

Split type room air conditioner  
Wall-mounted type  
Inverter



# SERVICE INSTRUCTION



Indoor unit	Outdoor unit
ASYG09KMCB	AOYG09KMCBN
ASYG12KMCB	AOYG12KMCBN
ASYG14KMCB	AOYG14KMCBN

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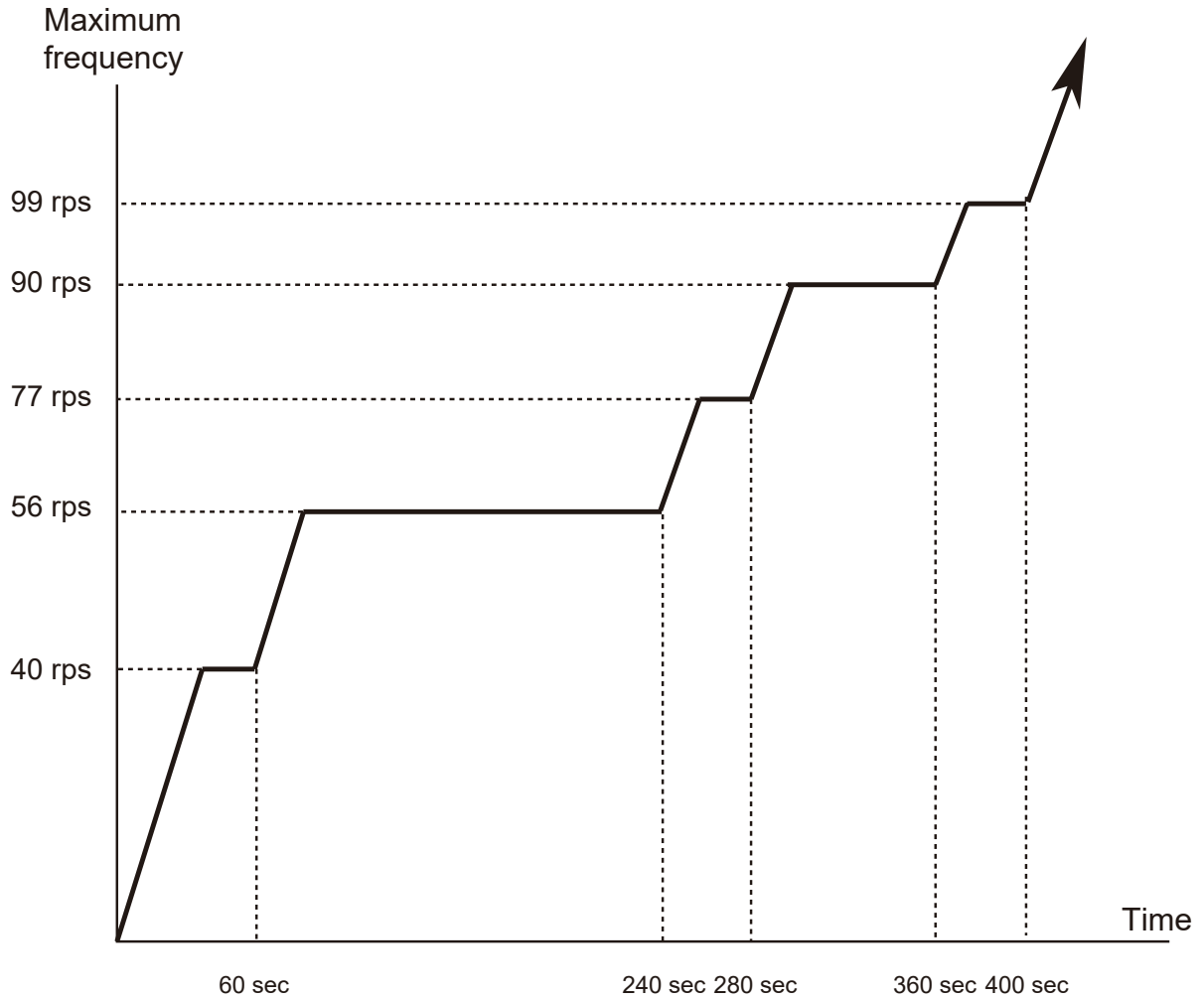
# *Wall-mounted type* **INVERTER**

## **1 . DESCRIPTION OF EACH CONTROL OPERATION**

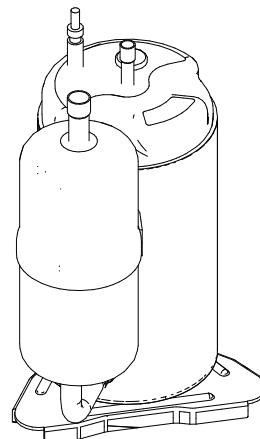
# 1. COMPRESSOR CONTROL

## 1. COMPRESSOR FREQUENCY AT NORMAL START-UP

Compressor frequency soon after starting is controlled as below.



Forced 40 rps operation  
for 60 seconds from start-up



Compressor  
SVB130FJDMC



## 2. COOLING OPEARTION

A sensor (room temperature thermistor) built in the indoor unit body will usually perceive difference or variation between set temperature and present room temperature, and controls the operation frequency of the compressor.

If the room temperature is  $2^{\circ}\text{C}$  higher than set temperature, the compressor operation frequency will attain to maximum performance.

If the room temperature is some degrees lower than set temperature, the compressor will be stopped.

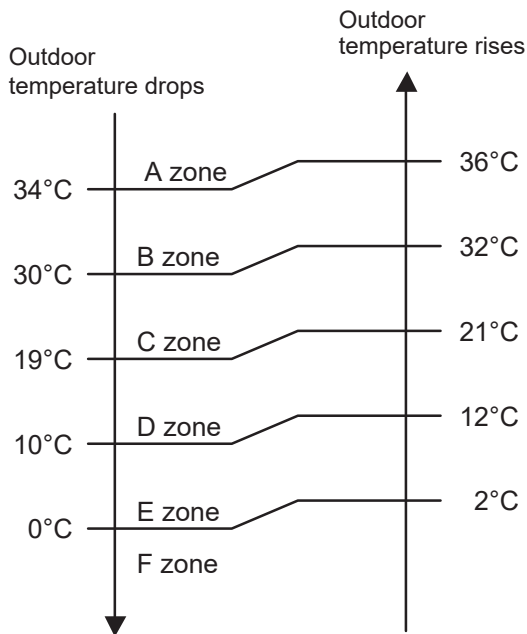
When the room temperature is between  $+2^{\circ}\text{C}$  to  $-2.5^{\circ}\text{C}$  of the set temperature, the compressor frequency is controlled within the range shown in Table 1.

However, the maximum frequency is limited in the range shown in Fig.1 based on the indoor fan mode and the outdoor temperature.

Table.1

	Minimum frequency	Maximum frequency
AOYG09KMCBN	8 rps	46 rps
AOYG12KMCBN	8 rps	68 rps
AOYG14KMCBN	8 rps	80 rps

Fig.1 Outdoor temperature zone



Limit of maximum speed based on outdoor temperature

### AOYG09KMCBN

Outdoor temp. zone	Indoor fan mode			
	Hi	Me	Lo	Quiet
A zone	46 rps	34 rps	30 rps	20 rps
B zone	46 rps	34 rps	30 rps	20 rps
C zone	46 rps	34 rps	30 rps	20 rps
D zone	36 rps	32 rps	28 rps	20 rps
E zone	36 rps	32 rps	28 rps	20 rps
F zone	36 rps	32 rps	28 rps	20 rps

### AOYG12KMCBN

Outdoor temp. zone	Indoor fan mode			
	Hi	Me	Lo	Quiet
A zone	68 rps	42 rps	36 rps	22 rps
B zone	68 rps	42 rps	36 rps	22 rps
C zone	68 rps	42 rps	36 rps	22 rps
D zone	46 rps	34 rps	28 rps	20 rps
E zone	46 rps	34 rps	28 rps	20 rps
F zone	46 rps	34 rps	28 rps	20 rps

### AOYG14KMCBN

Outdoor temp. zone	Indoor fan mode			
	Hi	Me	Lo	Quiet
A zone	80 rps	50 rps	42 rps	26 rps
B zone	80 rps	50 rps	42 rps	26 rps
C zone	80 rps	50 rps	42 rps	26 rps
D zone	58 rps	39 rps	28 rps	20 rps
E zone	58 rps	39 rps	28 rps	20 rps
F zone	58 rps	39 rps	28 rps	20 rps

### 3. HEATING OPERATION

A sensor (room temperature thermistor) built in the indoor unit body will usually perceive difference or variation between set temperature and present room temperature, and controls the operation frequency of the compressor.

If the room temperature is 3°C lower than set temperature, the compressor operation frequency will attain to maximum performance.

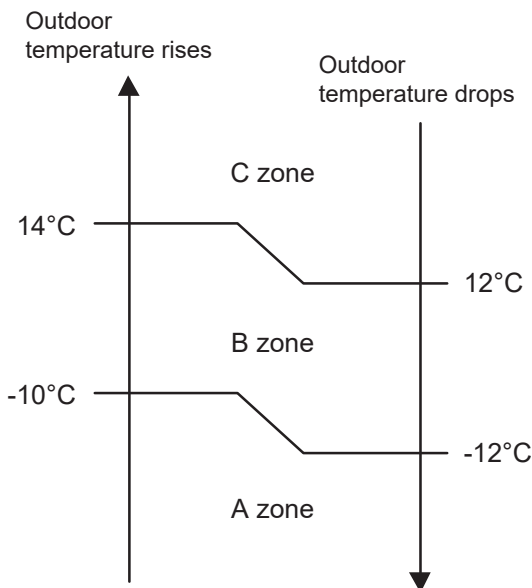
If the room temperature is some degrees higher than set temperature, the compressor will be stopped.

When the room temperature is between +2.5°C to -3°C of the set temperature, the compressor frequency is controlled within the range shown in Table 2. However, the maximum frequency is limited in the range shown in Fig.2 based on the indoor fan mode and the outdoor temperature.

Table 2

	Minimum frequency	Maximum frequency
AOYG09KMCBN	10 rps	87 rps
AOYG12KMCBN	10 rps	87 rps
AOYG14KMCBN	10 rps	102 rps

Fig.2 Outdoor temperature zone



Limit of maximum speed based on outdoor temperature

#### AOYG09KMCBN

Outdoor temp. zone	Indoor fan mode				
	Auto	Hi	Me	Lo	Quiet
C zone	87 rps	87 rps	58 rps	46 rps	39 rps
B zone	87 rps	87 rps	58 rps	46 rps	32 rps
A zone	87 rps	87 rps	58 rps	46 rps	26 rps

#### AOYG12KMCBN

Outdoor temp. zone	Indoor fan mode				
	Auto	Hi	Me	Lo	Quiet
C zone	87 rps	87 rps	68 rps	54 rps	46 rps
B zone	87 rps	87 rps	68 rps	54 rps	36 rps
A zone	87 rps	87 rps	58 rps	46 rps	32 rps

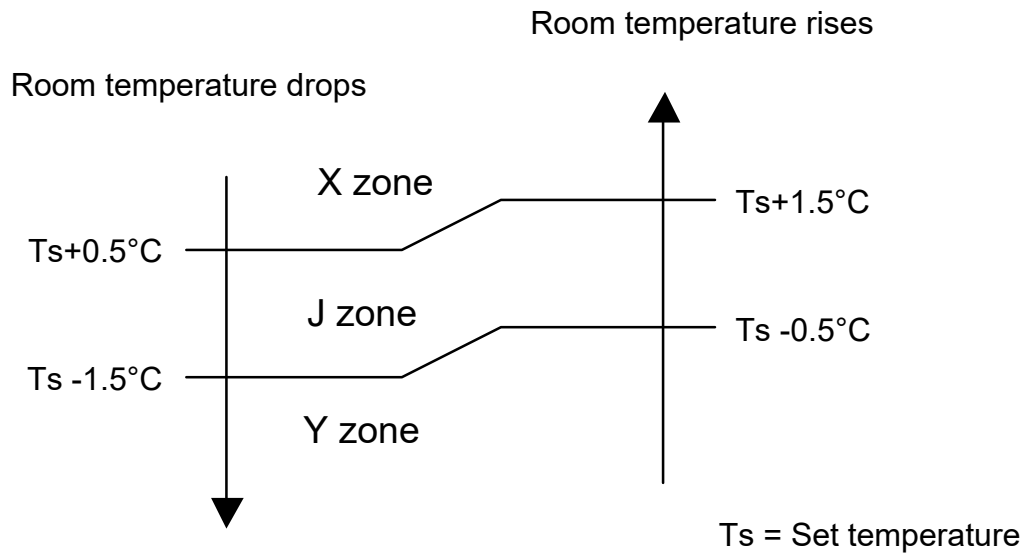
#### AOYG14KMCBN

Outdoor temp. zone	Indoor fan mode				
	Auto	Hi	Me	Lo	Quiet
C zone	102 rps	102 rps	102 rps	63 rps	54 rps
B zone	102 rps	102 rps	102 rps	63 rps	54 rps
A zone	102 rps	102 rps	102 rps	63 rps	54 rps

## 4. DRY OPERATION

In dry operation, maximum compressor frequency is defined by set temperature, and room temperature as below.

Zone is defined by set temperature and room temperature.



Maximum compressor frequency is defined by zone.

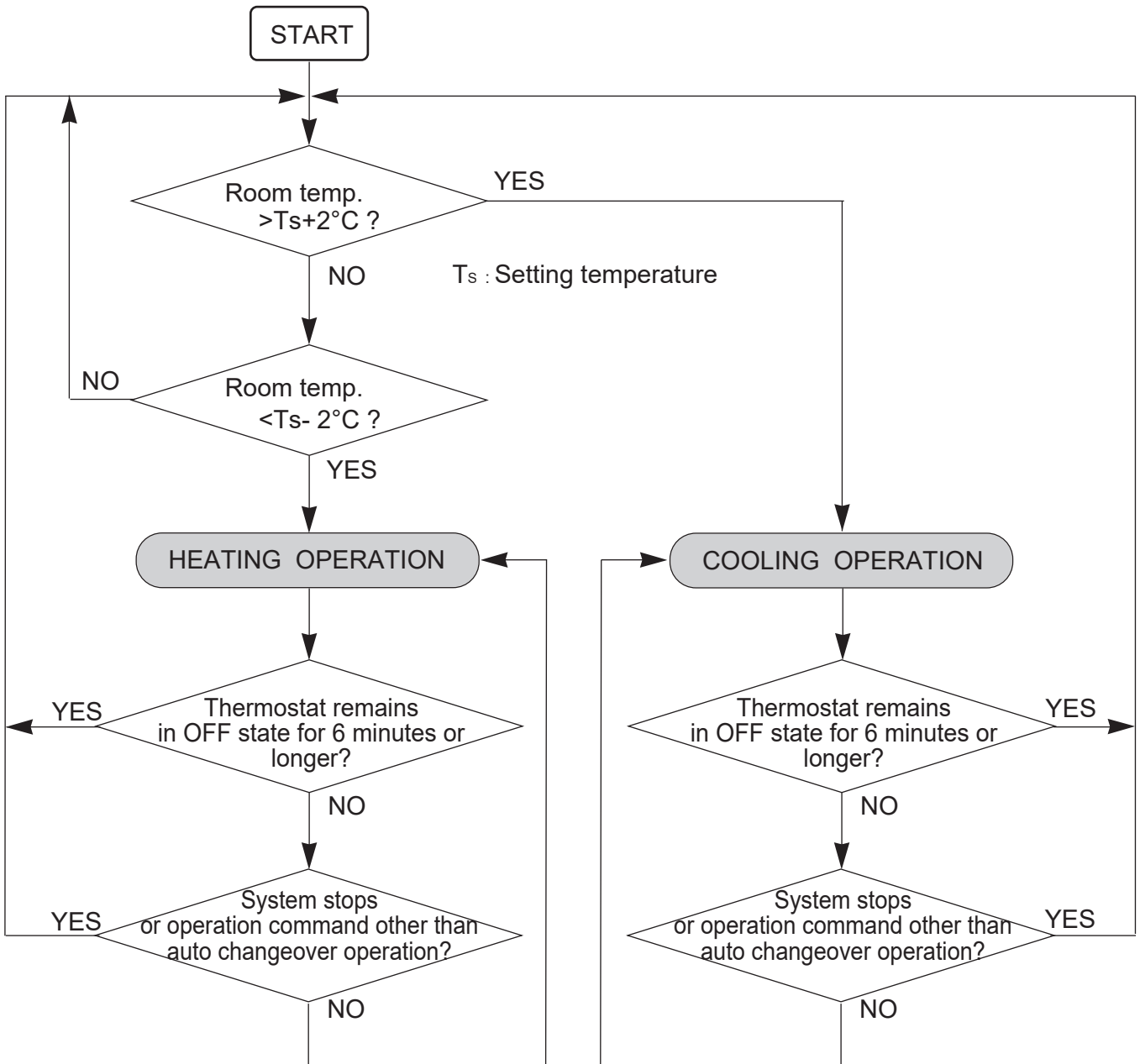
	AOYG09KMCBN	AOYG12KMCBN	AOYG14KMCBN
X zone	20 rps	22 rps	26 rps
J zone	16 rps	18 rps	18 rps
Y zone	0 rps	0 rps	0 rps

## 2. AUTO CHANGEOVER OPERATION

When air conditioner is set to AUTO mode by remote control, operation starts in the optimum mode from among heating, cooling, dry and monitoring modes.

During operation, the optimum mode is automatically switched in accordance with temperature changes.

Temperature can be set between 18°C and 30°C in 1°C steps.



### 3. INDOOR FAN CONTROL

#### 1. FAN SPEED

Indoor fan speed is defined as below.

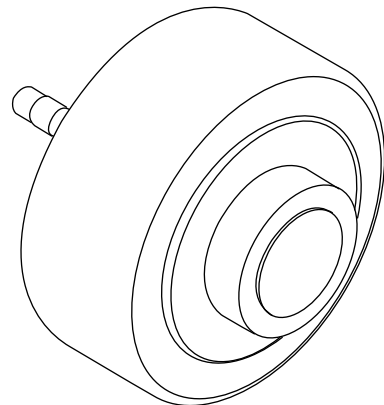
Operation mode	Air flow mode	Speed	
		ASYG09/12KMCB	ASYG14KMCB
Heating	Powerful	1,380 rpm	1,420 rpm
	Hi	1,320 rpm	1,360 rpm
	Me+	1,280 rpm	1,330 rpm
	Me	1,160 rpm	1,220 rpm
	Lo	980 rpm	1,040 rpm
	Quiet	710 rpm	770 rpm
	Cool air prevention	600 rpm	600 rpm
	S-Lo	480 rpm	480 rpm
Cooling/ Fan	Powerful	1,380 rpm	1,420 rpm
	Hi	1,320 rpm	1,360 rpm
	Me	1,160 rpm	1,220 rpm
	Lo	930 rpm	990 rpm
	Quiet	680 rpm	750 rpm
	* Soft Quiet	600 rpm	670 rpm
Dry		X zone: 680 rpm J zone: 660 rpm	X zone: 750 rpm J zone: 730 rpm

**\*Note**

During Economy operation and operation mode is Fan, air flow is 1 step downs.

(Hi > Me, Me > Lo, Lo > Quiet, Quiet > Soft Quiet)

Fan motor  
MFD-12CYBL



## 2. FAN OPERATION

Airflow can be switched in 5 steps such as Auto, Quiet, Lo, Me, Hi, while indoor unit fan only runs.

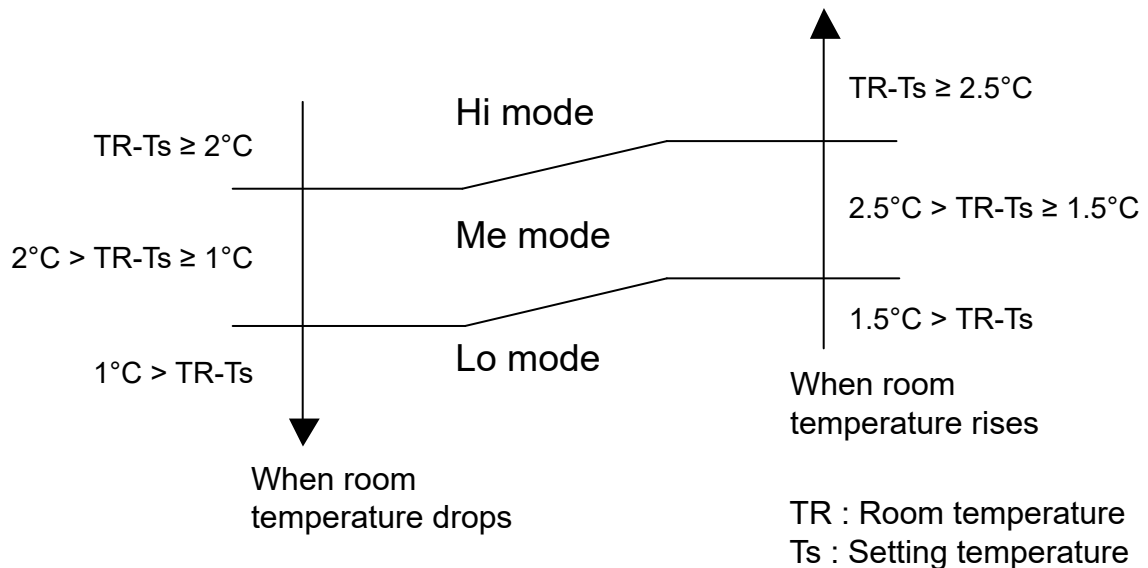
When fan mode is set at (Auto), it operates on (Me) fan speed.

## 3. COOLING OPERATION

Switch the airflow [Auto], and indoor fan motor will run according to room temperature, as below.

On the other hand, if switched in [Hi] ~ [Quiet], indoor motor will run at a constant airflow of [Cool] operation modes Quiet, Lo, Me, Hi, as the previous page.

Fig : Airflow changeover (Cooling : Auto)



## 4. DRY OPERATION

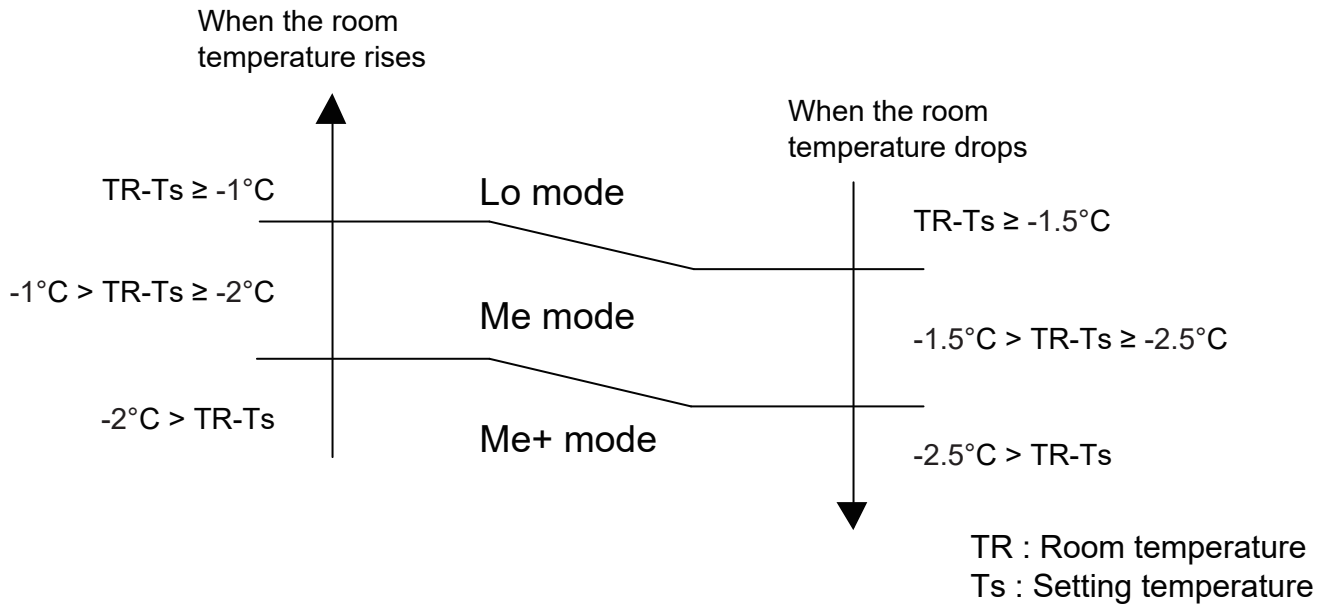
As the table in the previous page, during dry operation, fan speed setting can not be changed.

## 5. HEATING OPERATION

Switch the airflow [AUTO], and the indoor fan motor will run according to a room temperature, as below.

On the other hand, if switched in [Hi] ~ [Quiet], the indoor motor will run at a constant airflow of [Heat] operation modes Quiet, Lo, Me, Hi, as the previous page.

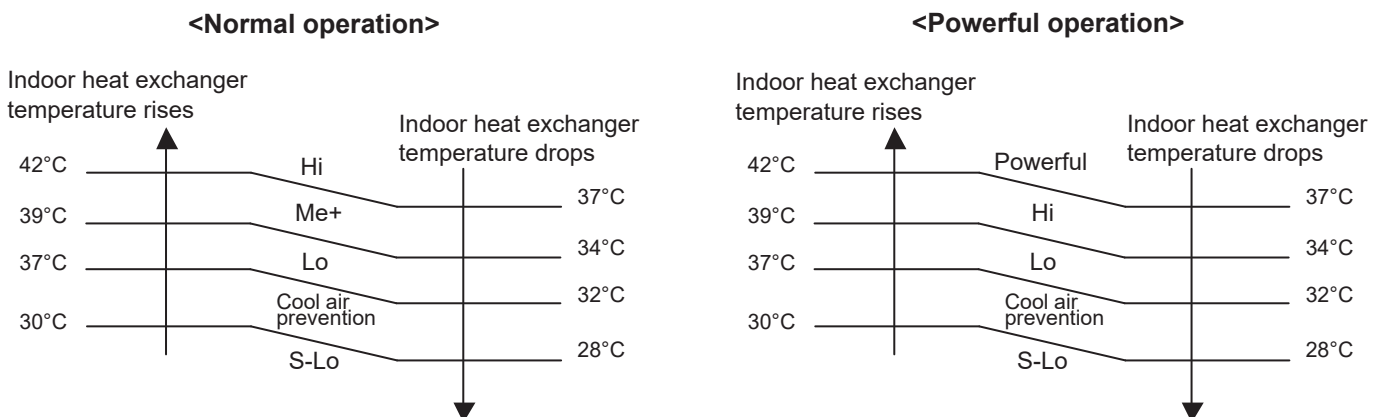
Fig : Airflow changeover (Heating : Auto)



## 6. COOL AIR PREVENTION CONTROL (HEATING MODE)

The maximum value of the indoor fan speed is set as shown in Fig. based on the detected temperature by the indoor heat-exchanger sensor on heating mode.

Fig : Cool air prevention control



## 7. MOISTURE RETURN PREVENTION CONTROL (COOLING AND DRY MODE)

Switch the airflow [Auto] at cooling mode, and the indoor fan motor will run as shown in Fig.

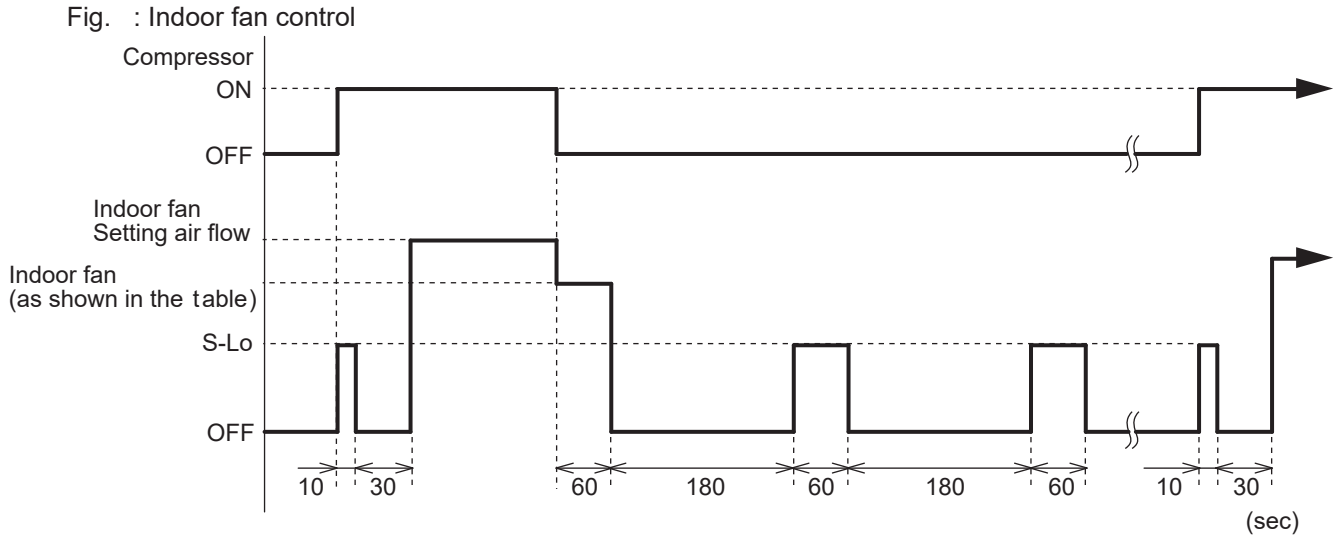


Table : Indoor fan speed

	Dry		Cooling
	X zone	J zone	
ASYG09/12KM CB	680rpm	660rpm	680rpm
ASYG14KM CB	750rpm	730rpm	750rpm

## 8. CONTROL FOR ENERGY SAVING (COOLING MODE)

Switch the airflow at cooling mode, and the indoor fan motor will run as shown in the above Fig. It depends on the Function setting "Indoor unit fan control for energy saving".

## 9. DEFROST OPERATION

When the defrost operation starts, the indoor fan runs according to cool air prevention control for 20 seconds. And the fan is stopped if 20 seconds have passed.

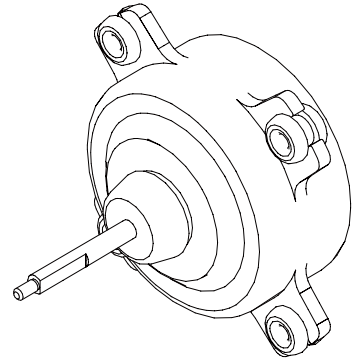
When 60 seconds have passed after defrost operation is released, the fan runs according to cool air prevention control



## 4. OUTDOOR FAN CONTROL

### 1. OUTDOOR FAN MOTOR

This outdoor unit has a DC fan motor.  
 (Control method is different between AC and DC motors.)  
 When fan motor starts to run,  
 it keeps 500 rpm for 20 seconds.

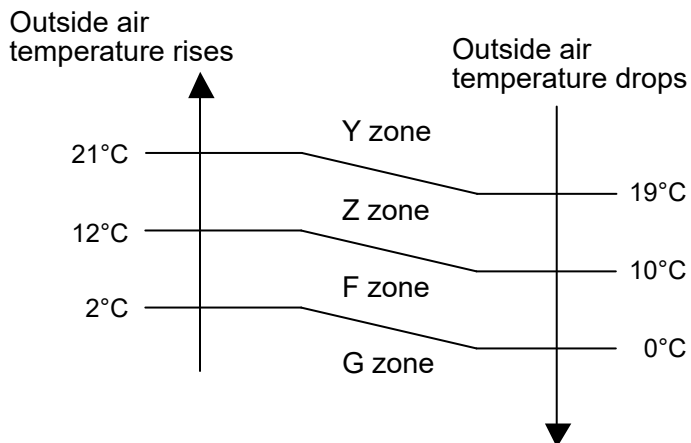


Fan motor  
MFE-S60VB2F

### 2. FAN SPEED IN COOLING AND DRY OPERATION

In cooling and dry operation, fan speed is defined  
 by outdoor temperature and compressor frequency.

#### Outside air temperature zone selection



Fan step	Y zone		Z zone Cool, Dry	F zone Cool, Dry	G zone Cool, Dry
	Cooling	Dry			
S-Hi1	1,050 rpm	-	-	-	-
Hi	1,050 rpm	-	-	-	-
9	1,050 rpm	1,050 rpm	1,050 rpm	1,050 rpm	1,050 rpm
8	1,050 rpm	1,050 rpm	1,050 rpm	1,050 rpm	1,050 rpm
7	1,030 rpm	1,030 rpm	1,030 rpm	1,030 rpm	1,030 rpm
6	870 rpm	870 rpm	870 rpm	870 rpm	870 rpm
5	770 rpm	770 rpm	770 rpm	770 rpm	770 rpm
4	630 rpm	630 rpm	630 rpm	630 rpm	630 rpm
3	510 rpm	510 rpm	510 rpm	510 rpm	510 rpm
2	400 rpm	400 rpm	400 rpm	400 rpm	400 rpm
1	400 rpm	400 rpm	400 rpm	400 rpm	400 rpm

### 3. FAN SPEED IN HEATING OPERATION

In heating operation, fan speed is defined by compressor frequency.

Fan step	Fan speed
S-Hi2	1,100 rpm
S-Hi1	1,100 rpm
Hi	1,100 rpm
10	1,100 rpm
9	1,100 rpm
8	850 rpm
7	760 rpm
6	670 rpm
5	510 rpm
4	470 rpm
3	420 rpm
2	420 rpm
1	420 rpm

## 5. LOUVER CONTROL

### 1. VERTICAL LOUVER CONTROL

Whenever button is pressed, air direction will change as below.



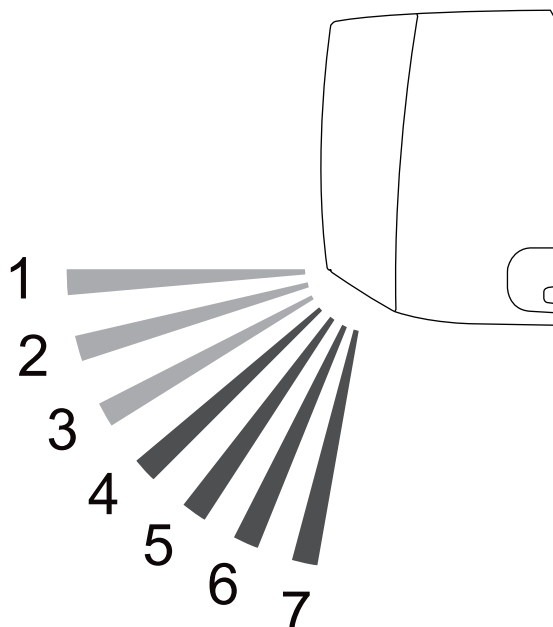
Remote control display is not changed.

- When you set the angle to position 4.7 for more than 30 minutes in cooling or dry operation, they automatically return to position 3.  
In cooling or dry operation, when the angle is set to position 4.7 for many hours, condensation may be formed, and the drips may wet your property.
- Use the air direction adjustments within the ranges shown above.
- Vertical airflow direction is set automatically as shown, in accordance with the type of operation selected.

Cooling / Dry mode : Horizontal flow ①  
Heating mode : Downward flow ⑦

- During AUTO or Heating mode operation, for the first a few minutes after beginning operation, air-flow will be horizontal 1; the air direction cannot be adjusted during this period.  
The air flow direction setting will temporarily become 1 when the temperature of the air -flow is low at the start of the Heating mode.

Fig. : Air direction range



## 2. SWING OPERATION

When swing signal is received from remote control, vertical louver starts to swing.

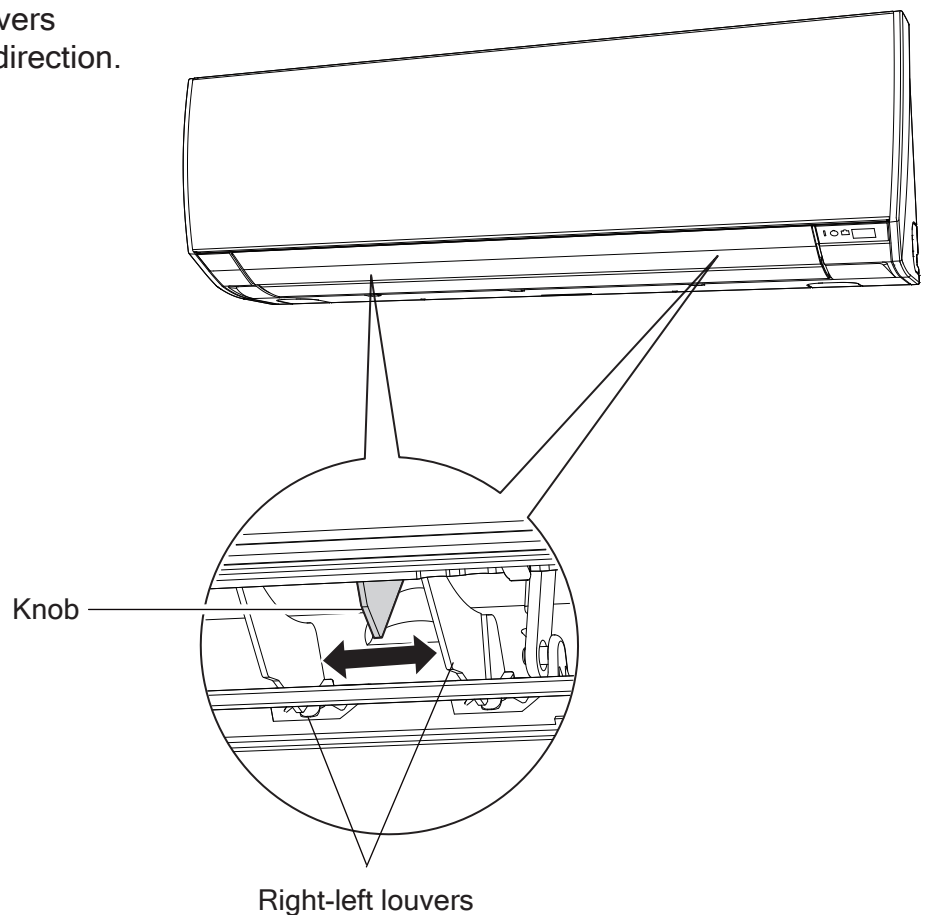
Table : Swinging range

	Range
Cooling / Dry mode Fan mode (① ~ ③)	① ⇔ ③
Heating mode Fan mode (④ ~ ⑦)	④ ⇔ ⑦

- The SWING operation may stop temporarily when the air conditioner's fan is not operating, or when operating at very low speeds.

## 3. ADJUST RIGHT-LEFT LOUVERS

You can move right-left louvers manually to adjust air flow direction.

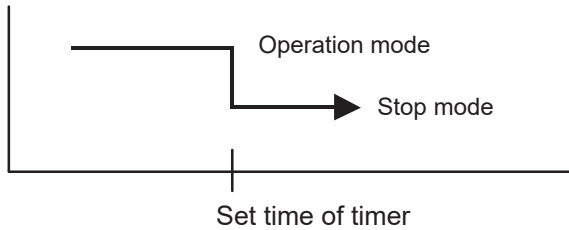


## 6. TIMER OPERATION CONTROL

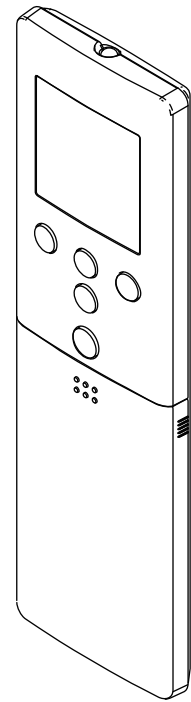
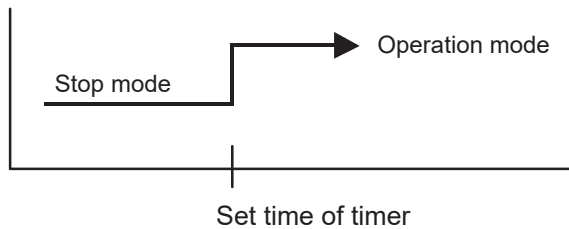
### 6-1 WIRELESS REMOTE CONTROL

#### 1. OPERATION FREQUENCY RANGE

- OFF timer :  
When clock reaches set time,  
air conditioner will be turned off.



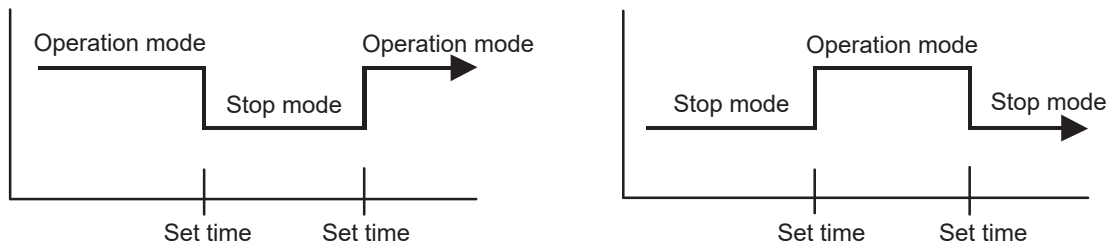
- ON timer :  
When clock reaches set time,  
air conditioner will be turned on.



Wireless remote control

#### 2. PROGRAM TIMER

Program timer allows OFF timer and ON timer to be used in combination one time.



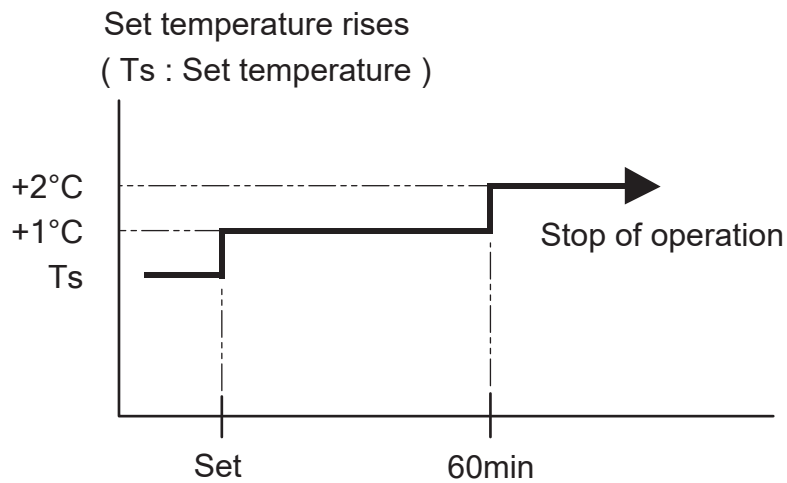
- Operation will start from the timer setting (either OFF timer or ON timer) whichever is closest to the clock's current timer setting.  
The order of operations is indicated by the arrow in the remote control unit's display.
- SLEEP timer operation cannot be combined with ON timer operation.

### 3. SLEEP TIMER

When sleep is set, room temperature is monitored and operation is stopped automatically. When operation mode or set temperature is changed after the sleep timer is set, operation is continued according to the changed setting of the sleep timer from that time ON.

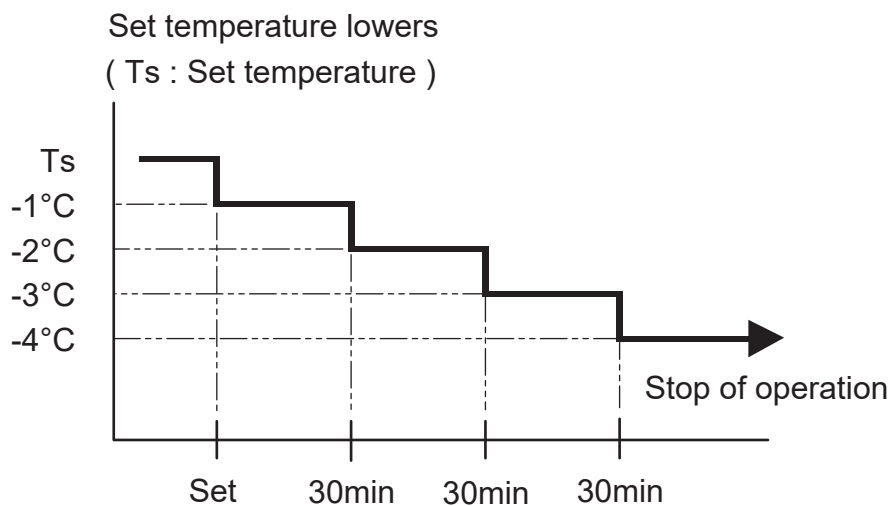
#### In cooling operation

When sleep timer is set, the set temperature is increased 1°C. It increases the setting temperature another 1°C after 1 hour. After that, the set temperature is not changed and the operation is stopped at the time of timer setting.



#### In heating operation

When the sleep timer is set, the set temperature is decreased 1°C. It decreases the set temperature another 1°C every 30 minutes. Upon lowering 4°C, the set temperature is not changed and the operation stops at the time of timer setting.



## 7. DEFROST OPERATION CONTROL

### 1. CONDITION OF STARTING DEFROST OPERATION

Defrost operation starts when outdoor heat-exchanger temperature sensor (Tn) detects the temperature lower than the values shown below.

Ta : Outdoor temperature

#### 1st time defrosting after starting operation

Compressor integrating operation time	Less than 22 min.	22 to 62 min.	More than 62 min.
Condition	(Does not operate)	$T_n \leq -9^\circ\text{C}$ and $T_n - T_a \geq 5\text{deg}$	$T_n \leq -5^\circ\text{C}$

#### 2nd time and after

Compressor integrating operation time	Less than 40 min.	More than 40min.
Condition	(Does not operate)	When $T_a \geq -10^\circ\text{C}$ $T_n \leq -17^\circ\text{C}$ <hr style="border-top: 1px dashed black;"/> When $T_a < -10^\circ\text{C}$ ① $T_n \leq -20^\circ\text{C}$ ② $T_n \leq T_a - 7^\circ\text{C}$ ③ $T_n - T_{n10} < -5^\circ\text{C}$ (and $T_n \leq -6^\circ\text{C}$ ) ④ $T_n - T_{nb} < -2^\circ\text{C}$ (and $T_n \leq -6^\circ\text{C}$ )

Tn10 : Temperature of continuous operation at 10minutes.

Tnb : Back 5minutes temperature

#### Integrating defrost (Constant monitoring)

Compressor integrating operation time	More than 240 min. (For long continuous operation)	More than 213 min. (For long continuous operation)	Less than 10min.*1 (For intermittent operation)
Condition	- 3°C	- 5°C	OFF count of the compressor 40 times.

\*1 : If the compressor continuous operation time is less than 10 minutes, the OFF number of the compressor is counted.

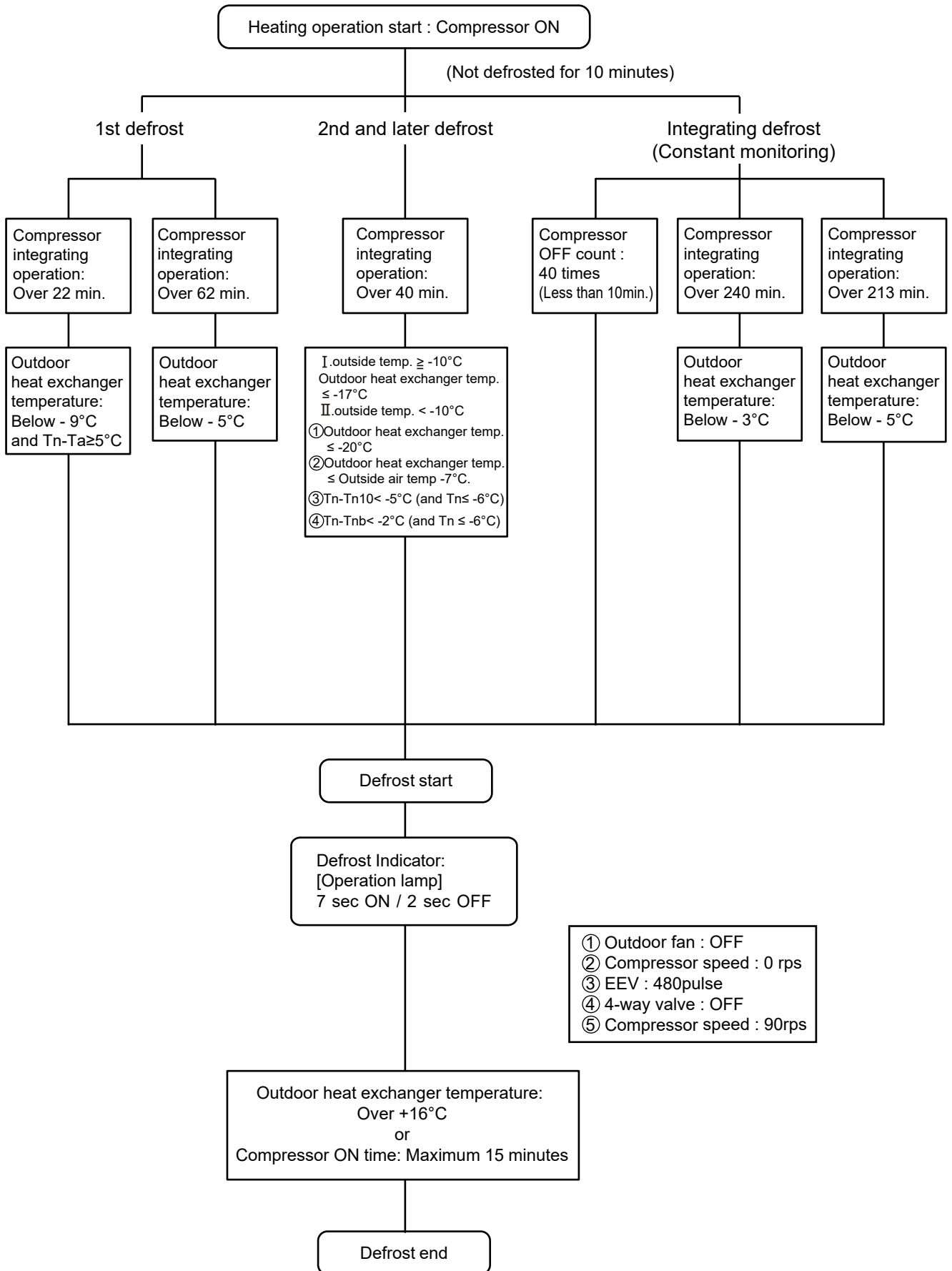
If any defrost operated, the compressor OFF count is cleared.

### 2. CONDITION OF DEFROST OPERATION COMPLETION

Defrost operation is released when outdoor heat-exchanger temperature sensor value is higher than 16°C or compressor operation time has passed 15 minutes.

### 3. DEFROST FLOWCHART

The defrosting shall proceed by the integrating operation time, outdoor temperature and outdoor heat exchanger temperature as follows.





## 8. OFF DEFROST OPERATION CONTROL

If the outdoor unit is frosted when stopping the heating operation, it stops after performing the automatic defrosting operation.

In this time, if indoor unit operation lamp flashes slowly (7 sec ON / 2 sec OFF), outdoor unit will allow heat-exchanger to defrost, and then stop.

### 1. OFF DEFROST OPERATION CONDITION

In heating operation, the outdoor heat-exchanger temperature is less than  $-4^{\circ}\text{C}$ , compressor continuous operation more than 10 minutes, and compressor operation integrating time lasts for more than 30 minutes.

### 2. OFF DEFROST END CONDITION

Defrost operation is released when outdoor heat-exchanger temperature rises  $16^{\circ}\text{C}$  or when 15 minutes has passed from defrost start.

## 9. VARIOUS CONTROL

### 1. ELECTRONIC EXPANSION VALVE CONTROL

The most proper opening of the electronic expansion valve is calculated and controlled under the present operating condition based on the table.

The compressor frequency, the temperatures detected by the discharge temperature sensor, the indoor heat exchanger sensor, the outdoor heat exchanger sensor, and the outdoor temperature sensor.

Table :

The pulse range of the electronic expansion valve control

Operation mode	Pulse range
Cooling / Dry mode	between 12 and 480 pulses.
Heating mode	between 0 and 480 pulses.

- \* The expansion valve is set at 480 pulses 110 seconds after compressor stopped.
- \* At the time of supplying the power to the outdoor unit, the initialization of the electronic expansion valve is operated (528 pulses are input to the closing direction).

### 2. TEST OPERATION CONTROL

Outdoor unit, may not operate, depending on room temperature.

In this case, keep on pressing the MANUAL AUTO button of indoor unit for more than 10 seconds.

Operation indicator lamp and timer indicator lamp will begin to flash simultaneously during cooling test run.

Then, heating test run will begin in about 3 minutes when HEAT is selected by remote control operation.

To end test operation, press remote control START/STOP button.

### 3. PREVENTION TO RESTART FOR 3 MINUTES (3 MINUTES ST)

Compressor won't enter operation status for 140 seconds after compressor is stopped, even if any operation is given.

### 4. 4-WAY VALVE EXTENSION SELECT

When air conditioner is switched from cooling mode to heating mode, compressor is stopped, and 4-way valve is switched in 140 seconds later after the compressor stopped.

## 5. AUTO RESTART

When the power was interrupted by a power failure, etc. during operation, the operation contents at that time are memorized and when power is recovered, operation is automatically started with the memorized operation contents.

When the power is interrupted and recovered during timer operation, since the timer operation time is shifted by the time the power was interrupted, an alarm is given by blinking (7 sec ON/2 sec OFF) the indoor unit body timer lamp.

[ Operation contents memorized when the power is interrupted ]

- Operation mode
- Set temperature
- Set air flow
- Timer mode and set time (set by wireless remote controller)
- Set air flow Direction
- Swing
- ECONOMY operation
- 10°C HEAT operation
- Outdoor low noise operation

## 6. MANUAL AUTO OPERATION (Indoor unit body operation)

When remote control is lost or battery power dissipated, this function will work without remote control.

When MANUAL AUTO button is set more than 3seconds and less than 10seconds, MANUAL AUTO OPERATION will be started as shown below.

To stop operation, press the MANUAL AUTO button for 3seconds.

OPERATION MODE	Auto changeover
FAN CONT. MODE	Auto
TIMER MODE	Continuous (No timer setting available)
SETTING TEMP.	24°C
SETTING LOUVER	Standard
SWING	OFF
ECONOMY	OFF

## 7. FORCED COOLING OPERATION (TEST OPERATION)

When FORCED COOLING OPERATION is set, the operation is controlled as shown below.

OPERATION MODE	Cooling
FAN CONT. MODE	Hi
TIMER MODE	-
SETTING TEMP.	Room Temp is not controlled
SETTING LOUVER	Horizontal (It is changed follow as setting of remote control)
SWING	OFF
ECONOMY	-

- Forced cooling operation is started when press MANUAL AUTO button for 10 seconds or more.
- During the forced cooling operation, it operates regardless of room temperature sensor.
- Operation LED and timer LED blink at the same time during the forced cooling operation.  
They blink for 1 second ON and 1 second OFF on both operation LED and timer LED (same as test operation).
- Forced cooling operation is released after 60 minutes of starting operation or pressing MANUAL AUTO button for 3 seconds.

## 8. COMPRESSOR PREHEATING

When the outdoor heat exchanger temperature is lower than 5°C and the all operation has been stopped for 30 minutes, power is applied to the compressor and the compressor is heated.  
(By heating the compressor, warm air is quickly discharged when operation is started.)  
When operation was started and when the outdoor temperature rises to 7°C or greater, preheating is ended.

## 9. 10°C HEAT OPERATION

10°C HEAT operation performs as below when pressing 10°C HEAT button or Weekly timer setting on the remote controller.

Mode	Heating
Setting temperature	10°C
Fan mode	Auto
LED display	Economy
Defrost operation	Operate as normal

## 10. ECONOMY OPERATION

The ECONOMY operation functions by pressing ECONOMY button on the remote controller.  
At the maximum output, ECONOMY Operation is approximately 70% of normal air conditioner operation for cooling and heating.  
The ECONOMY operation is almost the same operation as below settings.

Mode	Cooling/ Dry	Heating
Target temperature	Setting temp.+1°C	Setting temp.-1°C

## 11. OUTDOOR UNIT LOW NOISE OPERATION

This function works by pressing OUTDOOR UNIT LOW NOISE button on remote control.  
This operation stops the PFC control, and changes the Current release operation/release value.  
OUTDOOR UNIT LOW NOISE Operation mode can be used during cooling, heating and automatic operation.  
It can not be used in Fan and Dry mode

	Control / Release
Current release operation/release value	3.5A / 3.0A

## 12. POWERFUL OPERATION

POWERFUL OPERATION functions by pressing POWERFUL button on remote control.  
Indoor unit and outdoor unit will operate at the maximum power.

COMPRESSOR FREQUENCY	Maximum
FAN CONT. MODE	Powerful
SETTING LOUVER	Cooling/ Dry : 3, Heating : 6

Release condition is as follows.

### [Cooling / Dry]

Room temperature  $\leq$  Set temperature - 1.5°C  
or Operation time has passed 20 minutes.

### [Heating]

Room temperature  $\geq$  Set temperature + 1.5°C  
and Operation time has passed 20 minutes.

## 10.VARIOUS PROTECTIONS

### 1. DISCHARGE GAS TEMPERATURE OVERRISE PREVENION CONTROL (Discharge release)

Discharge gas temperature sensor (discharge thermistor : outdoor side) will detect discharge gas temperature.

When discharge temperature becomes higher than 104°C, compressor frequency is decreased 20rps, and it continues to decrease the frequency for 20rps every 120 seconds until temperature becomes lower than 101°C.

When discharge temperature becomes lower than 101°C, control of compressor frequency is released.

When discharge temperature becomes higher than 110°C, compressor is stopped and the indoor unit LED starts blinking.

## 2. CURRENT RELEASE CONTROL

Compressor frequency is controlled so that the outdoor unit input current does not exceeds current limit value that was set up with outdoor temperature. Compressor frequency returns to the designated frequency of indoor unit at the time when the frequency becomes lower than the release value.

Current release operation value / Release value

OT : Outdoor temperature

### Heating operation

AOYG09KMCBN		AOYG12KMCBN		AOYG14KMCBN	
OT	Control / Release	OT	Control / Release	OT	Control / Release
17°C	7.0A / 6.5A	17°C	7.0A / 6.5A	17°C	7.0A / 6.5A
12°C	8.0A / 7.5A	12°C	9.0A / 8.5A	10°C	9.0A / 8.5A
5°C	8.0A / 7.5A	5°C	9.5A / 9.0A	5°C	10.0A / 9.5A
	8.0A / 7.5A		9.5A / 9.0A		10.0A / 9.5A

### Cooling, Dry operation

AOYG09KMCBN		AOYG12KMCBN		AOYG14KMCBN	
OT	Control / Release	OT	Control / Release	OT	Control / Release
50°C	4.5A / 4.0A	50°C	4.5A / 4.0A	50°C	4.5A / 4.0A
46°C	4.5A / 4.0A	46°C	4.5A / 4.0A	46°C	4.5A / 4.0A
40°C	4.5A / 4.0A	40°C	6.0A / 5.5A	40°C	6.0A / 5.5A
12°C	5.5A / 5.0A	12°C	6.5A / 6.0A	12°C	8.5A / 8.0A
2°C	5.5A / 5.0A	2°C	6.5A / 6.0A	2°C	8.5A / 8.0A
	5.5A / 5.0A		6.5A / 6.0A		8.5A / 8.0A



# ***WALL-MOUNTED type INVERTER***

## **2 . TROUBLESHOOTING**



# 1. ERROR DISPLAY

## 1. INDOOR UNIT DISPLAY

When you use a wireless remote control, lamp on the photo detector unit will output error codes by way of blinking patterns.  
When you use a wired remote control, error codes will appear on remote control display.  
See lamp blinking patterns and error code table.  
Error display is displayed only during operation.



OPERATION indicator (green)

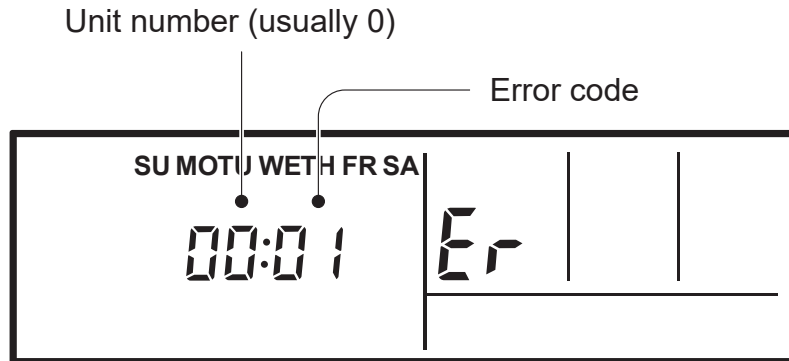
TIMER indicator (orange)

ECONOMY indicator (green)

## 2. WIRED REMOTE CONTROL DISPLAY (OPTION)

### 1. SELF - DIAGNOSIS

When " Er " in Temperature Display is displayed, inspection of the air conditioning system is necessary. Please consult authorized service personnel.



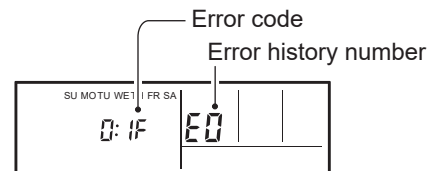
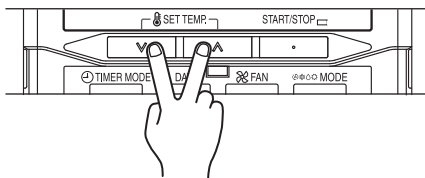
ex. Self-diagnosis check

### 2. ERROR CODE HISTORY DISPLAY

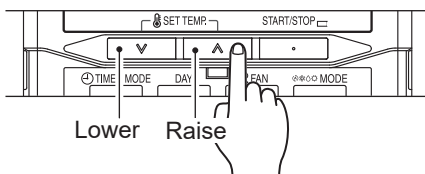
Up to 16 memorized error codes may be displayed for the indoor unit connected to the remote control.

1. Stop the air conditioner operation.

2. Press the SET TEMPERATURE buttons  $\nabla$ ,  $\blacktriangle$  simultaneously for 3 seconds or more to start the self-diagnosis.



3. Press the SET TEMPERATURE button to select the error history number.



0 ↔ 1 ↔ 2 ↔ 3 ↔ 4 ↔ 5 ↔ 6 ↔ 7  
F ↔ E ↔ d ↔ c ↔ b ↔ A ↔ 9 ↔ 8

4. Press the SET TEMPERATURE buttons  $\nabla$ ,  $\blacktriangle$  simultaneously for 3 seconds or more or there is no key input for 60 seconds to stop the display.

### 3. ERROR CODE TABLE

Please refer the flashing pattern as follows.

The OPERATION, TIMER and ECONOMY indicators operate as follows according to the error contents.

Error Contents	Indoor Unit Display			Wired Remote Control Display	Trouble shooting
	OPERATION [ I ] (Green)	TIMER [ ☺ ] (Orange)	ECONOMY [ 🌿 ] (Green)		
Serial communication error	1 times	1 times	Continuous	11	1
Wired remote control communication error	1 times	2 times	Continuous	12	2
Indoor unit model information error EEPROM access abnormal	3 times	2 times	Continuous	32	3
Manual auto switch error	3 times	5 times	Continuous	35	4
Indoor room thermistor error	4 times	1 times	Continuous	41	5
Indoor heat Ex. thermistor error	4 times	2 times	Continuous	42	6
Indoor unit fan motor error	5 times	1 times	Continuous	51	7
Outdoor unit main PCB error	6 times	2 times	Continuous	62	8
PFC circuit error	6 times	4 times	Continuous	64	9
IPM error	6 times	5 times	Continuous	65	10
Discharge thermistor error	7 times	1 times	Continuous	71	11
Heat Ex. liquid outlet thermistor error	7 times	3 times	Continuous	73	12
Outdoor thermistor error	7 times	4 times	Continuous	74	13
Current sensor error	8 times	4 times	Continuous	84	14
Over current error	9 times	4 times	Continuous	94	15
Compressor control error	9 times	5 times	Continuous	95	16
Outdoor unit fan motor error	9 times	7 times	Continuous	97	17
4 Way valve error	9 times	9 times	Continuous	99	18
Discharge temp. error	10 times	1 times	Continuous	A1	19

## 2. TROUBLESHOOTING WITH ERROR CODE

### Troubleshooting 1-1

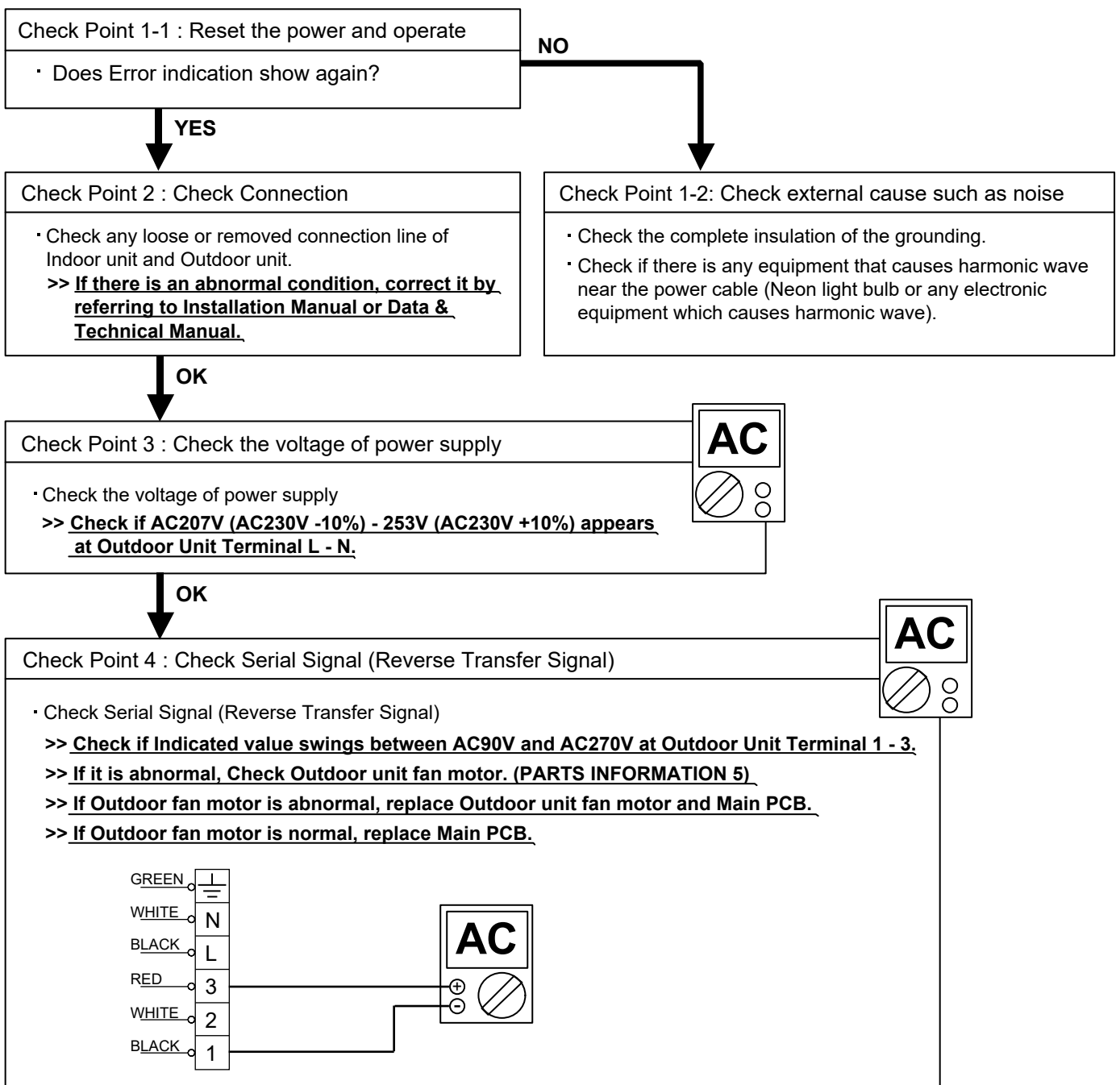
#### Serial communication error (Serial reverse transfer error)

OUTDOOR UNIT Error Method:

<b>Detective actuators:</b> Outdoor unit main PCB Outdoor unit fan motor	<b>Detective details:</b> When the indoor unit cannot receive the serial signal from Outdoor unit more than 2minutes after power ON, or the indoor unit cannot receive the serial signal more than 15seconds during normal operation.
--	--

Forecast of cause:

1. Connection failure
2. External cause
3. Main PCB failure
4. Outdoor unit fan motor failure



# Troubleshooting 1-2

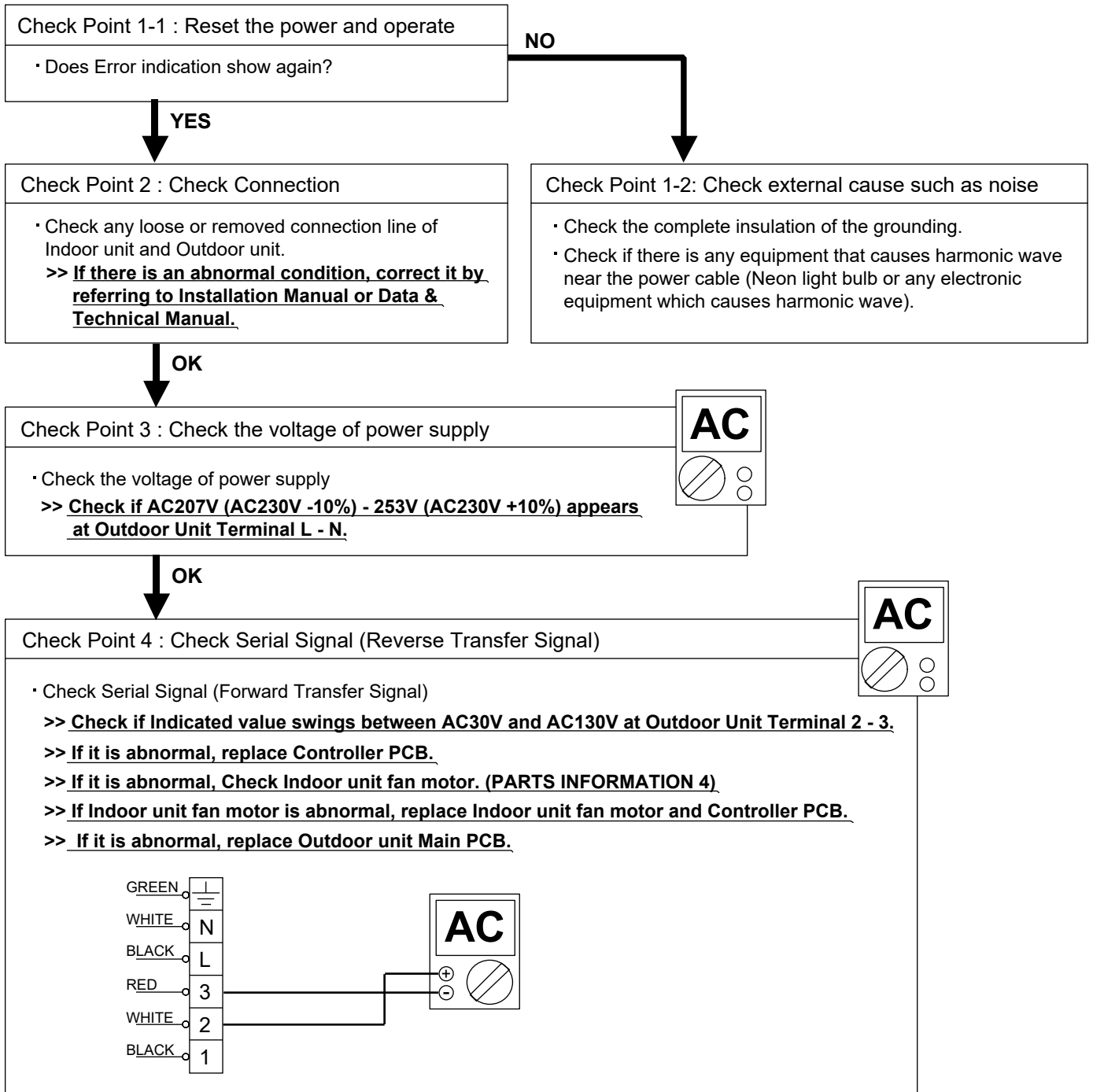
## Serial communication error (Serial forward transfer error)

INDOOR UNIT Error Method:

<p>Detective Actuators:</p> <ul style="list-style-type: none"> <li>Indoor unit Controller PCB</li> <li>Indoor unit Fan motor</li> <li>Outdoor unit Main PCB</li> </ul>	<p>Detective details:</p> <p>When the outdoor unit cannot receive the serial signal from Indoor unit more than 10seconds.</p>
--	---

### Forecast of cause:

1. Connection failure
2. External cause
3. Controller PCB failure
4. Indoor unit fan motor failure
5. Outdoor unit Main PCB



# Troubleshooting 2

## Remote control communication error

INDOOR UNIT Error Method:


<b>Detective actuators:</b> Indoor unit controller PCB Wired remote control	<b>Detective details:</b> When the indoor unit cannot receive the signal from Wired Remote Control more than 1minute during normal operation.
---	--

### Forecast of cause:

1. Terminal connection abnormal
2. Wired remote control failure
3. Controller PCB failure

<b>Check Point 1 : Check the connection of terminal</b>
<u>After turning off the power, check &amp; correct the followings.</u> · Check the connection of terminal between remote control and Indoor unit, and check if there is a disconnection of the cable.



<b>Check Point 2 : Check remote control and controller PCB</b>	
· Check Voltage at CNC01 (terminal 1-3) of UTY-XCBXZ2 (Communication kit). (Power supply to Remote Control) >> If it is DC13V, Remote Control is failure. (Controller PCB is normal) >> Replace Remote Control >> If it is DC 0V, Controller PCB is failure. (Check Remote Control once again) >> Replace Controller PCB <b>▶ <u>Upon correcting the removed connector or mis-wiring, reset the power.</u></b>	

# Troubleshooting 3

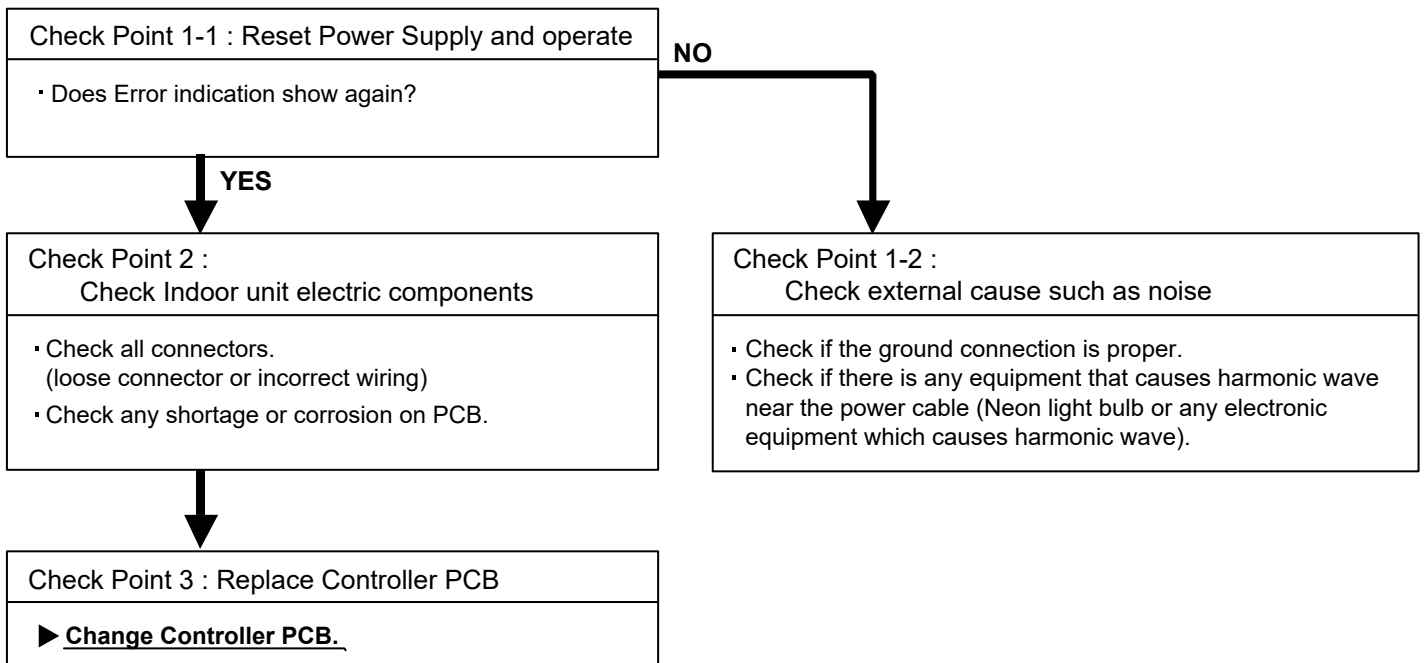
## Indoor unit main PCB error

INDOOR UNIT Error Method:

Detective actuators: Indoor unit controller PCB	Detective details: When power is on and there is some below case. 1. When model information of EEPROM is incorrect. 2. When the access to EEPROM failed.
--	---

### Forecast of cause:

1. External cause
2. Defective connection of electric components
3. Controller PCB failure



### **Note : EEPROM**

EEPROM(Electronically Erasable and Programmable Read Only Memory) is a non-volatile memory which keeps memorized information even if power is turned off. It can change the contents electronically. To change the contents, it uses higher voltage than normal, and it can not change a partial contents. (Rewriting shall be done upon erasing the all contents.) There is a limit in a number of rewriting.

# Troubleshooting 4

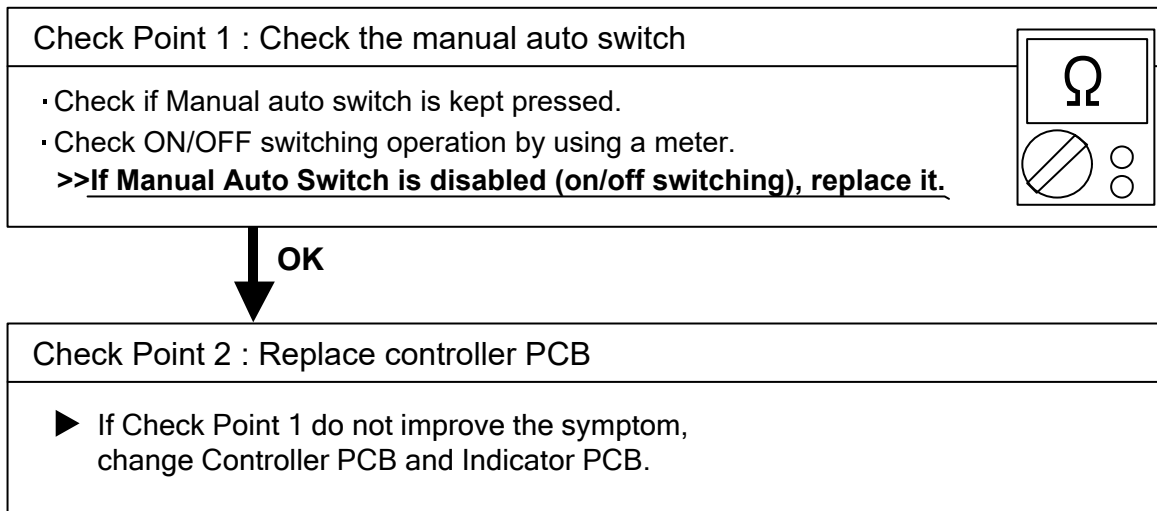
## Manual auto switch error

INDOOR UNIT Error Method:

<b>Detective actuators:</b> Indoor unit controller PCB Indicator PCB Manual auto switch	<b>Detective details:</b> When the Manual Auto Switch becomes ON for consecutive 60 or more seconds.
--	---

### Forecast of cause :

1. Manual auto switch failure
2. Controller PCB and Indicator PCB failure





# Troubleshooting 5

## Room temperature sensor error

INDOOR UNIT Error Method:

<b>Detective actuators:</b> Indoor unit controller PCB Room temperature thermistor	<b>Detective details:</b> When Room Temperature Thermistor open or short-circuit is detected.
--	--

### Forecast of cause :

1. Connector connection failure
2. Thermistor failure
3. Controller PCB failure

<b>Check Point 1 : Check connection of Connector</b>
<ul style="list-style-type: none"> <li>• Check if connector is removed.</li> <li>• Check erroneous connection.</li> <li>• Check if thermistor cable is open.</li> </ul> <p>&gt;&gt; Upon correcting the removed connector or mis-wiring, reset the power.</p>



<b>Check Point 2 : Remove connector and check Thermistor resistance value</b>								
Thermistor Characteristics (Approx. value)								
Temperature	-10°C	-5°C	0°C	5°C	10°C	15°C	20°C	25°C
Resistance Value (kΩ)	55.46	42.36	32.67	25.39	19.91	15.71	12.5	10.0
Temperature	30°C	35°C	40°C	45°C				
Resistance Value (kΩ)	8.051	6.52	5.316	4.354				
► <b>If Thermistor is either open or shorted, replace it and reset the power.</b>								



<b>Check Point 3 : Check voltage of Controller PCB (DC5.0V)</b>							
Make sure circuit diagram of indoor unit and check terminal voltage at Thermistor (DC5.0V)							
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: center;">                 THERMISTOR (PIPE)             </td> <td style="width: 50%;"></td> </tr> <tr> <td style="text-align: center;"> </td> <td style="text-align: center; vertical-align: middle;"> <b>CN4</b> </td> </tr> <tr> <td style="text-align: center;">                 THERMISTOR (ROOM TEMP.)             </td> <td></td> </tr> </table>		THERMISTOR (PIPE)			<b>CN4</b>	THERMISTOR (ROOM TEMP.)	
THERMISTOR (PIPE)							
	<b>CN4</b>						
THERMISTOR (ROOM TEMP.)							
► If the voltage does not appear, replace controller PCB.							

# Troubleshooting 6

## Indoor unit heat-exchanger sensor error

INDOOR UNIT Error Method:

<b>Detective actuators:</b> Indoor unit controller PCB Heat Ex. temperature thermistor	<b>Detective details:</b> When heat-exchanger temperature thermistor open or short-circuit is detected.
--	--

### Forecast of cause :

1. Connector connection failure
2. Thermistor failure
3. Controller PCB failure

**Check Point 1 : Check connection of Connector**

- Check if connector is removed.
- Check erroneous connection.
- Check if thermistor cable is open.

**>>Upon correcting the removed connector or mis-wiring, reset the power.**



**Check Point 2 : Remove connector and check Thermistor resistance value**

Thermistor Characteristics (Approx. value)

Temperature	-10°C	-5°C	0°C	5°C	10°C	20°C
Resistance Value (kΩ)	295.1	223.3	170.7	131.4	102.1	62.9

Temperature	30°C	40°C	50°C	60°C	63°C
Resistance Value (kΩ)	39.78	25.8	17.11	11.6	10.36

**► If Thermistor is either open or shorted, replace it and reset the power.**



**Check Point 3 : Check voltage of Controller PCB (DC5.0V)**

Make sure circuit diagram of indoor unit and check terminal voltage at Thermistor (DC5.0V)

THERMISTOR (PIPE)	
	BLACK 1 1
	BLACK 2 2
	BLACK 3 3
	BLACK 4 4
THERMISTOR (ROOM TEMP.)	CN4

**► If the voltage does not appear, replace controller PCB.**

# Troubleshooting 7

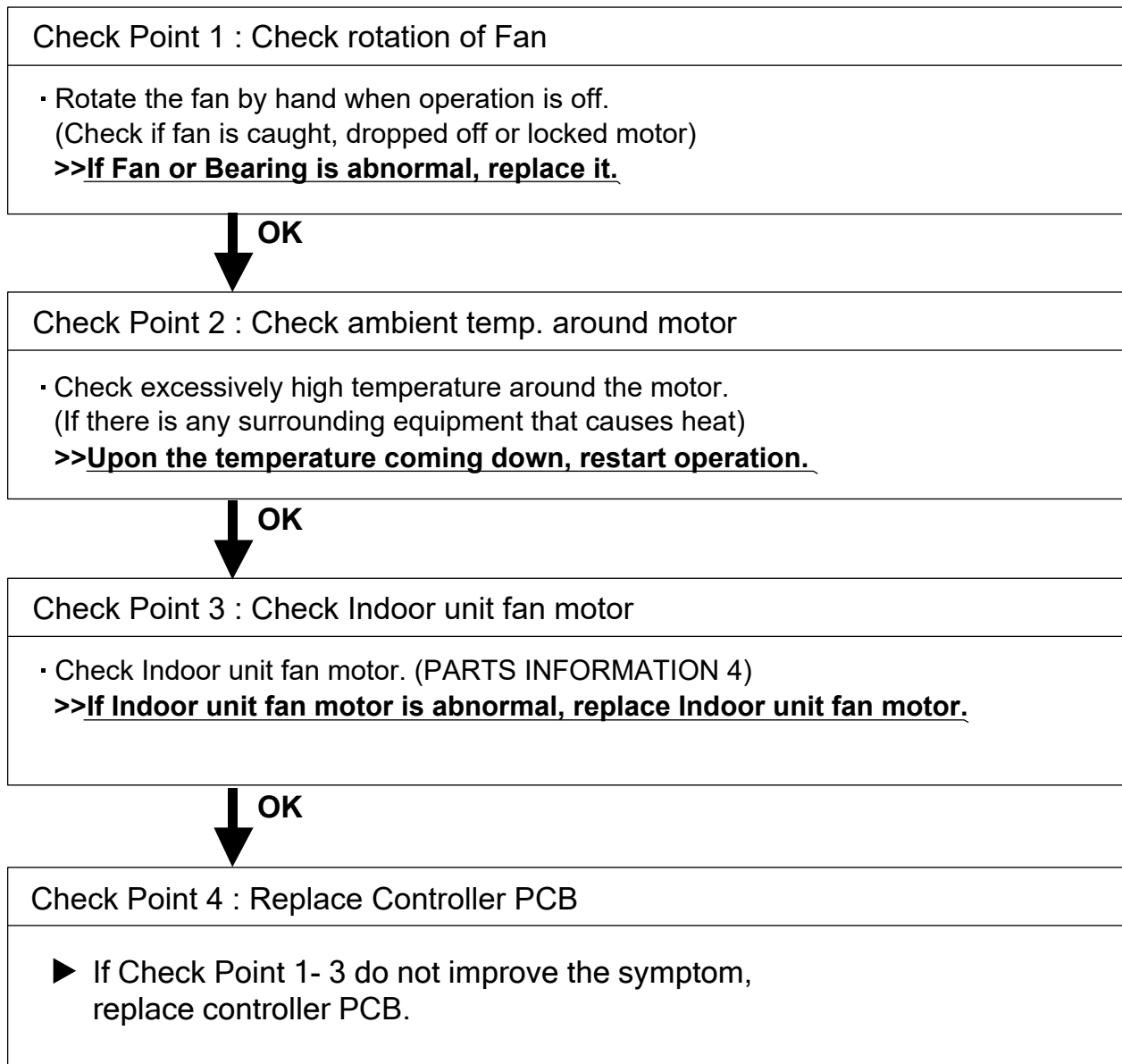
## Indoor unit fan motor error

INDOOR UNIT Error Method:

Detective Actuators: Indoor unit Controller PCB Indoor unit Fan motor	Detective details: When the condition that actual frequency of Indoor Fan is below 1/3 of target frequency is continued more than 56 seconds.
---	--

### Forecast of cause:

1. Fan rotation failure
2. Fan motor winding open
3. Motor protection by surrounding temperature rise
4. Control PCB failure
5. Indoor unit fan motor failure



# Troubleshooting 8

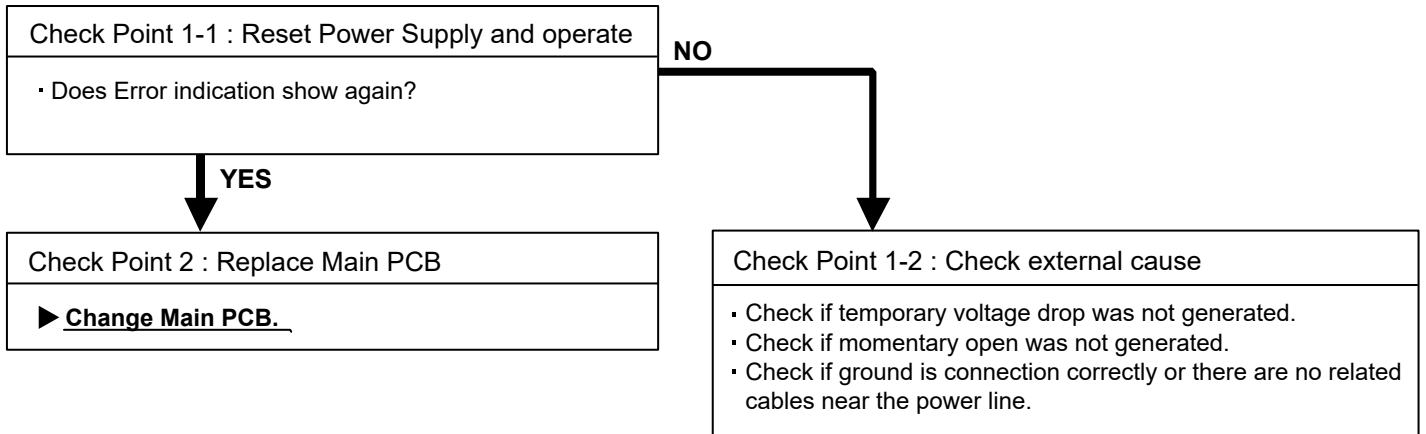
## Outdoor unit main PCB error

OUTDOOR UNIT Error Method:

<b>Detective actuators:</b> Outdoor unit main PCB	<b>Detective details:</b> Access to EEPROM failed due to some cause after outdoor unit started.
--	--

### Forecast of cause:

1. External cause (Noise, temporary open, voltage drop)
2. Main PCB failure



# Troubleshooting 9

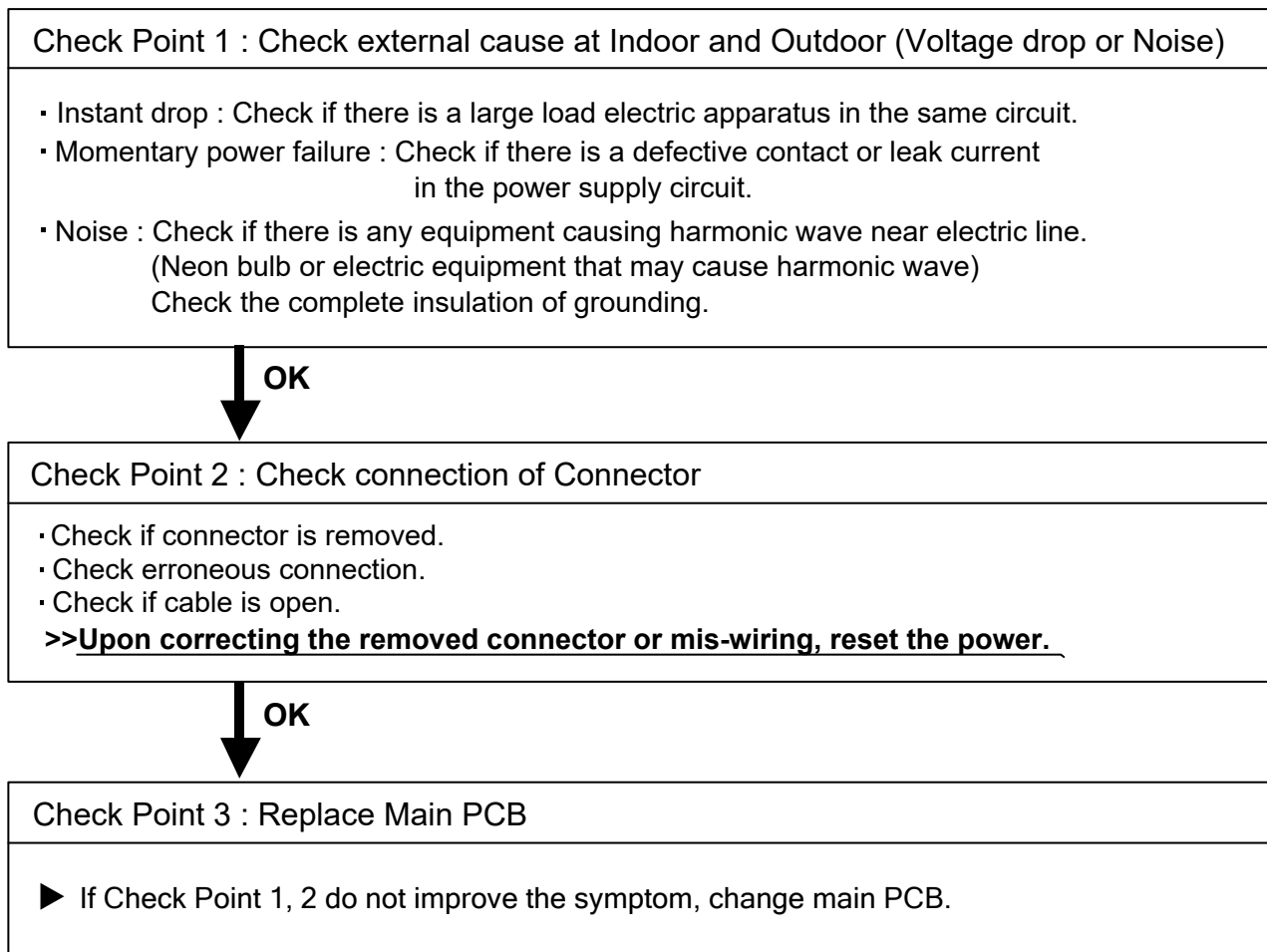
## PFC circuit error

OUTDOOR UNIT Error Method:

<b>Detective actuators:</b> Outdoor unit main PCB	<b>Detective details:</b> When inverter output DC voltage is higher than 415V for over 3 seconds, the compressor stops. If the same operation is repeated 5 times, the compressor stops permanently.
--	--

Forecast of cause :

1. External cause
2. Connector connection failure
3. Main PCB failure



# Troubleshooting 10

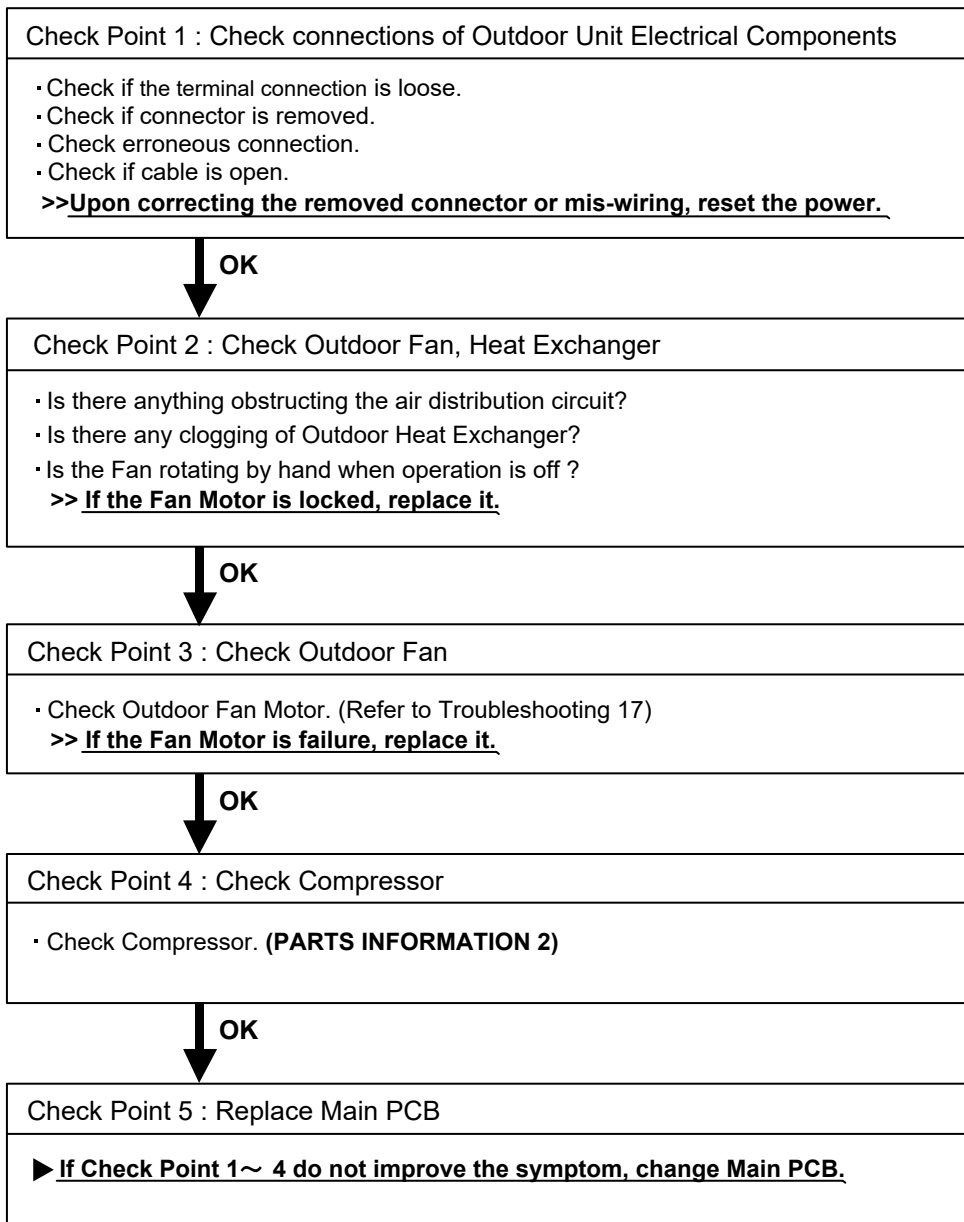
## IPM error

OUTDOOR UNIT Error Method:

Detective actuators:	Detective details:
Outdoor unit main PCB Compressor	① When more than normal operating current to IPM in Main PCB flows, the compressor stops. ② After the compressor restarts, if the same operation is repeated within 40sec, the compressor stops again. ③ If ① and ② repeats 5 times, the compressor stops permanently.

Forecast of cause :

1. Defective connection of electric components
2. Outdoor Fan Operation failure
3. Outdoor Heat Exchanger clogged
4. Compressor failure
5. Main PCB failure



# Troubleshooting 11

## Discharge thermistor error

OUTDOOR UNIT Error Method:

<p><b>Detective actuators:</b></p> <p>Outdoor unit main PCB Discharge pipe temperature thermistor</p>	<p><b>Detective details:</b></p> <p>When Discharge pipe temperature thermistor open or short-circuit is detected at power ON or while running the compressor.</p>
---	---

### Forecast of cause :

1. Connector connection failure
2. Thermistor failure
3. Main PCB failure

<p>Check Point 1 : Check connection of Connector</p> <ul style="list-style-type: none"> <li>• Check if connector is removed.</li> <li>• Check erroneous connection.</li> <li>• Check if thermistor cable is open.</li> </ul> <p><b>&gt;&gt;Upon correcting the removed connector or mis-wiring, reset the power.</b></p>
--



<p>Check Point 2 : Remove connector and check Thermistor resistance value</p> <p>Thermistor Characteristics (Approx. value)</p> <table border="1"> <tr> <td>Temperature</td> <td>-10°C</td> <td>-5°C</td> <td>0°C</td> <td>5°C</td> <td>10°C</td> <td>20°C</td> <td>30°C</td> </tr> <tr> <td>Resistance Value (kΩ)</td> <td>286.3</td> <td>218.6</td> <td>168.6</td> <td>130.9</td> <td>102.5</td> <td>64.22</td> <td>41.33</td> </tr> </table> <table border="1"> <tr> <td>Temperature</td> <td>40°C</td> <td>50°C</td> <td>60°C</td> <td>70°C</td> <td>80°C</td> <td>90°C</td> <td>100°C</td> <td>110°C</td> <td>120°C</td> </tr> <tr> <td>Resistance Value (kΩ)</td> <td>27.26</td> <td>18.40</td> <td>12.68</td> <td>8.909</td> <td>6.375</td> <td>4.639</td> <td>3.430</td> <td>2.573</td> <td>1.956</td> </tr> </table> <p>► If Thermistor is either open or shorted, replace it and reset the power.</p>	Temperature	-10°C	-5°C	0°C	5°C	10°C	20°C	30°C	Resistance Value (kΩ)	286.3	218.6	168.6	130.9	102.5	64.22	41.33	Temperature	40°C	50°C	60°C	70°C	80°C	90°C	100°C	110°C	120°C	Resistance Value (kΩ)	27.26	18.40	12.68	8.909	6.375	4.639	3.430	2.573	1.956	
Temperature	-10°C	-5°C	0°C	5°C	10°C	20°C	30°C																														
Resistance Value (kΩ)	286.3	218.6	168.6	130.9	102.5	64.22	41.33																														
Temperature	40°C	50°C	60°C	70°C	80°C	90°C	100°C	110°C	120°C																												
Resistance Value (kΩ)	27.26	18.40	12.68	8.909	6.375	4.639	3.430	2.573	1.956																												



<p>Check Point 3 : Check voltage of Main PCB (DC5.0V)</p> <p>Make sure circuit diagram of outdoor unit and check terminal voltage at Thermistor (DC5.0V)</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> </div> <p>► If the voltage does not appear, replace main PCB.</p>	
---	--

# Troubleshooting 12

## Outdoor unit heat-exchanger sensor error

### OUTDOOR UNIT Error Method:

<b>Detective actuators:</b> Outdoor unit main PCB Heat exchanger temperature thermistor	<b>Detective details:</b> When Heat exchanger temperature thermistor open or short-circuit is detected at power ON or while running the compressor.
---	--

### Forecast of cause :

1. Connector connection failure
2. Thermistor failure
3. Main PCB failure

**Check Point 1 : Check connection of Connector**

- Check if connector is removed.
- Check erroneous connection.
- Check if thermistor cable is open.

**>>Upon correcting the removed connector or mis-wiring, reset the power.**



**Check Point 2 : Remove connector and check Thermistor resistance value**

Ω

Thermistor Characteristics (Approx. value)

Temperature	-10°C	-5°C	0°C	5°C	10°C	20°C	30°C	40°C	50°C
Resistance Value (kΩ)	27.21	20.80	16.05	12.47	9.775	6.129	3.947	2.606	1.759

Temperature	60°C	70°C	80°C
Resistance Value (kΩ)	1.213	0.8531	0.6115

**► If Thermistor is either open or shorted, replace it and reset the power.**



**Check Point 3 : Check voltage of Main PCB (DC5.0V)**

DC

Make sure circuit diagram of outdoor unit and check terminal voltage at Thermistor (DC5.0V)

THERMISTOR (PIPE)	BLACK	1	1	P1
	BLACK	2	2	
	BLACK	3	3	
	BLACK	4	4	
THERMISTOR (DISCHARGE)				
THERMISTOR (OUTDOOR)				
	BLACK	1	1	P5
	BLACK	2	2	
	BLACK	3	3	

**► If the voltage does not appear, replace main PCB.**



# Troubleshooting 13

## Outdoor thermistor error

OUTDOOR UNIT Error Method:

<p><b>Detective Actuators:</b> Outdoor unit main PCB Outdoor temperature thermistor</p>	<p><b>Detective details:</b> When Outdoor temperature thermistor open or short-circuit is detected at power ON or while running the compressor.</p>
---	---

Forecast of cause :

1. Connector connection failure
2. Thermistor failure
3. Main PCB failure

<p><b>Check Point 1 : Check connection of Connector</b></p> <ul style="list-style-type: none"> <li>• Check if connector is removed.</li> <li>• Check erroneous connection.</li> <li>• Check if thermistor cable is open.</li> </ul> <p><b>&gt;&gt;Upon correcting the removed connector or mis-wiring, reset the power.</b></p>
---



<p><b>Check Point 2 : Remove connector and check Thermistor resistance value</b></p> <p>Thermistor Characteristics (Approx. value)</p> <table border="1"> <tr> <td>Temperature</td> <td>-20°C</td> <td>-15°C</td> <td>-10°C</td> <td>-5°C</td> <td>0°C</td> <td>5°C</td> <td>10°C</td> </tr> <tr> <td>Resistance Value (kΩ)</td> <td>109.0</td> <td>80.56</td> <td>60.23</td> <td>45.40</td> <td>34.57</td> <td>26.53</td> <td>20.56</td> </tr> </table> <table border="1"> <tr> <td>Temperature</td> <td>15°C</td> <td>20°C</td> <td>25°C</td> <td>30°C</td> <td>35°C</td> <td>40°C</td> <td>45°C</td> <td>50°C</td> <td>55°C</td> </tr> <tr> <td>Resistance Value (kΩ)</td> <td>16.04</td> <td>12.26</td> <td>10.00</td> <td>7.978</td> <td>6.408</td> <td>5.184</td> <td>4.216</td> <td>3.451</td> <td>2.841</td> </tr> </table> <p><b>► If Thermistor is either open or shorted, replace it and reset the power.</b></p>	Temperature	-20°C	-15°C	-10°C	-5°C	0°C	5°C	10°C	Resistance Value (kΩ)	109.0	80.56	60.23	45.40	34.57	26.53	20.56	Temperature	15°C	20°C	25°C	30°C	35°C	40°C	45°C	50°C	55°C	Resistance Value (kΩ)	16.04	12.26	10.00	7.978	6.408	5.184	4.216	3.451	2.841	
Temperature	-20°C	-15°C	-10°C	-5°C	0°C	5°C	10°C																														
Resistance Value (kΩ)	109.0	80.56	60.23	45.40	34.57	26.53	20.56																														
Temperature	15°C	20°C	25°C	30°C	35°C	40°C	45°C	50°C	55°C																												
Resistance Value (kΩ)	16.04	12.26	10.00	7.978	6.408	5.184	4.216	3.451	2.841																												



<p><b>Check Point 3 : Check voltage of Main PCB (DC5.0V)</b></p> <p>Make sure circuit diagram of outdoor unit and check terminal voltage at Thermistor (DC5.0V)</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> </div> <p><b>► If the voltage does not appear, replace main PCB.</b></p>	
---	--

# Troubleshooting 14

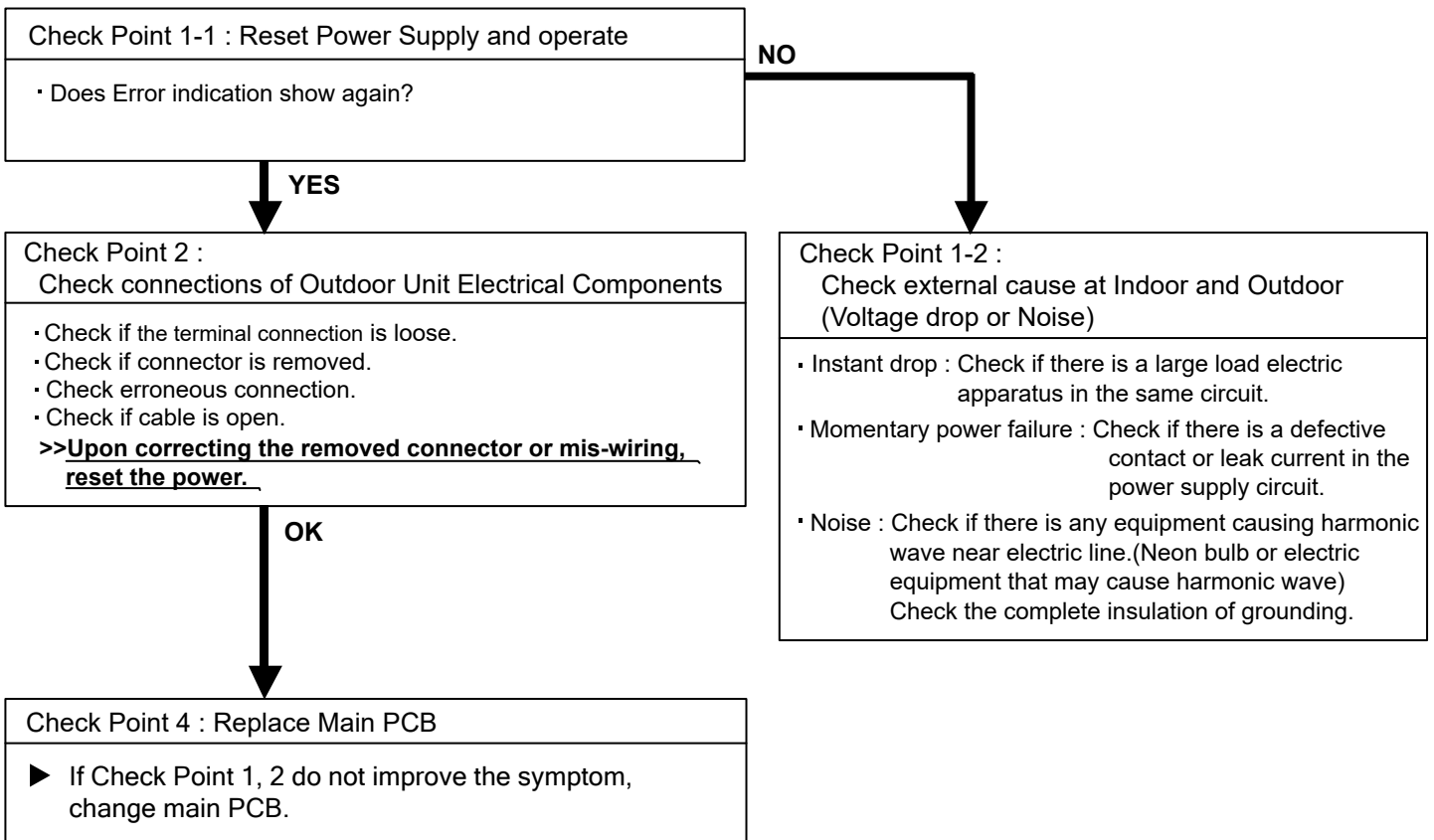
## Current sensor error

OUTDOOR UNIT Error Method:

<b>Detective actuators:</b> Outdoor unit main PCB	<b>Detective details:</b> When Input Current Sensor has detected 0A, while Inverter Compressor is operating at higher than 56rps, after 1minute upon starting the Compressor. (Except during the defrost operation)
--	--

Forecast of cause :

1. Defective connection of electric components
2. External cause
3. Main PCB failure



# Troubleshooting 15

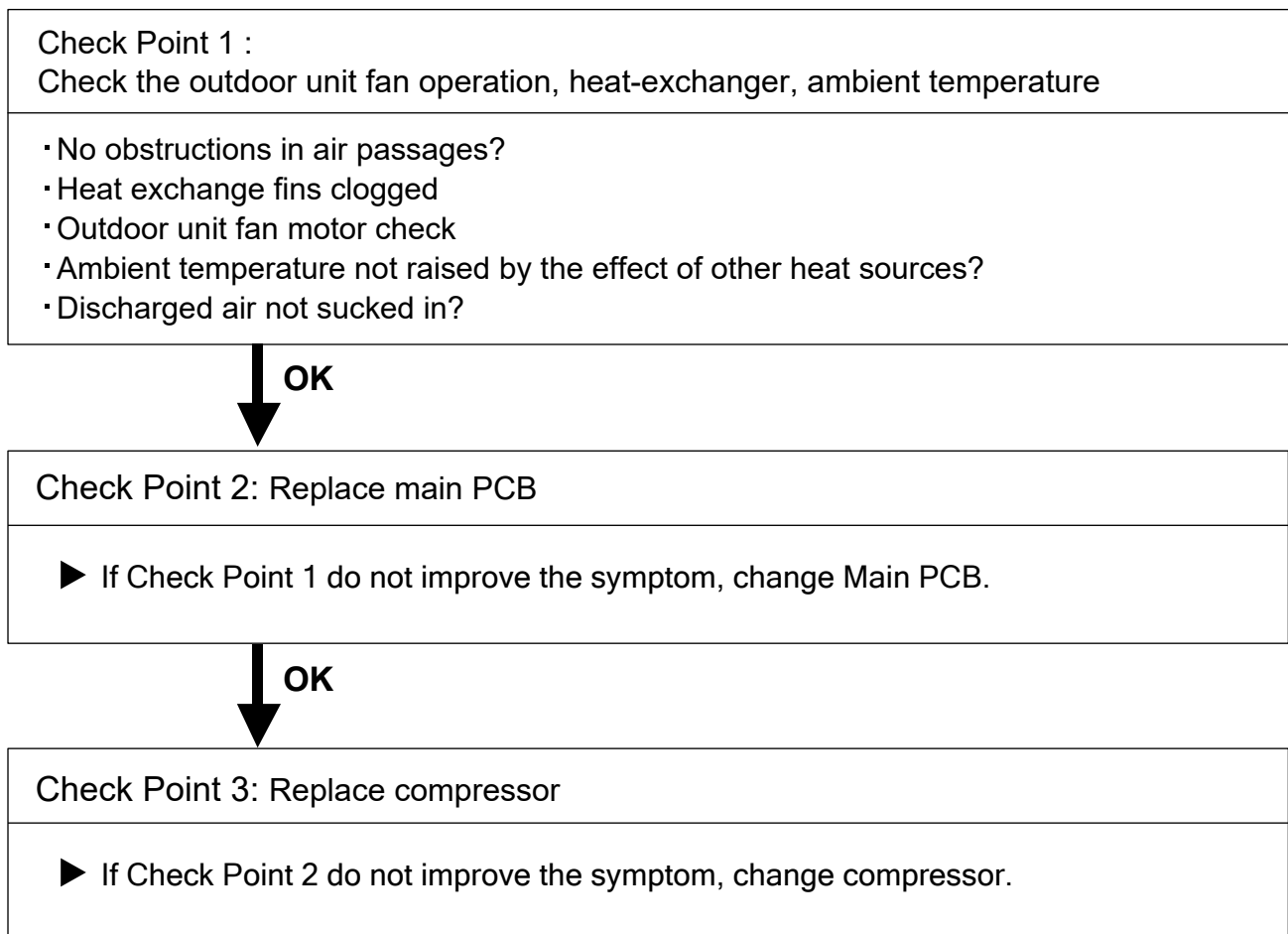
## Trip detection

OUTDOOR UNIT Error Method:

<b>Detective actuators:</b> Outdoor unit main PCB Compressor	<b>Detective details:</b> ▪ <b>"Protection stop</b> by overcurrent generation after inverter compressor start processing completed" generated consecutively 10 times. * The number of generations is reset if the start-up of the compressor succeeds.
--	--

### Forecast of cause :

1. Outdoor unit fan operation defective, foreign matter on heat-exchanger, excessive rise of ambient temperature
2. Inverter PCB failure
3. Inverter compressor failure (lock, winding short)



# Troubleshooting 16

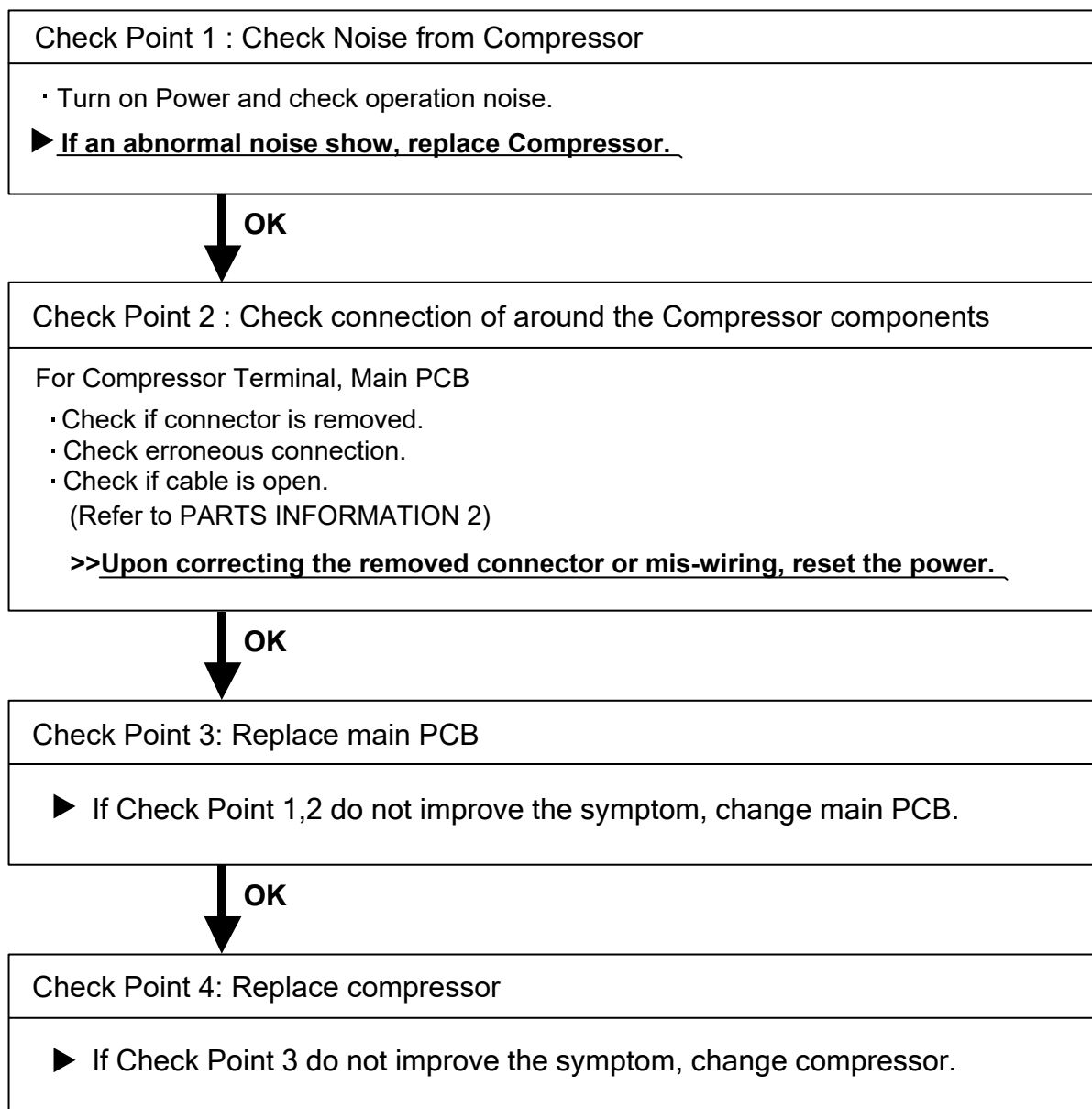
## Compressor motor control error

OUTDOOR UNIT Error Method:

<b>Detective actuators:</b> Outdoor unit Main PCB Compressor	<b>Detective details:</b> If it does not succeed even if the compressor is started 50 times, it will become 3 minutes ST. If it does not succeed even after repeating this 3 sets, the compressor will stop permanently. If the three phase current is less than the single phase current, the compressor will stop permanently.
--	---

Forecast of cause :

1. Defective connection of electric components
2. Main PCB failure
3. Compressor failure



# Troubleshooting 17

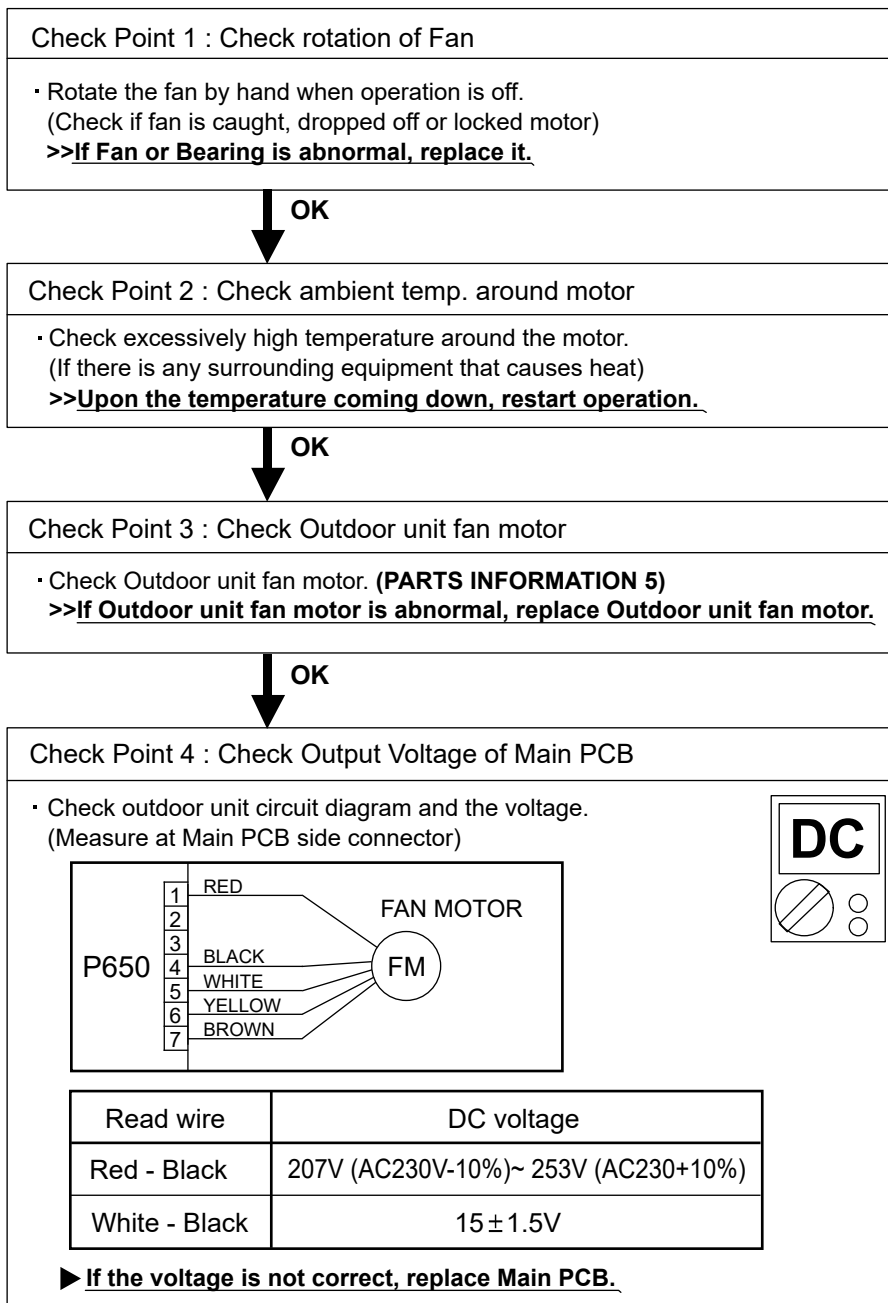
## Outdoor unit fan motor error

OUTDOOR UNIT Error Method:

<p><b>Detective actuators:</b></p> <p>Outdoor unit main PCB Outdoor unit fan motor</p>	<p><b>Detective details:</b></p> <p>① When outdoor fan rotation speed is less than 100rpm in 20 seconds after fan motor starts, fan motor stops. ② After fan motor restarts, if the same operation within 60sec is repeated 3 times in a row, compressor and fan motor stops. ③ If ① and ② repeats 5 times in a row, compressor and fan motor stops permanently.</p>
--	--

### Forecast of cause:

1. Fan rotation failure
2. Motor protection by surrounding temperature rise
3. Main PCB failure
4. Outdoor unit fan motor



# Troubleshooting 18

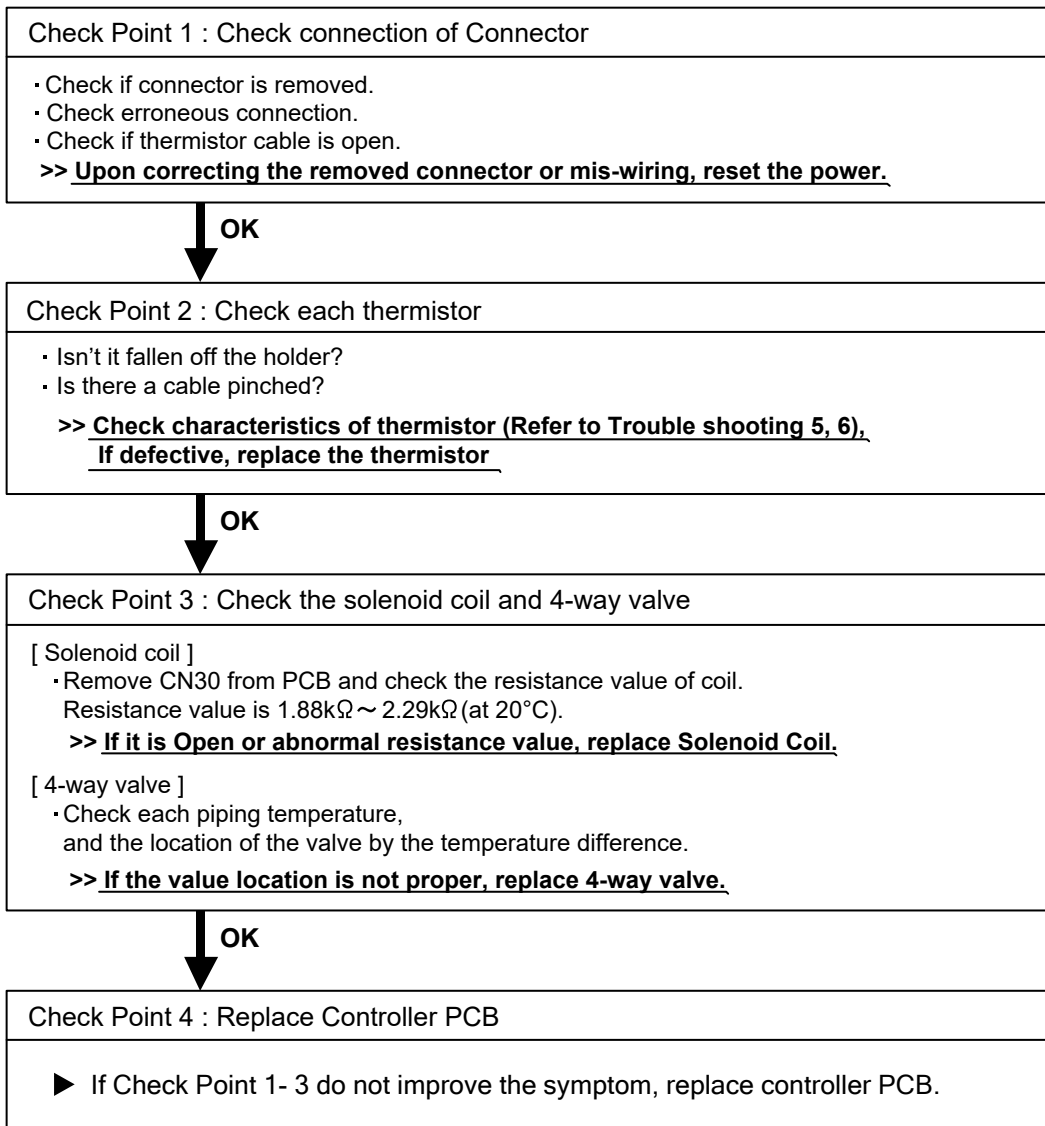
## 4-way valve error

INDOOR UNIT Error Method:

<b>Detective actuators:</b> Indoor unit controller PCB Heat Ex. temperature thermistor Room temperature thermistor 4-way valve	<b>Detective details:</b> When the indoor heat exchanger temperature is compared with the room temperature, and either following condition is detected continuously two times, the compressor stops. <ul style="list-style-type: none"><li>▪ Cooling or Dry operation [Indoor heat exchanger temp.] - [Room temp.] &gt; 10degC</li><li>▪ Heating operation [Indoor heat exchanger temp.] - [Room temp.] &lt; - 10degC</li></ul> If the same operation is repeated 5 times, the compressor stops permanently.
--	---

Forecast of cause :

1. Connector connection failure
2. Thermistor failure
3. Coil failure
4. 4-way valve failure
5. Controller PCB failure



# Troubleshooting 19

## Discharge temperature error

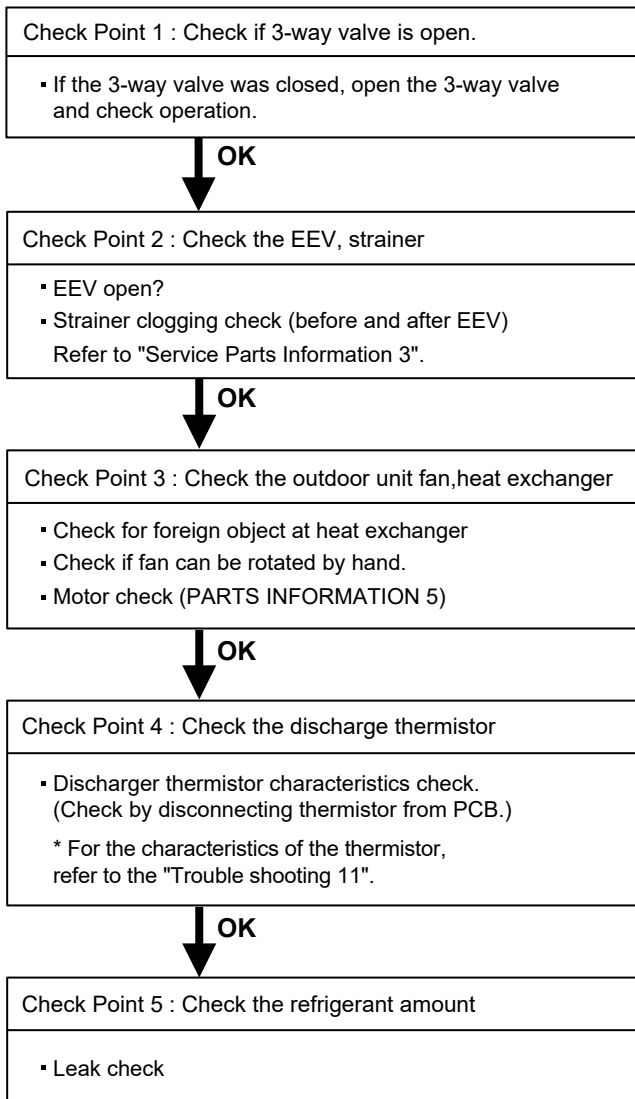
OUTDOOR UNIT Error Method:

<p><b>Detective actuators:</b></p> <p>Outdoor unit Main PCB Discharge temperature thermistor</p>	<p><b>Detective details:</b></p> <ul style="list-style-type: none"> <li>"Protection stop by "discharge temperature <math>\geq 110\text{degC}</math> during compressor operation"" generated 2 times within 24 hours.</li> </ul>
--	---

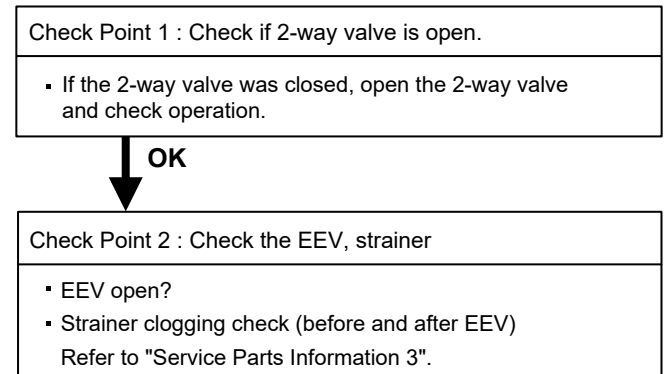
### Forecast of cause :

1. 2,3-way valve not opened
2. EEV defective, strainer clogged
3. Outdoor unit operation failure, foreign matter on heat exchanger
4. Discharge temperature thermistor failure
5. Insufficient refrigerant
6. Main PCB failure

### Cooling operation



### Heating operation



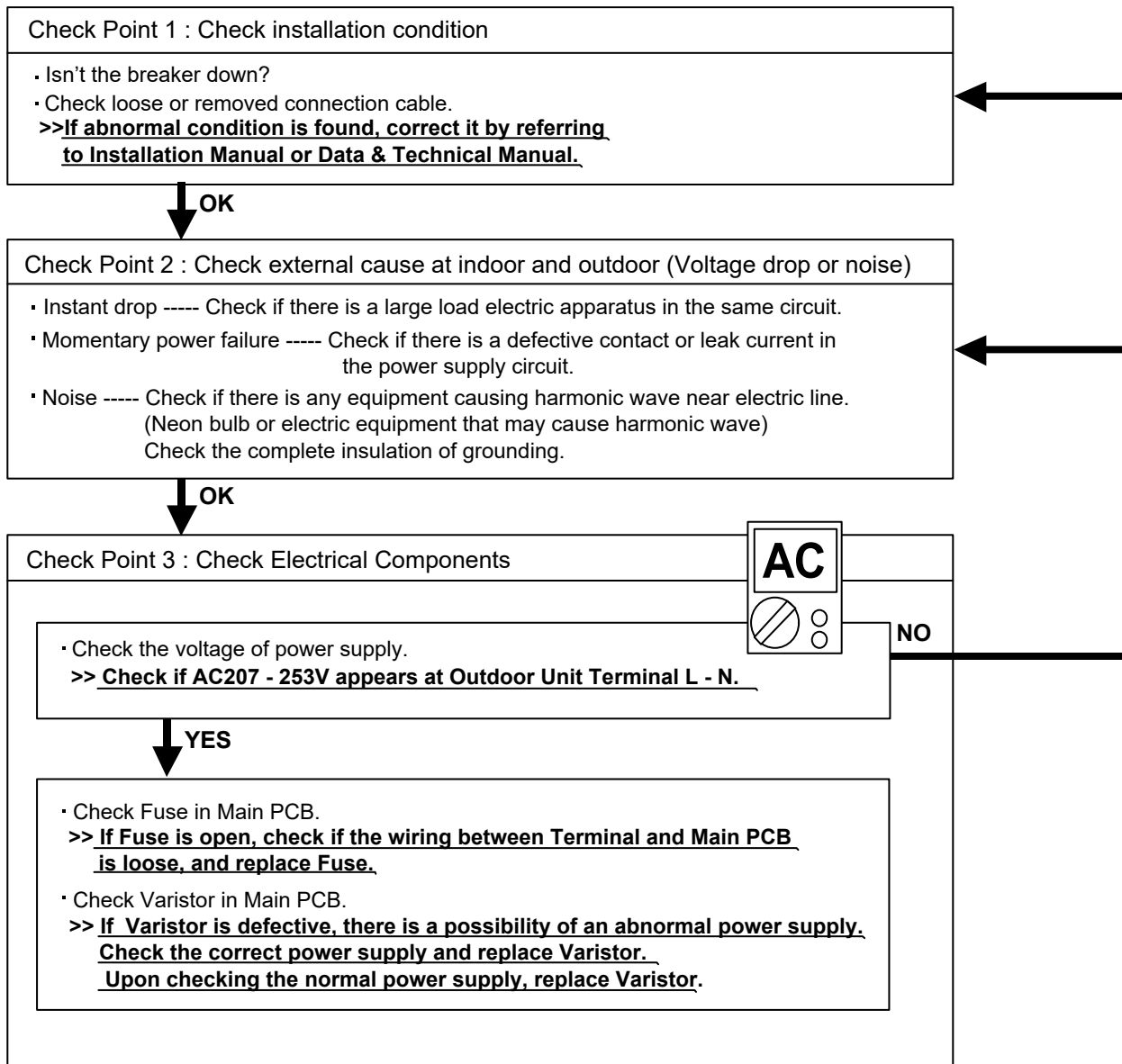
### 3. TROUBLESHOOTING WITH NO ERROR CODE

## Troubleshooting 20

Indoor unit - No power

Forecast of cause:

1. Power supply failure
2. External cause
3. Electrical components defective



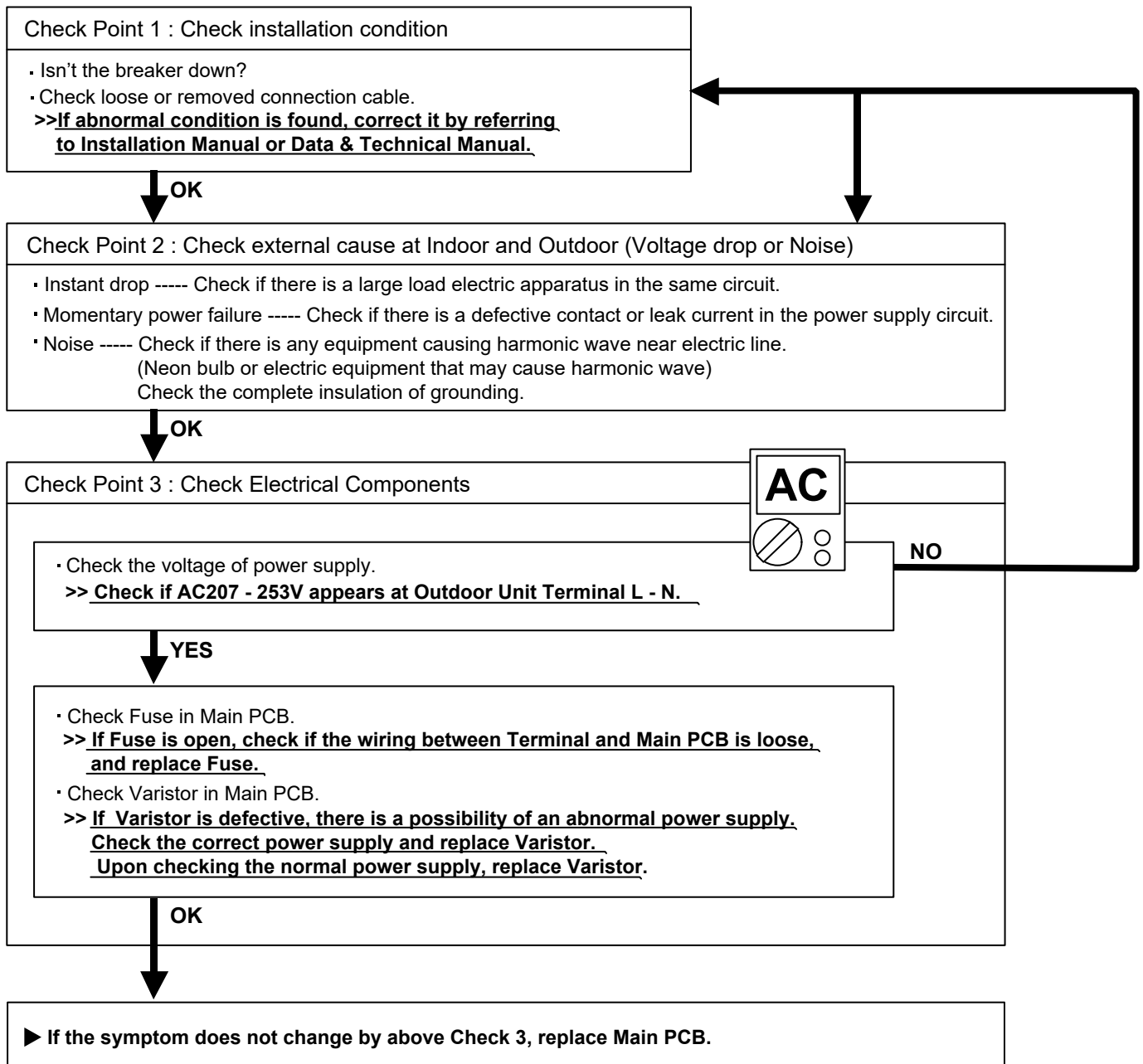


# Troubleshooting 21

## Outdoor unit - No power

Forecast of cause:

1. Power supply failure
2. External cause
3. Electrical Components defective

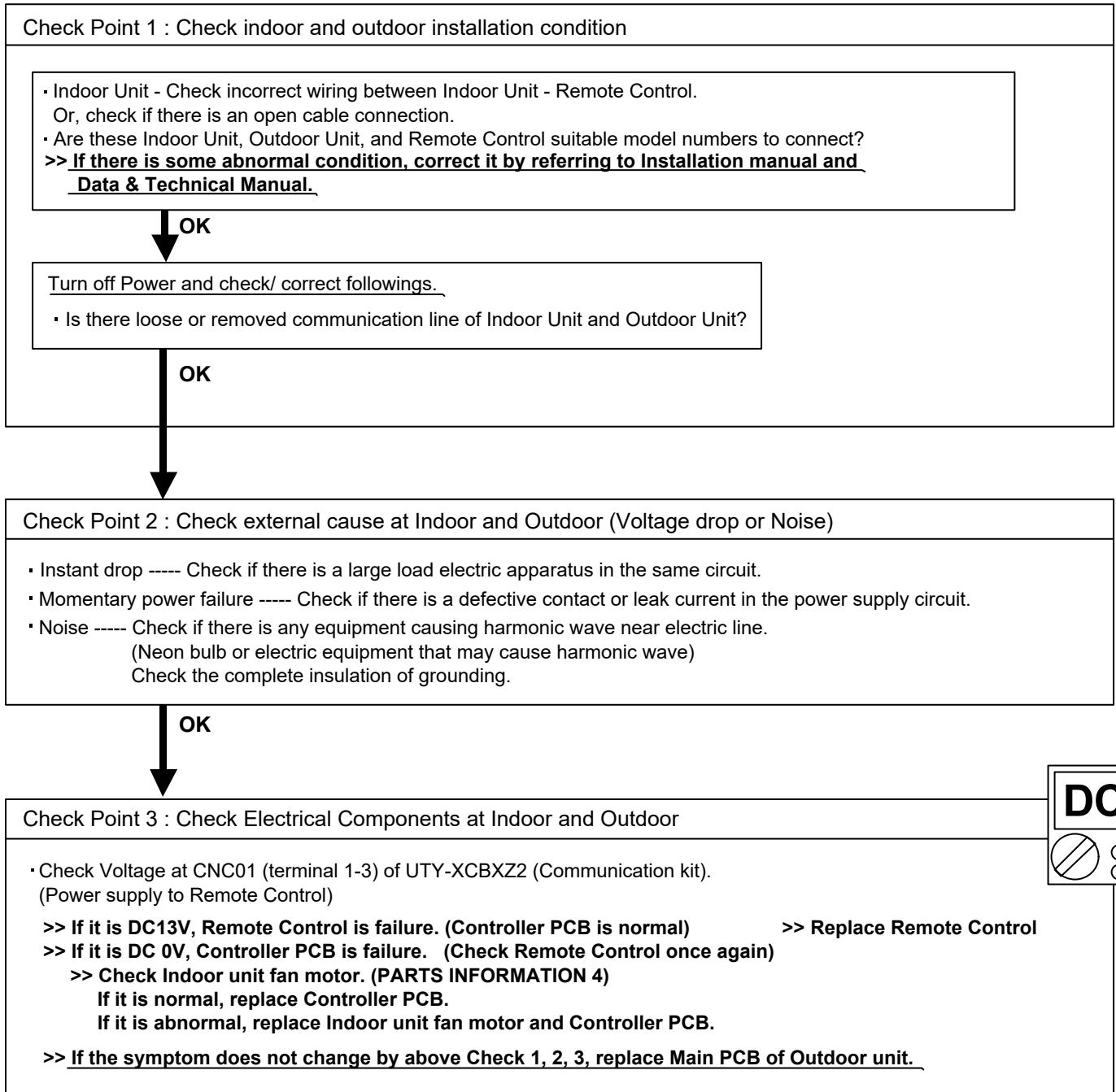


# Troubleshooting 22

## No operation (Power is ON)

Forecast of cause:

1. Setting/ Connection failure
2. External cause
3. Electrical component defective

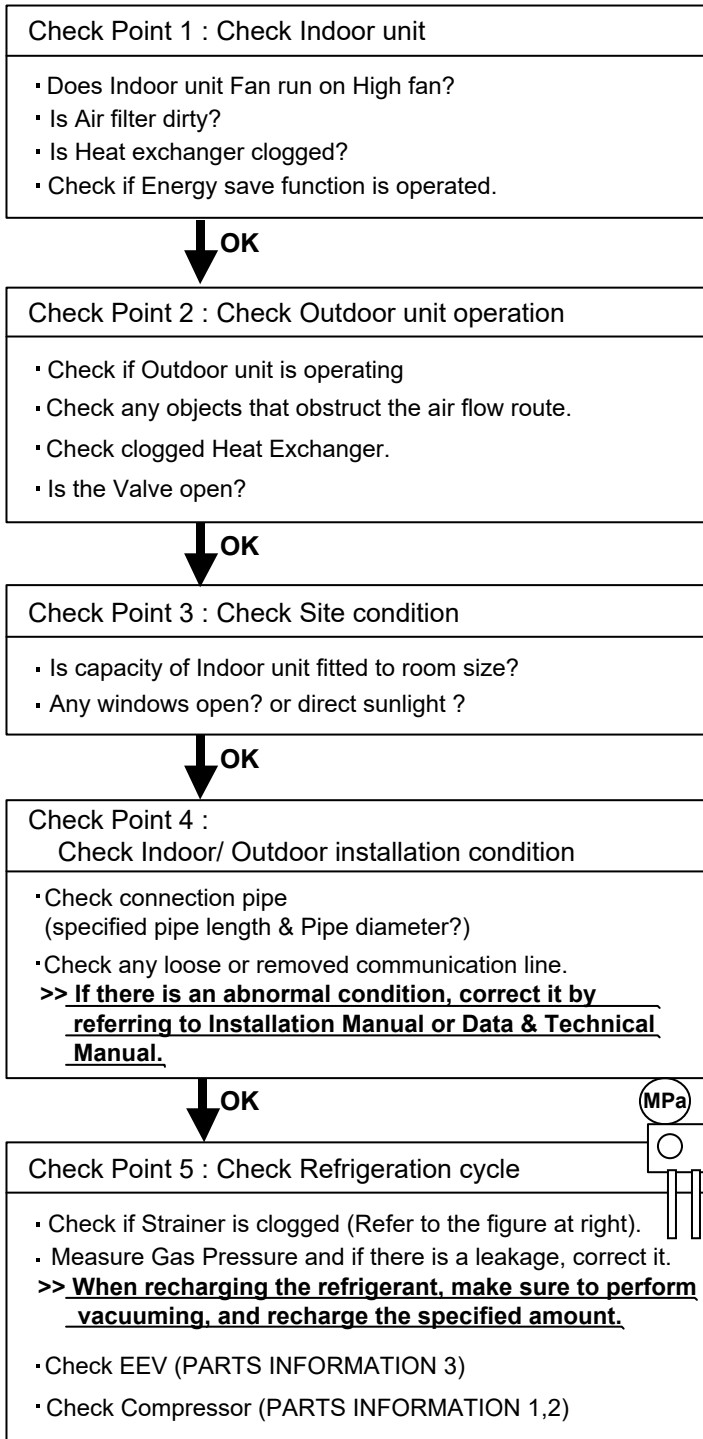


# Troubleshooting 23

## No cooling / No heating

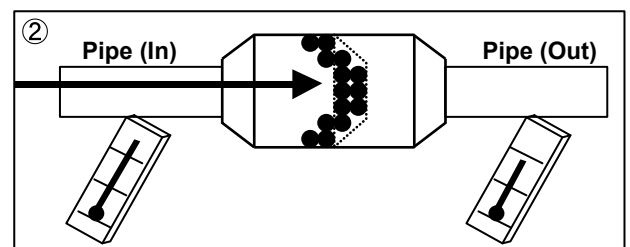
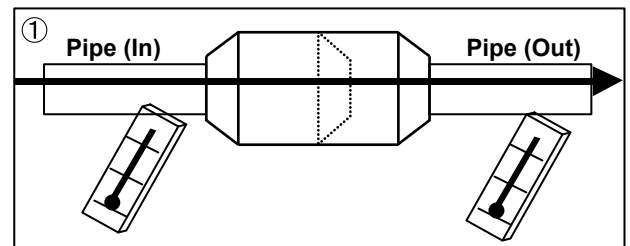
Forecast of cause:

1. Indoor Unit error
2. Outdoor Unit error
3. Effect by surrounding environment
4. Connection pipe / Connection wire failure
5. Refrigeration cycle failure



### Attention

Strainer normally does not have temperature difference between inlet and outlet as shown in ①, but if there is a difference like shown in ②, there is a possibility of inside clogged. In this case, replace Strainer.

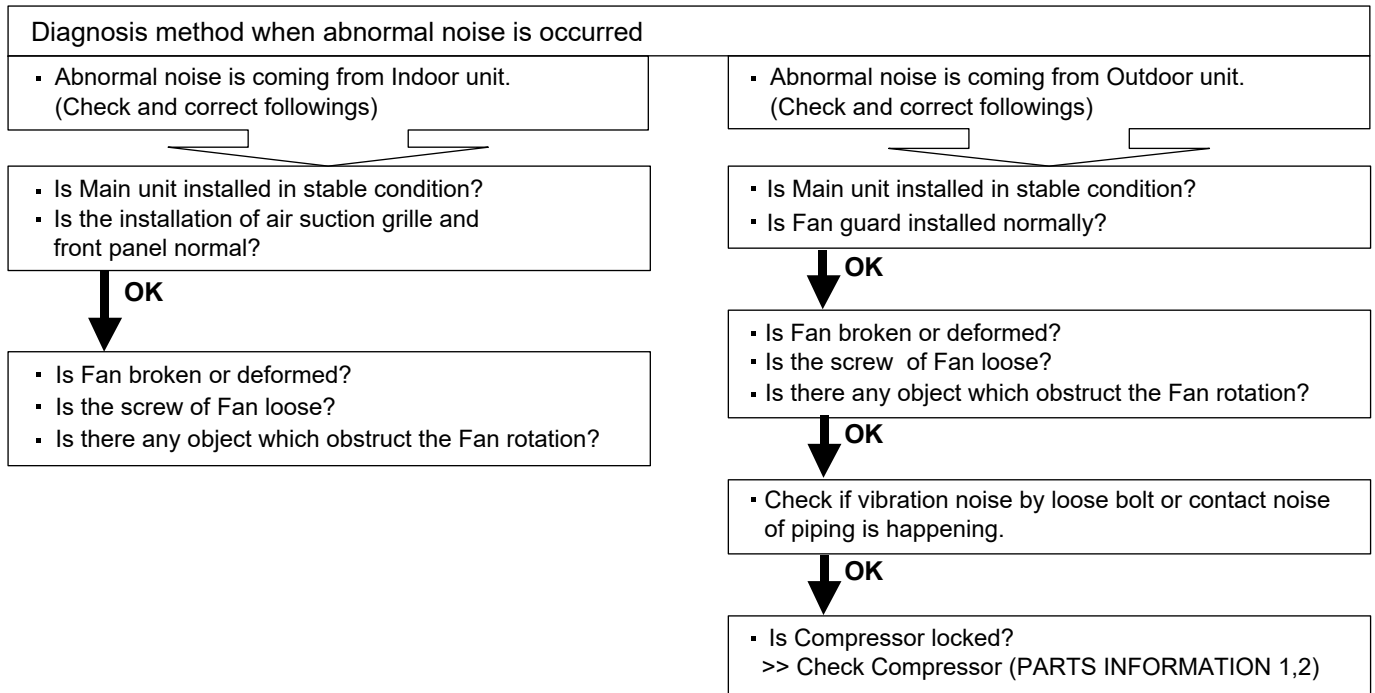


# Troubleshooting 24

## Abnormal noise

Forecast of cause :

1. Abnormal installation (Indoor/ Outdoor)
2. Fan failure (Indoor/ Outdoor)
3. Compressor failure (Outdoor)

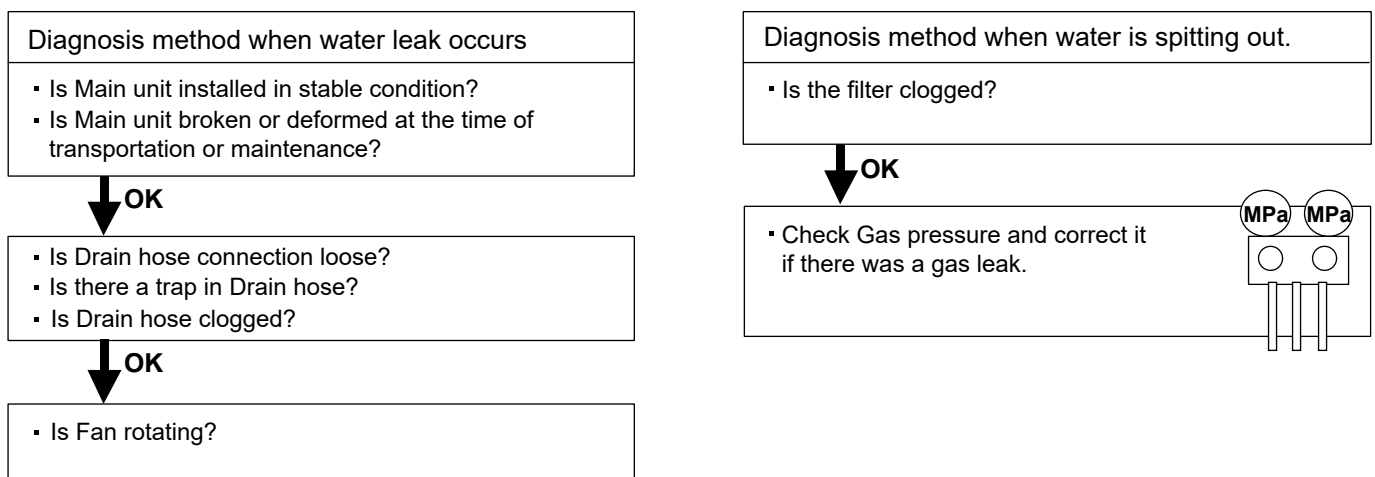


# Troubleshooting 25

## Water leaking

Forecast of cause:

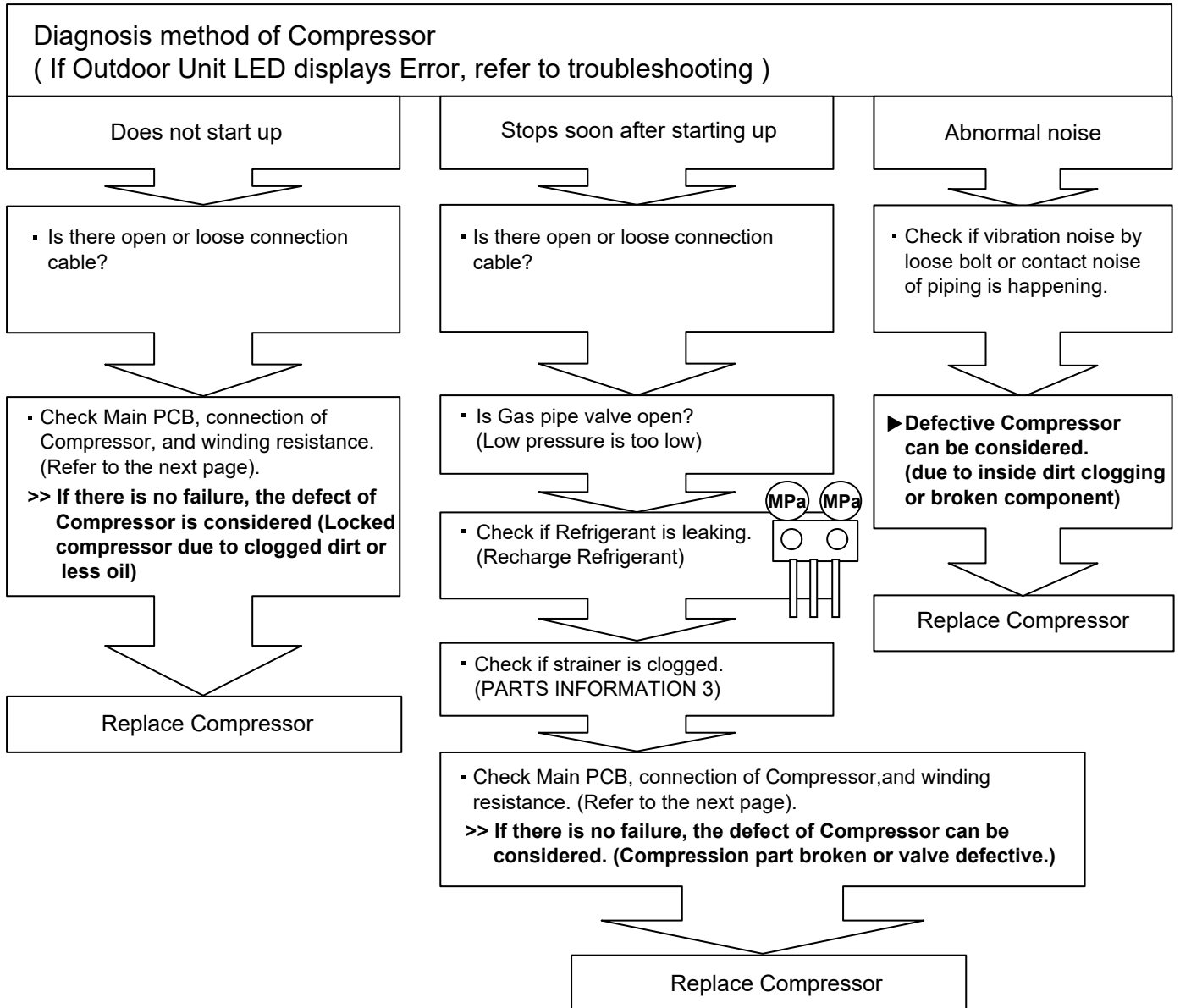
1. Erroneous installation
2. Drain hose failure



# 4. PARTS INFORMATION

## PARTS INFORMATION 1

### Compressor

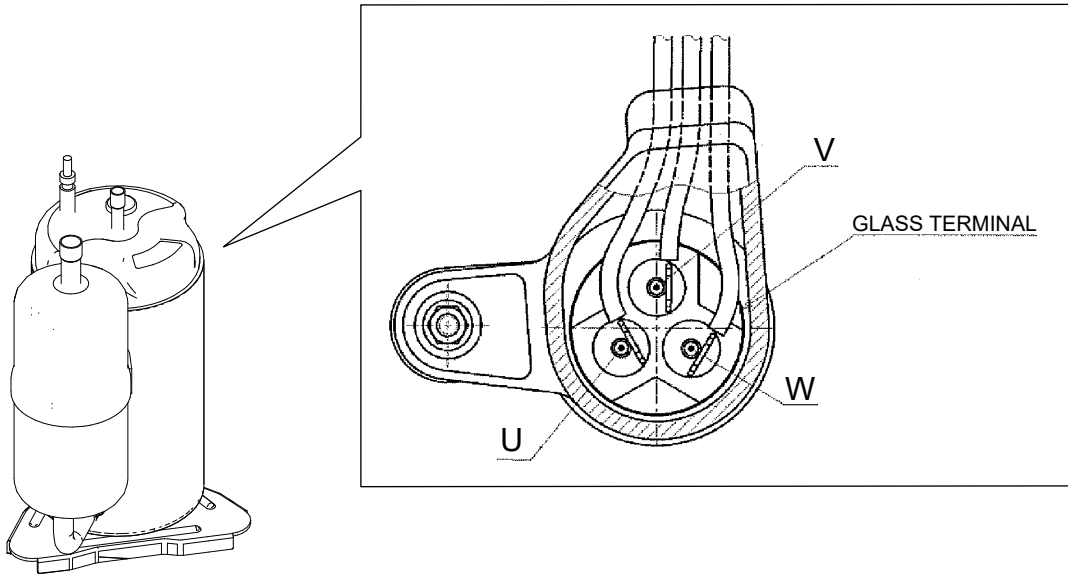


## PARTS INFORMATION 2

### Inverter compressor

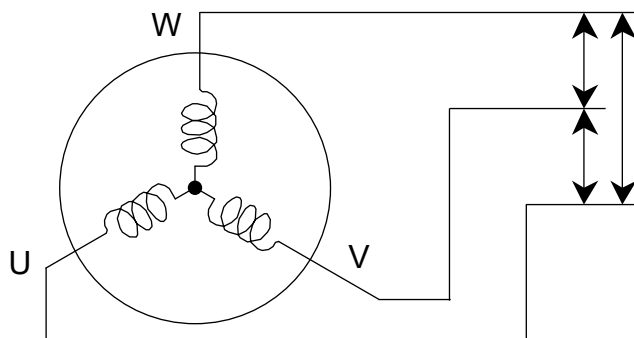
#### Check Point 1 : Check connection

- Check terminal connection of Compressor (loose or incorrect wiring)

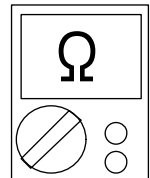


#### Check Point 2 : Check winding resistance

- Check winding resistance of each terminal
  - ▶ If the resistance value is  $0\Omega$  or infinite, replace Compressor.



Resistance value :  
 $1.91\Omega$  at  $20^\circ\text{C}$



#### Check Point 3 : Replace main PCB

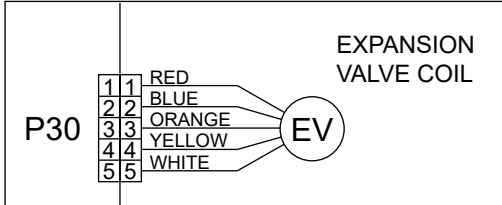
- ▶ If the symptom does not change with above Check 1, 2, replace main PCB.

# PARTS INFORMATION 3

## Outdoor unit, electronic expansion valve (EEV)

### Check Point 1 : Check Connections

- Check connection of connector (P30)  
( Loose connector or open cable )



### Check Point 2 : Check coil of EEV

- Remove connector, check each winding resistance of Coil.

Read wire	Resistance value
White - Red	$46 \Omega \pm 4 \Omega$ at 20°C
Yellow - Red	
Orange - Red	
Blue - Red	

- ▶ If Resistance value is abnormal, replace EEV.

### Check Point 3 : Check Noise at start up

- Turn on Power and check operation noise.
- ▶ **If an abnormal noise does not show, replace Main PCB.**

### Check Point 4 : Check Voltage from main PCB.

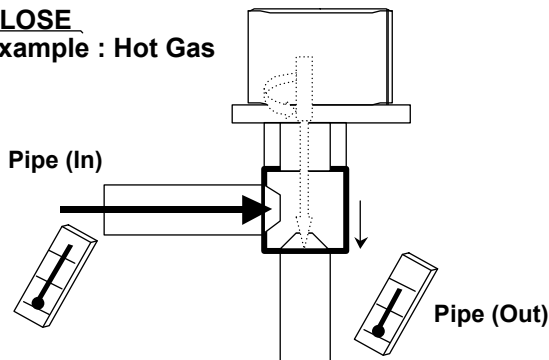
- Remove Connector and check Voltage (DC12V)
- ▶ If it does not appear, replace main PCB.



### Check Point 5 : Check Opening and Closing Operation of Valve

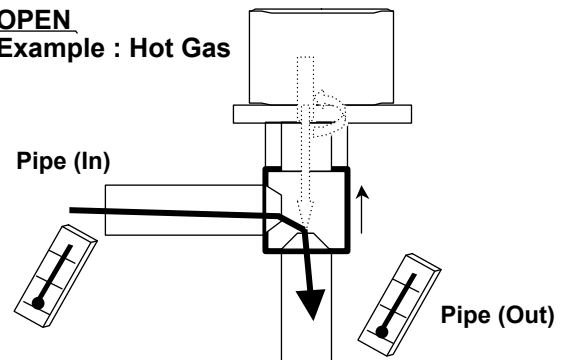
When Valve is closed, it has a temp. difference between Inlet and Outlet.

**CLOSE**  
Example : Hot Gas



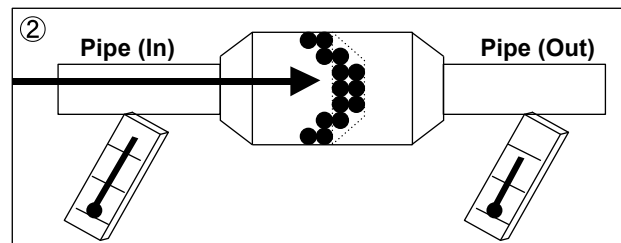
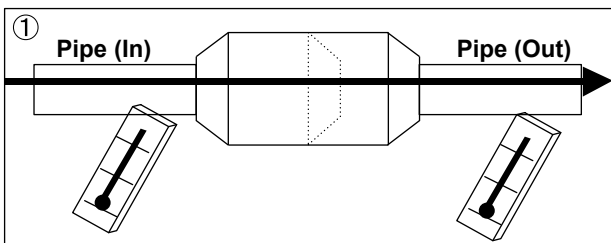
If it is open, it has no temp. difference between Inlet and Outlet.

**OPEN**  
Example : Hot Gas



### Check Point 6 : Check Strainer

Strainer normally does not have temperature difference between inlet and outlet as shown in ①, but if there is a difference as shown in ②, there is a possibility of inside clogged. In this case, replace Strainer.



## PARTS INFORMATION 4

### Indoor unit fan motor

#### Check Point 1 : Check rotation of Fan

- Rotate the fan by hand when operation is off.  
(Check if fan is caught, dropped off or locked motor)
- >>If Fan or Bearing is abnormal, replace it.**

#### Check Point 2 : Check resistance of Indoor Fan Motor

- Refer to below. Circuit-test "Vm" and "GND" terminal.  
(Vm: DC voltage, GND: Earth terminal)
- >>If they are short-circuited (below 300 kΩ),  
replace Indoor fan motor and controller PCB.**

Pin number (wire color)	Terminal function (symbol)
1 (Blue)	Feed back (FG)
2 (Yellow)	Speed command (Vsp)
3 (White)	Control voltage (Vcc)
4 (Black)	Earth terminal (GND)
5	No function
6 (Red)	DC voltage (Vm)

## PARTS INFORMATION 5

### Outdoor unit fan motor

#### Check Point 1 : Check rotation of Fan

- Rotate the fan by hand when operation is off.  
(Check if fan is caught, dropped off or locked motor)
- >>If Fan or Bearing is abnormal, replace it.**

#### Check Point 2 : Check resistance of Outdoor Fan Motor

- Refer to below. Circuit-test "Vm" and "GND" terminal.  
(Vm: DC voltage, GND: Earth terminal)
- >>If they are short-circuited (below 300 kΩ),  
replace Outdoor fan motor and main PCB.**

Pin number (wire color)	Terminal function (symbol)
1 (Red)	DC voltage (Vm)
2	No function
3	No function
4 (Black)	Earth terminal (GND)
5 (White)	Control voltage (Vcc)
6 (Yellow)	Speed command (Vsp)
7 (Brown)	Feed back (FG)





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