patterns](image-url)
3.11.1 Fully Closing with Power ON

Initialize the electronic expansion valve when turning on the power, set the opening position and develop pressure equalizing.

3.11.2 Pressure Equalization Control

When the compressor is stopped, open and close the electronic expansion valve and develop pressure equalization.

3.11.3 Opening Limit

Outline

Limit a maximum and minimum opening of the electronic expansion valve.

Detail

- A maximum electronic expansion valve opening : 450 pulses
- A minimum electronic expansion valve opening : 52 pulses

The electronic expansion valve is fully closed in the room where cooling is stopped and is opened with fixed opening during defrosting.

3.11.4 Starting Operation Control

Control the electronic expansion valve opening when the system is starting, and prevent the system to be super heated or moistened.

3.11.5 High Temperature of the Discharge Pipe

When the compressor is operating, if the discharge pipe temperature exceeds a certain value, open the electronic expansion valve and remove the refrigerant to the low pressure side and lower discharge temperature.

3.11.6 Disconnection of the Discharge Pipe Thermistor

Outline

Detect a disconnected discharge pipe thermistor by comparing the discharge pipe temperature with the condensation temperature. If any is disconnected, open the electronic expansion valve according to the outdoor air temperature and the operating frequency and operate for a specified time, and then stop.

After 3 minutes of waiting, restart the unit and check if any is disconnected. If any is disconnected stop the system after operating for a specified time. If the disconnection is detected 4 times in succession, then the system will be down.

Detail

- Detect Disconnection

  If the timer for open control (cooling : 12min., heating : 15min.) becomes over, and the 9-minute timer for the compressor operation continuation is not counting time, the following adjustment must be made.

  1. When the operation mode is cooling
     When the discharge pipe temperature is lower than the outdoor heat exchanger temperature, the discharge pipe thermistor disconnection must be ascertained.

  2. When the operation mode is heating
     When the discharge pipe temperature is lower than the max temperature of indoor unit heat exchanger, the discharge pipe thermistor disconnection must be ascertained.

Adjustment when the thermistor is disconnected

When compressor stop repeats specified time, the system should be down.
3.11.7 Control when frequency is changed
When the target discharge pipe temperature control is active, if the target frequency is changed for a specified value in a certain time period, cancel the target discharge pipe temperature control and change the target opening of the electronic expansion valve according to the shift.

3.11.8 Target Discharge Pipe Temperature Control
Obtain the target discharge pipe temperature from the indoor and outdoor heat exchanger temperature, and adjust the electronic expansion valve opening so that the actual discharge pipe temperature become close to that temperature. (Indirect SH control using the discharge pipe temperature)

![Diagram of SC and SH with instructions](R1389)

Determine a correction value of the electronic expansion valve compensation and drive it according to the deflection of the target discharge temperature and actual discharge temperature, and the discharge temperature variation by the 20 sec.
3.12 Malfunctions

3.12.1 Sensor Malfunction Detection

Sensor malfunction may occur in the thermistor.

**Relating to Thermistor Malfunction**

1. Outdoor heat exchanger thermistor
2. Discharge pipe thermistor
3. Fin thermistor
4. Outdoor air thermistor

3.12.2 Detection of Overload and Over Current

**Outline**

In order to protect the inverter, detect an excessive output current, and for protecting compressor, monitor the OL operation.

**Detail**

- If the OL (compressor head) temperature exceeds 248°F (depending on the model), the compressor gets interrupted.
- If the inverter current exceeds 22 A, the compressor gets interrupted too.

3.12.3 Insufficient Gas Control

**Outline**

There are three ways of control to detect insufficient gas.

**I Detecting by power consumption**

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

The power consumption is weak comparing with that in the normal operation when gas is insufficient, and gas insufficiency is detected by checking a power consumption.

![Power Consumption Graph](image)

**II Detecting by discharge pipe temperature**

If the discharge temperature is higher than the target discharge pipe temperature, and the electronic expansion valve is fully open (450 pulses) more than the specified time, it is regarded as insufficient gas.

![Discharge Temperature Graph](image)

**III Detecting by the difference of temperature**

If the difference between inhale and exhale temperature is smaller than the specified value, it is regarded as insufficient gas.
Detail

I Judgment by power consumption
When an output frequency is exceeds 55 Hz and the input current is less than specified value, the adjustment is made for insufficient gas.

II Judgment by discharge pipe temperature
When discharge pipe temperature is $\Delta 36^\circ \text{F}$ higher than target value and the electronic expansion value opening is 450 pulses (max.), the adjustment is made for insufficient gas.

III Judgment by the difference of temperature
When the difference of the temperature is smaller than $\Delta$, it is regarded as insufficient gas.

<table>
<thead>
<tr>
<th>Cooling</th>
<th>room temperature – indoor heat exchanger temperature</th>
<th>$\Delta7.2^\circ \text{F}$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>outdoor heat exchanger temperature – outdoor temperature</td>
<td>$\Delta7.2^\circ \text{F}$</td>
</tr>
<tr>
<td>Heating</td>
<td>indoor heat exchanger temperature – room temperature</td>
<td>$\Delta7.2^\circ \text{F}$</td>
</tr>
<tr>
<td></td>
<td>outdoor temperature – outdoor heat exchanger temperature</td>
<td>$\Delta5.4^\circ \text{F}$</td>
</tr>
</tbody>
</table>

3.13 Forced Operation Mode

Outline
Forced operating mode includes only forced cooling.

Detail

Forced Cooling

<table>
<thead>
<tr>
<th>Item</th>
<th>Forced Cooling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forced operation allowing conditions</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1) The outdoor unit is not abnormal and not in the 3-minute stand-by mode.</td>
</tr>
<tr>
<td></td>
<td>2) The operating mode of the outdoor unit is the stop mode.</td>
</tr>
<tr>
<td></td>
<td>3) The forced operation is ON. The forced operation is allowed when the above “and” conditions are met.</td>
</tr>
<tr>
<td>Starting/adjustment</td>
<td>If the forced operation switch is pressed as the above conditions are met.</td>
</tr>
<tr>
<td>1) Command frequency</td>
<td>68 Hz</td>
</tr>
<tr>
<td>2) Electronic expansion valve opening</td>
<td>It depends on the capacity of the indoor unit.</td>
</tr>
<tr>
<td>3) Outdoor unit adjustment</td>
<td>Compressor is in operation</td>
</tr>
<tr>
<td>4) Indoor unit adjustment</td>
<td>The command of forced operation is transmitted to the indoor unit.</td>
</tr>
<tr>
<td>End</td>
<td>1) When the forced operation switch is pressed again.</td>
</tr>
<tr>
<td></td>
<td>2) The operation is to end automatically after 15 min.</td>
</tr>
<tr>
<td>Others</td>
<td>The protect functions are prior to all others in the forced operation.</td>
</tr>
</tbody>
</table>

3.14 Additional Function

3.14.1 Powerful Operation Mode
Compressor operating frequency is increased to PI Max. (Max. Hz of operating room) and outdoor unit airflow rate is increased.

3.14.2 Voltage Detection Function
Power supply voltage is detected each time equipment operation starts.
4. Control Specification (15/18/24 Class)

4.1 Mode Hierarchy

Outline
There are two modes: the mode selected in user's place (normal air conditioning mode) and forced operation mode for installation and providing service.

Detail
For heat pump model
There are following modes: stop, cooling (includes drying), heating (include defrosting)

Air conditioner control mode
  - Forced operating mode
    - Forced cooling (for Pump Down Operation)
  - Normal operating mode
    - Cooling
    - Heating
    - Defrosting
    - Stop mode (except for cooling/heating modes by indoor command)
      - Preheat operation
      - During C (capacitor) is discharging
      - Stop

Note: Unless specified otherwise, an indoor dry operation command must be regarded as cooling operation.
4.2 Frequency Control

Outline
Frequency will be determined according to the difference between room and set temperature. The function is explained as follows.
1. How to determine frequency.
2. Frequency command from an indoor unit. (The difference between a room temperature and the temperature set by the remote controller.)
3. Frequency command from an indoor unit.
4. Frequency initial setting.
5. PI control.

Detail
How to Determine Frequency
The compressor's frequency will finally be determined by taking the following steps.

For Heat Pump Model
1. Determine command frequency
   - Command frequency will be determined in the following order of priority.
     1. Limiting frequency by drooping function
     2. Input current, discharge pipes, low Hz high pressure limit, peak cutting, freeze prevention, dew prevention, fin thermistor temperature.
   1. Limiting defrost control time
   1.3 Forced cooling
   1.4 Indoor frequency command

2. Determine upper limit frequency
   - Set a minimum value as an upper limit frequency among the frequency upper limits of the following functions:
     Compressor protection, input current, discharge pipes, Low Hz high pressure, peak cutting, freeze prevention, defrost.

3. Determine lower limit frequency
   - Set a maximum value as an lower limit frequency among the frequency lower limits of the following functions:
     Four way valve operating compensation, draft prevention, pressure difference upkeep.

4. Determine prohibited frequency
   - There is a certain prohibited frequency such as a power supply frequency.
Indoor Frequency Command (ΔD signal)
The difference between a room temperature and the temperature set by the remote controller will be taken as the “ΔD signal” and is used for 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>
<th>Temperature difference</th>
<th>ΔD signal</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Th OFF</td>
<td>2.0</td>
<td>4</td>
<td>4.0</td>
<td>8</td>
<td>6.0</td>
<td>C</td>
</tr>
<tr>
<td>0.5</td>
<td>1</td>
<td>2.5</td>
<td>5</td>
<td>4.5</td>
<td>9</td>
<td>6.5</td>
<td>D</td>
</tr>
<tr>
<td>1.0</td>
<td>2</td>
<td>3.0</td>
<td>6</td>
<td>5.0</td>
<td>A</td>
<td>7.0</td>
<td>E</td>
</tr>
<tr>
<td>1.5</td>
<td>3</td>
<td>3.5</td>
<td>7</td>
<td>5.5</td>
<td>B</td>
<td>7.5</td>
<td>F</td>
</tr>
</tbody>
</table>

*Th OFF = Thermostat OFF

Frequency Initial Setting
<Outline>
When starting the compressor, or when conditions are varied due to the change of the room, the frequency must be initialized according to the total of a maximum ΔD value of the indoor unit and the Q value of the indoor unit.

Q value: Indoor unit output determined from indoor unit volume, air flow rate and other factors.

Pl Control (Determine Frequency Up/Down by ΔD Signal)
1. P control
   Calculate ΔD value in each sampling time (20 seconds), and adjust the frequency according to its difference from the frequency previously calculated.

2. I control
   If the operating frequency is not change more than a certain fixed time, adjust the frequency up and down according to the ΔD value, obtaining the fixed ΔD value.
   When the ΔD value is small...lower the frequency.
   When the ΔD value is large...increase the frequency.

3. Limit of frequency variation width
   When the difference between input current and input current drooping value is less than 1.5 A, the frequency increase width must be limited.

4. Frequency management when other controls are functioning
   • When frequency is drooping:
     Frequency management is carried out only when the frequency droops.
   • For limiting lower limit
     Frequency management is carried out only when the frequency rises.

5. Upper and lower limit of frequency by Pl control
   The frequency upper and lower limits are set depending on indoor unit.
   When low noise commands come from the indoor unit or when outdoor unit low noise or quiet commands come from indoor unit, the upper limit frequency must be lowered than the usual setting.
4.3 Controls at Mode Changing / Start-up

4.3.1 Preheating Operation

Outline
Operate the inverter in the open phase operation with the conditions including the preheating command from the indoor, the outdoor air temperature and discharge pipe temperature.

Detail
Preheating ON Condition
- When outdoor air temperature and discharge pipe temperature are below 51ºF, inverter in open phase operation starts.

OFF Condition
- When outdoor air temperature or discharge pipe temperature is higher than 54ºF, inverter in open phase operation stops.

4.3.2 Four Way Valve Switching

Outline of heating operation
Heat Pump Only
During the heating operation current must be conducted and during cooling and defrosting current must not be conducted. In order to eliminate the switching sound (as the four way valve coil switches from ON to OFF) when the heating is stopped, the delay switch of the four way valve must be carried out after the operation stopped.

Detail
The OFF delay of four way valve
Energize the coil for 150 sec after unit operation is stopped.

4.3.3 Four Way Valve Operation Compensation

Outline
Heat Pump Only
At the beginning of the operation as the four way valve is switched, acquire the differential pressure required for activating the four way valve by having output the operating frequency, which is more than a certain fixed frequency, for a certain fixed time.

Detail
Starting Conditions
1. When starting compressor for heating.
2. When the operating mode changes from the previous time.
3. When starting compressor for starting defrosting or resetting.
4. When starting compressor for the first time after the reset with the power is ON.
   Set the lower limit frequency to 55 (model by model) Hz for 70 seconds with any conditions 1 through 4 above.

4.3.4 3 Minutes Stand-by

Prohibit to turn ON the compressor for 3 minutes after turning it off.
(except when defrosting)
4.3.5 Compressor Protection Function
When turning the compressor from OFF to ON, the upper limit of frequency must be set as follows. (The function must not be used when defrosting.)

<table>
<thead>
<tr>
<th>FCG 3</th>
<th>85</th>
</tr>
</thead>
<tbody>
<tr>
<td>FCG 2</td>
<td>70</td>
</tr>
<tr>
<td>FCG 1</td>
<td>55</td>
</tr>
</tbody>
</table>

4.4 Discharge Pipe Temperature Control

Outline
The discharge pipe temperature is used as the compressor’s internal temperature. If the discharge pipe temperature rises above a certain level, the operating frequency upper limit is set to keep this temperature from going up further.

Detail
Divide the Zone

Management within the Zones

<table>
<thead>
<tr>
<th>Zone</th>
<th>Control contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stop zone</td>
<td>When the temperature reaches the stop zone, stop the compressor and correct abnormality.</td>
</tr>
<tr>
<td>Drooping zone</td>
<td>Start the timer, and the frequency will be drooping.</td>
</tr>
<tr>
<td>Keep zone</td>
<td>Keep the upper limit of frequency.</td>
</tr>
<tr>
<td>Return / Reset zone</td>
<td>Cancel the upper limit of frequency.</td>
</tr>
</tbody>
</table>
4.5 Input Current Control

Outline
Detect an input current by the CT during the compressor is running, and set the frequency upper limit from such input current.
In case of heat pump model, this control is the upper limit control function of the frequency which takes priority of the lower limit of four way valve activating compensation.

Detail
The frequency control will be made within the following zones.

When a “stop current” continues for 2.5 seconds after rushing on the stop zone, the compressor operation stops.
If a “drooping current” is continues for 1.0 second after rushing on the drooping zone, the frequency will be 2 Hz drooping.
Repeating the above drooping continues until the current rushes on the drooping zone without change.
In the keep zone, the frequency limit will remain.
In the return / reset zone, the frequency limit will be cancelled.

Limitation of current drooping and stop value according to the outdoor air temperature
1. In case the operation mode is cooling
   ♦ The current droops when outdoor air temperature becomes higher than a certain level (model by model).
2. In case the operation mode is heating
   ♦ The current droops when outdoor air temperature becomes higher than a certain level (model by model).

(R4598)
4.6 Freeze-up Protection Control

Outline
During cooling operation, the signals being sent from the indoor unit allow the operating frequency limitation and then prevent freezing of the indoor heat exchanger. (The signal from the indoor unit must be divided into the zones as the followings.

Detail

Conditions for Start Controlling
Judge the controlling start with the indoor heat exchanger temperature after 2 sec from operation start.

Control in Each Zone

4.7 Heating Peak-cut Control

Outline
Heat Pump Only
During heating operation, the signals being sent from the indoor unit allow the operating frequency limitation and prevent abnormal high pressure. (The signal from the indoor unit must be divided as follows.)

Detail

Conditions for Start Controlling
Judge the controlling start with the indoor heat exchanger temperature after 2 min from operation start.

Control in Each Zone
The heat exchange intermediate temperature of indoor unit controls the following.
4.8 Fan Control

Outline
Fan control is carried out according to the following priority.
1. Fan ON control for electric component cooling fan
2. Fan control when defrosting
3. Fan OFF delay when stopped
4. ON/OFF control in cooling operation
5. Tap control when drooping function is working
6. Fan control in forced operation
7. Fan control in indoor/outdoor unit silent operation
8. Fan control in powerful mode
9. Fan control in normal operation

Detail
Fan OFF Control when Stopped
- Fan OFF delay for 60 seconds must be made when the compressor is stopped.

Tap Control in indoor/outdoor unit silent operation
1. When Cooling Operation
   - When the outdoor air temperature is lower than 99°F, the fan tap must be set to L.
2. When Heating Operation
   - When the outdoor air temperature is higher than 39°F, the fan tap must be turned to L (only for heat pump model).

4.9 Liquid Compression Protection Function 2

Outline
In order to obtain the dependability of the compressor, the compressor must be stopped according to the conditions of the temperature of the outdoor air and outdoor heat exchanger.

Detail
Heat Pump Model
- Operation stop depending on the outdoor air temperature
Compressor operation turns OFF under the conditions that the system is in cooling operation and outdoor air temperature is below 14°F.
4.10 Low Hz High Pressure Limit

Outline
Heat Pump Only
Set the upper limit of high pressure in a low Hz zone. Set the upper limit of the indoor heat exchanger temperature by its operating frequency of Hz. Separate into three zones, reset zone, unchanged zone and drooping zone and the frequency control must be carried out in such zones.

Detail
Separate into Zones

Note: Drooping: The system stops 2 minutes after staying in the drooping zone.

4.11 Defrost Control

Outline
Heat Pump Only
Defrosting is carried out by the cooling cycle (reverse cycle). The defrosting time or outdoor heat exchanger temperature must be more than its fixed value when finishing.

Detail
Conditions for Starting Defrost
The starting conditions must be made with the outdoor air temperature and heat exchanger temperature. Under the conditions that the system is in heating operation, 6 minutes after the compressor is started and more than 44 minutes of accumulated time pass since the start of the operation or ending the defrosting.

Conditions for Canceling Defrost
The judgment must be made with heat exchanger temperature. (39°F~54°F)
4.12 Electronic Expansion Valve Control

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

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

Open Control
1. Electronic expansion valve control when starting operation
2. Control when frequency changed
3. Control for defrosting (only for heat pump model)
4. Control when a discharge pipe temperature is abnormally high
5. Control when the discharge pipe thermistor is disconnected

Feedback Control
1. Discharge pipe temperature control

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

<table>
<thead>
<tr>
<th>Operation pattern</th>
<th>Control when frequency changed</th>
<th>Control when a discharge pipe temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>When power is turned ON</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cooling operation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stop</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heating operation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(only for heat pump model)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stop</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heating operation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(only for heat pump model)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control of discharge pipe thermistor disconnection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stop</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(R2833)
4.12.1 Fully Closing with Power ON
Initialize the electronic expansion valve when turning on the power, set the opening position and develop pressure equalizing.

4.12.2 Pressure Equalization Control
When the compressor is stopped, open and close the electronic expansion valve and develop pressure equalization.

4.12.3 Opening Limit
Outline
Limit a maximum and minimum opening of the electronic expansion valve.

Detail
- A maximum electronic expansion valve opening: 450 pulses
- A minimum electronic expansion valve opening: 54 pulses

The electronic expansion valve is fully closed in the room where cooling is stopped and is opened with fixed opening during defrosting.

4.12.4 Starting Operation Control
Control the electronic expansion valve opening when the system is starting, and prevent the system to be super heated or moistened.

4.12.5 High Temperature of the Discharge Pipe
When the compressor is operating, if the discharge pipe temperature exceeds a certain value, open the electronic expansion valve and remove the refrigerant to the low pressure side and lower discharge temperature.

4.12.6 Disconnection of the Discharge Pipe Thermistor
Outline
Detect a disconnected discharge pipe thermistor by comparing the discharge pipe temperature with the condensation temperature. If any is disconnected, open the electronic expansion valve according to the outdoor air temperature and the operating frequency, and operate for a specified time, and then stop.

After 3 minutes of waiting, restart the unit and check if any is disconnected. If any is disconnected stop the system after operating for a specified time. If the disconnection is detected 4 times in succession, then the system will be down.

Detail
Detect Disconnection
If a 630-second timer for open control becomes over, and a 9-minute timer for the compressor operation continuation is not counting time, the following adjustment must be made.
1. When the operation mode is cooling
   When the discharge pipe temperature is lower than the outdoor heat exchanger temperature, the discharge pipe thermistor disconnection must be ascertained.
2. When the operation mode is heating
   When the discharge pipe temperature is lower than the max temperature of operating room heat exchanger, the discharge pipe thermistor disconnection must be ascertained.

Adjustment when the thermistor is disconnected
When compressor stop repeats specified time, the system should be down.
4.12.7 Control when frequency is changed
When the target discharge pipe temperature control is active, if the target frequency is changed for a specified value in a certain time period, cancel the target discharge pipe temperature control and change the target opening of the electronic expansion valve according to the shift.

4.12.8 Target Discharge Pipe Temperature Control
Obtain the target discharge pipe temperature from the indoor and outdoor heat exchanger temperature, and adjust the electronic expansion valve opening so that the actual discharge pipe temperature become close to that temperature. (Indirect SH control using the discharge pipe temperature)

Determine a correction value of the electronic expansion valve compensation and drive it according to the deflection of the target discharge temperature and actual discharge temperature, and the discharge temperature variation by the 20 sec.
4.13 Malfunctions

4.13.1 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. Fin thermistor
4. Outside air thermistor

Relating to CT Malfunction
When the output frequency is more than 55 Hz and the input current is less than 1.25A, carry out abnormal adjustment.

4.13.2 Detection of Overload and Over Current

Outline
In order to protect the inverter, detect an excessive output current, and for protecting compressor, monitor the OL operation.

Detail
- If the OL (compressor head) temperature exceeds 248–266°F (depending on the model), the compressor gets interrupted.
- If the inverter current exceeds 30 A, the compressor gets interrupted too.

4.13.3 Insufficient Gas Control

Outline
If a power consumption is below the specified value in which the frequency is higher than the specified frequency, it must be regarded as gas insufficient.

In addition to such conventional function, if the discharge temperature is higher than the target discharge pipe temperature, and the electronic expansion valve is fully open (450 pulses) more than the specified time, it is considered as an insufficient gas.

With the conventional function, a power consumption is weak comparing with that in the normal operation when gas is insufficient, and gas insufficiency is detected by checking a power consumption.

When operating with insufficient gas, although the rise of discharge pipe temperature is great and the electronic expansion valve is open, it is presumed as an insufficient gas if the discharge pipe temperature is higher than the target discharge pipe temperature.

Detail
Judgment by Input Current
When an output frequency is exceeds 55 Hz and the input current is less than specified value, the adjustment is made for insufficient gas.

Judgment by Discharge Pipe Temperature
When discharge pipe temperature is Δ36°F higher than target value and the electronic expansion valve opening is 450 plus (max.), the adjustment is made for insufficient gas.
4.14 Forced Operation Mode

Outline
Forced operating mode includes only forced cooling.

Detail

<table>
<thead>
<tr>
<th>Forced Cooling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item</td>
</tr>
<tr>
<td>Forced operation allowing conditions</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Starting/adjustment</td>
</tr>
<tr>
<td>1) Command frequency</td>
</tr>
<tr>
<td>2) Electronic expansion valve opening</td>
</tr>
<tr>
<td>3) Outdoor unit adjustment</td>
</tr>
<tr>
<td>4) Indoor unit adjustment</td>
</tr>
<tr>
<td>End</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Others</td>
</tr>
</tbody>
</table>

4.15 Additional Function

4.15.1 Powerful Operation Mode
Compressor operating frequency is increased to PI Max. (Max. Hz of operating room) and outdoor unit airflow rate is increased.

4.15.2 Voltage Detection Function
Power supply voltage is detected each time equipment operation starts.
Part 5
System Configuration

1. System Configuration .................................................................................. 68
2. Instruction .................................................................................................... 69
   2.1 Safety Precautions ................................................................................. 69
   2.2 The Single Split Duct-Free System FTXS09/12DVJU ......................... 71
   2.3 The Single Split Duct-Free System FTXS15/18/24DVJU ..................... 96
   2.4 The Slim Duct Built-in System FDXS09/12DVJU ............................... 121
1. System Configuration

After the installation and test operation of the room air conditioner have been completed, it should be operated and handled as described below. Every user would like to know the correct method of operation of the room air conditioner, to check if it is capable of cooling (or heating) well, and to know a clever method of using it.

In order to meet this expectation of the users, giving sufficient explanations taking enough time can be said to reduce about 80% of the requests for servicing. However good the installation work is and however good the functions are, the customer may blame either the room air conditioner or its installation work because of improper handling. The installation work and handing over of the unit can only be considered to have been completed when its handling has been explained to the user without using technical terms but giving full knowledge of the equipment.
2. Instruction

2.1 Safety Precautions

Safety precautions

- Keep this manual where the operator can easily find it.
- Read this manual carefully before starting the unit.
- For safety reason, the operator must read the following cautions carefully.
- This manual classifies precautions into DANGER, WARNING and CAUTION. Be sure to follow all precautions below: they are all important for ensuring safety.

<table>
<thead>
<tr>
<th>DANGER</th>
<th>WARNING</th>
<th>CAUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.</td>
<td>If you do not follow these instructions exactly, the unit may cause property damage, personal injury or loss of life.</td>
<td>If you do not follow these instructions exactly, the unit may cause minor or moderate property damage or personal injury.</td>
</tr>
</tbody>
</table>

⚠️ Never do.

⚠️ Be sure to ground the air conditioner.

⚠️ Never touch the air conditioner (including the remote controller) with a wet hand.

⚠️ Be sure to follow the instructions.

⚠️ Never cause the air conditioner (including the remote controller) to get wet.

For refrigerant leakage, consult your dealer.

Refrigerant gas is heavier than air and replaces oxygen. A massive leak could lead to oxygen depletion, especially in basements, and an asphyxiatio hazard could occur leading to serious injury or death.

Refrigerant gas may produce a toxic gas if it comes in contact with fire such as from a fan heater, stove or cooking device. Exposure to this gas could cause severe injury or death.

Any abnormalities in the operation of the air conditioner such as smoke or fire could result in severe injury or death. Turn off the power and contact your dealer immediately for instructions.

Do not install the unit in an area where flammable materials are present due to risk of explosion resulting in serious injury or death.

If equipment utilizing a burner is used in the same room as the air conditioner, there is the danger of oxygen deficiency which could lead to an asphyxiation hazard resulting in serious injury or death. Be sure to ventilate the room sufficiently to avoid this hazard.

Safely dispose of the packing materials. Packing materials, such as nails and other metal or wooden parts, may cause stabs or other injuries. Tear apart and throw away plastic packaging bags so that children will not play with them. Children playing with plastic bags face the danger of death by suffocation.

⚠️ It is not good for health to expose your body to the air flow for a long time.

⚠️ Do not put your finger, a rod or other objects into the air outlet or inlet. As the fan is rotating at a high speed and could, cause injury. Always keep small children away from the unit during operation.

⚠️ Do not attempt to repair, relocate, modify or reinstall the air conditioner by yourself. Incorrect work or modifications could cause electric shocks, fire or other damage. For repairs and reinstallation, consult your Daikin dealer for advice and information.

⚠️ If the air conditioner is not cooling (heating) properly, the refrigerant may be leaking, contact your authorized dealer or qualified service repairman.

When making repairs which requires adding refrigerant, consult with your authorized dealer or qualified service repairman.

⚠️ Do not attempt to install the air conditioner by yourself. Improper installation could result in water leakage, electric shocks or fire. For installation, consult your authorized dealer or a qualified technician.
CAUTION

- The air conditioner must be grounded to the earth. Improper grounding may result in electric shocks. Do not connect the earth grounding wire to a gas pipe, water pipe, lightning rod, or a telephone ground line. Follow all local and state electrical codes.

- Do not use this unit for cooling precision instruments, food, plants, animals or works of art.
- Never expose little children, plants or animals directly to the air flow.
- Do not block air inlets nor outlets. Impaired air flow may result in poor performance or equipment problems.
- Do not stand, sit, or place objects on the outdoor unit. To avoid injury, do not remove the fan guard.
- Do not place anything under the indoor or outdoor unit that must be kept away from moisture, such as electrical or electronic equipment. In certain conditions, moisture in the air may condense and drip.
- Check the unit stand and fittings for damage annually.
- Do not touch the air inlet and aluminum fins of outdoor unit. It may cause injury and/or damage the heat transfer surface.
- This appliance is NOT intended for use by young children or impaired persons without proper supervision.
- Young children should be supervised to ensure that they DO NOT play with or near the air flow of this appliance.
- Do not pull at the conduit or hang anything on it. Otherwise it will cause fire or electric shock.
- Do not touch the heat exchanger fins. Improper handling may result in injury.
- Do not turn off the power immediately after stopping operation. Always wait at least five minutes before turning off the power. Otherwise, water leakage and trouble may occur.

- To avoid personal injury or equipment damage be sure to stop the operation, turn the breaker off or pull out the supply cord before cleaning or servicing the unit. NOTE: More than one disconnect may be required to shut off all power.
- Do not connect the air conditioner to a power supply different from the one specified. It may cause improper operation or fire.
- Depending on the environment, state and local electrical codes, a ground fault circuit interrupter may be required. Improper grounding or lack of a ground fault circuit interrupter may result in electrical shock, injuries, or death.
- Arrange the drain hose to ensure smooth drainage. Improper drainage may cause water damage to the building, or it’s furnishing.
- Depending on the usage environment, water may leak from the air conditioner. If this happens, contact your Daikin Dealer.
- Safely dispose of the packing materials. Packing materials, such as nails and other metal or wooden parts, may cause stabs or other injuries. Tear apart and throw away plastic packaging bags so that children will not play with them. If children play with a plastic bag which was not torn apart, they face the risk of suffocation.
- The remote controller should be installed in such away that children cannot play with it.
- Do not place objects in direct proximity of the outdoor unit and do not let leaves and other debris accumulate around the unit. Leaves are a hotbed for small animals which can enter the unit. Once in the unit, such animals can cause malfunctions, smoke or fire when making contact with electrical parts.

- Do not operate the air conditioner with wet hands.

- Do not wash the indoor unit with excessive water, only use a slightly wet cloth.
- Do not place things such as vessels containing water or anything else on top of the unit. Water may penetrate into the unit and degrade electrical insulations, resulting in an electric shock.

**Installation site.**

- To install the air conditioner in the following types of environments, consult your authorized dealer.
  - Places with an oily ambient or where steam or soot occurs.
  - Salty environment such as coastal areas.
  - Places where sulfide gas occurs such as hot springs.
  - Places where snow may block the outdoor unit.

The drain from the outdoor unit must be discharged to a place of good drainage.

**Consider nuisance to your neighbors from noises.**

- For installation, choose a place as described below.
  - A place solid enough to bear the weight of the unit which does not amplify the operation noise or vibration.
  - A place from where the air discharged from the outdoor unit or the operation noise will not annoy your neighbors.

**Electrical work.**

- For power supply, be sure to use a separate power circuit dedicated to the air conditioner. Follow all local and state electrical codes.

**System relocation.**

- Relocating the air conditioner requires specialized knowledge and skills. Please consult your authorized dealer if relocation is necessary for moving or remodeling.
2.2 The Single Split Duct-Free System FTXS09/12DVJU

2.2.1 Names of Parts

Names of parts

- Indoor Unit

![Diagram of Indoor Unit with numbered parts and labels](image-url)
## Outdoor Unit

1. Air inlet (Back and side)
2. Air outlet
3. Refrigerant piping and inter-unit cable
4. Drain hose

Appearance of the outdoor unit may differ from some models.
Remote Controller

1. Signal transmitter:
   - It sends signals to the indoor unit.

2. Display:
   - It displays the current settings.
     (In this illustration, each section is shown with all its displays ON for the purpose of explanation.)

3. HOME LEAVE button:
   HOME LEAVE operation (page 16.)

4. POWERFUL button: (Maximum operation)
   POWERFUL operation (page 14.)

5. TEMPERATURE adjustment buttons:
   - It changes the temperature setting.

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

7. MODE selector button:
   - It selects the operation mode.
     (AUTO/DRY/COOL/HEAT/FAN) (page 10.)

8. SILENT button: OUTDOOR UNIT SILENT operation (page 15.)

9. FAN setting button:
   - It selects the airflow rate setting.

10. SWING button: (page 12.)

11. SENSOR button: INTELLIGENT EYE operation (page 18.)

12. ON TIMER button: (page 21.)

13. OFF TIMER button: (page 20.)

14. TIMER Setting button:
   - It changes the time setting.

15. TIMER CANCEL button:
   - It cancels the timer setting.

16. CLOCK button: (page 9.)
2.2.2 Preparation before Operation

Preparation Before Operation

■ To set the batteries

1. Slide the front cover to take it off.
2. Set two dry batteries (AAA).
3. Set the front cover as before.

ATTENTION

■ About batteries
  • When replacing the batteries, use batteries of the same type, and replace the two old batteries together.
  • When the system is not used for a long time, take the batteries out. In case the remote controller is not used for a long time remove all batteries in order to prevent liquid leak of the battery.
  • We recommend replacing once a year, although if the remote controller display begins to fade or if reception deteriorates, please replace with new alkali batteries. Using manganese batteries reduces the lifespan.
  • The attached batteries are provided for the initial use of the system. The usable period of the batteries may be short depending on the manufactured date of the air conditioner.
  • Pressing two or more buttons simultaneously may cause the strange display of the remote controller. The remote controller is not malfunction. In this case take the batteries out and reset them.

■ Replacing the Batteries
  • When replacing the battery, remove the old battery, wait one minute, and then insert the new battery.
Preparation Before Operation

■ To operate the remote controller
  • 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 about 23 Ft.

■ To fix the remote controller holder on the wall
  1. Choose a place from where the signals reach the unit.
  2. Fix the holder to a wall, a pillar, etc. with the screws supplied with the holder.
  3. Place the remote controller in the remote controller holder.

ATTENTION

■ About remote controller
  • Do not put the remote controller in the following places.
    • In direct sunlight.
    • In vicinity of a heater.
  • Dust on the signal transmitter or receiver will reduce the sensitivity. Wipe off dust with soft cloth.
  • Signal communication may be disabled if an electronic-starter-type fluorescent lamp (such as inverter-type lamps) is in the room. Consult your authorized dealer if that is the case.
  • If the remote controller signals happen to operate another appliance, move that appliance to somewhere else, or consult your authorized dealer.
To set the clock

1. Press “CLOCK button”.
   - 0:00 is displayed.
   - blinks.
2. Press "TIMER setting button" to set the clock to the present time.
   - Holding down “ ▲ ” or “ ▼ ” button rapidly increases or decreases the time display.
3. Press “CLOCK button”.
   - blinks.

Turn the breaker ON

- Turning ON the breaker opens the flap, then closes it again.
  (This is a normal procedure.)

NOTE

Tips for saving energy

- Be careful not to cool (heat) the room too much. Keeping the temperature setting at a moderate level helps save energy.
- Cover windows with a blind or a curtain. Blocking sunlight and air from outdoors increases the cooling (heating) effect.
- Clogged air filters cause inefficient operation and waste energy. Clean them once every two weeks.

Please note

- When the main power switch is turned on, some watts of electricity are being used even when the system is not operating.
- If you are not going to use the air conditioner for a long period, for example in spring or autumn, turn the breaker OFF to save energy.
- Use the air conditioner in the following conditions.

<table>
<thead>
<tr>
<th>Mode</th>
<th>Operating conditions</th>
<th>If operation is continued out of this range</th>
</tr>
</thead>
<tbody>
<tr>
<td>COOL</td>
<td>Outdoor temperature: 14 to 115 °F&lt;br&gt;Indoor temperature: 64 to 90 °F&lt;br&gt;Indoor humidity: 80% max.</td>
<td>• A safety device may work to stop the operation under 0 °F and over 115 °F outdoor temperature.&lt;br&gt;• See Note 2 for 0 °F to 14 °F operation.&lt;br&gt;• Condensation may occur on the indoor unit and drip.</td>
</tr>
<tr>
<td>HEAT</td>
<td>Outdoor temperature: 5 to 64 °F&lt;br&gt;Indoor temperature: 50 to 86 °F</td>
<td>• A safety device may work to stop the operation under 0 °F or over 64 °F outdoor temperature.&lt;br&gt;See the Note 3 for 0 °F to 5 °F.</td>
</tr>
<tr>
<td>DRY</td>
<td>Outdoor temperature: 14 to 115 °F&lt;br&gt;Indoor temperature: 64 to 90 °F&lt;br&gt;Indoor humidity: 80% max.</td>
<td>• A safety device may work to stop the operation.&lt;br&gt;• Condensation may occur on the indoor unit and drip.</td>
</tr>
</tbody>
</table>

- Operation outside this humidity or temperature range may cause a safety device to disable the system.

---

**Note 1**: A Breaker must be turned on for 24 hours before the operation start if the ambient is below 14 °F, otherwise the unit will not start operation smoothly.

**Note 2**: Use low outdoor ambient cooling operation for equipment cooling applications only.
   - **This operation is not intended for human comfort cooling.**
   - 1. Intermittent noises may be produced by the indoor unit due to the outdoor fan rotation speed change.
   - 2. Do not place humidifiers or other items which might raise the humidity in rooms at 0 to 14 °F outdoor temperature. A humidifier may cause condensation to drip from the indoor unit outlet vent.
   - 3. Set the indoor unit at the highest air flow rate.

**Note 3**: When the outdoor temperature is 0 to 5 degrees F, the system may not have sufficient cooling capacity.
2.2.3 AUTO • DRY • COOL • HEAT • FAN Operation

AUTO • DRY • COOL • HEAT • FAN Operation

The air conditioner operates with the operation mode of your choice.
From the next time on, the air conditioner will operate with the same operation mode.

■ To start operation

1. Press “MODE selector button” and select a operation mode.
   • Each pressing of the button advances the mode setting in sequence.
     AUTO: AUTO
     DRY: DRY
     COOL: COOL
     HEAT: HEAT
     FAN: FAN

2. Press “ON/OFF button”.
   • The OPERATION lamp lights up.

■ To stop operation

3. Press “ON/OFF button” again.
   • Then OPERATION lamp goes off.

■ To change the temperature setting

4. Press “TEMPERATURE adjustment button”.

<table>
<thead>
<tr>
<th>DRY or FAN mode</th>
<th>AUTO or COOL or HEAT mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>The temperature setting is not variable.</td>
<td>Press “▲” to raise the temperature and press “▼” to lower the temperature.</td>
</tr>
<tr>
<td></td>
<td>Set to the temperature you like.</td>
</tr>
</tbody>
</table>
To change the airflow rate setting

5. Press “FAN setting button”.

<table>
<thead>
<tr>
<th>DRY mode</th>
<th>AUTO or COOL or HEAT or FAN mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>The airflow rate setting is not variable.</td>
<td>Five levels of airflow rate setting from “” to “” plus “” “” are available.</td>
</tr>
</tbody>
</table>

- Indoor unit quiet operation
  When the airflow is set to “”, the noise from the indoor unit will become quieter. Use this when making the indoor unit quieter.
  The unit might lose capacity when the airflow rate is set to a low level.

NOTE

■ Note on HEAT operation
  - Since this air conditioner heats the room by taking heat from outdoor air to indoors, the heating capacity becomes smaller in lower outdoor temperatures. If the heating effect is insufficient, it is recommended to use another heating appliance in combination with the air conditioner.
  - The heat pump system heats the room by circulating hot air around all parts of the room. After the start of heating operation, it takes some time before the room gets warmer.
  - In heating operation, frost may occur on the outdoor unit and lower the heating capacity. In that case, the system switches into defrosting operation to take away the frost.
  - During defrosting operation, hot air does not flow out of indoor unit.

■ Note on COOL operation
  - This air conditioner cools the room by blowing the hot air in the room outside, so if the outside temperature is high, performance drops.

■ Note on DRY operation
  - The computer chip works to rid the room of humidity while maintaining the temperature as much as possible. It automatically controls temperature and fan strength, so manual adjustment of these functions is unavailable.

■ Note on AUTO operation
  - In AUTO operation, the system selects an appropriate operation mode (COOL or HEAT) based on the room temperature at the start of the operation.
  - The system automatically reselects setting at a regular interval to bring the room temperature to user-setting level.
  - If you do not like AUTO operation, you can manually select the operation mode and setting you like.

■ Note on airflow rate setting
  - At smaller airflow rates, the cooling (heating) effect is also less.
2.2.4 Adjusting the Airflow Direction

Adjusting the Airflow Direction

You can adjust the airflow direction to increase your comfort.

- To adjust the horizontal blades (flaps)
  1. Press “SWING button”.
     The display will light up and the flaps will begin to swing.
  2. When the flaps have reached the desired position, press “SWING button” once more.
     The display will go blank.
     The flaps will stop moving.
To adjust the vertical blades (louvers)

Hold the knob and move the louvers.
(You will find a knob on the left-side and the right-side blades.)

Notes on flaps and louvers angles

- When "SWING button" is selected, the flaps swinging range depends on the operation mode. (See the figure.)

**ATTENTION**

- Always use a remote controller to adjust the flaps angle. If you attempt to move it forcibly with hand when it is swinging, the mechanism may be broken.
- Be careful when adjusting the louvers. Inside the air outlet, a fan is rotating at a high speed and may cause bodily injury if fan comes in contact with fingers.
2.2.5 POWERFUL Operation

POWERFUL Operation

POWERFUL operation quickly maximizes the cooling (heating) effect in any operation mode. You can get the maximum capacity.

■ To start POWERFUL operation

1. Press “POWERFUL button”.
   - POWERFUL operation ends in 20 minutes. Then the system automatically operates again with the settings which were used before POWERFUL operation.
   - When using POWERFUL operation, there are some functions which are not available.
   - “■” is displayed on the LCD.

■ To cancel POWERFUL operation

2. Press “POWERFUL button” again.
   - “■” disappears from the LCD.

NOTE

■ Notes on POWERFUL operation
   - POWERFUL Operation cannot be used together with SILENT Operation. Priority is given to the function of whichever button is pressed last.
   - POWERFUL Operation can only be set when the unit is running. Pressing the operation stop button causes the settings to be canceled, and the “■” disappears from the LCD.
   - In COOL and HEAT mode
     To maximize the cooling (heating) effect, the capacity of outdoor unit must be increased and the airflow rate be fixed to the maximum setting. The temperature and airflow settings are not variable.
   - In DRY mode
     The temperature setting is lowered by 4.5˚F and the airflow rate is slightly increased.
   - In FAN mode
     The airflow rate is fixed to the maximum setting.
2.2.6 OUTDOOR UNIT SILENT Operation

OUTDOOR UNIT SILENT Operation

OUTDOOR UNIT SILENT operation lowers the noise level of the outdoor unit by changing the fan speed on the outdoor unit. This function is convenient during night.

■ To start OUTDOOR UNIT SILENT operation

1. Press “SILENT button”.
   - “lığı” is displayed on the LCD.

■ To cancel OUTDOOR UNIT SILENT operation

2. Press “SILENT button” again.
   - “liwości” disappears from the LCD.

NOTE

■ Note on OUTDOOR UNIT SILENT operation

- This function is available in COOL, HEAT, and AUTO modes. (This is not available in FAN and DRY modes.)
- POWERFUL operation and OUTDOOR UNIT SILENT operation cannot be used at the same time. Priority is given to the function of whichever button is pressed last.
- If operation is stopped using the remote controller or the main unit ON/OFF switch when using OUTDOOR UNIT SILENT operation, “liwości” will remain on the remote controller display.
2.2.7 HOME LEAVE Operation

HOME LEAVE Operation

HOME LEAVE operation is a function which allows you to record your preferred temperature and airflow rate settings.

■ To start HOME LEAVE operation

1. Press “HOME LEAVE button”.
   - “ ” is displayed on the LCD.
   - The HOME LEAVE lamp lights up.

■ To cancel HOME LEAVE operation

2. Press “HOME LEAVE button” again.
   - “ ” disappears from the LCD.
   - The HOME LEAVE lamp goes off.

Before using HOME LEAVE operation.

■ To set the temperature and airflow rate for HOME LEAVE operation

When using HOME LEAVE operation for the first time, please set the temperature and airflow rate for HOME LEAVE operation. Record your preferred temperature and airflow rate.

<table>
<thead>
<tr>
<th></th>
<th>Initial setting</th>
<th>Selectable range</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Temperature</td>
<td>Airflow rate</td>
</tr>
<tr>
<td>Cooling</td>
<td>77°F</td>
<td>AUTO</td>
</tr>
<tr>
<td>Heating</td>
<td>77°F</td>
<td>AUTO</td>
</tr>
</tbody>
</table>

1. Press “HOME LEAVE button”. Make sure “ ” is displayed in the remote controller display.
2. Adjust the set temperature with “ ” or “ ” as you like.
3. Adjust the airflow rate with “FAN” setting button as you like.
Home leave operation will run with these settings the next time you use the unit. To change the recorded information, repeat steps 1 – 3.
What’s the HOME LEAVE operation?
Is there a set temperature and airflow rate which is most comfortable, a set temperature and airflow rate which you use the most? HOME LEAVE operation is a function that allows you to record your favorite set temperature and airflow rate. You can start your favorite operation mode simply by pressing the HOME LEAVE button on the remote controller. This function is convenient in the following situations.

Useful in these cases
1. Use as an energy-saving mode.
   Set the temperature 3-5°F higher (cooling) or lower (heating) than normal. Setting the fan speed to the lowest setting allows the unit to be used in energy-saving mode. Also convenient for use while you are out or sleeping.

- Every day before you leave the house...

- Before bed...

2. Use as a favorite mode
   Once you record the temperature and airflow rate settings you most often use, you can retrieve them by pressing HOME LEAVE button. You do not have to go through troublesome remote controller operations.

NOTE
- Once the temperature and airflow rate for HOME LEAVE operation are set, those settings will be used whenever HOME LEAVE operation is used in the future. To change these settings, please refer to the “Before using HOME LEAVE operation” section above.
- HOME LEAVE operation is only available in COOL and HEAT mode. It cannot be used in AUTO, DRY, and FAN mode.
- HOME LEAVE operation runs in accordance with the previous operation mode (COOL or HEAT) before using HOME LEAVE operation.
- HOME LEAVE operation and POWERFUL operation cannot be used at the same time. Last button that was pressed has priority.
- The operation mode cannot be changed while HOME LEAVE operation is being used.
- When operation is shut off during HOME LEAVE operation, using the remote controller or the indoor unit ON/OFF switch, “енд” will remain on the remote controller display.
2.2.8 INTELLIGENT EYE Operation

INTELLIGENT EYE Operation

“INTELLIGENT EYE” is the infrared sensor which detects the human movement.

■ To start INTELLIGENT EYE operation

1. Press “SENSOR button”.
   • “*” is displayed on the LCD.

■ To cancel the INTELLIGENT EYE operation

2. Press “SENSOR button” again.
   • “*” disappears from the LCD.

[EX.]

When somebody is in the room
• Normal operation.

When nobody is in the room
• 20 min. after, start energy saving operation.

When somebody is back in the room
• Back to normal operation.
To adjust the angle of the INTELLIGENT EYE sensor

- You can adjust the angle of the INTELLIGENT EYE sensor to increase the detection area. (Adjustable angle: 15° to right and left of centre)

- Gently push and slide the sensor to adjust the angle.
- After adjusting the angle, wipe the sensor gently with a clean cloth, being careful not to scratch the sensor.

“INTELLIGENT EYE” is useful for Energy Saving.

Energy saving operation
- Change the temperature –3.6°F in heating / +3.6°F in cooling / +1.8°F in dry mode from set temperature.
- Decrease the airflow rate slightly in fan operation. (In FAN mode only)

Notes on “INTELLIGENT EYE”

- Application range is as follows.

  ![Diagram showing vertical and horizontal angles](image)

  - Sensor may not detect moving objects further than 16Ft. away. (Check the application range)
  - Sensor detection sensitivity changes according to indoor unit location, the speed of passersby, temperature range, etc.
  - The sensor also mistakenly detects pets, sunlight, fluttering curtains and light reflected off of mirrors as passersby.
  - INTELLIGENT EYE operation will not go on during powerful operation.
  - Night set mode (page 20.) will not go on during your use of INTELLIGENT EYE operation.

CAUTION

- Do not place large objects near the sensor. Also keep heating units or humidifiers outside the sensor’s detection area. This sensor can detect objects it shouldn’t as well as not detect objects it should.
- Do not hit or violently push the INTELLIGENT EYE sensor. This can lead to damage and malfunction.
2.2.9 TIMER Operation

TIMER Operation

Timer functions are useful for automatically switching the air conditioner on or off at night or in the morning. You can also use OFF TIMER and ON TIMER in combination.

To use OFF TIMER operation

- Check that the clock is correct. If not, set the clock to the present time. (page 9.)

1. Press “OFF TIMER button”.
   - is displayed.
   - blinks.

2. Press “TIMER Setting button” until the time setting reaches the point you like.
   - Every pressing of either button increases or decreases the time setting by 10 minutes. Holding down either button changes the setting rapidly.

3. Press “OFF TIMER button” again.
   - The TIMER lamp lights up.

To cancel the OFF TIMER operation

4. Press “CANCEL button”.
   - The TIMER lamp goes off.

NOTE

- When TIMER is set, the present time is not displayed.
- Once you set ON, OFF TIMER, the time setting is kept in the memory. (The memory is lost when remote controller batteries are replaced.)
- When operating the unit via the ON/OFF Timer, the actual length of operation may vary from the time entered by the user.

NIGHT SET MODE

When the OFF TIMER is set, the air conditioner automatically adjusts the temperature setting (1°F up in COOL, 3.6°F down in HEAT) to prevent excessive cooling (heating) for your pleasant sleep.
To use ON TIMER operation

- Check that the clock is correct. If not, set the clock to the present time. (page 9.)

1. Press “ON TIMER button”.
   - 5:00 is displayed.
   - ✪ blinks.

2. Press “TIMER Setting button” until the time setting reaches the point you like.
   - Every pressing of either button increases or decreases the time setting by 10 minutes. Holding down either button changes the setting rapidly.

3. Press “ON TIMER button” again.
   - The TIMER lamp lights up.

To cancel ON TIMER operation

4. Press “CANCEL button”.
   - The TIMER lamp goes off.

To combine ON TIMER and OFF TIMER

- A sample setting for combining the two timers is shown below.

  (Example)
  Present time: 11:00 p.m. (The unit operating)
  OFF TIMER at 0:00 a.m.
  ON TIMER at 7:00 a.m.
  Combined

ATTENTION

- In the following cases, set the timer again.
  - After a breaker has turned OFF.
  - After a power failure.
  - After replacing batteries in the remote controller.
2.2.10 Care and Cleaning

Care and Cleaning

⚠️ CAUTION Before cleaning, be sure to stop the operation and turn the breaker OFF.

Units
To avoid possible bodily injury, units should be shutoff or disconnected before any cleaning or servicing is attempted.

- Indoor unit, Outdoor unit and Remote controller
  1. Wipe them with dry soft cloth.

- Front panel
  1. Open the front panel.
     • Hold the panel by the tabs on the two sides and lift it until it stops with a click.
  2. Remove the front panel.
     • Supporting the front panel with one hand, release the lock by sliding down the knob with the other hand.
     • To remove the front panel, pull it toward yourself with both hands.
  3. Clean the front panel.
     • Wipe it with a soft cloth soaked in water.
     • Only neutral detergent may be used.
     • In case of washing the panel with water, dry it with cloth, dry it up in the shade after washing.
  4. Attach the front panel.
     • Set the 3 keys of the front panel into the slots and push them in all the way.
     • Close the front panel slowly and push the panel at the 3 points.
       (1 on each side and 1 in the middle.)
     • Check to see if the rotating axis in the upper center section is moving.

⚠️ CAUTION
- Don’t touch the metal parts of the indoor unit. If you touch those parts, this may cause an injury.
- When removing or attaching the front panel, use a robust and stable stool and watch your steps carefully.
- When removing or attaching the front panel, support the panel securely with hand to prevent it from falling.
- For cleaning, do not use hot water above 104°F, benzine, gasoline, thinner, nor other volatile oils, polishing compound, scrubbing brushes, nor other hand stuff.
- After cleaning, make sure that the front panel is securely fixed.
Filters

1. Open the front panel. (page 22.)
2. Pull out the air filters.
   • Push a little upwards the tab at the center of each air filter, then pull it down.
3. Take off the air-purifying filter with photocatalytic deodorizing function.
   • Hold the recessed parts of the frame and unhook the four claws.
4. Clean or replace each filter.
   See figure.
5. Set the air filter and the air-purifying filter with photocatalytic deodorizing function as they were and close the front panel.
   • Insert claws of the filters into slots of the front panel. Close the front panel slowly and push the panel at the 3 points. (1 on each side and 1 in the middle.)

Air Filter

1. Wash the air filters with water or clean them with vacuum cleaner.
   • If the dust does not come off easily, wash them with neutral detergent thinned with lukewarm water, then dry them up in the shade.
   • It is recommended to clean the air filters every two weeks.

Air-purifying filter with photocatalytic deodorizing function (gray)
The Air-purifying filter with photocatalytic deodorizing function can be renewed by washing it with water once every 6 months. We recommend replacing it once every 3 years.

[ Maintenance ]
1. Remove dust with a vacuum cleaner and wash lightly with water.
2. If it is very dirty, soak it for 10 to 15 minutes in water mixed with a neutral cleaning agent.
3. Do not remove filter from frame when washing with water.
4. After washing, shake off remaining water and dry in the shade.
5. Since the material is made out of paper, do not wring out the filter when removing water from it.

[ Replacement ]
1. Remove the tabs on the filter frame and replace with a new filter.
   • Dispose of the old filter as flammable waste.
**Check**

<table>
<thead>
<tr>
<th>Check</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Check that the base, stand and other fittings of the outdoor unit are not decayed or corroded. Check the units to ensure they are level and secure.</td>
<td></td>
</tr>
<tr>
<td>Check that nothing blocks the air inlets and the outlets of the indoor unit and the outdoor unit.</td>
<td></td>
</tr>
<tr>
<td>Check that the water drains smoothly out of the drain hose during COOL or DRY operation.</td>
<td></td>
</tr>
<tr>
<td>• If no drain water is seen, water may be leaking from the indoor unit. Stop operation and consult your authorized dealer.</td>
<td></td>
</tr>
</tbody>
</table>

**Before a long idle period**

1. Operate the “FAN only” for several hours on a warm day to dry out the inside.
   - Press “MODE selector button” and select “FAN” operation.
   - Press “ON/OFF button” and start operation.

2. After operation stops, turn off the electrical circuit breaker for the room air conditioner.

3. Remove and clean the air filters. Reinstall filters after cleaning.

4. Take out batteries from the remote controller.

**NOTE**

- Operation with dirty filters:
  1. cannot deodorize the air.
  2. cannot clean the air.
  3. results in poor heating or cooling.
  4. may cause odor.

- To order air-purifying filter with photocatalytic deodorizing function, contact your authorized dealer where you bought the air conditioner.

- Dispose of old filters as required by local codes.

<table>
<thead>
<tr>
<th>Item</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air-purifying filter with photocatalytic deodorizing function. (with frame) 1 set</td>
<td>KAF918A43</td>
</tr>
<tr>
<td>Air-purifying filter with photocatalytic deodorizing function. (without frame) 1 set</td>
<td>KAF918A44</td>
</tr>
</tbody>
</table>
### 2.2.11 Troubleshooting

#### Trouble Shooting

**Conditions that appear to be abnormal but are not operational problems.**

The following cases are not abnormal problems and you may just continue using it.

<table>
<thead>
<tr>
<th>Case</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation does not start quickly.</td>
<td>• This is to protect the air conditioner.</td>
</tr>
<tr>
<td>• When ON/OFF button was pressed soon after operation was stopped.</td>
<td>You should wait for about 3 minutes.</td>
</tr>
<tr>
<td>• When the mode was reselected.</td>
<td>• The air conditioner is warming up. You should wait for 1 to 4 minutes.</td>
</tr>
<tr>
<td></td>
<td>(The system is designed to start discharging air only after it has</td>
</tr>
<tr>
<td></td>
<td>reached a certain temperature.)</td>
</tr>
<tr>
<td>Hot air does not flow out soon after the start of heating operation.</td>
<td>• The system is taking away the frost on the outdoor unit.</td>
</tr>
<tr>
<td></td>
<td>You should wait for about 3 to 8 minutes.</td>
</tr>
<tr>
<td>The heating operation stops suddenly and a flowing sound is heard.</td>
<td>• In HEAT mode</td>
</tr>
<tr>
<td></td>
<td>• The frost on the outdoor unit melts into water or steam when</td>
</tr>
<tr>
<td></td>
<td>the air conditioner is in defrost operation.</td>
</tr>
<tr>
<td></td>
<td>• In COOL or DRY mode</td>
</tr>
<tr>
<td></td>
<td>• Moisture in the air condenses into water on the cool surface of</td>
</tr>
<tr>
<td></td>
<td>outdoor unit piping and drips.</td>
</tr>
<tr>
<td>The outdoor unit emits water or steam.</td>
<td>• This happens when the air in the room is cooled into mist by the</td>
</tr>
<tr>
<td></td>
<td>melt airflow during cooling operation.</td>
</tr>
<tr>
<td>Mists come out of the indoor unit.</td>
<td>• This happens when smells of the room, furniture, or cigarettes</td>
</tr>
<tr>
<td></td>
<td>are absorbed into the unit and discharged with the airflow.</td>
</tr>
<tr>
<td></td>
<td>(If this happens, we recommend you to have the indoor unit</td>
</tr>
<tr>
<td></td>
<td>washed by a technician. Consult your authorized dealer where</td>
</tr>
<tr>
<td></td>
<td>you bought the air conditioner.)</td>
</tr>
<tr>
<td>The indoor unit gives out odor.</td>
<td>• After operation is stopped:</td>
</tr>
<tr>
<td></td>
<td>• The outdoor fan continues rotating for another 60 seconds for system</td>
</tr>
<tr>
<td></td>
<td>protection.</td>
</tr>
<tr>
<td></td>
<td>• While the air conditioner is not in operation:</td>
</tr>
<tr>
<td></td>
<td>• When the outdoor temperature is very high, the outdoor fan</td>
</tr>
<tr>
<td></td>
<td>starts rotating for system protection.</td>
</tr>
<tr>
<td>The outdoor fan rotates while the air conditioner is not in operation.</td>
<td>• For system protection, the air conditioner may stop operating on</td>
</tr>
<tr>
<td></td>
<td>a sudden large voltage fluctuation.</td>
</tr>
<tr>
<td>The operation stopped suddenly. (OPERATION lamp is on.)</td>
<td>It automatically resumes operation in about 3 minutes.</td>
</tr>
</tbody>
</table>
Check again.
Please check again before calling a repair person.

<table>
<thead>
<tr>
<th>Case</th>
<th>Check</th>
</tr>
</thead>
<tbody>
<tr>
<td>The air conditioner does not operate.</td>
<td>• Has a breaker been turned OFF or a fuse blown?</td>
</tr>
<tr>
<td>(OPERATION lamp is off.)</td>
<td>• Is there a power failure?</td>
</tr>
<tr>
<td></td>
<td>• Are fresh batteries installed in the remote controller?</td>
</tr>
<tr>
<td></td>
<td>• Is the timer setting correct?</td>
</tr>
<tr>
<td>Cooling (Heating) effect is poor.</td>
<td>• Are the air filters clean?</td>
</tr>
<tr>
<td></td>
<td>• Is anything to blocking the air inlet or the outlet of the indoor and the outdoor units?</td>
</tr>
<tr>
<td></td>
<td>• Is the temperature setting appropriate?</td>
</tr>
<tr>
<td></td>
<td>• Are the windows and doors closed?</td>
</tr>
<tr>
<td></td>
<td>• Are the airflow rate and the air direction set appropriately?</td>
</tr>
<tr>
<td></td>
<td>• Is the unit set to the INTELLIGENT EYE mode?</td>
</tr>
<tr>
<td>(page 18.)</td>
<td></td>
</tr>
<tr>
<td>Operation stops suddenly.</td>
<td>• Are the air filters clean?</td>
</tr>
<tr>
<td>(OPERATION lamp flashes.)</td>
<td>• Is there anything blocking the air inlet or the outlet of the indoor and the outdoor units?</td>
</tr>
<tr>
<td></td>
<td>Turn the electrical breaker off, clean the air filters or take all obstacles away from inlet and outlet. Then turn the breaker ON again and try operating the air conditioner with the remote controller. If the lamp still flashes, call your authorized dealer where you bought the air conditioner.</td>
</tr>
<tr>
<td>An abnormal functioning happens during operation.</td>
<td>• The air conditioner may malfunction with lightning or radio waves. Turn the circuit breaker OFF, to reset. Then turn it ON again and try operating the air conditioner with the remote controller.</td>
</tr>
</tbody>
</table>
Call your authorized dealer immediately.

**WARNING**

- When an abnormality (such as a burning smell) occurs, stop operation and turn the circuit breaker OFF. Continued operation in an abnormal condition may result in troubles, electric shocks or fire. Consult your authorized dealer where you bought the air conditioner.
- Do not attempt to repair or modify the air conditioner by yourself. Work performed by untrained persons could result in electric shocks, personal injury, fire, or additional damage to equipment. Consult the service shop where you bought the air conditioner.

If one of the following symptoms takes place, call your authorized dealer immediately.

- The power cord is abnormally hot or damaged.
- An abnormal sound is heard during operation.
- The safety breaker, a fuse, or the ground leakage breaker cuts off the operation frequently.
- A switch or a button often fails to work properly.
- There is a burning smell.
- Water leaks from the indoor unit.

- Turn the breaker OFF and call your authorized dealer.

**After a power failure**

The air conditioner automatically resumes operation in about 3 minutes. You should just wait for a while.

**Lightning**

If lightning may strike the neighboring area, stop operation and turn the breaker OFF for system protection.

**Disposal requirements**

Dismantling of the unit, treatment of the refrigerant, oil and eventual other parts, should be done in accordance with the relevant local and national regulations. Contact your authorized dealer for assistance.

**We recommend periodical maintenance.**

In certain operating conditions, the inside of the air conditioner may get foul after several seasons of use, resulting in poor performance. It is recommended to have periodical maintenance by a specialist aside from regular cleaning by the user. For specialist maintenance, contact your authorized dealer where you bought the air conditioner. The maintenance cost must be born by the user.
Fault diagnosis by remote controller

In the ARC433A series, the temperature display sections on the main unit indicate corresponding codes.

1. When the TIMER CANCEL button is held down for 5 seconds, a "-" indication flashes on the temperature display section.

2. Press the TIMER CANCEL button repeatedly until a continuous beep is produced.
   • The code indication changes as shown below, and notifies with a long beep.

<table>
<thead>
<tr>
<th>CODE</th>
<th>MEANING</th>
</tr>
</thead>
<tbody>
<tr>
<td>D0</td>
<td>NORMAL</td>
</tr>
<tr>
<td>D1</td>
<td>REFRIGERANT SHORTAGE</td>
</tr>
<tr>
<td>U2</td>
<td>DROP VOLTAGE OR MAIN CIRCUIT OVERVOLTAGE</td>
</tr>
<tr>
<td>U4</td>
<td>FAILURE OF TRANSMISSION (BETWEEN INDOOR UNIT AND OUTDOOR UNIT)</td>
</tr>
<tr>
<td>A1</td>
<td>INDOOR PCB DEFECTIVENESS</td>
</tr>
<tr>
<td>A5</td>
<td>HIGH PRESSURE CONTROL OR FREEZE-UP PROTECTOR</td>
</tr>
<tr>
<td>A6</td>
<td>FAN MOTOR FAULT</td>
</tr>
<tr>
<td>C4</td>
<td>FAULTY HEAT EXCHANGER TEMPERATURE SENSOR</td>
</tr>
<tr>
<td>C9</td>
<td>FAULTY SUCTION AIR TEMPERATURE SENSOR</td>
</tr>
<tr>
<td>E4</td>
<td>COOLING-HEATING SWITCHING ERROR</td>
</tr>
<tr>
<td>E5</td>
<td>OL STARTED</td>
</tr>
<tr>
<td>E6</td>
<td>FAULTY COMPRESSOR START UP</td>
</tr>
<tr>
<td>E7</td>
<td>DC FAN MOTOR FAULT</td>
</tr>
<tr>
<td>E8</td>
<td>OPERATION HALT DUE TO DETECTION OF INPUT OVER CURRENT</td>
</tr>
<tr>
<td>F3</td>
<td>HIGH TEMPERATURE DISCHARGE PIPE CONTROL</td>
</tr>
<tr>
<td>F6</td>
<td>HIGH PRESSURE CONTROL (IN COOLING)</td>
</tr>
<tr>
<td>H6</td>
<td>OPERATION HALT DUE TO FAULTY POSITION DETECTION SENSOR</td>
</tr>
<tr>
<td>H8</td>
<td>CT ABNORMALITY</td>
</tr>
<tr>
<td>H9</td>
<td>FAULTY SUCTION AIR TEMPERATURE SENSOR</td>
</tr>
<tr>
<td>J3</td>
<td>FAULTY HEAT EXCHANGER TEMPERATURE SENSOR</td>
</tr>
<tr>
<td>J6</td>
<td>FAULTY HEAT EXCHANGER TEMPERATURE SENSOR</td>
</tr>
<tr>
<td>L4</td>
<td>HIGH TEMPERATURE AT INVERTER CIRCUIT HEATSINK</td>
</tr>
<tr>
<td>L5</td>
<td>OUTPUT OVERCURRENT</td>
</tr>
<tr>
<td>P4</td>
<td>FAULTY INVERTER CIRCUIT HEATSINK TEMPERATURE SENSOR</td>
</tr>
</tbody>
</table>

NOTE

1. A short beep and two consecutive beeps indicate non-corresponding codes.
2. To cancel the code display, hold the TIMER CANCEL button down for 5 seconds. The code display also cancel itself if the button is not pressed for 1 minute.
2.3 The Single Split Duct-Free System FTXS15/18/24DVJU

2.3.1 Names of Parts

Names of parts

- Indoor Unit

- Main unit control panel
## Outdoor Unit

![Outdoor Unit Diagram]

### Indoor Unit

1. Air filter
2. Air-purifying filter with photocatalytic deodorizing function:
   - These filters are attached to the inside of the air filters.
3. Air inlet
4. Front panel
5. Panel tab
6. INTELLIGENT EYE sensor:
   - It detects the movements of people and automatically switches between normal operation and energy saving operation. (page 18.)
7. Display
8. Air outlet
9. Flaps (horizontal blades): (page 12.)
10. Louvers (vertical blades):
    - The louvers are inside of the air outlet. (page 13.)
11. Operation lamp (green)
12. TIMER lamp (yellow): (page 20.)
13. HOME LEAVE lamp (red):
    - Lights up when you use HOME LEAVE Operation. (page 16.)

### Outdoor Unit

14. Indoor Unit ON/OFF switch:
   - Push this switch once to start operation. Push once again to stop it.
   - The operation mode refers to the following table.

<table>
<thead>
<tr>
<th>Mode</th>
<th>Temperature setting</th>
<th>Airflow rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUTO</td>
<td>77°F</td>
<td>AUTO</td>
</tr>
</tbody>
</table>

   - This switch is useful when the remote controller is missing.

15. Room temperature sensor:
   - It senses the air temperature around the unit.

16. Signal receiver:
   - It receives signals from the remote controller.
   - When the unit receives a signal, you will hear a short beep.
     - Operation start ..........beep-beep
     - Settings changed......beep
     - Operation stop ..........beeeeeep

17. Air inlet: (Back and side)
18. Air outlet
19. Refrigerant piping and inter-unit cable
   Appearance of the outdoor unit may differ from some models.
■ Remote Controller

1. Signal transmitter:
   • It sends signals to the indoor unit.
2. Display:
   • It displays the current settings.
   (In this illustration, each section is shown with all its displays ON for the purpose of explanation.)
3. HOME LEAVE button:
   HOME LEAVE operation (page 16.)
4. POWERFUL button: (Maximum operation)
   POWERFUL operation (page 14.)
5. TEMPERATURE adjustment buttons:
   • It changes the temperature setting.
6. ON/OFF button:
   • Press this button once to start operation.
   Press once again to stop it.
7. MODE selector button:
   • It selects the operation mode.
   (AUTO/DRY/COOL/HEAT/FAN) (page 10.)
8. SILENT button: OUTDOOR UNIT SILENT operation (page 15.)
9. FAN setting button:
   • It selects the airflow rate setting.
10. SENSOR button: INTELLIGENT EYE operation (page 18.)
11. SWING button: (page 12.)
    • Flap (Horizontal blade)
12. SWING button: (page 12.)
    • Louver (Vertical blades)
13. ON TIMER button: (page 21.)
14. OFF TIMER button: (page 20.)
15. TIMER Setting button:
   • It changes the time setting.
16. TIMER CANCEL button:
   • It cancels the timer setting.
17. CLOCK button: (page 9.)
2.3.2 Preparation before Operation

Preparation Before Operation

To set the batteries

1. Slide the front cover to take it off.
2. Set two dry batteries (AAA).
3. Set the front cover as before.

ATTENTION

About batteries

- When replacing the batteries, use batteries of the same type, and replace the two old batteries together.
- When the system is not used for a long time, take the batteries out. In case the remote controller is not used for a long time remove all batteries in order to prevent liquid leak of the battery.
- We recommend replacing once a year, although if the remote controller display begins to fade or if reception deteriorates, please replace with new alkali batteries. Using manganese batteries reduces the lifespan.
- The attached batteries are provided for the initial use of the system. The usable period of the batteries may be short depending on the manufactured date of the air conditioner.
- Pressing two or more buttons simultaneously may cause the strange display of the remote controller. The remote controller is not malfunction. In this case take the batteries out and reset them.

Replacing the Batteries

- When replacing the battery, remove the old battery, wait one minute, and then insert the new battery.
Preparation Before Operation

■ To operate the remote controller

- 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 about 23 Ft.

■ To fix the remote controller holder on the wall

1. Choose a place from where the signals reach the unit.
2. Fix the holder to a wall, a pillar, etc. with the screws supplied with the holder.
3. Place the remote controller in the remote controller holder.

ATTENTION

■ About remote controller

- Do not put the remote controller in the following places.
  - In direct sunlight.
  - In vicinity of a heater.
- Dust on the signal transmitter or receiver will reduce the sensitivity. Wipe off dust with soft cloth.
- Signal communication may be disabled if an electronic-starter-type fluorescent lamp (such as inverter-type lamps) is in the room. Consult your authorized dealer if that is the case.
- If the remote controller signals happen to operate another appliance, move that appliance to somewhere else, or consult your authorized dealer.
■ To set the clock

1. Press “CLOCK button”.
   - 0:00 is displayed.
   - 0 blinks.

2. Press “TIMER setting button” to set the clock to the present time.
   - Holding down “▲” or “▼” button rapidly increases or decreases the time display.

3. Press “CLOCK button”.
   - 0 blinks.

■ Turn the breaker ON

- Turning ON the breaker opens the flap, then closes it again. (This is a normal procedure.)

NOTE

■ Tips for saving energy

- Be careful not to cool (heat) the room too much.
- Keeping the temperature setting at a moderate level helps save energy.
- Cover windows with a blind or a curtain.
- Blocking sunlight and air from outdoors increases the cooling (heating) effect.
- Clogged air filters cause inefficient operation and waste energy.
- Clean them once every two weeks.

■ Please note

- When the main power switch is turned on, some watts of electricity are being used even when the system is not operating.
- If you are not going to use the air conditioner for a long period, for example in spring or autumn, turn the breaker OFF to save energy.
- Use the air conditioner in the following conditions.

<table>
<thead>
<tr>
<th>Mode</th>
<th>Operating conditions</th>
<th>If operation is continued out of this range</th>
</tr>
</thead>
</table>
| COOL | Outdoor temperature: 14 to 115 °F  
Indoor temperature: 64 to 90 °F  
Indoor humidity: 80% max. | - A safety device may work to stop the operation under 0 °F and over 115 °F outdoor temperature.  
- See Note 2 for 0 °F to 14 °F operation.  
- Condensation may occur on the indoor unit and drip. |
| HEAT | Outdoor temperature: 5 to 64 °F  
Indoor temperature: 50 to 86 °F | - A safety device may work to stop the operation under 0 °F or over 64 °F outdoor temperature.  
See the Note 3 for 0 °F to 5 °F. |
| DRY | Outdoor temperature: 14 to 115 °F  
Indoor temperature: 64 to 90 °F  
Indoor humidity: 80% max. | - A safety device may work to stop the operation.  
- Condensation may occur on the indoor unit and drip. |

- Operation outside this humidity or temperature range may cause a safety device to disable the system.

<Note 1> A Breaker must be turned on for 24 hours before the operation start if the ambient is below 14 °F, otherwise the unit will not start operation smoothly.

<Note 2> 1. Use low outdoor ambient cooling operation for equipment cooling applications only. This operation is not intended for human comfort cooling.
   2. Intermittent noises may be produced by the indoor unit due to the outdoor fan rotation speed change.
   3. Do not place humidifiers or other items which might raise the humidity in rooms at 0 to 14 °F outdoor temperature. A humidifier may cause condensation to drip from the indoor unit outlet vent.
   4. Set the indoor unit at the highest air flow rate.

<Note 3> When the outdoor temperature is 0 to 5 degrees F, the system may not have sufficient cooling capacity.

Recommended temperature setting

For cooling: 78 °F – 82 °F
For heating: 68 °F – 75 °F
2.3.3 AUTO・DRY・COOL・HEAT・FAN Operation

AUTO・DRY・COOL・HEAT・FAN Operation

The air conditioner operates with the operation mode of your choice. From the next time on, the air conditioner will operate with the same operation mode.

■ To start operation

1. Press “MODE selector button” and select a operation mode.
   • Each pressing of the button advances the mode setting in sequence.
     ☑: AUTO
     ☐: DRY
     ✴: COOL
     ☑: HEAT
     ☐: FAN

2. Press “ON/OFF button”.
   • The OPERATION lamp lights up.

■ To stop operation

3. Press “ON/OFF button” again.
   • Then OPERATION lamp goes off.

■ To change the temperature setting

4. Press “TEMPERATURE adjustment button”.

<table>
<thead>
<tr>
<th>DRY or FAN mode</th>
<th>AUTO or COOL or HEAT mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>The temperature setting is not variable.</td>
<td>Press “▲” to raise the temperature and press “▼” to lower the temperature.</td>
</tr>
<tr>
<td></td>
<td>Set to the temperature you like.</td>
</tr>
</tbody>
</table>
To change the airflow rate setting

5. Press “FAN setting button”.

<table>
<thead>
<tr>
<th>DRY mode</th>
<th>AUTO or COOL or HEAT or FAN mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>The airflow rate setting is not variable.</td>
<td>Five levels of airflow rate setting from “ ” to “ ” plus “ ” “ ” are available.</td>
</tr>
</tbody>
</table>

- Indoor unit quiet operation
  When the airflow is set to “ ”, the noise from the indoor unit will become quieter.
  Use this when making the indoor unit quieter.
  The unit might lose capacity when the airflow rate is set to a low level.

**NOTE**

**Note on HEAT operation**
- Since this air conditioner heats the room by taking heat from outdoor air to indoors, the heating capacity becomes smaller in lower outdoor temperatures. If the heating effect is insufficient, it is recommended to use another heating appliance in combination with the air conditioner.
- The heat pump system heats the room by circulating hot air around all parts of the room. After the start of heating operation, it takes some time before the room gets warmer.
- In heating operation, frost may occur on the outdoor unit and lower the heating capacity. In that case, the system switches into defrosting operation to take away the frost.
- During defrosting operation, hot air does not flow out of indoor unit.

**Note on COOL operation**
- This air conditioner cools the room by blowing the hot air in the room outside, so if the outside temperature is high, performance drops.

**Note on DRY operation**
- The computer chip works to rid the room of humidity while maintaining the temperature as much as possible. It automatically controls temperature and fan strength, so manual adjustment of these functions is unavailable.

**Note on AUTO operation**
- In AUTO operation, the system selects an appropriate operation mode (COOL or HEAT) based on the room temperature at the start of the operation.
- The system automatically reselects setting at a regular interval to bring the room temperature to user-setting level.
- If you do not like AUTO operation, you can manually select the operation mode and setting you like.

**Note on airflow rate setting**
- At smaller airflow rates, the cooling (heating) effect is also less.
2.3.4 Adjusting the Airflow Direction

You can adjust the airflow direction to increase your comfort.

■ To adjust the horizontal blade (flap)

1. Press “SWING button ”.
   • “ ” is displayed on the LCD.
2. When the flap has reached the desired position, press “SWING button ” once more.
   • The flap will stop moving.

■ To adjust the vertical blades (louvers)

3. Press “SWING button ”.
   • “ ” is displayed on the LCD.
4. When the louvers have reached the desired position, press the “SWING button ” once more.
   • The louvers will stop moving.
To 3-D Airflow

Press the “SWING button” and the “SWING button”:
the “” and “” display will light up and the flap and louvers will move in turn.
(page 12.)

To cancel 3-D Airflow

Press either the “SWING button” or the “SWING button”. (page 12.)

Notes on louvers angles

ATTENTION

• Always use a remote controller to adjust the louvers angles. In side the air outlet, a fan is rotating at a high speed and may cause bodily injury if fan comes in contact with fingers.

Notes on flaps angles

• When “SWING button” is selected, the flaps swinging range depends on the operation mode. (See the figure.)

Three-Dimensional (3-D) Airflow

• Using three-dimensional airflow circulates cold air, which tends to collected at the bottom of the room, and hot air, which tends to collect near the ceiling, throughout the room, preventing areas of cold and hot developing.

ATTENTION

• Always use a remote controller to adjust the flaps angle. If you attempt to move it forcibly with hand when it is swinging, the mechanism may be broken.
• Be careful when adjusting the louvers. Inside the air outlet, fan is rotating at a high speed and may cause bodily injury if fan comes in contact with fingers.
2.3.5  POWERFUL Operation

POWERFUL Operation

POWERFUL operation quickly maximizes the cooling (heating) effect in any operation mode. You can get the maximum capacity.

■ To start POWERFUL operation

1. Press “POWERFUL button”.
   • POWERFUL operation ends in 20 minutes. Then the system automatically operates again with the settings which were used before POWERFUL operation.
   • When using POWERFUL operation, there are some functions which are not available.
   • “❄” is displayed on the LCD.

■ To cancel POWERFUL operation

2. Press “POWERFUL button” again.
   • “❄” disappears from the LCD.

NOTE

■ Notes on POWERFUL operation

• POWERFUL Operation cannot be used together with SILENT Operation. Priority is given to the function of whichever button is pressed last.
• POWERFUL Operation can only be set when the unit is running. Pressing the operation stop button causes the settings to be canceled, and the “❄” disappears from the LCD.
• In COOL and HEAT mode
  To maximize the cooling (heating) effect, the capacity of outdoor unit must be increased and the airflow rate be fixed to the maximum setting. The temperature and airflow settings are not variable.
• In DRY mode
  The temperature setting is lowered by 4.5˚F and the airflow rate is slightly increased.
• In FAN mode
  The airflow rate is fixed to the maximum setting.
2.3.6 OUTDOOR UNIT SILENT Operation

OUTDOOR UNIT SILENT Operation

OUTDOOR UNIT SILENT operation lowers the noise level of the outdoor unit by changing the fan speed on the outdoor unit. This function is convenient during night.

- **To start OUTDOOR UNIT SILENT operation**
  1. Press “SILENT button”.
     - “فعال” is displayed on the LCD.

- **To cancel OUTDOOR UNIT SILENT operation**
  2. Press “SILENT button” again.
     - “فعال” disappears from the LCD.

**NOTE**

- **Note on OUTDOOR UNIT SILENT operation**
  - This function is available in COOL, HEAT, and AUTO modes. (This is not available in FAN and DRY modes.)
  - POWERFUL operation and OUTDOOR UNIT SILENT operation cannot be used at the same time. Priority is given to the function of whichever button is pressed last.
  - If operation is stopped using the remote controller or the main unit ON/OFF switch when using OUTDOOR UNIT SILENT operation, “فعال” will remain on the remote controller display.
### 2.3.7 HOME LEAVE Operation

#### HOME LEAVE Operation

HOME LEAVE operation is a function which allows you to record your preferred temperature and airflow rate settings.

- **To start HOME LEAVE operation**
  1. Press “HOME LEAVE button”.
     - “
     - The HOME LEAVE lamp lights up.

- **To cancel HOME LEAVE operation**
  2. Press “HOME LEAVE button” again.
     - “
     - The HOME LEAVE lamp goes off.

#### Before using HOME LEAVE operation.

- **To set the temperature and airflow rate for HOME LEAVE operation**

  When using HOME LEAVE operation for the first time, please set the temperature and airflow rate for HOME LEAVE operation. Record your preferred temperature and airflow rate.

<table>
<thead>
<tr>
<th>Initial setting</th>
<th>Selectable range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>Airflow rate</td>
</tr>
<tr>
<td>Cooling</td>
<td>Heating</td>
</tr>
<tr>
<td>77°F</td>
<td>77°F</td>
</tr>
<tr>
<td>AUTO</td>
<td>AUTO</td>
</tr>
<tr>
<td>64-90°F</td>
<td>50-86°F</td>
</tr>
</tbody>
</table>

  1. Press “HOME LEAVE button”. Make sure “
  2. Adjust the set temperature with “ ” or “ ” as you like.
  3. Adjust the airflow rate with “FAN” setting button as you like.

  Home leave operation will run with these settings the next time you use the unit. To change the recorded information, repeat steps 1 – 3.
What’s the HOME LEAVE operation?
Is there a set temperature and airflow rate which is most comfortable, a set temperature and airflow rate which you use the most? HOME LEAVE operation is a function that allows you to record your favorite set temperature and airflow rate. You can start your favorite operation mode simply by pressing the HOME LEAVE button on the remote controller. This function is convenient in the following situations.

Useful in these cases

1. Use as an energy-saving mode.
   Set the temperature 3-5°F higher (cooling) or lower (heating) than normal. Setting the fan speed to the lowest setting allows the unit to be used in energy-saving mode. Also convenient for use while you are out or sleeping.

   Every day before you leave the house...
   
   When you go out, push the “HOME LEAVE Operation” button, and the air conditioner will adjust capacity to reach the preset temperature for HOME LEAVE Operation.
   
   When you return, you will be welcomed by a comfortably air conditioned room.

   Push the “HOME LEAVE Operation” button again, and the air conditioner will adjust capacity to the set temperature for normal operation.

   Before bed...

   Set the unit to HOME LEAVE Operation before leaving the living room when going to bed.
   
   The unit will maintain the temperature in the room at a comfortable level while you sleep.

   When you enter the living room in the morning, the temperature will be just right. Disengaging HOME LEAVE Operation will return the temperature to that set for normal operation. Even the coldest winters will pose no problem!

2. Use as a favorite mode
   Once you record the temperature and airflow rate settings you most often use, you can retrieve them by pressing HOME LEAVE button. You do not have to go through troublesome remote controller operations.

   Every day before you leave the house...
   
   When you go out, push the “HOME LEAVE Operation” button, and the air conditioner will adjust capacity to reach the preset temperature for HOME LEAVE Operation.
   
   When you return, you will be welcomed by a comfortably air conditioned room.

   Push the “HOME LEAVE Operation” button again, and the air conditioner will adjust capacity to the set temperature for normal operation.

   Before bed...

   Set the unit to HOME LEAVE Operation before leaving the living room when going to bed.
   
   The unit will maintain the temperature in the room at a comfortable level while you sleep.

   When you enter the living room in the morning, the temperature will be just right. Disengaging HOME LEAVE Operation will return the temperature to that set for normal operation. Even the coldest winters will pose no problem!

   Once you record the temperature and airflow rate settings you most often use, you can retrieve them by pressing HOME LEAVE button. You do not have to go through troublesome remote controller operations.

   NOTE
   - Once the temperature and airflow rate for HOME LEAVE operation are set, those settings will be used whenever HOME LEAVE operation is used in the future. To change these settings, please refer to the “Before using HOME LEAVE operation” section above.
   - HOME LEAVE operation is only available in COOL and HEAT mode. It cannot be used in AUTO, DRY, and FAN mode.
   - HOME LEAVE operation runs in accordance with the previous operation mode (COOL or HEAT) before using HOME LEAVE operation.
   - HOME LEAVE operation and POWERFUL operation cannot be used at the same time. Last button that was pressed has priority.
   - The operation mode cannot be changed while HOME LEAVE operation is being used.
   - When operation is shut off during HOME LEAVE operation, using the remote controller or the indoor unit ON/OFF switch, “_on will remain on the remote controller display.
2.3.8 INTELLIGENT EYE Operation

INTELLIGENT EYE Operation

“INTELLIGENT EYE” is the infrared sensor which detects the human movement.

■ To start INTELLIGENT EYE operation

1. Press “SENSOR button”.
   • “*” is displayed on the LCD.

■ To cancel the INTELLIGENT EYE operation

2. Press “SENSOR button” again.
   • “*” disappears from the LCD.

[EX.]

When somebody is in the room
• Normal operation.

When nobody is in the room
• 20 min. after, start energy saving operation.

When somebody is back in the room
• Back to normal operation.
“INTELLIGENT EYE” is useful for Energy Saving

Energy saving operation
- Change the temperature –3.6°F in heating / +3.6°F in cooling / +1.8°F in dry mode from set temperature.
- Decrease the airflow rate slightly in fan operation. (In FAN mode only)

Notes on “INTELLIGENT EYE”
- Application range is as follows.

![Diagram of application range]

- Sensor may not detect moving objects further than 23Ft. away. (Check the application range)
- Sensor detection sensitivity changes according to indoor unit location, the speed of passersby, temperature range, etc.
- The sensor also mistakenly detects pets, sunlight, fluttering curtains and light reflected off of mirrors as passersby.
- INTELLIGENT EYE operation will not go on during powerful operation.
- Night set mode (page 20.) will not go on during your use of INTELLIGENT EYE operation.

CAUTION
- Do not place large objects near the sensor. Also keep heating units or humidifiers outside the sensor’s detection area. This sensor can detect objects it shouldn’t as well as not detect objects it should.
- Do not hit or violently push the INTELLIGENT EYE sensor. This can lead to damage and malfunction.
2.3.9 TIMER Operation

TIMER Operation

Timer functions are useful for automatically switching the air conditioner on or off at night or in the morning. You can also use OFF TIMER and ON TIMER in combination.

■ To use OFF TIMER operation

• Check that the clock is correct.
  If not, set the clock to the present time. (page 9.)
  1. Press “OFF TIMER button”.
     0:00 is displayed.
     ⌁ Olsen blinks.
  2. Press “TIMER Setting button” until the time setting reaches the point you like.
     • Every pressing of either button increases or decreases the time setting by 10 minutes. Holding down either button changes the setting rapidly.
  3. Press “OFF TIMER button” again.
     • The TIMER lamp lights up.

■ To cancel the OFF TIMER operation

  4. Press “CANCEL button”.
     • The TIMER lamp goes off.

NOTE

• When TIMER is set, the present time is not displayed.
• Once you set ON, OFF TIMER, the time setting is kept in the memory. (The memory is lost when remote controller batteries are replaced.)
• When operating the unit via the ON/OFF Timer, the actual length of operation may vary from the time entered by the user.

■ NIGHT SET MODE

When the OFF TIMER is set, the air conditioner automatically adjusts the temperature setting (1°F up in COOL, 3.6°F down in HEAT) to prevent excessive cooling (heating) for your pleasant sleep.
To use ON TIMER operation

- Check that the clock is correct. If not, set the clock to the present time. (page 9.)

1. Press “ON TIMER button”.
   - 5:00 is displayed.
   -  ø-1 blinks.

2. Press “TIMER Setting button” until the time setting reaches the point you like.
   - Every pressing of either button increases or decreases the time setting by 10 minutes. Holding down either button changes the setting rapidly.

3. Press “ON TIMER button” again.
   - The TIMER lamp lights up.

To cancel ON TIMER operation

4. Press “CANCEL button”.
   - The TIMER lamp goes off.

To combine ON TIMER and OFF TIMER

- A sample setting for combining the two timers is shown below.

(Example)

Present time: 11:00 p.m.
(The unit operating)
OFF TIMER at 0:00 a.m.
ON TIMER at 7:00 a.m.) Combined

ATTENTION

- In the following cases, set the timer again.
  - After a breaker has turned OFF.
  - After a power failure.
  - After replacing batteries in the remote controller.
2.3.10 Care and Cleaning

Care and Cleaning

⚠️ CAUTION Before cleaning, be sure to stop the operation and turn the breaker OFF.

Units

To avoid possible bodily injury, units should be shutoff or disconnected before any cleaning or servicing is attempted.

- **Indoor unit, Outdoor unit and Remote controller**
  1. Wipe them with dry soft cloth.

- **Front panel**
  1. Open the front panel.
     - Hold the panel by the tabs on the two sides and lift it until it stops with a click.
  2. Remove the front panel.
     - Open the front panel further while sliding it to either the left or right and pulling it toward you. This will disconnect the rotation dowel on one side. Then disconnect the rotation dowel on the other side in the same manner.
  3. Clean the front panel.
     - Wipe it with a soft cloth soaked in water.
     - Only neutral detergent may be used.
     - In case of washing the panel with water, dry it with cloth, dry it up in the shade after washing.
  4. Attach the front panel.
     - Align the rotation dowels on the left and right of the front panel with the slots, then push them all the way in.
     - Close the front panel slowly. (Press the panel at both sides and the center.)

⚠️ CAUTION

- Don’t touch the metal parts of the indoor unit. If you touch those parts, this may cause an injury.
- When removing or attaching the front panel, use a robust and stable stool and watch your steps carefully.
- When removing or attaching the front panel, support the panel securely with hand to prevent it from falling.
- For cleaning, do not use hot water above 104°F, benzine, gasoline, thinner, nor other volatile oils, polishing compound, scrubbing brushes, nor other hand stuff.
- After cleaning, make sure that the front panel is securely fixed.
Filters

1. Open the front panel. (page 22.)

2. Pull out the air filters.
   - Push a little upwards the tab at the center of each air filter, then pull it down.

3. Take off the air-purifying filter with photocatalytic deodorizing function.
   - Press the top of the air-cleaning filter onto the tabs (3 at top).
   - Then press the bottom of the filter up slightly, and press it onto the tabs (3 at bottom).

4. Clean or replace each filter.
   See figure.

5. Set the air filter and the air-purifying filter with photocatalytic deodorizing function as they were and close the front panel.
   - Press the front panel at both sides and the center.

Air Filter

1. Wash the air filters with water or clean them with vacuum cleaner.
   - If the dust does not come off easily, wash them with neutral detergent thinned with lukewarm water, then dry them up in the shade.
   - It is recommended to clean the air filters every two weeks.

Air-purifying filter with photocatalytic deodorizing function (gray)

The Air-purifying filter with photocatalytic deodorizing function can be renewed by washing it with water once every 6 months. We recommend replacing it once every 3 years.

[ Maintenance ]
1. Remove dust with a vacuum cleaner and wash lightly with water.
2. If it is very dirty, soak it for 10 to 15 minutes in water mixed with a neutral cleaning agent.
3. After washing, shake off remaining water and dry in the shade.
4. Since the material is made out of paper, do not wring out the filter when removing water from it.

[ Replacement ]
1. Remove the tabs on the filter frame and replace with a new filter.
   - Dispose of the old filter as flammable waste.
Check

Check that the base, stand and other fittings of the outdoor unit are not decayed or corroded. Check the units to ensure they are level and secure.

Check that nothing blocks the air inlets and the outlets of the indoor unit and the outdoor unit.

Check that the water drains smoothly out of the drain hose during COOL or DRY operation.

- If no drain water is seen, water may be leaking from the indoor unit. Stop operation and consult your authorized dealer.

### Before a long idle period

1. **Operate the “FAN only” for several hours on a warm day to dry out the inside.**
   - Press “MODE selector button” and select “FAN” operation.
   - Press “ON/OFF button” and start operation.

2. **After operation stops, turn off the electrical circuit breaker for the room air conditioner.**

3. **Remove and clean the air filters. Reinstall filters after cleaning.**

4. **Take out batteries from the remote controller.**

### NOTE

- **Operation with dirty filters:**
  1. cannot deodorize the air.
  2. cannot clean the air.
  3. results in poor heating or cooling.
  4. may cause odor.

- **To order air-purifying filter with photocatalytic deodorizing function, contact your authorized dealer where you bought the air conditioner.**

- **Dispose of old filters as required by local codes.**

<table>
<thead>
<tr>
<th>Item</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air-purifying filter with photocatalytic deodorizing function. (without frame) 1 set</td>
<td>KAF952A42</td>
</tr>
</tbody>
</table>
## 2.3.11 Troubleshooting

### Trouble Shooting

**Conditions that appear to be abnormal but are not operational problems.**

The following cases are not abnormal problems and you may just continue using it.

<table>
<thead>
<tr>
<th>Case</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation does not start quickly.</td>
<td>• This is to protect the air conditioner. You should wait for about 3 minutes.</td>
</tr>
<tr>
<td>• When ON/OFF button was pressed soon after operation was stopped.</td>
<td></td>
</tr>
<tr>
<td>• When the mode was reselected.</td>
<td></td>
</tr>
<tr>
<td>Hot air does not flow out soon after the start of heating operation.</td>
<td>• The air conditioner is warming up. You should wait for 1 to 4 minutes. (The system is designed to start discharging air only after it has reached a certain temperature.)</td>
</tr>
<tr>
<td>The heating operation stops suddenly and a flowing sound is heard.</td>
<td>• The system is taking away the frost on the outdoor unit. You should wait for about 3 to 8 minutes.</td>
</tr>
</tbody>
</table>
| The outdoor unit emits water or steam.                              | • In HEAT mode  
  • The frost on the outdoor unit melts into water or steam when the air conditioner is in defrost operation.  
  • In COOL or DRY mode  
  • Moisture in the air condenses into water on the cool surface of outdoor unit piping and drips. |
| Mists come out of the indoor unit.                                  | ■ This happens when the air in the room is cooled into mist by the cold airflow during cooling operation.                                  |
| The indoor unit gives out odor.                                     | ■ This happens when smells of the room, furniture, or cigarettes are absorbed into the unit and discharged with the airflow.  
  (If this happens, we recommend you to have the indoor unit washed by a technician. Consult your authorized dealer where you bought the air conditioner.) |
| The outdoor fan rotates while the air conditioner is not in operation.| ■ After operation is stopped:  
  • The outdoor fan continues rotating for another 60 seconds for system protection.  
  ■ While the air conditioner is not in operation:  
  • When the outdoor temperature is very high, the outdoor fan starts rotating for system protection. |
| The operation stopped suddenly. (OPERATION lamp is on.)            | ■ For system protection, the air conditioner may stop operating on a sudden large voltage fluctuation.  
  It automatically resumes operation in about 3 minutes.                                      |
Check again.
Please check again before calling a repair person.

<table>
<thead>
<tr>
<th>Case</th>
<th>Check</th>
</tr>
</thead>
<tbody>
<tr>
<td>The air conditioner does not operate. (OPERATION lamp is off.)</td>
<td>• Has a breaker been turned OFF or a fuse blown?</td>
</tr>
<tr>
<td></td>
<td>• Is there a power failure?</td>
</tr>
<tr>
<td></td>
<td>• Are fresh batteries installed in the remote controller?</td>
</tr>
<tr>
<td></td>
<td>• Is the timer setting correct?</td>
</tr>
<tr>
<td>Cooling (Heating) effect is poor.</td>
<td>• Are the air filters clean?</td>
</tr>
<tr>
<td></td>
<td>• Is anything blocking the air inlet or the outlet of the indoor and the outdoor units?</td>
</tr>
<tr>
<td></td>
<td>• Is the temperature setting appropriate?</td>
</tr>
<tr>
<td></td>
<td>• Are the windows and doors closed?</td>
</tr>
<tr>
<td></td>
<td>• Are the airflow rate and the air direction set appropriately?</td>
</tr>
<tr>
<td>Operation stops suddenly. (OPERATION lamp flashes.)</td>
<td>• Are the air filters clean?</td>
</tr>
<tr>
<td></td>
<td>• Is there anything blocking the air inlet or the outlet of the indoor and the outdoor units?</td>
</tr>
<tr>
<td></td>
<td>Turn the electrical breaker off, clean the air filters or remove obstacles away from inlet and outlet. Then turn the breaker ON again and try operating the air conditioner with the remote controller. If the lamp still blinks, call your authorized dealer where you bought the air conditioner.</td>
</tr>
<tr>
<td>An abnormal functioning happens during operation.</td>
<td>• The air conditioner may malfunction with lightning or radio waves. Turn the circuit breaker OFF, to reset unit. Then turn it ON again and try operating the air conditioner with the remote controller.</td>
</tr>
</tbody>
</table>
Call your authorized dealer immediately.

**WARNING**

- When an abnormality (such as a burning smell) occurs, stop operation and turn the circuit breaker OFF. Continued operation in an abnormal condition may result in troubles, electric shocks or fire. Consult your authorized dealer where you bought the air conditioner.
- Do not attempt to repair or modify the air conditioner by yourself. Work performed by untrained persons could result in electric shocks, personal injury, fire, or additional damage to equipment. Consult your authorized dealer where you bought the air conditioner.

If one of the following symptoms takes place, call your authorized dealer immediately.

- The power cord is abnormally hot or damaged.
- An abnormal sound is heard during operation.
- The safety breaker, a fuse, or the ground leakage breaker cuts off the operation frequently.
- A switch or a button often fails to work properly.
- There is a burning smell.
- Water leaks from the indoor unit.

**Disposal requirements**

Dismantling of the unit, treatment of the refrigerant, oil and eventual other parts, should be done in accordance with the relevant local and national regulations. Contact your authorized dealer for assistance.

**We recommend periodical maintenance.**

In certain operating conditions, the inside of the air conditioner may get foul after several seasons of use, resulting in poor performance. It is recommended to have periodical maintenance by a specialist aside from regular cleaning by the user. For specialist maintenance, contact your authorized dealer where you bought the air conditioner.

The maintenance cost must be born by the user.
**Fault diagnosis.**

**FAULT DIAGNOSIS BY REMOTE CONTROLLER**

In the ARC433A series, the temperature display sections on the main unit indicate corresponding codes.

1. When the TIMER CANCEL button is held down for 5 seconds, a “□” indication flashes on the temperature display section.

2. Press the TIMER CANCEL button repeatedly until a continuous beep is produced.
   - The code indication changes as shown below, and notifies with a long beep.

<table>
<thead>
<tr>
<th>CODE</th>
<th>MEANING</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>NORMAL</td>
</tr>
<tr>
<td>U0</td>
<td>REFRIGERANT SHORTAGE</td>
</tr>
<tr>
<td>U2</td>
<td>DROP VOLTAGE OR MAIN CIRCUIT OVERVOLTAGE</td>
</tr>
<tr>
<td>U4</td>
<td>FAILURE OF TRANSMISSION (BETWEEN INDOOR UNIT AND OUTDOOR UNIT)</td>
</tr>
<tr>
<td>A1</td>
<td>INDOOR PCB DEFECTIVENESS</td>
</tr>
<tr>
<td>A5</td>
<td>HIGH PRESSURE CONTROL OR FREEZE-UP PROTECTOR</td>
</tr>
<tr>
<td>A6</td>
<td>FAN MOTOR FAULT</td>
</tr>
<tr>
<td>C4</td>
<td>FAULTY HEAT EXCHANGER TEMPERATURE SENSOR</td>
</tr>
<tr>
<td>C9</td>
<td>FAULTY SUCTION AIR TEMPERATURE SENSOR</td>
</tr>
<tr>
<td>EA</td>
<td>COOLING-HEATING SWITCHING ERROR</td>
</tr>
<tr>
<td>E5</td>
<td>OL STARTED</td>
</tr>
<tr>
<td>E6</td>
<td>FAULTY COMPRESSOR START UP</td>
</tr>
<tr>
<td>E7</td>
<td>DC FAN MOTOR FAULT</td>
</tr>
<tr>
<td>E8</td>
<td>OPERATION HALT DUE TO DETECTION OF INPUT OVER CURRENT</td>
</tr>
<tr>
<td>F3</td>
<td>HIGH TEMPERATURE DISCHARGE PIPE CONTROL</td>
</tr>
<tr>
<td>H6</td>
<td>OPERATION HALT DUE TO FAULTY POSITION DETECTION SENSOR</td>
</tr>
<tr>
<td>H8</td>
<td>CT ABNORMALITY</td>
</tr>
<tr>
<td>J3</td>
<td>FAULTY DISCHARGE PIPE TEMPERATURE SENSOR</td>
</tr>
<tr>
<td>J6</td>
<td>FAULTY HEAT EXCHANGER TEMPERATURE SENSOR</td>
</tr>
<tr>
<td>L4</td>
<td>HIGH TEMPERATURE AT INVERTER CIRCUIT HEATSINK</td>
</tr>
<tr>
<td>L5</td>
<td>OUTPUT OVERCURRENT</td>
</tr>
<tr>
<td>P4</td>
<td>FAULTY INVERTER CIRCUIT HEATSINK TEMPERATURE SENSOR</td>
</tr>
</tbody>
</table>

**NOTE**

1. A short beep and two consecutive beeps indicate non-corresponding codes.
2. To cancel the code display, hold the TIMER CANCEL button down for 5 seconds. The code display also cancel itself if the button is not pressed for 1 minute.
2.4 The Slim Duct Built-in System FDXS09/12DVJU

2.4.1 Names of Parts

Names of parts

- Indoor Unit
**Outdoor Unit**

![Outdoor Unit Diagram]

- **11. Air inlet:** (Back and side)
- **12. Air outlet**
- **13. Refrigerant piping and inter-unit cable**
- **14. Drain hose**

Appearance of the outdoor unit may differ from some models.

---

**Indoor Unit**

1. **Air outlet**
2. **Air outlet grille:** (Field supply)
   - Appearance of the Air outlet grille and Air inlet grille may differ with some models.
3. **Receiver**
4. **Suction grille:** (Option)
   - Appearance of the suction grille and Air inlet grille may differ with some models.
5. **Air inlet**
6. **Room temperature sensor:**
   - It senses the air temperature around the unit.
7. **Operation lamp (green)**
8. **TIMER lamp (yellow):** (page 16.)
9. **HOME LEAVE lamp (red):**
   - Lights up when you use HOME LEAVE operation. (page 14.)
10. **Indoor Unit ON/OFF switch:**
    - Push this switch once to start operation. Push once again to stop it.
    - This switch is useful when the remote controller is missing.

- **The operation mode refers to the following table.**

<table>
<thead>
<tr>
<th>Mode</th>
<th>Temperature setting</th>
<th>Air flow rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUTO</td>
<td>77°F</td>
<td>AUTO</td>
</tr>
</tbody>
</table>

15. **Earth grounding terminal:**
   - It is inside of this cover.

16. **Outside air temperature sensor:**
    - It senses the ambient temperature around the unit.
Remote Controller

1. Signal transmitter:
   • It sends signals to the indoor unit.
2. Display:
   • It displays the current settings.
   (In this illustration, each section is shown with all its displays ON for the purpose of explanation.)
3. HOME LEAVE button:
   HOME LEAVE operation (page 14.)
4. POWERFUL button:
   POWERFUL operation (page 12.)
5. TEMPERATURE adjustment buttons:
   • It changes the temperature setting.
6. ON/OFF button:
   • Press this button once to start operation. Press once again to stop it.
7. MODE selector button:
   • It selects the operation mode.
   (AUTO/DRY/COOL/HEAT/FAN) (page 10.)
8. SILENT button: OUTDOOR UNIT SILENT operation (page 13.)
9. FAN setting button:
   • It selects the air flow rate setting.
10. ON TIMER button: (page 17.)
11. OFF TIMER button: (page 16.)
12. TIMER Setting button:
   • It changes the time setting.
13. TIMER CANCEL button:
   • It cancels the timer setting.
14. CLOCK button: (page 9.)
15. RESET button:
   • Restart the unit if it freezes.
   • Use a thin object to push.
2.4.2 Preparation before Operation

Preparation Before Operation

■ To set the batteries

1. Slide the front cover to take it off.
2. Set two dry batteries (AAA).
3. Set the front cover as before.

ATTENTION

■ About batteries

- When replacing the batteries, use batteries of the same type, and replace the two old batteries together.
- When the system is not used for a long time, take the batteries out.
- We recommend replacing once a year, although if the remote controller display begins to fade or if reception deteriorates, please replace with new alkali batteries. Do not use manganese batteries.
- The attached batteries are provided for the initial use of the system. The usable period of the batteries may be short depending on the manufactured date of the air conditioner.
Preparation Before Operation

■ To operate the remote controller

- 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 about 13ft.

■ To fix the remote controller holder on the wall

1. Choose a place from where the signals reach the unit.
2. Fix the holder to a wall, a pillar, etc. with the screws supplied with the holder.
3. Place the remote controller in the remote controller holder.

ATTENTION

■ About remote controller

- Never expose the remote controller to direct sunlight.
- Dust on the signal transmitter or receiver will reduce the sensitivity. Wipe off dust with soft cloth.
- Signal communication may be disabled if an electronic-starter-type fluorescent lamp (such as inverter-type lamps) is in the room. Consult the shop if that is the case.
- If the remote controller signals happen to operate another appliance, move that appliance to somewhere else, or consult the shop.
To set the clock

1. Press “CLOCK button”.
   
   0:00 is displayed.
   
   0 blinks.

2. Press “TIMER setting button” to set the clock to the present time.
   
   Holding down “▲” or “▼” button rapidly increases or decreases the time display.

3. Press “CLOCK button”.
   
   0 blinks.

Turn the breaker ON

- Turning ON the breaker opens the flap, then closes it again. (This is a normal procedure.)

NOTE

Tips for saving energy

- Be careful not to cool (heat) the room too much. Keeping the temperature setting at a moderate level helps save energy.
- Cover windows with a blind or a curtain. Blocking sunlight and air from outdoors increases the cooling (heating) effect.
- Clogged air filters cause inefficient operation and waste energy. Clean them once every two weeks.

Please note

- The air conditioner always consumes 15-35 watts of electricity even while it is not operating.
- If you are not going to use the air conditioner for a long period, for example in spring or autumn, turn the breaker OFF.
- Use the air conditioner in the following conditions.

<table>
<thead>
<tr>
<th>Mode</th>
<th>Operating conditions</th>
<th>If operation is continued out of this range</th>
</tr>
</thead>
<tbody>
<tr>
<td>COOL</td>
<td>Outdoor temperature: 14 to 115°F Indoor temperature: 64 to 90°F Indoor humidity: 80% max.</td>
<td>• A safety device may work to stop the operation. • Condensation may occur on the indoor unit and drip.</td>
</tr>
<tr>
<td>HEAT</td>
<td>Outdoor temperature: 5 to 64°F Indoor temperature: 50 to 86°F</td>
<td>• A safety device may work to stop the operation.</td>
</tr>
<tr>
<td>DRY</td>
<td>Outdoor temperature: 14 to 115°F Indoor temperature: 64 to 90°F Indoor humidity: 80% max.</td>
<td>• A safety device may work to stop the operation. • Condensation may occur on the indoor unit and drip.</td>
</tr>
</tbody>
</table>

- Operation outside this humidity or temperature range may cause a safety device to disable the system.
2.4.3 AUTO • DRY • COOL • HEAT • FAN Operation

AUTO • DRY • COOL • HEAT • FAN Operation

The air conditioner operates with the operation mode of your choice. From the next time on, the air conditioner will operate with the same operation mode.

■ To start operation

1. Press “MODE selector button” and select a operation mode.
   • Each pressing of the button advances the mode setting in sequence.
     AUTO: AUTO
     DRY
     COOL
     HEAT
     FAN

2. Press “ON/OFF button”.
   • The OPERATION lamp lights up.

■ To stop operation

3. Press “ON/OFF button” again.
   • Then OPERATION lamp goes off.

■ To change the temperature setting

4. Press “TEMPERATURE adjustment button”.

<table>
<thead>
<tr>
<th>DRY or FAN mode</th>
<th>AUTO or COOL or HEAT mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>The temperature setting is not variable.</td>
<td>Press “▲” to raise the temperature and press “▼” to lower the temperature. Set to the temperature you like.</td>
</tr>
</tbody>
</table>
To change the air flow rate setting

5. Press “FAN setting button”.

<table>
<thead>
<tr>
<th>DRY mode</th>
<th>AUTO or COOL or HEAT or FAN mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>The air flow rate setting is not variable.</td>
<td>Five levels of air flow rate setting from “ ” to “ ” plus “ ” “ ” are available.</td>
</tr>
</tbody>
</table>

- Indoor unit quiet operation
  When the air flow is set to “ ”, the noise from the indoor unit will become quieter.
  Use this when making the indoor unit quieter.
  The unit might lose capacity when the fan strength is set to a weak level.

NOTE

- **Note on HEAT operation**
  - Since this air conditioner heats the room by taking heat from outdoor air to indoors, the heating capacity becomes smaller in lower outdoor temperatures. If the heating effect is insufficient, it is recommended to use another heating appliance in combination with the air conditioner.
  - The heat pump system heats the room by circulating hot air around all parts of the room. After the start of heating operation, it takes some time before the room gets warmer.
  - In heating operation, frost may occur on the outdoor unit and lower the heating capacity. In that case, the system switches into defrosting operation to take away the frost.
  - During defrosting operation, hot air does not flow out of indoor unit.

- **Note on COOL operation**
  - This air conditioner cools the room by blowing the hot air in the room outside, so if the outside temperature is high, performance drops.

- **Note on DRY operation**
  - The computer chip works to rid the room of humidity while maintaining the temperature as much as possible. It automatically controls temperature and fan strength, so manual adjustment of these functions is unavailable.

- **Note on AUTO operation**
  - In AUTO operation, the system selects a temperature setting and an appropriate operation mode (COOL or HEAT) based on the room temperature at the start of the operation.
  - The system automatically reselects setting at a regular interval to bring the room temperature to user-setting level.
  - If you do not like AUTO operation, you can manually select the operation mode and setting you like.

- **Note on air flow rate setting**
  - At smaller air flow rates, the cooling (heating) effect is also smaller.
2.4.4 POWERFUL Operation

POWERFUL Operation

POWERFUL operation quickly maximizes the cooling (heating) effect in any operation mode. You can get the maximum capacity.

- To start POWERFUL operation
  1. Press “POWERFUL button”.
     - POWERFUL operation ends in 20 minutes. Then the system automatically operates again with the settings which were used before POWERFUL operation.
     - When using POWERFUL operation, there are some functions which are not available.
     - “←” is displayed on the LCD.

- To cancel POWERFUL operation
  2. Press “POWERFUL button” again.
     - “←” disappears from the LCD.

NOTE

- Notes on POWERFUL operation
  - POWERFUL Operation cannot be used together with SILENT Operation. Priority is given to the function of whichever button is pressed last.
  - POWERFUL Operation can only be set when the unit is running. Pressing the operation stop button causes the settings to be canceled, and the “←” disappears from the LCD.
  - In COOL and HEAT mode
    To maximize the cooling (heating) effect, the capacity of outdoor unit must be increased and the air flow rate be fixed to the maximum setting.
    The temperature and air flow settings are not variable.
  - In DRY mode
    The temperature setting is lowered by 4.5°F and the air flow rate is slightly increased.
  - In FAN mode
    The air flow rate is fixed to the maximum setting.
2.4.5 OUTDOOR UNIT SILENT Operation

OUTDOOR UNIT SILENT Operation

OUTDOOR UNIT SILENT operation lowers the noise level of the outdoor unit by changing the frequency and fan speed on the outdoor unit. This function is convenient during night.

- **To start OUTDOOR UNIT SILENT operation**
  1. Press “SILENT button”.
    - “ᵉ” is displayed on the LCD.

- **To cancel OUTDOOR UNIT SILENT operation**
  2. Press “SILENT button” again.
    - “ᵉ” disappears from the LCD.

**NOTE**

- **Note on OUTDOOR UNIT SILENT operation**
  - This function is available in COOL, HEAT, and AUTO modes. (This is not available in FAN and DRY modes.)
  - POWERFUL operation and OUTDOOR UNIT SILENT operation cannot be used at the same time. Priority is given to the function of whichever button is pressed last.
  - If operation is stopped using the remote controller or the main unit ON/OFF switch when using OUTDOOR UNIT SILENT operation, “ᵉ” will remain on the remote controller display.
2.4.6 HOME LEAVE Operation

HOME LEAVE Operation

HOME LEAVE operation is a function which allows you to record your preferred temperature and air flow rate settings.

■ To start HOME LEAVE operation

1. Press “HOME LEAVE button”.
   - “” is displayed on the LCD.
   - The HOME LEAVE lamp lights up.

■ To cancel HOME LEAVE operation

2. Press “HOME LEAVE button” again.
   - “” disappears from the LCD.
   - The HOME LEAVE lamp goes off.

Before using HOME LEAVE operation.

■ To set the temperature and air flow rate for HOME LEAVE operation

When using HOME LEAVE operation for the first time, please set the temperature and air flow rate for HOME LEAVE operation. Record your preferred temperature and air flow rate.

<table>
<thead>
<tr>
<th>Initial setting</th>
<th>Selectable range</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Temperature</td>
</tr>
<tr>
<td>Cooling</td>
<td>77°F</td>
</tr>
<tr>
<td>Heating</td>
<td>77°F</td>
</tr>
</tbody>
</table>

1. Press “HOME LEAVE button”. Make sure “” is displayed in the remote controller display.
2. Adjust the set temperature with “” or “” as you like.
3. Adjust the air flow rate with “FAN” setting button as you like.

Home leave operation will run with these settings the next time you use the unit. To change the recorded information, repeat steps 1 – 3.
What’s the HOME LEAVE operation?

Is there a set temperature and air flow rate which is most comfortable, a set temperature and air flow rate which you use the most? HOME LEAVE operation is a function that allows you to record your favorite set temperature and air flow rate. You can start your favorite operation mode simply by pressing the HOME LEAVE button on the remote controller. This function is convenient in the following situations.

Useful in these cases

1. Use as an energy-saving mode.

Set the temperature 4-5°F higher (cooling) or lower (heating) than normal. Setting the fan strength to the lowest setting allows the unit to be used in energy-saving mode. Also convenient for use while you are out or sleeping.

Every day before you leave the house...

Push the “HOME LEAVE Operation” button, and the air conditioner will adjust capacity to reach the preset temperature for HOME LEAVE Operation.

When you return, you will be welcomed by a comfortably air conditioned room.

Push the “HOME LEAVE Operation” button again, and the air conditioner will adjust capacity to the set temperature for normal operation.

Before bed...

Set the unit to HOME LEAVE Operation before leaving the living room when going to bed.

The unit will maintain the temperature in the room at a comfortable level while you sleep.

When you enter the living room in the morning, the temperature will be just right. Disengaging HOME LEAVE Operation will return the temperature to that set for normal operation. Even the coldest winters will pose no problem!

2. Use as a favorite mode.

Once you record the temperature and air flow rate settings you most often use, you can retrieve them by pressing HOME LEAVE button. You do not have to go through troublesome remote controller operations.

NOTE

- Once the temperature and air flow rate for HOME LEAVE operation are set, those settings will be used whenever HOME LEAVE operation is used in the future. To change these settings, please refer to the “Before using HOME LEAVE operation” section above.
- HOME LEAVE operation is only available in COOL and HEAT mode. Cannot be used in AUTO, DRY, and FAN mode.
- HOME LEAVE operation runs in accordance with the previous operation mode (COOL or HEAT) before using HOME LEAVE operation.
- HOME LEAVE operation and POWERFUL operation cannot be used at the same time. Last button that was pressed has priority.
- The operation mode cannot be changed while HOME LEAVE operation is being used.
- When operation is shut off during HOME LEAVE operation, using the remote controller or the indoor unit ON/OFF switch, “ ” will remain on the remote controller display.
2.4.7 TIMER Operation

TIMER Operation

Timer functions are useful for automatically switching the air conditioner on or off at night or in the morning. You can also use OFF TIMER and ON TIMER in combination.

■ To use OFF TIMER operation

- Check that the clock is correct.
  If not, set the clock to the present time. (page 9.)

1. Press “OFF TIMER button”.
  - is displayed.
  - blinks.

2. Press “TIMER Setting button” until the time setting reaches the point you like.
  - Every pressing of either button increases or decreases the time setting by 10 minutes. Holding down either button changes the setting rapidly.

3. Press “OFF TIMER button” again.
  - The TIMER lamp lights up.

■ To cancel the OFF TIMER operation

4. Press “CANCEL button”.
  - The TIMER lamp goes off.

NOTE

- When TIMER is set, the present time is not displayed.
- Once you set ON, OFF TIMER, the time setting is kept in the memory. (The memory is canceled when remote controller batteries are replaced.)
- When operating the unit via the ON/OFF Timer, the actual length of operation may vary from the time entered by the user. (Maximum approx. 10 minutes)

■ NIGHT SET MODE

When the OFF TIMER is set, the air conditioner automatically adjusts the temperature setting (1°F up in COOL, 4°F down in HEAT) to prevent excessive cooling (heating) for your pleasant sleep.
To use ON TIMER operation

- Check that the clock is correct. If not, set the clock to the present time. (page 9.)

1. Press “ON TIMER button”.
   - 6:00 is displayed.
   - 1 blinks.

2. Press “TIMER Setting button” until the time setting reaches the point you like.
   - Every pressing of either button increases or decreases the time setting by 10 minutes. Holding down either button changes the setting rapidly.

3. Press “ON TIMER button” again.
   - The TIMER lamp lights up.

To cancel ON TIMER operation

4. Press “CANCEL button”.
   - The TIMER lamp goes off.

To combine ON TIMER and OFF TIMER

- A sample setting for combining the two timers is shown below.

(Example)
- Present time: 11:00 p.m. (The unit operating)
- OFF TIMER at 0:00 a.m.
- ON TIMER at 7:00 a.m. Combined

ATTENTION

- In the following cases, set the timer again.
  - After a breaker has turned OFF.
  - After a power failure.
  - After replacing batteries in the remote controller.
2.4.8 Care and Cleaning

Care and Cleaning

⚠️ CAUTION • Only a qualified service person is allowed to perform maintenance.
• Before cleaning, be sure to stop the operation and turn the breaker OFF.

Cleaning the air filter

1. Removing the air filter.
   • Rear suction
     Pull the bottom side of the air filter backwards, over the 2 bends.
   • Bottom suction
     Pull the filter over the 2 bends situated at the backside of the unit.

2. Cleaning the air filter.
   Remove dust from the air filter using a vacuum cleaner and gently rinse them in cool water. Do not use detergent or hot water to avoid filter shrinking or deformation. After cleaning dry them in the shade.

3. Replacing the air filter.
   • Rear suction
     Hook the filter behind the flap situated at the top of the unit and push the other side gently over the 2 bends.
   • Bottom suction
     Hook the filter behind the flap situated at the middle of the unit and push the other side gently over the 2 bends.
Cleaning the drain pan

- Clean the drain pan periodically, or drain piping may be clogged with dust and may result in water leakage. Ask your DAIKIN dealer to clean them.
- Prepare a cover locally to prevent any dust in the air around the indoor unit from getting in the drain pan, if there is a great deal of dust present.

CAUTION

- Do not operate the air conditioner without filters, this to avoid dust accumulation inside the unit.
- Do not remove the air filter except when cleaning.
- Unnecessary handling may damage the filter.
- Do not use gasoline, benzene, thinner, polishing powder, liquid insecticide. It may cause discoloring or warping.
- Do not let the indoor unit get wet. It may cause an electric shock or a fire.
- Operation with dusty air filters lowers the cooling and heating capacity and wastes energy.
- The suction grille is option.
- Do not use water or air of 122°F or higher for cleaning air filters and outside panels.
- Ask your DAIKIN dealer how to clean it.

Check

Check that the base, stand and other fittings of the outdoor unit are not decayed or corroded.
Check that nothing blocks the air inlets and the outlets of the indoor unit and the outdoor unit.
Check that the drain comes smoothly out of the drain hose during COOL or DRY operation.
- If no drain water is seen, water may be leaking from the indoor unit. Stop operation and consult the service shop if this is the case.

Before a long idle period

1. Operate the “FAN only” for several hours on a fine day to dry out the inside.
   - Press “MODE selector button” and select “FAN” operation.
   - Press “ON/OFF button” and start operation.

2. Clean the air filters and set them again.

3. Take out batteries from the remote controller.

4. Turn OFF the breaker for the room air conditioner.
### 2.4.9 Troubleshooting

## Trouble Shooting

**These cases are not troubles.**
The following cases are not air conditioner troubles but have some reasons. You may just continue using it.

<table>
<thead>
<tr>
<th>Case</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation does not start soon.</td>
<td>• This is to protect the air conditioner.</td>
</tr>
<tr>
<td>• When ON/OFF button was pressed soon after operation was stopped.</td>
<td>You should wait for about 3 minutes.</td>
</tr>
<tr>
<td>• When the mode was reselected.</td>
<td></td>
</tr>
<tr>
<td>Hot air does not flow out soon after the start of heating operation.</td>
<td>• The air conditioner is warming up. You should wait for 1 to 4 minutes.</td>
</tr>
<tr>
<td></td>
<td>(The system is designed to start discharging air only after it has reached a certain temperature.)</td>
</tr>
<tr>
<td>The heating operation stops suddenly and a flowing sound is heard.</td>
<td>• The system is taking away the frost on the outdoor unit.</td>
</tr>
<tr>
<td></td>
<td>• You should wait for about 3 to 8 minutes.</td>
</tr>
<tr>
<td>The outdoor unit emits water or steam.</td>
<td>• In HEAT mode</td>
</tr>
<tr>
<td></td>
<td>• The frost on the outdoor unit melts into water or steam when the air conditioner is in defrost operation.</td>
</tr>
<tr>
<td></td>
<td>• In COOL or DRY mode</td>
</tr>
<tr>
<td></td>
<td>• Moisture in the air condenses into water on the cool surface of outdoor unit piping and drips.</td>
</tr>
<tr>
<td>Mist comes out of the indoor unit.</td>
<td>• This happens when the air in the room is cooled into mist by the cold air flow during cooling operation.</td>
</tr>
<tr>
<td>The indoor unit gives out odour.</td>
<td>• This happens when smells of the room, furniture, or cigarettes are absorbed into the unit and discharged with the air flow. (If this happens, we recommend you to have the indoor unit washed by a technician. Consult the service shop where you bought the air conditioner.)</td>
</tr>
<tr>
<td>The outdoor fan rotates while the air conditioner is not in operation.</td>
<td>• After operation is stopped:</td>
</tr>
<tr>
<td></td>
<td>• The outdoor fan continues rotating for another 30 seconds for system protection.</td>
</tr>
<tr>
<td></td>
<td>• While the air conditioner is not in operation:</td>
</tr>
<tr>
<td></td>
<td>• When the outdoor temperature is very high, the outdoor fan starts rotating for system protection.</td>
</tr>
<tr>
<td>The operation stopped suddenly. (OPERATION lamp is on.)</td>
<td>• For system protection, the air conditioner may stop operating on a sudden large voltage fluctuation.</td>
</tr>
<tr>
<td></td>
<td>It automatically resumes operation in about 3 minutes.</td>
</tr>
</tbody>
</table>
Check again.
Please check again before calling a repair person.

<table>
<thead>
<tr>
<th>Case</th>
<th>Check</th>
</tr>
</thead>
</table>
| The air conditioner does not operate.          | • Hasn’t a breaker turned OFF or a fuse blown?  
• Isn’t it a power failure?  
• Are batteries set in the remote controller?  
• Is the timer setting correct?               |
| (OPERATION lamp is off.)                       |                                                                                                 |
| Cooling (Heating) effect is poor.              | • Are the air filters clean?  
• Is there anything to block the air inlet or the outlet of the indoor and the outdoor units?  
• Is the temperature setting appropriate?  
• Are the windows and doors closed?  
• Are the air flow rate and the air direction set appropriately? |
| Operation stops suddenly.                      | • Are the air filters clean?  
Is there anything to block the air inlet or the outlet of the indoor and the outdoor units?  
Clean the air filters or take all obstacles away and turn the breaker OFF. Then turn it ON again and try operating the air conditioner with the remote controller. If the lamp still blinks, call the service shop where you bought the air conditioner. |
| (OPERATION lamp blinks.)                       |                                                                                                 |
| An abnormal functioning happens during operation.| • The air conditioner may malfunction with lightning or radio waves. Turn the breaker OFF, turn it ON again and try operating the air conditioner with the remote controller. |
Call the service shop immediately.

⚠️ WARNING

- When an abnormality (such as a burning smell) occurs, stop operation and turn the breaker OFF.
  Continued operation in an abnormal condition may result in troubles, electric shocks or fire.
  Consult the service shop where you bought the air conditioner.
- Do not attempt to repair or modify the air conditioner by yourself.
  Incorrect work may result in electric shocks or fire.
  Consult the service shop where you bought the air conditioner.

If one of the following symptoms takes place, call the service shop immediately.

- The power cord is abnormally hot or damaged.
- An abnormal sound is heard during operation.
- The safety breaker, a fuse, or the earth leakage breaker cuts off the operation frequently.
- A switch or a button often fails to work properly.
- There is a burning smell.
- Water leaks from the indoor unit.

Turn the breaker OFF and call the service shop.

- After a power failure
  The air conditioner automatically resumes operation in about 3 minutes. You should just wait for a while.
- Lightning
  If lightning may strike the neighbouring area, stop operation and turn the breaker OFF for system protection.

Disposal requirements

Dismantling of the unit, treatment of the refrigerant, oil and eventual other parts, should be done in accordance with the relevant local and national regulations. Contact your authorized dealer for assistance.

We recommend periodical maintenance.

In certain operating conditions, the inside of the air conditioner may get foul after several seasons of use, resulting in poor performance. It is recommended to have periodical maintenance by a specialist aside from regular cleaning by the user. For specialist maintenance, contact the service shop where you bought the air conditioner.

The maintenance cost must be born by the user.
**Fault diagnosis.**

**FAULT DIAGNOSIS BY REMOTE CONTROLLER**

In the ARC433A series, the temperature display sections on the main unit indicate corresponding codes.

1. When the TIMER CANCEL button is held down for 5 seconds, a `°C` indication flashes on the temperature display section.

2. Press the TIMER CANCEL button repeatedly until a continuous beep is produced.
   - The code indication changes in the sequence shown below, and notifies with a long beep.

<table>
<thead>
<tr>
<th>CODE</th>
<th>MEANING</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>NORMAL</td>
</tr>
<tr>
<td>U0</td>
<td>REFRIGERANT SHORTAGE</td>
</tr>
<tr>
<td>U2</td>
<td>DROP VOLTAGE OR MAIN CIRCUIT OVERVOLTAGE</td>
</tr>
<tr>
<td>U4</td>
<td>FAILURE OF TRANSMISSION (BETWEEN INDOOR UNIT AND OUTDOOR UNIT)</td>
</tr>
<tr>
<td>A1</td>
<td>INDOOR PCB DEFECTIVENESS</td>
</tr>
<tr>
<td>A5</td>
<td>HIGH PRESSURE CONTROL OR FREEZE-UP PROTECTOR</td>
</tr>
<tr>
<td>A6</td>
<td>FAN MOTOR FAULT</td>
</tr>
<tr>
<td>C4</td>
<td>FAULTY HEAT EXCHANGER TEMPERATURE SENSOR</td>
</tr>
<tr>
<td>C9</td>
<td>FAULTY SUCTION AIR TEMPERATURE SENSOR</td>
</tr>
<tr>
<td>EA</td>
<td>COOLING-HEATING SWITCHING ERROR</td>
</tr>
<tr>
<td>E5</td>
<td>OL STARTED</td>
</tr>
<tr>
<td>E6</td>
<td>FAULTY COMPRESSOR START UP</td>
</tr>
<tr>
<td>E7</td>
<td>DC FAN MOTOR FAULT</td>
</tr>
<tr>
<td>E8</td>
<td>OPERATION HALT DUE TO DETECTION OF INPUT OVER CURRENT</td>
</tr>
<tr>
<td>F3</td>
<td>HIGH TEMPERATURE DISCHARGE PIPE CONTROL</td>
</tr>
<tr>
<td>F6</td>
<td>HIGH PRESSURE CONTROL (IN COOLING)</td>
</tr>
<tr>
<td>H6</td>
<td>OPERATION HALT DUE TO FAULTY POSITION DETECTION SENSOR</td>
</tr>
<tr>
<td>H8</td>
<td>CT ABNORMALITY</td>
</tr>
<tr>
<td>H9</td>
<td>FAULTY SUCTION AIR TEMPERATURE SENSOR</td>
</tr>
<tr>
<td>J3</td>
<td>FAULTY DISCHARGE PIPE TEMPERATURE SENSOR</td>
</tr>
<tr>
<td>J6</td>
<td>FAULTY HEAT EXCHANGER TEMPERATURE SENSOR</td>
</tr>
<tr>
<td>L4</td>
<td>HIGH TEMPERATURE AT INVERTER CIRCUIT HEATSINK</td>
</tr>
<tr>
<td>L5</td>
<td>OUTPUT OVERCURRENT</td>
</tr>
<tr>
<td>P4</td>
<td>FAULTY INVERTER CIRCUIT HEATSINK TEMPERATURE SENSOR</td>
</tr>
</tbody>
</table>

**NOTE**

1. A short beep and two consecutive beeps indicate non-corresponding codes.
2. To cancel the code display, hold the TIMER CANCEL button down for 5 seconds. The code display also cancels itself if the button is not pressed for 1 minute.
Part 6
Service Diagnosis

1. Caution for Diagnosis .................................................................142
2. Problem Symptoms and Measures ........................................144
3. Service Check Function ............................................................145
4. Troubleshooting .......................................................................148
   4.1 Error Codes and Description ..............................................148
   4.2 Indoor Unit PCB Abnormality .............................................149
   4.3 Freeze-up Protection Control or High Pressure Control ....150
   4.4 Fan Motor or Related Abnormality ....................................152
   4.5 Thermistor or Related Abnormality (Indoor Unit) .............155
   4.6 Signal Transmission Error (between Indoor and Outdoor Unit) ..156
   4.7 OL Activation (Compressor Overload) ............................157
   4.8 Compressor Lock ............................................................158
   4.9 DC Fan Lock .................................................................160
   4.10 Input Over Current Detection ..........................................161
   4.11 Four Way Valve Abnormality ..........................................164
   4.12 Discharge Pipe Temperature Control ..............................168
   4.13 High Pressure Control in Cooling ...................................170
   4.14 Position Sensor Abnormality ...........................................174
   4.15 DC Voltage / Current Sensor Abnormality .....................176
   4.16 CT or Related Abnormality .............................................177
   4.17 Thermistor or Related Abnormality (Outdoor Unit) .........179
   4.18 Electrical Box Temperature Rise .....................................181
   4.19 Radiation Fin Temperature Rise .....................................183
   4.20 Output Over Current Detection .......................................185
   4.21 Insufficient Gas ............................................................189
   4.22 Over-voltage Detection .................................................193
   4.23 Low-voltage Detection ...............................................194
5. Check ..................................................................................195
   5.1 How to Check .................................................................195
1. Caution for Diagnosis

The operation lamp flashes 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, disabling equipment operation.
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.

Location of Operation Lamp

- The Single Split Duct-Free System 09/12 Class

- The Single Split Duct-Free System 15/18/24 Class
■ The Slim Duct Built-in System 09/12 Class

Troubleshooting with LED Indication

The outdoor unit has one green LED (LED A) on the PCB. The flashing green LED indicates normal condition of microcomputer operation.

■ 15/18/24 Class
## 2. Problem Symptoms and Measures

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Check Item</th>
<th>Details of Measure</th>
<th>Reference Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>None of the units operates.</td>
<td>Check the power supply.</td>
<td>Check to make sure that the rated voltage is supplied.</td>
<td>—</td>
</tr>
<tr>
<td>Check the type of the indoor units.</td>
<td>Check the type of the indoor units.</td>
<td>Check to make sure that the indoor unit type is compatible with the outdoor unit.</td>
<td>—</td>
</tr>
<tr>
<td>Check the outdoor air temperature.</td>
<td>Check the outdoor air temperature.</td>
<td>Heating operation cannot be used when the outdoor air temperature is 64.4°F or higher (only for heat pump model), and cooling operation cannot be used when the outdoor air temperature is below 14°F.</td>
<td>—</td>
</tr>
<tr>
<td>Diagnosis with remote controller indication</td>
<td></td>
<td></td>
<td>148</td>
</tr>
<tr>
<td>Check the remote controller addresses.</td>
<td>Check to make sure that address settings for the remote controller and indoor unit are correct.</td>
<td></td>
<td>—</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>Check the outdoor air temperature.</td>
<td>Check the outdoor air temperature.</td>
<td>Heating operation cannot be used when the outdoor air temperature is 64.4°F or higher (only for heat pump model), and cooling operation cannot be used when the outdoor air temperature is below 14°F.</td>
<td>—</td>
</tr>
<tr>
<td>Diagnosis with remote controller indication</td>
<td></td>
<td></td>
<td>148</td>
</tr>
<tr>
<td>Equipment operates but does not cool, or does not heat (only for heat pump model).</td>
<td>Check for wiring and piping errors in the indoor and outdoor units connection wires and pipes.</td>
<td>Conduct the wiring/piping error check described on the product diagnosis nameplate.</td>
<td>—</td>
</tr>
<tr>
<td>Check for thermistor detection errors.</td>
<td>Check for thermistor detection errors.</td>
<td>Check to make sure that the main unit’s thermistor has not dismounted from the pipe holder.</td>
<td>—</td>
</tr>
<tr>
<td>Check for faulty operation of the electronic expansion valve.</td>
<td>Check for faulty operation of the electronic expansion valve.</td>
<td>Set the units to cooling operation, and compare the temperatures of the liquid side connection pipes of the connection section among rooms to check the opening and closing operation of the electronic expansion valves of the individual units.</td>
<td>—</td>
</tr>
<tr>
<td>Diagnosis with remote controller indication</td>
<td></td>
<td></td>
<td>148</td>
</tr>
<tr>
<td>Diagnosis by service port pressure and operating current</td>
<td>Diagnosis by service port pressure and operating current</td>
<td>Check for insufficient gas.</td>
<td>201</td>
</tr>
<tr>
<td>Large operating noise and vibrations</td>
<td>Check the output voltage of the power transistor.</td>
<td></td>
<td>202</td>
</tr>
<tr>
<td>Check the power transistor.</td>
<td>Check the power transistor.</td>
<td></td>
<td>—</td>
</tr>
<tr>
<td>Check the installation condition.</td>
<td>Check the installation condition.</td>
<td>Check to make sure that the required spaces for installation (specified in the Engineering Data book Guide, etc.) are provided.</td>
<td>—</td>
</tr>
</tbody>
</table>
3. Service Check Function

In the ARC433A series remote controller, the temperature display sections on the main unit indicate corresponding codes.

Check Method 1

1. When the timer cancel button is held down for 5 seconds, a “00” indication flashes on the temperature display section.

2. Press the timer cancel button repeatedly until a continuous beep is produced.
   - The code indication changes in the sequence shown below, and notifies with a long beep.

<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>12</td>
<td>C7</td>
<td>23</td>
<td>H0</td>
</tr>
<tr>
<td>2</td>
<td>U4</td>
<td>13</td>
<td>H8</td>
<td>24</td>
<td>E1</td>
</tr>
<tr>
<td>3</td>
<td>F3</td>
<td>14</td>
<td>J3</td>
<td>25</td>
<td>P4</td>
</tr>
<tr>
<td>4</td>
<td>E6</td>
<td>15</td>
<td>A3</td>
<td>26</td>
<td>L3</td>
</tr>
<tr>
<td>5</td>
<td>L5</td>
<td>16</td>
<td>A1</td>
<td>27</td>
<td>L4</td>
</tr>
<tr>
<td>6</td>
<td>A6</td>
<td>17</td>
<td>C4</td>
<td>28</td>
<td>H6</td>
</tr>
<tr>
<td>7</td>
<td>E5</td>
<td>18</td>
<td>C5</td>
<td>29</td>
<td>H7</td>
</tr>
<tr>
<td>8</td>
<td>F6</td>
<td>19</td>
<td>H9</td>
<td>30</td>
<td>U2</td>
</tr>
<tr>
<td>9</td>
<td>C9</td>
<td>20</td>
<td>J6</td>
<td>31</td>
<td>UH</td>
</tr>
<tr>
<td>10</td>
<td>U0</td>
<td>21</td>
<td>UA</td>
<td>32</td>
<td>EA</td>
</tr>
<tr>
<td>11</td>
<td>E7</td>
<td>22</td>
<td>A5</td>
<td>33</td>
<td>AH</td>
</tr>
</tbody>
</table>

**Note:**
1. A short beep and two consecutive beeps indicate non-corresponding codes.
2. To cancel the code display, hold the timer cancel button down for 5 seconds. The code display also cancels itself if the button is not pressed for 1 minute.
Check Method 2

1. Enter the diagnosis mode.
   Press the 3 buttons (TEMP▲, TEMP▼, MODE) simultaneously.

   The digit of the number of tens blinks.
   ★Try again from the start when the digit does not blink.

2. Press the TEMP button.
   Press TEMP▲ or TEMP▼ and change the digit until you hear the sound of “beep” or “pi pi”.

3. Diagnose by the sound.
   ★“pi” : The number of tens does not accord with the error code.
   ★“pi pi” : The number of tens accords with the error code.
   ★“beep” : The both numbers of tens and units accord with the error code. (→See 7.)

4. Enter the diagnosis mode again.
   Press the MODE button.
The digit of the number of units blinks.

5. Press the TEMP button.
   Press TEMP▲ or TEMP▼ and change the digit until you hear the sound of “beep”.

6. Diagnose by the sound.
   ★“pi” : The both numbers of tens and units do not accord with the error code.
   ★“pi pi” : The number of tens accords with the error code.
   ★“beep” : The both numbers of tens and units accord with the error code.

7. Determine the error code.
   The digits indicated when you hear the “beep” sound are error code.
   (Error codes and description → Refer to page 148.)

8. Exit from the diagnosis mode.
   Press the MODE button.
## 4. Troubleshooting
### 4.1 Error Codes and Description

<table>
<thead>
<tr>
<th>Code Indication</th>
<th>Description</th>
<th>Reference Page</th>
<th>System Class</th>
<th>Outdoor Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Normal</td>
<td></td>
<td>09/12 Class</td>
<td>15/18/24 Class</td>
</tr>
<tr>
<td>U0</td>
<td>Insufficient gas</td>
<td>189 191</td>
<td></td>
<td></td>
</tr>
<tr>
<td>U2</td>
<td>Over-voltage detection</td>
<td>193</td>
<td></td>
<td></td>
</tr>
<tr>
<td>U4</td>
<td>Signal transmission error (between indoor and outdoor unit)</td>
<td>156 156</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A1</td>
<td>Indoor unit PCB abnormality</td>
<td>149 149</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A5</td>
<td>Freeze-up protection control or high pressure control</td>
<td>150 150</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A6</td>
<td>Fan motor or related abnormality</td>
<td>152 —</td>
<td>AC Motor</td>
<td>155 155</td>
</tr>
<tr>
<td>C4</td>
<td>Heat exchanger temperature thermistor abnormality</td>
<td>155 155</td>
<td>DC Motor</td>
<td></td>
</tr>
<tr>
<td>C9</td>
<td>Room temperature thermistor abnormality</td>
<td>155 155</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E5</td>
<td>OL activation (compressor overload)</td>
<td>157 157</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E6</td>
<td>Compressor lock</td>
<td>158 —</td>
<td></td>
<td>159 159</td>
</tr>
<tr>
<td>E7</td>
<td>DC fan lock</td>
<td>160 —</td>
<td></td>
<td>160 160</td>
</tr>
<tr>
<td>E8</td>
<td>Input over current detection</td>
<td>161 —</td>
<td></td>
<td>161 162</td>
</tr>
<tr>
<td>E9</td>
<td>Four way valve abnormality</td>
<td>164 —</td>
<td></td>
<td>164 166</td>
</tr>
<tr>
<td>F3</td>
<td>Discharge pipe temperature control</td>
<td>168 —</td>
<td></td>
<td>168 169</td>
</tr>
<tr>
<td>F6</td>
<td>High pressure control in cooling</td>
<td>170 172</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H6</td>
<td>Position sensor abnormality</td>
<td>174 —</td>
<td></td>
<td>175 177</td>
</tr>
<tr>
<td>H8</td>
<td>DC voltage/current sensor abnormality</td>
<td>176 —</td>
<td>CT or related</td>
<td></td>
</tr>
<tr>
<td>H9</td>
<td>Outdoor air thermistor or related abnormality</td>
<td>179 —</td>
<td></td>
<td>179 179</td>
</tr>
<tr>
<td>J3</td>
<td>Discharge pipe temperature thermistor or related abnormality</td>
<td>179 —</td>
<td></td>
<td>179 179</td>
</tr>
<tr>
<td>J6</td>
<td>Heat exchanger temperature thermistor or related abnormality</td>
<td>179 —</td>
<td></td>
<td>179 179</td>
</tr>
<tr>
<td>L3</td>
<td>Electrical box temperature rise</td>
<td>181 —</td>
<td></td>
<td>181 181</td>
</tr>
<tr>
<td>L4</td>
<td>Radiation fin temperature rise</td>
<td>183 —</td>
<td></td>
<td>183 183</td>
</tr>
<tr>
<td>L5</td>
<td>Output over current detection</td>
<td>185 —</td>
<td></td>
<td>185 187</td>
</tr>
<tr>
<td>P4</td>
<td>Heat radiation fin thermistor or related abnormality</td>
<td>179 —</td>
<td></td>
<td>179 179</td>
</tr>
</tbody>
</table>

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

Remote Controller Display

Method of Malfunction Detection
Evaluation of zero-cross detection of power supply by indoor unit.

Malfunction Decision Conditions
When there is no zero-cross detection in approximately 10 continuous seconds.

Supposed Causes
- Faulty indoor unit PCB
- Faulty connector connection

Troubleshooting

⚠️ Caution
Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

Connector connection check (note).

Is it normal?

NO
Correct connections.

YES
Replace PCBs.

Note: Connector Nos. vary depending on models.

<table>
<thead>
<tr>
<th>Model Type</th>
<th>Connector No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wall Mounted Type</td>
<td>Terminal strip-Control PCB</td>
</tr>
</tbody>
</table>
# 4.3 Freeze-up Protection Control or High Pressure Control

## Remote Controller Display

A5

## Method of Malfunction Detection

- **High pressure control (heat pump model only)**
  During heating operations, the temperature detected by the indoor heat exchanger thermistor is used for the high pressure control (stop, outdoor fan stop, etc.)

- **Freeze-up protection control (operation halt)**
  Is activated during cooling operation according to the temperature detected by the indoor unit heat exchanger thermistor.

## Malfunction Decision Conditions

- **High pressure control**
  During heating operations, the temperature detected by the indoor heat exchanger thermistor is above 149°F

- **Freeze-up protection**
  When the indoor unit heat exchanger temperature is below 32°F during cooling operation.

## Supposed Causes

- Operation halt due to clogged air filter of the indoor unit.
- Operation halt due to dust accumulation on the indoor unit heat exchanger.
- Operation halt due to short-circuit.
- Detection error due to faulty indoor unit heat exchanger thermistor.
- Detection error due to faulty indoor unit PCB.
Troubleshooting

Check No. 06
Refer to P.198

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

Check the air passage.

  NO → Check the intake air filter.

- Is it very dirty? YES → Clean the air filter.
  NO → Check the dust accumulation on the indoor unit heat exchanger.

- Is it very dirty? YES → Clean the heat exchanger.
  NO → Check No. 06
Indoor unit heat exchanger thermistor check

- Does it conform to the thermistor characteristic chart? YES → Replace the indoor unit PCB.
  NO → Replace the thermistor (replace the indoor unit PCB).

Caution

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.
4.4 Fan Motor or Related Abnormality

4.4.1 AC Motor

Remote Controller Display

Method of Malfunction Detection

Malfunction Decision Conditions

Supposed Causes

Troubleshooting

The rotation speed detected by the Hall IC during fan motor operation is used to determine abnormal fan motor operation.

When 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.

■ Operation halt due to short circuit inside the fan motor winding.
■ Operation halt due to breaking of wire inside the fan motor.
■ Operation halt due to breaking of the fan motor lead wires.
■ Operation halt due to faulty capacitor of the fan motor.
■ Detection error due to faulty indoor unit PCB.

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

Check No. 16 Refer to P.204

Operate the fan.

Does it rotate?

YES

NO

Rotate the fan by hand.

Does it rotate smoothly?

YES

NO

Check the fan motor voltage.

Is there an output?

NO

Replace the fan motor or indoor unit PCB.

Replace the fan motor.

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

Is it at the rated voltage?

NO

Replace indoor unit PCB (1).

Replace the fan motor.

Replace the indoor unit PCB (1)

YES

Check the fan motor voltage.

Is it at the rated voltage?

NO

YES

Check the capacitor's conductivity

Is there conductivity?

YES

Replace the capacitor. (Replace PCB (1))

NO

Replace the fan motor.
### 4.4.2 DC Motor

<table>
<thead>
<tr>
<th>Remote Controller Display</th>
<th>A6</th>
</tr>
</thead>
</table>

**Method of Malfunction Detection**

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

**Malfunction Decision Conditions**

When 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**

- Operation halt due to short circuit inside the fan motor winding.
- Operation halt due to breaking of wire inside the fan motor.
- Operation halt due to breaking of the fan motor lead wires.
- Operation halt due to faulty capacitor of the fan motor.
- Detection error due to faulty indoor unit PCB.
Troubleshooting

Check No.01
Refer to P.195

Caution
Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

Turn off power supply and rotate fan by hand.

Does fan rotate smoothly?

NO

Replace fan motor.

YES

Turn power ON and operate fan.

Does it rotate?

NO

Turn off power supply and disconnect fan motor connector, then turn power ON.

YES

Check No.01
Check output of fan motor connector

Is motor power voltage DC 200V generated?

NO

Replace indoor unit PCB.

YES

Is motor control power voltage DC 15V generated?

NO

Replace indoor unit PCB.

YES

Turn off power supply and disconnect fan motor connector, then turn power ON again.

Check No.01
Check output of fan motor connector

Is rotation number command voltage DC 1~6V generated?

YES

Stop fan motor.

NO

Check No.01
Check output of fan motor connector

Is rotation number command pulse generated?

NO

Replace fan motor and indoor PCB.

YES

Replace indoor unit PCB.

Replace fan motor.

Replace indoor unit PCB.
4.5 **Thermistor or Related Abnormality (Indoor Unit)**

**Remote Controller Display**

| C4, C9 |

**Method of Malfunction Detection**

The temperatures detected by the thermistors are used to determine thermistor errors.

**Malfunction Decision Conditions**

When the thermistor input is more than 4.96 V or less than 0.04 V during compressor operation.*

* (reference)

When above about 414°F (less than 120 Ω) or below about –58°F (more than 1,860 kΩ).

**Note:** The values vary slightly in some models.

**Supposed Causes**

- Faulty connector connection
- Faulty thermistor
- Faulty PCB

**Troubleshooting**

* Caution* Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

Check the connector connection.

Is it normal?

NO Correct the connection.

YES

**Check No. 06**

Thermistor resistance check

Is it normal?

NO Replace the thermistor.
(Replace the indoor unit PCB.)

YES Replace the indoor unit PCB.

R4696

**C4:** Heat exchanger thermistor
**C9:** Room temperature thermistor
4.6 **Signal Transmission Error (between Indoor and Outdoor Unit)**

**Remote Controller Display**

U4

**Method of Malfunction Detection**

The data received from the outdoor unit in indoor unit-outdoor unit signal transmission is checked whether it is normal.

**Malfunction Decision Conditions**

When the data sent from the outdoor unit cannot be received normally, or when the content of the data is abnormal.

**Supposed Causes**

- Faulty outdoor unit PCB.
- Faulty indoor unit PCB.
- Indoor unit-outdoor unit signal transmission error due to wiring error.
- Indoor unit-outdoor unit signal transmission error due to disturbed power supply waveform.
- Indoor unit-outdoor unit signal transmission error due to breaking of wire in the connection wires between the indoor and outdoor units (wire No. 2).

**Troubleshooting**

Check No.10 Refer to P.201

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

- Check the indoor unit-outdoor unit connection wires.
- Is there any wiring error? YES Correct the indoor unit-outdoor unit connection wires.
  NO
  - Check the outdoor unit's LED A.
  - Is LED A flashing? YES Diagnose the outdoor unit.
    NO
    - Check the voltage of the indoor unit-outdoor unit connection wires between No. 1 and No. 2, and between No 2 and No. 3.
      - Is the voltage 0 V? YES Replace the connection wires between the indoor and outdoor units.
        NO
        - Check No. 10 Check power supply waveform.
          - Is there any disturbance? YES Replace indoor unit control PCB.
            NO Locate the cause of the disturbance of the power supply waveform, and correct it.
4.7 OL Activation (Compressor Overload)

**Method of Malfunction Detection**

A compressor overload is detected through compressor OL.

**Malfunction Decision Conditions**

- If the compressor OL is activated twice, the system will be shut down.
- The error counter will reset itself if this or any other error does not occur during the following 60-minute compressor running time (total time).
- *The operating temperature condition is not specified.*

**Supposed Causes**

- Refrigerant shortage
- Four way valve malfunctioning
- Outdoor unit PCB defective
- Water mixed in the local piping
- Electronic expansion valve defective
- Stop valve defective

### Troubleshooting

**Check No. 04**

Refer to P.195

**Check No. 05**

Refer to P.196

**Check No. 06**

Refer to P.198

**Check No. 11**

Refer to P.201

**Caution**

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

- **Discharge pipe thermistor disconnected?**
  - YES: Insert the thermistor in position.
  - NO: Proceed to the next step.

- **Check No. 06** Check the thermistors
  - Malfunctioning: Replace the discharge pipe thermistor.
  - Functioning: Proceed to the next step.

- **Check No. 04** Check the electronic expansion valve.
  - Malfunctioning: Replace the valve itself or the coil.
  - Functioning: Proceed to the next step.

- **Check No. 05** Check the four way valve.
  - Malfunctioning: Replace the four way valve coil or the valve itself. Replace the outdoor unit PCB.
  - Functioning: Proceed to the next step.

- **Check No. 11** Check the refrigerant line.
  - Malfunctioning: Refer to the refrigerant line check procedure.
  - Functioning: Replace the outdoor unit PCB.

(R4697)
4.8 Compressor Lock

4.8.1 09/12 Class

Remote Controller Display

E6

Method of Malfunction Detection

A compressor lock is detected by checking the compressor running condition through the position detection circuit.

Malfunction Decision Conditions

- The system judges the compressor lock, and stops due to over current.
- The system judges the compressor lock, and cannot operation with position detection within 15 seconds after start up.
- The system will be shut down if the error occurs 16 times.
- Clearing condition: Continuous run for about 10 minutes (normal)

Supposed Causes

- Compressor locked
- Compressor harness disconnected

Troubleshooting

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

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

Check with the inverter checker (∗).

Normal?

YES

Emergency stop without compressor running?

YES

Replace the compressor.

NO

System shut down after errors repeated several times?

YES

Replace the compressor.

NO

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

Note: If the model doesn’t have SPM, replace the outdoor unit PCB.

∗ Inverter checker Part No.: 1225477
### 4.8.2 15/18/24 Class

#### Remote Controller Display

**E6**

<table>
<thead>
<tr>
<th>Method of Malfunction Detection</th>
</tr>
</thead>
<tbody>
<tr>
<td>A compressor lock is detected by checking the compressor running condition through the position detection circuit.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Malfunction Decision Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>- The position detection circuit detects a compressor frequency of below 10 Hz for 20 seconds or a frequency of above 160 Hz.</td>
</tr>
<tr>
<td>- 40 seconds after the compressor has started, the position detection circuit detects a compressor frequency of above 180 Hz.</td>
</tr>
<tr>
<td>- The system will be shut down if the error occurs 16 times.</td>
</tr>
<tr>
<td>- Clearing condition: Continuous run for about 5 minutes (normal)</td>
</tr>
</tbody>
</table>

#### Supposed Causes

- Compressor locked

#### Troubleshooting

![Diagram](image.png)

**Caution**

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

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

- Check with the inverter checker (*).

- Correct the power supply or replace the SPM. (Replace the outdoor unit PCB.)

- Replace the compressor.

- Check the electronic expansion valve. Replace it as required.

- Replace the compressor.

- System shut down after errors repeated several times?

- Emergency stop without compressor running?

- Normal?

- Turn off the power and reconnect the harnesses. Turn on the power again and get the system restarted.
4.9 DC Fan Lock

**Remote Controller Display**

**Method of Malfunction Detection**

A fan motor or related error is detected by checking the high-voltage fan motor rpm being detected by the Hall IC.

**Malfunction Decision Conditions**

- The fan does not start in 30 seconds even when the fan motor is running.
- The system will be shut down if the error occurs 16 times.
- Clearing condition: Continuous run for about 5 minutes (normal)

**Supposed Causes**

- Fan motor breakdown
- Harness or connector disconnected between fan motor and PCB or in poor contact
- Foreign matters stuck in the fan

**Troubleshooting**

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

- Fan motor connector disconnected?
  - YES: Turn off the power and reconnect the connector.
  - NO: Foreign matters in or around the fan?
    - YES: Remove.
    - NO: Get started.

- Check No. 15
  - Check the outdoor unit PCB rpm pulse input.

- Pulse signal inputted?
  - NO: Replace the outdoor unit fan motor.
  - YES: Replace the outdoor unit PCB.

Check No.15 Refer to P.203

Refer to P.203

(R2843)
4.10 Input Over Current Detection
4.10.1 09/12 Class

Remote Controller Display

Method of Malfunction Detection

Malfunction Decision Conditions

Supposed Causes

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

- The following current with the compressor running continues for 2.5 seconds.
  - Cooling · Heating: Above 12A

Supposed Causes

- Over-current due to compressor failure
- Over-current due to defective power transistor
- Over-current due to defective outdoor unit PCB
- Error detection due to outdoor unit PCB
- Over-current due to short-circuit

Troubleshooting

Check No.07
Refer to P.199

Check No.08
Refer to P.199

* Inverter checker
Part No.: 1225477

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

Note: If the model doesn't have SPM, replace the outdoor unit PCB.
4.10.2 15/18/24 Class

**Remote Controller Display**

| E8 |

**Method of Malfunction Detection**

An input over-current is detected by checking the input current value being detected by CT with the compressor running.

---

**Malfunction Decision Conditions**

- The following CT input with the compressor running continues for 2.5 seconds.
  - CT input: Above 20 A
- The system will be shut down if the error occurs 16 times.
- Clearing condition: Continuous run for about 5 minutes (normal)

---

**Supposed Causes**

- Over-current due to compressor failure
- Over-current due to defective power transistor
- Over-current due to defective inverter main circuit electrolytic capacitor
- Over-current due to defective outdoor unit PCB
- Error detection due to outdoor unit PCB
- Over-current due to short-circuit
Caution

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

* An input over-current may result from wrong internal wiring. If the wires have been disconnected and reconnected for part replacement, for example, and the system is interrupted by an input over-current, take the following procedure.

Get restarted and measure the input current.

- Input current flowing above its stop level?
  - NO: Replace the outdoor unit PCB.
  - YES: Proceed to the next step.

- Check No. 14: Check the main circuit electrolytic capacitor.
  - Normal?
    - NO: Replace the electrolytic capacitor.
    - YES: Proceed to the next step.

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

- Check with the inverter checker (*).
  - Any LED off?
    - YES: Correct the power supply or replace the SPM. (Replace the outdoor unit PCB.)
    - NO: Turn off the power, and reconnect the harnesses. Turn on the power again and get restarted.

- Check No. 08: Check the discharge pressure.

- Check No. 07: Check the installation condition.

* Inverter checker Part No.: 1225477
4.11 Four Way Valve Abnormality

4.11.1 09/12 Class

Remote Controller Display

EA

Method of Malfunction Detection
The indoor air temperature thermistor, the indoor unit heat exchanger thermistor, the outdoor temperature thermistor and the outdoor unit heat exchanger thermistor are checked to see if they function within their normal ranges in the operating mode.

Malfunction Decision Conditions
A following condition continues over 10 minute after operating 5 minutes.

- Cooling / dry operation
  
  (room temp. – indoor heat exchanger temp.) < −Δ9°F

- Heating
  
  (indoor unit heat exchanger temp. – room temp.) < −Δ9°F

Supposed Causes
- Connector in poor contact
- Thermistor defective
- Outdoor unit PCB defective
- Four way valve coil or harness defective
- Four way valve defective
- Foreign substance mixed in refrigerant
- Insufficient gas
Caution

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

Check No. 05
Refer to P. 196

Four way valve coil disconnected (loose)?

NO

YES

Correct.

Check No. 06
Refer to P. 198

Harness out of connector?

YES

Reconnect.

NO

Check the continuity of the four way valve coil and harness.

Check No. 11
Refer to P. 201

Check the refrigerant line.

Functioning

Malfunctioning

Check No. 05
Check the four way valve switching output.

Malfunctioning

Replace the outdoor unit PCB.

Functioning

Check No. 06
Check the thermistors.

Malfunctioning

Replace a defective thermistor.

Functioning

Check No. 11
Check the refrigerant line.

Malfunctioning

- Insufficient gas
- Water mixed
- Stop valve defective

Refer to the refrigerant line check procedure.

Functioning

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

(R4699)
4.11.2 15/18/24 Class

Remote Controller Display

Method of Malfunction Detection

The room temperature thermistor, the indoor unit heat exchanger thermistor, the outdoor temperature thermistor and the outdoor unit heat exchanger thermistor are checked to see if they function within their normal ranges in the operating mode.

Malfunction Decision Conditions

A following condition continues over 1 minute after operating 10 minutes.

- Cooling / dry operation
  
  \[(\text{room temp.} – \text{indoor heat exchanger temp.}) < –\Delta 18^\circ\text{F}\]

- Heating
  
  \[(\text{indoor unit heat exchanger temp.} – \text{room temp.}) < –\Delta 18^\circ\text{F}\]

Supposed Causes

- Connector in poor contact
- Thermistor defective
- Outdoor unit PCB defective
- Four way valve coil or harness defective
- Four way valve defective
- Foreign substance mixed in refrigerant
- Insufficient gas
Troubleshooting

Check No.05
Refer to P.196

Check No.06
Refer to P.198

Check No.11
Refer to P.201

Caution

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

Four way valve coil disconnected (loose)?

YES

Correct.

NO

Harness out of connector?

YES

Reconnect.

NO

Check the continuity of the four way valve coil and harness.

Disconnect the harness from the connector. Resistance between harnesses about 1500 ohms?

YES

Replace the four way valve coil.

NO

Check No. 05
Check the four way valve switching output. Malfunctioning

Replace the outdoor unit PCB.

Functioning

Any thermistor disconnected?

YES

Reconnect in position.

NO

Check No. 06
Check the thermistors. Malfunctioning

Replace a defective thermistor.

Functioning

Check No. 11
Check the refrigerant line. Malfunctioning

Refer to the refrigerant line check procedure.

Functioning

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

(R4710)
4.12 Discharge Pipe Temperature Control

4.12.1 09/12 Class

Remote Controller Display

F3

Method of Malfunction Detection

The discharge pipe temperature control (stop, frequency drooping, etc.) is checked with the temperature being detected by the discharge pipe thermistor.

Malfunction Decision Conditions

- If a stop takes place 4 times successively due to abnormal discharge pipe temperature, the system will be shut down.
- If the temperature being detected by the discharge pipe thermistor rises above 45°F, the compressor will stop. (The error is cleared when the temperature has dropped below 40°F.)

Supposed Causes

- Refrigerant shortage
- Four way valve malfunctioning
- Discharge pipe thermistor defective
  (heat exchanger or outdoor air temperature thermistor defective)
- Outdoor unit PCB defective
- Water mixed in the local piping
- Electronic expansion valve defective
- Stop valve defective

Troubleshooting

<table>
<thead>
<tr>
<th>Stop temperatures</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) above 45Hz (rising), above 40Hz (dropping)</td>
<td>230</td>
<td>207</td>
</tr>
<tr>
<td>(2) 30<del>45Hz (rising), 25</del>40Hz (dropping)</td>
<td>221</td>
<td>198</td>
</tr>
<tr>
<td>(3) below 30Hz (rising), below 25Hz (dropping)</td>
<td>210</td>
<td>187</td>
</tr>
</tbody>
</table>

- The error counter will reset itself if this or any other error does not occur during the following 60-minute compressor running time (total time).

Caution

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

Check No. 04
Refer to P.195

Check No. 06
Check the thermistors.

Functioning

Malfunctioning
  - Discharge pipe thermistor
  - Outdoor unit heat exchanger thermistor
  - Outdoor temperature thermistor

Replace a defective thermistor.

Check No. 04
Check the electronic expansion valve.

Functioning

Malfunctioning

Replace the valve itself or the coil.

Check No. 11
Check the refrigerant line.

Functioning

Malfunctioning
  - Refrigerant shortage
  - Four way valve malfunctioning
  - Water mixed
  - Stop valve defective

Refer to the refrigerant line check procedure.

Replace the outdoor unit PCB. (R4700)
4.12.2 15/18/24 Class

Remote Controller Display

Method of Malfunction Detection

The discharge pipe temperature control (stop, frequency drooping, etc.) is checked with the temperature being detected by the discharge pipe thermistor.

Malfunction Decision Conditions

- If a stop takes place 6 times successively due to abnormal discharge pipe temperature, the system will be shut down.
- If the temperature being detected by the discharge pipe thermistor rises above 248°F, the compressor will stop. (The error is cleared when the temperature has dropped below 225°F.)

Stop temperatures (variable by models)
(1) 230°F: above 45Hz (rising), above 40Hz (dropping)
(2) 216°F: 30–45Hz (rising), 25–40Hz (dropping)
(3) 208°F: below 30Hz (rising), below 25Hz (dropping)
- The error counter will reset itself if this or any other error does not occur during the following 60-minute compressor running time (total time).

Supposed Causes

- Refrigerant shortage
- Four way valve malfunctioning
- Discharge pipe thermistor defective
  (heat exchanger or outdoor temperature thermistor defective)
- Outdoor unit PCB defective
- Water mixed in the local piping
- Electronic expansion valve defective
- Stop valve defective

Troubleshooting

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

Check No. 04
Refer to P.195

Check No. 06
Check the thermistors.
Check No. 04
Check the electronic expansion valve.
Check No. 11
Check the refrigerant line.

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

Malfunctioning
- Replace a defective thermistor.
- Replace the valve itself or the coil.
- Refer to the refrigerant line check procedure.

Functioning
- Replace the outdoor unit PCB.

(R4700)
# 4.13 High Pressure Control in Cooling

## 4.13.1 09/12 Class

| Remote Controller Display | F6 |

### Method of Malfunction Detection

High-pressure control (stop, frequency drop, etc.) is activated in the cooling mode if the temperature being sensed by the heat exchanger thermistor exceeds the limit.

### Malfunction Decision Conditions

Activated when the temperature being sensed by the heat exchanger thermistor rises above 149°F. (The error is cleared when the temperature drops below 129°F.)

### Supposed Causes

- The installation space is not large enough.
- Faulty outdoor unit fan
- Faulty electronic expansion valve
- Faulty defrost thermistor
- Faulty outdoor unit PCB
- Faulty stop valve
- Dirty heat exchanger
Troubleshooting

Check No. 04
Refer to P.195

Check No. 06
Refer to P.198

Check No. 07
Refer to P.199

Check No. 09
Refer to P.200

Caution
Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

Check the installation space.

Check No. 07
Installation condition check

Abnormal

Change the air outlet grille position. Change the installation location. Clean the heat exchanger.

Normal

Check No. 09
Outdoor fan check

Abnormal

Replace the fan motor. Repair the connector or fan motor lead wires.

Normal

Check No. 04
Electronic expansion valve check

Abnormal

Replace the electronic expansion valve or coil. Replace the PCB.

Normal

Check No. 06
Heat exchanger thermistor check

Abnormal

Replace the heat exchanger thermistor.

Normal

Replace PCB.
### 4.13.2 15/18/24 Class

<table>
<thead>
<tr>
<th>Remote Controller Display</th>
<th>F6</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Method of Malfunction Detection</strong></td>
<td>High-pressure control (stop, frequency drop, etc.) is activated in the cooling mode if the temperature being sensed by the heat exchanger thermistor exceeds the limit.</td>
</tr>
<tr>
<td><strong>Malfunction Decision Conditions</strong></td>
<td>Activated when the temperature being sensed by the heat exchanger thermistor rises above 140°F. (Deactivated when the said temperature drops below 122°F.)</td>
</tr>
<tr>
<td><strong>Supposed Causes</strong></td>
<td>The installation space is not large enough.</td>
</tr>
<tr>
<td></td>
<td>Faulty outdoor unit fan</td>
</tr>
<tr>
<td></td>
<td>Faulty electronic expansion valve</td>
</tr>
<tr>
<td></td>
<td>Faulty defrost thermistor</td>
</tr>
<tr>
<td></td>
<td>Faulty outdoor unit PCB</td>
</tr>
<tr>
<td></td>
<td>Faulty stop valve</td>
</tr>
<tr>
<td></td>
<td>Dirty heat exchanger</td>
</tr>
</tbody>
</table>
**Troubleshooting**

**Check No. 04**
Refer to P.195

**Check No. 06**
Refer to P.198

**Check No. 07**
Refer to P.199

**Check No. 09**
Refer to P.200

---

**Caution**
Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

- **Check No. 04**
  - Electronic expansion valve check

- **Check No. 06**
  - Heat exchanger thermistor check

- **Check No. 07**
  - Installation condition check

- **Check No. 09**
  - Outdoor fan check

---

**Abnormal**
- Change the air outlet grille position.
- Change the installation location.
- Clean the heat exchanger.
- Replace the fan motor.
- Repair the connector or fan motor lead wires.
- Replace the electronic expansion valve or coil.
- Replace the PCB.
- Replace the heat exchanger thermistor.
- Replace PCB.

**Normal**
- Replace the heat exchanger thermistor.
### 4.14 Position Sensor Abnormality
#### 4.14.1 09/12 Class

**Remote Controller Display**

**Method of Malfunction Detection**

A compressor startup failure is detected by checking the compressor running condition through the position detection circuit.

**Malfunction Decision Conditions**

- The compressor fails to start in about 15 seconds after the compressor run command signal is sent.
- Clearing condition: Continuous run for about 10 minutes (normal)
- The system will be shut down if the error occurs 16 times.

**Supposed Causes**

- Compressor relay cable disconnected
- Compressor itself defective
- Outdoor unit PCB defective
- Stop valve closed
- Input voltage out of specification

**Troubleshooting**

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

<table>
<thead>
<tr>
<th>Check No. 13</th>
<th>Refer to P.202</th>
</tr>
</thead>
</table>

*Caution*

**Diagram:**

- Normal NO → Replace the outdoor unit PCB.
- YES → Check the electrolytic capacitor voltage.
- DC290–380V? NO → Replace the outdoor unit PCB.
- YES →Electricals or compressor harnesses connected as specified?
  - NO → Reconnect as specified.
  - YES → Turn off the power. Disconnect the harnesses U, V and W.
- Check with the inverter checker (∗).
- Any LED off? YES → Correct the power supply or replace the outdoor unit PCB.
- NO → Replace the compressor.

* Inverter checker Part No.: 1225477
4.14.2 15/18/24 Class

**Remote Controller Display**

Method of Malfunction Detection

A compressor startup failure is detected by checking the compressor running condition through the position detection circuit.

Malfunction Decision Conditions

- The compressor fails to start in about 15 seconds after the compressor run command signal is sent.
- Clearing condition: Continuous run for about 5 minutes (normal)
- The system will be shut down if the error occurs 16 times.

Supposed Causes

- Compressor relay cable disconnected
- Compressor itself defective
- Outdoor unit PCB defective
- Stop valve closed
- Input voltage out of specification

Troubleshooting

Check No. 13

Refer to P.202

Replace the outdoor unit PCB.

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

Check No. 13

Check for short-circuit.

Check the electrolytic capacitor voltage.

DC380±30V?

Electricals or compressor harnesses connected as specified?

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

Check with the inverter checker (∗).

Any LED off?

Correct the power supply or replace the outdoor unit PCB.

Replace the compressor.

∗ Inverter checker

Part No.: 1225477
### 4.15 DC Voltage / Current Sensor Abnormality

#### Remote Controller Display

H8

#### Method of Malfunction Detection

Detecting abnormality of the DC sensor by the running frequency of compressor and by the input current multiplied DC voltage and current.

#### Malfunction Decision Conditions

- The compressor running frequency is below 52 Hz.
- (The input current is also below 0.5 A.)
- If this error repeats 4 times, the system will be shut down.
- The error counter will reset itself if this or any other error does not occur during the following 60-minute compressor running time (total time).

#### Supposed Causes

- Outdoor unit PCB defective

#### Troubleshooting

- **Caution** Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

Replace the outdoor unit PCB.
## 4.16 CT or Related Abnormality

<table>
<thead>
<tr>
<th>Remote Controller Display</th>
<th>H8</th>
</tr>
</thead>
</table>

### Method of Malfunction Detection

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

### Malfunction Decision Conditions

- The compressor running frequency is below 55 Hz and the CT input is below 0.1 V. (The input current is also below 1.25 A.)
- If this error repeats 4 times, the system will be shut down.
- The error counter will reset itself if this or any other error does not occur during the following 60-minute compressor running time (total time).

### Supposed Causes

- Power transistor defective
- Internal wiring broken or in poor contact
- Reactor defective
- Outdoor unit PCB defective
Caution
Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

Check No. 12
Check the capacitor voltage.

Turn off the power and turn it on again.

Get the system started.

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

YES
Replace the outdoor unit PCB.
NO

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

Current (guideline)

Rising with increasing frequency

Time

2 sec

NO

Check No. 12
Check the capacitor voltage.

DC380±30V?

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

NO

Measure the rectifier input voltage.

Any LED off?

YES
Correct the power supply or replace the SPM. (Replace the outdoor unit PCB.)

NO

Turn off the power and reconnect the above harnesses. Then turn on the power again and get the system restarted.

Compressor running?

YES
Replace the outdoor unit PCB.

NO

Replace the compressor.

Replace the outdoor unit PCB.

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

YES

NO

Check the supply voltage.

(R2848)
4.17 Thermistor or Related Abnormality (Outdoor Unit)

Remote Controller Display

P4, J3, J6, H9

Method of Malfunction Detection

This type of error is detected by checking the thermistor input voltage to the microcomputer.
[A thermistor error is detected by checking the temperature.]

Malfunction Decision Conditions

The thermistor input is above 4.96 V or below 0.04 V with the power on.
Error J3 is judged if the discharge pipe thermistor temperature is smaller than the condenser thermistor temperature.

Supposed Causes

- Connector in poor contact
- Thermistor defective
- Outdoor unit PCB defective
- Indoor unit PCB defective
- Condenser thermistor defective in the case of J3 error (outdoor unit heat exchanger thermistor in the cooling mode, or indoor unit heat exchanger thermistor in the heating mode)
Troubleshooting

Check No. 06
Refer to P.198

Troubleshooting

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

Turn on the power again.

Error displayed again on remote controller?

NO

Reconnect.

YES

Connect or thermistor disconnected?

NO

Normal?

NO

Replace defective one(s) of the following thermistors.

- Radiation fin thermistor
- Discharge pipe thermistor
- Outdoor heat exchanger thermistor
- Outdoor air thermistor

YES

Replace the following thermistor.

- Indoor heat exchanger thermistor

Check No. 06
Check the indoor heat exchanger thermistor resistance value in the heating mode.

Indoor heat exchanger thermistor functioning?

NO

Replace the outdoor unit PCB. (Replace the indoor unit PCB.)

YES

Replace the following thermistor.

- Indoor heat exchanger thermistor

P4: Radiation fin thermistor
J3: Discharge pipe thermistor
J6: Outdoor heat exchanger thermistor
H9: Outdoor air temperature thermistor

(R4702)
### 4.18 Electrical Box Temperature Rise

<table>
<thead>
<tr>
<th>Remote Controller Display</th>
<th>L3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Method of Malfunction Detection</strong></td>
<td>An electrical box temperature rise is detected by checking the radiation fin thermistor with the compressor off.</td>
</tr>
<tr>
<td><strong>Malfunction Decision Conditions</strong></td>
<td>With the compressor off, the radiation fin temperature is above 176°F. Reset is made when the temperature drops below 158°F.</td>
</tr>
</tbody>
</table>
| **Supposed Causes** | - Fin temperature rise due to defective outdoor unit fan  
- Fin temperature rise due to short-circuit  
- Fin thermistor defective  
- Connector in poor contact  
- Outdoor unit PCB defective |
Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

**Caution**

Turn off the power and turn it on again.

**WARNING**

To cool down the electricals, the outdoor unit fan gets started when the radiation fin temperature rises above 176°F and stops itself when it drops below 158°F.

Error again or outdoor unit fan activated?

**Check No. 06**

Check the thermistor resistance value.

Fin thermistor

Check the radiation fin temperature.

Thermistor as specified in its characteristic chart?

Replace the fin thermistor.

Above 176°F?

Replace the outdoor unit PCB.

Check No. 06

Check No. 07

Check No. 09

Check the installation condition.

Check the outdoor unit fan or related.

Functioning

Radiation fin dirty?

Too dirty

Clean up the radiation fin.

Slightly dirty

Replace the fan motor. Correct the connectors and fan motor leads. Replace the outdoor unit PCB.
## 4.19 Radiation Fin Temperature Rise

### Remote Controller Display

**L4**

### Method of Malfunction Detection

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

### Malfunction Decision Conditions

If the radiation fin temperature with the compressor on is above 194°F.
- If a radiation fin temperature rise takes place 4 times successively, the system will be shut down.
- The error counter will reset itself if this or any other error does not occur during the following 60-minute compressor running time (total time).

### Supposed Causes

- Fin temperature rise due to defective outdoor unit fan
- Fin temperature rise due to short-circuit
- Fin thermistor defective
- Connector in poor contact
- Outdoor unit PCB defective
Troubleshooting

Check No. 06
Refer to P.198

Check No. 07
Refer to P.199

Check No. 09
Refer to P.200

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

Turn off the power and turn it on again to get the system started.

Error displayed again?

YES

Check No. 06
Check the thermistor resistance value.

Fin thermistor

Check the radiation fin temperature.

Thermistor as specified in its characteristic chart?

NO

Replace the fin thermistor.

YES

Above 194°F?

NO

Check the power transistor and fin for looseness. If they are found to be fit tightly, replace the PCB or the power transistor.

YES

Replace the fan motor. Correct the connectors and fan motor leads. Replace the outdoor unit PCB.

Check No. 09
Check the outdoor unit fan or related.

Malfunctioning

Check the outdoor unit fan or related.

Functioning

Radiation fin dirty?

Too dirty

Clean up the radiation fin.

Slightly dirty

Check No. 07
Check the installation condition.
## 4.20 Output Over Current Detection

### 4.20.1 09/12 Class

<table>
<thead>
<tr>
<th>Method of Malfunction Detection</th>
<th>L5</th>
</tr>
</thead>
<tbody>
<tr>
<td>An output over-current is detected by checking the current that flows in the inverter DC section.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Malfunction Decision Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>■ A position signal error occurs while the compressor is running.</td>
</tr>
<tr>
<td>■ A speed error occurs while the compressor is running.</td>
</tr>
<tr>
<td>■ An output over-current input is fed from the output over-current detection circuit to the microcomputer.</td>
</tr>
<tr>
<td>■ The system will be shut down if the error occurs 255 times.</td>
</tr>
<tr>
<td>■ Clearing condition: Continuous run for about 10 minutes (normal)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Supposed Causes</th>
</tr>
</thead>
<tbody>
<tr>
<td>■ Over-current due to defective power transistor</td>
</tr>
<tr>
<td>■ Over-current due to wrong internal wiring</td>
</tr>
<tr>
<td>■ Over-current due to abnormal supply voltage</td>
</tr>
<tr>
<td>■ Over-current due to defective PCB</td>
</tr>
<tr>
<td>■ Error detection due to defective PCB</td>
</tr>
<tr>
<td>■ Over-current due to closed stop valve</td>
</tr>
<tr>
<td>■ Over-current due to compressor failure</td>
</tr>
<tr>
<td>■ Over-current due to poor installation condition</td>
</tr>
</tbody>
</table>
Troubleshooting

Check No.07
Refer to P.199

Check No.08
Refer to P.199

Check No.13
Refer to P.202

Note:
If the model doesn't have SPM, replace the outdoor unit PCB.
4.20.2 15/18/24 Class

Remote Controller
Display

---

L5

Method of Malfunction Detection

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

Malfunction Decision Conditions

- A position signal error occurs while the compressor is running.
- A speed error occurs while the compressor is running.
- An output over-current input is fed from the output over-current detection circuit to the microcomputer.
- The system will be shut down if the error occurs 16 times.
- Clearing condition: Continuous run for about 5 minutes (normal)

Supposed Causes

- Over-current due to defective power transistor
- Over-current due to wrong internal wiring
- Over-current due to abnormal supply voltage
- Over-current due to defective PCB
- Error detection due to defective PCB
- Over-current due to closed stop valve
- Over-current due to compressor failure
- Over-current due to poor installation condition
Troubleshooting

Check No.07
Refer to P.199

Check No.08
Refer to P.199

Check No.13
Refer to P.202

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

An output over-current may result from wrong internal wiring. If the wires have been disconnected and reconnected for part replacement, for example, and the system is interrupted by an output over-current, take the following procedure.

Caution

Stop valve fully open? NO

Fully open the stop valve.

Turn off the power and turn it on again to get the system started. See if the same error occurs.

Error again? NO

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

Possible causes
  • Instantaneous supply voltage drop
  • Compressor motor overloaded
  • Contact-induced electrical short-circuit

Keep on using as it is (monitor).

Check the electricals' connectors and other fittings.

∗ Inverter checker
Part No.: 1225477

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

Any LED off? NO

Correct the power supply.

Check No. 13
Check the power transistor.

Normal? NO

Replace the SPM.
(Replace the outdoor unit PCB.)

Turn off the power, and reconnect the harnesses. Turn on the power again and get restarted.

Check the supply voltage.

Voltage as rated? NO

Correct the power supply.

Turn off the power, and reconnect the harnesses. Turn on the power again and get restarted.

Check No. 08
Check the discharge pressure.

Short-circuit or breakage between compressor's coil phases? NO

Replace the compressor.
4.21 **Insufficient Gas**

### 4.21.1 09/12 Class

#### Remote Controller Display

**U0**

#### Method of Malfunction Detection

Gas shortage detection I: A gas shortage is detected by checking the compressor running frequency.

Gas shortage detection II: A gas shortage is detected by checking the difference between indoor unit heat exchanger temperature and room temperature as well as the difference between outdoor unit heat exchanger temperature and room temperature.

Gas shortage detection III: A gas shortage is detected by checking the difference between inhale and exhale temperature.

#### Malfunction Decision Conditions

**Gas shortage detection I:**

\[
\text{Input current} < (A/\text{Hz}) \times \text{Compressor running frequency} \times \text{Voltage} + \Box
\]

However, when the status of running frequency > (Hz) is kept on for a certain time.

Note: The values are different from model to model.

<table>
<thead>
<tr>
<th>(A)</th>
<th>(B)</th>
<th>(C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>640 / 256</td>
<td>0</td>
<td>55</td>
</tr>
</tbody>
</table>

**Gas shortage detection II:**

If a gas shortage error takes place 4 times successively, the system will be shut down. The error counter will reset itself if this or any other error does not occur during the following 60-minute compressor running time (total time).

**Gas shortage detection III:**

When the difference of the temperature is smaller than \(\Delta\), it is regarded as insufficient gas.

<table>
<thead>
<tr>
<th>Cooling</th>
<th>.room temperature – indoor heat exchanger temperature (\Delta 7.2°F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>.outdoor heat exchanger temperature – outdoor temperature (\Delta 7.2°F)</td>
<td></td>
</tr>
<tr>
<td>Heating</td>
<td>.indoor heat exchanger temperature – room temperature (\Delta 7.2°F)</td>
</tr>
<tr>
<td>.outdoor temperature – outdoor heat exchanger temperature (\Delta 5.4°F)</td>
<td></td>
</tr>
</tbody>
</table>

#### Supposed Causes

- Refrigerant shortage (refrigerant leakage)
- Poor compression performance of compressor
- Discharge pipe thermistor disconnected, or indoor unit or outdoor unit heat exchanger thermistor disconnected, room or outdoor air temperature thermistor disconnected
- Stop valve closed
- Electronic expansion valve defective
Troubleshooting

Check No.04
Refer to P.195

Check No.06
Refer to P.198

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

Any thermistor disconnected?

YES

* Discharge pipe thermistor
* Indoor / outdoor unit heat exchanger thermistor
* Room temperature thermistor
* Outdoor air thermistor

Reconnect in position.

NO

Stop valve closed?

YES

Open the stop valve.

NO

Check for gas leakage.

Oil oozing at relay pipe connections?

YES

Repair the pipe flare or replace the square union.

NO

Oil oozing at internal piping?

YES

Compressor vibrating too much?

YES

Check the power transistor harness for looseness. Correct it as required. Also replace cracked pipe if any.

NO

Check the pipes for improper contact. Correct as required. Also replace cracked pipe if any.

Check No.04

Electronic expansion valve functioning?

YES

Change for a specified amount of fresh refrigerant.

NO

Compressor vibrating too much?

YES

Check the power transistor harness for looseness. Correct it as required. Also replace cracked pipe if any.

NO

Check the pipes for improper contact. Correct as required. Also replace cracked pipe if any.

Replace the electronic expansion valve.

Gas shortage error again?

YES

Malfunctioning

Replace the room temperature or outdoor air thermistor, or the indoor unit or outdoor unit heat exchanger thermistor.

NO

Check No.06

Check the thermistors.

Functioning

(1) Replace the PCB.
(2) Replace the compressor.

Procedure complete

(R4706)
4.21.2 15/18/24 Class

Remote Controller Display

Method of Malfunction Detection

Gas shortage detection I: A gas shortage is detected by checking the CT-detected input current value and the compressor running frequency.

Gas shortage detection II: A gas shortage is detected by checking the difference between indoor unit heat exchanger temperature and room temperature as well as the difference between outdoor unit heat exchanger temperature and room temperature.

Malfunction Decision Conditions

Gas shortage detection I:

Input current < \( A (A/Hz) \times \text{Compressor running frequency} \times \text{Voltage} + B \)

However, when the status of running frequency > 55 (Hz) is kept on for a certain time.

Note: The values are different from model to model.

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1756 / 256</td>
<td>-50</td>
</tr>
</tbody>
</table>

Gas shortage detection II:

If a gas shortage error takes place 4 times successively, the system will be shut down. The error counter will reset itself if this or any other error does not occur during the following 60-minute compressor running time (total time).

Supposed Causes

- Refrigerant shortage (refrigerant leakage)
- Poor compression performance of compressor
- Discharge pipe thermistor disconnected, or indoor unit or outdoor unit heat exchanger thermistor disconnected, room or outside air temperature thermistor disconnected
- Stop valve closed
- Electronic expansion valve defective
Troubleshooting

Check No.04
Refer to P.195

Check No.06
Refer to P.198

Caution
Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

Any thermistor disconnected?
YES
* Discharge pipe thermistor
* Indoor / outdoor unit heat exchanger thermistor
* Room temperature thermistor
* Outdoor air thermistor
Reconnect in position.

NO

Stop valve closed?
YES
Open the stop valve.

NO

Check for gas leakage.

Oil oozing at relay pipe connections?
YES
Repair the pipe flare or replace the square union.

NO

Oil oozing at internal piping?

YES
Compressor vibrating too much?
YES
Check the power transistor harness for looseness. Correct as required. Also replace cracked pipe if any.

NO
Check the pipes for improper contact. Correct as required. Also replace cracked pipe if any.

Replace the electronic expansion valve.

CT in trouble (refer to H8).

NO

Check No. 06
Electronic expansion valve functioning?
YES
Check the CT.
Malfunctioning
Change for a specified amount of fresh refrigerant.

Functioning

Gas shortage error again?
YES
Replace the room temperature or outdoor air thermistor, or the indoor unit or outdoor unit heat exchanger thermistor.

NO
Check No. 06
Check the thermistors.
Malfunctioning
(1) Replace the PCB.
(2) Replace the compressor.

Functioning

Procedure complete

(R4777)
4.22 Over-voltage Detection

Remote Controller Display

Method of Malfunction Detection

An abnormal voltage rise is detected by checking the specified over-voltage detection circuit.

Malfunction Decision Conditions

- An over-voltage signal is fed from the over-voltage detection circuit to the microcomputer (The voltage is over 400V).
- The system will be shut down if the error occurs 255 times.
- Clearing condition: Continuous run for about 10 minutes (normal)

Supposed Causes

- Supply voltage not as specified
- Over-voltage detection circuit defective
- PAM control part(s) defective

Troubleshooting

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

Check the supply voltage.

Supply voltage as specified?

- YES
  - Correct the power supply.
- NO
  - Turn on the power again.
  - Error displayed again?
    - YES
      - Replace the SPM. (Replace the outdoor unit PCB.)
    - NO
      - Disturbance factors
        - Noise
        - Power supply distortion
      - Check for such factors for a long term.
      - Repeat a couple of times.

Note: If the model doesn’t have SPM, replace the outdoor unit PCB.
### 4.23 Low-voltage Detection

**Remote Controller Display**

**Method of Malfunction Detection**

An abnormal voltage rise or drop is detected by checking the detection circuit or DC voltage detection circuit.

**Malfunction Decision Conditions**

- An over-voltage signal is fed from the over-voltage detection circuit to the microcomputer, or the voltage being detected by the DC voltage detection circuit is judged to be below 150 V for 0.1 second.
- The system will be shut down if the error occurs 16 times.
- Clearing condition: Continuous run for about 60 minutes (normal)

**Supposed Causes**

- Supply voltage not as specified
- Over-voltage detector or DC voltage detection circuit defective
- PAM control part(s) defective

**Troubleshooting**

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

1. Check the supply voltage.
   - Supply voltage as specified?
     - YES
       - Turn on the power again.
         - System restarted?
           - YES
             - Disturbance factors
               - Noise
               - Power supply distortion
             - (Precaution before turning on the power again) Make sure the power has been off for at least 30 seconds.
             - (R2854) Check for such factors for a long term.
             - Try to get restarted a couple of times.
           - NO
             - Repeat a couple of times.
       - NO
         - Correct the power supply.
     - NO
       - Correct the power supply.

2. Replace the SPM.
   - (Replace the outdoor unit PCB.)
5. Check

5.1 How to Check

5.1.1 Fan Motor Connector Output Check

Check No.01

1. Check connector connection.
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).

- Motor power supply voltage
- Unused
- Unused
- P.0V (reference potential)
- Motor control voltage (15 VDC)
- Rotation command voltage (1–6 VDC)
- Rotation pulse input

5.1.2 Electronic Expansion Valve Check

Check No.04

Conduct the followings to check the electronic expansion valve (EV).

1. Check to see if the EV connector is correctly inserted in the PCB. Compare the EV unit and the connector number.
2. Turn the power off and back on again, and check to see if all the EVs generate latching sound.
3. If any of the EVs does not generate latching noise in the above step 2, disconnect that connector and check the conductivity using a tester.
   Check the conductivity between pins 1, 3 and 6, and between pins 2, 4 and 5. If there is no conductivity between the pins, the EV coil is faulty.

4. If no EV generates latching sound in the above step 2, the outdoor unit PCB is faulty.
5. If the conductivity is confirmed in the above step 2, mount a good coil (which generated latching sound) in the EV unit that did not generate latching sound, and check to see if that EV generates latching sound.
   *If latching sound is generated, the outdoor unit PCB is faulty.
   *If latching sound is not generated, the EV unit is faulty.

Note: Please note that the latching sound varies depending on the valve type.
5.1.3 Four Way Valve Performance Check

Check No.05

- **09/12 Class**

  - Turn off the power and turn it on again.
  - Start the heating-mode run.

  - S80 voltage at DC 180-220 V with compressor on?
    - NO: Replace the outdoor unit PCB.
    - YES: Disconnect the four way valve coil from the connector and check the continuity.

  - Four way valve coil resistance at 3kΩ±0.5kΩ?
    - NO: Replace the four way valve coil.
    - YES: Replace the four way valve.

  - (Fig. 1) Voltage at S80
    - DC180-220V

  - Compressor ON Time

  *(R3047)*
15/18/24 Class

Turn off the power and turn it on again.

Start the heating-mode run.

* Four way valve coil
  Cooling / dry: No continuity
  Heating: Continuity

S80 voltage at DC 180-220 V with compressor on? (Fig. 1)

YES

Disconnect the four way valve coil from the connector and check the continuity.

Four way valve coil resistance at 1500 ohms?

NO

Replace the four way valve coil.

YES

Replace the four way valve.

NO

Replace the outdoor unit PCB.

Voltage at S80

DC180-220V

Compressor ON Time

(R2856)
5.1.4 Thermistor Resistance Check

Check No.06

Remove the connectors of the thermistors on the PCB, and measure the resistance of each thermistor using tester. The relationship between normal temperature and resistance is shown in the graph and the table below.

<table>
<thead>
<tr>
<th>Temperature (°F)</th>
<th>Thermistor R77°F=20kΩ B=3950</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>211.0 (kΩ)</td>
</tr>
<tr>
<td>5</td>
<td>150</td>
</tr>
<tr>
<td>14</td>
<td>116.5</td>
</tr>
<tr>
<td>23</td>
<td>88</td>
</tr>
<tr>
<td>32</td>
<td>67.2</td>
</tr>
<tr>
<td>41</td>
<td>51.9</td>
</tr>
<tr>
<td>50</td>
<td>40</td>
</tr>
<tr>
<td>59</td>
<td>31.8</td>
</tr>
<tr>
<td>68</td>
<td>25</td>
</tr>
<tr>
<td>77</td>
<td>20</td>
</tr>
<tr>
<td>86</td>
<td>16</td>
</tr>
<tr>
<td>95</td>
<td>13</td>
</tr>
<tr>
<td>104</td>
<td>10.6</td>
</tr>
<tr>
<td>113</td>
<td>8.7</td>
</tr>
<tr>
<td>122</td>
<td>7.2</td>
</tr>
</tbody>
</table>

(R77°F=20kΩ B=3950)

Tester

Resistance range
5.1.5 Installation Condition Check

Check No.07

Installation condition check

Check the allowable dimensions of the air suction and discharge area.

Abnormal

Change the position of the air discharge grille or the installation location.

Normal

Check

Does the discharged air from other outdoor unit cause an increase of the suction air temperature?

YES

Change the position of the air discharge grille or the installation location.

NO

Is the heat exchanger very dirty?

YES

Clean the heat exchanger.

NO

Is the air flow blocked by obstacles or winds blowing in the opposite direction?

YES

Change the installation location or direction.

NO

Check the outside air temperature (temperature of air taken in by the outdoor unit). (The outside air temperature shall be 109°F or lower.)

(R4160)

5.1.6 Discharge Pressure Check

Check No.08

Discharge pressure check

High

NO

Replace compressor.

YES

Replace the pipe installed at the site.

Is the stop valve open?

NO

Open the stop valve.

YES

Clean.

Is the connection pipe deformed?

NO

Replace the compressor.

YES

At the heat exchanger and air filter dirty?

(R1443)
5.1.7 Outdoor Unit Fan System Check

Check No. 09

Check the outdoor unit fan system.

Outdoor unit fan running?

YES

Outdoor unit fan system functioning.

NO

Fan motor lead wire connector disconnected?

YES

Reconnect.

NO

Go to Check No. 15.

(R2857)
5.1.8 Power Supply Waveforms Check

Check No.10

Measure the power supply waveform between pins 1 and 3 on the terminal board, and check the waveform disturbance.

- Check to see if the power supply waveform is a sine wave (Fig.1).
- Check to see if there is waveform disturbance near the zero cross (sections circled in Fig.2)

[Fig.1]  [Fig.2]

5.1.9 Inverter Units Refrigerant System Check

Check No.11

Refrigerant system check

Is the discharge thermistor disconnected from the holder?

YES  Correct the problem.

NO

Is any moisture found in sight glass?

YES  Conduct vacuum drying.

Conduct the check after operating the equipment for a sufficient length of time.

NO  Replace the refrigerant.

Check for gas leaks. See the section on insufficient gas detection.

YES  

(R1445)
5.1.10 Capacitor Voltage Check

Check No.12

Before this checking, be sure to check the main circuit for short-circuit.
- Checking the capacitor voltage
- 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.

5.1.11 Power Transistor Check

Check No.13

- Checking the power transistor
- Never touch any live parts for at least 10 minutes after turning off the circuit breaker.
- If you cannot avoid to touch a live part, make sure that the power transistor's supply voltage is below 50 V using the tester.
- For the UVW, make measurements at the Faston terminal on the board or the relay connector.

<table>
<thead>
<tr>
<th>Tester's negative terminal</th>
<th>Power transistor (+)</th>
<th>UVW</th>
<th>Power transistor (-)</th>
<th>UVW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tester's positive terminal</td>
<td>UVW</td>
<td></td>
<td>Power transistor (+)</td>
<td>UVW</td>
</tr>
<tr>
<td>Normal resistance</td>
<td>Several kΩ to several MΩ</td>
<td></td>
<td>Power transistor (-)</td>
<td></td>
</tr>
<tr>
<td>Abnormal resistance</td>
<td>0 or ∞</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
5.1.12 Main Circuit Electrolytic Capacitor Check

Check No.14

- Checking the main circuit electrolytic capacitor
- Never touch any live parts for at least 10 minutes after turning off the circuit breaker.
- If you cannot avoid to touch a live part, make sure that there is no DC voltage using the tester.
- Check the continuity with the tester. Reverse the pins and make sure there is continuity.

![Diagram of capacitance check]

Keep the tester in the resistance measuring range.

- When the pointer swings, it means the capacitor functions.
- If the pointer does not swing at all, or if it swings all the way but does not return, it means the capacitor malfunction.

5.1.13 Turning Speed Pulse Input on the Outdoor Unit PCB Check

Check No.15

<Propeller fan motor>
Make sure the voltage of 270±30V is being applied.
(1) Stop the operation first and then the power off, and disconnect the connector S70.
(2) Make sure there is about DC 270 V between pins 4 and 7.
(3) With the system and the power still off, reconnect the connector S70.
(4) Make a turn of the fan motor with a hand, and make sure the pulse (0-15 V) appears twice at pins 1 and 4.

If the fuse is blown out, the outdoor-unit fan may also be in trouble. Check the fan too.
If the voltage in Step (2) is not applied, it means the PCB is defective. Replace the PCB.
If the pulse in Step (4) is not available, it means the Hall IC is defective. Replace the DC fan motor. If there are both the voltage (2) and the pulse (4), replace the PCB.

![Diagram of turning speed pulse input]

- Propeller fan motor : S70
5.1.14 **Hall IC Check**

**Check No.16**

1. Check the connector connection.
2. With the power ON, operation OFF, and the connector connected, check the following.
   * Output voltage of about 5 V between pins 1 and 3.
   * Generation of 3 pulses between pins 2 and 3 when the fan motor is operating.

Failure of (1) → faulty PCB → Replace the PCB.
Failure of (2) → faulty Hall IC → Replace the fan motor.
Both (1) and (2) result → Replace the PCB.

Part 7

Removal Procedure

1. FTXS09/12DVJU ................................................................. 206
   1.1 Removal of Air Filter .................................................. 206
   1.2 Removal of Front Grille ............................................. 209
   1.3 Removal of Horizontal Blade and Vertical Blade ........ 212
   1.4 Removal of Electrical Box, PCB and Swing Motor ...... 214
   1.5 Removal of Heat Exchanger ....................................... 220
   1.6 Install of Drain Plug .................................................. 223
   1.7 Removal of Fan Rotor and Fan Motor ....................... 225

2. FTXS15/18/24DVJU ........................................................ 229
   2.1 Removal of the Air Filter / Front Panel ....................... 229
   2.2 Removal of the Front Grille ....................................... 233
   2.3 Removal of the Horizontal Blades / Vertical Blades ...... 236
   2.4 Removal of the Electrical Box / PCB / Swing Motor .... 239
   2.5 Removal of the Heat Exchanger ................................ 247
   2.6 Removal of the Fan Rotor / Fan Motor ....................... 250

3. RXS09/12DVJU .............................................................. 253
   3.1 Removal of Panels and Fan Motor .............................. 253
   3.2 Removal of Electrical Box .......................................... 261
   3.3 Removal of Reactor and Partition Plate ...................... 263
   3.4 Removal of Sound Blanket ....................................... 265
   3.5 Removal of Four Way Valve ....................................... 268
   3.6 Removal of Compressor ............................................ 270
   3.7 Removal of PCB ....................................................... 273

4. RXS15/18/24DVJU .......................................................... 276
   4.1 Removal of the Panels and Plates .............................. 276
   4.2 Removal of the Fan Motor / Propeller Fan ................. 281
   4.3 Removal of the PCB / Electrical Box ......................... 285
   4.4 Removal of the Reactor ............................................ 294
   4.5 Removal of the Sound Blanket ................................. 296
   4.6 Removal of the Four Way Valve ............................... 299
   4.7 Removal of the Electronic Expansion Valve .............. 300
   4.8 Removal of the Compressor ..................................... 301

Note:
The removal procedures for FDXS09/12DVJU is not described.
1. FTXS09/12DVJU

1.1 Removal of Air Filter

Procedure Warning Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.

<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. External features</td>
<td><img src="image1.png" alt="Diagram" /></td>
<td>If ON/OFF button is kept pushing for 5 seconds, a forced cooling operation will be carried out for approx. 15 minutes.</td>
</tr>
<tr>
<td>2. Removing air filters</td>
<td><img src="image2.png" alt="Diagram" /></td>
<td>Pull protrusions on left and right sides of panel with fingers and open front grille all the way.</td>
</tr>
<tr>
<td>Step</td>
<td>Procedure</td>
<td>Points</td>
</tr>
<tr>
<td>------</td>
<td>-----------</td>
<td>--------</td>
</tr>
<tr>
<td>2</td>
<td>Lift center section of air filter and disengage hooks. Remove air filter by pulling forward.</td>
<td>▪ Left and right filters are interchangeable. ▪ To re-install, insert air filter along the guide.</td>
</tr>
<tr>
<td>3.</td>
<td>Opening and shutting front panel</td>
<td>Support the front panel by one hand, while remove the rotation axis at the upper center by the other hand. ▪ And pull out the front panel forward to remove.</td>
</tr>
</tbody>
</table>

1 Hook a finger onto the projection part provided on the both sides of the unit’s panel and open up the panel to the position higher than it will stop.

2 Support the front panel by one hand, while remove the rotation axis at the upper center by the other hand.

3 Slide the center rotary axis the left and remove it out.
<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Remove front panel from the unit.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>When restoring the air filter, make sure that the projection parts on the panel are in the guide groove, and then shut the panel.</td>
<td></td>
</tr>
</tbody>
</table>

![Diagram](R2513)

![Diagram](R2514)
1.2 Removal of **Front Grille**

**Procedure**

<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Opening and closing of service cover</td>
<td>- A switch for field setting is not provided in particular.</td>
</tr>
<tr>
<td></td>
<td>1 Remove a service cover mounting screw. Open</td>
<td></td>
</tr>
<tr>
<td></td>
<td>service cover upward</td>
<td></td>
</tr>
</tbody>
</table>

**Warning** Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.
### Removal Procedure

<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>Removal of front grille assembly</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Remove the 2 screws, in the right and the left, which fix the main body with the front grille.</td>
<td>Screw stoppers inside the flap which were equipped in the existing models are not provided.</td>
</tr>
<tr>
<td>2</td>
<td>Disengage the 2 hooks on the upper part. In case that the hooks are not pressed from above, remove the front panel and then remove the grille while pushing the hook through a clearance between the front grille and the heat exchanger.</td>
<td>At the upper part there are 2 hooks in the left and the right. Disengage the hooks by pressing knobs with a screwdriver.</td>
</tr>
</tbody>
</table>

![Diagram of grille removal](image1)

![Diagram of screw removal](image2)

![Diagram of hook disengagement](image3)
<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>The front grille can be removed in a manner to pull out the upper part forward and lift up the lower part.</td>
<td>- When restoring the grille, make sure whether each hook is set as it was.</td>
</tr>
</tbody>
</table>

(R2520) (R2521)
## 1.3 Removal of Horizontal Blade and Vertical Blade

**Procedure Warning**  
Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.

<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Remove horizontal blade</td>
<td>Screw stoppers inside the flap which were equipped in the existing models are not provided.</td>
</tr>
<tr>
<td>1</td>
<td>Lift horizontal blade to open position.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Disengage horizontal blade from blade retaining section.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Bend blade slightly and remove it from the unit.</td>
<td></td>
</tr>
</tbody>
</table>
**Removal Procedure**

<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
</table>
| 2.   | Removal of vertical blade | - For restoring.  
  1. Since the key pattern hook is provided on the left side, insert the edge of the blade to the tip while rotating it.  
  2. Restore the 2 fixed parts of the horizontal blade onto the hook. |
|      |           |        |
| 1.   | Disengage the vertical blade’s joint from the fixed plate. |        |
| 2.   | Remove the blade forward. | Five vertical blades are integrated with the joint rod. (so, only one blade can't be exchanged.) |
# 1.4 Removal of Electrical Box, PCB and Swing Motor

**Procedure**

<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>■ Remove front grill.</td>
<td><img src="image1.png" alt="Diagram" /></td>
<td></td>
</tr>
<tr>
<td>1. Remove electrical box</td>
<td><img src="image2.png" alt="Diagram" /></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Disconnect the connection wires.</td>
<td>■ Pay attention to the direction of the retainer of the thermistor so that the retainer will not touch the harness (same as the existing models.)</td>
</tr>
<tr>
<td>2.</td>
<td>Disconnect connectors (S1 and S7) of fan motor.</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Disconnect one connector (S6) of swing motor.</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Remove heat exchanger thermistor.</td>
<td></td>
</tr>
</tbody>
</table>
### Step Procedure Points

<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Remove a screw on the terminal board.</td>
<td>■ The electrical box can be removed instead of disengaging the terminal board.</td>
</tr>
<tr>
<td>6</td>
<td>Remove a screw on the electrical box.</td>
<td></td>
</tr>
<tr>
<td>Step</td>
<td>Procedure</td>
<td>Points</td>
</tr>
<tr>
<td>------</td>
<td>-----------------------------------------------</td>
<td>---------------------------------------------</td>
</tr>
<tr>
<td>7</td>
<td>Pull up the electrical box forward to remove.</td>
<td>- A hook is provided on the behind.</td>
</tr>
</tbody>
</table>

(R2533)
<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Remove the shelter.</td>
<td><img src="R2534" alt="Image" /></td>
</tr>
<tr>
<td>2</td>
<td>Disengage the front plate of the electrical box. Disengage the knobs by pushing the 2 hooks at the top and the bottom.</td>
<td><img src="R2536" alt="Image" /></td>
</tr>
<tr>
<td>3</td>
<td>Sliding to the left, the front part of the electrical box can be removed.</td>
<td><img src="R2537" alt="Image" /></td>
</tr>
</tbody>
</table>
4. Disengage the four knobs on the back of the signal receiver PCB.

5. Signal receiver PCB
3. Remove swing motor assembly.

1. To remove swing motor assembly, remove 2 screws.
   (Manual adjusting for the vertical blades.)

- Provide a supporter so that the joint link will not drop off, in case the horizontal blade assembly is removed.

- The control PCB is integrated with the power supply PCB.
1.5 Removal of Heat Exchanger

**Procedure Warning** Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.

<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Conduct pump-down operation. Remove the installation frame from the mounting plate.</td>
<td><strong>Warning</strong> If gas leaks, repair the leak location, then connect all refrigerant from the unit. Conduct vacuum drying, and charge proper amount of refrigerant. <strong>Warning</strong> Do not mix any gas (including air) other than the specified refrigerant (R-410A) into refrigerating cycle. (Mixing of air or other gas causes abnormal temperature rise in refrigerating cycle, and this results in pipe rupture or personal injuries.)</td>
</tr>
<tr>
<td>2</td>
<td>Remove the drain hose. Make curing so that the residual drain water will not leak out.</td>
<td>Pay attention so that the residual drain will not make a floor dirty. In case that a drain hose is buried inside a wall, remove it after the drain hose in the wall is pulled out.</td>
</tr>
<tr>
<td>3</td>
<td>Disengage the insulation tube and disconnect the flare nuts for the gas line and the liquid line.</td>
<td>Use two wrenches to disconnect pipe.</td>
</tr>
<tr>
<td></td>
<td>Disengage the indoor unit from the installation plate.</td>
<td>After pipes are disconnected, close all pipe openings with caps to prevent dust and moisture from entering pipes.</td>
</tr>
<tr>
<td>Step</td>
<td>Procedure</td>
<td>Points</td>
</tr>
<tr>
<td>------</td>
<td>-----------</td>
<td>--------</td>
</tr>
<tr>
<td>4</td>
<td>Disengage the hooks of the pipe retainer on the back.</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Pull auxiliary pipe forward to an angle of 10 to 20 degrees.</td>
<td>Be careful to prevent pipe deformation.</td>
</tr>
<tr>
<td>Step</td>
<td>Procedure</td>
<td>Points</td>
</tr>
<tr>
<td>------</td>
<td>------------</td>
<td>--------</td>
</tr>
<tr>
<td>6</td>
<td>Disengage hooks located right and left side, and pull heat exchanger forward. The hooks are symmetrically placed in the right and the left.</td>
<td>Lifting the heat-exchanger slightly upward to the right, the left hook comes to be disengaged easily.</td>
</tr>
<tr>
<td>7</td>
<td>Lift and remove heat exchanger.</td>
<td>Caution When removing or re-installing heat exchanger, be sure to wear protective gloves or wrap heat exchanger with cloths. (Fins can cut fingers.)</td>
</tr>
</tbody>
</table>
## 1.6 Install of Drain Plug

**Warning** Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.

<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Disconnect drain hose.</td>
<td>- The drain pan is integrated with the bottom plate.</td>
</tr>
<tr>
<td>2</td>
<td>Pull out the drain plug in the left on the drain pan by hand.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Insert the drain hose,</td>
<td>- Push it into the inner part firmly.</td>
</tr>
</tbody>
</table>

![Diagram](image1.png)

![Diagram](image2.png)

![Diagram](image3.png)

![Diagram](image4.png)
<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Push the drain plug into the right by Allen wrench.</td>
<td>Push it into the inner part firmly.</td>
</tr>
</tbody>
</table>

[Diagram showing Allen wrench (5/32\text{inch})]
## 1.7 Removal of **Fan Rotor and Fan Motor**

**Warning**: Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.

<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>To remove right side plate, remove three screws.</td>
<td></td>
</tr>
<tr>
<td>Step</td>
<td>Procedure</td>
<td>Points</td>
</tr>
<tr>
<td>------</td>
<td>------------------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>2</td>
<td>Disengage hook.</td>
<td></td>
</tr>
</tbody>
</table>

![Image of disengaging hook](P2558)

3 Loosen the hexagon head set screw on the fan rotor.

![Image of loosening screw](R2559)

![Image of loosening screw](R2560)
<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Remove the motor and fan rotor.</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Remove a screw on the left side plate.</td>
<td>Disengage a hook from the backward</td>
</tr>
<tr>
<td>Step</td>
<td>Procedure</td>
<td>Points</td>
</tr>
<tr>
<td>------</td>
<td>-----------</td>
<td>--------</td>
</tr>
<tr>
<td>6</td>
<td>Disengage a hook from the backward.</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Since the fan bearing is made of rubber, push it strongly off from the inside. The bearing can be removed just as the left side plate is attached with.</td>
<td></td>
</tr>
</tbody>
</table>
## 2. FTXS15/18/24DVJU
### 2.1 Removal of the Air Filter / Front Panel

#### Procedure

<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Features</td>
<td><img src="R2746" alt="Room temperature sensor (thermistor)" /> When the signal receiver catches a signal from the remote controller, it produces beep sound and the operation lamp blinks.</td>
<td></td>
</tr>
<tr>
<td>2. Remove the air filters.</td>
<td><img src="R2747" alt="Operation lamp" /></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Hold the front panel by the tabs on the both sides and lift it until it stops with a click.</td>
<td></td>
</tr>
<tr>
<td>Step</td>
<td>Procedure</td>
<td>Points</td>
</tr>
<tr>
<td>------</td>
<td>-----------</td>
<td>--------</td>
</tr>
</tbody>
</table>
| 2    | Lift an **air filter** upwards slightly by the center knob, and then pull it out downwards. | - The right and left filters are interchangeable.  
- Insert the air filters along grooves when installing.  
- Set the air filters with displaying “FRONT” on the front side.  
- Insert 2 hooks of the air filter completely. |
<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.</td>
<td>Remove an &quot;air purifying filter with photocatalytic deodorizing function&quot;.</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Push up the bottom of an air purifying filter to undo the hooks (2 on lower, 3 on upper) and take the filter out.</td>
<td>The right and left filters are interchangeable.</td>
</tr>
</tbody>
</table>

![Diagram showing hooks and air purifying filter with photocatalytic deodorizing function.](image-url)
<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.</td>
<td>Remove the front panel.</td>
<td></td>
</tr>
</tbody>
</table>
| 1    | While opening the front panel further than it stops, release both axes and remove the front panel. | - Slide the front panel side to side to release each axis.  
- Align the right and left axes with grooves in turn and insert them to the end when installing. |

![Diagram](R2753)  

![Diagram](R2754)  

![Diagram](R2755)
## 2.2 Removal of the Front Grille

### Procedure

<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Remove the service cover.</td>
<td></td>
</tr>
</tbody>
</table>
| 1    | Loosen the screw and remove the service cover by the knob. | ![Service cover](R2756)  
- No field setting switch is inside it.  
- You can remove the front grille without detaching the service cover. |
| 2.   | Remove the front grille. | ![Front grille](R2758)  
- It has no fixing screws inside blades, though previous models had. |
| 1    | Loosen the three fixing screws of the front grille. |   |
### Step 2: Undo the three hooks on the top of the front grille.

#### Points
- The front grille has three hooks on the center and the both sides of the upper part.
- Refer to the removal procedure in a reverse way when reassembling.
### Step Procedure Points

<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Pull the upper part of the front grille out and lift the lower part up, and then remove the front grille.</td>
<td>- Make sure that all the hooks are placed securely when reassembling.</td>
</tr>
</tbody>
</table>
### 2.3 Removal of the Horizontal Blades / Vertical Blades

**Procedure**

*Warning:* Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.

<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Remove the horizontal blades.</td>
<td>It has no fixing screws inside blades, though previous models had.</td>
</tr>
<tr>
<td>1.</td>
<td>Open the horizontal blades.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Undo the left pivot of the horizontal blades.</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Bend the horizontal blades slightly and release the center pivots. Slide the horizontal blades to the left and release the right pivot.</td>
<td></td>
</tr>
</tbody>
</table>
### Installation Procedure

1. Since key pattern hook is provided, rotate the blades and fit it to the right pivot first.
2. Fit the blades to the center and left pivots.

### Step Procedure Points

<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
</table>
| 2.   | Remove the **vertical blades**. | - Installation procedure  
- 1. Since key pattern hook is provided, rotate the blades and fit it to the right pivot first.  
- 2. Fit the blades to the center and left pivots. |
<p>| 1.   | Undo the right and left pivots. | |
| 2.   | Undo the three hooks. | |</p>
<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Pull the vertical blades rightwards and remove it.</td>
<td></td>
</tr>
</tbody>
</table>
## 2.4 Removal of the Electrical Box / PCB / Swing Motor

**Warning**
Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.

<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Remove the front grille.</td>
<td>Parts layout</td>
</tr>
<tr>
<td>2.</td>
<td>Remove the drip proof plate.</td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Loosen the screw.</td>
<td>Drip proof plate</td>
</tr>
</tbody>
</table>

![Image of parts layout](image1.png)

![Image of drip proof plate](image2.png)
### 3. Disconnect the indoor heat exchanger thermistor and the earth

- Mind that not to lose the clip for the thermistor.

### 4. Remove the electrical box

1. Disconnect the 4 connection wirings. Loosen the screw and remove the terminal strip board.

- You can remove the electrical box without detaching the terminal strip board.
- Screw: M4×25

2. Disconnect the connectors for fan motor (S1).
<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Disconnect the connectors for swing motor (S6, S8).</td>
<td><img src="image" alt="Connector for swing motor (horizontal blades) S6" /> <img src="image" alt="Connector for swing motor (vertical blades) S8" /></td>
</tr>
<tr>
<td>4</td>
<td>Loosen the fixing screw of the electrical box.</td>
<td><img src="image" alt="Electrical box" /> <img src="image" alt="The electrical box has a hook on its back." /></td>
</tr>
<tr>
<td>5</td>
<td>Dislocate the electrical box to the left and undo the back hook.</td>
<td><img src="image" alt="Dislocate the electrical box" /></td>
</tr>
<tr>
<td>Step</td>
<td>Procedure</td>
<td>Points</td>
</tr>
<tr>
<td>------</td>
<td>-----------</td>
<td>--------</td>
</tr>
<tr>
<td>6</td>
<td>Pull the electrical box out towards you.</td>
<td>Hook the back hook of the electrical box when reassembling.</td>
</tr>
<tr>
<td>7</td>
<td>Loosen the screw on the electrical box.</td>
<td>Screw: M4×16</td>
</tr>
<tr>
<td>8</td>
<td>Push the shelter up and undo the hook.</td>
<td></td>
</tr>
<tr>
<td>Step</td>
<td>Procedure</td>
<td>Points</td>
</tr>
<tr>
<td>------</td>
<td>------------</td>
<td>--------</td>
</tr>
<tr>
<td>9</td>
<td>Press the receiver units down and release the hooks on the upper side, and then undo the hooks on the lower side.</td>
<td>- Release the hooks on the upper side.</td>
</tr>
<tr>
<td>10</td>
<td>Cut the clamp.</td>
<td>- Remove the receiver units while pushing the hooks of connectors.</td>
</tr>
<tr>
<td>11</td>
<td>The receiver units contain four PCBs. Remove each PCB with releasing hooks. Disconnect every connector from each PCB.</td>
<td>- Remove the receiver units while pushing the hooks of connectors.</td>
</tr>
<tr>
<td>Step</td>
<td>Procedure</td>
<td>Points</td>
</tr>
<tr>
<td>------</td>
<td>-----------</td>
<td>--------</td>
</tr>
<tr>
<td>12</td>
<td>Cut the clamp.</td>
<td>- Clamps should be always available. Fix it as it was before.</td>
</tr>
<tr>
<td>5.</td>
<td>Remove the control PCB.</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Undo the 2 hooks on the lower side, and then the 2 hooks on the upper side. Remove the control PCB.</td>
<td></td>
</tr>
</tbody>
</table>
| 2    | **Control PCB (indoor unit)**  
S1: connector for the fan motor  
S21: HA  
S26: connector for the room temperature thermistor  
S32: connector for the heat exchanger thermistor | |
<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.</td>
<td>Remove the swing motor for horizontal blades.</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Remove the screw of the swing motor.</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Remove the swing motor for vertical blades.</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Release the swing axis on the right side.</td>
<td></td>
</tr>
</tbody>
</table>

**Removal Procedure Points**

1. **Releasing the swing axis**
   - (1) Undo the hook.
   - (2) Pull it out.

![Diagram of swing motor and swing axis](image-url)
<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Loosen the 2 screws and detach the swing motor assembly.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Loosen the 2 screws and remove the swing motor.</td>
<td>Six hooks hold the assembly.</td>
</tr>
</tbody>
</table>
### 2.5 Removal of the Heat Exchanger

**Procedure Warning** Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.

<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>Remove the electrical box.</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Disconnect the refrigerant piping.</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Hold the indoor unit up by a piece of wood etc..</td>
<td><img src="R2793" alt="Image of holding the indoor unit up" /></td>
</tr>
<tr>
<td>2</td>
<td>Unscrew the flare nut for gas piping by 2 wrenches.</td>
<td><img src="R2794" alt="Image of unscrewing the flare nut" /></td>
</tr>
</tbody>
</table>

- **Caution**
  - If gas leaks, repair the spot of leaking, then collect all refrigerant from the unit. After conducting vacuum drying, recharge proper amount of refrigerant.
  - Do not contaminate any gas (including air) other than the specified refrigerant (R-410A) into refrigerant cycle.
    - (Contaminating of air or other gas causes abnormal high pressure in refrigerating cycle, and this results in pipe breakage or personal injuries.)
  - Pay attention so that the residual water in the drain will not make the floor wet.
  - In case that a drain hose is buried inside a wall, remove it after the drain hose in the wall is pulled out.
  - Use two wrenches to disconnected pipes.
  - When disconnecting pipes, cover every nozzle with caps so as not to let dust and moisture in.
### 248 Removal Procedure

<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.</td>
<td>Unscrew the flare nut for <strong>liquid piping</strong> by 2 wrenches.</td>
<td><img src="R2796" alt="Image" /></td>
</tr>
<tr>
<td>2.</td>
<td><strong>Remove the indoor unit.</strong></td>
<td><img src="R2797" alt="Image" /></td>
</tr>
<tr>
<td>1.</td>
<td>Detach the indoor unit from the installation plate.</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td><strong>Remove the piping fixture.</strong></td>
<td><img src="R2798" alt="Image" /></td>
</tr>
<tr>
<td>1.</td>
<td>Release the hook on the upper side of the piping fixture on the back of the unit.</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td><strong>Remove the heat exchanger.</strong></td>
<td><img src="R2799" alt="Image" /></td>
</tr>
<tr>
<td>1.</td>
<td>Widen the <strong>auxiliary piping</strong> to the extent of 10°~20°.</td>
<td>At an angle of 10°~20°</td>
</tr>
<tr>
<td>Step</td>
<td>Procedure</td>
<td>Points</td>
</tr>
<tr>
<td>------</td>
<td>-----------</td>
<td>--------</td>
</tr>
<tr>
<td>2</td>
<td>Release the hooks on the left side.</td>
<td><img src="R5482" alt="Image" /></td>
</tr>
<tr>
<td>3</td>
<td>Push the fixing hooks on the right side and release.</td>
<td><img src="R5483" alt="Image" /></td>
</tr>
<tr>
<td>4</td>
<td>Pull the heat exchanger to the front side and undo the hooks completely, and then lift it.</td>
<td><img src="R2802" alt="Image" /></td>
</tr>
</tbody>
</table>

**Caution**

When removing or reinstalling heat exchanger, be sure to wear protective gloves or wrap the heat exchanger with cloths. (Fins can cut fingers.)
### 2.6 Removal of the Fan Rotor / Fan Motor

**Procedure Warning**  
Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.

<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Remove the right side panel.</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Loosen the 2 screws.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><img src="R2803" alt="Right side panel" /></td>
<td>You can remove the fan rotor without detaching the right side panel.</td>
</tr>
<tr>
<td>2</td>
<td>Lift the right side panel and remove it.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><img src="R2804" alt="Right side panel" /></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Remove the fan rotor.</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Loosen the screw and remove the fan motor fixture.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><img src="R2805" alt="Fan motor fixture" /></td>
<td></td>
</tr>
<tr>
<td>Step</td>
<td>Procedure</td>
<td>Points</td>
</tr>
<tr>
<td>-------</td>
<td>-----------</td>
<td>--------</td>
</tr>
<tr>
<td>2</td>
<td>Loosen the fixing screw of the fan rotor.</td>
<td><img src="R2806" alt="Image" /></td>
</tr>
<tr>
<td>3.</td>
<td>Remove the fan motor</td>
<td><img src="R2807" alt="Image" /></td>
</tr>
<tr>
<td>1</td>
<td>Remove the fan motor.</td>
<td><img src="R2808" alt="Image" /></td>
</tr>
<tr>
<td>4.</td>
<td>Remove the bearing</td>
<td><img src="R2809" alt="Image" /></td>
</tr>
<tr>
<td>1</td>
<td>Remove the fan rotor. The bearing is on the left side.</td>
<td><img src="R4163" alt="Image" /></td>
</tr>
</tbody>
</table>

Reassembling the fan motor:

1. When reassembling the fan rotor, provide as much as 3/16 inch of play between the side face of the rotor and the bottom frame.

2. When reassembling the fan motor, align the end of the connector with the height of ★ for play.
<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Loosen the 2 screws and remove the mounting plate for the bearing.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>The bearing is made of rubber. Push it inwards firmly and remove it.</td>
<td></td>
</tr>
</tbody>
</table>
## 3. RXS09/12DVJU
### 3.1 Removal of Panels and Fan Motor

**Procedure Warning**  Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.

<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Features</td>
<td></td>
</tr>
</tbody>
</table>

1. **Loosen the screw of the stop valve cover.**
   Pull down the stop valve cover and remove it.

- Take care not to cut your finger by the fins of the heat exchanger.
### 2. Remove the panels

<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
</table>
| 1    | Loosen the 3 screws (front, right, left) and lift the top panel. | - The stop valve cover is united with the shelter.  
- When reassembling, make sure to fit the 5 hooks. |
<p>| 2    | Remove the drip proof plate. |     |</p>
<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Disconnect the connector for fan motor (S70).</td>
<td>- The fan motor is united with the front panel.</td>
</tr>
<tr>
<td>4</td>
<td>Loosen the 5 screws of the front panel.</td>
<td>- The front panel has 4 hooks. - The fan motor is united with the front panel.</td>
</tr>
<tr>
<td>5</td>
<td>Undo the hooks. Pull and remove the front panel.</td>
<td>- The front panel has 4 hooks. - The fan motor is united with the front panel.</td>
</tr>
</tbody>
</table>
### Removal Procedure

<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.</td>
<td>Remove the fan motor</td>
<td>- The screw has reverse winding.</td>
</tr>
<tr>
<td>1</td>
<td>Unscrew the washer-fitted nut (M10) of the propeller fan with a spanner.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Remove the propeller fan.</td>
<td>- Align ▼ mark of the propeller fan with D-cut section of the motor shaft when reassembling.</td>
</tr>
</tbody>
</table>

![Diagram of propeller fan and motor shaft](R3244.png)

![Diagram of propeller fan and D-cut](R3246.png)
3. Loosen the 2 screws and lift the bell mouth to undo the hooks. Remove the bell mouth.

4. Loosen the fixing hooks and release the lead wire.

- Put the lead wire through the back of the motor when reassembling. (so as not to be entangled with the propeller fan)
<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Loosen the 4 screws to remove the fan motor.</td>
<td>- M4x16</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- DC fan motor</td>
</tr>
<tr>
<td>6</td>
<td>Loosen the 2 screws to remove the fan motor</td>
<td></td>
</tr>
<tr>
<td></td>
<td>fixing frame.</td>
<td></td>
</tr>
<tr>
<td>Step</td>
<td>Procedure</td>
<td>Points</td>
</tr>
<tr>
<td>------</td>
<td>------------</td>
<td>--------</td>
</tr>
<tr>
<td>4.</td>
<td>Remove the right side panel.</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Loosen the 2 screws on the rear side.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Loosen the 3 screws on the right side.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Loosen the screw and lift the connection port to remove.</td>
<td></td>
</tr>
</tbody>
</table>

**Removal Procedure**
<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><img src="R3256" alt="Diagram" /></td>
<td>- When reassembling, make sure to fit the hook.</td>
</tr>
<tr>
<td></td>
<td><img src="R3257" alt="Diagram" /></td>
<td></td>
</tr>
</tbody>
</table>
## 3.2 Removal of **Electrical Box**

**Procedure**

**Warning** Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.

<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Remove the electrical box.</td>
<td>Disconnect the 2 reactor harnesses.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Disconnect the relay connector for compressor lead wire.</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Disconnect the \textcolor{blue}{\textbf{connector for four way valve (S80).}}</td>
<td><strong>When reassembling, coil the excessive lead wire and hang the loop on the hook.</strong></td>
</tr>
</tbody>
</table>

[Image of electrical box removal steps]
### Removal Procedure

<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Release the discharge pipe thermistor.</td>
<td>■ Pay attention so as not to lose the clip for thermistor.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><img src="R3261" alt="Discharge pipe thermistor" /></td>
</tr>
<tr>
<td>5</td>
<td>Release the heat exchanger thermistor.</td>
<td>■ Pay attention so as not to lose the clip.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><img src="R3263" alt="Heat exchanger thermistor" /></td>
</tr>
<tr>
<td>6</td>
<td>Lift and remove the electrical box.</td>
<td><img src="R3265" alt="Electrical box" /></td>
</tr>
</tbody>
</table>
3.3 Removal of Reactor and Partition Plate

Warning: Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.

<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Remove the reactor.</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Loosen the screw. Lift and remove the reactor.</td>
<td>(R3267)</td>
</tr>
</tbody>
</table>

- Remove the outer panels.
- Remove the electrical box.
<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>Remove the partition plate.</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Loosen the 2 screws.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The partition plate has a hook on the lower side. Lift and pull the partition plate to remove.</td>
<td>- When reassembling, fit the lower hook into the bottom frame.</td>
</tr>
</tbody>
</table>
## 3.4 Removal of Sound Blanket

### Procedure Warning
Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.

<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Remove the outer panels.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Remove the electrical box.</td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Remove the sound blanket.</td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Untie the strings and open the sound blanket.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Lift and remove the sound blanket (body) as it is opened.</td>
<td>Since the piping ports on the sound blanket are torn easily, remove the blanket carefully.</td>
</tr>
<tr>
<td>Step</td>
<td>Procedure</td>
<td>Points</td>
</tr>
<tr>
<td>------</td>
<td>---------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>3</td>
<td>Lift and remove the sound blanket (top).</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Pull the sound blanket (inner) out.</td>
<td>Since the piping ports on the sound blanket are torn easily, remove the blanket carefully.</td>
</tr>
</tbody>
</table>

(R3273)

(R3274)
<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Pull the sound blanket (bottom) out.</td>
<td></td>
</tr>
</tbody>
</table>
## 3.5 Removal of Four Way Valve

**Procedure**

<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Remove the peripheries.</td>
<td>Action: Be careful so as not to burn the compressor terminals or the name plate. Make a note.</td>
</tr>
<tr>
<td></td>
<td>- Remove the four way valve and the sheets of putty so as not to burn them.</td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Remove the terminal cover.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Loosen the screw of the four way valve coil.</td>
<td></td>
</tr>
</tbody>
</table>

**Warning**
Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.
<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Remove the sheets of putty. Cut the pipe with a tube cutter.</td>
<td><img src="R3279" alt="Image" /></td>
</tr>
<tr>
<td>4</td>
<td>Heat up the brazed part and withdraw the piping with pliers.</td>
<td><img src="R3280" alt="Image" /> <img src="R3281" alt="Image" /></td>
</tr>
</tbody>
</table>

- Provide a protective sheet or a steel plate so that the brazing flame cannot influence peripheries.
- Be careful so as not to break the pipes by pressing it excessively by pliers when withdrawing it.
### 3.6 Removal of Compressor

**Procedure**

<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Remove the compressor.</td>
<td><strong>Warning</strong> Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.</td>
</tr>
</tbody>
</table>

- **Before working,** make sure that the refrigerant is empty in the circuit.
- **Be sure to apply** nitrogen replacement when heating up the brazed part.
- **Warning** Ventilate when refrigerant leaks during the work. *(If refrigerant contacts fire, it will cause to arise toxic gas.)*
  - Provide a protective sheet or a steel plate so that the brazing flame cannot influence peripheries.
  - Be careful so as not to burn the compressor terminals or the name plate.
  - Be careful so as not to burn the heat exchanger fin.
- **Warning** Since it may happen that refrigeration oil in the compressor will catch fire, prepare wet cloth so as to extinguish fire immediately.
<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Heat up the brazed part of the discharge side and disconnect.</td>
<td><strong>In case of the difficulty with gas brazing machine</strong>&lt;br&gt;1. Disconnect the brazed part where is easy to disconnect and restore.&lt;br&gt;2. Cut pipes on the main unit by a miniature copper tube cutter in order to make it easy to disconnect. <strong>Cautions for restoration</strong>&lt;br&gt;1. Restore the piping by non-oxidation brazing. &lt;br&gt;2. It is required to prevent the carbonization of the oil inside the four way valve and the deterioration of the gaskets affected by heat. For the sake of this, wrap the four way valve with wet cloth and provide water so that the cloth will not be dried and avoid excessive heating. (Keep below 248°F) <strong>Note:</strong> Do not use a metal saw for cutting pipes by all means because the sawdust come into the circuit.</td>
</tr>
<tr>
<td>3</td>
<td>Heat up the brazed part of the suction side and disconnect.</td>
<td></td>
</tr>
<tr>
<td>Step</td>
<td>Procedure</td>
<td>Points</td>
</tr>
<tr>
<td>------</td>
<td>-----------</td>
<td>--------</td>
</tr>
<tr>
<td>4</td>
<td>Lift the compressor up and remove it.</td>
<td>(R3283)</td>
</tr>
</tbody>
</table>
## 3.7 Removal of PCB

**Warning**
Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.

<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
</table>
| 1    | Remove the PCB. | ■ You can remove the PCB when you disconnect the read wires on the terminal board without removing the electrical box.  
      | Feature of the PCB | ■ PbF (Pb free brazing) is adopted. |
| 2    | Loosen the screw on the terminal board. |        |

![Diagram of PCB removal process](image-url)
<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Release the earth terminal.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Loosen the 4 screws.</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Undo the 3 hooks on the upper side.</td>
<td></td>
</tr>
<tr>
<td>Step</td>
<td>Procedure</td>
<td>Points</td>
</tr>
<tr>
<td>------</td>
<td>-----------</td>
<td>--------</td>
</tr>
<tr>
<td>6</td>
<td>Lift and pull out the PCB.</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Feature of the PCB S70: fan motor S80: four way valve S90: thermistor (outdoor air, heat exchanger, discharge pipe)</td>
<td></td>
</tr>
</tbody>
</table>
## 4. RXS15/18/24DVJU
### 4.1 Removal of the Panels and Plates

**Warning** Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.

<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Remove the panels and plates.</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Loosen the 4 screws and lift the top panel.</td>
<td>- Take care not to cut your finger by the fins of the heat exchanger.</td>
</tr>
</tbody>
</table>

![Diagram of a heat exchanger with labeled parts: Top panel, Outdoor air thermistor, Heat exchanger.](R2676) ![Diagram of a heat exchanger with labeled parts: Heat exchanger.](R2677)
<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Loosen the 4 screws and remove the discharge grille.</td>
<td>The front grille has 4 hooks. Slide the discharge grille upwards and remove it.</td>
</tr>
<tr>
<td>3</td>
<td>Loosen the 6 screws of the front panel.</td>
<td></td>
</tr>
</tbody>
</table>

Discharge grille

Front panel

(R2678)

(R2679)

(R2680)
<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Push the front panel and undo the hook. Lift the clamp plate and remove it.</td>
<td>Lift the front panel and remove it while pushing the right side panel inwards.</td>
</tr>
<tr>
<td>5</td>
<td>Undo the right side hook, and then the left side hooks. Remove the front panel.</td>
<td></td>
</tr>
<tr>
<td>Step</td>
<td>Procedure</td>
<td>Points</td>
</tr>
<tr>
<td>------</td>
<td>-----------</td>
<td>--------</td>
</tr>
</tbody>
</table>
|      | ![Diagram](R2684) | - Lift the front panel and undo the left side hooks.  
  - Fit the left side of the front panel first when installing. |
<p>| 2.   | Remove the stop valve cover. |         |
| 1    | Loosen the screw of the stop valve cover. | <img src="R2685" alt="Diagram" /> |</p>
<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Pull down the stop valve cover to undo the hooks and remove it.</td>
<td>The stop valve cover has 6 hooks.</td>
</tr>
</tbody>
</table>
### 4.2 Removal of the Fan Motor / Propeller Fan

**Warning**  Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.

<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Remove the electrical box cover.</td>
<td>This procedure is not necessary to remove the propeller fan only.</td>
</tr>
<tr>
<td>2</td>
<td>Undo the 2 hooks and remove it.</td>
<td>The hooks have been released since the front panel was removed.</td>
</tr>
<tr>
<td>3</td>
<td>Release the 4 hooks of the electrical box cover and remove it.</td>
<td></td>
</tr>
</tbody>
</table>
2. Remove the fan motor.

<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Disconnect the connector for fan motor <em>(S70)</em>.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>The illustration shows arrangement of the fan motor lead wire.</td>
<td></td>
</tr>
</tbody>
</table>
3. Unscrew the washer-fitted nut (M10) of the propeller fan with a spanner.

4. Remove the 4 screws from the fan motor.

- Align ▲ mark of the propeller fan with D-cut section of the motor shaft when reassembling.
<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Pull the fan motor out.</td>
<td>■ Put the lead wire through the back of the motor when reassembling. (so as not to be entangled with the propeller fan)</td>
</tr>
</tbody>
</table>
## 4.3 Removal of the PCB / Electrical Box

### Procedure

<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>✗ Remove the top panel and the front panel.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Remove the right side panel.</td>
<td>1. Disconnect the 3 connection wirings and the 2 earth wires.</td>
<td>Terminal strip number black (1) ----- power supply white (2) ----- power supply red (3) ----- transmission yellow / green ( ) ----- earth</td>
</tr>
<tr>
<td>2. Loosen the 3 screws of the right side panel.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Warning:** Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.
<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Loosen the fixing screw of the electrical box.</td>
</tr>
</tbody>
</table>

- Insert the two hooks of the lower part and the one hook of the upper back when reassembling.
<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>Disconnect harnesses.</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Loosen the fixing screw of the cable way board.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Push the hook up to release the cable way board. Open the cable way board.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Disconnect the harnesses from the power supply PCB. HL (black).....to the terminal strip HE2 (yellow / green).....to the terminal strip (earth) HAC1 (black).....from the control PCB (AC1) HE1 (yellow / green).....from the control PCB (E)</td>
<td></td>
</tr>
</tbody>
</table>

**Service monitor PCB**

- LED A (Green)
- SW4 (Initial setting: OFF)

**Power supply PCB**

- HE1, V3 (varistor), HAC1
- HE2, HL, FU1 (soldered) 250V 30A (R2707)
<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Disconnect the connectors of the front side.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>S20</strong>: electronic expansion valve</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>S40</strong>: overload protector</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>S80</strong>: four way valve</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>S90</strong>: thermistors (discharge pipe, outdoor air, heat exchanger)</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Loosen the screw of the control PCB.</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Undo the 2 hooks and release the control PCB from the ditch of the front side.</td>
<td></td>
</tr>
</tbody>
</table>
### Step 7
Disconnect the harnesses while opening the control PCB.  
- **S10**: to the terminal strip  
- **AC2**: to the terminal strip

### Step 8
Disconnect the connectors.  
- **S51**: to the service monitor PCB  
- **S101**: to the service monitor PCB

### Step 9
Disconnect the connectors.  
- **S31**: to the SPM  
- **S32**: to the SPM  
- **S33**: to the MID  
- **S71**: to the MID  
- **S91**: fin thermistor

<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
</table>
| 7    | Disconnect the harnesses while opening the control PCB.  
**S10**: to the terminal strip  
**AC2**: to the terminal strip |        |
| 8    | Disconnect the connectors.  
**S51**: to the service monitor PCB  
**S101**: to the service monitor PCB |        |
| 9    | Disconnect the connectors.  
**S31**: to the SPM  
**S32**: to the SPM  
**S33**: to the MID  
**S71**: to the MID  
**S91**: fin thermistor |        |
<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
</table>
| 10   | Control PCB (outdoor unit)  
S10: to the terminal strip  
S20: electronic expansion valve  
S31: to CN14 of the SPM  
S32: to CN11 of the SPM  
S33: to S34 of the MID  
S40: overload protector  
S51: to S52 of the service monitor PCB  
S71: to S72 of the MID  
S80: four way valve  
S90: thermistors (discharge pipe, outdoor air, heat exchanger)  
S91: fin thermistor  
S101: to S102 of the service monitor PCB |        |
<p>| 11   | Disconnect the relaying wire connector for the compressor. |        |</p>
<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>Release the clamp by pliers.</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Disconnect the reactor harness.</td>
<td></td>
</tr>
</tbody>
</table>

![Diagram of the clamp by pliers being released](image1.png)

![Diagram of the reactor harness being disconnected](image2.png)
<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>Pull the clamp and draw the thermistor harness out from the back of the electrical box.</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Loosen the screw of the electrical box.</td>
<td></td>
</tr>
<tr>
<td>Step</td>
<td>Procedure</td>
<td>Points</td>
</tr>
<tr>
<td>------</td>
<td>-----------</td>
<td>--------</td>
</tr>
<tr>
<td>16</td>
<td>Release the clamp of the four way valve harness.</td>
<td><img src="R2720" alt="Image" /></td>
</tr>
<tr>
<td>17</td>
<td>Lift the electrical box and remove it.</td>
<td><img src="R2721" alt="Image" /></td>
</tr>
</tbody>
</table>

Removal Procedure
### 4.4 Removal of the Reactor

**Warning**  
Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.

<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
</table>
| 1    | Remove the electrical box.  
1. Remove the partition plate. | | |
| 2    | Release the clamp by pliers. | The partition plate is fixed to the bottom frame with a hook. |
| 2    | Loosen the 2 screws of the partition plate. | |

(R5487)  
(R2722)  
(R2723)  
(R5487)
<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Lift the partition plate and remove it.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Loosen the screw. Slide the <strong>reactor</strong> and remove it from the partition plate.</td>
<td></td>
</tr>
</tbody>
</table>
### 4.5 Removal of the Sound Blanket

**Warning**  
Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.

<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Disconnect the harness of each thermistor.</td>
<td><img src="R727" alt="Image" /></td>
</tr>
</tbody>
</table>
| 2    | Release the **discharge pipe thermistor**. | ![Image](R728)  
- Pay attention to the direction of the clip so as not to touch the lead wire of the thermistor when reassembling. |
<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Cut the clamp by nippers. Disconnect the outdoor heat exchanger thermistor.</td>
<td>- Clamps should be always available. Fix it as it was before.</td>
</tr>
<tr>
<td>4</td>
<td>Remove the sound blanket (side-outer).</td>
<td>- Since the piping ports on the sound blanket (side-outer) are torn easily, remove the blanket carefully.</td>
</tr>
<tr>
<td>5</td>
<td>Remove the sound blanket (top-upper).</td>
<td></td>
</tr>
<tr>
<td>Step</td>
<td>Procedure</td>
<td>Points</td>
</tr>
<tr>
<td>------</td>
<td>-----------</td>
<td>--------</td>
</tr>
<tr>
<td>6</td>
<td>Remove the sound blanket (top-lower).</td>
<td><img src="R2732" alt="Diagram" /></td>
</tr>
<tr>
<td>7</td>
<td>Remove the sound blanket (side-inner).</td>
<td><img src="R2733" alt="Diagram" /></td>
</tr>
</tbody>
</table>

- Since the piping ports on the sound blanket (side-inner) are torn easily, remove the blanket carefully.
4.6 **Removal of the Four Way Valve**

**Procedure**

**Warning** Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.

<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
</table>
| 1    | Loosen the screw of the four way valve coil. | ■ Provide a protective sheet or a steel plate so that the brazing flame cannot influence peripheries.  
       | | ■ Be careful so as not to break the pipes by pressing it excessively by pliers when withdrawing it. |
| 2    | Heat up the brazed part of the four way valve and disconnect. | **Caution** Be careful about the four way valve, pipes and so on, which were heated up by a gas brazing machine, so as not to get burnt your hands. |
|      | Be sure to apply nitrogen replacement when heating up the brazed part. | **Cautions for restoration**  
1. Restore the piping by non-oxidation brazing. Braze it quickly when no nitrogen gas can be used.  
2. It is required to prevent the carbonization of the oil inside the four way valve and the deterioration of the gaskets affected by heat. For the sake of this, wrap the four way valve with wet cloth and provide water so that the cloth will not be dried and avoid excessive heating. (Keep below 248°F) |
| 3    | Heat up every brazed part in turn and disconnect. | **In case of the difficulty with gas brazing machine**  
1. Disconnect the brazed part where is easy to disconnect and restore.  
2. Cut pipes on the main unit by a miniature copper tube cutter in order to make it easy to disconnect. |

**Note:** Do not use a metal saw for cutting pipes by all means because the sawdust come into the circuit.
4.7 Removal of the Electronic Expansion Valve

**Procedure**

---

**Warning**

Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.

<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Remove the electronic expansion valve coil.</td>
<td><img src="R2737" alt="Image" /></td>
</tr>
<tr>
<td>2</td>
<td>Remove the sheets of putty.</td>
<td><img src="R2738" alt="Image" /></td>
</tr>
<tr>
<td>3</td>
<td>Heat up the two brazed parts of the electronic expansion valve and disconnect.</td>
<td><img src="R2739" alt="Image" /></td>
</tr>
<tr>
<td></td>
<td>Before working, make sure that the refrigerant is empty in the circuit.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Be sure to apply nitrogen replacement when heating up the brazed part.</td>
<td></td>
</tr>
</tbody>
</table>

---

**Caution**

Be careful about the electronic expansion valve, pipes and so on, which were heated up by a gas brazing machine, so as not to get burnt your hands.

**Warning**

Ventilate when refrigerant leaks during the work. (If refrigerant contacts fire, it will cause to arise toxic gas.)
### 4.8 Removal of the Compressor

**Procedure Warning**  
Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.

<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Remove the terminal cover.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Disconnect the lead wires of the compressor.</td>
<td>Be careful so as not to burn the compressor terminals or the name plate.</td>
</tr>
</tbody>
</table>

Make a note.

- U: red
- V: yellow
- W: blue
- N: brown
<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Unscrew the nut of the compressor.</td>
<td><img src="R2743" alt="Diagram" /></td>
</tr>
<tr>
<td>4</td>
<td>Remove the putty of the accumulator.</td>
<td><img src="R2744" alt="Diagram" /></td>
</tr>
<tr>
<td></td>
<td><strong>Warning</strong></td>
<td>Ventilate when refrigerant leaks during the work. (If refrigerant contacts fire, it will cause to arise toxic gas.)</td>
</tr>
<tr>
<td></td>
<td>Before working, make sure that the refrigerant is empty in the circuit.</td>
<td>- Provide a protective sheet or a steel plate so that the brazing flame cannot influence peripheries.</td>
</tr>
<tr>
<td></td>
<td>Be sure to apply nitrogen replacement when heating up the brazed part.</td>
<td>- Be careful so as not to burn the heat exchanger fin.</td>
</tr>
<tr>
<td>5</td>
<td>Heat up the brazed part of the discharge side and disconnect.</td>
<td><img src="R2745" alt="Diagram" /></td>
</tr>
<tr>
<td>6</td>
<td>Heat up the brazed part of the suction side and disconnect.</td>
<td><strong>Warning</strong> Since it may happen that refrigeration oil in the compressor will catch fire, prepare wet cloth so as to extinguish fire immediately.</td>
</tr>
<tr>
<td>7</td>
<td>Lift the compressor up and remove it.</td>
<td></td>
</tr>
</tbody>
</table>
1. Others .................................................................................................................. 304
   1.1 Test Run from the Remote Controller .................................................. 304
   1.2 Jumper Settings ................................................................................... 305
1. Others

1.1 Test Run from the Remote Controller

For Heat pump

In cooling mode, select the lowest programmable temperature; in heating mode, select the highest programmable temperature.

- Trial operation may be disabled in either mode depending on the room temperature.
- After trial operation is complete, set the temperature to a normal level.
  (78°F to 82°F in cooling mode, 68°F to 75°F in heating mode)
- For protection, the system disables restart operation for 3 minutes after it is turned off.

Trial Operation and Testing

1. Measure the supply voltage and make sure that it falls in the specified range.
2. Trial operation should be carried out in either cooling or heating mode.
3. Carry out the test operation in accordance with the Operation Manual to ensure that all functions and parts, such as louver movement, are working properly.

- The air conditioner requires a small amount of power in its standby mode. If the system is not to be used for some time after installation, shut off the circuit breaker to eliminate unnecessary power consumption.
- If the circuit breaker trips to shut off the power to the air conditioner, the system will restore the original operation mode when the circuit breaker is opened again.

Trial operation from Remote Controller

(1) Press ON/OFF button to turn on the system.
(2) Simultaneously press center of TEMP button and MODE buttons.
(3) Press MODE button twice.

("T" will appear on the display to indicate that Trial Operation mode is selected.)
(4) Trial run mode terminates in approx. 30 minutes and switches into normal mode. To quit a trial operation, press ON/OFF button.
1.2  Jumper Settings

1.2.1  When Two Units are Installed in One Room

When two indoor units are installed in one room, the two wireless remote controllers can be set for different addresses.

How to set the different addresses

- Control PCB of the indoor unit
  (1) Remove the front grille. (3 screws)
  (2) Remove the electrical box (1-screw).
  (3) Remove the drip proof plate. (4 tabs)
  (4) Cut the address jumper JA on the control PCB.

- Wireless remote controller
  (1) Slide the front cover and take it off.
  (2) Cut the address jumper J4.

1.2.2  Jumper Setting

<table>
<thead>
<tr>
<th>Jumper (On indoor control PCB)</th>
<th>Function</th>
<th>When connected (factory set)</th>
<th>When cut</th>
</tr>
</thead>
<tbody>
<tr>
<td>JC</td>
<td>Power failure recovery function</td>
<td>Auto-restart</td>
<td>Unit does not resume operation after recovering from a power failure. Timer ON-OFF settings are cleared.</td>
</tr>
<tr>
<td>JB</td>
<td>Fan speed setting</td>
<td>Fan speed setting ; Remote controller setting</td>
<td>Fan rpm is set to “0” &lt;Fan stop&gt;</td>
</tr>
</tbody>
</table>
Part 9
Appendix

1. Piping Diagrams ................................................................. 308
   1.1 Indoor Units .............................................................. 308
   1.2 Outdoor Units ............................................................ 309

2. Wiring Diagrams .............................................................. 311
   2.1 Indoor Units .............................................................. 311
   2.2 Outdoor Units ............................................................ 313
1. Piping Diagrams

1.1 Indoor Units

1.1.1 The Single Split Duct-Free System

FTXS09/12DVJU

1.1.2 The Slim Duct Built-in System

FDXS09/12DVJU
1.2 Outdoor Units

RXS09DVJU

RXS12DVJU
2. Wiring Diagrams

2.1 Indoor Units

2.1.1 The Single Split Duct-Free System

**FTXS09/12DVJU**

**CAUTION**

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

**FTXS15/18/24DVJU**

**CAUTION**

NOTE THAT OPERATION WILL RESTART AUTOMATICALLY IF THE MAIN POWER SUPPLY IS TURNED OFF AND THEN BACK ON AGAIN.
2.1.2 The Slim Duct Built-in System

FDXS09/12DVJU

NOTE THAT OPERATION WILL TURN OFF AND THEN BACK ON AGAIN.

CAUTION

FIELD WIRING.
Index

Numerics

00 .................................................................148
3 minutes stand-by .......................................38, 44, 56
3-D airflow ..................................................27

A

A1 .................................................................149
A5 .................................................................150
A6 .................................................................152, 153
AC1 ...............................................................20, 287
AC2 ...............................................................20, 289
accumulator ................................................302
address setting jumper .................................12, 14
air filter ........................................................38, 206, 230
air flow control .............................................28
air purifying filter with photocatalytic deodorizing function ........................................38, 231
ARC433A ......................................................145
automatic operation .....................................30
auto-restart ................................................12, 305
auto-restart function ....................................38
auto-swing ...................................................27
auxiliary pipe ..............................................221
auxiliary piping ..........................................248

B

bearing ..........................................................251
bell mouth ...................................................257
blades ..........................................................236
buzzer PCB ..........................................................15

C

C4 .................................................................155
C9 .................................................................155
cable way board ..........................................287
capacitor voltage check ................................202
centralized control ..........................................12, 14
check capacitor voltage check .........................202
discharge pressure check ...............................199
electronic expansion valve check ....................195
fan motor connector output check ....................195
four way valve performance check .................196
Hall IC check ................................................204
installation condition check .........................199
inverter units refrigerant system check ..........201
main circuit electrolytic capacitor check .........203
outdoor unit fan system check .......................200
power supply waveforms check .....................201
power transistor check ................................202
thermistor resistance check .........................198
turning speed pulse input on the outdoor unit
PCB check ....................................................203
check No.01 ..................................................195
check No.04 ..................................................195
check No.05 ..................................................196
check No.06 ..................................................198
check No.07 ..................................................199
check No.08 ..................................................199
check No.09 ..................................................200
check No.10 ..................................................201
check No.11 ..................................................201
check No.12 ..................................................202
check No.13 ..................................................202
check No.14 ..................................................203
check No.15 ..................................................203
check No.16 ..................................................204
clamp plate ..................................................278
CN11 ............................................................20, 290
CN14 ............................................................20, 290
compressor ..................................................270, 302
compressor lock .........................................158
compressor overload ....................................157
compressor protection function .....................44, 57
connectors ...................................................12, 14, 16, 18, 20
connectors fan motor .....................................214, 255
four way valve .............................................261
swing motor ................................................214
cover control PCB .........................................16
control PCB (indoor unit) ..............................13, 15, 219, 244
control PCB (outdoor unit) .........................19, 21, 273, 290
cover service cover .......................................209
stop valve cover ..........................................253
terminal cover .............................................268
CT or related abnormality ..............................177

D

DC fan lock ..................................................160
DC voltage / current sensor abnormality ........176
defrost control ............................................47, 61
diagnosis mode ............................................146
diode bridge ...............................................20
discharge grille ..........................................277
discharge pipe ............................................49, 63
discharge pipe control ..................................44
discharge pipe temperature control ...............50, 57, 64, 168
discharge pipe thermistor .........................39, 49, 63, 180, 262, 296
discharge pressure check ...............................199
display PCB ................................................15, 17
drain ..........................................................247
fan motor ..........................................225, 251, 258, 283
fan speed setting ..............................12, 14, 305
filter
air filter ..............................................38, 206
air purifying filter with photocatalytic
deodorizing function .........................38
filter PCB ....................................................19
forced cooling operation .......................26
forced operation mode ..........................52, 66
forced operation ON/OFF switch ..........14, 20
four way valve.................................268, 299
four way valve abnormality .................164
four way valve coil .................................299
four way valve operation compensation 43, 56
four way valve performance check .........196
four way valve switching .......................43, 56
four way valve, connector ......................261
freeze-up protection control .................45, 59, 150
frequency control ..............................25, 41, 54
frequency principle .............................25
front grille ............................................209, 233
front panel .............................................207, 229, 255, 277
FU1 .....................................................12, 14, 16, 18, 20
FU2 ..........................................................18, 20
FU201 .....................................................20
FU3 ...............................................................18
functions, list ........................................2
fuse .........................................................12, 14, 18
gas piping ............................................247
HE1 ..........................................................20, 287
HC3 .............................................................18
HC4 .............................................................18
heat exchanger .........................220, 249, 276
heat exchanger thermistor .................39, 155, 180, 214, 240, 262, 297
heating peak-cut control ......................46, 59
high pressure control .........................150
high pressure control in cooling ............170
HL ..........................................................20, 287
HL3 .............................................................18
HN3 .............................................................18
HOME LEAVE operation .................35
horizontal blade ..................................................212, 236
hot start function ..................................................37

I
indoor unit PCB abnormality ....................................149
input current control .............................................45, 58
input over current detection ..................................161
installation condition check ..................................199
insufficient gas ....................................................189
insufficient gas control .......................................51, 65
INTELLIGENT EYE ....................................................33
INTELLIGENT EYE sensor PCB ..........................13, 15
inverter PRINCIPLE ..................................................25
inverter units refrigerant system check .................201

J
J3 ............................................................................179
J4 ............................................................................305
J6 ............................................................................179
JA ...........................................................................12, 14, 16, 305
JB ...........................................................................12, 14, 16, 305
JC ...........................................................................12, 14, 16, 305
jumper settings .....................................................305

L
L1 ............................................................................20
L2 ............................................................................20
L3 ............................................................................181
L4 ............................................................................183
L5 ...........................................................................185, 187
LED A ........................................................................12, 14, 16, 18, 20
LED1 ........................................................................12, 14, 16
LED2 ........................................................................12, 14, 16
LED3 ........................................................................12, 14, 16
left side plate .......................................................227
liquid compression protection function 2 ............46, 60
liquid piping ..........................................................248
low Hz high pressure limit ..................................61
low-voltage detection ...........................................194

M
main circuit electrolytic capacitor check ...............203
MID ............................................................................22
mode changing control ......................................43
mode hierarchy ..................................................40, 53
mold proof air filter ............................................38
motor
  fan motor ..................................................225, 258
  swing motor ..................................................219
mounting plate for the bearing .............................252

N
night set mode ..........................................................32

O
OL activation ............................................................157

P
P4 .............................................................................179
panel
  front panel ..................................................207, 255
  right side panel ..............................................259
  top panel ..........................................................254
partition plate .....................................................263, 294
PI control ..............................................................42, 55
piping diagrams ..................................................308
piping fixture ........................................................248
plate
  drip proof plate ................................................254
  left side plate ..................................................227
  partition plate ..................................................263
  right side plate ................................................225
  shelter ............................................................217, 254
position sensor abnormality ................................174
power failure recovery function ......................12, 14, 305
power supply PCB ...........................................21, 287
power supply waveforms check .........................201
power transistor check ........................................202
power-airflow dual flaps ....................................27
POWERFUL operation ........................................36, 66
POWERFUL operation mode ................................52
preheating operation ...........................................43, 56
printed circuit board (PCB)
  buzzer PCB ..........................................................15
  control PCB ..........................................................16
  control PCB (indoor unit) ...............................13, 15, 219, 244
  control PCB (outdoor unit) ............................19, 21, 273, 290
  display PCB ......................................................15, 17
  filter PCB ..........................................................19
INTELLIGENT EYE sensor PCB ..........................13, 15
MID ............................................................................22
power supply PCB ...........................................21, 287
service monitor PCB ...........................................21, 287
signal receiver PCB .............................................13, 15, 218
SPM ........................................................................22
problem symptoms and measures ....................144
programme dry function ....................................29
propeller fan ........................................................256, 283

R
radiation fin temperature rise ................................183
radiation fin thermistor ......................................180
reactor ............................................................263, 295
reactor harnesses .................................................261
receiver units ..............................................................243
remote controller ...........................................14, 145
right side panel ........................................250, 259, 285
right side plate ................................................225
room temperature thermistor ....................155
RTH1 ..............................................................12, 14, 16
S
S1 ..............................................................12, 14, 16, 214, 240, 244
S10 ..............................................................18, 20, 289, 290
S101 ..............................................................20, 289, 290
S102 ..............................................................20, 290
S11 ..............................................................18
S20 ..............................................................18, 20, 288, 290
S21 ..............................................................12, 14, 16, 244
S26 ..............................................................12, 14, 16, 244
S27 ..............................................................12, 14
S28 ..............................................................14
S29 ..............................................................14
S30 ..............................................................18
S31 ..............................................................20, 290
S32 ..............................................................12, 14, 16, 20, 244, 290
S33 ..............................................................20, 290
S34 ..............................................................20, 290
S35 ..............................................................12, 14
S36 ..............................................................12, 14
S37 ..............................................................14
S38 ..............................................................14
S40 ..............................................................18, 20, 288, 290
S51 ..............................................................20, 289, 290
S52 ..............................................................20, 290
S6 ..............................................................12, 14, 214, 241
S7 ..............................................................12, 16, 214
S70 ..............................................................18, 20, 255, 282
S71 ..............................................................20, 290
S72 ..............................................................20, 290
S8 ..............................................................14, 241
S80 ..............................................................18, 20, 261, 288, 290
S90 ..............................................................18, 20, 288, 290
S91 ..............................................................20, 290
self-diagnosis digital display .................................38
sensor malfunction detection .........................51, 65
service check function .........................................145
service cover ........................................................209, 233
service monitor PCB ........................................21, 287
shelter ..............................................................217, 242, 254, 281
signal receiver ........................................................229
signal receiver PCB ..............................................13, 15, 218
signal receiving sign ...........................................37
signal transmission error ......................................156
sound blanket ...................................................265, 297
specifications ..............................................................6
SPM ..............................................................22
starting control ..............................................................43
stop valve cover ..............................................................253, 279
SW1 ..............................................................14, 16, 20
SW7 ..............................................................12
swing motor ..............................................................219
swing motor assembly ........................................246
swing motor for horizontal blades .........................245
swing motor for vertical blades .........................245
swing motor, connector ........................................214
T
terminal board ..............................................................215, 273
terminal cover ..............................................................268, 301
terminal strip ..............................................................240, 285
test run ..............................................................304
thermistor
  discharge pipe thermistor .......................................39, 49, 63, 180, 262, 296
  indoor heat exchanger thermistor .........................39, 155, 214, 240
  outdoor air temperature thermistor .....................180
  outdoor heat exchanger thermistor .....................39, 180, 262, 297
  radiation fin thermistor .........................................180
  room temperature thermistor ..................................155
  thermistor or related abnormality (indoor unit) ...........155
  thermistor or related abnormality (outdoor unit) ..........179
  thermistor resistance check ....................................198
  thermostat control .................................................31
  top panel ...............................................................254, 276
  troubleshooting ......................................................148
  troubleshooting with LED indication ......................143
  turning speed pulse input on the outdoor unit PCB
    check ..............................................................203
U
U0 ..............................................................189, 191
U2 ..............................................................193, 194
U4 ..............................................................156
V
V1 ..............................................................12, 14, 16, 18
V2 ..............................................................18
V3 ..............................................................18, 20
varistor ..............................................................12, 14, 18, 20
vertical blade ...........................................................213
vertical blades ......................................................237
voltage detection function .......................................52, 66
W
wide-angle louvres ......................................................27
wiring diagrams ..............................................................311
# Drawings & Flow Charts

<table>
<thead>
<tr>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
</tr>
<tr>
<td>ARC433A</td>
</tr>
<tr>
<td>automatic air flow control</td>
</tr>
<tr>
<td>automatic operation</td>
</tr>
<tr>
<td>auto-swing</td>
</tr>
<tr>
<td>B</td>
</tr>
<tr>
<td>buzzer PCB</td>
</tr>
<tr>
<td>C</td>
</tr>
<tr>
<td>capacitor voltage check</td>
</tr>
<tr>
<td>compressor lock</td>
</tr>
<tr>
<td>compressor protection function</td>
</tr>
<tr>
<td>control PCB</td>
</tr>
<tr>
<td>control PCB (indoor unit)</td>
</tr>
<tr>
<td>control PCB (outdoor unit)</td>
</tr>
<tr>
<td>CT or related abnormality</td>
</tr>
<tr>
<td>D</td>
</tr>
<tr>
<td>DC fan lock</td>
</tr>
<tr>
<td>DC voltage / current sensor abnormality</td>
</tr>
<tr>
<td>defrost control</td>
</tr>
<tr>
<td>diagnosis mode</td>
</tr>
<tr>
<td>discharge pipe control</td>
</tr>
<tr>
<td>discharge pipe temperature control</td>
</tr>
<tr>
<td>discharge pressure check</td>
</tr>
<tr>
<td>display PCB</td>
</tr>
<tr>
<td>E</td>
</tr>
<tr>
<td>electrical box temperature rise</td>
</tr>
<tr>
<td>electronic expansion valve check</td>
</tr>
<tr>
<td>electronic expansion valve control</td>
</tr>
<tr>
<td>F</td>
</tr>
<tr>
<td>fan motor connector output check</td>
</tr>
<tr>
<td>fan motor or related abnormality</td>
</tr>
<tr>
<td>filter PCB</td>
</tr>
<tr>
<td>four way valve abnormality</td>
</tr>
<tr>
<td>four way valve performance check</td>
</tr>
<tr>
<td>freeze-up protection control</td>
</tr>
<tr>
<td>freeze-up protection control or high pressure control</td>
</tr>
<tr>
<td>frequency control</td>
</tr>
<tr>
<td>frequency principle</td>
</tr>
<tr>
<td>function of thermistor</td>
</tr>
<tr>
<td>heat pump model</td>
</tr>
<tr>
<td>H</td>
</tr>
<tr>
<td>Hall IC check</td>
</tr>
<tr>
<td>heating peak-cut control</td>
</tr>
<tr>
<td>high pressure control in cooling</td>
</tr>
<tr>
<td>I</td>
</tr>
<tr>
<td>indoor unit PCB abnormality</td>
</tr>
<tr>
<td>input current control</td>
</tr>
<tr>
<td>input over current detection</td>
</tr>
<tr>
<td>installation condition check</td>
</tr>
<tr>
<td>insufficient gas</td>
</tr>
<tr>
<td>insufficient gas control</td>
</tr>
<tr>
<td>INTELLIGENT EYE</td>
</tr>
<tr>
<td>INTELLIGENT EYE sensor PCB</td>
</tr>
<tr>
<td>inverter features</td>
</tr>
<tr>
<td>inverter POWERFUL operation</td>
</tr>
<tr>
<td>inverter units refrigerant system check</td>
</tr>
<tr>
<td>J</td>
</tr>
<tr>
<td>jumper settings</td>
</tr>
<tr>
<td>K</td>
</tr>
<tr>
<td>low Hz high pressure limit</td>
</tr>
<tr>
<td>low-voltage detection</td>
</tr>
<tr>
<td>L</td>
</tr>
<tr>
<td>main circuit electrolytic capacitor check</td>
</tr>
<tr>
<td>MID</td>
</tr>
<tr>
<td>mode hierarchy</td>
</tr>
<tr>
<td>N</td>
</tr>
<tr>
<td>night set mode</td>
</tr>
<tr>
<td>O</td>
</tr>
<tr>
<td>OL activation (compressor overload)</td>
</tr>
<tr>
<td>ON/OFF button on indoor unit</td>
</tr>
<tr>
<td>operation lamp</td>
</tr>
<tr>
<td>outdoor unit fan system check</td>
</tr>
<tr>
<td>output over current detection</td>
</tr>
<tr>
<td>over-voltage detection</td>
</tr>
<tr>
<td>P</td>
</tr>
<tr>
<td>piping diagrams</td>
</tr>
<tr>
<td>FDXS09/12DVJU</td>
</tr>
<tr>
<td>FTXS09/12DVJU</td>
</tr>
<tr>
<td>FTXS15/18/24DVJU</td>
</tr>
<tr>
<td>RXS09DVJU</td>
</tr>
<tr>
<td>RXS12DVJU</td>
</tr>
<tr>
<td>RXS15/18DVJU</td>
</tr>
<tr>
<td>RXS24DVJU</td>
</tr>
<tr>
<td>position sensor abnormality</td>
</tr>
<tr>
<td>power supply PCB</td>
</tr>
<tr>
<td>power supply waveforms check</td>
</tr>
<tr>
<td>power transistor check</td>
</tr>
</tbody>
</table>
POWERFUL operation ........................................36
programme dry function ........................................29

R
radiation fin temperature rise ..............................183
remote controller ..............................................145

S
service check function ......................................145
service monitor PCB ............................................21
signal receiver PCB ............................................13, 15
signal transmission error
  (between indoor and outdoor units) .............156
SPM .................................................................22

T
target discharge pipe temperature control ..........50, 64
thermistor or related abnormality (indoor unit) .....155
thermistor or related abnormality (outdoor unit) ....179
thermistor resistance check .................................198
thermostat control ..............................................31
trial operation from remote controller ..............304
turning speed pulse input on the outdoor unit PCB
  check ..........................................................203

W
wiring diagrams
  FDXS09/12DVJU ..............................................312
  FTXS09/12DVJU ..............................................311
  FTXS15/18/24DVJU ...........................................311
  RXS09/12DVJU .................................................313
  RXS15/18/24DVJU ............................................313
Always use a licensed 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 licensed 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.

For any inquiries, contact your local Daikin sales office.