SERVICE MANUAL

TECHNICAL INFORMATION
FOR SERVICE PERSONNEL ONLY

airHome 600

HITACHI

INDOOR UNIT

RAK-VJ60PHAE
RAK-VJ70PHAE

(RC-AGS1EA0E)

ROOM AIR CONDITIONER
SPLIT TYPE
VJ SERIES

MODEL
RAK-VJ60PHAE
RAK-VJ70PHAE

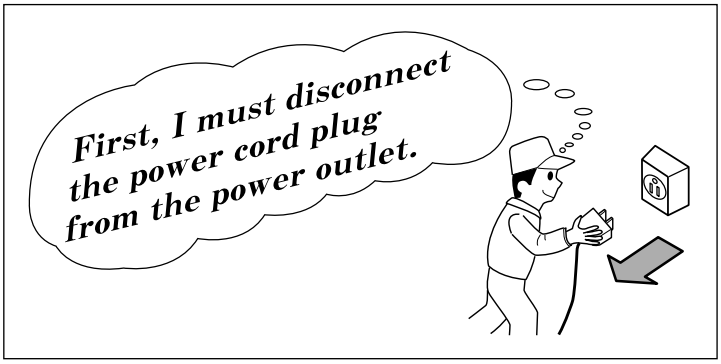
CONTENTS

Cooling & Heating

<PM NO:0803E>

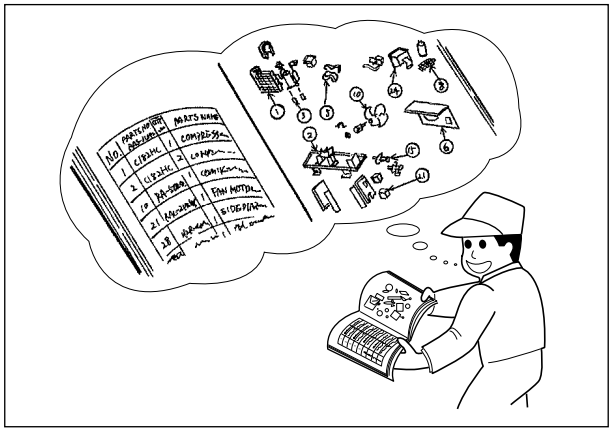
SAFETY DURING REPAIR WORK

1. In order to disassemble and repair the unit in question, be sure to disconnect the power cord plug from the power outlet before starting the work.



2. If it is necessary to replace any parts, they should be replaced with respective genuine parts for the unit, and the replacement must be effected in correct manner according to the instructions in the Service Manual of the unit.

> If the contacts of electrical parts are defective, replace the electrical parts without trying to repair them.



3. After completion of repairs, the initial state should be restored.

4. Lead wires should be connected and laid as in the initial state.

5. Modification of the unit by the user himself should absolutely be prohibited.

6. Tools and measuring instruments for use in repairs or inspection should be accurately calibrated in advance.

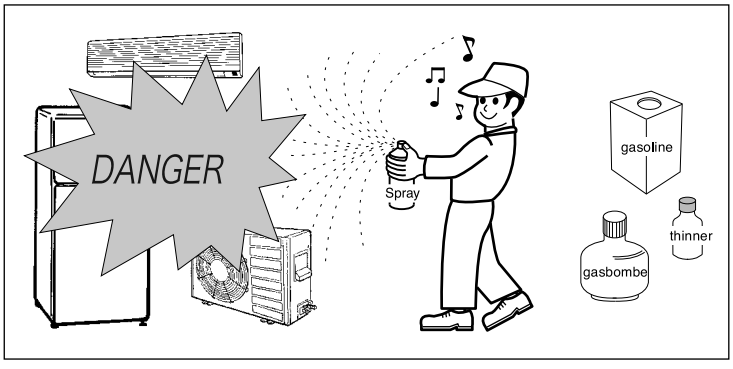
7. In installing the unit having been repaired, be careful to prevent the occurence of any accident such as electrical shock, leak of current, or bodily injury due to the drop of any part.

8. To check the insulation of the unit, measure the insulation resistance between the power cord plug and grounding terminal of the unit. The insulation resistance should be 1MΩ or more as measured by a 500V DC megger.

9. The initial location of installation such as window, floor or the other should be checked for being and safe enough to support the repaired unit again.
   If it is found not so strong and safe, the unit should be installed at the initial location after reinforced or at a new location.

10. Any inflammable object must not be placed about the location of installation.

11. Check the grounding to see whether it is proper or not, and if it is found improper, connect the grounding terminal to the earth.



WORKING STANDARDS FOR PREVENTING BREAKAGE OF SEMICONDUCTORS

1. Scope
   The standards provide for items to be generally observed in carrying and handling semiconductors in relative manufacturers during maintenance and handling thereof. (They apply the same to handling of abnormal goods such as rejected goods being returned).

2. Object parts

   (1) Micro computer
   (2) Integrated circuits (I.C.)
   (3) Field-effective transistor (F.E.T.)
   (4) P.C. boards or the like to which the parts mentioned in (1) and (2) of this paragraph are equipped.

3. Items to be observed in handling

   (1) Use a conductive container for carrying and storing of parts. (Even rejected goods should be handled in the same way).

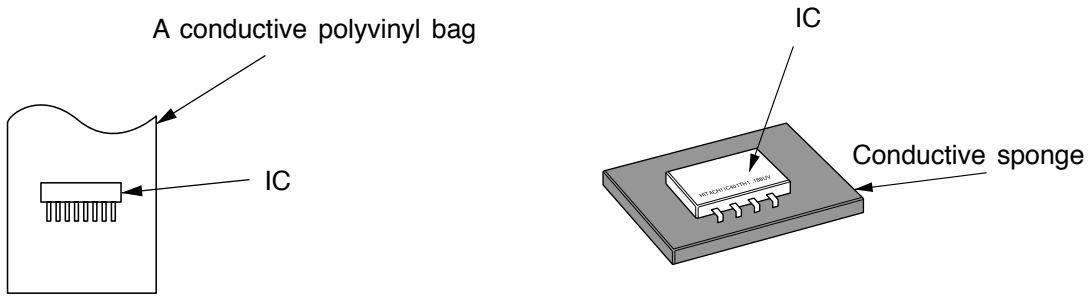


Fig. 1. Conductive container

   (2) When any part is handled uncovered (in counting, packing and the like), the handling person must always use himself as a body earth. (Make yourself a body earth by passing 1MΩ earth resistance through a ring or bracelet).

   (3) Be careful not to touch the parts with your clothing when you hold a part even if a body earth is being taken.

   (4) Be sure to place a part on a metal plate with grounding.

   (5) Be careful not to fail to turn off power when you repair the printed circuit board. At the same time, try to repair the printed circuit board on a grounded metal plate.

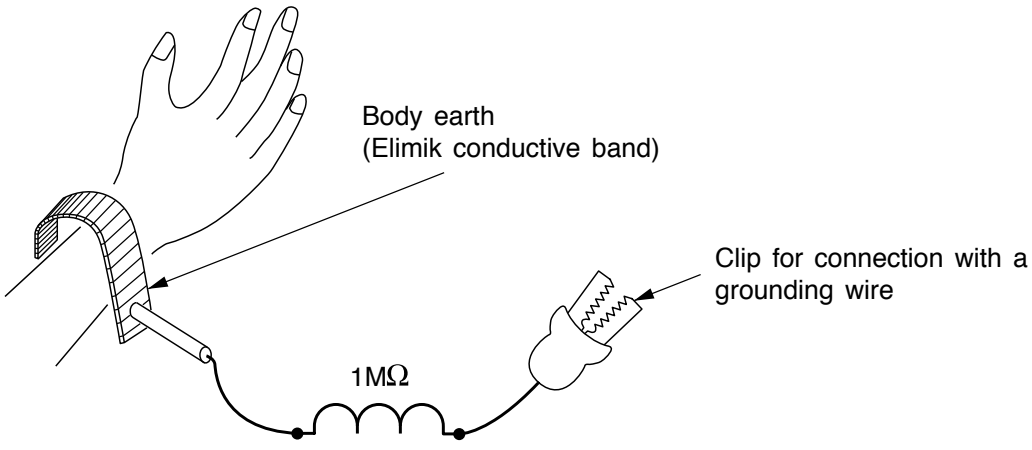


Fig. 2. Body Earth

(6) Use a three wire type soldering iron including a grounding wire.

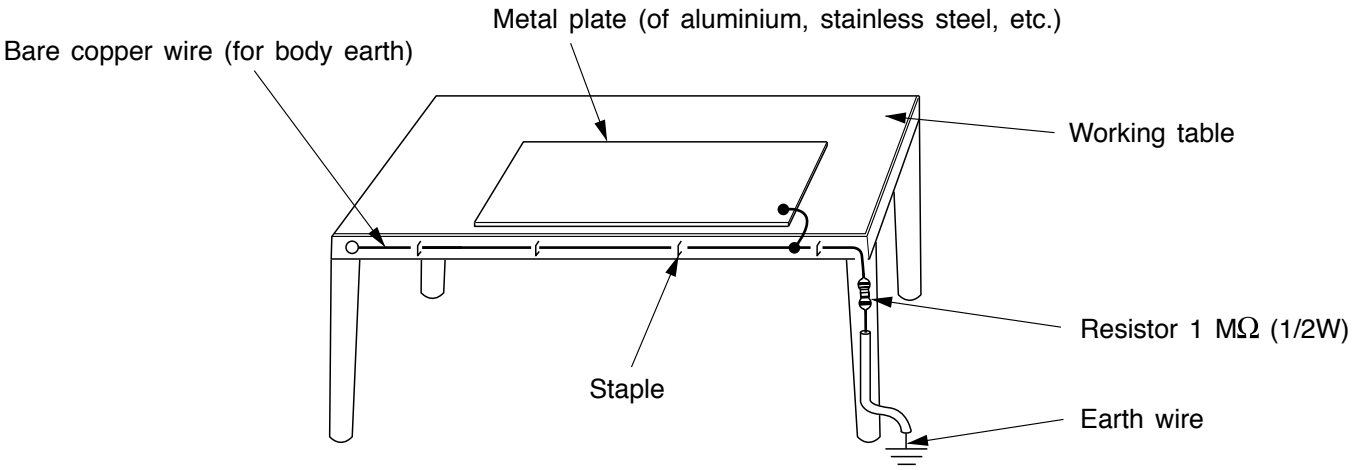


Fig. 3. Grounding of the working table

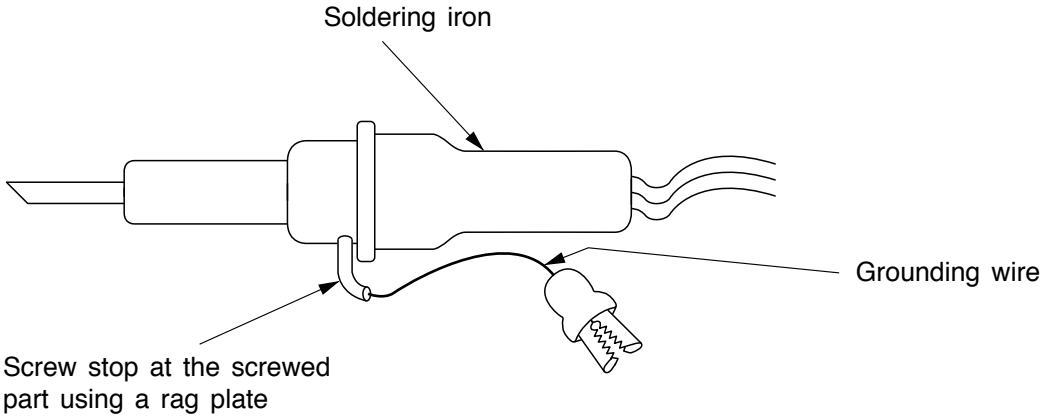


Fig. 4. Grounding a solder iron

Use a high insulation mode (100V, 10MΩ or higher) when ordinary iron is to be used.

(7) In checking circuits for maintenance, inspection or some others, be careful not to have the test probes of the measuring instrument short circuit a load circuit or the like.

⚠ CAUTION

1. In quiet or stop operation, slight flowing noise of refrigerant in the refrigerating cycle is heard occasionally, but this noise is not abnormal for the operation.

2. When it thunders nearby, it is recommend to stop the operation and to disconnect the power cord plug from the power outlet for safety.

3. In the event of power failure, the air conditioner will restart automatically in the previously selected mode once the power is restored. In the event of power failure during TIMER operation, the air conditioner will not start automatically. Re-press ON/OFF button after 3 minutes from when the unit off or power recovery.

4. If the room air conditioner is stopped by adjusting thermostat, or miss operation, and re-start in a moment, there is occasion that the cooling and heating operation does not start for 3 minutes, it is not abnormal and this is the result of the operation of IC delay circuit. This IC delay circuit ensures that there is no danger of blowing fuse or damaging parts even if operation is restarted accidentally.

5. This room air conditioner should not be used at the cooling operation when the outside temperature is below –10°C (14°F).

6. This room air conditioner (the reverse cycle) should not be used when the outside temperature is below –15°C (5°F).
   If the reverse cycle is used under this condition, the outside heat exchanger is frosted and efficiency falls.

7. When the outside heat exchanger is frosted, the frost is melted by operating the hot gas system, it is not trouble that at this time fan stops and the vapour may rise from the outside heat exchanger.

SPECIFICATIONS

TYPE				DC INVERTER	
				INDOOR UNIT	INDOOR UNIT
MODEL				RAK-VJ60PHAE	RAK-VJ70PHAE
POWER SOURCE				1PHASE, 50Hz, 220 ~ 240V	1PHASE, 50Hz, 220 ~ 240V
COOLING	TOTAL INPUT		(W)	1,813 (500~3,050)	2,628 (500~3,150)
	TOTAL AMPERES		(A)	8.37~7.67	12.13~11.12
	CAPACITY		(kW)	6.00 (1.75~6.80)	7.10 (1.75~7.50)
			(B.T.U./h)	20,470 (5,970~23,200)	24,220 (5,970~25,590)
HEATING	TOTAL INPUT		(W)	2,000 (500~3,050)	2,611 (500~3,150)
	TOTAL AMPERES		(A)	9.23~8.46	12.05~11.04
	CAPACITY		(kW)	7.00 (1.75~7.80)	8.10 (1.75~8.30)
			(B.T.U./h)	23,880 (5,970~26,610)	27,640 (5,970~28,320)
DIMENSIONS (mm)			W	1050	1050
			H	294	294
			D	230	230
NET WEIGHT			(kg)	12.5	12.5

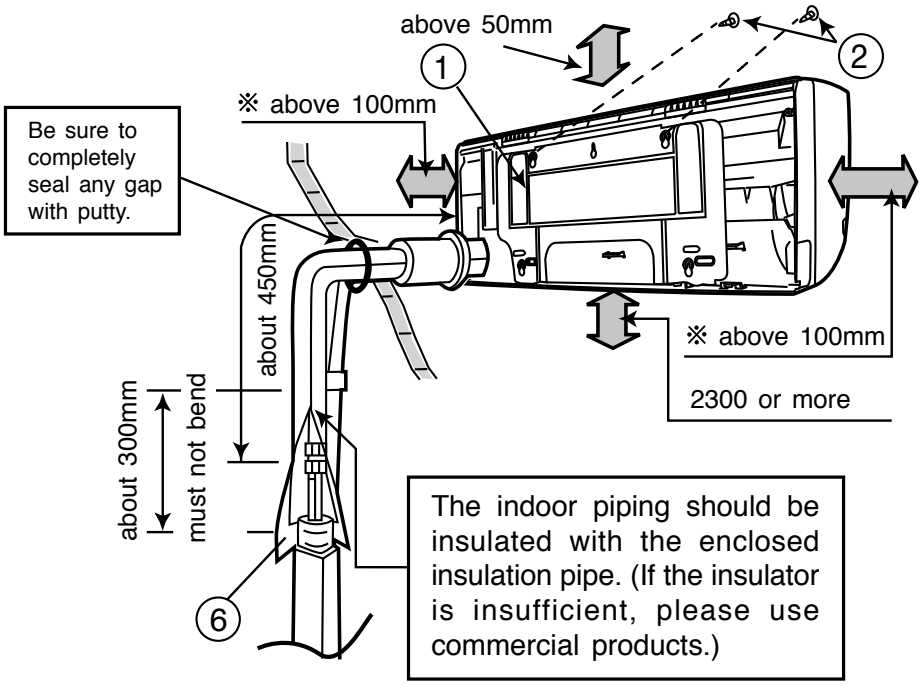
※ After installation

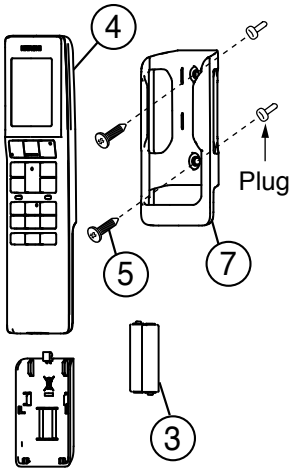
- The performance tests are based on the EN14511, EN14825.

MODEL		RAK-VJ60PHAE	RAK-VJ70PHAE
FAN MOTOR		38W	
FAN MOTOR CAPACITOR		NO	
FAN MOTOR PROTECTOR		NO	
COMPRESSOR		–	
COMPRESSOR MOTOR CAPACITOR		NO	
OVERLOAD PROTECTOR		NO	
OVERHEAT PROTECTOR		NO	
FUSE (for MICROPROCESSOR)		3.15A	
POWER RELAY		NO	
POWER SWITCH		NO	
TEMPORARY SWITCH		YES	
SERVICE SWITCH		NO	
TRANSFORMER		YES	
VARISTOR		S14K320E2G10AS5	
NOISE SUPPRESSOR		NO	
THERMOSTAT		YES(IC)	
REMOTE CONTROL SWITCH (LIQUID CRYSTAL)		YES	
REFRIGERANT CHARGING VOLUME	PIPES	WITHOUT REFRIGERANT BECAUSE COUPLING IS FLARE TYPE	

Figure showing the Installation of Indoor Unit

MODEL RAK-VJ60PHAE
RAK-VJ70PHAE



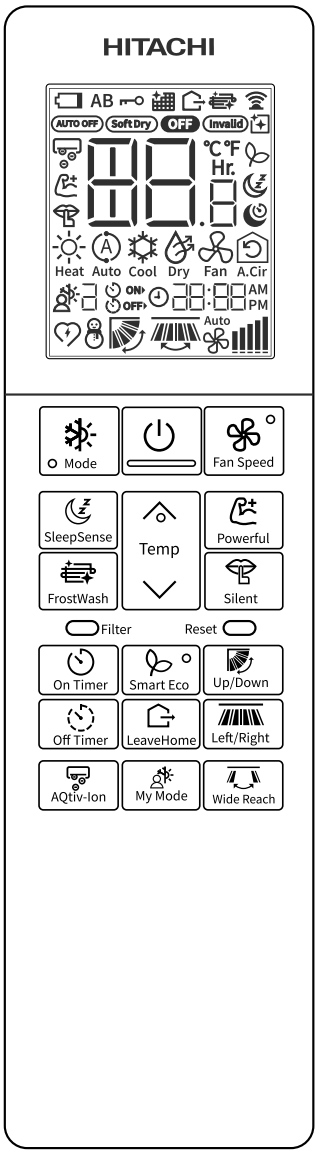


HITACHI

Remote Controller Manual

MODEL

RC-AGS1EA0E

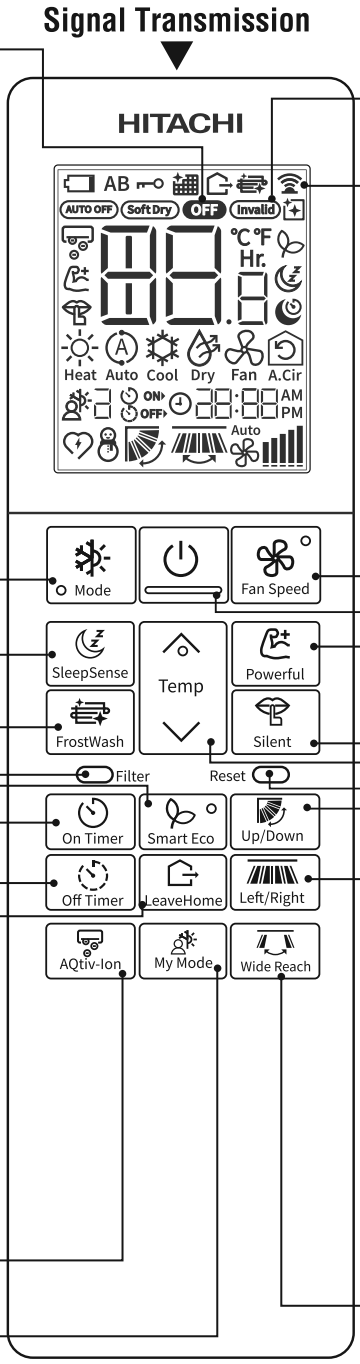


Remote Controller manual

To obtain the best performance and ensure years of trouble free use, please read this instruction manual completely.

Names and Functions of Remote Controller

■ This controls the operation function and timer setting of the room air conditioner. The range of control is about 7 meters. If indoor lighting is controlled electronically, the range of control may be shorter.



Signal Transmission

Off Mode Sign

Invalid Operation Sign
Shown at invalid setting or operation

Mode Selector Button
Use this button to select the operation mode. Every time you press this button the mode will change from (Heat) → (Auto) → (Cool) → (Dry) → (Fan) cyclically.
(☞ Page 10)

Transmission Sign
The transmission sign blinks when a signal has been sent.

Fan Speed Button
Select the fan speed.
(☞ Page 10)

On/Off Button
Press this button to start operation.
Press it again to stop operation.
(☞ Page 10)

SleepSense Button
(☞ Page 21)

FrostWash Button
(☞ Page 15)

Filter Sign Reset Button
(☞ Page 32)

Powerful Button
(☞ Page 14)

Silent Button
(☞ Page 23)

Temperature Button
Room temperature setting. Value will change quicker when keep pressing.
(☞ Page 10)

Smart Eco Button
Use this button to set the Eco mode.
(☞ Page 18)

Reset Button
(☞ Page 32)

On Timer Button
Select the turn ON time.
(☞ Page 26)

Up/Down Button
Control the angle of the horizontal air deflector.
(☞ Page 24)

Off Timer Button
Select the turn OFF time.
(☞ Page 26)

Left/Right Button
Control the angle of the Vertical air deflector.
(☞ Page 25)

LeaveHome Button
(☞ Page 14)

AQtiv-Ion Button
(☞ Page 22)

Wide Reach Button
Control the angle of the Vertical air deflector.
(☞ Page 25)

My Mode Button
(☞ Page 28)

Backlight function

- Backlight is to see the LCD readings in the dark.
- On Pressing any key, the LCD panel lights up for a period of approx. 10 seconds. After approx. 10 seconds the light automatically switches off.
- The function is independent of all other functions of the air conditioner.
- The backlight color is white.

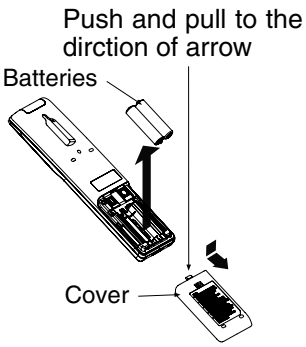
Precautions for Use

- Do not put the remote controller under direct sunlight and high temperature.
- Do not drop it on the floor, and protect it from water.
- If you press the any function button during operation, the air conditioner may stop for about 3 minutes for protection before you can start it again.

How to Install the Batteries in the Remote Controller

1. Remove the cover as shown in the figure and take out the old batteries.

2. Install the new batteries.
The direction of the batteries should match the marks in the case.



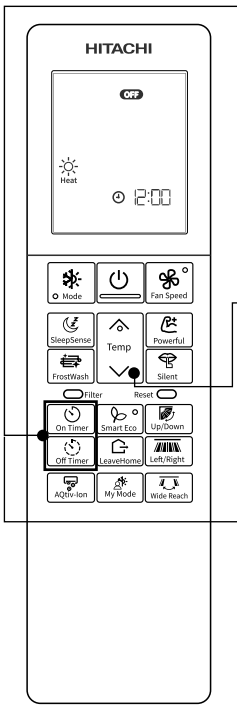
CAUTION

1. Do not use new and old batteries, or different kinds of batteries together.
2. Take out the batteries when you do not use the remote controller for 2 or 3 months.

NOTE

- Change the batteries when remote controller LCD display restarts on pressing of any key and there is no response from air conditioner.

How to set clock



1 Press and Hold Timer ON button [On Timer] or Timer OFF button [Off Timer] for 5 seconds.
ON or OFF segment start blinking on LCD approx. 5 seconds then Clock symbol start blinking.

2 When Clock symbol is in blinking , Press Temperature Up / Down [Temp] button to change/set desire time value.

3 Press Timer ON button [On Timer] or Timer OFF button [Off Timer] once.
Clock symbol stop blinking and Clock time will be display on LCD screen.

NOTE

- When Timer ON , Timer OFF or both set then it is not possible to change/set clock time. First Timer ON , Timer OFF or both need to cancel.
- If Correct clock time is not set then Timer ON and Timer OFF will not operate correctly.
- At time of Battery replacement/ Reset , Clock time need to set. If it is not set and press any key then default 12:00 will be set.
- At time of Battery replacement / Reset , Need to follow process from step2 onwards.
- During Clock time change/set when symbol is blinking , if no key press then it will come out of Clock setting with previous set time.

Various Functions

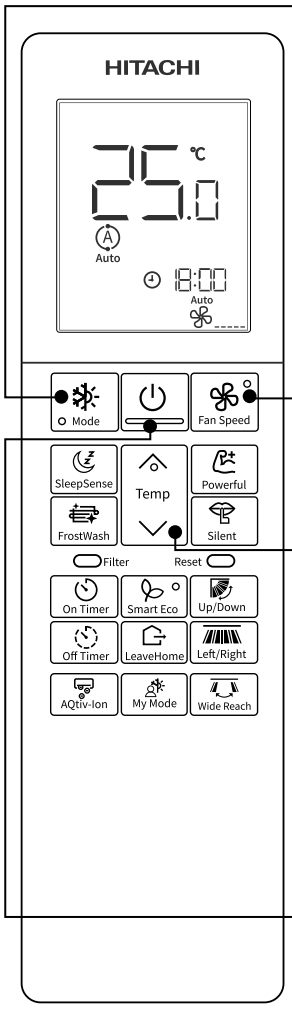
■ Auto Restart Control

- If there is a power failure, operation will be automatically restarted when the power is resumed with previous operation mode and airflow direction.
  (As the operation is not stopped by remote controller.)
- If you intend not to continue the operation when the power is resumed, switch off the power supply.
  When you switch on the circuit breaker, the operation will be automatically restarted with previous operation mode and airflow direction.

Note: 1. If you do not require Auto Restart Control, please consult your sales agent.
2. Auto Restart Control is not available when Timer set.

Auto Mode

The device will automatically determine the mode of operation, Heat Mode or Cool Mode depending on the current room temperature. The selected mode of operation will change when the room temperature varies.



1 Press the Mode Selector Button so that the display indicates the (Auto) mode of operation.

- When Auto has been selected, the device will automatically determine the mode of operation, Heat or Cool depending on the current room temperature.
- If the mode automatically selected by the unit is not satisfactory, manually change the mode setting (Heat, Dry, Cool or Fan).

2 Set the desired Fan Speed with the (Fan Speed) button (the display indicates the setting).

Auto (Auto) → (Silent) → (Low) → (Medium) → (High) → (Super High) →

3 Set the desired room temperature with the Temperature buttons (the display indicates the setting).
The temperature setting and the actual room temperature may vary depending on conditions.
Temperature range can be set between 16.0°C and 32.0°C.

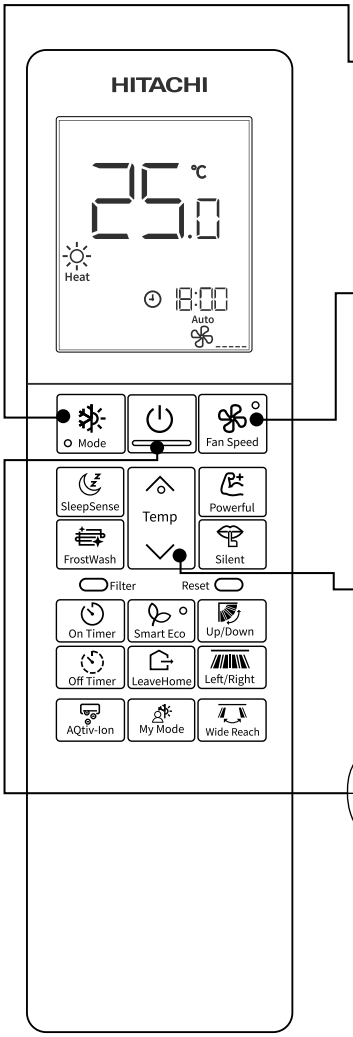
START / STOP Press the (On/Off) button.
Operation starts with a beep.
Press the button again to stop operation.

■ As the settings are stored in the memory of the remote controller, you only have to press the (On/Off) button next time.

Press the (Fan Speed) button to select Auto, Silent, Low, Medium, High or Super High.

Heat Mode

- Use the device for heating when the outdoor temperature is under 21°C.
  When it is too warm (over 21°C), the heating function may not work in order to protect the device.
- In order to keep reliability of the device, please use this device above –15°C of the outdoor temperature.



1 Press the Mode Selector Button so that the display indicates Heat (Heat).

2 Set the desired Fan Speed with the Fan Speed (Fan Speed) button (the display indicates the setting).

Auto (Auto) → (Silent) → (Low) → (Medium) → (High) → (Super High) →

3 Set the desired room temperature with the Temperature buttons (the display indicates the setting).

The temperature setting and the actual room temperature may vary depending on conditions.

Temperature range can be set between 16.0°C and 32.0°C.

START / STOP Press the (On/Off) button. Heating operation starts with a beep. Press the button again to stop operation.

■ As the settings are stored in the memory of the remote controller, you only have to press the (On/Off) button next time.

■ During Auto fan, the fan speed automatically changes as below:

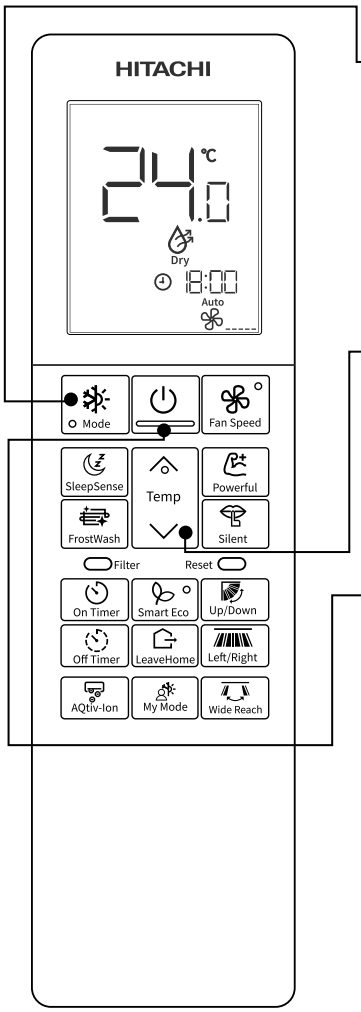
- When the difference between room temperature and setting temperature is large, fan starts to run at Super High speed.
- After room temperature reaches the preset temperature, fan speed will be changed to lower speed to obtain optimum room temperature condition for natural healthy heating.

■ Defrosting

Defrosting will be performed about once an hour when frost forms on the heat exchange of the outdoor unit, for 5~10 minutes each time.
During defrosting operation, the operation lamp blinks in cycle of 2 seconds on and 1 second off.
The maximum time for defrosting is 20 minutes.
(If the piping length used is longer than usual, frost will likely to form.)

Dry Mode

Use the device for dehumidifying when the room temperature is over 16°C.
When it is under 15°C, the dehumidifying function will not work.



1 Press the Mode Selector Button so that the display indicates (Dry).
The fan speed is set at Auto.
Press (Fan Speed) button to select Silent, Low or Auto fan speed.

2 Set the desired room temperature with the Temperature Buttons (the display indicates the setting).

The range of 20.0˚C to 26.0˚C is recommended as the room temperature for dehumidifying.
Temperature range can be set between 16.0°C and 32.0°C.

START / STOP Press the (On/Off) button. Dehumidifying operation starts with a beep. Press the button again to stop operation.

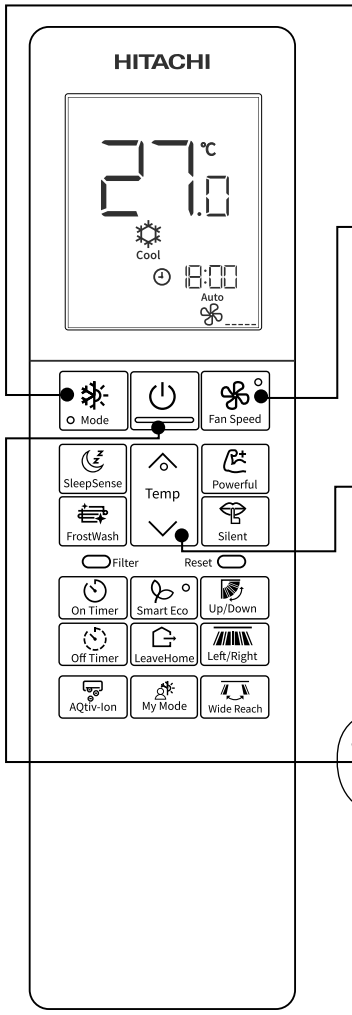
■ As the settings are stored in the memory of the remote controller, you only have to press the (On/Off) button next time.

■ Dehumidifying Function

- When the room temperature is higher than the temperature setting: The device will dehumidify the room, reducing the room temperature to the preset level.
  When the room temperature is lower than the temperature setting: Dehumidifying will be performed at the temperature setting slightly lower than the current room temperature, regardless of the temperature setting.
- The preset room temperature may not be reached depending on the number of people present in the room or other room conditions.

Cool Mode

Use the device for cooling when the outdoor temperature is -10 to 46°C.
If humidity is very high (over 80%) indoors, some dew may form on the air outlet grille of the indoor unit.



1 Press the Mode Selector Button so that the display indicates Cool (Cool).

2 Set the desired Fan Speed with the Fan Speed (Fan Speed) button (the display indicates the setting).

Auto (Auto) → (Silent) → (Low) → (Medium) → (High) → (Super High) →

3 Set the desired room temperature with the Temperature Buttons (the display indicates the setting).
The temperature setting and the actual room temperature may vary depending on conditions.
Temperature range can be set between 16.0°C and 32.0°C.

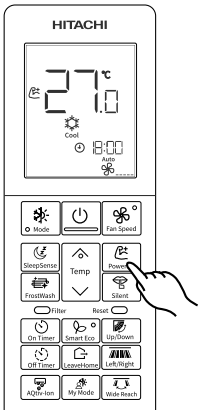
START
STOP

Press the (On/Off) button. Cooling operation starts with a beep. Press the button again to stop operation. The cooling function does not start if the temperature setting is higher than the current room temperature (even though the (Operation) lamp lights).
The cooling function will start as soon as you set the temperature below the current room temperature.

- As the settings are stored in memory in the remote controller, you only have to press the (On/Off) button next time.
- During Auto fan, the fan speed automatically changes as below:
  - When the difference between room temperature and setting temperature is large, fan starts to run at Super High speed.
  - After room temperature reaches the preset temperature, fan speed will be changed to lower speed to obtain optimum room temperature condition for natural healthy cooling.

Powerful Operation

- By pressing (Powerful) button during Auto, Heat, Dry, Cool, or Fan operation, the air conditioner performs at maximum power.
- During Powerful operation, cooler or warmer air will be blown out from indoor unit for Cooling or Heating operation respectively.



START

Press the (Powerful) button during operation.

- " " is displayed on the LCD.
  Powerful operation ends in 20 minutes. Then the system automatically operates with the previous settings used before Powerful operation.

CANCEL

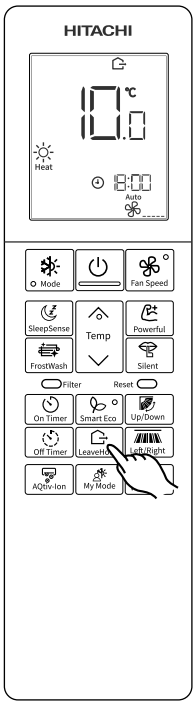
- Press the (On/Off) button. or
  Press the (Powerful) button again.
- " " disappears from the LCD.

NOTE

- When SleepSense Smart Eco operation, LeaveHome Operation,Silent Mode or My mode is selected , Powerful Operation will be cancelled.
- During Powerful operation, capacity of the air conditioner will not increase
  – if the air conditioner is already running at maximum capacity.
  – just before defrost operation (when the air conditioner is running in Heating operation).

LeaveHome Operation

■ Prevent the room temperature from falling too much when no one is at home .The initial setting temperature is 10.0˚C and the temperature range can be set between 10.0˚C and 16.0˚C.



START

① Press (LeaveHome) button during stop or operation.
Room temperature is set at 10.0˚C and heating operation starts.
② Set the desired room temperature with the Temperature buttons.Temperature range can be set between 10.0˚C and 16.0˚C.

- " Heat ", " Auto ", " ", "Set Temperature" is displayed on the LCD.

CANCEL

Press the (On/Off) button. or

Press the (LeaveHome) button again.

Change to other Operation Mode.

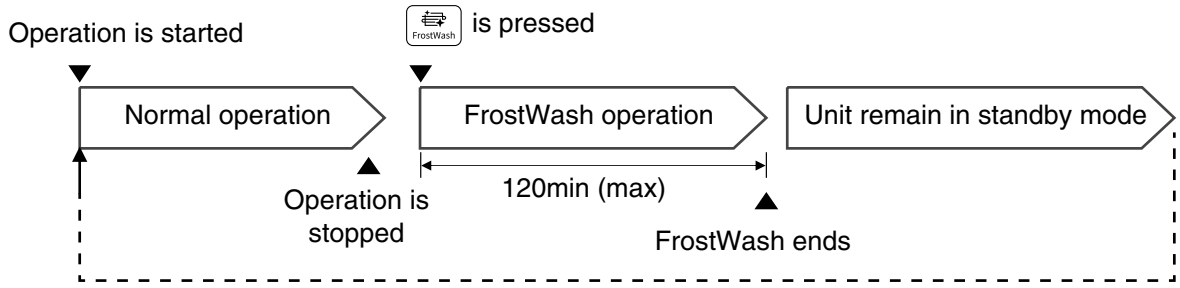
NOTE

- During Leave Home operation, fan speed and horizontal and vertical air deflector position cannot be changed.
- Timer function will be cancel if LeaveHome key press.
- Powerful , SleepSense , Smart Eco , Timer Function , Silent , My Mode operations are disable.

FrostWash Operation

- The dust and dirt adhering to indoor heat exchanger which is the cause of the smell. They are washed away by freezing and thawing of the heat exchanger.
- FrostWash function can work when the outdoor temperature is 1℃ to 43℃ and Indoor humidity is 30% to 70%.

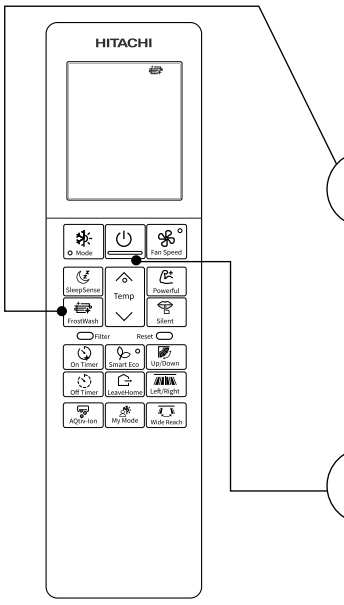
The process of FrostWash



- " " lamp on the indoor unit lights up during FrostWash operation.
- When pressing "On/Off" button during FrostWash operation, FrostWash will stop.
- In order to protect the product, FrostWash function cannot be carried out again for about 60 minutes after FrostWash operation is completed.

■ FrostWash(Manual Mode)

When the unit is off, press (FrostWash) button, manual FrostWash will start.



■ How to start and cancel FrostWash (Manual mode).

1

- Press the FrostWash button , FrostWash display on LCD screen.
  FrostWash operation start with beep sound and " " lamp light up on the indoor unit.
- After one hour, " " disappears from the LCD. After about two hours, the indoor unit will stop FrostWash operation.
- In order to protect the product, FrostWash function cannot be carried out again for about 60 minutes after the FrostWash operation is completed.

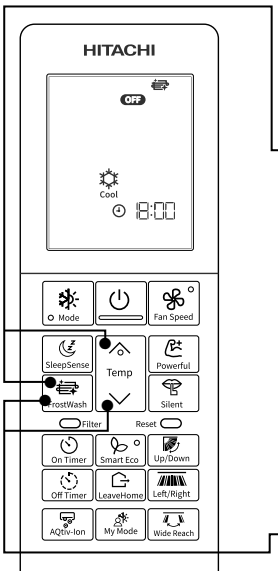
2

- Press the (On/Off) button, the operation will stop.
  " " lamp on the indoor unit turns off.

Precautions for Use

- Do not open windows or doors during FrostWash operation. Water will condense on the air deflector and drips down occasionally. This will wet your furniture.
- Do not open or remove the front panel during FrostWash operation. It may cause injury or malfunction.
- FrostWash operation does not wash away all dust and dirt.
- Hissing, fizzy or squeaking noise may generate during FrostWash operation.
- If the air conditioner is continuously running, FrostWash function is not effective.
- During FrostWash operation, if power is turned off and then power is restored, FrostWash function will not restart.
- After turning on the power, please wait a moment if you want to start FrostWash.
- If On Timer or Off Timer is set, there is a need to cancel those timer before operating FrostWash.

FrostWash(Auto Mode)



■ How to enable FrostWash (Auto)

1

- Press Temperature Up button and FrostWash button for 3 seconds together while remote control in OFF mode with directing remote control towards Indoor unit.
  is displayed on the LCD indicating Auto FrostWash enable.
- If FrostWash function is not being used for a long period, it may not be possible to completely remove the dust and dirt adhering to indoor heat exchanger. This will cause odour. Hence, kindly operate FrostWash frequently by using the remote controller.

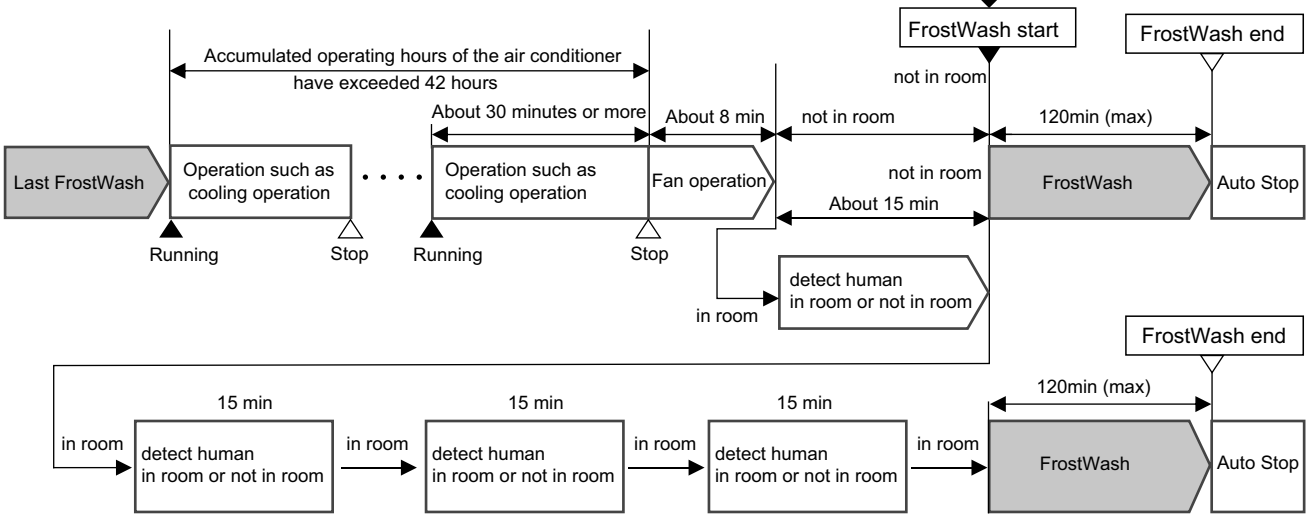
■ How to disable FrostWash (Auto)

2

- Press Temperature Down button and FrostWash button for 3 seconds together while remote control in OFF mode with directing remote control towards Indoor unit.
  disappear on the LCD indicating Auto FrostWash disable.
- The screen on remote controller.
  When FrostWash (Auto) is enabled, " " is displayed on the LCD.
  When FrostWash (Auto) is disable, " " is disappeared on the LCD.

FrostWash auto start conditions

Accumulated operating hours of the air conditioner have exceeded 42 hours
⊕
Air conditioner is operated for more than 30 minutes and stops, such as cooling operation
⊕
Human sensor detects somebody is in room for 15 minutes and over 4 times; or not in room for 15 minutes

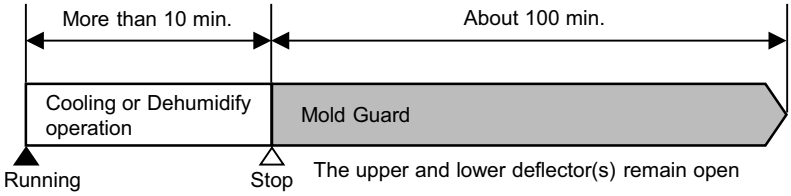


- When the outdoor temperature or indoor humidity are not suitable for FrostWash operation, only fan operation is carried out, FrostWash operation will be done again when room air conditioner is in standby mode.
- Sometimes the heat exchanger may not freeze depending on the conditions of the room.
- When the ON timer reaches the set time during FrostWash operation, it will stop the FrostWash operation and start the operation of setting mode.
- If the interval of the OFF to ON timer is less than 2 Hours , FrostWash operation may not be complete. In that case, it will restart FrostWash operation when room air conditioner is in standby mode.
- To return to normal FrostWash (Auto mode) interval (42 hours), please stop operation of air conditioner and operate FrostWash (Auto mode) or FrostWash (Manual mode).
- When FrostWash operation has not been operated in last 84 hours , FrostWash kicks in automatically after halting the operation even if a human sensor detects a person in the room.
- When FrostWash is stopped during FrostWash operation, the unit automatically restart FrostWash operation at the next operation stop.

Mold Guard Operation

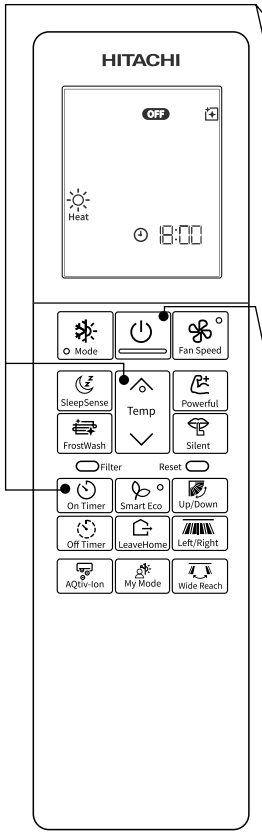
- After the cooling operation is stopped, the fan of the indoor unit is dried by heating or fan mode to suppress the generation of mold inside the indoor unit.
  - Mold Guard Operation period is about 100 minutes.
  - It can't remove mold or sterilize.

The Process of Mold Guard



- " " Lamp on the indoor unit lights up during Mold Guard operation.
- If the air conditioner is operated in cooling or drying mode, including in auto mode, for more than 10 minutes and then put into off mode, the mold guard operation will start.
- If unit operation is stopped after heating operation, Mold Guard will not operate.
- Room temperature or humidity may rise.

■ How to set and cancel Mold Guard



1

For setting

- Press the room temperature Up button and Timer on button for 3 seconds together while remote controller in OFF mode with directing remote control towards indoor unit.
  " " is displayed on the LCD.

2

For cancelling

- Press the room temperature Up button and Timer on button for 3 seconds together while remote controller in OFF mode with directing remote control towards indoor unit.
- " " is disappear on the LCD.
- Once Mold Guard function set, Mold Guard icon will always display on the LCD. And it stored in the memory of remote controller and remain set even after reset or battery replacement case. It is one time setting procedure to use this function.

■ How to stop at middle point of Mold Guard operation

3

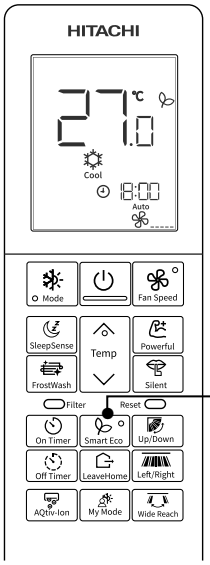
- Press the button (On/Off) twice, the operation will stop.
- " " Lamp on the indoor unit turns off. But setting for Mold Guard will not cancel, it will stop operation only.

NOTE

- If unit operation is stopped after heating operation, Mold Guard will not operate.
- If operation of Unit is stop by Off Timer , the Mold Guard will not operate.
- If On Timer is set and on time is within about 2 hours, the Mold Guard will not operate.
- Depending on situation, Mold Guard will operate with Fan Mode.
- Room temperature or humidity may rise.
- When there would be the window near indoor unit, the water might condense on the window during Mold Guard. If necessary, to cancel Mold Guard.

Smart Eco operation

- The sensor detects the presence of people in the room. When nobody is detected, the unit automatically starts energy saving operation by shifting the set temperature in two steps.
- Smart Eco button is scrolling button , First Press of button , it will start Eco operation , on second Press of button it will start Eco with Auto-Off operation and on Third press of button , it will cancel Eco and Eco with Auto-Off function.

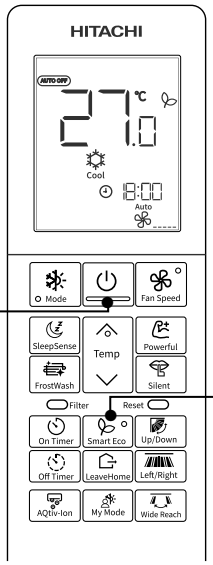


Key Press	1	→ 2 →	3
Function Selected	Eco	Eco+Auto-Off	Cancel

1

To Start Smart Eco operation

- Press the Smart Eco button [Smart Eco] during Heat, Auto , Cool or Dry operation , the Air conditioner performs the "Eco" operation.
  is display on LCD screen.
- A beep sound is emitted from Indoor Unit.
  The sensor starts to detect the presence of people in the room. Energy saving operation will start by changing the set temperature higher or lower automatically and reducing operation power consumption.



2

To Start Eco operation and Auto-Off operation

- Press the Smart Eco button [Smart Eco] again, it will start Auto-Off operation along with Eco operation.
  Sensor detect activity / movement level in room and turn off the unit automatically , thus achieving the purpose of energy saving during day time.
  and (AUTO OFF) will be appear on LCD.
- A beep sound is emitted from indoor unit .

3

To Cancel Eco operation and Auto-Off operation

- Press the [⏻] start/stop button OR
- Press the Smart Eco button [Smart Eco] again.

NOTE

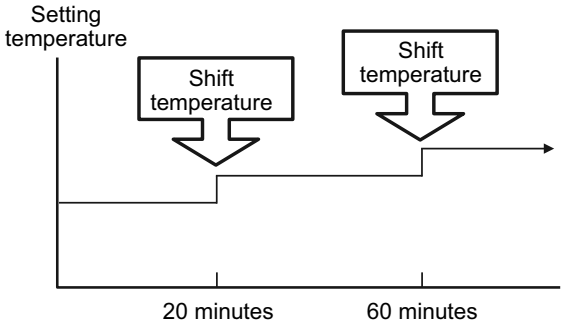
In case the power consumption is already low, Smart Eco operation will not reduce the power consumption.

- By pressing (POWERFUL) button, Eco or Eco with Auto-Off operation is cancelled.
- After auto restart, Eco or Eco with Auto-Off operation is cancelled and previous operation mode shall start.
- By Pressing Mode button ,Leave Home button , SleepSense button , My mode button , Eco or Eco with Auto-Off operation is cancelled.

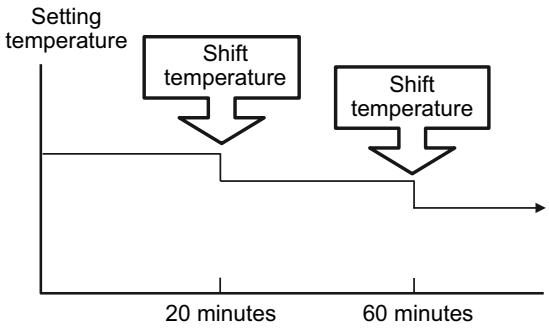
Smart Eco Logic

When the presence of people is not detected for 20 minutes, the set temperature is automatically shifted for energy saving. If nobody is in the room for 60 minutes, the set temperature is shifted further.

Cooling operation [diagram representation for illustrative purpose only]



Heating operation [diagram representation for illustrative purpose only]



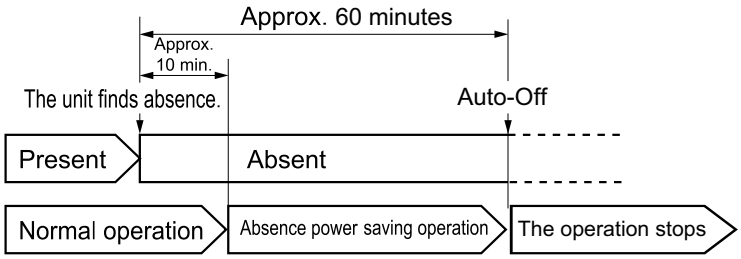
The unit returns to normal operation when the sensor detects human movement.
The set temperature is adjusted automatically, but the temperature display on the remote controller does not change.

NOTE

The sensor detects changes to the infrared generated by human bodies. Therefore the accuracy of sensor may be affected in the following cases:

- The activity level is very low (reading , watching TV, etc.) or human bodies are blocked by a screen , cabinet or glass board.
- The Indoor temperature is very high and exceeds or approaches the human body temperature (When refrigeration just begins)
- Person wears thick clothes and turns his/her back to the air conditioner.
- Curtains or plant leaves swing due to pet movement or airflow.

■ Smart Eco with Auto-Off Logic



The motion before Auto-Off (Operation stop)

- If the Unit cannot find any person during Eco with Auto-Off operation for 60 minutes , the operation stops automatically.
- The operation does not restart if person comes back to the room after stopping the operation. User need to restart operation by remote controller.
- During OFF Timer operation , Priority is given to OFF timer operation.

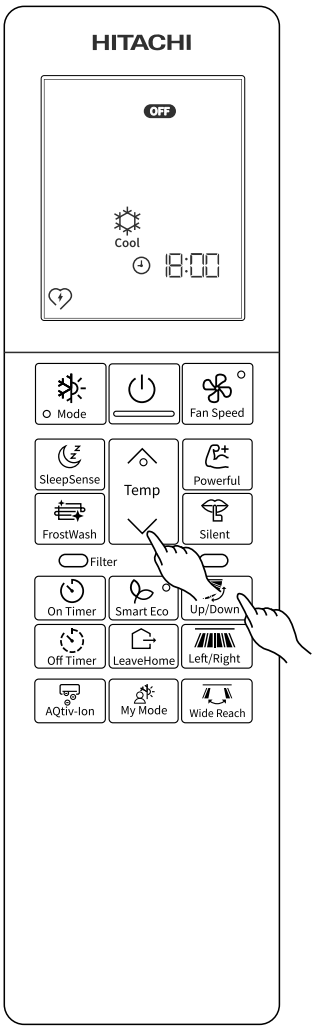
NOTE

- If there are infants or a person who is on bed due to sickness , it is recommended not to set "Auto-Off" Unit may judge that nobody is in the room and stop the operation of the Unit.
- In following cases , the operation may stop automatically
  - If there is a person in the place where human sensor cannot detect it presence.
  - If there is a sleeping person to little child only.
  - If there is pet only.

In these cases it is recommended to cancel Auto-Off function.

Power Safe (Max Current Switching)

- This function limit the maximum current during the operation of Air conditioner so it will help to avoid breaker trips if maximum current reaches to breaker limit. it limits the electrical current during operation.



When Power Safe set , Maximum current limit for model changes as below.

Model	Maximum current with Power Safe setting
1.8~3.5kW	6A
4.2~5.0kW	8A

START

How to set Power Safe mode (Power Safe)

- Place the indoor unit in the standby mode (OFF mode on the display of remote controller)
- Press temperature down button ⌵ and Up/Down swing button Up/Down about 3 seconds together with directing remote control toward indoor unit.
- symbol will be visible on LCD screen and indoor unit will accept by buzzer sound.

CANCEL

How to cancel Power Safe mode

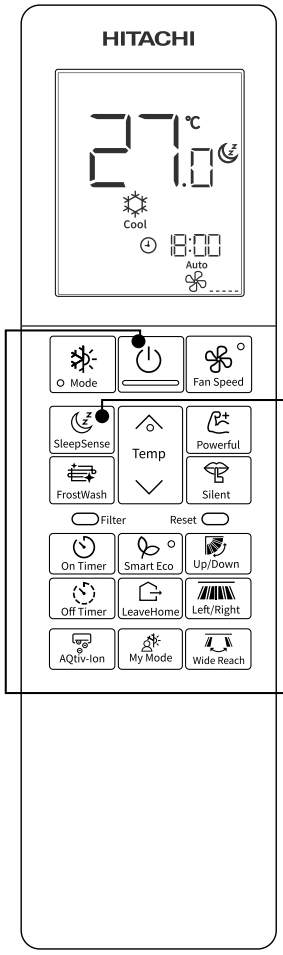
- Place the indoor unit in the standby mode (OFF mode on the display of remote controller)
- Press temperature down button ⌵ and Up/Down swing button Up/Down about 3 seconds together.
- symbol will be disappear on LCD screen and indoor unit will accept by buzzer sound.

NOTE

- Once Power Safe mode set ,it stored In the memory of remote controller and remain set even after remote controller reset or battery replacement case.
- Power Safe mode symbol will be visible in all mode if it set. It is one time setting procedure to use this function.
- This function will limits the maximum current drawn by air conditioner by reducing the speed of the compressor, you may feel less cooling or heating performance compare to normal mode. If you feel so please cancel Power Safe mode if Power Safe mode is set .
- At heating operation or Cooling operation during Power Safe setting maximum capacity will decrease.
- During Power Safe setting mode , it is recommeded to use Auto Fan speed.

SleepSense Operation

- With motion sensor, the room air conditioner detects movements, its location and temperature around people to control set temperature and control fan speed to provide comfortable and energy saving operation as well as to achieve comfortable sleep environment.



1

To Start SleepSense operation

- Press the SleepSense button [SleepSense] during Cool and Heat operation , the Air conditioner performs the "SleepSense" operation.
  is display on LCD screen.
  A beep sound is emitted from Indoor Unit.
  Energy saving operation will start by changing the set temperature higher or lower automatically and reducing operation power consumption.

2

To Cancel SleepSense operation

- Press the [⏻] start/stop button OR
  Press the SleepSense button [SleepSense] again. OR Mode [Mode] button.
  will be disappear on LCD.
  A beep sound is emitted from indoor unit.

NOTE

The sensor detects changes to the infrared generated by human bodies. Therefore the accuracy of sensor may be affected in the following cases:

- The activity level is very low (reading , watching TV, etc.) or human bodies are blocked by a screen , cabinet or glass board.
- The Indoor temperature is very high and exceeds or approaches the human body temperature (When refrigeration just begins)
- Person wears thick clothes and turns his/her back to the air conditioner.
- Curtains or plant leaves swing due to pet movement or airflow.

NOTE

- By pressing (Powerful mode) button, SleepSense operation is cancelled.
- After auto restart, SleepSense operation is cancelled and previous operation mode shall start.
- By Pressing Leave Home button,Smart ECO button/ECO button , My Mode button , SleepSense operation is cancelled.

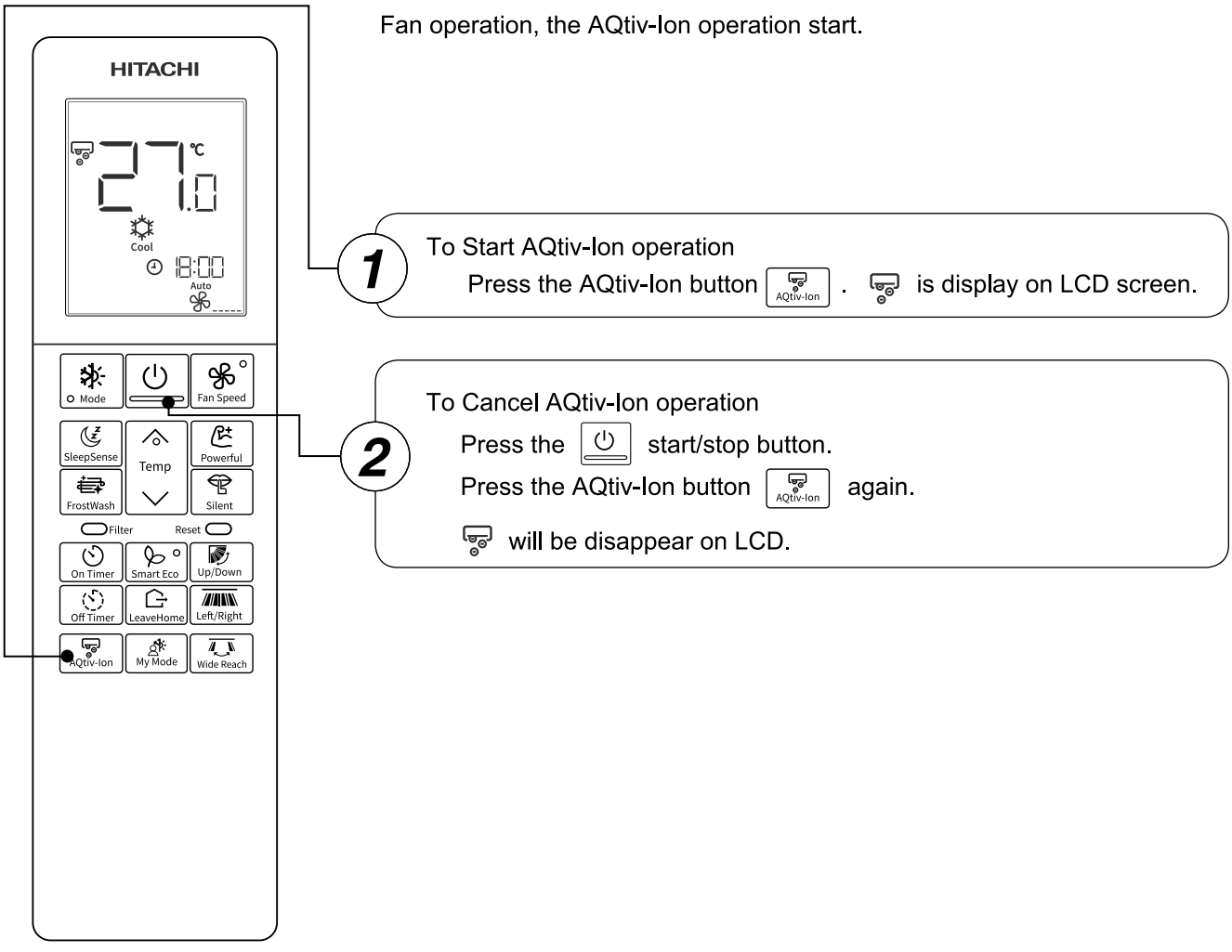
SleepSense Operation

LOGIC (SleepSense)

- At First, unit will operate cooling mode for 60 minutes at setting condition.
- With the motion sensor, the room air conditioner can monitor human movement. If no human movement is detected, then the temperature will increase by 1°C (in case of cooling operation) automatically and The fan speed will be changed to silent fan speed.
  Unit continues running for another 1 hour.
- If the condition of activity in the room is stable then the unit will continue running with the temperature increased by another 1°C (in case of cooling) respectively.
- During the SleepSense operation, if Big activity / movement is detected, the temperature and Fan speed will resume back to previous setting.
- During the SleepSense operation, if small activity / movement is detected, the temperature will decreased by 1°C.

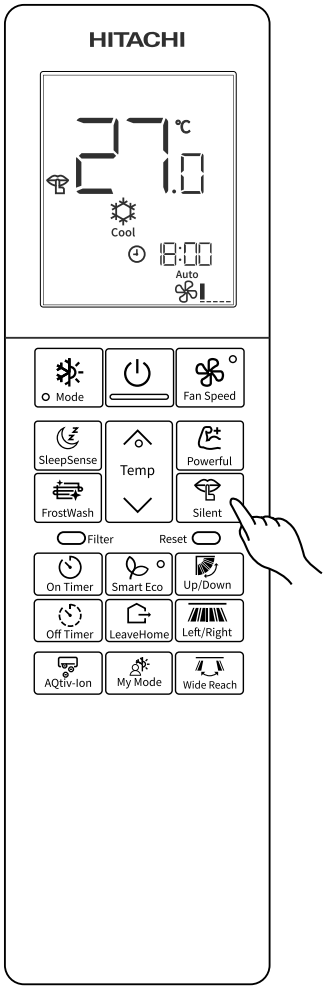
AQtiv-Ion

By pressing AQtiv-Ion (AQtiv-Ion) button during Heat, Auto, Cool, Dry, Fan operation, the AQtiv-Ion operation start.



Silent Mode

By pressing the Silent (Silent) button during Auto, Heat, Dry, Cool or Fan operation, the fan speed changes to the silent fan speed .



START

- When Silent (Silent) button is pressed,
- " " is displayed on the LCD.
- Fan speed changes to silent .

CANCEL

- Press the (On/Off) button, or
- Press the Silent (Silent) button once again or
- Press the Fan Speed (Fan Speed) button.

Fan speed will return to the previous speed before Silent operation starts.

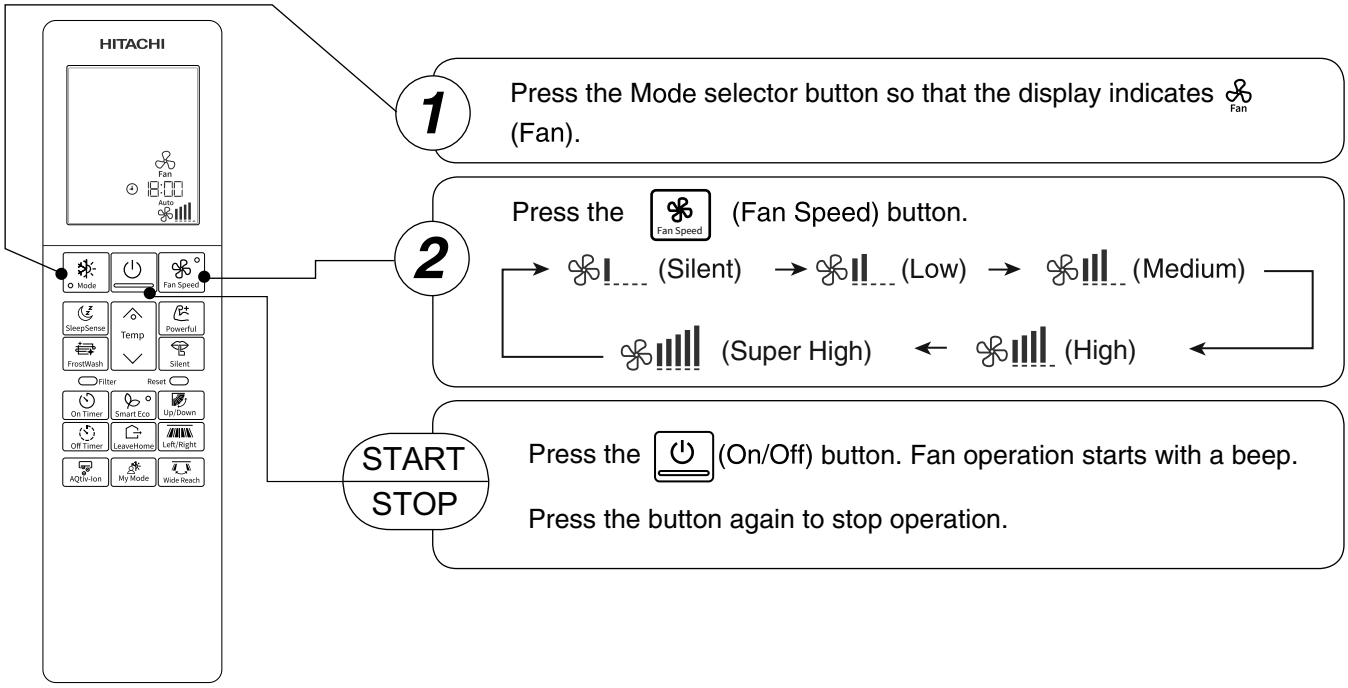
When Silent operation stops, " " will disappear from the LCD.

NOTE

- When Powerful operation is selected, Silent operation will be cancelled. Fan speed will return to the previous speed before Silent operation.
- After unit auto restart, Silent operation is cancelled. Fan speed will return to the previous speed before Silent operation.
- During any operations with silent fan speed , if user presses the Silent (Silent) button, the fan speed does not change.
- By Pressing Mode button or LeaveHome button or My Mode button , Silent operation is cancelled.

Fan Mode

User can use the device simply as an air circulator.



Adjusting the Airflow Direction(upward and downward)

1 Adjust the airflow upward and downward.

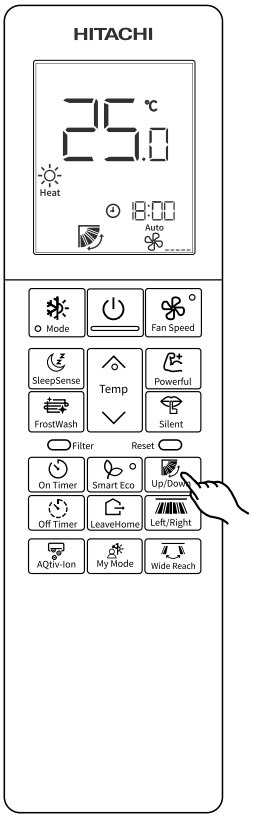
According to operation, the horizontal air deflector is automatically set to the proper angle suitable for each operation.The deflector can be swings up and down and also set to the desired angle using the " (Up/Down)" button.

Press the " (Up/Down)" button . The deflector will start to swing up and down.

" " is display on LCD screen.

Press the " (Up/Down)" button again. The deflector(s) will stop in the current position.

" " is disappear on LCD screen.



- If the " (Up/Down)" button is pressed once, the horizontal air deflector swings up and down.If the button is pressed again, the deflector stops in its current position. Several seconds (about 6 seconds) may be required before the deflector starts to move.
- When the operation is stopped, the horizontal air deflector moves and stops at the position where the air outlet closes.

CAUTION

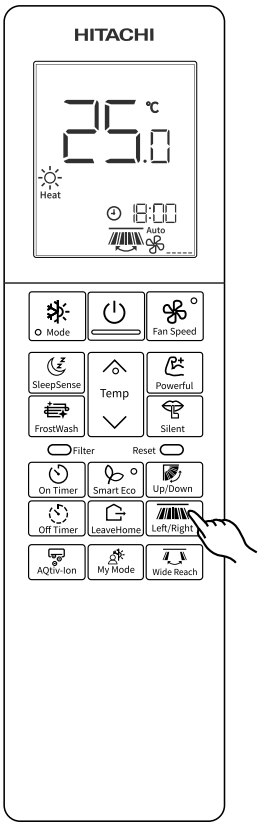
- Don't operate the deflector by hands. It might cause of the failure.
- In "Cooling" operation, do not keep the horizontal air deflector swinging for a long time. Some dew may form on the horizontal air deflector and some dew may drop from it.

Adjust the Airflow Direction(leftward and rightward)

1 Adjusting the airflow leftward and rightward parallelly.

Adjustment of airflow in Left and Right direction.

- Press the Left/Right button [Left/Right] . The deflector(s) will start to swing Left and Right side parallelly. is display on LCD screen.
- Press the Left/Right button [Left/Right] again. The deflector(s) will stop at the current position. Is disappear on LCD screen.



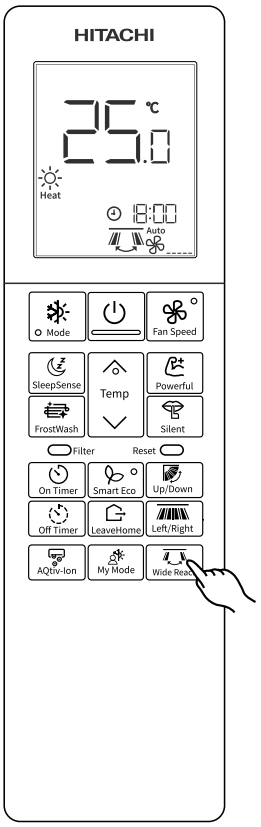
- If the " [Left/Right] " button is pressed once, the Vertical air deflector swings Left and Right.If the button is pressed again, the deflector stops in its current position. Several seconds (about 6 seconds) may be required before the deflector starts to move.
- When the operation is stopped, the vertical air deflector moves and stops at the center position.

CAUTION

- Don't operate the deflector by hands. It might cause of the failure.
- In "cooling" operation don't keep the vertical air deflector at leftmost or rightmost position or swinging for a long time. Dew formation may happen on vertical deflector and some water drops may fall from it.

2 Adjust the airflow leftward and rightward asymmetrically.

- Press the Wide Reach button [Wide Reach] . The deflector(s) will start to swing Left and Right side symmetrically. Is display on LCD screen.
- Press the Wide Reach button [Wide Reach] again. The deflector(s) will stop at the current position. Is disappear on LCD screen.

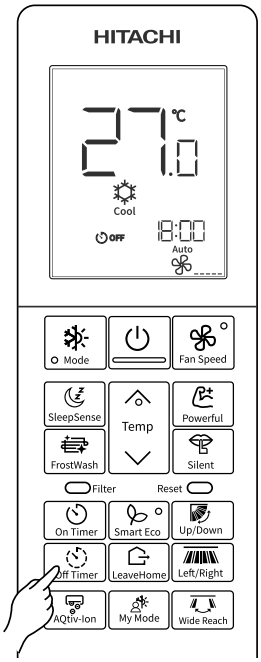


- If the " [Wide Reach] " button is pressed once, the Vertical air deflector swings Left and Right symmetrically. If the button is pressed again, the deflector stops in its current position. Several seconds (about 6 seconds) may be required before the deflector starts to move asymmetrically.
- When the operation is stopped, the vertical air deflector moves and stops at the center position.

CAUTION

- Don't operate the deflector by hands. It might cause of the failure.
- In "cooling" operation don't keep the vertical air deflector at leftmost or rightmost position or swinging for a long time. Dew formation may happen on vertical deflector and some water drops may fall from it.

Timer Reservation

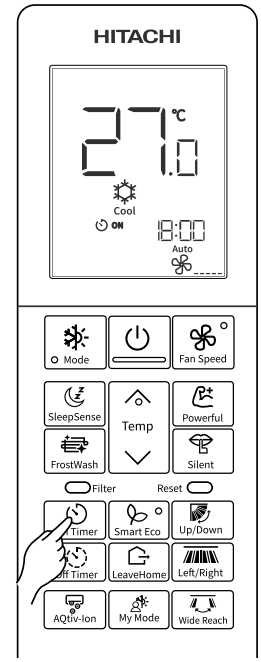


1. Off Time Setting

The device can be set to turn off at a preset time.

1

- Press [Off Timer] (Timer OFF) Button to select OFF timer.
- OFF Symbol start blinking and 12:00 or Previously set time will be display on LCD screen.
- Set up desire Turn off time by pressing Temperature Up /Down button [Temp] .
- After setting , point the remote controller towards the indoor unit and Press [Off Timer] button.
  OFF Symbol stop blinking and turn off time will be display on LCD screen.
  A beep sound emitted from Indoor unit and Timer LED on the indoor unit lights up.
  Remote controller will go to OFF mode after turn off time elapse.
- By pressing On Timer and Off Timer Button together for 3 seconds, Off Timer can be canceled.



2. On Time Setting

Indoor unit can be set to turn on at a preset time.

2

- Press [On Timer] (Timer ON) Button to select ON timer.
- ON Symbol start blinking and 12:00 or Previously set time will be display on LCD screen.
- Set up desire Turn on time by pressing Temperature Up / Down button [Temp] .
- After setting , point the remote controller towards the indoor unit and Press [On Timer] button.
  ON Symbol stop blinking and turn on time will be display on LCD screen.
  A beep sound emitted from Indoor unit and Timer LED on the indoor unit lights up.
  Remote controller will go to ON mode after ON timer elapse.
- By pressing On Timer and Off Timer Button together for 3 seconds, On Timer can be canceled.

NOTE

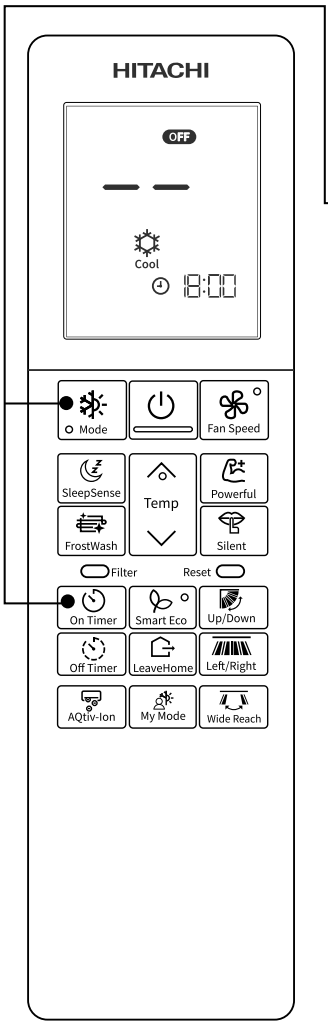
- During the Timer Setting, if you do not press the Temperature Up/Down key within 10 seconds then it will come out of the Timer Setting without any changes in Timer Settings and will display with OFF or ON Icon will be stable appear on LCD to indicate Timer Setting if set previously.
- During Timer setting mode, if you press any key then it will come out immediately from timer setting.
- Timer ON and Timer OFF can be set simultaneously.
- When both timer set simultaneously then ▸ on LCD appear with Timer which will going to execute/expire first.
- During Timer ON or Timer OFF set then Clock setting can not be changed. Clock time will not be display on LCD screen.
- Clock time can be seen on LCD screen by Press and Hold Timer ON or Timer OFF key for 5 seconds. Clock time display for 10 seconds then it will change to Timer ON or Timer OFF time value.

Initialization of the Built-in airCloud Home Module

- You can reset the internal settings (restore the factory settings) by remote controller.

■ How to restore factory setting

Please make this setting with the remote control in off mode.



- Press Mode button (Mode) and On Timer button (On Timer) 3 seconds together.
- LCD will display " — — " on Temperature segment for 3 seconds then it will display normal screen.
- Make sure " " Lamp on the indoor unit flash 4 times repeatedly for about 20 seconds.
- Restart the unit & check " " Lamp blinks 3 times. This ensures that unit enters into pairing mode & restoring factory setting is succeeded.

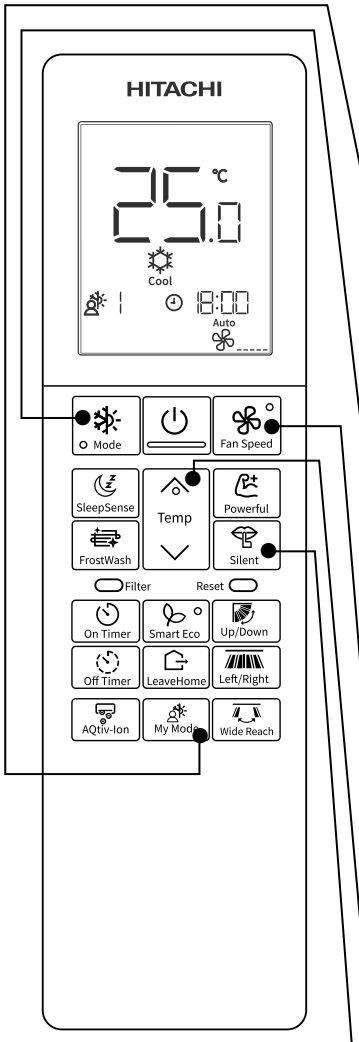
NOTE

- Please note that the configuration will be cleared and pairing procedure will be required to do again to use the built-in airCloud Home module.
- Please refer separate operation manual available for more information related Built-in airCloud Home Module.

My Mode(Programming)

- Use this mode for personalized comfortable settings. The My Mode can be set by using the remote controller.
- Up to 3 programs can be set.

Programming of My Mode



Default Setting of My Mode

My Mode	Mode	Temperature	Fan Speed	ON Timer / OFF Timer	Silent
My Mode1	COOL	25.℃	Auto	No setting	No setting
My Mode2	COOL	25.℃	Auto	No setting	No setting
My Mode3	COOL	25.℃	Auto	No setting	No setting

1 Enter to My Mode programming

- Press the My Mode button continuously for 5 seconds .
- " "blinks on the LCD. And " ", " " or " " any one appear at the right of " ".
  The blinking of " " will remain for 10 seconds.
- By pressing the [My Mode] (My Mode) button, " ", " " or " " can be selected for programming.

2 Mode Selection

- Press [Mode] (Mode) button in order to select desired Mode during " " blinks.
- Mode will change from (Heat) → (Auto) → (Cool) → (Dry) → (Fan) cyclically.

3 Fan Speed Selection

- Press [Fan Speed] (Fan Speed) button in order to select desired Fan Speed during " " blinks.
- Available Fan speed only can be selected as per selected desired mode.

4 Desired Room Temperature Selection

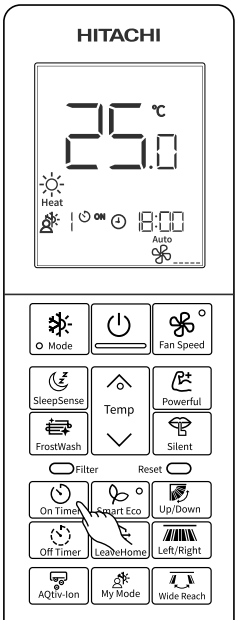
- Press [Temp] button or [Temp] button in order to select desired Room Temperature during " " blinks.
- Temperature range can be set between 16.0℃ and 32.0℃.
- Fan Mode can not be set desired Room Temperature.

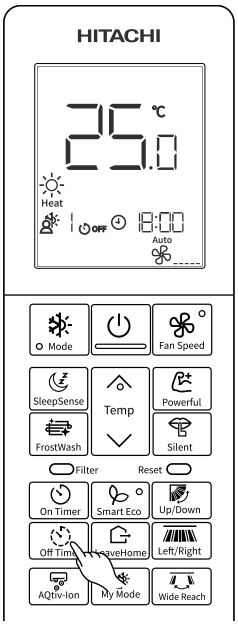
5 Silent Mode Selection

- Press [Silent] (Silent) button in order to set or cancel Silent Mode during " " blinks.

My Mode(Programming)

Programming of My Mode





On Timer Setting

6

- Press [On Timer] (Timer ON) Button to select ON timer.

ON Symbol start blinknig on LCD screen.
ON Timer time will be display on clock time segment on LCD.

- Press [Temp] button to set desire ON timer.
- Press [On Timer] button . It will set ON timer programming.

ON symbol stop blinking on LCD screen.

- Remote controller will go to ON mode after ON timer elapse.
- To cancel ON timer , Press On Timer button and Off Timer button together for 3 seconds.

Off Timer Setting

7

- Press [Off Timer] (Timer OFF) Button to select OFF timer.

OFF Symbol start blinknig on LCD screen.
OFF Timer time will be display on clock time segment on LCD.

- Press [Temp] button to set desire OFF timer.
- Press [Off Timer] button . It will set OFF timer programming.

OFF symbol stop blinking on LCD screen.

- To cancel Off timer , Press On Timer button and Off Timer button together for 3 seconds.
- Remote controller will go to OFF mode after OFF timer elapse.

Register of My Mode Programming

8

- Once all desire setting completed , press [⏻] (On/Off) button during " ❄ " blinks.

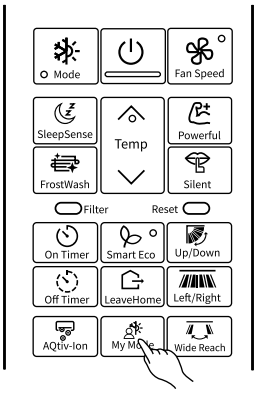
All selection will be saved to remote controller and room air conditioner.

NOTE

- If operation of remote controller will not be done for 10 seconds during My Mode programming, remote controller will come out from My Mode programming without registering of My Mode Programming.
  Without registering of My Mode Programming, My Mode selection will remain with all previously selections and previous values.
- If My Mode button is kept pressing for 5 seconds during My Mode Programming, remote controller will come out from My Mode programming.
  Without registering of My Mode Programming, My Mode selection will remain with all previously selections and previous values.
- If battery is replaced or Reset (Reset) button is pressed, My Mode Programming on remote controller will be reset to default settings.
  If new settings are required, do My Mode Programming again.
- When Operation Mode Lock is set, selectable mode during My Mode will be limited.

My Mode(Start or Stop of My Mode Operation)

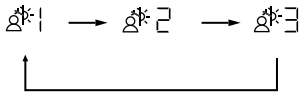
Start of My Mode Operation



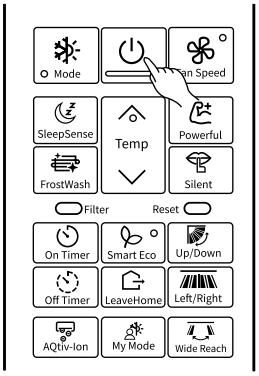
Start of My Mode Operation

- Press [My Mode] (My Mode) button at room air conditioner operation.

  Room air conditioner starts with My Mode 1 registered to remote controller.
- Press [My Mode] (My Mode) button again in order to change to the operation of My mode 2, My mode 3.



Stop of My Mode Operation



Stop of My Mode Operation

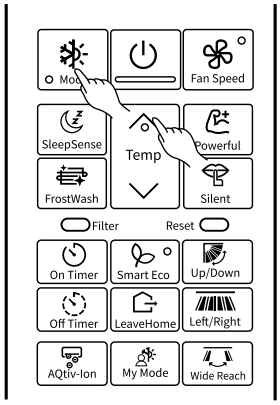
- Press [⏻] (On/Off) button in order to turn off room air conditioner.

NOTE

- My Mode operation can be cancelled by pressing [Mode] (Mode) button or [LeaveHome] (LeaveHome) button.
- If My Mode Operation is started without programming of My Mode yet, room air conditioner starts with default setting of My Mode.
- If On Timer or Off Timer set by My Mode has elapsed, pressing [My Mode] (My Mode) button again to restart the Timer operation.
- FrostWash (Manual Mode) will not activate during My Mode.
- Up/Down swing , Left-Right swing , Wide Reach and AQtiv-Ion function can be selectable with My mode.

Operation Mode Lock

The remote controller can be set to fix the Heat Mode (including Fan Mode), Cool Mode and Dry Mode (including Fan Mode) operations.



■ Method to lock Heat Mode (including Fan Mode) operation.

Press [Mode] (Mode) and [Temp] buttons simultaneously for about 3 seconds when the remote controller is OFF.

" Heat ", " Fan " and " " will be displayed for about 10 seconds. Later, " Heat " and " " will remain.

This indicates that Heat Mode operation is locked.

When pressing [Mode] (Mode) button, " Heat ", or " Fan " will be displayed.

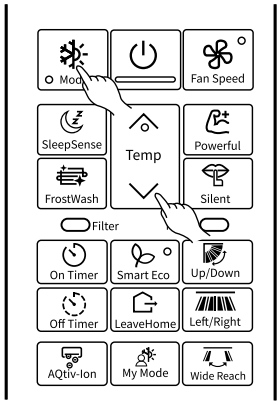
■ Method to unlock Heat Mode (including Fan Mode) operation.

Press [Mode] (Mode) and [Temp] buttons simultaneously for about 3 seconds when the remote controller is OFF.

All operation mode symbols will appear on the display for about 10 seconds " " will disappear. After that, " Heat " will remain.

This indicates that Heat Mode operation is unlocked.

■ Method to lock Cool Mode and Dry Mode (including Fan Mode) operations.



Press [Mode] (Mode) and [Temp] buttons simultaneously for about 3 seconds when the remote controller is OFF.

" Cool ", " Dry ", " Fan " and " "will be displayed for about 10 seconds. Later, " Cool " and " " will remain.

This indicates that Cool Mode and Dry Mode operation is locked.

When pressing [Mode] (Mode) button, " Cool ", " Dry ", or " Fan " will be displayed.

■ Method to unlock Cool Mode and Dry Mode (including Fan Mode) operations.

Press [Mode] (Mode) and [Temp] buttons simultaneously for about 3 seconds when the remote controller is OFF.

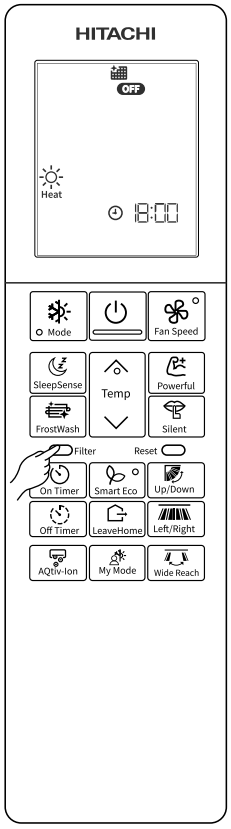
All operation mode symbols will appear on the display for about 10 seconds " " will disappear. After that " Heat " will remain.

This indicates that Cool Mode and Dry Mode operation is unlocked.

NOTE

- Operation Mode Lock function will not activate if Timer reservations or My Mode is activate. Timer reservations shall be deactivated first. Then, Operation Mode Lock function can be activated.
- Operation Mode Lock can be kept even if Reset (Reset) button is pressed.
- Operation Mode Lock will not be set if FrostWash(Manual Mode) is in progress.
- LeaveHome button is disable during lock Cool mode and Dry Mode operation.

How to Reset Filter Sign on the indoor unit



Filter Sign on the indoor unit will show with " " lamp by blinking with 1 second on and 4 seconds off. Because cleaning of Air filter has not been done for a long time. Clean the Air filter.

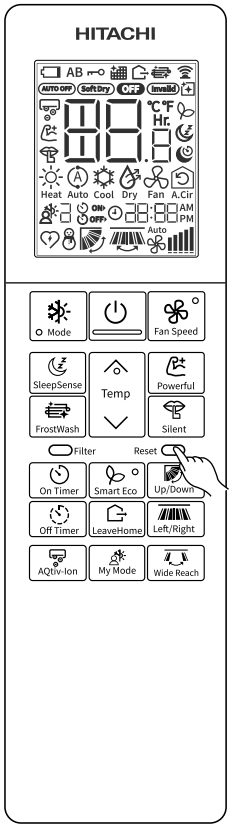
Press Filter Button at Off Mode pointing the remote controller towards the indoor unit to reset Filter Sign.

" " symbol will be visible on LCD screen for about 3 seconds and Filter Sign on the indoor unit will turn off.

NOTE

- Filter Button is active in OFF mode only.

Reset Function (For Hardware Reset)



During Battery replacement or any unlikely event, if the display does not change on Press of key or any unwanted garbage display comes,
Press Reset button to reset your remote controller hardware.

In order to reset remote controller hardware , Press and release Reset button, the display will be as shown for 2 seconds then it will change to default mode screen.

NOTE

- Use some pointed item like pen to press the reset key.
- Once the remote controller is reset, all setting will reset except some special function activated by User

SAFETY PRECAUTION

- Please read the “Safety Precaution” carefully before operating the unit to ensure correct usage of the unit.
- Pay special attention to signs of “⚠ **Warning**” and “⚠ **Caution**”. The “Warning” section contains matters which, if not observed strictly, may cause death or serious injury. The “Caution” section contains matters which may result in serious consequences if not observed properly. Please observe all instructions strictly to ensure safety.
- The sign indicate the following meanings.

Make sure to connect earth line.	The sign in the figure indicates prohibition.
Indicates the instructions that must be followed.	

WARNING	This symbol shows that this equipment uses a flammable refrigerant. If the refrigerant is leaked, together with an external ignition source, there is a possibility of ignition.
CAUTION	This symbol shows that the Operation Instructions should be read carefully.
CAUTION	This symbol shows that a service personnel should be handling this equipment with reference to the Installation Manual.
CAUTION	This symbol shows that there is information included in the Operation Manual and/or Installation Manual

- Please keep this manual after reading.

PRECAUTIONS DURING INSTALLATION

⚠ WARNING

- Do not reconstruct the unit.
  Water leakage, fault, short circuit or fire may occur if you reconstruct the unit by yourself.
- Please ask your sales agent or qualified technician for the installation of your unit. Water leakage, short circuit or fire may occur if you install the unit by yourself.
- Please use earth line.
  Do not place the earth line near water or gas pipes, lightning-conductor, or the earth line of telephone. Improper installation of earth line may cause electric shock.
- Be sure to use the specified piping set for R32. Otherwise, this may result in broken copper pipes or faults.
- Do not use refrigerant other than the one indicated on the outdoor unit (R32) when installing, moving or repairing. Using other refrigerants may cause trouble or damage to the unit, and personal injury.

⚠ CAUTION

- A circuit breaker should be installed depending on the mounting site of the unit. Without a circuit breaker, the danger of electric shock exists.
- Do not install near location where there is flammable gas. The outdoor unit may catch fire if flammable gas leaks around it.

- Please ensure smooth flow of water when installing the drain hose.
- Do not install the indoor unit in a machine shop or kitchen where vapor from oil or its mist flows to the indoor unit. The oil will deposit on the heat exchanger, thereby reducing the indoor unit performance and may deform and in the worst case, break the plastic parts of the indoor unit.

PRECAUTIONS DURING SHIFTING OR MAINTENANCE

⚠ WARNING

- Should abnormal situation arises (like burning smell), please stop operating the unit and turn off the circuit breaker. Contact your agent. Fault, short circuit or fire may occur if you continue to operate the unit under abnormal situation.
- Please contact your agent for maintenance. Improper self maintenance may cause electric shock and fire.
- Please contact your agent if you need to remove and reinstall the unit. Electric shock or fire may occur if you remove and reinstall the unit yourself improperly.
- If the supply cord is damaged, it must be replaced by the special cord obtainable at authorized service/parts centers.
- If the air conditioner is not cool, one possible cause could be due to refrigerant leakage, so consult your dealer.
  The refrigerant gas used in the air conditioner is harmless. But if refrigerant gas leaks into the room, harmful products are generated when in contact with fire from appliances such as a stove heater.
  When there is refrigerant gas accumulation in the room, immediately stop the air conditioner. Open the windows for ventilation and contact your agent.

PRECAUTIONS DURING OPERATION

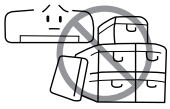
⚠ WARNING

- Avoid an extended period of direct air flow for your health.
- Do not insert a finger, a rod or other objects into the air outlet or inlet. As the fan is rotating at a high speed, it will cause injury. Before cleaning, be sure to stop the operation and turn the breaker OFF.
- Do not use any conductor as fuse wire, this could cause fatal accident.
- During thunder storm, disconnect and turn off the circuit breaker.
- Spray cans and other combustibles should not be located within a meter of the air outlets of both indoor and outdoor units. As a spray can’s internal pressure can be increased by hot air, a rupture may result.

PRECAUTIONS DURING OPERATION

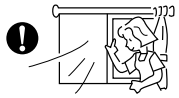
CAUTION

- The product shall be operated under the manufacturer specification and not for any other intended use.



- Do not attempt to operate the unit with wet hands, this could cause fatal accident.

- When operating the unit with burning equipments, regularly ventilate the room to avoid oxygen insufficiency.

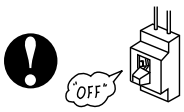


- Do not direct the cool air coming out from the air-conditioner panel to face household heating apparatus as this may affect the working of apparatus such as the electric kettle, oven etc.

- Please ensure that outdoor mounting frame is always stable, firm and without defect. If not, the outdoor unit may collapse and cause danger.

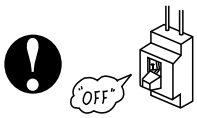
- Do not splash or direct water to the body of the unit when cleaning it as this may cause short circuit.

- Do not use any aerosol or hair sprays near the indoor unit. This chemical can adhere on heat exchanger fin and blocked the evaporation water flow to drain pan. The water will drop on tangential fan and cause water splashing out from indoor unit.



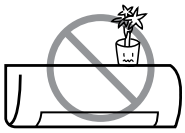
- Please switch off the unit and turn off the circuit breaker during cleaning, the high-speed fan inside the unit may cause danger.

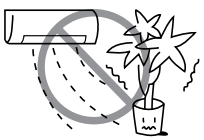
- Turn off the circuit breaker if the unit is not to be operated for a long period.



- Do not climb on the outdoor unit or put objects on it.

- Do not put water container (like vase) on the indoor unit to avoid water dripping into the unit. Dripping water will damage the insulator inside the unit and causes short-circuit.





- Do not place plants directly under the air flow as it is bad for the plants.

- When operating the unit with the door and windows opened, (the room humidity is always above 80%) and with the air deflector facing down or moving automatically for a long period of time, water will condense on the air deflector and drips down occasionally. This will wet your furniture. Therefore, do not operate under such condition for a long time.
- If the amount of heat in the room is above the cooling or heating capability of the unit (for example: more people entering the room, using heating equipments and etc.), the preset room temperature cannot be achieved.

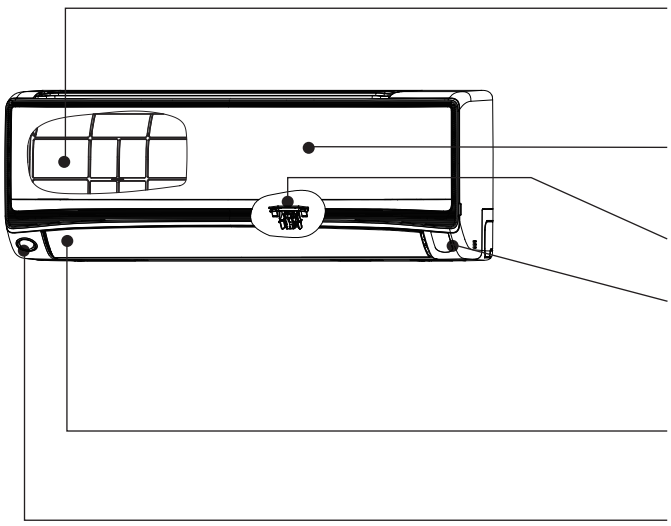
- This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved.
  Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.

Operation Range

Operation mode	Cooling/Dehumidifying	Heating
Outdoor temperature	-10 to 46°C	-15 to 21°C

Names and Functions of Each Part

Indoor Unit



Pre-filter
To prevent dust from coming into the indoor unit. (Refer page 43)

Front panel
(Refer page 44)

Ioniser

Indoor unit indicators
Light indicator showing the operating condition. (Refer page 36)

Horizontal deflector, Vertical deflector (Air Outlet)

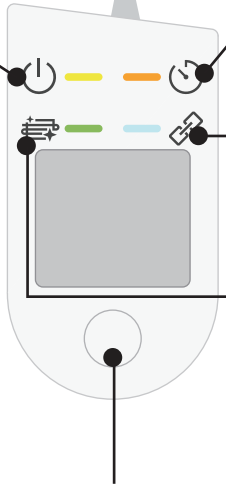
ECO Sensor

Remote controller
Send out operation signal to the indoor unit. So as to operate the whole unit.

Model Name and Dimensions

MODEL	WIDTH (mm)	HEIGHT (mm)	DEPTH (mm)
RAK-VJ60PHAE RAK-VJ70PHAE	1050	294	255

Indoor Unit Indications



Operation Lamp (Yellow)
This lamp lights during operation. The Operation Lamp flashes in the following cases during heating.

(1) **During preheating**
For about 2-3 minutes after starting up.

(2) **During defrosting**
Defrosting will be performed about once an hour when frost forms on the heat exchanger of the outdoor unit, for 5-10 minutes each time.

Timer Lamp (Orange)
This lamp lights when the timer is working.

Wi-Fi Lamp (Blue)

Clean Function Lamp (Green)
This lamp uses for FrostWash, Mold Guard, Filter Sign.

Temporary Switch
Use this switch to start and stop when the remote controller does not work.

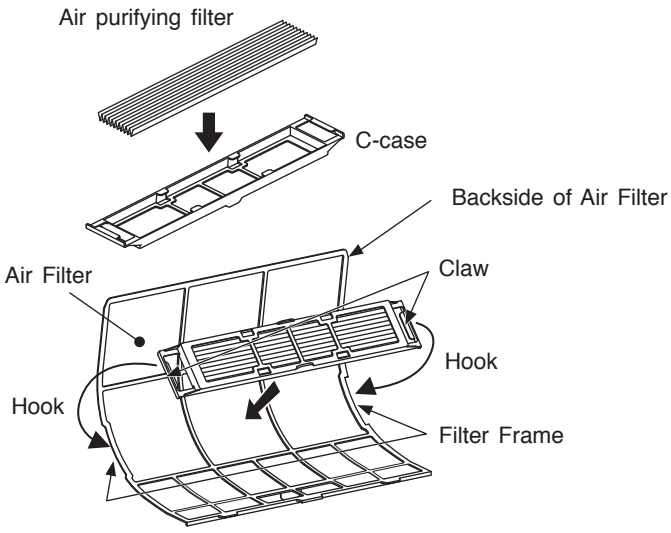
- By pressing the temporary switch, the operation is done in automatic mode.
- When the operation is done using the temporary switch after the power source is turned off and turn on again, the operation is done in automatic mode.

⚠ CAUTION
Turn off the circuit breaker if the unit is not be operated for a long period.

☆ If the power stays on and the unit is not operated, power is slightly consumed in the control circuit. The power is saved by turning off the power switch (or the circuit breaker when the power is supplied from the outdoor unit).

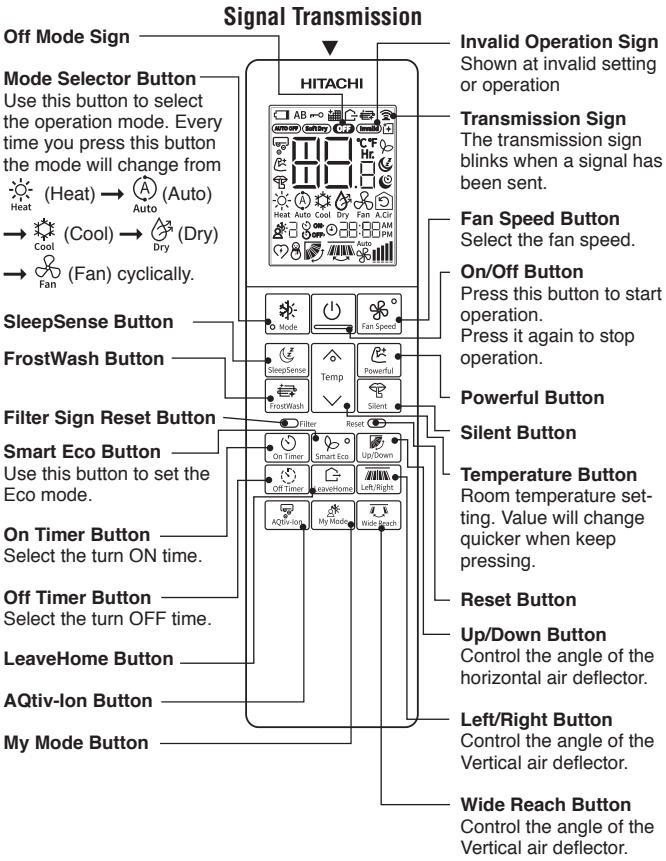
■ **Attaching the air purifying filters (Accessories) to the filter frame.**

- Attach the air purifying filters to the C-case to the designated position.
- The cooling capacity is slightly weakened and the cooling speed becomes slower when the air purifying filters are used.
- The air purifying filters are not washable. It is recommended to use vacuum to clean. It can be used for 1 year. When you want to renew it, please ask your sales agent.



Names and Functions of Remote Controller

This controls the operation function and timer setting of the room air conditioner. The range of control is about 7 meters. If indoor lighting is controlled electronically, the range of control may be shorter.



Backlight function

- Backlight is to see the LCD readings in the dark.
- On Pressing any key, the LCD panel lights up for a period of approx. 10 seconds. After approx. 10 seconds the light automatically switches off.
- The function is independent of all other functions of the air conditioner.
- The backlight color is white.

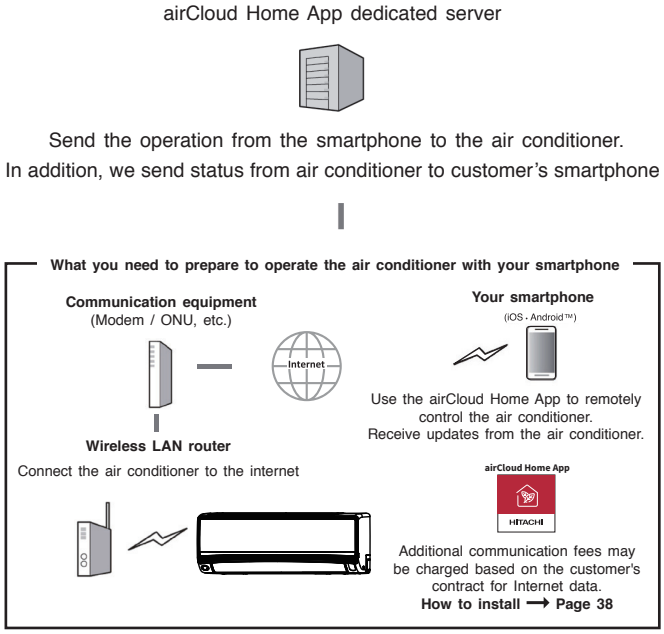
Precautions for Use

- Do not put the remote controller under direct sunlight and high temperature.
- Do not drop it on the floor, and protect it from water.
- If you press the FUNCTION button during operation, the air conditioner may stop for about 3 minutes for protection before you can start it again.

Operate Air Conditioner with Smartphone

Built-in airCloud Home module

airCloud Home is a cloud-based solution for remotely controlling your Hitachi air conditioning system via smart phone. You can operate the air conditioner from outside the home with your smartphone and check the operating status.



What You Should Confirm When Using the Service

Internet environment at home

- In order to use the service, FTTH (optical fiber) ADSL / CATV (cable TV) and other Internet services, a broadband line capable of communication is required. Not available on dial-up lines.
- For details on Internet connection, contact your provider or carrier. Please check your contract.
- Internet communication charges are the responsibility of the customer.

Smartphone

- iOS (iPhone, etc.) 10.0 / Android 8.0 or later (as of December 2021).
- To confirm the OS version, check on your smart phone, or contact your smart phone manufacturer.
- Make sure that you can connect to the router with wireless LAN.
- Tablets are not guaranteed to work.

Wireless LAN router (Hereinafter router)

- Please use a router that supports the 2.4GHz band.
- For security, be sure to use a router that can set the encryption method WPA2 or WPA (either TKIP or AES). We recommend the WPA2 (AES) encryption method. For the setting procedure, refer to the instruction manual of the router.
- Routers that support only WEP cannot be used.
- Mobile routers are not guaranteed to work.

Initial Settings

Please install the airCloud Home app on your smartphone

(1) Search for the airCloud Home app
- For Android models: Open Google Play. Android is a trademark and registered trademark of Google LLC.
- For iOS models (iPhone): Open the App Store. iPhone is a trademark and registered trademark of Apple Inc.

(2) Please install according to the screen
- In order to use the dedicated app, you need to read and agree to the Terms of Service.
- To dedicated application is free of charge, but to download the application, the data charges as per the internet provider or smart phone network provider charges apply.
- The names and icons of the dedicated apps are as of September 2021. It may be changed by updating the application.

Notes:

- The first registered user becomes gruop administrator by default and manage other users and also set access rights for other users.
- When using with multiple users, the registered user should invite other users to register.

Notes on Wireless LAN

⚠ WARNING

- **Do not enable remote features near those with a cardiac pacemaker or defibrillator**
  If it is too close, radio waves may affect the operation of pacemakers and other devices.

Use frequency band

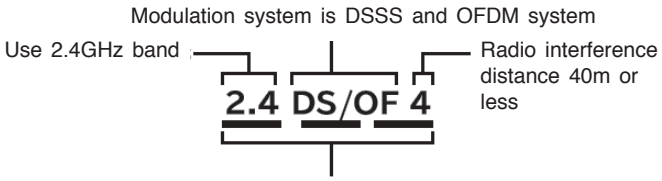
In the frequency band used by this air conditioner, in addition to industrial, scientific and medical equipment such as microwave ovens, private radio stations for identification of mobile objects (radio stations that require a license) and special Low power radio stations (radio stations that do not require a license) and amateur radio stations (radio stations that require a license) are in operation.

(1) Before using this air conditioner, make sure that local radio stations for identification of mobile objects, specified low-power radio stations and amateur radio stations are not operating nearby.

(2) If any harmful radio interference occurs from the air conditioner to the mobile station identification radio station, immediately stop using the radio wave and contact below to consult about measures for avoidance.

(3) In addition, if you have any problems such as harmful radio interference from the air conditioner to the specified low power radio station for identifying the moving object or amateur radio station. Please contact us.

How to use frequency



It means that the entire band from 2.400 GHz to 2.4835 GHz can be used and the band of the mobile identification device can be avoided.

Equipment certification

This air conditioner has a built-in wireless device that has been approved for construction design based on the Radio Law, so a license for a wireless station is not required. However, the following acts are prohibited by the Radio Law.

- Disassemble / modify wireless device.
- Remove the main unit nameplate.
- Erase the indication on the nameplate of the main unit.

Security measures

- Since wireless LAN transmits and receives using radio waves, there is a risk of unauthorized access. Please take security measures for the wireless LAN router (hereinafter, router) to ensure data security. Please note that we do not take any responsibility if a problem occurs without implementing security measures.
- We recommend that you set a password (encryption key) for the router of at least 8 characters and no more than 63 characters. (Refer to the instruction manual of the router for the limitation of the number of characters.) When you change the password (encryption key), change the setting according to “When the router is replaced” in the airCloud Home app.

About firmware

- This air conditioner has the function of connecting to our server through the Internet and automatically updating its firmware to the latest version. During the update, wireless communication may be interrupted and communication may be interrupted or can be slow.
- Do not analyze or modify the firmware.

Usage restrictions

Please note the following restrictions on use. The Company will not be liable for any failure to observe the restrictions or for any incidental damage resulting from the use or inability to use the air conditioner.

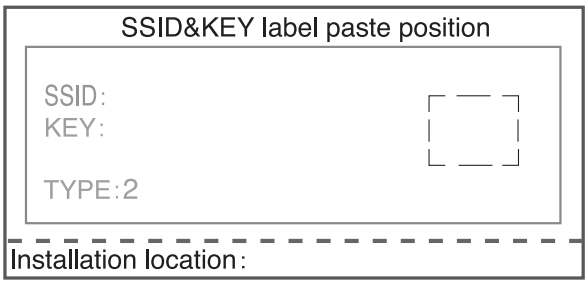
- Do not connect to wireless networks for which you do not have usage rights. Unauthorized wireless networks (*SSID) that you do not have permission to use may be displayed during automatic search of the wireless network environment.
  - ☆ SSID is a name to identify a specific network in wireless LAN. If this SSID matches on both devices, communication is possible.
- Do not use where magnetic fields, static electricity or radio interference may occur.
  If used near the following devices, communication may be interrupted or the speed may decrease. Please use as far as possible.
  - Microwave oven during cooking
  - Bluetooth compatible device
  - Other wireless LAN devices (wireless WEB cameras, PC devices, etc.) except the router (wireless LAN router) that communicates with this air conditioner.
- If the air conditioner is surrounded by a metal object, or if there is an object such as metal or reinforced concrete that cannot pass radio waves between itself and the router, it may not be able to communicate due to the reception of radio noise or a short range.

Information about Using Wireless LAN

- The air conditioner can be operated from a place that is not directly visible. Therefore, for example, a situation may occur where a person in the room turns ON while another person turns OFF from outside. Especially when infants, children, the elderly, the sick, or the physically handicapped are indoors, use it when a person who can manage it is nearby. In addition, before using, please understand the condition of the room before operating.
- Your smartphone and air conditioner communicate data via our server using the Internet. Therefore, due to the condition of the communication line of your mobile phone company or provider, the setting of your router, or the stop of service due to maintenance of the airCloudHome server, data communication may not be possible, and the system may not or delay operate.
- After connecting the air conditioner to the router, you can perform data communication. To use, you will incur the broadband internet charges and your smartphone network provider charges as per the customer contract.
- If the air conditioner is not operated for a long time or if the home internet network has been completely shut down, it is advisable to initialize the airCloud Home module and reconnect the same.
- Please do not inform other people about the SSID / KEY of this air conditioner.
- Our company guarantees repair of this air conditioner under certain conditions. However, we do not guarantee that stored data is lost or damaged.
- This air conditioner stores network setting information. When disposing of this air conditioner, initialize the built-in airCloud Home module (Refer to page 42 Restore Factory Setting).
- Customers are responsible for resolving any deficiencies in the Internet and wireless environment at home.
- If you operate the air conditioner using the App, some of the set functions may be canceled. Check the web page for details.

SSID & KEY Label Paste

SSID & KEY label details of Air conditioner's built-in airCloud Home module is pasted here for your reference. Please keep it safe for future requirements during pairing process and please write down the installation location (like living room, bed room, etc.) on the label. The AC type is "2" that is for models with a built-in airCloud Home module.



About Software License

The software installed in this air conditioner is composed of multiple independent software modules, and each software module has the copyright of Johnson Controls Air Conditioning (Herein after referred to as “the Company”) and a third party. This air conditioner also contains software modules developed or created by us, but these software and accompanying documents have proprietary rights and intellectual property rights of our company. These are protected by copyright law and other laws.

Initial Setting of App

Installation of App

Go to Google Play or the Apple Store (depending on your smartphone) and download the “airCloud Home” Application

- Please read and agree to “the Terms of Use” on the App.
- The App is free. Communication charges will be incurred for download and operation as per the local cell phone provider.
- Android is a trademark and registered by Google LLC.
- iPhone is a trademark and registered by Apple Inc.
- QR code is a trademark and registered by DENSO WAVE Inc.

Registration on App

(1) Click “Create Account”.

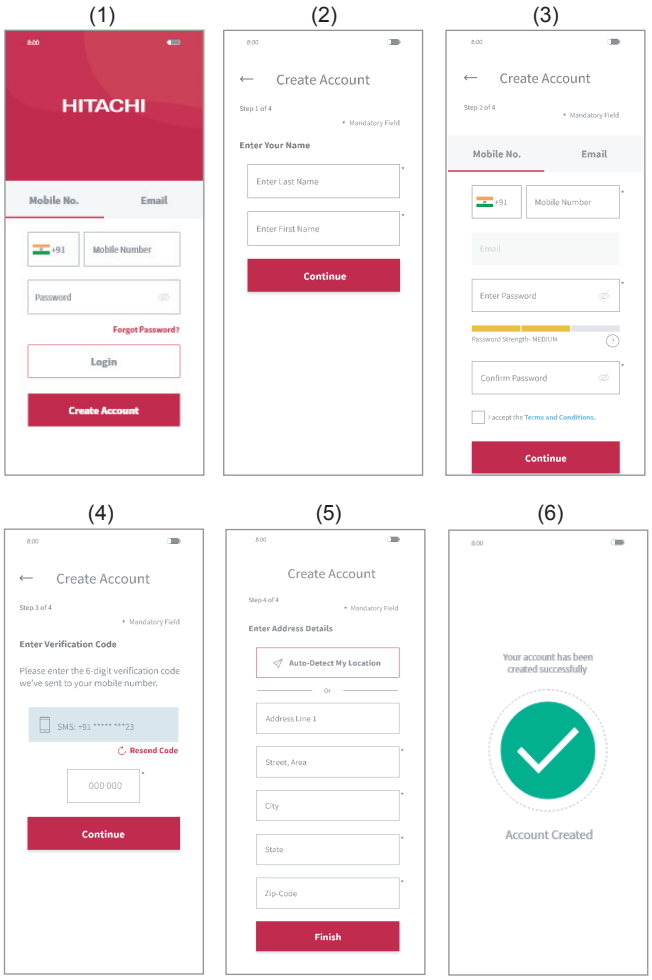
(2) Enter your name and click “Continue”.

(3) Enter your mobile number and password (or click “E-mail” tab, and enter your E-mail address and password), read the “terms and conditions” and check on the box, click “Continue”.

(4) Enter received verification code you received and click “Continue”.

(5) Click “Auto-Detect My Location” or Enter address details manually, and click “Finish”.

(6) The account has been created successfully.



Note:

The first registered user can manage all the users and set access rights as a group owner. Group owner can invite others to register.

Air Conditioner Registration and Router Connection

Make sure that the air conditioner is plugged in, then follow the steps below to add your air conditioner device to the App.

(1) Click “Add Air Conditioner” on the top screen after registration and login your App.

(2) Scan QR code on the bundled SSID & KEY label in this user manual or by lifting the front panel of your air conditioner.

(3) If the SSID shown on the App is your home router, enter your home router password, click “Next”. Otherwise, click “Change Wi-Fi Network”, select your home router enter password and click “Next”,

(4) Switch ON your air conditioner now. Once your air conditioner is switched on, or reset the internal settings (restore the factory settings) by remote control, it will automatically set into pairing mode for 10 minutes. Wi-Fi LED on air conditioner's panel (see diagram in status indicator section) will blink for 3 times repeatedly showing air conditioner is in pairing mode. Wi-Fi LED keeps blinking till communication with Wi-Fi router is succeeded.
When the airCloud Home module reset operation is performed through the remote control, the pairing mode can be entered without restarting the air conditioner.

(5) Click "Change Wi-Fi Network", select the Wi-Fi access point of the Built-in airCloud Home module with SSID printed on the bundled SSID&KEY Label, input password (the KEY). Click right arrow icon on the screen top to continue for connecting your smart phone with the Adapter.

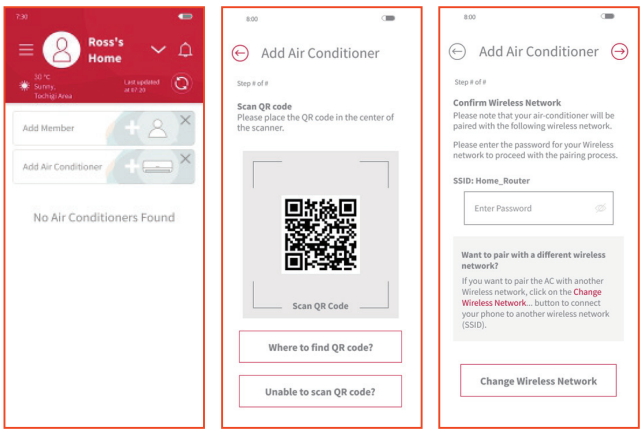
(6) Waiting for the built-in airCloud Home module to connect to your home router. When communication is established, Wi-Fi LED on panel will be continuously ON after blinking.

(7) Waiting for the Smartphone to connect with your home network. If your Smartphone is connected to another wireless network then click on Change Wireless Network & select home network.

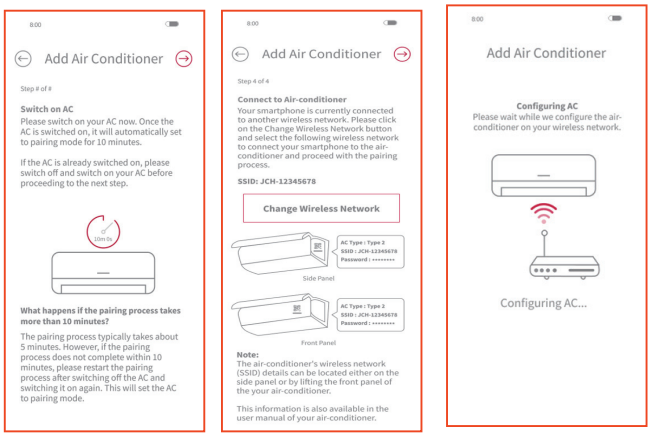
(8) Please assign a name to your registered air conditioner. If you assign a custom name to your air conditioner, it will not be compatible with your smart speaker (integrated with Alexa or Google Assistant), so we recommend that you select a name from the pre-defined list.

(9) Your air conditioner has been successfully configured.

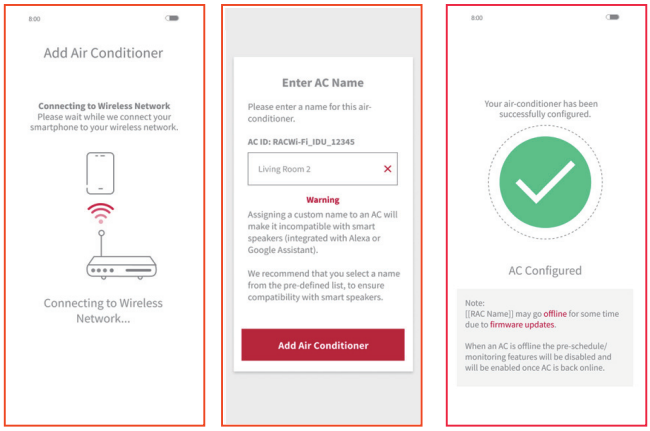
(1) (2) (3)



(4) (5) (6)



(7) (8) (9)



(1) If communication cannot succeed within 10 minutes, please follow the instructions of the App to complete the pairing process again.

(2) If a user in the group has already registered some air conditioning units, the other users in the same group can also control the unit.

(3) If the air conditioning is not configured with router, at power on unit enters into pairing mode every time for 10 minutes with Wi-Fi indication blinking for 3 times.

(4) If the air conditioning is already configured with router, and router detection is available then at power on, unit will skip the pairing mode & try to connect to router.

(5) Please enter the SSID name of the air-conditioner to proceed with the pairing process if unable to scan QR code.

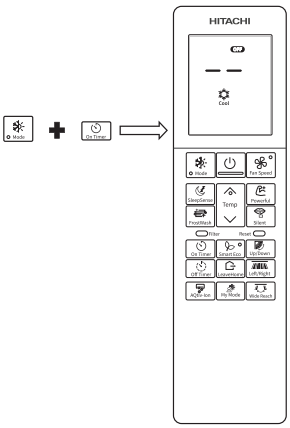
Initialization of the Built-in airCloud Home Module

Reset the internal settings (restore the factory settings) by remote controller. Please note that the configuration will be cleared and pairing procedure will be required to do again to use the built-in airCloud Home module.

(1) Press Mode key and ON Timer key simultaneously, pointing the remote controller towards the air conditioning unit.

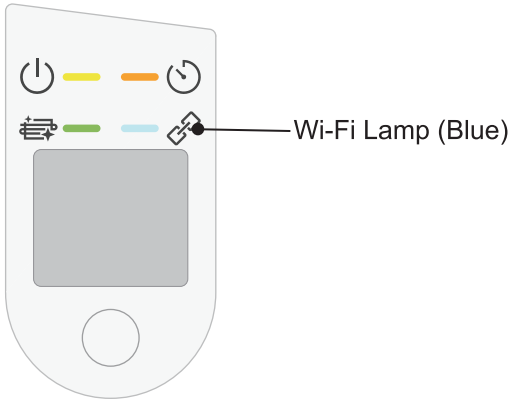
(2) Make sure Wi-Fi LED on Indoor Unit flashes 4 times repeatedly for about 20 seconds (LED is turning off between 2 sequences of 20 seconds).

(3) Restart the unit (turn power OFF during 1 minute, then turn power ON again) and check that the Wi-Fi LED is blinking 3 times.
If Wi-Fi LED is indeed flashing 3 times, pairing mode is well activated and factory settings have well been restored.



Status Indicator (LED Indicator may light up while the air conditioner is turned off)

Wi-Fi Lamp	Corresponding Status
LED OFF	● Pairing time out occurs (after 10 mins.) & configured router not detected. ● Air conditioner is not plugged in. ● Built-in airCloud Home module and the air conditioner is not connected.
LED ON	● The connection between the Built-in airCloud Home module and the router is completed. ● The operation can be conducted through smartphone.
LED flashes 3 times	Waiting to connect to the Wi-Fi router using AP mode.
LED flashes 4 times	Restoring factory setting procedure has started.
LED flashes 5 times	Communication error between air conditioner & Built-in airCloud Home module (Error detection time: approx 24 mins.)
LED flashes with 4 sec ON/ 1 sec OFF	Router connection error.
LED flashes with 4 sec ON/ 3 sec OFF	Cloud connection error. (Error detection time: approx 30 mins.)



Indoor Unit Indications: Wi-Fi LED

Note:

- Please try to power OFF/ON your air conditioner from mains switch when an error occurs.
- Wi-Fi is a trademark or registered trademark of the “Wi-Fi” Alliance”.

Information

Capabilities

Heating Capability

- This room air conditioner utilizes a heat pump system that absorbs exterior heat and brings it into a room to be heated. As the ambient temperature gets lower, heating capability will also lower. In such a situation, the inverter work to increase compressor rpm to keep the unit’s heating capability from decreasing. If the unit’s heating performance is still unsatisfactory, other heating appliances should be used to augment this unit’s performance.

CAUTION

Do not use a stove or any other high temperature devices in proximity to the indoor unit.

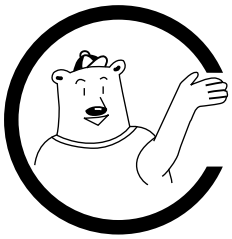
- The air conditioner is designed to heat an entire room so that it may take some time before you feel warm. Timer operation is recommended for effective preheating ahead of the desired time.

Cooling and Dehumidifying Capabilities

- If the heat present in a room exceeds the unit’s cooling capacity (for example, if there are many people in the room or other heating appliances are used), the preset room temperature may not be reached.

Refrigerant Information

- For the refrigerant charge information, please refer to the outdoor unit installation manual or specification label.



MAINTENANCE

⚠ CAUTION

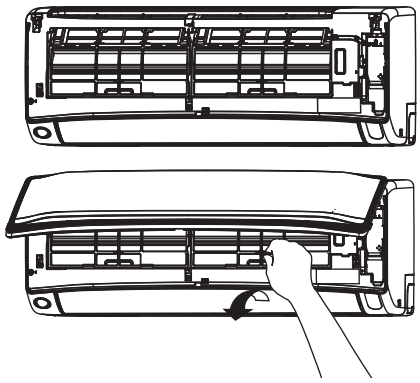
Cleaning and maintenance must be carried out only by qualified service personnel. Before cleaning, stop operation and switch off the power supply.

1. PRE-FILTER

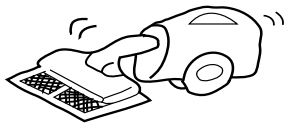
Clean the Pre-filter, as it removes dust inside the room. In case the Pre-filter is full of dust, the air flow will decrease and the cooling capacity will be reduced. Further, noise may occur. Be sure to clean the Pre-filter following the procedure below.

PROCEDURE

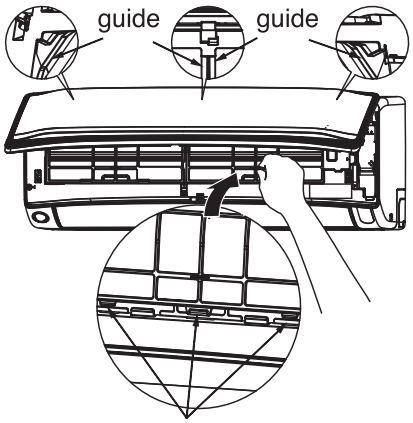
1 Open the front panel and remove the Pre-filter
- Gently lift and remove the air purifying filters from the air purifying filter frame.



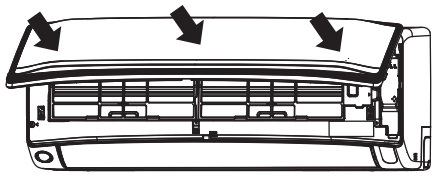
2 Vacuum dust from the Pre-filter and air purifying filter using vacuum cleaner. If there is too much dust, rinse under running tap water and gently brush it with soft bristle brush. Allow filters to dry in shade.



3
- Re-insert the air purifying filter to the filter frame. Set the Pre-filter with “FRONT” mark facing front, and slot them into the original state.
- After attaching the Pre-filters, push the front panel at three arrow portions as shown in figure and close it.



insert the hook to the hole



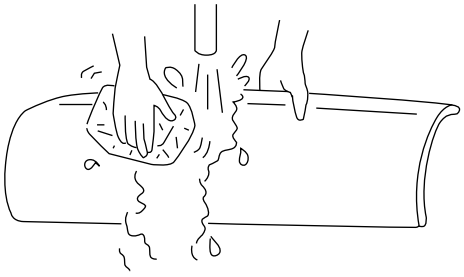
NOTE:
- Air purifying filter should be cleaned every month or sooner if noticeable loading occurs. When used overtime, it may lose its deodorizing function. For maximum performance, it is recommended to replace it every 1 year depending on application requirements.

⚠ CAUTION

- Do not operate the air conditioner without Pre-filter. Dust may enter the air conditioner and fault may occur.

2. CLEANING OF FRONT PANEL

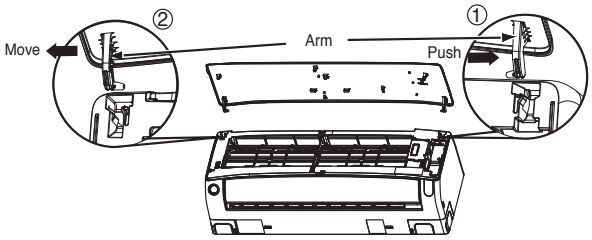
- Remove the front panel and wash with clean water.
  Wash it with a soft sponge.
  After using neutral detergent, wash thoroughly with clean water.



- When front panel is not removed, wipe it with a soft dry cloth. Wipe the remote controller thoroughly with a soft dry cloth.
- Wipe the water thoroughly.
  If water remains at indicators or signal receiver of indoor unit, it causes trouble.

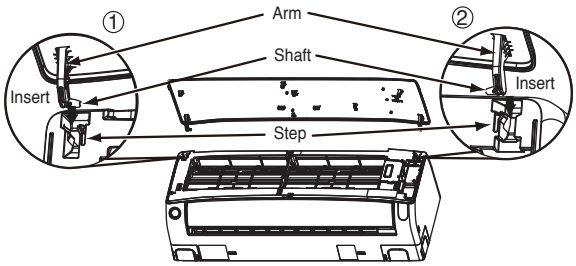
Method of removing the front panel.
Be sure to hold the front panel with both hands to detach and attach it.

Removing the Front Panel



- When the front panel is fully opened with both hands, push the right arm to the outside to release it, and while closing the front panel slightly, pull it out forward.

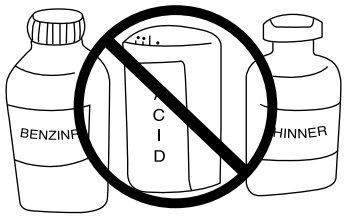
Attaching the Front Panel



- Move the projections of the left and right arms into the Flanges in the unit and securely insert them into the holes.

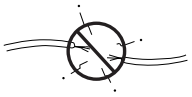
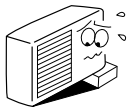
⚠ CAUTION

- Never use hot water (above 40°C), benzine, gasoline, acid, thinner or a brush, because they will damage the plastic surface and the coating.



Regular Inspection

PLEASE CHECK THE FOLLOWING POINTS BY QUALIFIED SERVICE PERSONNEL EITHER EVERY HALF YEARLY OR YEARLY. CONTACT YOUR SALES AGENT OR SERVICE SHOP.

1		Is the earth line disconnected or broken?
2		Is the mounting frame seriously affected by rust and is the outdoor unit tilted or unstable?
3		Is the plug of power line firmly plugged into the socket? (Please ensure no loose contact between them).

AFTER SALE SERVICE AND WARRANTY

WHEN ASKING FOR SERVICE, CHECK THE FOLLOWING POINTS

CONDITION	CHECK THE FOLLOWING POINTS
If the remote controller is not transmitting a signal. Remote controller display is dim or blank.)	• Do the batteries need replacement? • Is the polarity of the inserted batteries correct?
When it does not cool well	• Is the fuse all right? • Is the voltage extremely high or low? • Is the circuit breaker “ON”? • Is the setting of operation mode different from other indoor units?
When it does not cool well When it does not hot well	• Is the pre-filter blocked with dust? • Does sunlight fall directly on the outdoor unit? • Is the air flow of the outdoor unit obstructed? • Are the doors or windows opened, or is there any source of heat in the room? • Is the set temperature suitable? • Are the air inlets or air outlets of indoor and outdoor units blocked? • Is the fan speed “LOW” or “SILENT”?

FrostWash Operation

FrostWash Operation does not start	It does not wash when outside temperature is less than about 1 degrees Celsius or more than 43 degrees Celsius. It does not wash when the humidity in the room is about 30% or less or about 70% or more. When “FrostWash” is done by operating a remote controller, it does not wash when the room temperature is less than about 10 degrees Celsius or more than about 32 degrees Celsius.
	When 60 minutes after the end of “FrostWash”, “FrostWash” is not operated for product protection.
Noise occurred during FrostWash operation	It is the sound that the internal machine is inflated and contracted by the temperature change and the fin of the heat exchanger is frozen and thawed
(Clean Function Lamp) blinks	Repeat for 1 second on and 1 second off for 10 seconds Because “FrostWash” can not work when operating the “FrostWash” with remote controller. • The air conditioner is operating • Outside air temperature, room temperature and room humidity are not suitable for “FrostWash” • It has not been over 60 minutes since the end of “FrostWash”
	Repeat for 4 seconds on and 1 second off for 15 seconds Because FrostWash has not been done for a long time. → Operate the remote controller to operate “FrostWash”.

Mold Guard Operation

Mold Guard operation does not start	If the air conditioner operation is stopped after heating operation, Mold Guard will not operate. If the air conditioner has operated in cooling and drying mode, including auto mode, for less than 10 minutes, the Mold Guard operation will not start even if the air conditioner is in off mode. If operation of the air conditioner is stop by OFF Timer or GoodSleep Timer, the Mold Guard will not operate. If ON Timer is set and on time is within about 2 hours, the Mold-Guard will not operate.
During Mold Guard	(Clean Function Lamp) on the indoor unit lights up during Mold Guard operation. If Mold Guard operation stop at middle point, FrostWash and Filter sign indicator will turn off.

Notes	The horizontal deflector remain open. Room temperature or humidity may rise. Depending on situation, Mold Guard will operate with Fan Mode. When there would be the window near indoor unit, the water might condense on the window during Mold Guard. If necessary, to cancel Mold Guard. When after FrostWash operation, the water inside the indoor unit evaporates and depending on the room conditions, may emitted as steam. But this is not a malfunction. If necessary, to cancel Mold-Guard.

■ The following phenomena do not indicate unit failure.

During heating, the operation indicator blinks and air blow stops	<Operation start> The unit is preparing to blow warm air. Please wait. <In operation> The outdoor unit is defrosting. Please wait.
Hissing or fizzy sounds	Refrigerant flow noise in the pipe or valve sound generated when flow rate is adjusted.
	Refrigerant flow noise occur during changes of maximum fan speed to lowest speed.
Squeaking noise	Noise generated when the unit expands or contracts due to temperature changes.
Rustling noise	Noise generated with the indoor unit fan's rpm changing such as operation start times.
Clicking noise	Noise of the motorized valve when the unit is switched on.
Perking noise	Noise of the ventilation fan sucking in air present in the drain hose and blowing out dehumidifying water that had accumulated in the condensed water collector. For details, consult your sales agent.
Changing operation noise	Operation noise changes due to power variations according to room temperature changes.
Mist emission	Mist is generated as the air within the room is suddenly cooled by conditioned air.
Steam emitted from the outdoor unit	Water generated during defrosting operation evaporates and steam is emitted.
Odors	Caused as the smells and particles of smoke, food, cosmetics, etc. present in room air become attached the unit and blown off into the room again.
The outdoor unit continues to operate even if operation is stopped.	Defrosting is underway (as the heating operation is stopped, the microcomputer checks frost accumulated in the outdoor unit and instructs the unit to perform automatic defrosting if necessary).
The OPERATION lamp is flashing	Shows preheating or defrosting operation is underway. As the protective circuit or preheat sensor operates when unit operation is stopped during preheating and then restarted, or when operation mode is switched from cooling to heating, the lamp continues to blink.
Does not reach the temperature setting	Actual room temperature may deviate slightly from the remote controller's temperature setting depending on the number of people in the room, indoor or outdoor conditions.

If the unit still fails to operate normally after performing the above inspections, turn the circuit breaker off and contact your sales agent immediately.

Contact your sales agent immediately if the following phenomena should occur

- The circuit breaker switches off or the fuse blows frequently.
- The switch operation is not stable.
- Foreign matter or water accidentally enters the unit interior.
- The power cord gets excessively hot or its insulation is torn or stripped.
- TIMER lamp on the indoor unit display blinks. (As the nature of the failure can be identified by the blinking cycle, check the blinking cycle before turning off the circuit breaker.)

Notes

- IIn quiet or stop operation, the following phenomena may occassionally occur, but they are not abnormal for the operation.

(1) Slight flowing noise of refrigerant in the refrigerating cycle.
(2) Slight rubbing noise from the fan casing which is cooled and then gradually warmed as operation stops.

- The odor will possibly be emitted from the room air conditioner because the various odor, emitted by smoke, foodstuffs, cosmetics and so on, sticks to it. So the pre-filter and the evaporator regularly must be cleaned to reduce the odor.

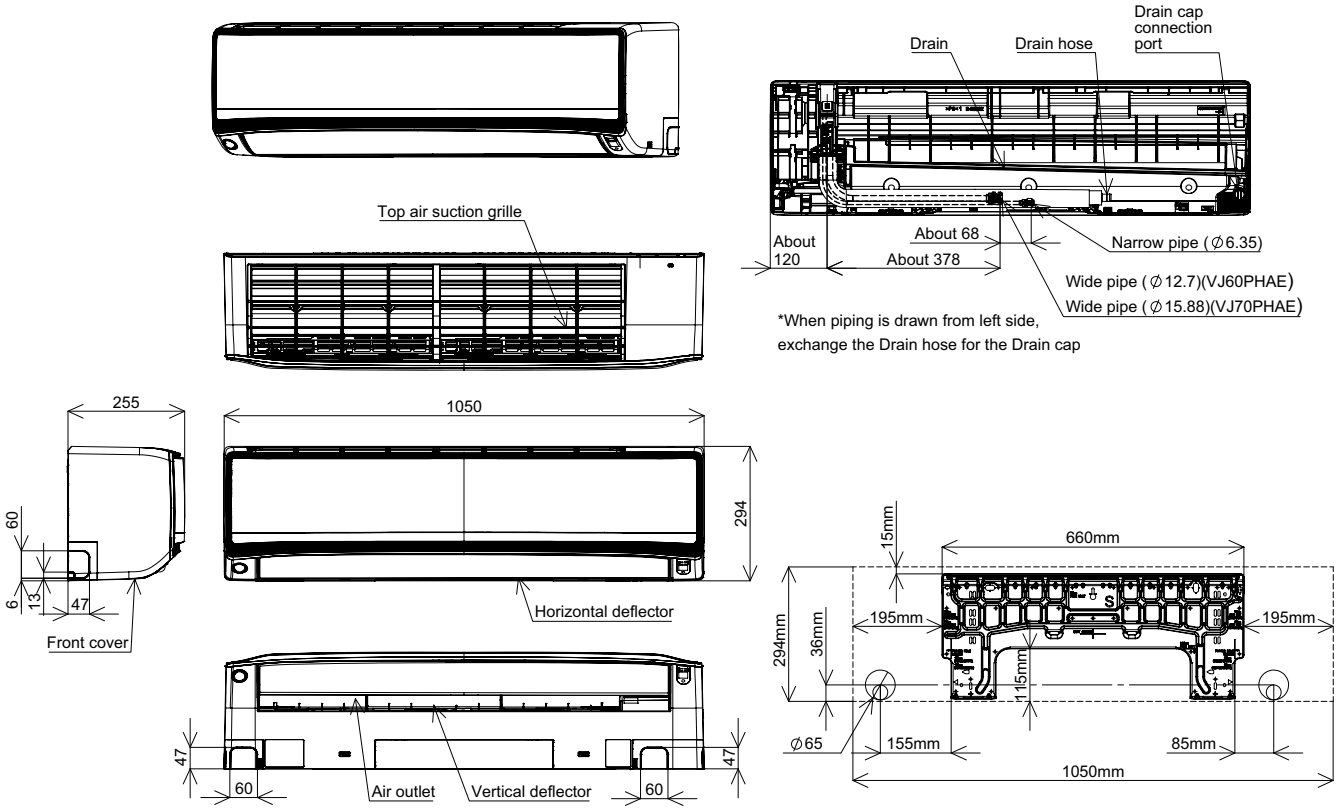
Please contact your sales agent immediately if the air conditioner still fails to operate normally after the above inspections. Inform your agent of the model of your unit, production number, date of installation. Please also inform him regarding the fault.

Please note:
On switching on the equipment, particularly when the room light is dimmed, a slight brightness fluctuation may occur. This is of no consequence.
The conditions of the local Power Supply Companies are to be observed.

CONSTRUCTION AND DIMENSIONAL DIAGRAM

MODEL RAK-VJ60PHAE, RAK-VJ70PHAE

CONSTRUCTION AND DIMENSIONAL DIAGRAM
MODEL: RAK-VJ60PHAE
RAK-VJ70PHAE



MAIN PARTS COMPONENT

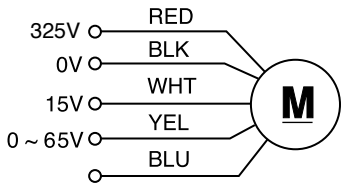
THERMOSTAT (Room Temperature Thermistor)

Thermostat Specifications

MODEL			RAK-VJ60PHAE, RAK-VJ70PHAE	
THERMOSTAT MODEL			IC	
OPERATION MODE			COOL	HEAT
TEMPERATURE °C (°F)	INDICATION 16	ON	18.3 (64.99)	13.7 (56.61)
		OFF	15.0 (59.00)	16.7 (62.06)
	INDICATION 24	ON	26.3 (79.39)	21.7 (71.01)
		OFF	23.0 (73.40)	24.7 (76.46)
	INDICATION 32	ON	34.3 (93.79)	29.7 (85.41)
		OFF	31.0 (87.80)	32.7 (90.86)

FAN MOTOR

Fan Motor Specifications

MODEL	RAK-VJ60PHAE, RAK-VJ70PHAE
POWER SOURCE	DC: 340V
POWER OUTPUT	38W
CONNECTION	 (Control circuit built in)

BLU : BLUE YEL : YELLOW BRN : BROWN WHT : WHITE

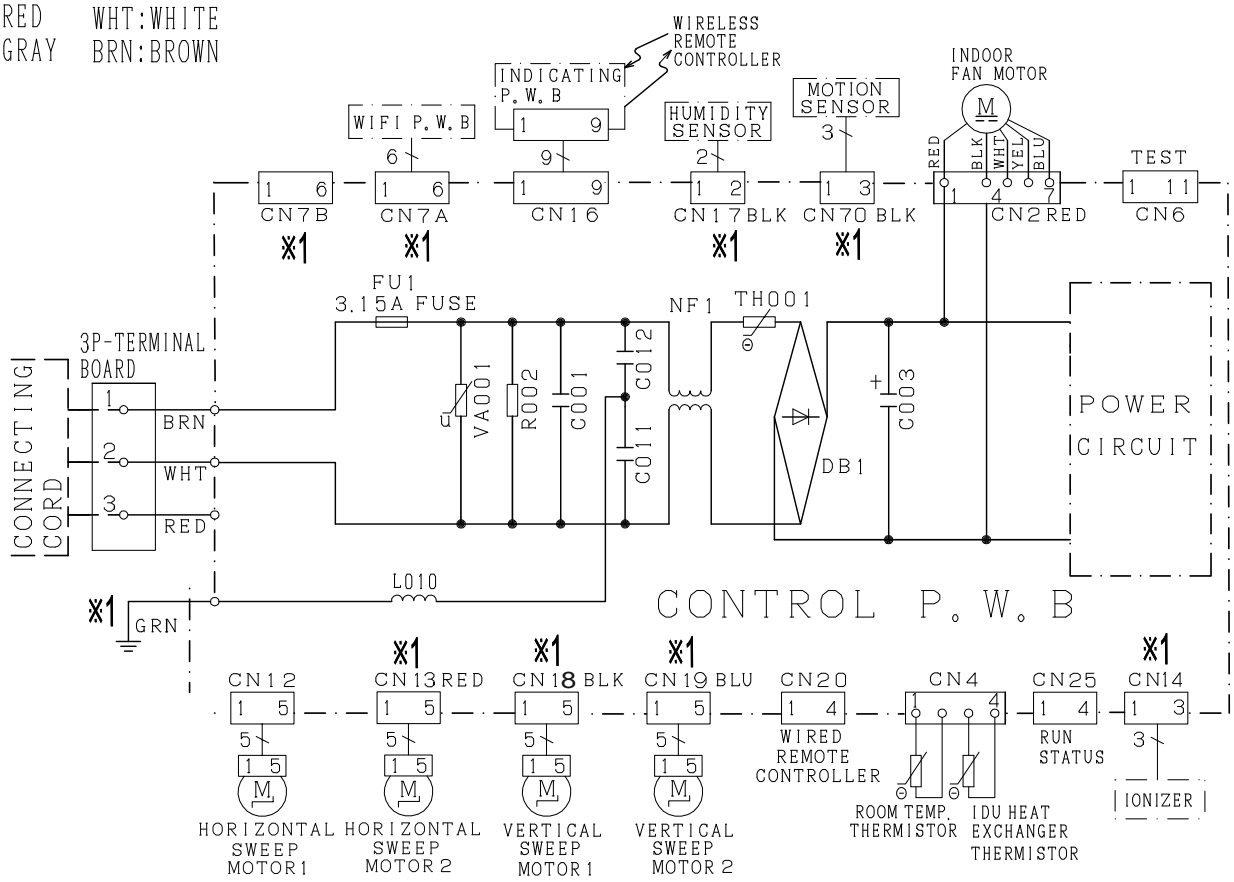
GRY : GRAY ORN : ORANGE GRN : GREEN RED : RED

BLK : BLACK PNK : PINK VIO : VIOLET

WIRING DIAGRAM

MODEL RAK-VJ60PHAE, RAK-VJ70PHAE

BLK:BLACK YEL:YELLOW
BLU:BLUE GRN:GREEN
RED:RED WHT:WHITE
GRY:GRAY BRN:BROWN

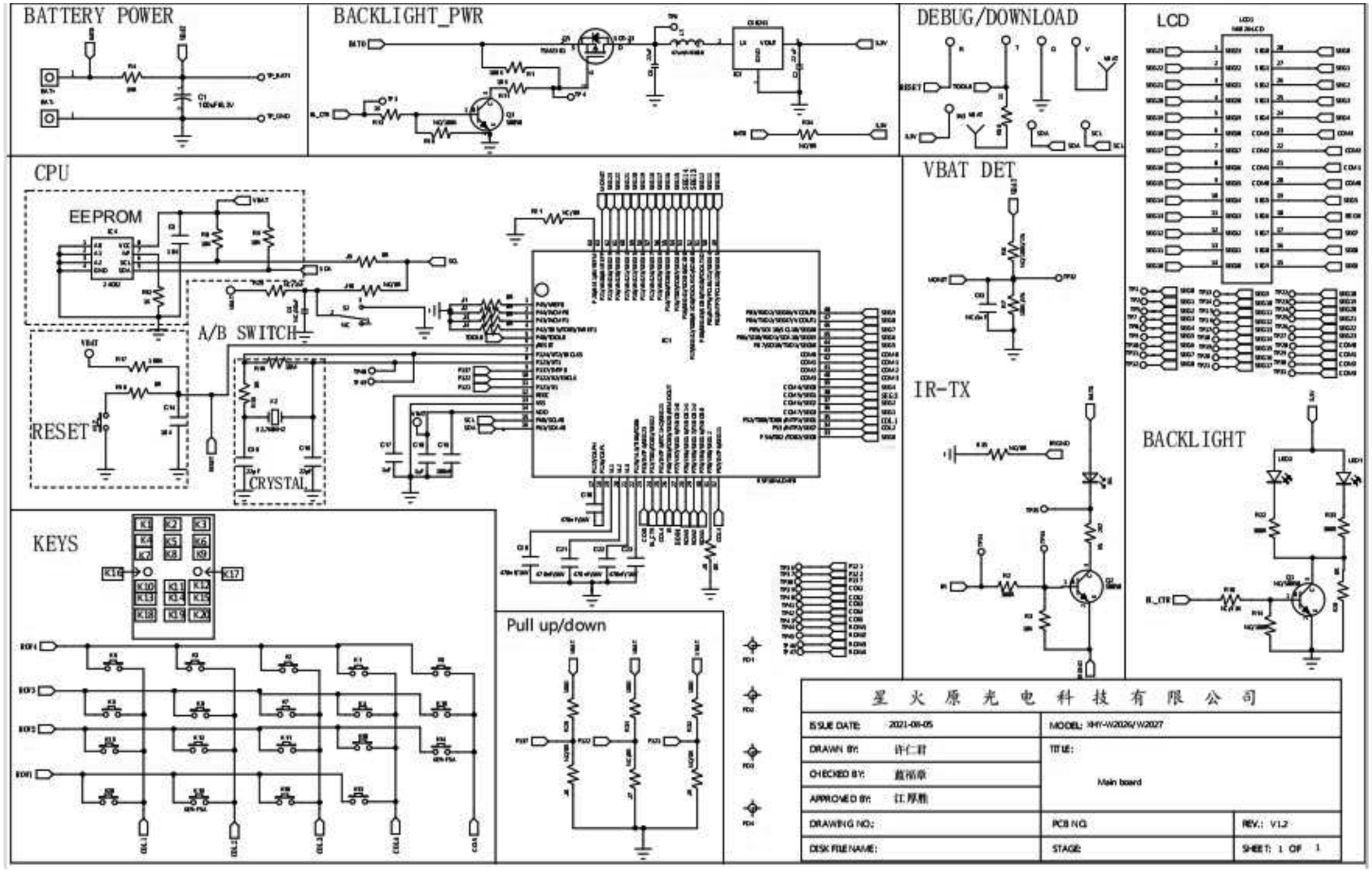


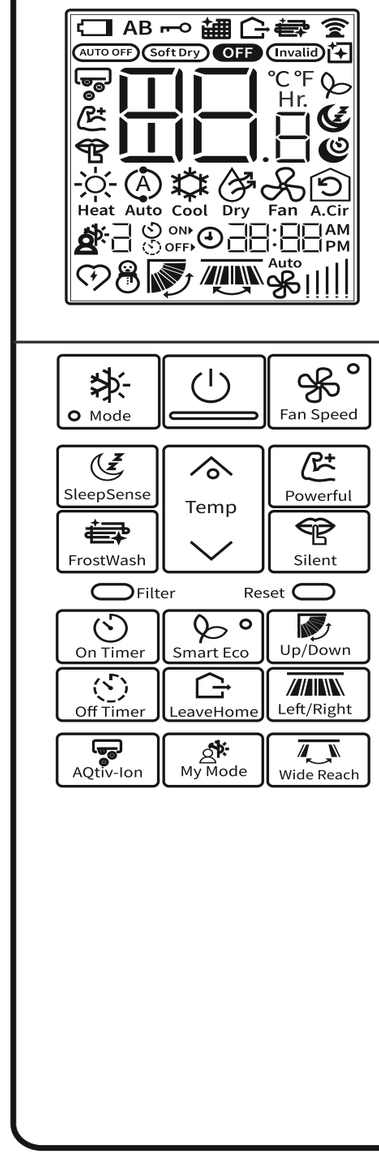
※1: SOME MODEL DO NOT HAVE THIS FUNCTION

CAUTION! HIGH VOLTAGE	TURN OFF THE POWER SOURCE DURING THE SERVICE WORK.

WIRING DIAGRAM OF THE PRINTED WIRING BOARD

[Remote controller] RC-AGS1EA0E





CIRCUIT DIAGRAM

MODEL RAK-VJ60PHAE, RAK-VJ70PHAE

NOTE

1. The type of capacitors are as follows.

Symbol	Type
F	Film Capacitor
C	Ceramic Capacitor
D	Electrolytic Capacitor

2. The symbol of forms show the following.

Symbol	Form
A	Aixal
R	Radial
H	Manual Insertion
C	Chip Surface Mounting
S	Other Surface Mounting

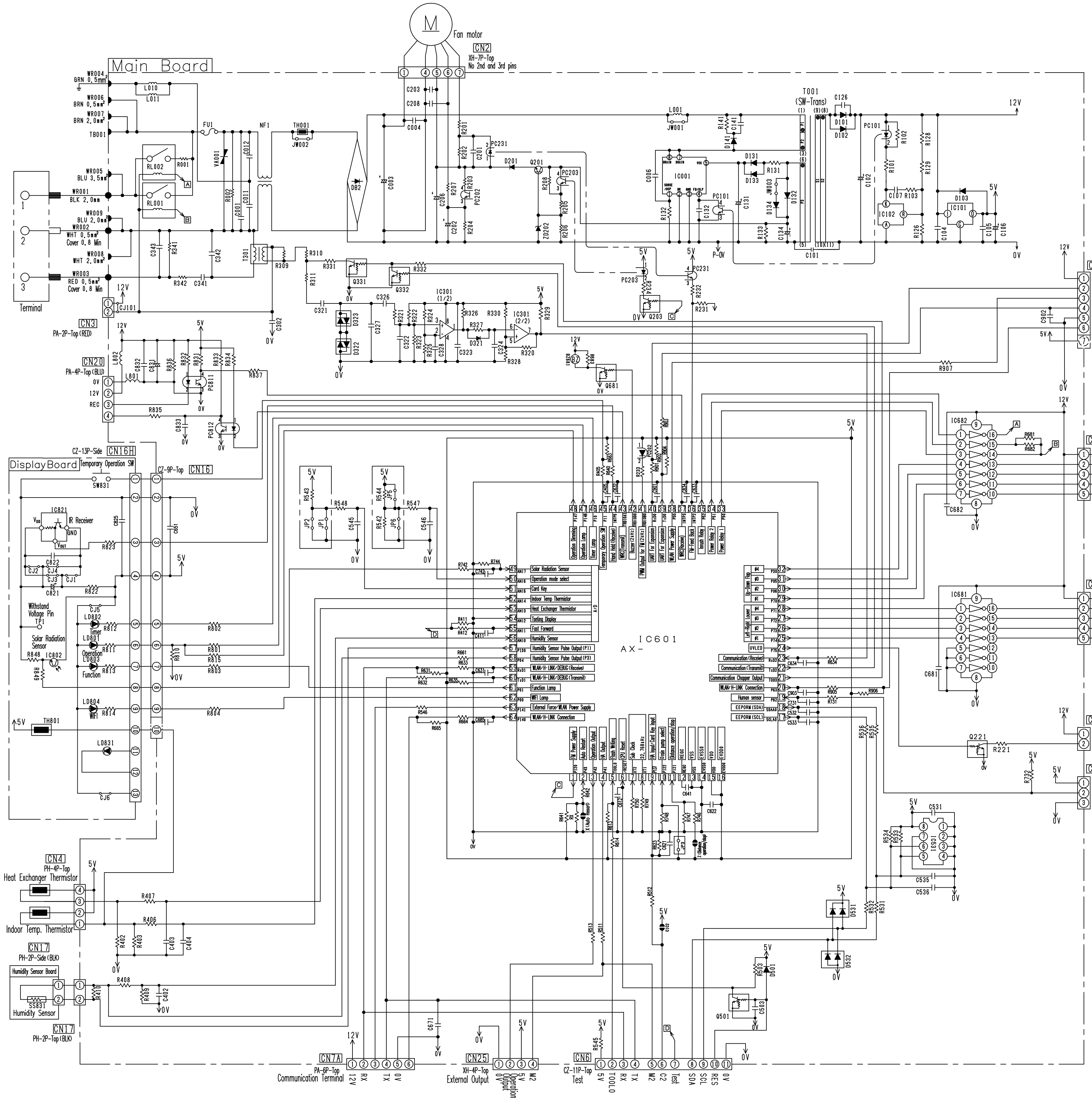
3. The symbol of mounting board shows the following.

Symbol	Form
M	Main Board
H	Display Board
S	Humidity Sensor Board

4. Refer to the following drawing depending on the mounting Board and form.

Mounting Board	Form	Reference Drawing
M	A, R, C, S	
	H	
H	A, R, C, S	
	H	
S	H	

5. A 3216 chip component of J*** in a board mark diagram mounts NN0018690, item # (40) (X0000CT2EJ). CJ800~CJ801 in a board mark diagram mounts NN0018692, item # (10) (X0000CT2EJ).



Group	A	B	C	D	E	F	G
Region	FULL SPEC	JPN 100V	JPN 200V	IND	SEA	EU/ANZ (JCH-WH)	EU/ANZ (JCH-MY)

Resistor

Symbol	Resistance	Tolerance	Electric power	Mounting-form	Mounting-Board	A	B	C	D	E	F	G	Part Number	Remarks
R001	510	5%	5	H	M	O	/	O	O	O	/	/	62	Cement
R002	1M	5%	1/4	A	M	O	O	O	O	O	O	O	26	HVL
R101	1.5k	5%	1/4	C	M	O	O	O	O	O	O	O	37	3226
R102	1.5k	5%	1/10	C	M	O	O	O	O	O	O	O	73	1608
R103	33k	5%	1/10	C	M	O	O	O	O	O	O	O	82	1608
R126	8.2k	1%	1/10	C	M	O	O	O	O	O	O	O	56	1608
R128	5.6k	1%	1/10	C	M	O	O	O	O	O	O	O	54	1608
R129	27k	1%	1/10	C	M	O	O	O	O	O	O	O	62	1608
R131	4.7	5%	1/2	A	M	O	O	O	O	O	O	O	23	
R132	1	5%	1	R	M	O	O	O	O	O	O	O	19	MOS
R133	~~20k~~	5%	1/10	C	M	/	/	/	/	/	/	/		
R141	220k	5%	1	R	M	O	/	/	O	O	O	O	20	RRTE1925
R201	4.3k	5%	1/4	C	M	O	O	O	O	O	O	O	48	3216
R202	4.3k	5%	1/10	C	M	O	O	O	O	O	O	O	76	1608
R203	4.7k	5%	1/6	A	M	O	O	O	O	O	O	O	32	
R204	3.3k	5%	1/10	C	M	O	O	O	O	O	O	O	75	1608
R205	402	1%	1/4	C	M	O	O	O	O	O	O	O	38	3216
R206	33k	5%	1/10	C	M	O	O	O	O	O	O	O	82	1608
R207	100	5%	1/6	A	M	O	O	O	O	O	O	O	29	
R208	0		1/10	C	M	/	O	O	/	/	/	/	65	1608
R221	200	5%	1/8	C	M	O	/	/	/	/	/	/	52	2125
R231	10k	5%	1/10	C	M	O	O	O	O	O	O	O	80	1608
R232	1k	5%	1/10	C	M	O	O	O	O	O	O	O	72	1608
R233	390	5%	1/6	A	M	O	O	O	O	O	O	O	30	
R234	560	5%	1/4	A	M	O	/	/	O	O	O	O	27	
R309	680	5%	1/4	C	M	O	O	O	O	O	O	O	45	3216
R310	180	5%	1/4	C	M	O	O	O	O	O	O	O	50	3216
R311	820	5%	1/10	C	M	/	O	O	/	/	/	/	70	1608
	2k	5%	1/10	C	M	O	/	/	O	O	O	O	74	1608
R320	8.2k	1%	1/10	C	M	O	O	O	O	O	O	O	56	1608
R321	1k	5%	1/10	C	M	O	O	O	O	O	O	O	72	1608
R322	10.5k	1%	1/10	C	M	O	O	O	O	O	O	O	59	1608
R323	10k	1%	1/10	C	M	O	O	O	O	O	O	O	58	1608
R324	7.15k	1%	1/10	C	M	O	O	O	O	O	O	O	55	1608
R325	10k	1%	1/10	C	M	O	O	O	O	O	O	O	58	1608
R326	7.15k	1%	1/10	C	M	O	O	O	O	O	O	O	55	1608
R327	51k	5%	1/10	C	M	O	O	O	O	O	O	O	83	1608
R328	7.15k	1%	1/10	C	M	O	O	O	O	O	O	O	55	1608
R329	5.6k	1%	1/10	C	M	O	O	O	O	O	O	O	54	1608
R330	5.6k	1%	1/10	C	M	O	O	O	O	O	O	O	54	1608
R331	510	5%	1/2	C	M	/	O	O	/	/	/	/	36	3226
	91	5%	1/2	C	M	O	/	/	O	O	O	O	35	3226
R332	5.6k	1%	1/10	C	M	O	O	O	O	O	O	O	54	1608
R341	470K	5%	1/4	A	M	O	O	O	O	O	O	O	25	
R342	47	5%	1/2	A	M	O	O	O	O	O	O	O	22	
R402	10k	1%	1/10	C	M	O	O	O	O	O	O	O	58	1608
R403	12.7k	1%	1/10	C	M	O	O	O	O	O	O	O	60	1608
R405	1k	5%	1/10	C	M	O	O	O	O	O	O	O	72	1608
R406	1k	5%	1/10	C	M	O	O	O	O	O	O	O	72	1608
R407	1k	5%	1/10	C	M	O	O	O	O	O	O	O	72	1608
R408	1k	5%	1/4	C	M	O	O	O	O	O	O	O	46	3216
R409	1M	5%	1/10	C	M	O	O	O	O	O	O	O	89	1608
R410	~~51k~~	1%	1/10	C	M	/	/	/	/	/	/	/		1608
R411	10k	5%	1/10	C	M	O	O	O	O	O	O	O	80	1608
R412	1k	5%	1/10	C	M	O	O	O	O	O	O	O	72	1608
R503	300k	5%	1/10	C	M	O	O	O	O	O	O	O	87	1608
R511	1k	5%	1/10	C	M	O	O	O	O	O	O	O	72	1608
R512	1k	5%	1/4	C	M	O	O	O	O	O	O	O	46	3216
R513	1k	5%	1/10	C	M	O	O	O	O	O	O	O	72	1608
R531	100	5%	1/4	C	M	O	O	O	O	O	O	O	41	3216
R532	100	5%	1/10	C	M	O	O	O	O	O	O	O	67	1608
R533	2.2k	5%	1/10	C	M	O	O	O	O	O	O	O	77	1608
R534	2.2k	5%	1/10	C	M	O	O	O	O	O	O	O	77	1608
R535	0		1/10	C	M	O	O	O	O	O	O	O	65	1608
R536	0		1/10	C	M	O	O	O	O	O	O	O	65	1608
R542	10k	5%	1/10	C	M	/	O	O	O	O	/	/	80	1608
R543	30k	5%	1/10	C	M	O	/	/	O	O	O	O	81	1608
R544	10k	5%	1/10	C	M	/	O	O	O	O	/	/	80	1608
R545	0		1/10	C	M	O	O	O	O	O	O	O	65	1608
R546	1k	5%	1/10	C	M	O	O	O	O	O	O	O	72	1608
R547	1k	5%	1/10	C	M	O	O	O	O	O	O	O	72	1608
R548	1k	5%	1/10	C	M	O	/	/	O	O	O	O	72	1608
R613	1k	5%	1/10	C	M	O	O	O	O	O	O	O	72	1608
R614	100	5%	1/10	C	M	O	O	O	O	O	O	O	67	1608
R623	10k	5%	1/10	C	M	O	O	O	O	O	O	O	80	1608
R631	10k	5%	1/10	C	M	O	O	O	O	O	O	O	80	1608
R632	1k	5%	1/4	C	M	O	O	O	O	O	O	O	46	3216
R633	1k	5%	1/10	C	M	O	O	O	O	O	O	O	72	1608
R634	10k	5%	1/6	A	M	O	O	O	O	O	O	O	28	
R635	10k	5%	1/4	C	M	O	O	O	O	O	O	O	49	3216
R640	1k	5%	1/4	C	M	O	O	O	O	O	O	O	46	3216
R641	10k	5%	1/4	C	M	O	O	O	O	O	O	O	49	3216
R642	1k	5%	1/10	C	M	O	O	O	O	O	O	O	72	1608
R661	47k	1%	1/10	C	M	O	O	O	O	O	O	O	63	1608
R663	10k	5%	1/10	C	M	O	O	O	O	O	O	O	80	1608
R664	1k	5%	1/10	C	M	O	O	O	O	O	O	O	72	1608
R665	10k	5%	1/10	C	M	O	O	O	O	O	O	O	80	1608
R681	330	5%	1/4	C	M	O	O	O	O	O	/	/	43	3216
R682	330	5%	1/4	C	M	O	O	O	O	O	/	/	43	3216
R683	3.3k	5%	1/10	C	M	O	O	O	O	O	O	O	75	1608
R731	1k	5%	1/10	C	M	O	O	O	O	O	O	O	72	1608
R732	10k	5%	1/10	C	M	O	O	O	O	O	O	O	80	1608
R742	1k	5%	1/4	C	M	O	O	O	/	/	/	/	46	3216
R744	1M	5%	1/10	C	M	O	O	O	/	/	/	/	89	1608
	10k	5%	1/10	C	M	/	/	/	O	O	O	O	80	1608
R746	1k	5%	1/6	A	M	O	O	O	O	O	O	O	31	
R747	10k	5%	1/10	C	M	O	O	O	O	O	O	O	80	1608
R748	10k	5%	1/10	C	M	O	O	O	O	O	O	O	80	1608
R749	10k	5%	1/10	C	M	O	O	O	O	O	O	O	80	1608
R750	10k	5%	1/10	C	M	O	O	O	O	O	O	O	80	1608
R801	3k	5%	1/10	C	M	O	O	O	O	O	O	O	78	1608
R802	1.5k	5%	1/10	C	M	O	O	O	O	O	O	O	73	1608
R803	200	5%	1/4	C	M	O	/	/	O	O	O	O	51	3216
	1.5k	5%	1/4	C	M	/	O	O	/	/	/	/	42	3216
R804	1.5k	5%	1/10	C	M	O	O	O	O	O	/	/	73	1608
	3.9k	5%	1/10	C	M	/	/	/	/	/	O	O	79	1608
R810	/	5%	1/10	C	M	/	/	/	/	/	/	/		1608
R811	300	5%	1/10	C	H	O	O	O	O	O	O	O	17	1608
R812	300	5%	1/10	C	H	O	O	O	O	O	O	O	17	1608
R813	300	5%	1/10	C	H	/	O	O	/	/	/	/	17	1608
	100	5%	1/10	C	H	O	/	/	O	O	O	O	18	1608
R814	300	5%	1/10	C	H	O	O	O	O	O	O	O	17	1608
R815	3k	5%	1/10	C	M	O	O	O	O	O	O	O	78	1608
R822	47	5%	1/10	C	H	O	O	O	O	O	O	O	15	1608
R823	1k	5%	1/4	C	H	O	O	O	O	O	O	O	11	3216
R831	2k	5%	1/10	C	M	O	/	/	O	O	O	O	74	1608
	10k	5%	1/10	C	M	/	O	O	/	/	/	/	80	1608
R832	1.2k	5%	1/4	C	M	O	/	/	O	O	O	O	47	3216
R833	2k	5%	1/4	C	M	O	/	/	O	O	O	O	44	3216
R834	560	5%	1/10	C	M	O	/	/	O	O	O	O	69	1608
R835	620	5%	1/8	C	M	O	/	/	O	O	O	O	53	2125
R836	100k	5%	1/10	C	M	O	/	/	O	O	O	O	86	1608
R837	1k	5%	1/4	C	M	O	O	O	O	O	O	O	46	3216
R848	30k	1%	1/10	C	H	O	O	O	/	/	/	/	20	1608
R849	1k	5%	1/10	C	H	O	O	O	/	/	/	/	16	1608
R901	1k	5%	1/10	C	M	O	O	O	O	O	O	O	72	1608
R902	10k	5%	1/10	C	M	O	O	O	O	O	O	O	80	1608
R903	1k	5%	1/10	C	M	O	/	/	O	O	O	O	72	1608
R904	10k	5%	1/10	C	M	O	/	/	O	O	O	O	80	1608
R905	1k	5%	1/10	C	M	O	O	O	O	O	O	O	72	1608
R906	10k	5%	1/10	C	M	O	O	O	O	O	O	O	80	1608
R907	1k	5%	1/10	C	M	O	/	/	O	O	O	O	72	1608
RX	0		1/10	C	M	O	/	/	O	O	O	O	65	1608
CJ1	~~0~~		1/10	C	H	/	/	/	/	/	/	/		1608
CJ2	~~0~~		1/10	C	H	/	/	/	/	/	/	/		1608
CJ3	0		1/10	C	H	O	O	O	O	O	O	O	14	1608
CJ4	0		1/10	C	H	O	O	O	O	O	O	O	14	1608
CJ5	0		1/10	C	H	O	O	O	O	O	O	O	14	1608
CJ6	~~0~~		1/10	C	H	/	/	/	/	/	/	/		1608
CJ101	0		1/10	C	M	/	/	/	O	O	/	O	65	1608
JP1	1k	5%	1/6	A	M	O	/	/	O	O	O	O	31	
JP2	30k	5%	1/6	A	M	O	/	/	O	O	O	O	33	
JP3	1k	5%	1/6	A	M	O	O	O	O	O	O	O	31	
JP5	10k	5%	1/6	A	M	O	/	/	/	/	O	O	28	
JP6	10k	5%	1/6	A	M	O	/	/	/	/	O	O	28	

Capacitor

Symbol	Capacity	Voltage	Type	Mounting-form	Mounting-Board	A	B	C	D	E	F	G	Part Number	Remarks
C001	0.33	AC305	F	H	M	O	O	O	O	O	O	O	32	TDK RRCPP239
C003	200	180	D	H	M	/	O	/	/	/	/	/	28	RRCP3177
	76	360	D	H	M	/	/	O	/	/	/	/	29	RRCP3178
	82	450	D	H	M	O	/	/	O	O	O	O	27	RRCP3384
C004	~~0.01~~	1k	C	H	M	/	/	/	/	/	/	/		F
C006	22p	3k	C	R	M	O	O	O	O	O	O	O	111	SL
C011	470p	AC300	C	R	M	/	/	O	/	/	/	/	116	B RRCP3084
	0.01	AC300	C	R	M	O	/	/	O	O	O	O	115	B RRCP3411
C012	470p	AC300	C	R	M	/	/	O	/	/	/	/	116	B RRCP3084
	0.01	AC300	C	R	M	O	/	/	O	O	O	O	115	B RRCP3411
C101	1000p	AC300	C	R	M	O	O	O	O	O	O	O	112	Z5U CS
C102	680	16	D	R	M	O	O	O	O	O	O	O	121	ZLH
C104	0.1	25	C	C	M	O	O	O	O	O	O	O	100	X7R 1608
C105	0.1	25	C	C	M	O	O	O	O	O	O	O	100	X7R 1608
C106	220	10	D	R	M	O	O	O	O	O	O	O	120	PX
C107	0.1	16	C	C	M	O	O	O	O	O	O	O	96	X7R 1608
C126	1000p	1k	C	R	M	O	/	O	O	O	O	O	118	RRCPP296
	2200p	1k	C	R	M	/	O	/	/	/	/	/	113	R CK
C131	10	50	D	R	M	O	O	O	O	O	O	O	126	SV
C132	4700p	50	C	C	M	O	O	O	O	O	O	O	107	X7R 1608
C134	100	50	D	R	M	O	O	O	O	O	O	O	125	PW
C141	1000p	1k	C	R	M	O	/	/	O	O	O	O	118	RRCPP296
C201	1000p	50	C	C	M	O	O	O	O	O	O	O	105	X7R 1608
C202	10	50	D	R	M	O	O	O	O	O	O	O	124	SMG
C203	0.1	25	C	C	M	O	O	O	O	O	O	O	100	X7R 1608
C206	4.7	50	D	R	M	O	O	O	O	O	O	O	123	SMG
C208	0.1	25	C	C	M	O	O	O	O	O	O	O	100	X7R 1608
C302	0.1	25	C	C	M	O	O	O	O	O	O	O	100	X7R 1608
C321	0.022	50	C	C	M	O	O	O	O	O	O	O	108	X7R 1608
C322	2200p	50	C	C	M	O	O	O	O	O	O	O	106	X7R 1608
C323	0.1	25	C	C	M	O	O	O	O	O	O	O	100	X7R 1608
C324	0.01	16	C	C	M	O	O	O	O	O	O	O	95	X7R 1608
C326	0.022	50	C	C	M	O	O	O	O	O	O	O	108	X7R 1608
C327	47p	50	C	C	M	O	O	O	O	O	O	O	90	NPO 1608
C328	0.1	16	C	C	M	O	O	O	O	O	O	O	96	X7R 1608
C341	0.1	AC310	F	H	M	O	O	O	O	O	O	O	33	OKAYA LE-FX
C342	0.018	50	F	R	M	O	O	O	O	O	O	O	130	NISSEI MMTVA
C343	4700p	AC440	C	R	M	O	O	O	O	O	O	O	117	E
C402	0.01	16	C	C	M	O	O	O	O	O	O	O	95	X7R 1608
C403	0.1	25	C	C	M	O	O	O	O	O	O	O	100	X7R 1608
C404	0.1	25	C	C	M	O	O	O	O	O	O	O	100	X7R 1608
C405	0.1	25	C	C	M	O	O	O	O	O	O	O	100	X7R 1608
C411	0.1	25	C	C	M	O	O	O	O	O	O	O	100	X7R 1608
C503	0.1	25	C	C	M	O	O	O	O	O	O	O	100	X7R 1608
C531	0.1	25	C	C	M	O	O	O	O	O	O	O	100	X7R 1608
C532	470p	50	C	C	M	O	O	O	O	O	O	O	92	NPO 1608
C533	470p	50	C	C	M	O	O	O	O	O	O	O	92	NPO 1608
C535	/	50	C	C	M	/	/	/	/	/	/	/		NPO 1608
C536	/	50	C	C	M	/	/	/	/	/	/	/		NPO 1608
C545	0.1	25	C	C	M	O	/	/	O	O	O	O	100	X7R 1608
	10kΩ	5%		C	M	/	O	O	/	/	/	/	80	1608
C546	0.1	25	C	C	M	O	/	/	/	/	O	O	100	X7R 1608
C612	0.1	25	C	C	M	O	O	O	O	O	O	O	100	X7R 1608
C621	0.1	25	C	C	M	O	O	O	O	O	O	O	100	X7R 1608
C622	0.1	25	C	C	M	O	O	O	O	O	O	O	100	X7R 1608
C631	1000p	50	C	C	M	O	O	O	O	O	O	O	91	NPO 1608
C632	1000p	50	C	C	M	O	O	O	O	O	O	O	105	X7R 1608
C633	1000p	50	C	C	M	O	O	O	O	O	O	O	105	X7R 1608
C634	0.022	50	C	C	M	O	O	O	O	O	O	O	108	X7R 1608
C641	0.47	25	C	C	M	O	O	O	O	O	O	O	101	X7R 1608
C651	~~0.1~~	25	C	C	M	/	/	/	/	/	/	/		X7R 1608
C671	1000p	50	C	C	M	O	O	O	O	O	O	O	91	NPO 1608
C681	0.1	25	C	C	M	O	O	O	O	O	/	/	100	X7R 1608
C682	0.1	25	C	C	M	O	O	O	O	O	O	O	100	X7R 1608
C685	0.1	25	C	C	M	O	O	O	O	O	O	O	100	X7R 1608
C731	0.1	25	C	C	M	O	/	/	O	/	/	/	100	X7R 1608
C742	0.1	25	C	C	M	O	O	O	/	/	/	/	100	X7R 1608
C821	47	16	D	R	H	O	O	O	O	O	O	O	23	MF
C822	~~0.1~~	25	C	C	H	/	/	/	/	/	/	/		X7R 1608
C825	~~0.1~~	25	C	C	H	/	/	/	/	/	/	/		X7R 1608
C831	100	35	D	R	M	O	/	/	O	O	O	O	128	ZLH
C832	0.1	25	C	C	M	O	/	/	O	O	O	O	100	X7R 1608
C833	1000p	50	C	C	M	O	/	/	O	O	O	O	105	X7R 1608
C834	1000p	50	C	C	M	O	/	/	O	O	O	O	105	X7R 1608
C901	1000p	50	C	C	M	O	/	/	O	O	O	O	91	NPO 1608
C902	1000p	50	C	C	M	O	/	/	O	O	O	O	91	NPO 1608
C903	0.1	25	C	C	M	O	/	/	O	O	O	O	100	X7R 1608

IC

Symbol	Model type	Mounting-form	Mounting-Board	A	B	C	D	E	F	G	Part Number	Remarks
IC001	STR-A6061MZ	H	M	O	O	O	O	O	O	O	39	RREAP132
IC101	NJM78M05SDL1	S	M	O	O	O	O	O	O	O	151	RREAP265
IC102	TL431K	R	M	O	O	O	O	O	O	O	150	RREAP267
IC301	NJM2903CG	S	M	O	O	O	O	O	O	O	152	RREA6124
IC531	M24C64-RMN6TP	S	M	O	O	O	O	O	O	O	154	RREAP197
IC601	R5F104LHAFA	S	M	O	O	O	O	O	O	O	155	RREAP071
IC681	TBD62003AFWG	S	M	O	O	O	O	O	/	/	156	RREAP234
IC682	TBD62003AFWG	S	M	O	O	O	O	O	O	O	156	RREAP234
IC802	RPT-37PB3F(M Rank)	H	H	O	O	O	/	/	/	/	19	RREG5731

Connector

Symbol	Model type	Mounting-form	Mounting-Board	A	B	C	D	E	F	G	Part Number	Remarks
CN2	B5(7-2.3)B-XH-A	H	M	/	O	/	/	/	/	/	72	RRPB2460
	B5(7-2.3)B-XH-A-R	H	M	O	/	O	O	O	O	O	71	RRPB2686
CN3	B02B-PARK-1 (Red)	H	M	O	O	O	/	/	O	/	73	RRPA2953
CN4	B4B-PH-K-S	H	M	O	O	O	O	O	O	O	74	RRPA2675
CN5	B02B-PASK-1	H	M	O	/	/	/	/	/	/	84	RRPA2477
CN6	B11B-CZHK-B-1	H	M	O	O	O	O	O	O	O	75	RRPB2726
CN7A	B06B-PASK-1	H	M	O	O	O	O	O	O	O	76	RRPB2413
CN7B	B06B-PASK-1	H	M	O	/	/	O	O	O	O	76	RRPB2413
CN12	B5B-PH-K-S	H	M	O	O	O	O	O	O	O	77	RRPB2654
CN16	B09B-CZHK-B-1	H	M	O	O	O	O	O	O	O	79	RRPB2724
CN16H	S09B-CZHK-B-1	H	H	O	O	O	O	O	O	O	26	RRPB2752
	S12B-CZHK-B-1	H	H	/	/	/	/	/	/	/	28	RRPB2755
	S13B-CZHK-B-1	H	H	/	/	/	/	/	/	/	25	RRPB2756
CN17	B2B-PH-K-K (Black)	H	M	O	O	O	O	O	O	O	81	RRPA2730
CN17	S-2B-PH-K-K (Black)	H	S	O	O	O	O	O	O	O	10	RRPA2788
CN18	B5B-PH-K-K (Black)	H	M	O	O	O	O	O	/	/	82	RRPB2733
CN20	B04B-PASK-1	H	M	O	/	/	O	O	O	O	80	RRPA2479
CN25	B4B-XH-A	H	M	O	/	/	/	/	/	/	85	RRPA2669
CN70	B03B-PAKK-1 (Black)	H	M	O	/	/	O	/	/	/	83	RRPA2993
TP1	RT-01T-1.3B	H	H	O	O	O	O	O	O	O	17	RRPA2866

Transistor

Symbol	Model type	Mounting-form	Mounting-Board	A	B	C	D	E	F	G	Part Number	Remarks
Q201	2SCR293P5	C	M	O	O	O	O	O	O	O	140	RREGP087
Q203	RN1315	C	M	O	/	/	O	O	O	O	141	RREGP065
Q221	RN1315	C	M	O	/	/	/	/	/	/	141	RREGP065
Q331	RN1315	C	M	O	O	O	O	O	O	O	141	RREGP065
Q332	RN1306	C	M	O	O	O	O	O	O	O	142	RREGP063
Q501	RN1302	C	M	O	O	O	O	O	O	O	143	RREGP059
Q681	RN1402	C	M	O	O	O	O	O	O	O	144	RREG4173

Diode

Symbol	Model type	Mounting-form	Mounting-Board	A	B	C	D	E	F	G	Part Number	Remarks
D101	D2L20U-5060	A	M	O	O	O	O	O	O	O	160	RREBP249
D102	/	C	M	/	/	/	/	/	/	/		
D103	BAS316	C	M	O	O	O	O	O	O	O	167	RREBP272
D131	D1NL20U	A	M	/	O	/	/	/	/	/	162	RREB4808
	D1NL40U	A	M	O	/	O	O	O	O	O	161	RREB5585
D132	D1NL20U	A	M	/	O	/	/	/	/	/	162	RREB4808
	D1NL40U	A	M	O	/	O	O	O	O	O	161	RREB5585
D133	/	C	M	/	/	/	/	/	/	/		
D134	/	C	M	/	/	/	/	/	/	/		
D141	SARS01	A	M	O	/	/	O	O	O	O	163	RREB4430
D201	BAS316	C	M	O	O	O	O	O	O	O	167	RREBP272
D321	BAS316	C	M	O	O	O	O	O	O	O	167	RREBP272
D322	BAV99	C	M	O	O	O	O	O	O	O	168	RREBP158
D323	BAV99	C	M	O	O	O	O	O	O	O	168	RREBP158
D501	BAS316	C	M	O	O	O	O	O	O	O	167	RREBP272
D531	BAV70	C	M	O	O	O	O	O	O	O	165	RREBP340
D532	BAW56	C	M	O	O	O	O	O	O	O	166	RREBP339
DB2	YBS2010	S	M	O	O	O	O	O	O	O	135	RREBP263

Tab Terminal

Symbol	Model type	Mounting-form	Mounting-Board	A	B	C	D	E	F	G	Part Number	Remarks
TB001	86028	H	M	O	O	O	O	/	/	/	69	RRPJ3532

Wire

Symbol	Model type	Mounting-form	Mounting-Board	A	B	C	D	E	F	G	Part Number	Remarks
WR001	2.0mm^2 (Red)	H	M	/	/	/	O	/	/	/	90	
	2.0mm^2 (Black)	H	M	/	O	/	/	/	/	/	92	
	2.0mm^2 (Black)	H	M	/	/	/	/	O	/	/	98	
WR002	0.5mm^2 (White)	H	M	O	O	O	/	/	/	/	93	
	0.5mm^2 (White)	H	M	/	/	/	/	/	/	O	103	
	0.5mm^2 (White)	H	M	/	/	/	/	/	O	/	107	
	0.5mm^2 (Black)	H	M	/	/	/	O	/	/	/	108	
WR003	0.5mm^2 (Red)	H	M	O	O	O	/	/	/	/	94	
	0.5mm^2 (Red)	H	M	/	/	/	/	O	/	O	101	
	0.5mm^2 (Red)	H	M	/	/	/	/	/	O	/	105	
	0.5mm^2 (White)	H	M	/	/	/	O	/	/	/	109	
WR004	0.5mm^2 (Green)	H	M	O	/	O	O	/	/	/	95	
	0.5mm^2 (Green)	H	M	/	/	/	/	O	/	O	96	
	0.5mm^2 (Green)	H	M	/	/	/	/	/	O	/	104	
WR005	3.5mm^2 (Blue)	H	M	O	/	O	/	/	/	/	91	
WR006	0.5mm^2 (Brown)	H	M	/	/	/	/	/	/	O	102	
	0.5mm^2 (Brown)	H	M	/	/	/	/	/	O	/	106	
WR007	2.0mm^2 (Brown)	H	M	/	/	/	/	O	/	/	97	
WR008	2.0mm^2 (White)	H	M	/	/	/	/	O	/	/	99	
WR009	2.0mm^2 (Blue)	H	M	/	/	/	/	O	/	/	100	

Fuse

Symbol	Model type	Mounting-form	Mounting-Board	A	B	C	D	E	F	G	Part Number	Remarks
FU1	MBG-F21 250V 3A	H	M	/	O	O	/	/	/	/	53	RRPN3450
	3.15A-F-WE	H	M	O	/	/	O	O	/	/	52	RRPN3189
	TSC3.15A250V	H	M	/	/	/	/	/	O	O	51	RRPNP286

LED

Symbol	Model type	Mounting-form	Mounting-Board	A	B	C	D	E	F	G	Part Number	Remarks
LD801	LTL17KSL5D-042A(Yellow)	R	H	O	O	O	O	O	O	O	25	RREBP144
LD802	LTL17KFL5D-042A(Amber)	R	H	O	O	O	O	O	O	O	26	RREBP145
LD803	LTL17KGH5D-042A(Green)	R	H	O	/	/	O	O	O	O	27	RREBP146
	LTL17KSL5D-042A(Yellow)	R	H	/	O	O	/	/	/	/	25	RREBP144
LD804	LTL17KSL5D-042A(Yellow)	R	H	/	O	O	/	/	/	/	25	RREBP144
	LTL17KTBH5D-042A(Blue)	R	H	O	/	/	O	O	O	O	28	RREBP399
LD831	SIR-34ST3F	H	H	O	/	/	/	/	O	O	21	RREB5916

Photo Coupler

Symbol	Model type	Mounting-form	Mounting-Board	A	B	C	D	E	F	G	Part Number	Remarks
PC101	LTV-817-D(China)	H	M	O	O	O	O	O	O	O	59	RREG5766
PC202	LTV-817-D(China)	H	M	O	O	O	O	O	O	O	59	RREG5766
PC203	LTV-817-D(China)	H	M	O	/	/	O	O	O	O	59	RREG5766
PC231	LTV-817-D(China)	H	M	O	O	O	O	O	O	O	59	RREG5766
PC811	LTV-817-D(China)	H	M	O	/	/	O	O	O	O	59	RREG5766
PC812	LTV-817-D(China)	H	M	O	/	/	O	O	O	O	59	RREG5766

Zener diode

Symbol	Model type	Mounting-form	Mounting-Board	A	B	C	D	E	F	G	Part Number	Remarks
ZD202	BZT52B16	C	M	O	O	O	O	O	O	O	170	RREBP269

IR Receiver

Symbol	Model type	Mounting-form	Mounting-Board	A	B	C	D	E	F	G	Part Number	Remarks
IC821	GT5638R-W	H	H	O	O	O	O	O	O	O	13	RRZLP248

Varistor

Symbol	Model type	Mounting-form	Mounting-Board	A	B	C	D	E	F	G	Part Number	Remarks
VA001	B72210S2141K362V87	R	M	/	O	/	/	/	/	/	177	RRELP312
	B72210S2271K362V87	R	M	/	/	O	/	/	/	/	178	RRELP313
	B72214S2321K591V87	R	M	O	/	/	O	O	O	O	176	RRELP311

Sensor

Symbol	Model type	Mounting-form	Mounting-Board	A	B	C	D	E	F	G	Part Number	Remarks
SS831	HIS-06K-N	H	S	O	O	O	O	O	O	O	7	RREL5825

Switch

Symbol	Model type	Mounting-form	Mounting-Board	A	B	C	D	E	F	G	Part Number	Remarks
SW831	KSM0613B	H	H	O	O	O	O	O	O	O	15	RRSA1638

Power Thermistor

Symbol	Model type	Mounting-form	Mounting-Board	A	B	C	D	E	F	G	Part Number	Remarks
TH001	5D2-08LCS	H	M	O	/	O	O	O	O	O	42	RREL5009

Inductor

Symbol	Model type	Mounting-form	Mounting-Board	A	B	C	D	E	F	G	Part Number	Remarks
NF1	SS11H-10062-CH	H	M	O	O	O	O	O	O	O	47	RRMH3900
T001	RRMF4130	H	M	O	/	O	O	O	O	O	50	TDK
	RRMFP048	H	M	/	O	/	/	/	/	/	49	WUXI
T301	UU9LF(1.25mH: 0.3mH)	H	M	O	/	/	O	O	O	O	44	RRMFP166
	L9.8UU01H002G	H	M	/	O	O	/	/	/	/	45	RRMFP160
L001	~~B-13~~	H	M	/	/	/	/	/	/	/		
L010	CKBW35X60X08CU	A	M	O	/	O	O	O	O	O	173	RRMHP111
L011	/	C	M	/	/	/	/	/	/	/		
L801	0Ω Chip Jumper(3216)	C	M	O	/	/	O	O	O	O	40	
L802	0Ω Chip Jumper(3216)	C	M	O	/	/	O	O	O	O	40	

Wire Jumper

Symbol	Model type	Mounting-form	Mounting-Board	A	B	C	D	E	F	G	Part Number	Remarks
JW001	Wire Jumper	A	M	O	O	O	O	O	O	O		
JW002	Wire Jumper	A	M	/	O	/	/	/	/	/		
JW003	~~Wire Jumper~~	A	M	/	/	/	/	/	/	/		

Buzzer

Symbol	Model type	Mounting-form	Mounting-Board	A	B	C	D	E	F	G	Part Number	Remarks
BZ681	~~PS1720P02~~	H	M	/	/	/	/	/	/	/		RRZB2563
	TDA-15220	H	M	O	O	O	O	O	O	O	65	RRZBP023

Thermistor

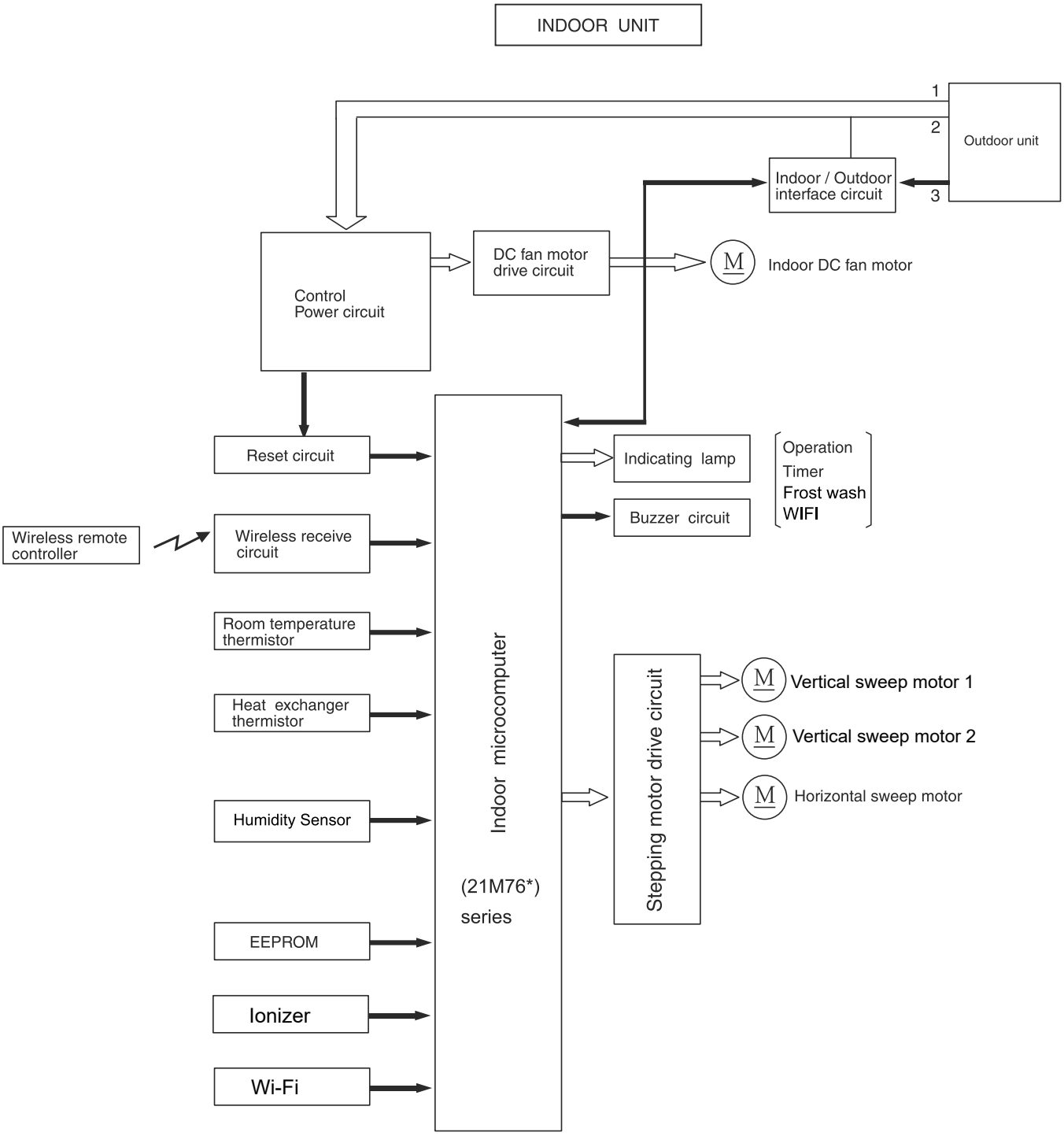
Symbol	Model type	Mounting-form	Mounting-Board	A	B	C	D	E	F	G	Part Number	Remarks
TH801	~~NRD3103Y400Y03SZHH~~	H	H	/	/	/	/	/	/	/		

Relay

Symbol	Model type	Mounting-form	Mounting-Board	A	B	C	D	E	F	G	Part Number	Remarks
RL001	DX12D1-O(M) 20A	H	M	O	O	O	O	O	/	/	55	RRRB1390
RL002	FTR-F3AA012E	H	M	O	/	O	O	O	/	/	56	RRRB1330

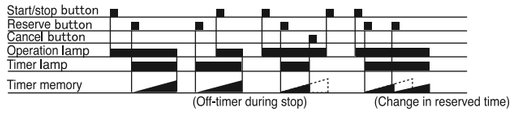
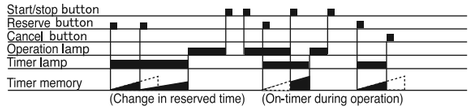
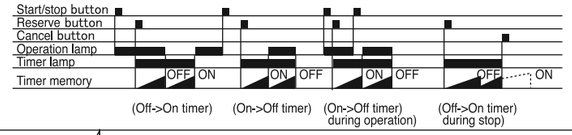
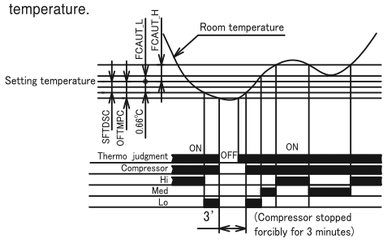
BLOCK DIAGRAM

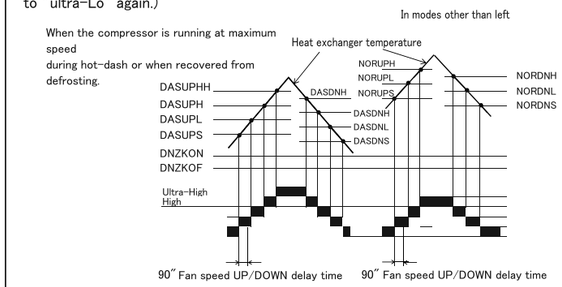
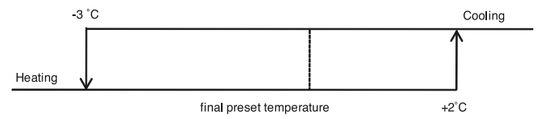
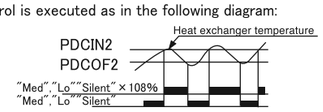
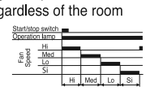
MODEL RAK-VJ60PHAE, RAK-VJ70PHAE



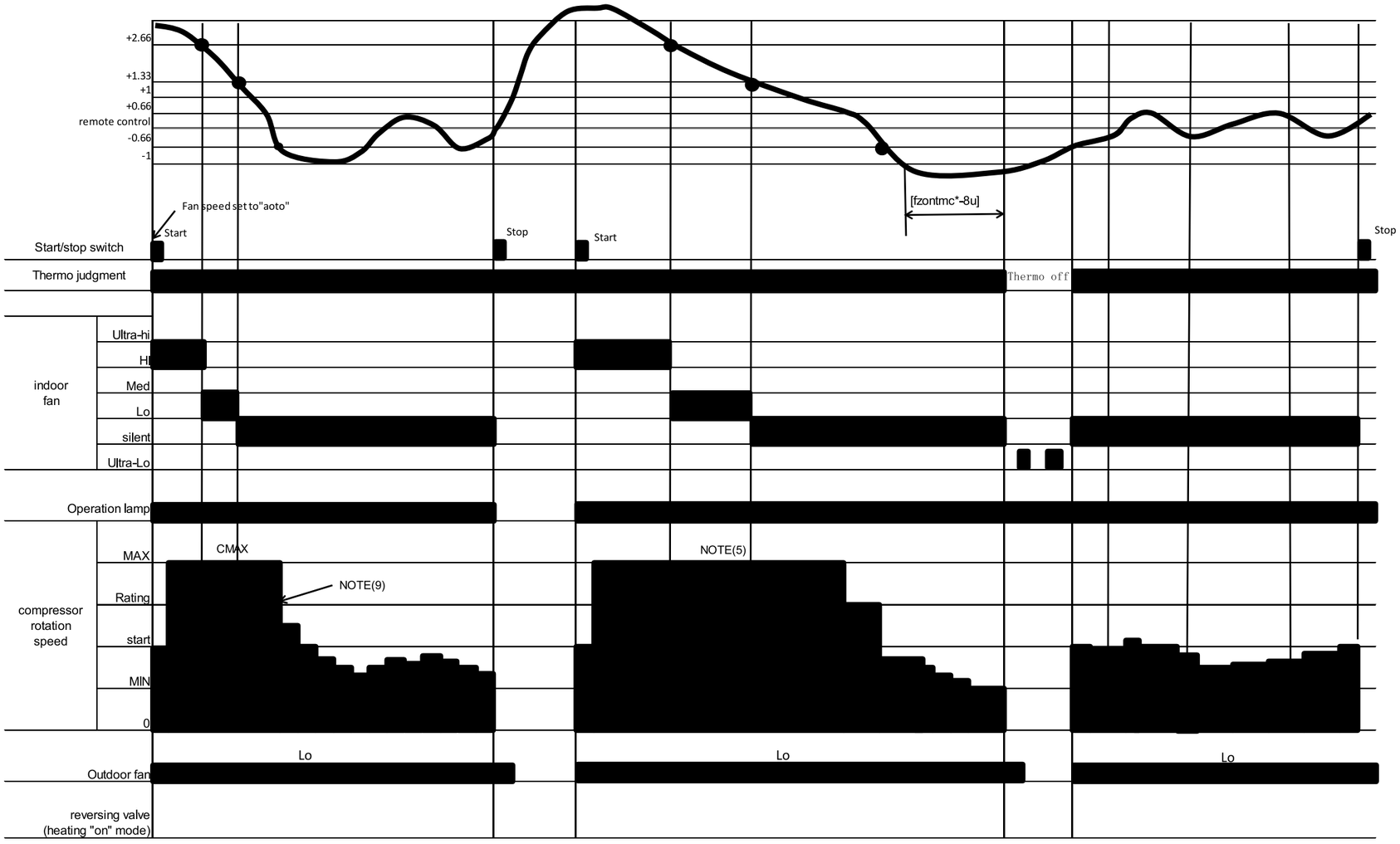
BASIC MODE

MODEL RAK-VJ60PHAE, RAK-VJ70PHAE

<table>
<tr><th colspan="2">Operation mode</th><th>Fan</th><th>Cooling</th><th>Dry</th><th>Heating</th><th>Auto</th></tr>
<tr><td colspan="2">Basic operation of start/stop button</td><td colspan="5"> 
</td></tr>
<tr><td rowspan="3">Timer functions</td><td>Off-timer</td><td colspan="5"> 
</td></tr>
<tr><td>On-timer</td><td colspan="5"> 
</td></tr>
<tr><td>Off -> On
On -> Off timer</td><td colspan="5"> 
</td></tr>
<tr><td rowspan="6">Fan speed mode (indoor fan)</td><td>Auto</td><td></td><td>Changes from “Hi” to “Med” or “Lo” depending on room temperature.
 

1. Runs at “Hi” until room temperature reaches to “setting temperature-SFTDSC” after operation is started.
2. Runs at “ultra-Lo” when thermo is off.</td><td></td><td>Set to “ultra-Lo”,”Silent”,”Lo”,”Med”,”Hi”,”ultra-Hi” or “stop” depending on the room temperature, time and heat exchanger temperature. Set to “stop” if the heat exchanger temperature is “DNZKOF” during Thermo OFF.(When reach at “DNZKON”, fan speed set to “ultra-Lo” again.)
 
</td><td>Operating mode is judged by room temperature.
(1) Judging by room temperature
・ Operating mode at start up is judged (initial judgment).
(a) Conditions for judgment (any of the followings).
・ When auto operation is started after the previous auto mode operation.
・ When auto operation is started after the previous manual mode operation.
・ When the operating mode is switched to auto while operating at manual mode.
(b) Judging method
・ [Cooling] : Room temperature ≧ Remote controller setting
・ [Heating] : Room temperature < Remote controller setting
[Room temperature setting of remote controller]
Cooling
Heating
(2) Judging operating mode change during operation (Continuous judgment).
(a) Conditions for judgment
・ The mode is reviewed at interval time.
*Interval time as below
・ The first interval time : 10 minutes
・ The second interval time : 15 minutes
・ On and after the third interval time : 55 minutes
(b) Judging method
・ Judge by setting the hysteresis on the final preset temperature.
The final preset temperature is the actually targeted preset temperature which is sum of basic preset temperature and each type of shift value.
(e.g. preset temperature correction value, powerful shift value, eco shift value, eco sleep shift value, etc.)
[Currently cooling]
・ Room temperature ≦ Final preset temperature -3 °C Change to heating
・ Room temperature > Final preset temperature -3 °C Continue cooling
[Currently heating]
・ Room temperature ≧ Final preset temperature 2 °C Change to cooling
・ Room temperature < Final preset temperature 2 °C Continue heating
 
</td></tr>
<tr><td>Super Hi</td><td>Operates at “Super Hi” regardless of the room temperature.</td><td>Set to “ultra-Hi” when the compressor runs at cold dash mode speed, and to “Super Hi” in other modes. Runs at “ultra-Lo” when thermo is off.</td><td></td><td>Set to ”ultra-Lo”,”Silent”,”Lo”,”Med”,”Hi”,” Super Hi ”,”ultra-Hi” or ”stop” depending on the room temperature, time and heat exchanger temperature. Set to ”stop” if the heat exchanger temperature is ”DNZKOF” during Thermo OFF.(When reach at”DNZKON”, fan speed set to ”ultra-Lo” again.)
Set to”ultra-Hi” when the compressor is running at maximum speed during hot dash or when recovered from defrosting.</td></tr>
<tr><td>Hi</td><td>Operates at “Hi” regardless of the room temperature.</td><td>Set to “ultra-Hi” when the compressor runs at cold dash mode speed, and to “Hi” in other modes. Runs at “ultra-Lo” when thermo is off.</td><td></td><td></td></tr>
<tr><td>Med</td><td>Operates at “Med” regardless of the room temperature.</td><td>Operates at “Med” regardless of the room temperature.
Runs at “ultra-Lo” when thermo is off.</td><td></td><td>Set to ”ultra-Lo”,”Silent”,”Lo”,”Med”,”Hi”,”ultra-Hi” or ”stop” depending on the room temperature, time and heat exchanger temperature. Set to ”stop” if the heat exchanger temperature is ”DNZKOF” during Thermo OFF.(When reach at ”DNZKON”, fan speed set to ”ultra-Lo” again.)</td></tr>
<tr><td>Lo</td><td>Operates at “Lo” regardless of the room temperature.</td><td>Operates at “Lo” regardless of the room temperature.
Runs at “ultra-Lo” when thermo is off.</td><td>Set to “Lo” in modes other than when the compressor stops.</td><td>Set to ”ultra-Lo”,”Silent”,”Lo”,”Med”,”Hi”,”ultra-Hi” or ”stop” depending on the room temperature, time and heat exchanger temperature. Set to ”stop” if the heat exchanger temperature is ”DNZKOF” during Thermo OFF.(When reach at ”DNZKON”, fan speed set to ”ultra-Lo” again.) The fan speed is controlled by the heat exchanger temperature; the overload control is executed as in the following diagram:
 
</td></tr>
<tr><td>Silent</td><td>Operates at “Silent” regardless of the room temperature.</td><td>Operates at “Silent” regardless of the room temperature.
Runs at “ultra-Lo” when thermo is off.</td><td>Set to “Silent” in modes other than when the compressor stops.</td></tr>
<tr><td colspan="2">Basic operation of temperature controller</td><td>Performs only fan operation at the set speed regardless of the room temperature.
 
</td><td>See page 29.</td><td>See page 31.</td><td>See page 33.</td></tr>
</table>

Basic Cooling Operation



Notes:

(1) Condition for entering into Cool Dashed mode. When fan set to “Hi” or “Auto and when the compressor speed (P section) due to temperature difference between setting temperature (including the correction shift only) and room temperature is CMAX or higher.

(2) Cool Dashed will release when i) a maximum 25 minutes is lapsed and ii) room temperature is lower than set temperature –3°C (thermo off) and iii) when room temperature has achieved setting temperature –sftdsc then maximum Cool Dashed time will be revised to 20 minutes. And iv) indoor fan is set to Lo and Med fan mode and v) change operation mode.

(3) During Cool Dashed operation, thermo off temperature is set temperature (with shift value) –3°C. After thermo off, operation continue in Fuzzy control mode.

(4) Compressor minimum “ON” time and “OFF” time is 3 minutes.

(5) During normal cooling mode, compressor maximum rpm CMAX will maintain for 60 minutes if indoor temperature is lower than 30°C. No time constrain if indoor temperature is higher than CLMXTP.

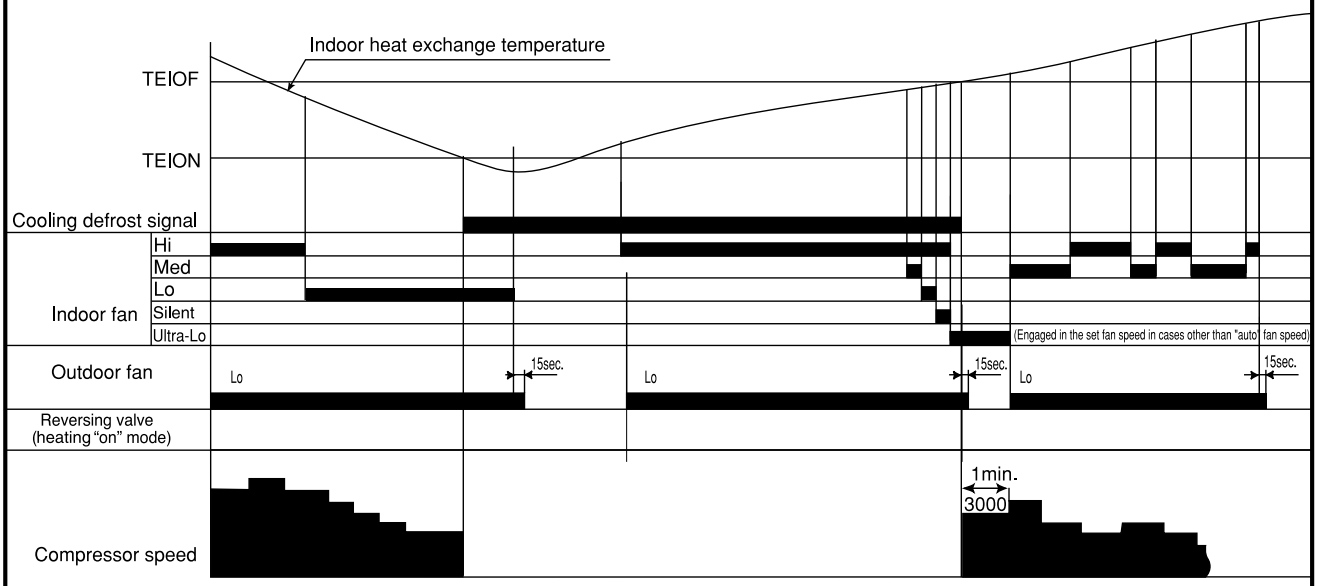
(6) When fan is set to “Hi”, compressor rpm will be limited to CSTD.

(7) When fan is set to “Med”, compressor rpm will be limited to CJKMAX.

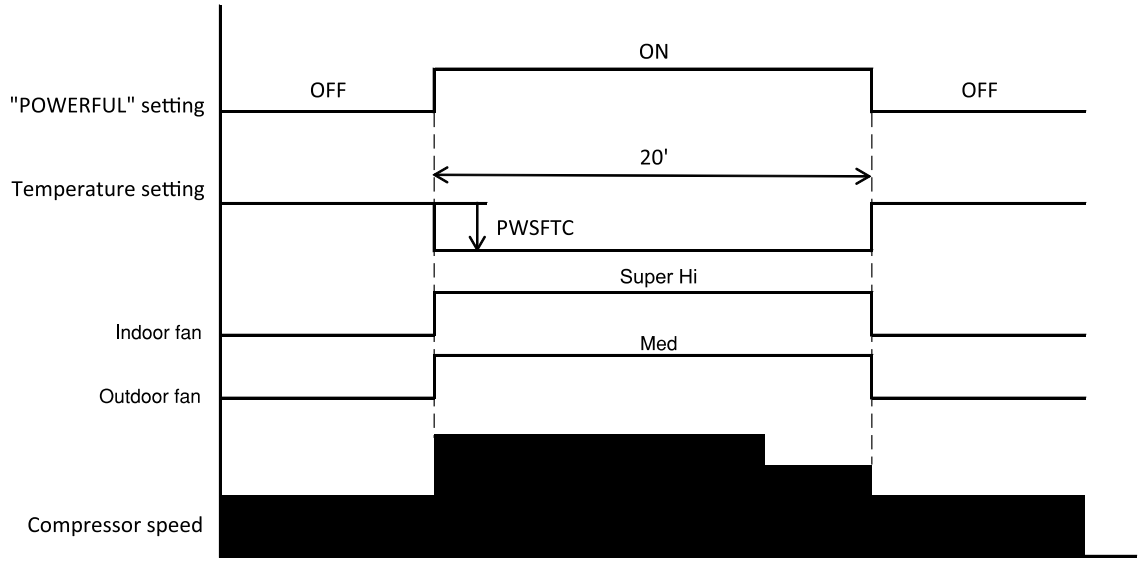
(8) When fan is set to “Lo”, compressor rpm will be limited to CBEMAX.

(9) During Cool Dashed, when room temperature reaches set temperature –sftdsc_8U compressor rpm is actual rpm x 70%.

Cooling Defrost



Cooling Powerful Operation



Notes :

(1) Pressing the "POWERFUL" button will reduce the temperature setting by PWSFTC 2°C.

(2) The powerful operation is for 20 minutes after setting.

(3) Operation is continued forcibly thermo-ON for 20 minutes after the powerful operation is finished.

(4) Pressing the "START/STOP" button and "POWERFUL"button during powerful operation wil cancel the powerful operation.

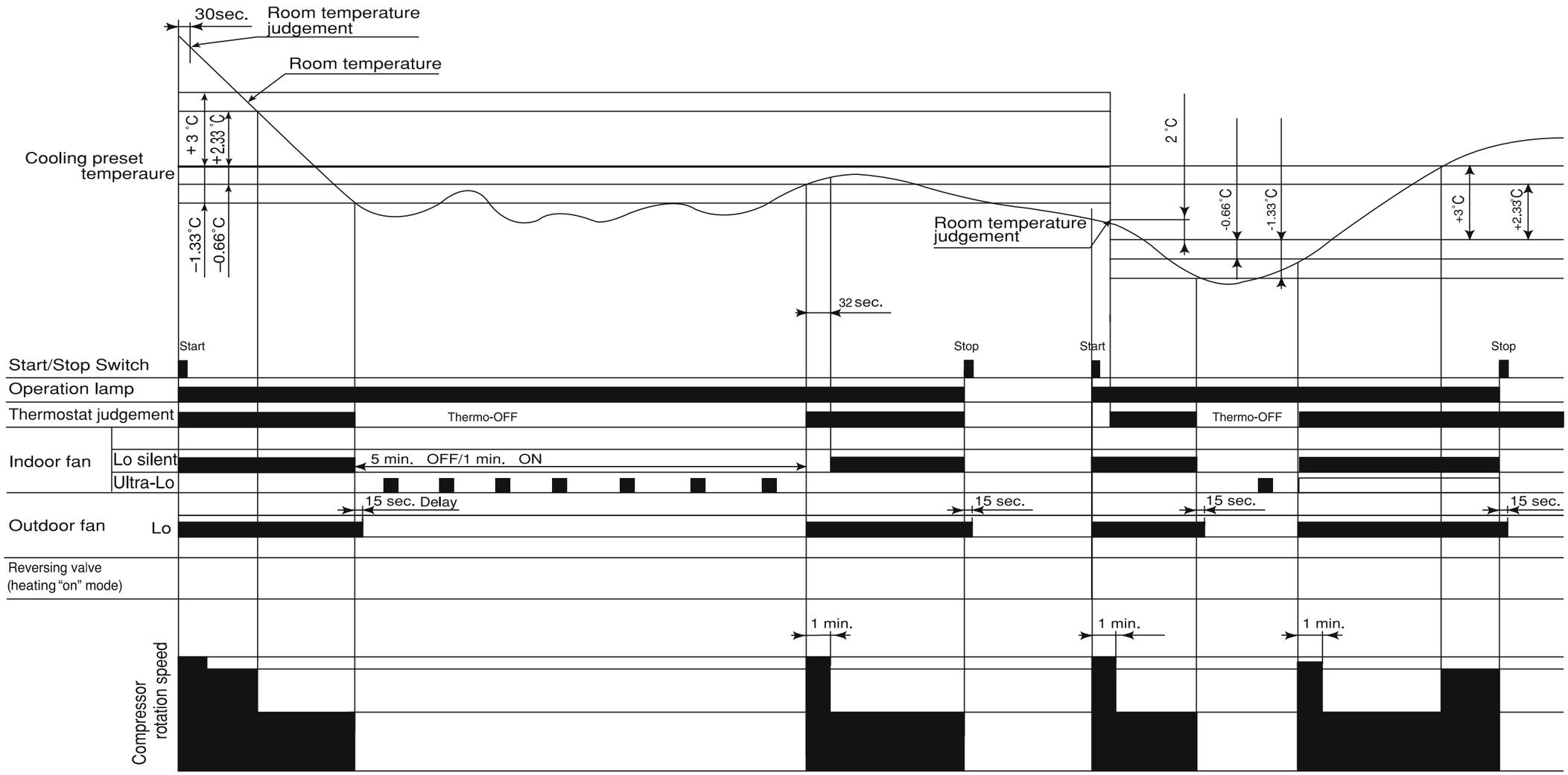
(5) If the GoodSleep timer is set during powerful operation, the powerful operation will be canceled.

(6) When the powerful operation is set, the fan speed will be set to "Super Hi" and the compressor's maximum speed will be set to CMAX2 during powerful operation. The compressor's lower limit speed is CKYMIN_PW.

(7) The fan speed increases by FNUPPW_C.

(8) After the powerful operation is ended, the system automatically operates with the previous settings used before the powerful operation.

Dry



Notes:

(1) If the room temperature is (cooling preset temperature) - (1.33°C) or less after 30 seconds from starting the operation, the operation is done assuming as the preset temperature = (room temperature at the time) - (2°C).

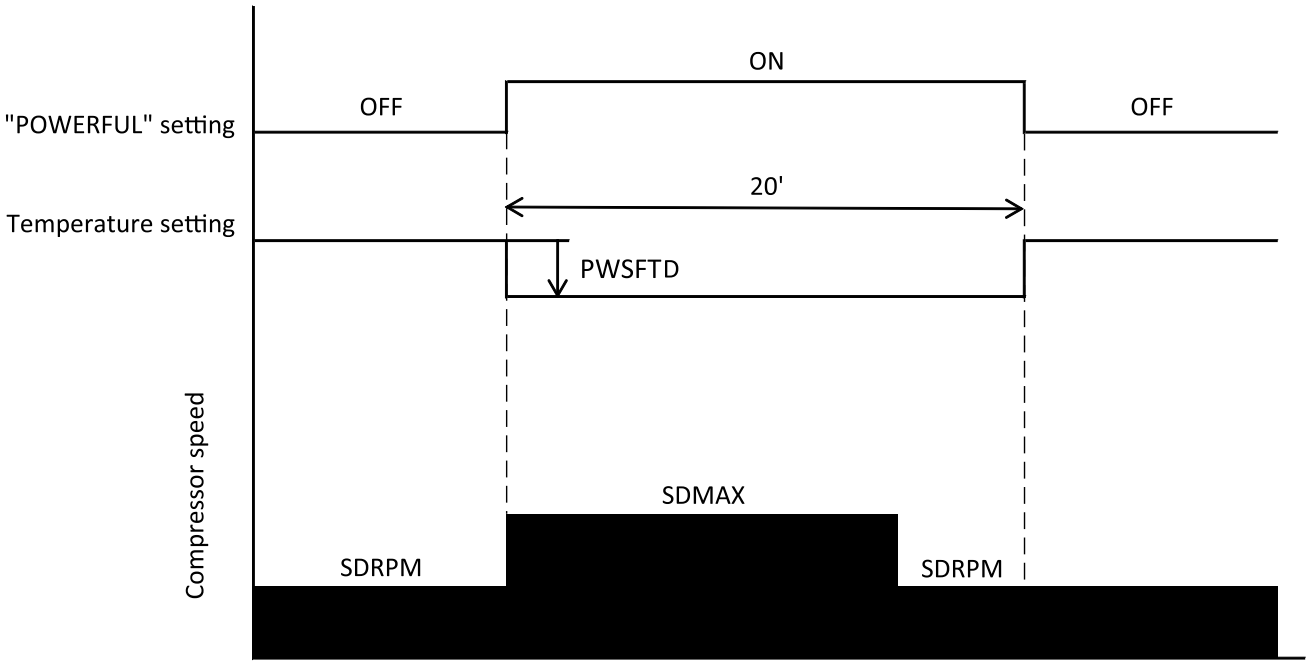
(2) The indoor fan is operated in the "Lo" mode. During thermo OFF indoor fan will be OFF for 5 minutes and ON for 1 minute.

(3) When the operation is started by the themostat turning ON, the start of the indoor fan is delayed 32 seconds after the start of compressor operation.

(4) The compressor is operated forcedly for 3 minutes after operation is started.

(5) The minimum ON time and OFF time of the compressor are 3 minutes.

Dry Powerful Operation



Notes :

(1) Pressing the "POWERFUL" button will reduce the temperature setting by PWSFTSD.

(2) The powerful operation is for 20 minutes after setting.

(3) Operation is continued forcibly thermo-ON for 20 minutes after the powerful operation is finished.

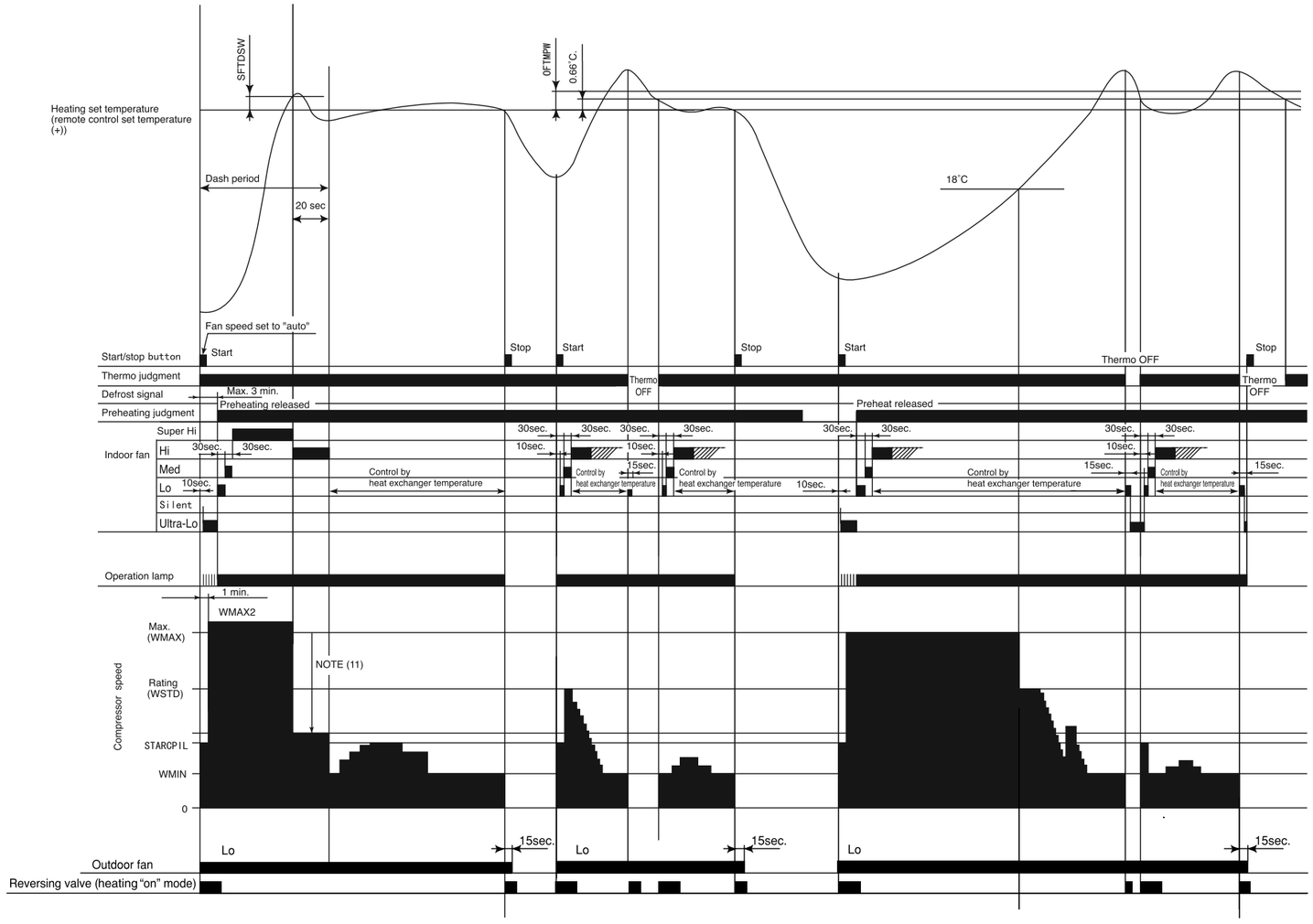
(4) Pressing the "START/STOP" button and "POWERFUL"button during powerful operation wil cancel the powerful operation.

(5) If the GoodSleep Timer is set during powerful operation, the powerful operation will be canceled.

(6) If the differential(the room temperature - the temperature setting) is "the differential≧3"℃after powerful setting , the compressor's maximum speed during powerful operation will be set to SDMAX. Then the differential reduce "the differential ≦233 "℃during powerful operation,the compressor's speed will be set to SDRPM.
If the differential(the room temperature - the temperature setting) is "the differential ＜ 3 ℃" after powerful setting , the compressor's minimum speed during powerful operation will be set to SDRPM.

(7) After the powerful operation is ended, the system automatically operates with the previous settings used before the powerful operation.

Basic Heating Operation



Notes:

(1) Condition for entering into hot dashed mode. When fan set to "Hi" or "Auto" and i) room temperature is 18 or less, and ii) outdoor temperature is 10 or less, and iii) compressor speed (P section) due to temperature difference between setting temperature(including shift value only) and room temperature is WMAX or more.

(2) The maximum compressor speed period during hot dash is finished when i) room temperature has reached the setting temperature + SFTDSW. ii) thermo off.

(3) During hot dashed operation, thermo off temperature is setting temperature (with shift value) +3 . After thermo off, operation continue inn Fuzzy control mode.

(4) Minimum "ON" time and minimum "OFF" time of compressor operation is 3 minutes.

(5) During normal heating mode, compressor maximum rpm WMAX will maintain for 120 minutes. No time limit constrain if room temperature is 18 or less and outdoor temperature is 2 or less.

(6) During preheating or defrosting or auto fresh defrosting mode, indoor unit operation lamp will blink.

(7) When heating mode starts, it will enter into preheating mode if indoor heat exchanger temperature is less than YNEOF + 0.33 .

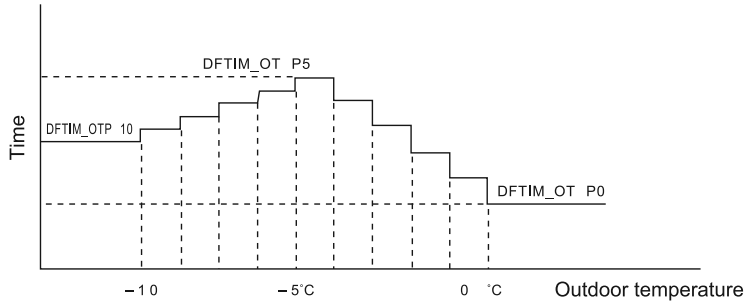
(8) When fan is set to "Med" or "Lo" or "Silent", compressor rpm will be limited to "WJKMAX" or "WBEMAX" or "WSZMAX".

(9) During "Ultra-Lo" mode, if room temperature is 18 or less, indoor fan will stop. If room temperature is 18 + 0.33 or more, fan will continue in "Ultra-Lo" mode. However, "Ulrta-Lo" mode during preheating or preheating after defrosting does not stop if room temperature is 18 or less.

(10) During hot dashed or outdoor temperature is -5 or less, compressor rpm is WMAX2.

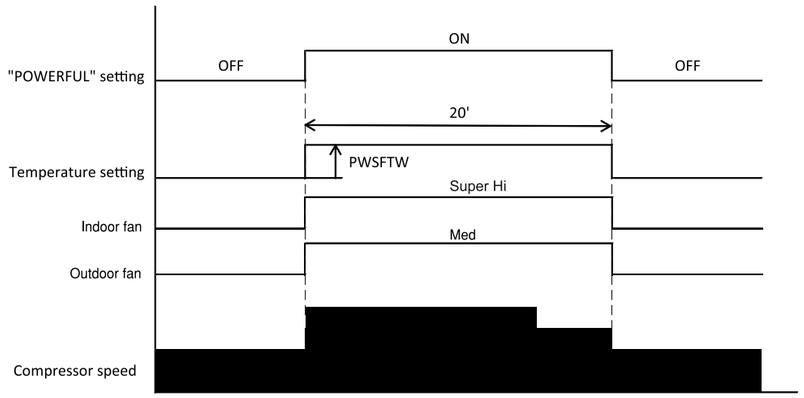
(11) During hot dashed, when room temperature reaches setting temperature + SFTDSW compressor rpm is actual rpm x DWNRATEW.

Setting Defrosting Inhibit Period



Notes:
(1) The first inhibit time after operation start is set to DFTIM_FST.
(2) From the second time onwards, the inhibit time is set according to the time required for defrosting.
Reverse cycle operation time ≧ [DEFCOL] : DEFTIM_COL is set.
Reverse cycle operation time < [DEFCOL] : The time corresponding to outdoor temperature is set.

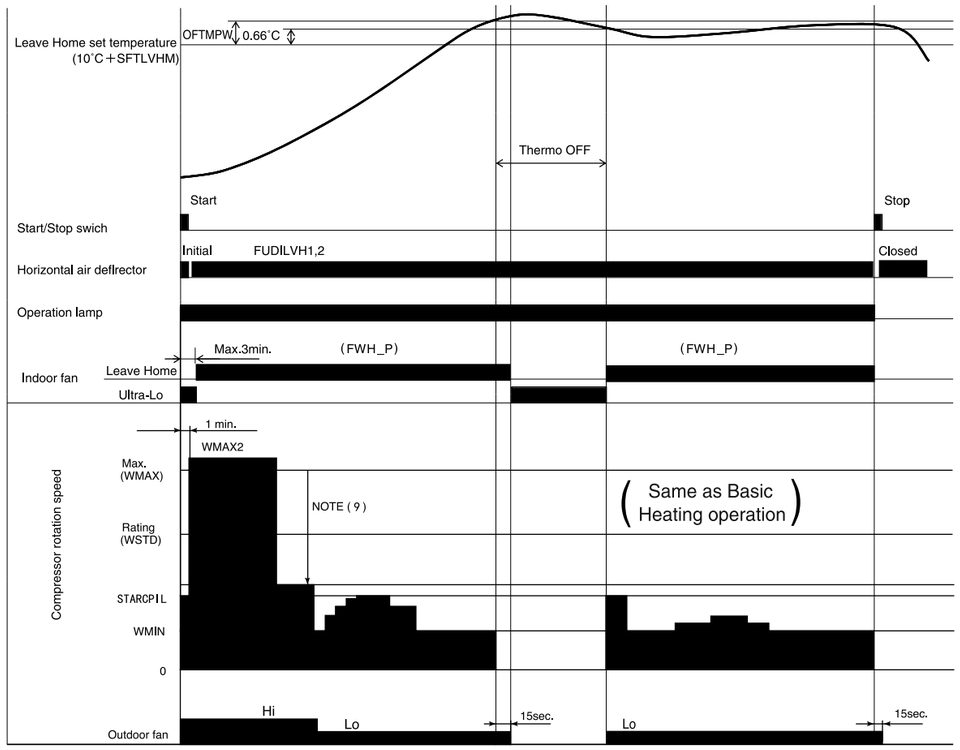
Heating Powerful Operation



Notes :

(1) Pressing the "POWERFUL" button will increase the temperature setting by PWSFTW.
(2) The powerful operation is for 20 minutes after setting.
(3) Operation is continued forcibly thermo-ON for 20 minutes after the powerful operation is finished.
(4) Defrost is inhibited for 20 minutes after the start of the powerful operation.
(5) Pressing the "START/STOP" button and "POWERFUL"button during powerful operation wil cancel the powerful operation.
(6) If the GoodSleep timer is set during powerful operation, the powerful operation will be canceled.
(7) When the powerful operation is set, the fan speed will be set to "HIGH" and the compressor's maximum speed will be set to WMAX2 during powerful operation. The compressor's lower limit speed is WKYMIN_PW.
(8) After the powerful operation is ended, the system automatically operates with the previous settings used before the powerful operation.

Leave Home



Notes:

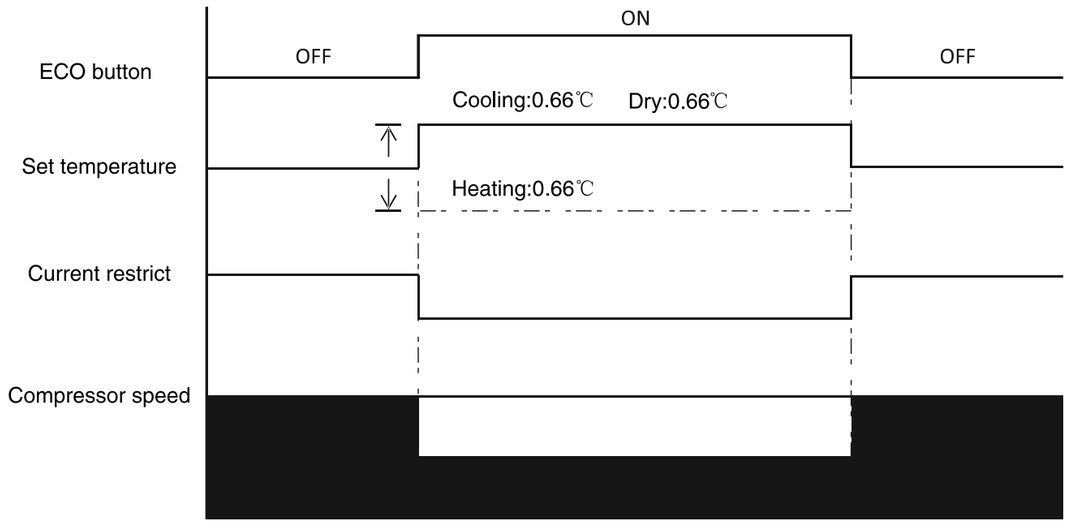
Perform Leave Home operation according to the following control contents.

(1) Operation mode : Heating
(2) Temperature set : 10˚C ~16˚C
(3) Temperature setting correction shift : + 『SFTLVHM』
(4) Indoor fan : 『FWH_P』
(5) Outdoor fan speed :
(6) Compressor start control :
(7) Compressor speed :

} Same as Basic Heating operation

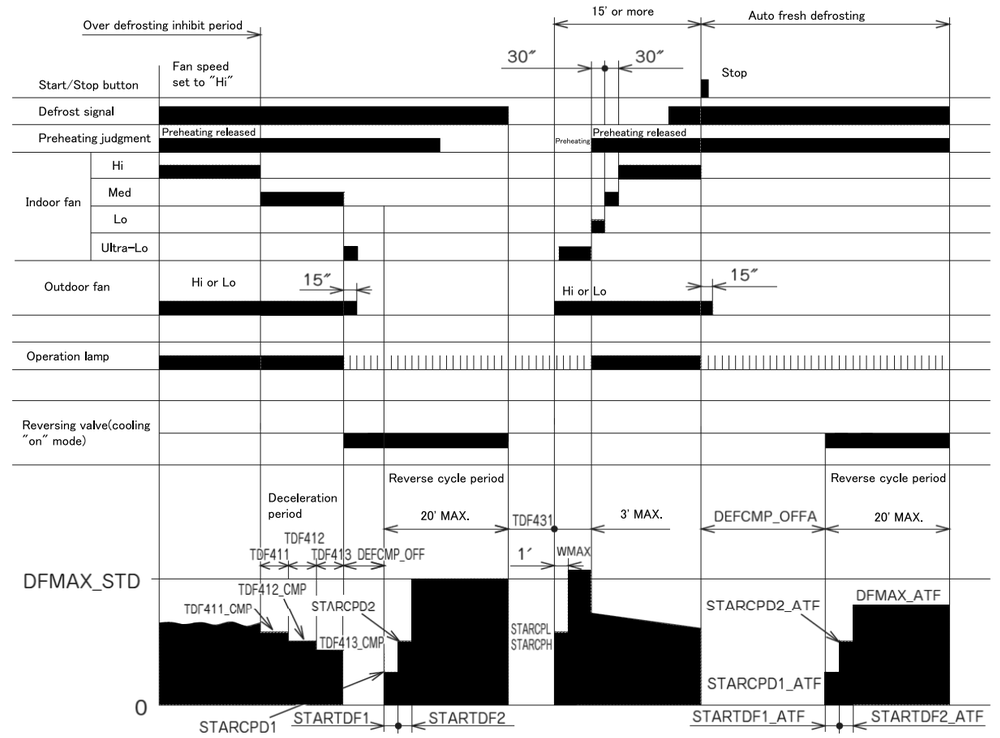
(8) Lamp indication : i) Operation lamp : ON
ii) Timer lamp : OFF(Cotinuous operation) ; ON(Day timer operation)

ECO



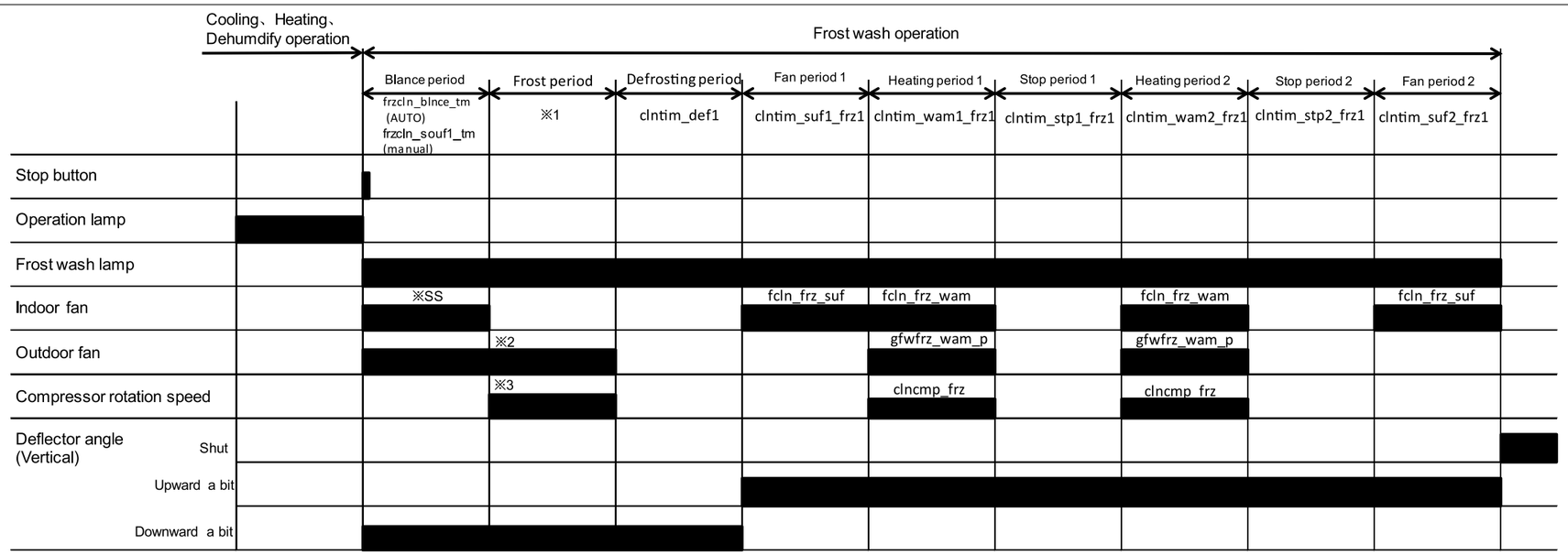
Notes:
- Can't set POWERFUL and ECO at the same time.
- During FAN operation,can't set ECO.

Reversing valve defrosting



Notes:
(1) The defrosting inhibit period is set as shown in the diagram above. When defrosting has finished once, the inhibit period is newly set, based on the outdoor temperature when the compressor was started. During this period, the defrost signal is not accepted.
(2) If the difference between the room and outdoor temperature is large when defrosting is finished, the maximum compressor speed (WMAX) or (WMAX2) can be continued for 120 minutes maximum.
(3) The defrosting period is 20 minutes maximum.
(4) When operation is stopped during defrosting, it is switched to auto refresh defrosting.
(5) Auto refresh defrosting cannot be engaged within 15 minutes after operation is started or defrosting is finished.

Frost wash



(1)The total hours of air conditioning operation is more than 42 hours(SLEEP、ON TIMER operation will take 84 hours ）,And air conditioner is operated for more than 30 minutes,
Meanwhile, the outdoor temperature and indoor humidity are suitable for the Frost Wash(Area A、B in Fig.3、4),Frost Wash (auto) start;
(2)Within 2 hours before the ON TIMER designated time,Frost wash(auto) cannot be operate;
(3)ONCE TIMER (ON/OFF TIMER) operation cannot be set ,when Frost wash(auto) is running;
(4)When the Frost Wash is stopped during Frost Wash operation, the unit automatically restart Frost Wash at the next operation stop.
(5)Before the Frost period start,the outdoor temperature≥16℃，Or before the defrosting period finish,the heat exchanger temperature ≥0℃，The Heating period will not running. Fan period 1～ Fan period 2 all turn to Fan operation
(6)In frost period ,The maximum time is 10 minutes after the heat exchanger temperature ≤-10℃
(7)Heating period will finish after the heat exchanger temperature ≥35℃,remanent time turn to Fan period 2,the total time unchanged
(8)Fan period 1～ Fan period 2 will not running,when last operation was HEATING;
(9)When device operat Frost wash during ON condition,the device will stop and have blance time(3 minutes)
(10)Before the Frost period start,OH temperature≥60℃,Original blance period time will add 3 minutes
※1 According to room humidity, the Frost period time becomes as it is shown in Fig.1.
※2 According to Compressor rotation speed, the Outdoor fan becomes as it is shown in Fig.2.
※3 The Compressor rotation speed becomes as it is shown in Fig.5.about area A,
The Compressor rotation speed becomes as it is shown in Fig.6.about area B

Fig.1 Frost Period time

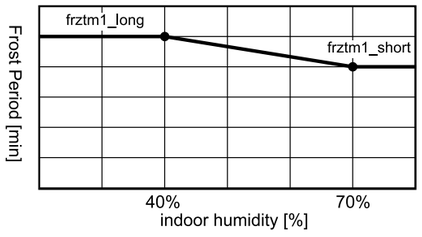


Fig.2 Frost Period outdoor Fan

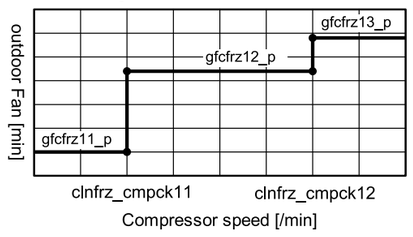


Fig.3 The range of indoor/outdoor temperature

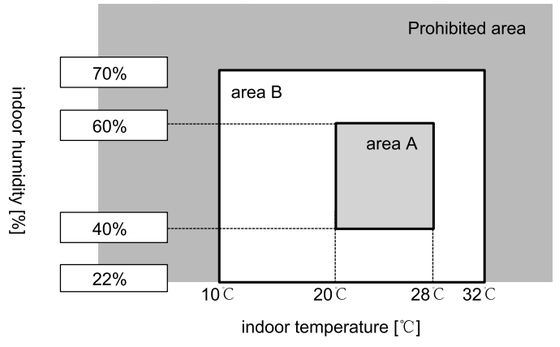


Fig.4 The range of indoor/outdoor temperature

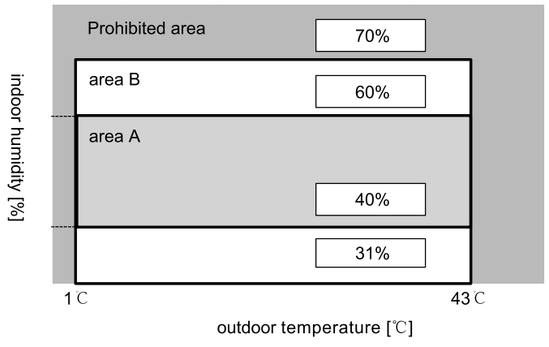


Fig.5 Frost Period Compressor speed (area A)

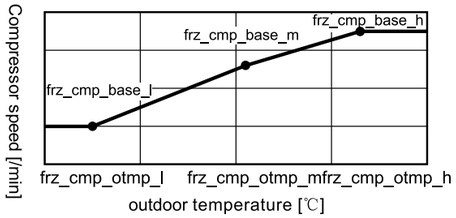
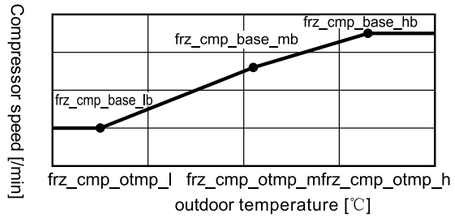


Fig.6 Frost Period Compressor speed (area B)

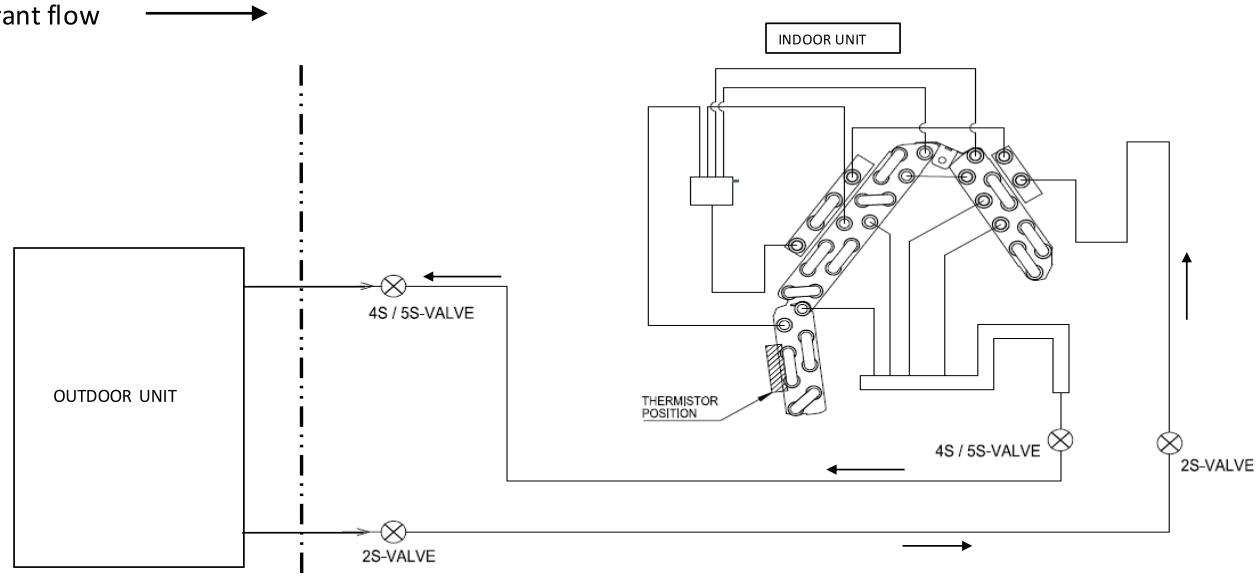


REFRIGERATING CYCLE DIAGRAM

MODEL RAK-VJ60PHAE, RAK-VJ70PHAE

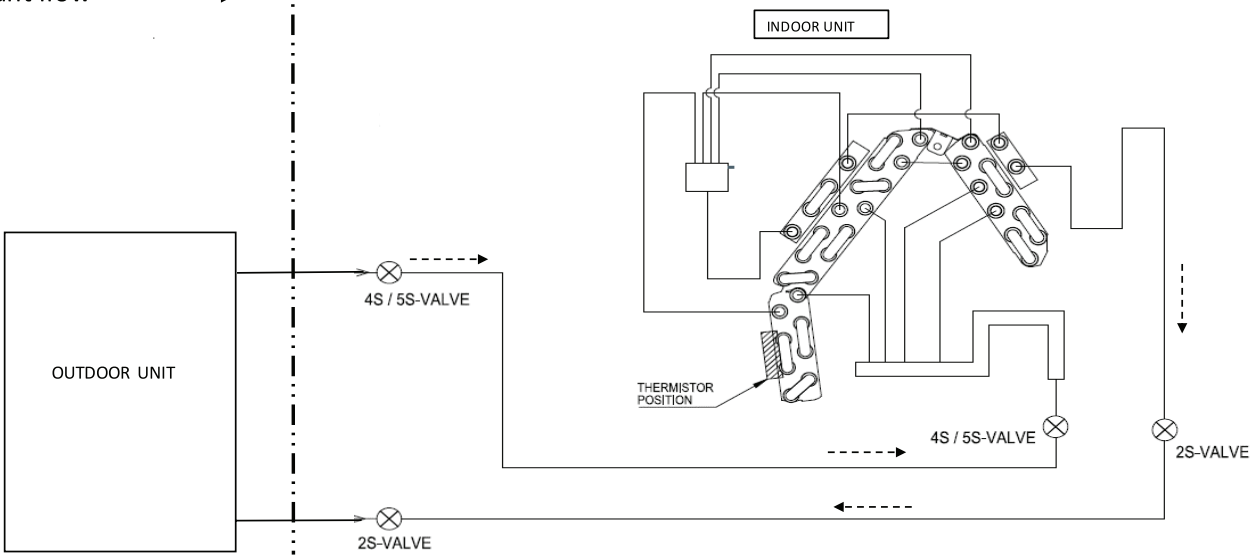
COOLING, DEHUMIDIFYING, DEFROSTING

Refrigerant flow ——▶



HEATING

Refrigerant flow - - - - - -▶



Procedure for Disassembly and Reassembly

INDOOR UNIT RAK-VJ60PHAE, RAK-VJ70PHAE

1. Front Panel

Be sure to hold the front panel with both hands to detach and attach it.

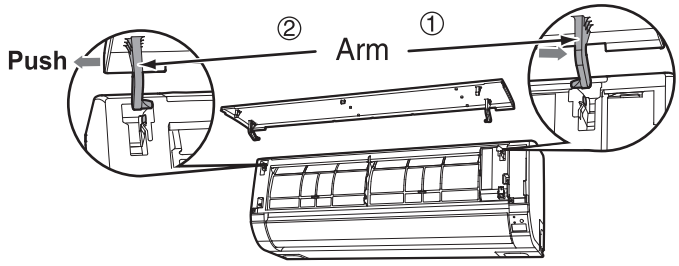


Fig. 1

1. Push the end of the right-side arm outward to release the tab.
2. Move the left-side arm outward to release the left tab, and then pull the panel towards you.

2. Front cover

(1) After removing the screw of fixing the terminal cover, hold the handle of terminal cover and remove it.

(2) After removing two screws, pull the center of the front cover forward and release the claws

(3) Hold the front cover at both lower sides and pull them forward to remove.

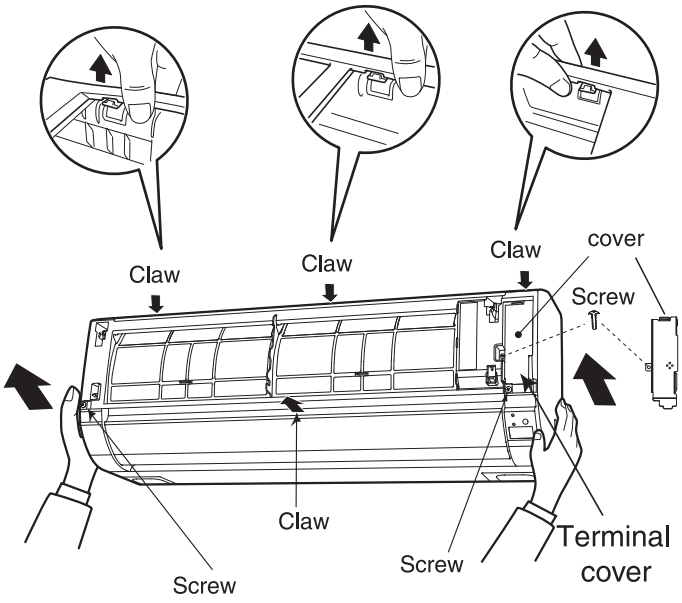


Fig. 2

3. Control P.W.B. and Indicating P.W.B.

(1) Remove each connector from the lead wire.

(2) Remove the four P.W.B. supports from the control P.W.B.

(3) Pull the support hook at the upper side of the indication lamp of the indicating P.W.B. and pull out the P.W.B. forward.

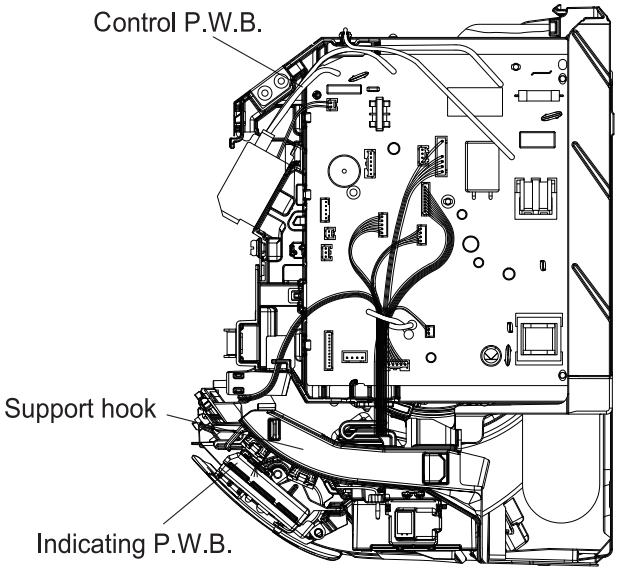


Fig. 3

4. Tangential air flow fan and fan motor

(1) Loosen the fan lock screw.

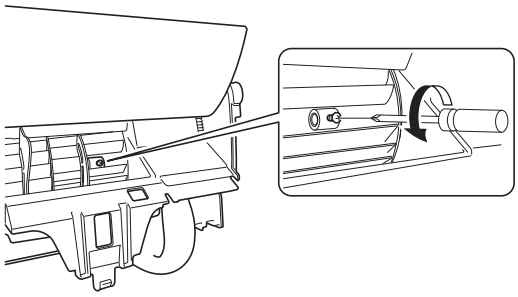


Fig. 4

(2) Press the fan motor cover 2 fixed pawl, and remove from the right to.

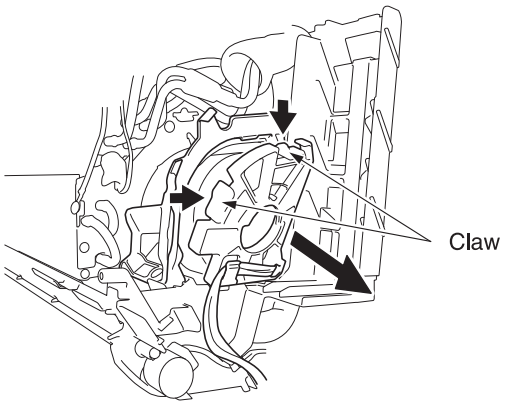


Fig. 5

(3) Pull fan motor out of the remove the right.

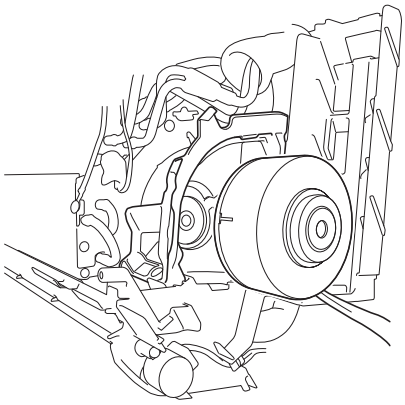


Fig. 6

(4) Remove the screws from the upper and lower bearing covers.
(5) Remove the locking hook of the lower bearing cover from the Cabinet.

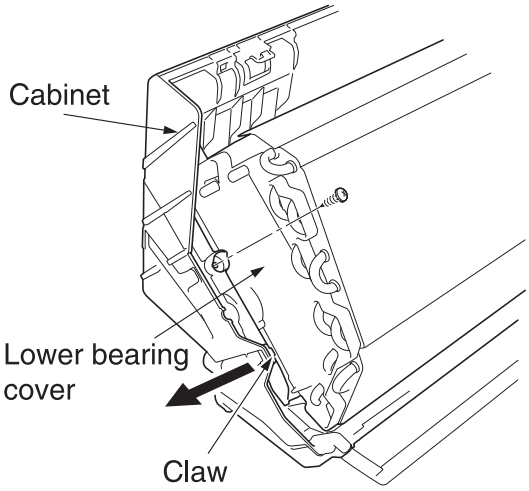


Fig. 7

(6) Remove the fan and bearing from the left.

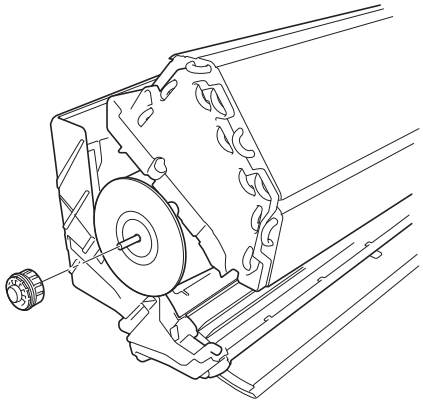


Fig. 8

Points for attention of fan motor and tangential air flow fan installation.

When installing the flow fan,the first part of the fan and water seal plate on the tube plate overlap, then tighten the screw.

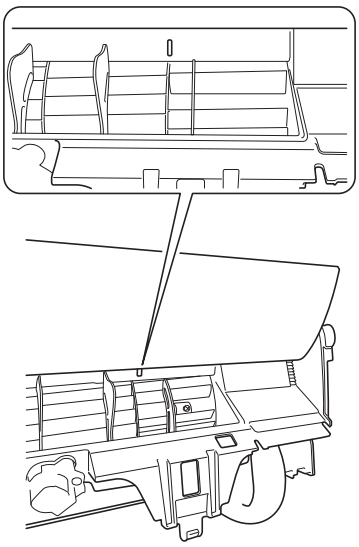


Fig. 9

5. Stepping motor

(1) The FC-guide frame fixed claw right side press. Remove the FC-guide from the rear.

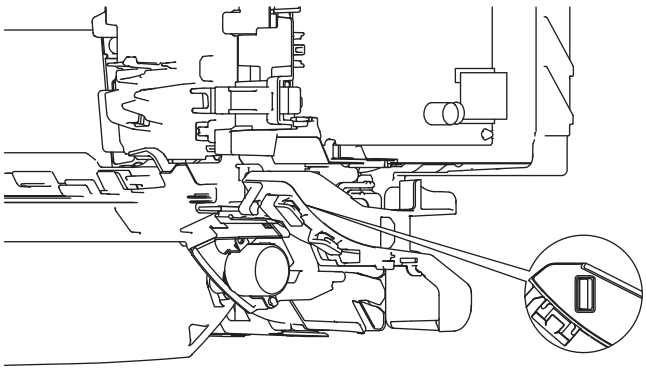


Fig. 10

(2) Remove the stepping motor screws and take off the stepping motor.

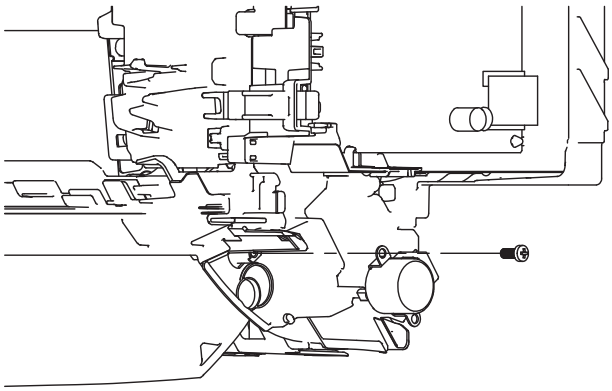


Fig. 11

DESRIPTION OF MAIN CIRCUIT OPERATION

MODEL RAK-VJ60PHAE, RAK-VJ70PHAE

1. Control power circuit

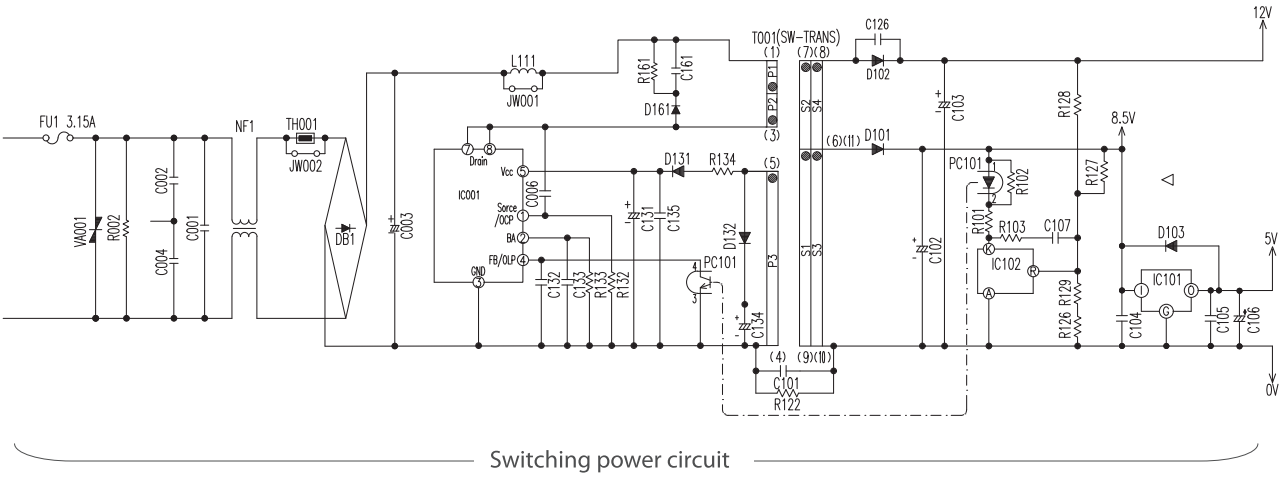


Fig. 1-1

- An AC power supply from indoor unit passes through the 3.15 A fuse, varistor (VA001), and noise filter circuit and rectified and smoothed by DB1 and C003 to become a DC current 325 V. It is then supplied to indoor fan motor drive circuit,and switching power circuit.
- The switching power circuit, as controlled by IC001, drives the primary winding of the transformer (T001) to produce a specified voltage at the output winding. [The output terminal (pin ⑤) of IC001 has a switching voltage. But it changes in voltage peak and oscillation period depending on the power load. usually,the oscillation frequency when the air condition operation is about 64.5 kHz. In the standby state, the oscillation frequency is lowered to a level as low as 64.5 kHz or so to reduce the standby power.]
- The outputs of the output windings of the transformer is rectified and smoothed to become DC voltages at primary 18.5 V, 12 V, and 8.5 V respectively. The primary 18.5 V is supplied to the drive circuit of the indoor fan motor, the 12 V is supplied to each vane motor and to the drive circuits of the cleaning unit driving motor and other equipment, and the 8.5 V is adjusted to a stable 5 V by IC101 and supplied to the microcomputer peripheral circuit.

Check

If a failure in a part or circuit has produced an abnormal current in the power supply, the 3.15 A fuse will melt down to prevent further damage. If the 3.15 A fuse melts down, check the indoor fan motor, switching electrical circuit, and other components and replace any defective part.

Check

If an abnormally high voltage is applied to the power supply, the 3.15 A fuse and varistor (VA001) will prevent further damage. If a high voltage results in the 3.15 A fuse melted down, the varistor (VA001) should have deteriorated and destroyed. Therefore replace it at the same time.

Caution

The primary circuit of the transformer (T001) has a voltage to ground. Guard against electric shocks.

2 . Stepping motor drive circuit

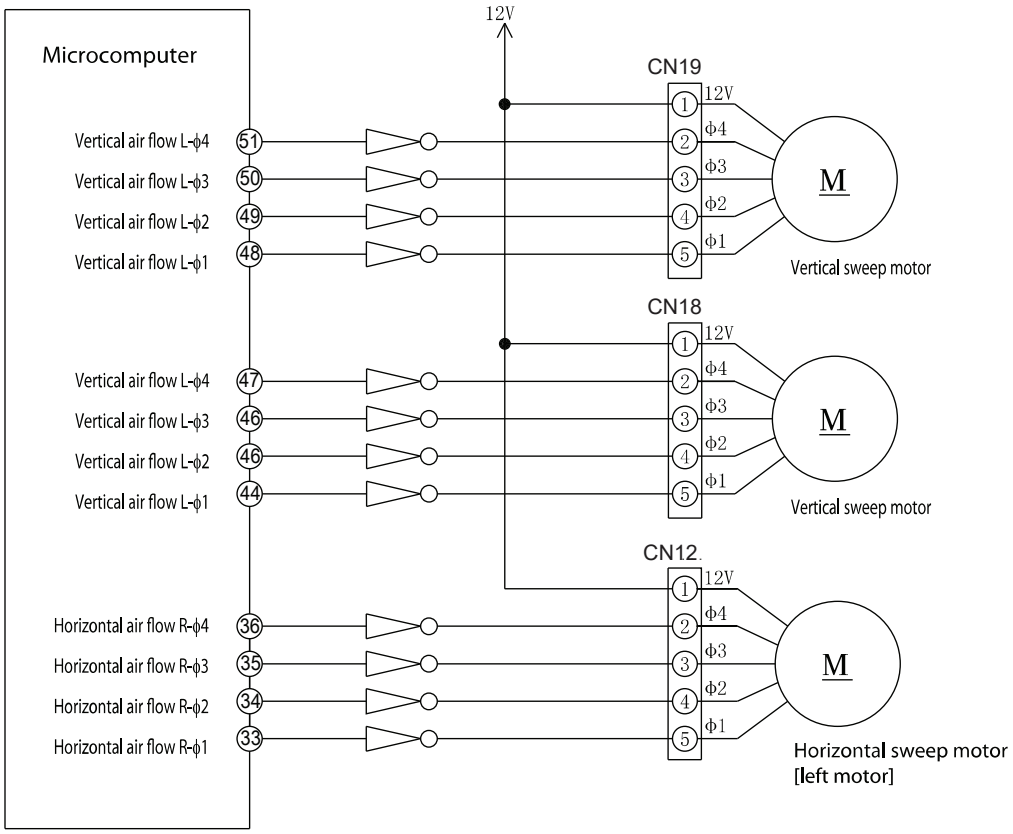


Fig. 12-1

[Connector circuit waveform while the motor runs]
Voltage waveforms of different phases as viewed from the OV line while the motor rotor is turning counterclockwise as viewed from the shaft side

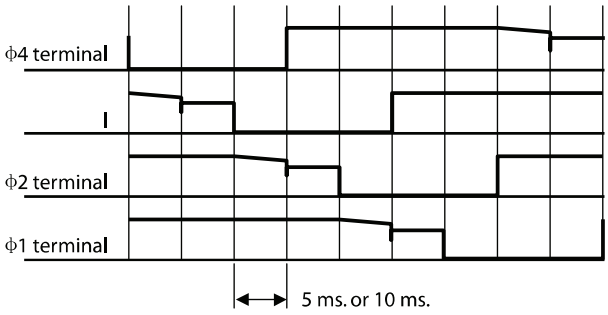


Fig. 12-2

- Each stepping motor runs as excited in 1 or 2 phases at 100 PPS or 200 PPS.
- The excitation pattern passes the microcomputer (IC601) and then the driver IC and excites the coil of each stepping motor.
- Some models not need to install the horizontal sweep motor.

3. Drive circuit of the indoor fan motor

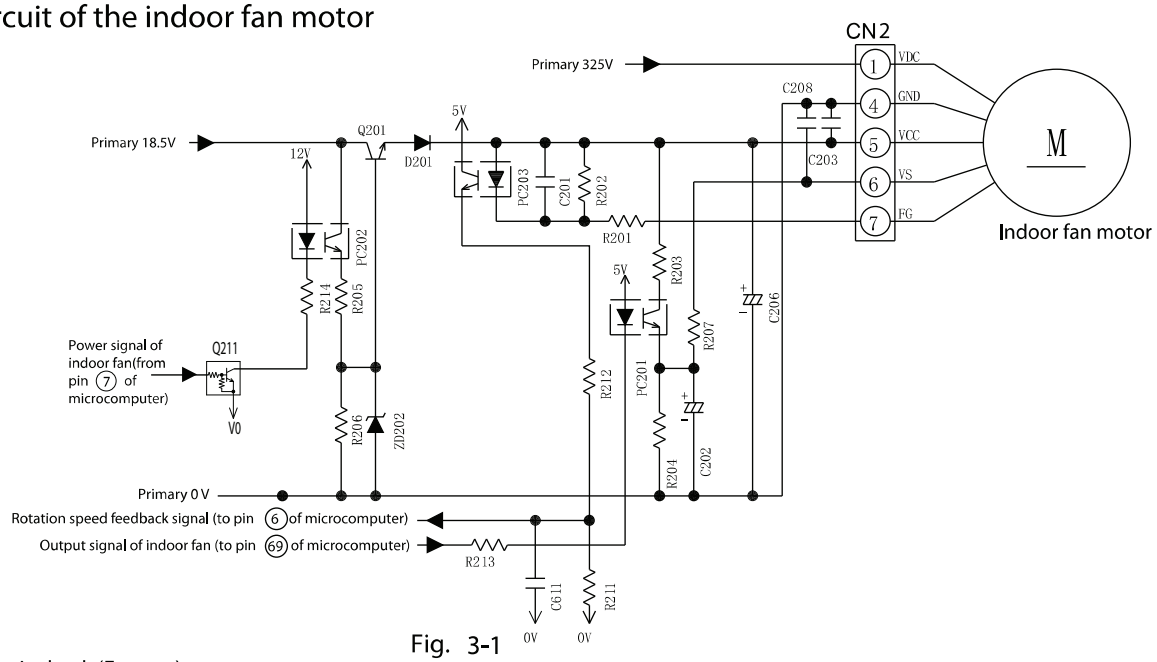


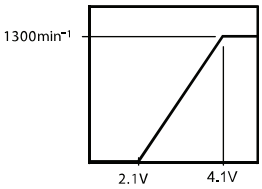
Fig. 3-1

< The circuit check (For test) >

Name	Test point	Test voltage
Motor drive power	CN2 ①pin- ④pin	About 325V
Motor contorl power	CN2 ⑤pin- ④pin	About 15V
Motor speed signal	CN2 ⑥pin- ④pin	About 2-6V
Motor rotation speed debug	CN2 ⑦pin- ④pin	About 7.5V

* The voltage above is all motor operation vol. when yon start the test, take care of your connector, do not touch the different pin together.
* The voltage of pin ⑥- pin ④, pin ⑦- ④maybe diffierent from above.

< Pin 6 - Pin 4 voltage one example >



* The different mode maybe have diffevent FAN rotation speed.

< Typical circuit waveform >

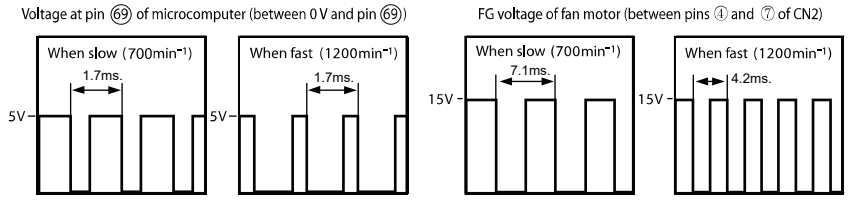


Fig. 3-2

- The indoor fan motor receives VDC (motor drive power supply), VCC (power supply for the control circuit inside the motor), and VS (speed command voltage) from CN2. The indoor fan motor returns an FG signal of a frequency that matches the rotation speed.
- VCC stabilizes the primary 18.5 V power supply into 15 V by using Q201 and supplies it.
- While on standby for a remote control signal, the Q201 shuts down the VCC and reduces the standby power.
- The VS receives a command voltage from the microcomputer . The VS terminal undergoes an analog voltage that matches the Lo level time ratio of the pulse signal from pin⑥⑨ of the microcomputer. (See Fig. 3-2.)
- The FG terminal undergoes a signal of 12 pulses per revolution of the motor shaft. By counting the pulse rate, the microcomputer recognizes the motor speed, thereby performing feedback control.

Caution

The indoor fan motor and drive circuit are connected to the primary power supply. They therefore have voltage to ground. Guard against electric shocks.

Caution

While the product is energized, do not under any circumstances detach or reattach a connector. Any such practice would cause a high voltage to run, resulting in the indoor fan motor and board circuit being destroyed. (Check the discharge of the C003 before detaching or reattaching the connectors.)

4. Buzzer Circuit

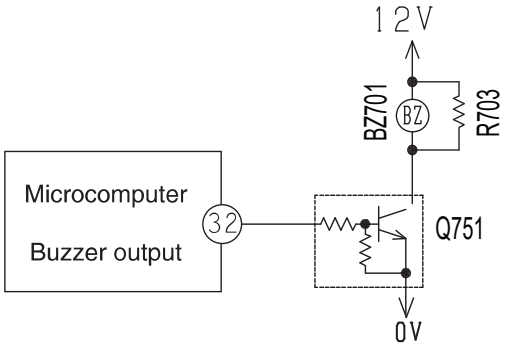


Fig.4-1 Buzzer Circuit

• When the buzzer sounds, an approx. 3.9kHz square signal is output from buzzer output pin (32) of the micro computer. After the amplitude of this signal has been set to 12Vp-p by a transistor, it is applied to the buzzer. The piezoelectric element in the buzzer oscillates to generate the buzzer's sound.

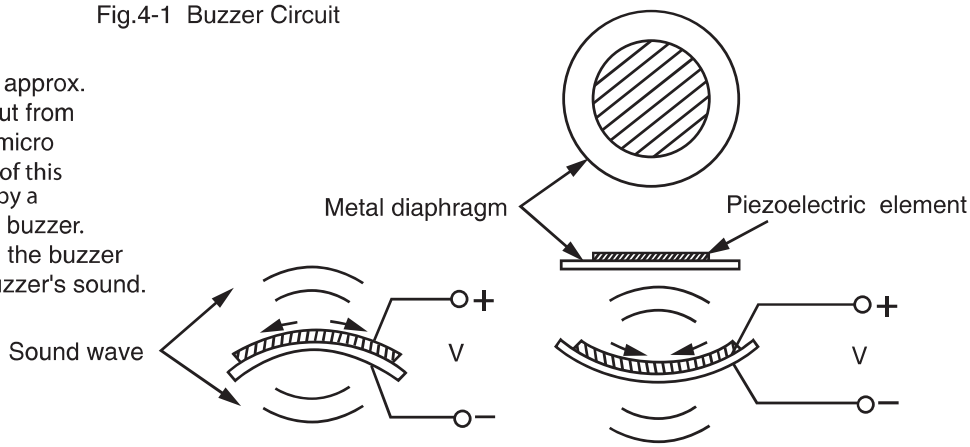


Fig.4-2 Buzzer Operation

5 . Remote control reception circuit

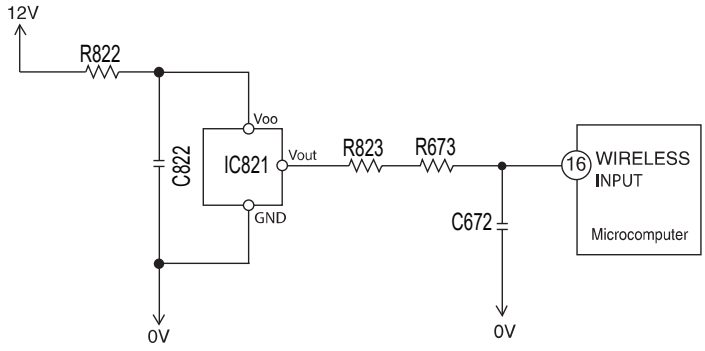


Fig.5-1

[Typical communication waveform]

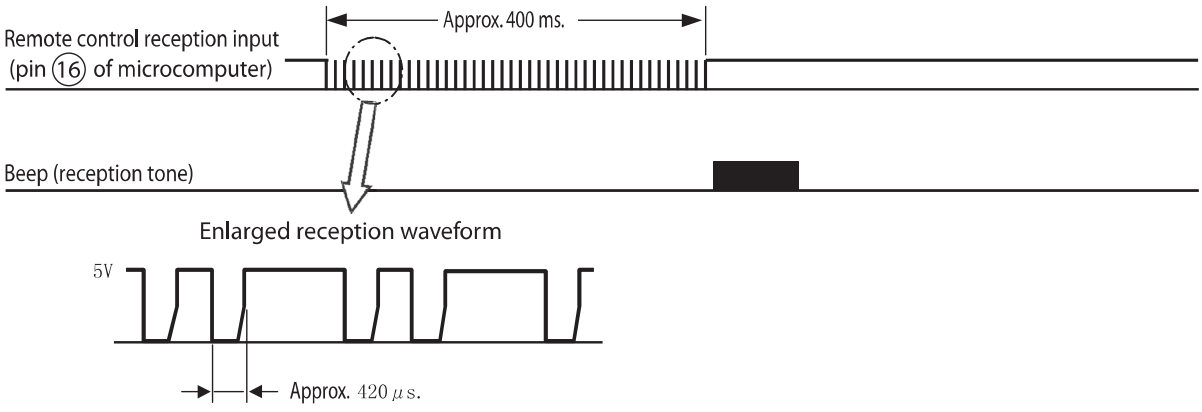


Fig. 5-2

・ An infrared signal from the remote control unit is converted to an electrical signal by the remote control light-receiving unit and is received by the microcomputer. Data is transmitted as digital data 0 and 1 by changing the interval of the basic pulses at about 420 μs.

6. Initial Setting Circuit (IC531)

- When power is supplied, the microcomputer reads the data in IC531 (E^2PROM) and sets the preheating activation value and the rating and maximum speed of the compressor, etc. to their initial values.
- Data of self-diagnosis mode is stored in IC531; data will not be erased even when power is turned off.

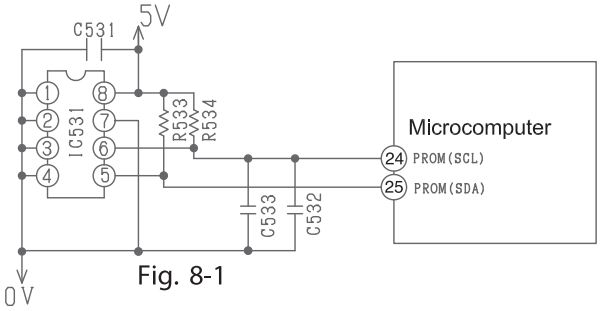


Fig. 8-1

7. Temporary Switch Circuit

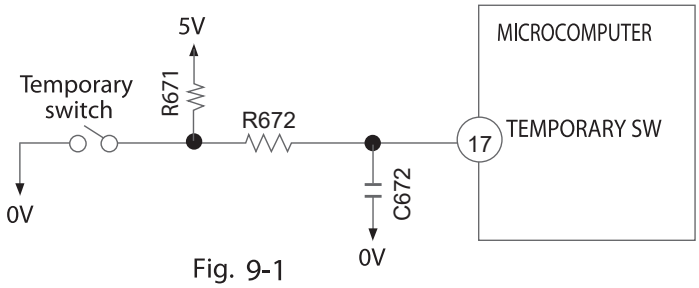


Fig. 9-1

- The temporary switch is used to operate the air conditioner temporarily when the wireless remote control is lost or faulty.
- The air conditioner operates in the automatic mode by pressing the temporary switch. If the power switch is set to OFF then ON it also operates in the automatic mode when the temporary switch is pressed.

8. Room Temperature Thermistor Circuit

A room temperature thermistor circuit is shown in Fig. 8-1.
According to room temperature, the voltage of point Ⓐ becomes as it is shown in Fig.8-2.

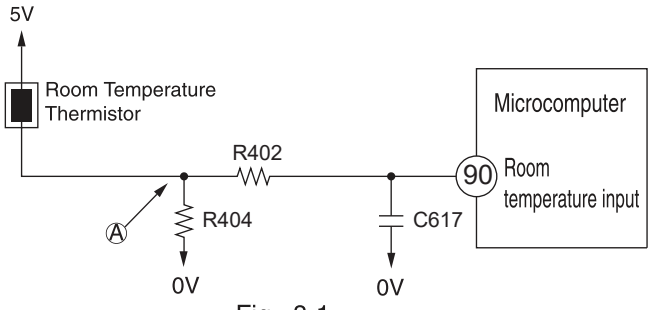


Fig. 8-1

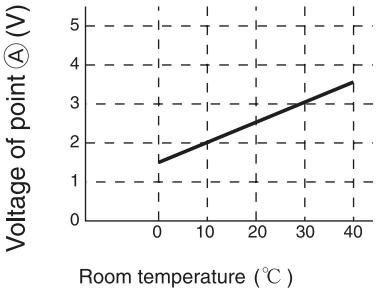


Fig. 8-2

9. Heat Exchanger Thermistor Circuit

Heat exchanger temperature is noticed inside the room

(1) Preheating

(2) Low-temperature defrosts at cooling and dehumidification operation time.

(3) Not working of reversing valve or detection of opening of heat exchanger thermistor is controlled.

(4) The microcomputer will estimated the pressure of the compressor due to the intermediate temperature of the IDU heat exchanger.
When reach the set pressure value of the microcomputer, the compressor speed will be adjusted to protect the compressor pressure.

According to heat exchanger temperature, the voltage of point Ⓐ becomes as it is shown in Fig. 9-2.

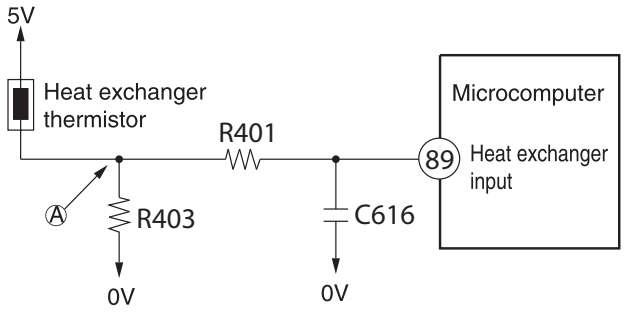


Fig. 9-1

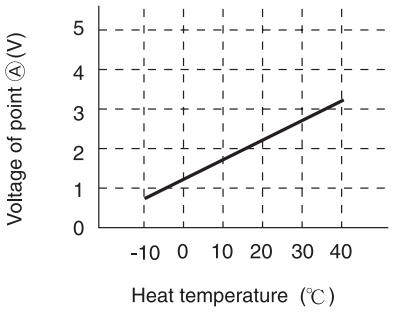
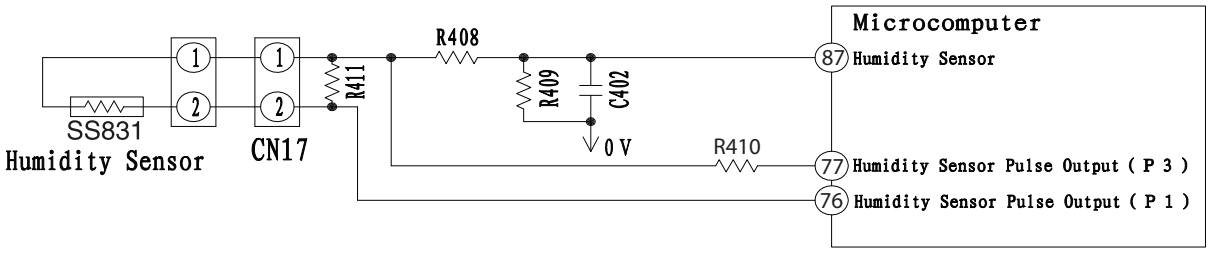


Fig. 9-2

10. Humidity sensor circuit



The resistance value of the humidity sensor is adjusted according to the change of ambient humidity.
With the change of resistance value, the voltage also changes, and the microcomputer will read the voltage signal.

11 . Indoor/outdoor communication circuits

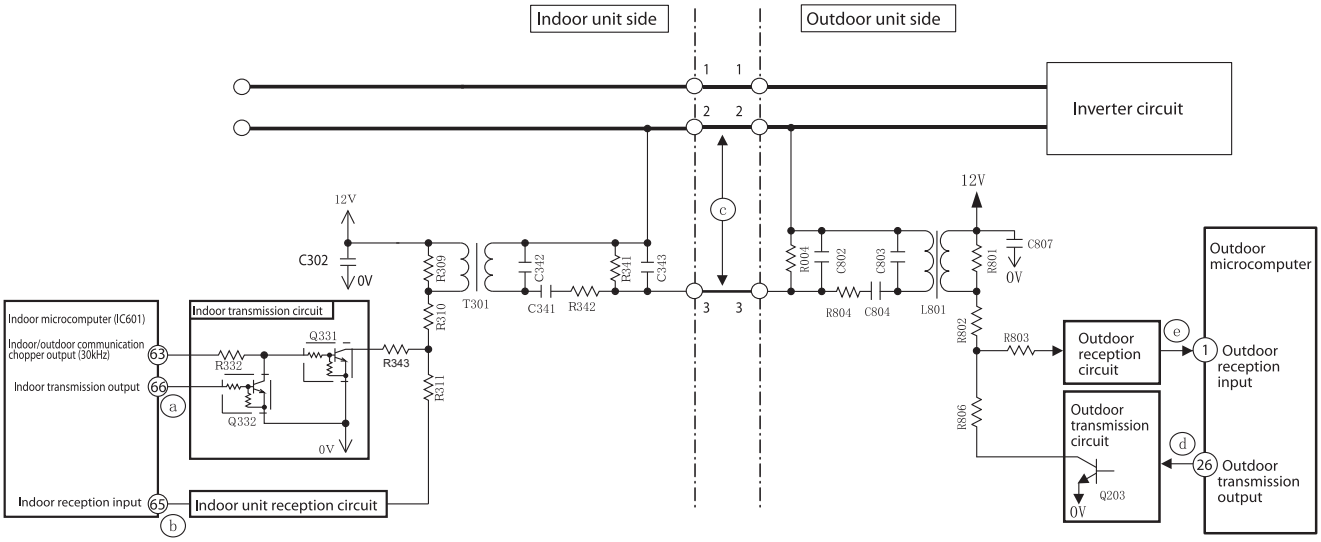
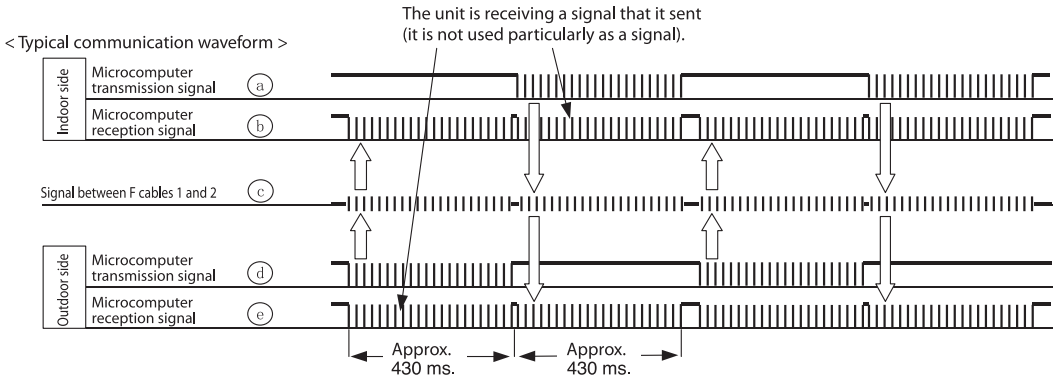


Fig. 11 -1



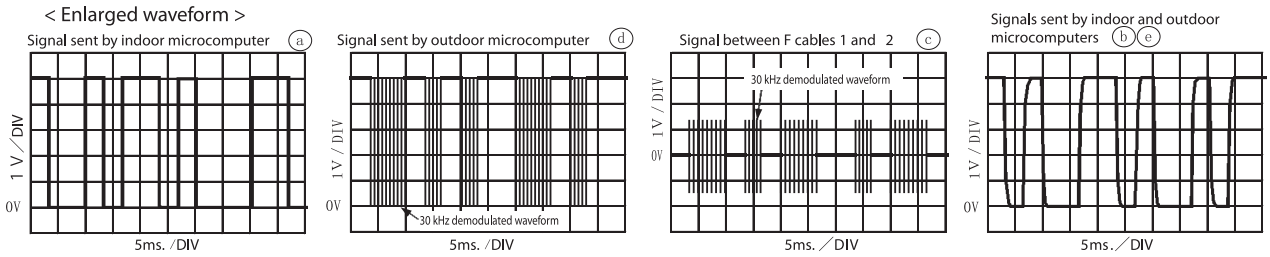


Fig. 11 -2

- Indoor and outdoor communications are conducted by using lines 2 and 3 of F cable. Line 2 of F cable is shared with a transmission channel that powers the outdoor unit.
- Data communicated between the indoor and outdoor units are outputted from the microcomputer as serial signals and are transmitted as demodulated by a 30 kHz carrier wave. (Both the indoor and outdoor microcomputers directly output a signal demodulated at 30 kHz.)

Check

If a cable poorly inserted in the indoor terminal board or some other failure overheats the terminal board and the temperature fuse of the terminal board blows out, the power to the indoor communication circuit will be shut down to stop the communications function.

Check

If communication fails between the indoor and outdoor units for some reason, the product will give a self-diagnosis display either by "the timer lamp blinking 3 times" or "the timer lamp blinking 12 times" depending on the cause.

SERVICE CALL Q & A

MODEL RAK-VJ60PHAE, RAK-VJ70PHAE

Cooling operation

Q1 The compressor sometimes stops during cooling.

A1 Check if the heat exchanger of the indoor unit is covered with frost. Wait for 3 to 4 minutes until the frost disappears.

Cooling when the room temperature is low may cause the heat exchanger of the indoor unit to gather frost.

Dehumidification

Q1 The indoor unit produces a noise that goes "shaaahhh" during dehumidification.

A1 That is a noise produced by refrigerant flowing through the pipe.

Q2 Cold air comes out during a dehumidifying operation.

A2 To improve the dehumidification efficiency performs quiet fan operation. Therefore the air is cold and it is not a malfunction.

Q3 The operation does not stop even by setting the temperature higher than room temperature on the remote controller.

A3 It sets to perform dehumidifying operation by setting the temperature slightly lower than remote controller setting.

Heating operation

Q1 The product sometimes fails to produce a wind during heating.

A1 Defrosting is in progress. Wait 5 to 10 minutes until the frost on the outdoor unit disappears.

Q2 The product begins with a slight fan speed during heating even though set to "Hi fan" or "Med fan" or "Low fan" or "silent fan".

A2 At the first of the heating, the product will run for 30 seconds with a slight fan speed. When set to strong fan speed, the product will begin with a slight fan speed operation, producing a weak fan speed for 30 seconds, and then switch to strong fan speed.

Q3 The product stops during heating even though it is set to "30℃."

A3 When heating is conducted despite the high outdoor temperature, the product may stop to protect its equipment.

Auto-fresh defrost

Q1 During heating, I turned off the product by using the START/STOP button. But the "operation lamp" is blinking and the outdoor unit is running.

A1 The "auto-fresh defrost" should be working. When stopped, the product will check its outdoor unit for frost and, if there is any frost, conduct defrosting and then stop operating.

Automatic operation

Q1 During an automatic run, switching the fan speed selector will not change the fan speed.

A1 The product will switch automatically to automatic fan speed. You cannot select strong or weak fan speed by remote control but you can select fan speed and quiet.

Q2 How is the automatic operation mode determined?

A2 According to the room temperature, heating or cooling operation is automatically selected. Refer to the basic operation section.

Common, etc.

Q1 In "automatic fan speed" mode, the indoor fan changes from strong fan speed to weak fan speed to slight fan speed.

A1 This does not abnormal. It is because the cold fan speed prevention is working.

In fan speed "automatic" mode, the product will sense the heat exchange temperature and, when the temperature goes down, the product will automatically switch to strong wind to weak fan speed to slight fan speed.

Q2 At operation startup, the outdoor unit becomes noisy.

A2 At operation startup, the product will set the rotation speed of the compressor to full power and increase its heating and cooling capacity, resulting in a slightly higher noise level. This is not a sign of a breakdown.

Q3 The outdoor unit sometimes changes in its noise.

A3 The difference between the thermometer temperature setting and room temperature will change the rotation speed of the compressor. This is not a sign of a breakdown.

Q4 There is a difference between the temperature setting and room temperature in room temperature control.

A4 The room structure, air stream, or other factor may cause a gap between the room temperature setting and actual room temperature. If there is any difference between the setting and the room temperature, adjust the temperature setting to match the living space to a comfortable temperature.

Q5 The product will not produce wind right after startup.

A5 After turning ON the power switch or breaker, setting the product to heating or dehumidification will activate a preliminary operation for 1 minute. At that time, heating will cause the operation lamp to blink. This is not a sign of a breakdown.

Q6 I performed internal cleaning, but didn't succeed in controlling the mold in the room.

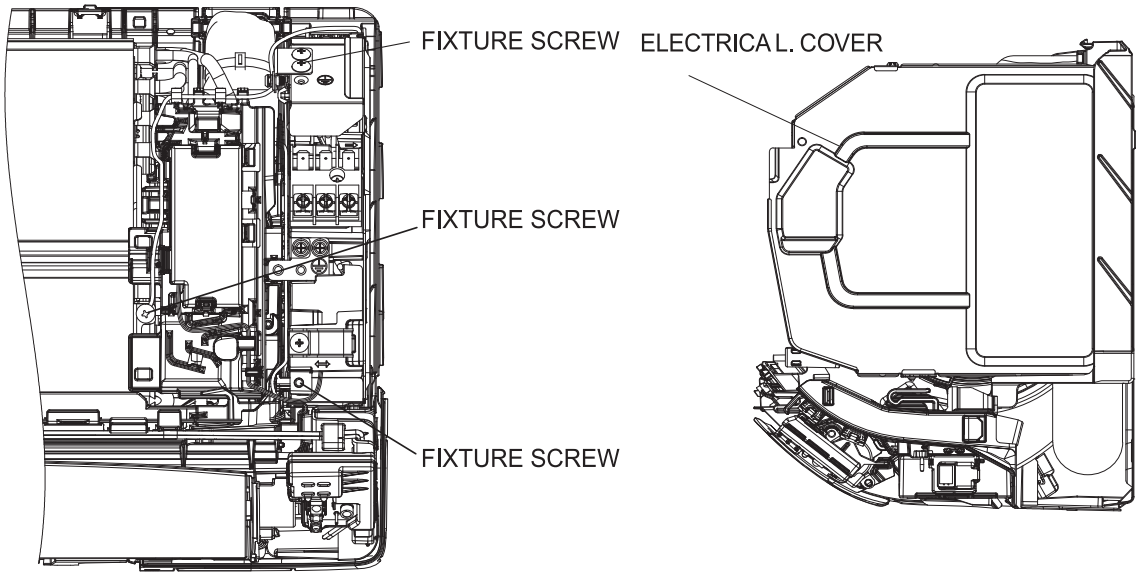
A6 Internal cleaning will clean the inside of the indoor unit of the air-conditioner, thereby controlling mold generation. This will not control the mold in the room.

Wireless remote control

Q1 I tried to change the setting with the "room temperature" button of the remote control unit in vain.

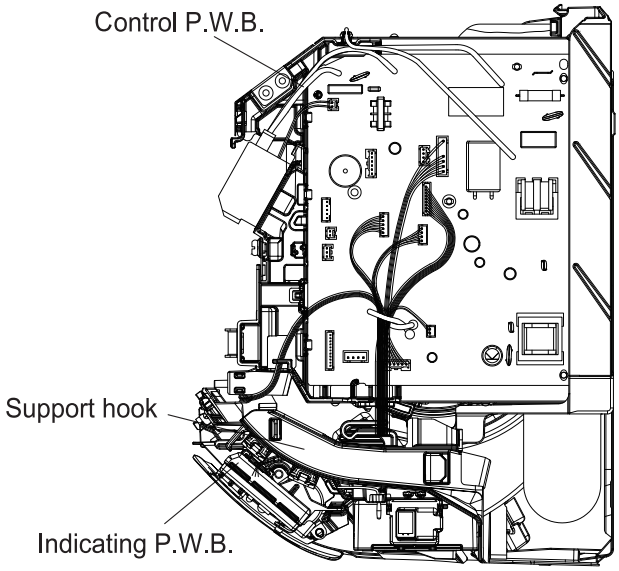
A1 You cannot make this setting when the product is in "air purification" mode. Moreover, you cannot set the product to a desired setting when quick laundry or dew control is being performed with the "auto" or "quick dehumidification" button.

STRUCTURE OF AN INDOOR UNIT ELECTRIC PARTS



Removing electrical parts

1. Remove the electrical parts cover.
2. Remove the connectors from the CN2, CN4, CN7A, CN12, CN16, CN17.



Removing control P.W.B.

1. Remove all the connectors from the control P.W.B.
2. Remove the P.W.B. from the P.W.B. support.

Removing the indicating P.W.B.

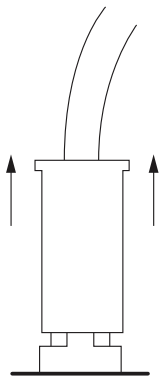
1. Remove the connector from the CN16 on the control P.W.B.
2. Remove the upper hook from the indicating P.W.B. lock resin, pull the P.W.B. forward a little and remove it.

Other instructions

(1) Detaching and reattaching the receptacles for tab terminal

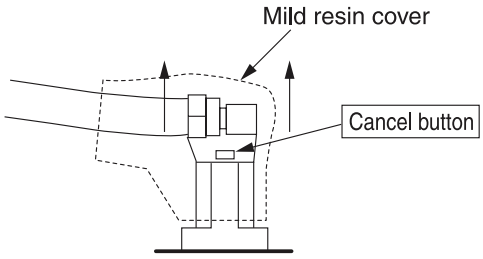
All the receptacles for connecting tab terminals are with a locking mechanism. Forcibly pulling any such receptacle without unlocking it will destroy it. Be on guard.
When reconnecting it, insert it securely all the way home.

· Receptacle types and how to unlock them



Vertical (with a resin case)

Hold the resin case and pull it out.



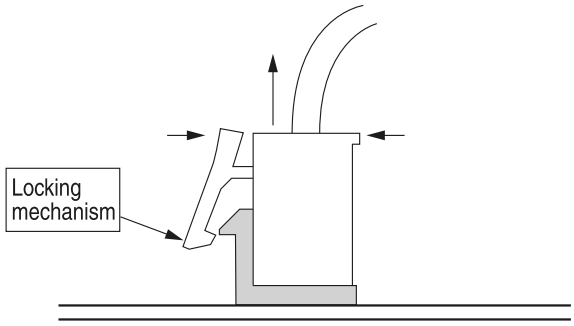
Horizontal (with a mild resin cover)

Hold the cancel button down on the mild resin cover while pulling it out.

(2) Detaching and reattaching the board connector

The product comes equipped with many board connectors provided with lock mechanism. Forcibly pulling any such part without unlocking it will destroy it. Be on guard. When reconnecting it, insert it securely all the way home.

Pinch the locking mechanism with your fingers and pull it out unlocked.



(3) Do not detach or reattach the connectors while energized

Do not under any circumstances detach or reattach the connectors while energized. That would destroy the board components and fan motor. For both the indoor and outdoor boards, ensure that the smoothing capacitor has discharged its electricity fully before you do your work.

Troubleshooting support

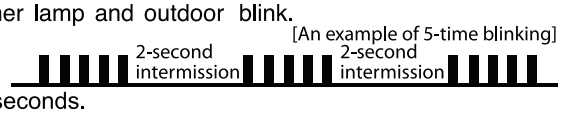
№	Function	Description
1	Self-diagnosis display [Display on the indoor unit side]	· The failure mode detected on the indoor unit side is displayed by blinking the "timer lamp". And a failure detected on the outdoor unit side will be indicated by the "time lamp" blinking 4 times. · If the outdoor unit side detects a failure, the product will first conduct several operation retrials. There are some failure modes with no lamp display while retrials are continued. [Failure mode where retrials are continued and the indoor unit lamp does not end up giving a display] OH thermistor heat-up Overload lower limit cut Low-frequency things
	[Buzzer on the indoor unit side]	· The failure codes both indoor unit and outdoor unit can be alerted by buzzer.
	[Display on the outdoor unit side]	· The failure mode detected on the outdoor unit side is displayed by blinking the "LD301". Detecting a failure will stop the outdoor unit and keep blinking the LD301 until it is restarted. (The communication error will persist until the communication is reestablished.)
2	Self-diagnosis memory	· The failure modes detected on the indoor and outdoor unit sides are stored in the nonvolatile memory of the indoor unit and can be read later on. (The memory will remain even after power-off.) · The failure modes detected on the outdoor unit side are written in memory every time any such mode occurs. The failure mode can therefore be detected on the indoor unit side without waiting for the retry frequency to reach the display of the indoor unit lamp. Moreover, the normal self-diagnosis display function which rarely occurs will store and display failure modes that do not end up displaying the indoor unit lamp. (Any such mode may be unable to be stored if indoor or outdoor communications is in a failure.) · The product stores 5 last-stored failure modes. · There is a function for deleting memory. Once you clear the memory and run the product for several days, you can read the failure modes and check them, thereby detecting the less frequent failure phenomena. · Failure modes can be checked by both the blinking of the lamp of the indoor unit and the sound of the buzzer

※The "self-diagnosis function of the communication circuit" available in our conventional models is now incorporated as part of the normal self-diagnosis function. In the case of a failure in the communication circuit, you do not have to conduct a special operation and the operations can be automatically divided into 3 blinking operations and 12 blinking operations of the timer lamp. However, a strong external noise may have resulted in 12 times of blinking.

TROUBLESHOOTING WHEN TIMER LAMP BLINKS.

Perform troubleshooting according to the number of times the indoor timer lamp and outdoor blink.

1. How to count the lamp blinking frequency
   - The product will repeat blinking with 2-second intermissions.
   - The blinking speed is as follows: on for 0.35 seconds and off for 0.35 seconds.



2. If you wish to try another operation while the lamp is blinking, operate the OFF/ON button on the remote control unit .The first push will reset the indoor microcomputer, while the second will activate the product (except for the mode in ※1).

SELF-DIAGNOSIS LIGHTING MODE

Refer to the table below if the timer indicator (orange) is blinking.

No.	Blinking of Timer lamp	Reason for indication	Possible cause
1	▮ 2sec. ▮ – – – – – – – once	Refrigerant cycle defective	Refrigerant cycle defective
2	▮▮ 2sec. ▮ – – – – – – – 2 times	Outdoor unit forced operation When the outdoor unit is in forced operation or balancing operation after forced operation	Electrical parts in the outdoor unit
3	▮▮▮ 2sec. ▮ – – – – – – 3 times	Indoor interface defective	Indoor interface circuit
4	▮▮ ≈ ▮▮ 2sec. ▮ – – – 4 times	Outdoor electrical assembly defective.	Please check at the outdoor electrical led lamp blinking (LD301) and refer to self diagnosis lighting mode for outdoor unit.
5	▮▮ ≈ ▮▮ 2sec. ▮ – – – 9 times	Room thermistor or heat exchanger thermistor or humidity sensor is faulty. When room thermistor or heat exchanger thermistor or humidity sensor is opened circuit or short circuit.	(1) Room thermistor (2) Heat exchanger thermistor (3) Humidity sensor
6	▮▮ ≈ ▮▮ 2sec. ▮ – – – 10 times	Over-current detection at the DC fan motor when over-current is detected at the DC fan motor of the indoor unit.	(1) Indoor fan locked (2) Indoor fan motor (3) Indoor control P.W.B.
7	▮▮ ≈ ▮▮ 2sec. ▮ – – – 12 times	Outdoor interface defective When the interface signal from the outdoor unit is interrupted.	Outdoor interface circuit
※1 8	▮▮ ≈ ▮▮ 2sec. ▮ – – – 13 times	IC531 data reading error When data read from IC531 is incorrect.	IC531 abnormal
9	▮▮ ≈ ▮▮ 2sec. ▮ – – – 21 times	Outdoor communication error Communication failure due to other home appliances	(1) Connecting cable check (2) Removal of noise cause (3) Connection cable is reverse
※2 10	▮▮ ≈ ▮▮ 2sec. ▮ – – – 25 times	CN7A & CN7B connected with both RAC, wifi or H-link	Please don't connect same external device CN7A & CN7B

(▮ – – Lights for 0.35 sec. at interval of 0.35 sec..)

※2 THE LAMP WILL BLINK ONLY WHEN 25 TIMES FAILURE IS CALLED OUT BY HHRC.

All indicator lights are blinking.
※ Buzzer will be sounded at the same time as the installation first blinks.

Flashing lamp	Blinking times	Checkpoint	Treatment and replacement parts
All lamps	1	Abnormal power supply	If 100V is applied to the 200V model, it is not a failure. Please repair the power supply.
	2	Connecting cable connection failure	Insufficient insertion of terminal block inside and outside. Confirmation of reverse connection.
	3	Forget to open the service valve	Check if the service valve is open.

REFER TO THE BELOW TABLE IF THE INDOOR UNIT DOSE NOT WORK AT ALL.

Fix CN2 connector	Action/replacement parts,etc.
FU1 (3.15A) fuse blown	Replace the part which caused blowing/disconnection of FU1 fuse.
Come off or disconnection of the connector for indicating P.W.B	Fix CN16 connector
Failure of control P.W.B	Refer to the service guide for how to determine the failed part

<Cautions>

(1) If the interface circuit is faulty when power is supplied, the self-diagnosis display will not be displayed.

(2) If the indoor unit does not operate at all, check to see if the connecting cable is connected or disconnected.

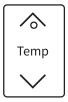
SELF-DIAGNOSIS MEMORY FUNCTION

Failure modes are stored in the nonvolatile memory of indoor unit and shall be redisplayed by remote controller.
This function is useful in checking the failure modes either during switching OFF the power or restarting the device without checking the number of indication lamp blinking . Remote controller can redisplay up to last 5 failure modes from the memory. However, failure modes which are rarely to occur are also stored in the memory which caused the numbers of failure more than 5. Thus, for some failure modes which are unable to retrive because of remote controller limit to redisplay only 5 failure modes, it can be found by clearing up the memory first then recheck the memory content again during the visit at the customer place.

ERROR CODE INFORMATION

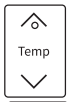
<HOW TO DISPLAY ERROR CODE>

1.Press three key ([On Timer] + [Fan Speed] + [Reset]) button on the remote control for 5 seconds to avoid access by User.

2. Press " 

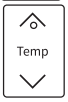
" (Temperature) button of the remote control and select the "7J" option.

3. Press " 

" (Fan Speed) button of the remote control, then Press " 

" (Temperature) button select the "t0" option.

4. Press " 

" (Fan Speed) button of the remote control, then Press " 

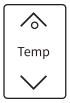
" (Temperature) button select the "01" option.

5. Press " 
" (On/Off) button of the remote control, the fault information will be seen.

Function Name	Value	Layer1	Layer2	Layer3
		Category	Function	Value
Display self-diagnosis memory(※)	Display History 1 (Latest(newest) of last Five)	7J	t0	01
	Display History 2			02
	Display History 3			03
	Display History 4			04
	Display History 5			05

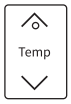
<HOW TO REMOVE ERROR CODE>

1. Press three key ([On Timer] + [Fan Speed] + [Reset]) button on the remote control for 5 seconds to avoid access by User.

2. Press " 

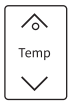
" (Temperature) button of the remote control and select the "7J" option.

3. Press " 

" (Fan Speed) button of the remote control, then Press " 

" (Temperature) button select the "t2" option.

4. Press " 

" (Fan Speed) button of the remote control, then Press " 

" (Temperature) button select the "01" option.

5. Press " 
" (On/Off) button of the remote control, and the error code will be removed.

	TIMER LAMP BLINKING	LD301 BLINKING	CODE	MEANING
INDOOR	-	-	000 00	Normal
	1 time		001 00	Refrigerant cycle fault
	2 times	-	-	Outdoor unit is under forced operation
	3 times	9 times	003 00	Communication error (indoor)
	9 times	-	009 00	Indoor thermistor defective
	10 times	-	010 00	Abnormal rotating numbers of DC fan motor
	12 times	9 times	012 00	Communication error (outdoor)
	13 times	-	013 00	EEPROM data reading error
	21 times	-	021 00	Interface defective (other machine cause)

< Cautions >

This function is effective only once immediately after the power is turned on. It will not work if you have performed another remote control operation beforehand. Note also that it may not function in response to a procedure other than the above. (If it does not work, turn off the power, turn it back on and repeat the procedure.)

If the memory stores nothing, performing a redisplay operation will not blink the lamp.

For a normal operation, turn off the power and turn it back on. After the above operation, the product will not receive a remote control signal normally.

After clearing the troubleshooting data, turn off the power. (If you do not turn off the power, the product will become unresponsive to remote control signals.)

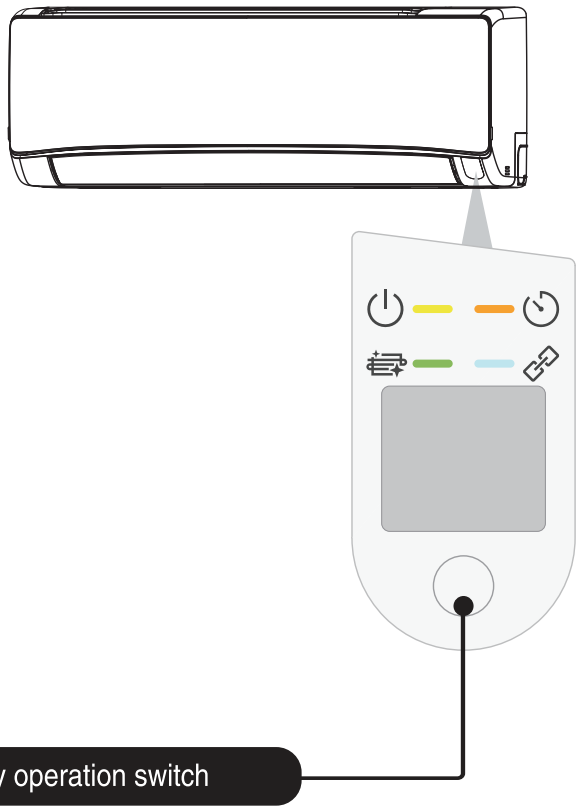
Forced cooling operation (Only single connection)

The cooling operation can be forcibly performed for collecting refrigerant and inspecting failures.
Do not perform the forced cooling operation continuously for long hours,
because the compressor continues to be in operational status, regardless of room temperature.

＜How to start the operation＞
・The operation of the unit should be stopped.
・Press and hold the "Temporary operation SW"
shown in the right figure for 5 sec.

＜How to stop the operation＞
・Press and hold the "Temporary operation SW" again.
Or stop the operation using the remote controller.

※During the forced cooling operation,
the "Timer indicator" blinks twice.



Temporary operation switch

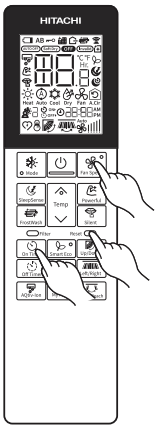
When performing the forced cooling operation, turn the power off once. If you press and hold the switch for 5 sec or longer, the forced cooling operation starts. To stop the forced cooling operation, press the switch once again or stop the operation using the remote controller.

How to set up from Service setting mode

The Service function, which was set by DIP-SW setting or double pressing of the HHRC in the current model. it will be done by HHRC in GRAC as shown as below.

「On timer」+「Fan speed」+「Reset」

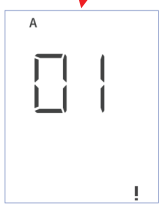
(Press three Key for 5 seconds to avoid access by User)



Standard

All icon ON for 2 Seconds

Layer1
(category selection):
Installation



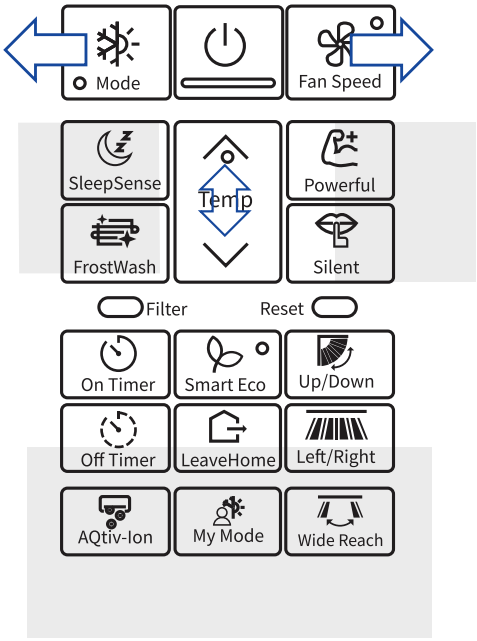
Layer2
(function selection):
Card key

Layer3
(setting select):
Disable

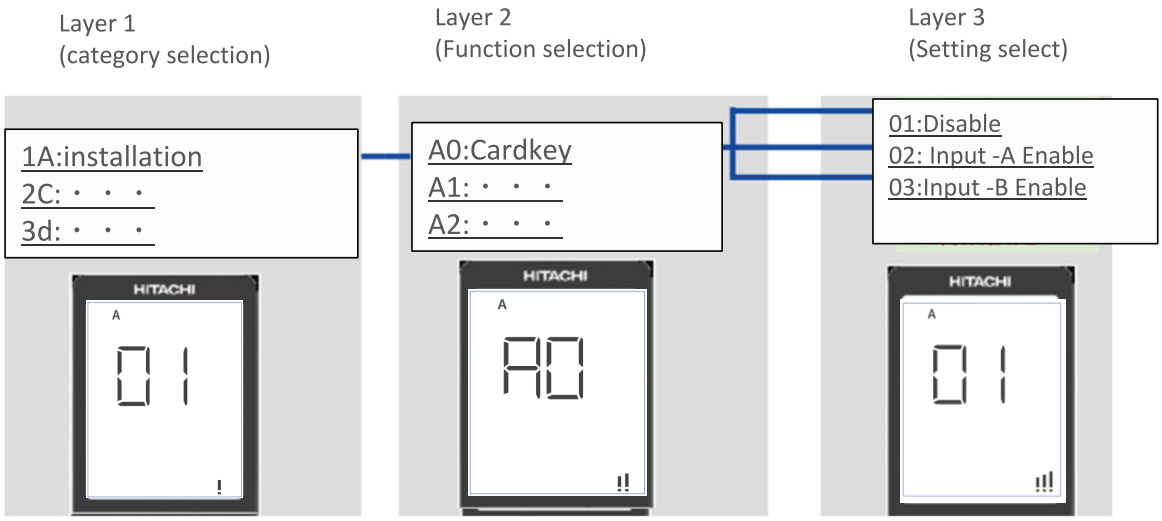
Fan speed： Current Layer

※ If you don't do anything for 30 seconds, you will be out of the service setting mode.

How to operate the HHRC method



Temp△▽ : Selection (in the same layer)
Mode : move to previous layer
Fan Speed : Move to next layer
ON/OFF : Decision/Send (at layer 3)
: Current setting check(at layer 2)
Filter: category initialization(at layer 1)
Filter + ON/OFF: all category initialization(at layer 1)
※ To exit from this setting mode, you need to either not operate the HHRC panel for 30 seconds or press and hold the UP/Down key for 5 seconds.



Service setting item used for GRAC Entry

Category	Function Name	Value	HHRC LCD display Layer1 Category	Layer2 Function	Layer3 Value	L1 (Category)
Installation	Card Key	Disable	1A	A0	01	1A Installation
		Card Key Input -A Enable			02	2C Clean
		Card Key Input -B Enable			03	3d cycle operation adjustment
		reserve			04-99	4E Fan control
	Mode Lock	Normal Mode	1A	A1	01	5F supporting service
		Cooling Lock (Cool, Dry, Fan mode available)			02	6H HHRC
		Heating Lock (Heat and Fan mode available)			03	7J Diagnosis
		reserve			04-99	8L Future
	Auto restart	auto restart changeover disable	1A	A2	01	
		auto restart by previous mode			02	
		reserve			03-99	
Cycle operation	Defrost selection Function	average area setting	3d	E0	01	L1 (Category)
		cold area setting			02	1A Installation
		reserve			03-99	2C Clean
	Shift value adjustment of setting temperature (Cool Mode, Heat Mode)	(-5° C/-10° F)	3d	E1(Cool)/E2(Heat)	01	3d cycle operation adjustment
		(-4°C/-8°F)			02	4E Fan control
		(-3°C/-6°F)			03	5F supporting service
		(-2° C/-4° F)			04	6H HHRC
		(-1° C/-2° F)			05	7J Diagnosis
		(±0° C/±0° F)			06	8L Future
		(+1° C/2° F)			07	
		(+2° C/4° F)			08	
		(+3° C/6° F)			09	
		(+4° C/8° F)			10	
		(+5° C/10° F)			11	
		reserve			12-99	
Cycle operation	IDU fan control at cooling thermo-off	ultra low	3d	E3	01	L1 (Category)
		set fan speed			02	1A Installation
		reserve			03-99	2C Clean
HHRC	Temperature Resolution change - 0.5 --> 1	0.5 ° C	6H	P0	01	3d cycle operation adjustment
		1° C			02	4E Fan control
	Fan Speed key sequence	Auto-Silent - Low-Med-Hi-Super Hi		P1	01	5F supporting service
		Super Hi-Hi-Med-Lo-Silent -Auto			02	6H HHRC
	Operation Mode : Auto	Disable Selection on HHRC		P2	01	7J Diagnosis
		Enable Selection on HHRC			02	8L Future
	Operation Mode : Cool	Disable Selection on HHRC		P3	01	
		Enable Selection on HHRC			02	
	Operation Mode : Dry	Disable Selection on HHRC		P4	01	
		Enable Selection on HHRC			02	
	Operation Mode : Fan	Disable Selection on HHRC		P5	01	
		Enable Selection on HHRC			02	

Service setting item used for GRAC Entry

Category	Function Name	Value	HHRC LCD display			L1 (Category)
			Layer1	Layer2	Layer3	1A Installation
			Category	Function	Value	2C Clean
HHRC	Operation Mode : Heat	Disable Selection on HHRC	6H	P6	01	3d cycle operation adjustment
		Enable Selection on HHRC			02	4E Fan control
	Auto Fan speed : Enable / Disable	Disable Selection on HHRC		P8	01	5F supporting service
		Enable Selection on HHRC			02	6H HHRC
	Super hi Fan speed : Enable / Disable	Enable Selection on HHRC		P9	01	7J Diagnosis
		Disable Selection on HHRC			02	8L Future
HHRC	Cooling Lower limit setting	16 ° C	6H	PC	01	L1 (Category)
		17 ° C			02	1A Installation
		18 ° C			03	2C Clean
		19 ° C			04	3d cycle operation adjustment
		20 ° C			05	4E Fan control
		21 ° C			06	5F supporting service
		22 ° C			07	6H HHRC
		23 ° C			08	7J Diagnosis
		24 ° C			09	8L Future
		25 ° C			10	
		26 ° C			11	
		27 ° C			12	
		28 ° C			13	
		29 ° C			14	
		30 ° C			15	
		31 ° C			16	
		32 ° C			17	
HHRC	Heating Upper limit setting	32 ° C	6H	Pd	01	L1 (Category)
		31 ° C			02	1A Installation
		30 ° C			03	2C Clean
		29 ° C			04	3d cycle operation adjustment
		28 ° C			05	4E Fan control
		27 ° C			06	5F supporting service
		26 ° C			07	6H HHRC
		25 ° C			08	7J Diagnosis
		24 ° C			09	8L Future
		23 ° C			10	
		22 ° C			11	
		21 ° C			12	
		20 ° C			13	
		19 ° C			14	
		18 ° C			15	
		17 ° C			16	
		16 ° C			17	
Diagnosis	Display self-diagnosis memory(※)	Display History 1 (Latest(newest) of last Five)	7J	t0	01	L1 (Category)
		Display History 2			02	1A Installation
		Display History 3			03	2C Clean
		Display History 4			04	3d cycle operation adjustment
		Display History 5			05	4E Fan control
		reserve			06-99	5F supporting service
	Display ODU self-check result	request		t1	01	6H HHRC
		reserve			02-99	7J Diagnosis
	Erase self-diagnosis memory(※)	request		t2	01	8L Future
		reserve			02-99	
	Humidity sensor failure diagnosis	request		t3	01	
		reserve			02-99	

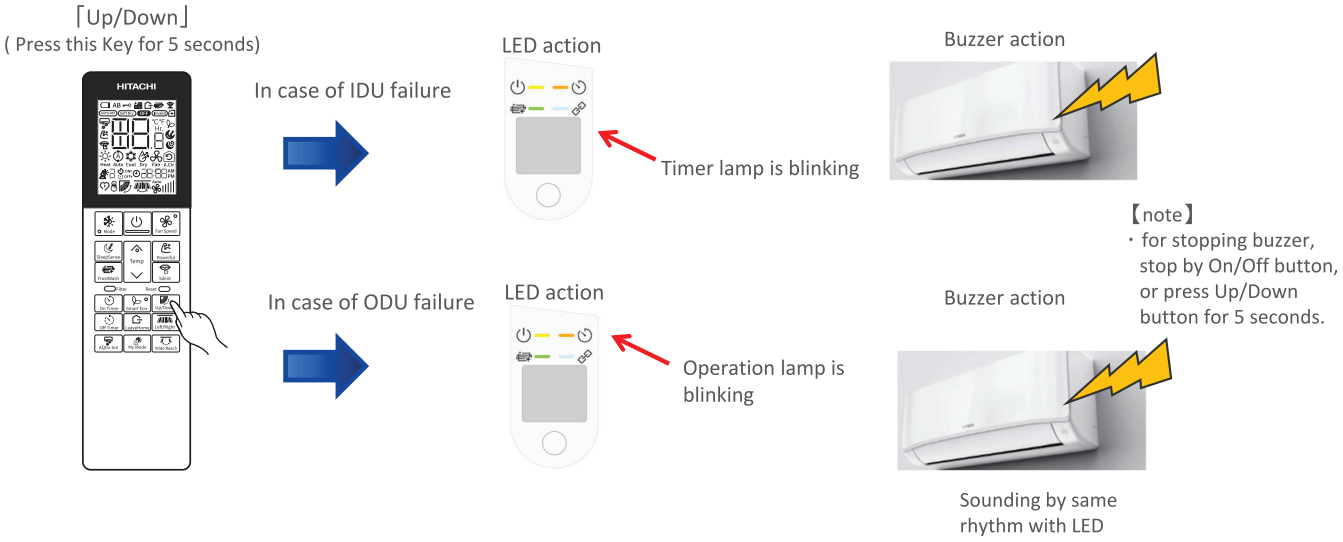
Buzzer sounding for showing error contents

【Purpose】

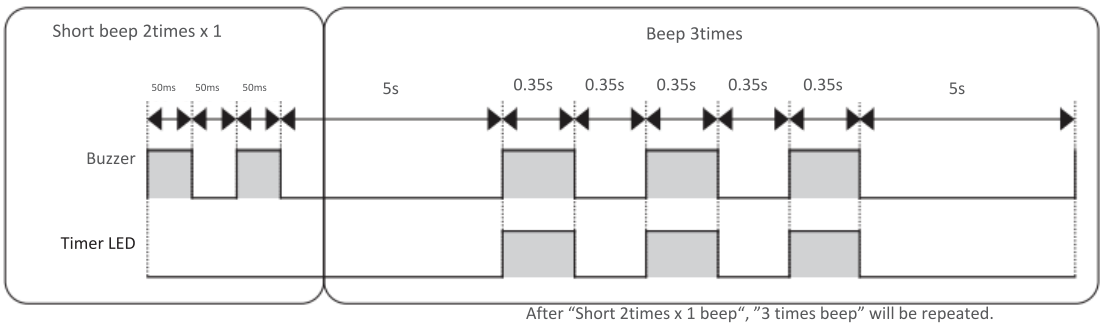
Reduction of “mis-communication about error contents" at contacting the service call center.【Function】

Add buzzer sounding for showing error contents during error, in addition to IDU LED action .【How to use】

When IDU or ODU has failed, and the Timer lamp is blinking. Service engineer can know error contents from the buzzer through phone.

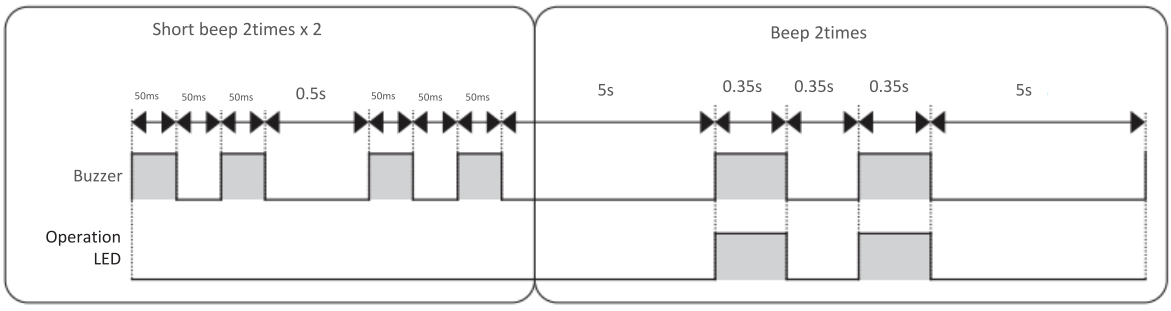


<IDU error example: timer LED will blink 3 times(interface defective(IDU) >



After “Short 2times x 1 beep“, ”3 times beep” will be repeated.

<ODU error example: operation LED will blink 2 times(peak current cut) >



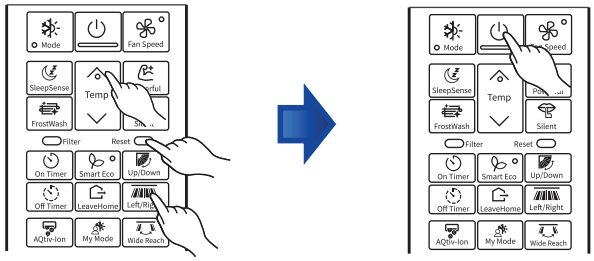
After “Short 2times x 2 beep“, ”2 times beep” will be repeated.

OTHER SETTING

▪ ID SELECTION

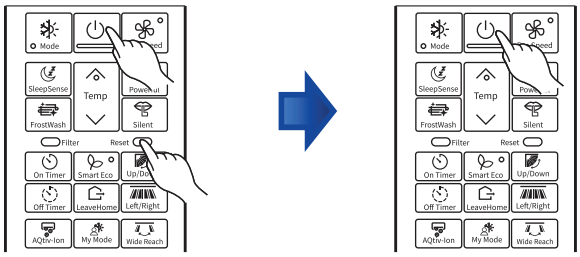
1. Press “Up/Down swing button” and “set. Temp. up button” and “reset button”, and release “reset button”.
2. Select from A or B by pressing “set.temp. button”.
3. Press “On/Off button” toward IDU.

(EEPROM in HHRC will keep the A or B information.)

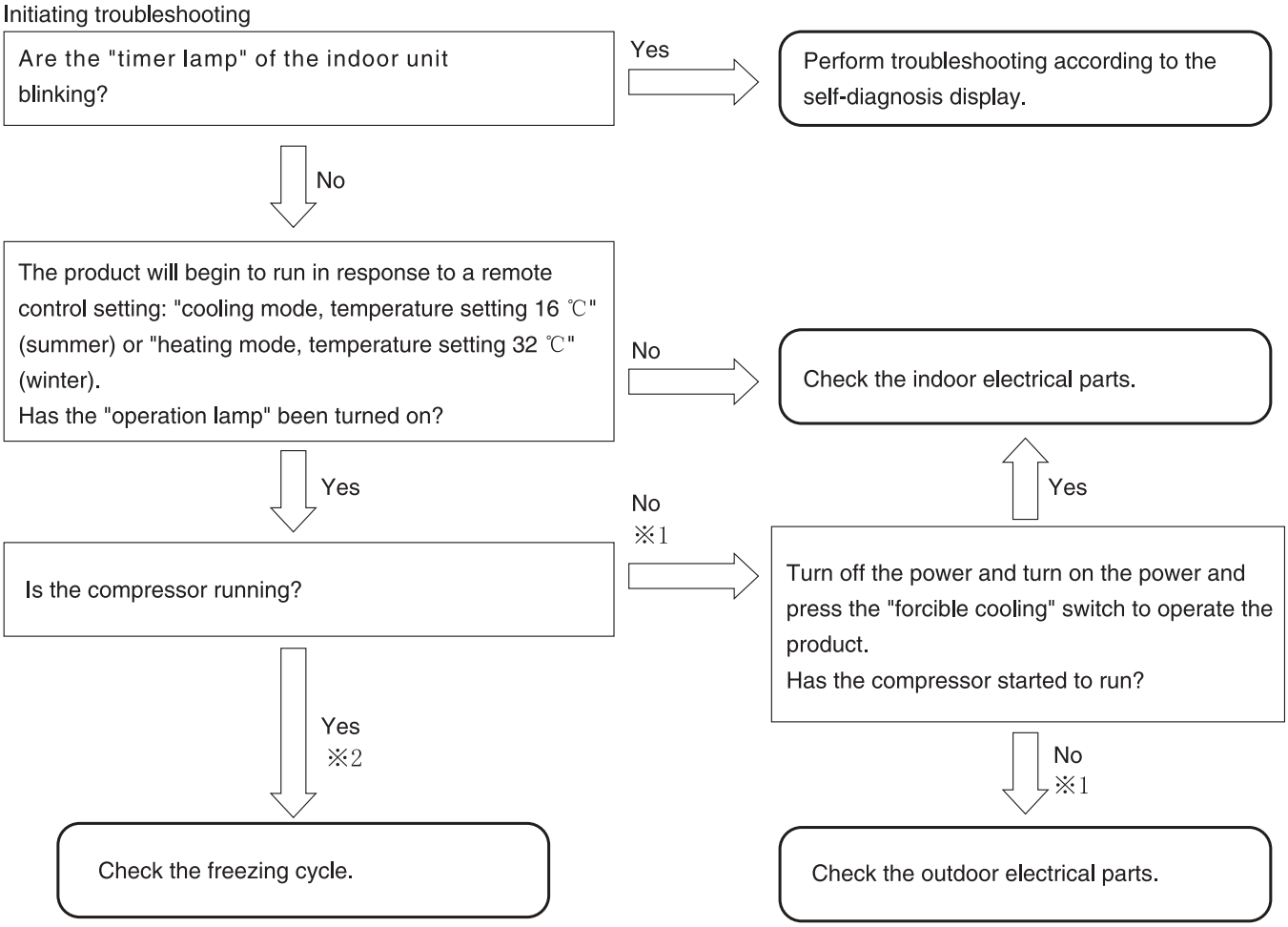


▪ DISPLAY MODE

1. Press “On Timer button” and “On/Off button” and “reset button”, and release “reset button”.
2. Fan speed icon( ) on LCD will blink.
3. Press “On/Off button” toward IDU.



Diagnosis and troubleshooting of indoor electric parts



< Troubleshooting by using the self-diagnosis memory function>

· By using the self-diagnosis memory function, you can check the failure mode (※1) occurring in the outdoor electrical parts on the indoor unit side.

Steps
1. Clear the troubleshooting data.
2. Run the product for several minutes under the conditions where the compressor runs.
3. Redisplay and check the data written in the self-diagnosis memory.

· The self-diagnosis memory function can also be used to catch sporadic failure phenomena.

Steps
1. Clear the troubleshooting data.
2. Have the user use the product as usual until a failure phenomenon occurs.
   (The period depends on the incidence of the phenomenon.)
3. At a later date, redisplay and check the data written in the self-diagnosis memory.

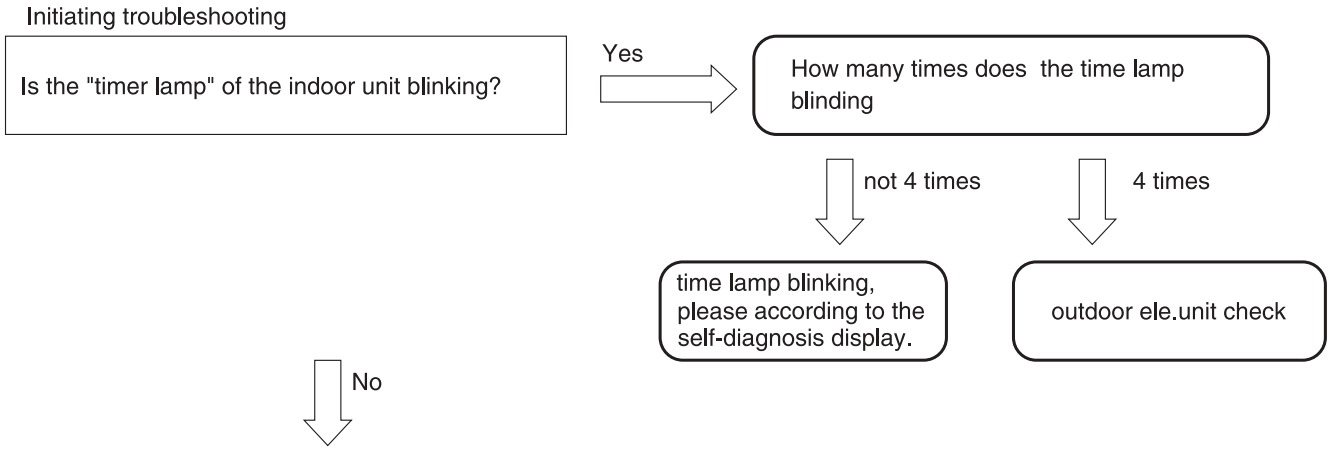
· For the outdoor self-diagnosis display (OH thermistor heat-up, overload lower limit cut) stemming from the freezing cycle or operating condition, the time lag is long from operation startup to the emergence of the phenomenon. Moreover, it is affected by the temperature, sunshine, operating hours, and other factors of the day, so that the phenomenon may not be able to be identified at the time of a repair service visit. In that case too, use the self-diagnosis memory function (※2).

· The outdoor self-diagnosis display "overload lower limit cut" and "OH thermistor heat-up" can be identified only when you are using the self-diagnosis lamp of the outdoor unit and the self-diagnosis memory function of the indoor unit. Note that this will not be automatically displayed on the indoor unit side.

Checking the indoor unit electrical parts

Introduction

First check the failure phenomenon and status, and then move on to elaborate diagnosis.



Turn off the power, wait at least 5 seconds, turn it back on, and observe the way the horizontal vanes move for about 30 seconds.

Check 1: Have the horizontal vanes moved? (Yes/No)

Set the remote control unit to cooling mode, temperature setting 16℃ (summer), heating mode, temperature setting 32℃ (winter) and operate the product.

Check 2: Has the product received the remote control signal and has the "operation lamp" gone on? (Yes/No)

If you responded "Yes" to Check 2:

Check 3: Is the compressor of the outdoor unit running? (Yes/No)

If you responded "No" to Check 2:

Check 4: Does the "emergency operation switch" work? (Yes/No)

Check results and next check items

Check 1	Check 2	Check 3	Check 4	Next check item
No	No	—	No	Go on to "The power will not become turned on".
Yes	No	—	Yes	Go on to "The product will not receive the remote control signal".
Yes	Yes	No	—	Go on to "The compressor will not run".

1. Failure phenomenon: The power will not become turned on.

［Situation ］ Neither initialization, remote control, nor any other step works on the vane position at power-on.

[Estimated failure locations]

- 3.15 A fuse blown out
- Control power circuit
- Connector loose, wire break

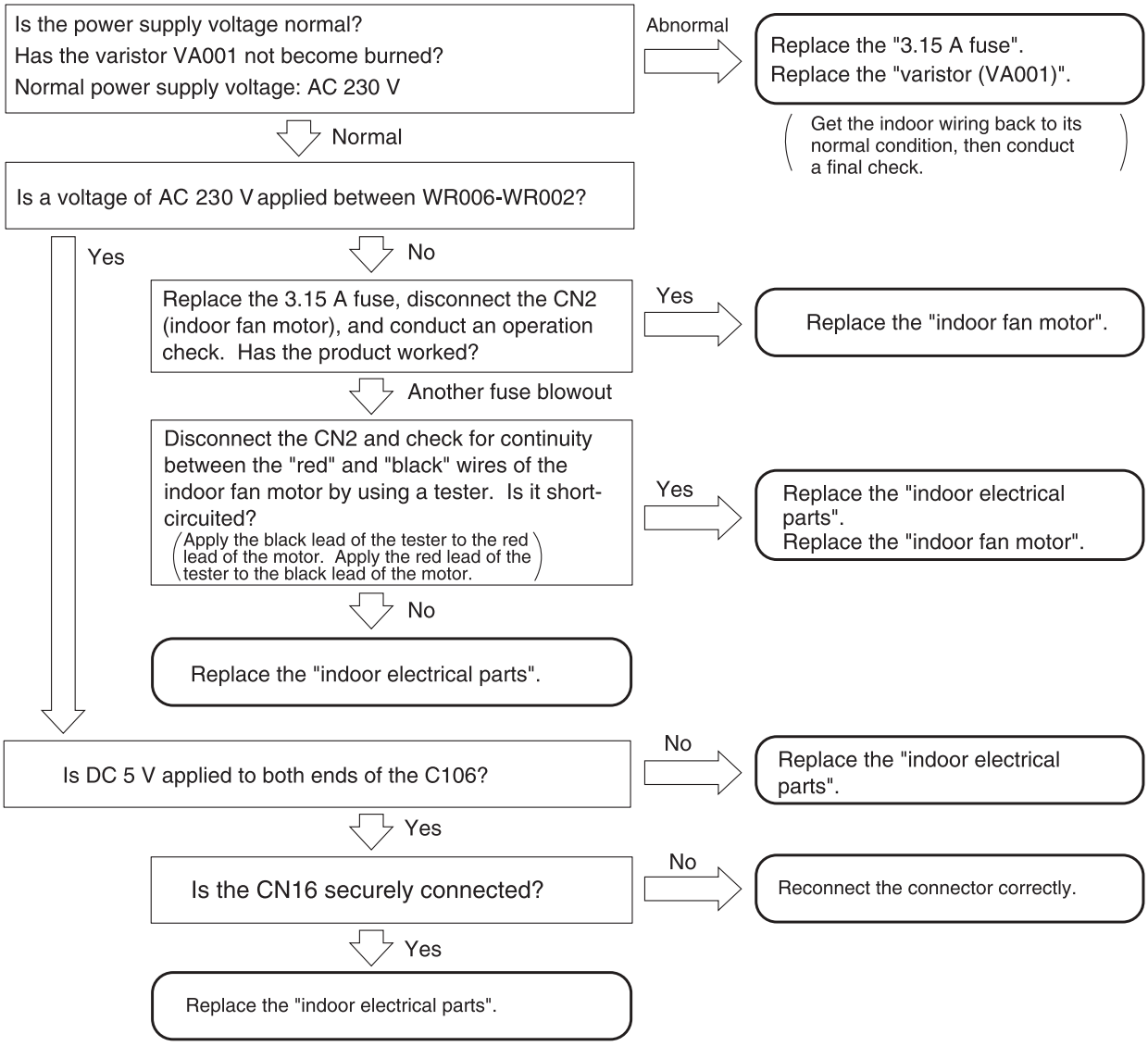
Estimated cause of fuse blowout
- Abnormally high voltage applied to the power supply
- Indoor fan motor out of order
- Power circuit out of order

［Cautions ］

- Before work, check the power supply voltage. An abnormal voltage may be being supplied in some rare occasions due to a defect in the indoor wiring (a wire break in the neutral wire of the single-phase 3-wire power supply).
- If the 3.15 A fuse has blown out, eliminate the cause of the fuse blowout. Otherwise, there will occur another fuse blowout.
- If the 3.15 A fuse has blown out due to an abnormally high voltage to the power supply, the varistor (VA001) will deteriorate and become destroyed as well.
- On a repair service visit due to the failure phenomenon of "The power will not become turned on", take a "3.15 A fuse" and a "varistor" with you.

［Diagnosis flow ］

Initiating troubleshooting



2.Failure phenomenon: The product will not receive a remote control signal.

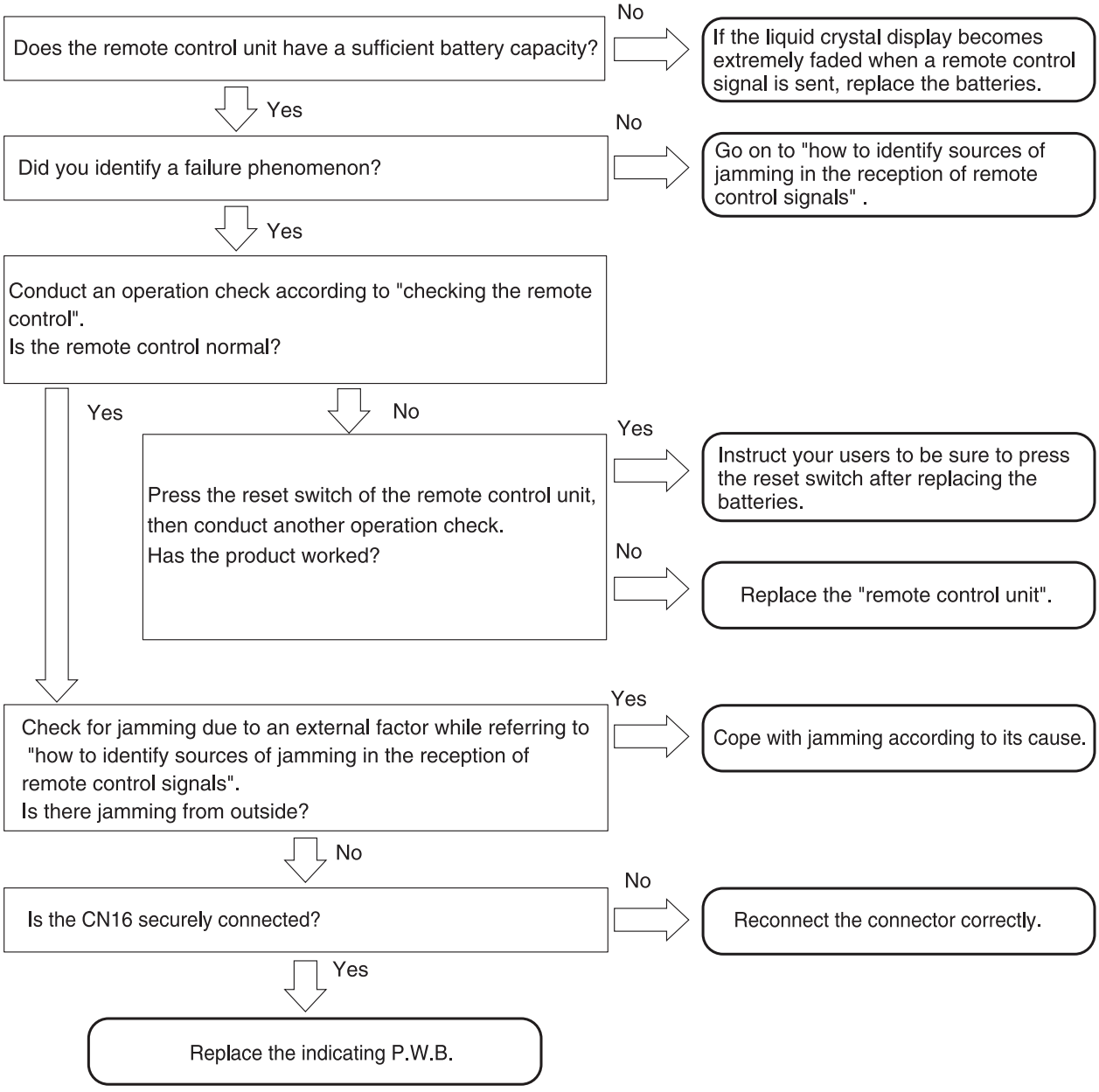
［Situation ］ The product does not receive a remote control signal. It is not very responsive.
(The product does run normally in response to the emergency operation switch.)

［Estimated failure locations ］
- Remote control failure, remote control low battery level, remote control poorly set
- Remote control light-receiving unit
- Connector loose, wire break
- Normal product (external factors: the remote control units for lighting equipment and other equipment, electrical noise, etc.)

［Cautions ］
- Even if the product is trouble-free, a factor coming from outside the product may hamper the reception of signals from the remote control unit.
- Batteries may decline in capacity at low temperatures. Old batteries decline particularly much in voltage in the morning and evening of winter, resulting in the poor arrival of remote control signals. Instruct your users to use new alkaline batteries.

［Diagnosis flow ］

Initiating troubleshooting



［Cautions in replacing the indicating P.W.B］ Be sure to replace the indicating P.W.B. components.

How to identify sources of jamming in the reception of remote control signals

[Situation] The product may become poorly responsive to remote control signals due to external factors even though the product itself is trouble-free.

[Estimating sources of jamming] Identify the installation status of the air-conditioner and the indoor and outdoor environments to identify possible causes of the jamming.

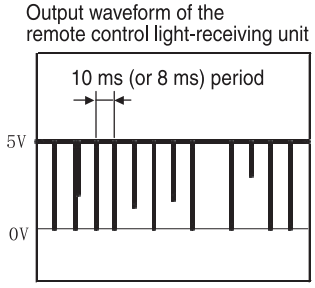
- Indoor lighting equipment (quantity, type, location)
- Remote control units of other electrical products and equipment
- Is the grounding for the air-conditioner shared with other equipment?
- Are the surroundings of the air-conditioner clear of wireless antenna?
- Is the remote control light-receiving unit protected from direct sunlight?

[Checking and actions]

Effects of lighting equipment (fluorescent lamps)

Checking points

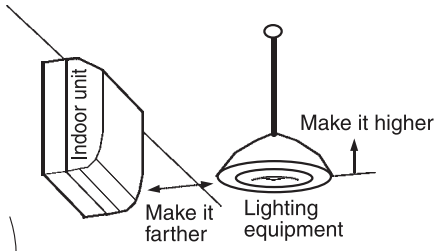
- Turn on and off the lighting equipment and check for its effects on the reception of remote control signals.
- When cold, the fluorescent lamp tends to emit infrared rays with wavelengths close to those used in remote control.
  If you cannot detect the phenomenon about which your user is complaining at the time of your visit, such as "the product sometimes fails to receive remote control signals" and "the product fails to receive remote control signals in the morning alone", then turn off the lighting for about 20-30 minutes and wait for the fluorescent lamps to cool down before conducting another check.
  There are even cases where the product fails to receive remote control signals for 1 to 2 minutes only after the lighting equipment is turned on.
- The noise status may vary with the dimming of the lighting equipment. In the case of lighting equipment with a dimmer, therefore, conduct a check with all the light intensities.
- If the lighting equipment is the source of the jamming, the remote control light-receiving unit output usually shows a noise waveform as shown in the right-hand figure. In the case of slight jamming, this kind of waveform will not cause practical problems. However, intense degrees of jamming will disable the reception of remote control signals.
- When the fluorescent lamp is old and is flickering, it may cause disorders in the reception of remote control signals.



Actions proposed

1. Make it hard for light of the lighting equipment to enter the remote control light-receiving unit.
   - Separate the lighting equipment from the indoor unit.
   - Raise the lighting equipment.
   - Cover the upper half of the light-receiving panel from its rear side with aluminum tape or black vinyl tape.

   (This will also affect the reception of remote control signals. Therefore, set the range to be covered with tape to a range that is problem-free in practice, while checking the reception status.)



2. Add an interference filter to the front panel of the remote control light-receiving unit.
   ※ Lighting equipment that produces strong jamming exists although rarely. Some problems may therefore be unsolvable by managing the air-conditioner side alone.

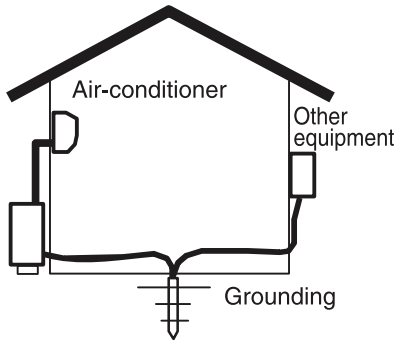
Effects of the remote control units of other equipment

Checking points

- If, on the remote control unit of a TV or audio equipment, its sound volume key or something similar is left pressed, infrared signals become continuously sent, thereby jamming the reception of remote control signals.
- Check how the remote control unit and related components are stored, thereby checking if there is any possibility that a button may be inadvertently left pressed on the remote control unit of other equipment.

Actions proposed

If there is any such possibility, give explanations to your users to that effect and instruct them to exercise caution.

Effects of other electrical products	Checking points · Check the effects of light and power noises coming from other electrical products. · Turn on and off the electrical products, turn off the power and turn on the power, and check their effects on the reception of remote control signals. · For products whose operating states change, check the effects of each state. Actions proposed · Change the location relationship between the air-conditioner and the target products. · Use a different wall outlet for the target products.
Sharing a grounding	Checking points · Check for effects of electrical noises coming into the air-conditioner through grounding wires. · Check if the grounding works is for the air-conditioner alone or shared with other equipment. If there is any equipment that shares it, turn on and off that equipment and detach and reattach the power plugs and examine their effects on the reception of remote control signals. Actions proposed · Establish an independent grounding for the air-conditioner. 
Effects of radio waves	Checking points · Using a wireless transmitter near the air-conditioner may affect the reception of remote control signals. · Have your users try sending signals with a wireless transmitter and examine their effects on the reception of remote control signals. Actions proposed · Add a ferrite core to the power cord and F cable. · Add a ferrite core to the internal wiring of the indoor unit. · Move the wireless antenna.
Effects of direct sunlight	Checking points · Direct sunlight and other intense light make the remote control light-receiving unit less sensitive. · Check for any time zone where the remote control light-receiving unit of the indoor unit is affected by direct sunlight depending on the location of the sun and mirror reflection. Actions proposed · Block the sunlight to protect against direct sunlight.

3. Failure phenomenon: The compressor will not run.

[Situation] The compressor will not run (the same state as the thermometer turned off), the product receives remote control signals normally. The self-diagnosis lamp (LD301) of the outdoor unit blinks once or becomes turned off.

[Estimated failure locations] · Room temperature thermistor, heat exchanger thermistor
· Microcomputer peripheral circuit

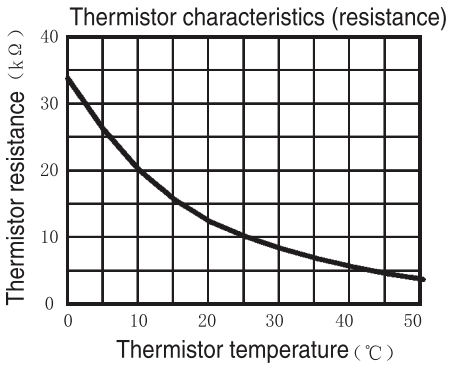
[Diagnosis flow]
Initiating troubleshooting

Is the "timer lamp" (orange) of the indoor unit blinking?
Yes → Check for failures according to the self-diagnosis display.
No ↓

Did the self-diagnosis lamp (LD301) of the outdoor unit blink once or become turned off?
No → Check for failures according to the self-diagnosis display.
Yes ↓

Remove the connector (CN4) of the room temperature thermistor and heat exchanger thermistor and measure the thermistor resistance. Did the reading roughly agree with the resistance values indicated in the right-hand figure?
No → Replace the "room temperature and heat exchanger thermistors".
Yes ↓

Replace the "indoor electrical parts".



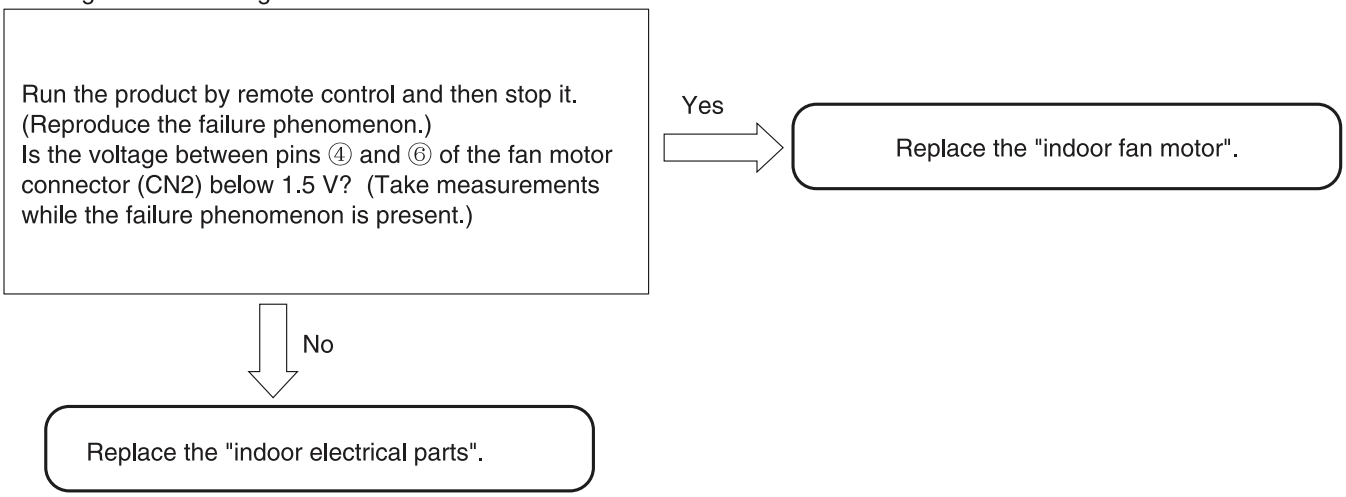
4. Failure phenomenon: The fan motor will not stop.

［Situation ］I have conducted the stop operation on the product by remote control, but the indoor fan motor will not stop.
(It stopped about 10 minutes later.)

［Estimated failure locations ］
- Indoor fan motor
- Fan motor drive circuit

［Diagnosis flow ］

Initiating troubleshooting



5. Timer lamp blinking: blinking once

[Situation] The timer lamp blinks one time and the product will not operate.
(This is not a sign of a breakdown.)

[Estimated failure locations]
- Reversing valve defective.
- The refrigerating cycle block gas leak.

6. Timer lamp blinking: blinking twice

[Situation] The product is giving a display to indicate that it is performing forcible cooling.
(This is not a sign of a breakdown.)

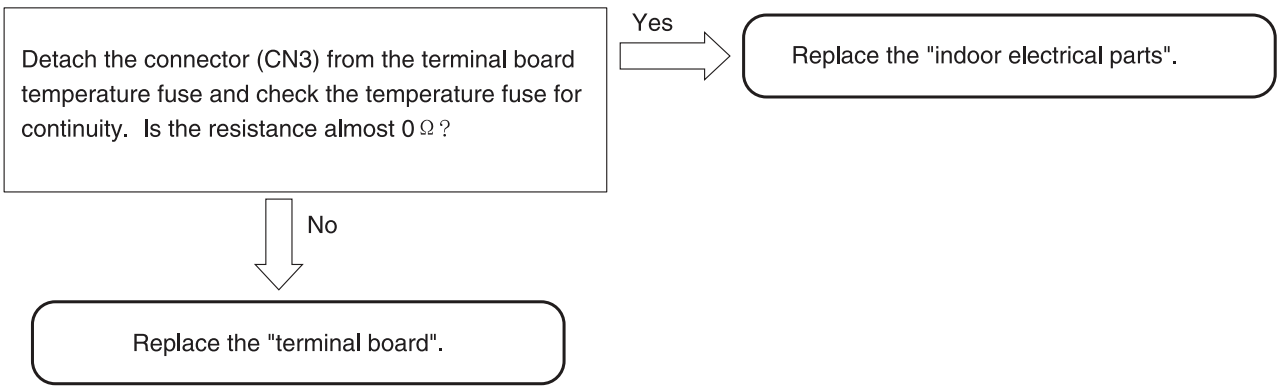
7. Timer lamp blinking: blinking three times

[Situation] The timer lamp blinks three times and the product will not operate.

[Estimated failure locations]
- Meltdown of the terminal board temperature fuse (the terminal board poorly inserted into the F cable)
- Outdoor communication circuit out of order

[Cautions]
- If a terminal board is replaced to counter the meltdown of the terminal board temperature fuse, ensure that the F cable to be inserted into the terminal board has the appropriate dimension for peeling the insulation sheathing and that the insertion region is unbent before inserting it into the terminal board securely.

[Diagnosis flow]



8. Timer lamp blinking: blinking four times

[Situation] The timer lamp blinks four times and the product will not operate.

[Estimated failure locations]
- Outdoor unit error.
- Please confirm the times of the LD301 blinking, and then see the outdoor selfcheck lable.

9. Timer lamp blinking: blinking 9 times

[Situation] The timer lamp blinks 9 times and the product will not run.

[Estimated failure location] ・ Loose connector, wire break, or short-circuit in the room temperature thermistor, heat exchanger thermistor.

[Cautions] ・ Starting the product by remote control will initiate failure detection.
(Merely turning on the power will not activate the failure detection function.)

[Diagnosis flow]
Initiating troubleshooting

Are the room temperature thermistor, heat exchanger thermistor connector (CN4) securely inserted?

No → Correct the connectors.

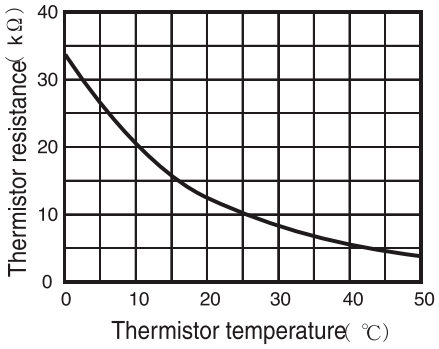
Yes ↓

Detach the connector (CN4) from the room temperature thermistor and heat exchanger thermistor and measure the thermistor resistances. Did the resistances almost agree with those indicated in the right-hand figure?

(The product will begin detecting failures if it is close to a wire break or short-circuit.)

No → Replace the room temperature and heat exchange thermistor.

Thermistor characteristics (resistance)



Yes ↓

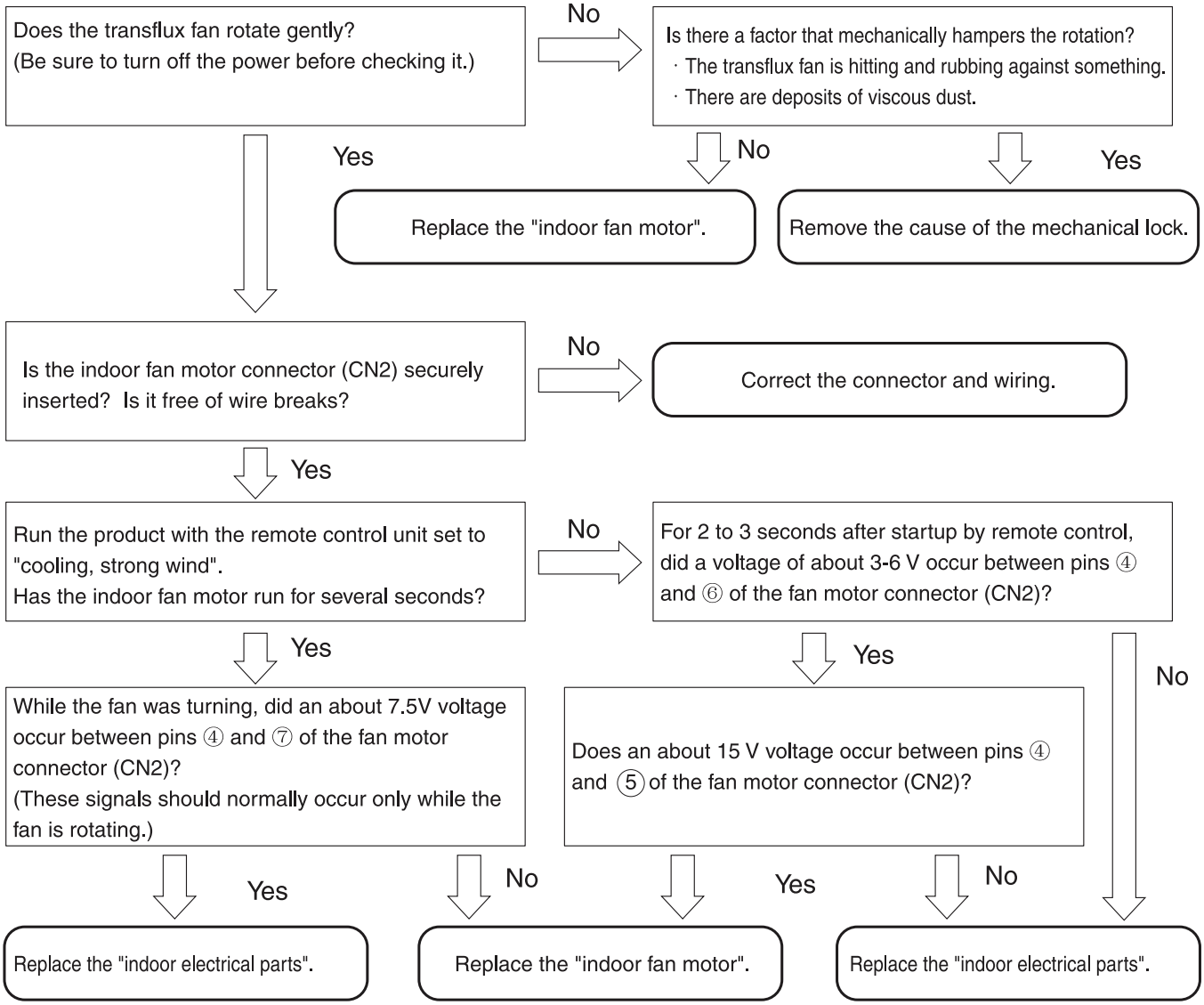
Replace the "indoor control P.W.B".

10. Timer lamp blinking: blinking 10 times

[Situation] The timer lamp blinks 10 times and the product will not run.

[Estimated failure locations]
- Loose connector or wire break in the indoor fan motor
- Indoor fan motor mechanically locked
- Indoor fan motor
- Indoor fan motor drive circuit

[Diagnosis flow]
Initiating troubleshooting



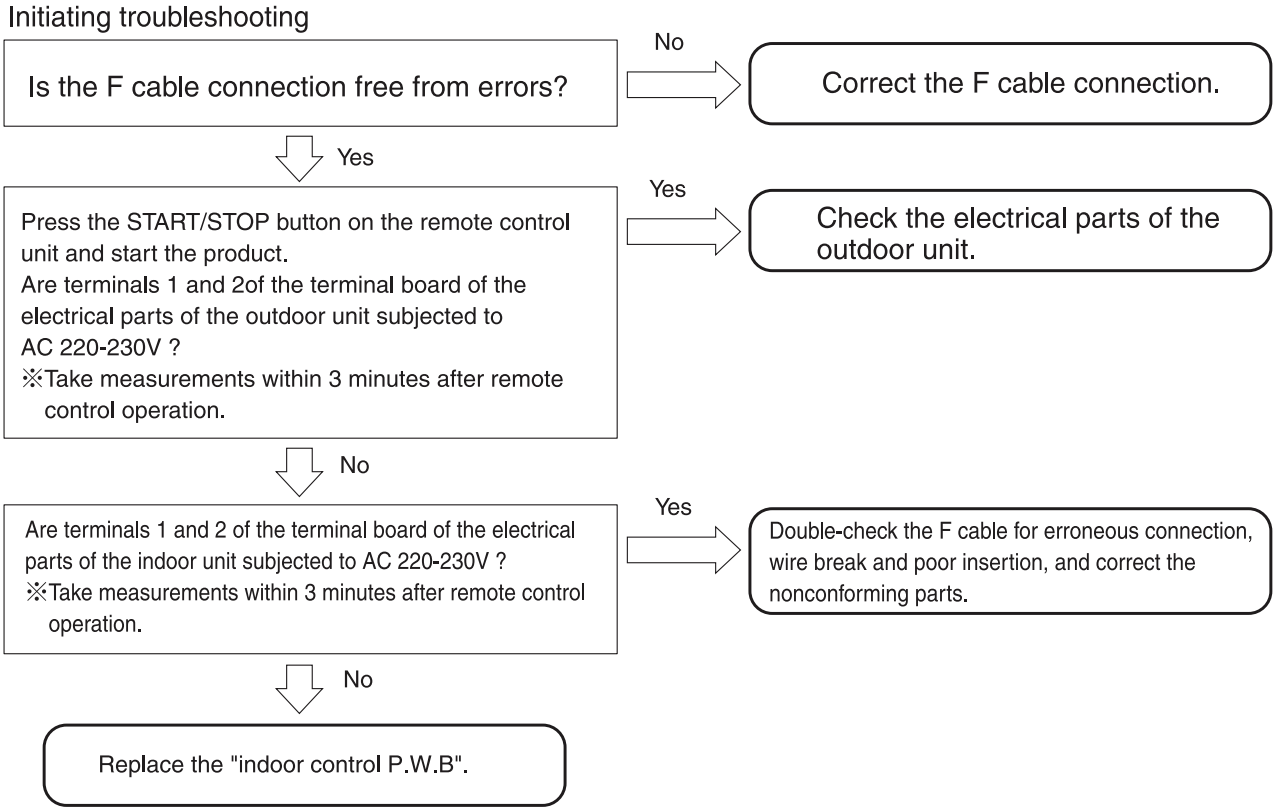
11. Timer lamp blinking: blinking 12 times

[Situation] The timer blinks 12 times and the product will not run.

[Estimated failure locations] ・ Erroneous connection in the indoor-outdoor connection line (F cable)
・ Wire break or poor insertion of the indoor-outdoor connection line (F cable)
・ Electrical parts in the outdoor unit (communication circuit, power circuit error)
・ Communication error due to noise in other home electronics
※This does not constitute a failure in the air-conditioner

[Cautions] ・ When lines 1 and 2 of F cable are erroneously connected (crossed), the product may not enter self-diagnosis display mode. If the self-diagnosis memory stores data about "timer lamp blinked 12 times", then, just in case, check if the F cable is not erroneously connected.

[Diagnosis flow]



12. Timer lamp blinking: blinking 13 times

[Situation] The timer lamp blinks 13 times and the product will not run.

[Estimated failure location] ・ EEPROM, microcomputer

[Diagnosis flow]

Replace the "indoor control P.W.B".

13. Timer lamp blinking: blinking 21 times

[Situation] The timer lamp blinks 21 times and the product will not run.

[Estimated failure location] ・ other machine cause

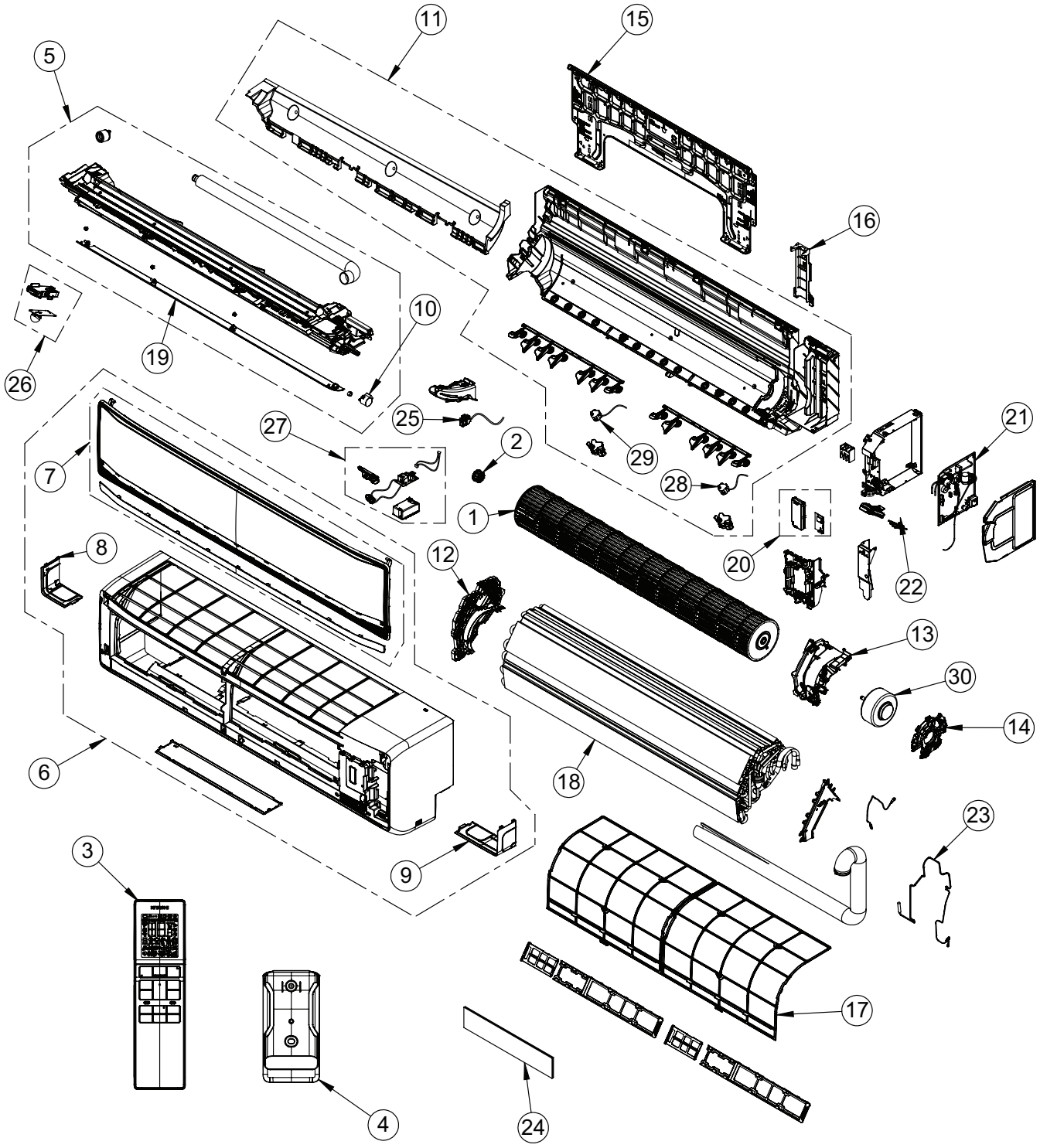
[Diagnosis flow]

Check "interference sources".

PARTS LIST AND DIAGRAM

INDOOR UNIT

MODEL : RAK-VJ60PHAE
RAK-VJ70PHAE



MODEL RAK-VJ60PHAE

NO.	PART NO.		Q'TY / UNIT	PARTS NAME
1	PMK-VJ60PHAE	R11	1	TANGENTIAL FAN
2	PMK-DJ10PCASV	R10	1	P-BEARING ASSY
3	REFER TO JCH-WH RAK-VJ18/25/35/50PHAE SERIES RELATED PART #		1	REMOTE CONTROL
4	REFER TO JCH-WH RAK-VJ18/25/35/50PHAE SERIES RELATED PART #		1	REMOTE CONTROL HOLDER
5	PMK-VJ60PHAE	R04	1	DRAINPAN ASSY
6	PMK-VJ60PHAE	R05	1	FRONT COVER ASSY
7	PMK-VJ60PHAE	R06	1	FRONT PANEL
8	PMK-DJ10PCASV	R17	1	S-COVER-L
9	PMK-DJ10PCASV	R18	1	S-COVER-R
10	PMK-DJ10PCASV	R07	1	AUTO SWEEP MOTOR
11	PMK-VJ60PHAE	R07	1	CABINET
12	PPMK-DJ60PHAE	R05	1	BEARING COVER
13	PMK-VJ60PHAE	R08	1	FM-BASE-L
14	PMK-DJ10PCASV	R22	1	FM-BASE-R
15	PMK-DJ18PCASV	R10	1	MOUNTING PLATE
16	PMK-DJ10PCASV	R16	1	PIPE SUPPORT
17	PMK-VJ60PHAE	R09	1	AIR FILTER
18	PMK-VJ60PHAE	R10	1	CYCLE ASSY
19	PMK-VJ60PHAE	R16	1	H-DEFLECTOR
20	REFER TO JCH-WH RAK-VJ18/25/35/50PHAE SERIES RELATED PART #		1	WIFI ASSEMBLY
21	PMK-VJ60PHAE	R03	1	PWB-MAIN
22	PMK-DJ10PCASV	R02	1	PWB RECEIVER
23	PMK-DJ10PCASV	R19	1	THERMISTOR
24	SPX-CFH22VR		1	ACL FILTER
25	PMK-DJ60PHAE	R04	1	SENSOR ASSEMBLY
26	PMK-VJ60PHAE	R12	1	MOTION SENSOR ASSY
27	PMK-VJ60PHAE	R13	1	IONIZER ASSY
28	PMK-VJ60PHAE	R14	1	AUTO SWEEP MOTOR (VR)
29	PMK-VJ60PHAE	R15	1	AUTO SWEEP MOTOR (VL)
30	PMK-VJ60PHAE	R02	1	FAN MOTOR

MODEL RAK-VJ70PHAE

NO.	PART NO.		Q'TY / UNIT	PARTS NAME
1	PMK-VJ60PHAE	R11	1	TANGENTIAL FAN
2	PMK-DJ10PCASV	R10	1	P-BEARING ASSY
3	REFER TO JCH-WH RAK-VJ18/25/35/50PHAE SERIES RELATED PART #		1	REMOTE CONTROL
4	REFER TO JCH-WH RAK-VJ18/25/35/50PHAE SERIES RELATED PART #		1	REMOTE CONTROL HOLDER
5	PMK-VJ60PHAE	R04	1	DRAINPAN ASSY
6	PMK-VJ60PHAE	R05	1	FRONT COVER ASSY
7	PMK-VJ60PHAE	R06	1	FRONT PANEL
8	PMK-DJ10PCASV	R17	1	S-COVER-L
9	PMK-DJ10PCASV	R18	1	S-COVER-R
10	PMK-DJ10PCASV	R07	1	AUTO SWEEP MOTOR
11	PMK-VJ60PHAE	R07	1	CABINET
12	PPMK-DJ60PHAE	R05	1	BEARING COVER
13	PMK-VJ60PHAE	R08	1	FM-BASE-L
14	PMK-DJ10PCASV	R22	1	FM-BASE-R
15	PMK-DJ18PCASV	R10	1	MOUNTING PLATE
16	PMK-DJ10PCASV	R16	1	PIPE SUPPORT
17	PMK-VJ60PHAE	R09	1	AIR FILTER
18	PMK-VJ70PHAE	R02	1	CYCLE ASSY
19	PMK-VJ60PHAE	R16	1	H-DEFLECTOR
20	REFER TO JCH-WH RAK-VJ18/25/35/50PHAE SERIES RELATED PART #		1	WIFI ASSEMBLY
21	PMK-VJ70PHAE	R01	1	PWB-MAIN
22	PMK-DJ10PCASV	R02	1	PWB RECEIVER
23	PMK-DJ10PCASV	R19	1	THERMISTOR
24	SPX-CFH22VR		1	ACL FILTER
25	PMK-DJ60PHAE	R04	1	SENSOR ASSEMBLY
26	PMK-VJ60PHAE	R12	1	MOTION SENSOR ASSY
27	PMK-VJ60PHAE	R13	1	IONIZER ASSY
28	PMK-VJ60PHAE	R14	1	AUTO SWEEP MOTOR (VR)
29	PMK-VJ60PHAE	R15	1	AUTO SWEEP MOTOR (VL)
30	PMK-VJ60PHAE	R02	1	FAN MOTOR

HITACHI

RAK-VJ60PHAE
RAK-VJ70PHAE

PM NO. 0803E

Printed in Malaysia

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

ROOM AIR CONDITIONER

INDOOR UNIT

MARCH 2023 Refrigeration & Air-Conditioning Division