08 Troubleshooting

1. Indoor/Outdoor Unit Error Display

1-1. SH026EAV1/SH035EAV1

1) Error detection and reoperation

◆ If an error occurs during operation, the LED flashes to indicate that there is a problem then all operations stop except LED.

◆ When resuming operation with remote controller and switch, it determines error mode after normal operation.

2) Indoor unit LED lamp display at error detected

Error LED lamp Display					Cause	Actions to take
Operation (Green)	Defrost (Red)					
×	×	◑	×	×	• Breakaway from the room temperature sensor connector. • Cut the room temperature sensor wire.	• Check the connection between the room temperature wire and the main PCB of the indoor unit. • Check the pattern of the room temperature sensor part of the main PCB of the indoor unit and if parts are open or shorted.
◑	×	◑	×	×	• Disjoint of the in/out sensor connector of the indoor heat exchanger. • Cut the In/out sensor wire of the indoor heat exchanger	• Check the connection between the main PB of the indoor unit and heat exchange sensor wire. • Check the pattern of the heat exchanger of the main PCB of the indoor unit and if parts are open or shorted
×	×	×	◑	×	• Indoor fan motor is non-operative. • Indoor fan motor is operating slowly. • Indoor fan motor operates at an excessive speed.	• Check if a motor connector has been dismounted (CN44. CN73) • Check the fastening of the motor fan.
◑	×	×	◑	×	• Disjointed or cut off of outdoor temperature sensor. • Disjointed or cut off of the outdoor sensor of heat exchanger (COND). • Dismounted/ cut off of the outdoor discharge sensor.	• Check the PCB display window of the outdoor unit then refer to a breakdown diagnosis.
×	×	◑	◑	×	• Communication error between indoor units and outdoor units for more than 2 minutes. • 3 min. error of the outdoor unit tracking (multi-product specification). • Inconsistency between the number of installed units and communication units (multi-product specification).	• Check the connection between indoor and outdoor units. • Check the settings for indoor Main/ RMC address switch.
×	×	◑	◑	◑	• The detection of secondary high temperature at COND (outdoor heat exchanger). • The detection of secondary high temperature at discharge. • Reverse detection error.	• Check the PCB display window of the outdoor unit then refer to breakdown diagnosis.
×	×	×	◑	◑	• Deviation of float sensor connector • Cut of float sensor wire.	• Check the connection between main PCB and float sensor in the indoor unit.

● : On, ◑ : Flickering, × : OFF

◆ If you turn off the air conditioner when the LED is flickering, the LED will also turned off.

Error LED lamp Display					Cause	Actions to take
Operation (Green)	Defrost (Red)					
×	×	◑	×	◑	• Option setup error on peripherals	• Check the setting of DIP switch (SW05,SW06, SW07)
◑	×	◑	◑	×	• EEPROM part defect • EEPROM circuit defect	• Check non-delivery/ cool delivery/ non-insertion of IC51 Part Pin • Check non-delivery/ cool delivery/ non-insertion of IC51 peripheral circuit components.
◑	◑	◑	◑	◑	• EEPROM option none input/erroneous input.	• Re-input of option code for indoor unit

● : On, ◑ : Flickering, × : OFF

◆ If you turn off the air conditioner when the LED is flickering, the LED will also turned off.

1-2. JH026EAV1/JH035EAV1

1) Error detection and reoperation

◆ If an error occurs during operation, the LED flashes to indicate that there is a problem then all operations stop except LED.

◆ When resuming operation with remote controller and switch, it determines error mode after normal operation.

2) Indoor unit LED lamp display at error detecting

Abnormal conditions	LED lamp display					REMARK
	White					
	MPI					
Power reset	×	×	×	×	◑	-
Error of temperature sensor in the indoor unit (Open/Short)	×	×	◑	×	×	-
Error of heat exchanger sensorin the indoor unit	×	×	◑	×	◑	-
Indoor fan motor is non-operative Indoor fan motor is operating slowly Indoor fan motor operates at an excessive speed	×	◑	×	×	×	Indoor motor fan error
Error of the outdoor temperature sensor Error of the condensor temperature sensor Error of the discharge temperature sensor	×	◑	×	×	◑	-
1. Indoor and outdoor unit time out 2. Abnormal data reception more than 60 packet 3. Indoor unit is not connected 4. Communication error between the outdoor unit Main-Inverter Micom (After 1 minute of Main-Inverter detection)	×	◑	◑	×	×	1. Indoor unit error (Display is unrelated with operation) 2. Outdoor unit error (Display is unrelated with operation)
Communication error between indoor units	◑	◑	◑	×	×	-
[Self diagnosis]Power voltage detection between indoor and outdoor unit communication cable [Self diagnosis]Outdoor unit refrigerant leakage(Gas leak) [Self diagnosis]Outdoor fan restriction error [Inverter]Inverter compressor operation failure [Inverter]DC peak error [Inverter]DC Link voltage 150V or less, 410V or more [Inverter]Compressor rotation error [Inverter]Electric current error [Inverter]DC Link sensor error [Inverter]EEPROM READ/WRITE error [Inverter]Inverter zerocrossing error Setting the outdoor unit capacity option error	◑	◑	◑	×	×	-
Error of setting option switches for optional accessories	◑	×	◑	×	×	-
EEPROM error	×	◑	◑	×	×	-
EEPROM option error	◑	◑	◑	◑	◑	-
MPI no feedback Error	◑	×	×	×	×	-

1-3. TH026EAV1/TH035EAV1/TH052EAV1/TH060EAV1/CH070EAV1/CH090EAV/ CH105EAV/CH140EAV

1) Error detection and reoperation

◆ If an error occurs during operation, the LED flashes to indicate that there is a problem then all operations stop except LED.

◆ When resuming operation with remote controller and switch, it determines error mode after normal operation.

2) Indoor unit LED lamp display at error detected

Abnormal conditions	LED lamp display					REMARK
	Green	Red	Yellow	Green	Orange	
	⏻	*💧	🕒	🌀	▦	
Power reset	◑	×	×	×	×	-
Error of temperature sensor in the indoor unit (Open/Short)	×	×	◑	×	×	-
Error of heat exchanger sensor in the indoor unit	◑	×	◑	×	×	-
Error of the outdoor temperature sensor Error of the condensor temperature sensor Error of the discharge temperature sensor	◑	×	×	◑	×	-
Indoor and outdoor unit time out Abnormal data reception more than 60 packet Indoor unit is not connected Communication error between the outdoor unit Main-Inverter Micom (After 1 minute of Main-Inverter detection)	×	×	◑		×	1.Indoor unit error (Display is unrelated with operation) 2.Outdoor unit error (Display is unrelated with operation)
[Self diagnosis] Power voltage detection between indoor and outdoor unit communication cable. [Self diagnosis] Outdoor unit refrigerant leakage(Gas leak) [Self diagnosis] Outdoor fan restriction error [Inverter] Inverter compressor operation failure [Inverter] DC peak error [Inverter] DC Link voltage 150V or less, 410V or more [Inverter] Compressor rotation error [Inverter] Electric current error [Inverter] DC Link sensor error [Inverter] EEPROM READ/WRITE error [Inverter] Inverter zero crossing error Setting the outdoor unit capacity option error	×	×	◑	◑	◑	-
Detection of the float switch	×	×	×	◑	◑	-
Error of setting option switches for optional accessories	×	×	◑	×	◑	-
EEPROM error	◑	×	◑	◑	×	-
EEPROM option error	◑	◑	◑	◑	◑	-

● : On, ◑ : Flickering, × : OFF

◆ If you turn off the air conditioner when the LED is flickering, the LED will also turned off.

1. Indoor/Outdoor Unit Error Display

1-4. FH052EAV1/FH070EAV1

1) Error detection and reoperation

◆ If error occurs during the operation, badness is indicated by LED flickering and all operation is stopped except LED.

◆ When reoperating by remote control and switch determine the error mode after normal operation.

2) Indoor unit LED lamp display at error detecting

ERROR TYPE	LED LAMP DISPLAY						REMARK
Power reset	×	◑	×	×	×	×	-
Error of temperature sensor in the indoor unit (Open/Short)	×	×	◑	×	×	×	Displayed on appropriate indoor unit which is operating
Error of heat exchanger sensorin the indoor unit	×	◑	◑	×	×	×	Displayed on appropriate indoor unit which is operating
Error of the outdoor temperature sensor Error of the condenser temperature sensor Error of the discharge temperature sensor	×	◑	×	◑	×	×	Displayed on appropriate indoor unit which is operating Displayed on outdoor unit
Indoor and outdoor unit time out Abnormal data reception more than 60 packet Indoor unit is not connected Communication error between the outdoor unit Main-Inverter Micom(After 1 minute of Main-Inverter detection)	×	×	◑	◑	×	×	Error of indoor unit : Displayed on the indoor unit regardless of operation
[Self diagnosis] Power voltage detection between indoor and outdoor unit communication cable [Self diagnosis] Outdoor unit refrigerant leakage (Gas leak) [Self diagnosis] Outdoor fan restriction error [Inverter] Inverter compressor operation failure [Inverter] DC peak error [Inverter] DC Link voltage 150V or less, 410V or more [Inverter] Compressor rotation error [Inverter] Electric current error [Inverter] DC Link sensor error [Inverter] EEPROM READ/WRITE error [Inverter] Inverter zero crossing error Setting the outdoor unit capacity option error	×	×	◑	◑	◑	×	-
Error of setting option switches for optional accessories	×	×	◑	×	◑	×	-
EEPROM error	×	◑	◑	◑	×	×	-
EEPROM option error	◑	◑	◑	◑	◑	◑	-

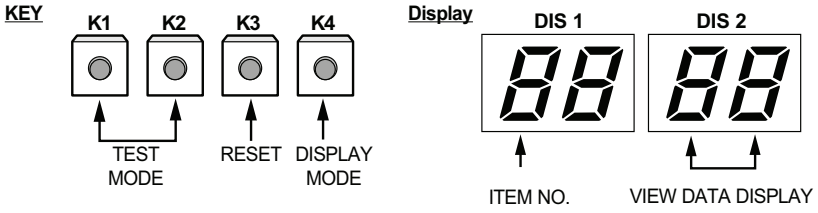
● : On, ◑ : Flickering, × : OFF

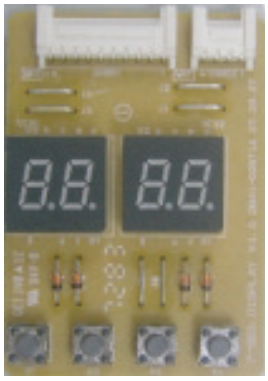
◆ If you turn off the air conditioner when the LED is flickering, the LED will also turned off.

1-5. Outdoor Unit 7-segment Error Display

1) 7-segment

(1) Setting of PCB Display of the Outdoor unit





Function / Number of press times	component	component	component	component
1	Test operation at heating mode	Test operation at cooling mode	Reset	View mode change
1	End	End	-	-

(2) K4 View mode Display changes

Push	Display Explanation
1	Target Compressor Frequency
2	Order Compressor Frequency
3	Current Discharge Temperature
4	Target Discharge Temperature
5	EEV current step
6	Condenser Temperature
7	Outdoor Temperature
8	Indoor Eva-pipe Temperature
9	Indoor Temperature
10	Indoor Fan RPM
11	Outdoor Fan RPM
12	Current
13	Safety Control
14	Version(Main Micom)
15	Current Compressor Frequency

1-5. Outdoor Unit 7-segment Error Display

2) Outdoor unit

Error mode	Content	Measure	Product operation status in case of error	Error type
			Outdoor unit compressor/ Outdoor unit Fan	
101	Indoor unit communication error	Check the communication line for indoor units, check the power supply of the communication phase (DC)	Operation-Off	Communication error
102	Communication time-out error between indoor/outdoor unit 6-packet over error	Check the communication line for indoor units, check the power supply of the communication phase (DC)	Operation-Off	Communication error
121	Indoor temperature sensor (open/short error)	Check the temp. sensor of the indoor unit room. Check the indoor PCB connector CN21(white)	Operation-Off	Indoor sensor error
122	Indoor unit Eva In sensor (open/short)	Check the indoor unit drainage pipe sensor Check the indoor PCB connector CN21 (white)	Operation-Off	Indoor sensor error
128	Dismount of indoor unit Eva In sensor	Check the drainage pipe has been dismounted	Operation-Off	Indoor sensor error
153	Secondary detection of indoor floating switch	Check the indoor unit's float sensor Check the indoor PCB connector CN51 (black)	Operation-Off	Self-diagnosis error
201	Indoor unit not connected	Check the indoor unit connection Check the indoor unit option	Operation-Off	Communication error
203	Communication error between indoor/outdoor unit INV and Main Micom (1 min.)	Check the Main MICOM Check the inverter MICOM	Operation-Off	Communication error
221	Outdoor temperature sensor error	Check the connection status of the sensor Check the sensor location Check the resistance values of sensor	Operation-Off	Outdoor sensor error
237	Cond. temperature sensor error	Check the connection status of the sensor Check the sensor location Check the resistance values of sensor	Operation-Off	Outdoor sensor error
251	[inverter] Emission temperature sensor error	Check the connection status of the sensor Check the sensor location Check the resistance values of sensor	Operation-Off	Outdoor sensor error
416	Excessive temperature emission	Not an error (discharge temp. control)	Operation-Off	Outdoor unit protection control error
425	Power cable connection error	Check the status of power connection	Operation-Off	Outdoor sensor error

Error mode	Content	Measure	Product operation status in case of error	Error type
			Outdoor unit compressor/ Outdoor unit Fan	
450	Non-connection error of indoor and outdoor Communication wire (connected to the power terminal)	Check the status of power connection Check the connection status of the communication line	Operation-Off	Self-diagnosis error
458	Outdoor fan 1 error	Check the input power connection status Check the connection status between the motor and PCB in outdoor unit Check the fuse of indoor/outdoor units	Operation-Off	Self-diagnosis error
461	[inverter] Compressor operation error	Check the connection status of the compressor Check the resistance between different phases in compressor	Operation-Off	Outdoor unit protection control error
462	Discharge current error/ PFC over-current error	Check the input power Check refrigerant is filled Check outdoor fan operates normally	Operation-Off	Outdoor unit protection control error
464	[inverter] IPM over current error	Check refrigerant is filled Check the connection status of compressor and if it operates normally Check for any obstacles around indoor/ outdoor units	Operation-Off	Outdoor unit protection control error
467	[inverter] Compressor rotation error	Check the connection status of the compressor Check the resistance between different phases in compressor	Operation-Off	Outdoor unit protection control error
468	[inverter] Current sensor error	Check PCB operates normally	Operation-Off	Outdoor unit protection control error
469	[inverter] DC link voltage sensor error	Check the connection of input power Check the status of RY21 and R2000 of Inverter PCB	Operation-Off	Outdoor unit protection control error
471	[inverter] OTP error	Check PCB operates normally	Operation-Off	Outdoor unit protection control error
475	Outdoor fan 2 error	Check the connection status of input power Check the connection status of motor and outdoor PCB Check the fuse of indoor/outdoor unit	Operation-Off	Self-diagnosis error
554	Gas leakage error	Check refrigerant is filled Check the indoor EVA sensor	Operation-Off	Self-diagnosis error
556	Inconsistent volume	Check the indoor unit's option code	Operation-Off	Outdoor unit protection control error

1-6. Wired Remote Controller Error Display(COM2)

1) Wired remote controller

◆ If an error occurs TEST is displayed on the wired remote controller.
◆ To see an error code, please press the test button.

Error mode	Content	Measure	Product operation status in case of error	Error type
			Outdoor unit compressor/ Outdoor unit Fan	
101	Indoor unit communication error	Check the communication line for indoor units, check the power supply of the communication phase (DC)	Operation-Off	Communication error
102	Communication time-out error between indoor/outdoor unit 6-packet over error	Check the communication line for indoor units, check the power supply of the communication phase (DC)	Operation-Off	Communication error
121	Indoor temperature sensor (open/short error)	Check the temp. sensor of the indoor unit room. Check the indoor PCB connector CN21(white)	Operation-Off	Indoor sensor error
122	Indoor unit Eva In sensor (open/short)	Check the indoor unit drainage pipe sensor Check the indoor PCB connector CN21 (white)	Operation-Off	Indoor sensor error
128	Dismount of indoor unit Eva In sensor	Check the drainage pipe has been dismounted	Operation-Off	Indoor sensor error
153	Secondary detection of indoor floating switch	Check the indoor unit's float sensor Check the indoor PCB connector CN51 (black)	Operation-Off	Self-diagnosis error
201	Indoor unit not connected	Check the indoor unit connection Check the indoor unit option	Operation-Off	Communication error
203	Communication error between indoor/outdoor unit INV and Main Micom (1 min.)	Check the Main MICOM Check the inverter MICOM	Operation-Off	Communication error
221	Outdoor temperature sensor error	Check the connection status of the sensor Check the sensor location Check the resistance values of sensor	Operation-Off	Outdoor sensor error
237	Cond. temperature sensor error	Check the connection status of the sensor Check the sensor location Check the resistance values of sensor	Operation-Off	Outdoor sensor error
251	[inverter] Emission temperature sensor error	Check the connection status of the sensor Check the sensor location Check the resistance values of sensor	Operation-Off	Outdoor sensor error
416	Excessive temperature emission	Not an error (discharge temp. control)	Operation-Off	Outdoor unit protection control error
425	Power cable connection error	Check the status of power connection	Operation-Off	Outdoor sensor error

Error mode	Content	Measure	Product operation status in case of error	Error type
			Outdoor unit compressor/ Outdoor unit Fan	
450	Non-connection error of indoor and outdoor Communication wire (connected to the power terminal)	Check the status of power connection Check the connection status of the communication line	Operation-Off	Self-diagnosis error
458	Outdoor fan 1 error	Check the input power connection status Check the connection status between the motor and PCB in outdoor unit Check the fuse of indoor/outdoor units	Operation-Off	Self-diagnosis error
461	[inverter] Compressor operation error	Check the connection status of the compressor Check the resistance between different phases in compressor	Operation-Off	Outdoor unit protection control error
462	Discharge current error/ PFC over-current error	Check the input power Check refrigerant is filled Check outdoor fan operates normally	Operation-Off	Outdoor unit protection control error
464	[inverter] IPM over current error	Check refrigerant is filled Check the connection status of compressor and if it operates normally Check for any obstacles around indoor/ outdoor units	Operation-Off	Outdoor unit protection control error
467	[inverter] Compressor rotation error	Check the connection status of the compressor Check the resistance between different phases in compressor	Operation-Off	Outdoor unit protection control error
468	[inverter] Current sensor error	Check PCB operates normally	Operation-Off	Outdoor unit protection control error
469	[inverter] DC link voltage sensor error	Check the connection of input power Check the status of RY21 and R2000 of Inverter PCB	Operation-Off	Outdoor unit protection control error
471	[inverter] OTP error	Check PCB operates normally	Operation-Off	Outdoor unit protection control error
475	Outdoor fan 2 error	Check the connection status of input power Check the connection status of motor and outdoor PCB Check the fuse of indoor/outdoor unit	Operation-Off	Self-diagnosis error
554	Gas leakage error	Check refrigerant is filled Check the indoor EVA sensor	Operation-Off	Self-diagnosis error

1-6. Wired Remote Controller Error Display(COM2)

1) Wired remote controller

◆ If an error occurs TEST is displayed on the wired remote controller.
◆ To see an error code, please press the test button.

Error mode	Content	Measure	Product operation status in case of error	Error type
			Outdoor unit compressor/ Outdoor unit Fan	
556	Inconsistent volume	Check the indoor unit's option code	Operation-Off	Outdoor unit protection control error
601	Communication error between indoor unit and wired remote controller	Check the connection wire linking indoor unit and wired remote controller	Normal operation	Wired remote controller control error
602	Communication error between master and slave wired remote controller	Check the option switch that distinguishes master and slave (Available only for 1 master unit and 1 slave unit)	Normal operation	Wired remote controller control error
606	Cross installation error of COM1/COM2	Check the connection of outdoor unit and wired remote controller is linked to Com2 terminal of the indoor unit	Normal operation	Wired remote controller control error
EA	Wired remote controller COM2 setting option error	Check the Dip switch for Com1 and Com2 is set to Com2	Normal operation	Wired remote controller control error

2. Check List

1) The input voltage should be rating voltage ±10% range.
   The air conditioner may not operate properly if the voltage is out of this range.

2) Is the link cable linking the indoor unit and the outdoor unit linked properly?
   The indoor unit and the outdoor unit shall be linked by 4 cables.
   Check the terminals if the indoor unit and outdoor unit are properly linked by the same number of cables.
   Otherwise the air conditioner may not operate properly.

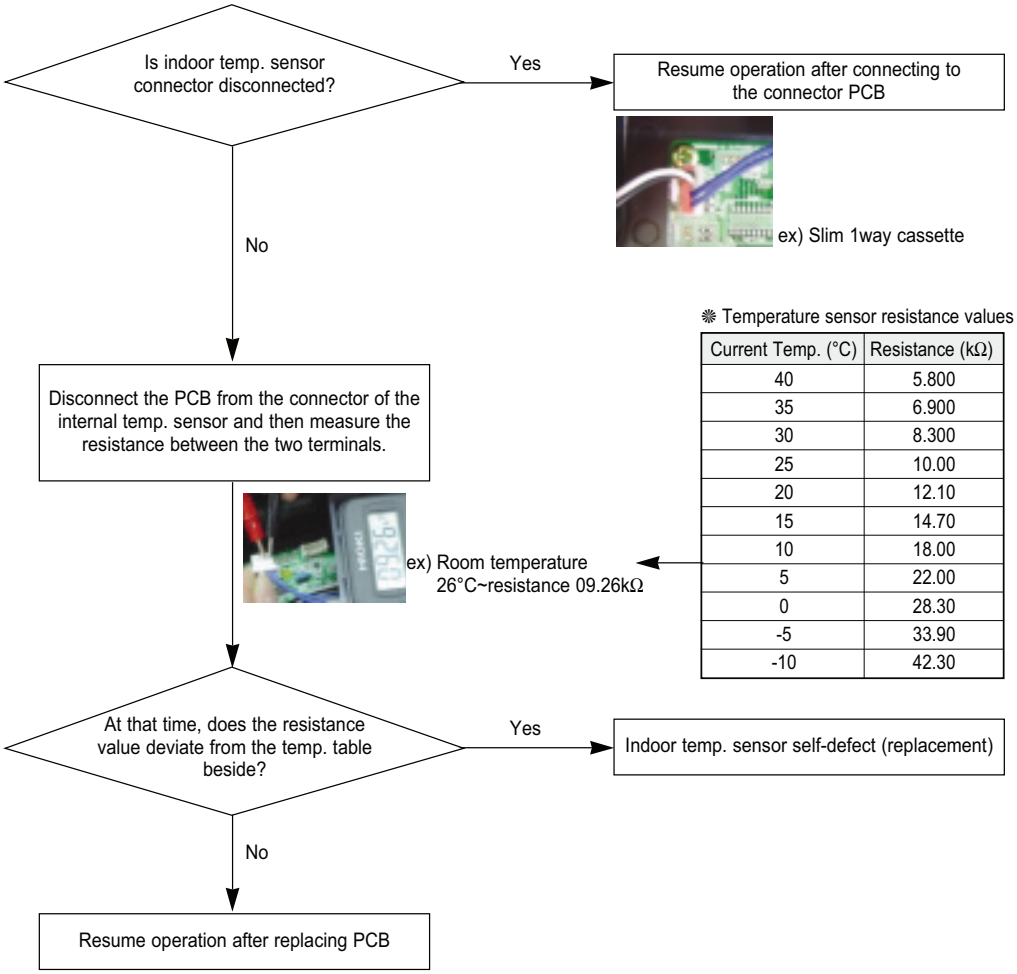
3) When a problem occurs due to the contents illustrated in the table below it is a symptom not related to the malfunction of the air conditioner.

No.	OPERATION OF AIR CONDITIONER	EXPLANATION
1	In a COOL operation mode, the compressor does not operate at a room temperature higher than the setting temperature that the INDOOR FAN should operate. **[In case of heat pump model]** In a HEAT operation mode, the compressor does not operate at a room temperature lower than the setting temperature that indoor fan should operate.	In happens after a delay of 3 minutes when the compressor is reoperated. The same phenomenon occurs when a power is on. As a phenomenon that the compressor is reoperated after a delay of 3 minutes, the indoor fan is adjusted automatically with reference to a temperature of the air blew.
2	Compressor stops operation intermittently in DRY( ) mode.	Compressor operation is controlled automatically in DRY mode depending on the room temperature and humidity.
3	**[In case of heat pump model]** Compressor of the outdoor unit is operating although it is turned off in a HEAT mode.	When the unit is turned off while de-ice is activated, the compressor continues operation for up to 12 minutes(maximum) until the deice is completed.
4	**[In case of heat pump model]** The compressor and indoor fan stop intermittently in HEAT mode.	The compressor and indoor fan stop intermittently if room temperature exceeds a setting temperature in order to protect the compressor from overheated air in a HEAT mode.
5	**[In case of heat pump model]** Indoor fan and outdoor fan stop operation intermittently in a HEAT mode.	The compressor operates in a reverse cycle to remove exterior ice in a HEAT mode, and indoor fan and outdoor fan do not operate intermittently for within 20% of the total heater operation

3-1. UH026EAV1/UH035EAV1/UH052EAV1/UH060EAV1/UH070EAV1/ UH052EAS/UH070EAS

1) Indoor temperature sensor (open/short)

Indoor unit display	× (Operation) × (Defrost) ◑ (Reservation) × (Fan) × (Filter)
Criteria	In case of disconnection or short-circuit of the indoor temperature sensors
Cause of problem	Disconnection or short-circuit of the relevant sensors

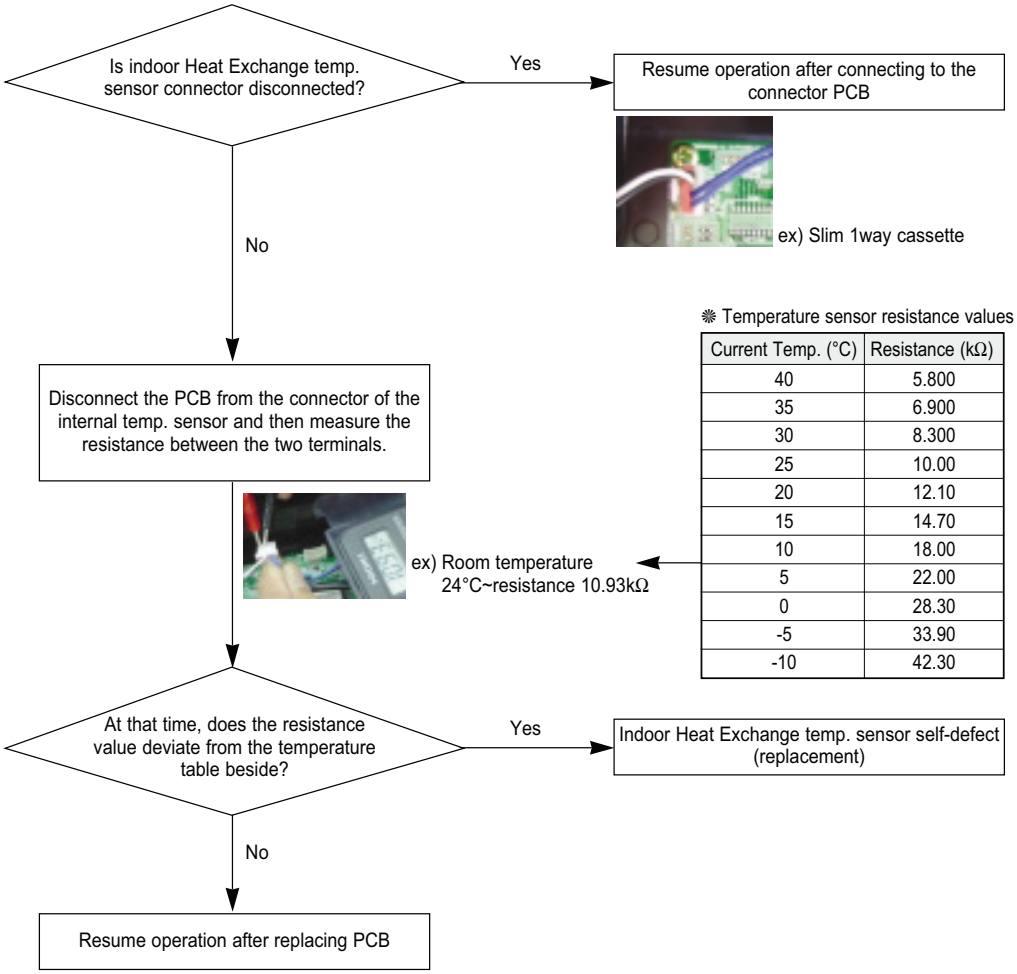


※ Temperature sensor resistance values

Current Temp. (°C)	Resistance (kΩ)
40	5.800
35	6.900
30	8.300
25	10.00
20	12.10
15	14.70
10	18.00
5	22.00
0	28.30
-5	33.90
-10	42.30

2) Indoor heat exchange temperature sensor (open/short)

Indoor unit display	◑ (Operation) × (Defrost) ◑ (Reservation) × (Fan) × (Filter)
Criteria	In case of disconnection or short-circuit of the heat exchanger of indoor temperature
Cause of problem	Disconnection or short-circuit of the relevant sensors



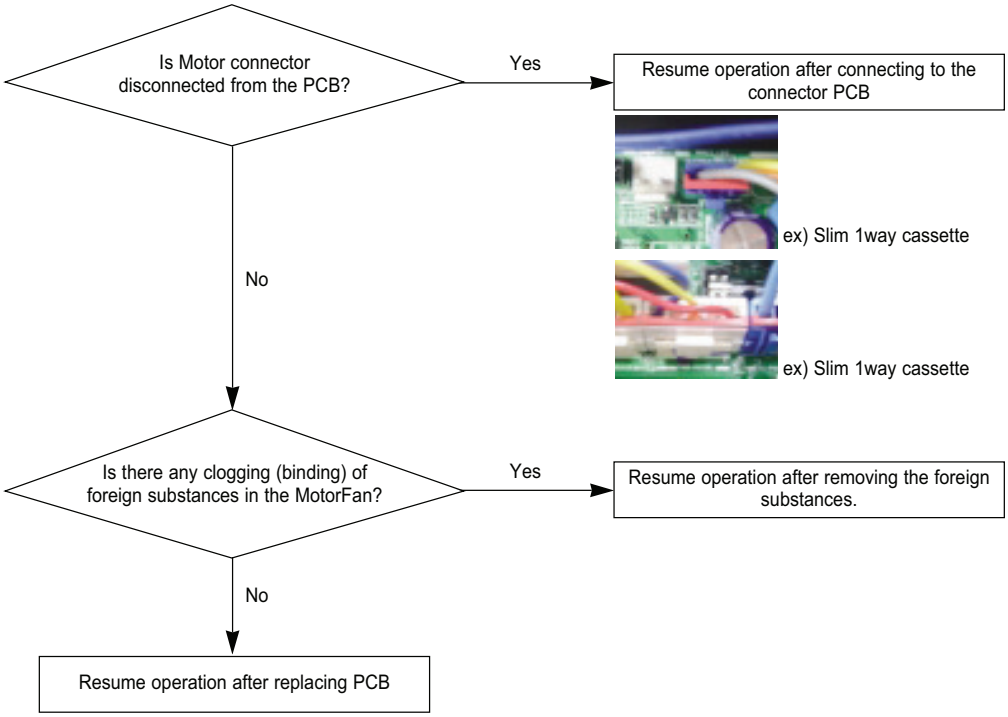
✺ Temperature sensor resistance values

Current Temp. (°C)	Resistance (kΩ)
40	5.800
35	6.900
30	8.300
25	10.00
20	12.10
15	14.70
10	18.00
5	22.00
0	28.30
-5	33.90
-10	42.30

3-1. UH026EAV1/UH035EAV1/UH052EAV1/UH060EAV1/UH070EAV1/ UH052EAS/UH070EAS

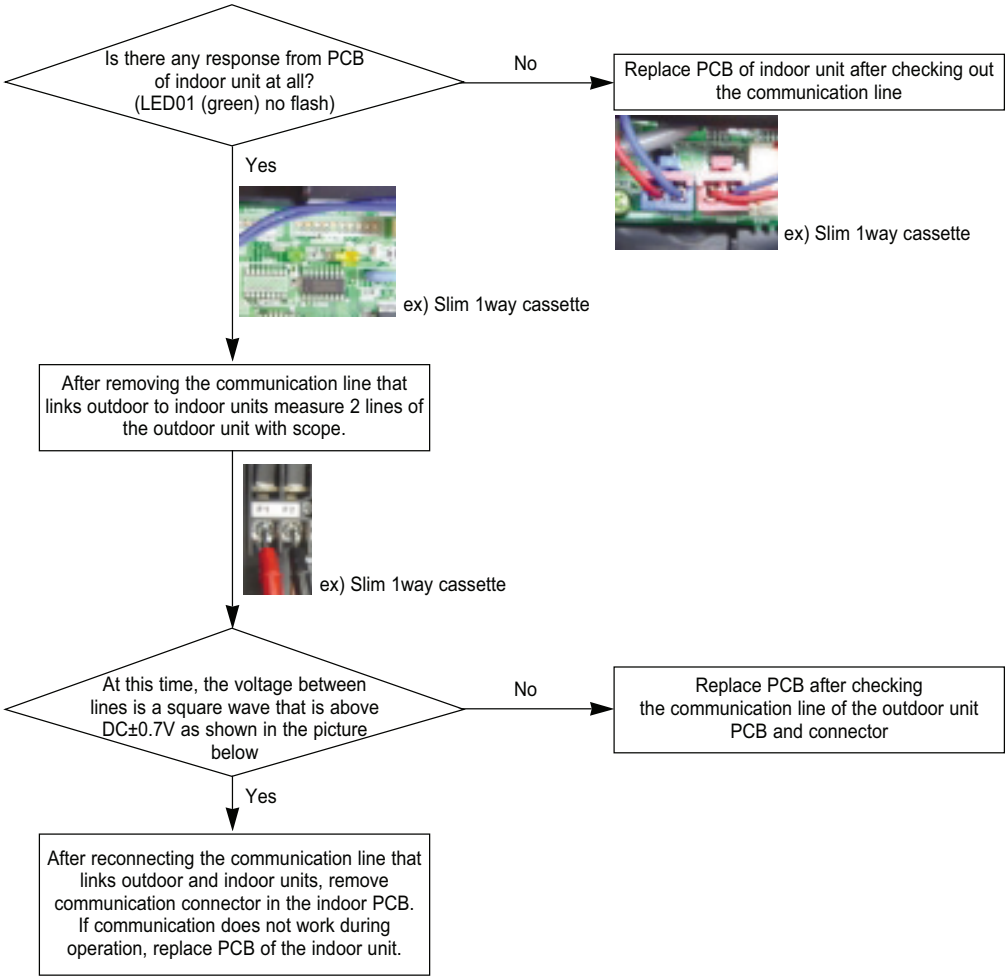
3) Indoor fan error

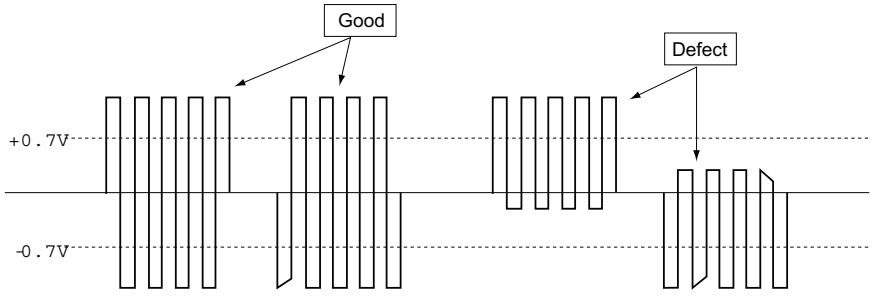
Indoor unit display	× (Operation) × (Defrost) × (Reservation) ◑ (Fan) × (Filter)
Criteria	Indoor fan being non-operative/ stop after excessive high speed
Cause of problem	Check for motor connector disconnect/ check motor fan fastening



4) Communication error after completion of tracking

Indoor unit display	× (Operation) × (Defrost) ◑ (Reservation) ◑ (Fan) × (Filter)
Criteria	If communication between indoor and outdoor units has been blocked for 2 minutes during operation
Cause of problem	Communication error between indoor and outdoor unit

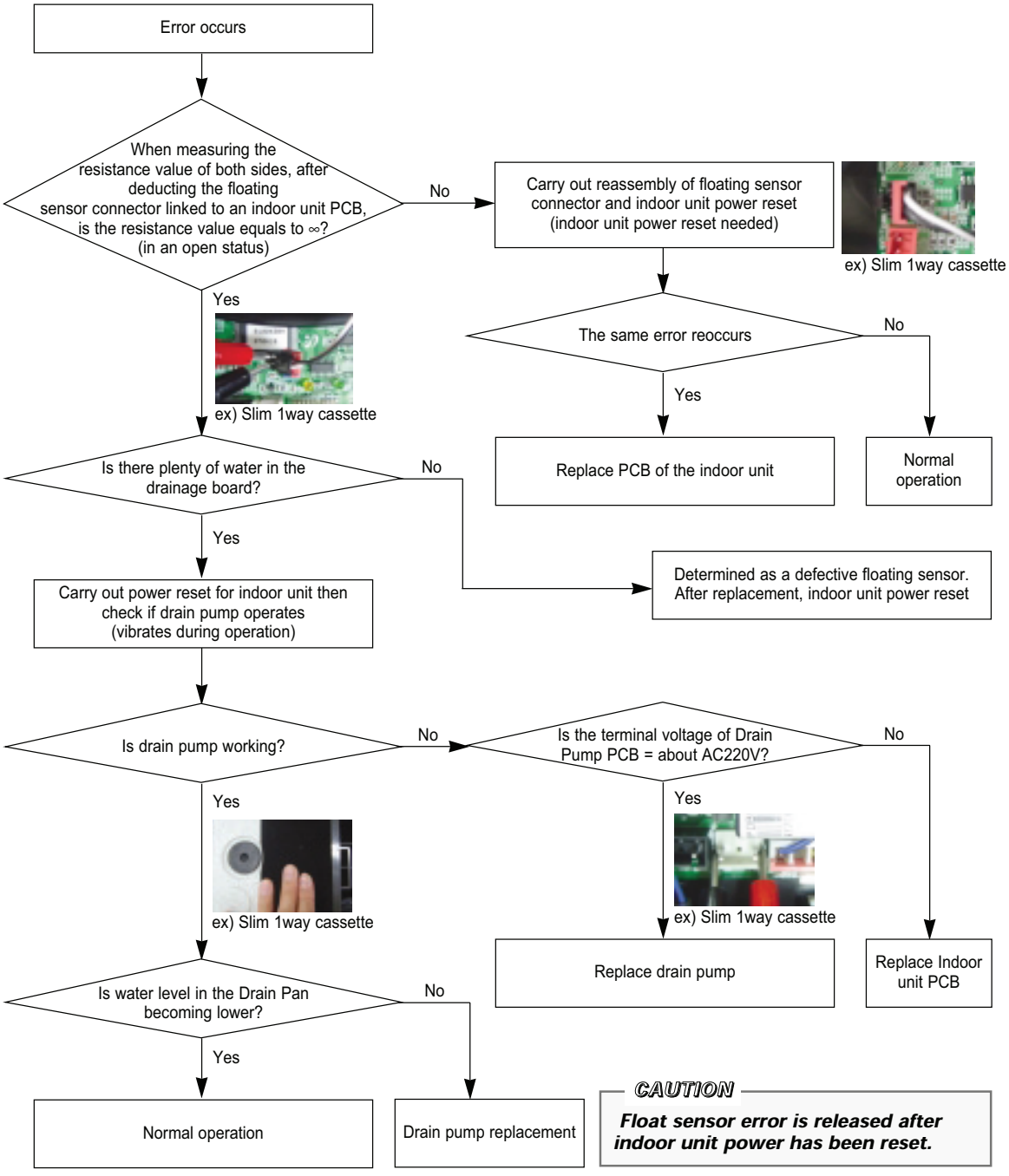




3-1. UH026EAV1/UH035EAV1/UH052EAV1/UH060EAV1/UH070EAV1/ UH052EAS/UH070EAS

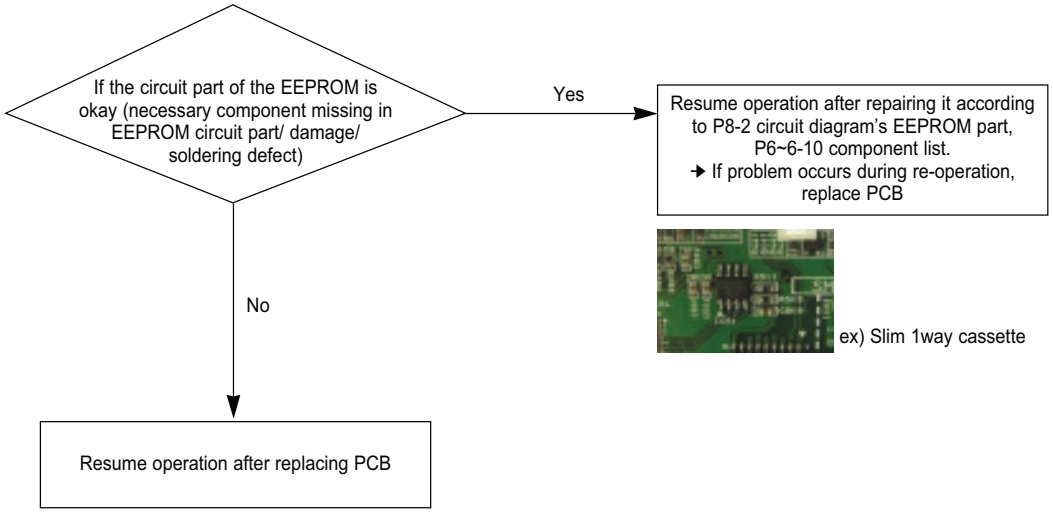
5) Indoor float sensor error

Indoor unit display	× (Operation) × (Defrost) × (Reservation) ◑ (Fan) ◑ (Filter)
Criteria	When the open status of the floating sensor of the indoor unit lasts for 1 minute or more
Cause of problem	Increase in the drain board level for indoor drain pump defect, defect in detection sensor (float sensor)



6) Communication error after completion of tracking

Indoor unit display	◑ (Operation) × (Defrost) ◑ (Reservation) ◑ (Fan) × (Filter)
Criteria	EEPROM circuit part defect
Cause of problem	EEPROM component defect/ necessary component missing in EEPROM circuit part/ damage/ soldering



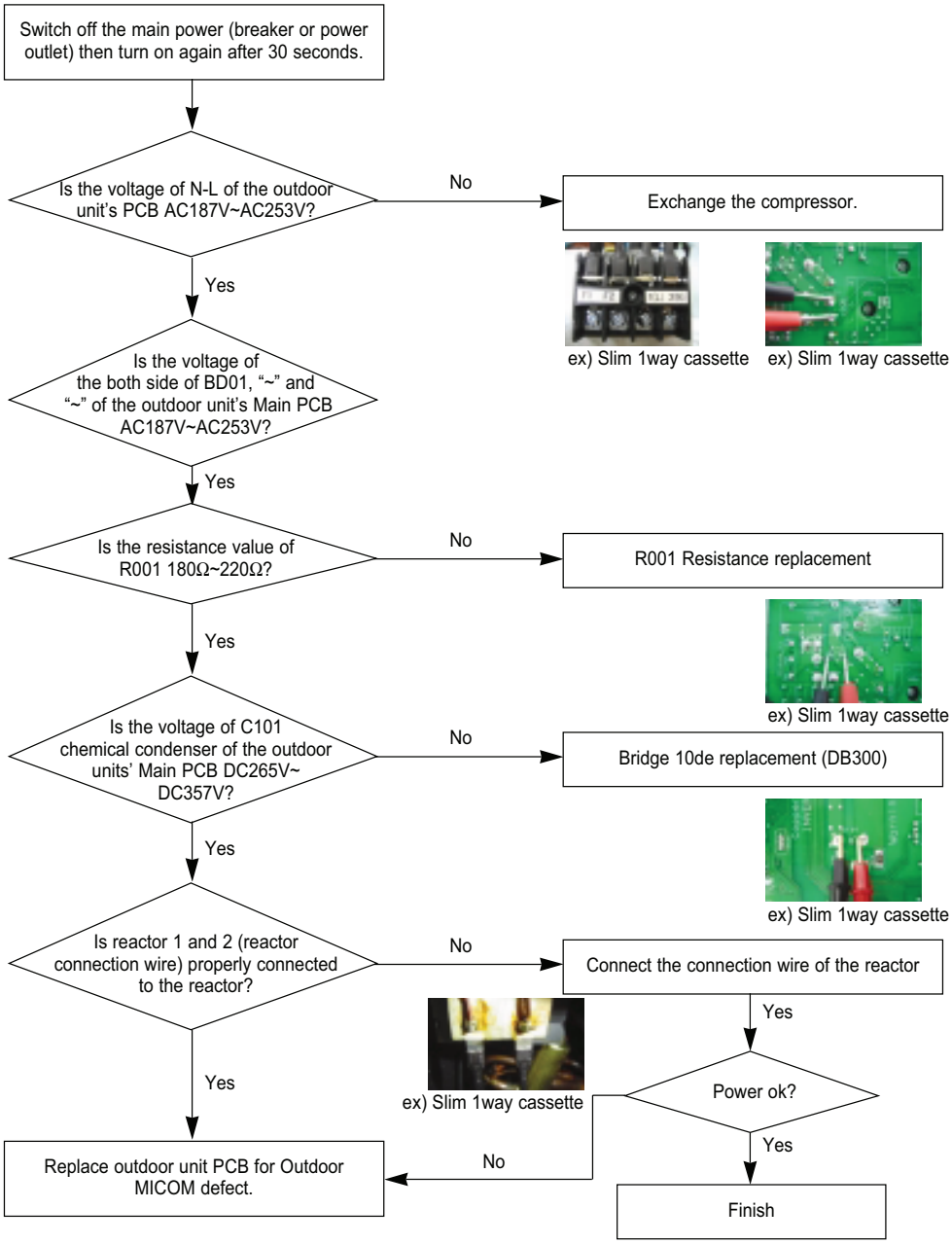
3-1. UH026EAV1/UH035EAV1/UH052EAV1/UH060EAV1/UH070EAV1/ UH052EAS/UH070EAS

7) When outdoor units cannot be turned on

(1) Cause of the breakdown

- ◆ Is power voltage 220V?
- ◆ Is AC power properly connected?
- ◆ Are the LEDs of Main PCB and inverter PCB of the outdoor unit on?
- ◆ Is the power supply of the outdoor unit 220V?

(2) Inspection order

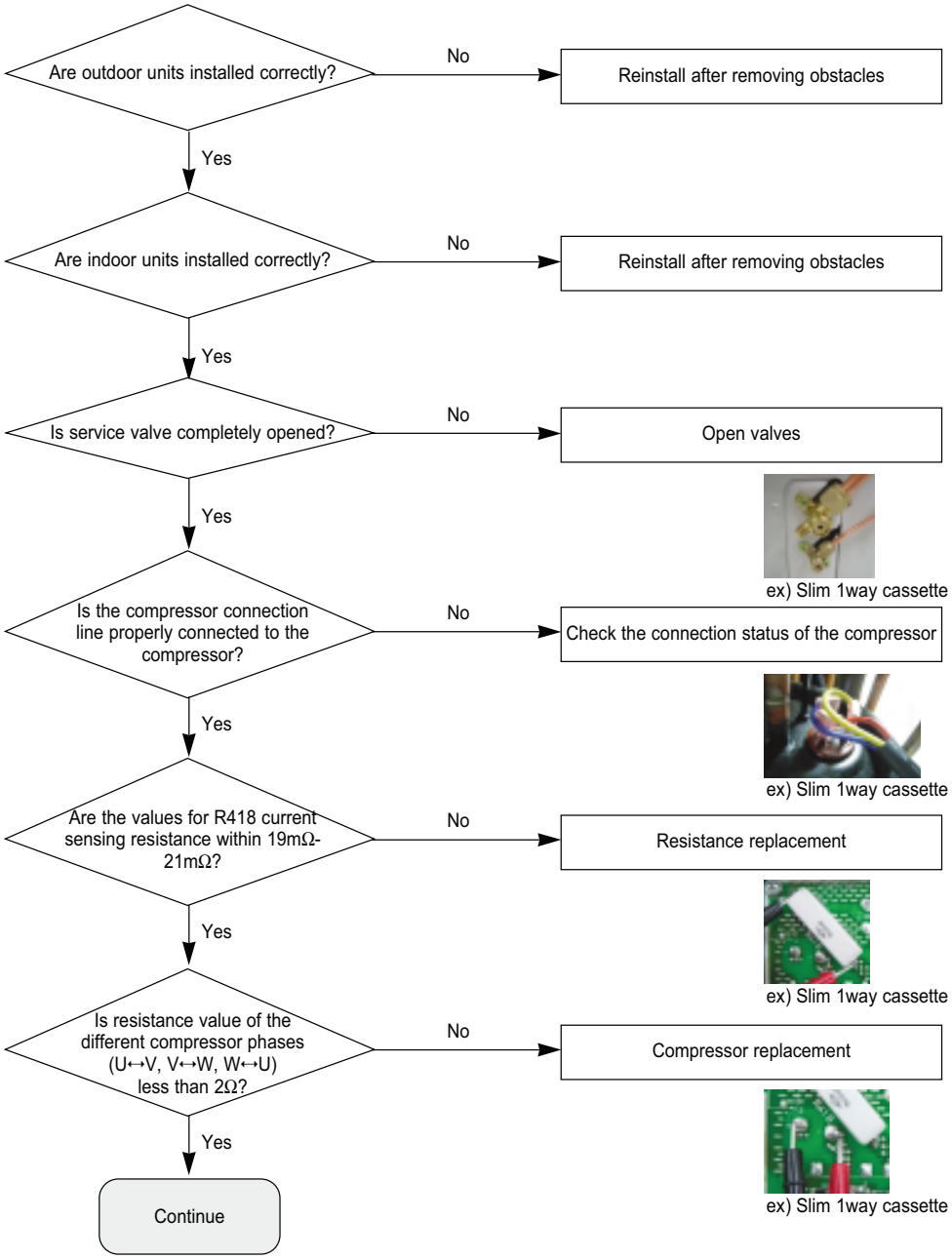


8) IPM and over current error

(1) Inspection items

- ◆ Is refrigerant filled?
- ◆ Is the compressor operating without a problem?
- ◆ Is the compressor connected properly?
- ◆ Are there any obstacles around the indoor/outdoor units?

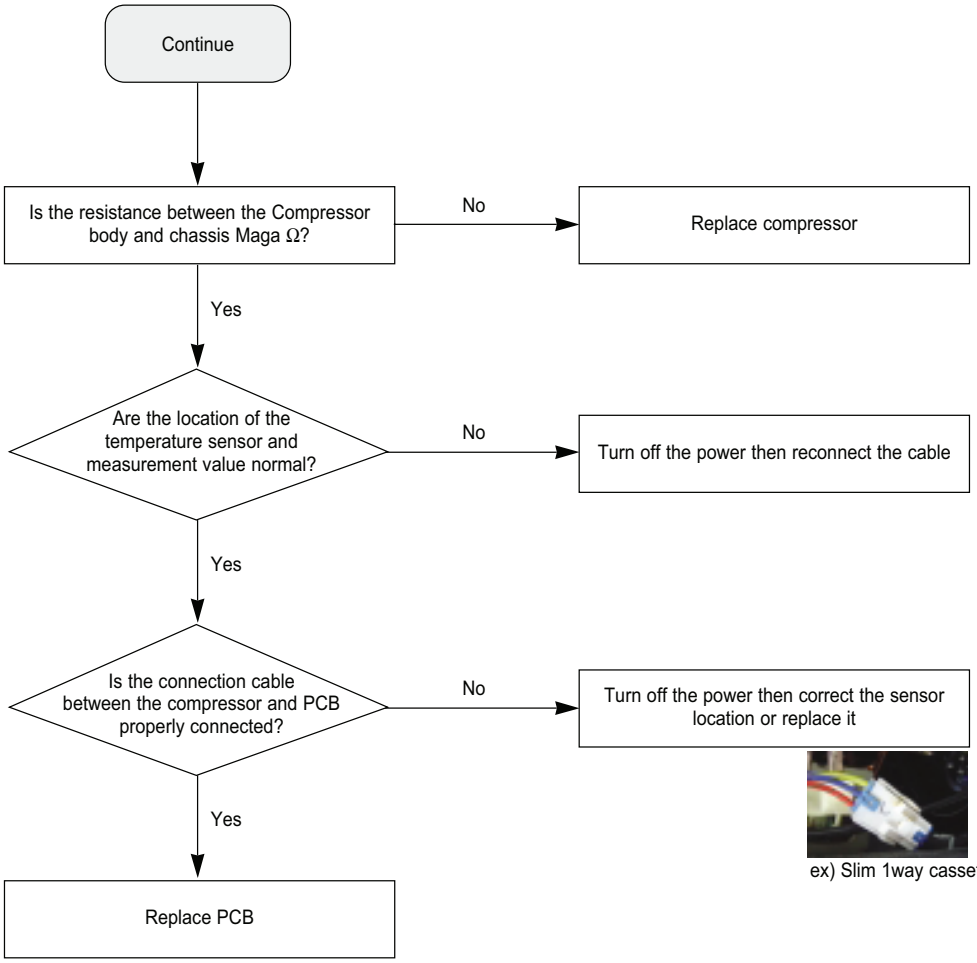
(2) Inspection order



(continued on the back)

3-1. UH026EAV1/UH035EAV1/UH052EAV1/UH060EAV1/UH070EAV1/ UH052EAS/UH070EAS

8) IPM and over current error



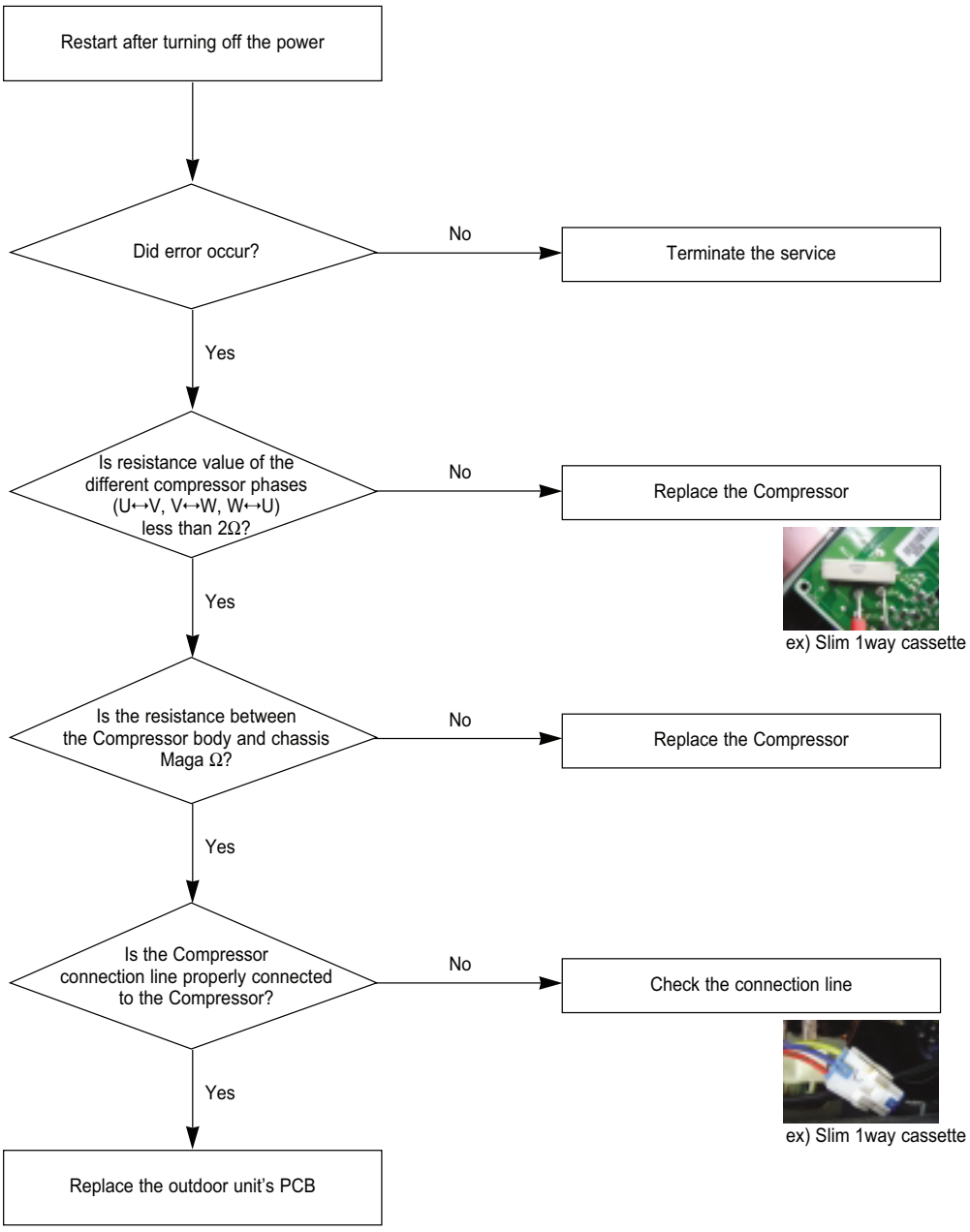
ex) Slim 1way cassette

9) Compressor starting error, compressor locking error, compressor revolving error

(1) Inspection items

- ◆ Is the connection line between power and the compressor properly connected?
- ◆ Is the resistance between different compressor phases normal?

(2) Inspection order



ex) Slim 1way cassette

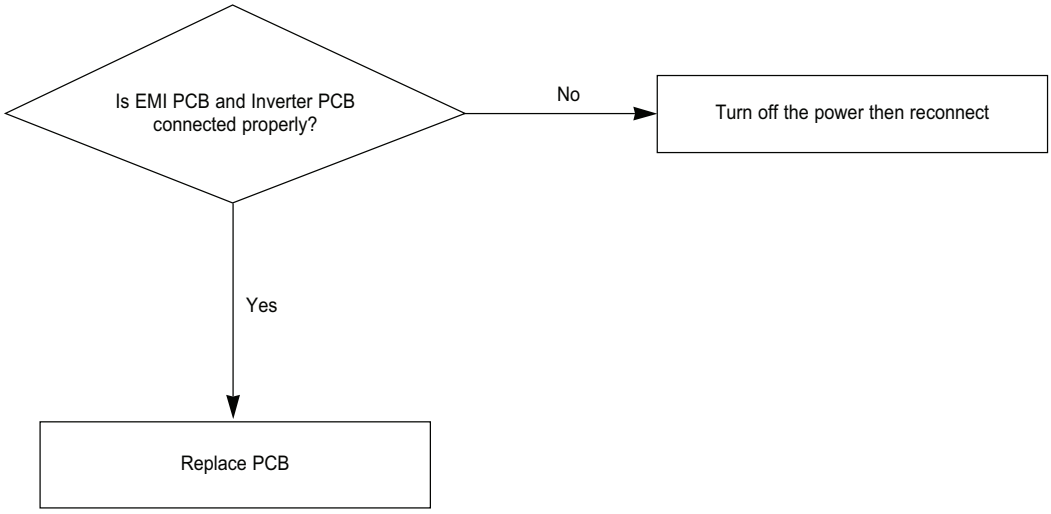
ex) Slim 1way cassette

3-1. UH026EAV1/UH035EAV1/UH052EAV1/UH060EAV1/UH070EAV1/ UH052EAS/UH070EAS

10) DC Link and over/lower voltage error

(1) Inspection items
- ◆ Is compressor operating properly?
- ◆ Is there a connection between input power and power?

(2) Inspection order

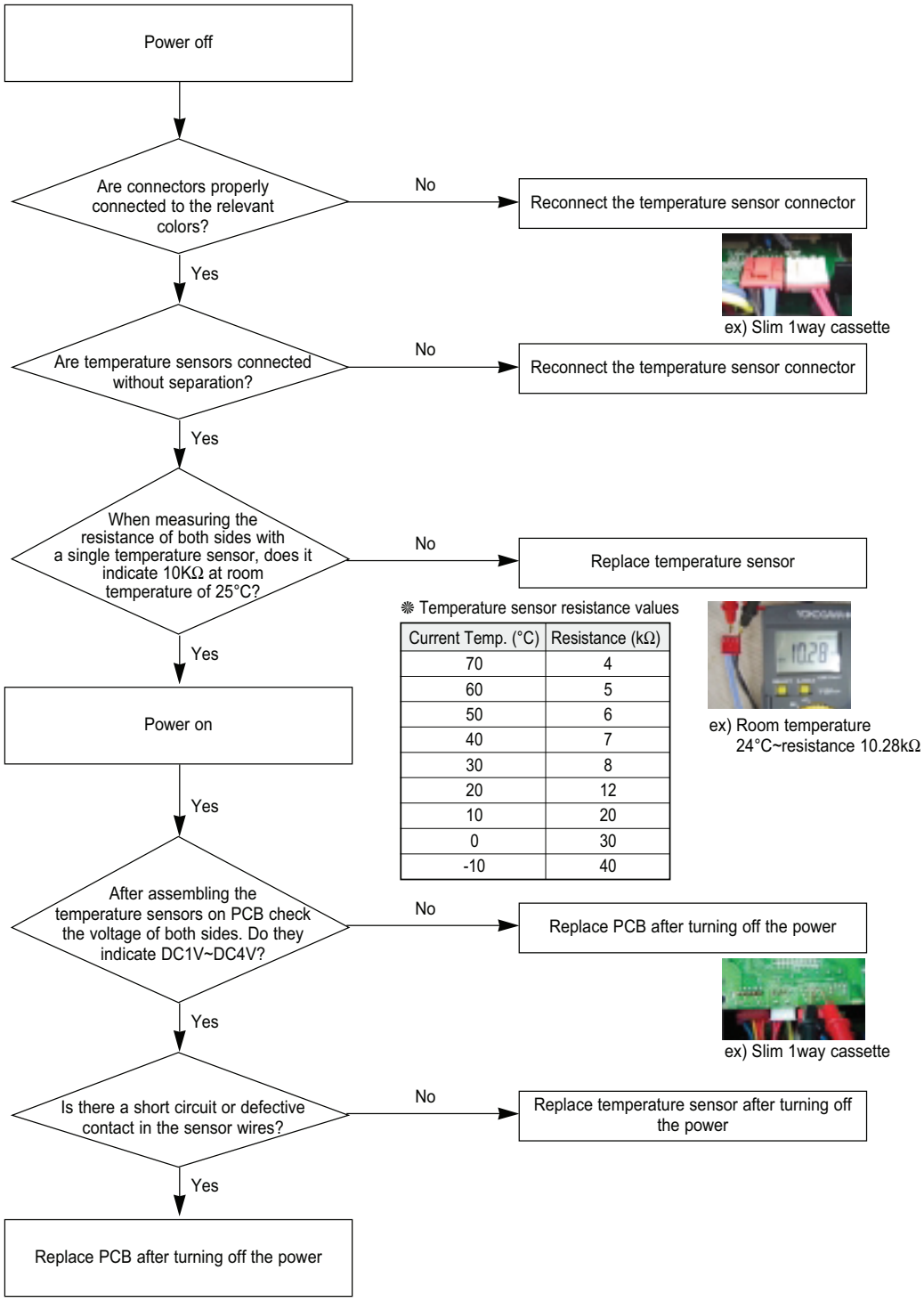


11) Outdoor temperature sensor error

(1) Inspection items

- ◆ Are the sensors connected properly?
- ◆ Are the sensors located properly?
- ◆ Do the resistance values of the sensors satisfy each temperature?

(2) Inspection order



ex) Slim 1way cassette

ex) Slim 1way cassette

ex) Room temperature 24°C~resistance 10.28kΩ

✺ Temperature sensor resistance values

Current Temp. (°C)	Resistance (kΩ)
70	4
60	5
50	6
40	7
30	8
20	12
10	20
0	30
-10	40

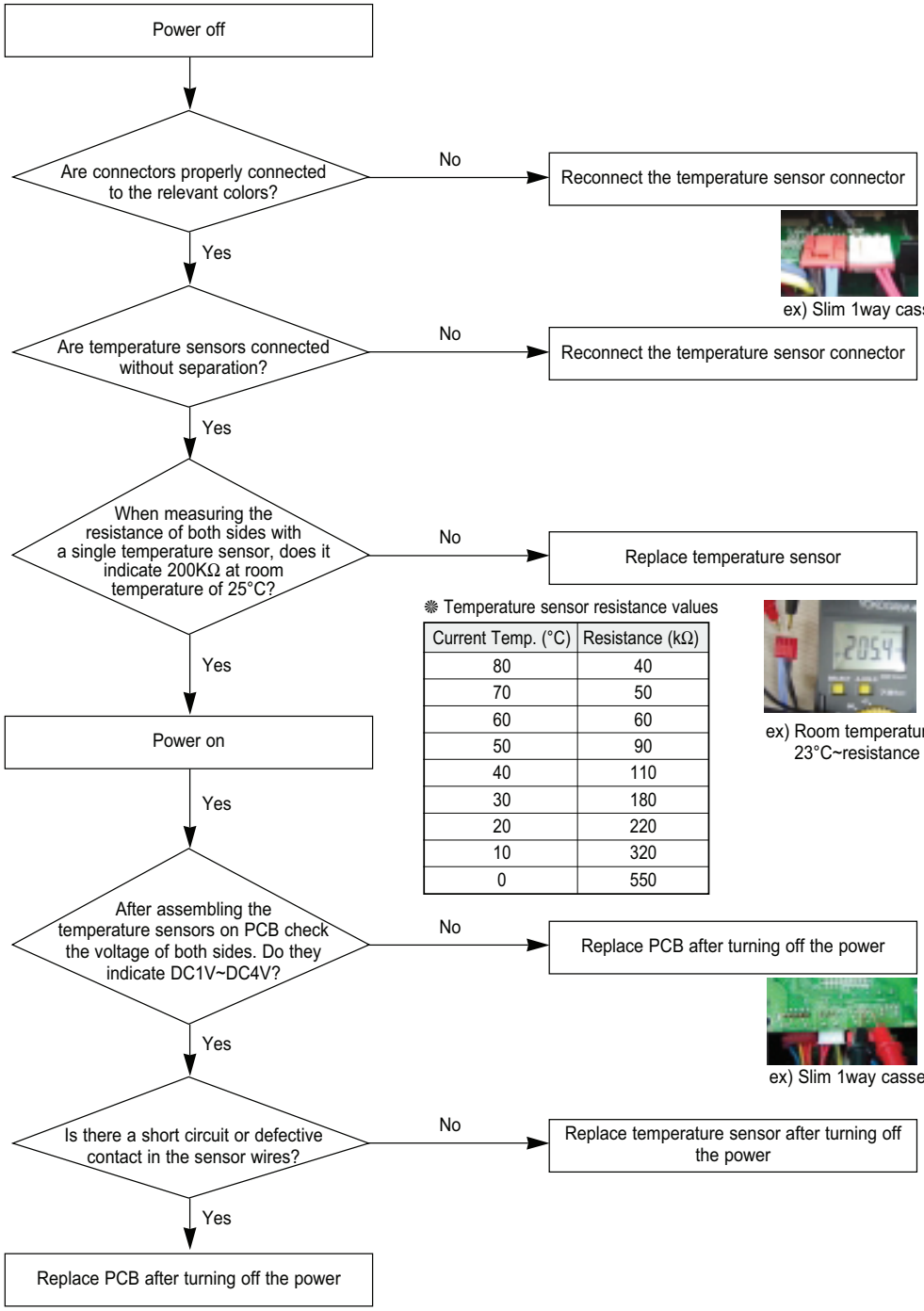
3-1. UH026EAV1/UH035EAV1/UH052EAV1/UH060EAV1/UH070EAV1/ UH052EAS/UH070EAS

12) Emission temperature sensor error

(1) Inspection items

- ◆ Are the sensors connected properly?
- ◆ Are the sensors located properly?
- ◆ Do the resistance values of the sensors satisfy each temperature?

(2) Inspection order



※ Temperature sensor resistance values

Current Temp. (°C)	Resistance (kΩ)
80	40
70	50
60	60
50	90
40	110
30	180
20	220
10	320
0	550

ex) Slim 1way cassette

ex) Room temperature 23°C~resistance 205.4kΩ

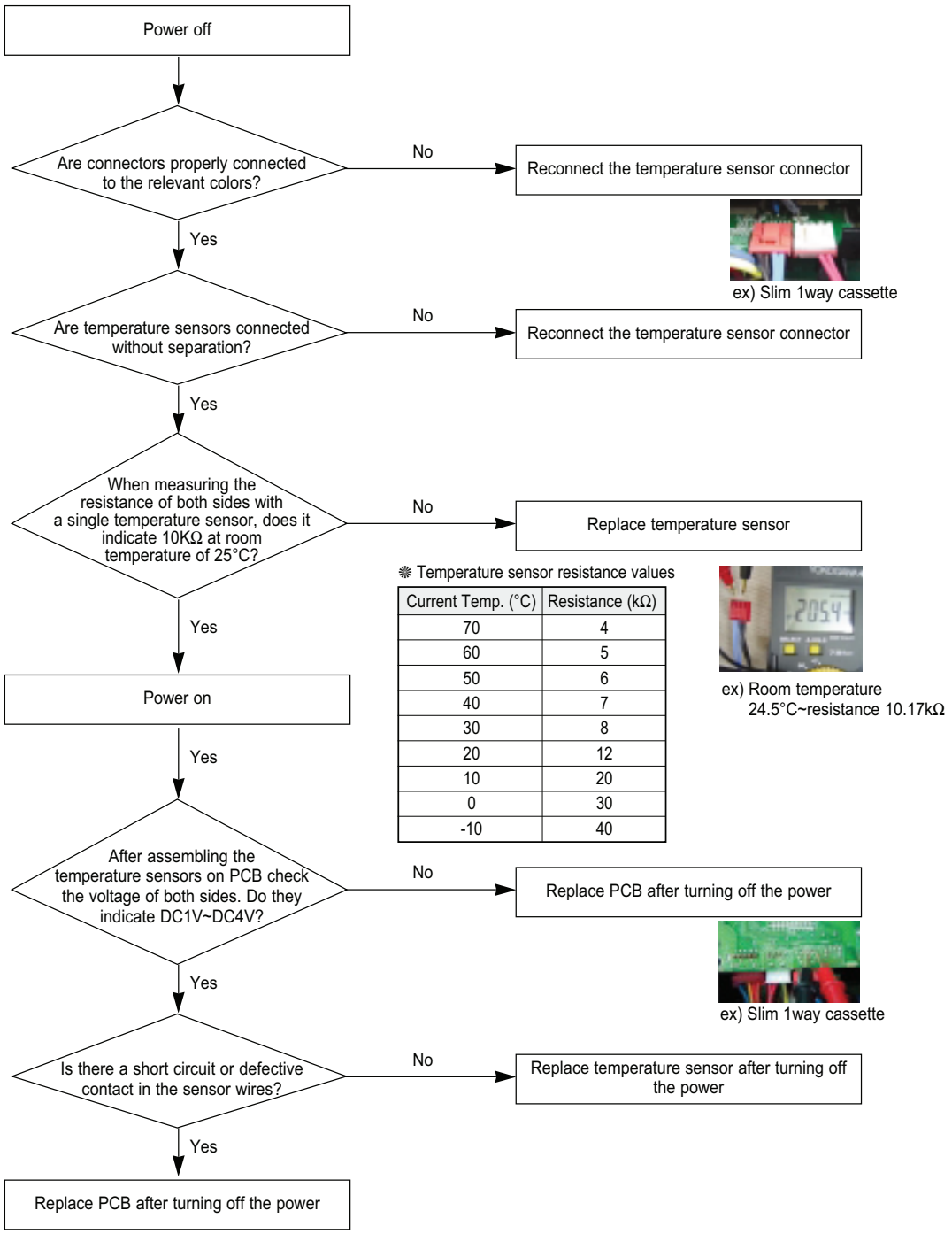
ex) Slim 1way cassette

13) Cond temperature sensor error

(1) Inspection items

- ◆ Are the sensors connected properly?
- ◆ Are the sensors located properly?
- ◆ Do the resistance values of the sensors satisfy each temperature?

(2) Inspection order



✺ Temperature sensor resistance values

Current Temp. (°C)	Resistance (kΩ)
70	4
60	5
50	6
40	7
30	8
20	12
10	20
0	30
-10	40

ex) Slim 1way cassette

ex) Room temperature 24.5°C~resistance 10.17kΩ

ex) Slim 1way cassette

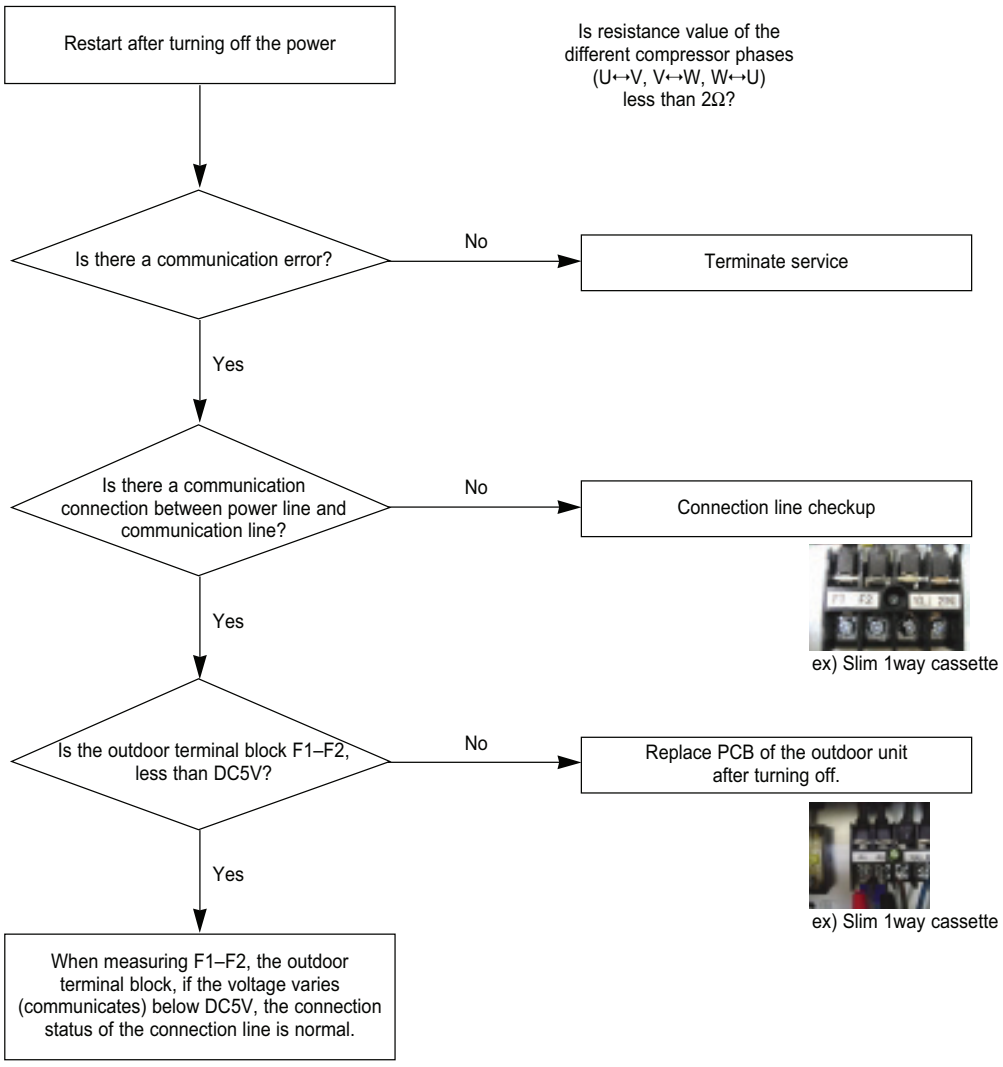
3-1. UH026EAV1/UH035EAV1/UH052EAV1/UH060EAV1/UH070EAV1/ UH052EAS/UH070EAS

14) Communication error between indoor/outdoor units (1min.)

(1) Inspection items

- ◆ Is the communication line between indoor and outdoor units connected properly?
- ◆ Is there a communication connection between power line and communication line?

(2) Inspection order

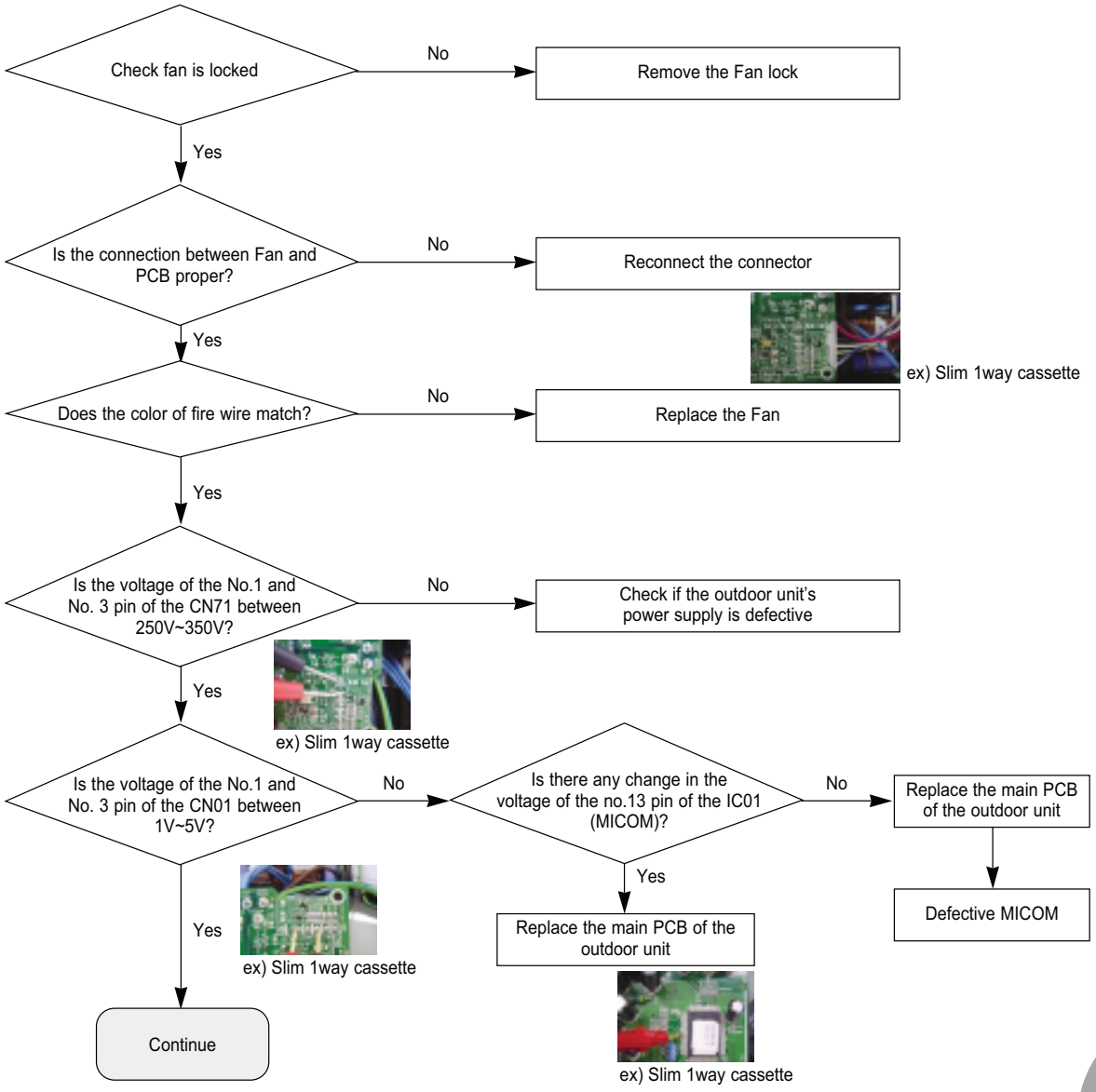


15) Outdoor fan error

(1) Inspection items

- ◆ Is input power and power connected properly?
- ◆ Is motor connection line properly connected to the PCB of the outdoor unit?
- ◆ Is the fuse for indoor/outdoor unit connected?
- ◆ Are there any obstacles around Motor or Propeller?
- ◆ Is Motor Driver out of order?

(2) Inspection order



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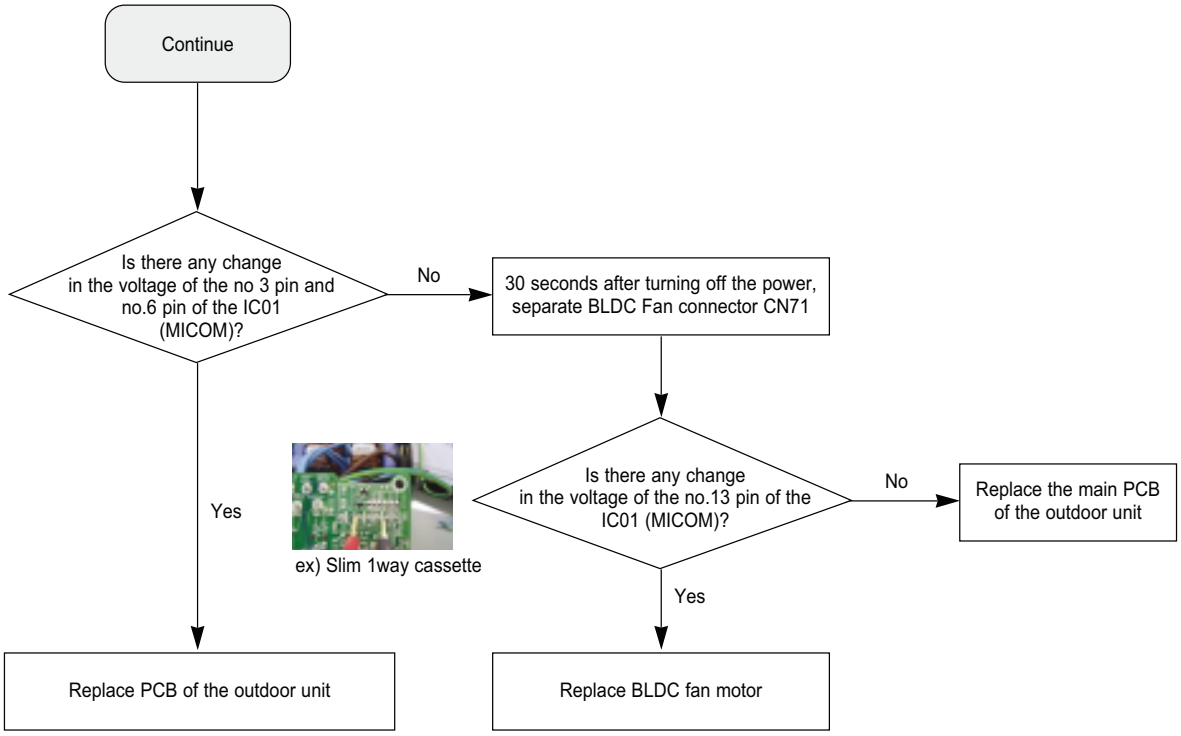
3-1. UH026EAV1/UH035EAV1/UH052EAV1/UH060EAV1/UH070EAV1/ UH052EAS/UH070EAS

15) Outdoor fan error

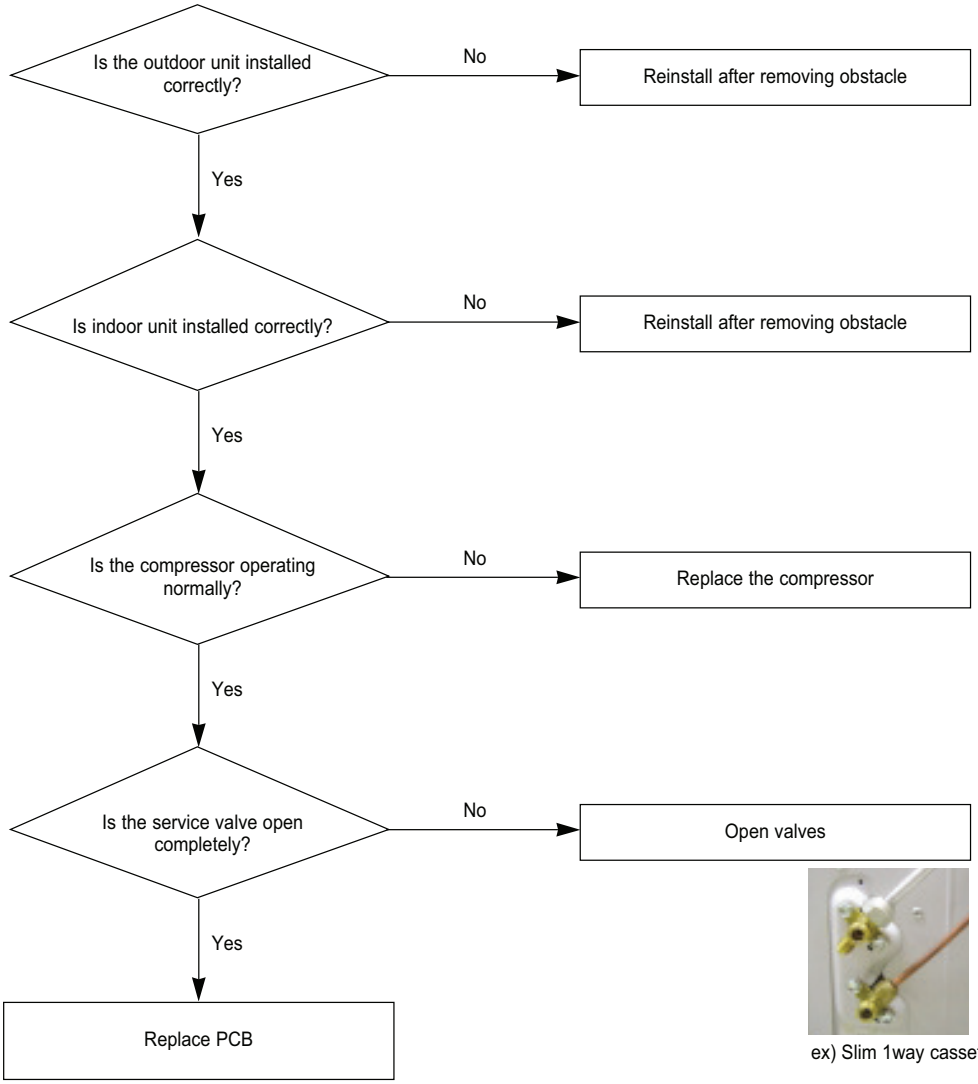


16) Discharge current error/ PFC over-current error

(1) Inspection items

- ◆ Is input power correct?
- ◆ Is refrigerant filled?
- ◆ Is the outdoor fan spinning correctly?
- ◆ Are there any obstacles around indoor/outdoor units?

(2) Inspection order



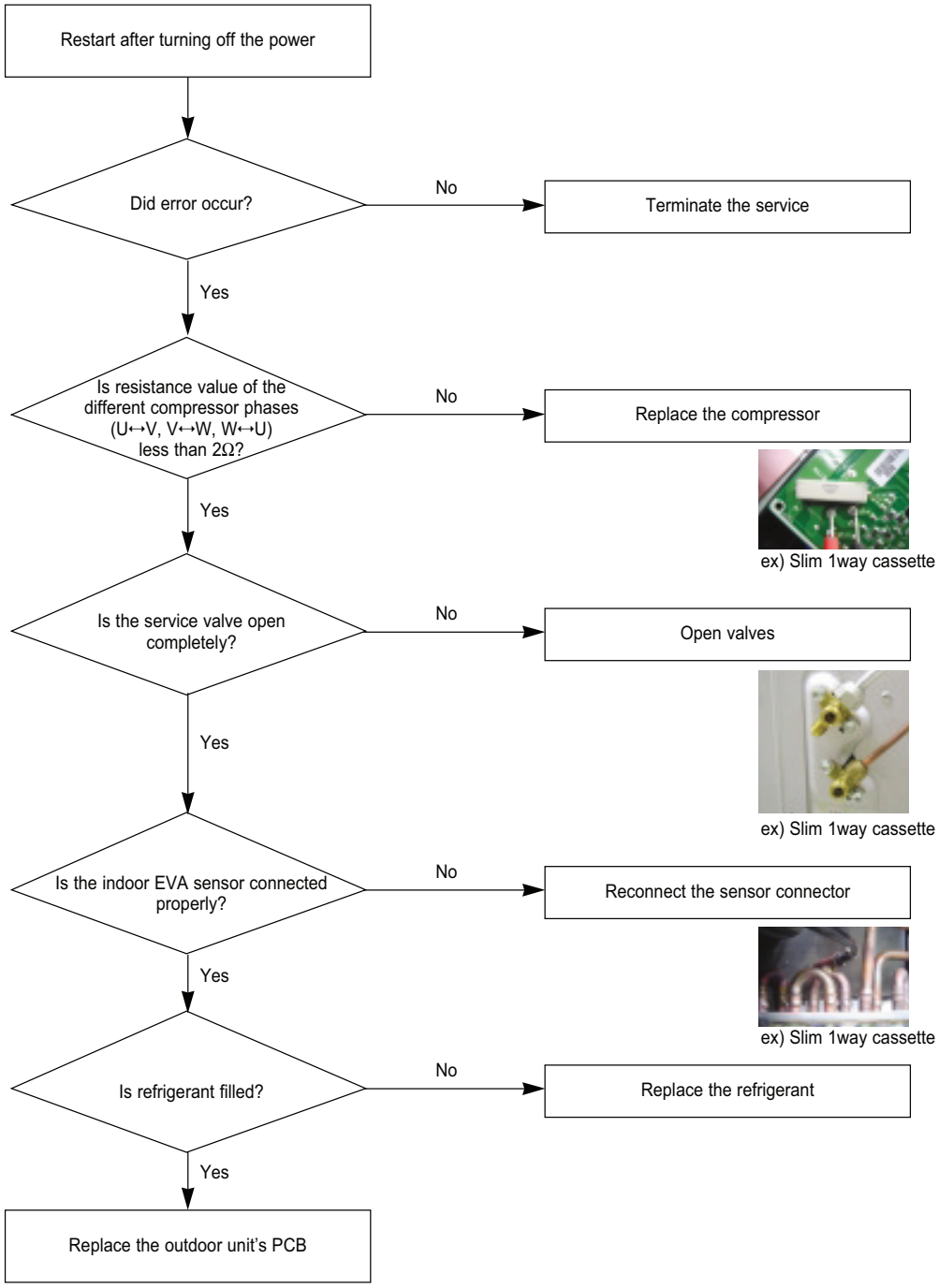
ex) Slim 1way cassette

3-1. UH026EAV1/UH035EAV1/UH052EAV1/UH060EAV1/UH070EAV1/ UH052EAS/UH070EAS

17) Gas leakage error

(1) Inspection items
- ◆ Is refrigerant filled?
- ◆ Is the indoor EVA sensor connected properly?

(2) Inspection order



ex) Slim 1way cassette

ex) Slim 1way cassette

ex) Slim 1way cassette

18) Other

(1) **Current sensor error**
Check PCB operates normally then replace the PCB

(2) **Compressor V limit error**
Check the compressor operates normally then replace the compressor. If an error still occurs after the replacement of the compressor, replace the PCB.

(3) **OTP error**
Check PCB operates normally then replace the PCB.

(4) **DC link Voltage Sensor Error**
Check the connection between input power and the power is okay then replace the PCB.

(5) **AC zero Crossing signal out error**
Check the connection between input power and the power is okay then replace the PCB.

(6) **Inconsistent volume**
Check the option code of the indoor unit.

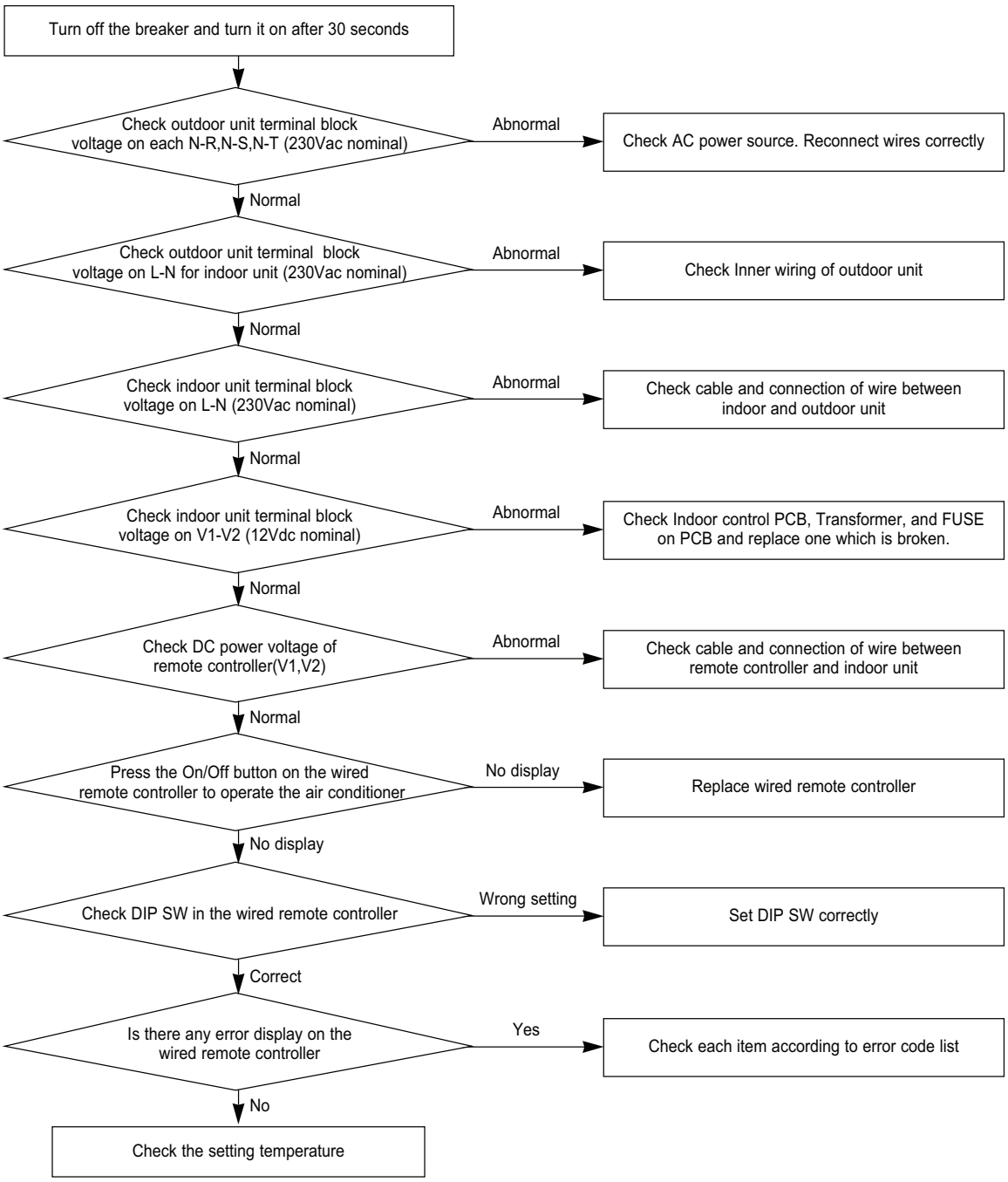
3-2. UH090EAV/UH105EAV/UH140EAV/UH105EAS

1) No power(completely dead)-initial diagnosis

(1) Checklist :

- ◆ Is Power source voltage normal?
- ◆ Is AC power linked correctly?(miss-wiring, wire detaching etc.)
- ◆ Is terminal voltage for indoor unit normal?(230Vac nominal)
- ◆ Is Wired remote controller installed correctly?

(2) Troubleshooting procedure

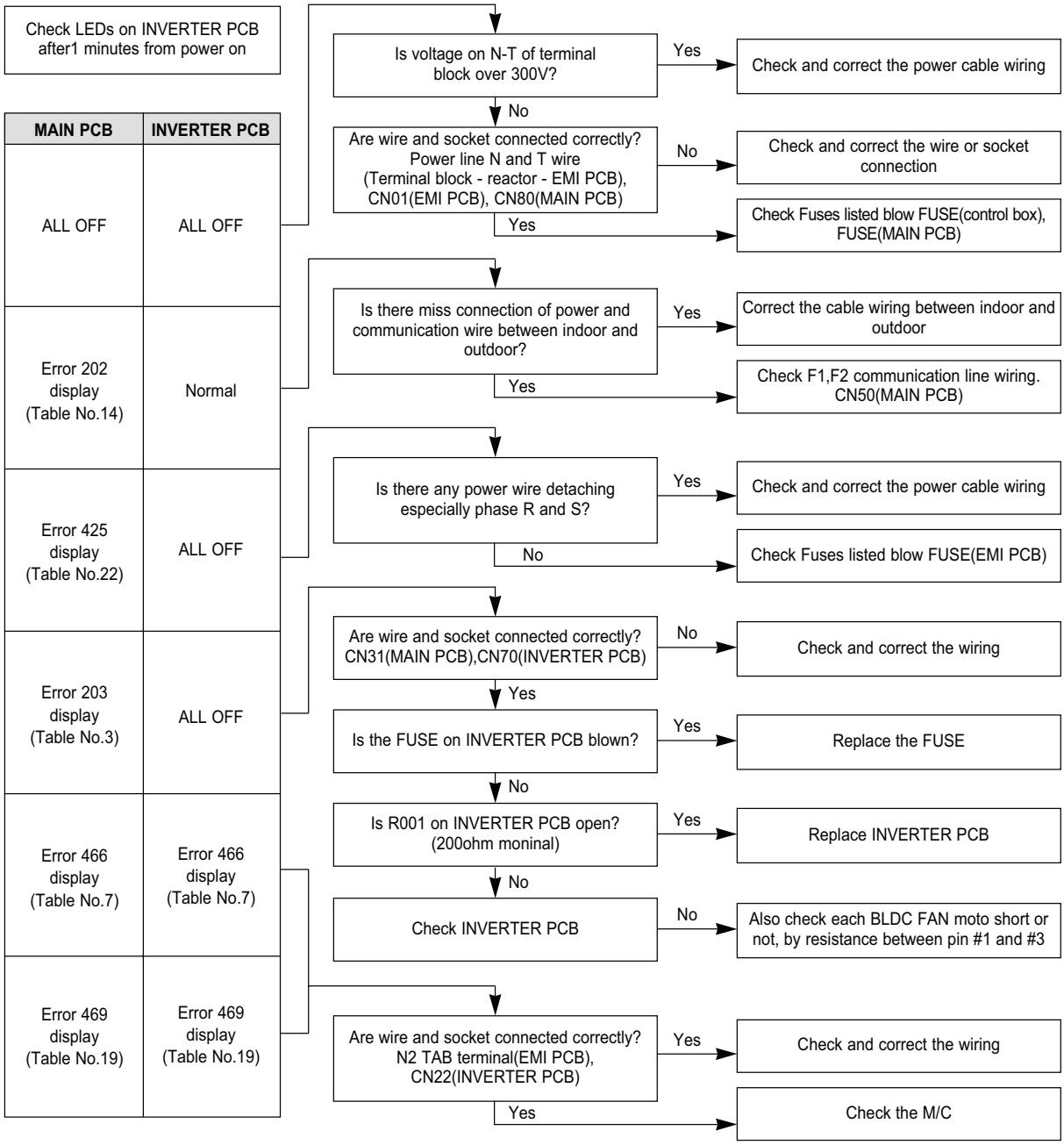


2) The outdoor unit power supply error

(1) Checklist :

- ◆ Are the input power voltage and power connection correct?
- ◆ Is there any Fuse Short of the indoor or outdoor unit?
- ◆ Is any LED lit on INVERTER PCB?
- ◆ Are Reactor wires of the outdoor unit connected correctly?

(2) Troubleshooting procedure



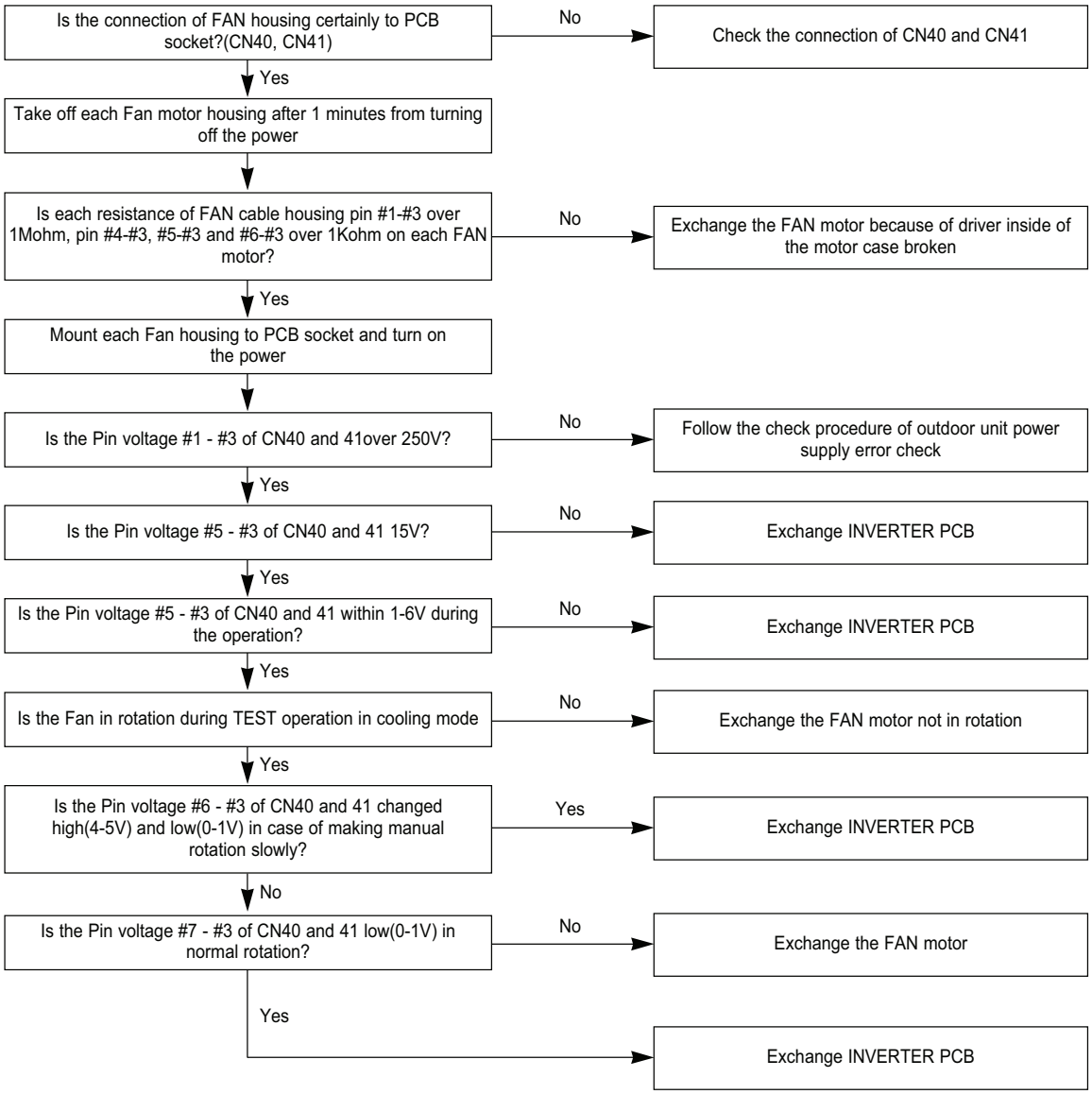
3-2. UH090EAV/UH105EAV/UH140EAV/UH105EAS

3) The outdoor unit fan error

(1) Checklist :

- ◆ Are the input power voltage and power connection correct?
- ◆ Is the motor wire connected to the outdoor PCB correctly?
- ◆ Is there no obstacle at the surrounding of motor and propeller?
- ◆ Does the driver in the motor case broken?

(2) Troubleshooting procedure

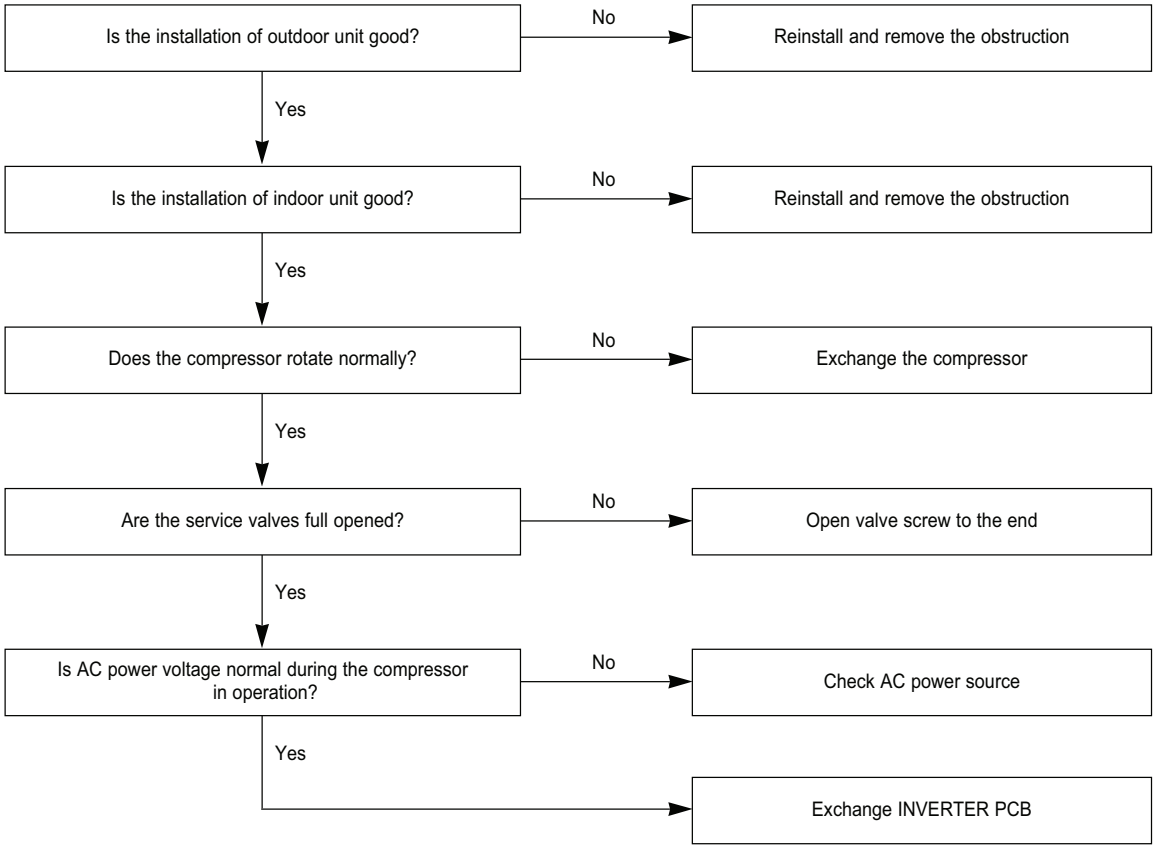


4) Total current trip error

(1) Checklist :

- ◆ Is the input power voltage proper?
- ◆ Is the refrigerant charged properly?
- ◆ Does the compressor rotate normally?(Reverse rotation, Locking etc.)
- ◆ Does the outdoor fan operate normally?(Fan propeller loss, Motor error ect.)
- ◆ Is the installation condition of outdoor unit good?(Piping, Space etc.)
- ◆ Is there no ventilation obstruction at the surrounding of outdoor unit?(Outdoor unit cover, Fan front obstruction etc.)
- ◆ Is there no ventilation obstruction at the surrounding of indoor unit?(Overload condition in heating mode)

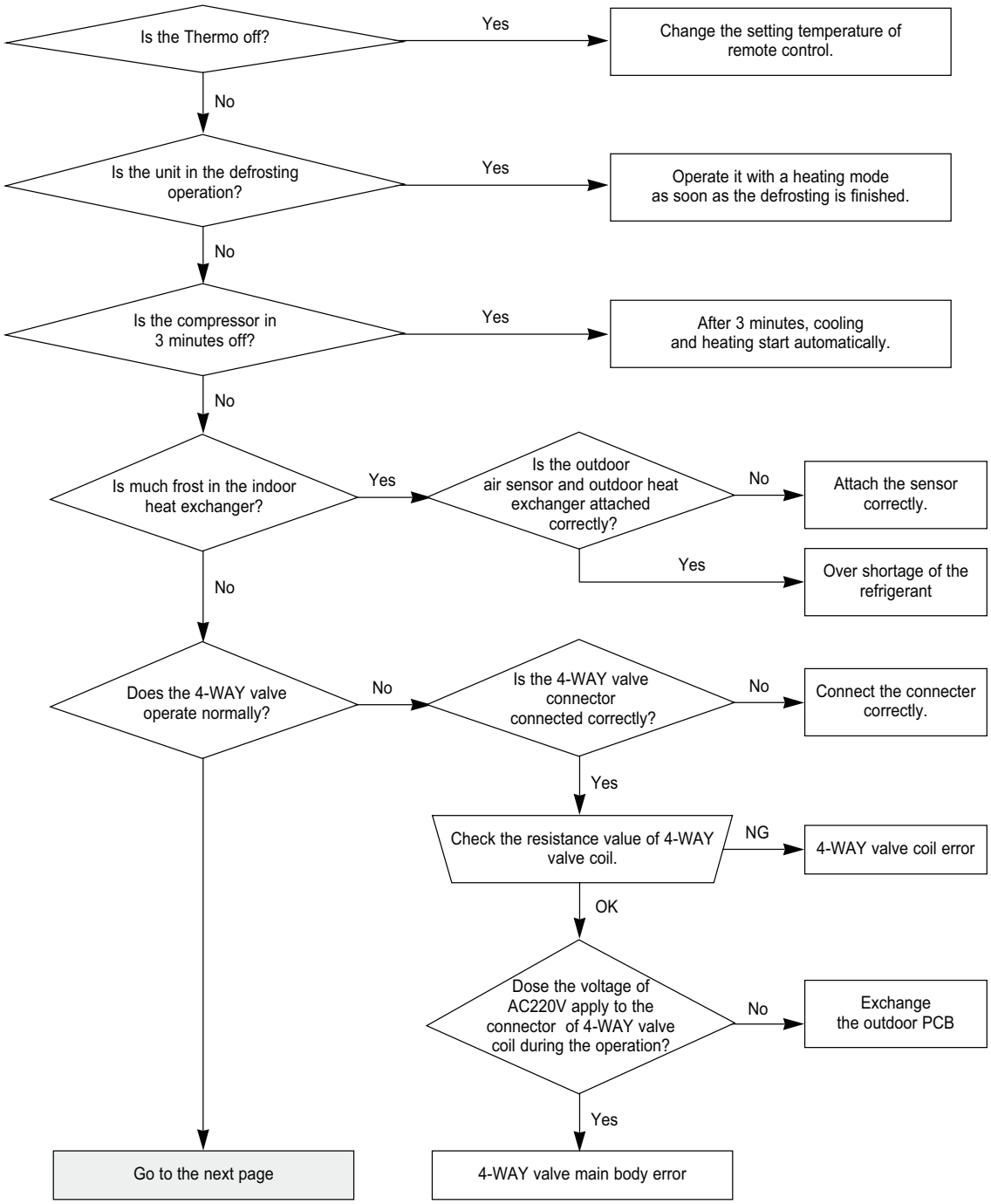
(2) Troubleshooting procedure

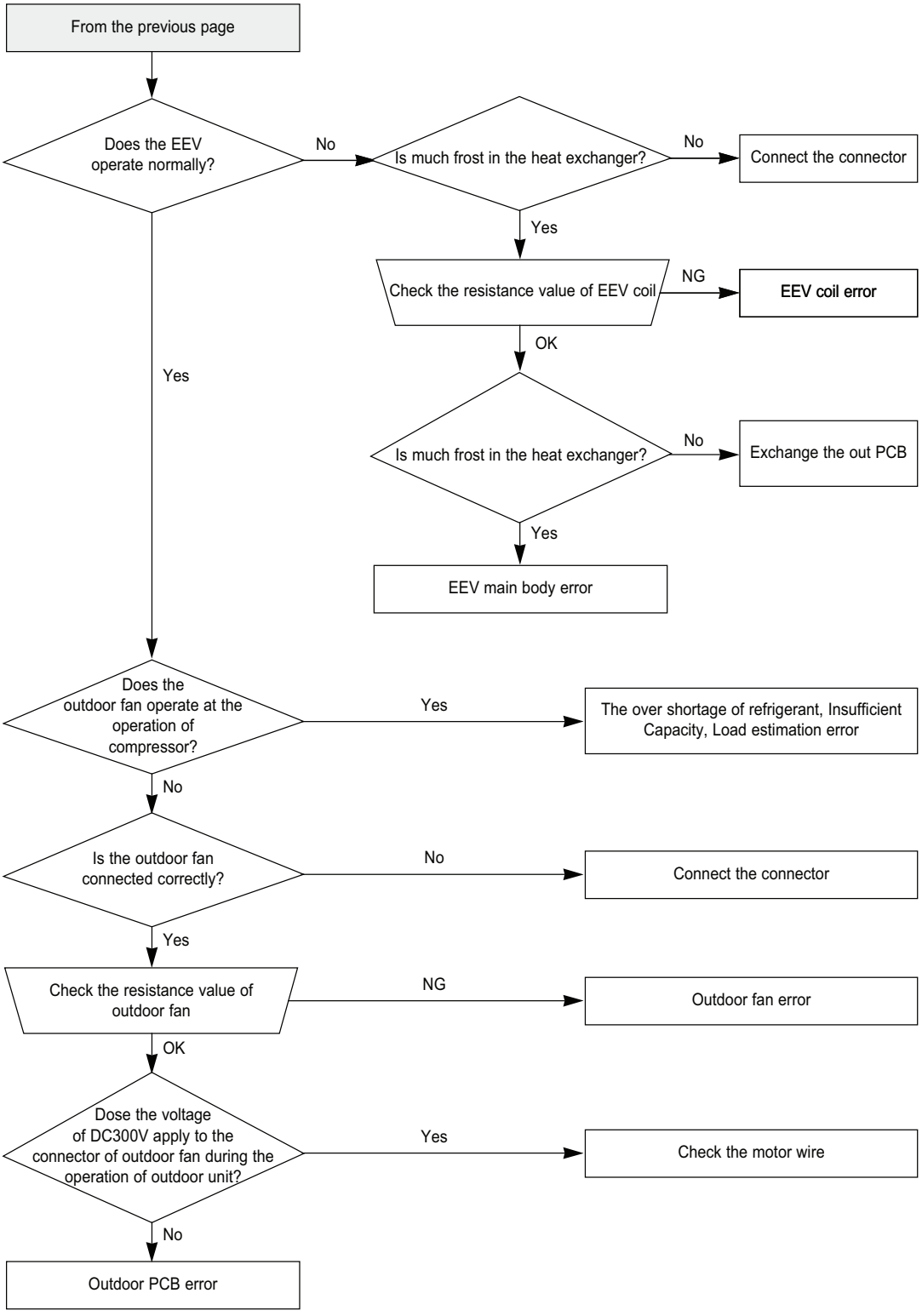


3-2. UH090EAV/UH105EAV/UH140EAV/UH105EAS

5) In Case of heating at the cooling mode or cooling at the heating mode

(1) Troubleshooting procedure




From the previous page
Does the EEV operate normally?
No
Is much frost in the heat exchanger?
No
Connect the connector
Yes
Check the resistance value of EEV coil
NG
EEV coil error
OK
Yes
Is much frost in the heat exchanger?
No
Exchange the out PCB
Yes
EEV main body error
Does the outdoor fan operate at the operation of compressor?
Yes
The over shortage of refrigerant, Insufficient Capacity, Load estimation error
No
Is the outdoor fan connected correctly?
No
Connect the connector
Yes
Check the resistance value of outdoor fan
NG
Outdoor fan error
OK
Dose the voltage of DC300V apply to the connector of outdoor fan during the operation of outdoor unit?
Yes
Check the motor wire
No
Outdoor PCB error

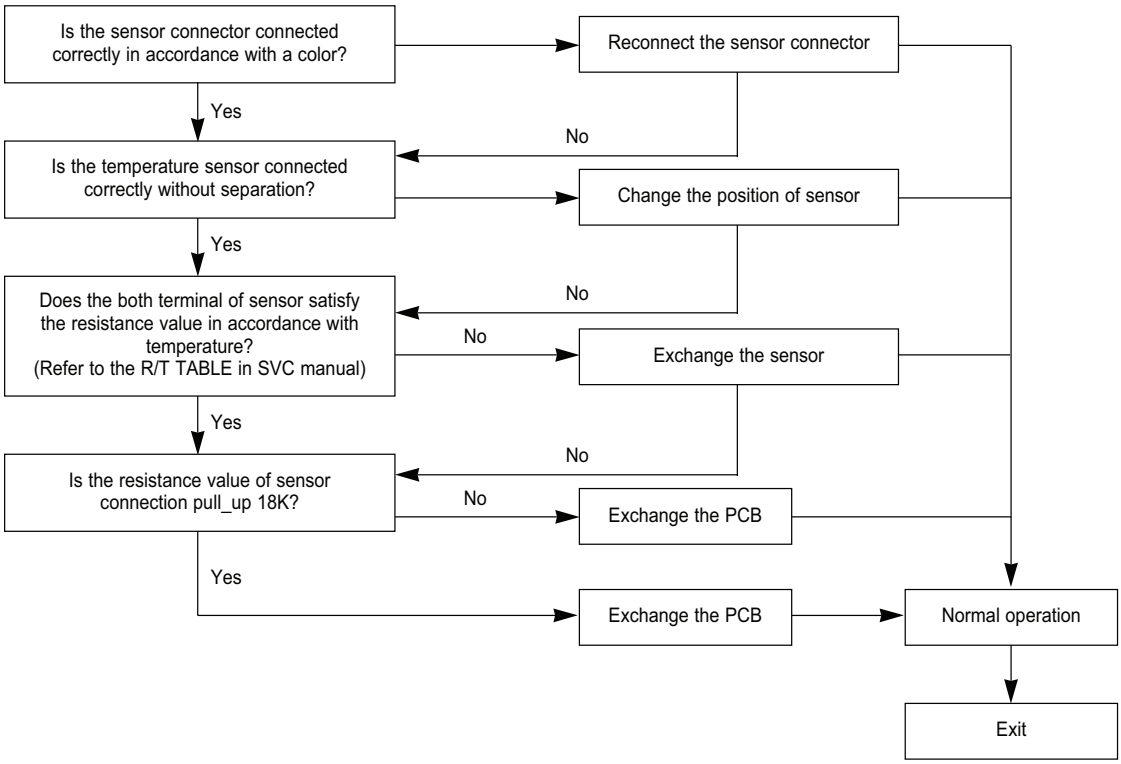
3-2. UH090EAV/UH105EAV/UH140EAV/UH105EAS

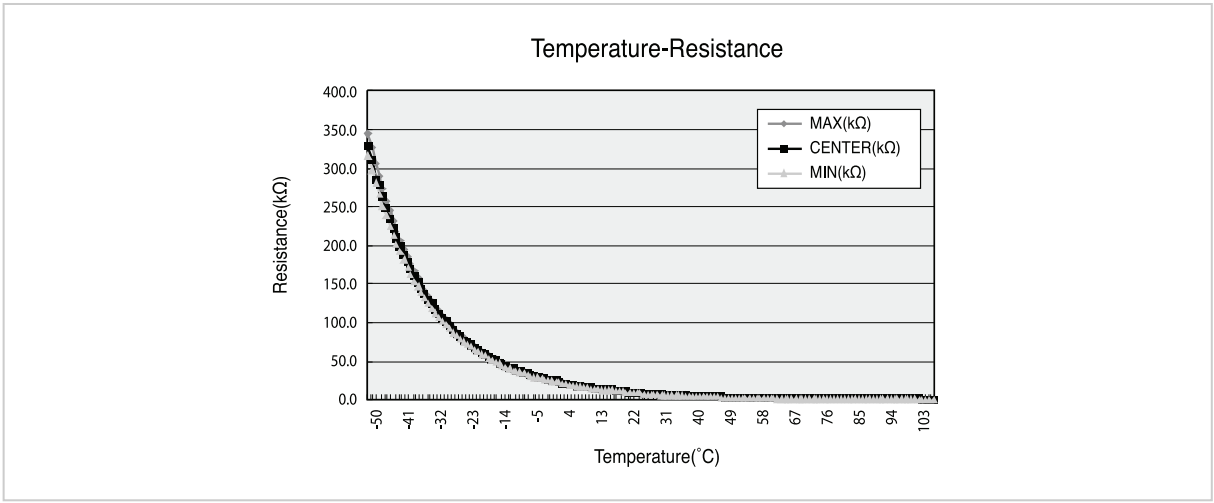
6) Outdoor temperature sensor error

(1) Checklist :

- ◆ Is the sensor connector connected correctly?
- ◆ Is the sensor placed correctly?
- ◆ Does the both terminal of sensor satisfy the resistance value in accordance with temperature?
- ◆ Is the resistance value of sensor connection pull_up correct?

(2) Troubleshooting procedure



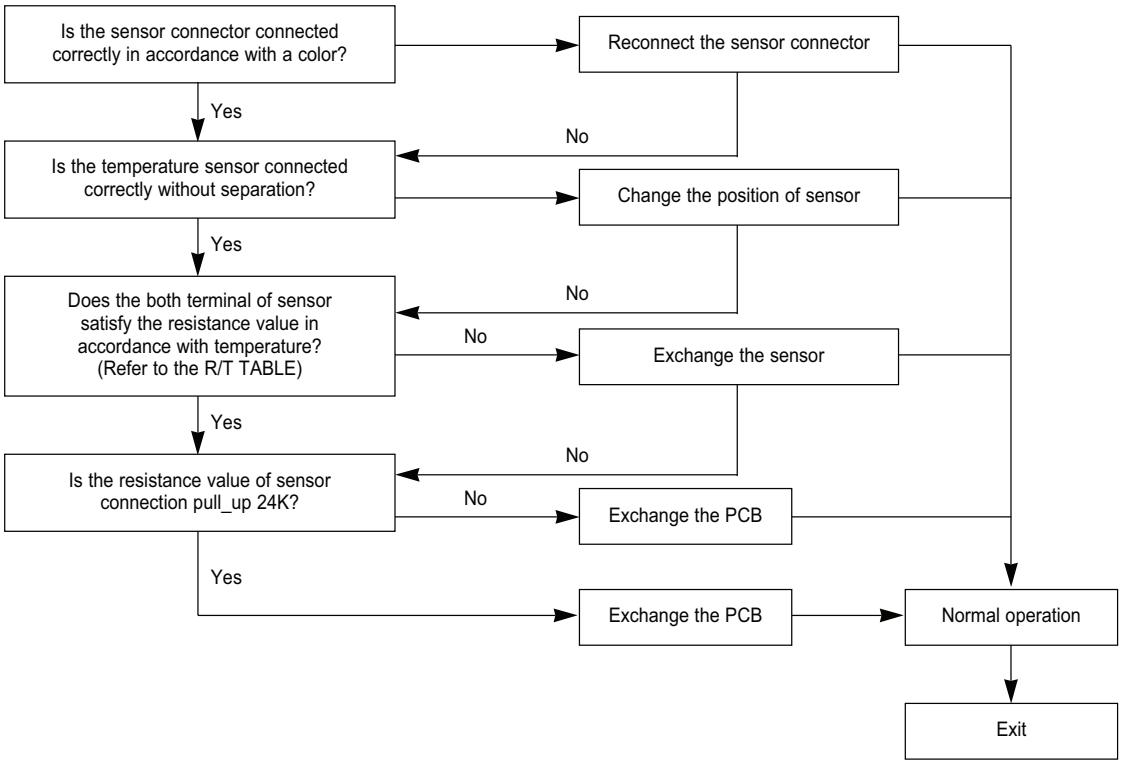


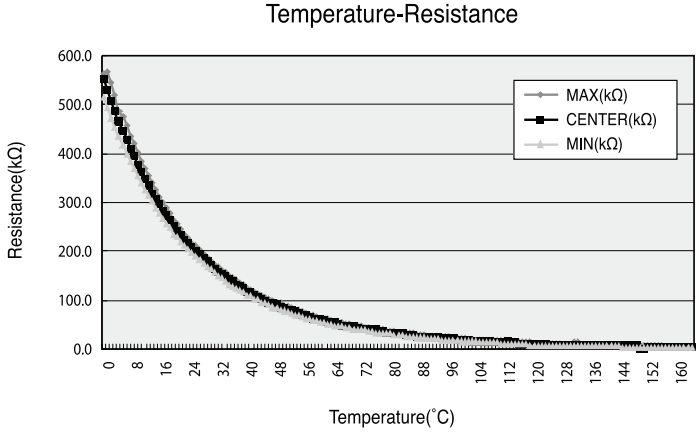
7) Discharge temperature sensor error

(1) Checklist :

- ◆ Is the sensor connector connected correctly?
- ◆ Is the sensor placed correctly?
- ◆ Does the both terminal of sensor satisfy the resistance value in accordance with temperature?
- ◆ Is the resistance value of sensor connection pull_up correct?

(2) Troubleshooting procedure





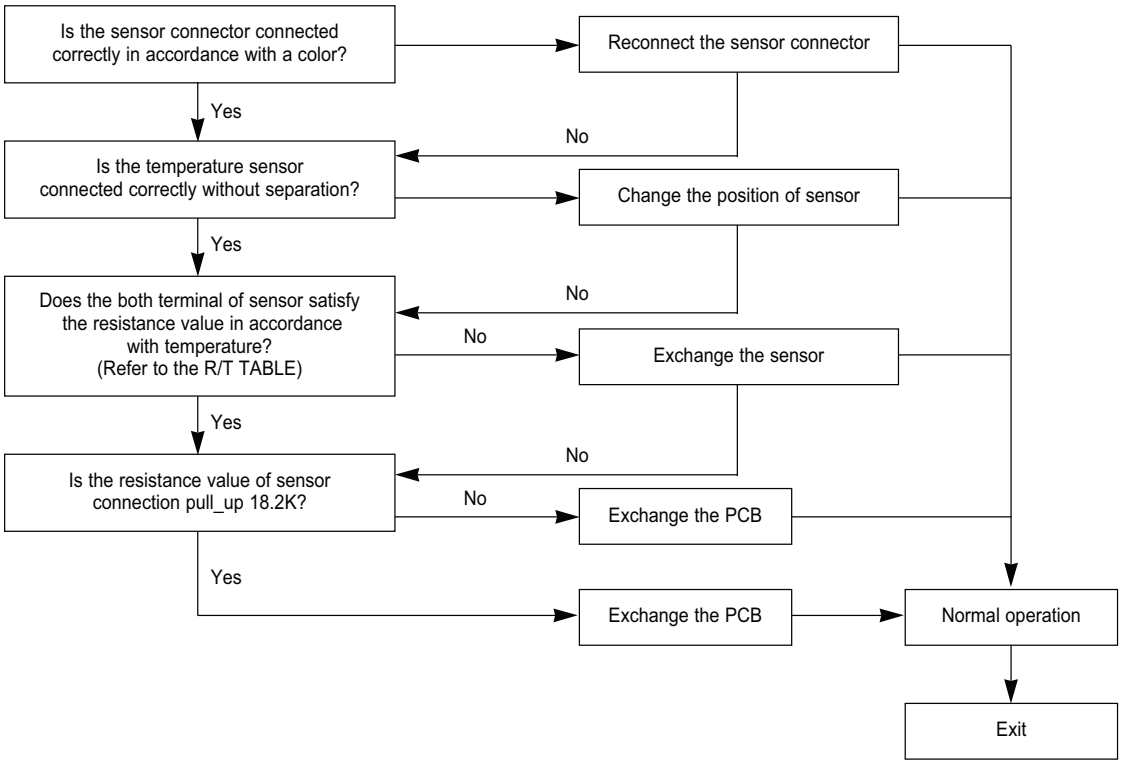
3-2. UH090EAV/UH105EAV/UH140EAV/UH105EAS

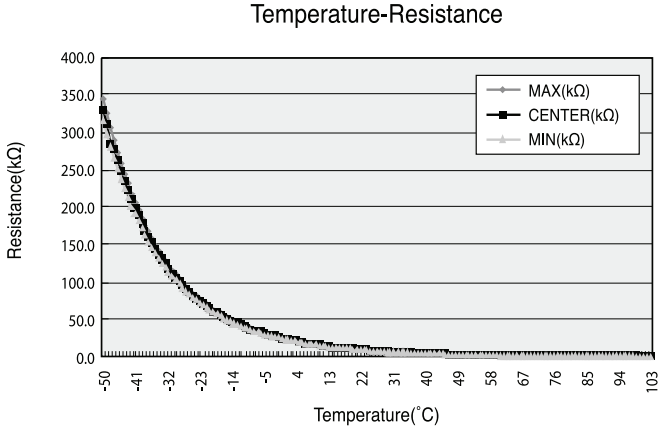
8) Coil temperature sensor error

(1) Checklist :

- ◆ Is the sensor connector connected correctly?
- ◆ Is the sensor placed correctly?
- ◆ Does the both terminal of sensor satisfy the resistance value in accordance with temperature?
- ◆ Is the resistance value of sensor connection pull_up correct?

(2) Troubleshooting procedure



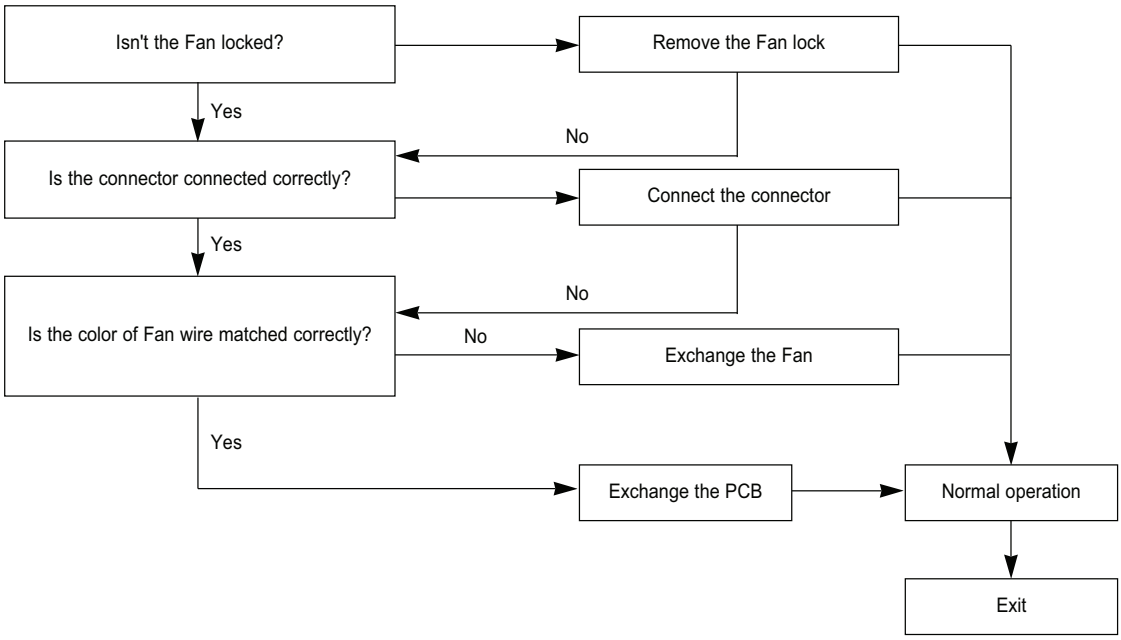


9) Fan error

(1) Checklist :

- ◆ Isn't the fan locked?
- ◆ Is the sensor placed correctly?
- ◆ Does the both terminal of sensor satisfy the resistance value in accordance with temperature?
- ◆ Is the resistance value of sensor connection pull_up correct?

(2) Troubleshooting procedure



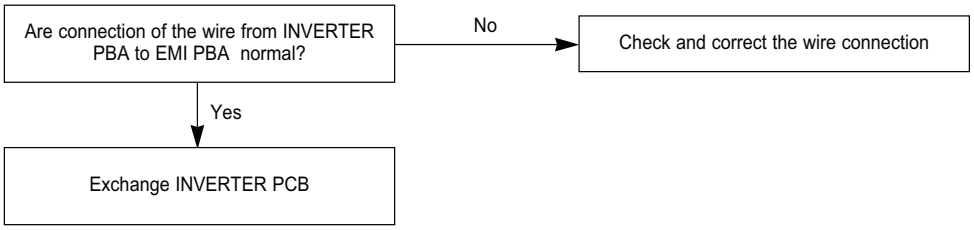
3-2. UH090EAV/UH105EAV/UH140EAV/UH105EAS

10) Discharge temperature sensor error

(1) Checklist :

- ◆ Is the connection of R, S, T power wire normal?
- ◆ Are Relay RY21 and R200 on the INVERTER PCB mounted normally?
- ◆ Are Relay RY01 and RY01 on the INVERTER PCB mounted normally?

(2) Troubleshooting procedure

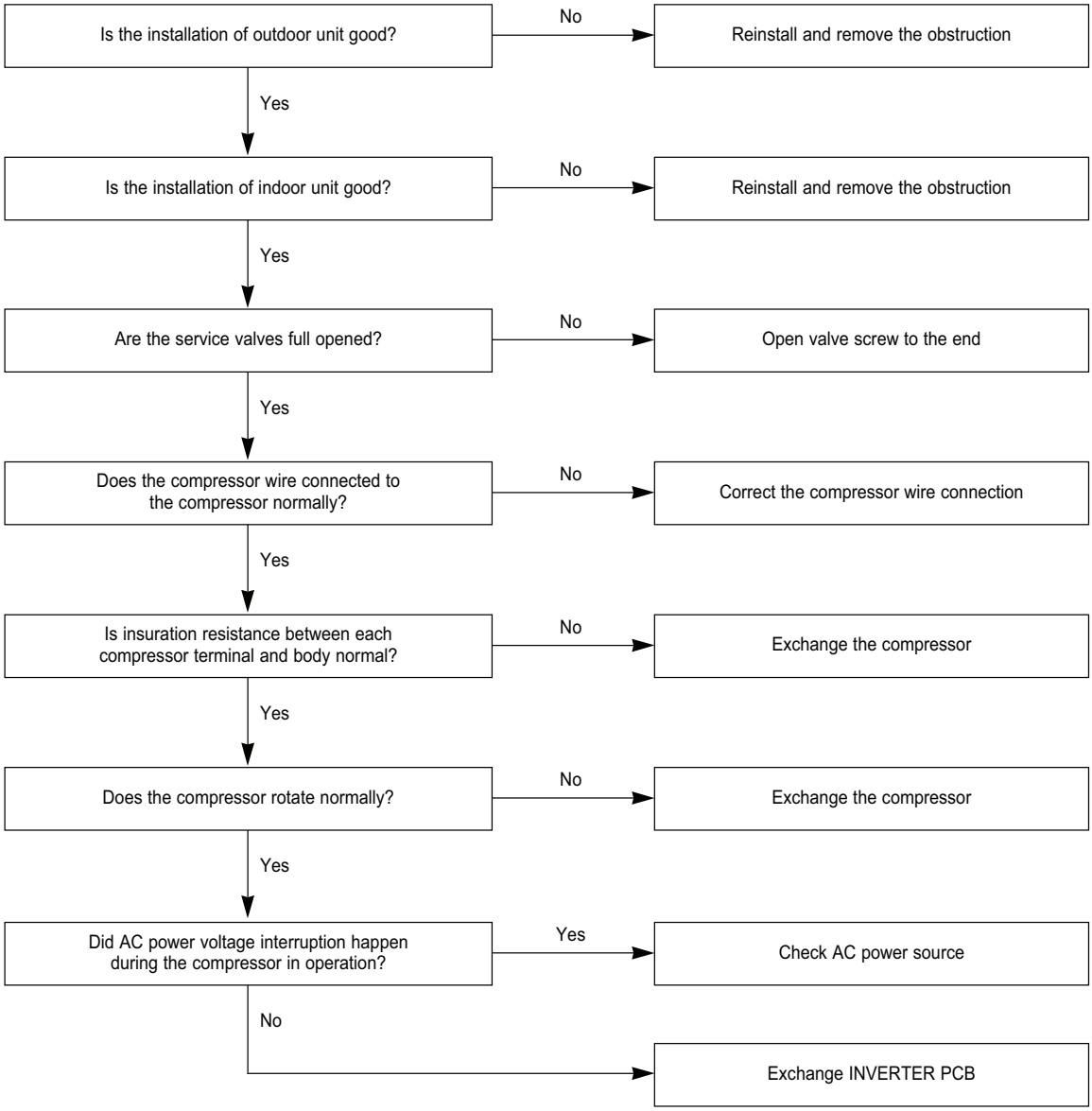


11) O.C.(Over Current) error

(1) Checklist :

- ◆ Is the refrigerant charged properly?
- ◆ Does the compressor rotate normally?(Reverse rotation, Locking etc.)
- ◆ Is connection of compressor wire normal?
- ◆ Is compressor motor normal?(Insulation, Coil resistance etc.)
- ◆ Does a temporary cycle overload condition happened?

(2) Troubleshooting procedure



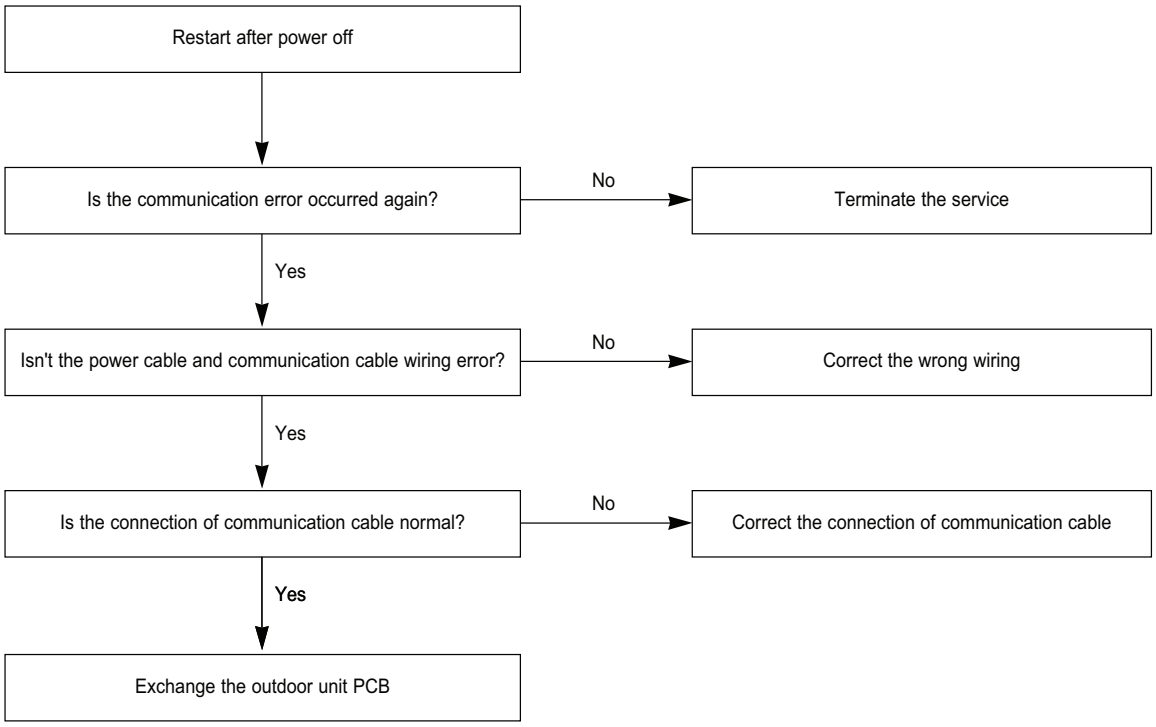
3-2. UH090EAV/UH105EAV/UH140EAV/UH105EAS

12) Communication error

(1) Checklist :

- ◆ Is the communication cable between the indoor unit and outdoor unit connected correctly?
- ◆ Isn't the power cable and communication cable wiring error?

(2) Troubleshooting procedure

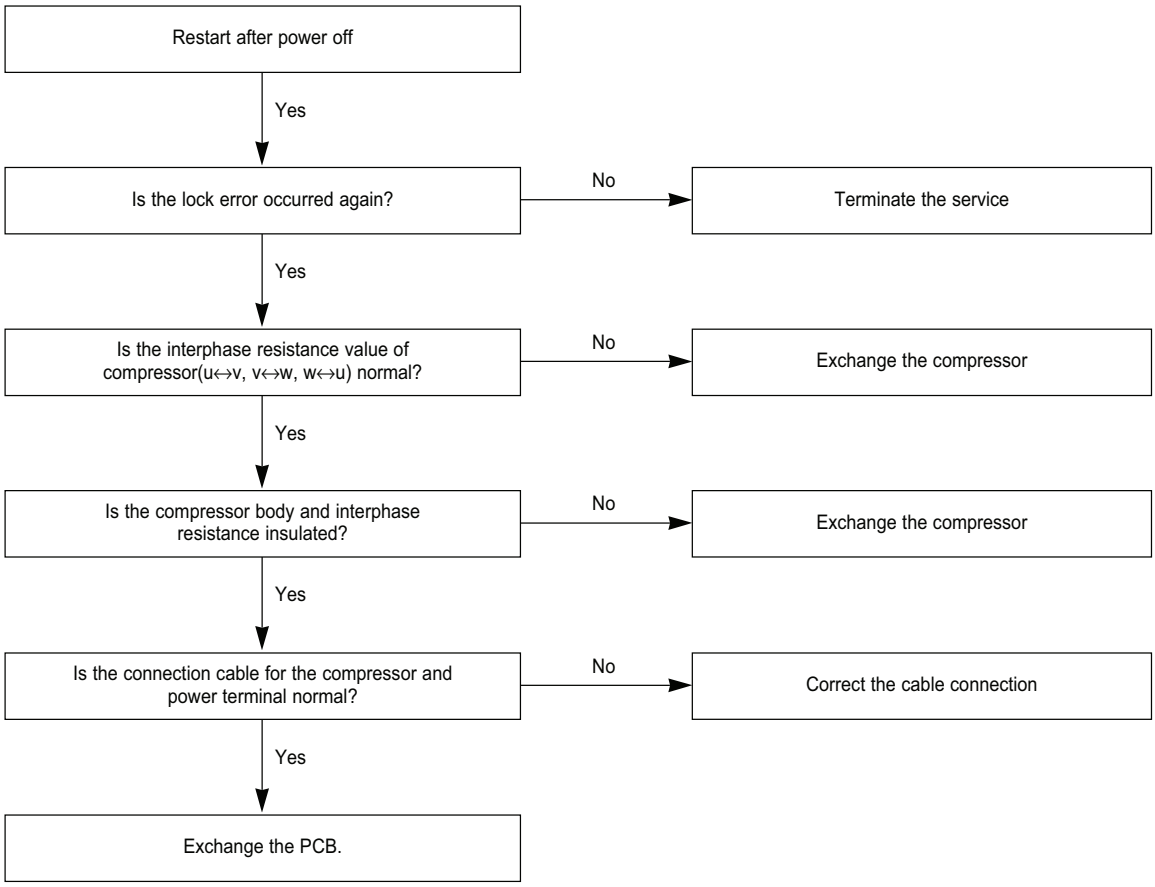


13) Compressor lock error

(1) Checklist :

- ◆ Is the connection of cable for the compressor and power?
- ◆ Is the interphase resistance of compressor normal?

(2) Troubleshooting procedure

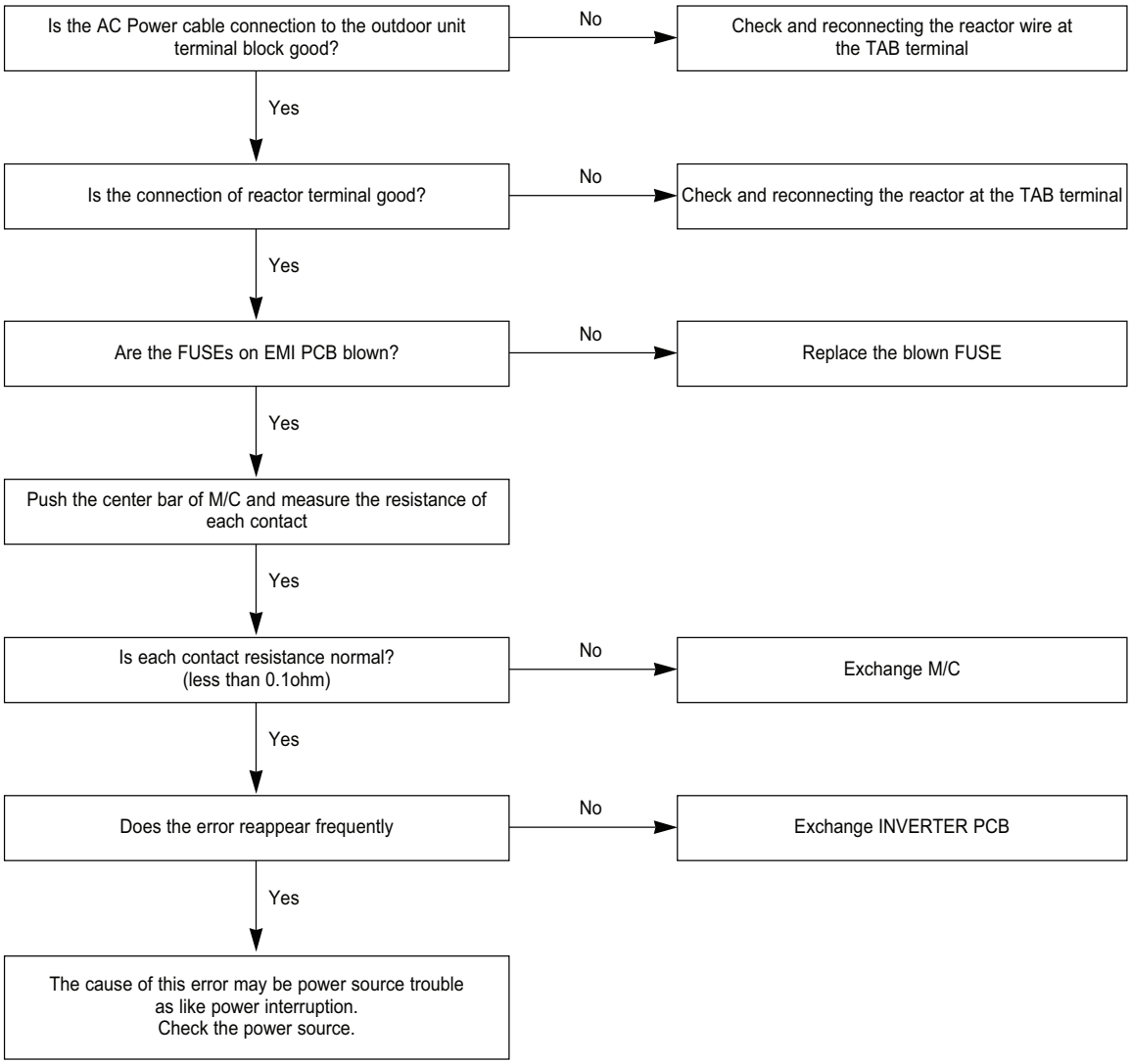


3-2. UH090EAV/UH105EAV/UH140EAV/UH105EAS

14) DC Link over voltage/ low voltage error

(1) Checklist :
- ◆ Is the power voltage normal?(Lightning, Power interruption etc.)
- ◆ Is AC Power cable connection normal?(Detaching the wire)

(2) Troubleshooting procedure



16) The Others

(1) Capacity miss match
- ◆ Check again the indoor unit option code.

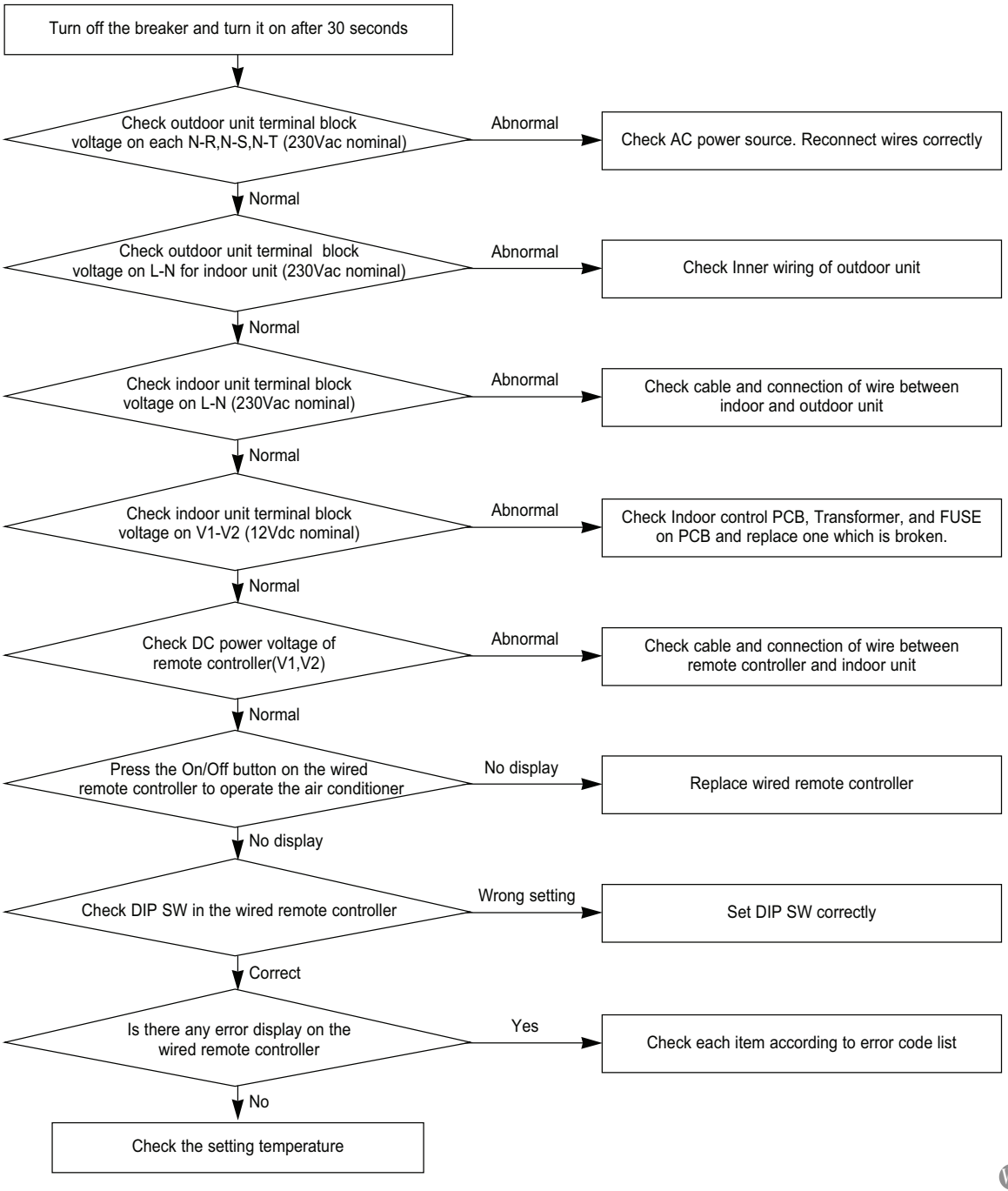
3-3. UH105GAV/UH140GAV

1) No power(completely dead)-initial diagnosis

(1) Checklist :

- ◆ Is Power source voltage normal?
- ◆ Is AC power linked correctly?(miss-wiring, wire detaching etc.)
- ◆ Is any LED on the MAIN PCB of Outdoor unit lit?
- ◆ Is terminal voltage for indoor unit normal?(230Vac nominal)
- ◆ Is Wired remote controller installed correctly?

(2) Troubleshooting procedure



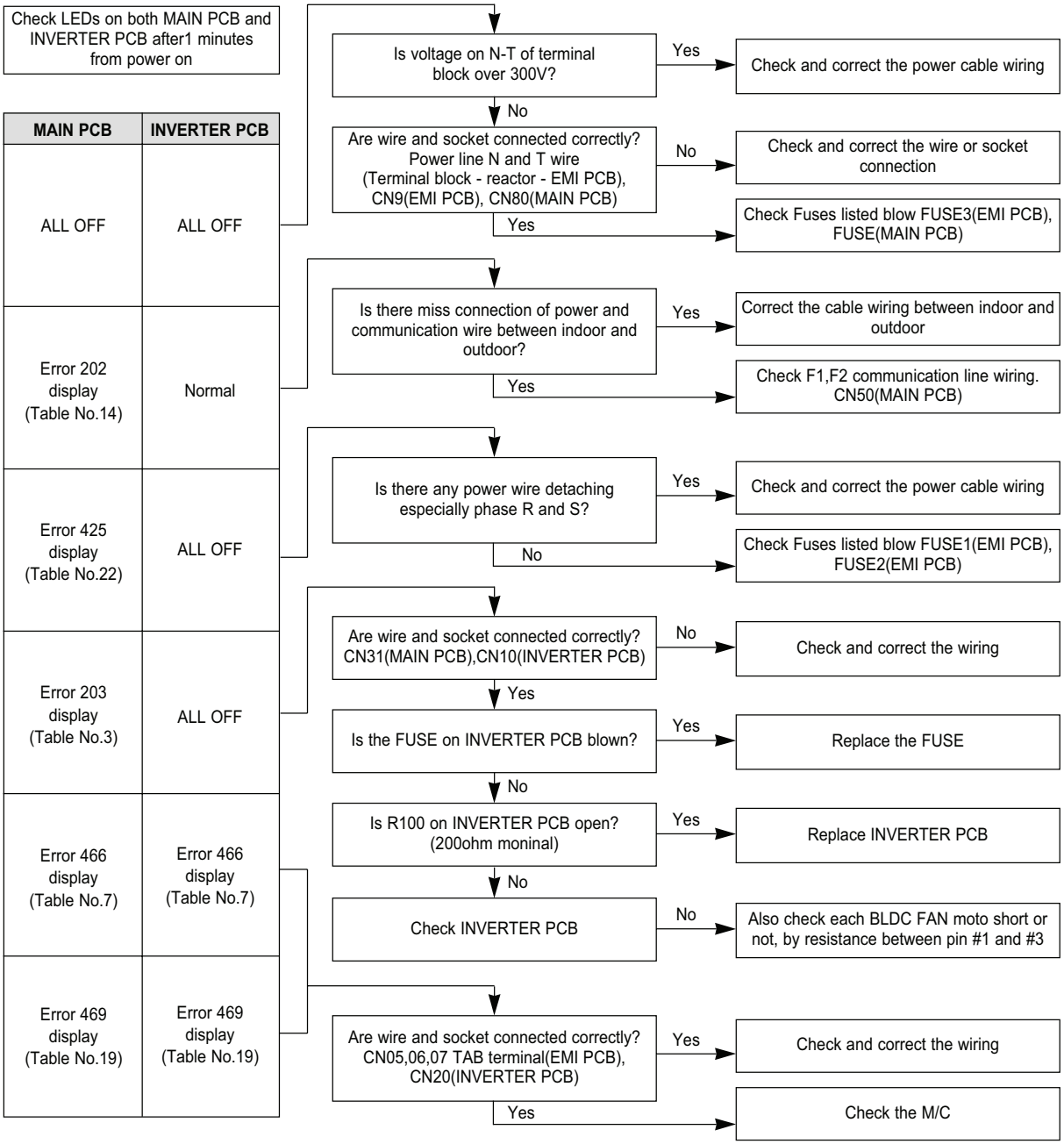
3-3. UH105GAV/UH140GAV

2) The outdoor unit power supply error

(1) Checklist :

- ◆ Are the input power voltage and power connection correct?
- ◆ Is there any Fuse Short of the indoor or outdoor unit?
- ◆ Is any LED lit on both MAIN PCB and INVERTER PCB?
- ◆ Are Reactor wires of the outdoor unit connected correctly?

(2) Troubleshooting procedure

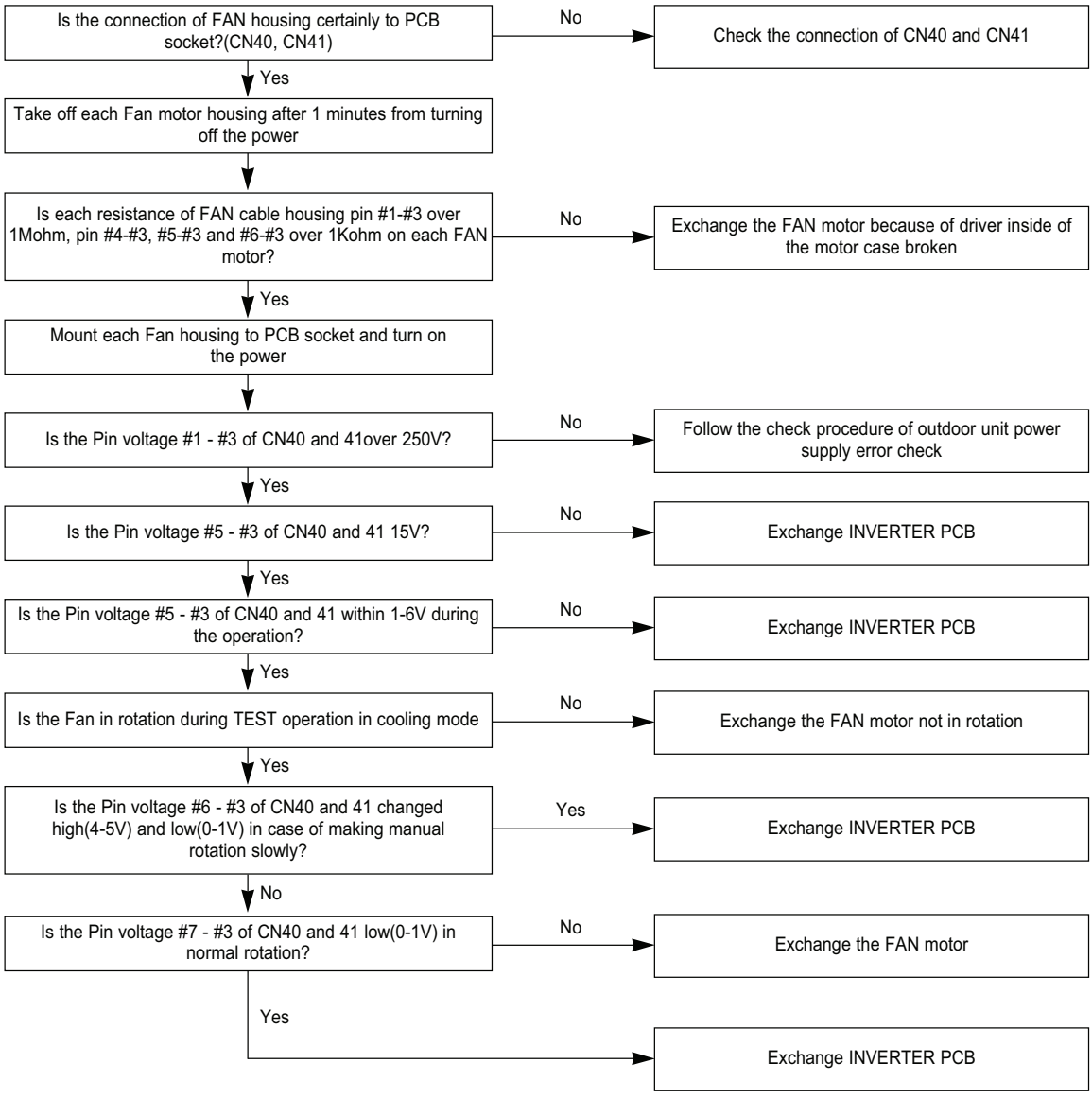


3) The outdoor unit fan error

(1) Checklist :

- ◆ Are the input power voltage and power connection correct?
- ◆ Is the motor wire connected to the outdoor PCB correctly?
- ◆ Is there no obstacle at the surrounding of motor and propeller?
- ◆ Does the driver in the motor case broken?

(2) Troubleshooting procedure



✳ **TEST operation**

press K900 button on the MAIN PCB after power on.

- once : cooling mode
- twice in a second : heating mode

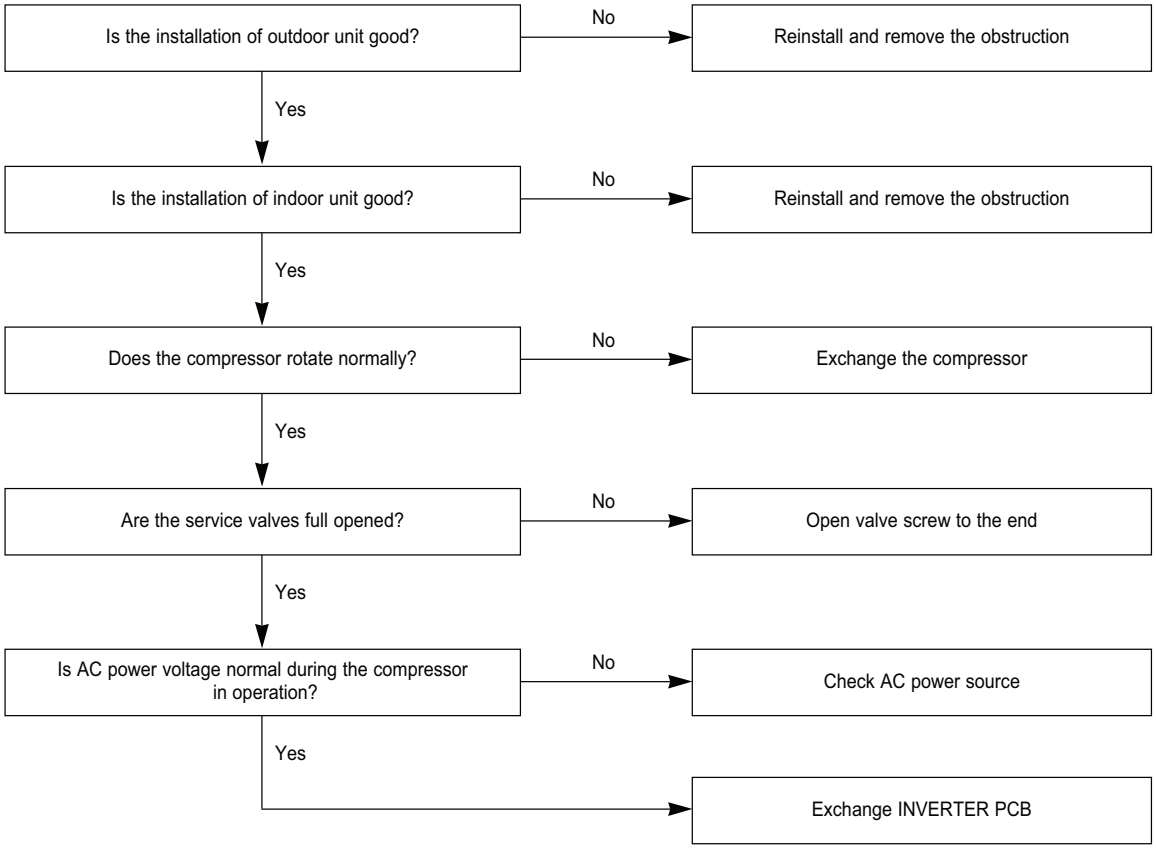
3-3. UH105GAV/UH140GAV

4) Total current trip error

(1) Checklist :

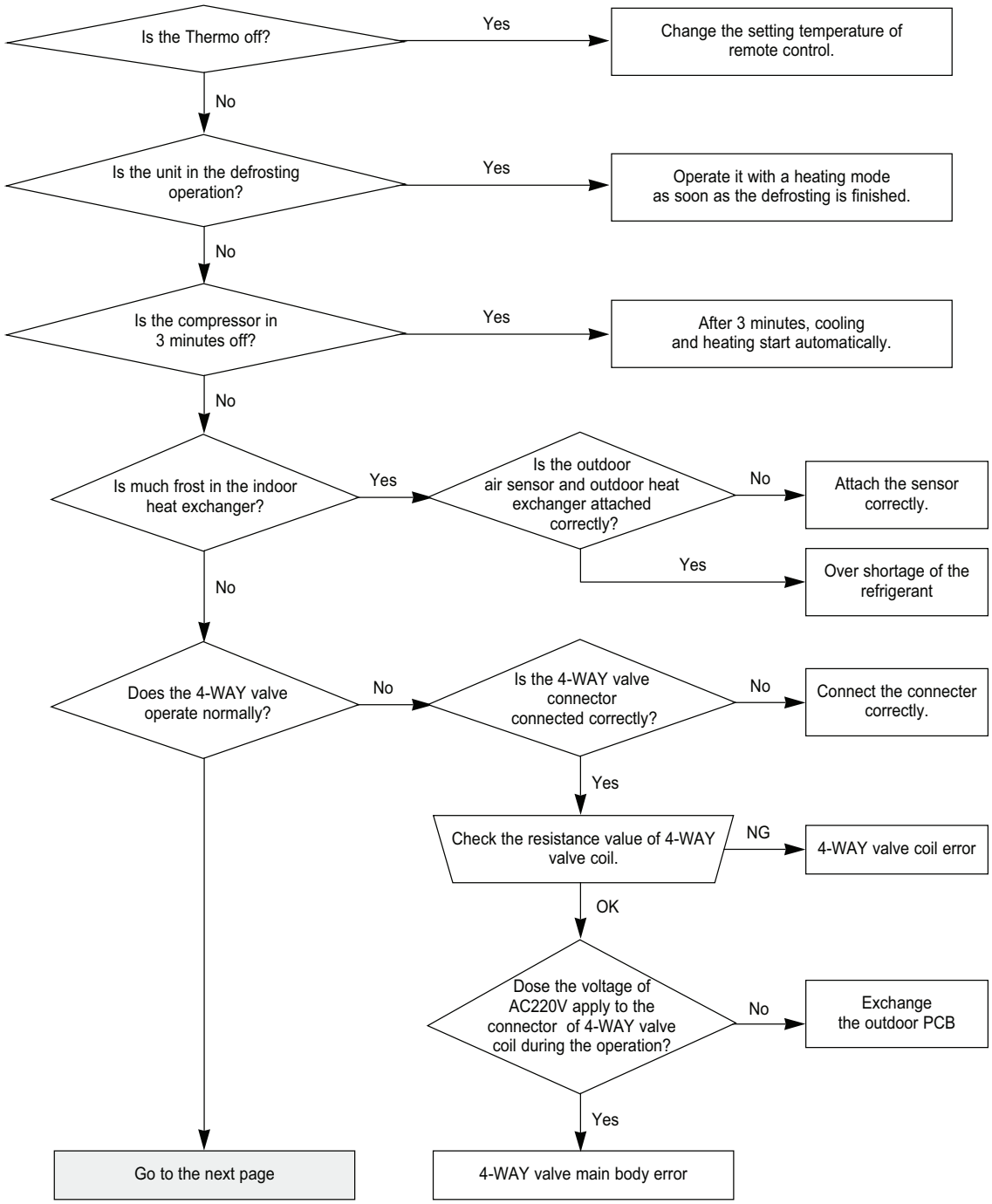
- ◆ Is the input power voltage proper?
- ◆ Is the refrigerant charged properly?
- ◆ Does the compressor rotate normally?(Reverse rotation, Locking etc.)
- ◆ Does the outdoor fan operate normally?(Fan propeller loss, Motor error ect.)
- ◆ Is the installation condition of outdoor unit good?(Piping, Space etc.)
- ◆ Is there no ventilation obstruction at the surrounding of outdoor unit?(Outdoor unit cover, Fan front obstruction etc.)
- ◆ Is there no ventilation obstruction at the surrounding of indoor unit?(Overload condition in heating mode)

(2) Troubleshooting procedure



5) In case of heating at the cooling mode or cooling at the heating mode

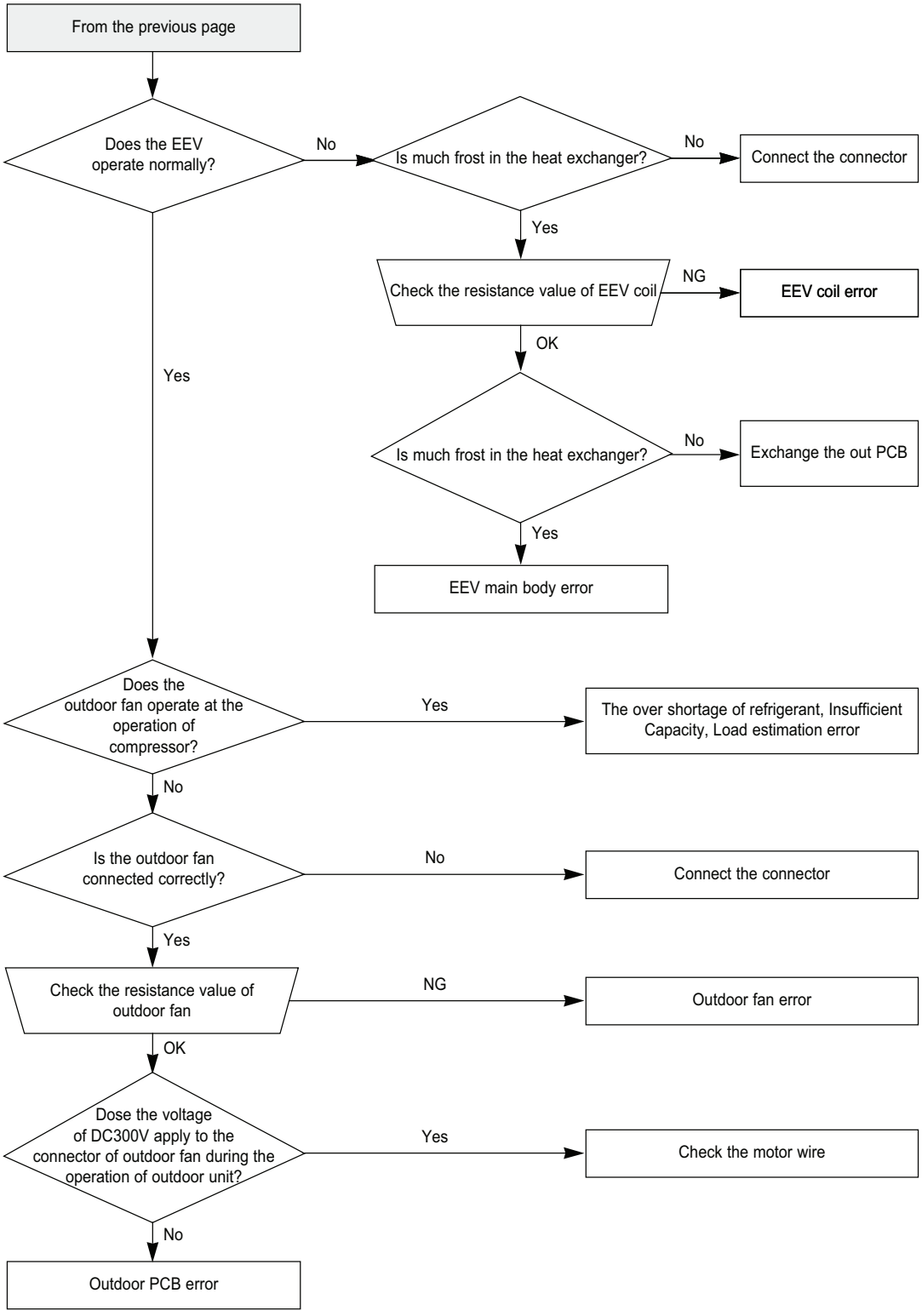
(1) Troubleshooting procedure



3-3. UH105GAV/UH140GAV

5) In case of heating at the cooling mode or cooling at the heating mode

(1) Troubleshooting procedure

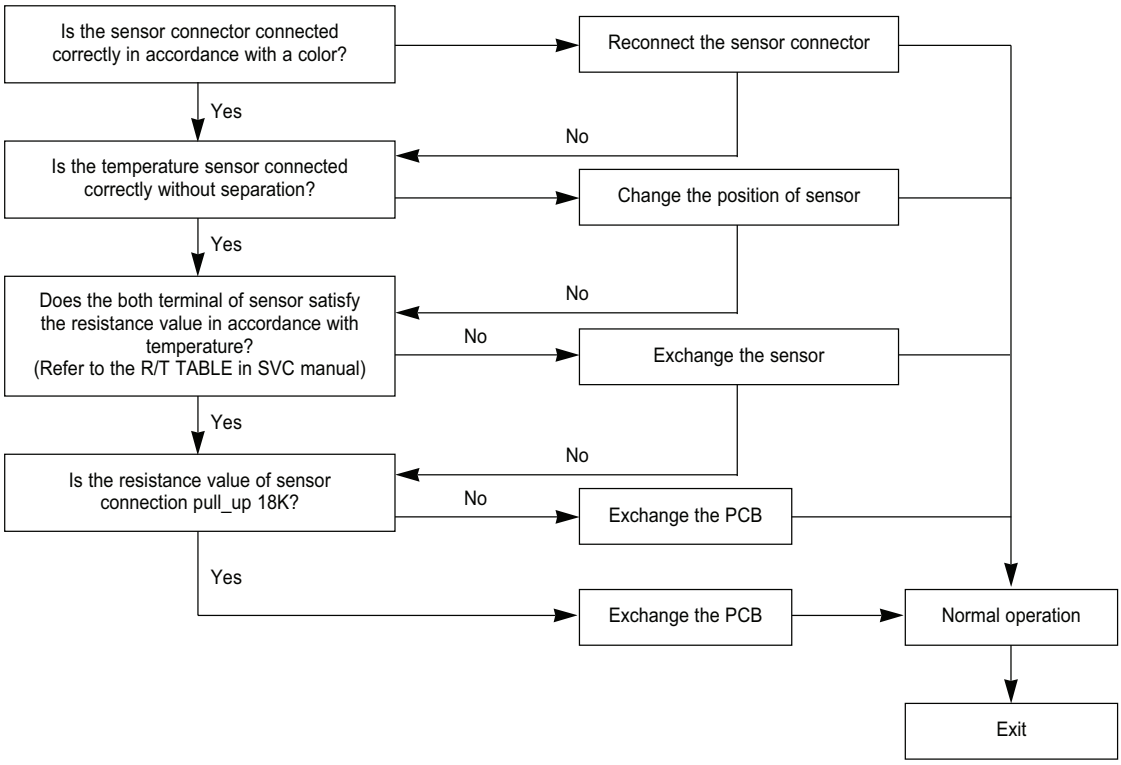


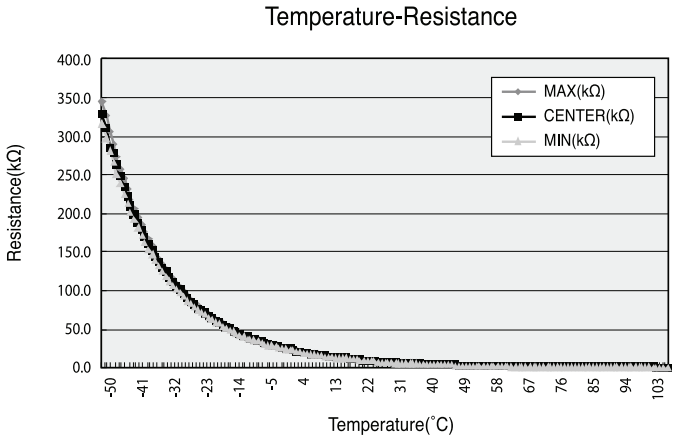
6) Outdoor temperature sensor error

(1) Checklist :

- ◆ Is the sensor connector connected correctly?
- ◆ Is the sensor placed correctly?
- ◆ Does the both terminal of sensor satisfy the resistance value in accordance with temperature?
- ◆ Is the resistance value of sensor connection pull_up correct?

(2) Troubleshooting procedure





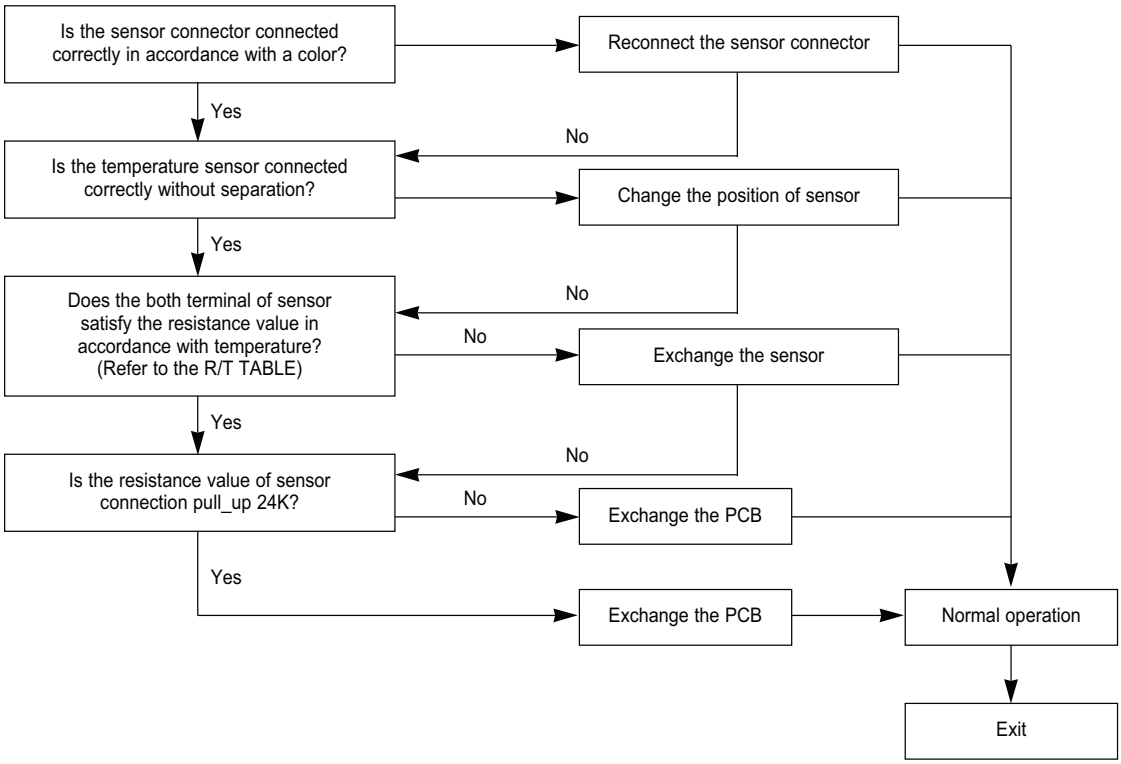
3-3. UH105GAV/UH140GAV

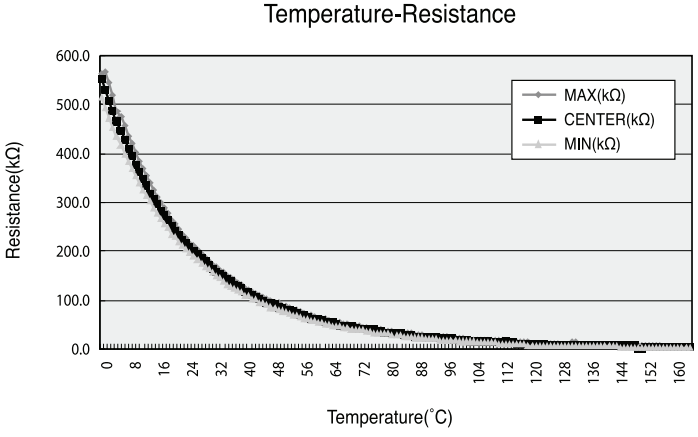
7) Discharge temperature sensor error

(1) Checklist :

- ◆ Is the sensor connector connected correctly?
- ◆ Is the sensor placed correctly?
- ◆ Does the both terminal of sensor satisfy the resistance value in accordance with temperature?
- ◆ Is the resistance value of sensor connection pull_up correct?

(2) Troubleshooting procedure



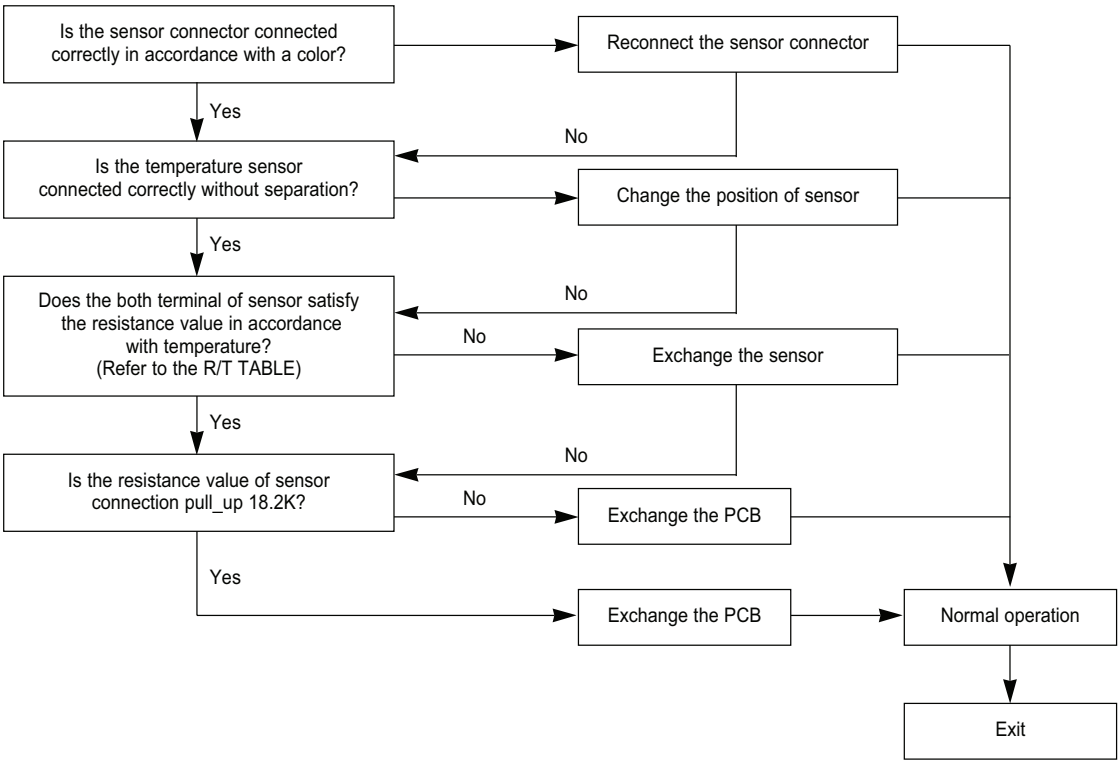


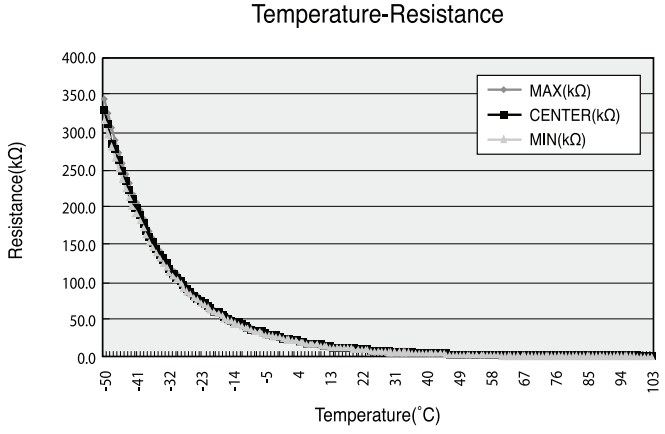
8) Coil temperature sensor error

(1) Checklist :

- ◆ Is the sensor connector connected correctly?
- ◆ Is the sensor placed correctly?
- ◆ Does the both terminal of sensor satisfy the resistance value in accordance with temperature?
- ◆ Is the resistance value of sensor connection pull_up correct?

(2) Troubleshooting procedure





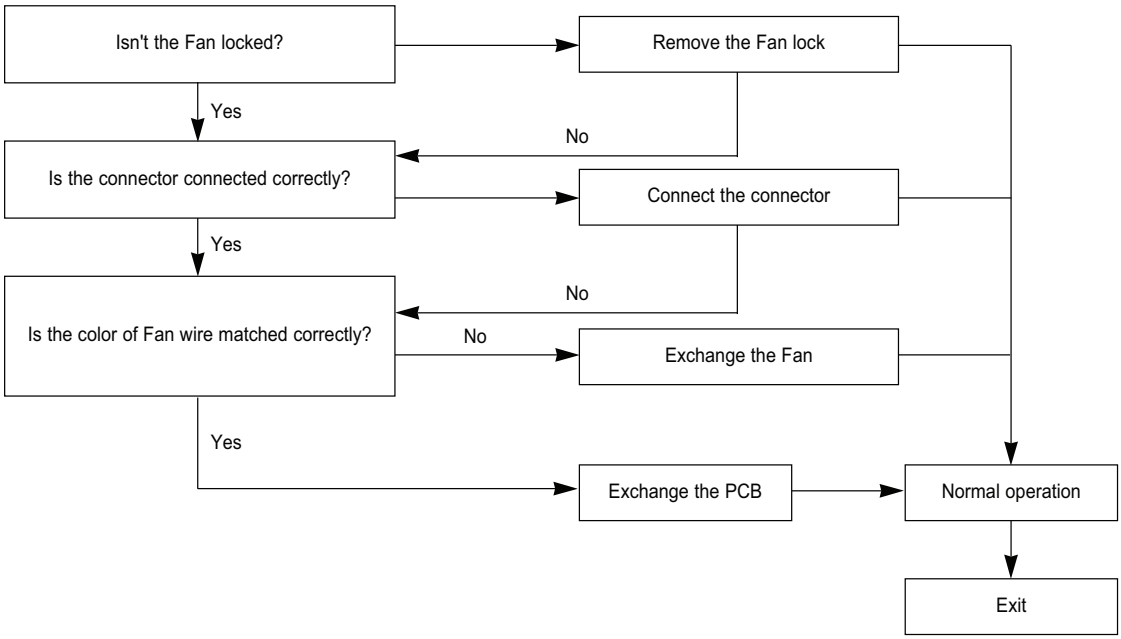
3-3. UH105GAV/UH140GAV

9) Fan error

(1) Checklist :

- ◆ Isn't the fan locked?
- ◆ Is the sensor placed correctly?
- ◆ Does the both terminal of sensor satisfy the resistance value in accordance with temperature?
- ◆ Is the resistance value of sensor connection pull_up correct?

(2) Troubleshooting procedure

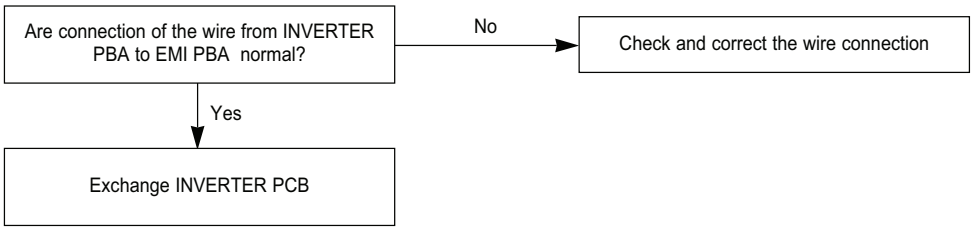


10) Discharge temperature sensor error

(1) Checklist :

- ◆ Is the connection of R, S, T power wire normal?
- ◆ Are Relay RY21 and R200 on the INVERTER PCB mounted normally?

(2) Troubleshooting procedure



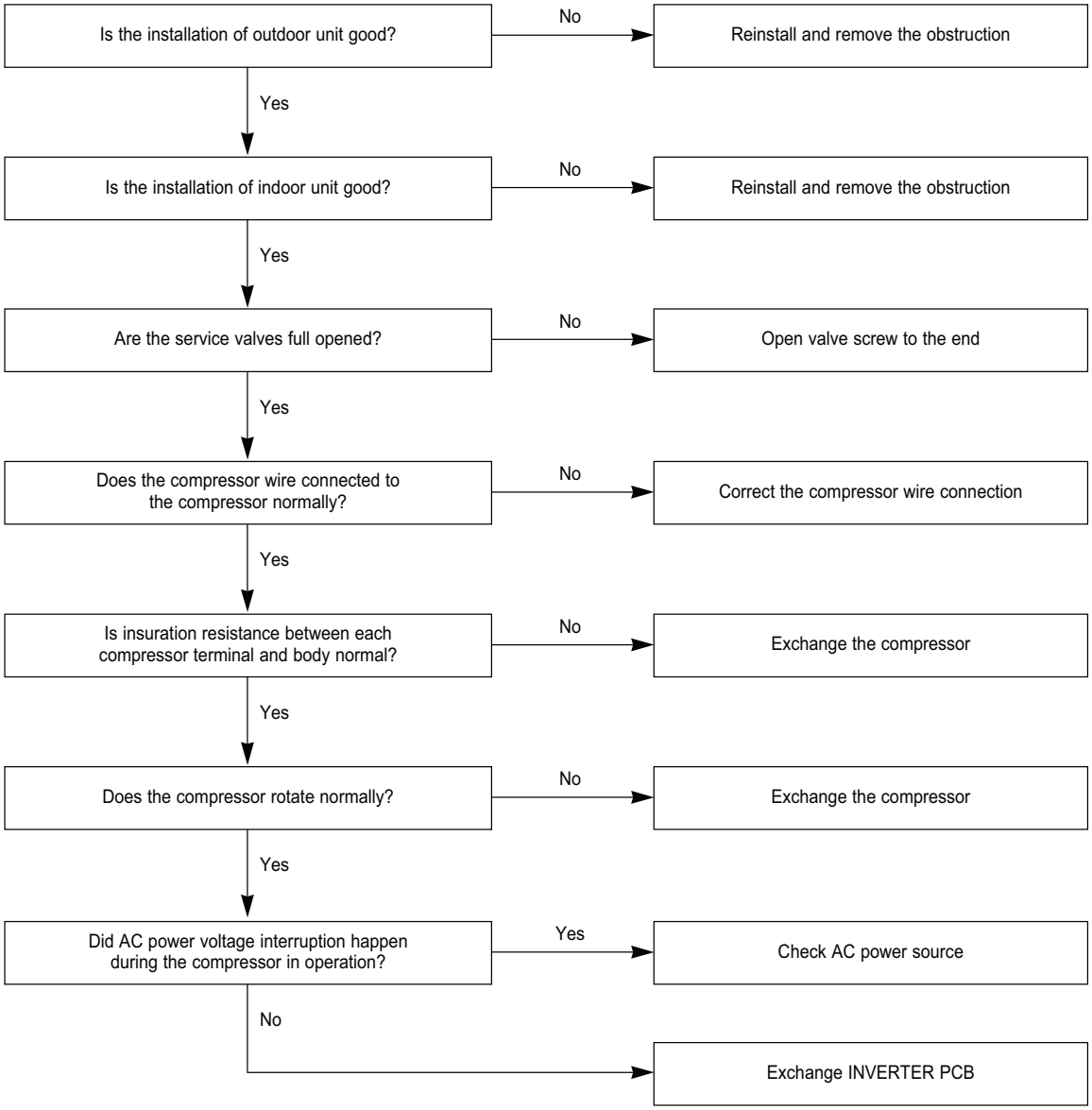
3-3. UH105GAV/UH140GAV

11) O.C.(Over Current) error

(1) Checklist :

- ◆ Is the refrigerant charged properly?
- ◆ Does the compressor rotate normally?(Reverse rotation, Locking etc.)
- ◆ Is connection of compressor wire normal?
- ◆ Is compressor motor normal?(Insulation, Coil resistance etc.)
- ◆ Does a temporary cycle overload condition happened?

(2) Troubleshooting procedure

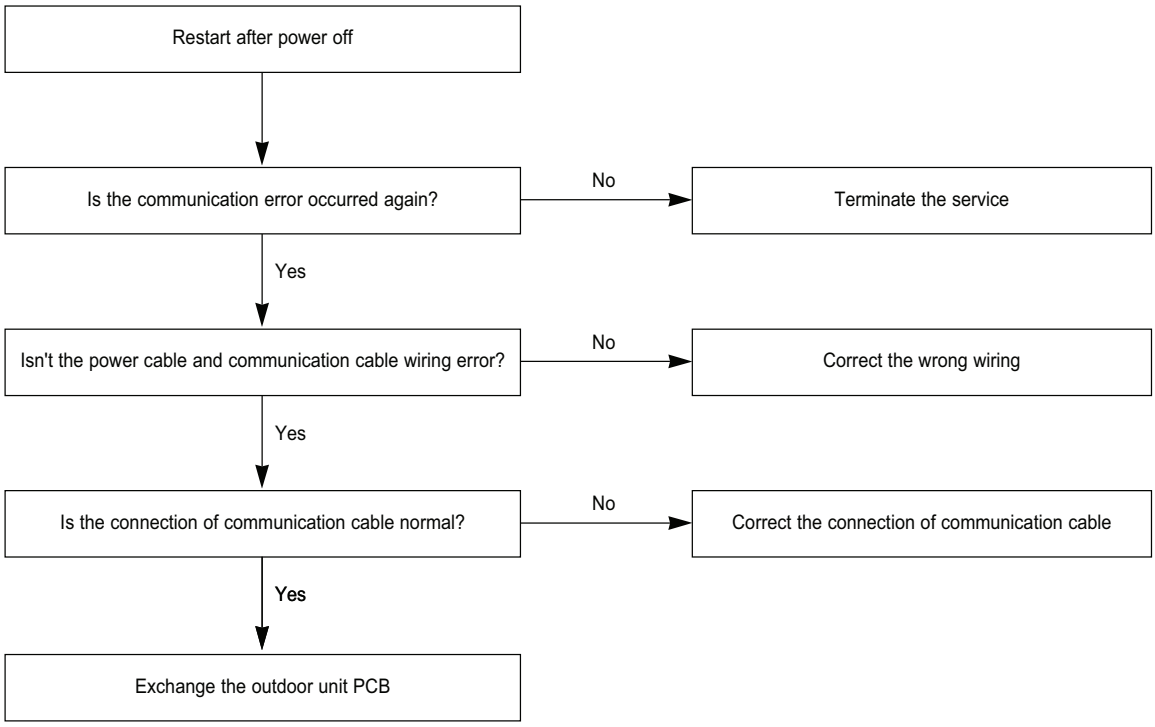


12) Communication error

(1) Checklist :

- ◆ Is the connection of cable for the compressor and power?
- ◆ Is the interphase resistance of compressor normal?

(2) Troubleshooting procedure



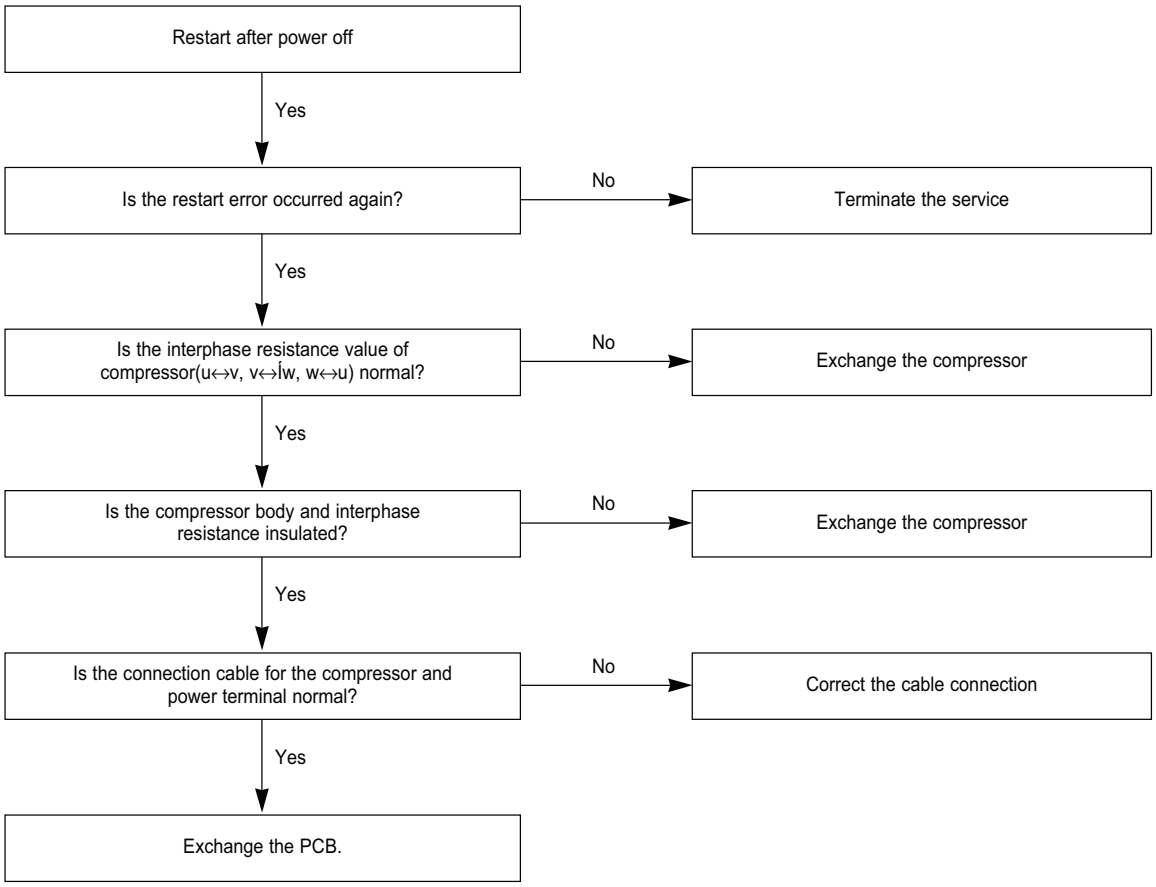
3-3. UH105GAV/UH140GAV

13) Communication error

(1) Checklist :

- ◆ Is the communication cable between the indoor unit and outdoor unit connected correctly?
- ◆ Isn't the power cable and communication cable wiring error?

(2) Troubleshooting procedure

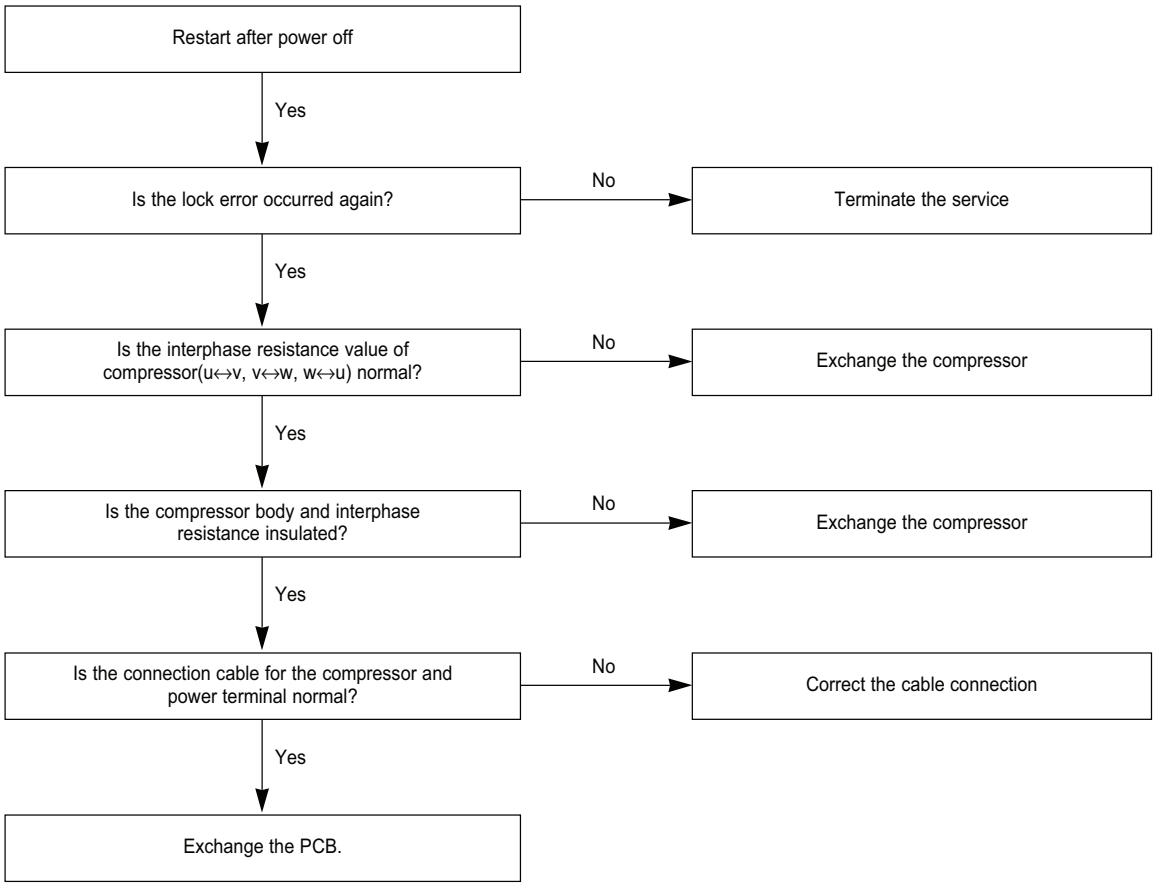


14) Compressor lock error

(1) Checklist :

- ◆ Is the connection of cable for the compressor and power?
- ◆ Is the interphase resistance of compressor normal?

(2) Troubleshooting procedure

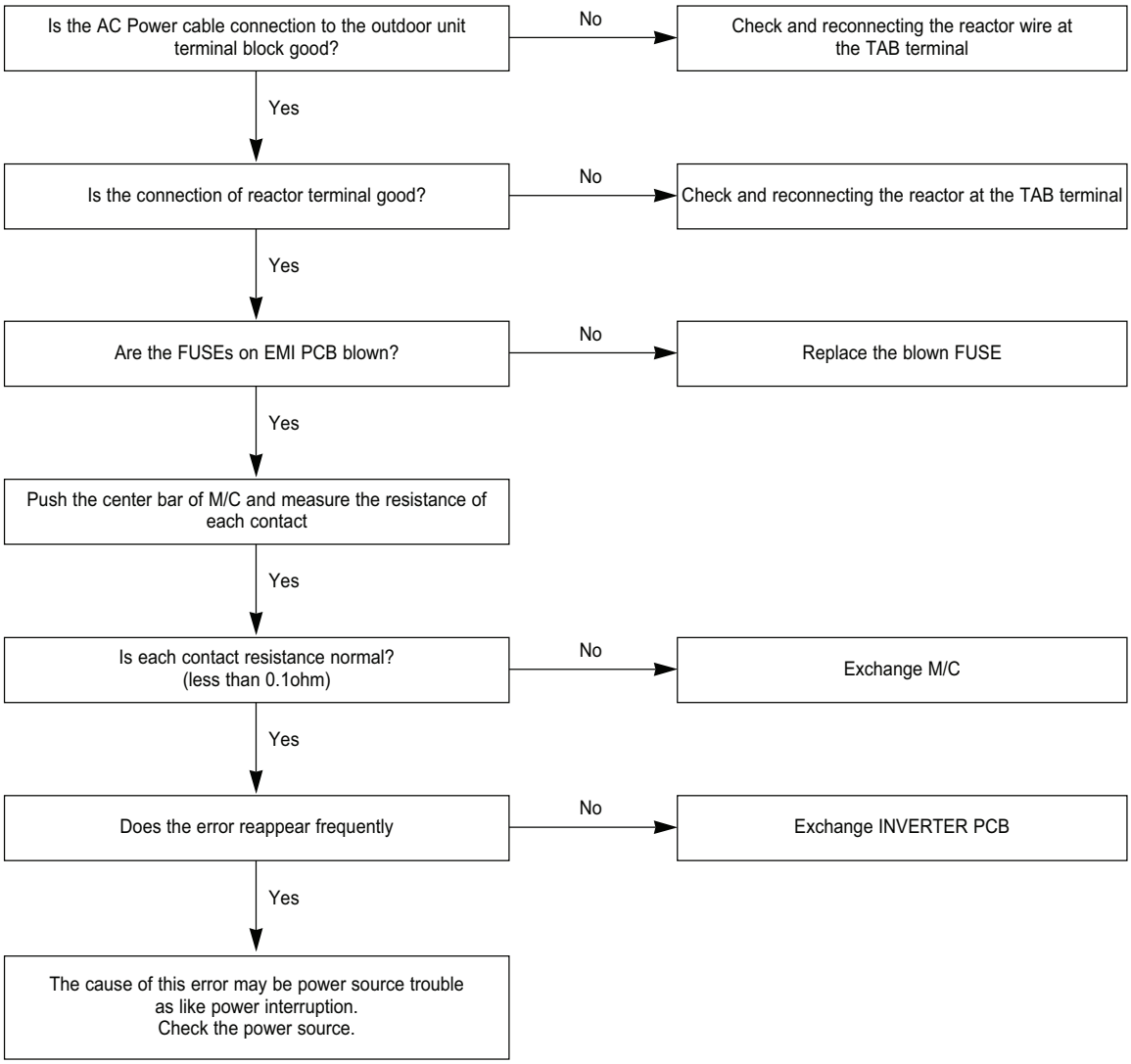


3-3. UH105GAV/UH140GAV

15) DC Link over voltage/ low voltage error

(1) Checklist :
- ◆ Is the power voltage normal?(Lightning, Power interruption etc.)
- ◆ Is AC Power cable connection normal?(Detaching the wire)

(2) Troubleshooting procedure



16) The Others

(1) Capacity miss match
- ◆ Check again the indoor unit option code.

4. PCB Inspection

4-1. UH026EAV1/UH035EAV1/UH052EAV1/UH060EAV1/UH070EAV1/ UH052EAS/UH070EAS

1) Pre-inspection notices

(1) Check if you pulled out the AC power plug when you eliminate the PCB or front panel.
(2) Don't hold the PCB side not impose excessive force on it to eliminate the PCB.
(3) Don't pull the lead wire but hold the whole housing to connect or disconnect a connector to the PCB.
(4) In case of outdoor PCB disassembly, check first the complete discharge of condenser(C101) after 30 seconds power off.

2) Inspection procedure

(1) Check connector connection and peeling of PCB or bronze coating pattern when you think the PCB is broken.
(2) The PCB is composed of the 3 parts.
- Indoor Main PCB Part : MICOM and surrounding circuit, relay, room fan motor driving circuit and control circuit, sensor driving circuit, power circuit of DC12V and DC5V, and buzzer driving circuit.
- 7 segment PCB part : 7 segment, switch
- Outdoor Main PCB part : MICOM and surrounding circuit. IPM and PFC circuit and control circuit.
- EMI PCB Part : Line filter and Noise Capacitor, Varistor

3) Detailed inspection procedure

No.	PROCEDURE	INSPECTION METHOD	CAUSE
1	Plug out and pull the PCB out of the electronic box. Check the PCB fuse.	1) Is the fuse disconnected?	• Over current • Indoor Fan Motor Short • AC Part Pattern Short of the MAIN PCB
2	Supply power. If the operating lamp twinkles at this time, the above 1)~3)have no relation.	Checking the power voltage.	
		1) Is the DB71 input voltage AC200V~AC240V?	• Power Cord is fault, Fuse open. Wrong Power Cable Wiring, AC Part is faulty.
		2) Is the voltage between both terminals of the C104 on the 2nd side of the transformer DC12V ±0.5V?	• Switching Trans or Power Circuit is faulty
		3) Is the voltage between both terminals of OUT and GND of IC02(KA7805) DC5V ±0.5V?	• Power Circuit is faulty, Load Short
3	Press the ON/OFF button. 1. FAN Speed [High] 2. Continuous Operation	1) Is the voltage over AC180V being imposed on terminal #3 and #5 of the fan motor connector(CN73)?	• Fan Motor of the indoor is faulty
		2) The fan motor of the indoor unit doesn't run.	• Fan Motor Connector(CN73) is faulty
		3) The power voltage between terminal #3 and #5 of the connector(CN73) is 0V.	• ASS'Y Main PCB is faulty • Connection is faulty

4-1. UH026EAV1/UH035EAV1/UH052EAV1/UH060EAV1/UH070EAV1/ UH052EAS/UH070EAS

4) Outdoor detailed inspection procedure

No.	PROCEDURE	INSPECTION METHOD	CAUSE
1	Wait 30 seconds over after disconnecting the power cable Check the outdoor PCB.	1) Is C101 discharged? 2) Is the resistance of both terminals of C101 opened? 3) Is the fuse of EMI PCB normal? 4) Is the reactor wire connected?	• Over Current • Inner short of PCB • BLDC FAN Motor Error
2	Check the outdoor unit PCB.	1) Is R001 200ohm? 2) Does RY503 operate normally? (IC55 & 8: 0V, 4: 5V) 3) Is the fuse normal?	• Outdoor PCB Error • Relay(RY503) Error • IC55 Error
3	Check the LED lighting after power supply.	1) Normal: Red: Light On, Green: Flickering, Yellow : Light Off? 2) Is the voltage of C101 250V over? 3) Is the input of IC19 8V, and the output 5V? 4) Recheck after disassembling BLDC FAN Wire.	• Inner short of outdoor PCB • Wrong assembly of outdoor PCB • BLDC FAN Error
4	Check the condition of indoor & outdoor connection cable.	1) Is the green LED light on once per second? 2) Is the indoor & outdoor connection cable connected in order? 3) Is the grounding wire connected to the both of indoor & outdoor unit?	• Wrong connection of Indoor/Outdoor wiring • Wrong assembly of outdoor communication circuit
5	Check the Comp Wire.	1) Is it connected red,blue,and yellow in order in counter clockwise. 2) Are the valve and its installation condition good? 3) Is the installation condition of outdoor unit?	• Wrong assembly • Installation condition is bad.
6	Check the BLDC Fan.	1) Is CN01 1, 3 over 250V? 2) Is CN01 3, 5 within 1V~5V? 3) Is the voltage of CN01 6 changed? 4) Is the resistance of BLDC Motor 1, 3 opened after power off?	• Outdoor PCB Error • BLDC Motor Error

4-2. UH090EAV/UH105EAV/UH140EAV/UH105EAS

1) Pre-inspection notices

(1) Turn off the breaker, AC power source, before disassembling the unit because of electrical hazard.
(2) Confirm the complete discharge of capacitor C102, C702, C703, C704, C705, C706, C707 on the INVERTER PCB when you touch the PCB.Especially discharging speed of C702-C707 is very slow because of little load in stand-by condition. To confirm the voltage of C702-C707, measure the DC link voltage at the IGBT module pins near C701 at which
applying voltage(450-510Vdc) is marked. To confirm discharging of C102, measure the voltage of non mounted C103 solder hole or check if all LEDs are off.
(3) Don't touch the metal body of electrolytic capacitor for avoiding electrical shock before confirming discharge.
(4) To discharging the capacitor use power resistor of about 1 Kohm, 10W.
Soldering tool(non electronic temperature control type) can be used as a discharging resistor.
(5) Don't pull the lead wire but hold the whole housing to disconnect or connect a housing from or to the PCB.

2) Inspection procedure

(1) Check the connection of each housing to the connector first and the peeling of PCB copper pattern.
(2) The PCB is composed of the 3 part in the indoor unit.
- INDOOR Main PCB part : Indoor unit control, MICOM and surrounding circuit, relay, fan motor driving circuit, sensor reading circuit, buzzer driving circuit and DC power supplying circuit.
- 7 segment PCB part : 7 segment, switch
- INDOOR EMI PCB part : Line filter, Noise Capacitor and Varistor

(3) The PCB is composed of the 3 part in the outdoor unit.
- EMI PCB part : Line filter for electrical noise, Varistors for surge and Fuses.
- MAIN PCB part : Refrigeration cycle controller with MICOM
- INVERTER PCB part : Compressor driving inverter and BLDC fan controller

3) Indoor detailed inspection procedure

No.	PROCEDURE	INSPECTION METHOD	CAUSE
1	Open the electronic component box and check the PCB fuse	Turn off the power 1) Is the Fuse F701 on the PCB blown? 2) Is the Fuse F702 on the MAIN PCB blown?	• Over current • Indoor fan motor short • PCB AC Part pattern short
2	Check the DIP and rotary switch on the PCB	1) Is the setting of each switch proper?	• Wrong setting of switch
3	Check the DC voltage	1) Is the voltage of CN32 pin #1-#2 12V? 2) Is the voltage of C10 pin #9-#10 5V?	• SMPS on MAIN PBA trouble • Load short
4	FAN operation checking Press the ON/OFF button. 1. FAN Speed[HIGH] 2. FAN mode	1) Is the FAN motor running? 2) Is the connection of CN73 normal?	• Controller trouble inside of the fan motor • Connector trouble of CN73

4-2. UH090EAV/UH105EAV/UH140EAV/UH105EAS

4) Outdoor detailed inspection procedure

No.	PROCEDURE	INSPECTION METHOD	CAUSE
1	Turn OFF the power and check wire and socket connection on each part	Wait for 1 minute after turn off 1) Is connection of housing to socket normal? 2) Is connection of each wire to terminal block normal? 3) Is the reactor wire connection normal? 4) Is there no miss-wiring of each cable?	• installation mistake • miss assembling
2	FUSE check	Is the fuses on each PCB normal? 1 fuse on control box 1 fuse on MAIN PCB	• wire short • overload • BLDC FAN short error
3	Turn on the power and check voltage of terminal block	Is N-R,N-S,N-T around 230Vac? Is R-S,S-T,T-R around 400Vac? Is L-N(to indoor unit) around 230Vac? Is F1-F2 within 5Vdc?	• miss wiring of power cable • wire detaching
4	Check LED display on INVERTER PCB	1) Is RED LED ON? 2) Is GREEN LED Blinking once a second? 3) Is LEDs displaying error code pattern?	• INVERTER PCB power trouble • NO communication between MAIN and INVERTER PCB • error detection
5	Check DC voltage of SMPS output	**MAIN PCB** 1) Is voltage of CN51 pin#1-#2 12-14.5V? 2) Is voltage of C108 5V? **INVERTER PCB** 3) Is voltage of IC19 G&O 5V? 4) Is voltage of R107 12V? 5) Is voltage of C119 15V?	• SMPS circuit trouble
6	Check INVERTER PCB	1) Is resistance of R001 200ohm? To check this, touch one probe to CN22pin#1(N) and the other to BD01 upper side pin of '~' marking pins 2) Is DC Link voltage 450-510V? Check IGBT module pins marking voltage Q803 C&G	• resister • wire connection between EMI PCB and INVERTER PCB
7	Check BLDC fan	1) See 12-2-3 The Outdoor unit Fan error (Fault Diagnosis)	

4-3. UH105GAV/UH140GAV

1) Pre-inspection notices

(1) Turn off the breaker, AC power source, before disassembling the unit because of electrical hazard.
(2) Confirm the complete discharge of capacitor C102, C702, C703, C704, C705, C706, C707 on the INVERTER PCB when you touch the PCB.Especially discharging speed of C702-C707 is very slow because of little load in stand-by condition. To confirm the voltage of C702-C707, measure the DC link voltage at the IGBT module pins near C701 at which
applying voltage(450-510Vdc) is marked. To confirm discharging of C102, measure the voltage of non mounted C103 solder hole or check if all LEDs are off.
(3) Don't touch the metal body of electrolytic capacitor for avoiding electrical shock before confirming discharge.
(4) To discharging the capacitor use power resistor of about 1 Kohm, 10W.
Soldering tool(non electronic temperature control type) can be used as a discharging resistor.
(5) Don't pull the lead wire but hold the whole housing to disconnect or connect a housing from or to the PCB.

2) Inspection procedure

(1) Check the connection of each housing to the connector first and the peeling of PCB copper pattern.
(2) The PCB is composed of the 3 part in the indoor unit.
- INDOOR Main PCB part : Indoor unit control, MICOM and surrounding circuit, relay, fan motor driving circuit, sensor reading circuit, buzzer driving circuit and DC power supplying circuit.
- Display PCB part : LED lamps, Switch,Remote controller module.
- INDOOR EMI PCB part : Line filter, Noise Capacitor and Varistor

(3) The PCB is composed of the 3 part in the outdoor unit.
- EMI PCB part : Line filter for electrical noise, Varistors for surge and Fuses.
- MAIN PCB part : Refrigeration cycle controller with MICOM
- INVERTER PCB part : Compressor driving inverter and BLDC fan controller

3) Indoor detailed inspection procedure

No.	PROCEDURE	INSPECTION METHOD	CAUSE
1	Open the electronic component box and check the PCB fuse	Turn off the power 1) Is the Fuse F701 on the EMI PCB blown? 2) Is the Fuse F702 on the MAIN PCB blown?	• Over current • Indoor fan motor short • PCB AC Part pattern short
2	Check the LEDs for DC power and communication condition	Turn on the power 1) Is RED LED blinking? his led means micom is running normally. 2) Is GREEN LED blinking? This means communication between Indoor and Outdoor unit is on 3) Is YELLOW LED blinking? This means communication between Indoor and wired remote controller is on. It may take one minute to start communication	• Communication circuit trouble • Communication wire connection trouble • wrong connection for power supply wire of remote controller
3	Check the DIP and rotary switch on the PCB	1) Is the setting of each switch proper?	• Wrong setting of switch
4	Check the DC voltage	1) Is the voltage of CN32 pin #1-#2 12V? 2) Is the voltage of C10 pin #9-#10 5V?	• SMPS on MAIN PBA trouble • Load short
5	FAN operation checking Press the ON/OFF button. 1. FAN Speed[HIGH] 2. FAN mode	1) Is the FAN motor running? 2) Is the connection of CN73 normal?	• Controller trouble inside of the fan motor • Connector trouble of CN73

4-3. UH105GAV/UH140GAV

4) Outdoor detailed inspection procedure

No.	PROCEDURE	INSPECTION METHOD	CAUSE
1	Turn OFF the power and check wire and socket connection on each part	Wait for 1 minute after turn off 1) Is connection of housing to socket normal? 2) Is connection of each wire to terminal block normal? 3) Is the reactor wire connection normal? 4) Is there no miss-wiring of each cable?	• installation mistake • miss assembling
2	FUSE check	Is the fuses on each PCB normal? 3 fuses on EMI PCB 1 fuse on MAIN PCB 1 fuse on INVERTER PCB	• wire short • overload • BLDC FAN short error
3	Turn on the power and check voltage of terminal block	Is N-R,N-S,N-T around 230Vac? Is R-S,S-T,T-R around 400Vac? Is L-N(to indoor unit) around 230Vac? Is F1-F2 within 5Vdc?	• miss wiring of power cable • wire detaching
4	Check LED display on AIN PCB	1) Is RED LED ON? 2) Is GREEN LED Blinking once a second? 3) Is LEDs displaying error code pattern?	• MAIN PCB power trouble • bad communication between indoor and outdoor unit • error detection
5	Check LED display on INVERTER PCB	1) Is RED LED ON? 2) Is GREEN LED Blinking once a second? 3) Is LEDs displaying error code pattern?	• INVERTER PCB power trouble • NO communication between MAIN and INVERTER PCB • error detection
6	Check DC voltage of SMPS output	**MAIN PCB** 1) Is voltage of CN51 pin#1-#2 12-14.5V? 2) Is voltage of C108 5V? **INVERTER PCB** 3) Is voltage of CN51 pin#1-#2 5V? 4) Is voltage of C124 12V? 5) Is voltage of each ZD100,ZD101,ZD102,ZD103 17-18V?	• SMPS circuit trouble
7	Check INVERTER PCB	1) Is resistance of R100 200ohm? To check this, touch one probe to CN10 pin#1(N) and the other to D101 upper side pin of '~' marking pins 2) Is DC Link voltage 450-510V? Check IGBT module pins marking voltage near C701	• resister • wire connection between EMI PCB and INVERTER PCB
8	Check BLDC fan	1) See 12-2-3 The Outdoor unit Fan error (Fault Diagnosis)	

5. Main Inspection

5-1. UH026EAV1/UH035EAV1/UH052EAV1/UH060EAV1/UH070EAV1/ UH052EAS/UH070EAS

<table>
<tr><th>PART</th><th colspan="2">BREAKDOWN INSPECTION METHOD</th></tr>
<tr><td rowspan="3">Room Temperature Sensor</td><td colspan="2">Measure resistance with a tester</td></tr>
<tr><td>Normal</td><td>At the normal temperature 37kΩ~8.3kΩ(-7˚C~+30˚C)</td></tr>
<tr><td>Abnormal</td><td>∞, 0Ω · · · Open or Short</td></tr>
<tr><td rowspan="3">Room Fan Motor</td><td colspan="2">Measure the resistance between terminals of the connector(CN73) with a tester.</td></tr>
<tr><td>Normal</td><td>At the normal temperature(10˚C~30˚C)
<table>
<tr><th>Compare terminal</th><th>Resistance</th><th>Remark</th></tr>
<tr><td>Yellow, Blue</td><td>404.4Ω ±10%</td><td>Main</td></tr>
<tr><td>Yellow, Red</td><td>340Ω ±10%</td><td>Sub</td></tr>
</table></td></tr>
<tr><td>Abnormal</td><td>∞, 0Ω · · · Open or Short</td></tr>
<tr><td rowspan="3">Stepping Motor</td><td colspan="2">Measure the resistance between the red wire and each terminal wire with a tester.</td></tr>
<tr><td>Normal</td><td>About 300Ω at the normal temperature(20˚C~30˚C)</td></tr>
<tr><td>Abnormal</td><td>∞, 0Ω · · · Open or Short</td></tr>
</table>

5-2. UH090EAV/UH105EAV/UH140EAV/UH105EAS

<table>
<tr><th>PART</th><th colspan="2">BREAKDOWN INSPECTION METHOD</th></tr>
<tr><td rowspan="3">Indoor Unit Temperature Sensor</td><td colspan="2">Measure sensor resistance with a multimeter</td></tr>
<tr><td>Normal</td><td>At the normal temperature 37kΩ~8.3kΩ(-7˚C ~ +30˚C)</td></tr>
<tr><td>Abnormal</td><td>∞, 0Ω · · · Open or Short</td></tr>
<tr><td rowspan="3">Indoor Unit BLDC FAN Motor</td><td colspan="2">Measure terminal resistance with a multimeter</td></tr>
<tr><td>Normal</td><td>At the normal temperature(10˚C ~ 30˚C)
<table>
<tr><th>Wire</th><th>pin number</th><th>Resistance</th><th>Remark</th></tr>
<tr><td>RED - BLACK</td><td>1-3</td><td>over 1MΩ</td><td>+300V motor power</td></tr>
<tr><td>WHITE - BLACK</td><td>4-3</td><td>1K ~ 2KΩ</td><td>+15V control power</td></tr>
<tr><td>YELLOW - BLACK</td><td>5-3</td><td>200K ~ 300KΩ</td><td>control</td></tr>
<tr><td>BLUE - BLACK</td><td>6-3</td><td>10K ~ 50KΩ</td><td>pulse</td></tr>
</table></td></tr>
<tr><td>Abnormal</td><td>∞, 0Ω · · · Open or Short</td></tr>
<tr><td rowspan="3">Outdoor Unit
Outdoor Temperature Sensor
&
Cond Temperature Sensor</td><td colspan="2">Measure sensor resistance with a multimeter</td></tr>
<tr><td>Normal</td><td>At the normal temperature 37kΩ~8.3kΩ(-7˚C ~ +30˚C) see 12-2-6 and 12-2-8</td></tr>
<tr><td>Abnormal</td><td>∞, 0Ω · · · Open or Short</td></tr>
<tr><td rowspan="3">Outdoor Unit
Discharge Temperature Sensor</td><td colspan="2">Measure sensor resistance with a multimeter</td></tr>
<tr><td>Normal</td><td>At the normal temperature 37kΩ~8.3kΩ(-7˚C ~ +30˚C) see 12-2-6 and 12-2-8</td></tr>
<tr><td>Abnormal</td><td>∞, 0Ω · · · Open or Short</td></tr>
<tr><td rowspan="3">Outdoor Unit BLDC FAN MOTOR</td><td colspan="2">Measure terminal resistance with a multimeter</td></tr>
<tr><td>Normal</td><td>At the normal temperature(10˚C ~ 30˚C)
<table>
<tr><th>Wire</th><th>pin number</th><th>Resistance</th><th>Remark</th></tr>
<tr><td>RED - BLACK</td><td>1-3</td><td>over 1MΩ</td><td>+300V motor power</td></tr>
<tr><td>WHITE - BLACK</td><td>4-3</td><td>1KΩ ~ 2KΩ</td><td>+15V control power</td></tr>
<tr><td>YELLOW - BLACK</td><td>5-3</td><td>200KΩ ~ 300KΩ</td><td>control</td></tr>
<tr><td>BLUE - BLACK</td><td>6-3</td><td>10KΩ ~ 50KΩ</td><td>pulse</td></tr>
<tr><td>ORANGE - BLACK</td><td>7-3</td><td>10KΩ ~ 50KΩ</td><td>reverse</td></tr>
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<tr><td>Abnormal</td><td>∞, 0Ω · · · Open or Short</td></tr>
<tr><td rowspan="3">Outdoor Unit 4way Valve Solenoid</td><td colspan="2">Measure sensor resistance with a multimeter</td></tr>
<tr><td>Normal</td><td>At the normal temperature 37kΩ~8.3kΩ(-7˚C ~ +30˚C) see 12-2-6 and 12-2-8</td></tr>
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</table>

5-3. UH105GAV/UH140GAV

<table>
<tr><th>PART</th><th colspan="2">BREAKDOWN INSPECTION METHOD</th></tr>
<tr><td rowspan="3">Indoor Unit Temperature Sensor</td><td colspan="2">Measure sensor resistance with a multimeter</td></tr>
<tr><td>Normal</td><td>At the normal temperature 37kΩ~8.3kΩ(-7˚C ~ +30˚C)</td></tr>
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&
Cond Temperature Sensor</td><td colspan="2">Measure sensor resistance with a multimeter</td></tr>
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CLASSIFICATION	CLASS	DESCRIPTION
Cooling	Q	**The cooling is weak.**
	A	When it is hot outside, its cooling capacity decreases due to the increase of the ambient temperature. When the dust filter gets blocked or warm outside air gets in, the cooling capacity will decrease. So, make sure to clean the dust filter frequently, prevent heat loss by closing the doors and insulate the cooling area by using curtains, blinds, shades or window tinting.
	Q	**The cooling is good generally. But, it gets weak when it is considerably hot.**
	A	It occurs when the outdoor unit is exposed to direct sun light and heat-up air is not ventilated well. So, set up a sunblind over the outdoor unit and keep stuff away from the unit to increase the ventilation. When the cooling capacity decreases during a heat wave, clean the heat exchanger of the outdoor unit or spray some cold water to the heat exchanger to increase the cooling capability.
	Q	**The cooling is weak. Does it need refrigerant charging?**
	A	It is not correct charging refrigerant regularly. Except that you have moved in several times or the connection pipes are broken, the refrigerant does not run low. So, when refrigerant is additionally charged, it could be costly and cause a product's failure.When the refrigerant leaks, all of it will escape in a short time resulting in cooling failure and no water coming out of the drain hose. So, if water comes out from the drain hose, it indicates the normal operation of the product and it does not need refrigerant charging.
	Q	**It fails to do cooling.**
	A	When the air conditioner is set to Ventilation or the desired temperature is set higher than the current temperature, it fails to do cooling. In this case, select Cooling or set the desired temperature lower.
Leakage	Q	**It floods the floor.**
	A	Place the drain hose properly. When it is not placed properly, the drain water would flow back flooding the floor. So, straighten out the drain hose for the water to be drained well.
	Q	**Water drips at the drain connection(service valve) of the outdoor unit.**
	A	When a glass bottle is taken out of the refrigerator, moisture gets condensed on its surface due to the temperature differences. The same principle applies to the air conditioner. When cold refrigerant goes through the copper tube, moisture gets condensed on the surface of the tube and the connection areas. To prevent the water condensation, the pipes are insulated. But, the connection areas of the outdoor unit are not insulated for the purpose of maintenance or repair, and water gets condensed due to the temperature differences and drips down. Generally, it evaporates right away. But, when it drips much during muggy days, put a water pan on the floor.
	Q	**It leaks even though a drain pump is used.**
	A	It occurs when the drain pump is plugged out or it is out of order. Check the power of the drain pump and the position of the drain hose, and when the pump is faulty, contact the drain pump manufacturer. Samsung Electronics do not manufacture drain pumps. So, we are not able to correct the drain pump problems.
Smells	Q	**Whenever the air conditioner is turned on, it irritates my eyes and gives me a headache.**
	A	There are no components in the air conditioner irritating the eyes and sending out chemical smells. But, when the air conditioner is turned on, other smell sources are sucked into the air conditioner and get out of it. So, find and root out the smell sources. Generally, it occurs at a interior renovated place, a pharmacy, a gasoline handling place, a tire shop, a second-hand book shop or an electronic component handling place; when its chemical or musty smells are sucked in and sent out, it can be misled that the air conditioner generates them. So, find and root out the problem or refresh the room frequently.

CLASSIFICATION	CLASS	DESCRIPTION
Smells	Q	**Whenever the air conditioner is turned on, it stinks.**
	A	There are no components in the air conditioner sending out chemical smells. But, when the air conditioner is turned on, other smell sources are sucked into the air conditioner and get out of it. So, find and root out the smell sources. Generally, when the drain hose is taken out to the washing room or there are sources of smells such as a diaper bin, a shoe shelf or a socks bin, bad smells generate. Also, it occurs where glass cleaners or air fresheners are used; when they are sucked in interacting with dusts and moistures inside, bad smells generate. These kinds of organic materials noxious to human bodies. So, we recommend against the use of them.
	Q	**Whenever the air conditioner is turned on, it smells sour.**
	A	When the room is papered recently, its paste smells would be sucked inside. Also, when the air conditioner is installed in the study room of young boys loving sweat-generating activities such as the basketball, excessive sweats evaporate and get sucked into the air conditioner resulting in bad smells.So, find and root out the problem or refresh the room frequently.
	Q	**Whenever the air conditioner is turned on, it smells musty.**
	A	It is due to the improper keeping of the product after its use. When keeping the product,dry up the inside with the operation of Ventilation to prevent must. When the product is kept without drying up the inside with Ventilation, mold would grow inside resulting in must. So, open the windows and switch on the Ventilation function to get rid of the saturated smell inside.
	Q	**Whenever the air conditioner is turned on,it sends out bad smells such as stale smells.**
	A	It occurs generally when there are pet animals in the house. Their smells stay at the same place. But, when the air conditioner is turned on, the air gets circulated resulting in the circulation of the smells. So, find and root out the problem or refresh the room frequently.
	Q	**It sends out bad smells.**
	A	When the air filter is filthy, it could send out bad smells. So, clean the filter and ventilate the room with the windows open while operating the Ventilation function.
Operation	Q	**It won't start.**
	A	There is a power failure or it is plugged out. Also, check if the power distribution panel is switched off.
	Q	**It goes off during operation.**
	A	When the hot air does not escape properly, it goes off during operation. It occurs when it does not ventilate properly because the outdoor unit is covered, the back of the outdoor unit is blocked by a cardboard or a plywood panel, and the front of the outdoor unit is blocked by the closed window or other obstacles. Clear the above obstacles from the outdoor unit.
	Q	**It generally works properly. But, when it's considerably hot, it goes off during operation.**
	A	It occurs when the outdoor unit is exposed to direct sunlight and the hot air does not escape properly. Set up a sun blind over the outdoor unit and clear the neighboring obstacles from the outdoor unit to provide good ventilation. When it goes off frequently during a heat wave, it would prevent the turn-off and increase the cooling capacity cleaning the outdoor unit or spraying some water to the heat exchanger.
	Q	**The remote controller won't operate.**
	A	When the batteries run out or the transmitter or receiver of the remote controller is blocked by obstacles, change the batteries or keep the obstacles away from the controlling area. Also, the remote controller may not work under intensive light from a 3-wave length lamp or a neon sign due to the EMI. In this case, take the remote controller closer to the receiver.

6. Q & A

CLASSIFICATION	CLASS	DESCRIPTION
Installation	Q	**Who installs the air conditioner?(Relocation/Re-installation)**
	A	When relocating or re-installing the air conditioner, make sure to contact Samsung Electronics Service Center or Authorized Service Agent and have them to do the job(If not, it could cause personal injury or product damage.) The cost for the relocation/re-installation of the air conditioner is subject to the customer's expense. There is a cost table. But, our service engineer needs to visit to total up the cost correctly. When you move in, make sure to contact Samsung Electronics Service Center or Authorized Service Agent in advance to streamline the process.
	Q	**Is it possible to install the outdoor unit outside?**
	A	It is possible to install it at a designated place in the apartment or on the rooftop nearby. But, it's illegal hanging an angle iron case with the outdoor unit in it outside the apartment. Also, it is illegal obstructing passers-by with the outdoor unit installed outside.
	Q	**What can be done to install the outdoor unit facing the road because it is a commercial building?**
	A	The following is an excerpt from Building Code going into effect from JUNE 1st 2005. "The exhaust pipe of a cooling or ventilation facility installed in a building adjacent to the streets of commercial or residential areas shall be installed higher than 2m to prevent the exhaust air from blowing directly to passers-by and the current facilities shall be corrected by MAY 31st 2005." So, please install it higher than 2m or not to blow the hot exhausting air directly to passers-by.
	Q	**What about installing a windscreen during installation not to blow hot air directly to passers-by?**
	A	When the hot air from the front of the outdoor unit is blocked, the product's performance will be affected and it will fail to operate properly. So, keep it at least 300mm away from its surrounding walls and give it good ventilation.