Split type room air conditioner
Wall-mounted type
Inverter

GENERAL

SERVICE INSTRUCTION

Indoor unit	Outdoor unit
ASHG07KPCA	AOHG07KPCA
ASHG09KPCA	AOHG09KPCA
ASHG12KPCA	AOHG12KPCA

FUJITSU GENERAL LIMITED

CONTENTS

1. DESCRIPTION OF EACH CONTROL OPERATION

1. COMPRESSOR CONTROL..... 01-01
2. AUTO CHANGEOVER OPERATION..... 01-05
3. INDOOR FAN CONTROL.....01-06
4. OUTDOOR FAN CONTROL.....01-10
5. LOUVER CONTROL.....01-12
6. TIMER OPERATION CONTROL.....01-14
7. DEFROST OPERATION CONTROL.....01-16
8. OFF DEFROST OPERATION CONTROL.....01-18
9. VARIOUS CONTROL..... 01-19
10. VARIOUS PROTECTIONS.....01-22

2. TROUBLESHOOTING

1. ERROR DISPLAY.....02-01
2. TROUBLESHOOTING WITH ERROR CODE..... 02-03
3. TROUBLESHOOTING WITH NO ERROR CODE.....02-23
4. PARTS INFORMATION.....02-28

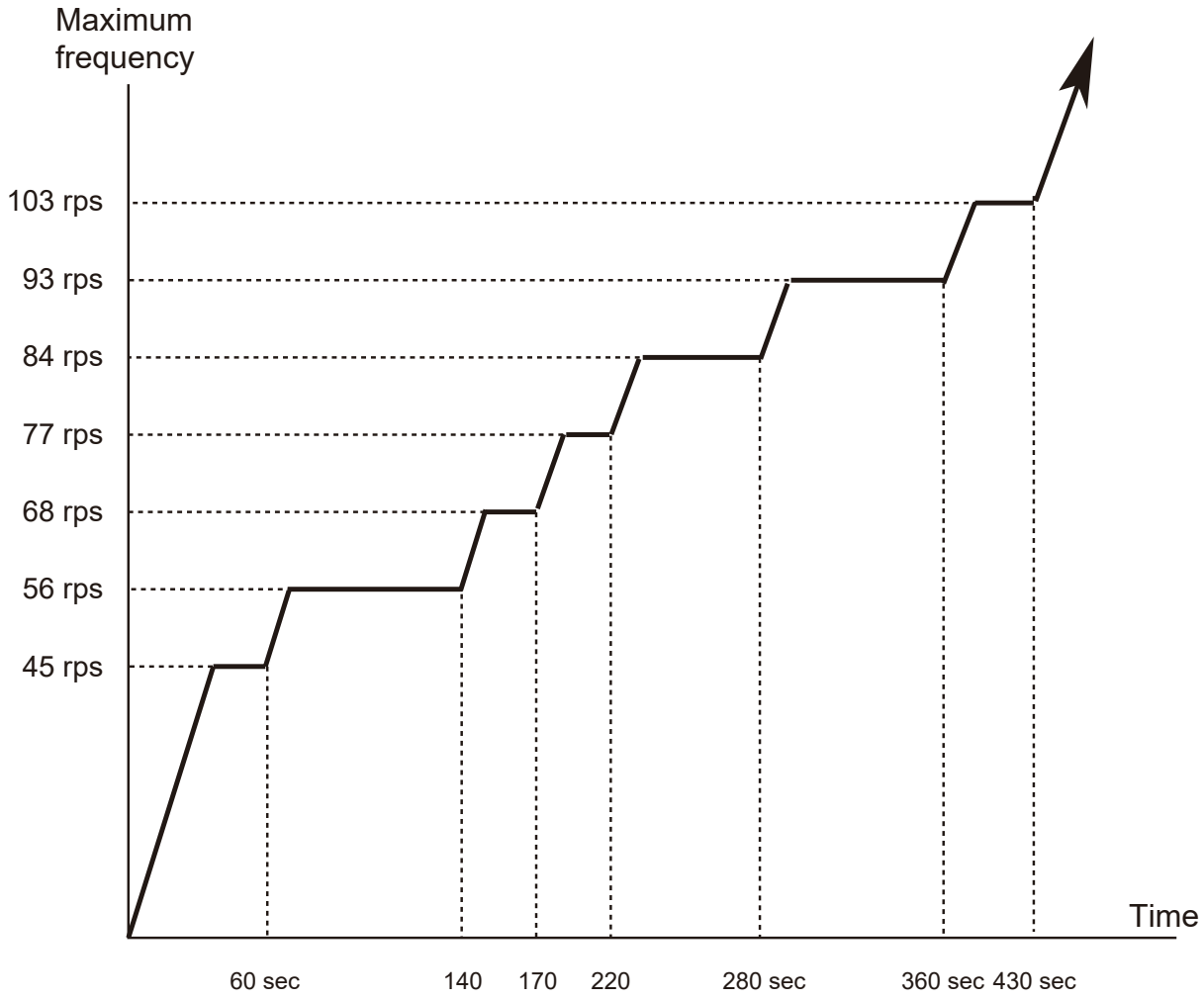
Refrigerant R32

Wall-mounted type INVERTER

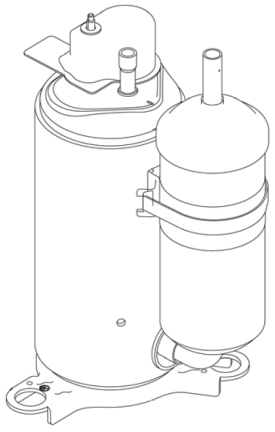
1 . DESCRIPTION OF EACH CONTROL OPERATION

1. COMPRESSOR FREQUENCY AT NORMAL START-UP

Compressor frequency soon after starting
is controlled as below.



Forced 45 rps operation
for 60 seconds from start-up



Compressor
DSG066MJA

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°C higher than set temperature, the compressor operation frequency will attain to maximum performance.

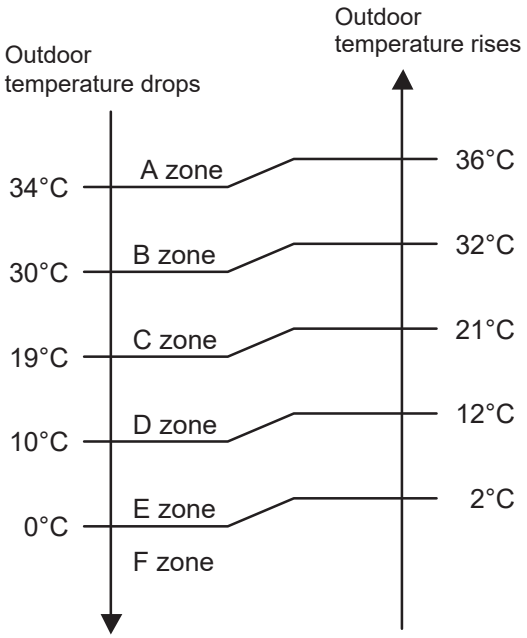
If the room temperature is some degrees lower than set temperature, the compressor will be stopped.

When the room temperature is between +2°C to -2.5°C of the set temperature, the compressor frequency is controlled within the range shown in Table1.
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
AOHG07KPCA	10 rps	84 rps
AOHG09KPCA	10 rps	84 rps
AOHG12KPCA	10 rps	90 rps

Fig.1 Outdoor temperature zone



Limit of maximum speed based on outdoor temperature

AOHG07/09KPCA

Outdoor temp. zone	Indoor fan mode			
	Hi	Me	Lo	Quiet
A zone	84 rps	49 rps	36 rps	24 rps
B zone	84 rps	49 rps	36 rps	24 rps
C zone	84 rps	49 rps	36 rps	24 rps
D zone	60 rps	44 rps	34 rps	22 rps
E zone	60 rps	44 rps	34 rps	22 rps
F zone	60 rps	44 rps	34 rps	22 rps

AOHG12KPCA

Outdoor temp. zone	Indoor fan mode			
	Hi	Me	Lo	Quiet
A zone	90 rps	52 rps	36 rps	24 rps
B zone	90 rps	52 rps	36 rps	24 rps
C zone	90 rps	52 rps	36 rps	24 rps
D zone	64 rps	46 rps	34 rps	22 rps
E zone	64 rps	46 rps	34 rps	22 rps
F zone	64 rps	46 rps	34 rps	22 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.

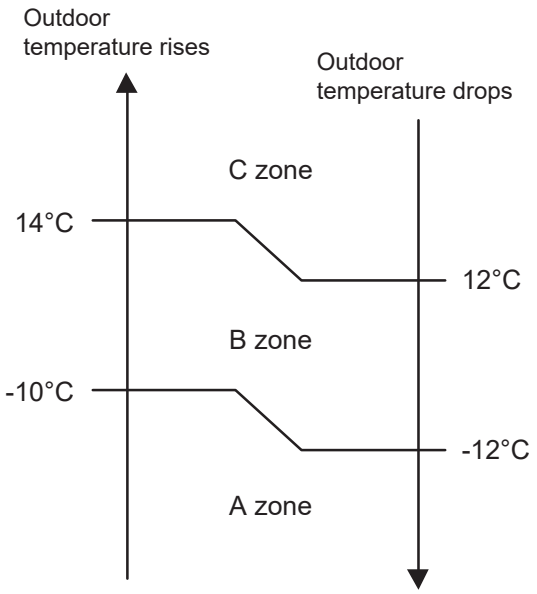
If the room temperature is some degrees higher than set temperature,
the compressor will be stopped.

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
AOHG07KPCA	10 rps	114 rps
AOHG09KPCA	10 rps	114 rps
AOHG12KPCA	10 rps	114 rps

Fig.2 Outdoor temperature zone



Limit of maximum speed based on outdoor temperature

AOHG07KPCA

Outdoor temp. zone	Indoor fan mode				
	Auto	Hi	Me	Lo	Quiet
C zone	110 rps	110 rps	110 rps	84 rps	52 rps
B zone	114 rps	114 rps	114 rps	96 rps	84 rps
A zone	114 rps	114 rps	114 rps	110 rps	90 rps

AOHG09KPCA

Outdoor temp. zone	Indoor fan mode				
	Auto	Hi	Me	Lo	Quiet
C zone	110 rps	110 rps	110 rps	84 rps	52 rps
B zone	114 rps	114 rps	114 rps	96 rps	84 rps
A zone	114 rps	114 rps	114 rps	110 rps	90 rps

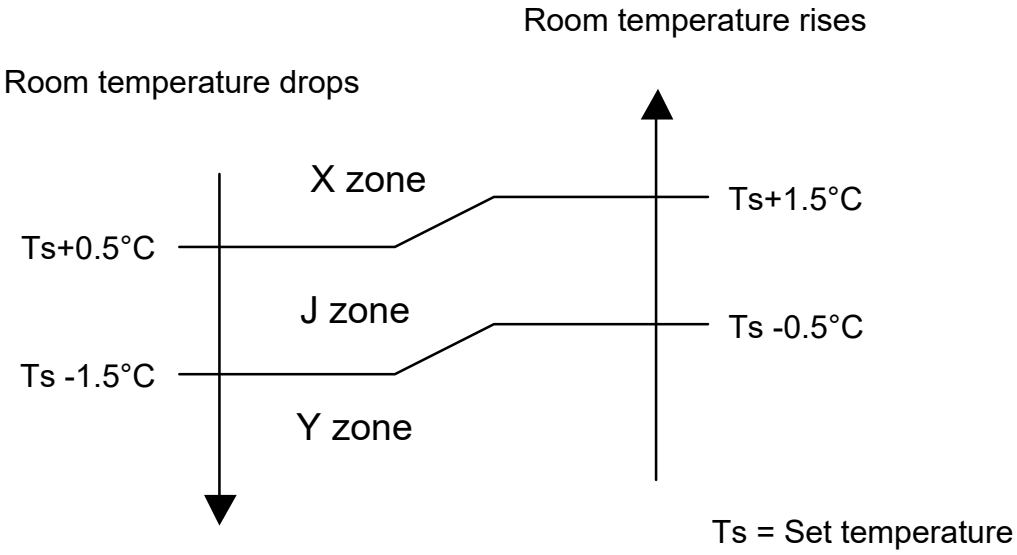
AOHG12KPCA

Outdoor temp. zone	Indoor fan mode				
	Auto	Hi	Me	Lo	Quiet
C zone	110 rps	110 rps	110 rps	73 rps	46 rps
B zone	114 rps	114 rps	114 rps	78 rps	73 rps
A zone	114 rps	114 rps	114 rps	78 rps	78 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.

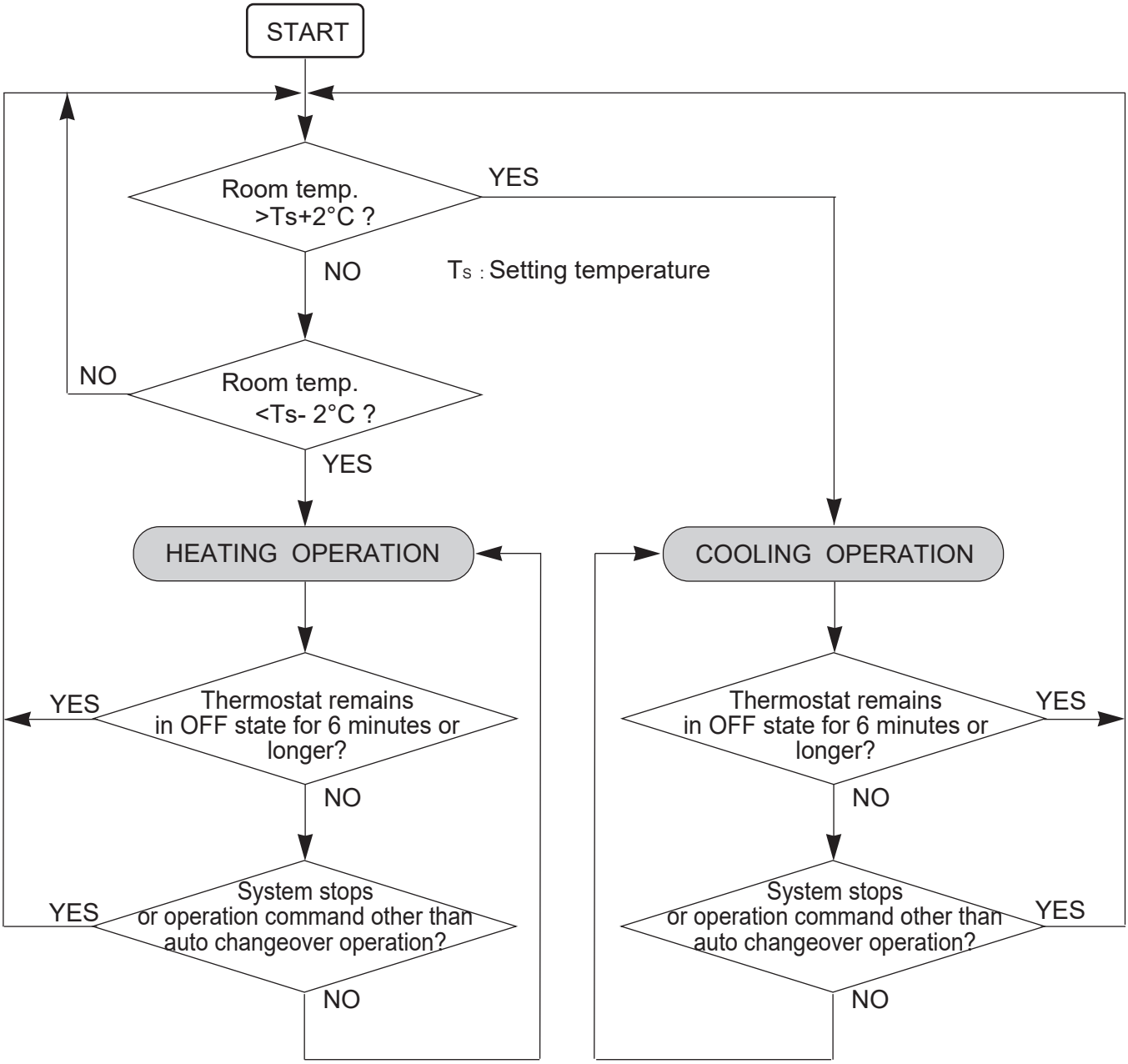


Maximum compressor frequency is defined by zone.

	AOHG07KPCA	AOHG09KPCA	AOHG12KPCA
X zone	24 rps	24 rps	24 rps
J zone	18 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.



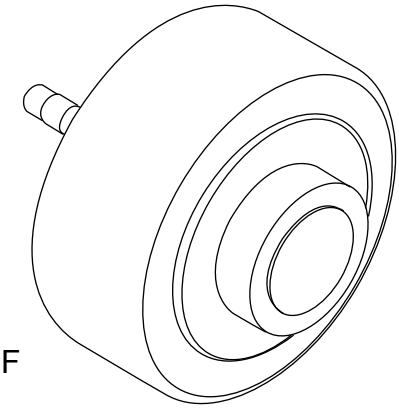
3. INDOOR FAN CONTROL

1. FAN SPEED

Indoor fan speed is defined as below.

Operation mode	Air flow mode	Speed		
		ASHG07KPCA	ASHG09KPCA	ASHG12KPCA
Heating	Powerful	1,370 rpm	1,370 rpm	1,470 rpm
	Hi	1,300 rpm	1,300 rpm	1,400 rpm
	Me+	1,190 rpm	1,190 rpm	1,280 rpm
	Me	1,080 rpm	1,080 rpm	1,140 rpm
	Lo	930 rpm	930 rpm	930 rpm
	Quiet	700 rpm	700 rpm	700 rpm
	Cool air prevention	630 rpm	630 rpm	630 rpm
	S-Lo	580 rpm	580 rpm	580 rpm
Cooling / Fan	Powerful	1,370 rpm	1,370 rpm	1,470 rpm
	Hi	1,300 rpm	1,300 rpm	1,400 rpm
	Me	1,080 rpm	1,080 rpm	1,140 rpm
	Lo	850 rpm	850 rpm	890 rpm
	Quiet	650 rpm	650 rpm	650 rpm
	* Soft Quiet	580 rpm	580 rpm	580 rpm
Dry		X zone: 650 rpm J zone: 650 rpm	X zone: 650 rpm J zone: 650 rpm	X zone: 650 rpm J zone: 650 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-W30YA2F

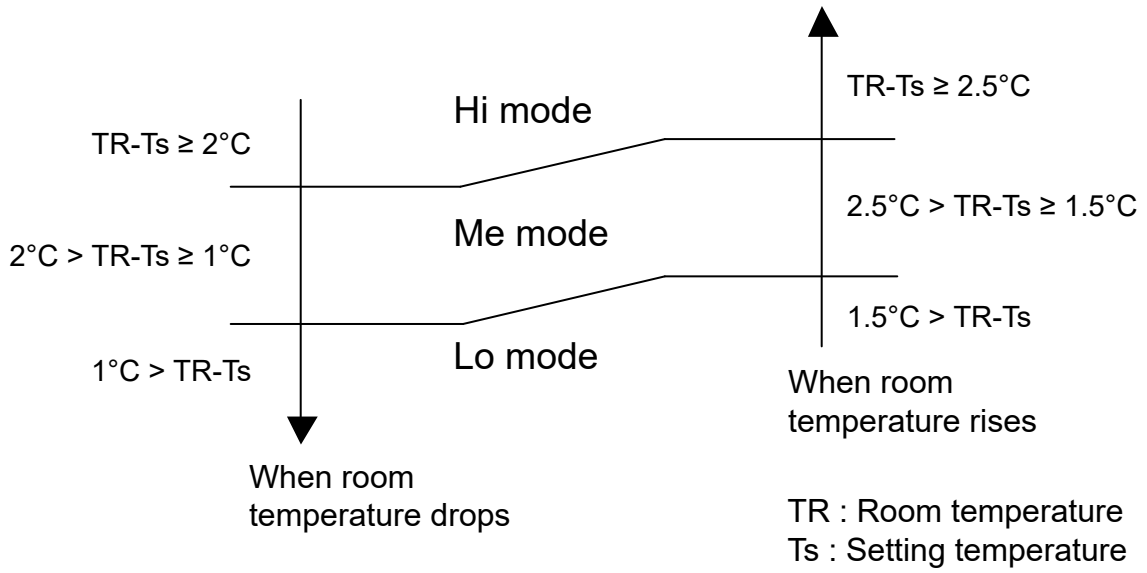
2. FAN OPERATION

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)



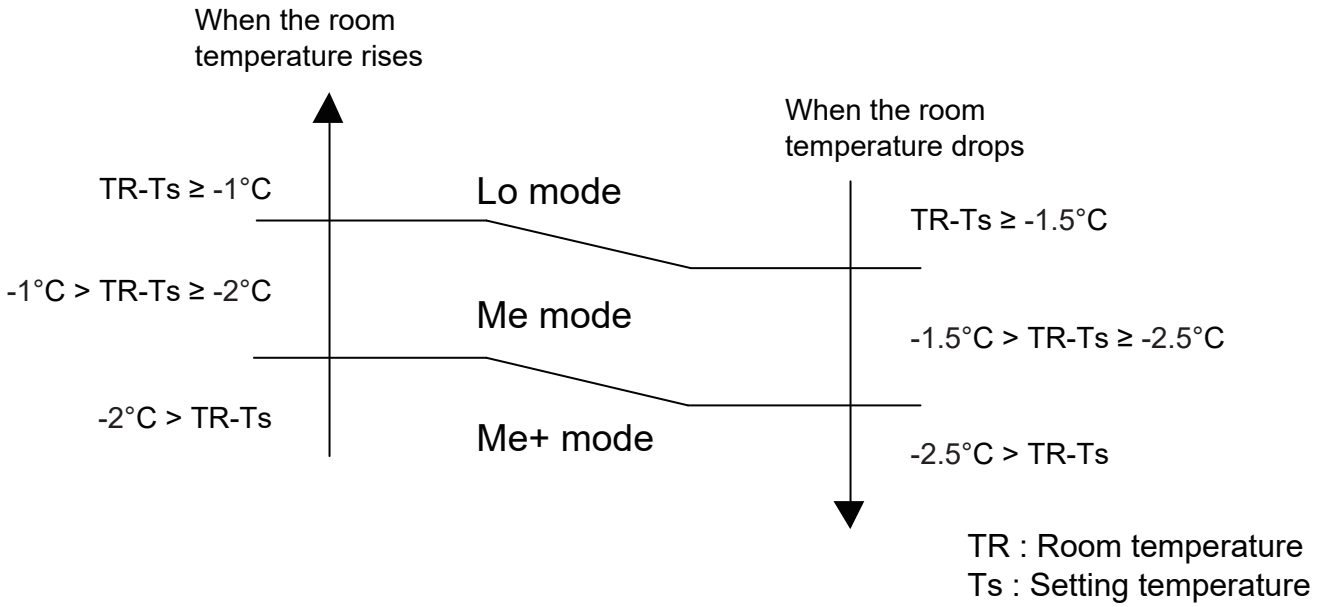
4. DRY OPERATION

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.

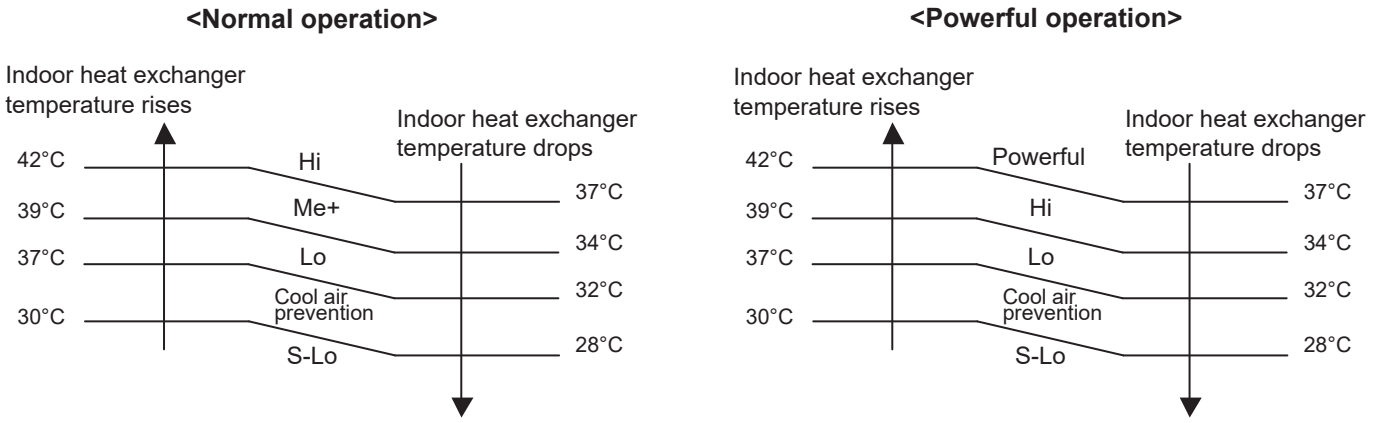
Fig : Airflow changeover (Heating : Auto)



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 prevension 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.

Fig. : Indoor fan control

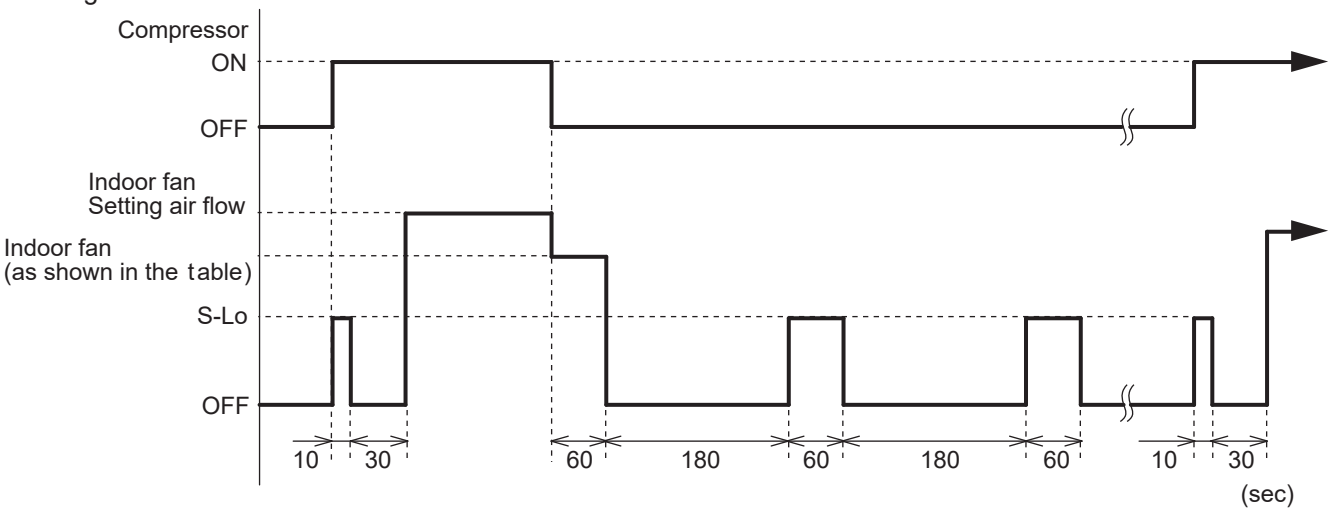


Table : Indoor fan speed

	Dry		Cooling
	X zone	J zone	
ASHG07/09KPCA	650rpm	650rpm	650rpm
ASHG12KPCA	650rpm	650rpm	650rpm

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 preventtion 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 preventtion control

4. OUTDOOR FAN CONTROL

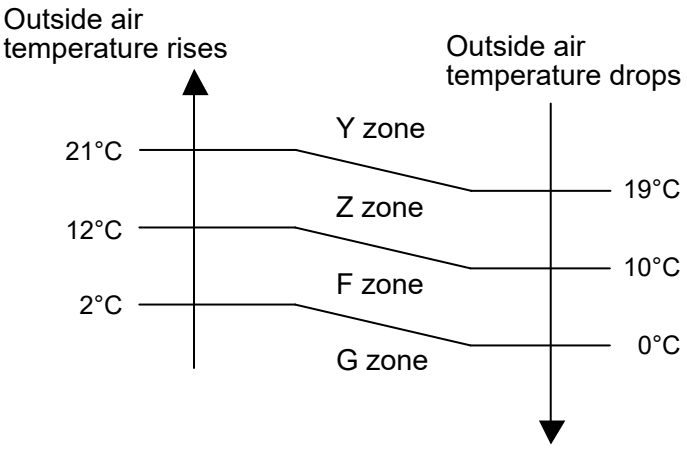
1. OUTDOOR FAN MOTOR

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.

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



AOHG07/09KPCA

Fan step	Y zone		Z zone Cool, Dry	F zone Cool, Dry	G zone Cool, Dry
	Cooling	Dry			
S-Hi1	950 rpm	-	-	-	-
Hi	950 rpm	-	-	-	-
9	950 rpm	950 rpm	950 rpm	950 rpm	950 rpm
8	780 rpm	780 rpm	780 rpm	270 rpm	250 rpm
7	780 rpm	780 rpm	780 rpm	270 rpm	250 rpm
6	780 rpm	780 rpm	540 rpm	270 rpm	200 rpm
5	780 rpm	780 rpm	360 rpm	240 rpm	170 rpm
4	780 rpm	780 rpm	270 rpm	210 rpm	170 rpm
3	680 rpm	680 rpm	270 rpm	190 rpm	170 rpm
2	610 rpm	610 rpm	270 rpm	190 rpm	170 rpm
1	580 rpm	580 rpm	270 rpm	170 rpm	170 rpm

AOHG12KPCA

Fan step	Y zone		Z zone Cool, Dry	F zone Cool, Dry	G zone Cool, Dry
	Cooling	Dry			
S-Hi1	950 rpm	-	-	-	-
Hi	950 rpm	-	-	-	-
9	950 rpm	950 rpm	950 rpm	950 rpm	950 rpm
8	900 rpm	900 rpm	900 rpm	350 rpm	300 rpm
7	900 rpm	900 rpm	900 rpm	350 rpm	300 rpm
6	900 rpm	900 rpm	560 rpm	350 rpm	300 rpm
5	900 rpm	900 rpm	420 rpm	320 rpm	230 rpm
4	800 rpm	800 rpm	350 rpm	290 rpm	230 rpm
3	680 rpm	680 rpm	350 rpm	270 rpm	230 rpm
2	580 rpm	580 rpm	350 rpm	270 rpm	230 rpm
1	540 rpm	540 rpm	350 rpm	250 rpm	230 rpm

3. FAN SPEED IN HEATING OPERATION

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

Fan step	Fan speed	
	AOHG07/09KPCA	AOHG12KPCA
S-Hi2	930 rpm	1,020 rpm
S-Hi1	930 rpm	1,020 rpm
Hi	930 rpm	1,020 rpm
10	690 rpm	790 rpm
9	690 rpm	790 rpm
8	690 rpm	790 rpm
7	690 rpm	790 rpm
6	690 rpm	790 rpm
5	690 rpm	730 rpm
4	550 rpm	630 rpm
3	510 rpm	530 rpm
2	480 rpm	470 rpm
1	480 rpm	470 rpm

5. LOUVER CONTROL

1. VERTICAL LOUVER CONTROL

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

① → ② → ③ → ④ → ⑤ → ⑥

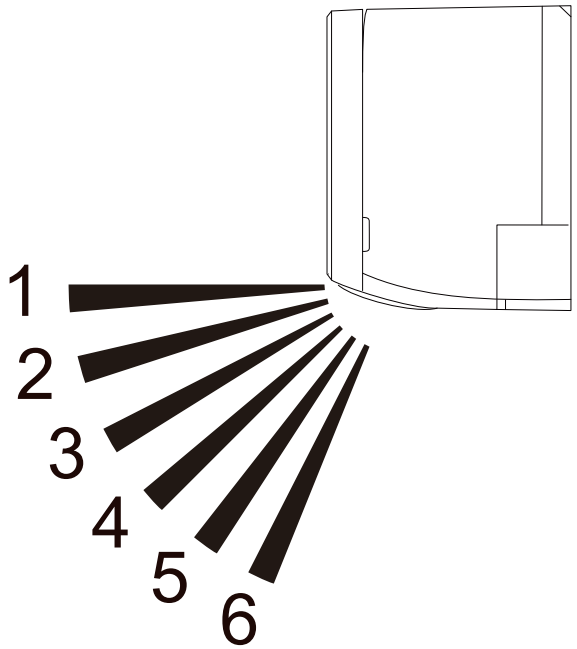
Remote control display is not changed.

- When you set the angle to position 4.6 for more than 30 minutes in cooling or dry operation, they automaticaly returnto position 3.
  In cooling or dry operation, when the angle is set to position 4.6 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	⑥

- 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.

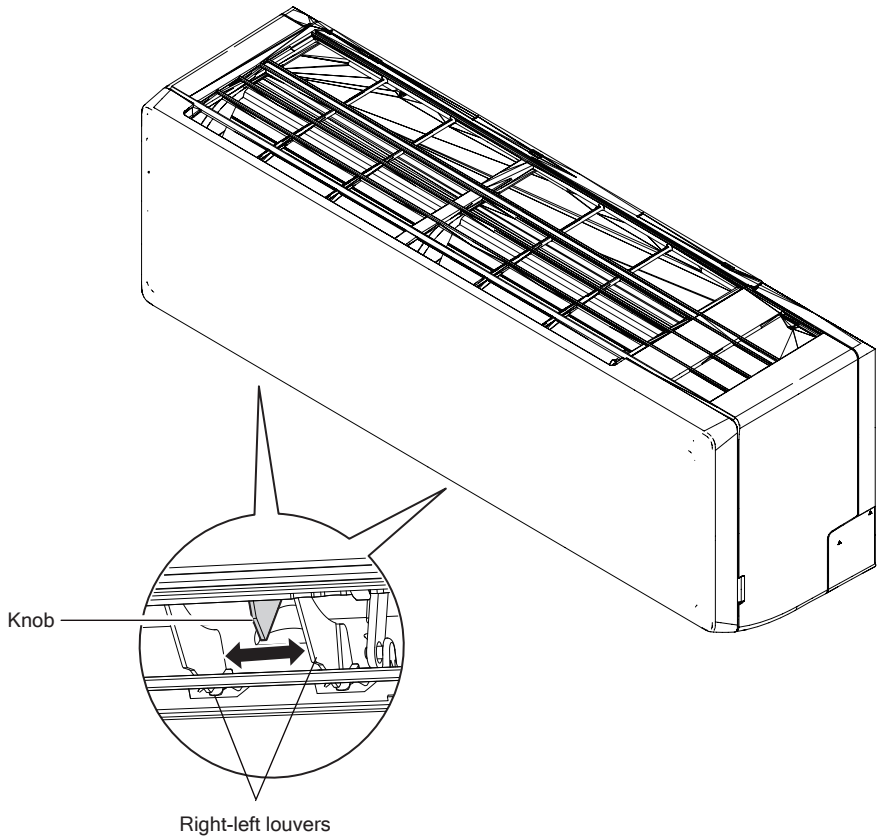
Table : Swinging range

	Range
Cooling / Dry mode Fan mode (①～④)	① ⇔ ④
Heating mode Fan mode (③～⑥)	③ ⇔ ⑥

・ 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.

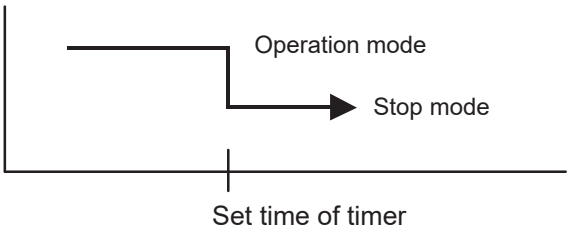


6. TIMER OPERATION CONTROL

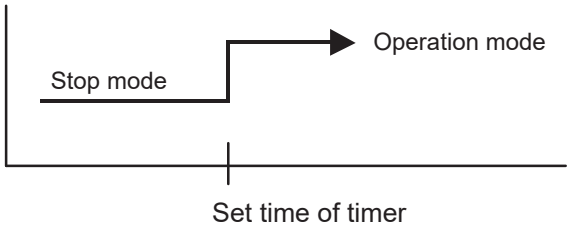
6-1 WIRELESS REMOTE CONTROL

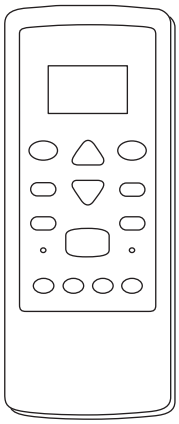
1. OPERATION FREQUENCY RANGE

・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.

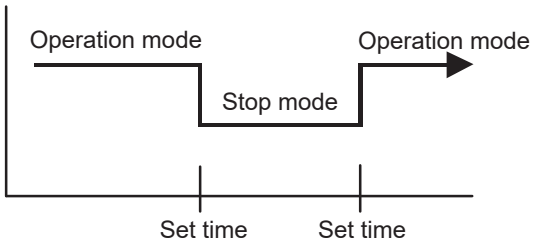


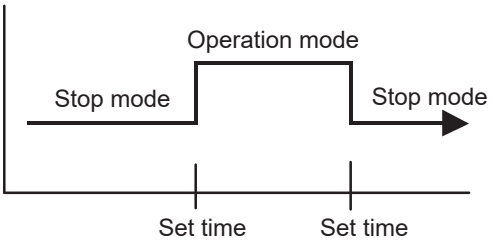


Wireless remote control

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.

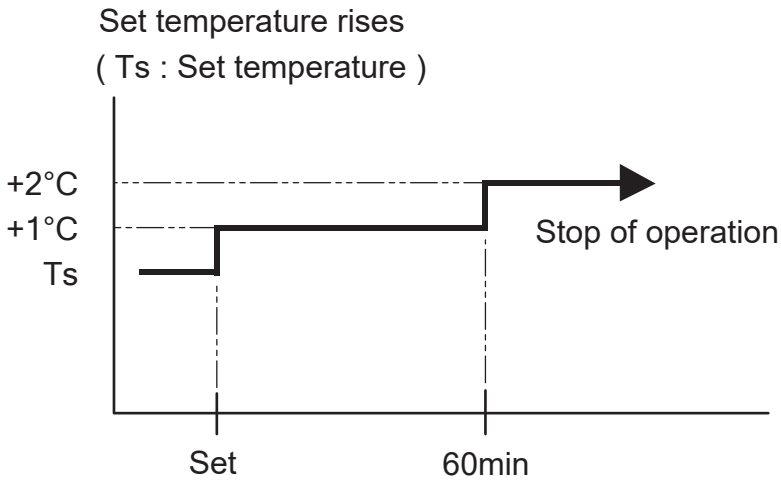
・SLEEP timer operation cannot be combined with ON timer operation.

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.

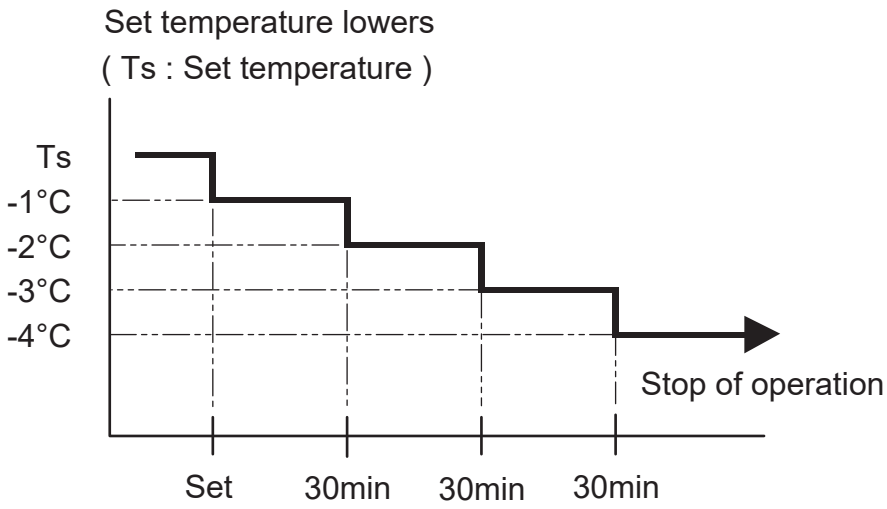
In cooling operation

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)	Tn ≤ -9°C and Tn - Ta ≥ 5deg	Tn ≤ -5°C

2nd time and after

Compressor integrating operation time	Less than 25 min.	More than 25 min.
Condition	(Does not operate)	When Ta ≥ -10°C Tn ≤ -17°C
		When Ta < -10°C ① Tn ≤ -20°C ② Tn ≤ Ta - 7°C ③ Tn-Tn10< -5°C (and Tn ≤ -6°C) ④ Tn-Tnb< -2°C (and Tn ≤ -6°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.

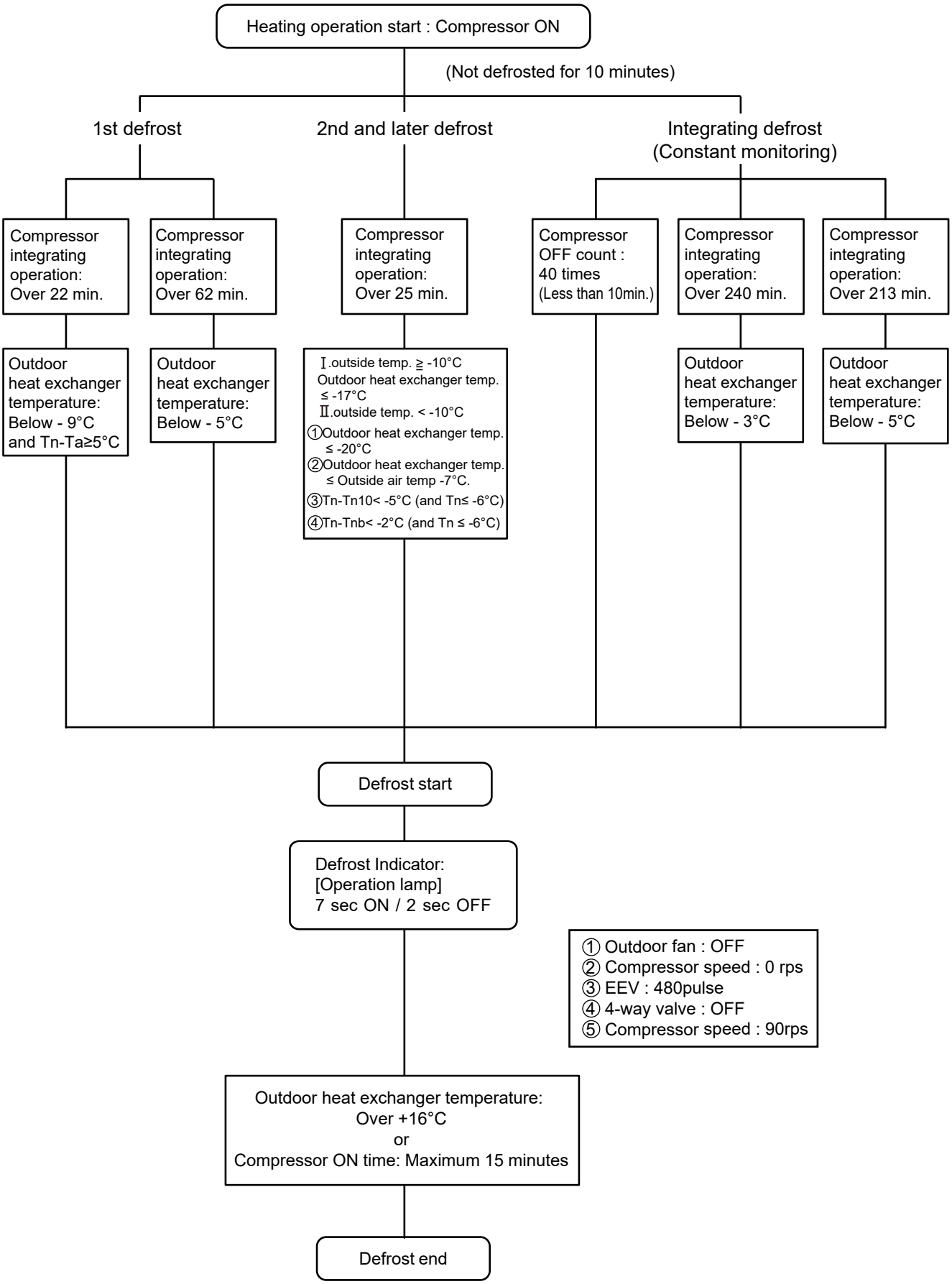
*1 : If the compressor continuous operation time is less than 10 minutes, the OFF number of the compressor is counted.
If any defrost operated, the compressor OFF count is cleared.

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 OPEARTION 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°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°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

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. 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

10. 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 ≤ Set temperature - 1.5°C
or Operation time has passed 20 minutes.

[Heating]
Room temperature ≥ Set temperature + 1.5°C
and Operation time has passed 20 minutes.

1. DISCHARGE GAS TEMPERATURE OVERRISE PREVENSION 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

OT	Control / Release
	5.5A / 5.0A
17°C	
	7.0A / 6.5A
12°C	
	7.5A / 7.0A
5°C	
	8.5A / 8.0A

Cooling, Dry operation

OT	Control / Release
	4.0A / 3.5A
50°C	
	4.0A / 3.5A
46°C	
	5.0A / 4.5A
40°C	
	6.0A / 5.5A
12°C	
	6.0A / 5.5A
2°C	
	6.0A / 5.5A

Refrigerant R32

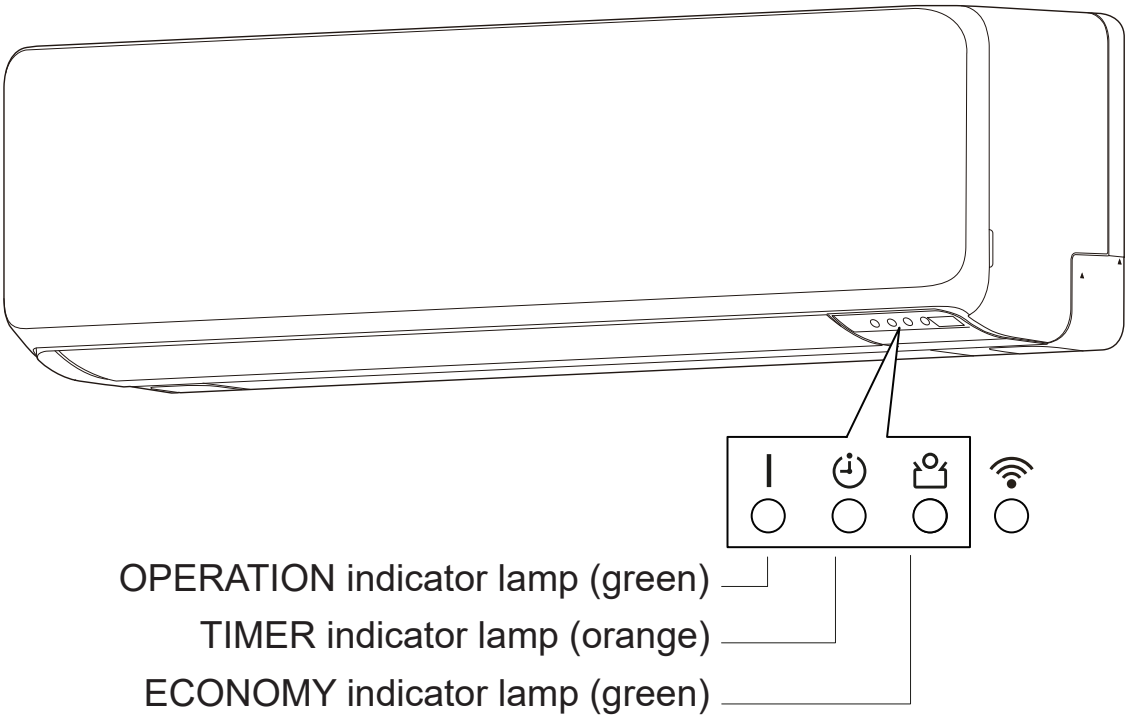
WALL-MOUNTED type
INVERTER

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.



2. 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			Trouble shooting
	OPERATION [▌] (Green)	TIMER [ ] (Orange)	ECONOMY [ ] (Green)	
Serial communication error	1 times	1 times	Continuous	1
Wired remote control communication error	1 times	2 times	Continuous	2
Indoor unit model information error EEPROM access abnormal	3 times	2 times	Continuous	3
Manual auto switch error	3 times	5 times	Continuous	4
Indoor room thermistor error	4 times	1 times	Continuous	5
Indoor heat Ex. thermistor error	4 times	2 times	Continuous	6
Indoor unit fan motor error	5 times	1 times	Continuous	7
Outdoor unit main PCB error	6 times	2 times	Continuous	8
PFC circuit error	6 times	4 times	Continuous	9
IPM error	6 times	5 times	Continuous	10
Discharge thermistor error	7 times	1 times	Continuous	11
Heat Ex. liquid outlet thermistor error	7 times	3 times	Continuous	12
Outdoor thermistor error	7 times	4 times	Continuous	13
Current sensor error	8 times	4 times	Continuous	14
Over current error	9 times	4 times	Continuous	15
Compressor control error	9 times	5 times	Continuous	16
Outdoor unit fan motor error	9 times	7 times	Continuous	17
4 Way valve error	9 times	9 times	Continuous	18
Discharge temp. error	10 times	1 times	Continuous	19

Troubleshooting 1-1

Serial communication error (Serial reverse transfer error)

OUTDOOR UNIT Error Method:

Detective actuators:	**Detective details:**
Outdoor unit main PCB Outdoor unit fan motor	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

Check Point 1-1 : Reset the power and operate

- Does Error indication show again?

NO → **Check Point 1-2: Check external cause such as noise**

- Check the complete insulation of the grounding.
- Check if there is any equipment that causes harmonic wave near the power cable (Neon light bulb or any electronic equipment which causes harmonic wave).

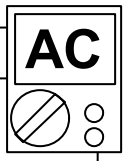
YES ↓

Check Point 2 : Check Connection

- Check any loose or removed connection line of Indoor unit and Outdoor unit.
  >> **If there is an abnormal condition, correct it by referring to Installation Manual or Data & Technical Manual.**

OK ↓

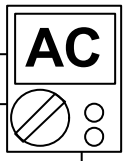
Check Point 3 : Check the voltage of power supply



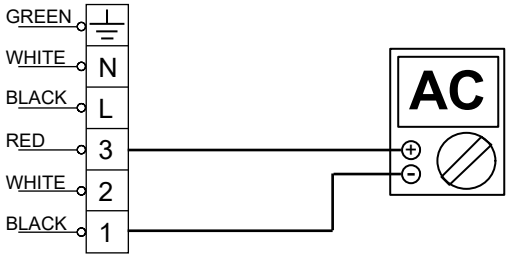
- Check the voltage of power supply
  >> **Check if AC207V (AC230V -10%) - 253V (AC230V +10%) appears at Outdoor Unit Terminal L - N.**

OK ↓

Check Point 4 : Check Serial Signal (Reverse Transfer Signal)



- Check Serial Signal (Reverse Transfer Signal)
  >> **Check if Indicated value swings between AC90V and AC270V at Outdoor Unit Terminal 1 - 3.**
  >> **If it is abnormal, Check Outdoor unit fan motor. (PARTS INFORMATION 5)**
  >> **If Outdoor fan motor is abnormal, replace Outdoor unit fan motor and Main PCB.**
  >> **If Outdoor fan motor is normal, replace Main PCB.**



Troubleshooting 1-2

Serial communication error (Serial forward transfer error)

INDOOR UNIT Error Method:

Detective Actuators:	Detective details:
Indoor unit Controller PCB Indoor unit Fan motor Outdoor unit Main PCB	When the outdoor unit cannot receive the serial signal from Indoor unit more than 10seconds.

Forecast of cause:

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

Check Point 1-1 : Reset the power and operate

- Does Error indication show again?

NO → **Check Point 1-2: Check external cause such as noise**

- Check the complete insulation of the grounding.
- Check if there is any equipment that causes harmonic wave near the power cable (Neon light bulb or any electronic equipment which causes harmonic wave).

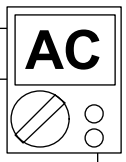
YES ↓

Check Point 2 : Check Connection

- Check any loose or removed connection line of Indoor unit and Outdoor unit.
  >> If there is an abnormal condition, correct it by referring to Installation Manual or Data & Technical Manual.

OK ↓

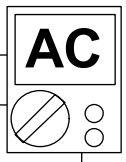
Check Point 3 : Check the voltage of power supply



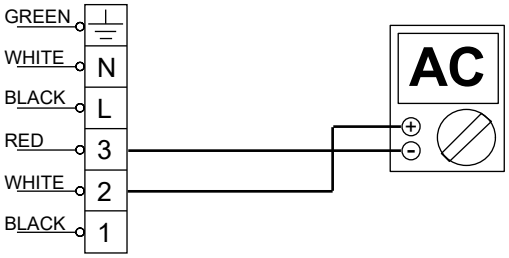
- Check the voltage of power supply
  >> Check if AC207V (AC230V -10%) - 253V (AC230V +10%) appears at Outdoor Unit Terminal L - N.

OK ↓

Check Point 4 : Check Serial Signal (Reverse Transfer Signal)



- Check Serial Signal (Forward Transfer Signal)
  >> Check if Indicated value swings between AC30V and AC130V at Outdoor Unit Terminal 2 - 3.
  >> If it is abnormal, replace Controller PCB.
  >> If it is abnormal, Check Indoor unit fan motor. (PARTS INFORMATION 4)
  >> If Indoor unit fan motor is abnormal, replace Indoor unit fan motor and Controller PCB.
  >> If it is abnormal, replace Outdoor unit Main PCB.



Troubleshooting 2

Remote control communication error

INDOOR UNIT Error Method:

Detective actuators:	Detective details:
Indoor unit controller PCB Wired remote control	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

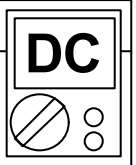
Check Point 1 : Check the connection of terminal

After turning off the power, check & correct the followings.

- Check the connection of terminal between remote control and Indoor unit, and check if there is a disconnection of the cable.

OK

Check Point 2 : Check remote control and controller PCB



- 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

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

Wired remote control is unable to connect to ASHG07/09/12KPCA.

Troubleshooting 3

Indoor unit main PCB error

INDOOR UNIT Error Method:

Detective actuators:	Detective details:
Indoor unit controller PCB	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

Check Point 1-1 : Reset Power Supply and operate

- Does Error indication show again?

NO → **Check Point 1-2 : Check external cause such as noise**

- Check if the ground connection is proper.
- Check if there is any equipment that causes harmonic wave near the power cable (Neon light bulb or any electronic equipment which causes harmonic wave).

YES → **Check Point 2 : Check Indoor unit electric components**

- Check all connectors.
  (loose connector or incorrect wiring)
- Check any shortage or corrosion on PCB.

→ **Check Point 3 : Replace Controller PCB**

▶ **Change Controller PCB.**

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

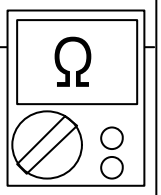
INDOOR UNIT Error Method:

Detective actuators:	Detective details:
Indoor unit controller PCB Indicator PCB Manual auto switch	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

Check Point 1 : Check the manual auto switch



- Check if Manual auto switch is kept pressed.
- Check ON/OFF switching operation by using a meter.

>>If Manual Auto Switch is disabled (on/off switching), replace it.

OK

Check Point 2 : Replace controller PCB

▶ If Check Point 1 do not improve the symptom, change Controller PCB and Indicator PCB.

Troubleshooting 5

Room temperature sensor error

INDOOR UNIT Error Method:

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

Forecast of cause :

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

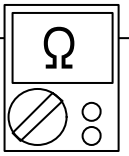
Check Point 1 : Check connection of Connector

- 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.

OK

Check Point 2 : Remove connector and check Thermistor resistance value



Thermistor Characteristics (Approx. value)

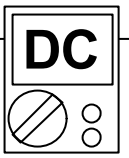
Temperature	-10°C	-5°C	0°C	5°C	10°C	15°C	20°C	25°C
Resistance Value (kΩ)	55.46	42.36	32.67	25.39	19.91	15.71	12.5	10.0

Temperature	30°C	35°C	40°C	45°C
Resistance Value (kΩ)	8.051	6.52	5.316	4.354

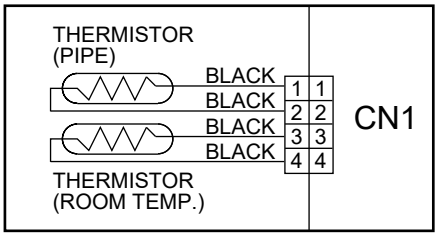
▶ **If Thermistor is either open or shorted, replace it and reset the power.**

OK

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)



▶ If the voltage does not appear, replace controller PCB.

Troubleshooting 6

Indoor unit heat-exchanger sensor error

INDOOR UNIT Error Method:

Detective actuators:	Detective details:
Indoor unit controller PCB Heat Ex. temperature thermistor	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

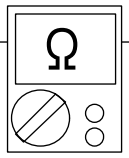
Check Point 1 : Check connection of Connector

- 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.

OK

Check Point 2 : Remove connector and check Thermistor resistance value



Thermistor Characteristics (Approx. value)

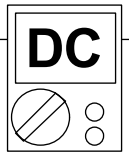
Temperature	-10°C	-5°C	0°C	5°C	10°C	20°C
Resistance Value (kΩ)	295.1	223.3	170.7	131.4	102.1	62.9

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

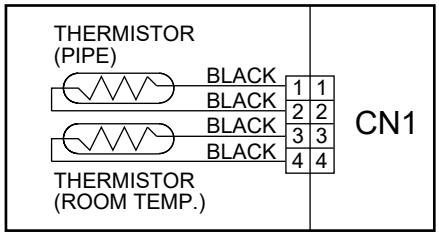
▶ **If Thermistor is either open or shorted, replace it and reset the power.**

OK

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)



▶ If the voltage does not appear, replace controller PCB.

Troubleshooting 7

Indoor unit fan motor error

INDOOR UNIT Error Method:

Detective Actuators:	Detective details:
Indoor unit Controller PCB Indoor unit Fan motor	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

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.

OK

Check Point 2 : Check ambient temp. around motor

・Check excessively high temperature around the motor.
(If there is any surrounding equipment that causes heat)
>>Upon the temperature coming down, restart operation.

OK

Check Point 3 : Check Indoor unit fan motor

・Check Indoor unit fan motor. (PARTS INFORMATION 4)
>>If Indoor unit fan motor is abnormal, replace Indoor unit fan motor.

OK

Check Point 4 : Replace Controller PCB

▶ If Check Point 1- 3 do not improve the symptom,
replace controller PCB.

Troubleshooting 8

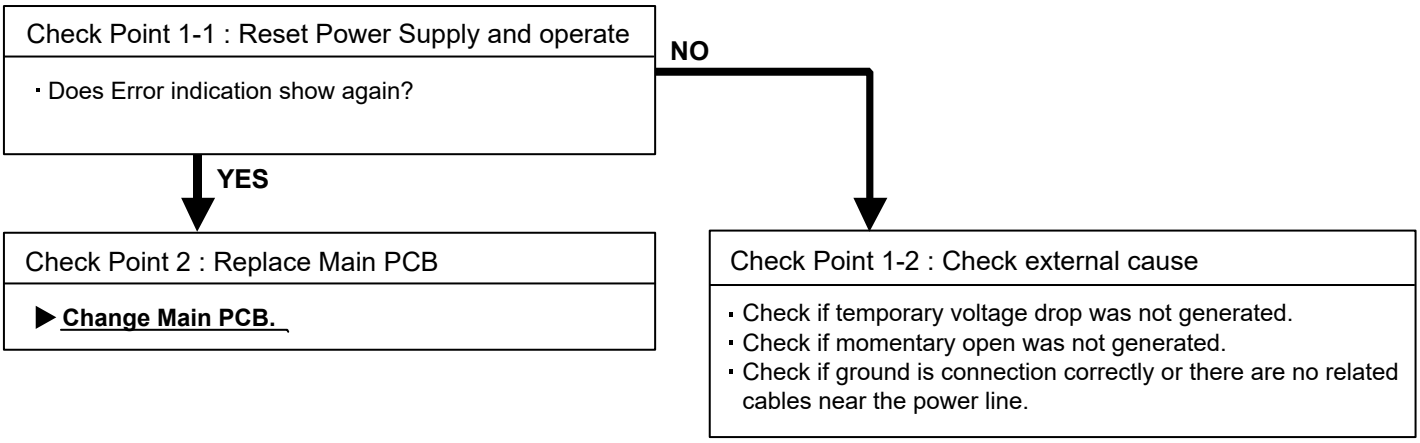
Outdoor unit main PCB error

OUTDOOR UNIT Error Method:

Detective actuators:	**Detective details:**
Outdoor unit main PCB	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:

Detective actuators:	**Detective details:**
Outdoor unit main PCB	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

Check Point 1 : Check external cause at Indoor and Outdoor (Voltage drop or Noise)

- Instant drop : Check if there is a large load electric apparatus in the same circuit.
- Momentary power failure : Check if there is a defective contact or leak current in the power supply circuit.
- Noise : Check if there is any equipment causing harmonic wave near electric line. (Neon bulb or electric equipment that may cause harmonic wave) Check the complete insulation of grounding.

OK

Check Point 2 : Check connection of Connector

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

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

OK

Check Point 3 : Replace Main PCB

▶ If Check Point 1, 2 do not improve the symptom, change main PCB.

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 ②repeats 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

Check Point 1 : Check connections of Outdoor Unit Electrical Components

- Check if the terminal connection is loose.
- Check if connector is removed.
- Check erroneous connection.
- Check if cable is open.

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

↓ **OK**

Check Point 2 : Check Outdoor Fan, Heat Exchanger

- Is there anything obstructing the air distribution circuit?
- Is there any clogging of Outdoor Heat Exchanger?
- Is the Fan rotating by hand when operation is off ?

>> If the Fan Motor is locked, replace it.

↓ **OK**

Check Point 3 : Check Outdoor Fan

- Check Outdoor Fan Motor. (Refer to Troubleshooting 17)

>> If the Fan Motor is failure, replace it.

↓ **OK**

Check Point 4 : Check Compressor

- Check Compressor. **(PARTS INFORMATION 2)**

↓ **OK**

Check Point 5 : Replace Main PCB

▶ **If Check Point 1～ 4 do not improve the symptom, change Main PCB.**

Troubleshooting 11

Discharge thermistor error

OUTDOOR UNIT Error Method:

Detective actuators:	**Detective details:**
Outdoor unit main PCB Discharge pipe temperature thermistor	When Discharge pipe 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.

OK

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	30°C
Resistance Value (kΩ)	286.3	218.6	168.6	130.9	102.5	64.22	41.33

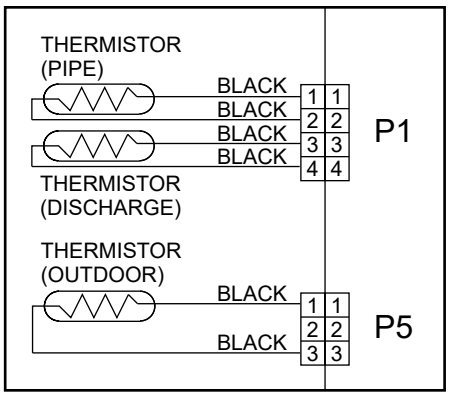
Temperature	40°C	50°C	60°C	70°C	80°C	90°C	100°C	110°C	120°C
Resistance Value (kΩ)	27.26	18.40	12.68	8.909	6.375	4.639	3.430	2.573	1.956

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

OK

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

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



▶ If the voltage does not appear, replace main PCB.

Troubleshooting 12

Outdoor unit heat-exchanger sensor error

OUTDOOR UNIT Error Method:

Detective actuators:	**Detective details:**
Outdoor unit main PCB Heat exchanger temperature thermistor	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.

OK

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	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

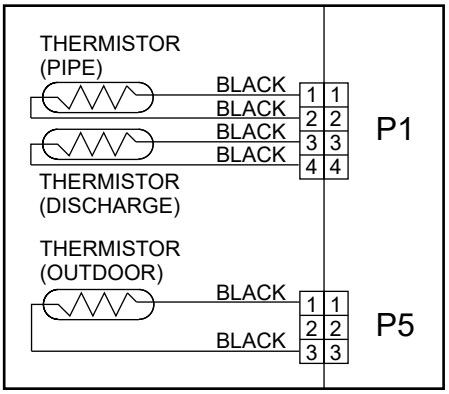
Temperature	60°C	70°C	80°C
Resistance Value (kΩ)	1.213	0.8531	0.6115

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

OK

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

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



▶ If the voltage does not appear, replace main PCB.

Troubleshooting 13

Outdoor thermistor error

OUTDOOR UNIT Error Method:

Detective Actuators:	**Detective details:**
Outdoor unit main PCB Outdoor temperature thermistor	When Outdoor 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

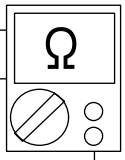
Check Point 1 : Check connection of Connector

- 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.

OK

Check Point 2 : Remove connector and check Thermistor resistance value



Thermistor Characteristics (Approx. value)

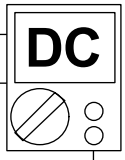
Temperature	-20°C	-15°C	-10°C	-5°C	0°C	5°C	10°C
Resistance Value (kΩ)	109.0	80.56	60.23	45.40	34.57	26.53	20.56

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

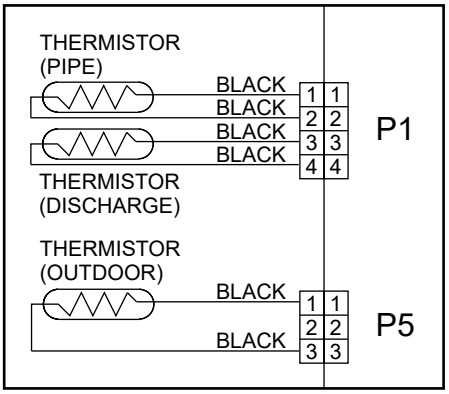
▶ **If Thermistor is either open or shorted, replace it and reset the power.**

OK

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



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



▶ If the voltage does not appear, replace main PCB.

Troubleshooting 14

Current sensor error

OUTDOOR UNIT Error Method:

Detective actuators:	**Detective details:**
Outdoor unit main PCB	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

Check Point 1-1 : Reset Power Supply and operate

- Does Error indication show again?

NO → **Check Point 1-2 : Check external cause at Indoor and Outdoor (Voltage drop or Noise)**

- Instant drop : Check if there is a large load electric apparatus in the same circuit.
- Momentary power failure : Check if there is a defective contact or leak current in the power supply circuit.
- Noise : Check if there is any equipment causing harmonic wave near electric line.(Neon bulb or electric equipment that may cause harmonic wave) Check the complete insulation of grounding.

YES ↓

Check Point 2 : Check connections of Outdoor Unit Electrical Components

- Check if the terminal connection is loose.
- Check if connector is removed.
- Check erroneous connection.
- Check if cable is open.

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

OK ↓

Check Point 4 : Replace Main PCB

▶ If Check Point 1, 2 do not improve the symptom, change main PCB.

Troubleshooting 15

Trip detection

OUTDOOR UNIT Error Method:

Detective actuators:	Detective details:
Outdoor unit main PCB Compressor	・"**Protection stop** 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)

Check Point 1 :
Check the outdoor unit fan operation, heat-exchanger, ambient temperature

- No obstructions in air passages?
- Heat exchange fins clogged
- Outdoor unit fan motor check
- Ambient temperature not raised by the effect of other heat sources?
- Discharged air not sucked in?

OK

Check Point 2: Replace main PCB

▶ If Check Point 1 do not improve the symptom, change Main PCB.

OK

Check Point 3: Replace compressor

▶ If Check Point 2 do not improve the symptom, change compressor.

Troubleshooting 16

Compressor motor control error

OUTDOOR UNIT Error Method:

Detective actuators:	Detective details:
Outdoor unit Main PCB Compressor	① If the detected rotor location is out of phase with actual rotor location more than 90°, the compressor stops. After the compressor restarts, if the same operation is repeated ② 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. Main PCB failure
3. Compressor failure

Check Point 1 : Check Noise from Compressor

・Turn on Power and check operation noise.

▶ **If an abnormal noise show, replace Compressor.**

OK

Check Point 2 : Check connection of around the Compressor components

For Compressor Terminal, Main PCB

・Check if connector is removed.
・Check erroneous connection.
・Check if cable is open.
(Refer to PARTS INFORMATION 2)

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

OK

Check Point 3: Replace main PCB

▶ If Check Point 1,2 do not improve the symptom, change main PCB.

OK

Check Point 4: Replace compressor

▶ If Check Point 3 do not improve the symptom, change compressor.

Troubleshooting 17

Outdoor unit fan motor error

OUTDOOR UNIT Error Method:

Detective actuators:	**Detective details:**
Outdoor unit main PCB Outdoor unit fan motor	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.

Forecast of cause:

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

↓ **OK**

Check Point 2 : Check ambient temp. around motor

・Check excessively high temperature around the motor.
(If there is any surrounding equipment that causes heat)
>>Upon the temperature coming down, restart operation.

↓ **OK**

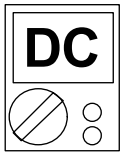
Check Point 3 : Check Outdoor unit fan motor

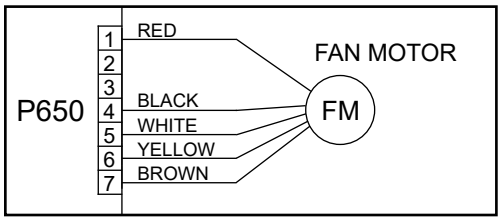
・Check Outdoor unit fan motor. **(PARTS INFORMATION 5)**
>>If Outdoor unit fan motor is abnormal, replace Outdoor unit fan motor.

↓ **OK**

Check Point 4 : Check Output Voltage of Main PCB

・Check outdoor unit circuit diagram and the voltage.
(Measure at Main PCB side connector)





Read wire	DC voltage
Red - Black	207V (AC230V-10%)~ 253V (AC230+10%)
White - Black	15±1.5V

▶ **If the voltage is not correct, replace Main PCB.**

Troubleshooting 18

4-way valve error

INDOOR UNIT Error Method:

Detective actuators:	**Detective details:**
Indoor unit controller PCB Heat Ex. temperature thermistor Room temperature thermistor 4-way valve	When the indoor heat exchanger temperature is compared with the room temperature, and either following condition is detected continuously two times, the compressor stops. ・Cooling or Dry operation [Indoor heat exchanger temp.] - [Room temp.] > 10degC ・Heating operation [Indoor heat exchanger temp.] - [Room temp.] < - 10degC 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

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.

OK

Check Point 2 : Check each thermistor

・Isn't it fallen off the holder?
・Is there a cable pinched?
>> Check characteristics of thermistor (Refer to Trouble shooting 5, 6), If defective, replace the thermistor

OK

Check Point 3 : Check the solenoid coil and 4-way valve

[Solenoid coil]
・Remove CN30 from PCB and check the resistance value of coil.
Resistance value is 1.88kΩ～2.29kΩ(at 20°C).
>> If it is Open or abnormal resistance value, replace Solenoid Coil.

[4-way valve]
・Check each piping temperature,
and the location of the valve by the temperature difference.
>> If the value location is not proper, replace 4-way valve.

OK

Check Point 4 : Replace Controller PCB

▶ If Check Point 1- 3 do not improve the symptom, replace controller PCB.

Troubleshooting 19

Discharge temperature error

OUTDOOR UNIT Error Method:

Detective actuators:	**Detective details:**
Outdoor unit Main PCB Discharge temperature thermistor	▪ "Protection stop by "discharge temperature ≧ 110degC during compressor operation"" generated 2 times within 24 hours.

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

Check Point 1 : Check if 3-way valve is open.

- If the 3-way valve was closed, open the 3-way valve and check operation.

↓ **OK**

Check Point 2 : Check the EEV, strainer

- EEV open?
- Strainer clogging check (before and after EEV)
  Refer to "Service Parts Information 3".

↓ **OK**

Check Point 3 : Check the outdoor unit fan,heat exchanger

- Check for foreign object at heat exchanger
- Check if fan can be rotated by hand.
- Motor check (PARTS INFORMATION 5)

↓ **OK**

Check Point 4 : Check the discharge thermistor

- Discharger thermistor characteristics check.
  (Check by disconnecting thermistor from PCB.)

  * For the characteristics of the thermistor, refer to the "Trouble shooting 11".

↓ **OK**

Check Point 5 : Check the refrigerant amount

- Leak check

Heating operation

Check Point 1 : Check if 2-way valve is open.

- If the 2-way valve was closed, open the 2-way valve and check operation.

↓ **OK**

Check Point 2 : Check the EEV, strainer

- EEV open?
- Strainer clogging check (before and after EEV)
  Refer to "Service Parts Information 3".

↙ **OK**

Troubleshooting 20

Indoor unit - No power

Forecast of cause:

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

Check Point 1 : Check installation condition

- Isn't the breaker down?
- Check loose or removed connection cable.

>>If abnormal condition is found, correct it by referring to Installation Manual or Data & Technical Manual.

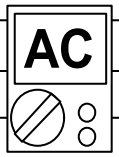
OK

Check Point 2 : Check external cause at indoor and outdoor (Voltage drop or noise)

- Instant drop ----- Check if there is a large load electric apparatus in the same circuit.
- Momentary power failure ----- Check if there is a defective contact or leak current in the power supply circuit.
- Noise ----- Check if there is any equipment causing harmonic wave near electric line. (Neon bulb or electric equipment that may cause harmonic wave) Check the complete insulation of grounding.

OK

Check Point 3 : Check Electrical Components



- Check the voltage of power supply.

>> Check if AC207 - 253V appears at Outdoor Unit Terminal L - N.

NO

YES

- Check Fuse in Main PCB.

>> If Fuse is open, check if the wiring between Terminal and Main PCB is loose, and replace Fuse.

- Check Varistor in Main PCB.

>> If Varistor is defective, there is a possibility of an abnormal power supply. Check the correct power supply and replace Varistor. Upon checking the normal power supply, replace Varistor.

Troubleshooting 21

Outdoor unit - No power

Forecast of cause:

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

Check Point 1 : Check installation condition

- Isn't the breaker down?
- Check loose or removed connection cable.

>>If abnormal condition is found, correct it by referring to Installation Manual or Data & Technical Manual.

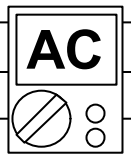
OK

Check Point 2 : Check external cause at Indoor and Outdoor (Voltage drop or Noise)

- Instant drop ----- Check if there is a large load electric apparatus in the same circuit.
- Momentary power failure ----- Check if there is a defective contact or leak current in the power supply circuit.
- Noise ----- Check if there is any equipment causing harmonic wave near electric line.
  (Neon bulb or electric equipment that may cause harmonic wave)
  Check the complete insulation of grounding.

OK

Check Point 3 : Check Electrical Components



- Check the voltage of power supply.

>> Check if AC207 - 253V appears at Outdoor Unit Terminal L - N.

NO

YES

- Check Fuse in Main PCB.

>> If Fuse is open, check if the wiring between Terminal and Main PCB is loose, and replace Fuse.

- Check Varistor in Main PCB.

>> If Varistor is defective, there is a possibility of an abnormal power supply. Check the correct power supply and replace Varistor. Upon checking the normal power supply, replace Varistor.

OK

▶ If the symptom does not change by above Check 3, replace Main PCB.

Troubleshooting 22

No operation (Power is ON)

Forecast of cause:

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

Check Point 1 : Check indoor and outdoor installation condition

・Indoor Unit - Check incorrect wiring between Indoor Unit - Remote Control.
Or, check if there is an open cable connection.
・Are these Indoor Unit, Outdoor Unit, and Remote Control suitable model numbers to connect?
>> If there is some abnormal condition, correct it by referring to Installation manual and Data & Technical Manual.

OK

Turn off Power and check/ correct followings.

・Is there loose or removed communication line of Indoor Unit and Outdoor Unit?

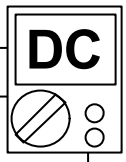
OK

Check Point 2 : Check external cause at Indoor and Outdoor (Voltage drop or Noise)

・Instant drop ----- Check if there is a large load electric apparatus in the same circuit.
・Momentary power failure ----- Check if there is a defective contact or leak current in the power supply circuit.
・Noise ----- Check if there is any equipment causing harmonic wave near electric line.
(Neon bulb or electric equipment that may cause harmonic wave)
Check the complete insulation of grounding.

OK

Check Point 3 : Check Electrical Components at Indoor and Outdoor



・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)
>> Check Indoor unit fan motor. (PARTS INFORMATION 4)
If it is normal, replace Controller PCB.
If it is abnormal, replace Indoor unit fan motor and Controller PCB.

>> If the symptom does not change by above Check 1, 2, 3, replace Main PCB of Outdoor unit.

Troubleshooting 23

No cooling / No heating

Forecast of cause:

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

Check Point 1 : Check Indoor unit

- Does Indoor unit Fan run on High fan?
- Is Air filter dirty?
- Is Heat exchanger clogged?
- Check if Energy save function is operated.

↓ **OK**

Check Point 2 : Check Outdoor unit operation

- Check if Outdoor unit is operating
- Check any objects that obstruct the air flow route.
- Check clogged Heat Exchanger.
- Is the Valve open?

↓ **OK**

Check Point 3 : Check Site condition

- Is capacity of Indoor unit fitted to room size?
- Any windows open? or direct sunlight ?

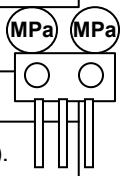
↓ **OK**

Check Point 4 : Check Indoor/ Outdoor installation condition

- Check connection pipe (specified pipe length & Pipe diameter?)
- Check any loose or removed communication line.

>> If there is an abnormal condition, correct it by referring to Installation Manual or Data & Technical Manual.

↓ **OK**



Check Point 5 : Check Refrigeration cycle

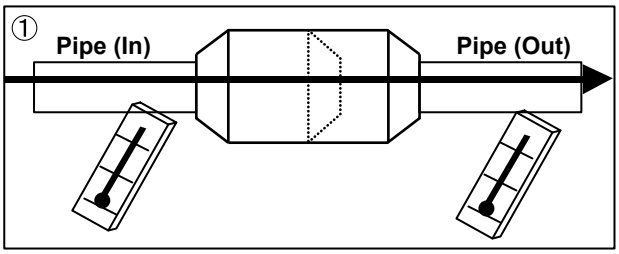
- Check if Strainer is clogged (Refer to the figure at right).
- Measure Gas Pressure and if there is a leakage, correct it.

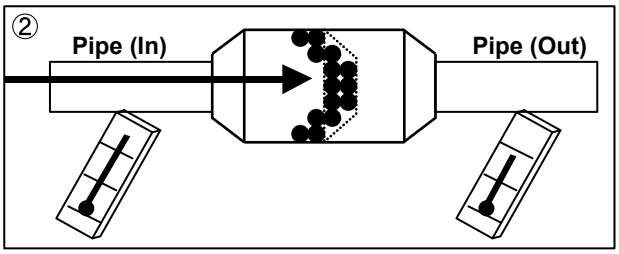
>> When recharging the refrigerant, make sure to perform vacuuming, and recharge the specified amount.

- Check EEV (PARTS INFORMATION 3)
- Check Compressor (PARTS INFORMATION 1,2)

Attention

Strainer normally does not have temperature difference between inlet and outlet as shown in① , but if there is a difference like shown in② , 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)

Diagnosis method when abnormal noise is occurred

- Abnormal noise is coming from Indoor unit. (Check and correct followings)

- Is Main unit installed in stable condition?
- Is the installation of air suction grille and front panel normal?

OK

- Is Fan broken or deformed?
- Is the screw of Fan loose?
- Is there any object which obstruct the Fan rotation?

- Abnormal noise is coming from Outdoor unit. (Check and correct followings)

- Is Main unit installed in stable condition?
- Is Fan guard installed normally?

OK

- Is Fan broken or deformed?
- Is the screw of Fan loose?
- Is there any object which obstruct the Fan rotation?

OK

- Check if vibration noise by loose bolt or contact noise of piping is happening.

OK

- Is Compressor locked?
  >> Check Compressor (PARTS INFORMATION 1,2)

Troubleshooting 25

Water leaking

Forecast of cause:

1. Erroneous installation
2. Drain hose failure

Diagnosis method when water leak occurs

- Is Main unit installed in stable condition?
- Is Main unit broken or deformed at the time of transportation or maintenance?

OK

- Is Drain hose connection loose?
- Is there a trap in Drain hose?
- Is Drain hose clogged?

OK

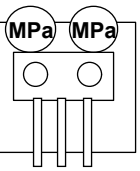
- Is Fan rotating?

Diagnosis method when water is spitting out.

- Is the filter clogged?

OK

- Check Gas pressure and correct it if there was a gas leak.



PARTS INFORMATION 1

Compressor

Diagnosis method of Compressor
(If Outdoor Unit LED displays Error, refer to troubleshooting)

Does not start up

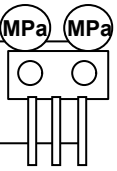
- Is there open or loose connection cable?
- Check Main PCB, connection of Compressor, and winding resistance. (Refer to the next page).

>> If there is no failure, the defect of Compressor is considered (Locked compressor due to clogged dirt or less oil)

Replace Compressor

Stops soon after starting up

- Is there open or loose connection cable?
- Is Gas pipe valve open? (Low pressure is too low)
- Check if Refrigerant is leaking. (Recharge Refrigerant)



- Check if strainer is clogged. (PARTS INFORMATION 3)
- Check Main PCB, connection of Compressor,and winding resistance. (Refer to the next page).

>> If there is no failure, the defect of Compressor can be considered. (Compression part broken or valve defective.)

Replace Compressor

Abnormal noise

- Check if vibration noise by loose bolt or contact noise of piping is happening.

▶Defective Compressor can be considered. (due to inside dirt clogging or broken component)

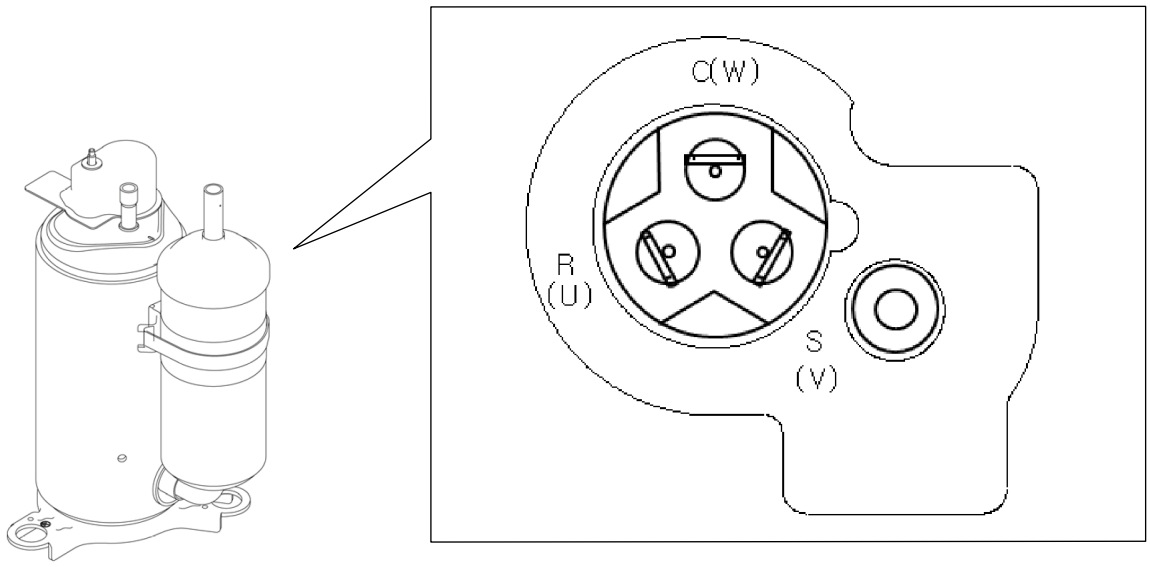
Replace Compressor

PARTS INFORMATION 2

Inverter compressor

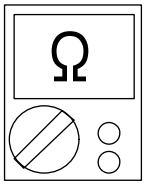
Check Point 1 : Check c onnection

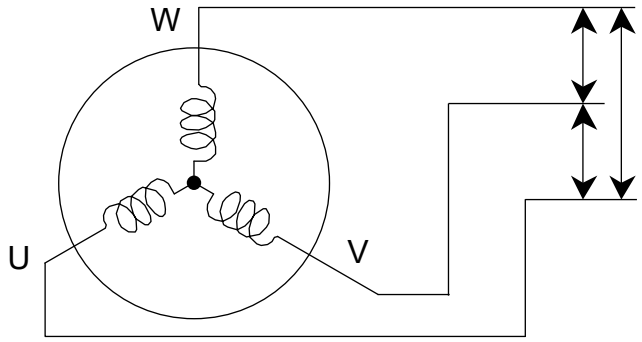
・Check terminal connection of Compressor
(loose or incorrect wiring)



Check Point 2 : Check winding resistance

・Check winding resistance of each terminal
▶If the resistance value is 0Ω or infinite, replace Compressor.





Resistance value :
1.862Ω at 25°C

Check Point 3 : Replace main PCB

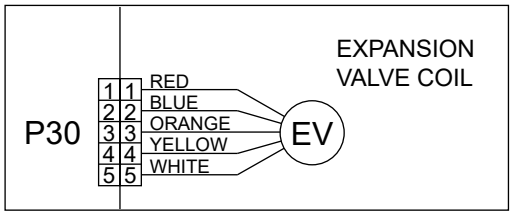
▶If the symptom does not change with above Check 1, 2, replace main PCB.

PARTS INFORMATION 3

Outdoor unit, electronic expansion valve (EEV)

Check Point 1 : Check Connections

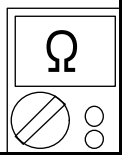
・Check connection of connector (P30)
(Loose connector or open cable)



Check Point 2 : Check coil of EEV

・Remove connector, check each winding resistance of Coil.

Read wire	Resistance value
White - Red	**46**Ω ± **4**Ω at 20°C
Yellow - Red	
Orange - Red	
Blue - Red	



▶ If Resistance value is abnormal, replace EEV.

Check Point 3 : Check Noise at start up

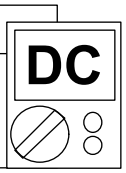
・Turn on Power and check operation noise.

▶ **If an abnormal noise does not show, replace Main PCB.**

Check Point 4 : Check Voltage from main PCB.

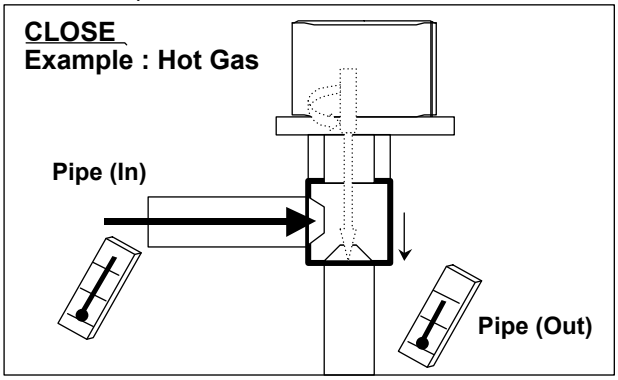
・Remove Connector and check Voltage (DC12V)

▶ If it does not appear, replace main PCB.

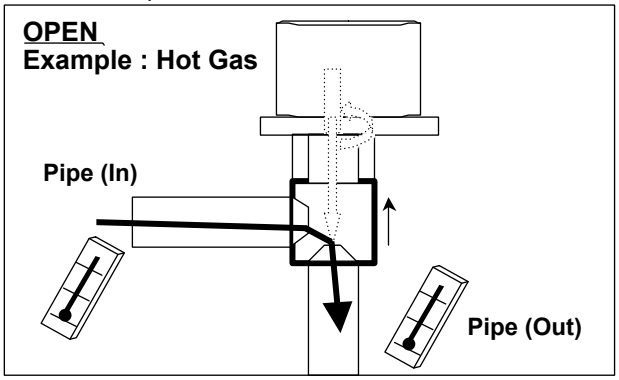


Check Point 5 : Check Opening and Closing Operation of Valve

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

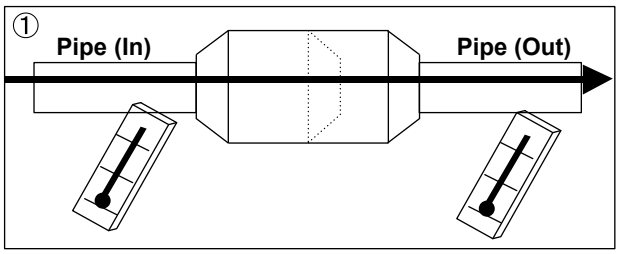


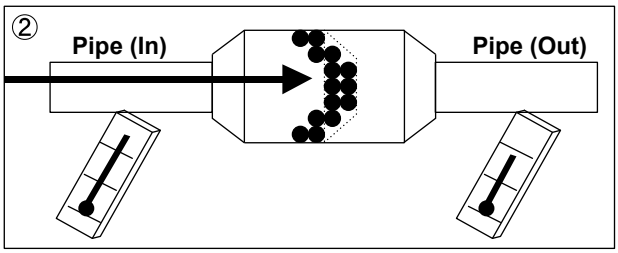
If it is open,
it has no temp. difference between Inlet and Outlet.



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)

FUJITSU

FUJITSU GENERAL LIMITED

3-3-17, Suenaga, Takatsu-ku, Kawasaki 213-8502, Japan

1902S0139