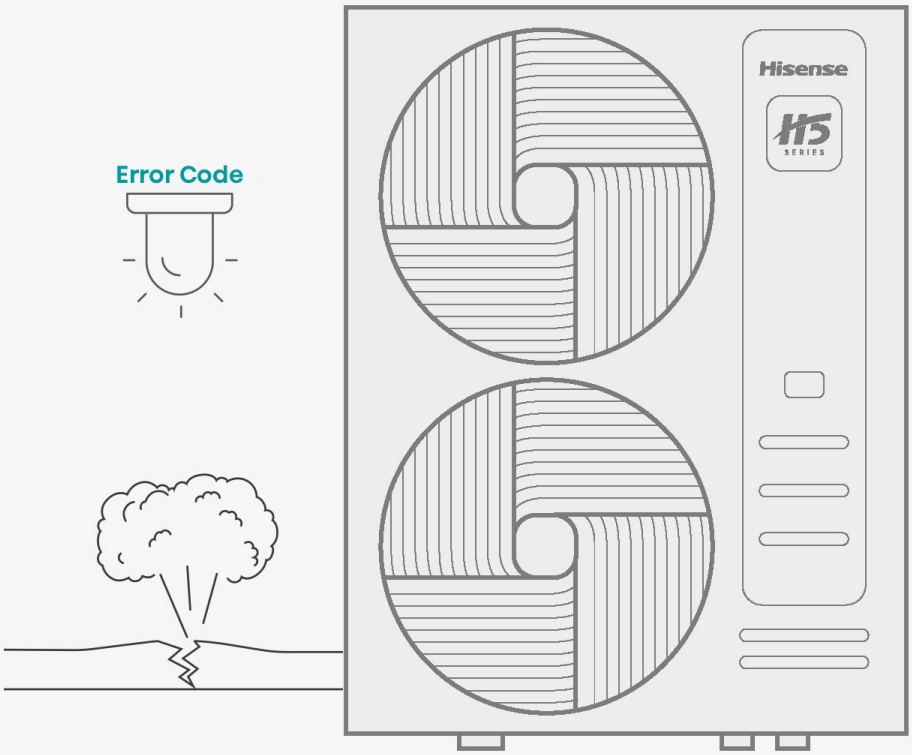
STORINGSLIJST HI-SMART H5



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1. Troubleshooting

1.1 Initial Troubleshooting

1.1.1 Checking of Electrical Wiring and Power Supply

Check the following items for any abnormality in the activation of the system.

No.	Check Situation	Check Method
1	Is any power supply breaker or fuse blown?	Check the voltage (secondary side) of the breaker and also check the continuity of the fuse by a tester.
2	Is voltage at the secondary side of the transformer correct?	Disconnect at the secondary side of the transformer and measure voltage by a tester.
3	Is wiring firmly secured and correctly connected?	Check that the following wiring connection on O.U./I.U. printed circuit boards (PCBs) is not loosened. • The connection for thermistors • The connection for the wired controller cable • The connection for communication cable • Each connection for power supply line Check that the wiring connection on O.U./I.U. PCBs is not loose or misconnected on the site according to the “Electrical Wiring Diagram”.

NOTE:

If the fuse(s) on an I.U. PCB blows out, diagnose the cause of overcurrent and recover the fuse(s).

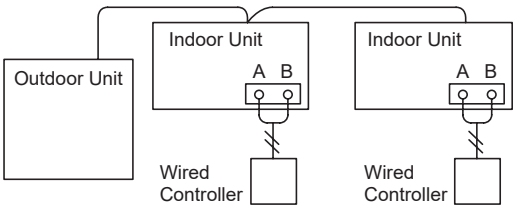
In addition, check the power supply of optional parts because the fuse may blow out because of the power supply failure.

- For Indoor Unit

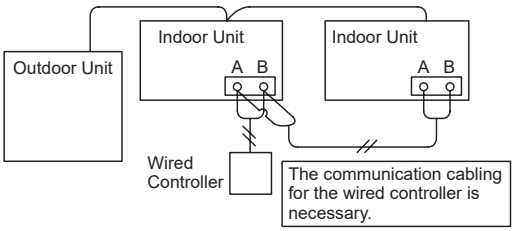
  Refer to the Installation Manual for Indoor Unit.

- Wired Controller Connecting Diagram

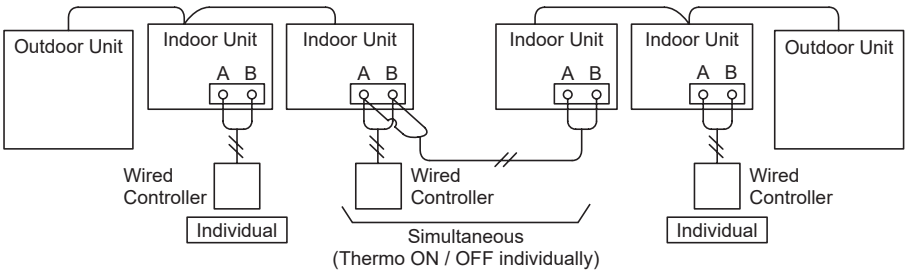
  (a) Wired Controllers to each Unit for Individual Operation Setting



  (b) One Wired Controller for Individual Operation Setting



  (c) Connecting Wired Controller if Connecting between Individual Systems



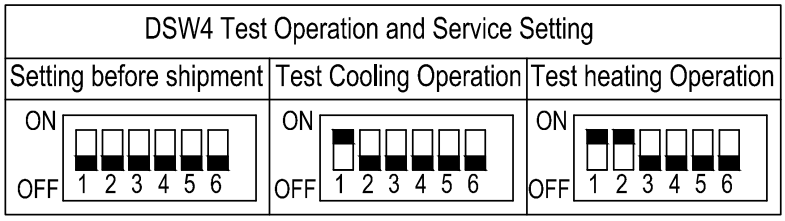
  NOTE:

  Thermo-ON: The outdoor unit and some indoor units are running.

  Thermo-OFF: The outdoor unit and some indoor units stay on, but don’t run.

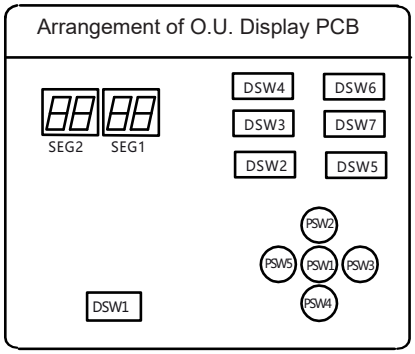
1.1.2 Checking of Rotary Switch and DIP Switch Settings

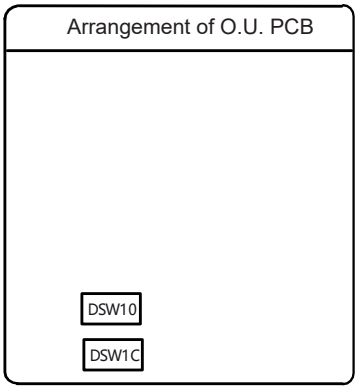
TURN OFF all power sources before setting. Without turning OFF, the switches do not work and the settings are invalid. However, DSW4-No.1~6 can work when power supply is ON. The mark of "■" indicates the position of DIP switches.

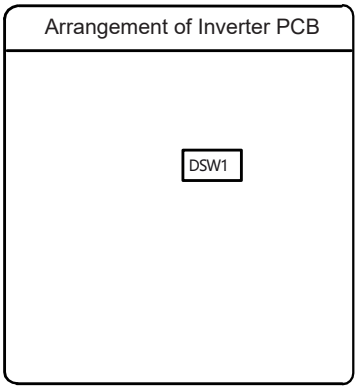


NOTES

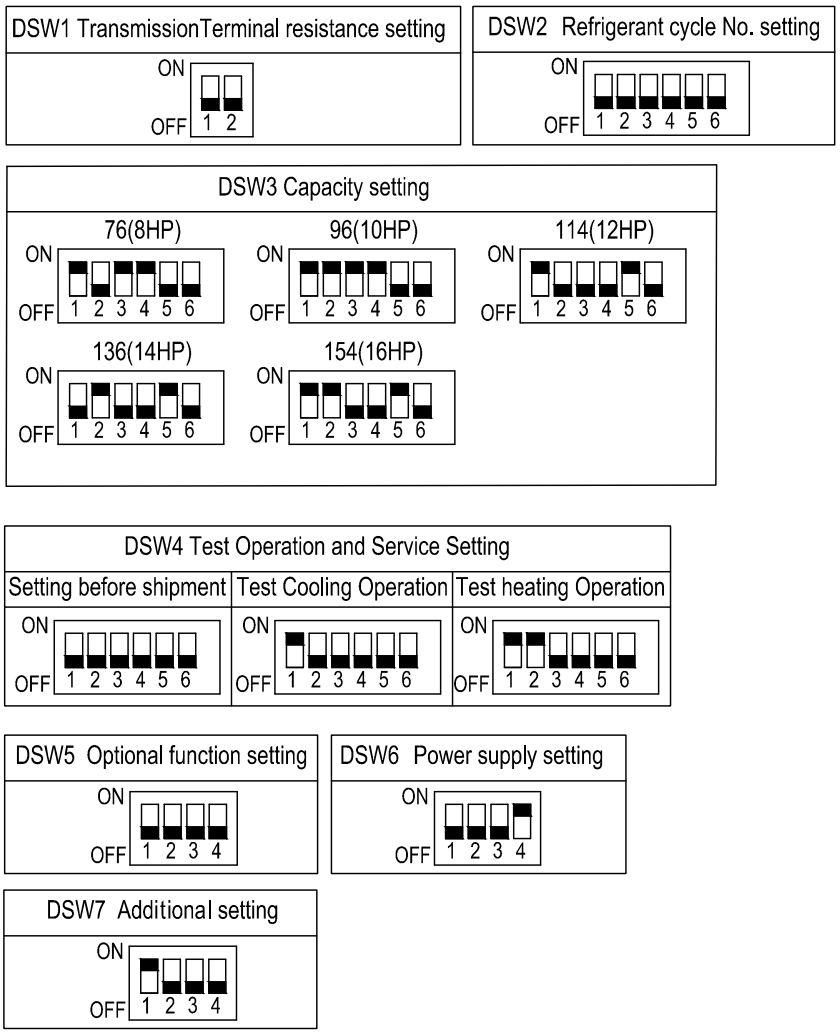
1. Only when the main outdoor unit is set, can DSW4-No.1 and 6 work. Otherwise, they are invalid.
2. By using switch DSW4, the unit starts or stops 10 to 20 seconds after the switch operates.
3. Number this outdoor unit to distinguish from other outdoor units for service and maintenance. And write the number in the box on the right.
4. Do not touch any other electrical parts when operating switches on the PCB.



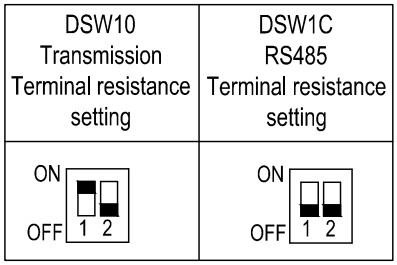




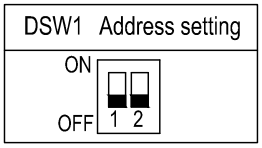
- PCB3 (O.U. Display PCB) Setting



- PCB1 (O.U. PCB) Setting



- PCB2 (Inverter PCB) Setting



NOTE:

1. DIP Switch Setting of O.U.Display PCB
   (1) No setup is required for DIP switches DSW1(Terminal Resistance Setting), DSW3(Capacity Setting), DSW5(Optional function Setting), DSW6(Power Supply Setting) and DSW7(Additional Setting) of the O.U. Display PCB.
   (2) For DSW2 (Refrigerant Cycle No. Setting), set the same refrigerant cycle No. for the outdoor unit and the indoor unit in the same refrigerant cycle.
   (3) For DSW4 (Test Operation and Service Setting), please refer to “3.4 Function Setting” for details.
2. DIP Switch Setting of O.U.PCB
   (1) Terminal Resistance Setting For CAT1 (DSW1C): No setup is required. The code is set before shipment.
   (2) Terminal Resistance Setting (DSW10): Before shipment, DSW10-No.1 is set at “ON”. In the case that the quantity of outdoor units in the same H-NET is 2 or more, DSW10-No.1 at “OFF” from the 2nd refrigerant group of outdoor unit. If only one outdoor unit is used, no setting is required.
3. DIP Switch Setting of Inverter PCB
   DSW 1 (Address setting): No setup is required. The code is set before shipment.

1.1.3 Troubleshooting in Check Mode by Remote Control Switch

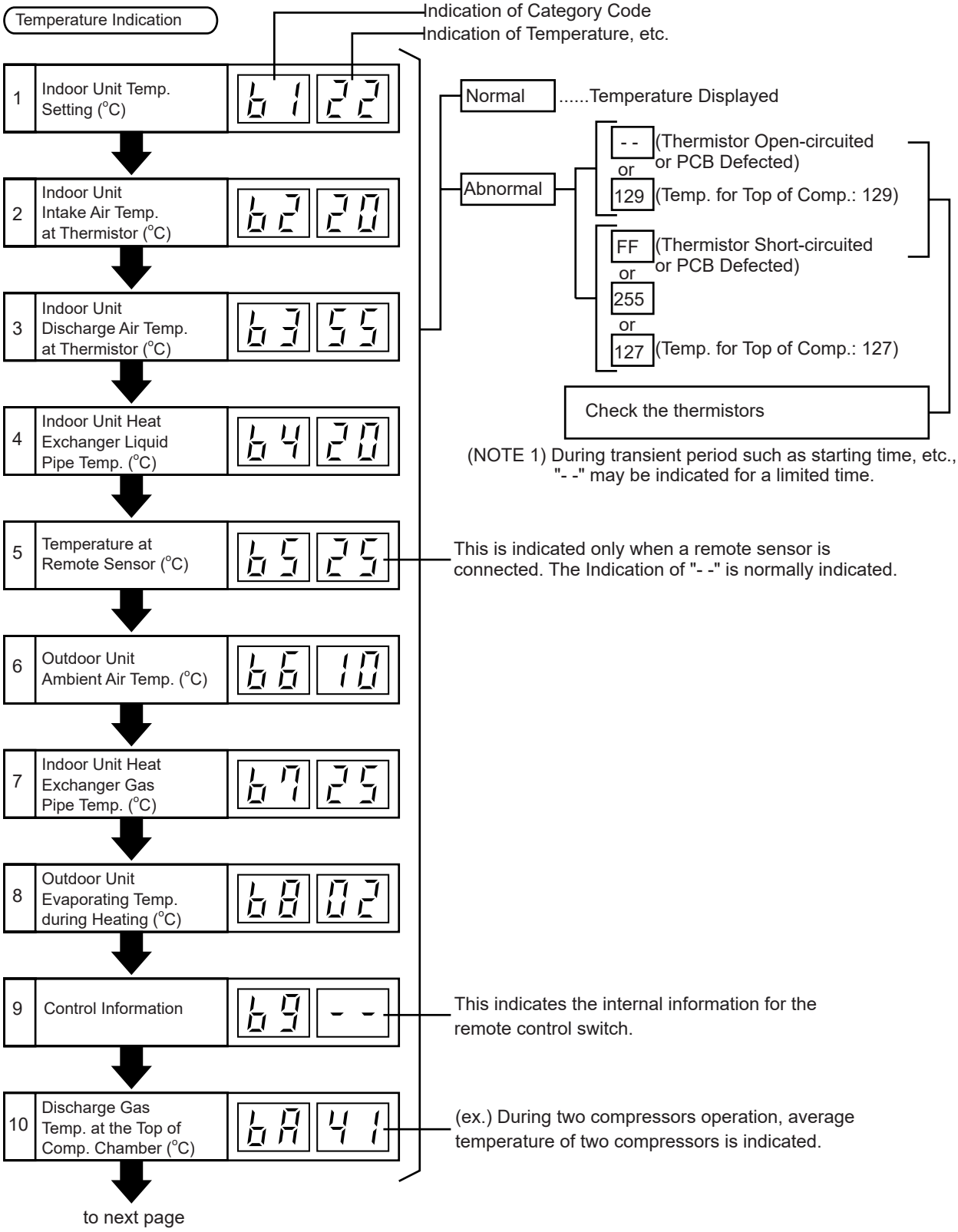
- Check mode

Each “Check Menu” item and its function are explained in the following table.

Check Menu Item	Function
Check 1	Sensor condition of air conditioner will be monitored and indicated.
Check 2	Sensor data of air conditioner prior to alarm occurrence will be indicated.
Alarm History Display	Previous alarm record (date, time, alarm code) will be indicated.

For detailed Setting Method, please refer to the manual of the wired controller.

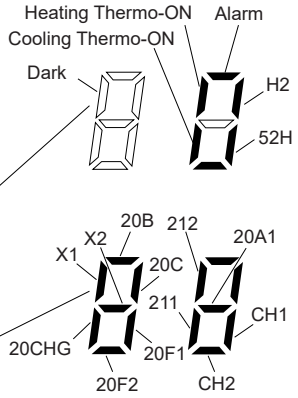
(1) Contents of Check Mode 1



11	Thermo Temp. of Remote Control Switch	b b 2 3

Indication on Micro-Computer Input/Output

12	Micro-Computer Input/Output in Indoor Unit	C 1 4
13	Micro-Computer Input/Output in Outdoor Unit	C 2 -



Indication of Unit Stoppage Cause

14	Cause of Stoppage	d 1 0 1

Abnormality Occurrence Counter

15	Abnormality Occurrence Times	E 1 0 1
16	Instantaneous Power Failure Occurrence Times in Indoor Unit	E 2 0 0
17	Transmission Error Occurrence Times between Remote Control Switch and Indoor Unit	E 3 0 0
18	Abnormality Occurrence Times on Inverter	E 4 0 0

Indication of Automatic Louver Condition

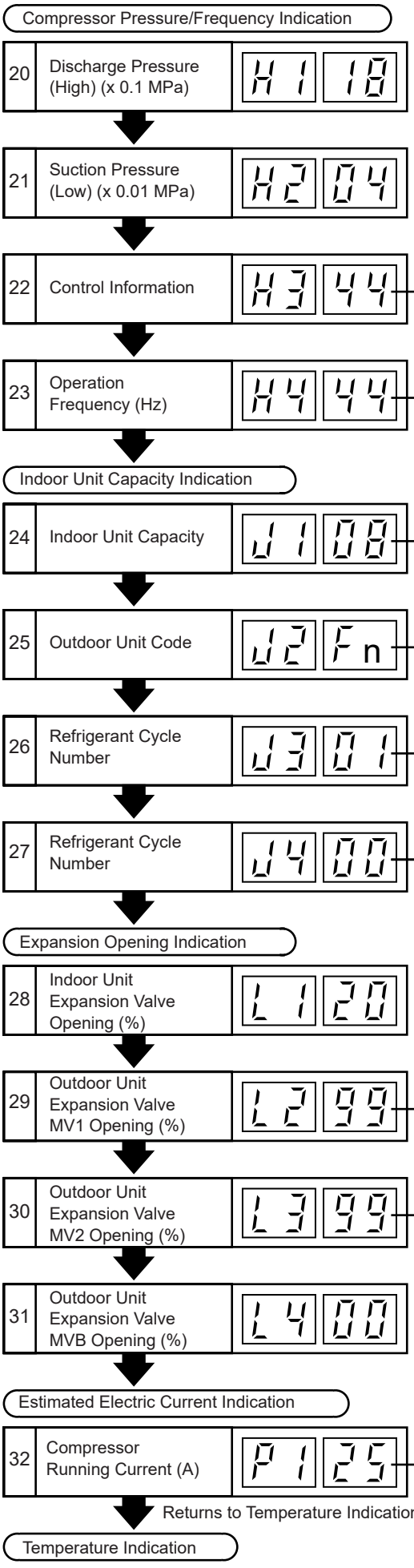
19	Louver Sensor	F 1 0 0

to next page

00	Operation OFF, Power OFF
01	Thermo-OFF (NOTE 1), Activating Float Switch
02	Alarm (NOTE 2)
03	Freeze Protection, Overheating Protection
05	Instantaneous Power Failure at Outdoor Unit, Reset (NOTE 3)
06	Instantaneous Power Failure at Indoor Unit, Reset (NOTE 4)
07	Stoppage of Cooling Operation due to Low Outdoor Air Temperature, Stoppage of Heating Operation due to High Outdoor Air Temperature
09	Reversing Valve Changeover, Stoppage
10	Demand, Enforced Stoppage
11	Retry due to Pressure Ratio Decrease
12	Retry due to Low Pressure Increase
13	Retry due to High Pressure Increase
14	Retry due to Abnormal Current of Constant Compressor
15	Retry due to Abnormal High Temperature of Discharge Gas, Excessively Low Suction Pressure
16	Retry due to Decrease of Discharge Gas Superheat
17	Retry due to Inverter Abnormality
18	Retry due to Voltage Decrease, Other Retry due to Inverter
19	Expansion Valve Opening Change Protection
21	Thermo-OFF by Oil Return Control
22	Hot Start of Outdoor Unit
26	Retry due to High Pressure Decrease
28	Cold Draft Control
30	Thermo-OFF due to Compressor Forced Stop
32	Retry due to Excessive Outdoor Unit Number
42	Abnormal condensation during refrigerant heat dissipation

(NOTE 1) Explanation of Term,
Thermo-ON: A condition that an indoor unit is requesting compressor to operate.
Thermo-OFF: A condition that an indoor unit is not requesting compressor to operate.
(NOTE 2) Even if stoppage is caused by "Alarm", "02" is not always indicated.
(NOTE 3) If transmission between the inverter printed circuit board and the control printed circuit board is not performed during 30 seconds, the outdoor unit is stopped. In this case, stoppage is d1-05 cause and the alarm code "04" may be indicated.
(NOTE 4) If transmission between the indoor unit and the outdoor unit is not performed during 3 minutes, indoor units are stopped. In this case, stoppage is d1-06 cause and the alarm code "03" may be indicated.

Countable up to 99.
Over 99 times, "99" is always indicated.
(NOTE 1) If a transmitting error continues for 3 minutes, one is added to the occurrence times.



This is an Indication for internal information for the remote control switch. This does not have any specific meaning.

This is an Indication for frequency of Inverter.

The capacity of the indoor unit is indicated as shown in the table below.

Capacity Code of Indoor Unit

Indication Code	Equivalent Capacity (HP)
06	0.8
08	1.0
10	1.3
13	1.5
14	1.8
16	2.0
18	2.3
20	2.5
22	2.8
26	3.0
32	4.0
40	5.0
64	8.0
80	10.0

"n" indicates total number of indoor units;

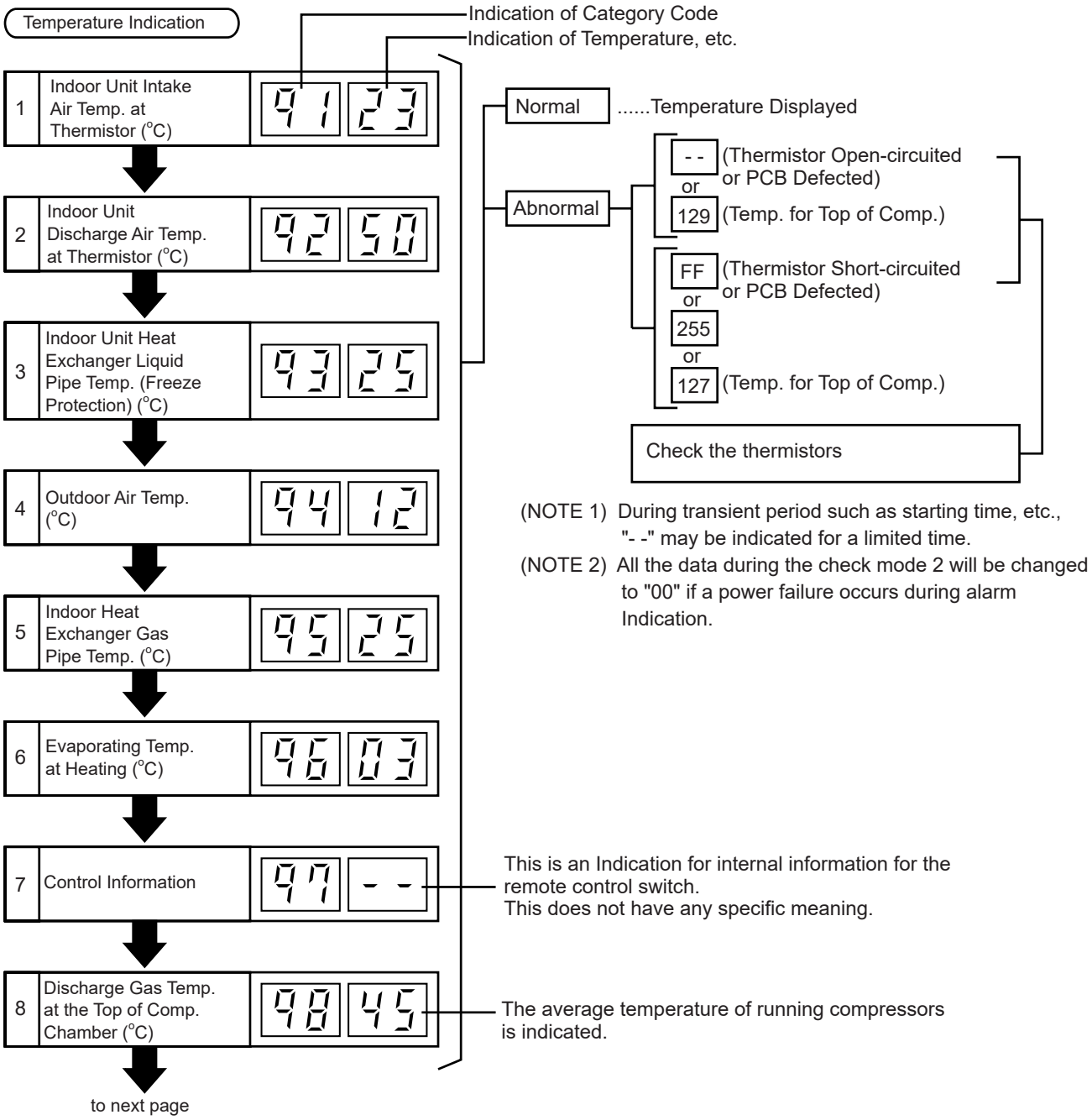
n = 1~9, A, b, C, d, E, F, U
(10) (11) (12) (13) (14) (15) (16)

J3: 01 to 16
(01: when shipment (DSW5), Decimal Indication)
J4: 00 to 0F
(00: when shipment (DSW5), Indication with 16 numbers)

In case of models without Expansion Valve (MV2), the same figure is indicated.

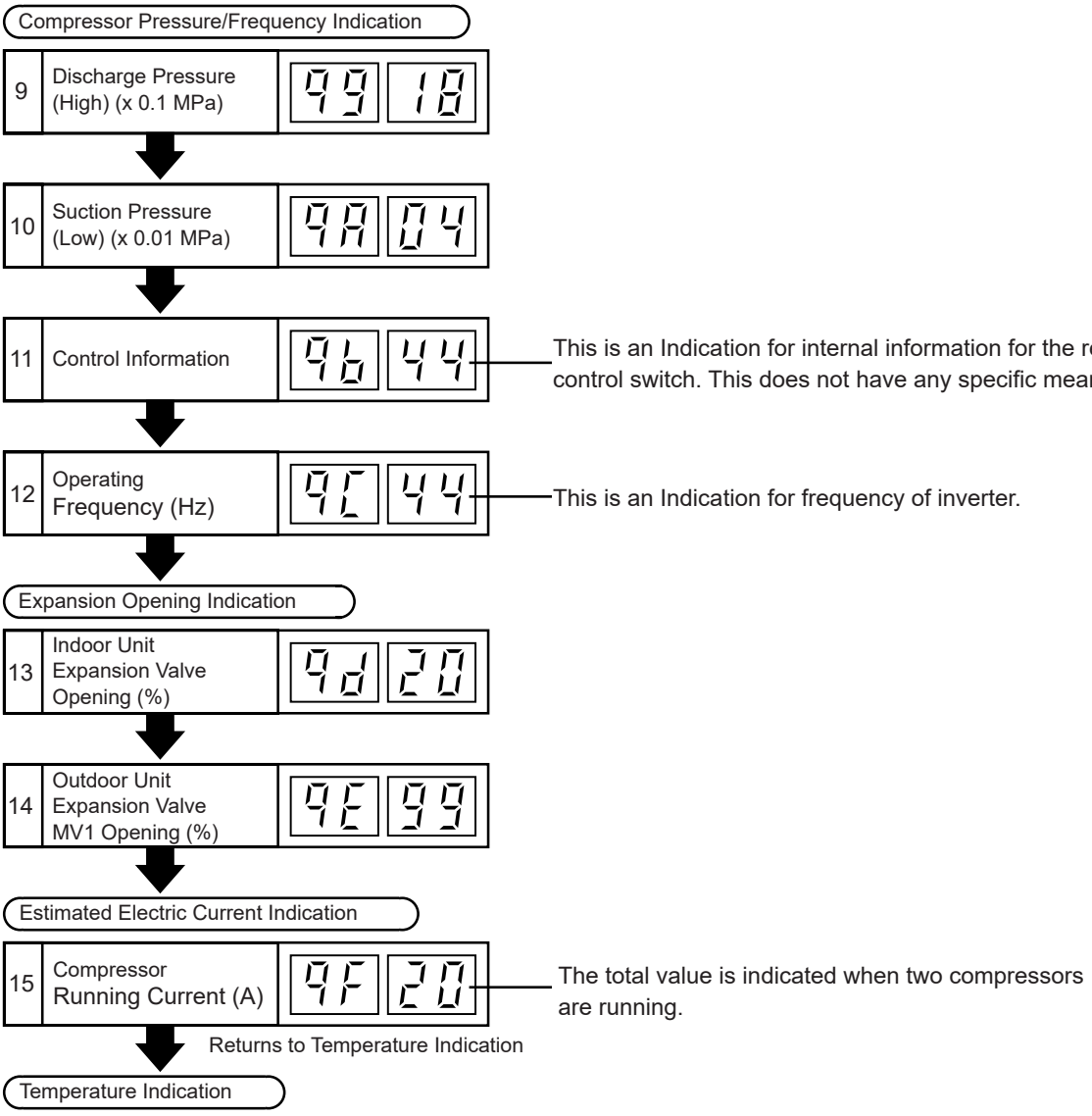
The total current is indicated when several compressors are running.
In case of inverter compressor, the running current of primary side of inverter is indicated.

(2) Contents of Check Mode 2



(NOTE 1) During transient period such as starting time, etc., "- -" may be indicated for a limited time.

(NOTE 2) All the data during the check mode 2 will be changed to "00" if a power failure occurs during alarm Indication.



- Alarm History Display

The alarm history display is available to be set from the check menu. For detailed setting method, please refer to the manual of the wired controller..

1.1.4 Checking of Using 7-Segment Display

Only the authorized person can check with this method. Operating conditions and each part of refrigeration cycle can be checked by 7-segment and push switches on the PCB in the outdoor unit.

(1) Before Checking

(a) Turn ON main power source. Wait for more than 20 seconds to start checking.

(b) Checking Items

* Connecting Information
* Outdoor Unit Information
* Indoor Unit Information
* Cause of Alarm Code Information
* Alarm Code History Information

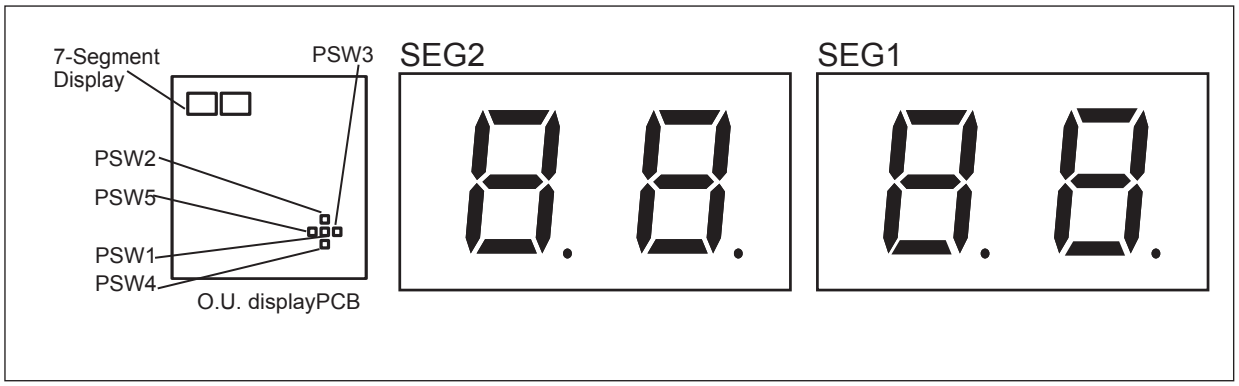
(c) Check the location of 7-segment and push switches.

⚠WARNING

AC220-240V is applied to PCB and electrical parts. Never touch electrical parts and wires when checking.

(2) Location of Push Switches and 7-Segment Display

The push switches and 7-segment display are located on the O.U. display PCB.



(3) Protection Control Code on 7-Segment Display

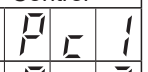
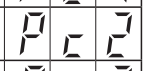
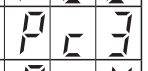
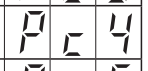
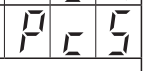
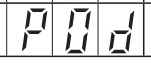
* Protection control code is displayed on 7-segment during operation when a protection control is activated.
* Protection control code is displayed while function is working, and goes out when released.
* When several protection controls are activated, code number with higher priority will be indicated (see below for the priority order).

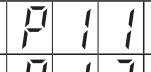
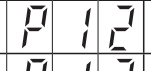
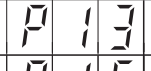
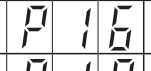
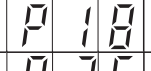
(a) Higher priority is given to the protection control related to frequency control than the others.

< Priority Order >

<1> Pressure Ratio Control
<2> High-Pressure Increase Protection
<3> Current Protection
<4> Inverter Fin Temperature Increase Protection
<5> Discharge Gas Temperature Increase Protection
<6> Low-Pressure Decrease Protection
<7> Demand Current Control (Running Current Limit Control)
<8> Low-Pressure Increase Protection
<9> High-Pressure Decrease Protection

(b) In relation to retry control, the latest retry code will be indicated unless a protection control related to frequency control is indicated.

Code	Protection Control	Code during Degeneration Control
	Pressure Ratio Protection Control	
	High-Pressure Increase Protection	
	Inverter Current Protection	
	Inverter Fin Temperature Increase Protection	
	Discharge Gas Temperature on Top of Compressor Increase Protection	
	Low-Pressure Decrease Protection	Without
	High-Pressure Decrease Protection	
	Demand Current Protection Control	
	Low-Pressure Increase Protection	

Code	Retry Control	Code during Degeneration Control
	Pressure Ratio Decrease Retry	Without
	Low-Pressure Increase Retry	
	High-Pressure Increase Retry	
	Discharge Gas Temperature Increase Retry/Low-Pressure Decrease Retry	
	Discharge Gas SUPERHEAT Decrease Retry	
	Inverter Abnormality Retry	
	Abnormal Inverter Voltage Retry/Inverter Failure Retry	
	High-Pressure Decrease Retry	
	Abnormality of Entering Water Temp. Retry	

NOTE:

(1) Retry Indication continues for 30 minutes unless a protection control is indicated.
(2) Retry Indication disappears if the stop signal comes from all rooms.
(3) The protection control code indicated on 7-segment display changes to an alarm code when an abnormal operation occurs. Also, the same alarm code is indicated on the remote control switch.
(4) In case that the degeneration control is activated, the Indications Pc1 to Pc5 are indicated instead of P01 to P05.

(4) Activating Condition of Protection Retry Control Code

Protection Control or Retry Control is performed to prevent the abnormal operation.

The activating conditions are shown in the table below.

<table>
<tr><th>Code</th><th>Protection Control</th><th>Activating Condition</th><th>Remarks</th></tr>
<tr><td>P01</td><td>Pressure Ratio Protection Control</td><td>Compression Ratio $\varepsilon \geq 8.5$
or
Compression Ratio $\varepsilon \leq 1.5$</td><td>-</td></tr>
<tr><td>P02</td><td>High-Pressure Increase Protection</td><td>Pd≥3.85 (at Cooling Mode)
Pd≥3.55 (at Heating Mode)</td><td>-</td></tr>
<tr><td>P03</td><td>Inverter Current Protection</td><td>Inverter Output Current≥(a)A
<table>
<tr><th rowspan="2">Capacity</th><th colspan="2">a</th></tr>
<tr><th>at cooling mode</th><th>at heating mode</th></tr>
<tr><td>8HP</td><td>24</td><td>21</td></tr>
<tr><td>10HP</td><td>25</td><td>22</td></tr>
<tr><td>12HP</td><td>26</td><td>23</td></tr>
<tr><td>14HP</td><td>32</td><td>26</td></tr>
<tr><td>16HP</td><td>33</td><td>28.5</td></tr>
</table></td><td>-</td></tr>
<tr><td>P04</td><td>Inverter Fin Temperature Increase Protection</td><td>Inverter Fin Temperature≥100°C</td><td>-</td></tr>
<tr><td>P05</td><td>Discharge Gas Temperature Increase Protection</td><td>Temperature at the Top of Compressor Td>112°C</td><td>-</td></tr>
<tr><td>P06</td><td>Low-Pressure Decrease Protection</td><td>Suction Pressure
Ps≤0.08MPa</td><td>-</td></tr>
<tr><td>P09</td><td>High-Pressure Decrease Protection</td><td>Discharge Pressure
Pd≤1.0MPa</td><td>-</td></tr>
<tr><td>P0A</td><td>Demand Current Protection Control</td><td>Running Current for Compressor>Demand Current Setting Value</td><td>Demand Current Setting Value:
Upper limit of total running current is set 100%, 80%, 70%, 60% and 40% at normal operation.</td></tr>
<tr><td>P0d</td><td>Low-Pressure Increase Protection</td><td>Suction Pressure≥1.6 MPa</td><td>-</td></tr>
</table>

Code	Retry Control	Activating Condition	Remarks
P11	Pressure Ratio Decrease Retry	Pressure Ratio ε<1.5 over 1 minute	When activating 3 times in 30 minutes, "43" alarm is indicated.
P12	Low-Pressure Increase Retry	Ps>1.7MPa over 1 minute	When activating 3 times in 30 minutes, "44" alarm is indicated.
P13	High-Pressure Increase Retry	Pd≥4.05MPa over 2 seconds	When activating 3 times in 30 minutes, "45" alarm is indicated.
P15	Discharge Gas Temperature Increase Retry	Discharge Gas Temperature≥130°C over 5 seconds or Discharge Gas Temperature≥125°C over 10 minutes	When activating 3 times in 60 minutes, "08" alarm is indicated.
	Low-Pressure Decrease Retry	Ps<0.07MPa over 12 minutes	When activating 3 times in 60 minutes, "47" alarm is indicated.
P16	Discharge Gas SUPERHEAT Decrease Retry	Discharge Gas SUPERHEAT≤Tc+10 deg. over 30 minutes. Tc: Saturation Temperature	When activating 3 times in 120 minutes, "07" alarm is indicated.
P17	Inverter Abnormality Retry	Instantaneous Overcurrent	When activating 6 times in 30 minutes, "48" alarm is indicated.
		Abnormality of Current Sensor	When activating 3 times in 30 minutes, "51" alarm is indicated.
		IPM Error	When activating 7 times in 30 minutes, "53" alarm is indicated.
		Variable frequency current ≥ 29A, fin temperature > 85°C; Variable frequency current ≥ 37A, fin temperature >78°C; Variable frequency current < 27.5A, fin temperature >93°C	When activating 3 times in 30 minutes, "54" alarm is indicated.
P18	Abnormal Inverter Voltage Retry	Insufficient Voltage at Inverter Circuit	When activating 3 times in 30 minutes, "06" alarm is indicated.
		Excessive Voltage at Inverter Circuit	When activating 3 times in 30 minutes, "06" alarm is indicated.
	Inverter Failure Retry	Actual Inverter Frequency continues to be 0Hz for 3 seconds, 3 minutes after Inverter Frequency is output.	When activating 3 times in 30 minutes, "55" alarm is indicated.
P26	High-Pressure Decrease Retry	Pd<Ta/130+0.4MPa over 4 minutes or Pd<0.8MPa over 30 minutes Ta: Ambient Temperature	When activating 2 times in 30 minutes, "46" alarm is indicated.

(5) Alarm Code

Refer to the item 1.2.1.

- Simple Checking by 7-Segment Display

1 ✳ Turn on All Indoor Units

✳ All the Indoor Units Connected to the Outdoor Unit

2 Turn on the Outdoor Unit

3 Auto-addressing Starts

Outdoor Unit Printed Circuit Board PCB

During auto-addressing, the following items can be checked using the outdoor unit's on-board 7-segment LED display.
(1) Disconnection of power supply to the indoor unit.
(2) Reverse connection of the operating line between the outdoor and indoor units.
In this case, "03" appears after 30 seconds.
(3) Duplication of indoor unit number. See Alarm Code 35.

Normal Case	(1) The outdoor unit's on-board 7-segment LED display is not indicated.

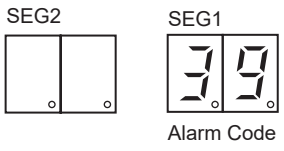
Abnormal Case

(2) The outdoor unit's on-board 7-segment LED display indicates the followings if there is something wrong.

(A) Alarm code will be displayed on the 7-segment when alarm is received from indoor unit in normal mode.
As for the following alarm codes, however, alarm code will be displayed on the 7-segment when alarm is detected by outdoor unit itself.
- Alarm Code “03” (Abnormal Transmission between Indoor Unit and Outdoor Unit)
- Alarm Code “35” (Incorrect Indoor and Outdoor Unit No. Setting)

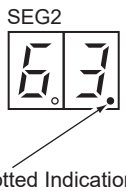
(B) Alarm code of smaller indoor unit address No. will be displayed when alarm is received from multiple indoor units.

(C) The following 7-segment is displayed and flashed every 0.5 seconds.

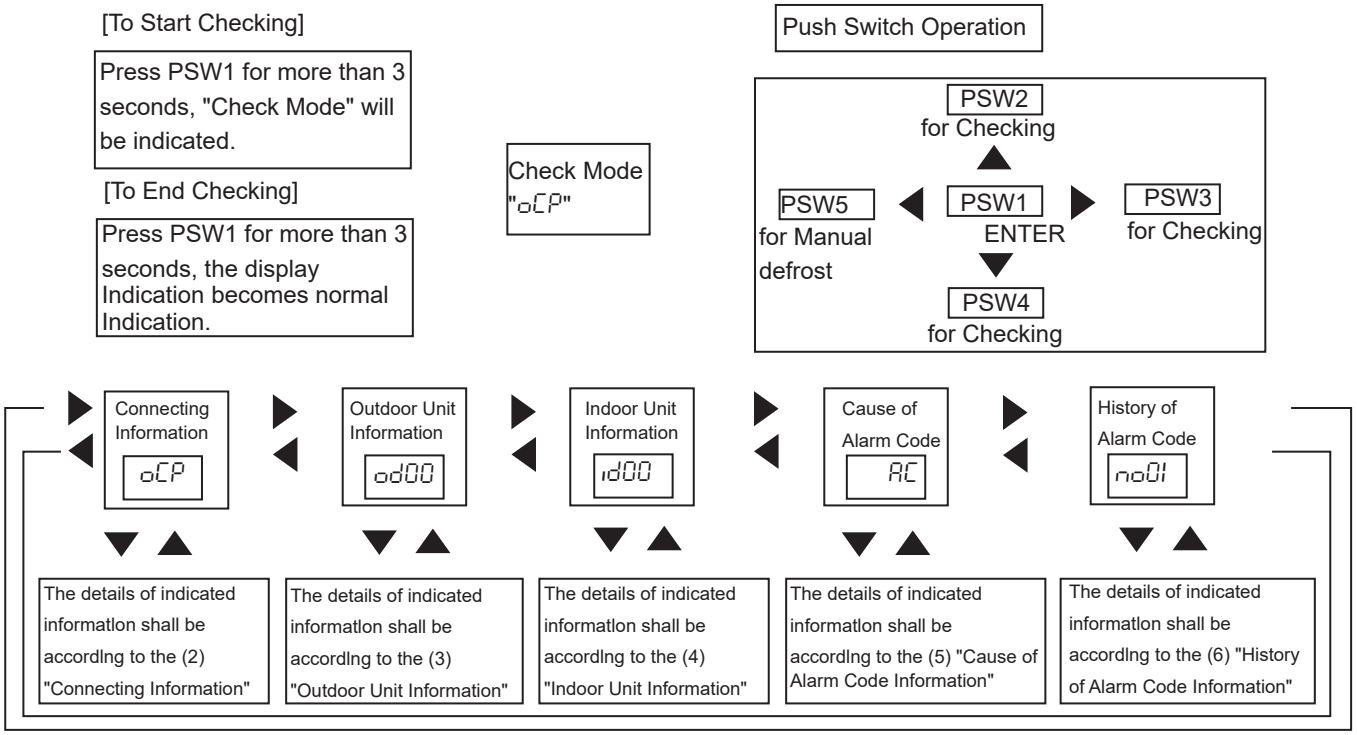


Alarm Code

(D) SEG1 and SEG2 are as follows.

7-Segment Display	Dotted Indication	Remarks
<In Case of Unit No. 63, Alarm Code “01”> SEG2: Indoor Unit No. (0~63) SEG1: Alarm Code  Indoor Unit No. Alarm Code	 Dotted Indication	In the case that 2 refrigerant cycle groups exist, one refrigerant cycle group is shown without dotted indication. The other refrigerant cycle group is shown with dotted indication.

- Checking Method by Checking Mode



■ To Cancel Check Mode

Press PSW1 for more than 3 seconds and release while Check Mode(oCP) is displayed, then the condition will return to normal.

Notice:
Make sure to cancel Check Mode after checking is completed.(If not, the unit will go out of control)

(A) Connecting Information

Press PSW4 (▼) to foward or PSW2 (▲) to backward, the information will be indicated alternately as "Item"→"Details".

Details of Indication

Item		7 Segment Display		Details
		SEG2	SEG1	
1	Total Capacity of Connected Outdoor Unit	o	CP	Total Capacity Indication of Connected Outdoor Unit. Refer to "Outdoor Unit Capacity Table".
2	Outdoor Unit Constitution Quantities	o	AA	Constltution Quantities of O.U.Combination
3	Total Capacity of Connected Indoor Unit	I	CP	Total Capaclty of Connected Indoor Unlts
4	Indoor Unit Constitution Quantities	I	AA	Constitution Quantitles of Indoor Unit Connected
5	Refrigerant System		CA	Refrigerant System Number Indication
6	Total Capacity of Operated Indoor Unit		oP	Total Capacity Indication of Operated Indoor Unlt. Refer to "Indoor Unit Capacity Table"
7	Total Compressor Frequency		HZ	Unit:Hz
8	Accumulated Operating Time		UJ	Unit:Hour (Indicationx10)

(B) Outdoor Unit Information

Select the outdoor unit No. to be dlsplayed, press PSW4 (▼) to foward or PSW2 (▲) to backward

Unit	Indication	Unit	Indication	Unit	Indication	Unit	Indication
Unit A(No. 0)	od00	Unit B(No. 1)	od01	Unit C(No. 2)	od02	Unit D(No. 3)	od03

Press PSW4 (▼) to foward or PSW2 (▲) to backward to select the outdoor unit No.

Press PSW3 (▶) for detailed information of selected unit No., the information will be indicated alternately as "Item"—▶"Details"

Press PSW5 (◀) for return to Combination Unit No. Selection.

Details of Indication

Item		7 Segment Display		Details
		SEG2	SEG1	
1	Outdoor Unit Number	od	0	Indicate Outdoor Unit Addresses 1~4
2	Outdoor Unit Capacity	CA	0	Refer to "Outdoor Unit Capaclty Table"
3	Output State of Outdoor Micro-Computer	SC	0	Refer to "Location of Push Switches and 7-Segment Display"
4	Running Frequency of Inverter Compressor MC1	H1	0	Running Frequency of Inverter Compressor Indication(Hz)
5	Running Frequency of Inverter Compressor MC2	H2	0	Runnlng Frequency of Inverter Compressor Indication(Hz)
6	Total Number of Running Compressor	CC	0	Total Number of Running Compressor Indication
7	Air Flow Rate	Fo	0	Air Flow Rate Indication(0-25 Steps)
8	Outdoor Expansion Valve MV1 Opening	E1	0	Outdoor Expansion Valve MV1 Opening Indication(Unit:%)
9	Outdoor Expansion Valve MV2 Openlng	E2	0	Outdoor Expansion Valve MV2 Openlng Indication(Unlt:%)
10	Outdoor Expansion Valve MVB Opening for Double Pipe	Eb	0	Outdoor Expanslon Valve MVB Opening Indication for Double Pipe(Unit:%)
15	Discharge Pressure(High)	Pd	0	UNIT:MPa Indication of Thermistor Open Circuit:5.62 Indication of Thermistor Close Circuit -0.62
16	Suction Pressure (Low)	PS	0	UNIT:MPa Indication of Thermistor Open Circuit:2.25 Indication of Thermistor Close Circuit -0.25
17	Ambient Air Temperature	To	0	UNIT:°C Indication of Thermistor Open Circuit:127 Indication of Thermistor Close Circuit -127
18	Discharge Gas Temperature On the Top of Compressor MC1	Td	10	UNIT:°C Indication of Thermistor Open Circuit:0 Indication of Thermistor Close Circuit 255
19	Discharge Gas Temperature On the Top of Compressor MC2	TE	20	UNIT:MPa Indication of Thermistor Open Circuit:0 Indication of Thermistor Close Circuit 255
20	Liquid Pipe Temperature of No1. Heat Exchanger	TE	10	UNIT:°C Indication of Thermistor Open Circuit:127 Indication of Thermistor Close Circuit -127
21	Liquid Pipe Temperature of No2. Heat Exchanger	TE	20	UNIT:°C Indication of Thermistor Open Circuit:127 Indication of Thermistor Close Circuit -127
22	Gas Pipe Temperature of No1. Heat Exchanger	TG	10	UNIT:°C Indication of Thermistor Open Circuit:127 Indication of Thermistor Close Circuit -127
23	Gas Pipe Temperature of No2. Heat Exchanger	TG	20	UNIT:°C Indication of Thermistor Open Circuit:127 Indication of Thermistor Close Circuit -127
24	Supercooling Temperature	TC	H0	UNIT:°C Indication of Thermistor Open Circuit:127 Indication of Thermistor Close Circuit -127
25	Supercooling Inlet Temperature	TS	C0	UNIT:°C Indication of Thermistor Open Circuit:127 Indication of Thermistor Close Circuit -127
26	Supercooling Inlet Temperature at Bypass	Tb	L0	UNIT:°C Indication of Thermistor Open Circuit:127 Indication of Thermistor Close Circuit -127
27	Supercooling Temperature at Bypass	Tb	G0	UNIT:°C Indication of Thermistor Open Circuit:127 Indication of Thermistor Close Circuit -127
28	Suction Temperature of Compressor MC1	TS	10	UNIT:°C Indication of Thermistor Open Circuit:127 Indication of Thermistor Close Circuit -127
29	Suction Temperature of Compressor MC2	TS	20	UNIT:°C Indication of Thermistor Open Circuit:127 Indication of Thermistor Close Circuit -127
30	Total Liquid Pipe Temperature of No1.Heat Exchanger	TL	10	UNIT:°C Indication of Thermistor Open Circuit:127 Indication of Thermistor Close Circuit -127
31	Total Llquid Pipe Temperature of No2.Heat Exchanger	TL	20	UNIT:°C Indication of Thermistor Open Circuit:127 Indication of Thermistor Close Circuit -127
32	NO.1 Inverter Fin Temperature	TF	11	UNIT:°C
33	NO.2 Inverter Fin Temperature	TF	12	UNIT:°C
34	Fan Controler Fin Temperature	TF	F1	UNIT:°C
35	Fan Controller Fin Temperature	TF	F2	UNIT:°C
36	Fan Controller Fin Temperature	TF	F3	UNIT:°C

37	Temperature Inside the Electrical Box	rA	10	UNIT:°C Indication of Thermistor Open Circuit:127 Indication of Thermistor Close Circuit -127
38	Compressor MC1 Current※1	A1	0	UNIT: A
39	Compressor MC2 Current※1	A2	0	UNIT: A
40	Fan Motor MFC1 Current※1	AF	1	UNIT: A
41	Fan Motor MFC2 Current※1	AF	2	UNIT: A
42	Fan Motor MFC3 Current※1	AF	3	UNIT: A
43	Accumulated Operation Time of Compressor MC1	UU	11	UNIT: Hour (Indication x10)
44	Accumulated Operation Time of Compressor MC2	UU	21	UNIT: Hour (Indication x10)
45	Accumulated Operation Time of Compressor MC1	cU	11	UNIT: Hour (Indication x10) Accumulated Operation Time can be reset.※2
46	Accumulated Operation Time of Compressor MC2	cU	21	UNIT: Hour (Indication x10) Accumulated Operation Time can be reset.※2
47	Cause of Inverter MC1 Stoppage	iF	1	Cause of Compressor MC1 Inverter Stoppage Indication
48	Cause of Inverter MC2 Stappage	iF	2	Cause of Compressor MC2 Inverter Stoppage Indication
49	Cause of Fan MFC1 Controller Stoppage	FF	1	Cause of Fan MFC1 Controller Stoppage Indication
50	Cause of Fan MFC2 Controller Stoppage	FF	2	Cause of Fan MFC2 Controller Stoppage Indication
51	Cause of Fan MFC3 Controller Stoppage	FF	3	Cause of Fan MFC3 Controller Stoppage Indication

※1) The indicated current is reduced value.Use a clamp meter for the accurate current value.

※2) For resetting the accumulated operatlon time,press PSW1 and PSW3 for 5 seconds while the accumulated data is displayed.

NOTE:

The outdoor unit No. is indicated at ones digit of "SEG1".

・Outdoor Unit Capacity Table

Indication	Capacity (kW/10)	Horsepower (HP)	Model (kBtu/h)
64	224	8.0	76
80	280	10.0	96
96	335	12.0	114
112	400	14.0	136
128	400	16.9	154
144	500	18.0	170
.....	.....	.....	.....
HP×8	≈HP×28	HP	≈HP×9.55

(C) Indoor Unit Information

※The information is displayed for No.1.

Unit	Indication	Unit	Indication	Unit	Indication	Unit	Indication
No. 0	id00	No. 1	id01	~	~	No. 63	id63

Selection of Indoor Unit No.

Press PSW4 (▼) to foward or PSW2 (▲) to backward to select the indoor unit No.

Press PSW3 (▶) for detailed information of selected unit No..

Press PSW4 (▼) to foward or PSW2 (▲) to backward, and the information will be indicated as "Item"⟶▶"Details".

Press PSW5 (◀) for return to Combination Unit No. Selection.

Item		7 Segment Display		Details
		SEG2	SEG1	
1	Indoor Unit Capacity	CA	00	Indicate Outdoor Unit Addresses 1~4
2	Expansion Valve Opening	iE	00	Refer to "Outdoor Unit Capaclty Table"
3	Liquid Pipe Temp. of Heat Exchanger	rL	00	UNIT:°C
4	Gas Pipe Temp. of Heat Exchanger	rG	00	UNIT:°C
5	Air Inlet Temp.	r1	00	UNIT:°C
6	Air Outlet Temp.	ro	00	UNIT:°C
7	Unit Stoppage Cause Code	dI	0	Unit Stoppage Cause Code Indication Refer to "Cause of Indoor Unit Stoppage Table"

NOTE:

The indoor unit No. is indicated at ones digit of "SEG1".

▪ Indoor Unit Capacity Table

Indication	Capacity (kW)	Horsepower (HP)	Model (kBtu/h)
6	2.2	0.8	07
8	2.8	1.0	09
10	3.6	1.3	12
11	4.0	1.5	14
13	4.5	1.8	15
14	5.0	2.0	17

Indication	Capacity (kW)	Horsepower (HP)	Model (kBtu/h)
16	5.6	2.3	19
18	6.3	2.5	22
20	7.1	2.8	24
22	8.0	3.0	27
26	9.0	3.3	30
32	11.2	4.0	38
36	12.5	4.5	42

Indication	Capacity (kW)	Horsepower (HP)	Model (kBtu/h)
40	14.0	5.0	48
48	16.0	6.0	54
64	22.4	8.0	76
80	28.0	10.0	96
96	33.5	12.0	114
128	45.0	16.0	154
160	56.0	20.0	190

(D) Cause of Alarm Code Information

※The information is displayed for Outdoor Unit A (No.0).

Press PSW4 (▼) to foward or PSW2 (▲) to backward, the information will be indicated alternately as "Item"⟶"Details".

Details of Indication

Item		7 Segment Display		Details
		SEG2	SEG1	
1	Alarm Cause Code		AC	Latest Outdoor Unit Alarm Code Indication Refer to"Alarm Code Table"
2	Degeneracy Control of Pressure Ratio Decrease Protection	C	11	0:Degeneracy control is not activated 1:Degeneracy control is activated
3	Degeneracy Control of High Pressure Increase Protection	C	13	0:Degeneracy control is not activated 1:Degeneracy control is activated
4	Degeneracy Control of Inverter Temp. Increase Protection	C	14	0:Degeneracy control is not activated 1:Degeneracy control is activated
5	Degeneracy Control of Discharge Gas Temp. Increase Protection	C	15	0:Degeneracy control is not activated 1:Degeneracy control is activated
6	Degeneracy Control of TDSH Decrease Protection	C	16	0:Degeneracy control is not activated 1:Degeneracy control is activated
7	Degeneracy Control of Overcurrent Protection	C	17	0:Degeneracy control is not activated 1:Degeneracy control is activated

(E) History of Alarm Code Information

※The information is displayed for Outdoor Unit A (No.0).

Data No.	7 Segment Display	
	SEG2	SEG1
1 (Latest Data)	no	01
~	~	~
15 (Oldest Data)	no	15

While data No.of Alarm History is ON.
Press PSW4 (▼) to foward or PSW2 (▲) to backward.
Press PSW3 (▶) for detailed information of selected unit No..
Press PSW4 (▼) to foward or PSW2 (▲) to backward.
Press PSW5 (◀) for return to Combination Unit No. Selection.

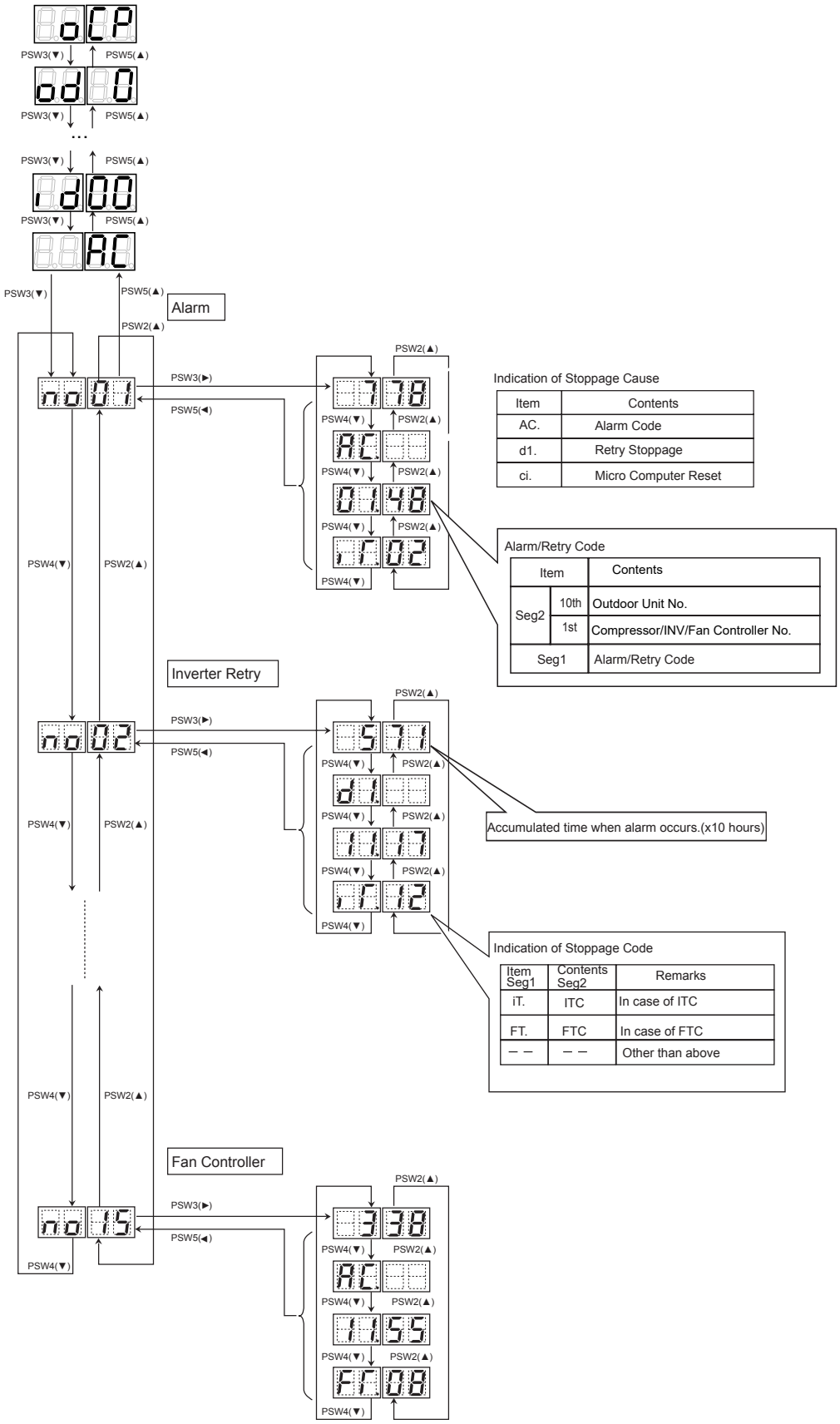
Details of Indication

Item		7 Segment Display		Details
		SEG2	SEG1	
1	Outdoor Unit Accumulated Operating Time	07	08	Outdoor Unit Accumulated Operating Time at Stoppage Unit: Hour (Indication x10)
2	Cause of Stoppage	AC		Alarm Code
		dI		Outdoor and Indoor Unit Stoppage Code
		Cı		Control Information
3	Alarm/Stoppage Cause Code	01	48	Alarm and Stoppage Cause Code O.U. No. is indicated at tens digit of SEG2, Compressor No. and Fan Controller No. are indicated at ones digit of SEG2. Alarm and stoppage code are indicated on SEG1.
4	Abnormal Data Indication	ıF	12	Inverter stoppage cause code is indicated when the code displays on SEG2.
		FF	12	Fan controller stoppage cause code Is Indlcated when the code displays on SEG2.
		--	--	Except for the above

1.1.5 Checking of Alarm Code History

Alarm code history is indicated in the following order while the check mode is displayed.
"no01" (latest) ◄——► history data ~ "no15" (oldest) ◄——► history data
Refer to the figure below as an example.

History is displayed up to 15 cases at the maximum in alarm occurrence order.



(1) Register of Alarm Code History

Cause of Stoppage (Alarm Code or Stoppage Code)	Contents	Indication of Alarm Code History					
		Time	*Alarm	Alarm Code			Alarm Code or Stoppage Code
				O.U. Unit No.	Comp. No.	Fan No.	
02	Activation of protection device	Accumulated Time	AC.	○	○		--
03	Abnormality transmitting between indoor units and outdoor units	Accumulated Time	AC.				--
04	Abnormality transmitting between inverter PCB and outdoor unit PCB	Accumulated Time	AC.	○	○		--
04.	Abnormality transmitting between O.U. fan controller and outdoor unit PCB	Accumulated Time	AC.	○		○	--
05	Abnormality of power supply phase	Accumulated Time	AC.	○			--
06	Abnormality of inverter voltage	Accumulated Time	AC.	○	○		iTC
d1-18		Accumulated Time	d1.	○	○		iTC
06.	Abnormality of O.U. fan controller voltage	Accumulated Time	AC.	○		○	FTC
07	Decrease in discharge gas superheat	Accumulated Time	AC.	○	○		--
d1-16		Accumulated Time	d1.	○	○		--
08	Increase in discharge gas temperature at the top of compressor	Accumulated Time	AC.	○	○		--
d1-15		Accumulated Time	d1.	○	○		--
0A	Abnormality transmitting between outdoor units	Accumulated Time	AC.				--
0b	Incorrect outdoor unit address setting	Accumulated Time	AC.				--
0c	Incorrect outdoor main unit setting	Accumulated Time	AC.				--
21	Abnormality of high pressure sensor	Accumulated Time	AC.	○			--
22	Abnormality of thermistor for outdoor air temperature	Accumulated Time	AC.	○			--
23	Abnormality of thermistor for discharge gas temp. on top of compressor	Accumulated Time	AC.	○	○		--
24	Abnormality of thermistor for outdoor unit heat exchanger liquid pipe (Te/Tchg)	Accumulated Time	AC.	○	Thermistor Signal Te: E Tchg: C		--
25	Abnormality of thermistor for outdoor unit heat exchanger gas pipe (TG/TbG)	Accumulated Time	AC.	○	Thermistor Signal TG: G TbG: b		--
29	Abnormality of low pressure sensor	Accumulated Time	AC.	○			--
31	Incorrect capacity setting of indoor unit and outdoor unit	Accumulated Time	AC.				--
35	Incorrect indoor unit No. setting	Accumulated Time	AC.				--
36	Incorrect indoor unit combination	Accumulated Time	AC.				--
38	Abnormality of picking up circuit for protection in outdoor unit	Accumulated Time	AC.	○			--
3A	Abnormality of outdoor unit capacity	Accumulated Time	AC.				--
3b	Incorrect setting of outdoor unit model combination or voltage	Accumulated Time	AC.				--
3d	Abnormality transmitting between main unit and sub unit(s)	Accumulated Time	AC.				--
43	Abnormality of low compression ratio	Accumulated Time	AC.	○			--
d1-11		Accumulated Time	d1.	○			--
44	Abnormality of low-pressure increase	Accumulated Time	AC.	○			--
d1-12		Accumulated Time	d1.	○			--
45	Abnormality of high-pressure increase	Accumulated Time	AC.	○			--
d1-13		Accumulated Time	d1.	○			--
46	Activation of high-pressure decrease protection device (Vacuum operation protection)	Accumulated Time	AC.	○			--
d1-26		Accumulated Time	d1.	○			--
47	Activation of low-pressure decrease protection device (Vacuum operation protection)	Accumulated Time	AC.	○			--
d1-15		Accumulated Time	d1.	○			--
48	Activation of inverter overcurrent protection device	Accumulated Time	AC.	○	○		iTC
d1-17		Accumulated Time	d1.	○	○		iTC
51	Abnormality of inverter current sensor	Accumulated Time	AC.	○	○		iTC
d1-17		Accumulated Time	d1.	○	○		iTC
53	Inverter error signal detection	Accumulated Time	AC.	○	○		iTC
d1-17		Accumulated Time	d1.	○	○		iTC
54	Abnormality of inverter fin temperature	Accumulated Time	AC.	○	○		iTC
d1-17		Accumulated Time	d1.	○	○		iTC

*(Details of Alarm)

AC.: Alarm

d1.: Retry

Ci.: Control Information

iTC: Inverter Stoppage Code;

FTC: Fan Controller Stoppage Code

Cause of Stoppage (Alarm Code or Stoppage Code)	Contents	Indication of Alarm Code History					
		Time	*Alarm	Alarm Code			Alarm Code or Stoppage Code
				O.U. Unit No.	Comp. No.	Fan No.	
55	Inverter failure	Accumulated Time	AC.	○	○		iTC
d1-18		Accumulated Time	d1.	○	○		iTC
56	Abnormality in fan motor location detection	Accumulated Time	AC.	○		○	FTC
57	Activation of fan controller protection device	Accumulated Time	AC.	○		○	FTC
58	Abnormality of fan controller	Accumulated Time	AC.	○		○	FTC
5A	Abnormality of Fan Controller Fin Temperature	Accumulated Time	AC.	○		○	FTC
5b	Activation of Overcurrent Protection	Accumulated Time	AC.	○		○	FTC
5c	Abnormality of Fan Controller Sensor	Accumulated Time	AC.	○		○	FTC
EE	Compressor protection alarm	Accumulated Time	AC.				--
A1	Detection of External Abnormality	Accumulated Time	AC.	○			--
A6	Abnormality of refrigerant cooling module temperature	Accumulated Time	AC.	○			--
d1-42		Accumulated Time	d1.	○			--
b5	Incorrect setting of indoor unit connection number	Accumulated Time	AC.				--
d1-05	Instantaneous power failure	Accumulated Time	d1.				--
d1-18	Abnormality of inverter and other	Accumulated Time	d1.				iTC
d1-26	Abnormality of high pressure decrease	Accumulated Time	d1.				--
d1-32	Retry stoppage by indoor unit auto address setting	Accumulated Time	d1.				--
Control Information	Micro-computer reset by abnormality of inverter transmission	Accumulated Time	Ci.				1
	Micro-computer reset by abnormality of fan controller transmission	Accumulated Time	Ci.				2
	Micro-computer reset by abnormality of indoor unit transmission	Accumulated Time	Ci.				3
	Micro-computer reset by abnormality transmitting between outdoor unit and outdoor unit	Accumulated Time	Ci.				4
	Micro-computer reset for abnormality of control state	Accumulated Time	Ci.				6

*(Details of Alarm)

AC.: Alarm

d1.: Retry

Ci.: Control Information

iTC: Inverter Stoppage Code;

FTC: Fan Controller Stoppage Code

(2) Cause of Stoppage

[Cause of I.U or O.U Stoppage]

Code	Cause
00	Operation OFF, Power OFF
01	Thermo-OFF
02	Alarm
03	Freezing and Overheating Protection
05	Instantaneous Power Failure at Outdoor Unit/ Reset
06	Instantaneous Power Failure at Indoor Unit/Reset
07	Stoppage of Cooling Operation due to Low Outdoor Air Temp; Stoppage of Heating Operation due to High Outdoor Air Temp
09	Stoppage of 4-way Reversing Valve Switching Control
10	Demand Enforced Stoppage
11	Retry due to Pressure Ratio Decrease
12	Retry due to Low Pressure Increase
13	Retry due to High Pressure Increase
15	Retry due to Vacuum Abnormality, Discharge Gas Temp. Increase
16	Retry due to Decrease of Discharge Gas Superheat
17	Retry due to Inverter Tripping(Detailed in Cause of Inverter Stoppage)

Code	Cause
18	Retry due to Voltage Decrease or Increase, Other Retry of Inverter
19	Retry due to Expansion Valve Opening Change
20	Operation Mode Clash With Other Indoor Unit
21	Enforced Thermo-OFF(Oil Return Control)
22	Enforced Thermo-OFF(Hot Start Control, Oil Heater Preheating)*
23	Refrigerant leak or recovery
26	Retry due to High Pressure Decrease
28	Cooling Air Discharge Temp.Control or Water Module Freezing
29	Retry due to Abnormal EVB or EVO leakage
30	Stoppage due to Forced Stop of all the Compressors
32	Retry due to Abnormal Transmission between Outdoor Units
36	Retry due to Thermo-OFF Stoppage of Outdoor Unit After Defrosting
42	Retry due to Insufficient Refrigerant or Abnormal EVO
C7 (199)	Indoor Unit Stoppage due to shut-off valve close on Refrigerant Shut-off Box

NOTE: Even if Stoppage Alarm "02" is not always indicated.

*Cancelation of Enforced Thermo-OFF
Function Setting HT=1. This function may damage compressor, please use this Function only when necessary.

[Cause of Inverter Stoppage]

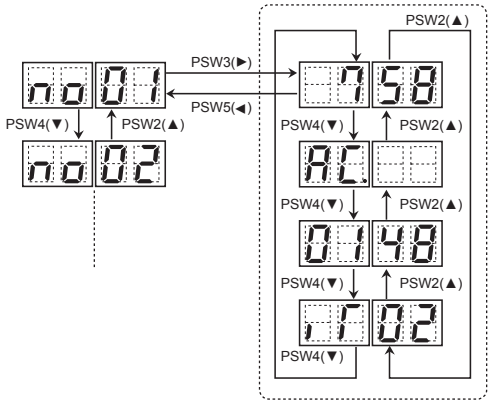
Code	Cause
1	Driver IC Error Signal Detection
2	Instantaneous Overcurrent
3	Inverter Temp. Increase
4	Electronic Thermal Activation (Inverter Overcurrent)
5	Voltage Decrease
6	Voltage Increase
7	Abnormal Inverter Transmission
8	Abnormal Current Sensor
9	Instantaneous Power Failure Detection
10	Abnormal high load startup
11	Micro Computer Reset
12	Earth Fault Detecting of Comp.
13	Abnormal Power Source Phase
17	The inverter of the compressor does not work
18	Pressure switch off
21	Abnormal Compressor Motor

[Cause of Fan Controller Stoppage]

Code	Cause
1	Driver IC Error Signal Detection
2	Instantaneous Overcurrent
3	Inverter Temp. Increase
4	Electronic Thermal Activation (Inverter Overcurrent)
5	Voltage Decrease
6	Voltage Increase
7	Abnormal Inverter Transmission
8	Abnormal Current Sensor
9	Instantaneous Power Failure Detection
11	Micro Computer Reset
12	Earth Fault Detecting of Fan.
13	Abnormal Power Source Phase
15	Reverse Driving
17	Abnormal Control
18	Pressure switch off
21	Abnormal Fan Motor

(3) Deletion of Alarm Code History

Press PSW1 and PSW3 for 5 seconds to clear the alarm code history while the history data display. (All history can be deleted.)



In order to delete all the history, press PSW1 and PSW3 (►) for 5 seconds while history displays.

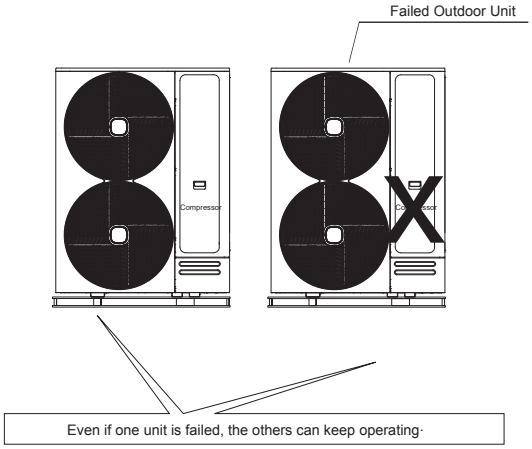
1.1.6 Emergency Operation

(1) Emergency Mode Operation from Remote Control Switch for Compressor Failure If one compressor is failed, emergency operation mode is available by the remote control switch after excluding the failed compressor. Even if the compressor is failed, the air conditioning operation is continuously available until the troubleshooting is performed.

* In case of following alarm codes, emergency operation is available.

* Inverter Compressor Failure

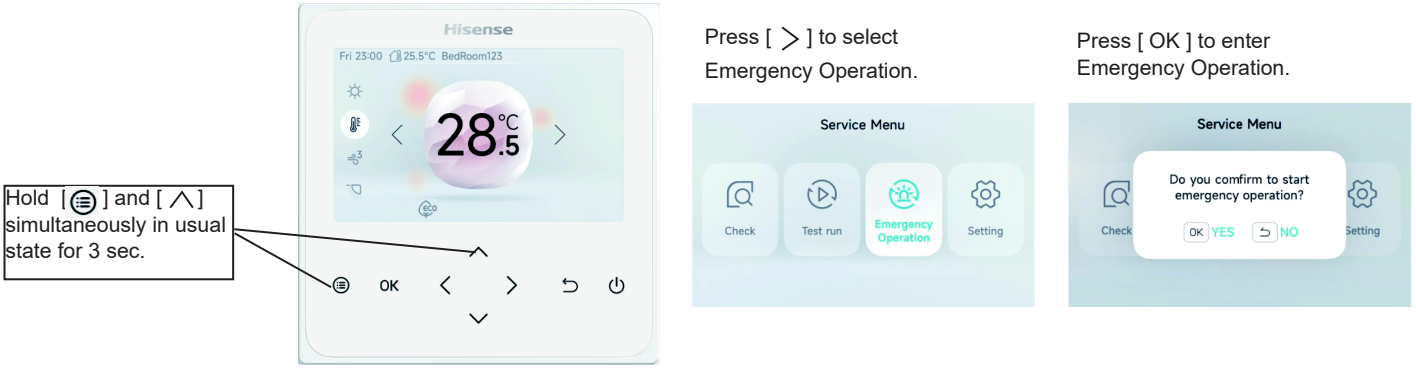
06: Abnormality of inverter voltage
23: Abnormality of discharge thermistor
48: Activation of over current protection device
51: Abnormality of inverter current sensor
53: Inverter error signal detection
54: Abnormality of inverter fin temperature



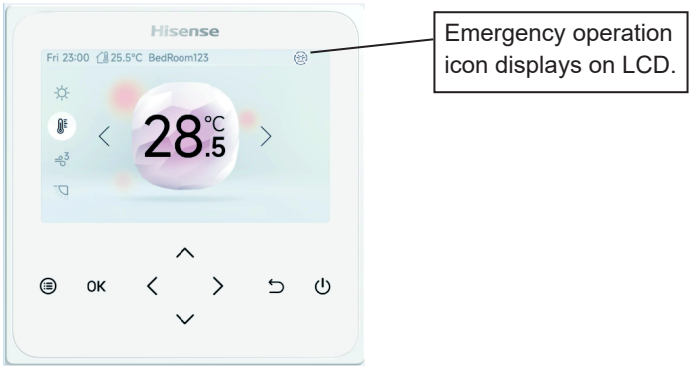
(a) Procedure

<In case of HYXM-VG01>

Hold [☰] and [∧] simultaneously in usual state for 3 seconds to enter Service Menu.



When emergency operation starts, [ ] will be displayed on the main interface.



(b) Operation Condition

This emergency operation is NOT applicable to all the compressors mounted in the failed outdoor unit.

NOTE:

- Emergency operation is available only when all the indoor unit and remote control to be connected are for H-NET.
- Emergency operation is available only when the alarm codes above (*) display.
- The emergency operation is not available for the failures of inverter PCB or fan controller.
- This emergency operation is not a normal operation but a temporary one until the service people come. If the alarm displays again during the emergency operation, it cannot be canceled.
- Do not perform emergency operation for more than 8 hours. Otherwise, the unit may be damaged.

(2) Emergency Mode Operation from O.U. Display PCB for Compressor Failure

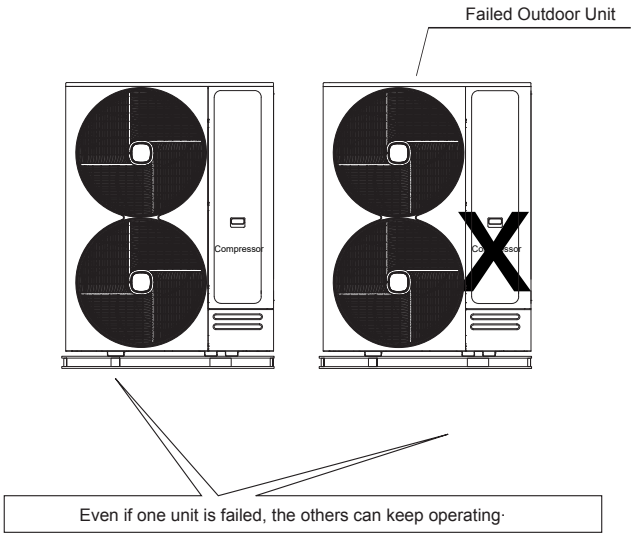
For Combination of Outdoor Units

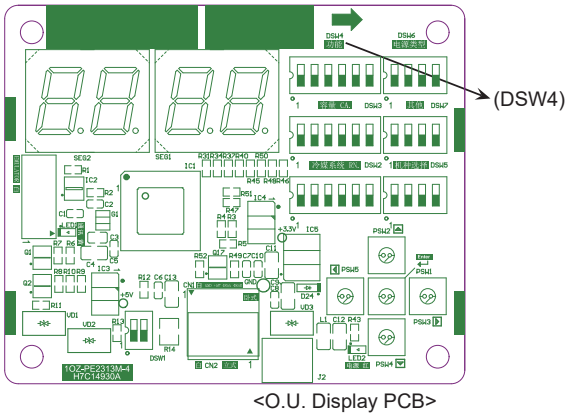
This operation is an emergency operation by excluding the failed unit when the inverter compressor fails.
<Alarms Corresponding to Inverter Compressor Failure>

06: Abnormality of inverter voltage
23: Abnormality of discharge thermistor
48: Activation of over current protection device
51: Abnormality of inverter current sensor
53: Inverter error signal detection
54: Abnormality of inverter fin temperature

<Procedure>

1. Turn OFF all the main switches of outdoor and indoor units.
2. Check the inverter PCB. If inverter PCB is faulty, disconnect the wiring (U, V, W) of diode module. (Insulate the disconnected terminals.)
3. Turn DSW4-No.6 ON and set the function setting r2 to stop the operation of the corresponding compressor.
   For example, if r2=1 is set, then compressor will not operate. If all the compressors of any outdoor unit of combination failed, set r1=1 and the failed outdoor unit will NOT operate.
   For heat pump system and cooling only system, fully close the stop valves (for gas/liquid) of the failed outdoor unit.
   Set control PCB of the failed outdoor unit.
4. Turn ON the power supply.
5. Start the operation by remote control switch.





<O.U. Display PCB>

NOTE:

- Measure the insulation resistance of inverter compressor.
  Do not perform the emergency operation when the insulation resistance is 0Ω.
  The other compressors may be damaged because there is a possibility that refrigerant oil is oxidized.
- In this emergency operation, compressor frequency cannot be controlled normally.
  Therefore, alarm code "07", "43", "44", "45" or "47" may display on LCD.
- This emergency operation may not provide sufficient cooling and heating capacity.
- This operation is an emergency but a temporary operation when the inverter compressor is damaged.
  Therefore, replace it with the new one as soon as possible.
- Turn OFF DSW4-No.6 of outdoor unit PCB after replacing the compressor.
  If this setting is not performed, the inverter compressor will be damaged.

(3) Emergency Mode Operation from O.U. Display PCB for Fan Failure

① For Combination of Outdoor Units

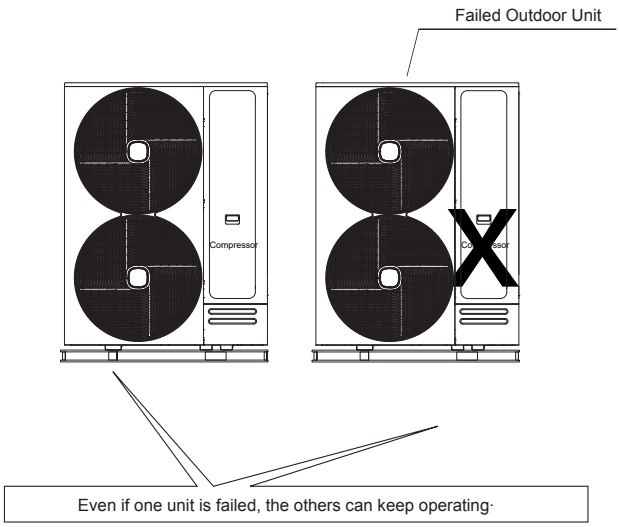
This operation is an emergency operation by excluding the failed fan.

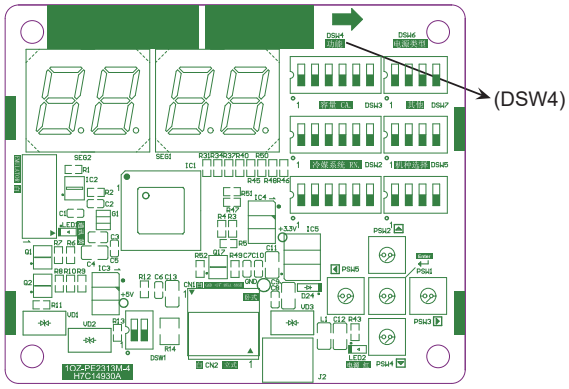
<Alarms Corresponding to Fan Failure>

04. :Abnormality transmitting between fan controller and outdoor unit PCB
06. : Abnormality of fan controller voltage
57 : Activation of fan controller protection device
5A : Abnormality of fan controller fin temperature
5b : Activation of over current protection
5C : Abnormality of fan controller sensor

<Procedure>

1. Turn OFF all the main switches of outdoor and indoor units.
2. Check the inverter PCB. If inverter PCB is faulty, disconnect the wiring (U, V, W) of diode module. (Insulate the disconnected terminals.)
3. Turn DSW4-No.6 ON and set the function setting r3 to stop the operation of the corresponding fan.
   For example, if r3=1 is set, then Inverter Fan(Upper) will not operate. If all the fans of any outdoor unit of the combination failed, set r1=1 and the failed outdoor unit will NOT operate.
   For heat pump system and cooling only system, fully close the stop valves (for gas/liquid) of the failed outdoor unit.
4. Turn ON the power supply.
5. Start operation by remote control switch.





<O.U. Display PCB>

Function Setting	Fan
r3=1	Inverter Fan(Upper)
r3=2	Inverter Fan(Lower)

NOTE:

- In this emergency operation, fan frequency cannot be controlled properly.
  Therefore, alarm code "07", "43", "44", "45" or "47" may display on LCD.
- This emergency operation may not provide sufficient cooling and heating capacity.
- This operation is an emergent but temporary operation when the inverter fan is damaged.
  Therefore, replace it with the new one as soon as possible.
- Turn OFF DSW4-No.6 of outdoor unit PCB after replacing the failed fan.
  If this setting is not performed, the inverter fan will be damaged.

⚠WARNING

Turn ON DSW4-No.6 when all fans are failed for any unit, otherwise, the unit will be damaged.

② For Outdoor Unit without Combination

This operation is an emergency operation by excluding the failed inverter fan.

<Alarms Corresponding to Inverter Compressor Failure>

04. : Abnormality transmitting between fan controller and outdoor unit PCB

06. : Abnormality of fan controller voltage

56 : Abnormality in fan motor location detection

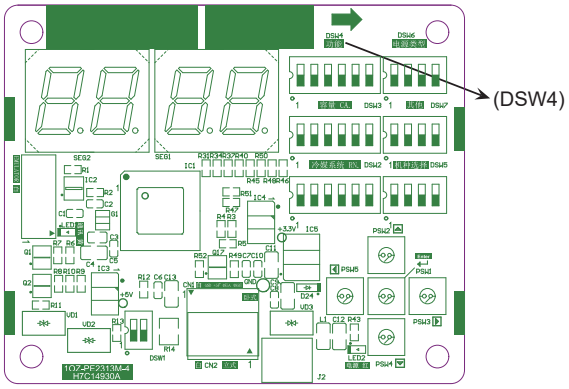
57 : Activation of fan controller protection device

58 : Abnormality of fan controller

5A : Abnormality of fan controller fin temperature

5B : Activation of over current protection

5C : Abnormality of fan controller sensor



<O.U. Display PCB>

Function Setting	Fan
r3=1	Inverter Fan(Upper)
r3=2	Inverter Fan(Lower)

<Procedure>

1. Turn OFF all the main switches of outdoor and indoor units.
2. Check the inverter PCB. If inverter PCB is faulty, disconnect the wiring (U, V, W) of diode module. (Insulate the disconnected terminals.)
3. Turn DSW4-No.6 ON and set r3=1 or r3=2 to stop the fan operation.
   For double fan unit, if only one of them is set, the corresponding fan will NOT operate. If both of them are set, the outdoor unit will NOT operate.
4. Turn ON the power supply.
5. Start the operation by remote control switch.

NOTE:

- In this emergency operation, fan frequency cannot be controlled properly.
  Therefore, alarm code “07”, “43”, “44”, “45” or “47” may display on LCD.
- This emergency operation may not provide sufficient cooling and heating capacity.
- This operation is an emergency but a temporary operation when the inverter fan is damaged.
  Therefore, replace it with the new one as soon as possible.
- Turn OFF DSW4-No.6 of outdoor unit PCB after replacing the failed fan.
  If this setting is not performed, the inverter fan will be damaged.

(4) Emergency Mode Operation from O.U. Display PCB for Sensors Failure

This operation is an emergency operation by excluding the failed sensors.

<Alarms Corresponding to Sensors Failure>

22: Abnormality of Thermistor for Outdoor Air Temperature (Outdoor Unit Ambient Thermistor)

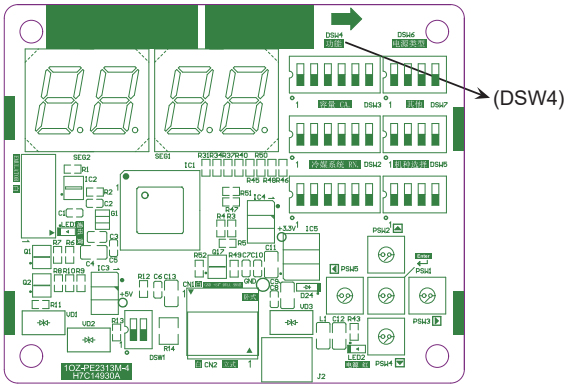
24: Abnormality of Thermistor for Outdoor Unit Heat Exchanger Liquid Pipe (Te1/TL1/Tsu1/Tsc/Tchg)

25: Abnormality of Thermistor for Outdoor Unit Heat Exchanger Gas Pipe (Tg/Tbg/Ts1)

2b: Abnormality of Thermistor for Temperature inside the Electrical Box of Outdoor Unit

<Procedure>

1. Turn OFF all the main switches of outdoor and indoor units.
2. Turn DSW4-No.6 ON and set r4=1.
3. Turn ON the power supply.
4. Start operation by remote control switch.



<O.U. Display PCB>

NOTE:

- This emergency operation time of the sensor is 7 days.
  It will fail after this period, so please replace it with the new one as soon as possible.
- This emergency operation may not provide sufficient cooling and heating capacity.
- This operation is an emergent but temporary operation when the sensor is damaged.
  Therefore, replace it with the new one as soon as possible.
- Turn OFF DSW4-No.6 of outdoor unit PCB after replacing the sensor.

1.2 Troubleshooting Procedure

1.2.1 Alarm Code Table

Code	Category	Content of Abnormality	Leading Cause
01	Indoor Unit	Activation of Protection Device (Float Switch)	Activation of Float Switch (High Water Level in Drain Pan,Abnormality of Drain Pipe, Float Switch or Drain Pan)
02	Outdoor Unit	Activation of Protection Device (High Pressure Cut)	Activation of PSH (Pipe Clogging, Excessive Refrigerant, Inert Gas Mixing)
03	Transmission	Abnormality between Indoor and Outdoor	Incorrect Wiring, Loose Terminals, Disconnect Wire, Blowout of Fuse, Outdoor Unit Power OFF
04		Abnormality between Inverter PCB and Outdoor Unit PCB	Inverter PCB - Outdoor Unit PCB Transmission Failure (Loose Connector, Wire Breaking, Blowout of Fuse)
06	Voltage	Abnormal Inverter Voltage	Outdoor Voltage Drop, Insufficient Power Capacity
07	Cycle	Decrease in Discharge Gas Superheat	Excessive Refrigerant Charge, Failure of Thermistor, Incorrect Wiring, Incorrect Piping Connection, Expansion Valve Locking at Opened Position (Disconnect Connector)
08		Increase in Discharge Gas Temperature	Insufficient Refrigerant Charge, Pipe Clogging Failure of Thermistor, Incorrect Wiring, Incorrect Piping Connection, Expansion Valve Locking at Closed Position(Disconnect Connector)
0A	Transmission	Abnormality between Outdoor and Outdoor	Incorrect Wiring, Breaking Wire, Loose Terminals
0b	Outdoor Unit	Incorrect Outdoor Unit Address Setting	Duplication of Address Setting for Outdoor Units (Sub Units) in Same Refrigerant Cycle System
0C		Incorrect Outdoor Unit Main Unit Setting	Two (or more) Outdoor Units Set as “Main Unit” Exist in Same Refrigerant Cycle System
11	Sensor on Indoor Unit	Inlet Air Thermistor	Incorrect Wiring, Disconnecting Wiring, Breaking Wire, Short Circuit
12		Outlet Air Thermistor	
13		Freeze Protection Thermistor	
14		Gas Piping Thermistor	
15		Abnormality of Thermistor for Ambient Tmeperture(Total Heat Exchanger)	
16		Abnormality of Remote Thermistor(All Fresh Air Type Indoor Units)	
17		Abnormality of Thermistor in Wired Controller	
19	Fan Motor	Activation of Protection Device for Indoor Fan	Fan Motor Overheat, Locking
21	Sensor on Outdoor Unit	High Pressure Sensor	Incorrect Wiring, Disconnecting Wiring Breaking Wire, Short Circuit
22		Outdoor Air Thermistor	
23		Discharge Gas Thermistor on Top of Compressor	
24		Heat Exchanger Liquid Pipe Thermistor	
25		Heat Exchanger Gas Pipe Thermistor	
29		Low Pressure Sensor	
2b		Thermistor for Temperature inside the Electrical Box	
31	System	Incorrect Capacity Setting of Outdoor Unit and Indoor Unit/water module	Incorrect Capacity Code Setting of Combination Excessive or Insufficient Indoor Unit /Water Module Total Capacity Code
		Abnormal Transmitting between Outdoor Units	
35		Incorrect Setting of Indoor Unit No.	Duplication of Indoor Unit No. in same Ref. Gr.
36		Incorrect of Indoor Unit Combination	Indoor Unit is Designed for R22
38	System	Abnormality of Picking up Circuit for Protection in Outdoor Unit	Failure of Protection Detecting Device (Incorrect Wiring of Outdoor Unit PCB)
3A	Outdoor Unit	Abnormality of Outdoor Unit Capacity	Outdoor Unit Capacity Over the Range
3b		Incorrect Setting of Outdoor Unit Models Combination or Voltage	Incorrect Setting of Main and Sub Unit(s) Combination or Voltage
3d		Abnormality Transmission between Main Unit and Sub Unit(s)	Incorrect Wiring, Disconnect Wire, Breaking Wire, PCB Failure
3E		Abnormal Control of Inverter PCB Combination	PCB Setting Error

Code	Category	Content of Abnormality	Leading Cause
43	Protection Device	Activation of Low Compression Ratio Protection Device	Defective Compression (Failure of Compressor of Inverter, Loose Power Supply Connection)
44		Activation of Low Pressure Increase Protection Device	Overload at Cooling, High Temperature at Heating, Expansion Valve Locking (Loose Connector)
45		Activation of High Pressure Increase Protection Device	Overload Operation (Clogging, Short-Pass), Pipe Clogging, Excessive Refrigerant, Inert Gas Mixing
46		Activation of High Pressure Decrease Protection Device	Insufficient Refrigerant, Low Temperature at Cooling
47		Activation of Low Pressure Decrease Protection Device (Vacuum Operation Protection)	Insufficient Refrigerant, Refrigerant Piping, Clogging, Expansion Valve Locking at Open Position (Loose Connector)
48		Activation of Inverter Overcurrent Protection Device	Overload Operation, Compressor Failure
51	Sensor	Abnormal Inverter Current Sensor	Current Sensor Failure
53	Inverter	Inverter Error Signal Detection	Driver IC Error Signal Detection (Protection for Overcurrent, Low Voltage, Short Circuit)
54		Abnormality of Inverter Fin Temperature	Abnormal Inverter Fin Thermistor, Heat Exchanger Clogging, Fan Motor Failure
55		Inverter Failure	Inverter PCB Failure
57	O.U. Fan Controller	Activation of O.U. Fan Controller Protection	Driver IC Error Signal Detection (Protection for Overcurrent, Low Voltage, Short Circuit), Instantaneous Overcurrent
5A		Abnormality of O.U. Fan Controller Fin Temperature	Fin Thermistor Failure, Heat Exchanger Clogging, O.U. Fan Motor Failure
5b		Activation of Overcurrent Protection	O.U. Fan Motor Failure
5C		Abnormality of O.U. Fan Controller Sensor	Failure of Current Sensor (Instantaneous Overcurrent, Increase of Fin Temperature, Low Voltage, Earth Fault, Step-Out)
EE	Compressor	Compressor Protection Alarm (It is can not be reset from remote controller)	This alarm code appears when the following alarms* occurs three times within 6 hours. *02, 07, 08, 43 to 45, 47
A6	Inverter	Abnormal Condensation During Refrigerant Heat Dissipation	Insufficient Refrigerant, or Abnormal EVO
E4	Outdoor Unit	Increase of temperature in the electrical box	The small fan in the electrical box is faulty
b1	System	Incorrect Setting of Unit and Refrigerant Cycle No.	Over 64 Number is Set for Address or Refrigerant Cycle.
b5	Indoor Unit No. Setting	Incorrect Indoor Unit Connection Number Setting	Incompatible with Indoor Unit Communications Protocol
1d	I.U. Fan Controller	I.U. Fan Controller Alarm	I.U. fan controller is damaged
1b		I.U. Fan Controller Software Over-current or Electronic Thermal Protection	The duct static pressure does not meet the requirements; speed-up mode selection of the wired controller is incorrect; I.U. fan controller is damaged
1C		I.U. Fan Controller Current Dection Circuit Abnormality	The I.U. fan motor is not connected; the I.U. fan motor is damaged; I.U. fan controller is damaged
1E		I.U. Fan Controller Under-voltage Protection	The power supply voltage of the I.U. fan controller is too low.
B6		Abnormal Transmission between I.U. PCB and I.U. Fan Controller	The transmission cable is not connected properly.
18		I.U. Fan motor non-action or out-of-step detected by I.U. fan controller	The I.U. fan motor wiring is not connected; the I.U. fan motor is faulty; I.U. fan controller is damaged

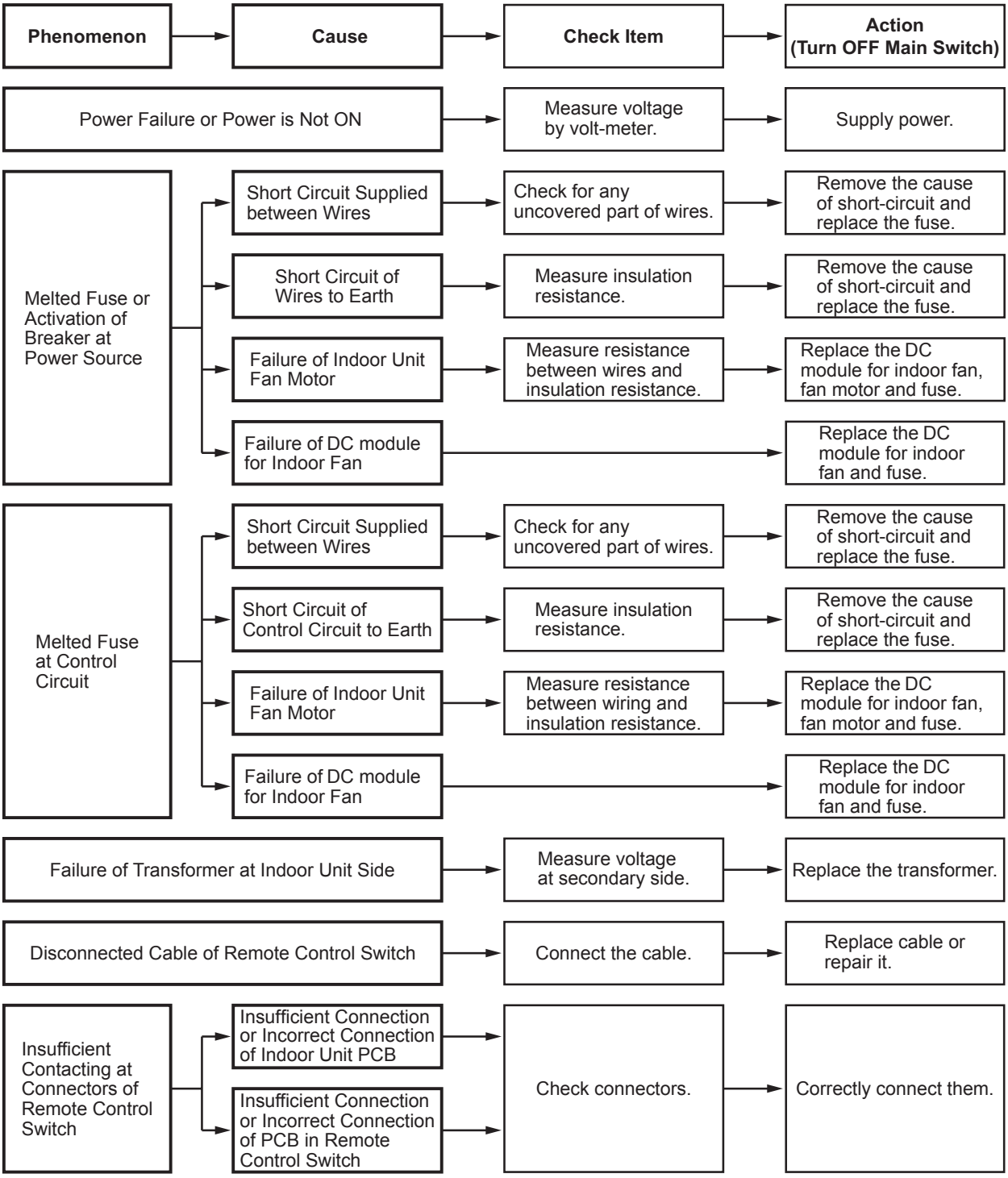
Code	Category	Content of Abnormality	Leading Cause
03	Refrigerant Shut-off Box	Abnormal of Refrigerant Shut-off Box transmission	Abnormal transmission between Refrigerant Shut-off Box and outdoor unit.
			Abnormal transmission between Refrigerant Shut-off Box and indoor unit.
C1		Incorrect Refrigerant Shut-off Box Connection	There are 2 or more Refrigerant Shut-off Boxs connected seriesly between the outdoor and indoor units.
C2		Incorrect Indoor Unit Connection No. Setting	There are 18 or more indoor units connected to one branch of Refrigerant Shut-off Box.
			There are 37 or more indoor units connected to one Refrigerant Shut-off Box PCB.
C6		Abnormal backup charging power board	The voltage of the backup charging power board is abnormal, Press and hold PSW1, 3 on Refrigerant Shut-off Box PCB at the same time for 6s to release alarm code.

NOTES:

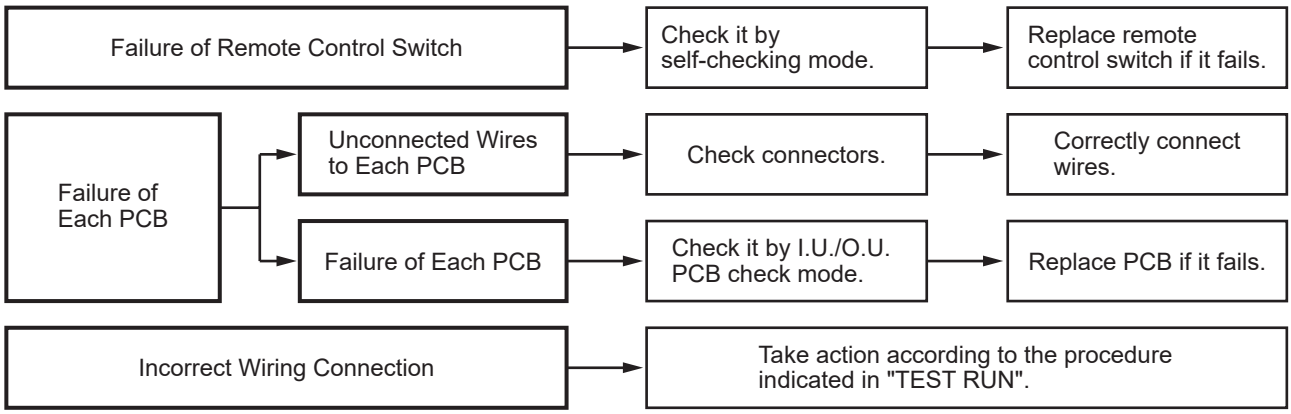
When the RUN indicator flashes every 4 seconds, the communication failure between the indoor unit and the wired controller (Loosening at connector, Incorrect Wiring, Disconnecting Wiring, Breaking Wire) occurs.

1.2.2 Failure of Power Supply to Indoor Unit and Remote Control Switch

- Lights and LCD are not Indicated.
- Not Operated.
  If fuses are melted or a breaker is activated, investigate the cause of over current and take necessary actions.

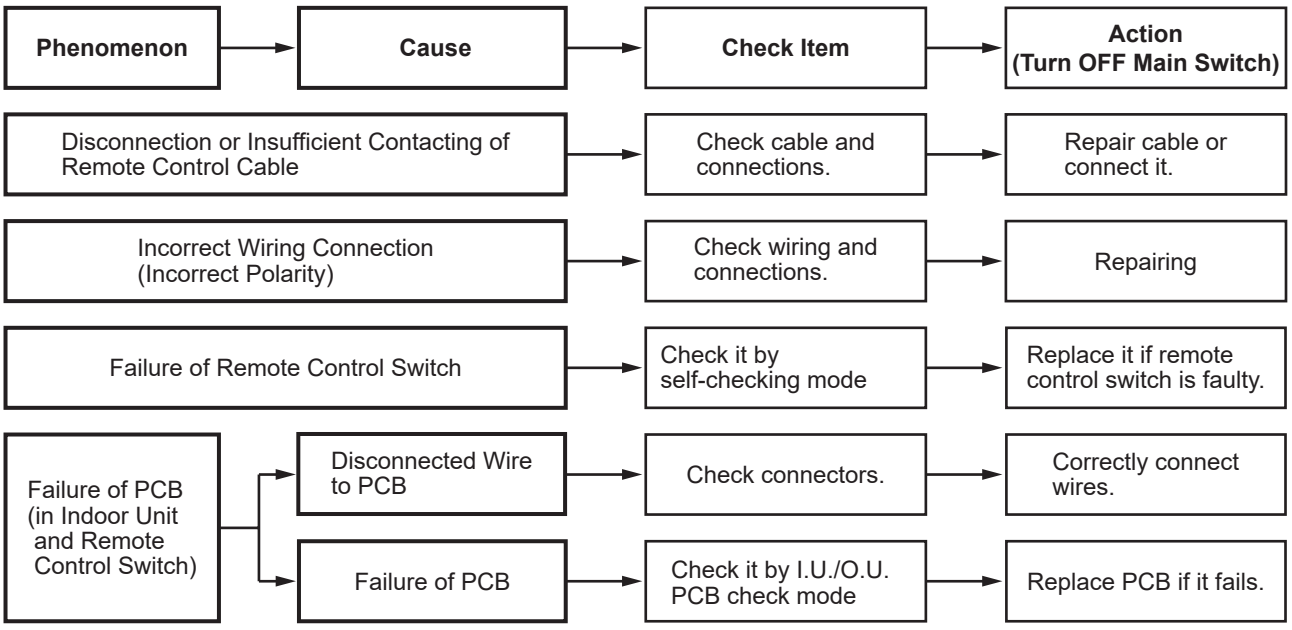


(1.2.2 Failure of Power Supply to Indoor Unit and Remote Control Switch)



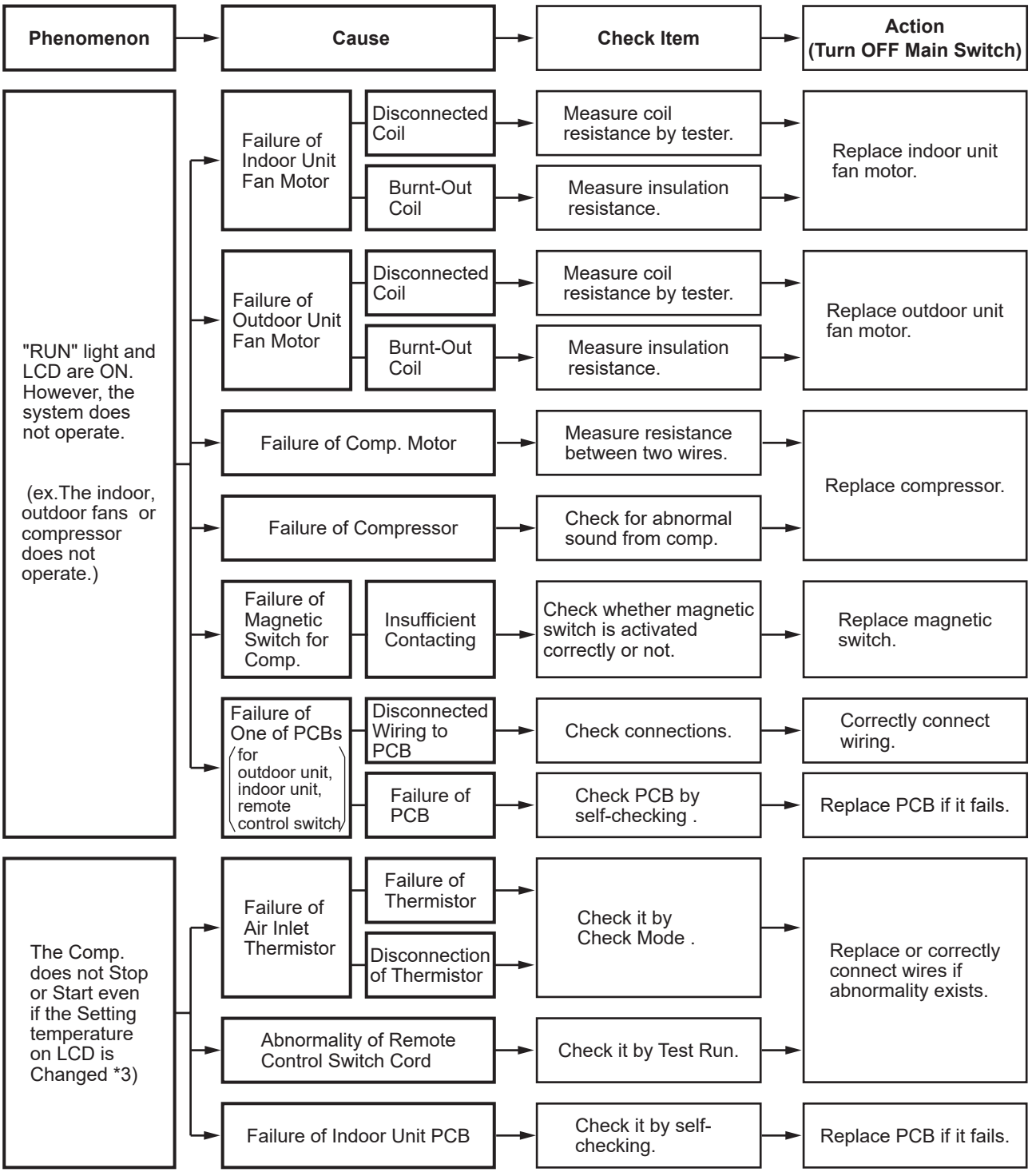
1.2.3 Abnormal Transmission between Remote Control Switch and Indoor Unit

- "RUN" Lamp on Remote Control Switch:
  Flashing every 2 seconds

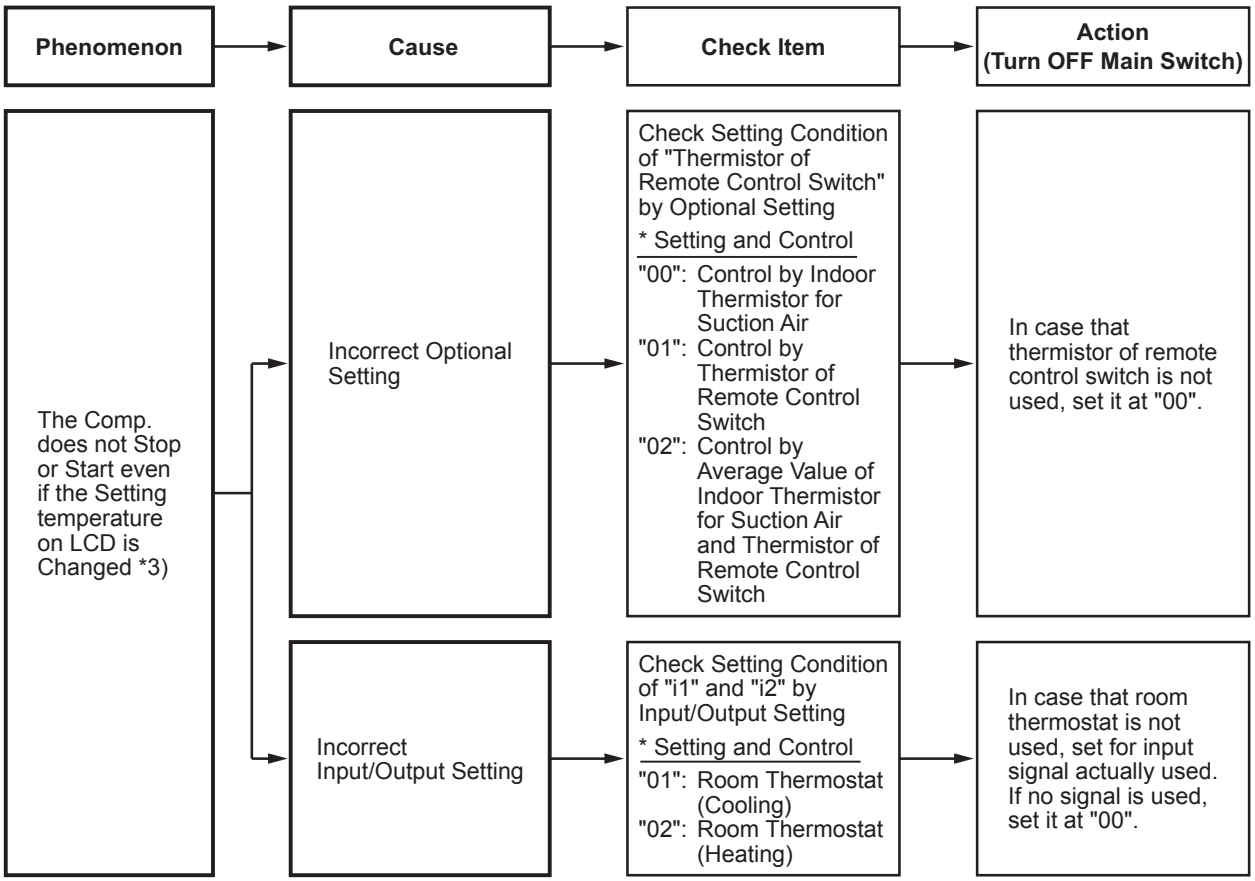


1.2.4 Abnormalities of Devices

In the case that no abnormality (Alarm Code) is indicated on the remote control switch, and normal operation is not available, take necessary actions according to the following procedures.



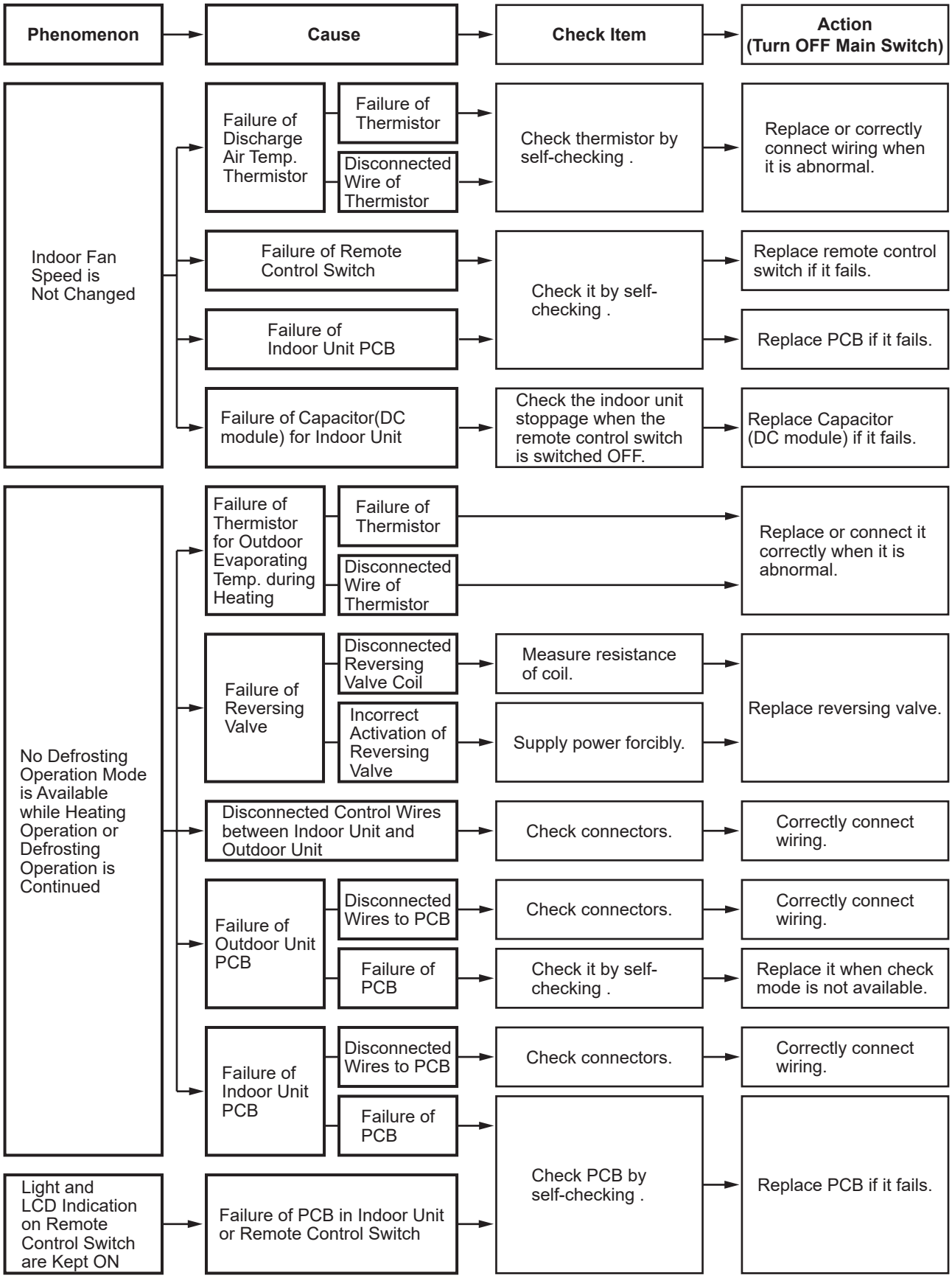
(1.2.4 Abnormalities of Devices)



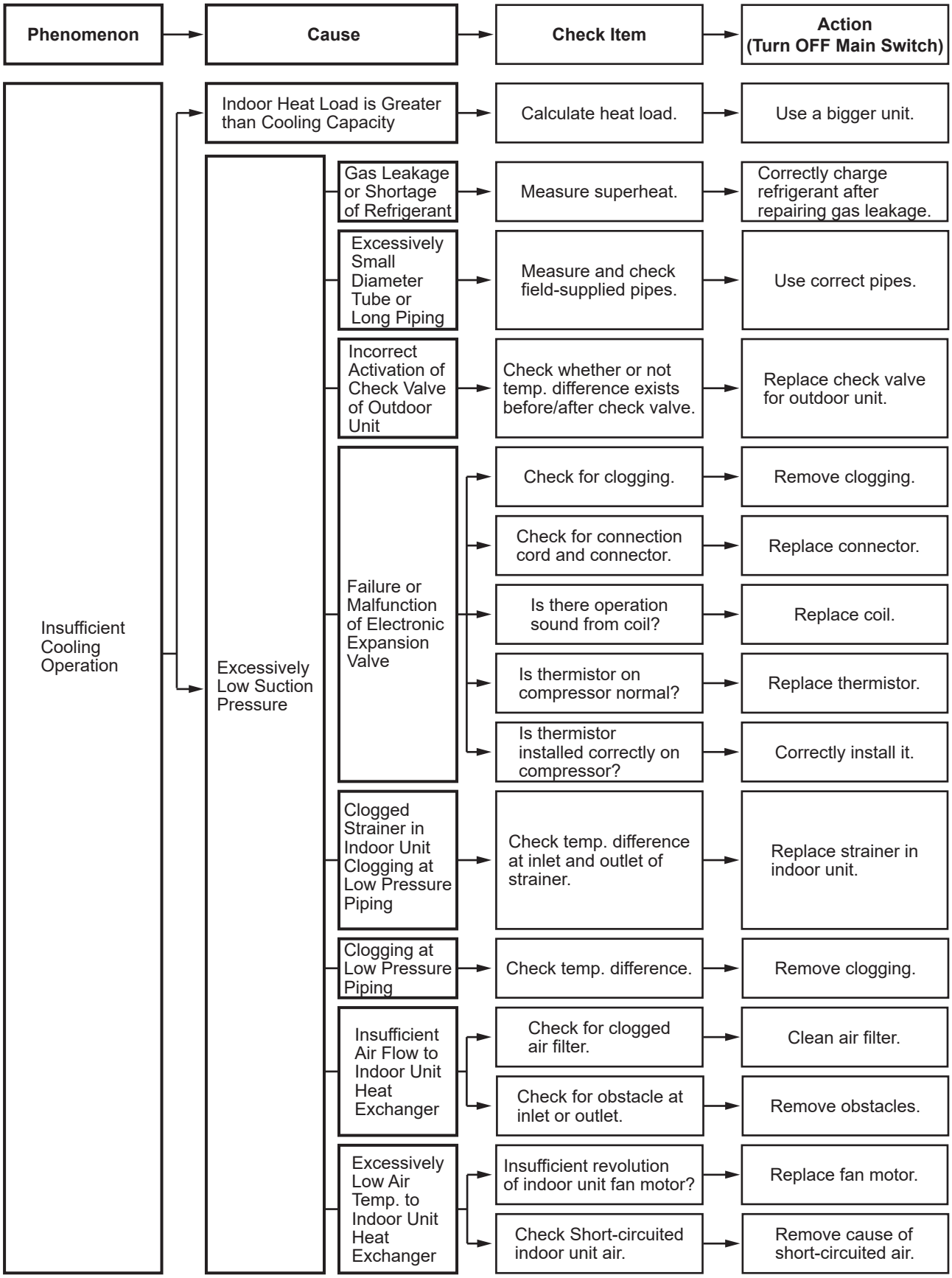
*3): Even if controllers are normal, the compressor does not operate under the following conditions.

* Indoor Air Temp. or Outdoor Air Temp. is out of the operating temperature range.
* When a cooling operation signal is given to the outdoor unit and a different operation signal is given to indoor units.
* When demand signal or emergency stop signal is given to outdoor unit.

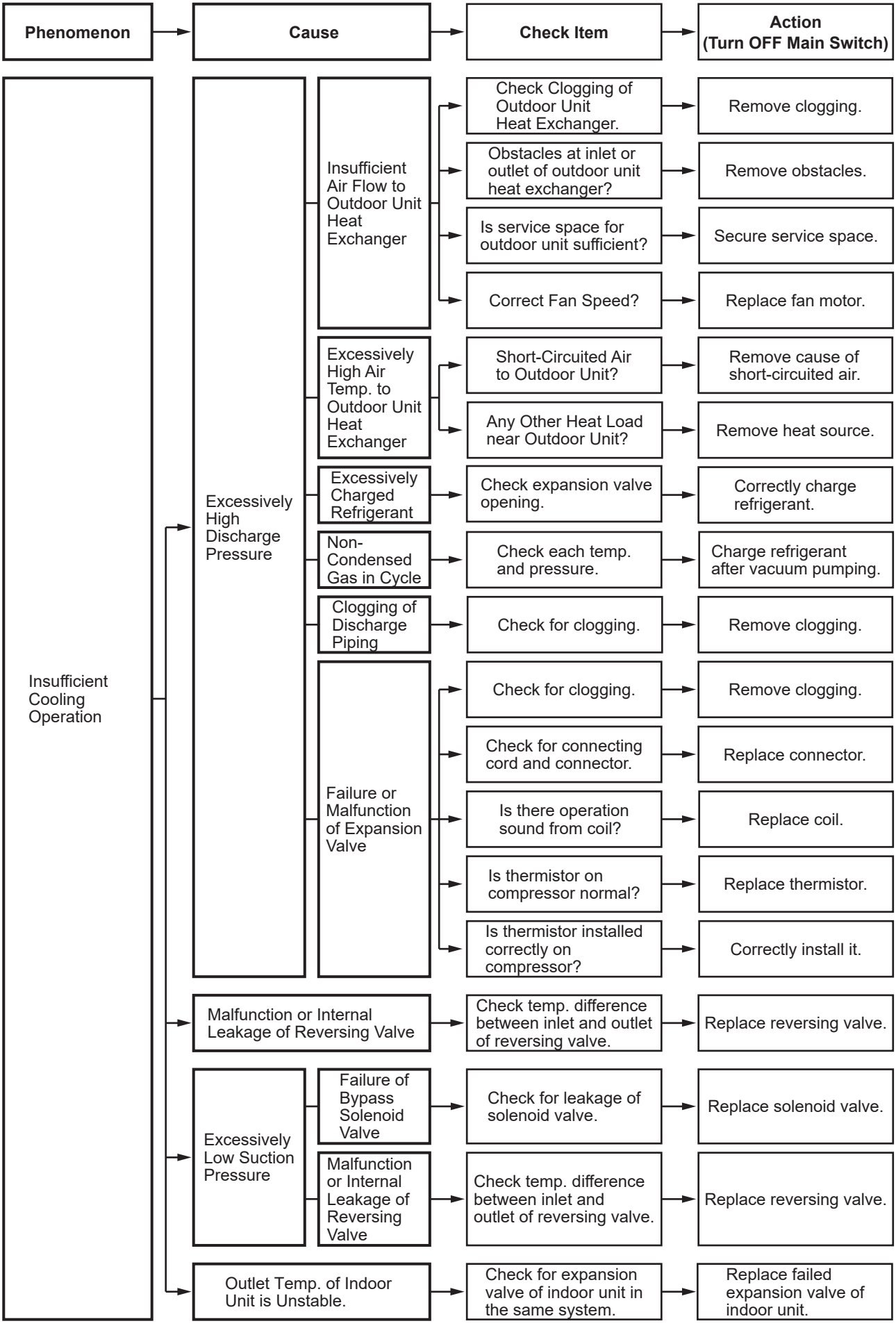
(1.2.4 Abnormalities of Devices)



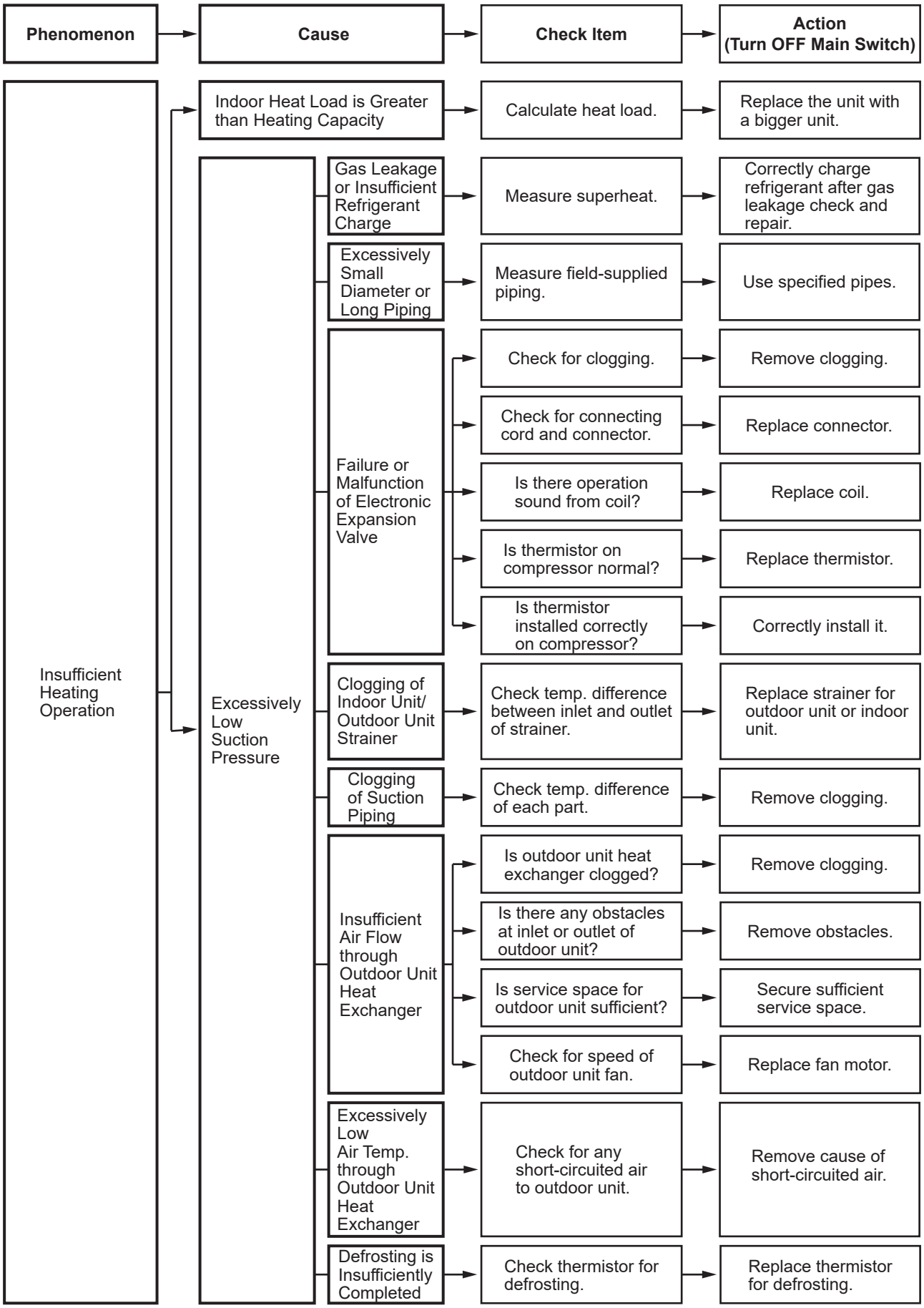
(1.2.4 Abnormalities of Devices)



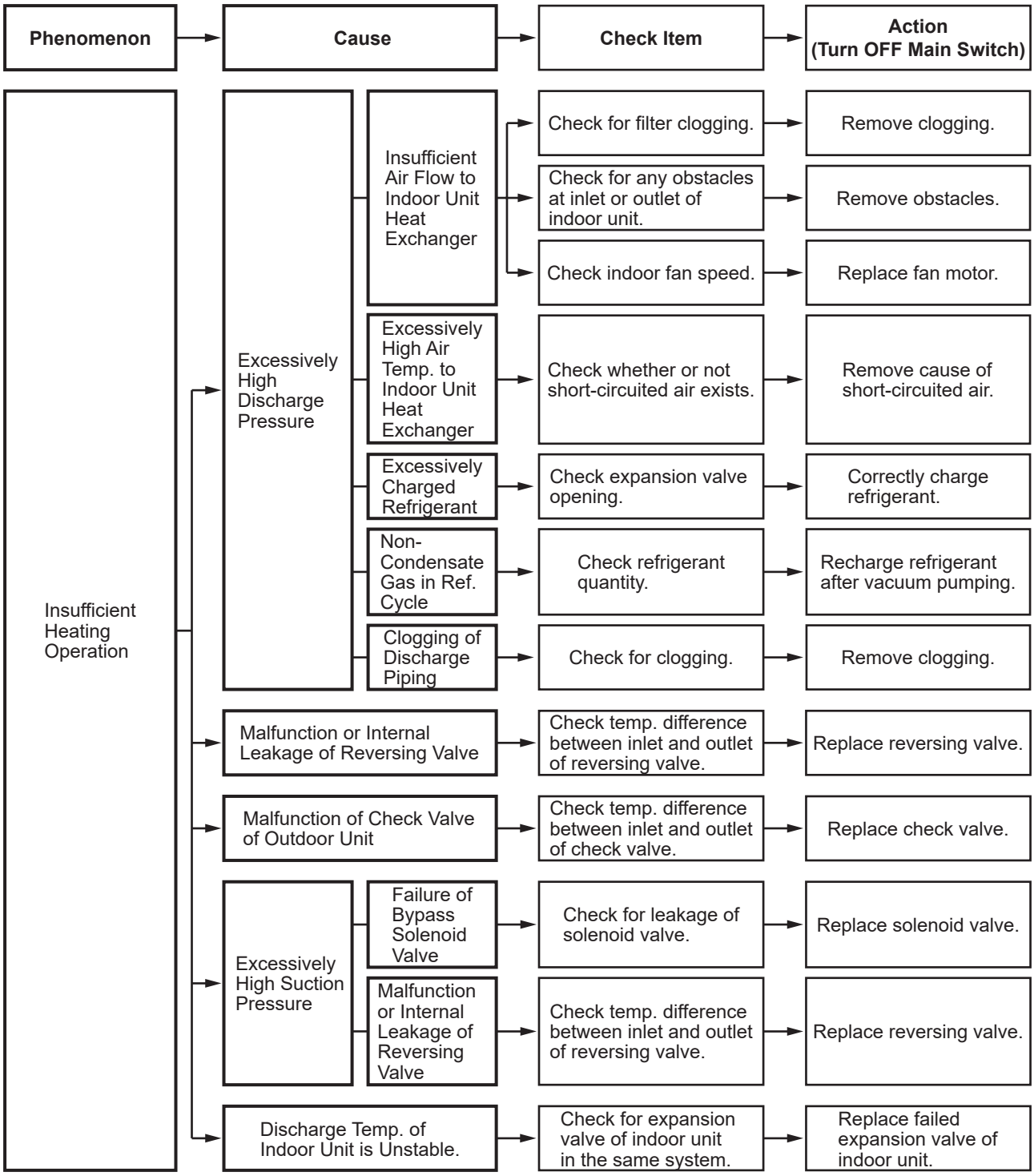
(1.2.4 Abnormalities of Devices)



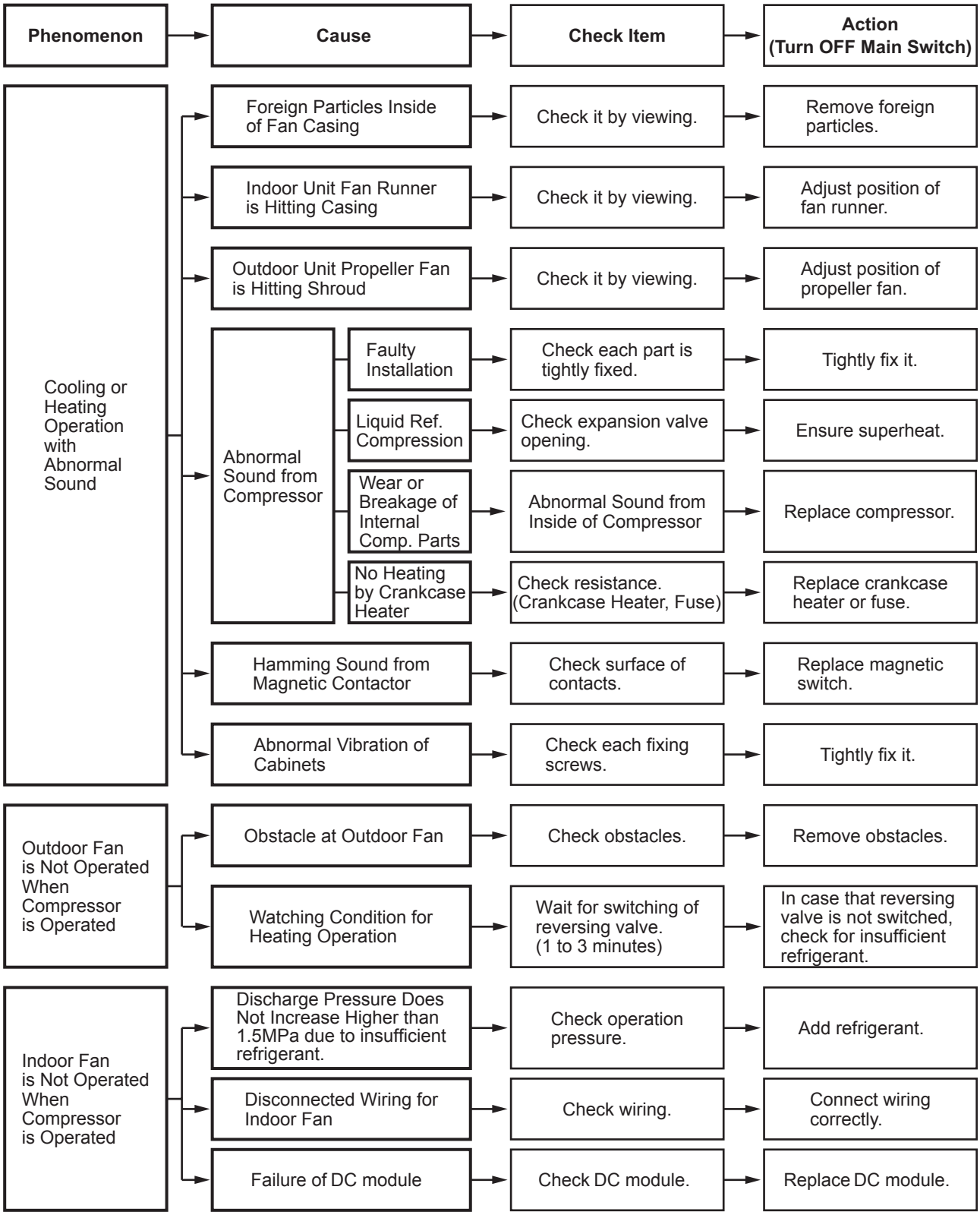
(1.2.4 Abnormalities of Devices)



(1.2.4 Abnormalities of Devices)



(1.2.4 Abnormalities of Devices)



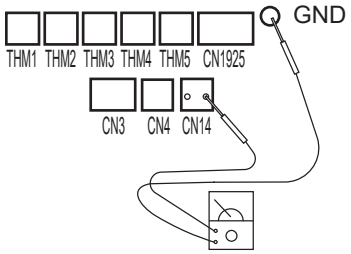
1.2.5 Troubleshooting by Alarm Code

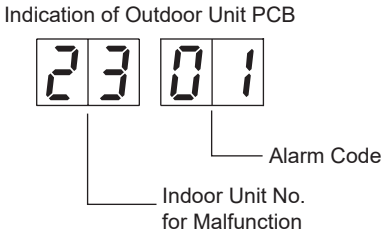
Alarm Code 01	Activation of Protection Device (Float Switch) in Indoor Unit

- The RUN indicator (Red) is flashing.
- The indoor unit number, the alarm code, the unit model code and the connected number of indoor units are displayed on LCD. Meanwhile, the indoor unit number and the alarm code are displayed on the 7-segment on O.U. display PCB.

★ This alarm code is indicated when the contact between #1 and #2 of CN14 is opened for over 120 seconds during the cooling, dry, fan or heating operation.

I.U. PCB: Indoor Unit PCB



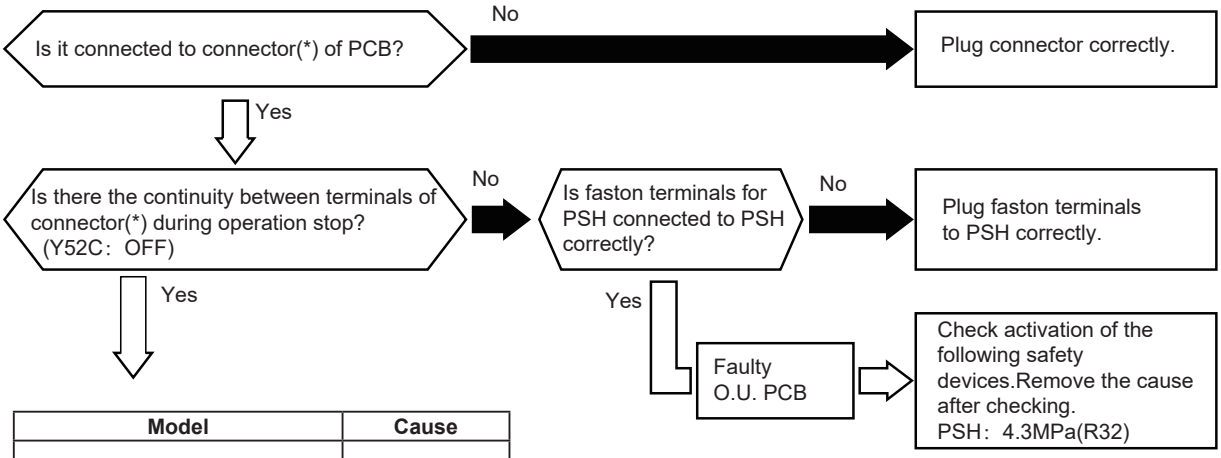


Phenomenon	Cause		Check Item	Action (Turn OFF Main Switch)
Activation of Float Switch	High Drain Level	Clogging of Drainage Up-Slope Drain Piping	Check drain pan. Check drainage by pouring water.	Remove foreign particles clogging the drainage.
	Faulty Float Switch	Fault	Check conduction when drain level is low.	Replace float switch if faulty.
		Faulty Contacting	Measure resistance by tester.	Repair looseness and replace connector.
		Faulty Connection	Check connections.	Repair connection.
Faulty Indoor Unit PCB			Check PCB by self-checking .	Replace it if faulty.

Alarm Code 02	Activation of the safety device (high pressure switch) in the outdoor unit

- The RUN LED flickers and “ALARM” is displayed on the remote control switch.
- The indoor unit number, the alarm code, the unit model code and the connected number of indoor units are displayed on LCD. Meanwhile, the indoor unit number and the alarm code are displayed on the 7- segment on O.U. display PCB.

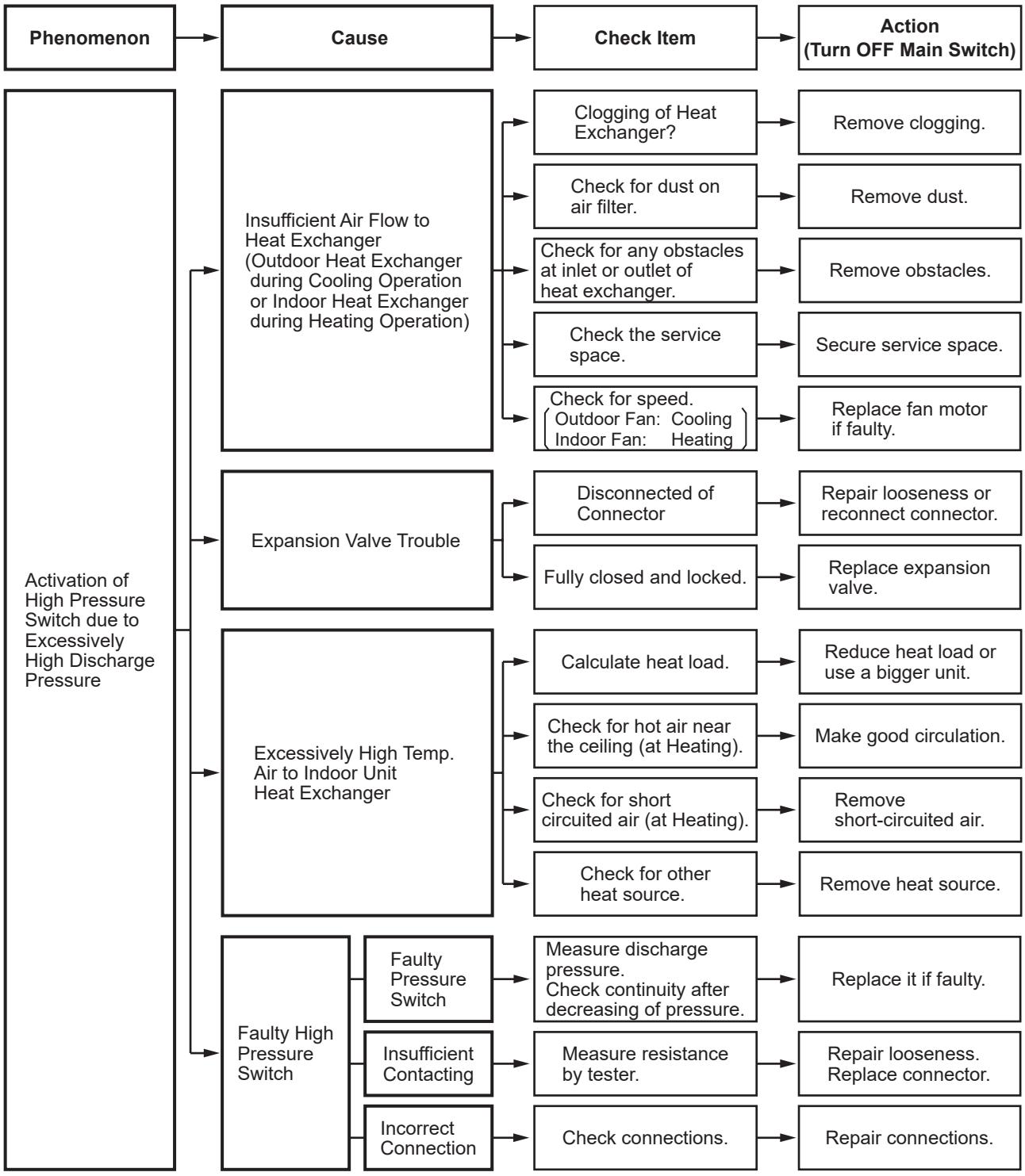
★ This alarm code is indicated when the high pressure switch (PSH) is activated during the compressor operation.

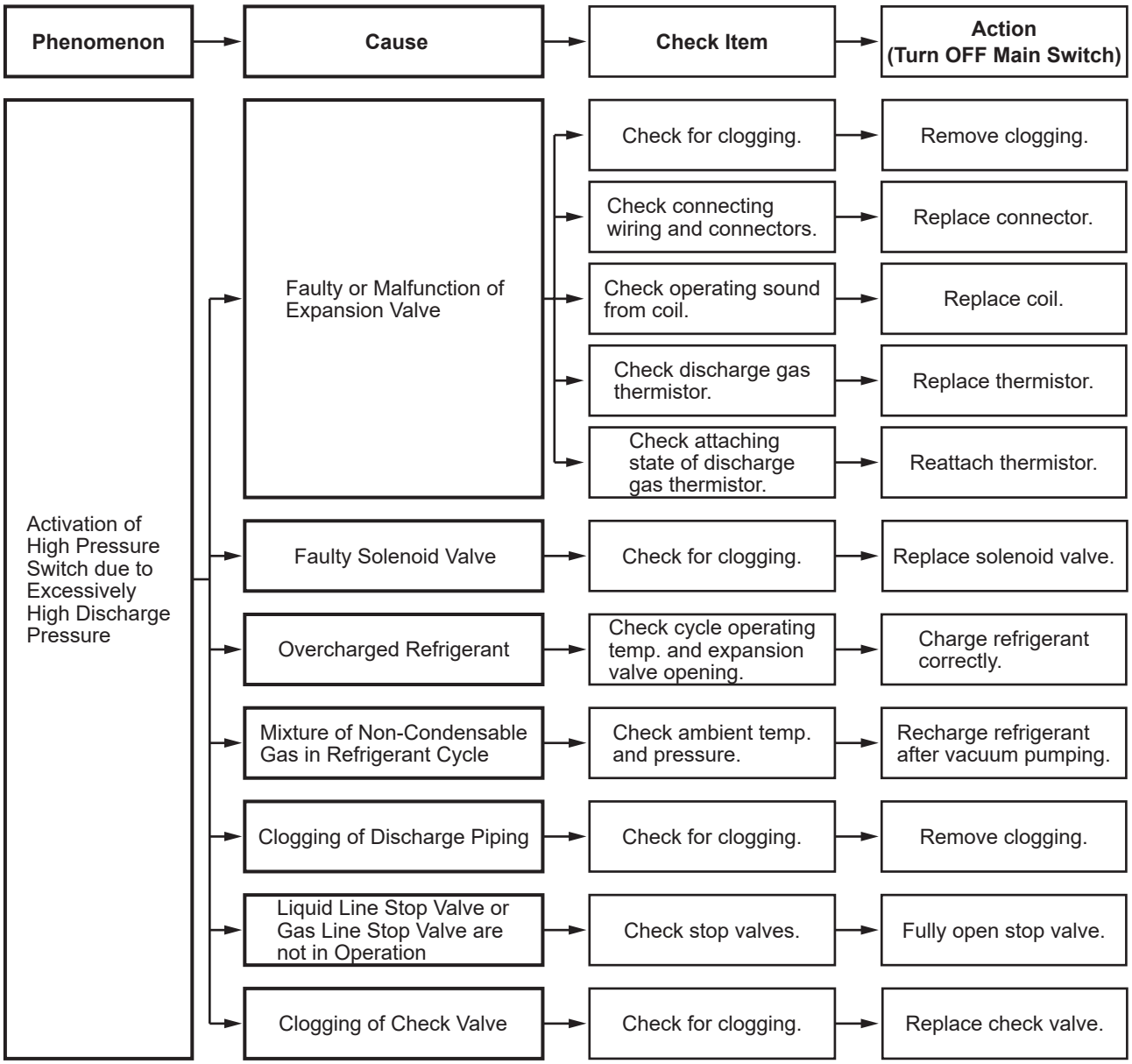


Model	Cause
AVW-76/96/114/136/154HKDHE2	Faulty INV PCB

(*)

Model	PCB connector	Pin
AVW-76/96/114/136/154HKDHE2	CN3 (INV PCB)	#1-#3


Phenomenon
Cause
Check Item
Action (Turn OFF Main Switch)
Activation of High Pressure Switch due to Excessively High Discharge Pressure
Insufficient Air Flow to Heat Exchanger (Outdoor Heat Exchanger during Cooling Operation or Indoor Heat Exchanger during Heating Operation)
Clogging of Heat Exchanger?
Remove clogging.
Check for dust on air filter.
Remove dust.
Check for any obstacles at inlet or outlet of heat exchanger.
Remove obstacles.
Check the service space.
Secure service space.
Check for speed. (Outdoor Fan: Cooling Indoor Fan: Heating)
Replace fan motor if faulty.
Expansion Valve Trouble
Disconnected of Connector
Repair looseness or reconnect connector.
Fully closed and locked.
Replace expansion valve.
Excessively High Temp. Air to Indoor Unit Heat Exchanger
Calculate heat load.
Reduce heat load or use a bigger unit.
Check for hot air near the ceiling (at Heating).
Make good circulation.
Check for short circuited air (at Heating).
Remove short-circuited air.
Check for other heat source.
Remove heat source.
Faulty High Pressure Switch
Faulty Pressure Switch
Measure discharge pressure. Check continuity after decreasing of pressure.
Replace it if faulty.
Insufficient Contacting
Measure resistance by tester.
Repair looseness. Replace connector.
Incorrect Connection
Check connections.
Repair connections.


Phenomenon
Cause
Check Item
Action (Turn OFF Main Switch)
Activation of High Pressure Switch due to Excessively High Discharge Pressure
Faulty or Malfunction of Expansion Valve
Check for clogging.
Remove clogging.
Check connecting wiring and connectors.
Replace connector.
Check operating sound from coil.
Replace coil.
Check discharge gas thermistor.
Replace thermistor.
Check attaching state of discharge gas thermistor.
Reattach thermistor.
Faulty Solenoid Valve
Check for clogging.
Replace solenoid valve.
Overcharged Refrigerant
Check cycle operating temp. and expansion valve opening.
Charge refrigerant correctly.
Mixture of Non-Condensable Gas in Refrigerant Cycle
Check ambient temp. and pressure.
Recharge refrigerant after vacuum pumping.
Clogging of Discharge Piping
Check for clogging.
Remove clogging.
Liquid Line Stop Valve or Gas Line Stop Valve are not in Operation
Check stop valves.
Fully open stop valve.
Clogging of Check Valve
Check for clogging.
Replace check valve.

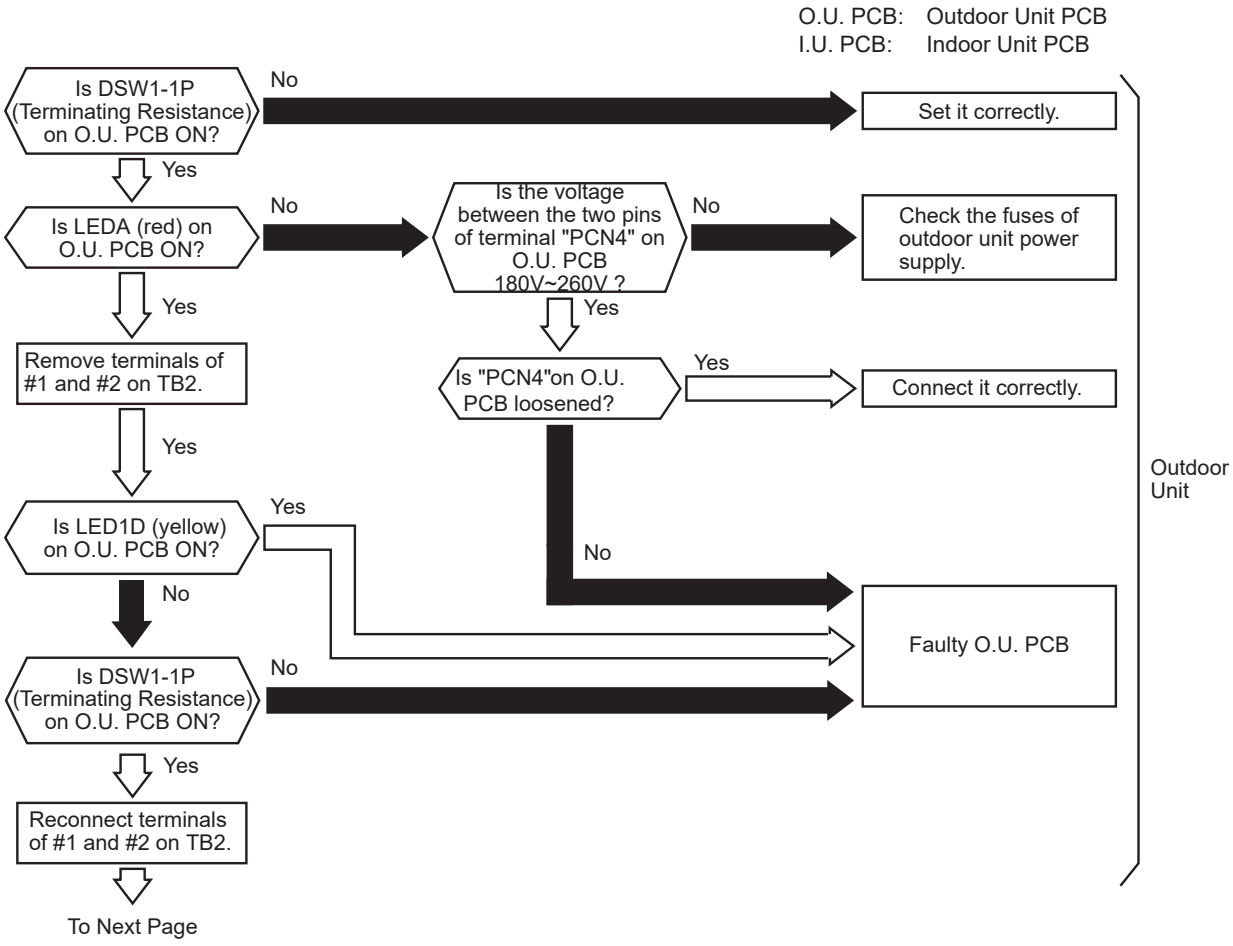
Alarm Code 03	Abnormal Transmitting between Indoor Units/Refrigerant Shut-off Box and Outdoor Units

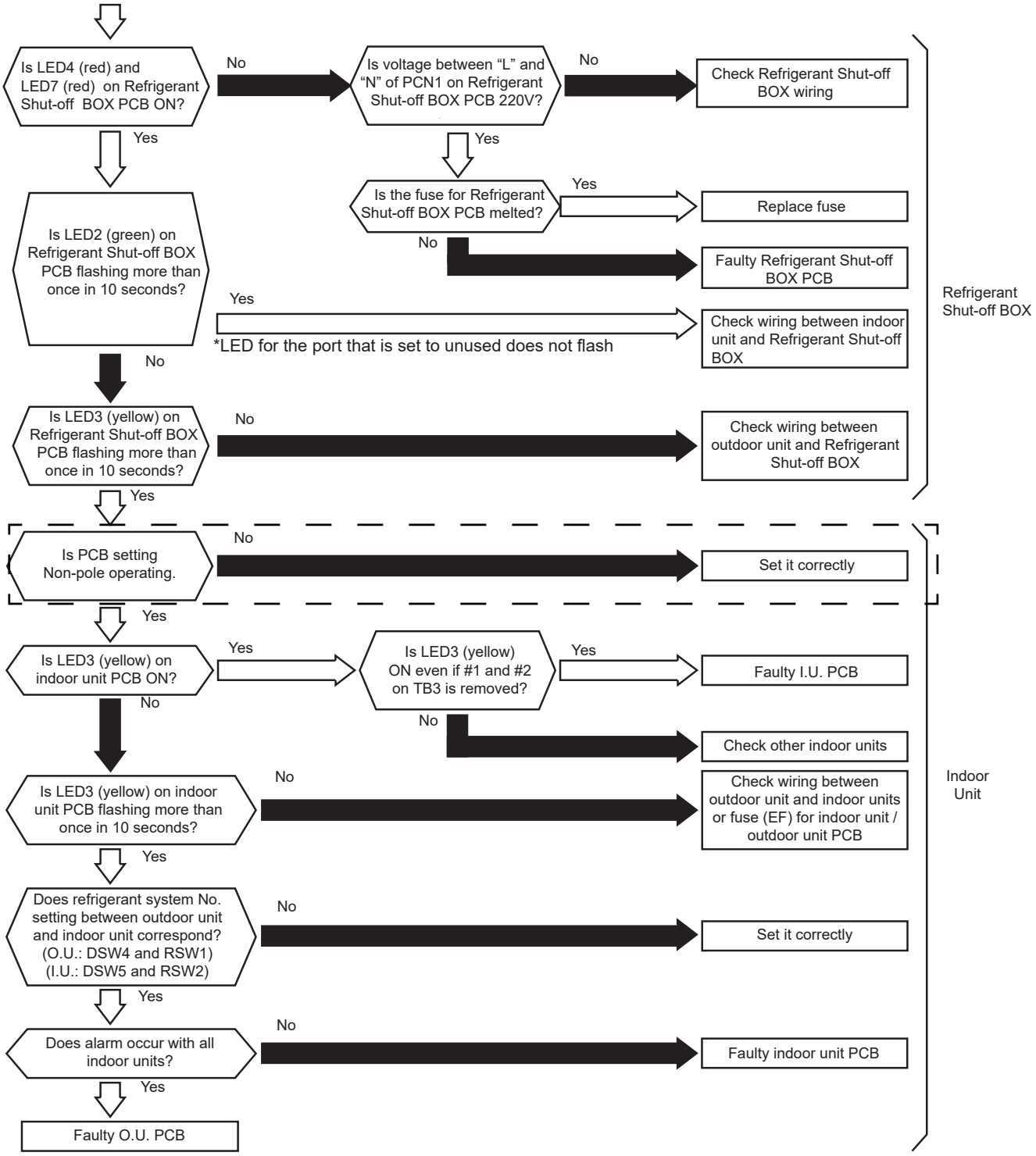
- The RUN LED flickers and “ALARM” is displayed on the remote control switch.
- The unit number, the alarm code and the unit code are alternately displayed on the set temperature section.
- The unit number and the alarm code are displayed on the O.U. display PCB.

★ This alarm is displayed when an abnormal operation is maintained for three minutes after the normal transmission between the indoor units and the outdoor unit. Also, an abnormal operation is maintained for 30 seconds after the micro-computer is automatically reset.

★ The alarm is displayed when the abnormal transmission is maintained for 30 seconds from the starting of the outdoor unit.

★ Investigate the cause of the overcurrent and take the necessary action when the fuses are blown out or the breaker for the outdoor unit is activated.




Is LED4 (red) and LED7 (red) on Refrigerant Shut-off BOX PCB ON?
No
Is voltage between "L" and "N" of PCN1 on Refrigerant Shut-off BOX PCB 220V?
No
Check Refrigerant Shut-off BOX wiring
Yes
Yes
Is the fuse for Refrigerant Shut-off BOX PCB melted?
Yes
Replace fuse
No
Faulty Refrigerant Shut-off BOX PCB
Is LED2 (green) on Refrigerant Shut-off BOX PCB flashing more than once in 10 seconds?
Yes
Check wiring between indoor unit and Refrigerant Shut-off BOX
*LED for the port that is set to unused does not flash
No
Is LED3 (yellow) on Refrigerant Shut-off BOX PCB flashing more than once in 10 seconds?
No
Check wiring between outdoor unit and Refrigerant Shut-off BOX
Yes
Refrigerant Shut-off BOX
Is PCB setting Non-pole operating.
No
Set it correctly
Yes
Is LED3 (yellow) on indoor unit PCB ON?
Yes
Is LED3 (yellow) ON even if #1 and #2 on TB3 is removed?
Yes
Faulty I.U. PCB
No
No
Check other indoor units
Is LED3 (yellow) on indoor unit PCB flashing more than once in 10 seconds?
No
Check wiring between outdoor unit and indoor units or fuse (EF) for indoor unit / outdoor unit PCB
Yes
Does refrigerant system No. setting between outdoor unit and indoor unit correspond? (O.U.: DSW4 and RSW1) (I.U.: DSW5 and RSW2)
No
Set it correctly
Yes
Does alarm occur with all indoor units?
No
Faulty indoor unit PCB
Yes
Faulty O.U. PCB
Indoor Unit

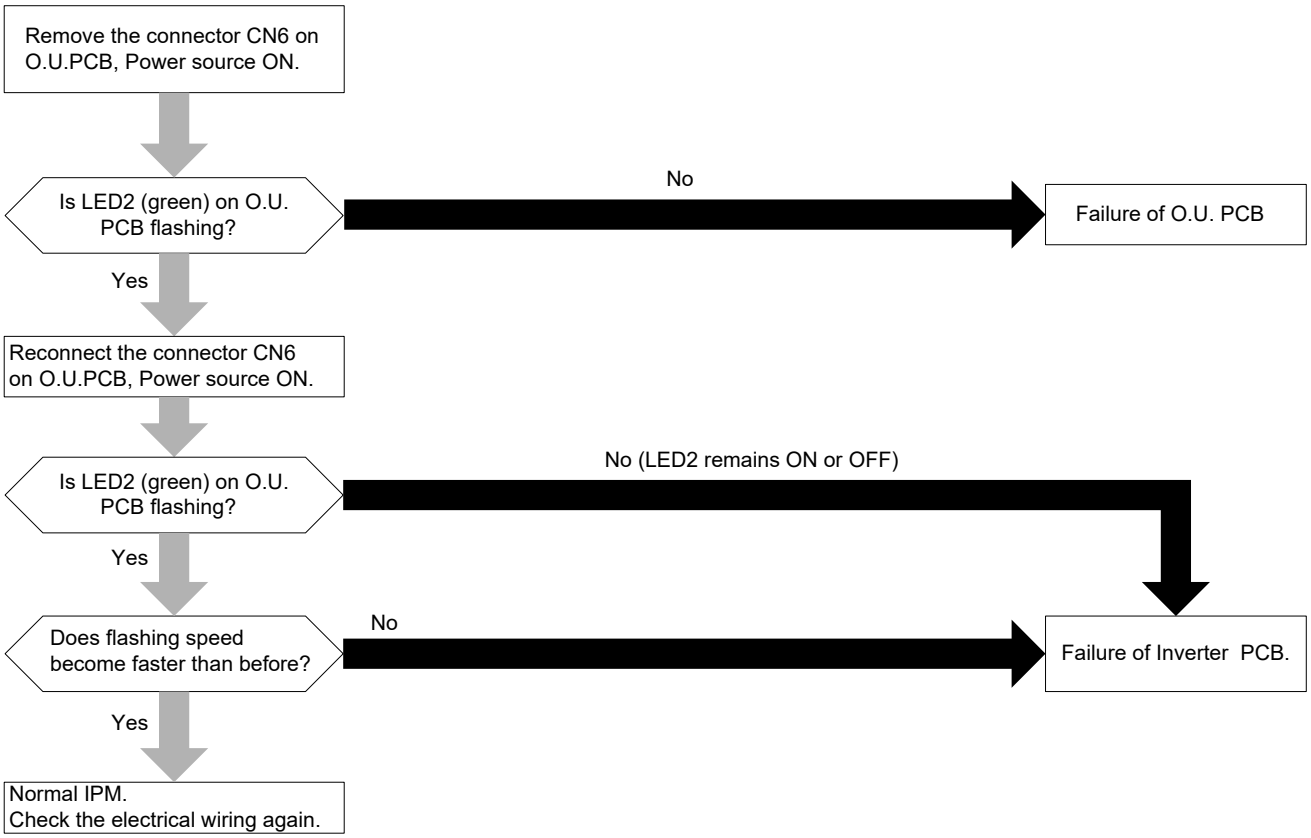
Phenomenon	Cause	Check Item	Action (Turn OFF Main Switch)
Power Failure of No Power Supply		Measure voltage by tester.	Supply power.
Melted Fuse for Power Supply or Activation of Breaker (Outdoor Unit)	Short Circuit between Wires	Check for breakage of insulation.	Remove cause of short circuit. Replace fuse and/or I.U./O.U. PCB if faulty.
	Short Circuited Wire to Ground	Measure insulation resistance.	Remove cause of short circuit to ground. Replace fuse and/or I.U./O.U. PCB if faulty.
	Faulty Comp. Motor	Measure resistance between wires and insulation resistance.	Replace comp. and fuse. (O.U.) Replace inverter PCB and/or PCB if faulty. (O.U.)
	Faulty Outdoor Unit Fan Motor	Measure resistance between wires and insulation resistance.	Replace outdoor unit fan motor and fuse. Replace O.U. PCB if faulty.
Melted Fuse on PCB (Outdoor Unit)	Short Circuit between Wires	Check for breakage of insulation.	Remove cause of short circuit and replace fuse.
	Short Circuit (to Ground)	Measure insulation resistance.	Remove cause of short circuit and replace fuse.
	Faulty Solenoid Coil for Magnetic Switch (CMC) for Comp. Motor	Measure resistance of coil.	Replace magnetic switch (CMC) and fuse.
	Failure of Outdoor Unit Fan Motor	Measure resistance between wires and insulation resistance.	Replace fan motor and fuse.
Incorrect Power Supply Circuit of O.U. PCB		Measure O.U. PCB output.	Replace O.U. PCB.
Disconnected Wires Insufficient Contacting or Incorrect Connection	Between Outdoor Unit and Indoor Unit	Check continuity of wires. Check for looseness of connection screws. Check terminal Nos.	Replacing wires, repairing and tightening screws.
	Power Supply Wiring for Outdoor Unit		Correctly connect wires.
Faulty PCB (Outdoor Unit, Indoor Unit)	Disconnected Wires to I.U./O.U. PCB	Check connections.	Correctly connect wires.
	Faulty I.U./O.U.PCB		Replace it if faulty.
Incorrect Wiring	Disconnected Wire Insufficient Contacting	Check continuity and looseness of connection screws.	Replacing Wires, Repairing and Tightening Screws
	Incorrect Wiring	Check terminal Nos.	Correctly connect wires.

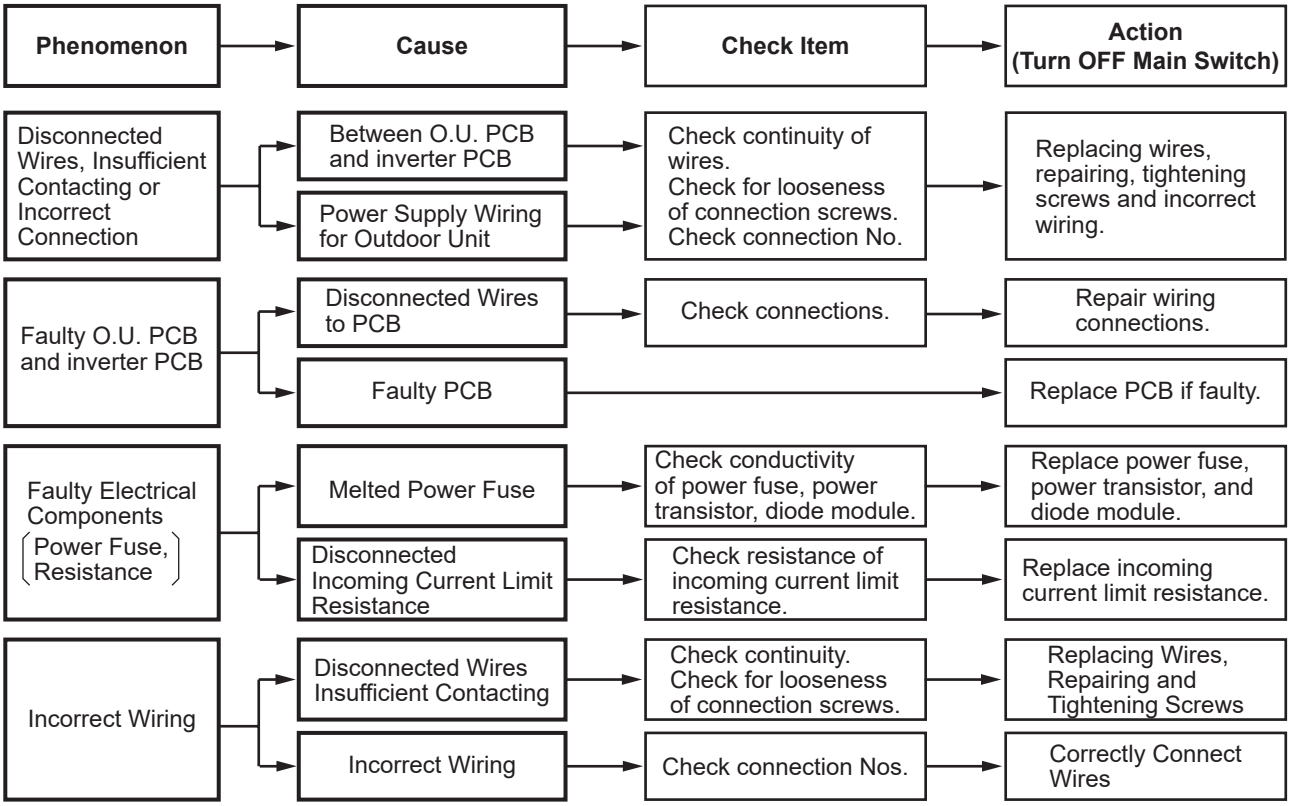
O.U. PCB: Outdoor Unit PCB
I.U. PCB: Indoor Unit PCB

Alarm Code 04	Abnormal Transmitting between Inverter PCB and Outdoor Unit PCB

- The RUN indicator (Red) is flashing.
- The indoor unit number, the alarm code, the unit model code and the connected number of indoor units are displayed on LCD. Meanwhile, the indoor unit number and the alarm code are displayed on the 7- segment on O.U. display PCB.

★ This alarm code is indicated when abnormality continues for 30 seconds after normal transmitting between the outdoor unit PCB and inverter PCB, and also abnormality continues for 30 seconds after the microcomputer is automatically reset. The alarm is indicated when the abnormal transmitting continues for 30 seconds from starting of the outdoor unit.

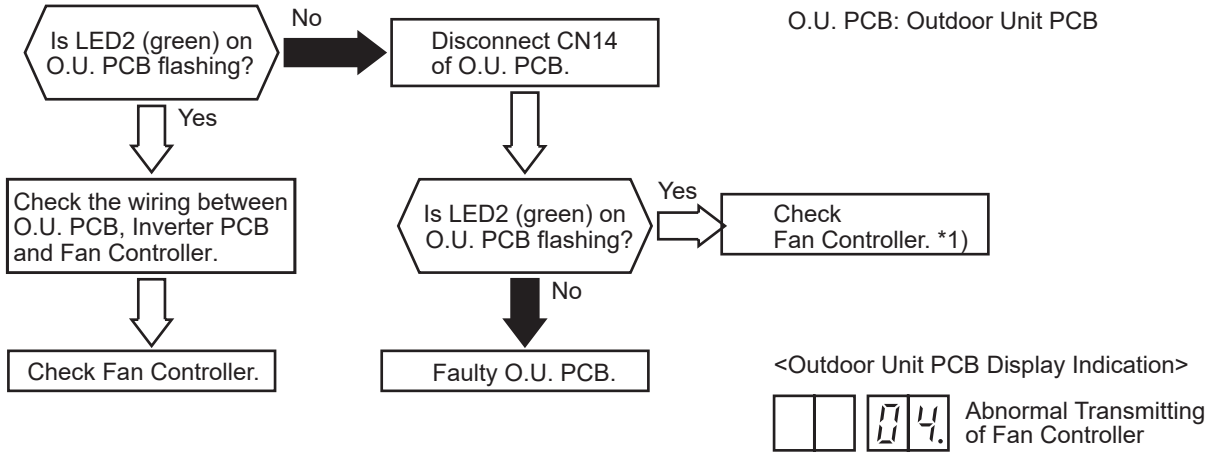



Phenomenon
Cause
Check Item
Action (Turn OFF Main Switch)
Disconnected Wires, Insufficient Contacting or Incorrect Connection
Between O.U. PCB and inverter PCB
Power Supply Wiring for Outdoor Unit
Check continuity of wires. Check for looseness of connection screws. Check connection No.
Replacing wires, repairing, tightening screws and incorrect wiring.
Faulty O.U. PCB and inverter PCB
Disconnected Wires to PCB
Faulty PCB
Check connections.
Repair wiring connections.
Replace PCB if faulty.
Faulty Electrical Components
Power Fuse, Resistance
Melted Power Fuse
Disconnected Incoming Current Limit Resistance
Check conductivity of power fuse, power transistor, diode module.
Check resistance of incoming current limit resistance.
Replace power fuse, power transistor, and diode module.
Replace incoming current limit resistance.
Incorrect Wiring
Disconnected Wires Insufficient Contacting
Incorrect Wiring
Check continuity. Check for looseness of connection screws.
Check connection Nos.
Replacing Wires, Repairing and Tightening Screws
Correctly Connect Wires

Alarm Code 04.	Abnormal Transmitting between Fan Controller and Outdoor PCB

- "RUN" light is flashing and "ALARM" are indicated on the remote control switch.
- The unit No., alarm code and the unit code are alternately indicated on the set temperature section, and the unit No. and alarm code are indicated on the 7-segment on O.U. display PCB.

★ This alarm is indicated when abnormality lasts for 30 seconds after normal transmitting occurs between the O.U. PCB and fan controller, and also abnormality lasts for 30 seconds after the micro-computer is automatically reset. The alarm is indicated when the abnormal transmitting lasts for 30 seconds from the starting of the outdoor unit.



Phenomenon	Cause	Check Item	Action (Turn OFF Main Switch)
Disconnected Wires, Insufficient Contacting or Incorrect Connection	Between O.U. PCB, Inverter PCB and Fan Controller	Check continuity of wires. Check for looseness of connection screws. Check connection No.	Replacing wires, repairing, tightening screws and incorrect wiring.
	Power Source Wiring for Outdoor Unit		
Faulty PCB (O.U. PCB, Inverter PCB and Fan Controller)	Disconnected Wires to PCB	Check connections.	Repair wiring connections.
	Faulty PCB		Replace PCB if faulty.
	Melted Fuse (Fan Controller)	Check conductivity of fuse.	Replace fan controller. *1)
Faulty Electrical Components (Power Fuse, Resistance	Melted Power Fuse	Check conductivity of power fuse, power transistor, diode module.	Replace power fuse, power transistor, and diode module.
	Disconnected Incoming Current Limit Resistance	Check resistance of incoming current limit resistance.	Replace incoming current limit resistance.
Incorrect Wiring	Disconnected Wires Insufficient Contacting	Check continuity. Check for looseness of connection screws.	Replacing Wires, Repairing and Tightening Screws
	Incorrect Wiring	Check connection No.	Correctly Connect Wires

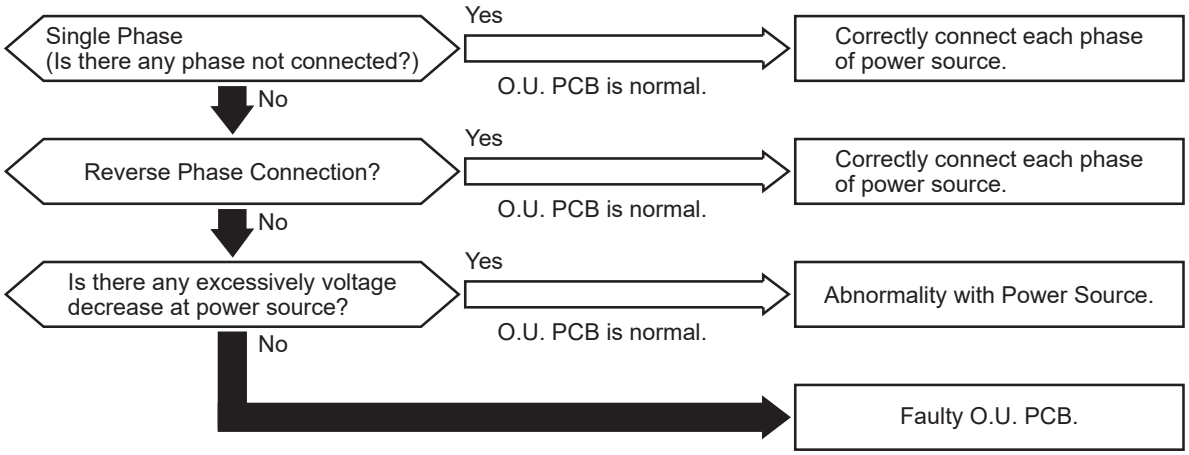
*1): The fan controller may be damaged if the fuse of fan controller is melted. In that case, replace the fan controller.

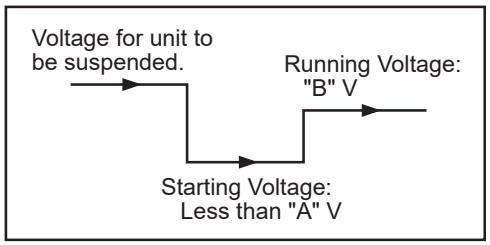
Alarm Code 05	Abnormal Power Supply Phase(Only for Three Phase Unit)

- The RUN indicator (Red) is flashing.
- The indoor unit number, the alarm code, the unit model code and the connected number of indoor units are displayed on LCD. Meanwhile, the indoor unit number and the alarm code are displayed on the 7- segment on O.U. display PCB.

★This alarm code is indicated when the main power supply phase is reversely connected or one phase is not connected.

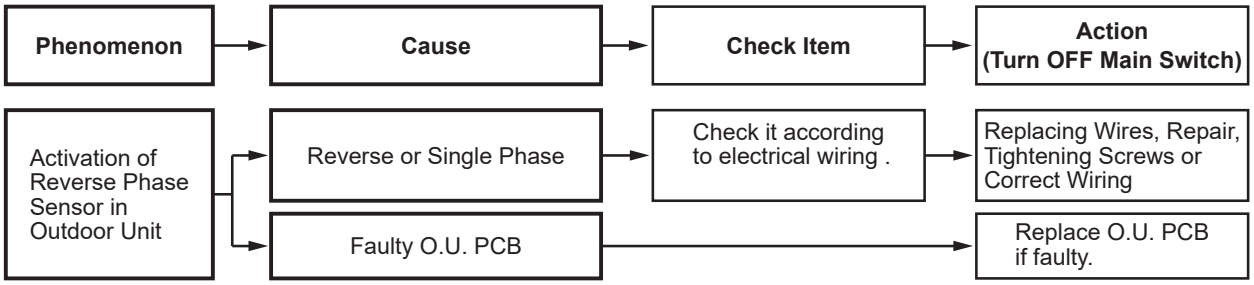
O.U. PCB: Outdoor Unit PCB





Check Item

Power Supply	"A"	"B"
380-415V/50Hz	323	342 to 456
380V/60Hz	323	342 to 418



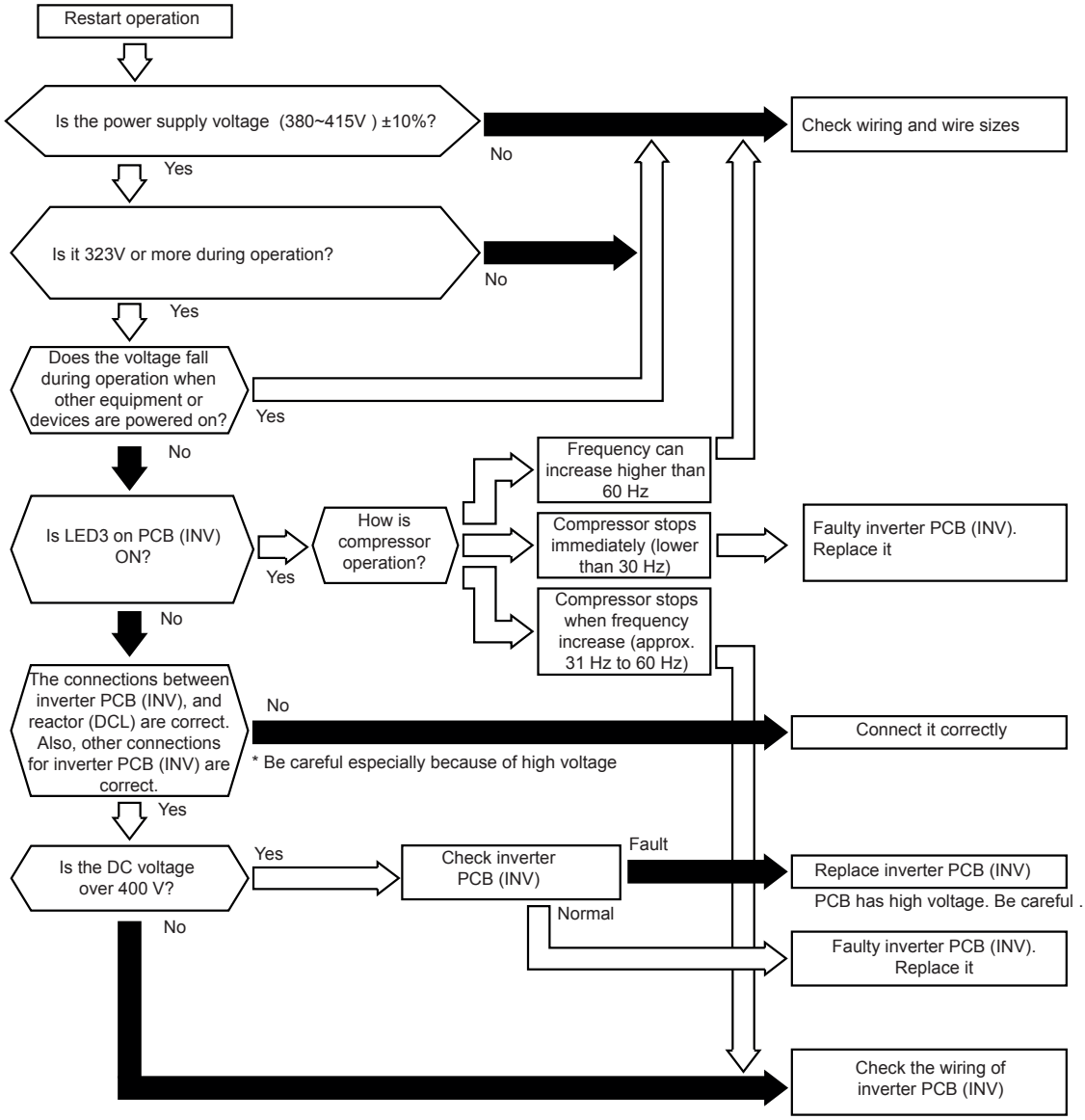
Alarm Code 06	Abnormal Inverter Voltage (Insufficient Inverter Voltage or Overvoltage)

- The RUN indicator (Red) is flashing.
- The indoor unit number, the alarm code, the unit model code and the connected number of indoor units are displayed on LCD. Meanwhile, the indoor unit number and the alarm code are displayed on the 7-segment on O.U. display PCB.

★ This alarm code is indicated when voltage between terminal “P” and “N” of transistor module (IPM) is insufficient and this occurs three times in 30 minutes. In the case that it occurs less than twice, retry is performed

<Outdoor Unit PCB Display Indication>

□□ 06 Abnormal of Inverter

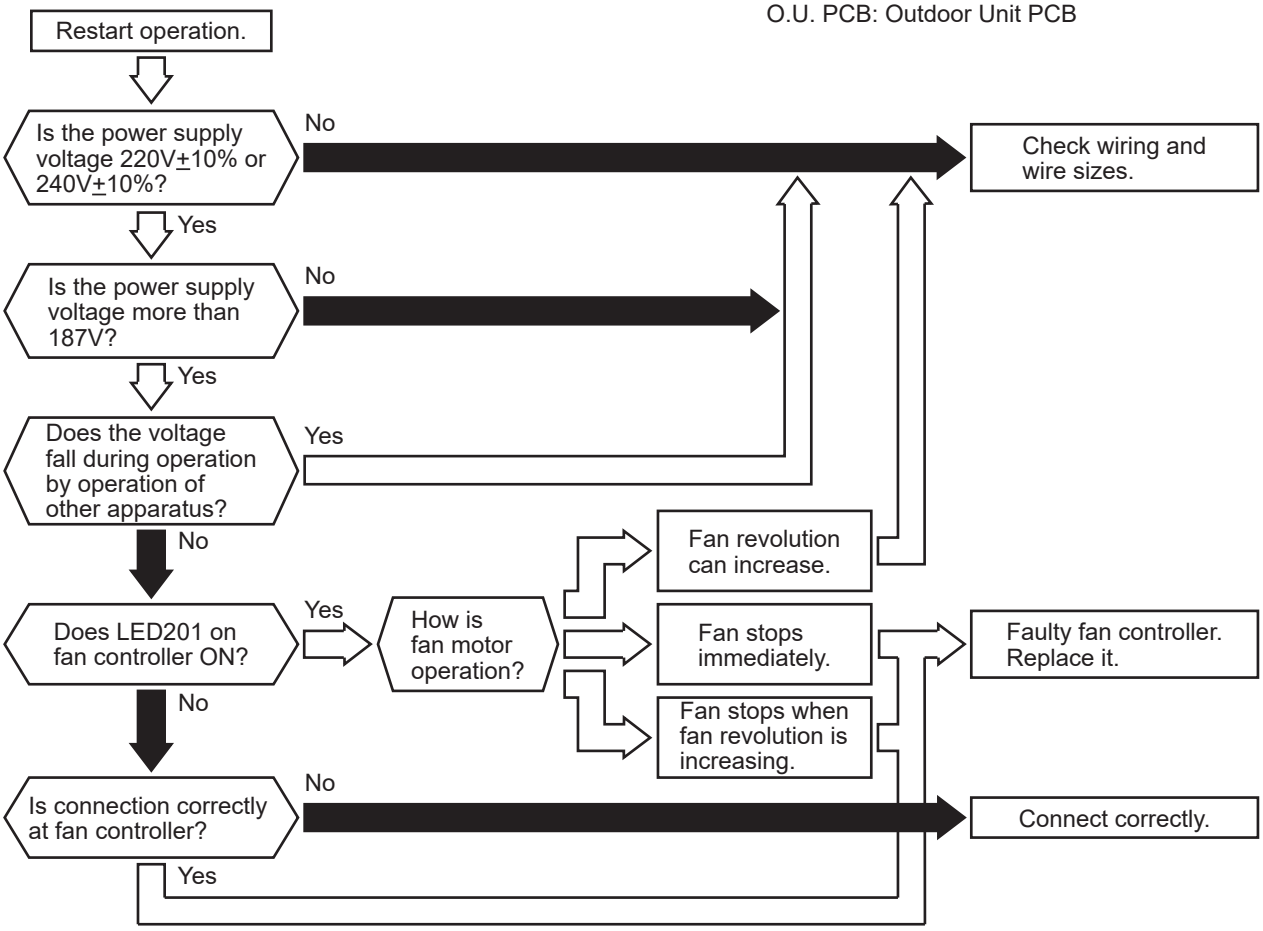


Alarm Code 06.	Abnormal Fan Controller Voltage

- "RUN" light is flashing and "ALARM" are indicated on the remote control switch.
- The unit No., alarm code and the unit code are alternately indicated on the set temperature section, and the alarm code is indicated on the 7-segment on O.U. display PCB.

★ This alarm is indicated when voltage between terminal "P" and "N" of Fan Controller is insufficient and its occurrence is three times in 30 minutes. In the case that the occurrence is fewer than 2 times, retry is performed.

O.U. PCB: Outdoor Unit PCB



<Outdoor Unit PCB Display Indication>

Abnormal of Fan Controller

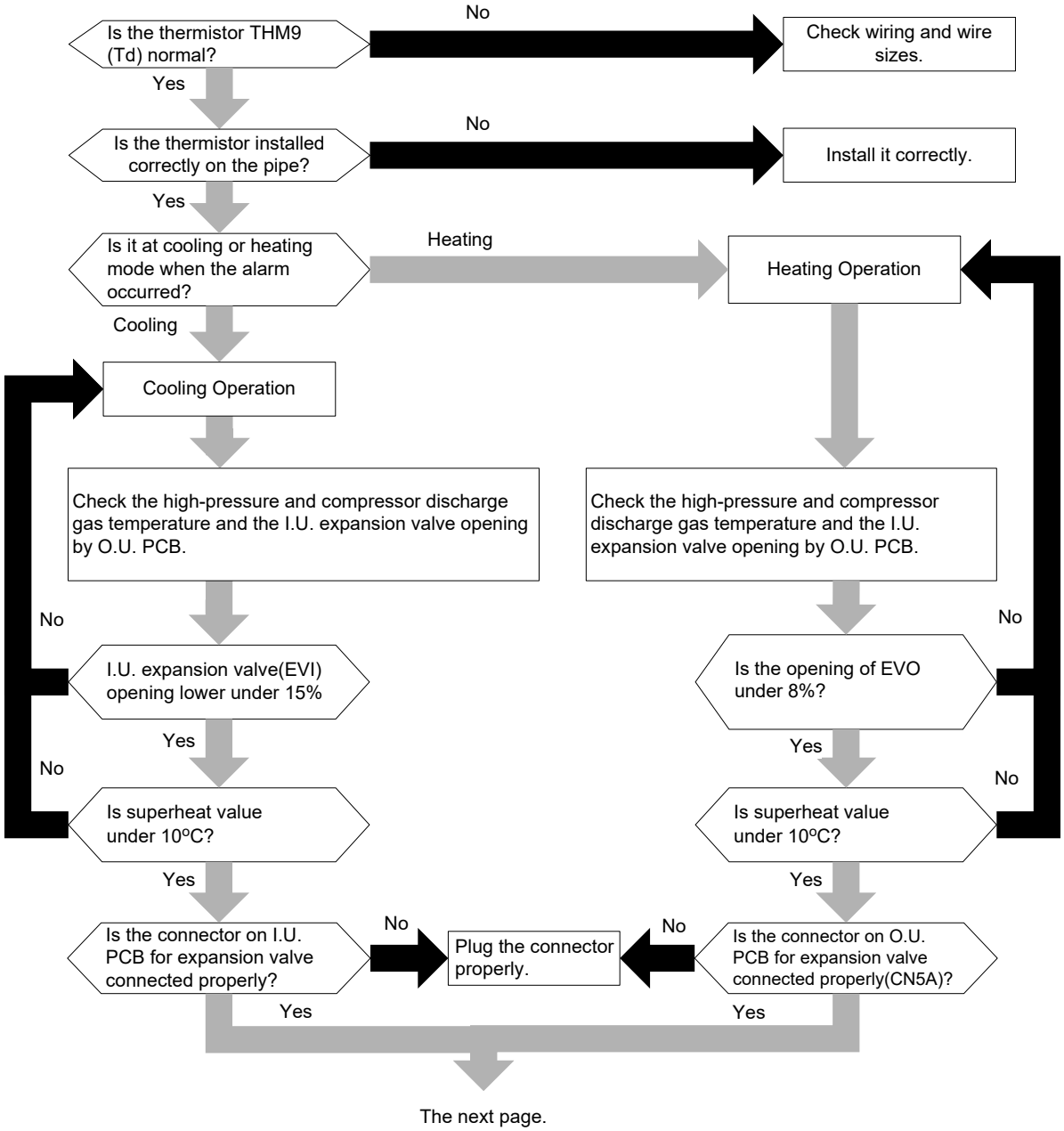
NOTES:
• I f fan controller has high voltage, perform the high voltage discharge work according to the item 1.1.
• Check the wiring connection according to the checking procedure of fan controller indicated in the item 1.1.

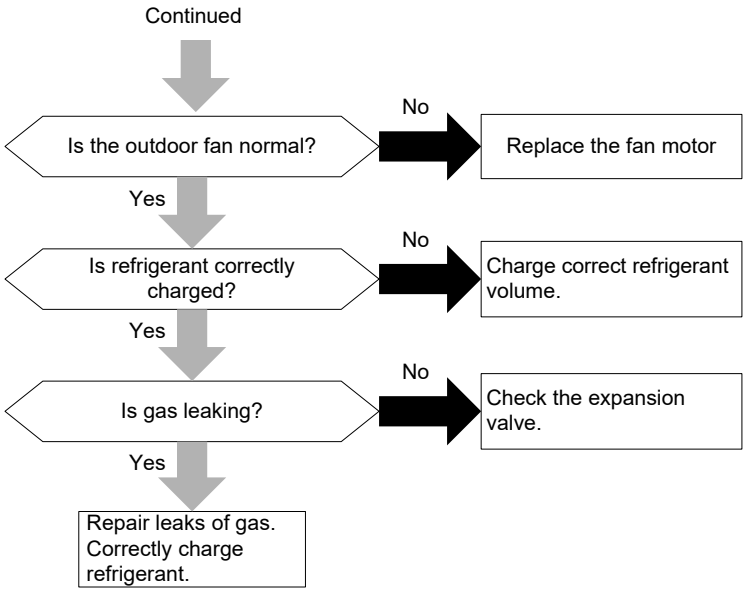
Alarm Code 07	Decrease in Discharge Gas Superheat

- The RUN indicator (Red) is flashing.
- The indoor unit number (Ref. system number - I.U. number), the alarm code, the model code*1), the model name*1) and the number of connected indoor units are displayed on the LCD. The alarm code is flashed on the 7-segment display on the outdoor unit PCB.
  *1) Except for some models.

★ If the temperature of compressor discharge gas is below the estimated condensing temperature for 30 minutes during operation, the compressor stops and then the operation is automatically retried after three minutes. If this occurs again twice in the next 120 minutes, this alarm code is displayed.

★ This alarm code is displayed when an abnormality cannot be detected by the step-out detection, caused by locking of compressor shaft.





Phenomenon	Cause		Check Item	Action (Turn OFF Main Switch)
Decrease of Discharge Gas Superheat	Ref. Cycle is Different from the Electrical System		Check ref. cycle and the electrical system.	Repair wiring.
	Overcharged Refrigerant		Check pressures.	Correctly charge refrigerant.
	Faulty Expansion Valve		Check expansion valve.	Replace expansion valve if faulty.
	Faulty PCB	Fault	Replace PCB and check operation.	Replace PCB if faulty.
		Disconnected Wires for Expansion Valve Control	Check connections.	Repair wiring connections.
	Faulty Discharge Gas Thermistor	Fault	Check resistance of thermistor.	Replace thermistor if faulty.
		Incorrect Mounting	Check mounting state.	Correctly mount thermistor.
		Incorrect Connection	Check connections.	Remove looseness, replace connector or repair connections.

Alarm Code 09	Increase in Discharge Gas Temperature of Compressor

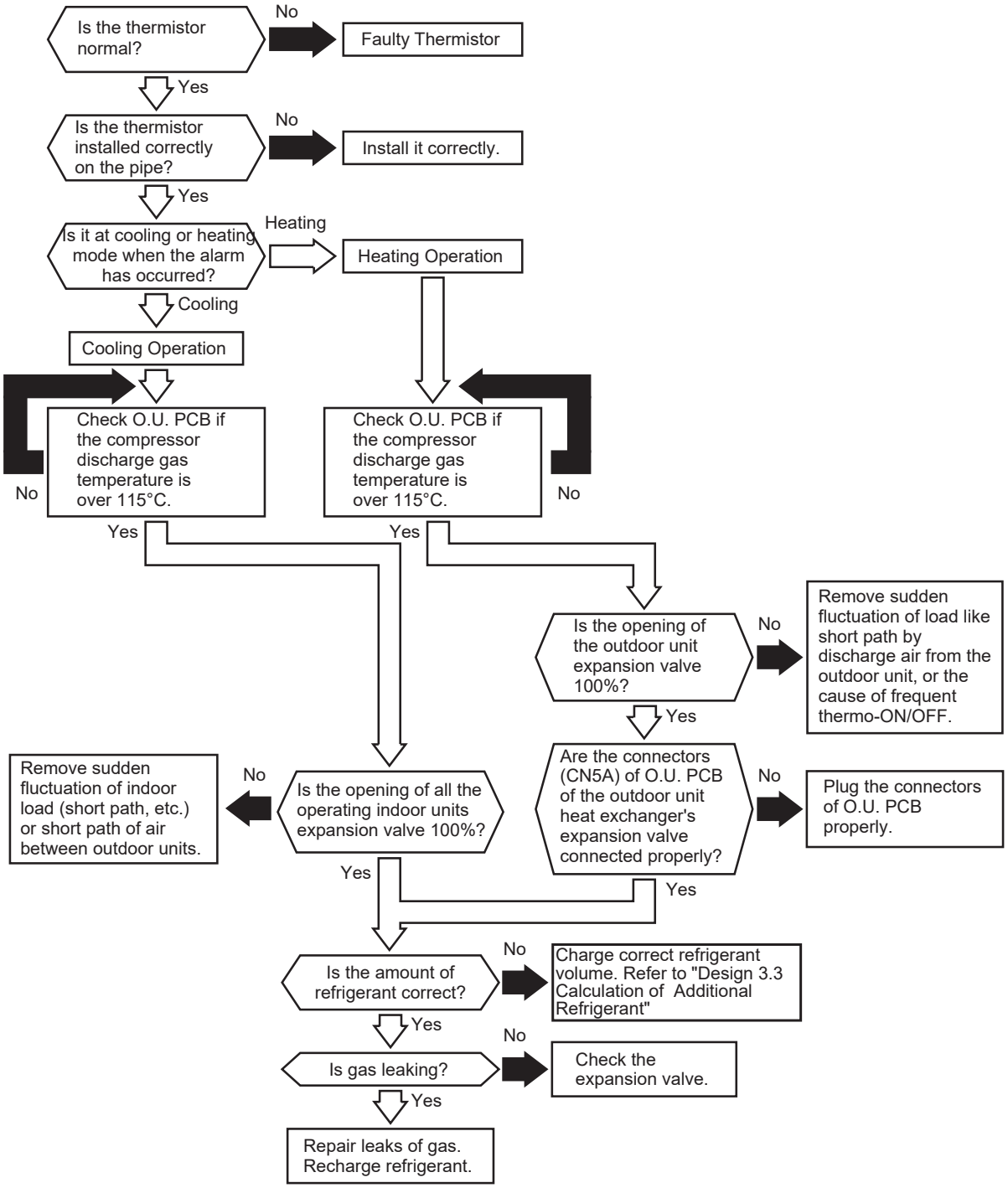
- The RUN indicator (Red) is flashing.
- The indoor unit number, the alarm code, the unit model code and the connected number of indoor units are displayed on LCD. Meanwhile, the indoor unit number and the alarm code are displayed on the 7- segment of outdoor unit PCB.

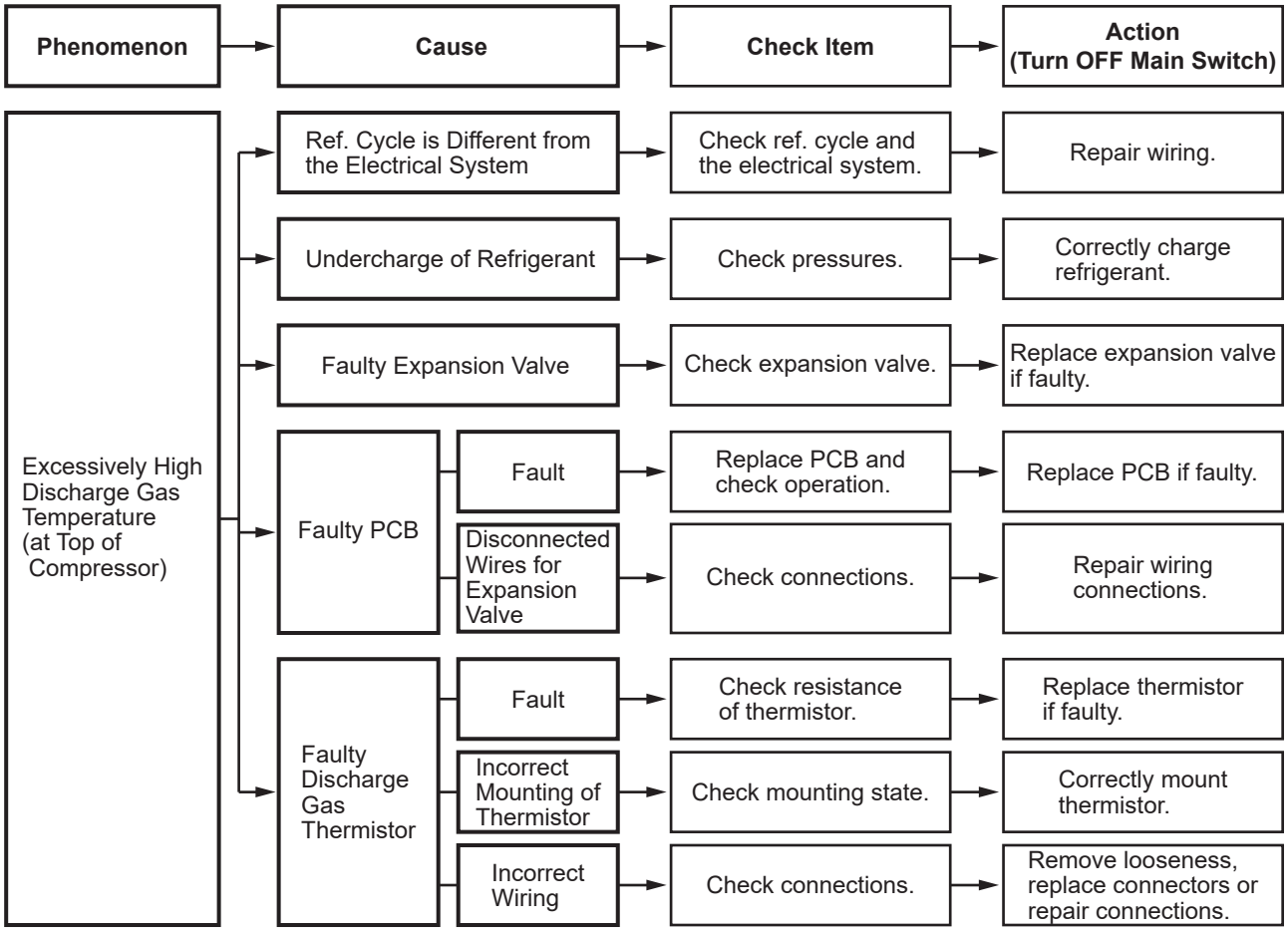
★ When either of the following conditions occurs, retry operation is performed. However, if it occurs three times within one hour, this alarm code is indicated;

(1) The temperature of the thermistor on the top of the compressor is kept higher than 113°C for 10 minutes.

(2) The temperature of the thermistor on the top of the compressor is kept higher than 120°C for 5 seconds.

O.U. PCB: Outdoor Unit PCB

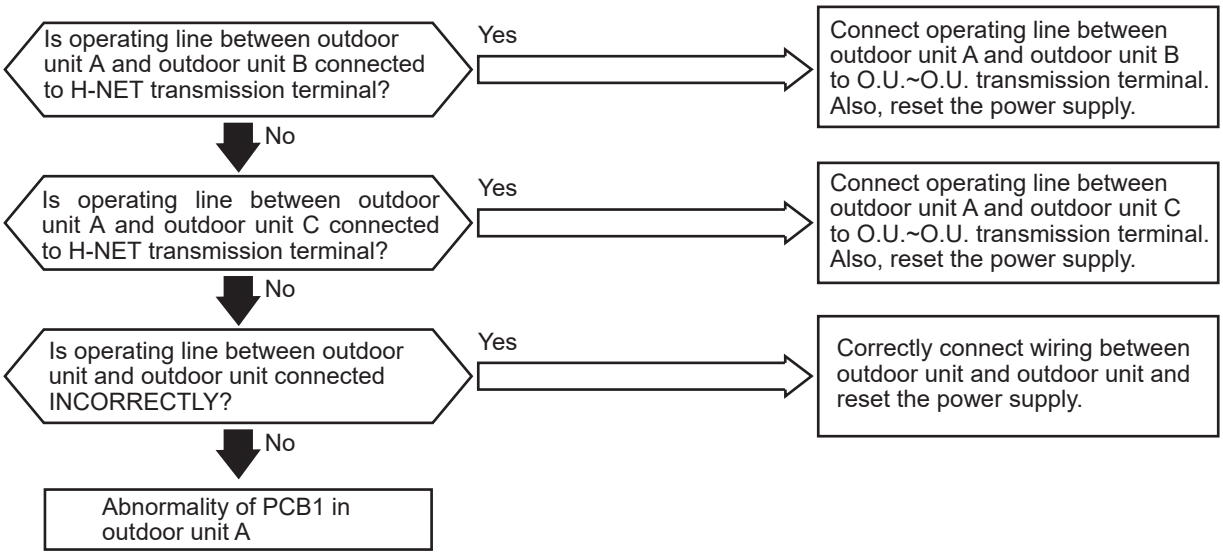


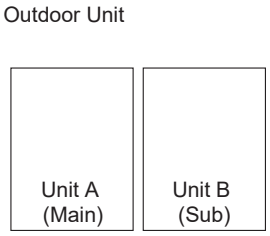

Phenomenon
Cause
Check Item
Action (Turn OFF Main Switch)
Excessively High Discharge Gas Temperature (at Top of Compressor)
Ref. Cycle is Different from the Electrical System
Check ref. cycle and the electrical system.
Repair wiring.
Undercharge of Refrigerant
Check pressures.
Correctly charge refrigerant.
Faulty Expansion Valve
Check expansion valve.
Replace expansion valve if faulty.
Faulty PCB
Fault
Replace PCB and check operation.
Replace PCB if faulty.
Disconnected Wires for Expansion Valve
Check connections.
Repair wiring connections.
Faulty Discharge Gas Thermistor
Fault
Check resistance of thermistor.
Replace thermistor if faulty.
Incorrect Mounting of Thermistor
Check mounting state.
Correctly mount thermistor.
Incorrect Wiring
Check connections.
Remove looseness, replace connectors or repair connections.

Alarm Code	Abnormality Transmitting between Outdoor Units

- “RUN” light is flashing and “ALARM” are indicated on the remote control switch.
- The unit No., alarm code and the unit code are alternately indicated on the set temperature section, and the unit No. and alarm code are indicated on the 7-segment on O.U. display PCB.

O.U. PCB: Outdoor Unit PCB

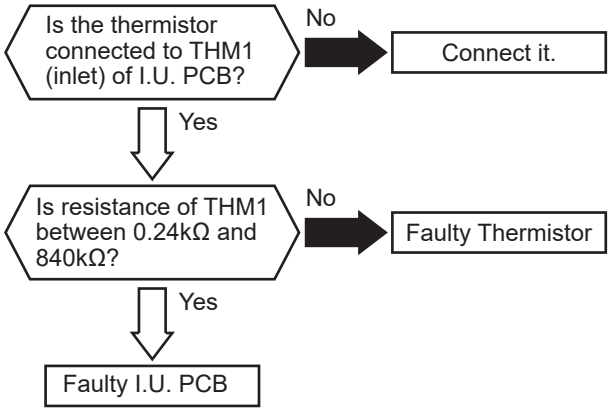




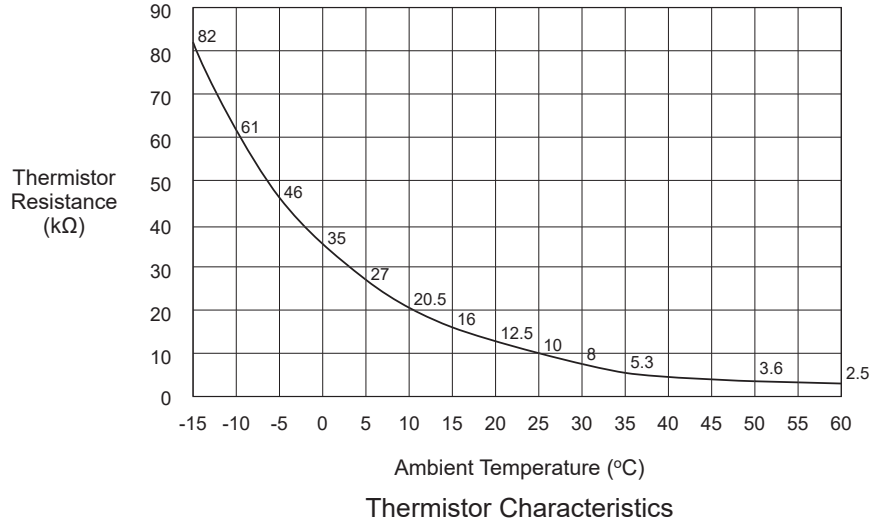
Alarm Code 11	Abnormality of Thermistor for Indoor Unit Inlet Air Temperature (Inlet Air Thermistor)

- The RUN indicator (Red) is flashing.
- The indoor unit number, the alarm code, the unit model code and the connected number of indoor units are displayed on LCD. Meanwhile, the indoor unit number and the alarm code are displayed on the 7-segment on O.U. display PCB.

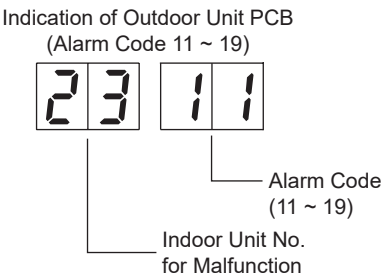
★ This alarm code is indicated when a short circuit (less than 0.24kΩ) or disconnection (more than 840kΩ) of the thermistor is detected during the heating or cooling operation. The operation is automatically restarted when the malfunction is removed.



Phenomenon	Cause	Check Item	Action (Turn OFF Main Switch)
Faulty Inlet Air Thermistor	Fault	Check resistance.	Replace thermistor if faulty.
	Incorrect Connection	Check connection.	Connect wiring correctly.
Faulty I.U. PCB		Replace I.U. PCB and check operation.	Replace I.U. PCB if faulty.



Thermistor Characteristics



NOTE:

This figure is applicable to the following thermistors.

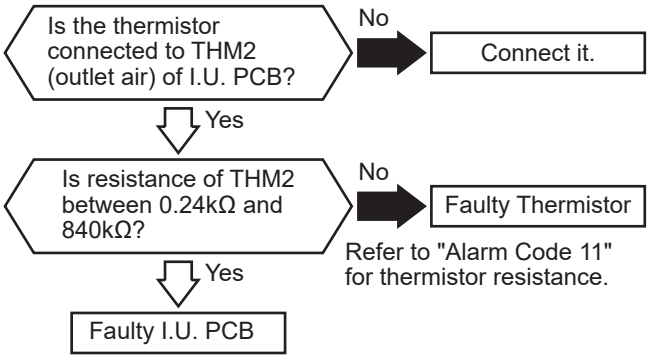
1. Inlet Air Thermistor (THM1)
2. Liquid Pipe Thermistor (Freeze Protection) (THM3)
3. Gas Pipe Thermistor (THM5)
4. Outlet Air Thermistor (THM2)(Some indoor units are not. Please refer to the technical manual of indoor units.)

Alarm Code 12	Abnormality of Thermistor for Indoor Unit Outlet Air Temperature (Outlet Air Thermistor)

- The RUN indicator (Red) is flashing.
- The indoor unit number, the alarm code, the unit model code and the connected number of indoor units are displayed on LCD. Meanwhile, the indoor unit number and the alarm code are displayed on the 7-segment on O.U. display PCB.

★ This alarm code is indicated when a short circuit (less than 0.24kΩ) or disconnection (more than 840kΩ) of the thermistor is detected during the heating or cooling operation. The operation is automatically restarted when the malfunction is removed.

★ Some indoor units are not outlet air thermistor. Please refer to the technical manual of indoor units.

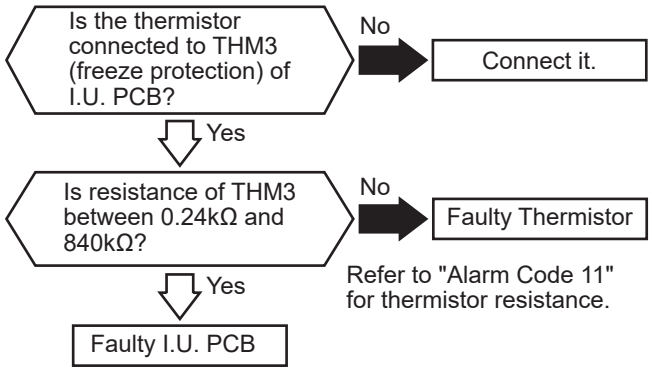


Phenomenon	Cause	Check Item	Action (Turn OFF Main Switch)
Faulty Outlet Air Thermistor	Fault	Check resistance.	Replace thermistor if faulty.
	Incorrect Connection	Check wiring to I.U. PCB.	Connect wiring correctly.
Faulty I.U. PCB		Replace I.U. PCB and check operation.	Replace I.U. PCB if faulty.

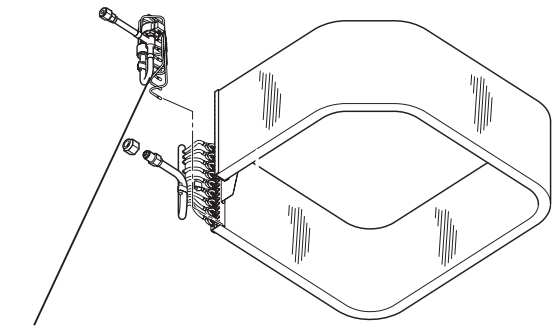
Alarm Code 13	Abnormality of Thermistor for Liquid Refrigerant Pipe Temperature at Indoor Unit Heat Exchanger (Freeze Protection Thermistor)

- The RUN indicator (Red) is flashing.
- The indoor unit number, the alarm code, the unit model code and the connected number of indoor units are displayed on LCD. Meanwhile, the indoor unit number and the alarm code are displayed on the 7-segment on O.U. display PCB.

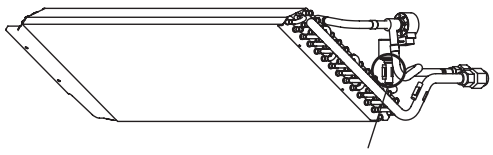
★ This alarm code is indicated when a short circuit (less than 0.24kΩ) or disconnection (more than 840kΩ) of the thermistor is detected during the heating or cooling operation. The operation is automatically restarted when the malfunction is removed.



Phenomenon	Cause	Check Item	Action (Turn OFF Main Switch)
Faulty Freeze Protection Thermistor	Fault	Check resistance.	Replace thermistor if faulty.
	Incorrect Connection	Check wiring to I.U. PCB.	Connect wiring correctly.
Faulty I.U. PCB		Replace I.U. PCB and check operation.	Replace I.U. PCB if faulty.



THM3
Liquid Pipe Thermistor (Freeze Protection)

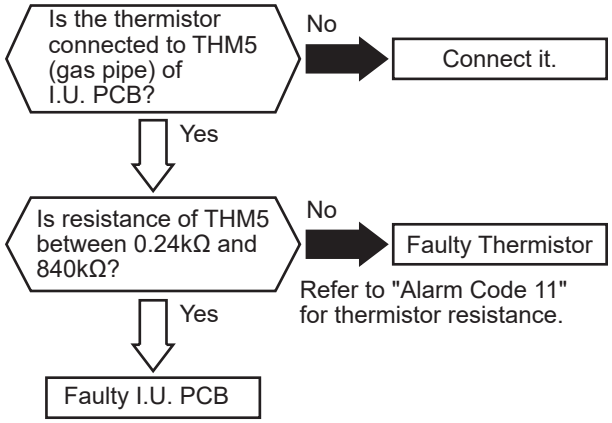


THM3
Liquid Pipe Thermistor (Freeze Protection)

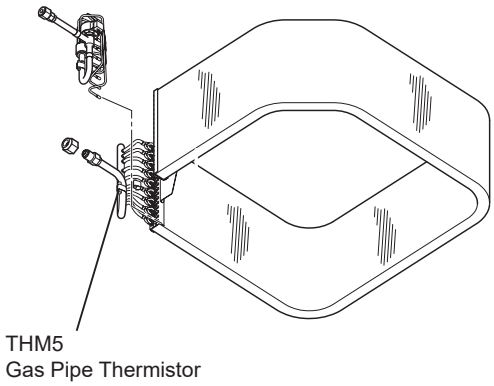
Alarm Code 14	Abnormality of Thermistor for Gas Refrigerant Pipe Temperature at Indoor Unit Heat Exchanger (Gas Pipe Thermistor)

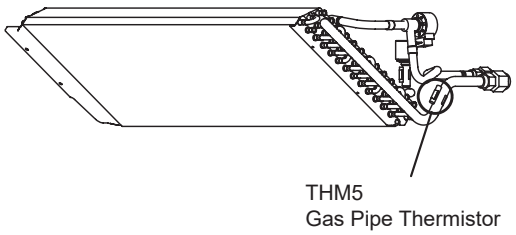
- The RUN indicator (Red) is flashing.
- The indoor unit number, the alarm code, the unit model code and the connected number of indoor units are displayed on LCD. Meanwhile, the indoor unit number and the alarm code are displayed on the 7-segment on O.U. display PCB.

★ This alarm code is indicated when a short circuit (less than 0.24kΩ) or disconnection (more than 840kΩ) of the thermistor is detected during the heating or cooling operation. The operation is automatically restarted when the malfunction is removed.



Phenomenon	Cause	Check Item	Action (Turn OFF Main Switch)
Faulty Thermistor for Indoor Unit Heat Exchanger Gas Pipe Temp.	Fault	Check resistance.	Replace thermistor if faulty.
	Incorrect Connection	Check wiring to I.U. PCB.	Connect wiring correctly.
Faulty I.U. PCB		Replace I.U. PCB and check operation.	Replace I.U. PCB if faulty.

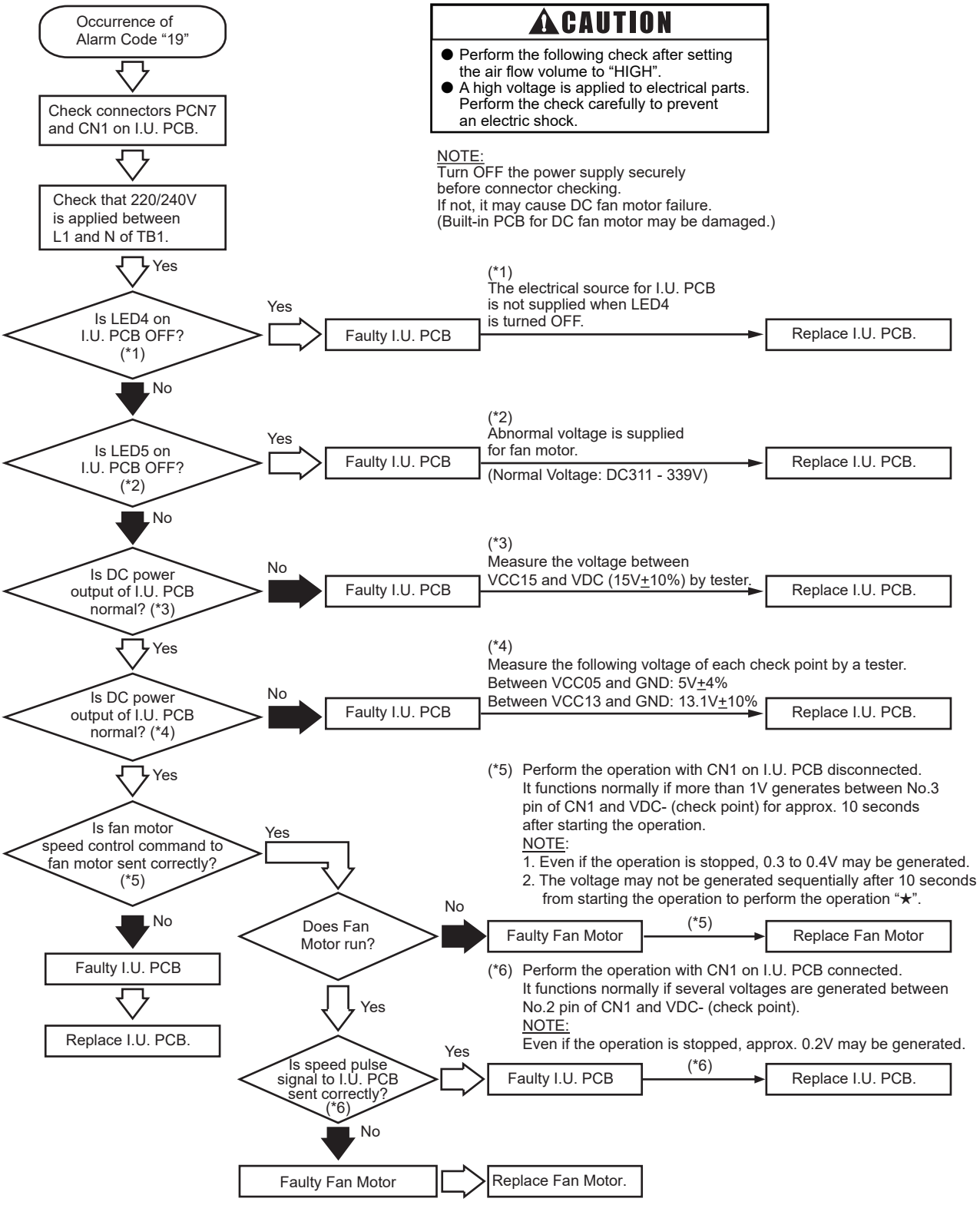




Alarm Code 19	Activation of Protection Device for Indoor Fan Motor (Indoor Unit with DC Motor)

- The RUN indicator (Red) is flashing.
- The indoor unit number, the alarm code, the unit model code and the connected number of indoor units are displayed on LCD. Meanwhile, the indoor unit number and the alarm code are displayed on the 7-segment on O.U. display PCB.

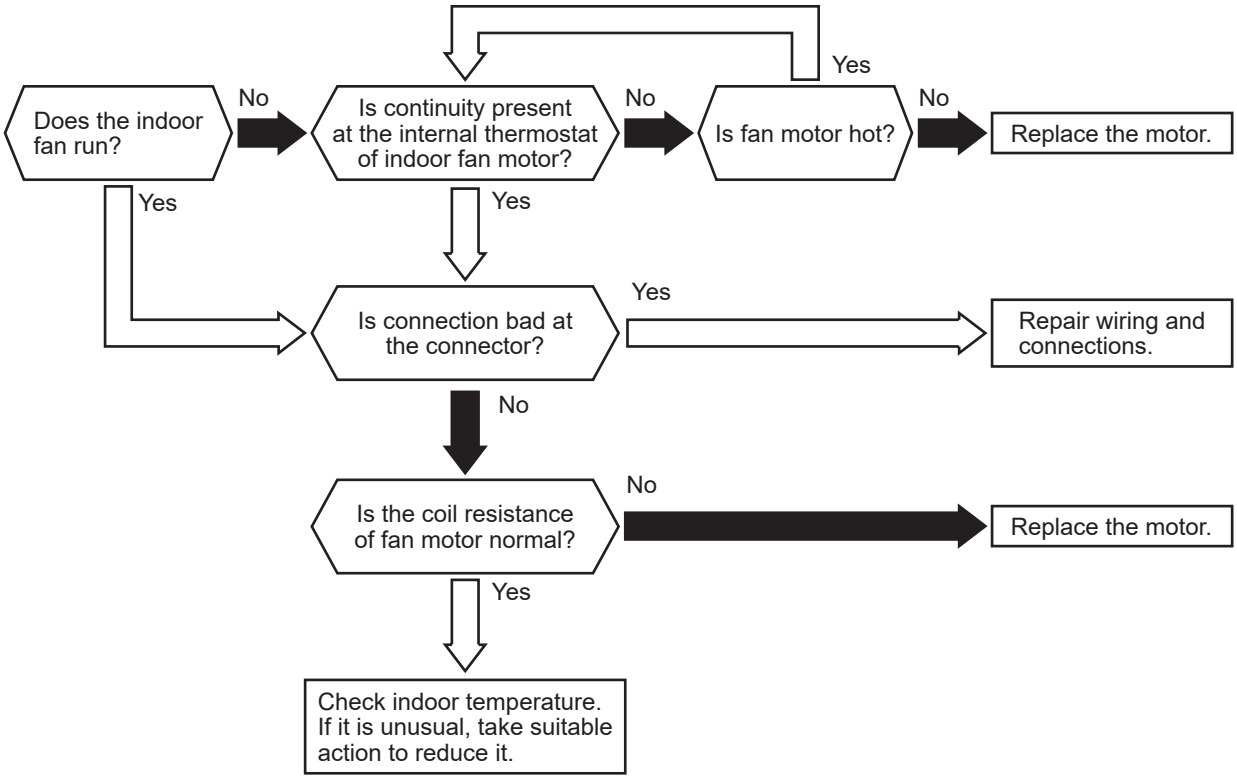
★ This alarm code is indicated when the indoor fan motor rotates at less than 70rpm for 5 seconds three times in 30 minutes during the operation.



Alarm Code 19	Activation of Protection Device for Indoor Fan Motor (Indoor Unit with AC Motor)

- The RUN indicator (Red) is flashing.
- The indoor unit number, the alarm code, the unit model code and the connected number of indoor units are displayed on LCD. Meanwhile, the indoor unit number and the alarm code are displayed on the 7-segment on O.U. display PCB.

★ This alarm code is indicated when over approximately 1A is applied to the indoor unit fan motor.



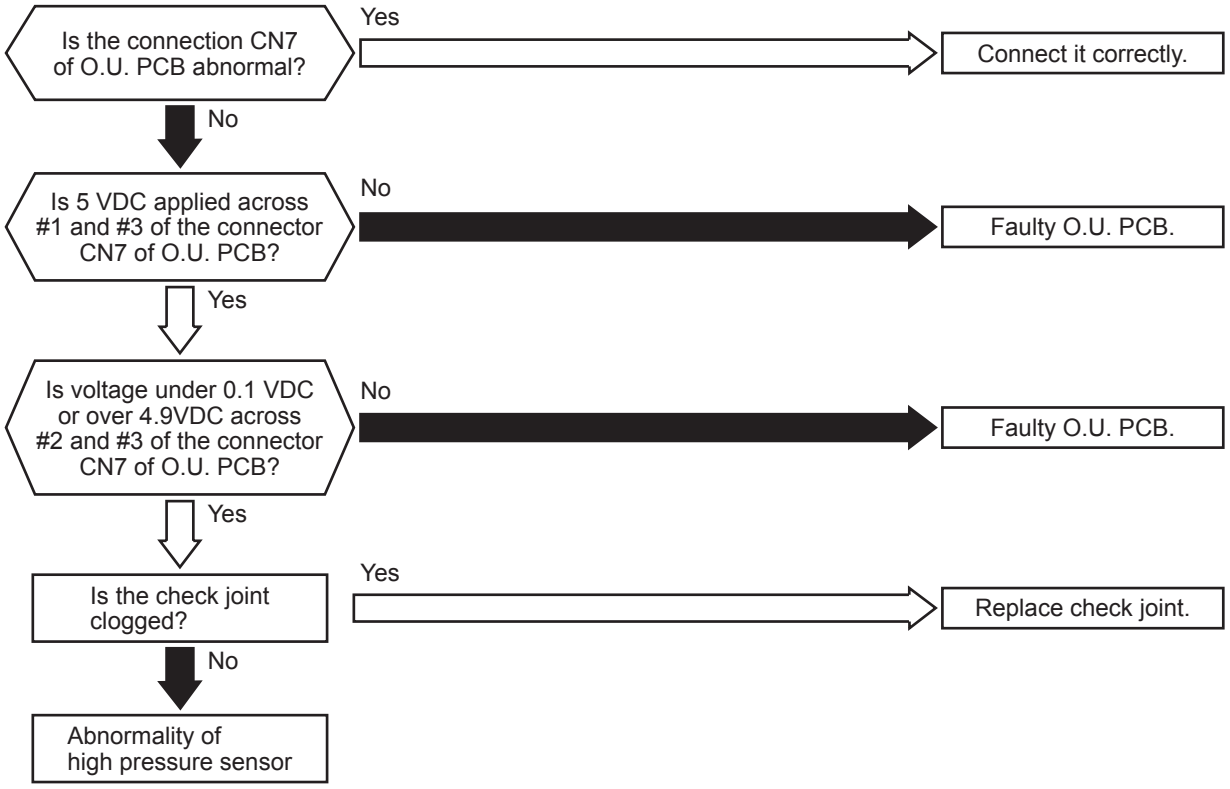
Phenomenon	Cause		Check Item	Action (Turn OFF Main Switch)
Activation of Internal Thermostat for Indoor Unit Fan Motor	Faulty Indoor Unit Fan Motor		Measure coil resistance and insulation resistance.	Replace motor if faulty.
	Faulty Internal Thermostat	Fault	Check continuity after fan motor temperature decreases to room temp.	Replace fan motor if no continuity.
		Insufficient Contacting	Measure resistance by tester.	Correct looseness. Replace connectors.
		Incorrect Connection	Check connections.	Repair connections.

Alarm Code 21	Abnormality of High Pressure Sensor for Outdoor Unit (Pd)

- The RUN indicator (Red) is flashing.
- The indoor unit number, the alarm code, the unit model code and the connected number of indoor units are displayed on LCD. Meanwhile, the indoor unit number and the alarm code are displayed on the 7-segment on O.U. display PCB.

★ This alarm code is indicated when the pressure sensor voltage decreases to 0.1V or less or increases to 4.9V or more during running.

O.U. PCB: Outdoor Unit PCB



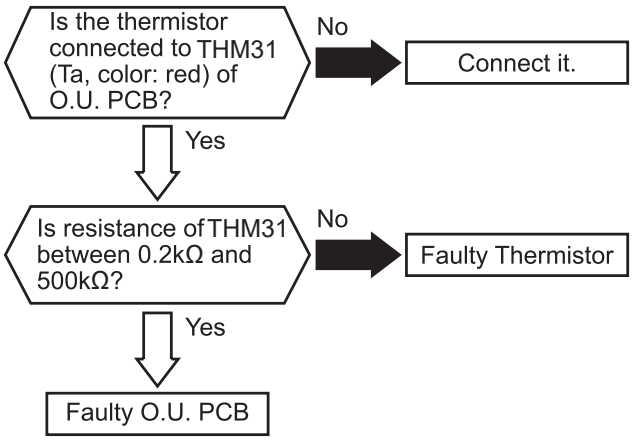
Phenomenon	Cause	Check Item	Action (Turn OFF Main Switch)
Faulty Top of Compressor Thermistor	Fault	Check resistance.	Replace thermistor if faulty.
	Incorrect Connection	Check wiring to O.U. PCB.	Repair wiring and connections.
Faulty O.U. PCB		Replace O.U. PCB and check operation.	Replace O.U. PCB if faulty.
Indicated Value of Pressure Value is Excessively High or Low	Malfunction of Pressure Sensor due to Faulty Check Joint	Check for clogging of check joint.	Replace check joint.

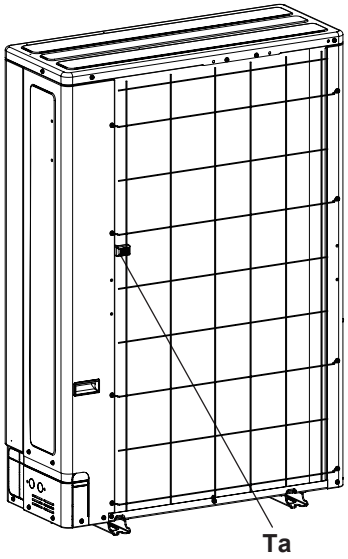
Alarm Code 22	Abnormality of Thermistor for Outdoor Air Temperature (Outdoor Unit Ambient Thermistor)

- The RUN indicator (Red) is flashing.
- The indoor unit number, the alarm code, the unit model code and the connected number of indoor units are displayed on LCD. Meanwhile, the indoor unit number and the alarm code are displayed on the 7-segment on O.U. display PCB.

★ This alarm code is indicated when a short circuit (less than 0.2kΩ) or disconnection (more than 500kΩ) of the thermistor is detected during the operation.

O.U. PCB: Outdoor Unit PCB





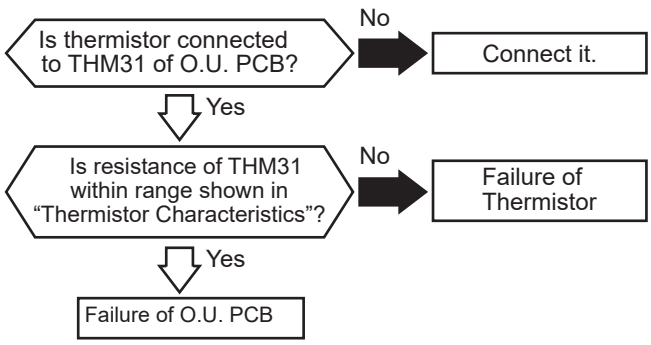
Phenomenon	Cause	Check Item	Action (Turn OFF Main Switch)
Faulty Thermistor for Outdoor Unit Ambient	Fault	Check resistance.	Replace thermistor if faulty.
	Incorrect Connection	Check wiring to O.U. PCB.	Repair wiring and connections.
Faulty O.U. PCB		Replace O.U. PCB and check operation.	Replace O.U. PCB if faulty.

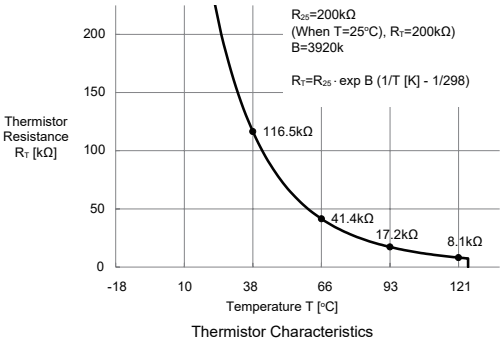
Alarm Code 23	Abnormality of Thermistor for Discharge Gas Temperature on the Top of Compressor

- The RUN indicator (Red) is flashing.
- The indoor unit number, the alarm code, the unit model code and the connected number of indoor units are displayed on LCD. Meanwhile, the indoor unit number and the alarm code are displayed on the 7-segment on O.U. display PCB. (For the combination of outdoor units, the alarm code is displayed on PCB of outdoor unit A.) Additionally for the outdoor unit number and compressor number with abnormal thermistor, check the alarm code history.

★ This alarm code is indicated when a short circuit (less than 0.9kΩ) for a second or disconnection (more than 5946kΩ) of the thermistor is detected during the operation.

O.U. PCB: Outdoor Unit PCB



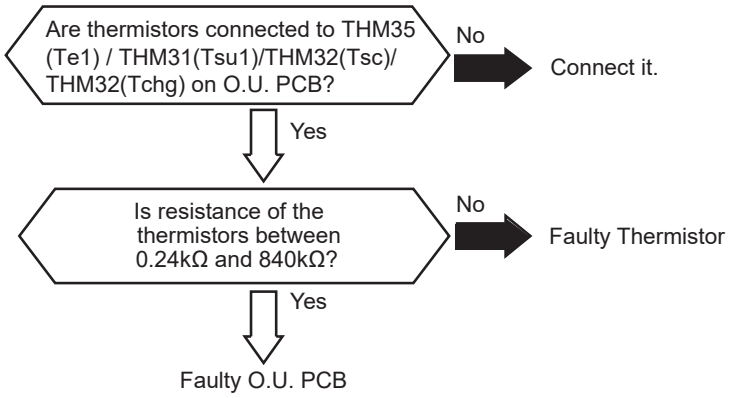


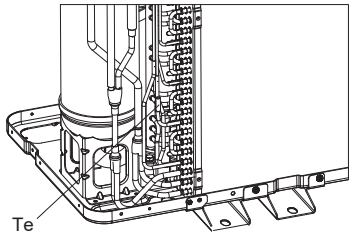
Thermistor Characteristics

Phenomenon	Cause	Check Item	Action (Turn OFF Main Switch)
Faulty Discharge Gas Thermistor	Fault	Check resistance.	Replace thermistor if faulty.
	Incorrect Connection	Check wiring to O.U. PCB.	Repair wiring and connections.
Faulty O.U. PCB		Replace O.U. PCB and check operation.	Replace O.U. PCB if faulty.

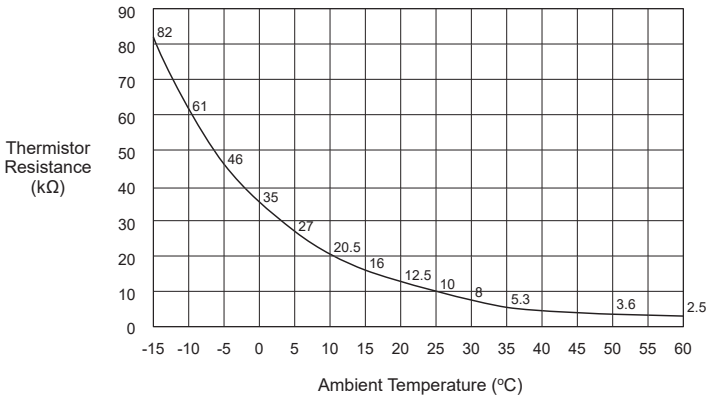
Alarm Code 24	Abnormality of Thermistor for Evaporating Temperature during Heating Operation (Te1/TL1/Tsu1/Tsc/Tchg)

- The RUN indicator (Red) is flashing.
- The indoor unit number (Ref. system number - I.U. number), the alarm code and the number of connected indoor units are displayed on the LCD. The alarm code is flashed on the 7-segment on O.U. display PCB.
  ★ This alarm code is displayed when a short circuit (0.24kΩ or less) or disconnection (840kΩ or more) of the thermistor is detected during heating or cooling operation.





Te1: heat exchanger liquid pipe thermistor
Tchg: sub cooling main pipe thermistor
Tsc: sub cooling main pipe inlet thermistor
O.U. PCB: outdoor unit PCB
HEX. : heat exchanger
Tsu1: suction pipe thermistor
TL1:liquid main pipe thermistor



Thermistor Characteristics

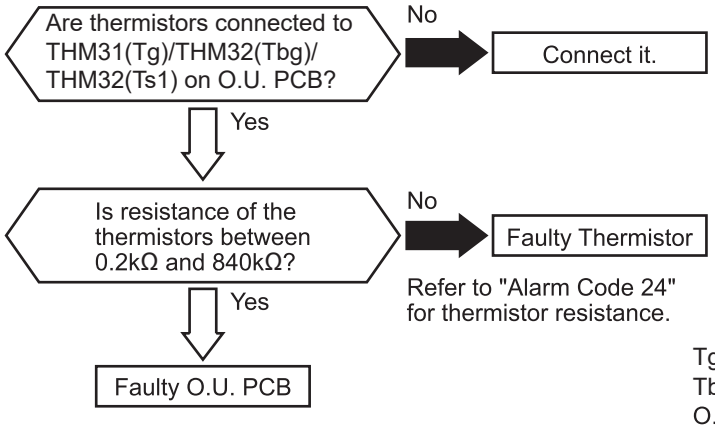
NOTE:
This figure is applicable to the following thermistors.
1. Ambient Temperature Thermistor (THM31),
2. Heat Exchanger Liquid Pipe Thermistor (THM35),
3. Suction Pipe Thermistor (THM31),
4. Sub Cooling Main Pipe Thermistor (THM32),
5. Sub Cooling Bypass Pipe Thermistor (THM32)
6. Sub Cooling Main Pipe Inlet Thermistor (THM32)

Phenomenon	Cause	Check Item	Action (Turn OFF Main Switch)
Failure of Thermistor	Failure	Check resistance.	Replace thermistor if faulty.
	Incorrect Connection	Check wiring to O.U. PCB.	Repair wiring and connection.
Failure of O.U. PCB		Replace O.U. PCB. and check operation.	Replace O.U. PCB if faulty.

Alarm Code 25	Abnormality of Thermistor for Outdoor Unit Heat Exchanger Gas Pipe (Tg/Tbg/Ts1)

- The RUN indicator (Red) is flashing.
- The indoor unit number, the alarm code, the unit model code and the connected number of indoor units are displayed on LCD. Meanwhile, the indoor unit number and the alarm code are displayed on the 7-segment on O.U. display PCB. (For the combination of outdoor units, the alarm code is displayed on PCB of outdoor unit A.) Additionally for the outdoor unit number and compressor number with abnormal thermistor, check the alarm code history.

★ This alarm code is indicated when a short circuit (less than 0.24kΩ) or disconnection (more than 840kΩ) of the thermistor is detected continuously for 8 minutes during the operation.



Tg: thermistor for outdoor gas pipe
Tbg: thermistor for super cooling bypass line
O.U. PCB: outdoor unit PCB

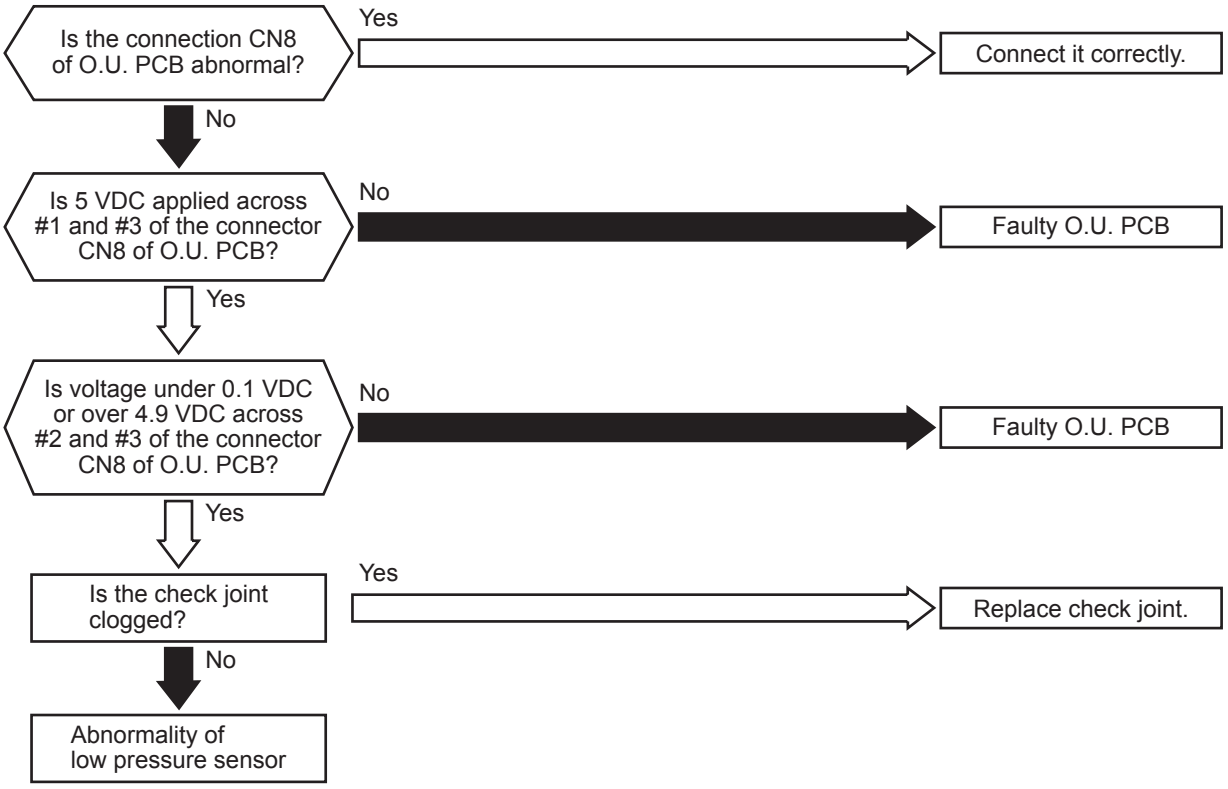
Phenomenon	Cause	Check Item	Action (Turn OFF Main Switch)
Faulty Outdoor Unit Gas Pipe Thermistor	Fault	Check resistance.	Replace thermistor if faulty.
	Incorrect Connection	Check wiring to O.U. PCB.	Repair wiring and connections.
Faulty O.U. PCB		Replace O.U. PCB and check operation.	Replace O.U. PCB if faulty.

Alarm Code 29	Abnormality of Low Pressure Sensor for Outdoor Unit (Ps)

- The RUN indicator (Red) is flashing.
- The indoor unit number, the alarm code, the unit model code and the connected number of indoor units are displayed on LCD. Meanwhile, the indoor unit number and the alarm code are displayed on the 7-segment on O.U. display PCB.

★ This alarm code is indicated when the pressure sensor voltage decreases to 0.1V or less or increases to 4.9V or more during running.

O.U. PCB: outdoor unit PCB

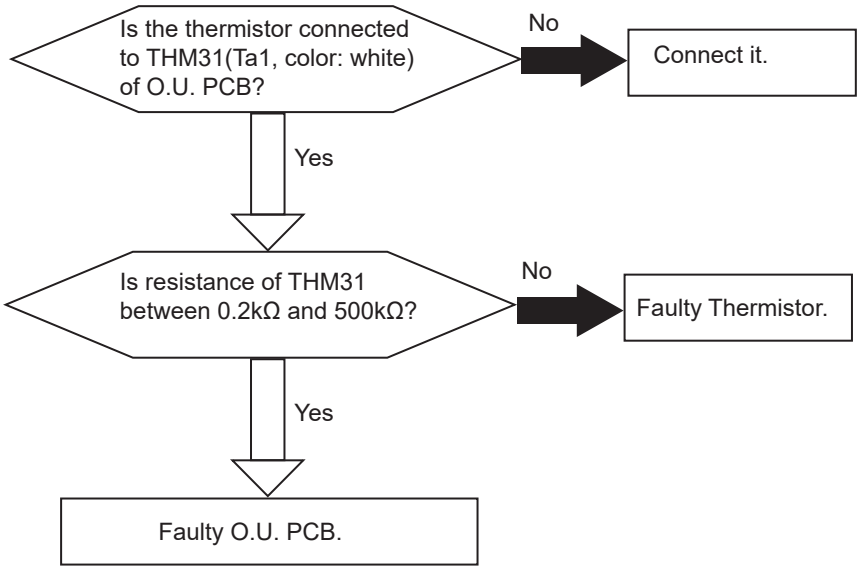


Phenomenon	Cause	Check Item	Action (Turn OFF Main Switch)
Faulty Low Pressure Sensor	Fault	Check output voltage is correct.	Replace pressure sensor if faulty.
	Incorrect Connection	Check wiring to O.U. PCB.	Repair wiring and connections.
Faulty O.U. PCB		Replace O.U. PCB and check operation.	Replace O.U. PCB if faulty.
Indicated Value of Pressure Value is Excessively High or Low	Malfunction of Pressure Sensor due to Faulty Check Joint	Check for clogging of check joint.	Replace check joint.

Alarm code 26	Abnormality of Thermistor for Temperature Inside the Electrical Box of Outdoor Unit

- The RUN indicator (Red) is flashing.
- The indoor unit number, the alarm code, the unit model code and the connected number of indoor units are displayed on LCD. Meanwhile, the indoor unit number and the alarm code are displayed on the 7-segment on O.U. display PCB.

★ This alarm code is indicated when a short circuit (less than 0.2kΩ) or disconnection (more than 500kΩ) of the thermistor is detected during the operation.



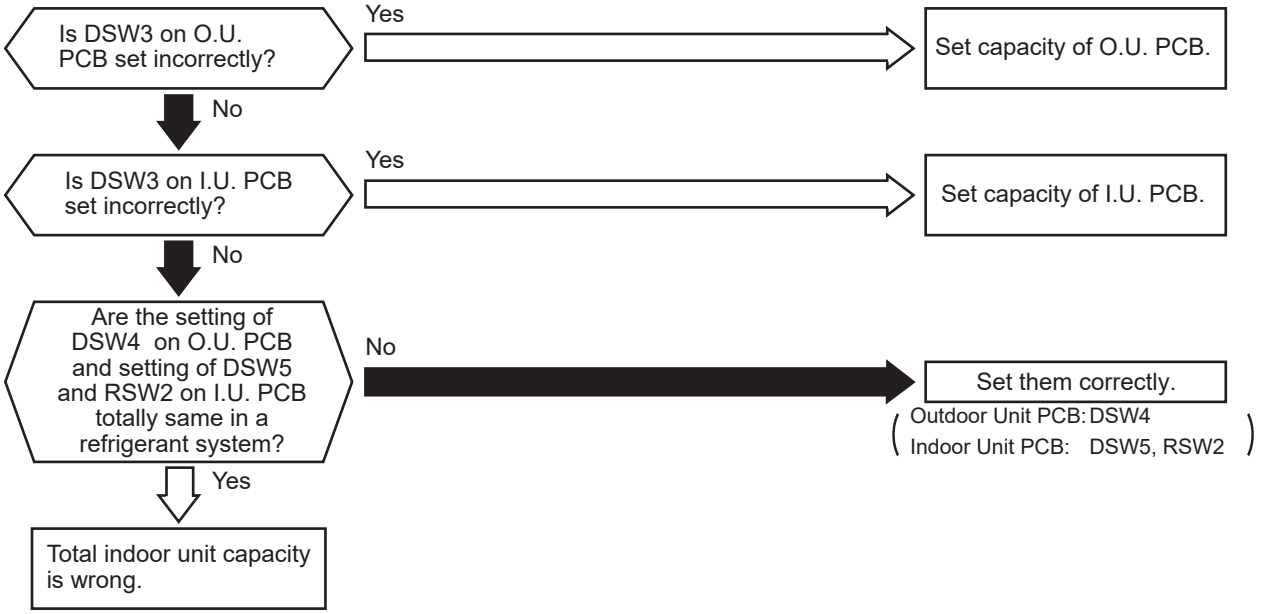
Phenomenon	Cause	Check Item	Action (Turn OFF Main Switch)
Faulty Thermistor for Temperature inside the Electrical box of Outdoor Unit	Fault	Check resistance.	Replace thermistor if faulty.
	Incorrect Connection	Check wiring to O.U. PCB.	Repair wiring and connections.
Faulty O.U. PCB		Replace O.U. PCB and check operation.	Replace O.U. PCB if faulty.

Alarm Code 31	Incorrect Capacity Setting of Indoor Unit and Outdoor Unit

- The RUN indicator (Red) is flashing.
- The indoor unit number, the alarm code, the unit model code and the connected number of indoor units are displayed on LCD. Meanwhile, the indoor unit number and the alarm code are displayed on the 7-segment on O.U. display PCB.

★ This alarm code is indicated when the capacity setting dip switch, DSW3 on the outdoor unit PCB is not set (all the settings from #1 to #4 are OFF) or set incorrectly.

★ This alarm code is indicated when the total indoor unit capacity is smaller than 50% or greater than 150% of the combined outdoor unit capacity.



Phenomenon	Cause	Check Item	Action (Turn OFF Main Switch)
Incorrect Capacity Setting of Indoor Unit		Check combination of indoor units and capacity setting on I.U. PCB.	Correctly set DIP switch, DSW3.
Incorrect Capacity Setting of Outdoor Unit		Check capacity setting on O.U. PCB.	Correctly set DIP switch, DSW3.
Total Indoor Unit Capacity Connected to the Outdoor Unit is Beyond Permissible Range		Check outdoor unit model by calculating total indoor units capacity.	Ensure that total indoor unit capacity is from 50% to 150%.
Refrigeration Cycle Setting of Outdoor Unit and Indoor Unit is Different		Check refrigeration cycle setting on O.U. PCB and I.U. PCB.	Set them correctly.

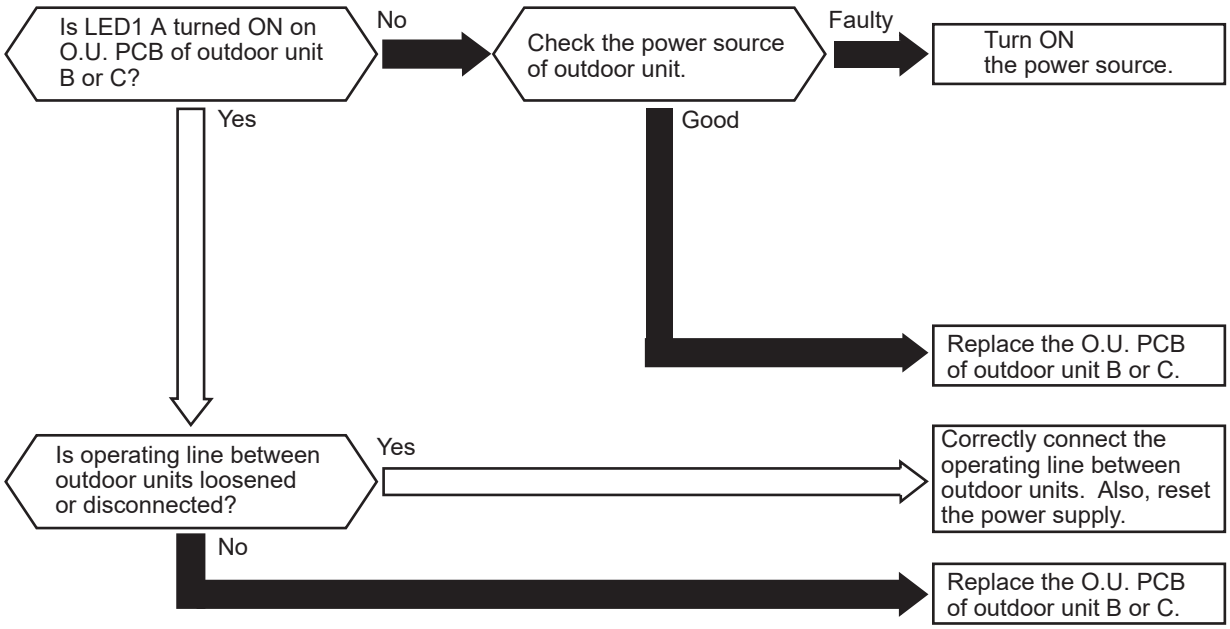
Alarm Code 31	Abnormal Transmitting between Outdoor Units

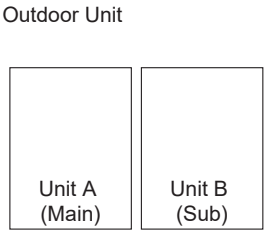
- The RUN indicator (Red) is flashing.
- The indoor unit number, the alarm code, the unit model code and the connected number of indoor units are displayed on LCD. Meanwhile, the indoor unit number and the alarm code are displayed on the 7-segment on O.U. display PCB.

★ This alarm code is indicated when the following conditions occur after normal transmitting between outdoor units is performed;

- Abnormality continues for 30 seconds.
- Abnormality continues for 30 seconds even after micro-computer reset (automatic).

O.U. PCB: outdoor unit PCB





Alarm Code 35	Incorrect Indoor Unit No. Setting

- The RUN indicator (Red) is flashing.
- The indoor unit number, the alarm code, the unit model code and the connected number of indoor units are displayed on LCD. Meanwhile, the indoor unit number and the alarm code are displayed on the 7-segment on O.U. display PCB.

★ This alarm code is displayed when the duration of automatic addressing of indoor unit exceeds 5 minutes after power-on of outdoor unit.
★ This alarm code is displayed when the number of connected indoor units exceeds the maximum allowed .*1)
★ This alarm code is displayed when refrigerant system No. set by DSW4 on O.U. PCB in the same H-NET system duplicates.
*1) The value of maximum number of connectable I.U. is refer to “Design 1.2 Application Case”

NOTE:

- In the case of H-NET system, this alarm code may be displayed when DSW4 (for refrigerant system No. setting) on the outdoor unit PCB and DSW5 and RSW2 (for refrigerant system No. setting) on the indoor unit PCB are not set correctly. In this case, turn OFF the power supply and set them correctly, and turn ON the power supply again.
(The rotary switch RSW2 is not available depending on the indoor unit model.)

Alarm Code 36	Incorrect Indoor Unit Combination

- The RUN indicator (Red) is flashing.
- The indoor unit number, the alarm code, the unit model code and the connected number of indoor units are displayed on LCD. Meanwhile, the indoor unit number and the alarm code are displayed on the 7-segment on O.U. display PCB.

★ This alarm code is indicated when the indoor unit connected to the outdoor unit is for other refrigerants (R22 or R407C).

Alarm Code 38	Abnormality of Picking up Circuit for Protection in Outdoor Unit

- The RUN indicator (Red) is flashing.
- The indoor unit number, the alarm code, the unit model code and the connected number of indoor units are displayed on LCD. Meanwhile, the indoor unit number and the alarm code are displayed on the 7-segment on O.U. display PCB.

★ This alarm code is indicated when DC5V is detected in A* during inverter compressor stoppage.

INV PCB: Inverter PCB

A*
Between terminal #1 and #3 of CN3 on INV PCB

Phenomenon	Cause	Check Item	Action (Turn OFF Main Switch)
Activation of Picking up Circuit for Protection	Starting Outdoor Unit at Activation of Pickig up Circuit for Protection	Alarm Code History: “02” and “09” before “38”.	Refer to Alarm Code “02” and “09”
Abnormality of Picking up Circuit for Protection	Incorrect Connection	Check voltage supplied to connectors.	Repair wiring connections.
Faulty INV PCB			Replace INV PCB.

*1): This alarm code may be indicated when the high pressure switch (PSH) is connected incorrectly or fails (open fault). The item for alarm code 02 should be checked as well.

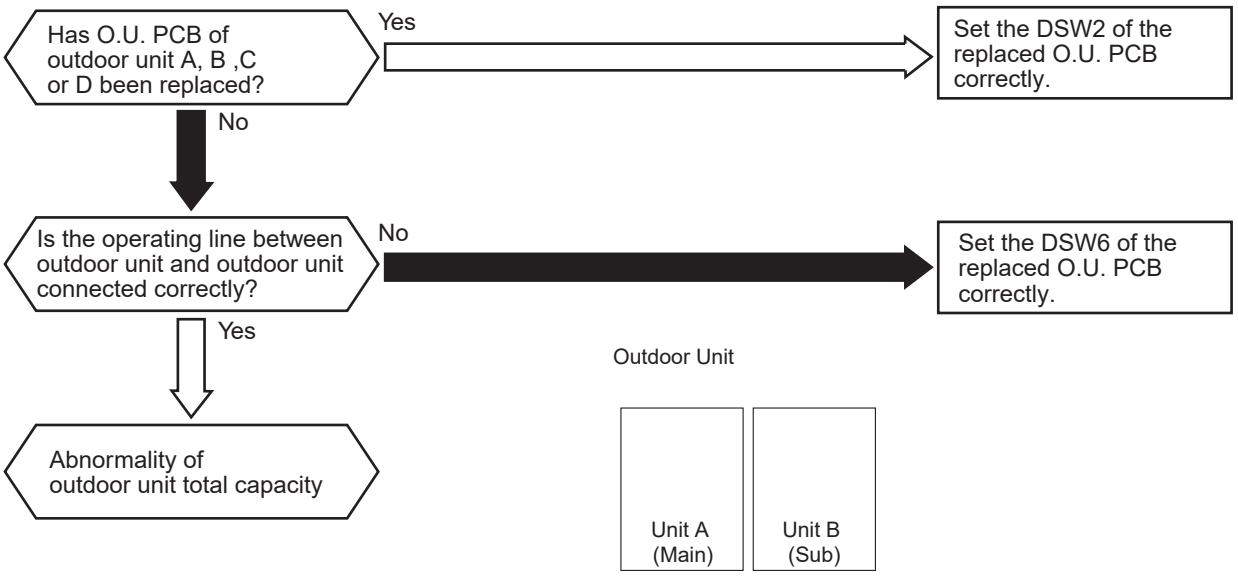
*2): Especially, check the wiring connection for CN3 on INV PCB.

Alarm Code 38	Abnormality of Outdoor Unit Capacity

● “RUN” light is flashing and “ALARM” are indicated on the remote control switch.
The unit No., alarm code and the unit code are alternately indicated on the set temperature section, and the unit No. and alarm code are indicated on the 7-segment on O.U. display PCB.

★ This alarm is indicated when the total capacity of outdoor unit connected to O.U.~O.U. transmission terminal exceeds 88HP.

O.U. PCB: Outdoor Unit PCB

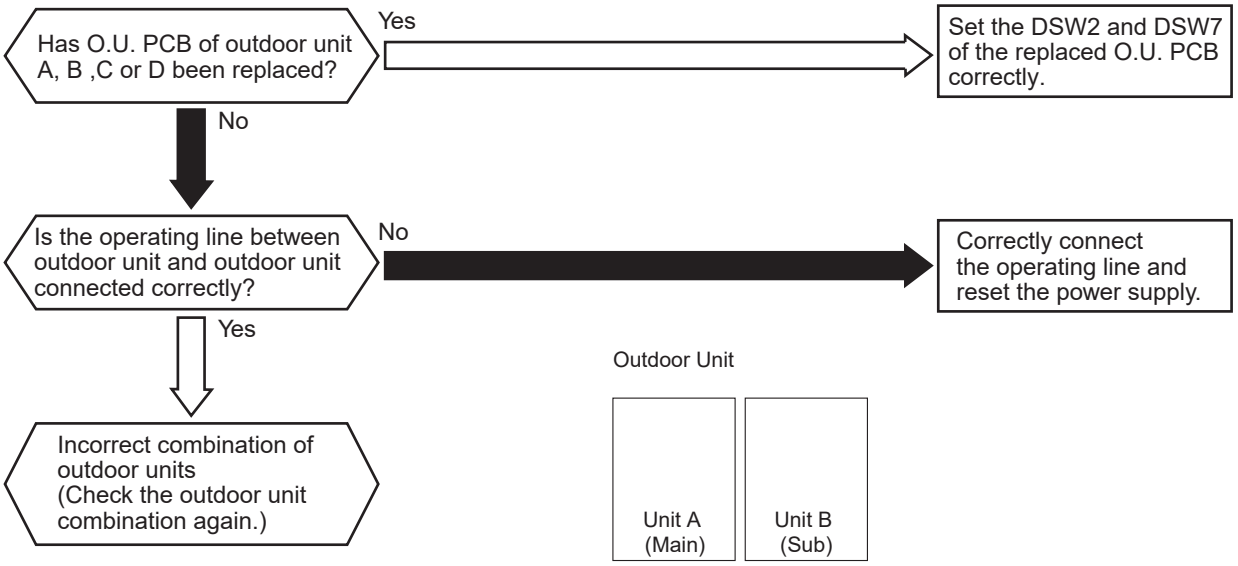


Alarm Code 3b	Incorrect Setting of Outdoor Unit Model Combination or Voltage

“RUN” light is flashing and “ALARM” are indicated on the remote control switch.
The unit No., alarm code and the unit code are alternately indicated on the set temperature section, and the unit No. and alarm code are indicated on the 7-segment on O.U. display PCB.

★ This alarm is indicated when the model setting for outdoor unit connected to O.U.~O.U. transmission terminal is incorrect.

O.U. PCB: Outdoor Unit PCB

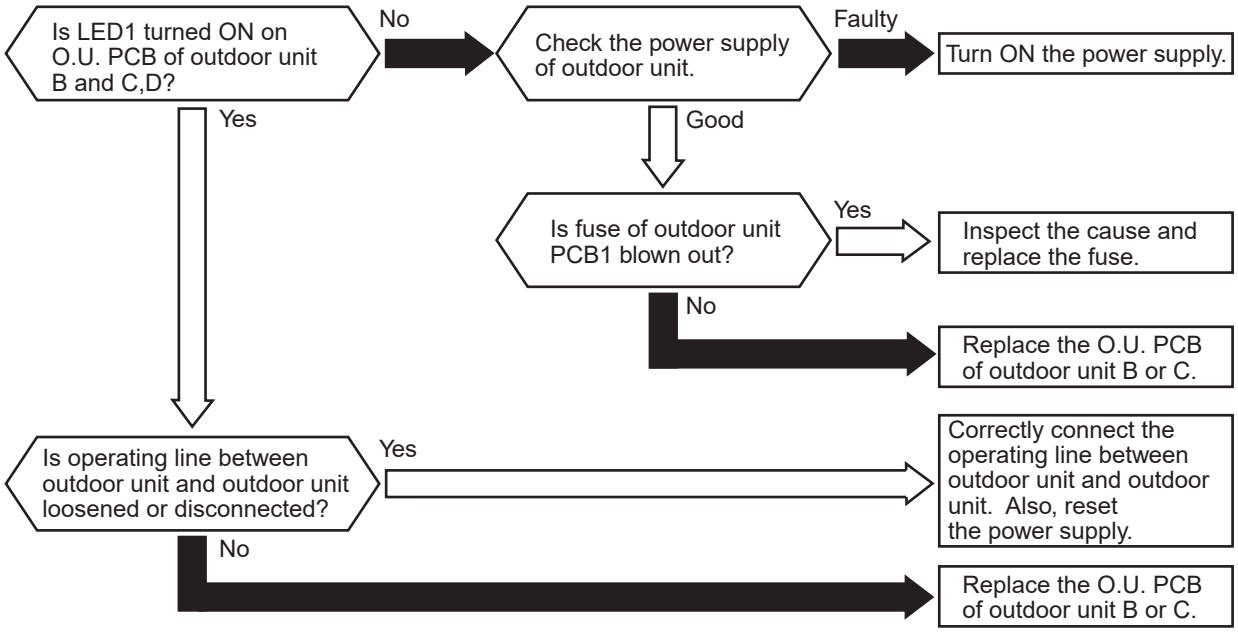


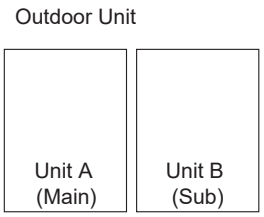
Alarm Code 30	Abnormality Transmitting between Main Unit and Sub Unit(s)

- "RUN" light is flashing and "ALARM" are indicated on the wired remote control switch.
- The unit No., alarm code and the unit code are alternately indicated on the set temperature section, and the unit No. and alarm code are indicated on the 7-segment on O.U. display PCB.

★ This alarm is indicated when transmission to outdoor unit B or C,D is NOT maintained for 30 seconds. (Alarm code "31" will be indicated when transmission to all the outdoor units connected to O.U.~O.U. transmission terminal is NOT maintained.)

O.U. PCB: Outdoor Unit PCB



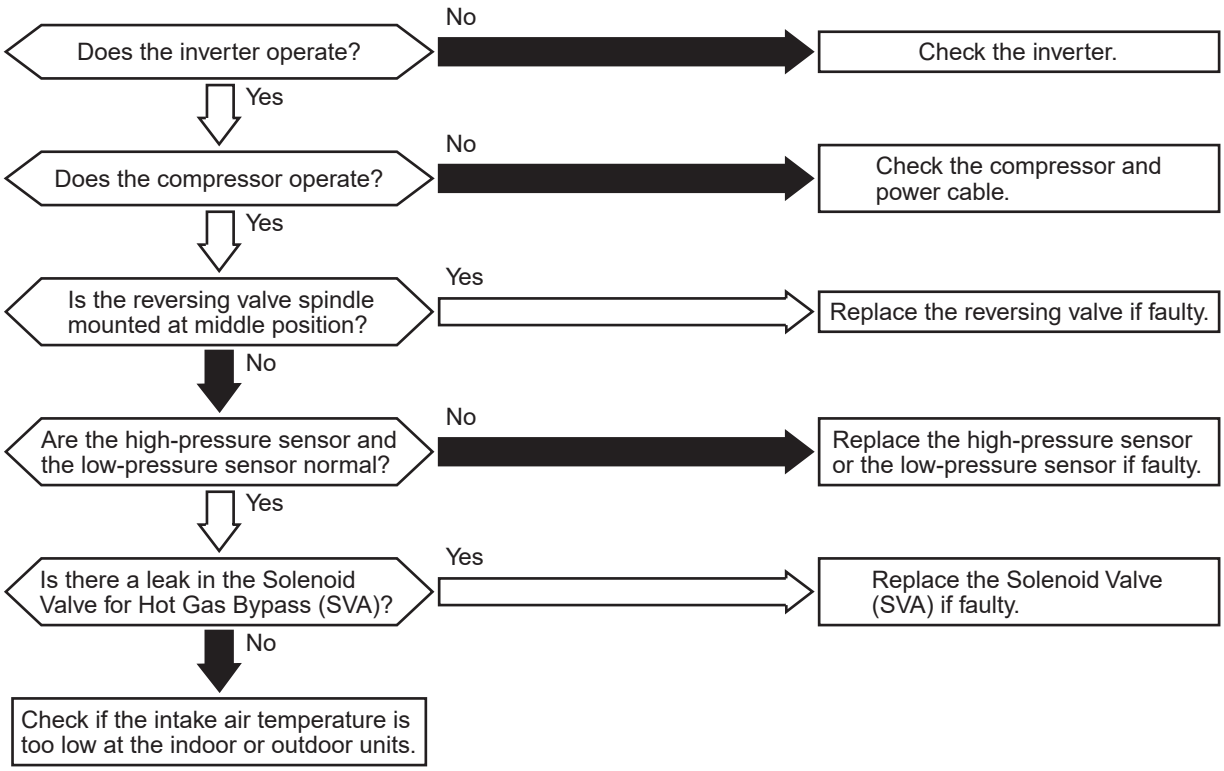


Alarm Code 43	Activation of Low Compression Ratio Protection Device

- "RUN" light is flashing and "ALARM" is indicated on the remote control switch.
- The unit No., alarm code and the unit code is alternately indicated on the set temperature section, and the unit No. and alarm code are indicated on the 7-segment on O.U. display PCB.

★ This alarm is indicated when a compression ratio, $\varepsilon = \{(Pd + 0.1) / (Ps + 0.06)\}$ is calculated from a discharge pressure (Pd MPa) and suction pressure (Ps MPa) and the condition lower than $\varepsilon < 1.8$ occurs more than three times (including three) in one hour.

O.U. PCB: Outdoor Unit PCB



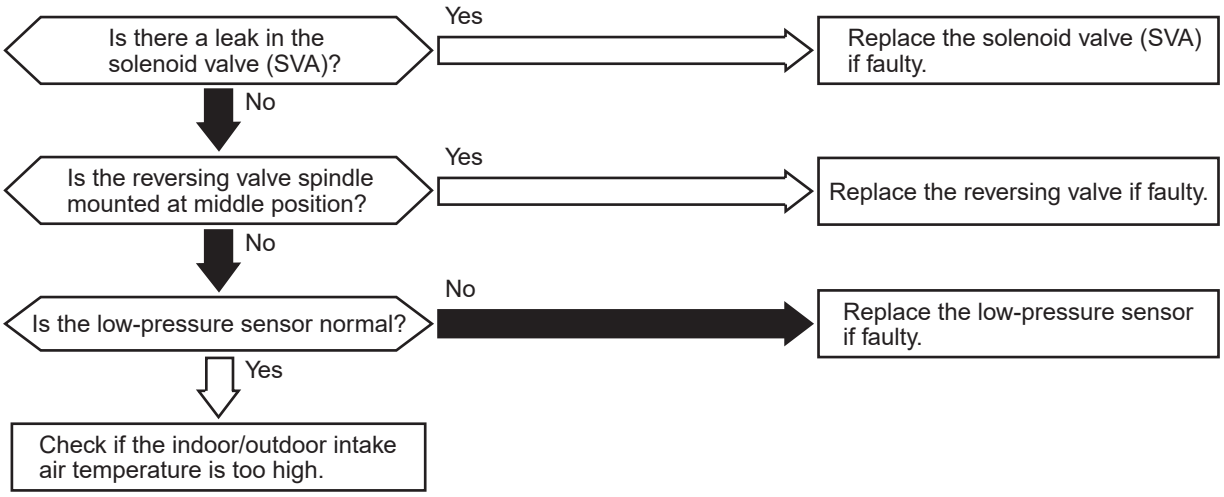
Phenomenon	Cause	Check Item	Action (Turn OFF Main Switch)
Excessively Low Compression Ratio	Inverter is not Functioning	Check inverter.	Repair faulty part.
	Compressor is not Operating	Check compressor.	Replace comp. if faulty.
	Valve Stoppage at Middle Position of Reversing Valve	Measure suction pipe temp. of reversing valve.	Replace reversing valve if faulty.
	Abnormality of High or Low Pressure Sensor	Check connector for O.U. PCB, power source and pressure indication.	Replace sensor if faulty.
	Excessively Low Indoor Intake Air Temperature	Check indoor unit and outdoor unit air temp. thermistor.	Replace thermistor if faulty.
	Leakage from Solenoid Valve (SVA)	Check Solenoid Valve.	Replace SVA if leaking.

Alarm Code 44	Activation of Low Pressure Increase Protection Device

● "RUN" light is flashing and "ALARM" are indicated on the remote control switch.
The unit No., alarm code and the unit code are alternately indicated on the set temperature section, and the unit No. and alarm code are indicated on the 7-segment on O.U. display PCB.

★ In case that compressor is operated under the condition that is higher than 1.4MPa of suction pressure (Ps) for 1 minute, all compressors are stopped and retry operation is started after 3 minutes. However this alarm is indicated when same phenomenon is occurred at two times within the next 30 minutes.

O.U. PCB: Outdoor Unit PCB



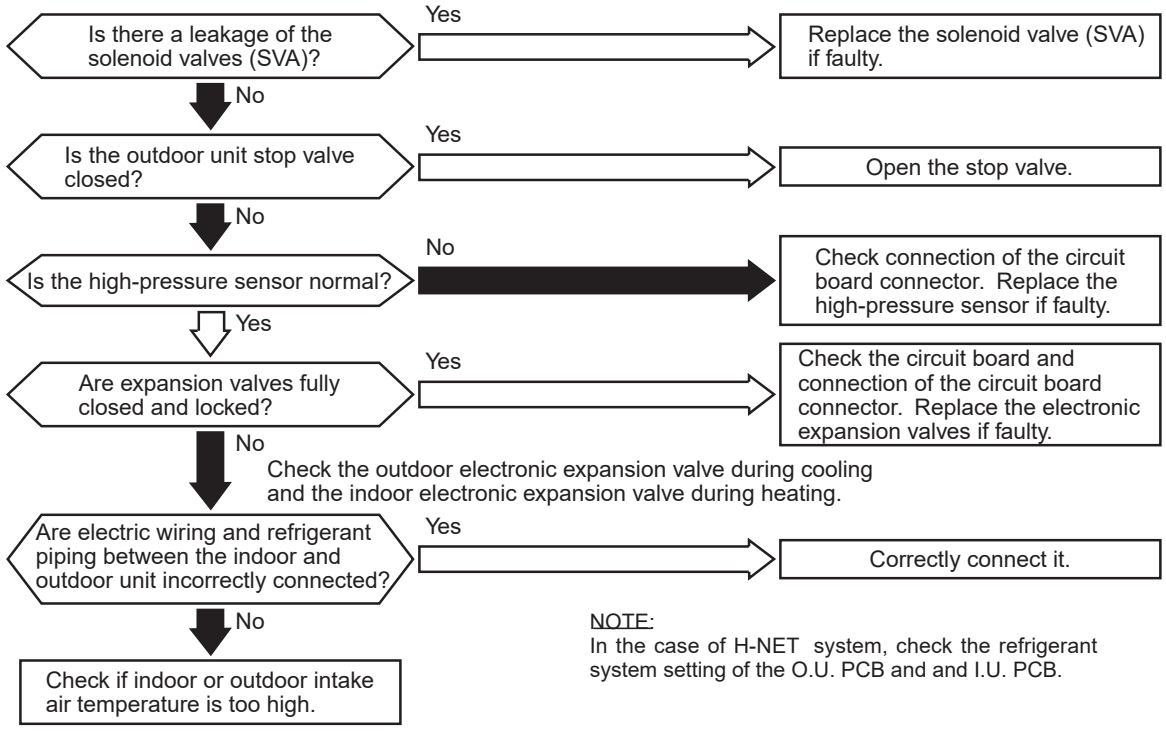
Phenomenon	Cause	Check Item	Action (Turn OFF Main Switch)
Excessively Low Suction Pressure	Leakage of Solenoid Valve (SVA)	Check outlet pipe temp. of solenoid valve (SVA).	Check connecting wires. Replace solenoid valve (SVA) if faulty.
	Valve Stoppage at Middle Position of Reversing Valve	Measure suction gas pipe temp. of reversing valve.	Replace reversing valve if faulty.
	Abnormal Suction Pressure Sensor	Check connectors of O.U. PCB and power source.	Replace sensor if faulty.
	Excessively High Indoor Unit and Outdoor Unit Suction Air Temperature	Check indoor unit and outdoor unit suction air temp. thermistor.	Replace thermistor if faulty.

Alarm Code 45	Activation of High Pressure Increase Protection Device

- "RUN" light is flashing and "ALARM" are indicated on the remote control switch.
- The unit No., alarm code and the unit code are alternately indicated on the set temperature section, and the unit No. and alarm code are indicated on the 7-segment on O.U. display PCB.

★ In case that compressor is operated under the condition that is higher than 3.8MPa of discharge pressure (Pd) for 1 minute, all compressors are stopped and retry operation is started after 3 minutes. However this alarm is indicated when same phenomenon is occurred at two times within the next 30 minutes.

O.U. PCB: Outdoor Unit PCB
I.U. PCB: Indoor Unit PCB



NOTE:
In the case of H-NET system, check the refrigerant system setting of the O.U. PCB and and I.U. PCB.

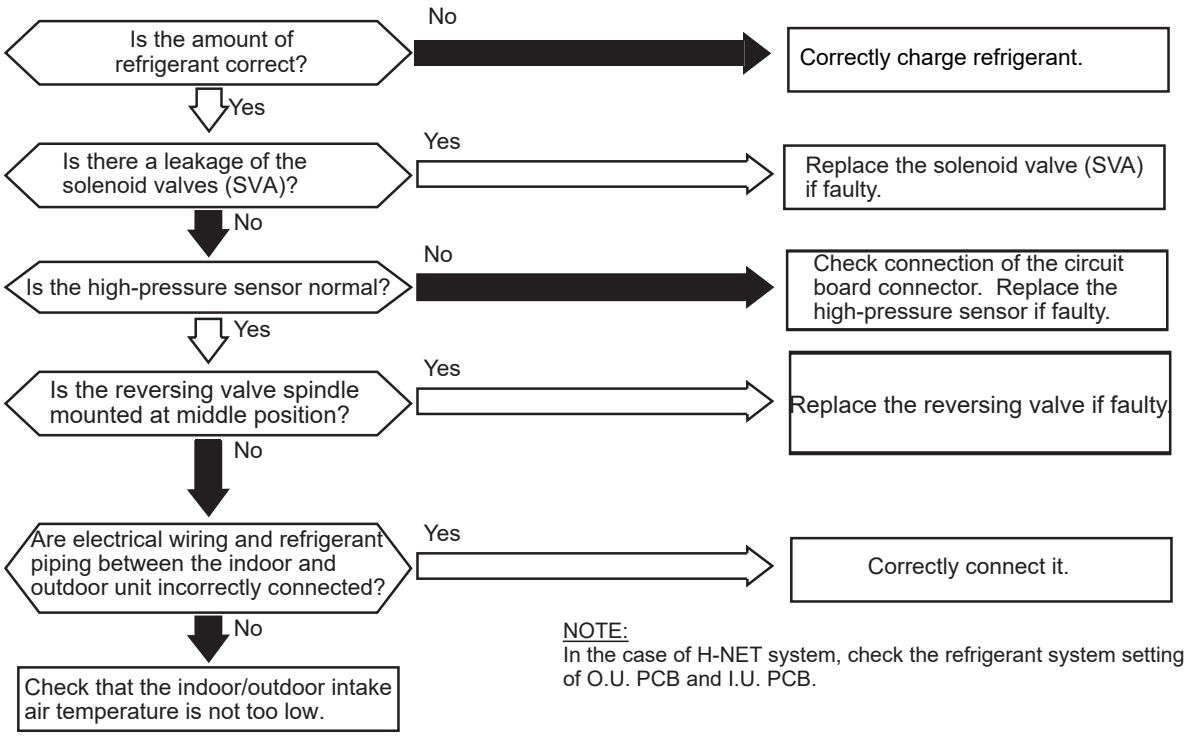
Phenomenon	Cause	Check Item	Action (Turn OFF Main Switch)
Excessively High Discharge Pressure	Leakage of Solenoid Valve (SVA)	Check outlet temp. of solenoid valve (SVA).	Check connection. Replace solenoid valve (SVA) if faulty.
	Closed Stop Valve	Check stop valve.	Open stop valve.
	Abnormal High Pressure Sensor	Check connectors for O.U. PCB.	Replace pressure sensor if faulty.
	Excessively High Indoor Unit and Outdoor Unit Inlet Air Temp.	Check thermistor for indoor unit and outdoor unit inlet air temp.	Replace thermistor if faulty.
	Incorrect Connection between Indoor Unit and Outdoor Unit	Check electrical system and ref. cycle.	Correctly connect.
	Locked Expansion Valve with Fully Closed	Check connector for O.U. PCB.	Repair connector for O.U. PCB or expansion valve. Replace it if faulty.

Alarm Code 46	Activation of High Pressure Decrease Protection Device

- The RUN indicator (Red) is flashing
- The indoor unit number, the alarm code, the unit model code and the connected number of indoor units are displayed on LCD. Meanwhile, the indoor unit number and the alarm code are displayed on the 7-segment on O.U. display PCB.

★When the discharge pressure (Pd) continues to be lower than 1.0MPa for 30 minutes,all the compressors stop and then retry the operation after 3 minutes.
This alarm code is indicated when this occurs twice more within the next 30 minutes.

O.U. PCB: Outdoor Unit PCB
I.U. PCB: Indoor Unit PCB



NOTE:
In the case of H-NET system, check the refrigerant system setting of O.U. PCB and I.U. PCB.

Phenomenon	Cause	Check Item	Action (Turn OFF Main Switch)
Excessively Low Discharge Pressure	Shortage of Ref.	Check charged ref. volume or check for leakage.	Repair leakage and correctly charge.
	Leakage of Solenoid Valve (SVA)	Check Solenoid Valve.	Replace SVA if leakage occurs.
	Abnormal High Pressure Sensor	Check connectors for O.U. PCB.	Replace pressure sensor if faulty.
	Valve Stoppage at Middle Position of Reversing Valve	Measure suction pipe temp. of reversing valve.	Replace reversing valve if faulty.
	Incorrect Connection between Indoor Unit and Outdoor Unit	Check electrical system and ref. cycle.	Correctly connect them.
	Excessively Low Indoor/outdoor Intake Air Temperature	Check indoor unit and outdoor unit air temp. thermistor.	Replace thermistor if faulty.

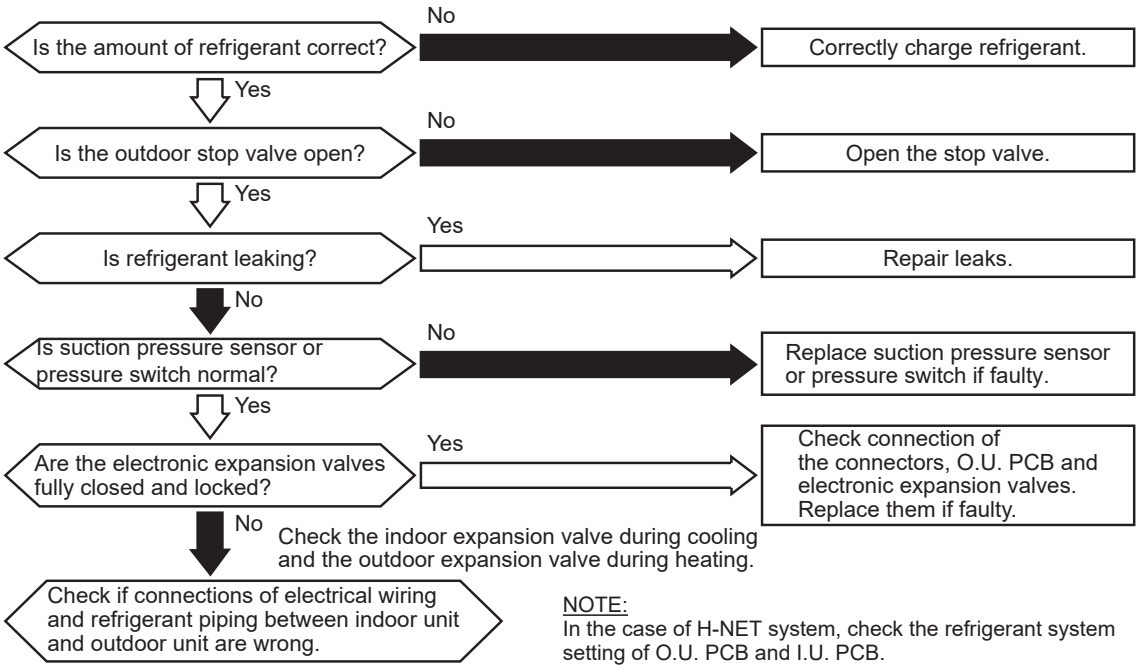
Alarm Code 47	Activation of Low Pressure Decrease Protection Device (Vacuum Operation Protection)

- The RUN indicator (Red) is flashing.
- The indoor unit number, the alarm code, the unit model code and the connected number of indoor units are displayed on LCD. Meanwhile, the indoor unit number and the alarm code are displayed on the 7-segment on O.U. display PCB.

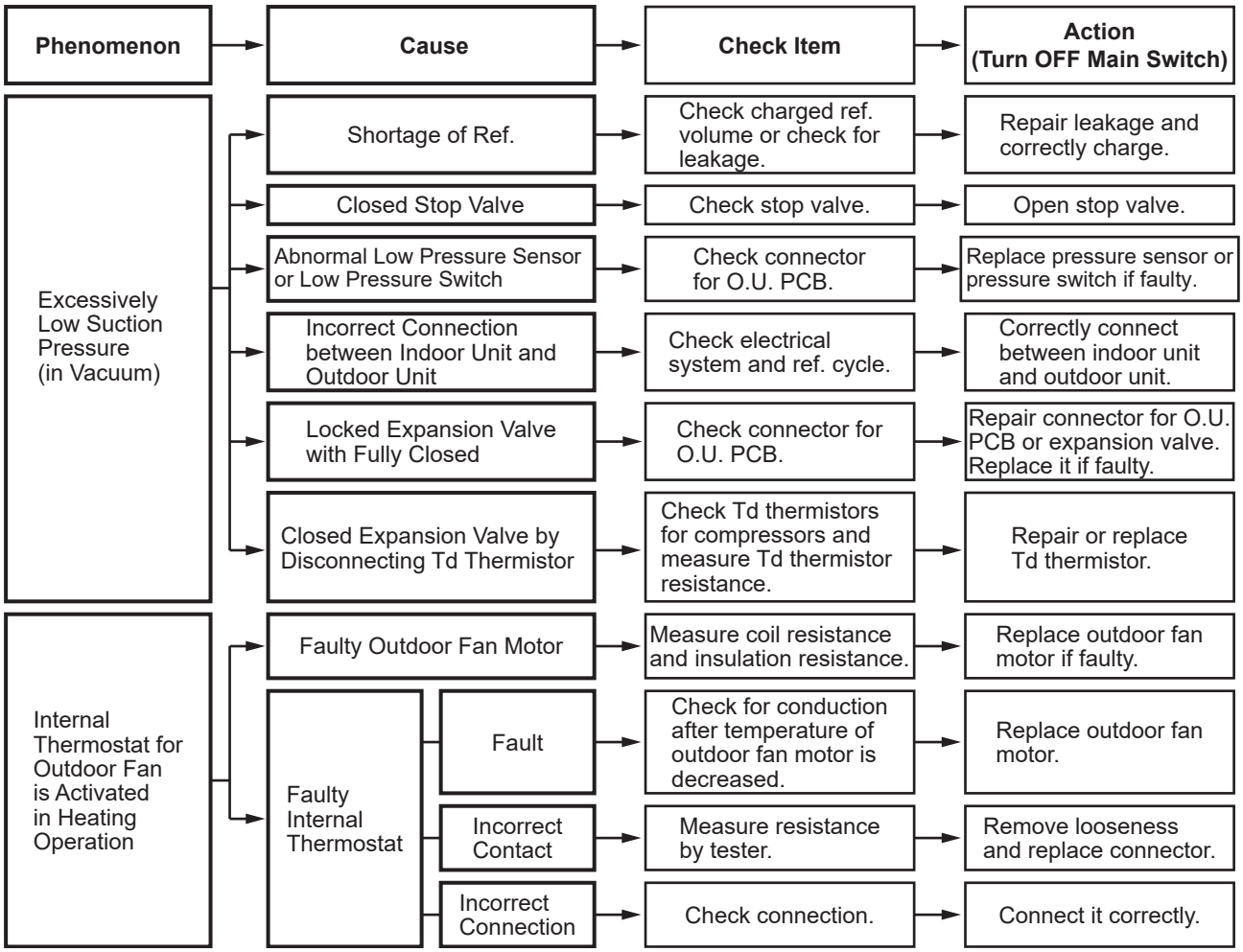
★ This alarm code is indicated when a suction pressure (Ps) is lower than 0.09MPa for over 12 minutes and the same condition occurs twice or more within one hour.

★ This alarm code is indicated when The action of low pressure switch(PSL) lasts for 30 seconds and the same condition occurs twice or more within one hour.

O.U. PCB: Outdoor Unit PCB
I.U. PCB: Indoor Unit PCB



NOTE:
In the case of H-NET system, check the refrigerant system setting of O.U. PCB and I.U. PCB.


Phenomenon
Cause
Check Item
Action (Turn OFF Main Switch)
Excessively Low Suction Pressure (in Vacuum)
Shortage of Ref.
Check charged ref. volume or check for leakage.
Repair leakage and correctly charge.
Closed Stop Valve
Check stop valve.
Open stop valve.
Abnormal Low Pressure Sensor or Low Pressure Switch
Check connector for O.U. PCB.
Replace pressure sensor or pressure switch if faulty.
Incorrect Connection between Indoor Unit and Outdoor Unit
Check electrical system and ref. cycle.
Correctly connect between indoor unit and outdoor unit.
Locked Expansion Valve with Fully Closed
Check connector for O.U. PCB.
Repair connector for O.U. PCB or expansion valve. Replace it if faulty.
Closed Expansion Valve by Disconnecting Td Thermistor
Check Td thermistors for compressors and measure Td thermistor resistance.
Repair or replace Td thermistor.
Internal Thermostat for Outdoor Fan is Activated in Heating Operation
Faulty Outdoor Fan Motor
Measure coil resistance and insulation resistance.
Replace outdoor fan motor if faulty.
Faulty Internal Thermostat
Fault
Check for conduction after temperature of outdoor fan motor is decreased.
Replace outdoor fan motor.
Incorrect Contact
Measure resistance by tester.
Remove looseness and replace connector.
Incorrect Connection
Check connection.
Connect it correctly.

Alarm Code 48	Activation of Inverter Overcurrent Protection Device (1)

- The RUN indicator (Red) is flashing.
- The indoor unit number, the alarm code, the unit model code and the connected number of indoor units are displayed on LCD. Meanwhile, the indoor unit number and the alarm code are displayed on the 7-segment on O.U. display PCB.

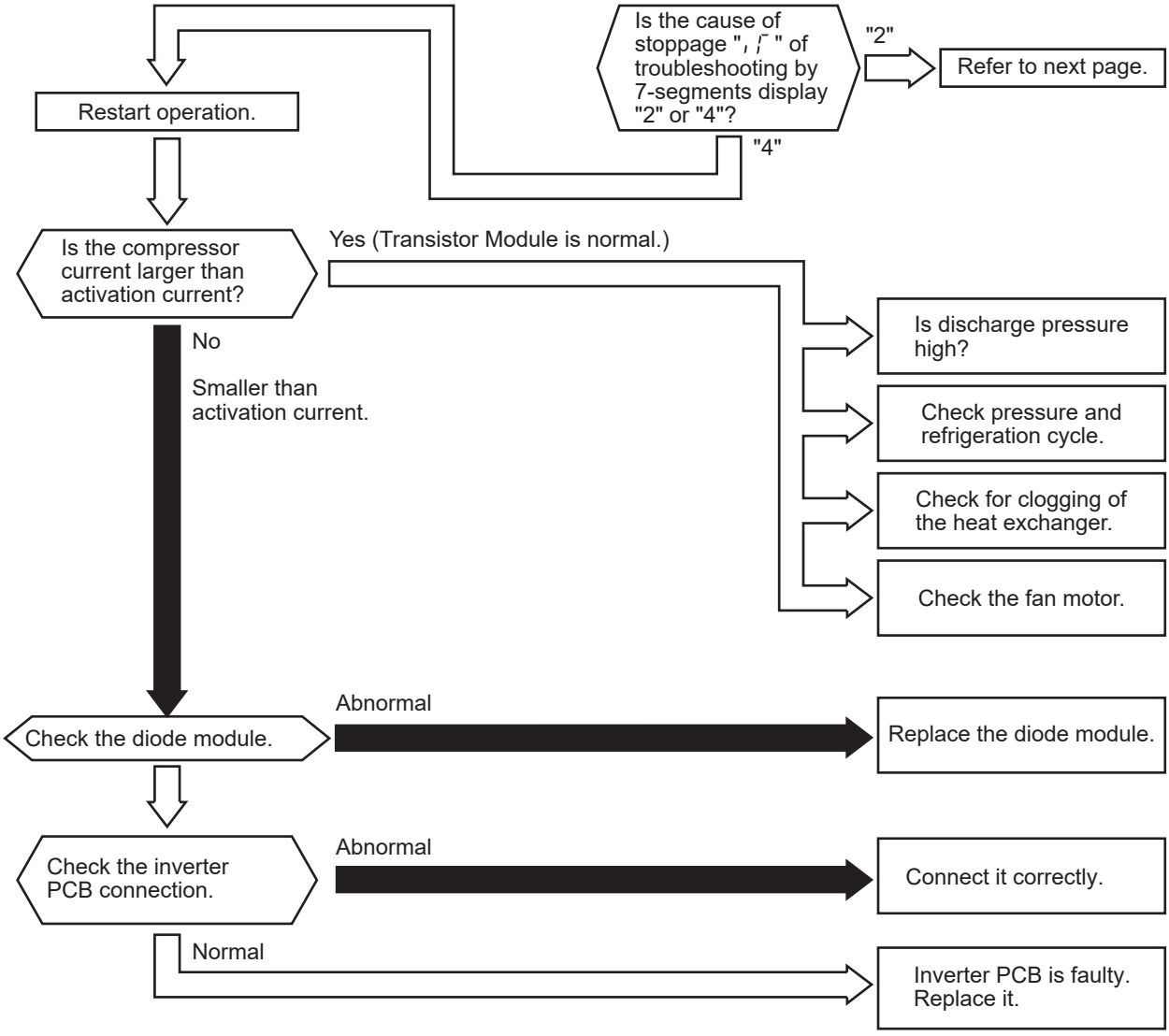
★ This alarm code is indicated when inverter electronic thermal protection is activated six times within 30 minutes. (Retry operation is performed up to the occurrence of five times.)

Conditions of Activation:

(1) Inverter current with 105% of the rated current runs for 30 seconds continuously.

(2) Inverter current runs intermittently and the accumulated time reaches up to 3 minutes, in 10 minutes.

O.U. PCB: Outdoor Unit PCB



iTC	Cause of inverter stoppage
2	Instantaneous overcurrent
4	Inverter overcurrent

Alarm Code 48	Activation of Inverter Overcurrent Protection Device (2)

- The RUN indicator (Red) is flashing.
- The indoor unit number, the alarm code, the unit model code and the connected number of indoor units are displayed on LCD. Meanwhile, the indoor unit number and the alarm code are displayed on the 7-segment on O.U. display PCB.

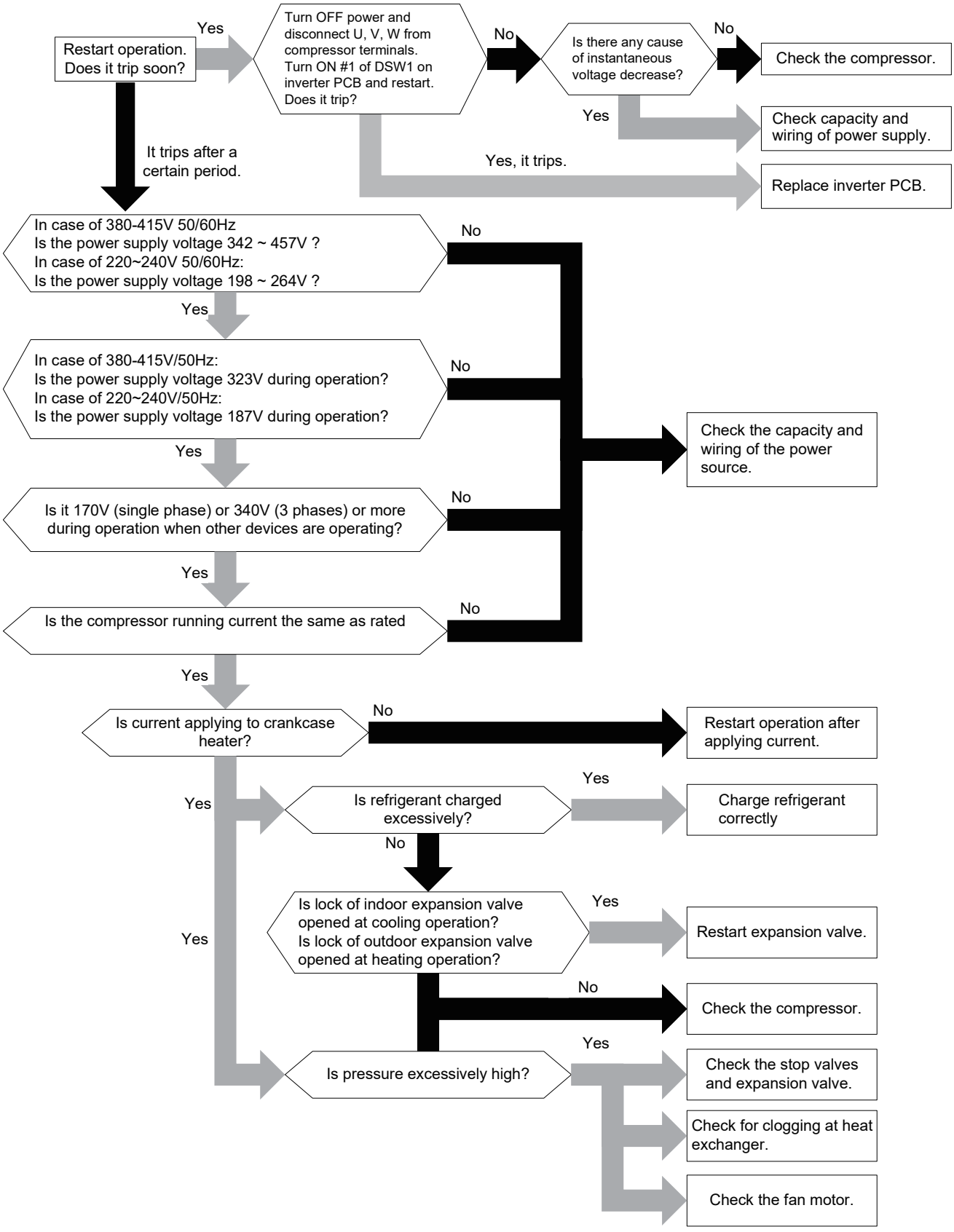
★ If instantaneous overcurrent or electronic thermal protection occurs on inverter as follows, the compressor stops. The operation automatically restarts after three minutes. If this occurs again five times in the next 30 minutes, this alarm code is displayed.

Condition of Activation:

(1) Instantaneous overcurrent (Cause code of inverter stoppage = 2)
Inverter secondary current is higher than 150% of the rated current instantaneously.

(2) Inverter electronic thermal protection (Cause code of inverter stoppage = 4)
Inverter primary/secondary current is higher than 105% of the rated current for 30 seconds continuously, or Inverter primary/secondary current is higher than 105% of the rated current intermittently for 3 minutes per 10 minutes.

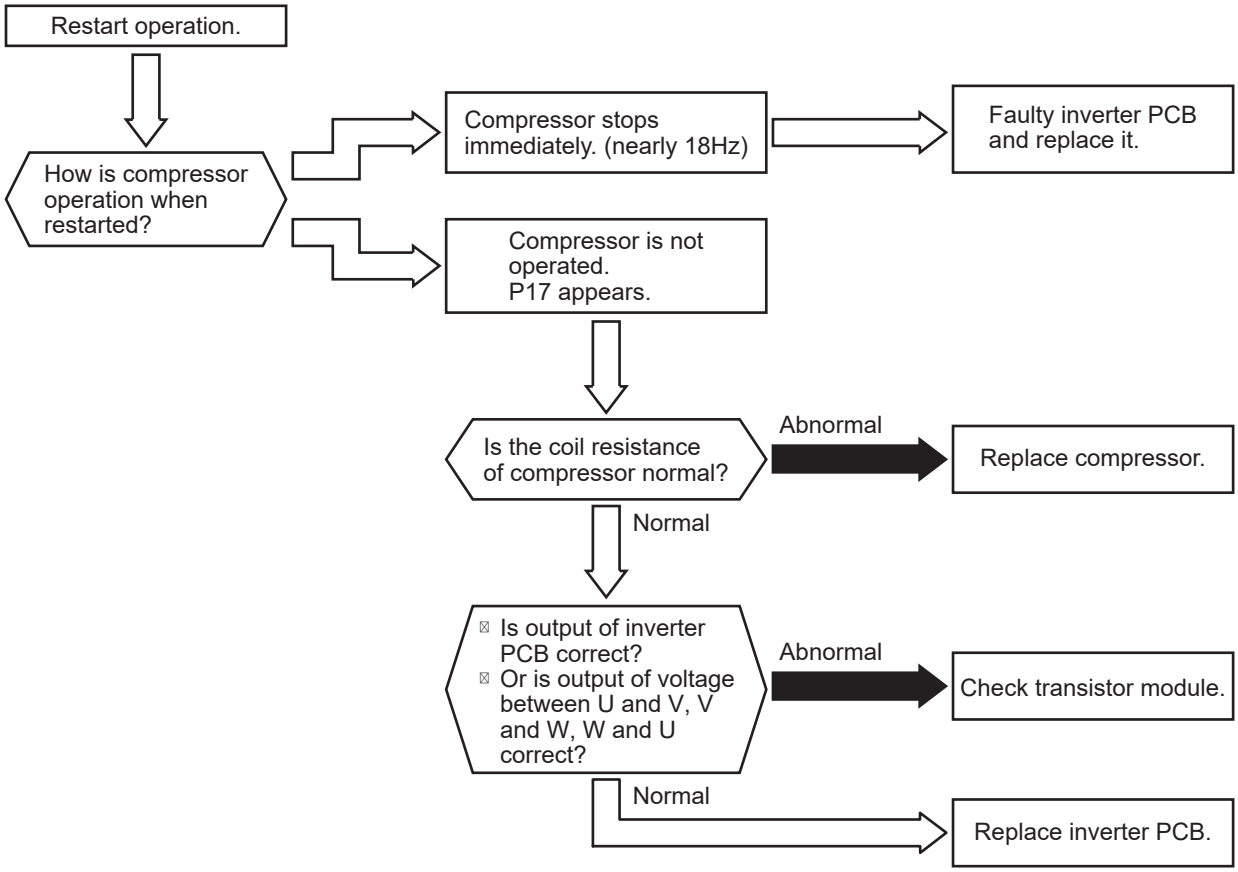
O.U.: Outdoor Unit
I.U.: Indoor Unit



Alarm Code 51	Abnormality of Current Sensor

- The RUN indicator (Red) is flashing.
- The indoor unit number, the alarm code, the unit model code and the connected number of indoor units are displayed on LCD. Meanwhile, the indoor unit number and the alarm code are displayed on the 7-segment on O.U. display PCB.

★ In case that the abnormality of current transformer (0A detecting) occurs three times within 30 minutes, this alarm code is indicated at the third time.
(Retry operation is performed for the first two times.)
Condition of Activation:
(1) When the frequency of compressor is maintained at 15 to 18Hz after compressor is started, one of the absolute value of running current detected by the current transformer at each phase U+, U-, V+ and V- is less than 1.5A (including 1.5A).
(2) The wave height value of running current for the phase positioning is less than 5A before the compressor is started (at completing the phase positioning).



iTC	Cause of inverter stoppage
8	Abnormal current sensor or imbalance of U/V/W

Alarm Code 53	Inverter Error Signal Detection

- The RUN indicator (Red) is flashing.
- The indoor unit number, the alarm code, the unit model code and the connected number of indoor units are displayed on LCD. Meanwhile, the indoor unit number and the alarm code are displayed on the 7-segment on O.U. display PCB.

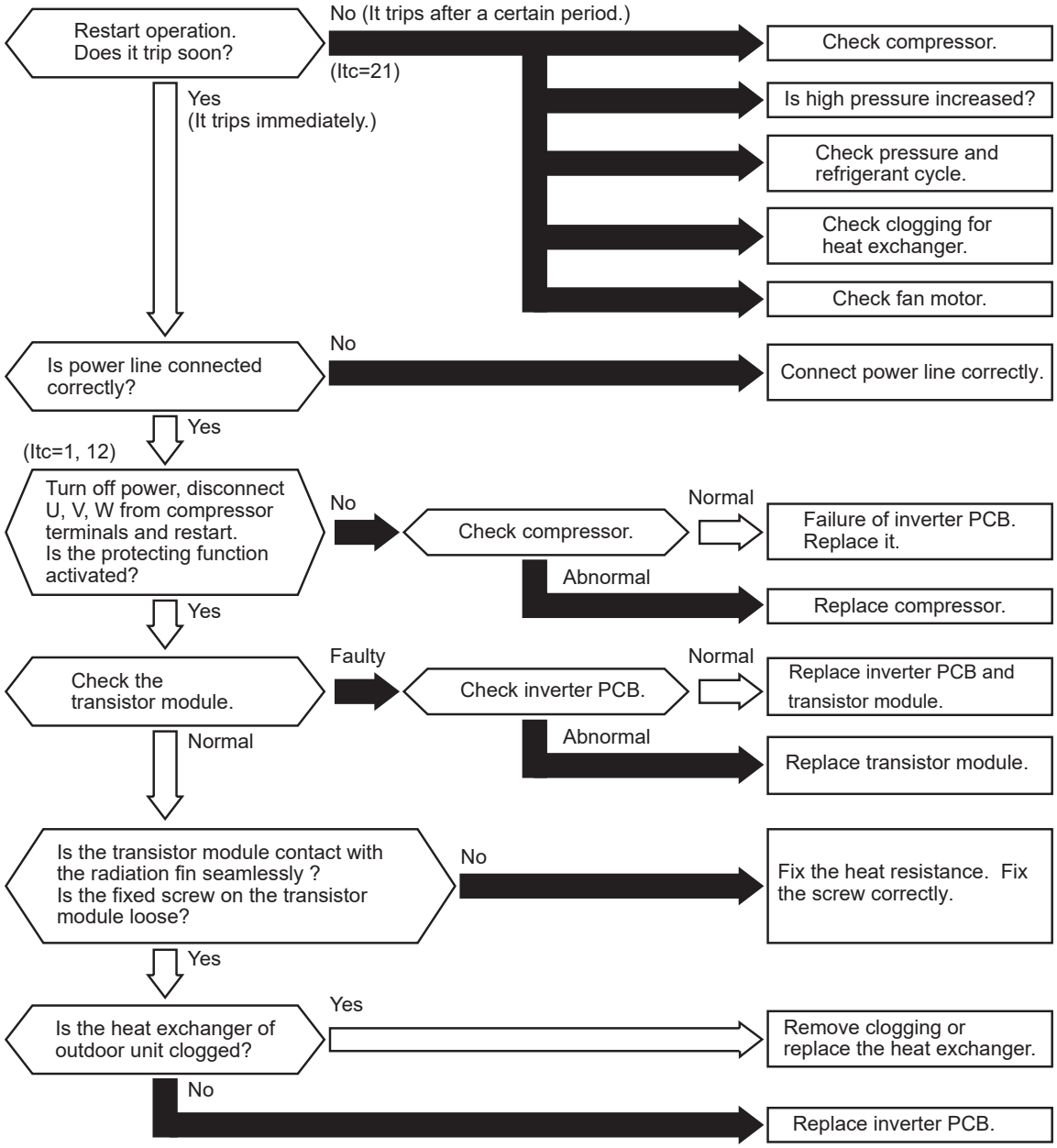
★ IPM (Transistor Module) has abnormality-detecting function.
This alarm code is indicated when the abnormality is detected seven times within 30 minutes.
(Retry operation is performed for the first 6 times.)

Condition of Activation:

(1) IPM Error (Cause code of inverter stoppage = 1)
Inverter PCB detects IPM fault signal due to abnormal current, control voltage decrease or etc.

(2) Ground Fault Detection from Compressor (Cause code of inverter stoppage = 12)
Inverter PCB detects overcurrent when checking ground fault before compressor starts operation.

(3) Step-Out Detection (Cause code of inverter stoppage = 21)
The angle difference between the shaft in compressor and the shaft in the control program exceeds 60°.



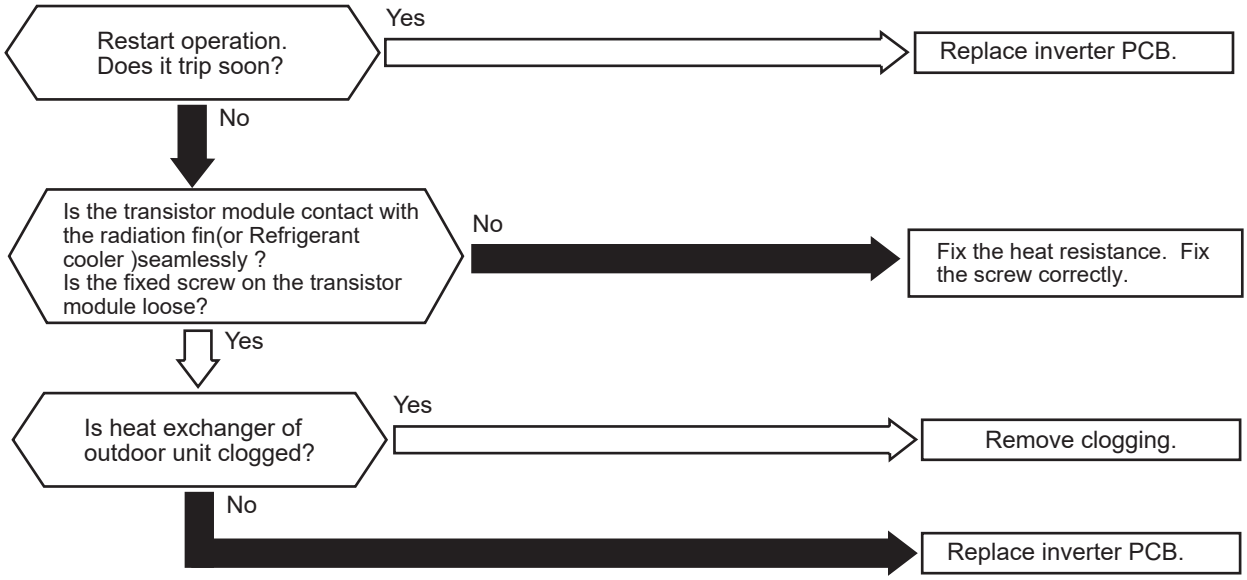
Alarm Code 54	Abnormality of Inverter Fin Temperature

- The RUN indicator (Red) is flashing.
- The indoor unit number (Ref. system number - I.U. number), the alarm code and the number of connected indoor units are displayed on the LCD. The alarm code is flashed on the 7-segment on O.U. display PCB. Check the inverter stoppage code when this alarm code is displayed.

★ When the following condition occurs three times in 30 minutes, the operation stops and this alarm code is displayed. If this occurs less than three times in 30 minutes, the operation automatically restarts.

Condition of Activation:

(1) Inverter fin thermistor protection a.ctivation (Cause code of inverter stoppage = 3)
The temperature of inverter fin exceeds 80°C.



* The maintenance and replacement for inverter PCB should be performed after performing surely the voltage discharge.

Alarm Code 55	Inverter Failure

- The RUN indicator (Red) is flashing.
- The indoor unit number, the alarm code, the unit model code and the connected number of indoor units are displayed on LCD. Meanwhile, the indoor unit number and the alarm code are displayed on the 7-segment on O.U. display PCB.

★ This alarm code is indicated when the following phenomenon occurs three times in 30 minutes.
(Retry operation is performed for the first two times.)
Actual frequency from inverter PCB is less than 10Hz (after inverter frequency output from outdoor unit PCB).
Conditions of Activation: Inverter PCB does not operate normally.

*1): When the excessive surge current is applied to the unit due to lightning or other causes, this alarm code or the cause code of inverter stoppage (Itc=11) will be displayed on the 7-segment display on O.U. PCB and the unit can not be operated. In this case, check to ensure the surge absorber (SA) on the noise filter. The surge absorber may be damaged if the inner surface of the surge absorber is changed to black. If the surge absorber is damaged, replace the noise filter. If the noise filter does not have abnormality, turn OFF the power supply once and wait until LED4 goes off on inverter PCB in approx. 5 min. Then, turn ON again.

Alarm Code 57	Activation of O.U. Fan Controller Protection

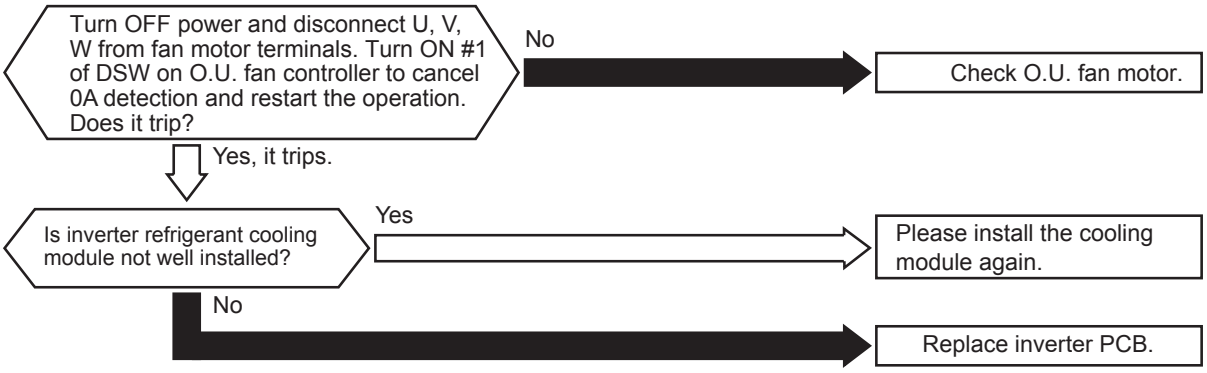
- The RUN indicator (Red) is flashing.
- The indoor unit number, the alarm code, the unit model code and the connected number of indoor units are displayed on LCD. Meanwhile, the indoor unit number and the alarm code are displayed on the 7-segment on O.U. display PCB.

★ IPM (Transistor Module) has abnormality-detecting function.
This alarm code is indicated when the abnormality is detected ten times within 30 minutes. (Retry operation is performed for the first nine times.)

Condition of Activation:

(1) The abnormal current such as a short-circuit current, a ground-fault current or the overcurrent occurs at the transistor module.

(2) The control voltage decreases.



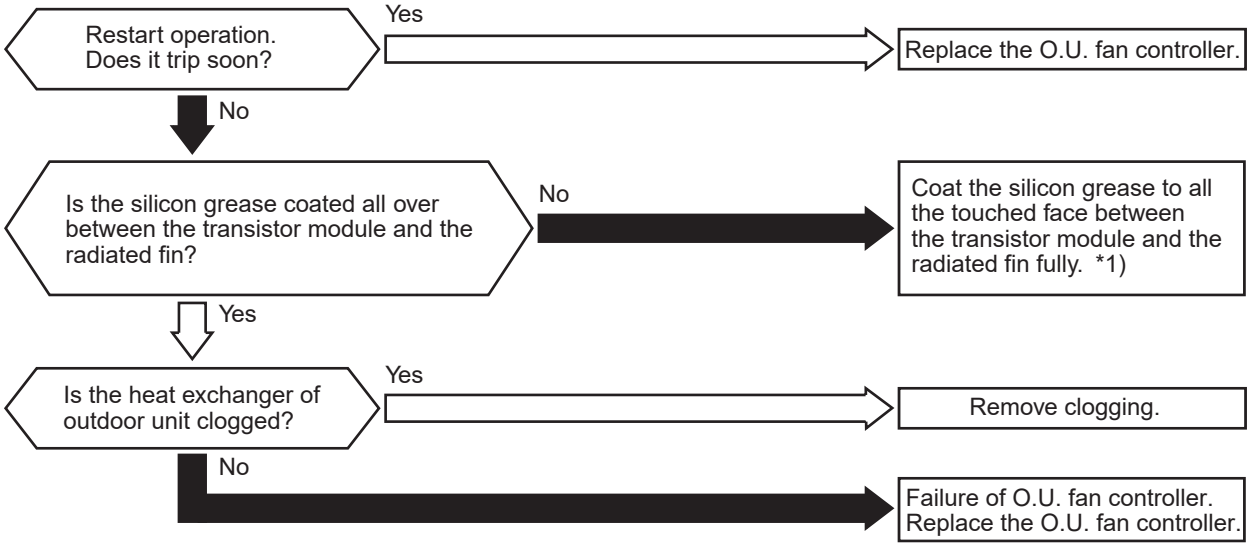
*1): When the unit is applied with excessive surge current due to lighting or other causes, this alarm code “57” will be indicated and the unit can not be operated. In this case, check to ensure the surge absorber/surge arrester (SA) on the noise filter (NF1, NF2). The surge absorber may be damaged if the inner surface of the surge absorber is black. In that case, replace the surge absorber.
If the inside of the surge absorber is normal, turn OFF the power once and wait until LED21P on inverter PCB is OFF (approx. 5 min.) and turn ON again.

Alarm Code 5A	Abnormality of O.U. Fan Controller Fin Temperature

● “RUN” light is flashing and “ALARM” are indicated on the remote control switch.
The unit No., alarm code and the unit code are alternately indicated on the set temperature section, and the unit No. and alarm code are indicated on the 7-segment on O.U. display PCB.

★ This alarm is indicated when the abnormality of fin temperature occurs ten times within 30 minutes. (Retry operation is performed up to the occurrence of nine times.)
Conditions of Activation: This alarm is indicated when the thermistor temperature inside the transistor module exceeds 100°C.

O.U. PCB: Outdoor Unit PCB



*1): Use the silicon grease provided as accessory.

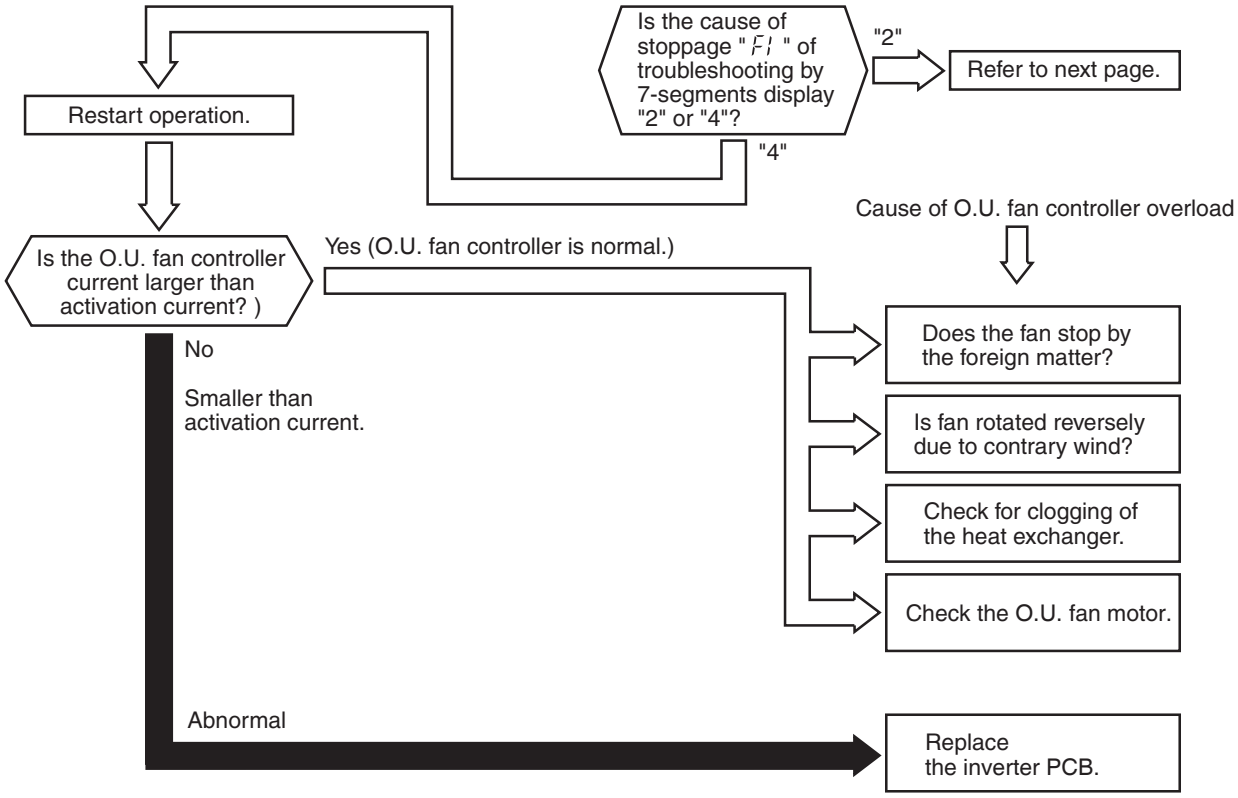
Alarm Code 56	Activation of O.U. Fan Controller Overcurrent Protection Device (1)

- The RUN indicator (Red) is flashing.
- The indoor unit number, the alarm code, the unit model code and the connected number of indoor units are displayed on LCD. Meanwhile, the indoor unit number and the alarm code are displayed on the 7-segment on O.U. display PCB.

★ This alarm code is indicated when fan controller electronic thermal protection is activated ten times within 30 minutes.
(Retry operation is performed for the first nine times.)
Conditions of Activation:

(1) Electric current with 105% of the rated current runs for 30 seconds continuously.

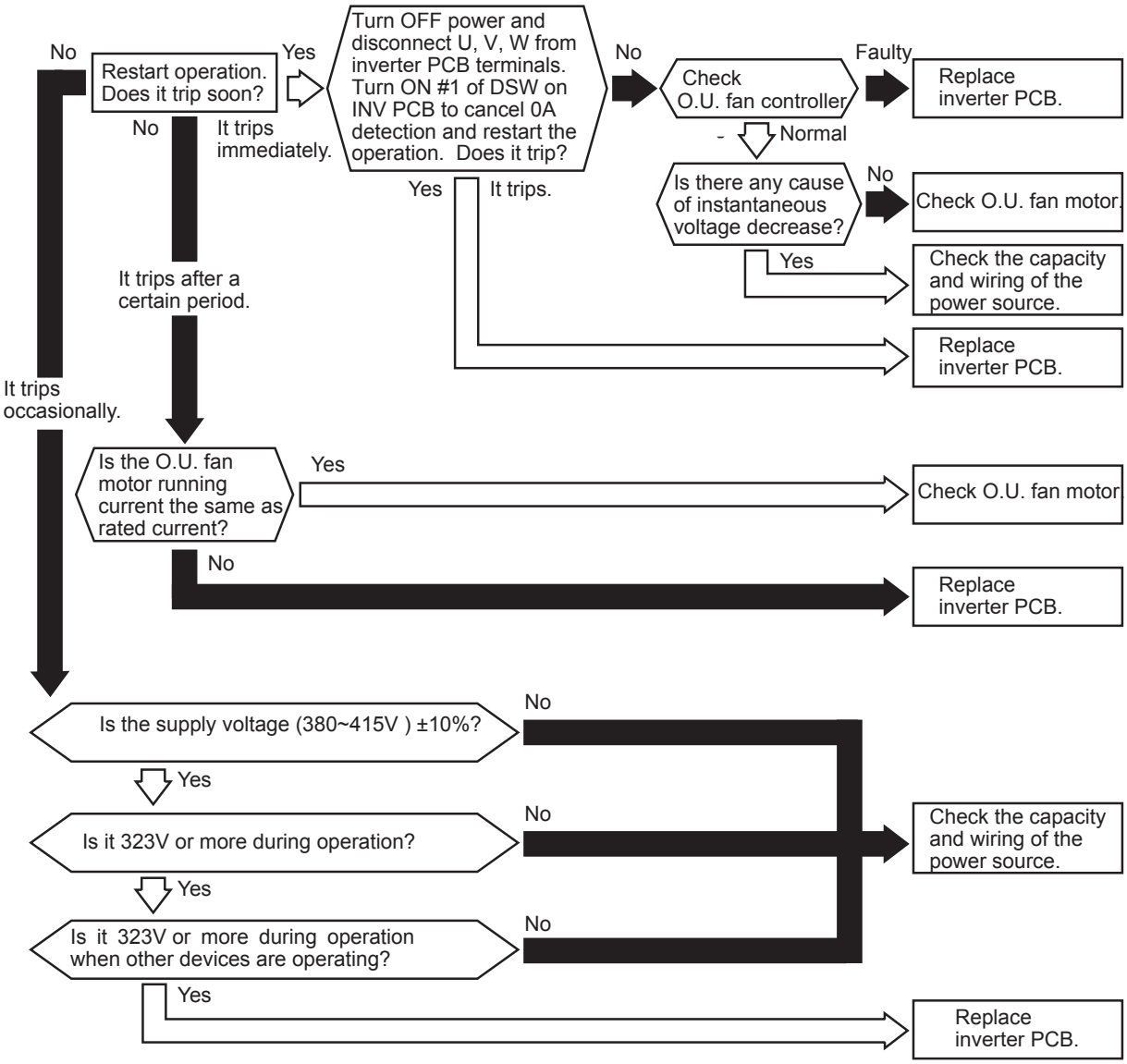
(2) Electric current runs intermittently and the accumulated time reaches up to 3 minutes, in 10 minutes.



Alarm Code 56	Activation of O.U. Fan Controller Overcurrent Protection Device (2)

- The RUN indicator (Red) is flashing.
- The indoor unit number, the alarm code, the unit model code and the connected number of indoor units are displayed on LCD. Meanwhile, the indoor unit number and the alarm code are displayed on the 7-segment on O.U. display PCB.

★ This alarm code is indicated when instantaneous overcurrent occurs ten times within 30 minutes.
(Retry operation is performed for the first nine times.)
Conditions of Activation: The running current exceeds the rated current of transistor module.



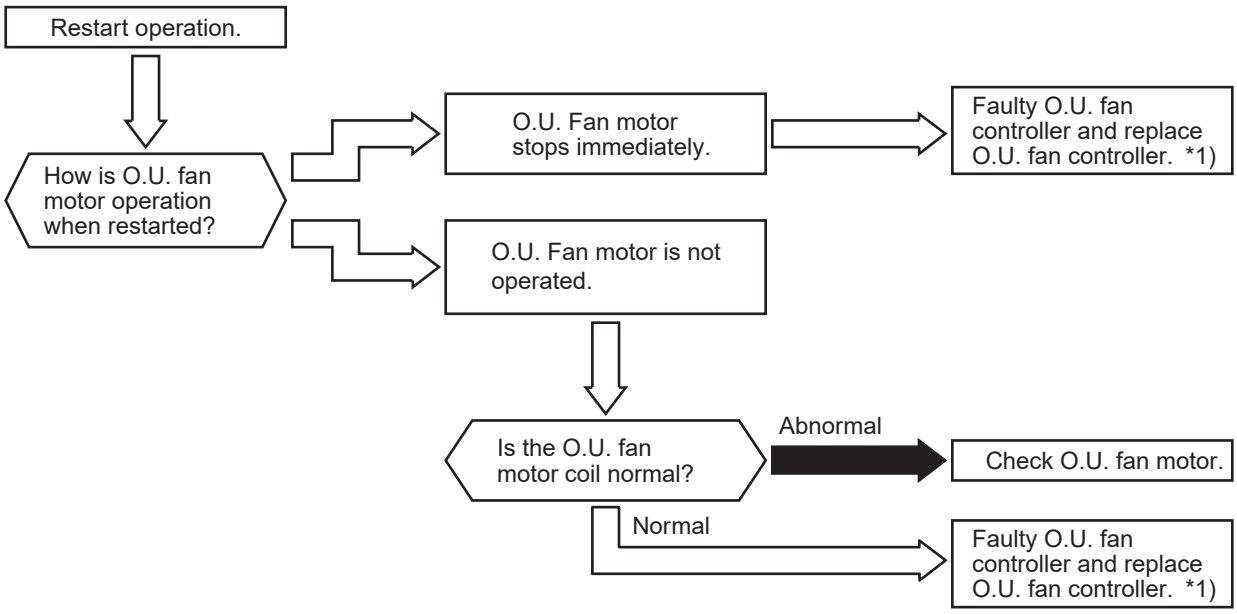
Alarm Code 51	Abnormality of O.U. Fan Controller Sensor

★ Conditions of Activation:

This alarm is indicated when the following condition occurs.

• After O.U. fan motor operation is started, O.U. fan controller current does NOT exceed 1.5A.

• Before O.U. fan motor operation is started, O.U. fan controller peak current does NOT exceed 4A.



*1): Perform electrical discharge when checking or replacing O.U. fan controller by referring to the item 1.1.

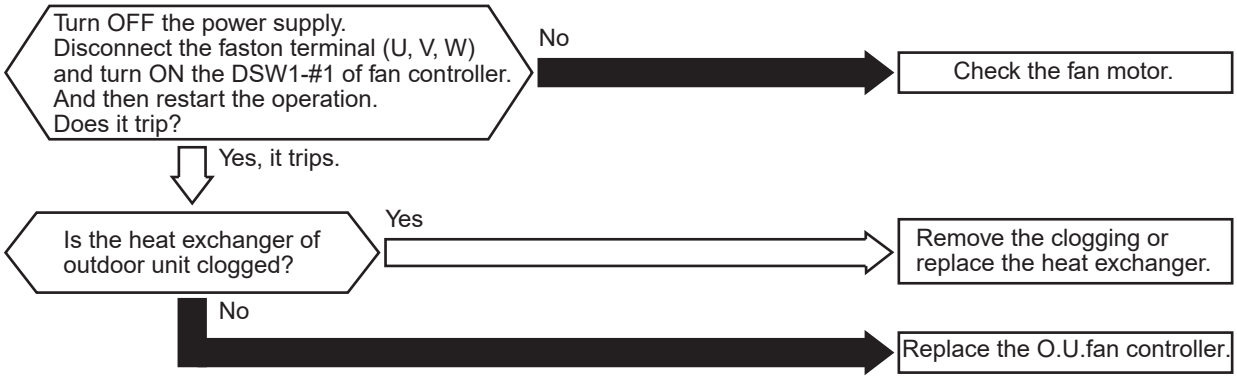
Alarm Code 58	Abnormality of O.U. Fan Controller

● “RUN” light is flashing and “ALARM” are indicated on the remote control switch.

The unit No., alarm code and the unit code are alternately indicated on the set temperature section, and the unit No. and the alarm code are indicated on the 7-segment on O.U. display PCB.

★ This alarm is indicated the speed of fan is abnormal

O.U. PCB: Outdoor Unit PCB



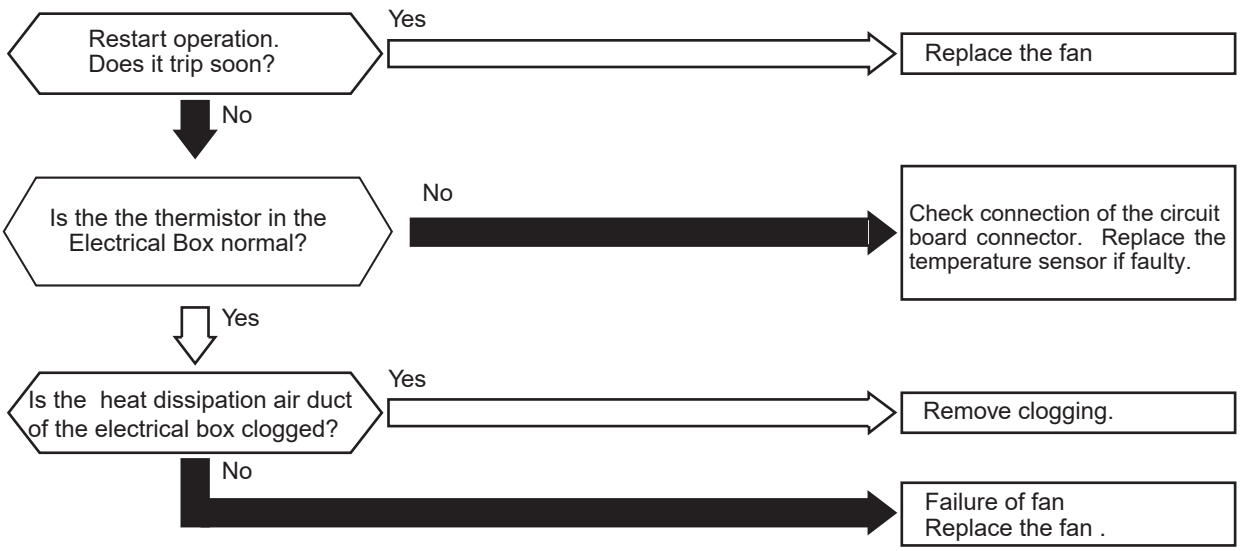
Alarm Code	External Abnormality Detection

- The RUN indicator (Red) is flashing
- The indoor unit number, the alarm code, the unit model code and the connected number of indoor units are displayed on LCD. Meanwhile, the indoor unit number and the alarm code are displayed on the 7-segment on O.U. display PCB.

★ This alarm is indicated when all the following conditions are met.
(1) When the external input function (master) is input 3, and the function serial number is set to "14".
(2) The external input terminal CN18 has an input signal for 10 seconds continuously.

Alarm Code	Increase in Temperature in the Electrical Box

★ This alarm code appears (when the compressor is in operation and The temperature of the thermistor in the Electrical Box is maintained higher than 65°C for 30 minutes



Alarm Code	Compressor Protection

★ This alarm code appears when one of the following alarms occurs three times within 6 hours, which may result in serious compressor damages, if the outdoor unit is continuously operated without removing the cause.

Alarm Code	Content of Abnormality
02	Activation of Protection Device (High Pressure Switch) in Outdoor Unit
07	Decrease in Discharge Gas Superheat
08	Excessively High Discharge Gas Temperature at Top of Compressor
43	Activation of Pressure Ratio Decrease Protection
44	Activation of Low Pressure Increase Protection
45	Activation of High Pressure Increase Protection Device
47	Activation of Low Pressure Decrease Protection

These alarms are able to be checked by the CHECK Mode. Follow the action indicated in each alarm chart.
These alarms are cleared only by turning OFF the main power supply to the system. Do not restart the operation without taking any necessary action, since there is a possibility of causing serious damages to the compressors.

Alarm Code	Abnormality of Refrigerant Cooling Module Temperature

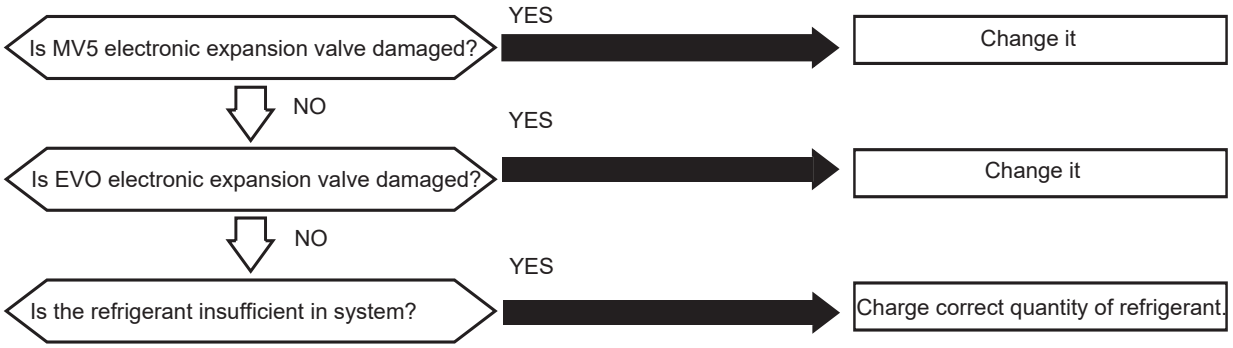
- The RUN indicator (Red) is flashing
- The indoor unit number, the alarm code, the unit model code and the connected number of indoor units are displayed on LCD. Meanwhile, the indoor unit number and the alarm code are displayed on the 7-segment of outdoor unit PCB.

★ This alarm code is indicated when the following conditions occurs twice or more within the next 60 minutes.

(1) The temperature of super cooler inlet pipe is lower than ambient temperature.

(2) The inverter fin temperature is lower than ambient temperature.

O.U. PCB: outdoor unit PCB
I.U. PCB: indoor unit PCB



Alarm Code	Incorrect Setting of Unit and Refrigerant Cycle Number

- The RUN indicator (Red) is flashing.
- The indoor unit number, the alarm code, the unit model code and the number of connected indoor units are displayed on LCD. Meanwhile, the indoor unit number and the alarm code are displayed on the 7-segment on O.U. display PCB.

★ This alarm code is displayed in the following conditions. Check the settings of the DIP switches (DSW) and the rotary switches (RSW) after turning OFF the power supply.

Conditions	Action
The unit No. setting (DSW6 and RSW1) or the refrigerant system No. setting (DSW5 and RSW2) on I.U. PCB is set as “64” or more, or more than 2 pins of DSW5 or DSW6 are set.	a . Unit No. Setting / Ref. System No. Setting Starting from “1” (recommended) Set the unit No. and the refrigerant system No. from “1” to “63”. (Setting No. for the 64th unit is “0”.) b . Unit No. Setting / Ref. System No. Setting Starting from “0” Set the unit No. and the refrigerant system No. from “0” to “63.” (Setting No. for the 64th unit is “63”.)
The unit No. setting and the refrigerant system No. setting are set between “16” and “63,” and the indoor unit does not support H-NET.	Set the unit No. and the refrigerant system No. between “0” and “15.”

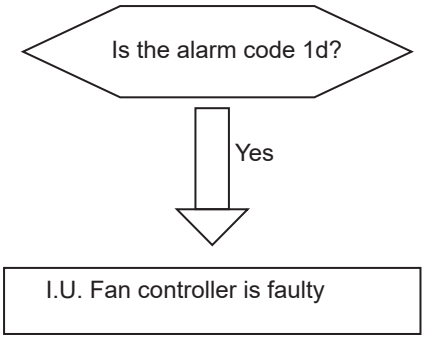
Alarm Code	Incorrect Setting of Indoor Unit Number for H-NET Type

- The RUN indicator (Red) is flashing.
- The indoor unit number, the alarm code*1), the unit model code and the number of connected indoor units are displayed on LCD. Meanwhile, the indoor unit number and the alarm code are displayed on the 7-segment on O.U. display PCB.
  *1): The alarm code indicated on the remote control switch is “35”.

Condition	Action
The number of the connected indoor units not supporting H-NET is 17 and after.	The number of the connected indoor units shall be 16 and before.

Alarm code 1d	Abnormality of I.U. Fan Controller

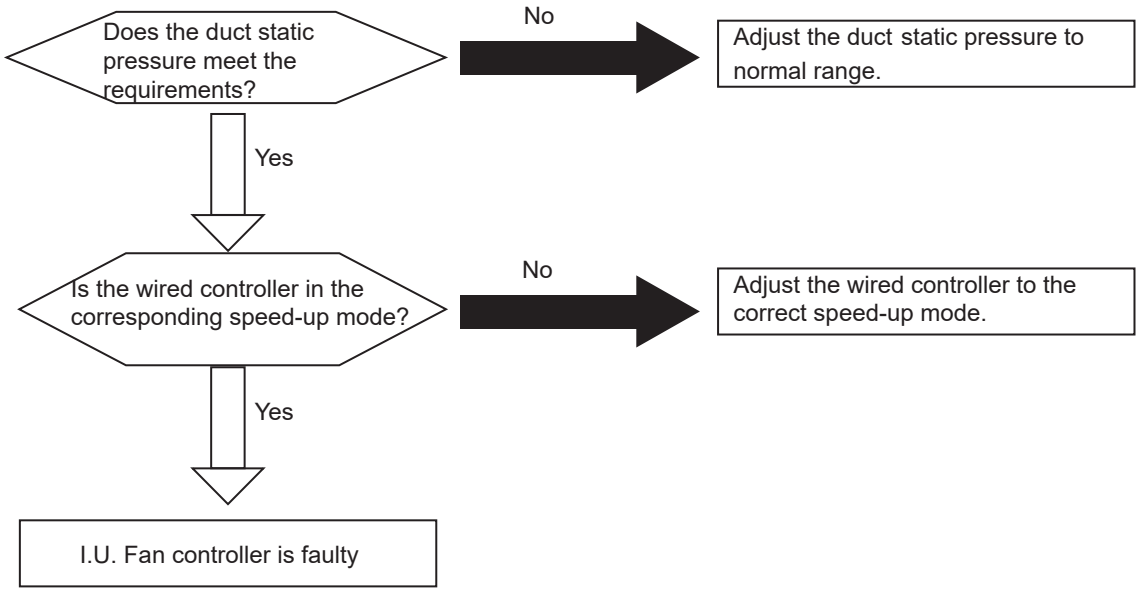
★ This alarm code is indicated when the fault signal from the I.U. fan controller IC is detected more than 3 times within 30 minutes.



Phenomenon	Cause	Check items	Action
I.U. fan controller failure		Check the I.U. fan controller	Replace it if faulty
The I.U. fan controller alarms as soon as it is activated	Short circuit protection	Check whether the I.U. fan motor is faulty	Replace the I.U. fan motor

Alarm code	16	I.U. Fan Controller Software Overcurrent/Electronic Thermal Protection

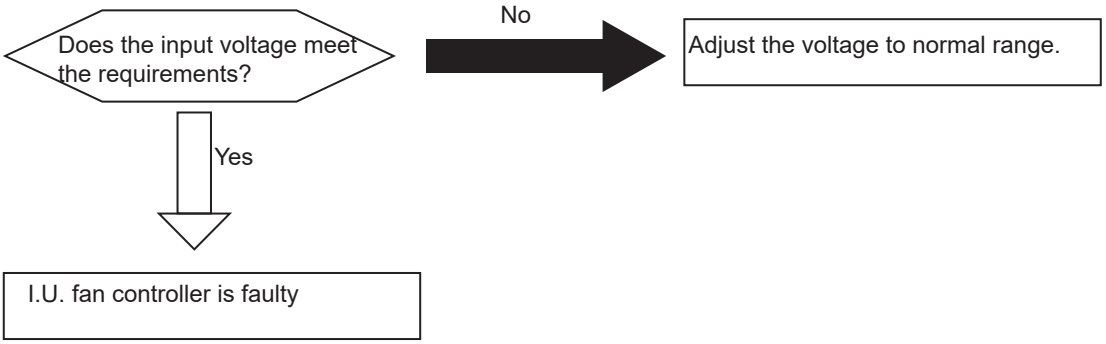
★ This alarm code is indicated when the current processed by the software exceeds the maximum current limit more than 3 times within 30 minutes. This alarm code can also be triggered by I.U. fan motor current exceeding the “Electronic thermal protection value” continuously for 30 seconds, or by exceeding the “Electronic thermal protection value” for 3 minutes in total within 30 minutes.



Phenomenon	Cause	Check items	Action
The I.U. fan motor runs for a period of time and shuts down and alarms	Software over-current protection	Check whether the speed-up mode selection of the wired controller is correct	Set the correct speed-up mode of the wired controller
I.U. fan controller failure		Check the I.U. fan controller	Replace it if faulty

Alarm code	1E	I.U. Fan Controller Under-Voltage

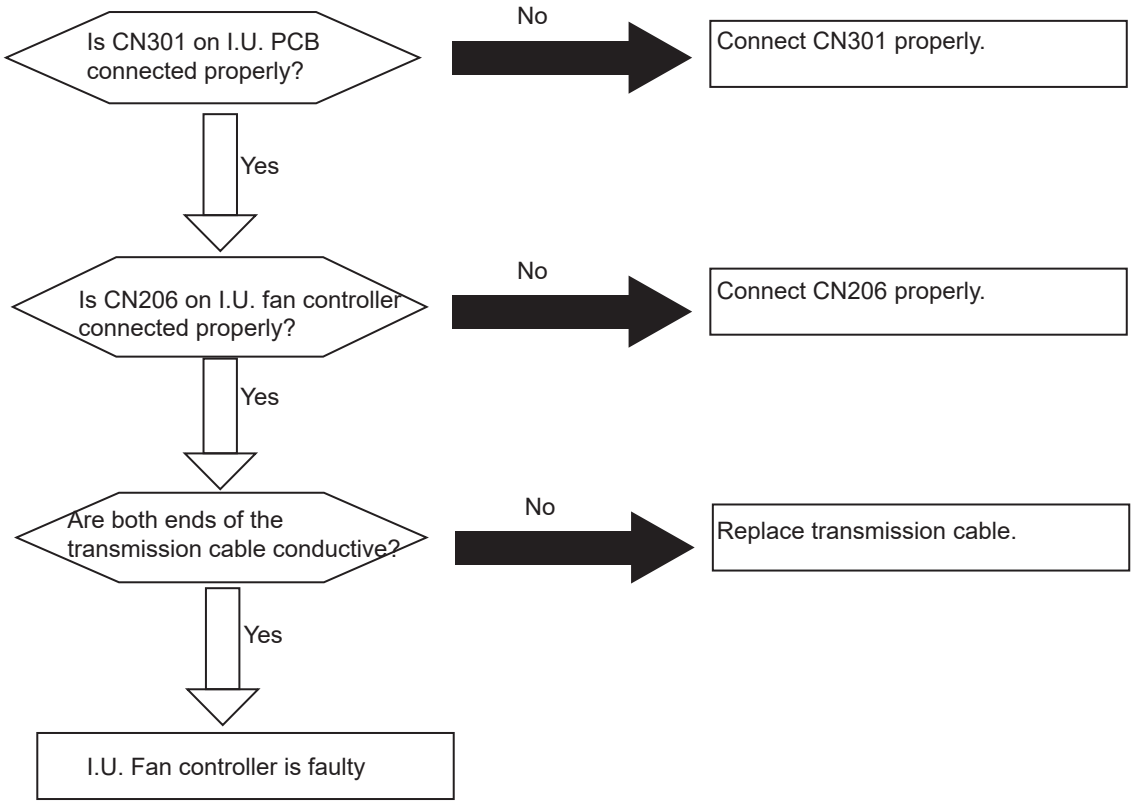
★ This alarm is indicated when the bus voltage amplitude on the I.U. fan controller is detected less than 140V more than 3 times within 30 minutes.



Phenomenon	Cause	Check items	Action
The I.U. fan controller alarms as soon as it is activated	Under-voltage protection	Check if the input voltage is too low	Adjust the input voltage to the normal range
I.U. fan controller failure		Check the fan controller	Replace it if faulty

Alarm code	b6	Abnormal Transmission between I.U. PCB and I.U. Fan controller

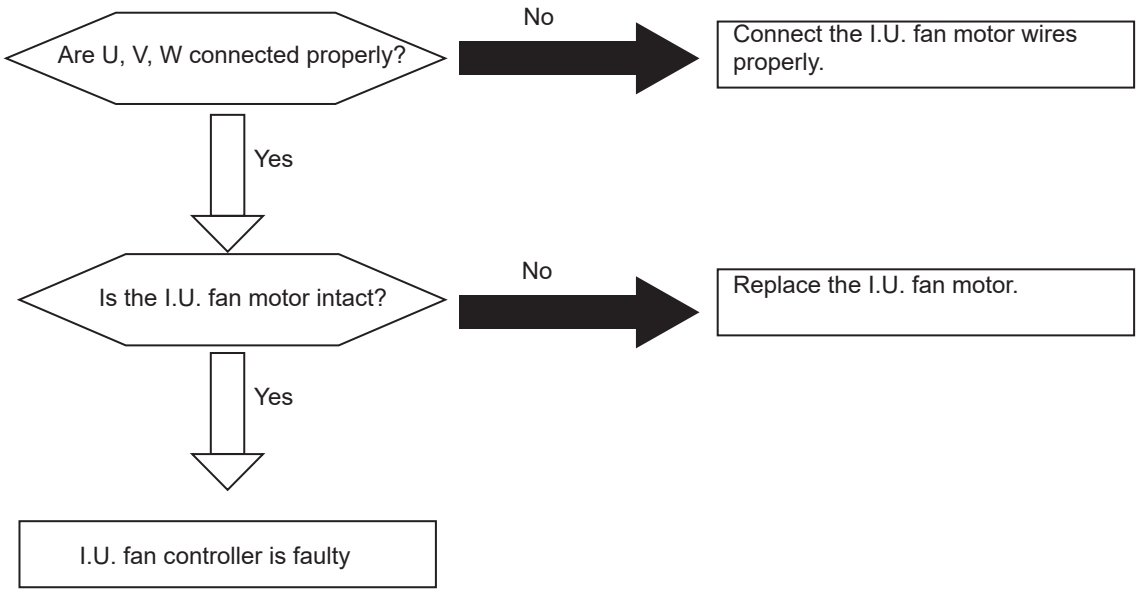
★ This alarm is indicated when transmission between I.U. PCB and I.U. Fan controller is abnormal, and after reset, no signal reception nor normal transmission was completed within 30 seconds.



Phenomenon	Cause	Check items	Action
The I.U. fan controller alarms as soon as it is activated	Abnormal transmission	Check whether both CN206 and CN301 are correctly connected	Connect the transmission cable properly
		Check if the transmission cable itself is damaged	Replace the transmission cable
I.U.fan controller failure		Check the I.U.fan controller	Replace it if faulty

Alarm code	1C	Abnormality of I.U. Fan Controller Current Detection Circuit

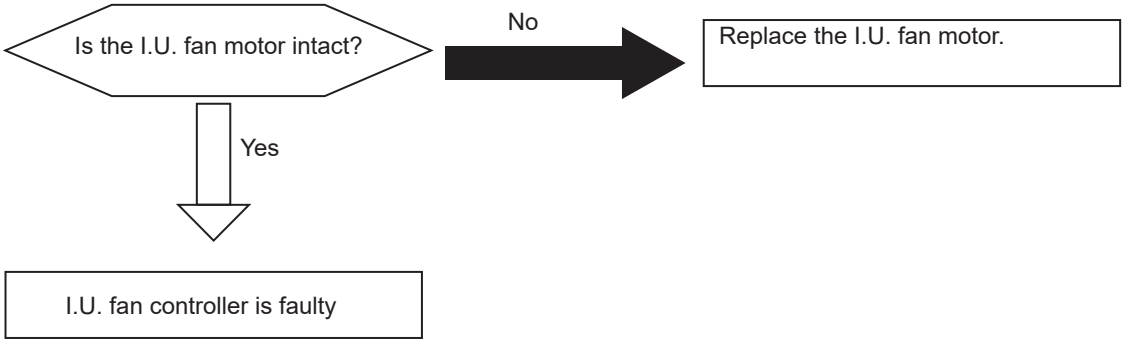
★ This alarm is indicated when I.U. fan motor lacking phase or unconnected I.U. fan motor is detected more than 3 times; or before the I.U. fan motor is started, the detection value of the current detection circuit is detected as incorrect more than 3 times within 30 minutes.



Phenomenon	Cause	Check items	Action
The I.U. fan controller alarms as soon as it is activated	The I.U. fan motor lacks phase	Check whether U, V, W are correctly connected	Connect the I.U. fan motor wires
I.U. fan controller failure		Check the I.U. fan controller	Replace it if faulty

Alarm code 18	I.U. Fan Motor Non-action or Out-of-step

★ This alarm code is indicated when the I.U. fan motor rotation speed command is above 60 rpm and the actual rotation speed is below 30 rpm for 30 seconds. Or this alarm code is indicated when the I.U. fan motor has lost its synchronization.

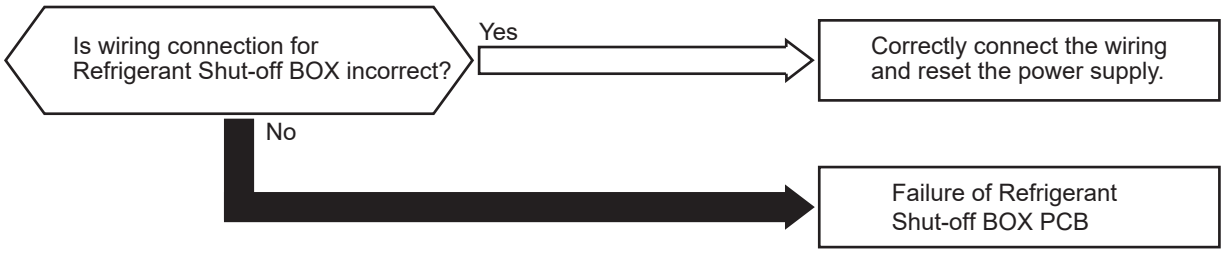


Phenomenon	Cause	Check items	Action
I.U. fan controller failure		Check the I.U. fan controller	Replace it if faulty
I.U. fan motor failure		Check the I.U. fan motor	Replace it if faulty

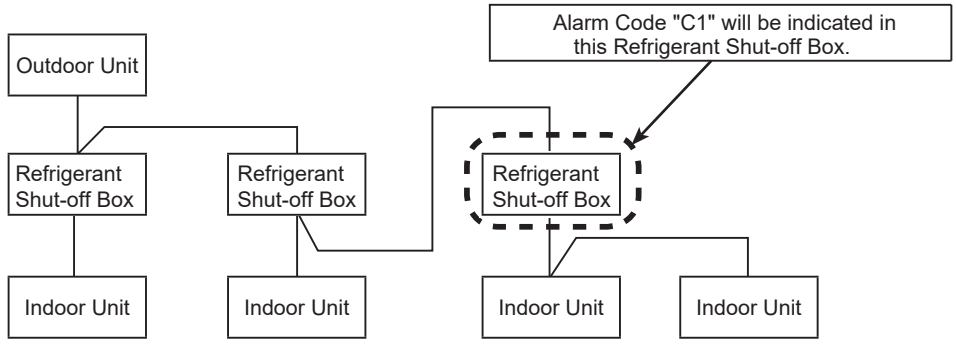
Alarm Code	C1	Incorrect Indoor Unit Connection (Refrigerant Shut-off Box)

★ <Heat Recovery System>

This alarm code is indicated when two or more Refrigerant Shut-off Boxes are connected between outdoor unit and indoor unit.

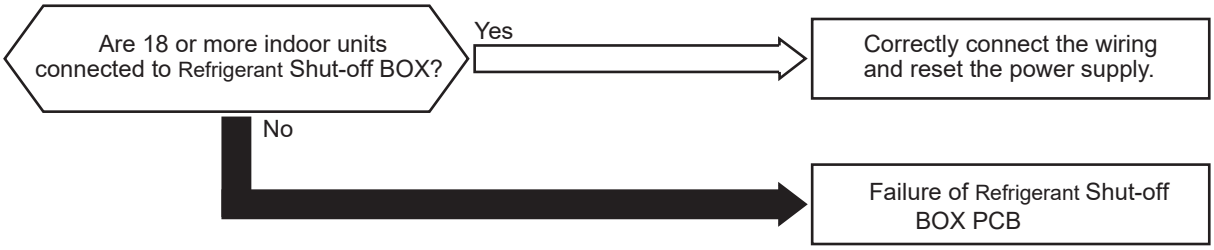


- Alarm Code “C1” will be indicated when the units are connected as follows.

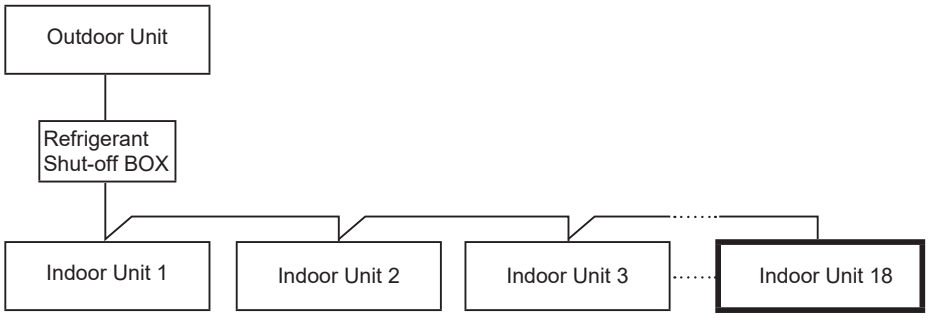


Alarm Code	C2	Incorrect Indoor Unit Connection No. Setting (Refrigerant Shut-off Box)

★ <Heat Recovery System>
This alarm code is indicated when 18 or more indoor units are connected to Refrigerant Shut-off Box.

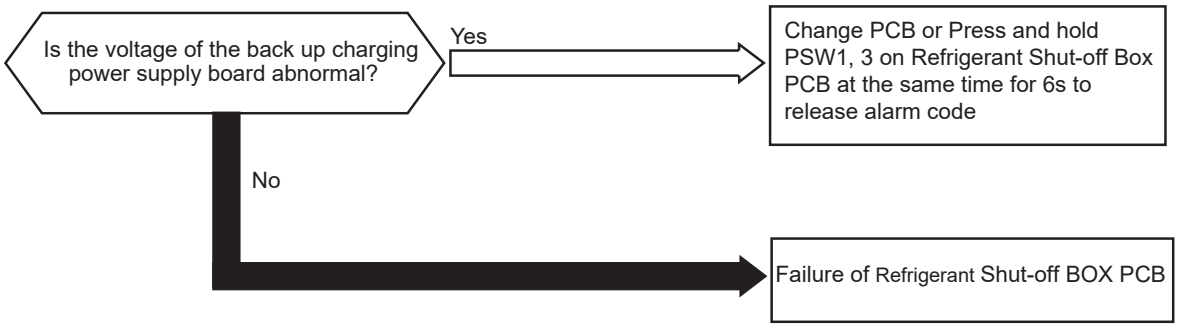


- Alarm Code “C2” will be indicated when the units are connected as follows.



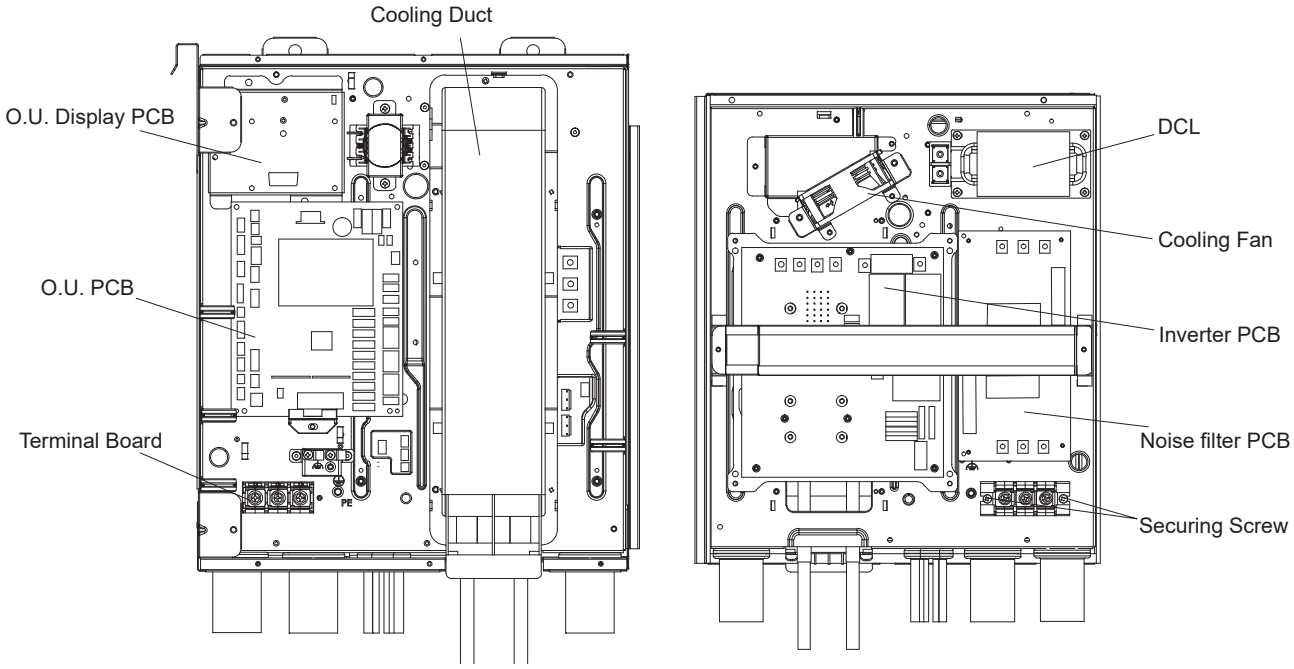
Alarm Code	C6	Abnormal backup charging power board (Refrigerant Shut-off Box)

★ The voltage of the back up charging power supply board is abnormal.



1.2.6 Function of RSW, DSWs and LEDs

- Arrangement Inside Electrical Box

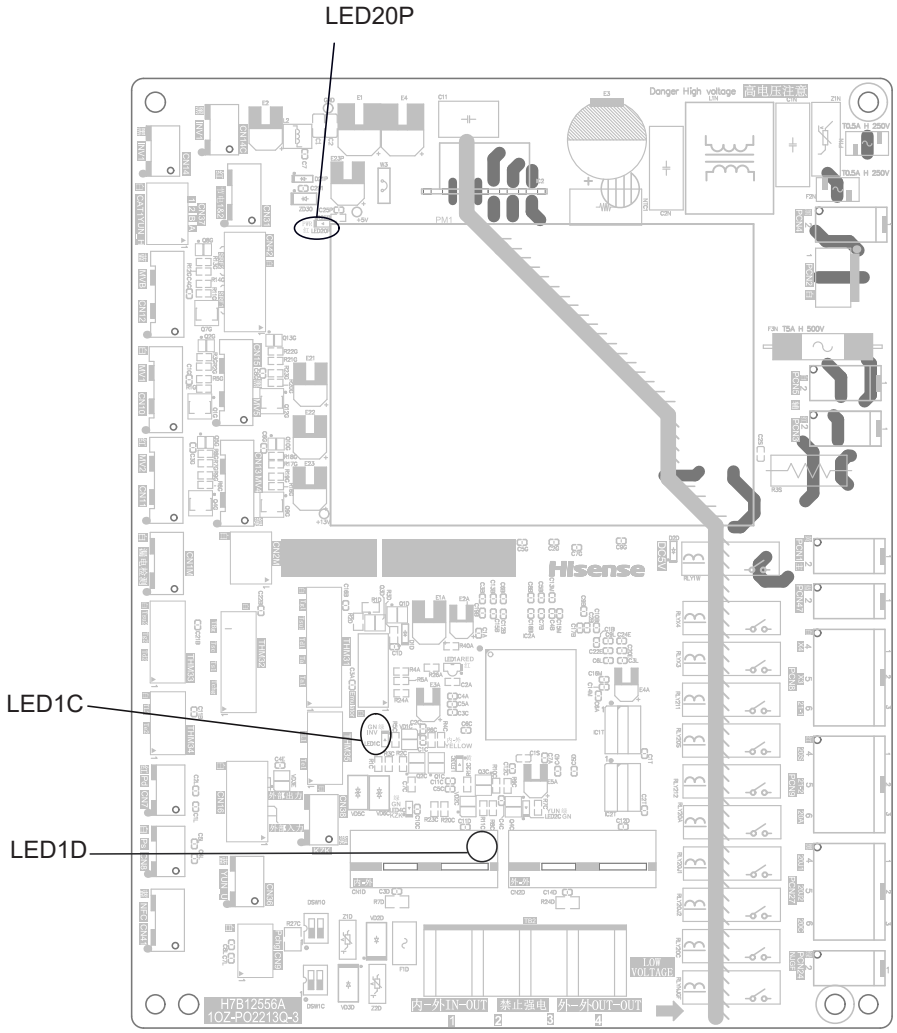


Front Side

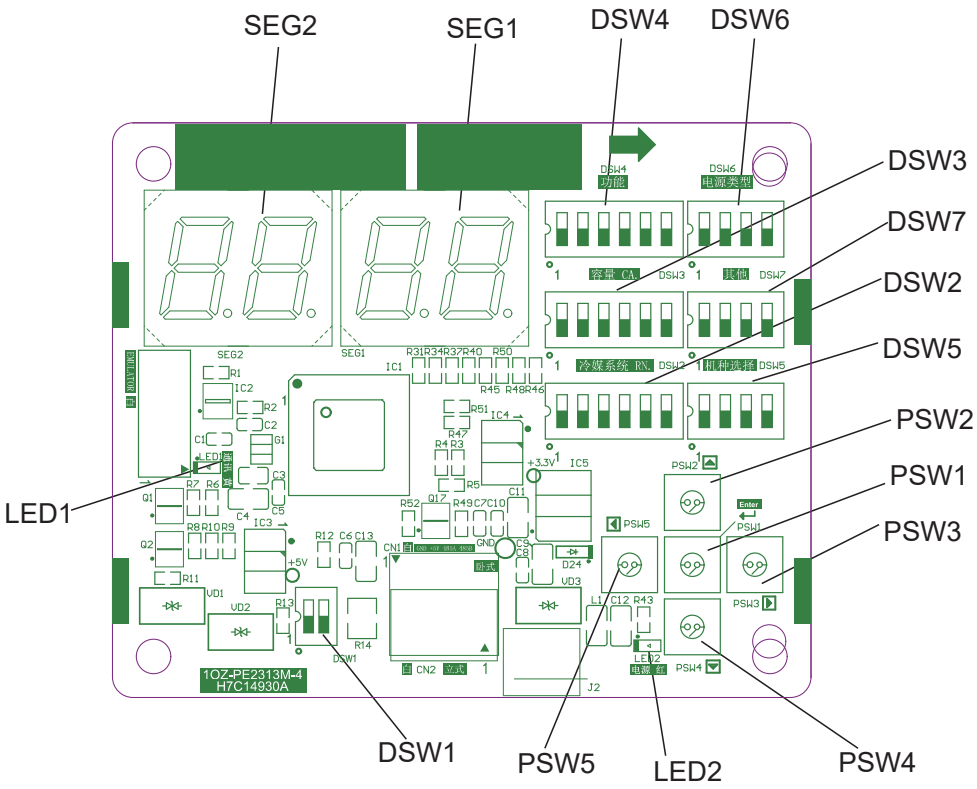
Rear Side

- LEDS and SEGS on PCB

Part Name		Contents of Functions
LEDs	LED20P	Power Supply Indication for Outdoor Unit PCB (Low Voltage) Normal Condition: Activated Abnormal Condition: Deactivated
	LED1C	This LED1C indicates the transmission state between the outdoor unit PCB and inverter PCB. Normal Condition: Flashing Abnormal Condition: Activated or Deactivated
	LED1D	This LED1D indicates the transmission state between the indoor unit and outdoor unit. Normal Condition: Flashing Abnormal Condition: Activated or Deactivated
SEGs	SEG1, SEG2	These indicate the following “Alarm”, “Protective Safety Device has Tripped” or “Checking Items”.



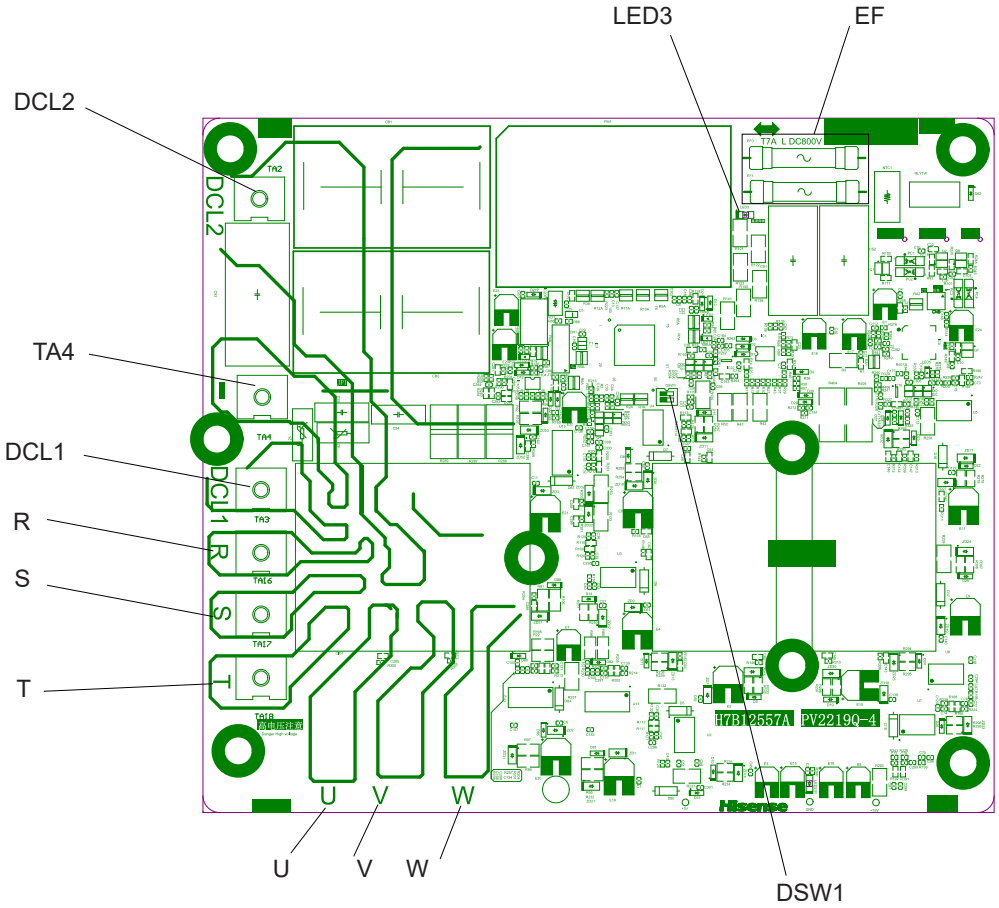
O.U. PCB



O.U. Display PCB

- Checking of Inverter PCB

<Procedure>



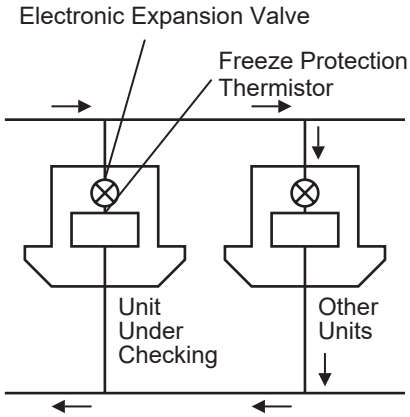
a . Check whether the high voltage still exists in the inverter PCB after power is disconnected. When the unit is operated, LED3 is turned ON on inverter PCB. At the time of power off the unit, LED3 is turned OFF.

Measure the each checking element by a tester. The checking result shall be as following table.

Tester Probe	Result
(+)DCL1, (-)R or S or T	More than 3MΩ
(+)R or S or T, (-)-	More than 3MΩ
(+)DCL2, (-)U or V or W	More than 3MΩ
(+)U or V or W, (-)-	More than 3MΩ
EF(+)(-)	Less than 1MΩ

NOTE:
The polar character of tester probes are as follows. Red(+), Black(-)

- Checking Method of Electronic Expansion Valve

	Indoor Unit Electronic Expansion Valve	Outdoor Unit Electronic Expansion Valve
Locked (Fully Closed)	Check for the liquid pipe temperature during heating operation. It is abnormal if the temperature does not increase.	It is abnormal if the liquid pipe pressure does not increase during cooling operation
Locked (Slightly Open)	It is abnormal under the following conditions; The temperature of freeze protection thermistor becomes lower than the suction air temperature when the unit under checking is stopped and the other units are in cooling operation.	It is abnormal if the liquid pipe pressure does not increase and the outlet temperature of the expansion valve decreases after the cooling operation is started.
Locked (Fully Open)		It is abnormal under the following conditions; After heating operation for more than 30 min., the discharge gas temperature of compressor is not 10°C higher than the condensing temperature and there is no other faults such as excessive charge of refrigerant, etc.

- Checking of DC Fan motor

When INV PCB is faulty and Alarm 03, 04 or 53 appears, the fan motor may also be damaged. To prevent INV PCB damage which may result from operation combined with a faulty fan motor, check also if the fan motor is not damaged when IPM is replaced.

Procedure in case of error diagnosis

(1) Remove fan motor connectors for DC fan motor from the INV PCB and turn the fan motor shaft by hand.

Normal: The fan motor shaft turns smoothly.

Faulty: No continuous rotary torque movement felt when turning the motor by hand. This occurs because the internal magnet of the fan motor breaks the movement when the internal electronic circuit of the fan motor has a short-circuit fault.

(2) Measure the fan motor resistance:

a . Disconnect the connector of DC fan motor from INV PCB.

b . Connect the black test lead wire to the pin terminal of black wiring for the connector of DC fan motor.

c . Connect the red test lead wire to each measuring pin terminal for the connector of DC fan motor.

Wiring Color for Measurement (Normal Value)			
Models	Red-Black	Red-White	White-Black
AVW-76HKDHE2	11.2Ω±10%		
AVW-96HKDHE2			
AVW-114HKDHE2			
AVW-136HKDHE2	11.8Ω±7%		
AVW-154HKDHE2			

NOTE:

If the wires are connected other way around the resistance can not be measured correctly.

It is normal when the resistance is the same or closed as the normal values in the table up.

It is abnormal if the resistance is completely different from the normal values in the table up.

(Open fault: infinity; Short-circuit fault: several Ω to several kΩ)

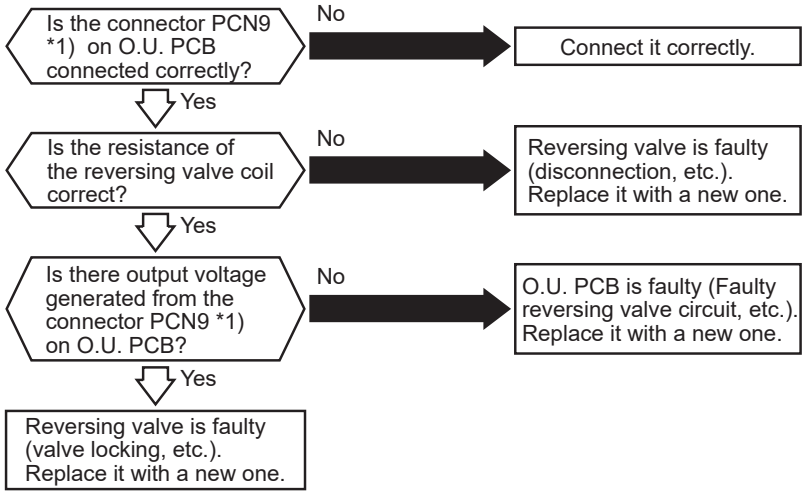
The condition of open fault and short-circuit fault in the electronic circuit of DC fan motor can be checked if the value shows abnormality.

- Checking of Electrical Coil Resistance for each Electrical Components

Parts	Type	Resistance	Unit models
Reversing Valve Coil	SQ-A2522G	2090Ω±10% at 20°C	AVW-76/96/114/136/154HKDHE2
Solenoid Valve Coil	FQ-A0522G	2085Ω±10% at 20°C	
Electronic expansion valve coil	PAM-MD12HS	100Ω±10% at 20°C	
Electronic expansion valve coil	DPFX07-294	46Ω±4Ω at 20°C	
Compressor	AA55PHDG-D1Y6	0.197Ω±0.7% at 20°C	AVW-76HKDHE2
			AVW-96HKDHE2
			AVW-114HKDHE2
	DA65PHDG-D1Y6	0.124Ω±0.7% at 20°C	AVW-136HKDHE2
	DA80PHDG-D1Y6	0.124Ω±0.7% at 20°C	AVW-154HKDHE2

- Checking of Reversing Valve

If outdoor unit does not start the heating operation or defrosting operation, there may be a malfunction of the reversing valve. The troubleshooting is indicated below.



*1)

Connector No.	Pin No.
PCN9 (O.U. PCB)	2 to 5

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