<Abnormalities detected while unit is operating>

Error Code	Abnormal point and detection method	Case	Judgment and action
U1	**High pressure (High-pressure switch 63H operated)** Abnormal if high-pressure switch 63H operated (※) during compressor operation. ※ 4.15 MPa 63H: High-pressure switch	① Decreased water flow ② Clogged filter of water pipe ③ Dirt of plate heat exchanger ④ Locked water pump ⑤ Malfunction of water pump ⑥ Clogged or broken pipe ⑦ Locked outdoor fan motor ⑧ Malfunction of outdoor fan motor ⑨ Short cycle of outdoor unit ⑩ Dirt of outdoor heat exchanger ⑪ Decreased airflow caused by defective inspection of outside temperature thermistor (It detects lower temperature than actual temperature.) ⑫ Disconnection or contact failure of connector (63H) on outdoor controller board ⑬ Disconnection or contact failure of 63H connection ⑭ Defective outdoor controller board ⑮ Defective operation of linear expansion valve ⑯ Malfunction of fan driving circuit	①~⑤Check water circuit and repair the defect. ⑥ Check piping and repair the defect. ⑦~⑩ Check outdoor unit and repair the defect. ⑪ Check the detected temperature of outside temperature thermistor on LED display. (SW2: Refer to 9-7.) ⑫~⑭Turn the power off and check F5 is displayed when the power is turned on again. When F5 is displayed, refer to “Judgment and action” for F5. ⑮ Check linear expansion valve. Refer to 9-5. ⑯ Replace outdoor controller board.
U2	**High discharging temperature** Abnormal if discharge temperature thermistor (TH4) exceeds 125℃ or 110℃ continuously for 5 minutes. Abnormal if during defrosting discharge temperature thermistor (TH4) exceeds 110℃ continuously for 30 minutes. **High comp. surface temperature (W50VHA, W50VHAR1, W50VHAR2, W85VHAR1, HW112YHA2R3, HW140VHA2R3 and HW140YHA2R3)** Abnormal if comp. surface temperature (TH33/H34) exceeds 125℃. In the case of high comp. surface temperature error, compressor does not restart unless the thermistor (TH33/TH34) becomes less than 95℃.	① Overheated compressor operation caused by insufficient refrigerant ② Defective thermistor ③ Defective outdoor controller board ④ Defective operation of linear expansion valve ⑤ In the case of the unit does not restart : Detection temp. of thermistor (TH33) ≧ 95℃	① Check intake super heat. Check leakage of refrigerant. Charge additional refrigerant. ②③Turn the power off and check if U3 is displayed when the power is turned ON again. When U3 is displayed, refer to “Judgement and action” for U3. ④ Check linear expansion valve. Refer to 9-5.
U3	**Open/short circuit of discharge temperature thermistor (TH4)/comp. surface thermistor (TH33/W50VHA, W50VHAR1, W50VHAR2 and W85VHAR1), (TH34/HW112YHA2R3, HW140VHA2R3 and HW140YHA2R3)** Abnormal if open (3℃ or less) or short (217℃ or more) is detected during compressor operation. (Open (3℃ or less) detection is inoperative for 10 minutes of compressor starting process and for 10 minutes after or during defrosting.)	① Disconnection or contact failure of connector (TH4/TH33/TH34) on the outdoor controller circuit board. ② Defective thermistor ③ Defective outdoor controller circuit board	① Check connection of connector (TH4/TH32) on the outdoor controller circuit board. Check the lead wire for thermistor (TH4/TH32). Refer to 9-6. ② Check resistance value of thermistor (TH4/TH32) or temperature on LED display. (Thermistor/TH4/TH32: Refer to 9-5.) (SW2: Refer to 9-7.) ③ Replace outdoor controller board.

<table>
<tr><th>Error Code</th><th>Abnormal point and detection method</th><th>Case</th><th>Judgment and action</th></tr>
<tr><td>U4</td><td>Open/short of outdoor unit thermistors (TH3, TH32, TH33, TH6, TH7, and TH8)
Abnormal if open or short is detected during compressor operation.
Open detection of thermistors TH3, TH32 and TH6 is not detected for 10 seconds to 10 minutes after compressor starting and 10 minutes after and during defrosting.
※ Check which unit has abnormality in its thermistor by switching the mode of SW2. (Refer to 9-7.)
※ HW112, 140
Heatsink thermistor (TH8) is in the power module.</td><td>① Disconnection or contact failure of connectors
(Outdoor controller circuit board: TH3, TH32, TH33, TH6/TH7
Outdoor power circuit board: CN3)
② Defective thermistor
③ Defective outdoor controller circuit board</td><td>① Check connection of connector (TH3, TH32, TH33, TH6/TH7) on the outdoor controller circuit board.
Check connection of connector (CN3) on the outdoor power circuit board.
Check the lead wire for thermistor (TH3, TH32, TH33, TH6, TH7, TH8). Refer to 9-6.
② Check resistance value of thermistor (TH3, TH32, TH33, TH6, TH7, TH8) or check temperature on LED display.
(Thermistor/TH3, TH32, TH33, TH6, TH7, TH8: Refer to 9-5.)
(SW2: Refer to 9-7.)
③ Replace outdoor controller circuit board.</td></tr>
<tr><td colspan="4">
<table>
<tr><th colspan="2">Thermistors</th><th rowspan="2">Open detection</th><th rowspan="2">Short detection</th></tr>
<tr><th>Symbol</th><th>Name</th></tr>
<tr><td>TH3</td><td>Thermistor <Liquid temperature></td><td>-40°C or below</td><td>90°C or above</td></tr>
<tr><td>TH32</td><td>Thermistor <Inlet water temperature></td><td>-40°C or below</td><td>102°C or above</td></tr>
<tr><td>TH33</td><td>Thermistor <Suction pipe temperature> HW112, 140</td><td>-40°C or below</td><td>90°C or above</td></tr>
<tr><td>TH6</td><td>Thermistor <Plate HEX liquid temperature></td><td>-40°C or below</td><td>90°C or above</td></tr>
<tr><td>TH7</td><td>Thermistor <Ambient temperature></td><td>-40°C or below</td><td>90°C or above</td></tr>
<tr><td>TH8</td><td>Thermistor <Heatsink temperature> W50, 85</td><td>-35°C or below</td><td>102°C or above</td></tr>
<tr><td>TH8</td><td>Internal thermistor HW112, 140</td><td>-35°C or below</td><td>170°C or above</td></tr>
</table>
</td></tr>
<tr><td>U5</td><td>Temperature of heatsink
Abnormal if heatsink thermistor (TH8) detects temperature indicated below.
W50V•••••••••••••••••• 77°C
W85V•••••••••••••••••• 77°C
HW140VHA •••••••••••• 84°C
HW112YHA•••••••••••• 95°C
HW140YHA •••••••••••• 95°C
HW140VHA2••••••••••• 89°C
HW112YHA2••••••••••• 95°C
HW140YHA2••••••••••• 95°C</td><td>① The outdoor fan motor is locked.
② Failure of outdoor fan motor
③ Air flow path is clogged.
④ Ambient temperature is high.
⑤ Defective thermistor
⑥ Defective input circuit of outdoor power circuit board
⑦ Failure of outdoor fan drive circuit</td><td>①② Check outdoor fan.
③ Check air flow path for cooling.
④ Check if there is something which causes temperature rise around outdoor unit.
(Upper limit of ambient temperature is 46℃.)
Turn off power, and on again to check if U5 is displayed within 30 minutes.
If U4 is displayed instead of U5, refer to error code U4.
⑤ Check resistance value of thermistor (TH8) or temperature by microcomputer.
(Thermistor/TH8: Refer to 9-5.)
(SW2: Refer to 9-7.)
⑥ Replace outdoor power circuit board.
⑦ Replace outdoor controller circuit board.</td></tr>
<tr><td>U6</td><td>Power module
Check abnormality by driving power module in case overcurrent is detected.
(UF or UP error condition)</td><td>① Defective outdoor power circuit board
② Decrease of power supply voltage
③ Loosens, disconnection or reverse of compressor wiring connection
④ Defective compressor</td><td>① Replace outdoor power circuit board.
② Check facility of power supply.
③ Correct the wiring (U•V•W phase) to compressor. Refer to 9-6 (Outdoor power circuit board).
④ Check compressor referring to 9-4.</td></tr>
<tr><td>U7</td><td>Too low superheat due to low discharge temperature
Abnormal if discharge superheat is continuously detected -15℃ or less for 3 minutes even though linear expansion valve has minimum open pulse after compressor starts operating for 10 minutes.</td><td>① Disconnection or loose connection of discharge temperature thermistor (TH4)
② Defective holder of discharge temperature thermistor
③ Disconnection or loose connection of linear expansion valve's coil
④ Disconnection or loose connection of linear expansion valve's connector
⑤ Defective linear expansion valve</td><td>①② Check the installation conditions of discharge temperature thermistor (TH4).
③ Check the coil of linear expansion valve. Refer to 9-5.
④ Check the connection or contact of LEV-A and LEV-B on outdoor controller circuit board.
⑤ Check linear expansion valve. Refer to 9-4.</td></tr>
<tr><td>U8</td><td>Outdoor fan motor
Abnormal if rotational frequency of the fan motor is not detected during DC fan motor operation.
Fan motor rotational frequency is abnormal if;
• 100 rpm or below detected continuously for 15 seconds at 20℃ or more outside air temperature
• 50 rpm or below or 1500 rpm or more detected continuously for 1 minute.</td><td>① Failure in the operation of the DC fan motor
② Failure in the outdoor circuit controller board</td><td>① Check or replace the DC fan motor.
② Check the voltage of the outdoor circuit controller board during operation.
③ Replace the outdoor circuit controller board. (when the failure is still indicated even after performing the remedy ① above.)</td></tr>
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