

16.4 Error Codes Table

Diagnosis display	Abnormality/Protection control	Abnormality judgement	Primary location to verify
H00	No abnormality detected	—	—
H12	Indoor/Outdoor capacity unmatched	90s after power supply	<ul style="list-style-type: none"> Indoor/outdoor connection wire Indoor/outdoor PCB Specification and combination table in catalogue
H15	Outdoor compressor temperature sensor abnormality	Continue for 5 sec.	<ul style="list-style-type: none"> Compressor temperature sensor (defective or disconnected)
H23	Indoor refrigerant liquid temperature sensor abnormality	Continue for 5 sec.	<ul style="list-style-type: none"> Refrigerant liquid temperature sensor (defective or disconnected)
H28	Abnormal solar sensor	Continue for 5 sec.	<ul style="list-style-type: none"> Solar temperature sensor (defective or disconnected)
H31	Abnormal swimming pool sensor	Continue for 5 sec.	<ul style="list-style-type: none"> Pool temperature sensor (defective or disconnected)
H36	Abnormal buffer tank sensor	Continue for 5 sec.	<ul style="list-style-type: none"> Buffer tank sensor (defective or disconnected)
H38	Brand code not match	When indoor and outdoor brand code not same	—
H42	Compressor low pressure abnormality	—	<ul style="list-style-type: none"> Outdoor pipe temperature sensor Clogged expansion valve or strainer Insufficient refrigerant Outdoor PCB Compressor
H43	Abnormal Zone 1 sensor	Continue for 5 sec.	<ul style="list-style-type: none"> Water temperature Zone 1 sensor
H44	Abnormal Zone 2 sensor	Continue for 5 sec.	<ul style="list-style-type: none"> Water temperature Zone 2 sensor
H62	Water flow switch abnormality	Continue for 1 min.	<ul style="list-style-type: none"> Water flow switch
H63	Abnormal low pressure sensor	4 times in 20 minutes	<ul style="list-style-type: none"> Low pressure sensor (defective or disconnect)
H64	Refrigerant high pressure abnormality	Continue for 5 sec.	<ul style="list-style-type: none"> Outdoor high pressure sensor (defective or disconnected)
H65	Abnormal deice water circulation	water flow > 7 l/min continuously for 20 second during anti freeze deice	<ul style="list-style-type: none"> Water pump
H67	Abnormal External Thermistor 1	Continue for 5 sec.	<ul style="list-style-type: none"> Room temperature Zone 1 sensor
H68	Abnormal External Thermistor 2	Continue for 5 sec.	<ul style="list-style-type: none"> Room temperature Zone 2 sensor
H70	Back-up heater OLP abnormality	Continue for 60 sec.	<ul style="list-style-type: none"> Back-up heater OLP (Disconnection or activated)
H72	Tank sensor abnormal	Continue for 5 sec.	<ul style="list-style-type: none"> Tank sensor
H74	PCB communication error	Communication or transfer error	<ul style="list-style-type: none"> Indoor main PCB and Sub PCB
H75	Low water temperature control	Room heater disable and deice request to operate under low water temperature	<ul style="list-style-type: none"> Heater operation must enable to increase water temperature
H76	Indoor - control panel communication abnormality	—	<ul style="list-style-type: none"> Indoor - control panel (defective or disconnected)
H90	Indoor/outdoor abnormal communication	> 1 min after starting operation	<ul style="list-style-type: none"> Internal/external cable connections Indoor/Outdoor PCB
H91	Tank heater OLP abnormality	Continue for 60 sec.	<ul style="list-style-type: none"> Tank heater OLP (Disconnection or activated)
H95	Indoor/Outdoor wrong connection	—	<ul style="list-style-type: none"> Indoor/Outdoor supply voltage
H98	Outdoor high pressure overload protection	—	<ul style="list-style-type: none"> Outdoor high pressure sensor Water pump or water leakage Clogged expansion valve or strainer Excess refrigerant Outdoor PCB
H99	Indoor heat exchanger freeze prevention	—	<ul style="list-style-type: none"> Indoor heat exchanger Refrigerant shortage
F12	Pressure switch activate	4 times occurrence within 20 minutes	<ul style="list-style-type: none"> Pressure switch
F14	Outdoor compressor abnormal revolution	4 times occurrence within 20 minutes	<ul style="list-style-type: none"> Outdoor compressor
F15	Outdoor fan motor lock abnormality	2 times occurrence within 30 minutes	<ul style="list-style-type: none"> Outdoor PCB Outdoor fan motor
F16	Total running current protection	3 times occurrence within 20 minutes	<ul style="list-style-type: none"> Excess refrigerant Outdoor PCB
F20	Outdoor compressor overheating protection	4 times occurrence within 30 minutes	<ul style="list-style-type: none"> Compressor tank temperature sensor Clogged expansion valve or strainer Insufficient refrigerant Outdoor PCB Compressor

Diagnosis display	Abnormality/Protection control	Abnormality judgement	Primary location to verify
F22	IPM (power transistor) overheating protection	3 times occurrence within 30 minutes	<ul style="list-style-type: none"> Improper heat exchange IPM (Power transistor)
F23	Outdoor Direct Current (DC) peak detection	7 times occurrence continuously	<ul style="list-style-type: none"> Outdoor PCB Compressor
F24	Refrigeration cycle abnormality	2 times occurrence within 20 minutes	<ul style="list-style-type: none"> Insufficient refrigerant Outdoor PCB Compressor low compression
F25	Cooling/Heating cycle changeover abnormality	4 times occurrence within 30 minutes	<ul style="list-style-type: none"> 4-way valve V-coil
F27	Pressure switch abnormality	Continue for 1 min.	<ul style="list-style-type: none"> Pressure switch
F32	Abnormal Internal Thermostat	Continue for 5 sec.	<ul style="list-style-type: none"> Control panel PCB thermostat
F36	Outdoor air temperature sensor abnormality	Continue for 5 sec.	<ul style="list-style-type: none"> Outdoor air temperature sensor (defective or disconnected)
F37	Indoor water inlet temperature sensor abnormality	Continue for 5 sec.	<ul style="list-style-type: none"> Water inlet temperature sensor (defective or disconnected)
F40	Outdoor discharge pipe temperature sensor abnormality	Continue for 5 sec.	<ul style="list-style-type: none"> Outdoor discharge pipe temperature sensor (defective or disconnected)
F41	PFC control	4 times occurrence within 10 minutes	<ul style="list-style-type: none"> Voltage at PFC
F42	Outdoor heat exchanger temperature sensor abnormality	Continue for 5 sec.	<ul style="list-style-type: none"> Outdoor heat exchanger temperature sensor (defective or disconnected)
F43	Outdoor defrost sensor abnormality	Continue for 5 sec.	<ul style="list-style-type: none"> Outdoor defrost sensor (defective or disconnected)
F45	Indoor water outlet temperature sensor abnormality	Continue for 5 sec.	<ul style="list-style-type: none"> Water outlet temperature sensor (defective or disconnected)
F46	Outdoor Current Transformer open circuit	—	<ul style="list-style-type: none"> Insufficient refrigerant Outdoor PCB Compressor low
F48	Outdoor EVA outlet temperature sensor abnormality	Continue for 5 sec.	<ul style="list-style-type: none"> Outdoor EVA outlet temperature sensor (defective or disconnected)
F49	Outdoor bypass outlet temperature sensor abnormality	Continue for 5 sec.	<ul style="list-style-type: none"> Outdoor bypass outlet temperature sensor (defective or disconnected)
F95	Cooling high pressure overload protection	—	<ul style="list-style-type: none"> Outdoor high pressure sensor Water pump or water leakage Clogged expansion valve or strainer Excess refrigerant Outdoor PCB

16.5 Self-diagnosis Method

16.5.1 Connection Capability Rank Abnormality (H12)

Malfunction Decision Conditions:

During startup operation of cooling and heating, the capability rank of indoor checked by the outdoor is used to determine connection capability rank abnormality.

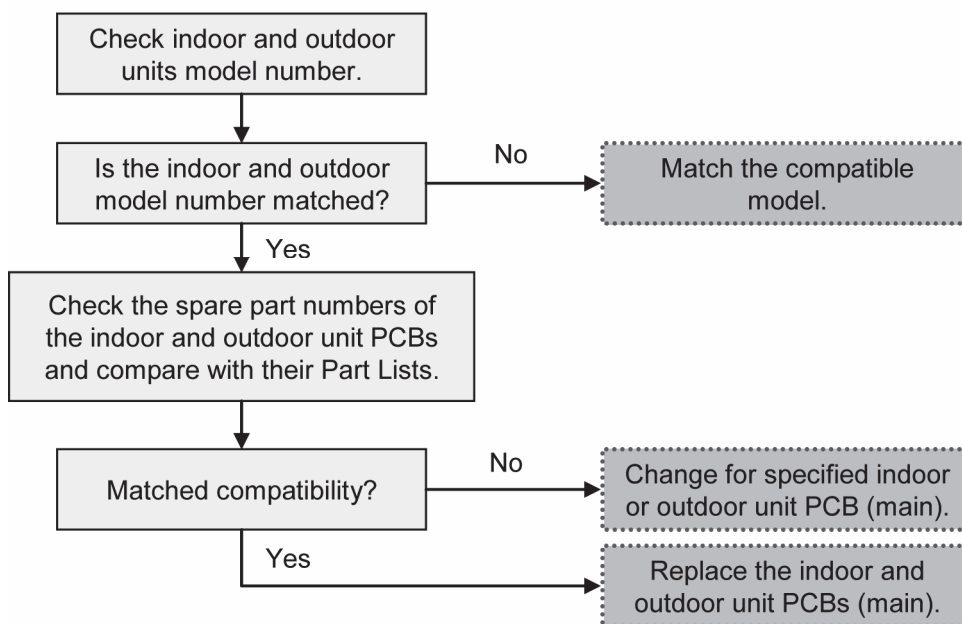
Malfunction Caused:

- 1 Wrong model interconnected.
- 2 Wrong indoor unit or outdoor unit PCB (main) used.
- 3 Faulty indoor unit or outdoor unit PCB (main).

Abnormality Judgment:

Continue for 90 seconds.

Troubleshooting:



16.5.2 Compressor Tank Temperature Sensor Abnormality (H15)

Malfunction Decision Conditions:

During startup and operation of cooling and heating, the temperatures detected by the compressor tank temperature sensor are used to determine sensor error.

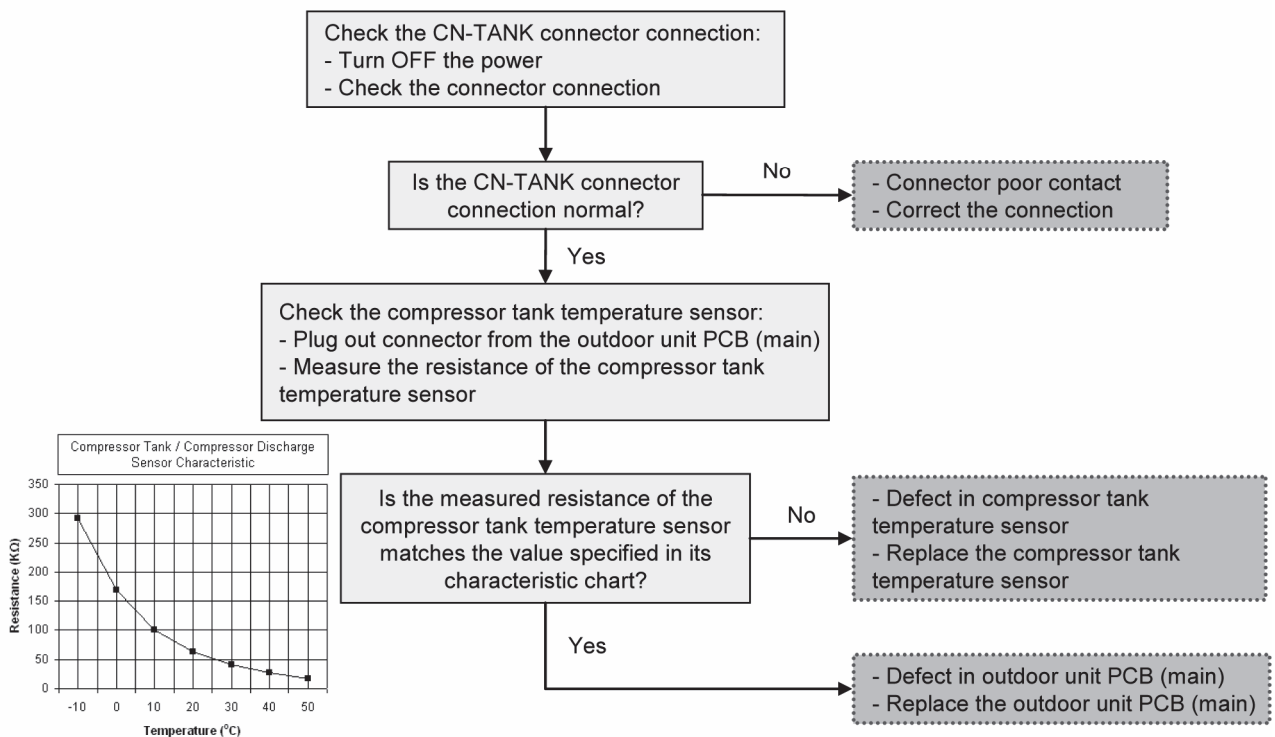
Malfunction Caused:

- 1 Faulty connector connection.
- 2 Faulty sensor.
- 3 Faulty outdoor unit PCB (main).

Abnormality Judgment:

Continue for 5 seconds.

Troubleshooting:



16.5.3 Water Pump Abnormality (H20)

Malfunction Decision Conditions:

During startup and operation of cooling and heating, the rotation speed detected by the IPM of water pump motor during water pump operation is used to determine abnormal water pump (feedback of rotation > 6,000rpm or < 1,000rpm).

Malfunction Caused:

- 1 Operation stop due to short circuit inside the water pump motor winding.
- 2 Operation stop due to breaking of wire inside the water pump motor.
- 3 Operation stop due to breaking of water pump lead wires.
- 4 Operation stop due to water pump motor IPM malfunction.
- 5 Operation error due to faulty indoor unit PCB.

Abnormality Judgment:

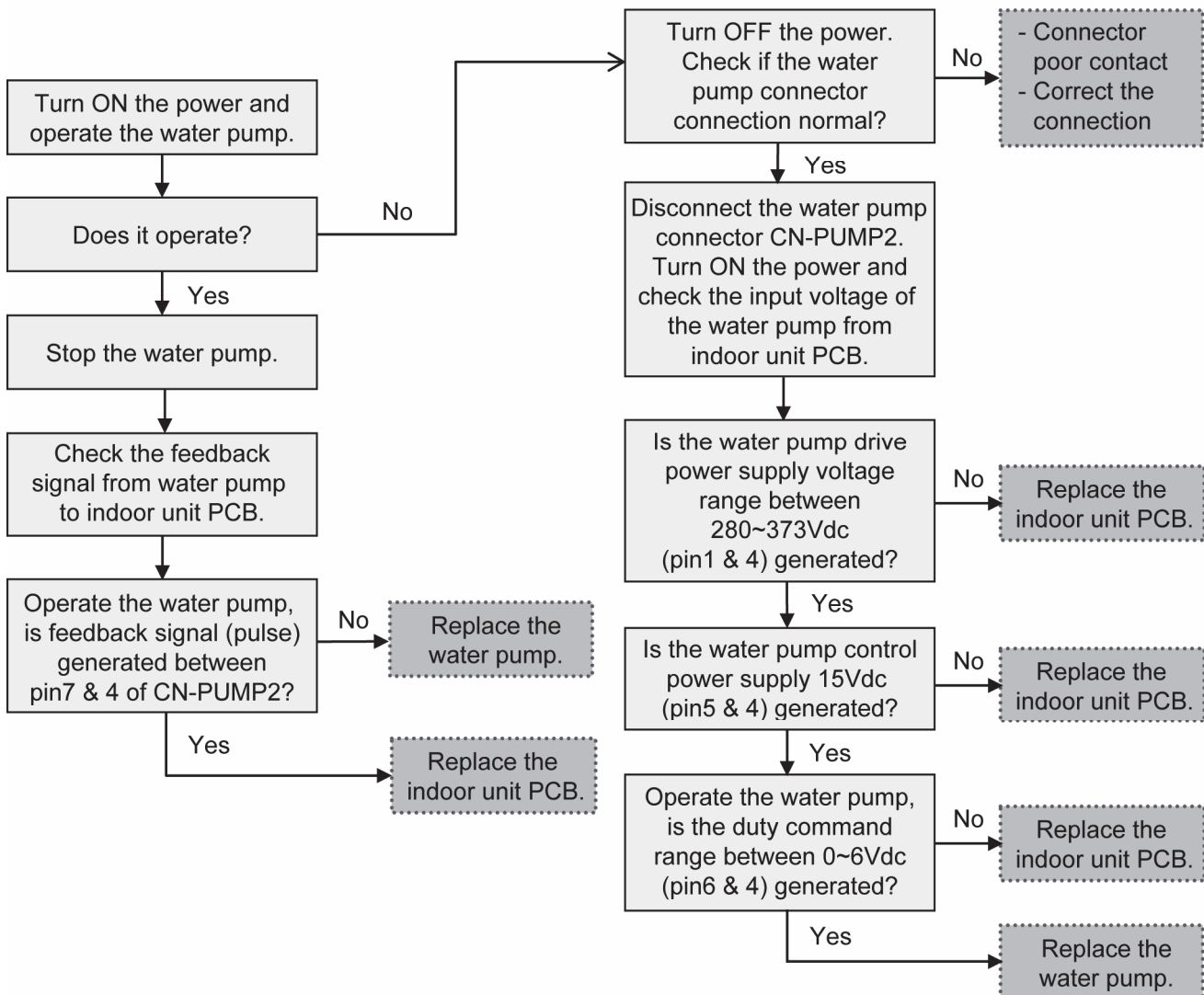
Continue for 5 seconds.

Troubleshooting:



Caution

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



16.5.4 Indoor Refrigerant Liquid Temperature Sensor Abnormality (H23)

Malfunction Decision Conditions:

During startup and operation of cooling and heating, the temperatures detected by the indoor refrigerant liquid temperature sensor are used to determine sensor error.

Malfunction Caused:

- 1 Faulty connector connection.
- 2 Faulty sensor.
- 3 Faulty indoor unit PCB (main).

Abnormality Judgment:

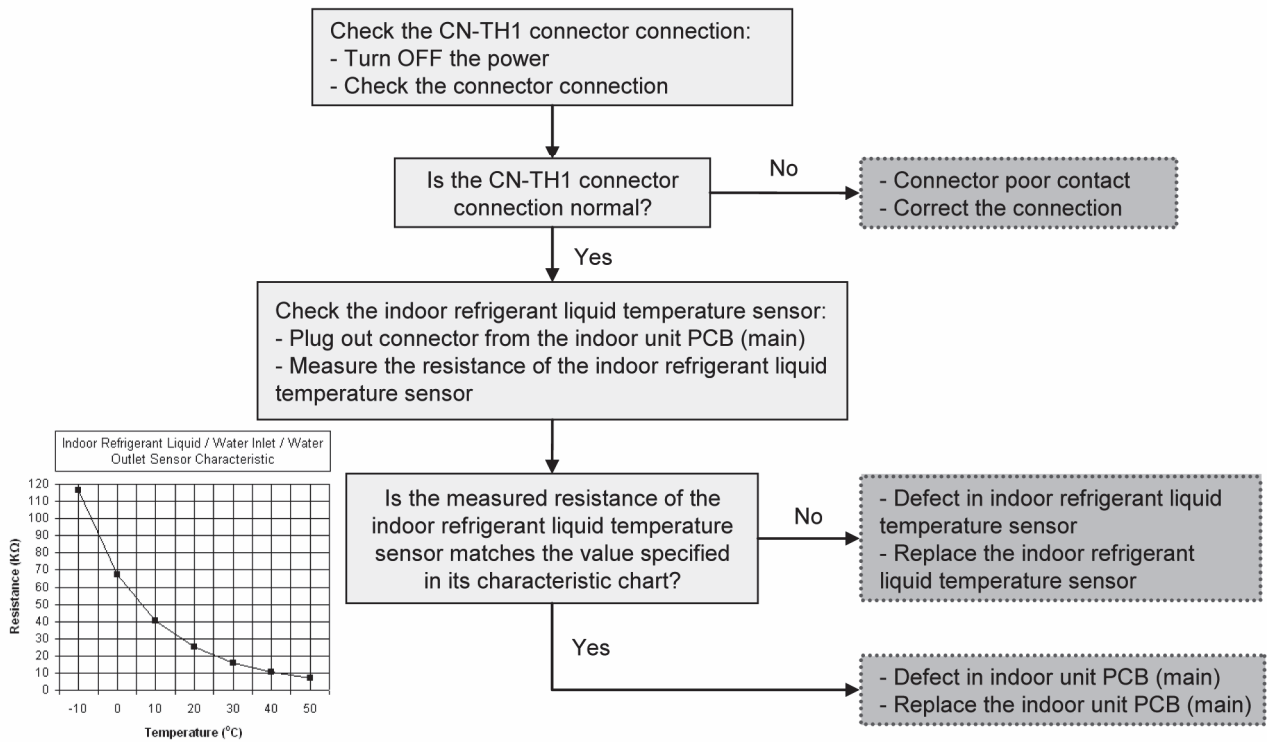
Continue for 5 seconds.

Troubleshooting:



Caution

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



16.5.5 Service Valve Error (H27)

Malfunction Decision Conditions:

During cooling operation, when:-

[a] Indoor refrigerant pipe temperature at compressor startup - present indoor refrigerant pipe temperature $< 2^{\circ}\text{C}$

[b] Present high pressure - high pressure at compressor startup $< 5\text{kg}/\text{cm}^2$

** Judgment only for first time cooling operation and not during pump down operation.

Malfunction Caused:

- 1 3 way valves closed.
- 2 Faulty high pressure sensor.
- 3 Faulty indoor refrigerant pipe temperature sensor
- 4 Faulty outdoor unit PCB (main).

Abnormality Judgment:

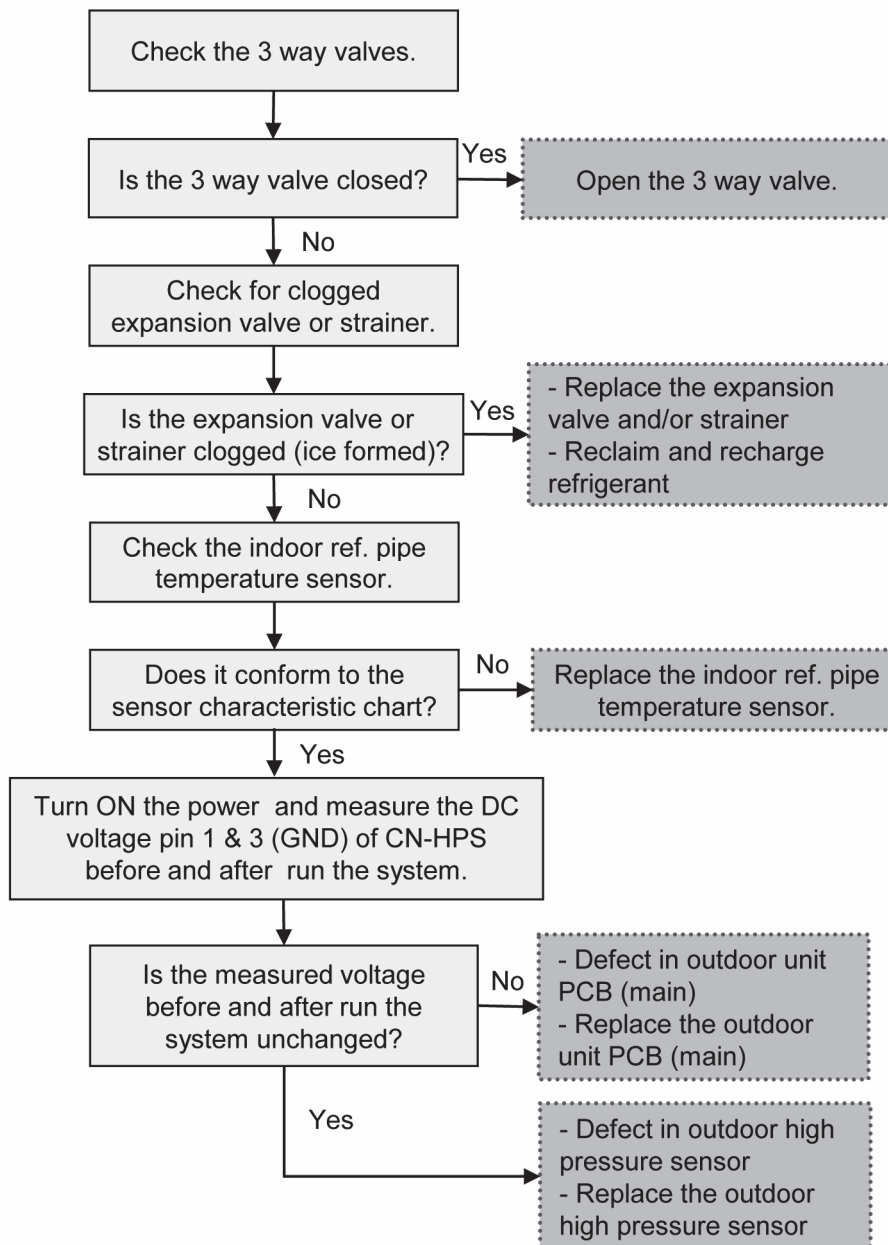
Continue for 5 minutes.

Troubleshooting:



Caution

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



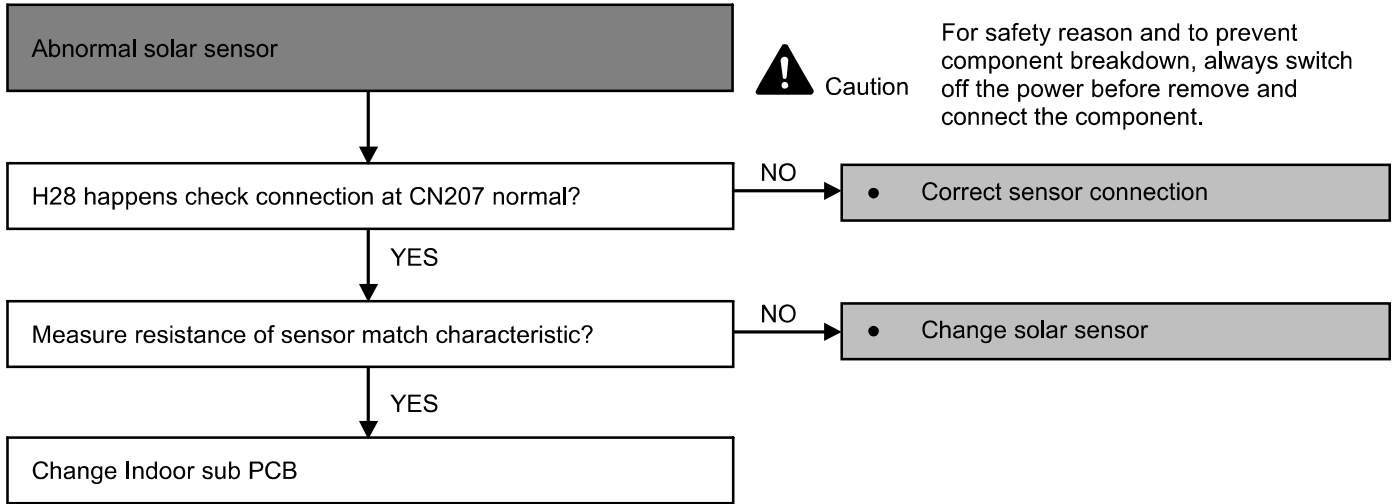
16.5.6 Abnormal Solar Sensor (H28)

Malfunction Caused:

- 1 Faulty connector connection.
- 2 Faulty solar sensor.
- 3 Faulty indoor sub PCB.

Abnormality Judgment:

Continue for 5 seconds.



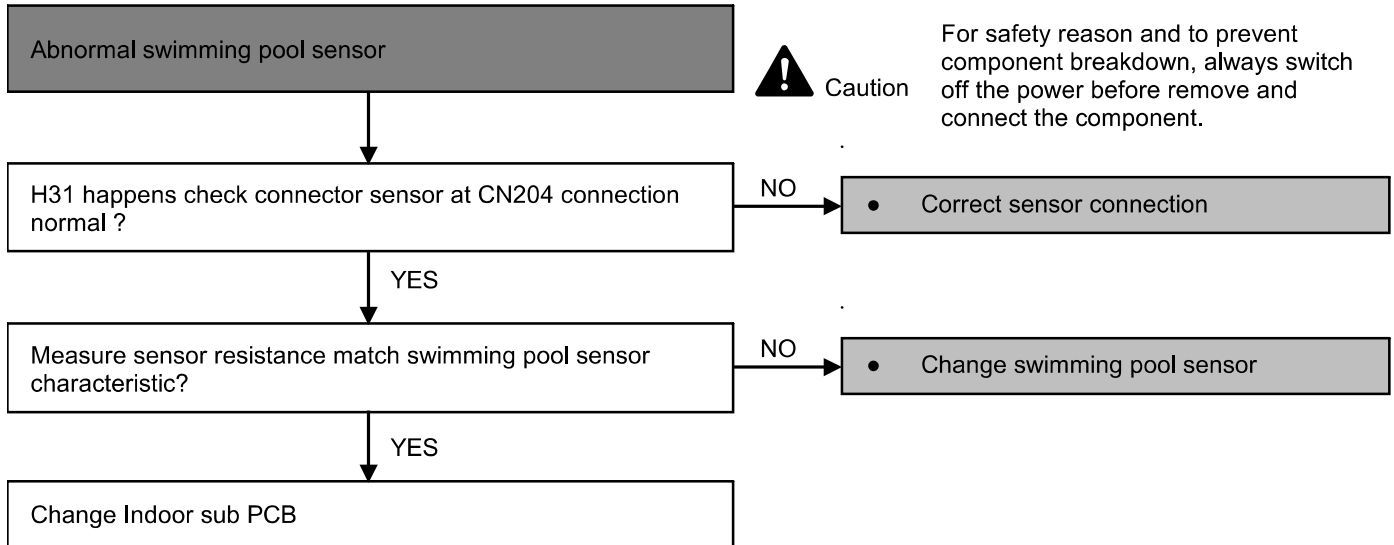
16.5.7 Abnormal Swimming Pool Sensor (H31)

Malfunction Caused:

- 1 Faulty connector connection.
- 2 Faulty swimming pool sensor.
- 3 Faulty indoor sub PCB.

Abnormality Judgment:

Continue for 5 seconds.



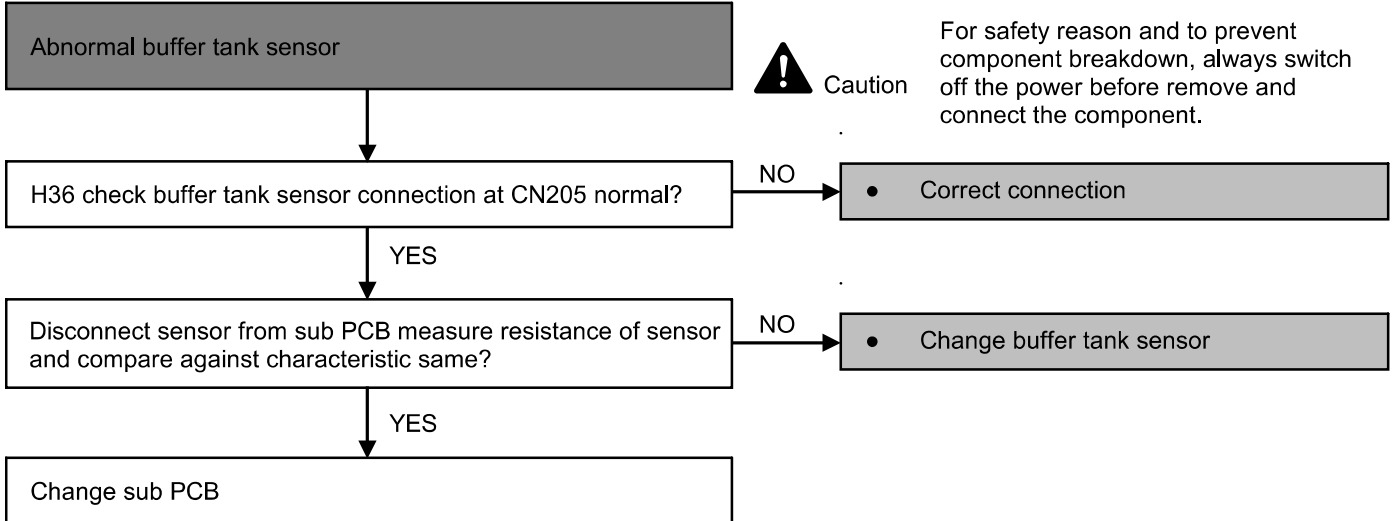
16.5.8 Abnormal Buffer Tank Sensor (H36)

Malfunction Caused:

- 1 Faulty connector connection.
- 2 Faulty buffer tank sensor.
- 3 Faulty indoor sub PCB.

Abnormality Judgment:

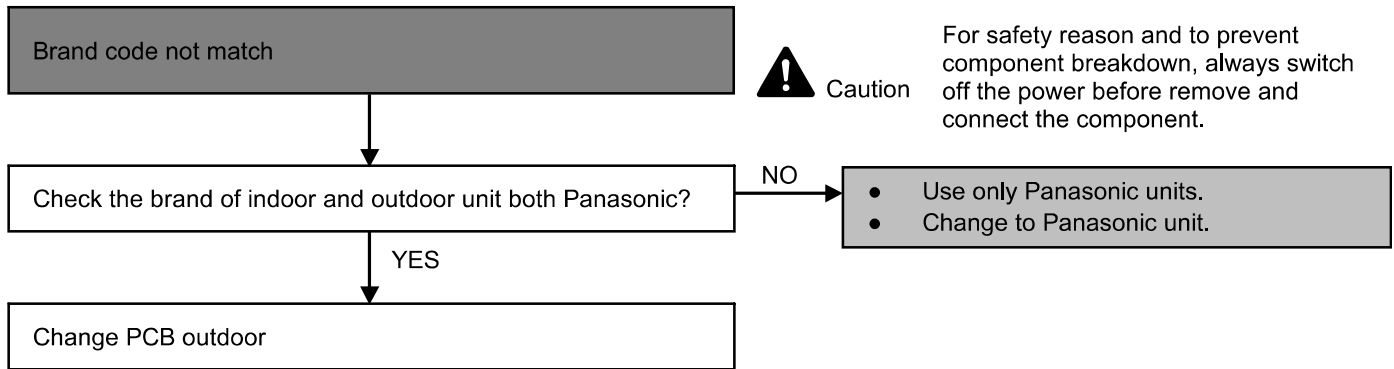
Continue for 5 seconds.



16.5.9 Brand Code Not Matching (H38)

Malfunction Caused:

- 1 Indoor and outdoor brand code not match.



Caution

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

16.5.10 Compressor Low Pressure Protection (H42)

Malfunction Decision Conditions:

During operation of heating and after 5 minutes compressor ON, when outdoor pipe temperature below -29°C or above 26°C is detected by the outdoor pipe temperature sensor.

Malfunction Caused:

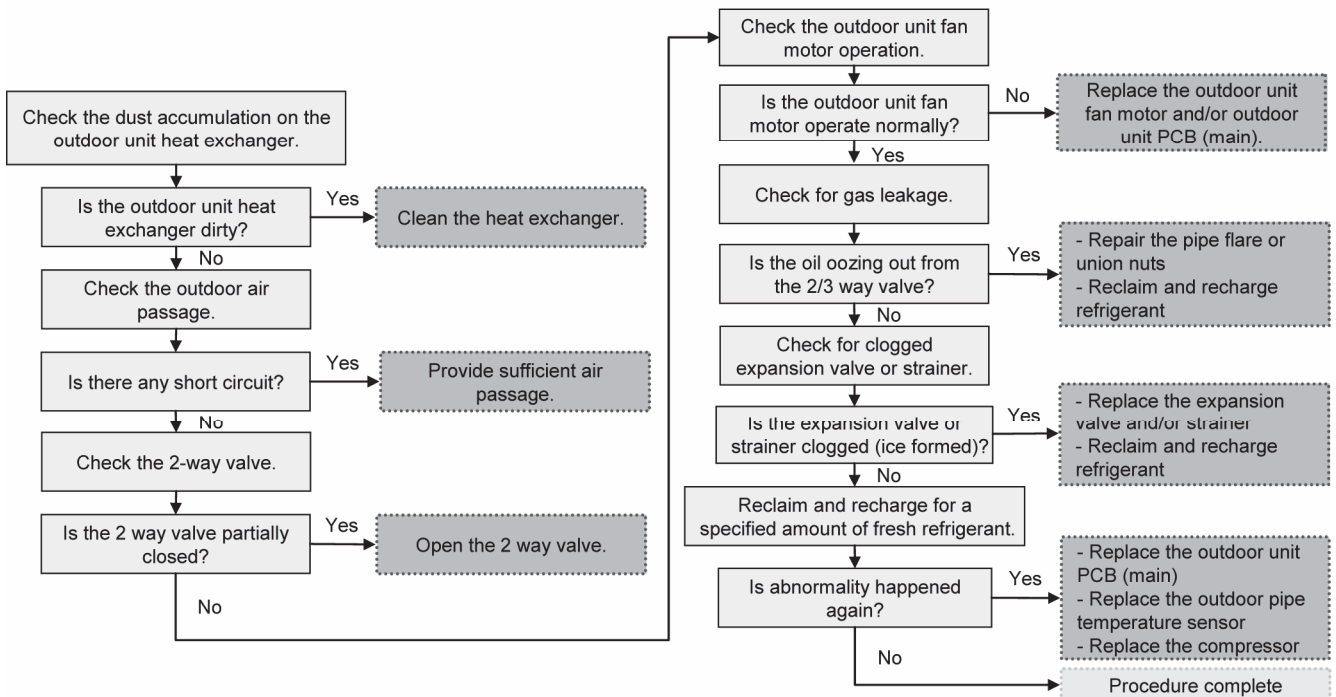
- 1 Dust accumulation on the outdoor unit heat exchanger.
- 2 Air short circuit at outdoor unit.
- 3 2 way valve partially closed.
- 4 Faulty outdoor unit fan motor.
- 5 Refrigerant shortage (refrigerant leakage).
- 6 Clogged expansion valve or strainer.
- 7 Faulty outdoor pipe temperature sensor.
- 8 Faulty outdoor unit main PCB (main).

Troubleshooting:



Caution

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



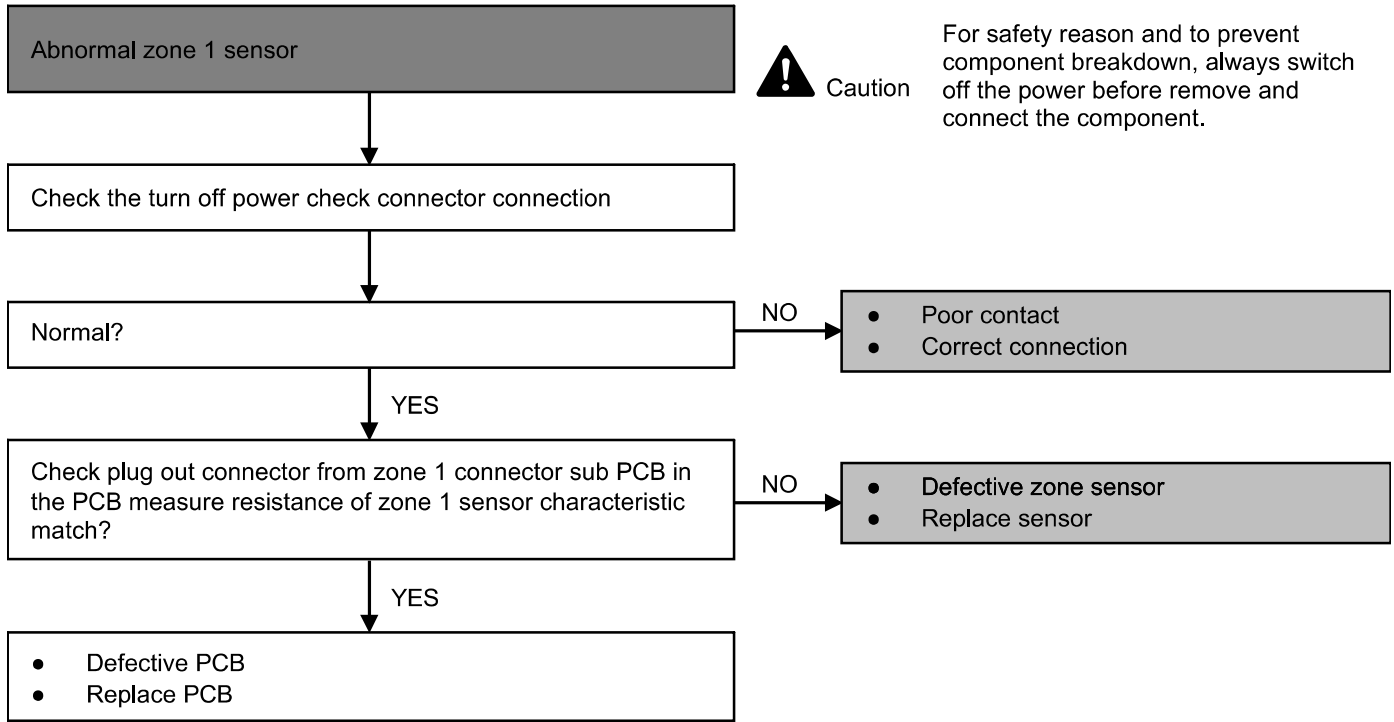
16.5.11 Abnormal Zone 1 Sensor (H43)

Malfunction Caused:

- 1 Faulty connector connection.
- 2 Faulty buffer tank sensor.
- 3 Faulty indoor sub PCB.

Abnormality Judgment:

Continue for 5 seconds.



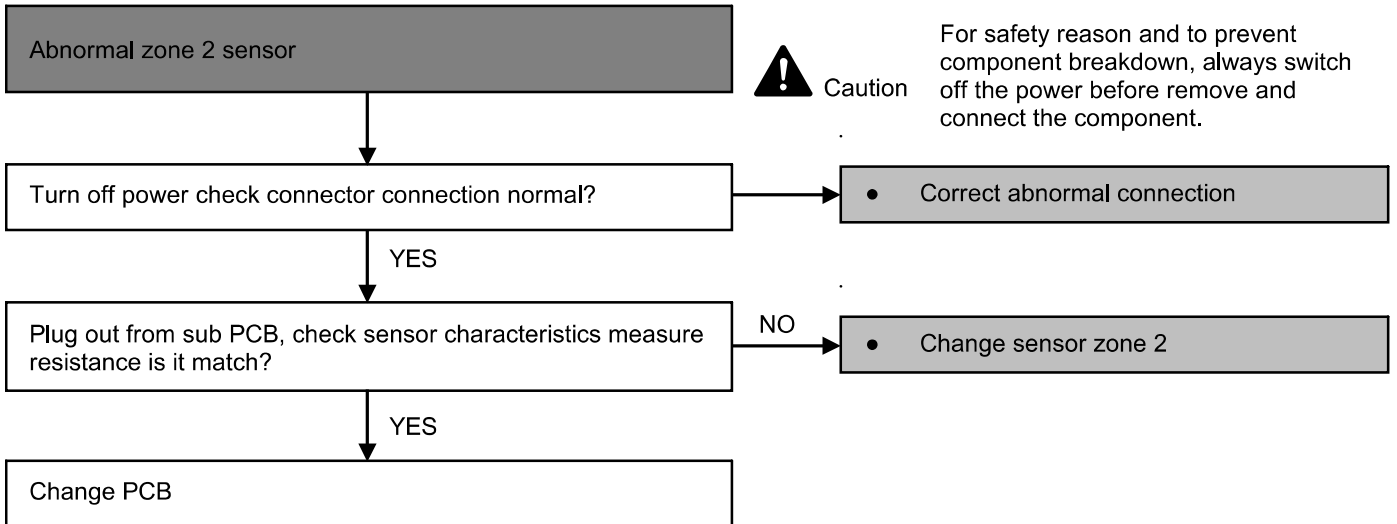
16.5.12 Abnormal Zone 2 Sensor (H44)

Malfunction Caused:

- 1 Faulty connector connection.
- 2 Faulty buffer tank sensor.
- 3 Faulty indoor sub PCB.

Abnormality Judgment:

Continue for 5 seconds.



16.5.13 Water Flow Switch Abnormality (H62)

Malfunction Decision Conditions:

During operation of cooling and heating, the water flow detected by the indoor water flow switch is used to determine water flow error.

Malfunction Caused:

- 1 Faulty water pump.
- 2 Water leak in system.
- 3 Faulty connector connection.
- 4 Faulty water flow switch.
- 5 Faulty indoor unit PCB (main).

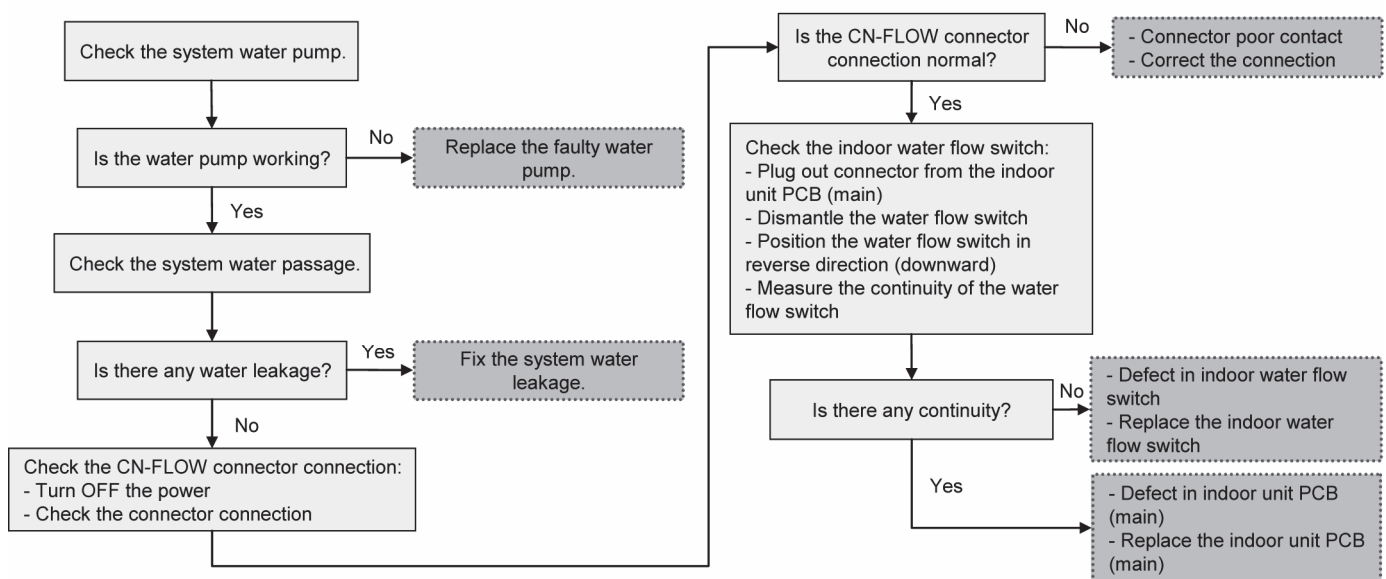
Abnormality Judgment:

Continue for 10 seconds (but no judgment for 9 minutes after compressor startup/restart).

Troubleshooting:



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



16.5.14 Outdoor High Pressure Abnormality (H64)

Malfunction Decision Conditions:

During operation of cooling and heating, when the outdoor high pressure sensor output signal is 0 Vdc or 5 Vdc.

Malfunction Caused:

- 1 Faulty connector connection.
- 2 Faulty sensor.
- 3 Faulty outdoor unit PCB (main).

Abnormality Judgment:

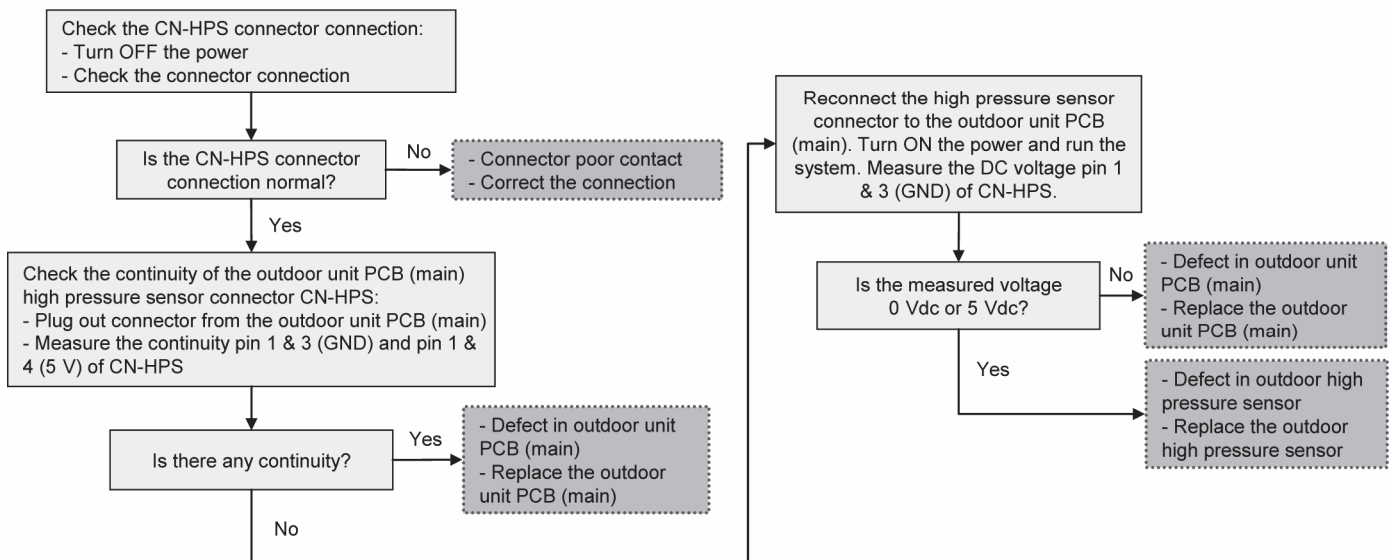
Continue 4 times in 20 minutes.

Troubleshooting:



Caution

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



16.5.15 Deice Circulation Error (H65)

Malfunction Decision Conditions:

During startup and operation of deice (mode 2), the water flow (> 10l/min) detected by the water flow switch is used to determine deice circulation error.

Malfunction Caused:

- 1 Water flow in air-to-water heatpump indoor unit circuitry.
- 2 Faulty indoor unit water flow switch.
- 3 Faulty indoor unit water pump.
- 4 Faulty indoor unit PCB.

Abnormality Judgment:

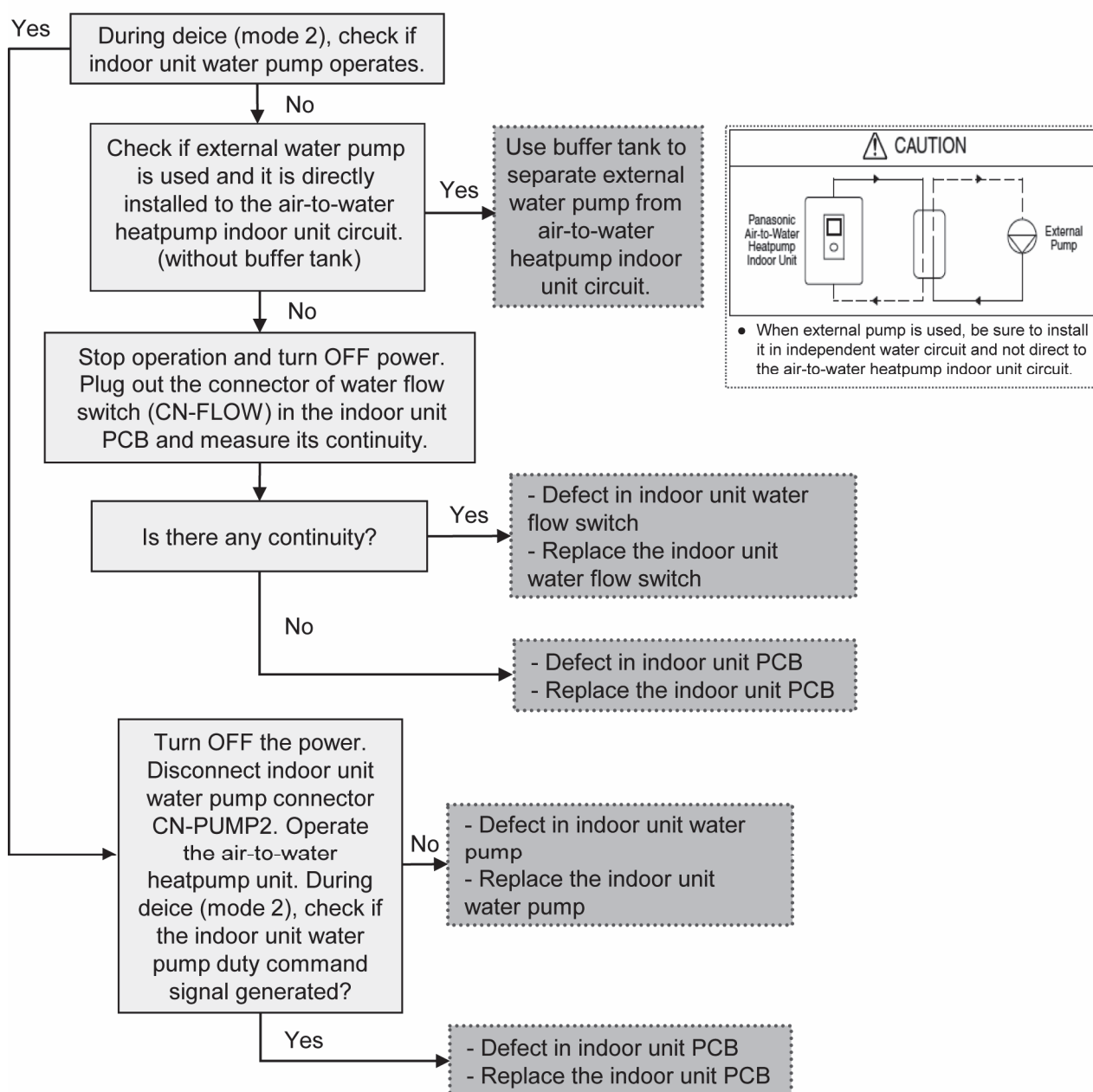
Continue for 10 seconds.

Troubleshooting:



Caution

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



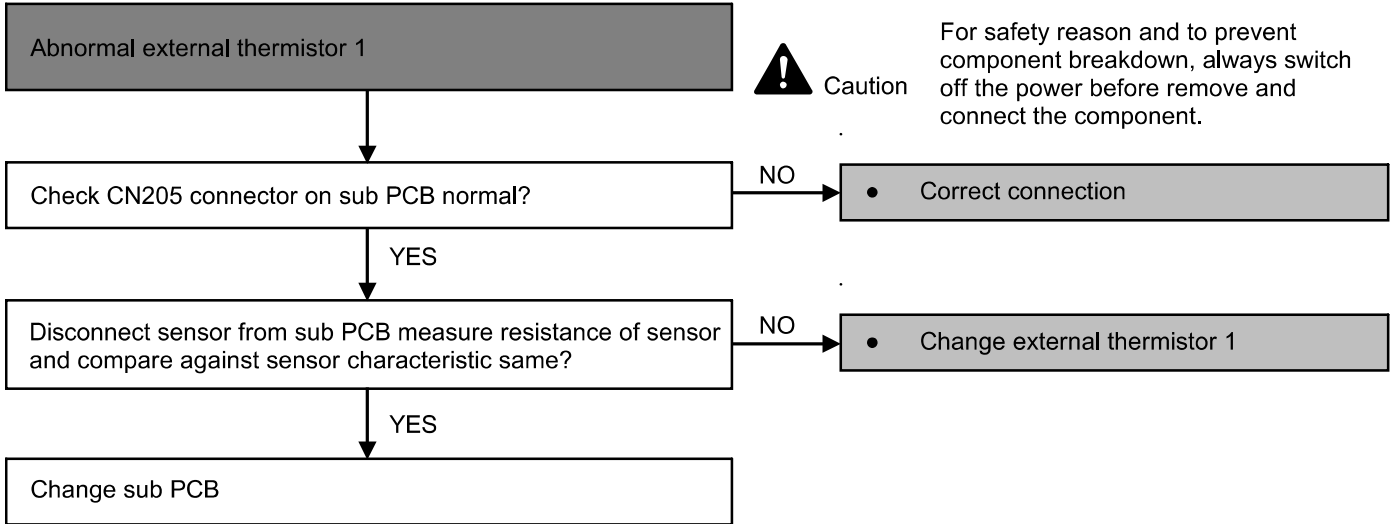
16.5.16 Abnormal External Thermistor 1 (H67)

Malfunction Caused:

- 1 Faulty connector connection.
- 2 Faulty room temperature zone 1 sensor.
- 3 Faulty indoor sub PCB.

Abnormality Judgment:

Continue for 5 seconds.



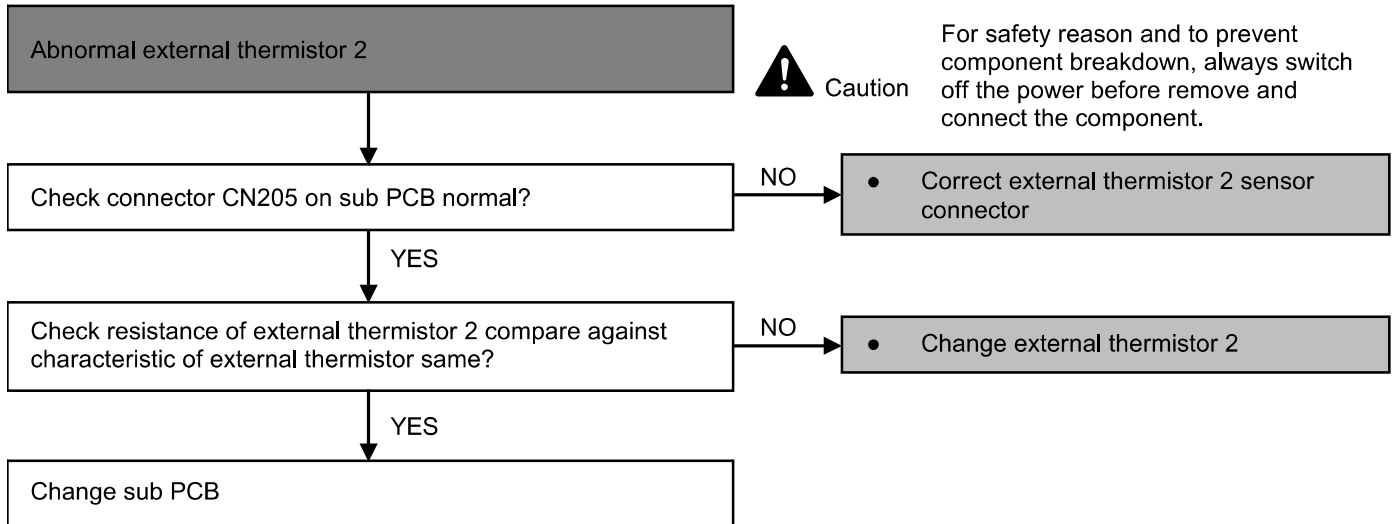
16.5.17 Abnormal External Thermistor 2 (H68)

Malfunction Caused:

- 1 Faulty connector connection.
- 2 Faulty room temperature zone 2 sensor.
- 3 Faulty indoor sub PCB.

Abnormality Judgment:

Continue for 5 seconds.



16.5.18 Indoor Backup Heater OLP Abnormality (H70)

Malfunction Decision Conditions:

During operation of indoor backup heater, when no power supplies to indoor backup heater or OLP open circuit.

Malfunction Caused:

- 1 Faulty power supply connector connection.
- 2 Faulty connector connection.
- 3 Faulty indoor backup heater overload protector (OLP).
- 4 Faulty indoor unit PCB (main).

Abnormality Judgment:

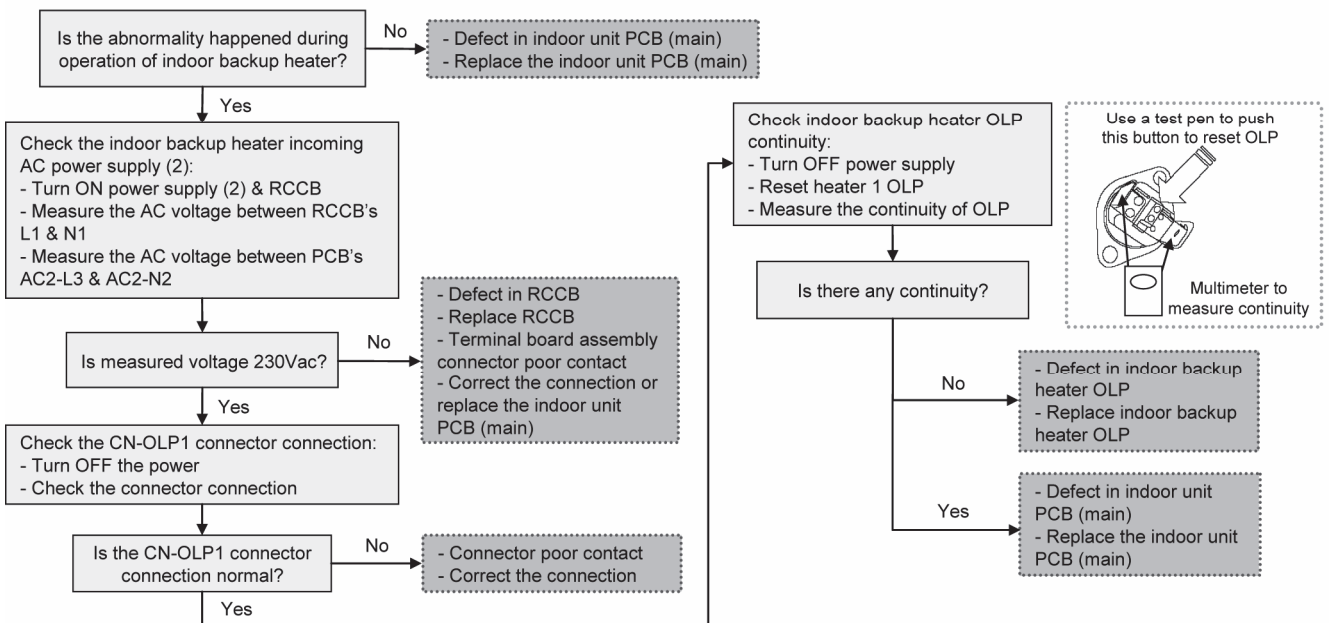
Continue for 60 seconds.

Troubleshooting:



Caution

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



16.5.19 Tank Temperature Sensor Abnormality (H72)

Malfunction Decision Conditions:

When tank connection is set to ON, the temperatures detected by the tank temperature sensor are used to determine sensor error.

Malfunction Caused:

- 1 Faulty connector connection.
- 2 Faulty sensor.
- 3 Faulty indoor unit PCB (main).

Abnormality Judgment:

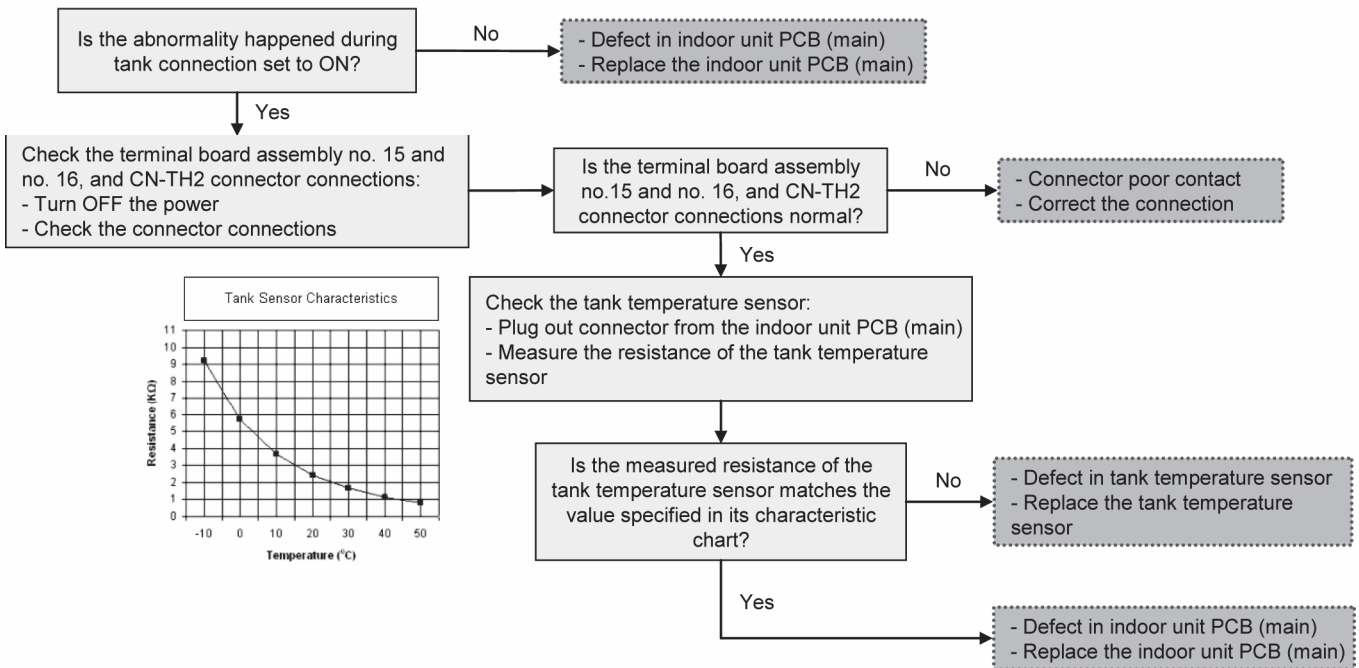
Continue for 5 seconds.

Troubleshooting:



Caution

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



16.5.20 PCB Communication Error (H74)

Malfunction Decision Conditions:

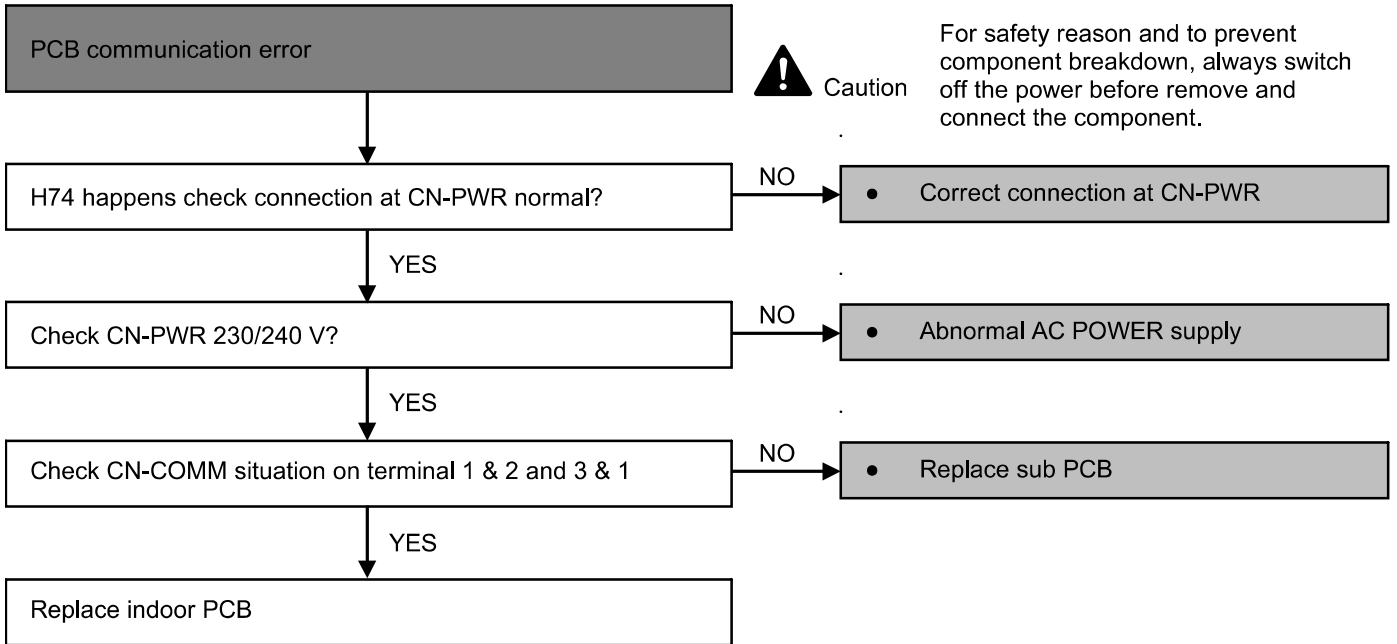
When External PCB connection is select "YES" and no communication with External PCB micon for 10 seconds and above.

Malfunction Caused:

- 1 Faulty connector connection.
- 2 Faulty indoor PCB.
- 3 Faulty indoor sub PCB.

Abnormality Judgment:

After 1 minute operation started.



16.5.21 Indoor-Control Panel Communication Abnormality (H76)

Malfunction Decision Conditions:

During standby and operation of cooling and heating, indoor-control panel error occur.

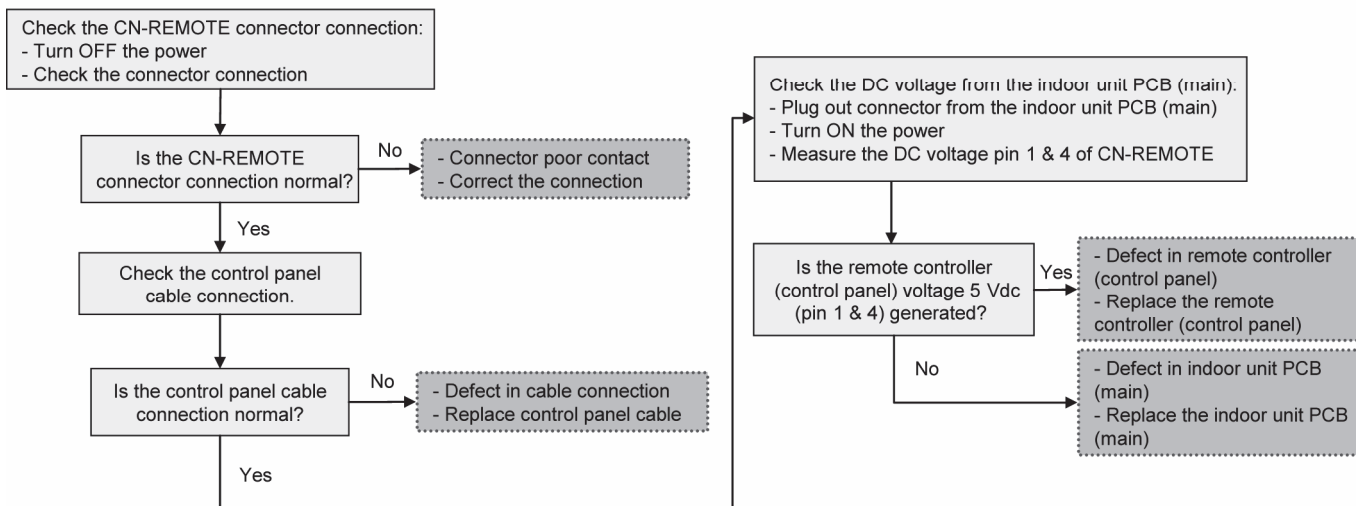
Malfunction Caused:

- 1 Faulty connector connection.
- 2 Faulty control panel.
- 3 Faulty indoor unit PCB (main).

Troubleshooting:



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



16.5.22 Indoor/Outdoor Abnormal Communication (H90)

Malfunction Decision Conditions:

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

Malfunction Caused:

- 1 Faulty outdoor unit PCB (main).
- 2 Faulty indoor unit PCB (main).
- 3 Indoor-outdoor signal transmission error due to wrong wiring.
- 4 Indoor-outdoor signal transmission error due to breaking of wire in the connection wires between the indoor and outdoor units.
- 5 Indoor-outdoor signal transmission error due to disturbed power supply waveform.

Abnormality Judgment:

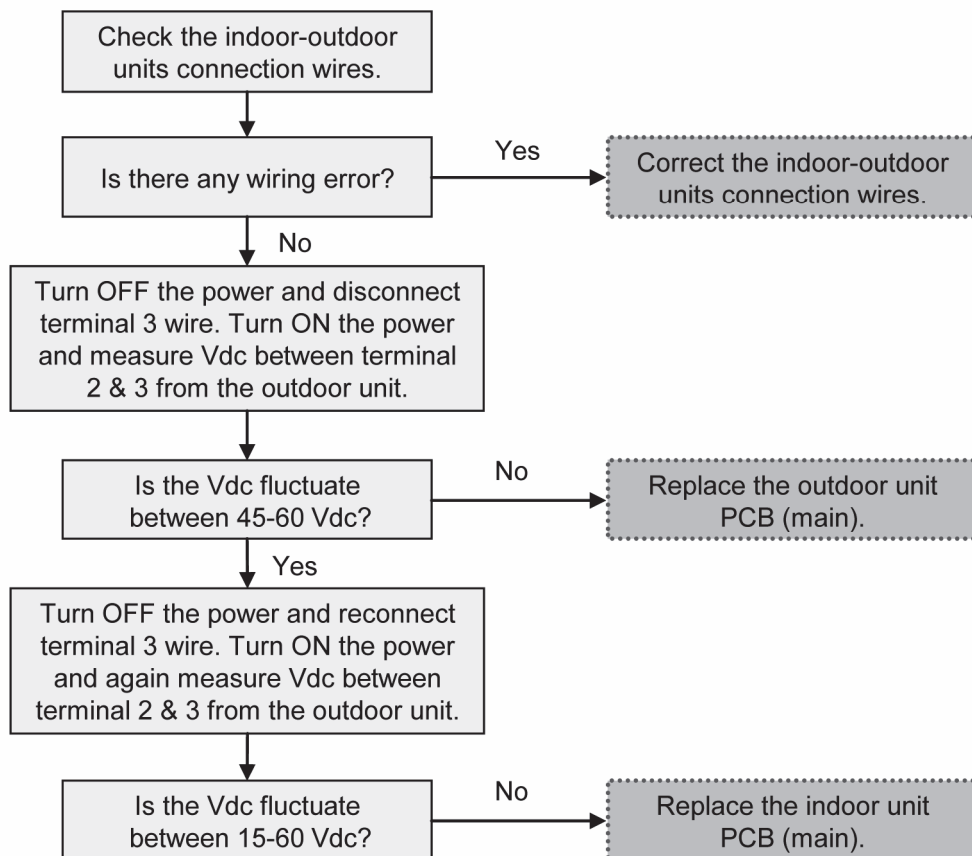
Continue for 1 minute after operation.

Troubleshooting:



Caution

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



16.5.23 Tank Booster Heater OLP Abnormality (H91)

Malfunction Decision Conditions:

During operation of tank booster heater, and tank booster heater OLP open circuit.

Malfunction Caused:

- 1 Faulty connector connection.
- 2 Faulty tank booster heater overload protector (OLP).
- 3 Faulty indoor unit PCB (main).

Abnormality Judgment:

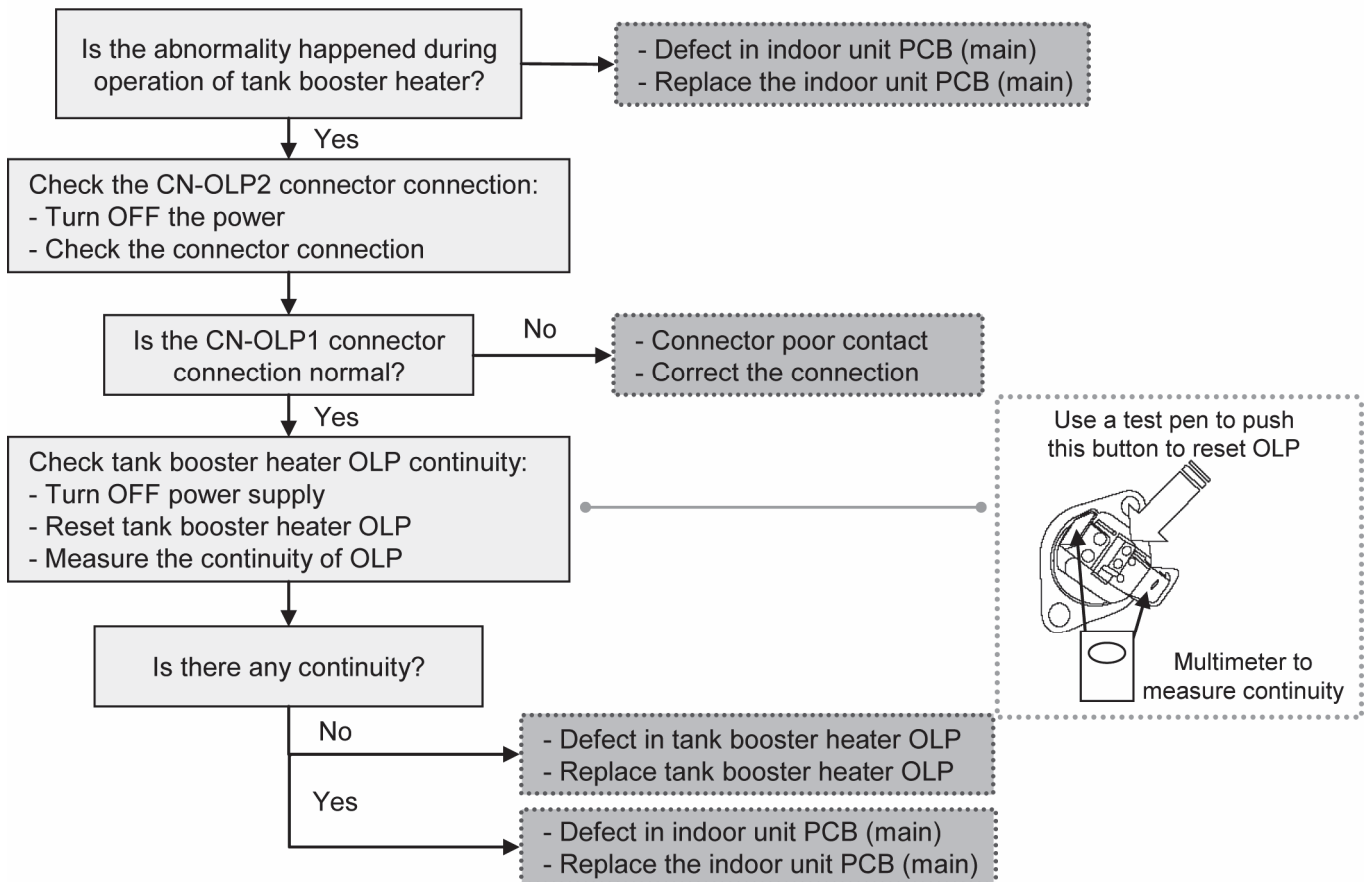
Continue for 60 seconds.

Troubleshooting:



Caution

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



16.5.24 Unspecified Voltage between Indoor and Outdoor (H95)

Malfunction Decision Conditions:

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

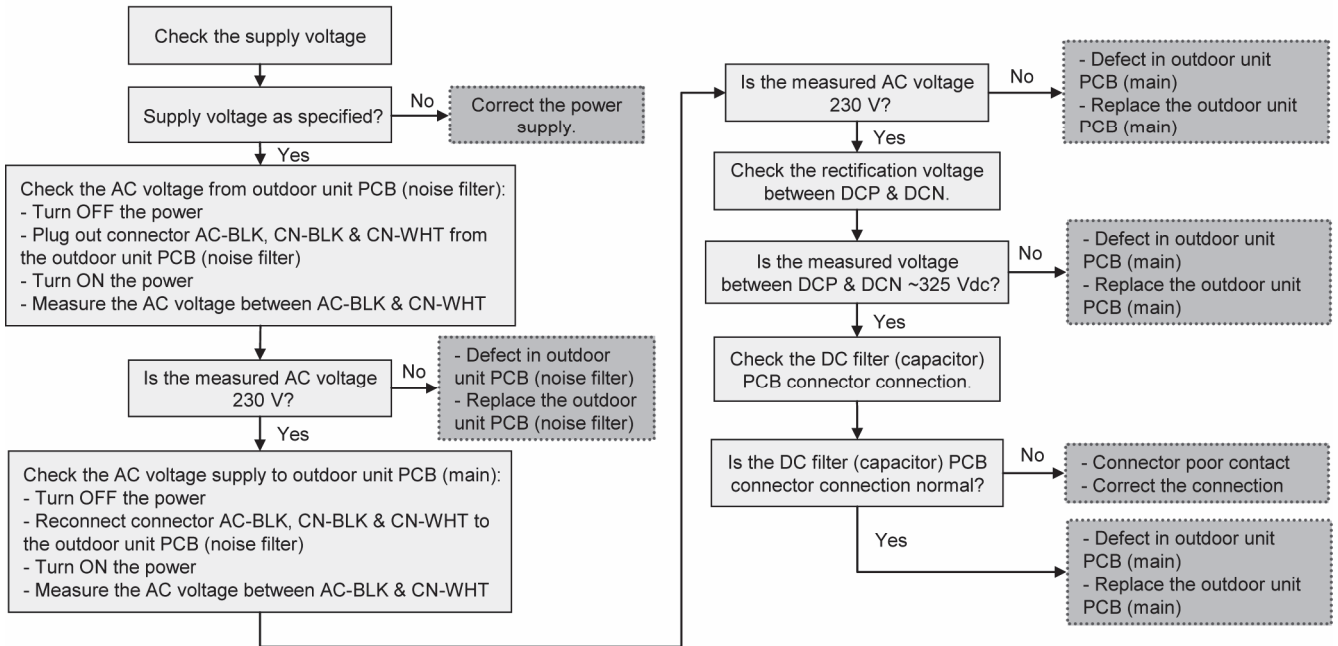
Malfunction Caused:

- 1 Insufficient power supply.
- 2 Faulty outdoor unit PCB (noise filter/main).

Troubleshooting:



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



16.5.25 Outdoor High Pressure Protection (H98)

Malfunction Decision Conditions:

During operation of heating, when pressure 4.0 MPa and above is detected by outdoor high pressure sensor.

Malfunction Caused:

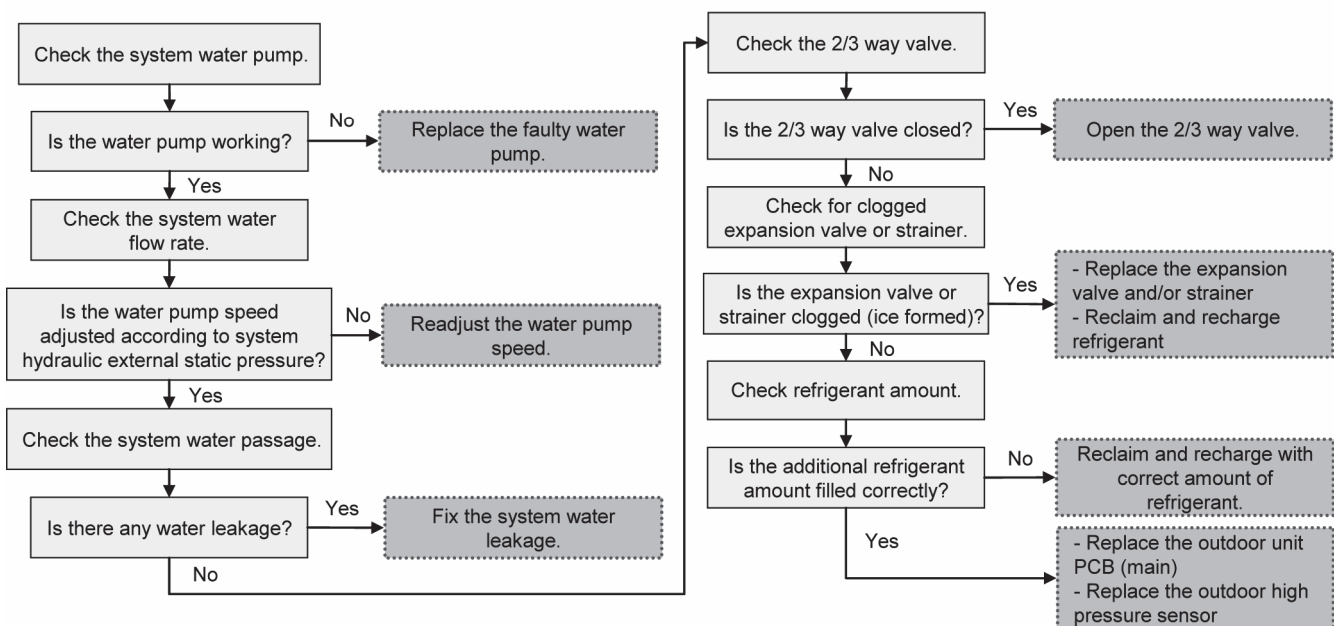
- 1 Faulty water pump.
- 2 Insufficient water flow rate in system.
- 3 Water leak in system.
- 4 2/3 way closed.
- 5 Clogged expansion valve or strainer.
- 6 Excessive refrigerant.
- 7 Faulty outdoor high pressure sensor.
- 8 Faulty outdoor unit PCB (main).

Troubleshooting:



Caution

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



16.5.26 Indoor Freeze-up Protection (H99)

Malfunction Decision Conditions:

During anti-freezing control in cooling operation, when the indoor refrigerant liquid temperature $< 0^{\circ}\text{C}$.

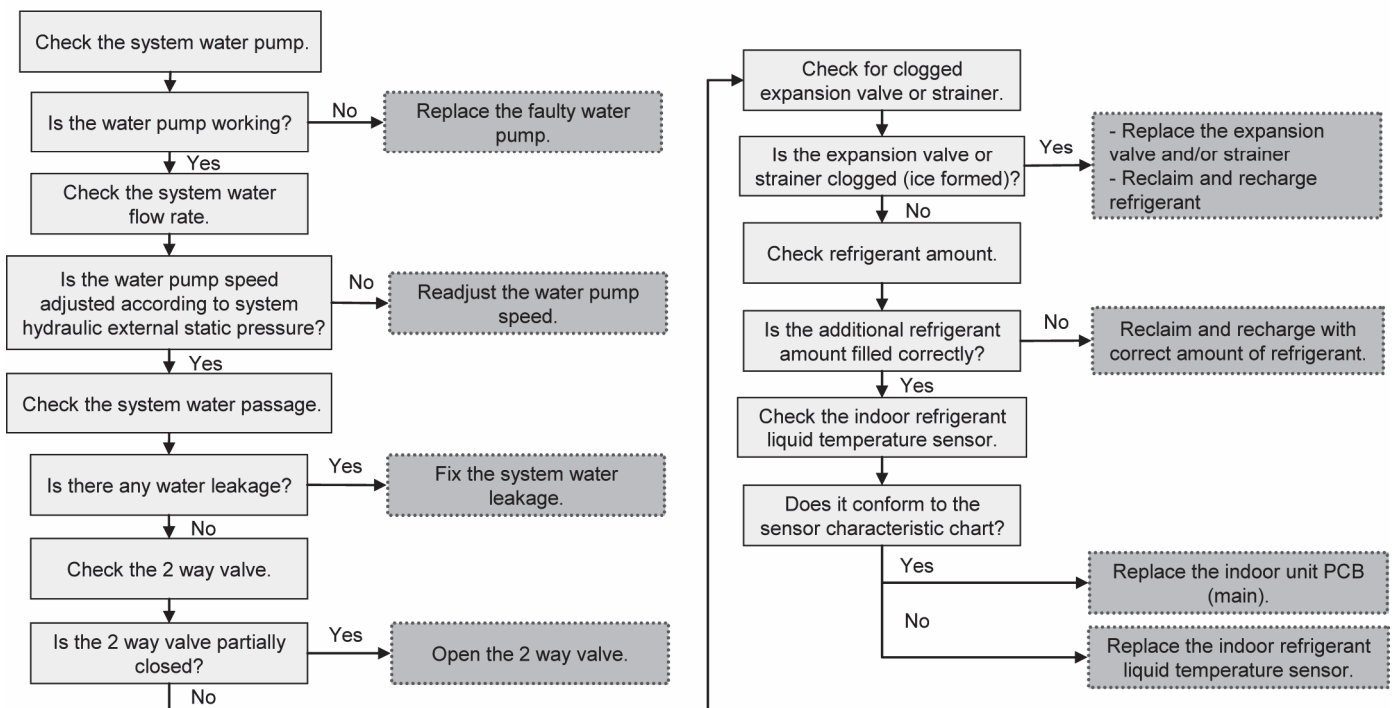
Malfunction Caused:

- 1 Faulty water pump.
- 2 Insufficient water flow rate in system.
- 3 Water leak in system.
- 4 2 way valve partially closed.
- 5 Clogged expansion valve or strainer.
- 6 Refrigerant shortage (refrigerant leakage).
- 7 Faulty indoor refrigerant liquid temperature sensor.
- 8 Faulty indoor unit PCB (main).

Troubleshooting:



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



16.5.27 Outdoor High Pressure Switch Activate (F12)

Malfunction Decision Conditions:

During operation of cooling and heating, when pressure 4.5 MPa and above is detected by outdoor high pressure switch.

Malfunction Caused:

- 1 Dust accumulation on the outdoor unit heat exchanger.
- 2 Air short circuit at outdoor unit.
- 3 Faulty water pump.
- 4 Insufficient water flow rate in system.
- 5 Water leak in system.
- 6 2/3 way valve closed.
- 7 Clogged expansion valve or strainer.
- 8 Excessive refrigerant.
- 9 Faulty outdoor high pressure sensor and switch.
- 10 Faulty outdoor unit PCB.

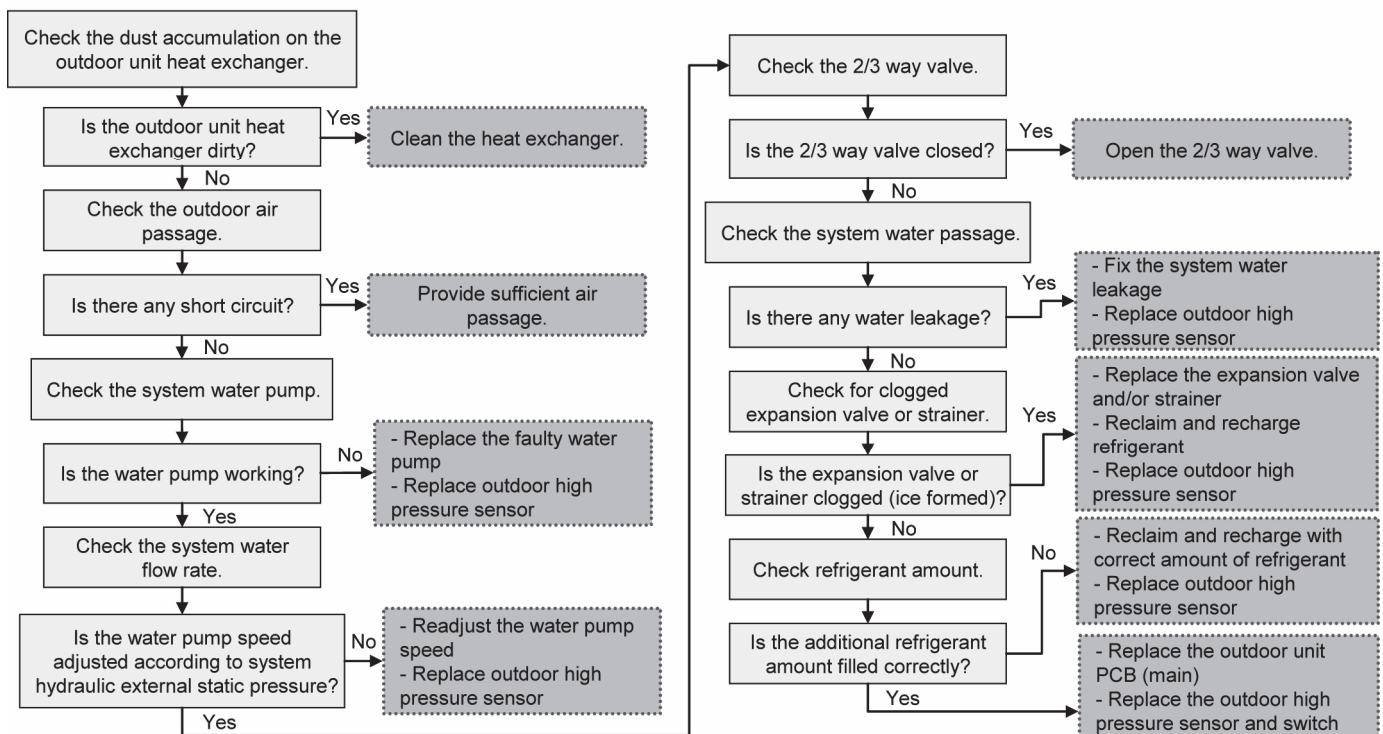
Abnormality Judgment:

Continue 4 times in 20 minutes.

Troubleshooting:



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



16.5.28 Compressor Rotation Failure (F14)

Malfunction Decision Conditions:

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

Malfunction Caused:

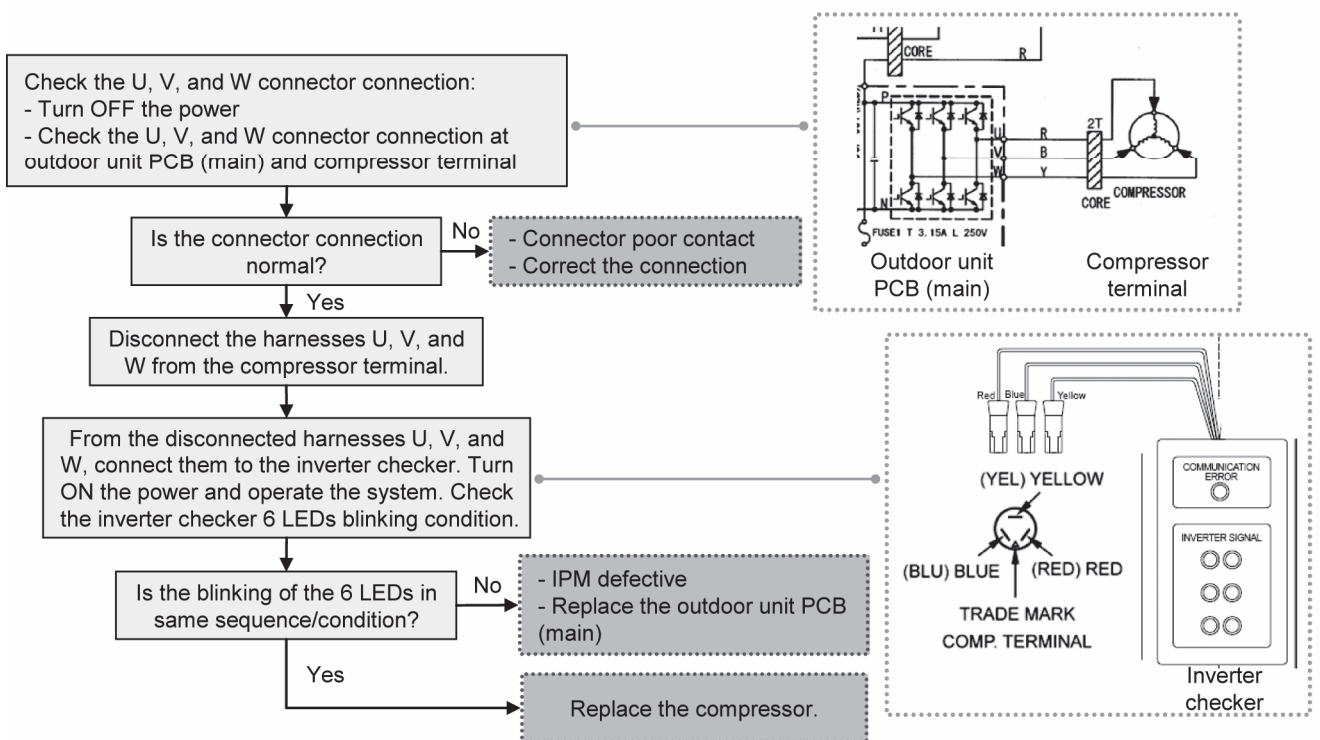
- 1 Compressor terminal disconnect.
- 2 Faulty outdoor unit PCB (main).
- 3 Faulty compressor.

Abnormality Judgment:

Continue 4 times in 20 minutes.

Troubleshooting: Caution

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



16.5.29 Outdoor Fan Motor (DC Motor) Mechanism Locked (F15)

Malfunction Decision Conditions:

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

Malfunction Caused:

- 1 Operation stop due to short circuit inside the fan motor winding.
- 2 Operation stop due to breaking of wire inside the fan motor.
- 3 Operation stop due to breaking of fan motor lead wires.
- 4 Operation stop due to fan motor Hall IC malfunction.
- 5 Operation error due to faulty outdoor unit PCB.

Abnormality Judgment:

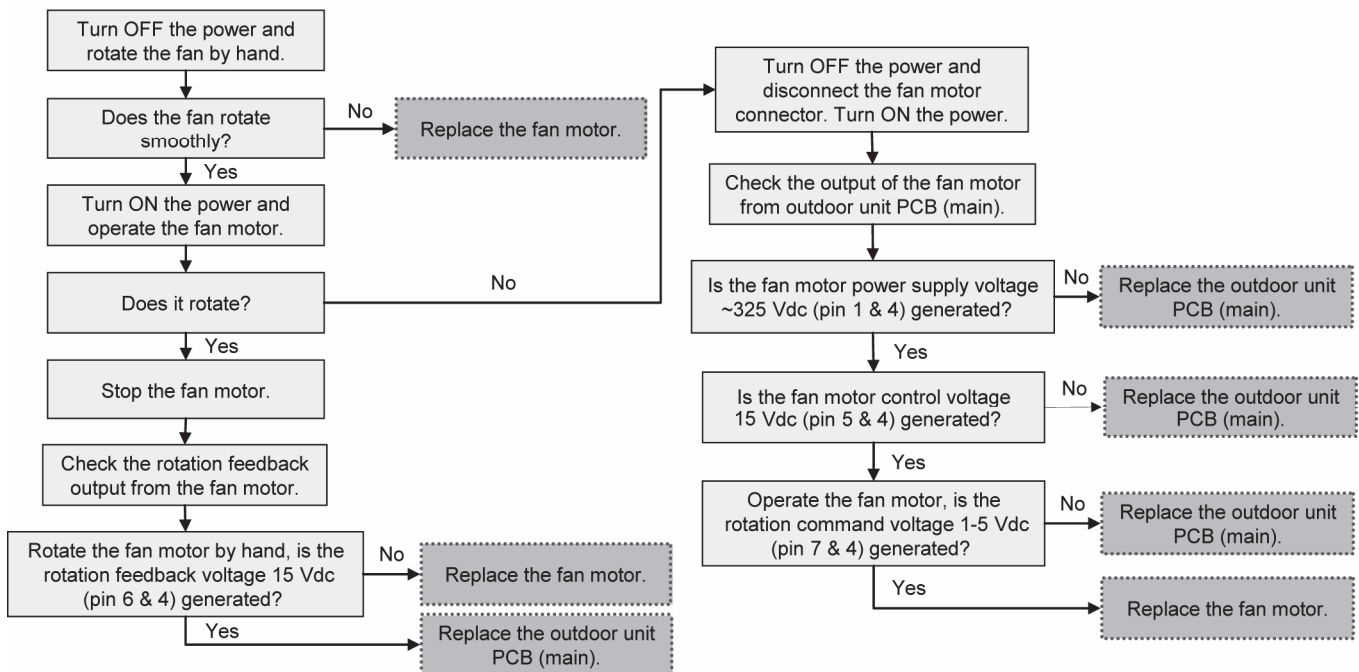
Continue 2 times in 30 minutes.

Troubleshooting:



Caution

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



16.5.30 Input Over Current Detection (F16)

Malfunction Decision Conditions:

During operation of cooling and heating, when outdoor current above 21.0 A (Heating) and 13.8 A (Cooling) [UD07HE5]] and 22.8 A (Heating) and 14.5 A (Cooling) [UD09HE5]] is detected by the current transformer (CT) in the outdoor unit PCB.

Malfunction Caused:

- 1 Excessive refrigerant.
- 2 Faulty outdoor unit PCB (main).

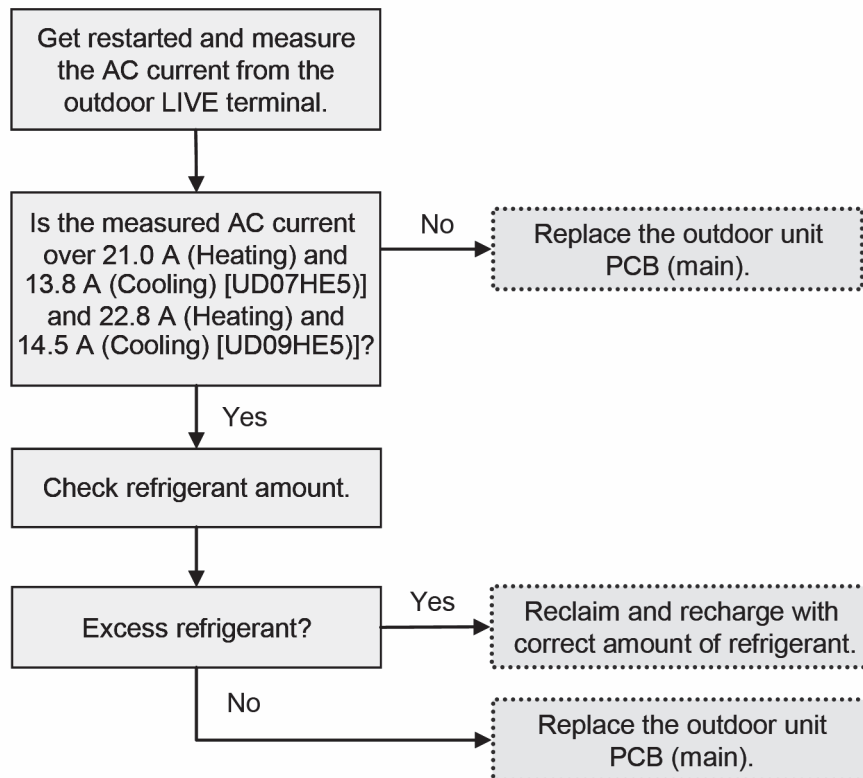
Abnormality Judgment:

Continue 3 times in 20 minutes.

Troubleshooting:



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



16.5.31 Compressor Overheating (F20)

Malfunction Decision Conditions:

During operation of cooling and heating, when temperature above 112°C is detected by the compressor tank temperature sensor.

Malfunction Caused:

- 1 Faulty compressor tank temperature sensor.
- 2 2/3 way valve closed.
- 3 Refrigerant shortage (refrigerant leakage).
- 4 Clogged expansion valve or strainer.
- 5 Faulty outdoor unit PCB (main).
- 6 Faulty compressor.

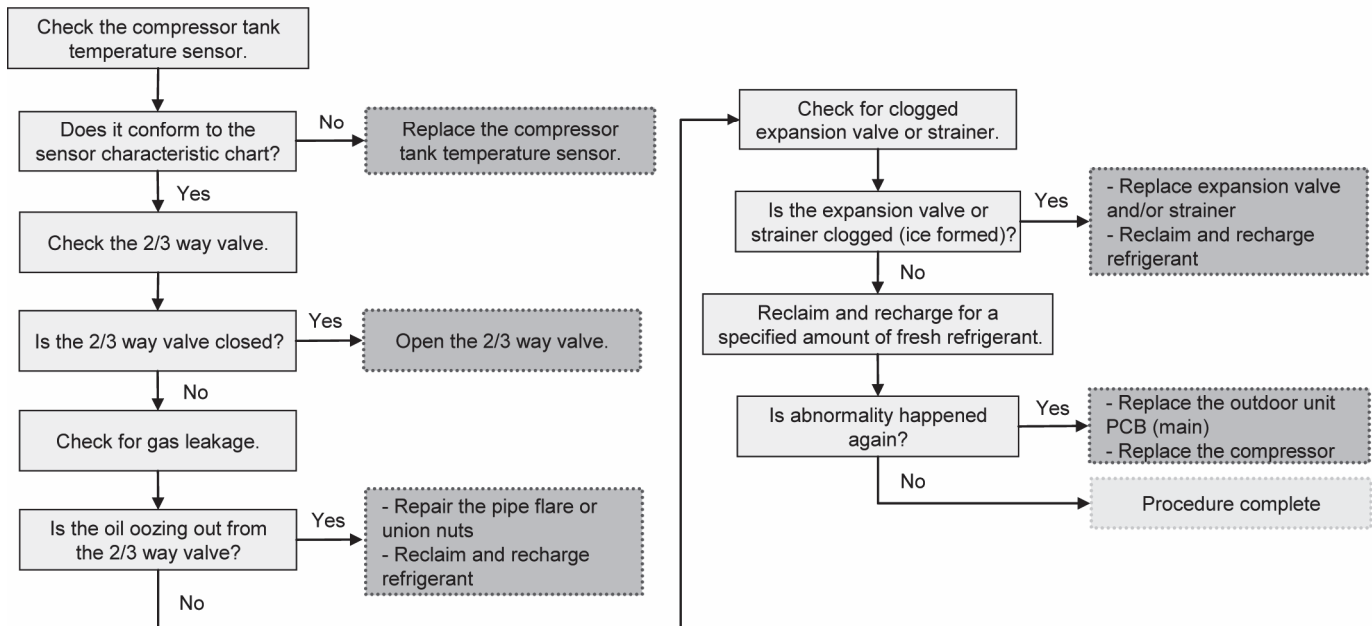
Abnormality Judgment:

Continue 4 times in 30 minutes.

Troubleshooting:



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



16.5.32 IPM Overheating (F22)

Malfunction Decision Conditions:

During operation of cooling and heating, when temperature 95°C is detected by the outdoor IPM temperature sensor.

Malfunction Caused:

- 1 Faulty outdoor unit fan motor.
- 2 Faulty outdoor unit PCB (main).

Abnormality Judgment:

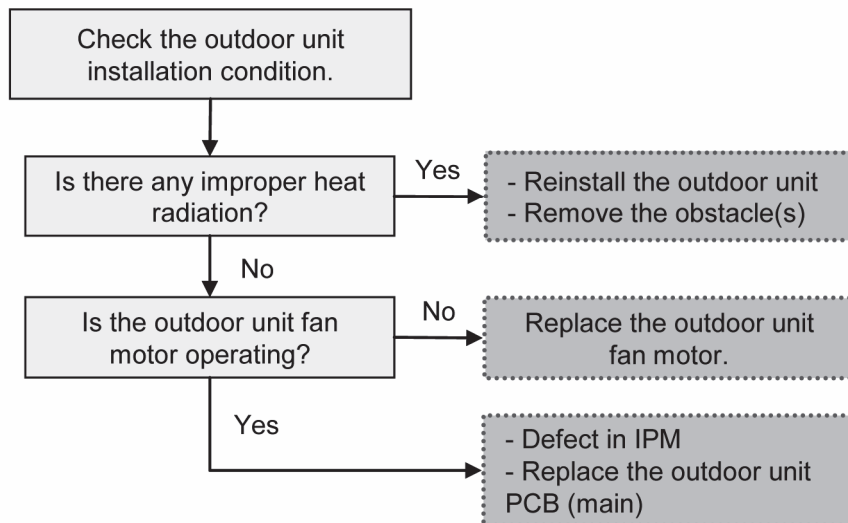
Continue 3 times in 30 minutes.

Troubleshooting:



Caution

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



16.5.33 Output Over Current Detection (F23)

Malfunction Decision Conditions:

During operation of cooling and heating, when outdoor DC current is above 34 A is detected by the IPM DC Peak sensing circuitry in the outdoor unit PCB (main).

Malfunction Caused:

- 1 Faulty outdoor unit PCB (main).
- 2 Faulty compressor.

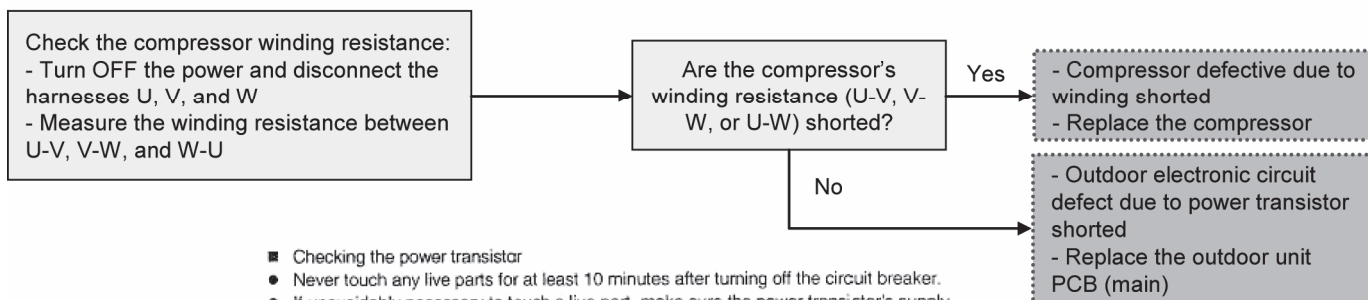
Abnormality Judgment:

Continue for 7 times.

Troubleshooting:



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



- Checking the power transistor
- Never touch any live parts for at least 10 minutes after turning off the circuit breaker.
- If unavoidably necessary to touch a live part, make sure 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.

Tester's negative terminal	Power transistor (+)	UVW	Power transistor (-)	UVW
Tester's positive terminal	UVW	Power transistor (+)	UVW	Power transistor (-)
Normal resistance	Several kohms to several Mohms			
Abnormal resistance	0 or ∞			

16.5.34 Refrigeration Cycle Abnormality (F24)

Malfunction Decision Conditions:

- 1 During operation of cooling and heating, compressor frequency > Frated.
- 2 During operation of cooling and heating, running current: $0.65 A < I < 1.65 A$.
- 3 During operation of cooling, water inlet temperature - indoor refrigerant liquid temperature < 5°C.
- 4 During operation of heating, indoor refrigerant liquid temperature - water inlet temperature < 5°C.

Malfunction Caused:

- 1 Faulty water inlet or indoor refrigerant liquid temperature sensors.
- 2 2/3 way valve closed.
- 3 Refrigerant shortage (refrigerant leakage).
- 4 Clogged expansion valve or strainer.
- 5 Faulty outdoor unit PCB (main).
- 6 Poor compression of compressor.

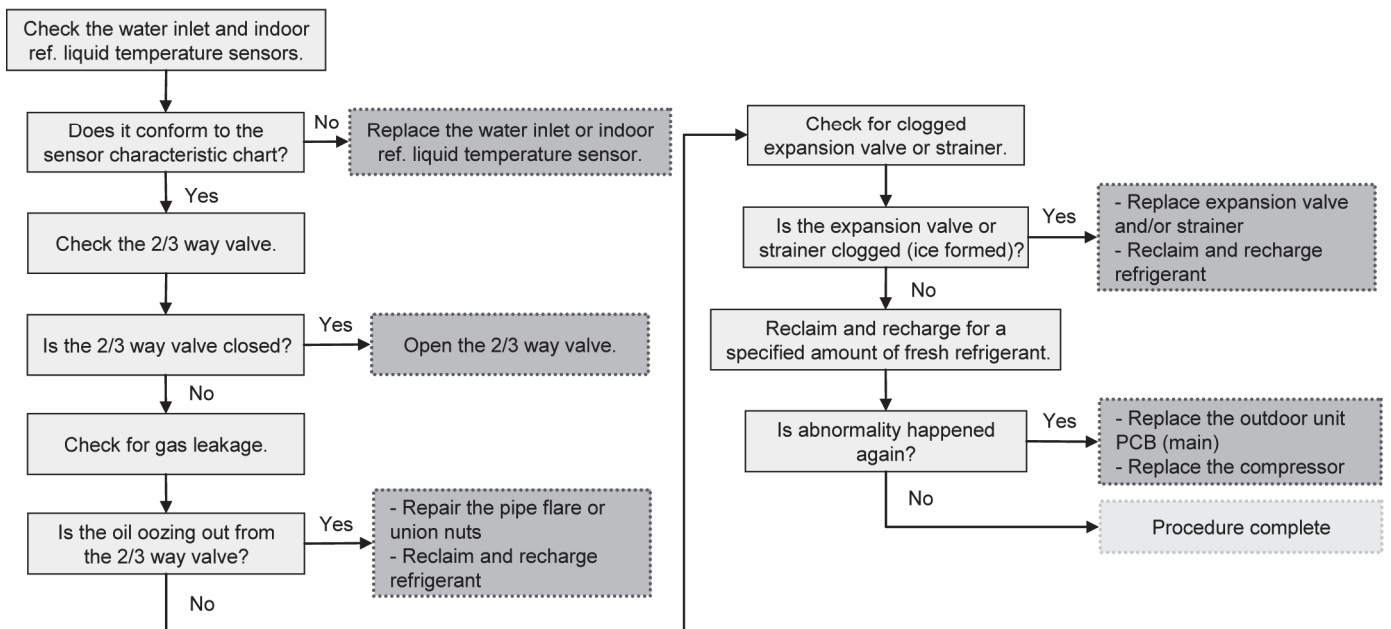
Abnormality Judgment:

Continue 2 times in 20 minutes.

Troubleshooting:



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



16.5.35 Four Way Valve Abnormality (F25)

Malfunction Decision Conditions:

- 1 During heating operation, when the indoor pipe temperature of thermostat ON indoor unit $< 0^{\circ}\text{C}$.
- 2 During cooling operation, when the indoor pipe temperature of thermostat ON indoor unit $> 45^{\circ}\text{C}$.

Malfunction Caused:

- 1 Faulty sensor.
- 2 Faulty connector connection.
- 3 Faulty outdoor unit PCB (noise filter/main).
- 4 Faulty four way valve.

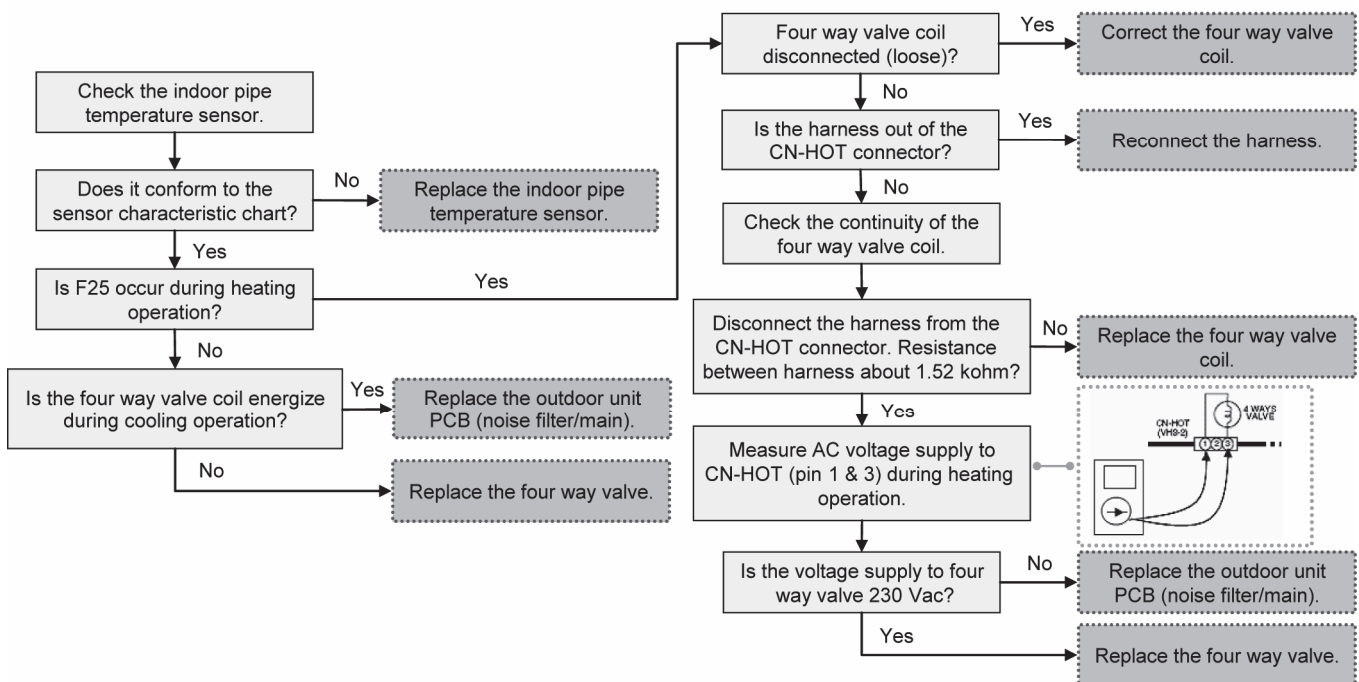
Abnormality Judgment:

Continue 4 times in 30 minutes.

Troubleshooting:



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



16.5.36 Outdoor High Pressure Switch Abnormal (F27)

Malfunction Decision Conditions:

During compressor stop, and outdoor high pressure switch is remain opened.

Malfunction Caused:

- 1 Faulty connector connection.
- 2 Faulty switch.
- 3 Faulty outdoor unit PCB (main).

Abnormality Judgment:

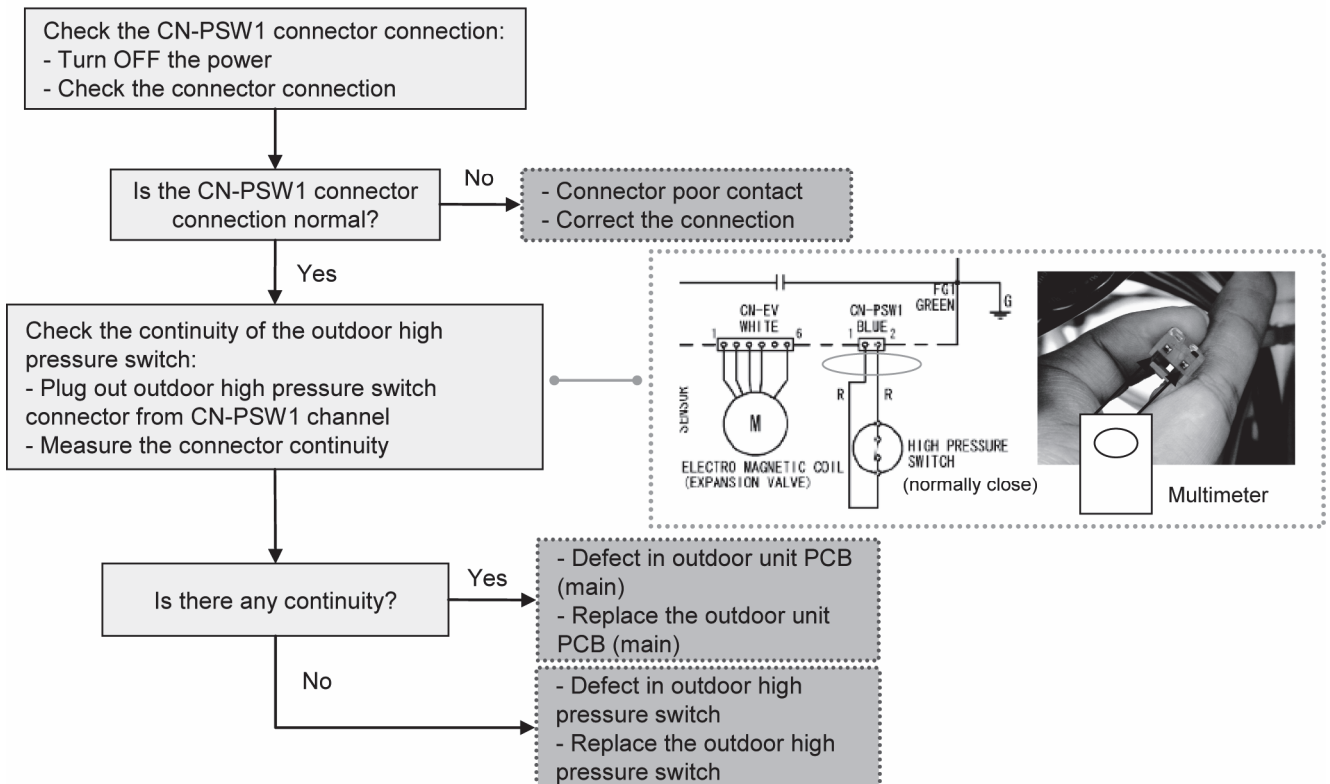
Continue for 1 minute.

Troubleshooting:



Caution

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



16.5.37 Indoor Water Outlet Temperature Sensor 2 Abnormality (F30)

Malfunction Decision Conditions:

During startup and operation of cooling and heating, the temperatures detected by the indoor water outlet temperature sensor 2 are used to determine sensor error.

Malfunction Caused:

- 1 Faulty connector connection.
- 2 Faulty sensor.
- 3 Faulty indoor unit PCB.

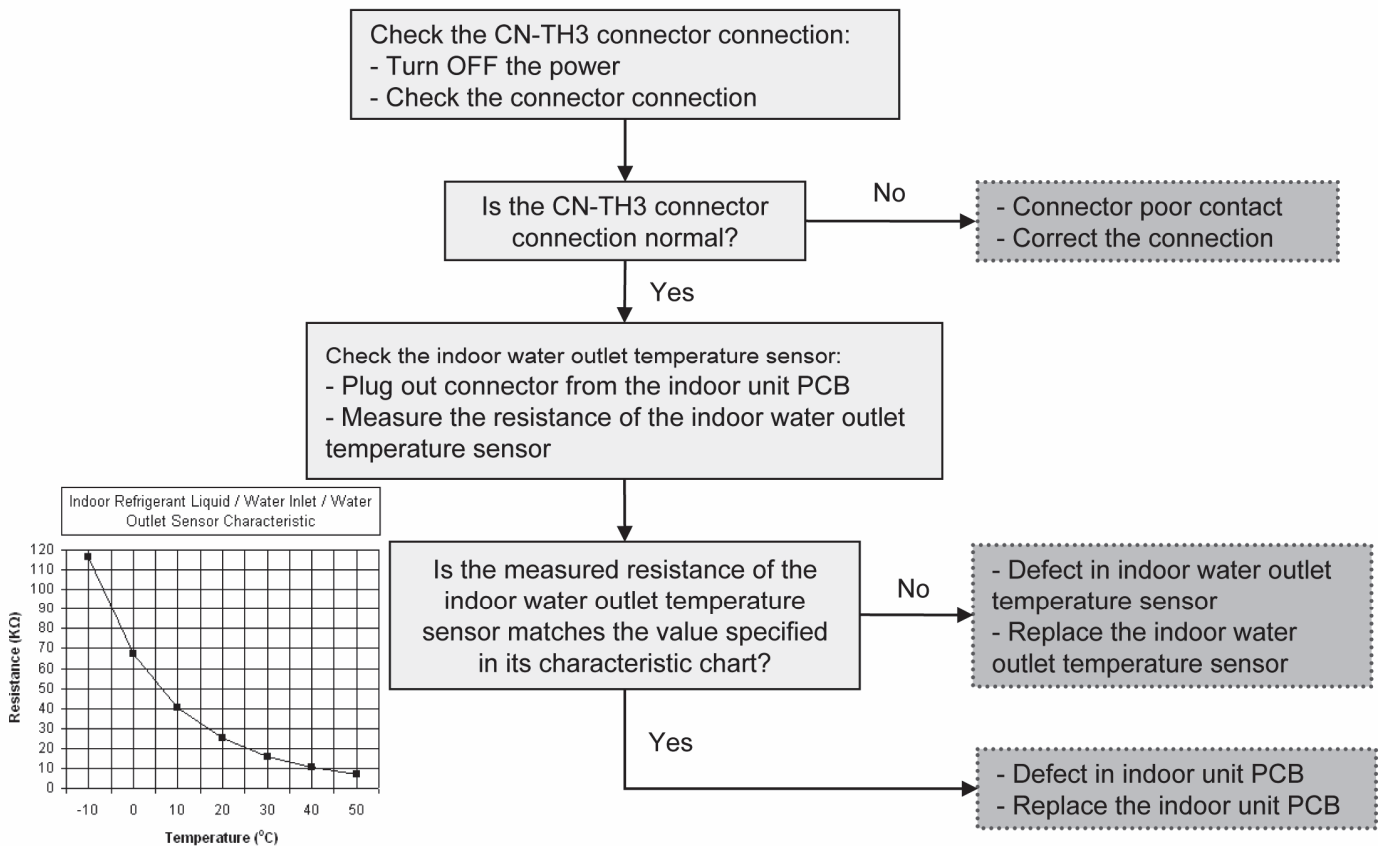
Abnormality Judgment:

Continue for 5 seconds.

Troubleshooting:



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



16.5.38 Outdoor Air Temperature Sensor Abnormality (F36)

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 error.

Malfunction Caused:

- 1 Faulty connector connection.
- 2 Faulty sensor.
- 3 Faulty outdoor unit PCB (main).

Abnormality Judgment:

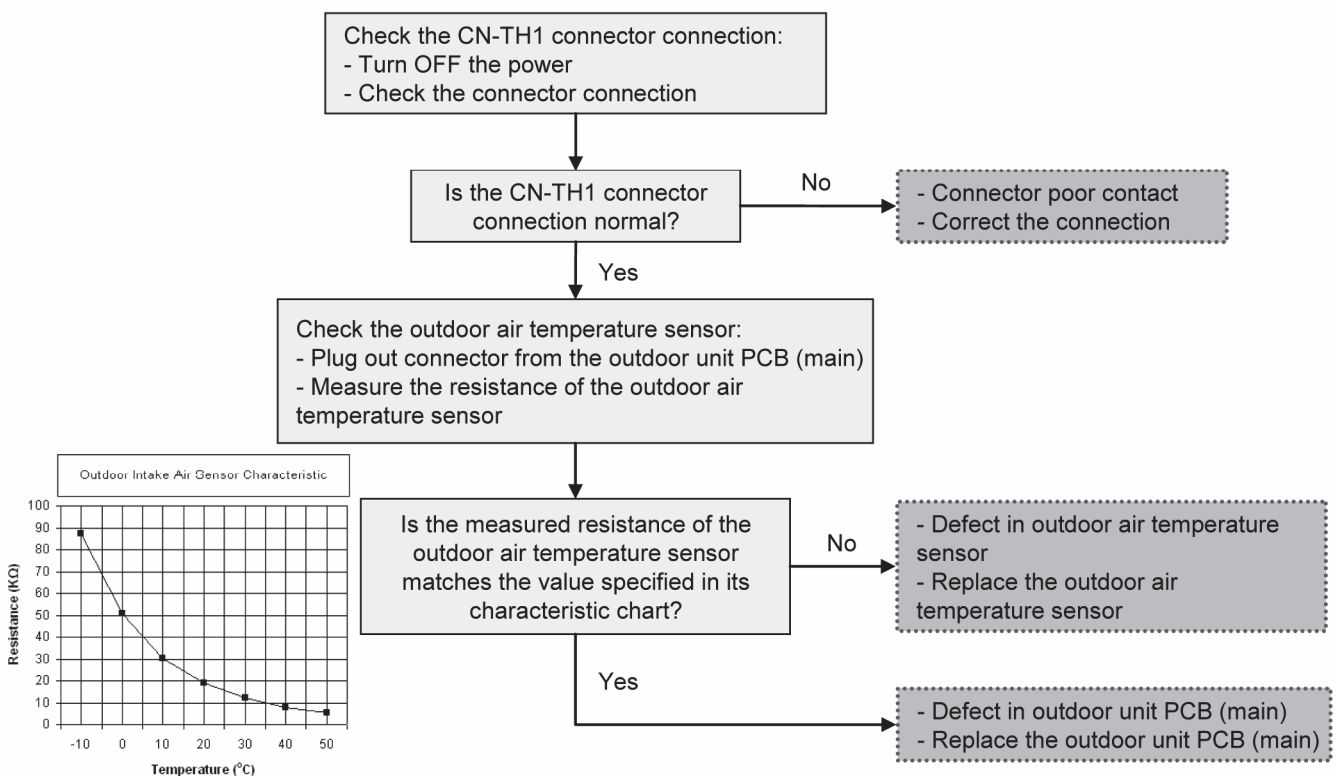
Continue for 5 seconds.

Troubleshooting:



Caution

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



16.5.39 Indoor Water Inlet Temperature Sensor Abnormality (F37)

Malfunction Decision Conditions:

During startup and operation of cooling and heating, the temperatures detected by the indoor water inlet temperature sensor are used to determine sensor error.

Malfunction Caused:

- 1 Faulty connector connection.
- 2 Faulty sensor.
- 3 Faulty indoor unit PCB (main).

Abnormality Judgment:

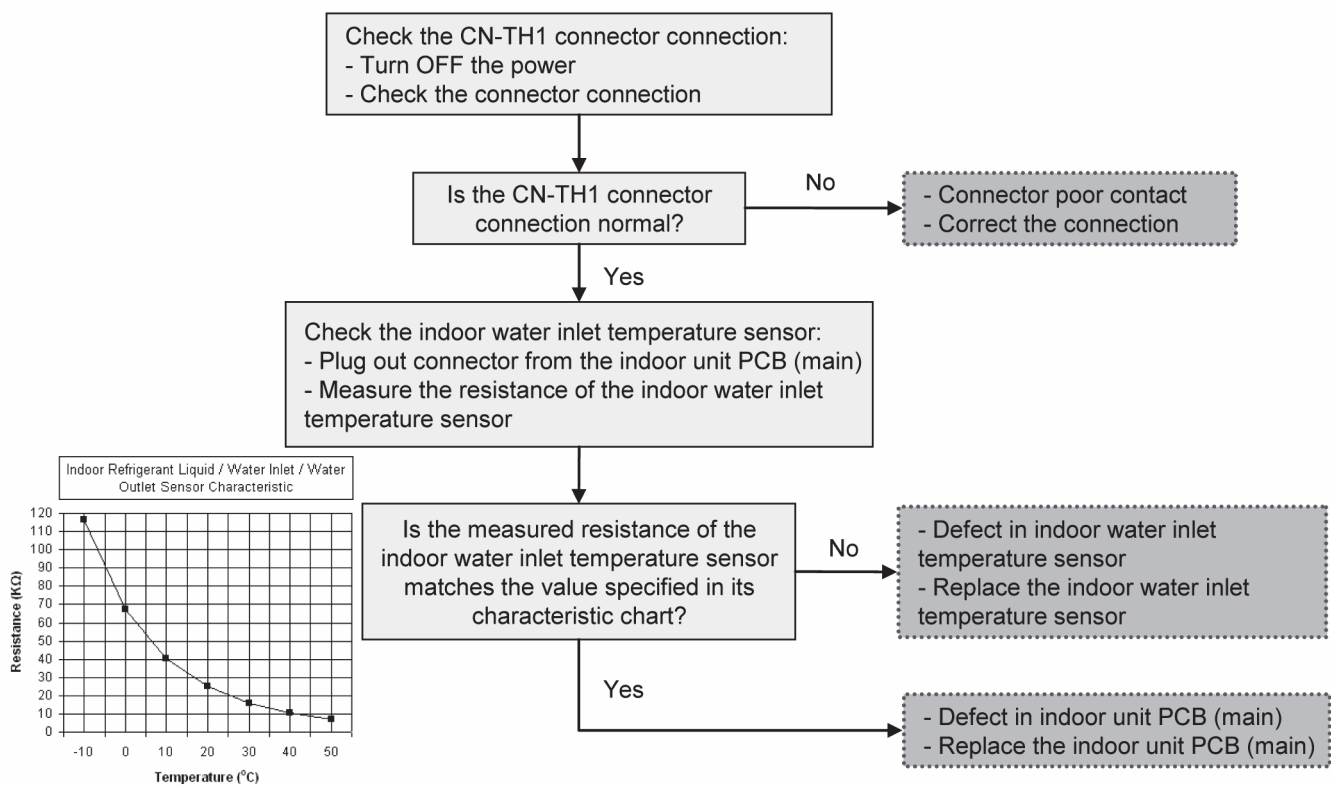
Continue for 5 seconds.

Troubleshooting:



Caution

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



16.5.40 Outdoor Discharge Pipe Temperature Sensor Abnormality (F40)

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 error.

Malfunction Caused:

- 1 Faulty connector connection.
- 2 Faulty sensor.
- 3 Faulty outdoor unit PCB (main).

Abnormality Judgment:

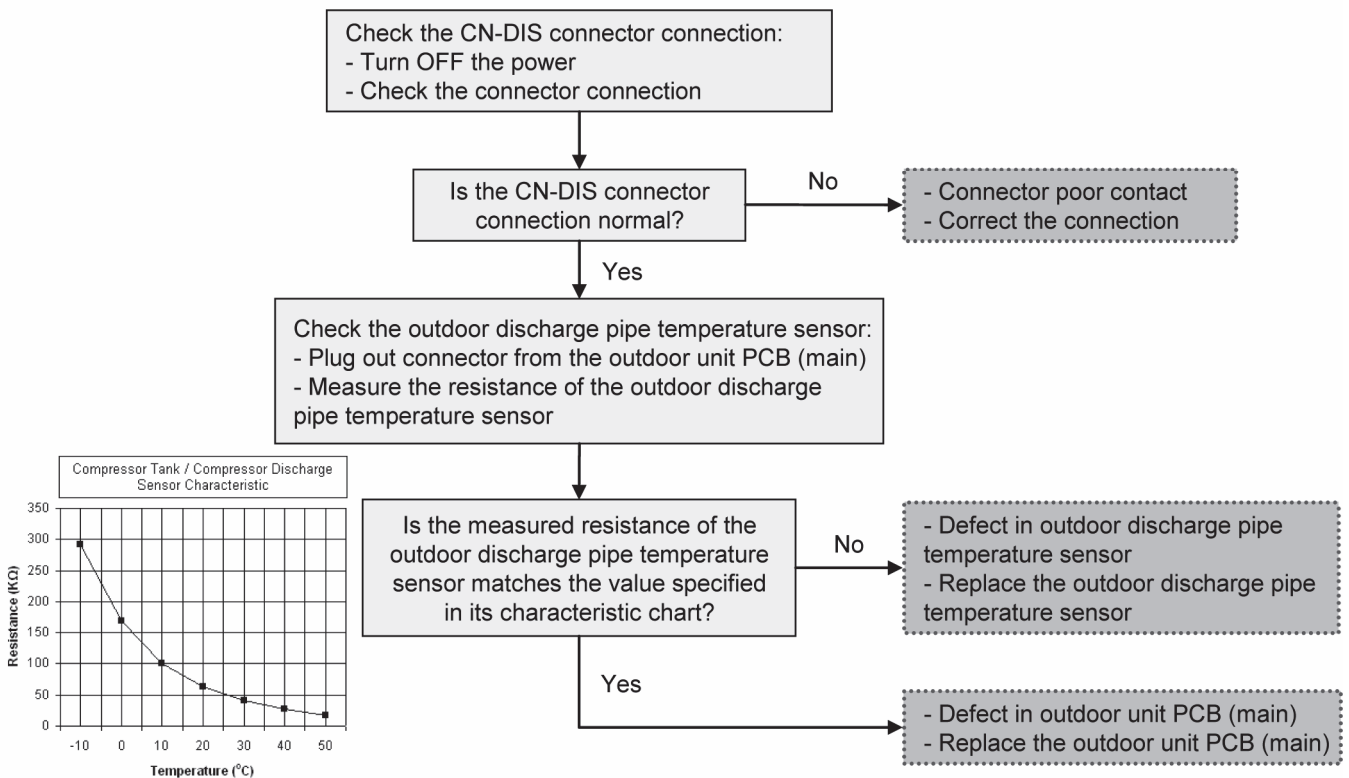
Continue for 5 seconds.

Troubleshooting:



Caution

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



16.5.41 Power Factor Correction (PFC) Abnormality (F41)

Malfunction Decision Conditions:

During operation of cooling and heating, when the PFC protection circuitry in the outdoor unit PCB (main) senses abnormal high DC voltage level.

Malfunction Caused:

- 1 Power supply surge.
- 2 Compressor windings not uniform.
- 3 Faulty outdoor unit PCB (main).

Abnormality Judgment:

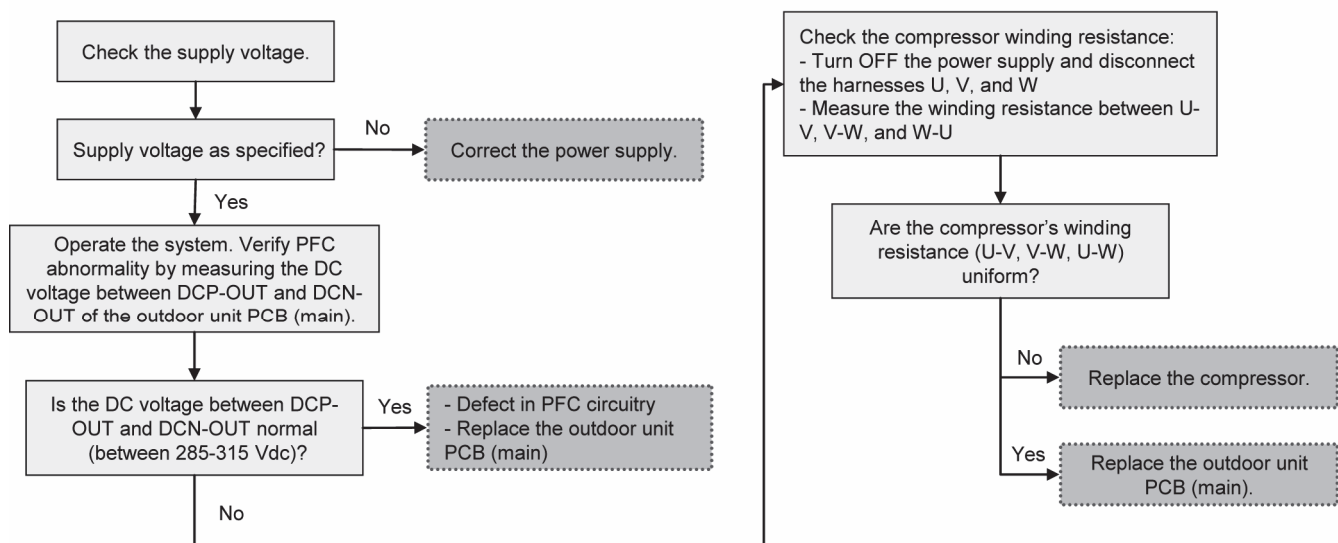
Continue 4 times in 10 minutes.

Troubleshooting:



Caution

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



16.5.42 Outdoor Pipe Temperature Sensor Abnormality (F42)

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 error.

Malfunction Caused:

- 1 Faulty connector connection.
- 2 Faulty sensor.
- 3 Faulty outdoor unit PCB (main).

Abnormality Judgment:

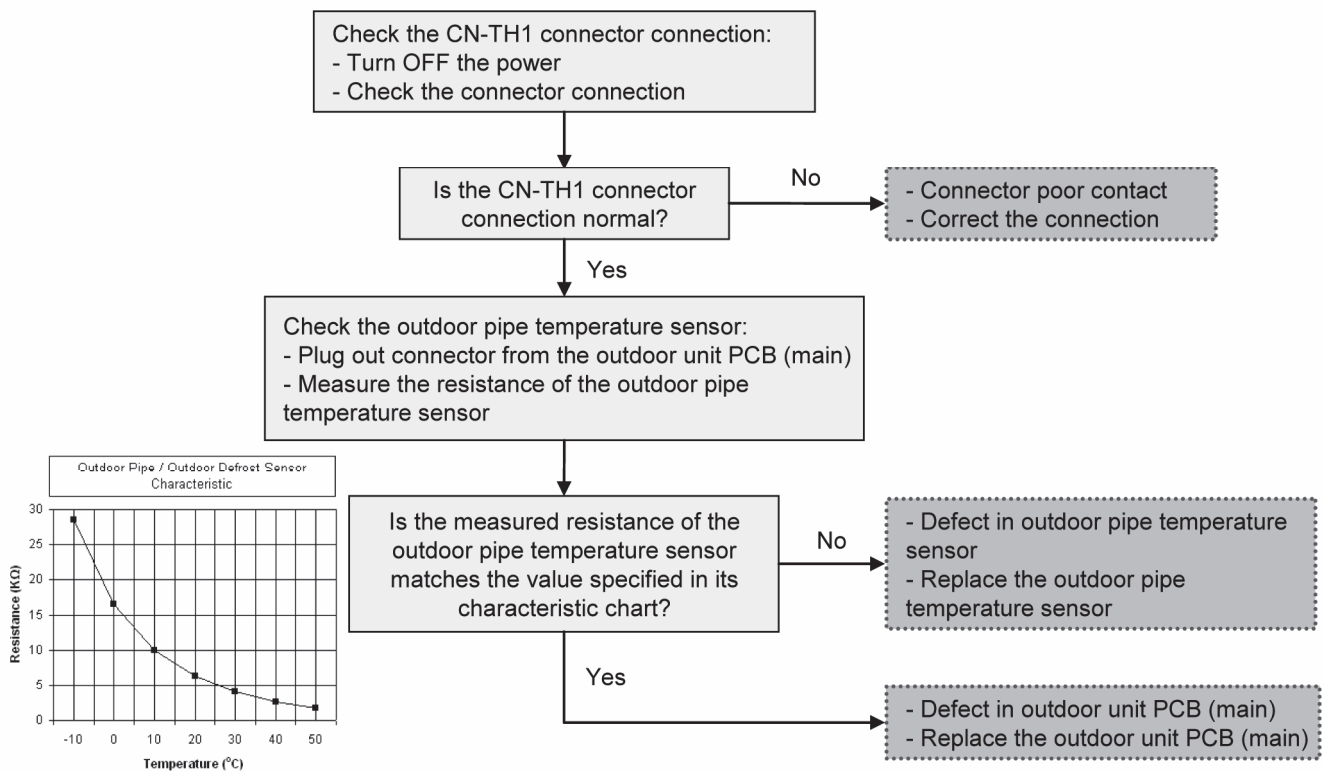
Continue for 5 seconds.

Troubleshooting:



Caution

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



16.5.43 Outdoor Defrost Temperature Sensor Abnormality (F43)

Malfunction Decision Conditions:

During startup and operation of cooling and heating, the temperatures detected by the outdoor defrost temperature sensor are used to determine sensor error.

Malfunction Caused:

- 1 Faulty connector connection.
- 2 Faulty sensor.
- 3 Faulty outdoor unit PCB (main).

Abnormality Judgment:

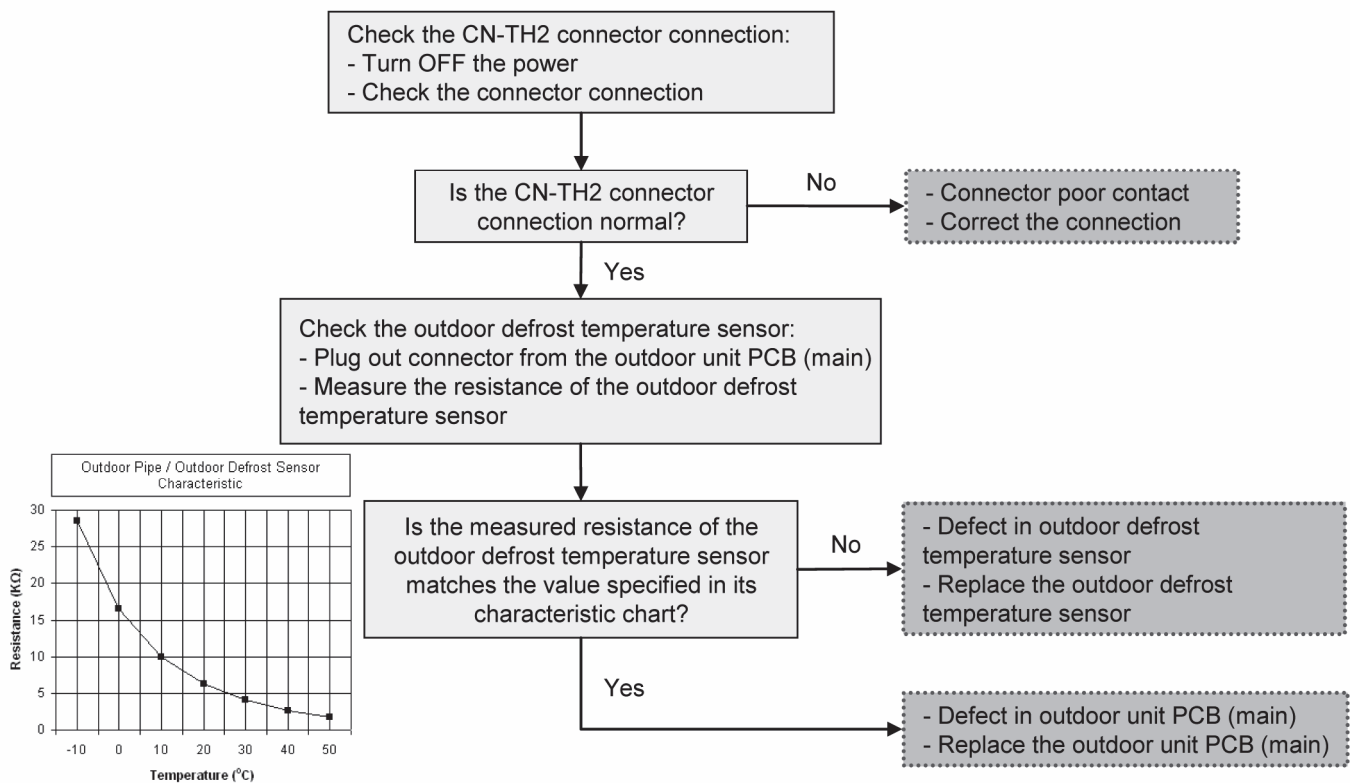
Continue for 5 seconds.

Troubleshooting:



Caution

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



16.5.44 Indoor Water Outlet Temperature Sensor Abnormality (F45)

Malfunction Decision Conditions:

During startup and operation of cooling and heating, the temperatures detected by the indoor water outlet temperature sensor are used to determine sensor errors.

Malfunction Caused:

- 1 Faulty connector connection.
- 2 Faulty sensor.
- 3 Faulty indoor unit PCB (main).

Abnormality Judgment:

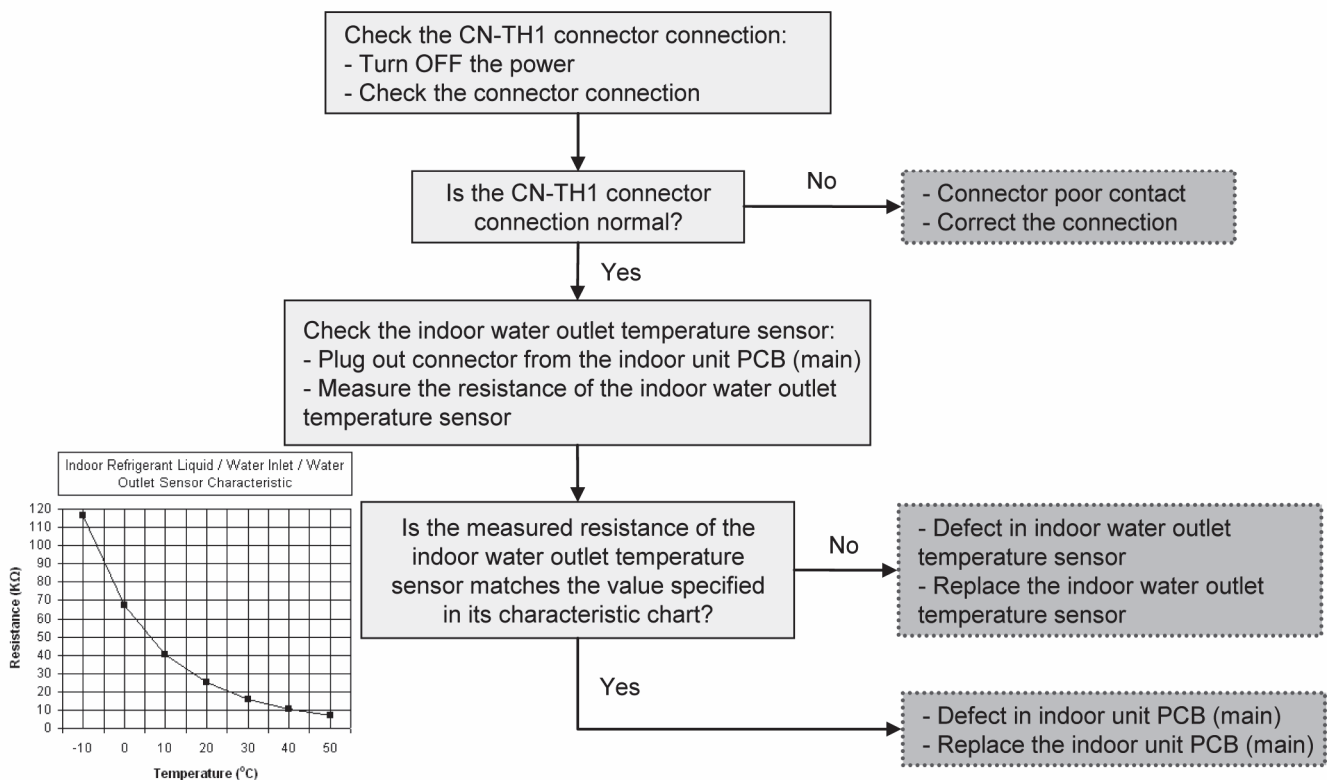
Continue for 5 seconds.

Troubleshooting:



Caution

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



16.5.45 Outdoor Current Transformer Open Circuit (F46)

Malfunction Decision Conditions:

A current transformer (CT) open circuit is detected by checking the compressor running frequency (\geq rated frequency) and CT detected input current (< 0.65 A) for continuously 20 seconds.

Malfunction Caused:

- 1 CT defective.
- 2 Faulty outdoor unit PCB (main).
- 3 Compressor defective (low compression).

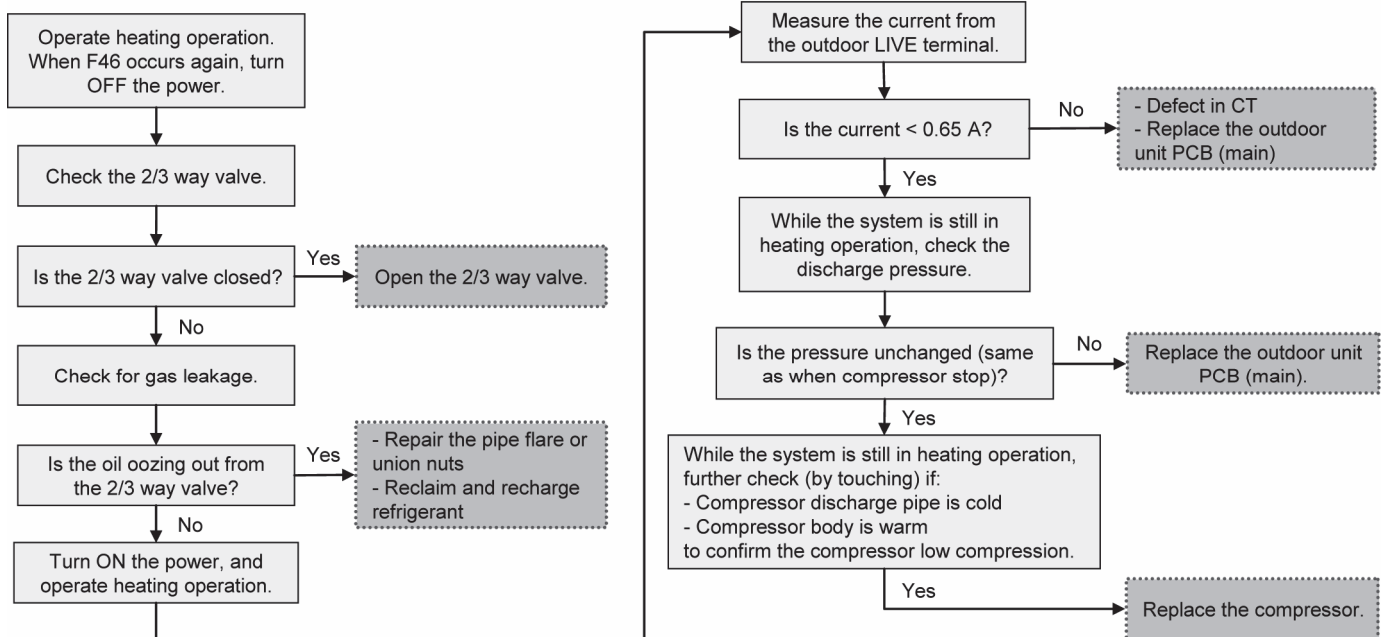
Abnormality Judgment:

Continue 3 times in 20 minutes.

Troubleshooting:



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



16.5.46 Cooling High Pressure Overload Protection (F95)

Malfunction Decision Conditions:

During operation of cooling, when pressure 4.0 MPa and above is detected by outdoor high pressure sensor.

Malfunction Caused:

- 1 Dust accumulation in the outdoor unit heat exchanger.
- 2 Air short circuit at outdoor unit.
- 3 2 way valve closed.
- 4 Faulty outdoor unit fan motor.
- 5 Clogged expansion valve or strainer.
- 6 Excessive refrigerant.
- 7 Faulty outdoor high pressure sensor.
- 8 Faulty outdoor unit PCB (main).

Troubleshooting:



Caution

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

