15.4. Self-diagnosis Method

15.4.1. H11 (Indoor/Outdoor Abnormal Communication)

Malfunction Decision Conditions
During startup and operation of cooling and heating, the data received from outdoor unit in indoor unit signal transmission is checked whether it is normal.

Malfunction Caused
- Faulty indoor unit PCB.
- Faulty outdoor unit PCB.
- Indoor unit-outdoor unit signal transmission error due to wrong wiring.
- Indoor unit-outdoor unit signal transmission error due to breaking of wire in the connection wires between the indoor and outdoor units.
- Indoor unit-outdoor unit signal transmission error due to disturbed power supply waveform.

Troubleshooting

When abnormality indication starts again

Check the indoor-outdoor units’ connection wires.

Is there any wiring error?

NO

Disconnect terminal 3 wire and measure Vdc between terminal 2 & 3 from the outdoor unit.

Is the Vdc fluctuate between 20-70Vdc?

NO

Replace outdoor PCB

YES

Reconnect terminal 3 wire and measure Vdc between terminal 2 & 3 from the outdoor unit.

Is the Vdc fluctuate between 20-50Vdc?

NO

Replace indoor unit PCB.

YES

Correct the indoor-outdoor units connection wires

Caution:
For safety reason and to prevent component breakdown, always switch off the power before remove and connect the component.
15.4.2. H14 (Indoor Intake Air Temperature Sensor Abnormality)

**Malfunction Decision Conditions**
During startup and operation of cooling and heating, the temperatures detected by the indoor intake air temperature sensor are used to determine sensor errors.

**Malfunction Caused**
- Faulty connector connection.
- Faulty sensor.
- Faulty PCB.

**Troubleshooting**

<table>
<thead>
<tr>
<th>When abnormality indication starts again</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check the connector connection:</td>
</tr>
<tr>
<td>• Turn off the power</td>
</tr>
<tr>
<td>• Check the connector connection</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Is the connector connection normal?</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO</td>
</tr>
<tr>
<td>• Connector poor contact</td>
</tr>
<tr>
<td>• Correct the connection</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Check the indoor intake air temperature sensor:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Plug out connector from the indoor unit PCB</td>
</tr>
<tr>
<td>• Measure the resistance of the indoor intake air temperature sensor</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Is the measured resistance of the indoor intake air temperature sensor matches the value specified in its characteristic chart?</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
</tr>
<tr>
<td>• Defect in indoor intake air temperature sensor</td>
</tr>
<tr>
<td>• Replace the indoor intake air temperature sensor</td>
</tr>
</tbody>
</table>

| YES |
| • Defect in indoor unit PCB |
| • Replace the indoor unit PCB |

---

**Sensor (Thermistor) Characteristics**

![Graph showing sensor characteristics with temperature and resistance values.](image)
15.4.3. H15 (Compressor Temperature Sensor Abnormality)

Malfunction Decision Conditions
During startup and operation of cooling and heating, the temperatures detected by the outdoor compressor temperature sensor are used to determine sensor errors.

Malfunction Caused
• Faulty connector connection.
• Faulty sensor.
• Faulty PCB.

Troubleshooting

When abnormality indication starts again

Check the connector connection:
• Turn off the power
• Check the connector connection

Is the connector connection normal?

Check the outdoor compressor temperature sensor:
• Plug out connector from the outdoor unit PCB
• Measure the resistance of the outdoor compressor temperature sensor

Is the measured resistance of the outdoor compressor temperature sensor matches the value specified in its characteristic chart?

For safety reason and to prevent component breakdown, always switch off the power before remove and connect the component.

Caution

NO
• Connector poor contact
• Correct the connection

YES

NO
• Defect in outdoor compressor temperature sensor
• Replace the outdoor compressor temperature sensor

YES
• Defect in outdoor unit PCB
• Replace the outdoor unit PCB
15.4.4. H16 (Outdoor Current Transformer Open Circuit)

**Malfunction Decision Conditions**
A current transformer (CT) is detected by checking the compressor running frequency (≥ rated frequency) and CT detected input current (less than 0.65A) for continuously 20 seconds.

**Malfunction Caused**
- CT defective
- Outdoor PCB defective
- Compressor defective (low compression)

**Troubleshooting**

<table>
<thead>
<tr>
<th>When abnormality indication starts again</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check the functionality of current transformer (CT)</td>
</tr>
<tr>
<td>Is the CT open circuit?</td>
</tr>
<tr>
<td>YES</td>
</tr>
<tr>
<td>NO</td>
</tr>
<tr>
<td>Force heating operation and measure:</td>
</tr>
<tr>
<td>• Running current</td>
</tr>
<tr>
<td>• Suction pressure</td>
</tr>
<tr>
<td>Is the running current less than 0.65A and suction pressure 120psi?</td>
</tr>
<tr>
<td>YES</td>
</tr>
<tr>
<td>NO</td>
</tr>
</tbody>
</table>

*Caution*
For safety reason and to prevent component breakdown, always switch off the power before remove and connect the component.
15.4.5. H19 (Indoor Fan Motor - DC Motor Mechanism Locked)

Malfunction Decision Conditions
The rotation speed detected by the Hall IC during fan motor operation is used to determine abnormal fan motor (feedback of rotation > 2550rpm or < 50rpm)

Malfunction Caused
• Operation stops due to short circuit inside the fan motor winding.
• Operation stops due to breaking of wire inside the fan motor.
• Operation stops due to breaking of fan motor lead wires.
• Operation stops due to Hall IC malfunction.
• Operation error due to faulty indoor unit PCB.

Troubleshooting
15.4.6. H23 (Indoor Pipe Temperature Sensor 1 Abnormality)

**Malfunction Decision Conditions**
During startup and operation of cooling and heating, the temperatures detected by the indoor heat exchanger temperature sensor 1 are used to determine sensor errors.

**Malfunction Caused**
- Faulty connector connection.
- Faulty sensor.
- Faulty PCB.

**Troubleshooting**

When abnormality indication starts again

Check the connector connection:
- Plug out connector from the indoor unit PCB
- Measure the resistance of the indoor pipe temperature sensor 1

Is the connector connection normal?

YES

Check the outdoor air temperature sensor:
- Plug out connector from the outdoor unit PCB
- Measure the resistance of the outdoor intake air temperature sensor

Is the measured resistance of the outdoor intake air temperature sensor matches the value specified in its characteristic chart?

YES

For safety reason and to prevent component breakdown, always switch off the power before remove and connect the component.

NO

- Connector poor contact
- Correct the connection

NO

- Defect in outdoor intake air temperature sensor
- Replace the outdoor intake air temperature sensor

YES

- Detect in outdoor unit PCB
- Replace the outdoor unit PCB

**Sensor (Thermistor) Characteristics**

![Graph showing sensor characteristics](image-url)
15.4.7. H24 (Indoor Pipe Temperature Sensor 2 Abnormality)

Malfunction Decision Conditions
During startup and operation of cooling and heating, the temperatures detected by the indoor heat exchanger temperature sensor 2 are used to determine sensor errors.

Malfunction Caused
• Faulty connector connection.
• Faulty sensor.
• Faulty PCB.

Troubleshooting

When abnormality indication starts again

Check the connector connection:
• Plug out connector from the indoor unit PCB
• Measure the resistance of the indoor pipe temperature sensor 2

Is the connector connection normal? NO

Caution
For safety reason and to prevent component breakdown, always switch off the power before remove and connect the component.

• Connector poor contact
• Correct the connection

YES

Check the outdoor air temperature sensor:
• Plug out connector from the outdoor unit PCB
• Measure the resistance of the outdoor intake air temperature sensor

Is the measured resistance of the outdoor intake air temperature sensor matches the value specified in its characteristic chart? NO

• Defect in outdoor intake air temperature sensor
• Replace the outdoor intake air temperature sensor

YES

• Detect in outdoor unit PCB
• Replace the outdoor unit PCB
15.4.8. H25 (e-ion Air Purifying System Abnormal)

Malfunction Decision Conditions
During standby of cooling and heating operation, e-ion breakdown occurs and air conditioner stops operation.

Malfunction Caused
- Faulty indoor main PCB.
- Faulty indoor e-ion power module.

Troubleshooting

When abnormality indication starts again

Check the indoor unit main PCB CN-CLN terminal 4 & 2 DC voltage:
- Turn off the power
- Disconnect the CN-CLN connector
- Turn on the power, measure the DC voltage between CN-CLN terminal 4 & 2

Is the DC voltage measured at 5Vdc?

YES
- Defect in indoor main PCB
- Replace the indoor unit main PCB

NO
- Turn off the power, and reconnect CN-CLN connector
- Turn on the power, and measure again the DC voltage between CN-CLN channel 4 & 2

Is the voltage measured at 5Vdc?

YES
- Defect in indoor unit e-ion power module
- Replace the indoor unit e-ion power module

NO
- Defect in indoor unit main PCB
- Replace the indoor unit main PCB

Caution
For safety reason and to prevent component breakdown, always switch off the power before remove and connect the component.
15.4.9. H27 (Outdoor Air Temperature Sensor Abnormality)

**Malfunction Decision Conditions**
During startup and operation of cooling and heating, the temperatures detected by the outdoor air temperature sensor are used to determine sensor errors.

**Malfunction Caused**
- Faulty connector connection.
- Faulty sensor.
- Faulty PCB.

**Troubleshooting**

When abnormality indication starts again

- Check the connector connection:
  - Turn off the power
  - Check the connector connection

Is the connector connection normal?

- YES
- NO

Is the measured resistance of the outdoor air temperature sensor matches the value specified in its characteristic chart?

- YES
- NO

For safety reason and to prevent component breakdown, always switch off the power before remove and connect the component.

- Connector poor contact
- Correct the connection

- Defect in outdoor air temperature sensor
- Replace the outdoor air temperature sensor

- Defect in outdoor unit PCB
- Replace the outdoor unit PCB

---

**Sensor (Thermistor) Characteristics**

![Sensor Characteristics](chart.png)
15.4.10. H28 (Outdoor Pipe Temperature Sensor Abnormality)

Malfunction Decision Conditions
During startup and operation of cooling and heating, the temperatures detected by the outdoor pipe temperature sensor are used to determine sensor errors.

Malfunction Caused
• Faulty connector connection.
• Faulty sensor.
• Faulty PCB.

Troubleshooting

When abnormality indication starts again

Check the connector connection:
• Turn off the power
• Check the connector connection

Is the connector connection normal?

No
• Connector poor contact
• Correct the connection

YES

Check the outdoor heat exchanger temperature sensor:
• Plug out connector from the outdoor unit PCB
• Measure the resistance of the outdoor heat exchanger temperature sensor

Is the measured resistance of the outdoor heat exchanger temperature sensor matches the value specified in its characteristic chart?

No
• Defect in outdoor heat exchanger temperature sensor
• Replace the outdoor heat exchanger temperature sensor

YES
• Defect in outdoor unit PCB
• Replace the outdoor unit PCB

For safety reason and to prevent component breakdown, always switch off the power before remove and connect the component.

Sensor (Thermistor) Characteristics

[Diagram showing resistance vs. temperature for different sensors]
15.4.11. H30 (Compressor Discharge Temperature Sensor Abnormality)

Malfunction Decision Conditions
During startup and operation of cooling and heating, the temperatures detected by the outdoor discharge pipe temperature sensor are used to determine sensor errors.

Malfunction Caused
- Faulty connector connection.
- Faulty sensor.
- Faulty PCB.

Troubleshooting

When abnormality indication starts again

- Check the connector connection:
  - Turn off the power
  - Check the connector connection

Is the connector connection normal?

- NO
  - Connector poor contact
  - Correct the connection

- YES
  - Check the outdoor discharge pipe temperature sensor:
    - Plug out connector from the outdoor unit PCB
    - Measure the resistance of the outdoor discharge pipe temperature sensor

Is the measured resistance of the outdoor discharge pipe temperature sensor matches the value specified in its characteristic chart?

- NO
  - Defect in outdoor discharge pipe temperature sensor
  - Replace the outdoor discharge pipe temperature sensor

- YES
  - Defect in outdoor unit PCB
  - Replace the outdoor unit PCB

Caution
For safety reason and to prevent component breakdown, always switch off the power before remove and connect the component.
15.4.12. H33 (Unspecified Voltage between Indoor and Outdoor)

Malfunction Decision Conditions
The supply power is detected for its requirement by the indoor/outdoor transmission.

Malfunction Caused
- Wrong models interconnected.
- Wrong indoor unit and outdoor unit PCBs used.
- Indoor unit or outdoor unit PCB defective.

Troubleshooting
15.4.13. H58 (Patrol Sensor Abnormality)

**Malfunction Decision Conditions**
- If Patrol sensor feedback is 0V or 5V continuous for 6 hours.
- Error will display only when the Patrol operation is ON.

**Malfunction Caused**
- Faulty connector connection.
- Faulty Patrol sensor.

**Troubleshooting**

<table>
<thead>
<tr>
<th>When abnormality indication starts again</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has the error occurred after 6 hours continuous of PATROL ON function?</td>
</tr>
<tr>
<td>Check at indoor PCB’s CN-DISP (14-15) and CN-DISP1 (1-2) connector. No loose cable or broken?</td>
</tr>
<tr>
<td>NO</td>
</tr>
<tr>
<td>• Defective Patrol sensor.</td>
</tr>
<tr>
<td>• Replace the Patrol sensor.</td>
</tr>
</tbody>
</table>

---

**Caution**

For safety reason and to prevent component breakdown, always switch off the power before remove and connect the component.
15.4.14. H97 (Outdoor Fan Motor - DC Motor Mechanism Locked)

**Malfunction Decision Conditions**

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

**Malfunction Caused**

- Operation stops due to short circuit inside the fan motor winding.
- Operation stops due to breaking of wire inside the fan motor.
- Operation stops due to breaking of fan motor lead wires.
- Operation stops due to Hall IC malfunction.
- Operation error due to faulty outdoor unit PCB.

**Troubleshooting**

<table>
<thead>
<tr>
<th>When abnormality indication starts again</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turn off power supply and rotate fan by hand</td>
</tr>
<tr>
<td>Does fan rotate smoothly?</td>
</tr>
<tr>
<td><strong>NO</strong></td>
</tr>
<tr>
<td>Replace fan motor</td>
</tr>
<tr>
<td><strong>YES</strong></td>
</tr>
<tr>
<td>Turn power supply on and operate fan.</td>
</tr>
<tr>
<td>Does it rotate?</td>
</tr>
<tr>
<td><strong>NO</strong></td>
</tr>
<tr>
<td>Stop fan motor</td>
</tr>
<tr>
<td><strong>YES</strong></td>
</tr>
<tr>
<td>Turn off power supply and disconnect fan motor connector, then turn power on.</td>
</tr>
<tr>
<td>Check the output of fan motor from indoor PCB</td>
</tr>
<tr>
<td>Is the motor power supply voltage (-325\text{Vdc (pin 7 &amp; 4)}) generated?</td>
</tr>
<tr>
<td><strong>NO</strong></td>
</tr>
<tr>
<td>Is the motor control voltage (15\text{Vdc (pin 3 &amp; 4)}) generated?</td>
</tr>
<tr>
<td><strong>NO</strong></td>
</tr>
<tr>
<td>Operate the fan, is the rotation command voltage (1-5\text{Vdc (pin 2 &amp; 4)}) generated?</td>
</tr>
<tr>
<td><strong>NO</strong></td>
</tr>
<tr>
<td><strong>YES</strong></td>
</tr>
<tr>
<td>Replace indoor PCB</td>
</tr>
<tr>
<td><strong>YES</strong></td>
</tr>
<tr>
<td>Replace fan motor</td>
</tr>
</tbody>
</table>
15.4.15. H98 (Indoor High Pressure Protection)
Error Code will not display (no Timer LED blinking) but store in EEPROM

Malfunction Decision Conditions
During heating operation, the temperature detected by the indoor pipe temperature sensor is above 60°C.

Malfunction Caused
• Clogged air filter of the indoor unit
• Dust accumulation on the indoor unit heat exchanger
• Air short circuit
• Detection error due to faulty indoor pipe temperature sensor
• Detection error due to faulty indoor unit PCB

Troubleshooting

When abnormality indication starts again

Check the air passage

Is there any short circuit?

Check the indoor unit air filter

Is the air filter dirty?

Check the dust accumulation on the indoor unit heat exchanger

Is the indoor unit heat exchanger dirty?

Check the indoor pipe temperature sensor

Does it conform to the sensor characteristic chart?

YES

NO

NO

YES

YES

NO

NO

YES

Caution
For safety reason and to prevent component breakdown, always switch off the power before remove and connect the component.

• Provide sufficient air passage

• Clean the air filter

• Clean the indoor unit heat exchanger

• Replace the indoor pipe temperature sensor

• Replace the indoor unit PCB
15.4.16. H99 (Indoor Freeze Prevention Protection: Cooling or Soft Dry)
Error code will not display (no TIMER LED blinking) but store in EEPROM

Malfunction Decision Conditions
Freeze prevention control takes place (when indoor pipe temperature is lower than 2°C)

Malfunction Caused
- Clogged air filter of the indoor unit
- Dust accumulation on the indoor unit heat exchanger
- Air short circuit
- Detection error due to faulty indoor pipe temperature sensor
- Detection error due to faulty indoor unit PCB

Troubleshooting

When abnormality indication starts again

Check the air passage

Is there any short circuit? YES → 
  • Provide sufficient air passage
  NO

Check the air filter

Is the air filter dirty? YES → 
  • Clean the air filter
  NO

Check the dust accumulation on the indoor unit heat exchanger

Is the indoor unit heat exchanger dirty? YES → 
  • Clean the indoor unit heat exchanger
  NO

Check the indoor heat exchanger temperature sensor

Does it conform to the sensor characteristic chart? YES → 
  • Defect in indoor unit PCB
  • Replace the indoor unit PCB
  NO
15.4.17. F11 (4-way valve Abnormality)

Malfunction Decision Conditions
- When heating operation, when indoor pipe temperature is below 10°C
- When cooling operation, when indoor pipe temperature is above 45°C

Malfunction Caused
- Connector in poor contact
- Faulty sensor
- Faulty outdoor unit PCB
- 4-way valve defective

Troubleshooting

- When F11 indication happens
  - Check the indoor pipe temperature sensor.
  - Does it conform to the sensor characteristic chart?
    - NO
    - Yes
      - Is F11 occurs during heating operation?
        - NO
        - Yes
          - 4-way valve coil disconnected (loose)?
            - NO
            - YES
              - Harness out of connector?
                - NO
                - YES
                  - Check the continuity of the 4-way valve coil
                    - Disconnect the harness from the connector. Resistance between harnesses about 18Ω?
                      - NO
                      - YES
                        - Measure DC voltage supply to CN-HOT (pin1 & 2) during heating operation.
                          - Is the voltage supply to 4-way valve 2.5–4.5Vdc?
                            - YES
                              - NO
                                - Replace the outdoor unit PCB
                                - Replace the 4-way valve
      - NO
        - Is the 4-way valve coil energized during cooling operation?
          - YES
            - Replace the outdoor unit PCB
            - Correct the 4-way valve coil
          - NO
            - Reconnect the harness
            - Replace the 4-way valve coil
- For safety reason and to prevent component breakdown, always switch off the power before remove and connect the component.
15.4.18. F90 (Power Factor Correction Protection)

**Malfunction Decision Conditions**
During startup and operation of cooling and heating, when Power Factor Correction (PFC) protection circuitry at the outdoor unit main PCB senses abnormal high DC voltage level.

**Malfunction Caused**
- DC voltage peak due to power supply surge.
- DC voltage peak due to compressor windings not uniform.
- Faulty outdoor PCB.

**Troubleshooting**

- **When abnormality indication starts again**
  - Check the supply voltage
    - Supply voltage as specified?
      - YES
        - Correct the power supply
      - NO
        - Operate the system. Verify PFC abnormality by measuring DC voltage between P(+) and N(-) terminal at the outdoor unit PCB.
          - Is the DC voltage between P(+) and N(-) terminal normal between 285–315Vdc? (YES)
            - Defect in PFC circuitry
            - Replace the outdoor unit PCB
          - NO
            - Check the compressor winding resistance:
              - Turn off the power supply and disconnect the harness U,V and W.
              - Measure the winding resistance between U-V,V-W and W-U
            - Are the compressor’s winding resistance (U-V,V-W,W-U) uniform? (YES)
              - Replace the outdoor unit PCB.
            - NO
              - Replace the compressor.

For safety reason and to prevent component breakdown, always switch off the power before remove and connect the component.
15.4.19. F91 (Refrigeration Cycle Abnormality)

Malfunction Decision Conditions
- During cooling, compressor frequency = \( F_{\text{cmax}} \).
- During heating, compressor frequency > \( F_{\text{hrated}} \).
- During cooling and heating operation, running current: 0.65A < I < 1.65A.
- During cooling, indoor intake - indoor pipe < 4°C
- During heating, indoor pipe - indoor intake < 5°C

**Multi Models Only**
- Gas shortage detection 1: A gas shortage is detected by checking the CT-detected input current value and the compressor running frequency. During startup and operating of cooling and heating, input current < \( 8.78/256 \) (A/Hz) x compressor running frequency + 0.25.
- Gas shortage detection 2: A gas shortage is detected by checking the difference between indoor pipe temperature and indoor intake air temperature during cooling and heating.

Malfunction Caused
- Refrigerant shortage (refrigerant leakage)
- Poor compression performance of compressor.
- 2/3 way valve closed.
- Detection error due to faulty indoor intake air or indoor pipe temperature sensors.

Troubleshooting

<table>
<thead>
<tr>
<th>When F91 indication happens</th>
<th>Caution</th>
<th>For safety reason and to prevent component breakdown, always switch off the power before remove and connect the component.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check the indoor air intake and pipe temperature sensors.</td>
<td>NO</td>
<td>Replace the indoor intake air or pipe temperature sensor</td>
</tr>
<tr>
<td>Does it conform to the sensor characteristic chart?</td>
<td>NO</td>
<td>Open 2/3 way valve</td>
</tr>
<tr>
<td>2/3-way valve opened?</td>
<td>YES</td>
<td>Repair the pipe flare or union nuts. Reclaim and recharge refrigerant.</td>
</tr>
<tr>
<td>Check for gas leaking.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oil oozing out from the 2/3 way valve?</td>
<td>YES</td>
<td>Replace the capillary tube or dryer.</td>
</tr>
<tr>
<td>Capillary tube or dryer clogged?</td>
<td>NO</td>
<td></td>
</tr>
<tr>
<td>Charge for a specified amount of fresh refrigerant.</td>
<td>YES</td>
<td>Replace outdoor unit PCB &amp; compressor</td>
</tr>
<tr>
<td>Refrigerant cycle abnormality error again?</td>
<td>NO</td>
<td>Procedure complete</td>
</tr>
</tbody>
</table>
15.4.20. F93 (Compressor Rotation Failure)

**Malfunction Decision Conditions**
A compressor rotation failure is detected by checking the compressor running condition through the position detection circuit.

**Malfunction Caused**
- Compressor terminal disconnect
- Outdoor PCB malfunction

**Troubleshooting**

When F93 indication happens

- Turn off power supply. Disconnect U, V and W wires
- Check with inverter checker.

Normal?

- **NO**
  - Replace outdoor unit PCB
  - IPM defective

- **YES**
  - Replace compressor

**Caution**
For safety reason and to prevent component breakdown, always switch off the power before remove and connect the component.
15.4.21. F95 (Cooling High Pressure Abnormality)

**Malfunction Decision Conditions**
During operation of cooling, when outdoor unit heat exchanger high temperature data (61°C) is detected by the outdoor pipe temperature sensor.

**Malfunction Caused**
- Outdoor pipe temperature rise due to short circuit of hot discharge air flow.
- Outdoor pipe temperature rise due to defective of outdoor fan motor.
- Outdoor pipe temperature rise due to defective outdoor pipe temperature sensor.
- Outdoor pipe temperature rise due to defective outdoor unit PCB.

**Troubleshooting**

<table>
<thead>
<tr>
<th>When F95 indication happens</th>
<th>Caution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check the outdoor unit installation condition (during cooling or soft-dry operation)</td>
<td>For safety reason and to prevent component breakdown, always switch off the power before remove and connect the component.</td>
</tr>
<tr>
<td>Is there any improper heat radiation?</td>
<td>YES</td>
</tr>
<tr>
<td>NO</td>
<td></td>
</tr>
<tr>
<td>Is outdoor fan motor operating?</td>
<td>NO</td>
</tr>
<tr>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>Check the outdoor pipe temperature sensor.</td>
<td>NO</td>
</tr>
<tr>
<td>Does it conform to the sensor characteristic charts?</td>
<td>YES</td>
</tr>
<tr>
<td>NO</td>
<td></td>
</tr>
</tbody>
</table>

- Replace the outdoor unit PCB.
15.4.22. F96 (IPM Overheating)

Malfunction Decision Conditions
During operating of cooling and heating, when IPM temperature data (100°C) is detected by the IPM temperature sensor.

Multi Models Only
- Compressor Overheating: During operation of cooling and heating, when the compressor OL is activated.
- Heat Sink Overheating: During operation of cooling and heating, when heat sink temperature data (90°C) is detected by the heat sink temperature sensor.

Malfunction Caused
- IPM overheats due to short circuit of hot discharge air flow.
- IPM overheats due to defective of outdoor fan motor.
- IPM overheats due to defective of internal circuitry of IPM.
- IPM overheats due to defective IPM temperature sensor.

Multi Models Only
- Compressor OL connector poor contact.
- Compressor OL faulty.

Troubleshooting

When F96 indication happens

Check the outdoor unit installation condition (during cooling or soft-dry operation)

If there is any improper heat radiation?

YES

NO

Is outdoor fan motor operating?

YES

NO

For safety reason and to prevent component breakdown, always switch off the power before remove and connect the component.

- Reinstall the outdoor unit
- Remove the obstacle(s)
- Clean the outdoor heat exchanger

- Replace the outdoor fan motor.

- Defect in IPM
- Replace the outdoor unit PCB
15.4.23. F97 (Compressor Overheating)

Malfunction Decision Conditions
During operation of cooling and heating, when compressor tank temperature data (112°C) is detected by the compressor tank temperature sensor.

Malfunction Caused
- Refrigerant shortage (refrigerant leakage).
- 2/3 way valve closed.
- Detection error due to faulty compressor tank temperature sensor.

Troubleshooting

<table>
<thead>
<tr>
<th>When F97 indication happens</th>
<th>NO</th>
<th>YES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check the compressor tank temperature sensor.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does it conform to the sensor characteristic chart?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>YES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2/3 way valve closed?</td>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>NO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Check for gas leakage.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>YES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oil oozing out from the 2/3 way valve?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>YES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capillary tube or dryer clogged?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>YES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Charge for a specified amount of fresh refrigerant.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>YES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Refrigerant cycle abnormality error again?</td>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>NO</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For safety reason and to prevent component breakdown, always switch off the power before remove and connect the component.

- Replace the compressor tank temperature sensor.
- Open the 2/3 way valve.
- Repair the pipe flare or union nuts. Reclaim and recharge refrigerant.
- Replace the capillary tube or dryer.
- Replace outdoor unit PCB
- Replace outdoor unit compressor
- Procedure complete
15.4.24. F98 (Input Over Current Detection)

Malfunction Decision Conditions
During operation of cooling and heating, when an input over-current (14.98A) is detected by checking the input current value being detected by current transformer (CT) with the compressor running.

Malfunction Caused
• Over-current due to compressor failure.
• Over-current due to defective outdoor unit PCB.
• Over-current due to defective inverter main circuit electrolytic capacitor.
• Over-current due to excessive refrigerant.

Troubleshooting

When F98 indication happens
- Get restarted and measure the input current.

Input current > 14.98A?

YES
- Turn off power supply. Check the main circuit electrolytic capacitor.

Normal?

YES
- Check refrigerant amount.

NO
- Excess refrigerant?

YES
- Replace the outdoor unit PCB.

NO
- Replace outdoor unit compressor

For safety reason and to prevent component breakdown, always switch off the power before remove and connect the component.