HITACHI

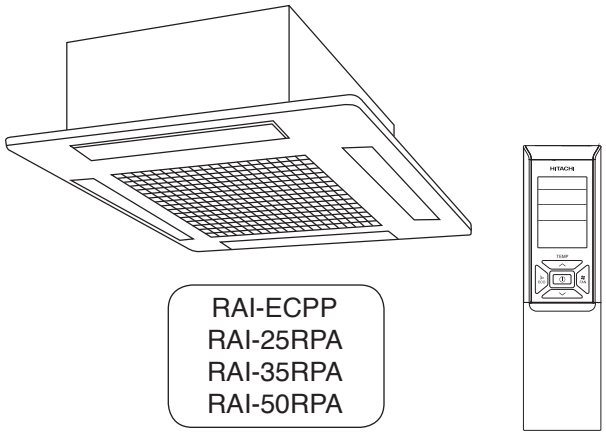
PM | NO. 0530E

SERVICE MANUAL
TECHNICAL INFORMATION

FOR SERVICE PERSONNEL ONLY

RAI-25RPA
RAI-35RPA
RAI-50RPA

REFER TO THE FOUNDATION MANUAL



RAI-ECPP
RAI-25RPA
RAI-35RPA
RAI-50RPA

NOTE:
This manual describes only points that differ from
RAK-18,25,35,50QXA (PM No 0527E)
RAD-18,25,35,50RPA (PM No 0531E)
and
RAM-36NP2A (PM No. 0522E)
RAM-53NP2A, RAM-53NP3A (PM No. 0523E)
RAM-68NP3A (PM No. 0524E)
RAM-70NP4A (PM No. 0525E)
RAM-90NP5A (PM No. 0528E)
RAM-130NP6A (PM No. 0529E)
for items not described in this manual.

CONTENTS

SPECIFICATIONS

TYPE			DC INVERTER (CEILING CASSETTE TYPE)		
			INDOOR UNIT		
MODEL			RAI-25RPA	RAI-35RPA	RAI-50RPA
POWER SOURCE			1 PHASE, 50 Hz, 220-240V		
COOLING	TOTAL INPUT	(W)	REFER TO THE SPECIFICATIONS PAGE (5)		
	TOTAL AMPERES	(A)			
	CAPACITY	(kW)			
		(B.T.U./h)			
HEATING	TOTAL INPUT	(W)			
	TOTAL AMPERES	(A)			
	CAPACITY	(kW)			
		(B.T.U./h)			
DIMENSIONS (mm)		W	580		
		H	285		
		D	580		
NET WEIGHT		(kg)	20		

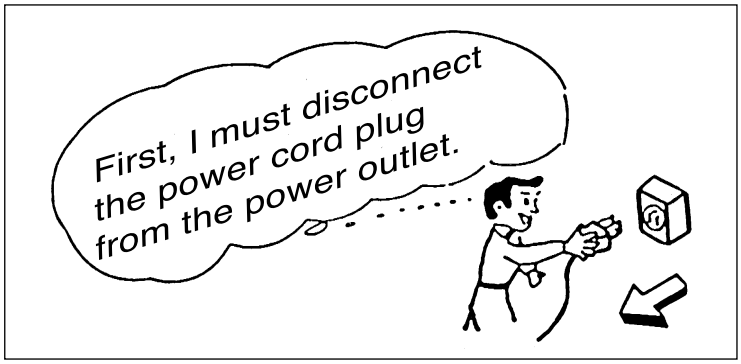
SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

ROOM AIR CONDITIONER
INDOOR UNIT

DECEMBER 2012 **Refrigeration & Air-Conditioning Division**

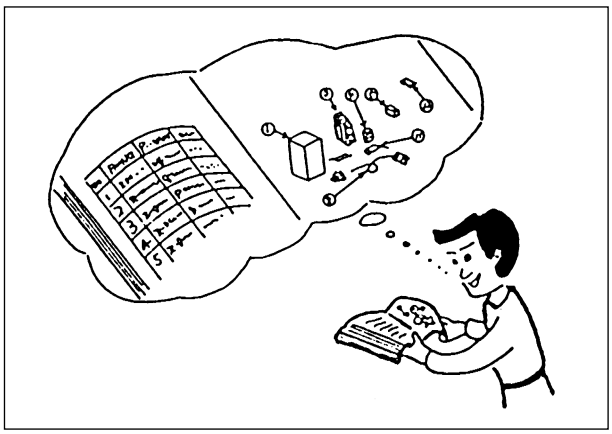
SAFETY DURING REPAIR WORK

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 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 reinforced or at a new location.
10. Any inflammable thing should never 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 (IC)
   (3) Field-effect transistors (FET)
   (4) P.C. boards or the like on 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).

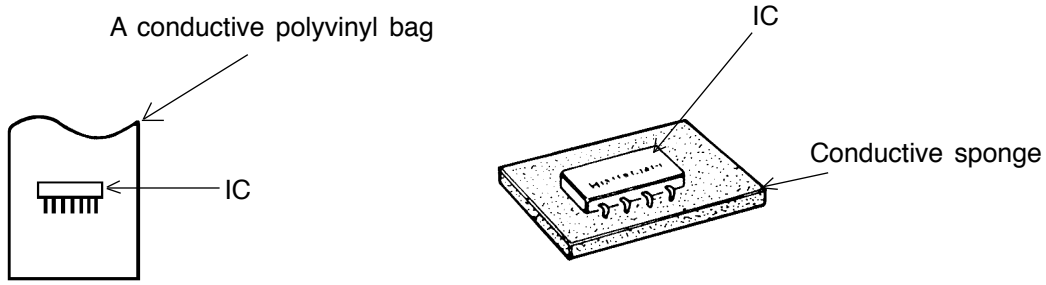


Fig. 1. Conductive Container

   (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.

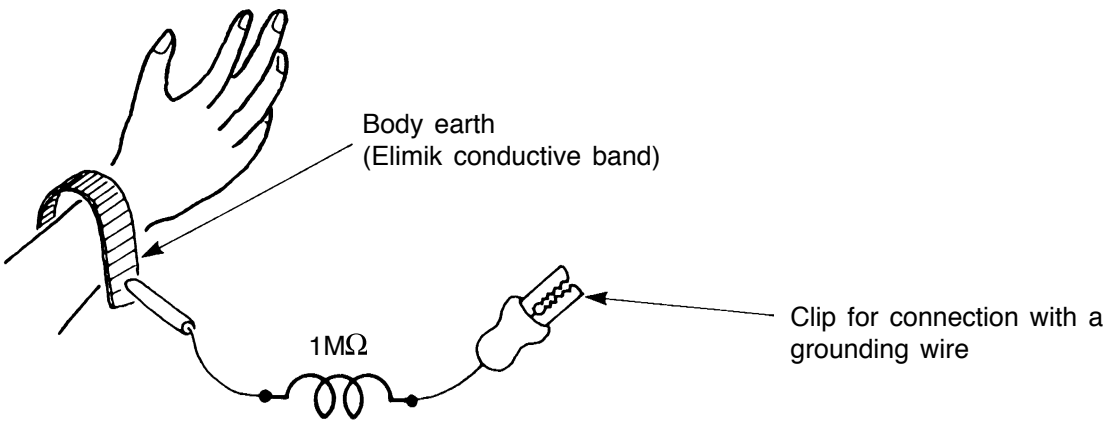


Fig. 2. Body Earth

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

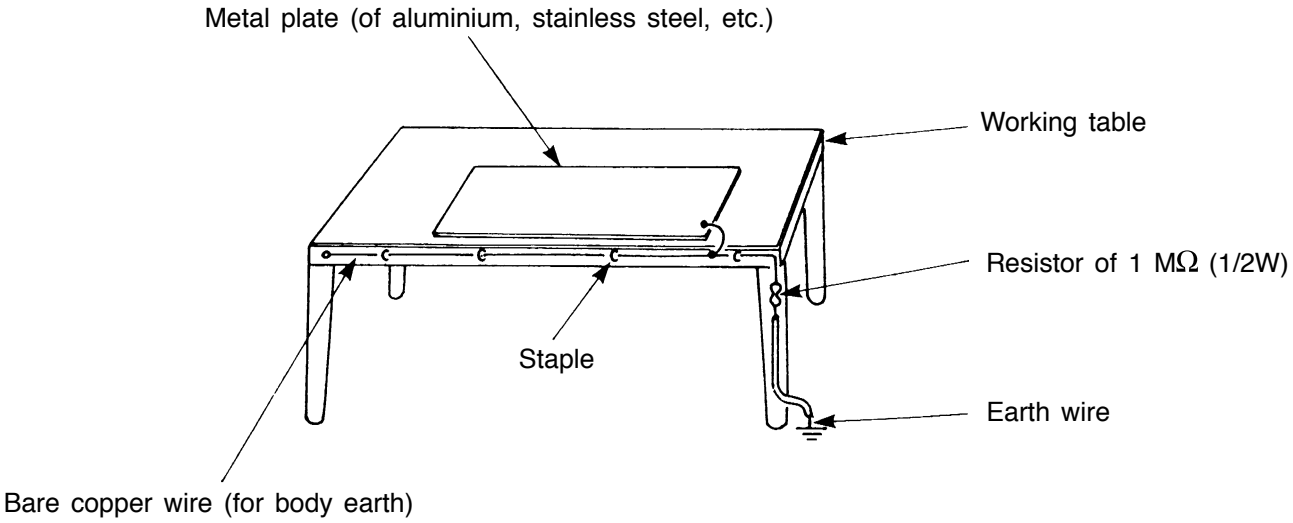


Fig. 3. Grounding of the working table

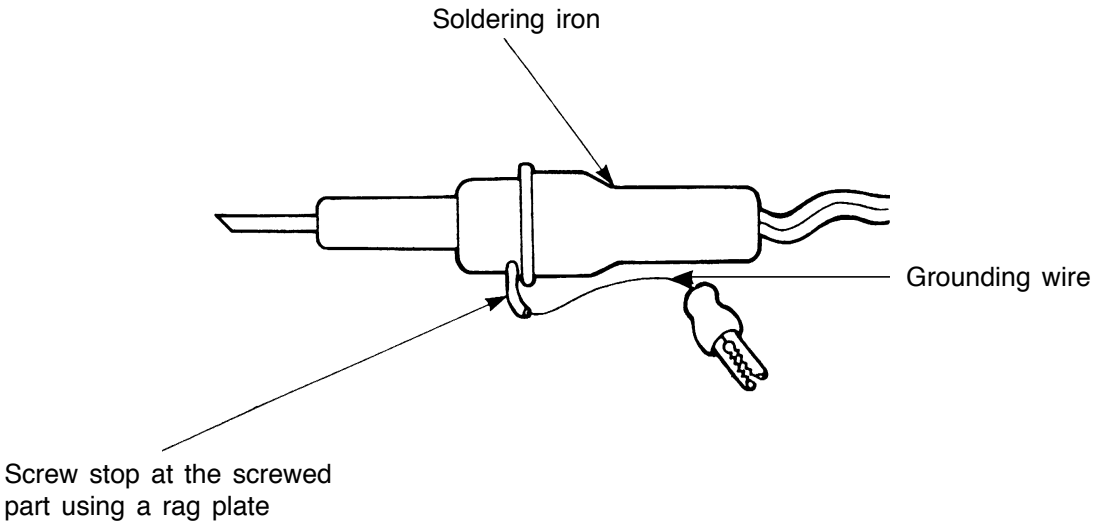


Fig. 4. Grounding a soldering iron

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 shortcircuit a load circuit or the like.

⚠ CAUTION

1. In quiet operation or stopping the running, 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 near by, it is recommend to stop the operation and to disconnect the power cord plug from the power outlet for safety.

3. The room air conditioner does not start automatically after recovery of the electric power failure for preventing fuse blowing. Re-press START/STOP button after 3 minutes from when unit stopped.

4. If the room air conditioner is stopped by adjusting thermostat, or missoperation, 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 (50°F).

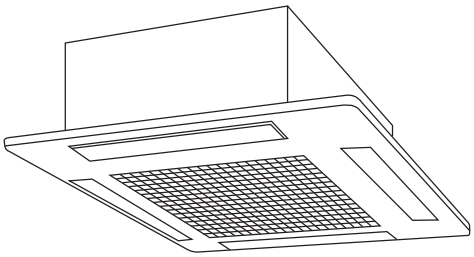
6. This room air conditioner (the reverse cycle) should not be used when the outside temperature is below –15°C (5°F).
   If the reverse cycle is used under this condition, the outside heat exchanger is frosted and efficiency falls.

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

MODEL		RAI-25RPA RAI-35RPA RAI-50RPA
FAN MOTOR		25W
FAN MOTOR CAPACITOR		NO
FAN MOTOR PROTECTOR		NO
COMPRESSOR		–
COMPRESSOR MOTOR CAPACITOR		NO
OVERLOAD PROTECTOR		NO
OVERHEAT PROTECTOR		NO
FUSE (for MICROPROCESSOR)		NO
POWER RELAY		NO
POWER SWITCH		NO
TEMPORARY SWITCH		YES
SERVICE SWITCH		NO
TRANSFORMER		NO
VARISTOR		NO
NOISE SUPPRESSOR		NO
THERMOSTAT		YES(IC)
REMOTE CONTROL SWITCH (LIQUID CRYSTAL)		YES
REFRIGERANT CHARGING VOLUME (Refrigerant 410A)	UNIT	----------
	PIPES	WITHOUT REFRIGERANT BECAUSE COUPLING IS FLARE TYPE.

SPECIFICATION OF ROOM AIR CONDITIONER



RAI-25RPA, RAI-35RPA, RAI-50RPA

TYPE		COOLING/HEATING		
		CEILING CASSETTE		
MODEL	INDOOR UNIT	RAI-25RPA	RAI-35RPA	RAI-50RPA
PHASE/VOLTAGE/FREQUENCY		1ø 220~240V 50Hz		
COOLING (ONE UNIT)	SOUND LEVEL (INDOOR)	35	39	43
	AIR FLOW VOLUME (Hi)	8.5 m^3/min.	10.8 m^3/min.	12.0 m^3/min.
HEATING (ONE UNIT)	SOUND LEVEL (INDOOR)	36	40	43
	AIR FLOW VOLUME (Hi)	8.5 m^3/min.	10.8 m^3/min.	12.0 m^3/min.
AUTOMATIC AIR DEFLECTORS		YES	YES	YES
FAN SPEED		4	4	4
LINE CORD		NOT PROVIDED (POWER CORD SHOULD BE PREPARED AND CONNECTED TO OUTDOOR UNIT WHEN INSTALLED)		
REMOTE CONTROL SWITCH		YES (WIRELESS)	YES (WIRELESS)	YES (WIRELESS)
DIMENSION inches (mm)	W	22-27/32 (580)		
	H	11-7/32 (285)		
	D (INSTALLED)	22-27/32 (580) –		
NET WEIGHT (kg)		20		
PACKING inches (mm)	W	29-29/32 (760)		
	H	15-9/16 (395)		
	D	29-29/32 (760)		
	cu.ft	8.06		
GROSS WEIGHT (kg)		25		
FLARE NUT SIZE (SMALL/LARGE)		6.35/9.52		6.35/12.7

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.	

- 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 R410A. Otherwise, this may result in broken copper pipes or faults.

⚠ CAUTION

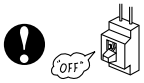
- A circuit breaker should be installed depending on the mounting site of the unit. Without a circuit breaker, the danger of electric shock exists.
- Do not install near location where there is flammable gas. The outdoor unit may catch fire if flammable gas leaks around it.

- Please ensure smooth flow of water when installing the drain hose.

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.

PRECAUTIONS DURING OPERATION

⚠ WARNING

- Avoid an extended period of direct air flow for your health.

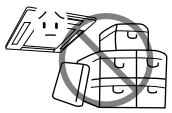
- Do not insert a finger, a rod or other objects into the air outlet or inlet. As the fan is rotating at a high speed, it will cause injury. Before cleaning, be sure to stop the operation and turn the breaker OFF.
- Do not use any conductor as fuse wire, this could cause fatal accident.

- During thunder storm, disconnect and turn off the circuit breaker.

PRECAUTIONS DURING OPERATION

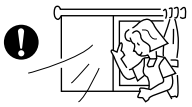
CAUTION

- 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.

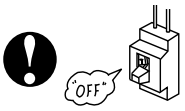


- Do not direct the cool air coming out from the air-conditioner panel to face household heating apparatus as this may affect the working of apparatus such as the electric kettle, oven etc.

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

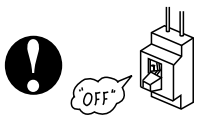
- Do not splash or direct water to the body of the unit when cleaning it as this may cause short circuit.

- 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.



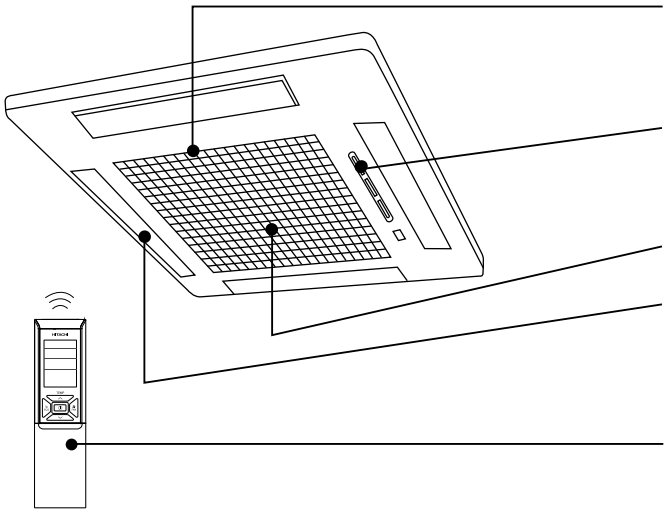
- Do not climb on the outdoor unit or put objects on it.

- 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 is not intended for use by young children or infirm persons unless they have been adequately supervised by a responsible person to ensure that they can use the appliance safely.
- Young children should be supervised to ensure that they do not play with the appliance.

NAMES AND FUNCTIONS OF EACH PART

INDOOR UNIT



AIR FILTER
To prevent dust from coming into the indoor unit.
(Refer page 13)

INDOOR UNIT INDICATORS
Light indicator showing the operating condition.
(Refer page 9)

SUCTION GRILL (AIR INLET)

HORIZONTAL DEFLECTOR (AIR OUTLET)

REMOTE CONTROL
Send out operation signal to the indoor unit. So as to operate the whole unit.
(Refer Remote Controller Manual)

NOTE

- Recommended to replace the air cleaning filter after every 3 months for normal usage. Type number for this air cleaning filter is <SPX-NTW1>. Please use this number for ordering when you want to renew it.

MODEL NAME AND DIMENSIONS

MODEL	WIDTH (mm)	HEIGHT (mm)	DEPTH (mm)
RAI-25RPA, 35RPA, 50RPA	580	285	580

MULTI-AIR CONDITIONER

With this multi-air conditioner, several indoor units can be connected to one outdoor unit to be driven. You can operate the required number of indoor units.

Combination of Operations:

When operation mode is selected:

- You cannot operate the indoor units in the following combinations.

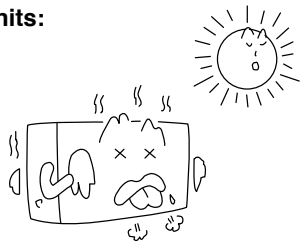
One unit	Other unit
Heating	Cooling
	Dehumidifying
	Circulating (fan)

- The indoor unit which is switched on first continues to operate, but other indoor units which is switched on later does not operate while the lamp lights.
- To re-start an indoor unit which was operated later, stop the indoor unit which was operated first or later and reset the type of operation, then perform operation again.

During automatic operation:

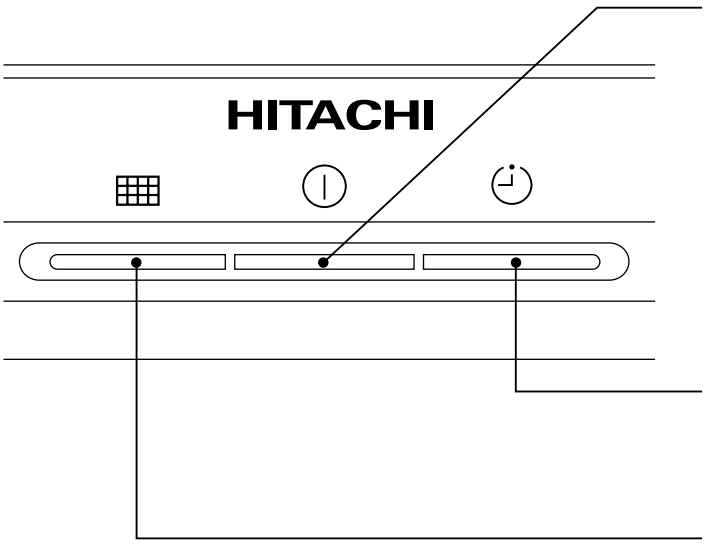
- When heating operation is automatically selected for the first indoor unit, the next indoor unit will then start to heat. Also, if cooling or dehumidifying is automatically selected for the first indoor unit, the next indoor unit will also start to cool or dehumidify.

Adjusting the Number of Indoor Units:
Decrease the number of indoor units to be operated especially when it is very hot or cold or when you want to reach the present temperature quickly.



Stopped Indoor Units:
When an indoor unit is operated in the cooling, heating or dehumidifying mode in the room, the sound of refrigerant flow may be heard from a stopped indoor unit or a stopped indoor unit may become warm. This is because the indoor unit returns refrigerant to the outdoor unit to be ready for operation.

INDOOR UNIT INDICATORS



OPERATION LAMP
This lamp lights during operation.
The OPERATION LAMP flashes in the following cases during heating.

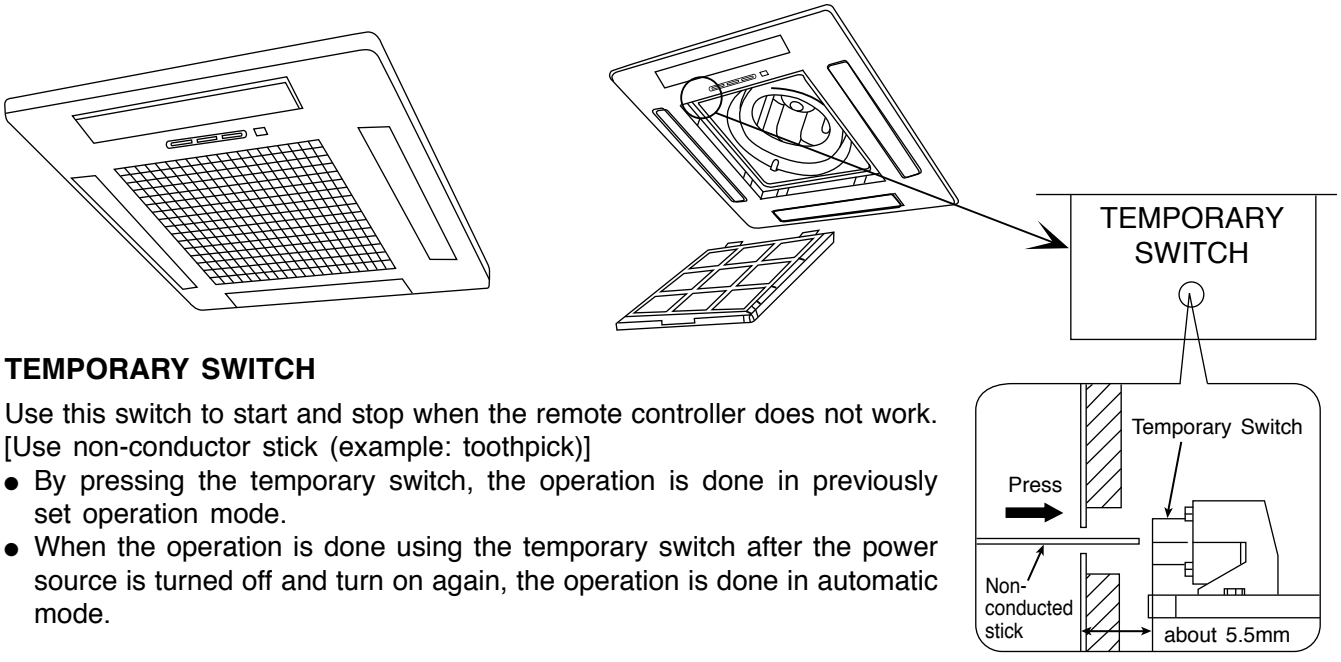
(1) During preheating
For about 2–3 minutes after starting up.

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

TIMER LAMP
This lamp lights when the timer is working.

FILTER LAMP
When the device is operated for a total of about 200 hours, the FILTER lamp lights to indicate that it is time to clean the filter. The lamp goes out when the " (AUTO SWING)" button is pressed while the device is on "STANDBY MODE".

OPERATION INDICATOR



TEMPORARY SWITCH

Use this switch to start and stop when the remote controller does not work. [Use non-conductor stick (example: toothpick)]

- By pressing the temporary switch, the operation is done in previously set operation 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.

Note

- The recommended temperature range for safety testing should be as below:

		Cooling		Heating	
		Minimum	Maximum	Minimum	Maximum
Indoor	Dry bulb °C	21	32	20	27
	Wet bulb °C	15	23	12	19
Outdoor	Dry bulb °C	21	43	2	21
	Wet bulb °C	15	26	1	15

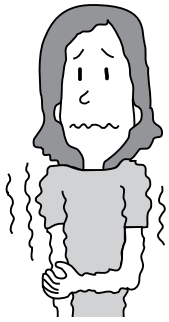
CIRCUIT BREAKER

When you do not use the room air conditioner, set the circuit breaker to “OFF”.

MEMO

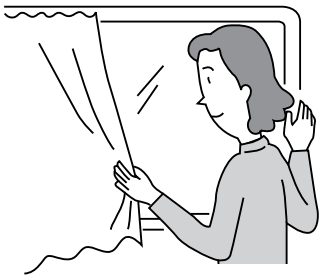
THE IDEAL WAYS OF OPERATION

Suitable Room Temperature



⚠ Warning
Freezing temperature is bad for health and a waste of electric power.

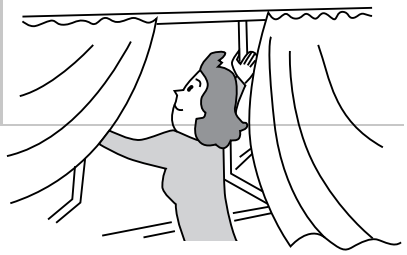
Install curtain or blinds



It is possible to reduce heat entering the room through windows.

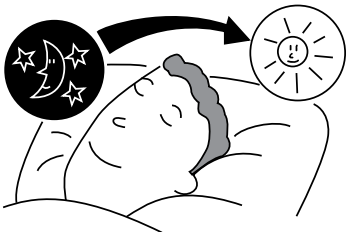
Ventilation

⚠ Caution
Do not close the room for a long period of time. Occasionally open the door and windows to allow the entrance of fresh air.



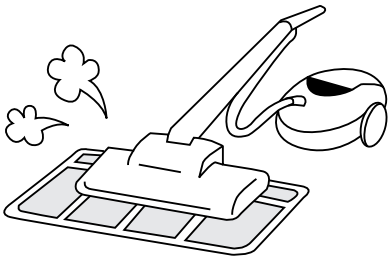
Effective Usage Of Timer

At night, please use the “OFF or ON timer operation mode”, together with your wake up time in the morning. This will enable you to enjoy a comfortable room temperature. Please use the timer effectively.



Do Not Forget To Clean The Air Filter

Dusty air filter will reduce the air volume and the cooling efficiency. To prevent from wasting electric energy, please clean the filter every 2 weeks.



Please Adjust Suitable Temperature For Baby And Children

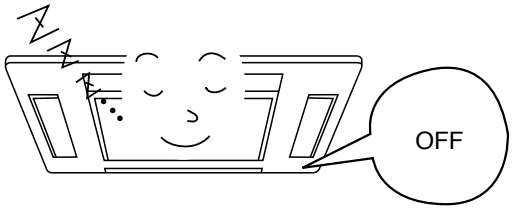
Please pay attention to the room temperature and air flow direction when operating the unit for baby, children and old folks who have difficulty in movement.

The Air Conditioner And The Heat Source In The Room

⚠ Caution
If the amount of heat in the room is above the cooling capability of the air conditioner (for example: more people entering the room, using heating equipments and etc.), the preset room temperature cannot be achieved.

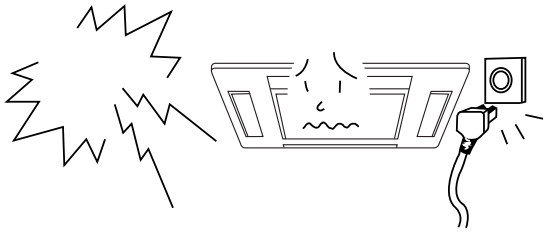
Not Operating For A Long Time

When the indoor unit is not to be used for a long period of time, please switch off the power from the mains. If the power from mains remains "ON", the indoor unit still consumes about 12W in the operation control circuit even if it is in "OFF" mode.



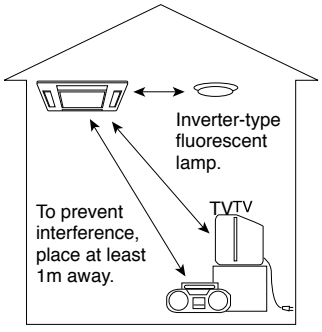
When Lightning Occurs

⚠ Warning
To protect the whole unit during lightning, please stop operating the unit and remove the plug from the socket.



Interference From Electrical Products

⚠ Caution
To avoid noise interference, please place the indoor unit and its remote controller at least 1m away from electrical products.



MAINTENANCE

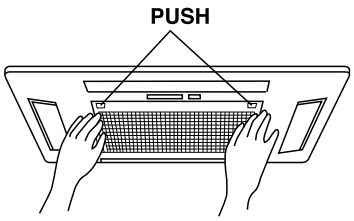
⚠ CAUTION

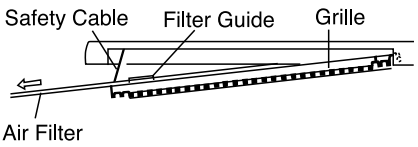
Cleaning and maintenance must be carried out by qualified service personnel.
Before the cleaning, stop operation and disconnect the power supply.
Clean the filter at least once every one month. This helps save electricity cost.

1. CLEANING OF AIR FILTER

REMOVAL AND ATTACHMENT OF AIR FILTER

PROCEDURE





1 Remove the filter from indoor
- Press the mark “PUSH” on the left and right sides of the suction grille.
- Pull out the filter from the grille.

2 Remove dust from the filter using a vacuum cleaner.
If there is too much dust, use neutral detergent. After using neutral detergent, wash with clean water and dry in the shade.

3 Install the filter. (Set it with “UP SIDE” mark facing front.)
Slot the filter to suction grille and close as original state.
(Press the mark “PUSH” at the left and right sides of the suction grille to fix it securely.)

Note:
- This model has an air cleaning filter. The cooling capacity is slightly weakened and the cooling speed becomes slower when the air cleaning filter is used. So, set the fan speed to “HIGH” when using it in this condition.

⚠ CAUTION

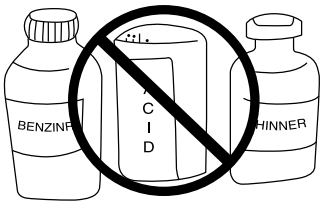
- Do not wash with hot water at more than 40°C. The filter may shrink.
- When washing it, shake off moisture completely and dry it in the shade; do not expose it directly to the sun. The filter may shrink.
- Do not operate the air conditioner with the filter removed. Dust may enter the air conditioner and cause trouble.

2. CLEANING OF FRONT PANEL

- Wipe it with a soft dry cloth.
- When it is excessively dirty, wipe with soft cloth soaked in lukewarm water or neutral detergent. Then wipe thoroughly with a soft dry cloth.

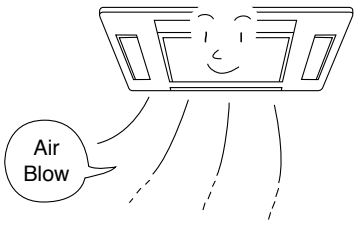
⚠ CAUTION

- Do not splash or direct water to the body of the unit when cleaning it as this may cause short circuit.
- Never use hot water (above 40°C), benzine, gasoline, acid, thinner or a brush, because they will damage the plastic surface and the coating.



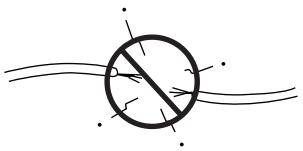
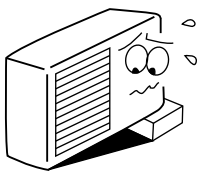
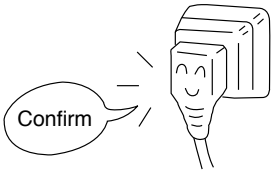
3. MAINTENANCE AT BEGINNING OF LONG OFF PERIOD

- Run the unit by setting the operation mode to ✲ (COOL), the temperature to 32°C and the fan speed to HI for about half a day on a fine day, and dry the whole of the unit.
- Turn off the circuit breaker.



REGULAR INSPECTION

PLEASE CHECK THE FOLLOWING POINTS EITHER EVERY HALF YEARLY OR YEARLY. CONTACT YOUR SALES AGENT SHOULD YOU NEED ANY HELP.

1		Is the earth line disconnected or broken? **⚠ WARNING** Coming off or breakage of grounding wire may cause malfunction or electrical shock.
2		Is the mounting frame seriously affected by rust and is the outdoor unit tilted or unstable? **⚠ WARNING** Outdoor unit may fall or drop if there is extreme rust on mounting frame or outdoor unit is unstably installed. This may cause injury.
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 operate	● 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 air 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”?

Notes

- In 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 air 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.
- Power supply shall be connected at the rated voltage, otherwise the unit will be broken or could not reach the specified capacity.

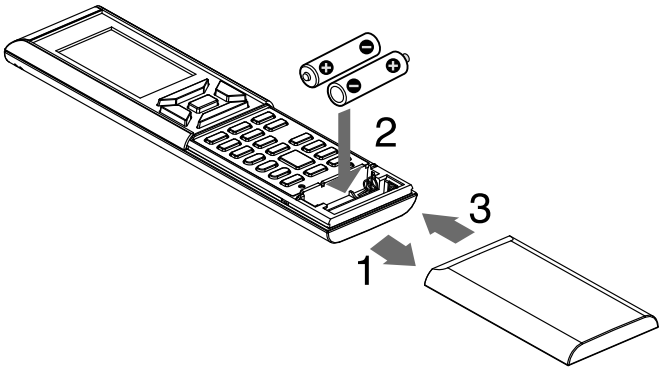
NOTE:

- If the supply cord is damaged, it must be replaced by the special cord obtainable at authorized service parts centers.
- 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.

PREPARATION BEFORE OPERATION

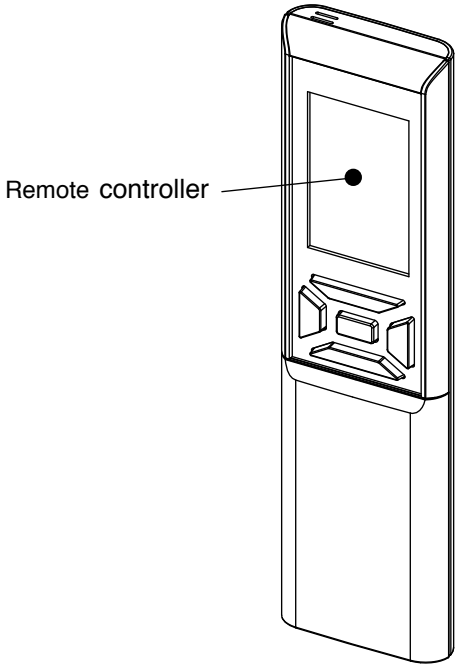
■ To install the batteries

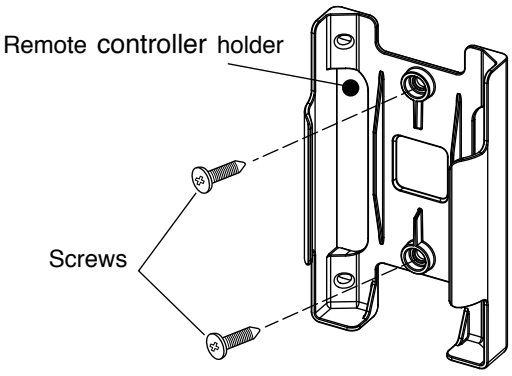
1. Slide the cover to take it off.
2. Install two dry batteries AAA.LR03 (alkaline). The direction of the batteries should match the marks in the case.
3. Replace the cover at its original position.



■ To fix the remote controller holder to the wall

1. Choose a place from where the signals can reach the unit.
2. Fix the remote controller holder to a wall, a pillar or similar location with the provided screws.
3. Place the remote controller in the remote controller holder.





NOTE

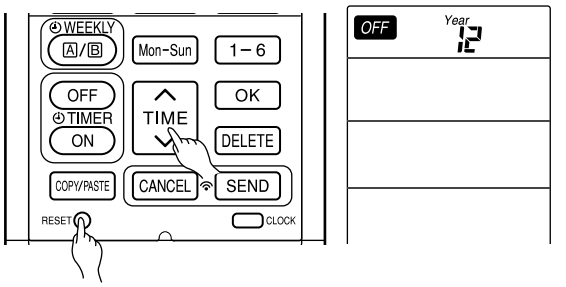
Notes on batteries

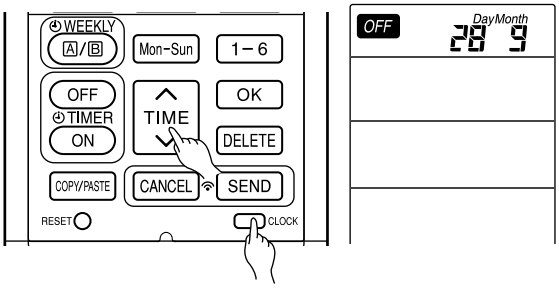
- When replacing the batteries, use batteries of the same type, and replace both old batteries together.
- When the system is not used for a long time, take the batteries out.
- The batteries will last for approximately 1 year. However, if the remote controller display begins to fade and degradation of reception performance occurs within a year, replace both batteries with new size AAA.LR03 (alkaline).
- The attached batteries are provided for the initial use of the system.
  The usable period of the batteries may be short depending on the manufactured date of the air conditioner.

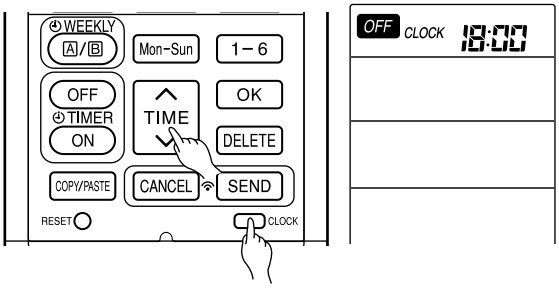
Notes on the remote controller

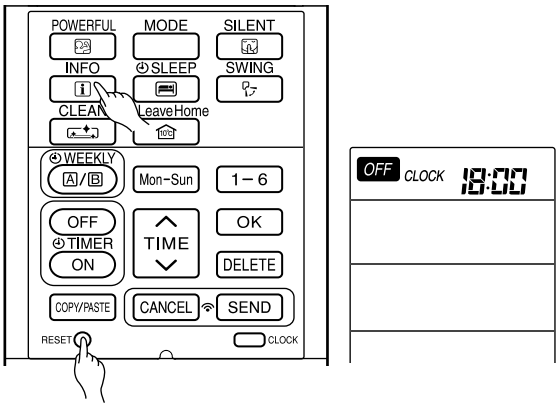
- Never expose the remote controller to direct sunlight.
- Dust on the signal transmitter or receiver will reduce the sensitivity. Wipe off dust with soft cloth.
- Signal communication may be disabled if an electronic-starter-type fluorescent lamp (such as inverter-type lamps) is in the room. Consult the shop if that is the case.
- If the remote controller signals happen to operate another appliance, move that appliance to somewhere else, or consult the service shop.
- When the remote controller is not in use, please close the slide cover to prevent failure.

PREPARATION BEFORE OPERATION









■ To set calendar and clock

1. Press RESET (RESET) button when first time setting. "Year" blinks.
2. Press TIME (TIME) button to set the current year.
3. Press CLOCK (CLOCK) button. "Day" and "Month" blink.
4. Press TIME (TIME) button to set the current day and month.
5. Press CLOCK (CLOCK) button. "CLOCK" blinks.
6. Press TIME (TIME) button to set the clock to the current time.
7. Press CLOCK (CLOCK) button.

   Calendar and clock are set.

To modify the calendar and clock, press CLOCK (CLOCK) button.
Then follow steps 1 to 7.

Calendar and clock need to be set again after changing batteries.

After changing the batteries,
1. Press RESET (RESET) button.
2. Direct remote controller towards indoor unit and press INFO (INFO) button.
3. The calendar and clock from indoor unit will be transmitted.

■ Calendar and clock will not be transmitted from indoor unit when the following occurs:
- When there is a power failure.
- When breaker is OFF by user (unit is not in STANDBY MODE).

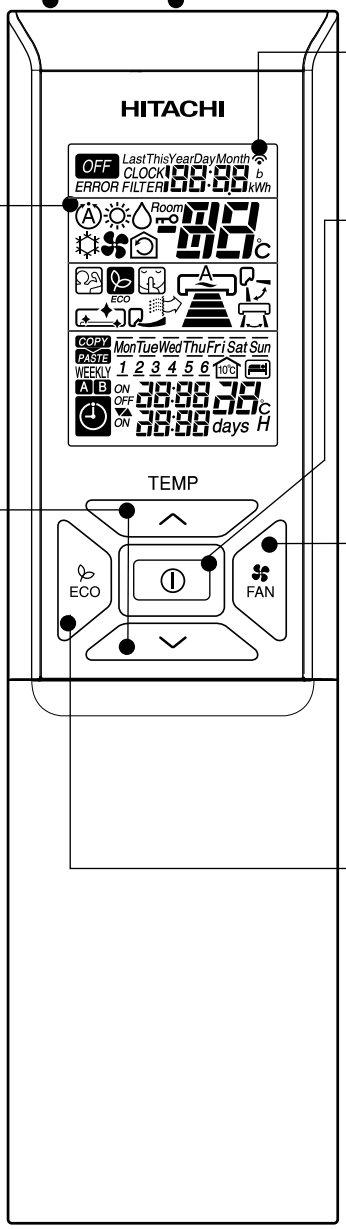
NOTE

Note on setting the calendar and clock.
- If the calendar and clock are not set, the ON-timer, OFF-timer and Weekly Timer cannot be set.
- If the calendar and clock are not set correctly, the ON-timer, OFF-timer and Weekly Timer will not operate correctly.
- When the ON-timer, OFF-timer and Weekly Timer are set, the calendar and clock cannot be changed. If there is a need to change the calendar and clock, ON-timer, OFF-timer and Weekly Timer need to be cancelled.

NAMES AND FUNCTIONS OF REMOTE CONTROLLER

REMOTE CONTROLLER

- This controls the operation of the indoor unit. The range of control is about 7 meters. If indoor lighting is controlled electronically, the range of control may be shorter.
  This unit can be fixed on a wall using the fixture provided. Before fixing it, make sure the indoor unit can be controlled from the remote controller.
- Handle the remote controller with care. Dropping it or getting it wet may compromise its signal transmission capability.
- After new batteries are inserted into the remote controller, the unit will initially require approximately 10 seconds to respond to commands and operate.
- When remote controller is not in use for about 3 minutes during OFF condition, indicated by OFF on the display, the LCD will turn off.
- During clock setting, the LCD will turn off about 10 minutes later if the remote controller is not in use.
- When pressing any button, the LCD will turn on.
- The LCD will not turn off during TIMER setting.



Signal Transmitting/Receiving Window

Point this window towards the indoor unit when controlling it.

Sensor

A temperature sensor inside the remote controller senses ambient temperature around the remote-controller.

Display

This indicates the room temperature selected, current time, timer status, function and airflow rate selected.

ROOM TEMPERATURE setting Buttons

Press these buttons to set the room temperature.

Press the [∧] button to raise the room temperature.

Press the [∨] button to lower the room temperature.

Keep pressing and the value will change more quickly.

Transmission sign

The transmission sign lights up when a signal is sent.

START/STOP button

Press this button to start operation. Press it again to stop operation.

FAN SPEED selector Button

This determines the fan speed. Every time you press this button, the airflow rate will change from (AUTO) → (HIGH) → (MED) → (LOW) → (SILENT) (This button allows selection of optimal or preferred fan speed for each operation mode).

ECO Button

Use this button to set the ECO mode. (▶ p. 27)

NAMES AND FUNCTIONS OF REMOTE CONTROLLER

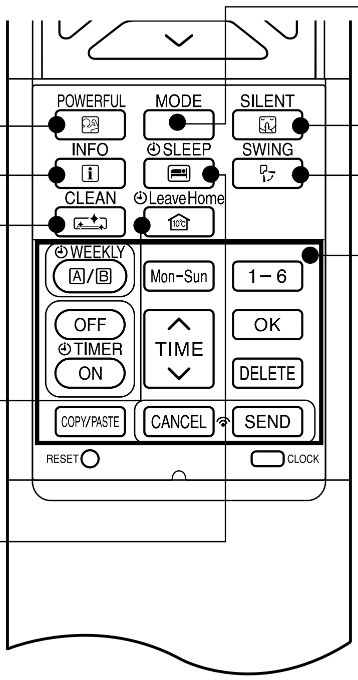
POWERFUL Button
Use this button to set the POWERFUL mode. (▶ p. 25)

INFORMATION Button
(▶ p. 39)

ONE TOUCH CLEAN Button
(▶ p. 29)

LEAVE HOME Button
(▶ p. 28)

ECO SLEEP TIMER Button
Use this button to set the ECO sleep timer. (▶ p. 31)



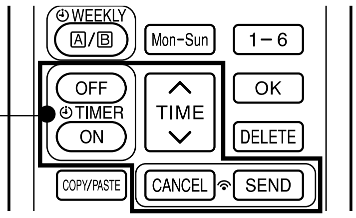
MODE selector Button
Use this button to select the operating mode. Every time you press this button, the mode will change from Ⓐ (AUTO) → ☼ (HEAT) → ◯ (DEHUMIDIFY) → ❄ (COOL) and → ✤ (FAN) cyclically.

SILENT Button
Use this button to set the SILENT mode. (▶ p. 26)

AUTO SWING (Vertical) Button
Controls the angle of the horizontal air deflector. (▶ p. 24)

WEEKLY TIMER setting Buttons
(▶ p. 33)

ON / OFF TIMER setting Buttons
(▶ p. 30)



MODE	MODE SELECTOR
Ⓐ	AUTO
☼	HEAT
◯	DEHUMIDIFY
❄	COOL
✤	FAN
A	FAN SPEED AUTO SILENT LOW MED HIGH
⏻	START / STOP
ECO	ECO

FAN	FAN
	POWERFUL
	SILENT
i	INFO
	SLEEP TIMER
	AUTO SWING (VERTICAL)
10°C	LEAVE HOME
	CLEAN
Mon-Sun	DAY
1−6	PROGRAM NO.

OFF TIMER ON	ON / OFF TIMER
TIME	TIME
OK	OK
DELETE	DELETE
COPY/PASTE	COPY / PASTE
CANCEL	CANCEL
SEND	SEND
CLOCK	CLOCK

Precautions for Use

- Do not put the remote controller in the following places.
  - Under direct sunlight.
  - In the vicinity of a heater.
- Handle the remote controller carefully. Do not drop it on the floor, and protect it from water.
- Once the outdoor unit stops, it will not restart for about 3 minutes (unless you turn the power switch off and on or unplug the power cord and plug it in again).
  This is to protect the device and does not indicate a failure.
- If you press the MODE selector button during operation, the device may stop for about 3 minutes for protection.

VARIOUS FUNCTIONS

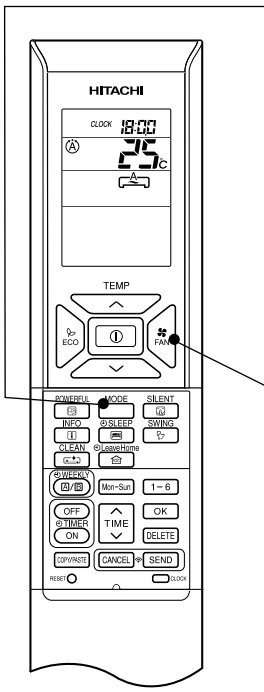
■ Auto Restart Control

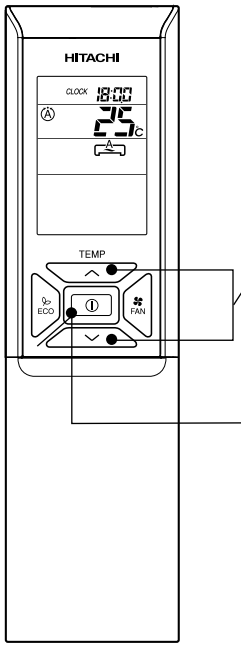
- If there is a power failure, operation will be automatically restarted when the power is resumed with previous operation mode and airflow direction.
  (As the operation is not stopped by remote controller.)
- If you intend not to continue the operation when the power is resumed, switch off the power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

AUTOMATIC OPERATION

The device will automatically determine the mode of operation, HEAT or COOL depending on the current room temperature. The selected mode of operation will change when the room temperature varies. However, the mode of operation will not change when indoor unit is connected to multi type outdoor unit.





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. However the mode of operation will not change when indoor unit is connected to multi type outdoor unit.
- If the mode automatically selected by the unit is not satisfactory, manually change the mode setting (HEAT, DEHUMIDIFY, COOL or FAN).

2

Set the desired FAN SPEED with the FAN (FAN SPEED) button (the display indicates the setting).

→ (AUTO) → (HIGH) → (MED) → (SILENT) ← (LOW) ←

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.

START / STOP

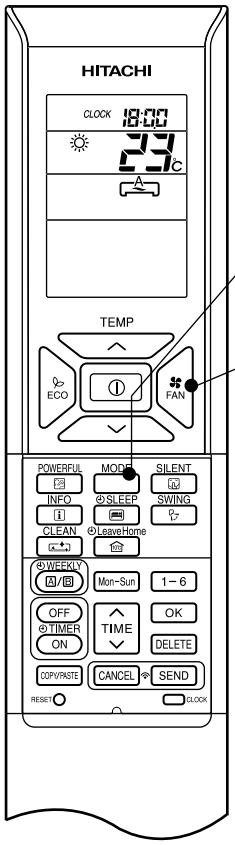
Press the ⏻ (START/STOP) button.
Operation starts with a beep.
Press the button again to stop operation.

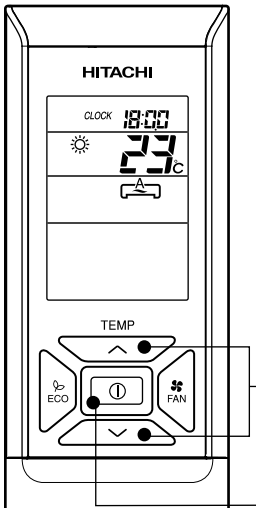
■ As the settings are stored in the memory of the remote controller, you only have to press the ⏻ (START/STOP) button next time.

Press the FAN (FAN SPEED) button to select AUTO, HIGH, MED, LOW or SILENT.

HEATING OPERATION

- 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 maintain reliability of the device, please use this device when outdoor temperature is above –15°C.





1 Press the MODE selector button so that the display indicates ☼ (HEAT).

2 Set the desired FAN SPEED with the FAN (FAN SPEED) button (the display indicates the setting).

(AUTO) → (HIGH) → (MED) → (LOW) → (SILENT) → (AUTO)

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.

START / STOP Press the ⏻ (START/STOP) 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 ⏻ (START/STOP) button next time.

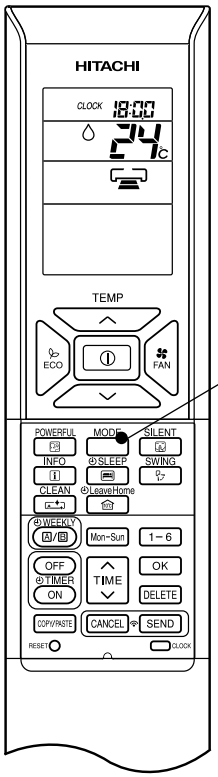
■ During AUTO fan, the fan speed automatically changes as below:
- When the difference between room temperature and setting temperature is large, fan starts to run at HI speed.
- After room temperature reaches the preset temperature, fan speed will be changed to lower speed to obtain optimum room temperature condition for natural healthy heating.

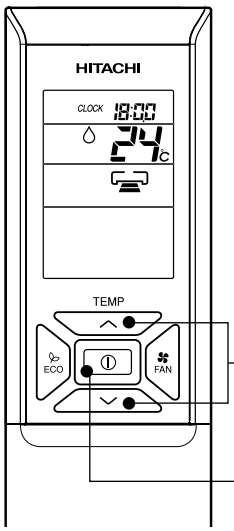
Defrosting

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 a cycle of 3 seconds on and 0.5 second off.
The maximum time for defrosting is 20 minutes.
However, if the indoor unit is connected to multi type outdoor unit, the maximum time for defrosting is 15 minutes.
(If the piping length used is longer than usual, frost is likely to form.)

DEHUMIDIFYING OPERATION

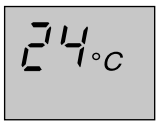
Use the device for dehumidifying when the room temperature is over 16°C.
When it is under 15°C, the dehumidifying function will not work.





1 Press the MODE selector button so that the display indicates ♢ (DEHUMIDIFY).
The fan speed is set at LOW.
Press FAN (FAN SPEED) button to select SILENT or LOW fan speed.

2 Set the desired room temperature with the ROOM TEMPERATURE setting buttons (the display indicates the setting).



The range of 20-26˚C is recommended as the room temperature for dehumidifying.

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

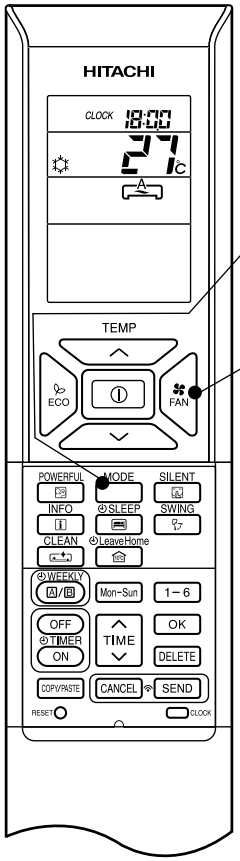
■ As the settings are stored in the memory of the remote controller, you only have to press the ⏻ (START/STOP) button next time.

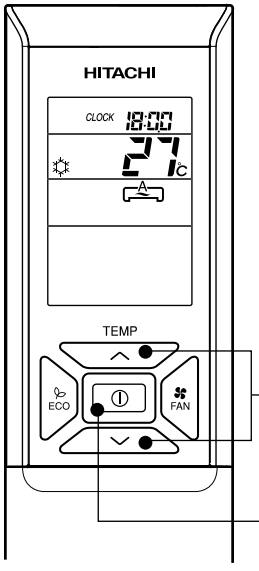
■ Dehumidifying Function

- 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.

COOLING OPERATION

Use the device for cooling when the outdoor temperature is -10~43°C.
If indoors humidity is very high (80%), 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).

2 Set the desired FAN SPEED with the FAN (FAN SPEED) button (the display indicates the setting).

(AUTO) → (HIGH) → (MED) → (LOW) → (SILENT) → (AUTO)

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

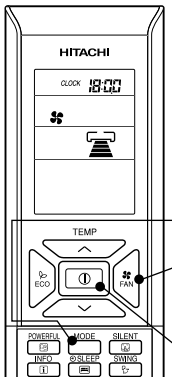
The temperature setting and the actual room temperature may vary depending on conditions.

START / STOP Press the ⏻ (START/STOP) 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 user set the temperature below the current room temperature.

- As the settings are stored in the memory of the remote controller, you only have to press the ⏻ (START/STOP) 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 HI 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.

FAN OPERATION

User can use the device simply as an air circulator.



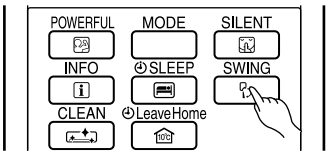
1 Press the MODE selector so that the display indicates (FAN).

2 Set the desired FAN SPEED with the FAN (FAN SPEED) button (the display indicates the setting).

→ (HIGH) → (MED) → (LOW) → (SILENT) →

START / STOP Press the ⏻ (START/STOP) button. Fan operation starts with a beep. Press the button again to stop operation.

AUTO SWING OPERATION



VERTICAL SWING

■ To start Vertical Auto Swing

- Press (AUTO SWING (VERTICAL)) button. The deflector(s) will start to swing up and down.
  is displayed on the LCD.

■ To cancel Vertical Auto Swing

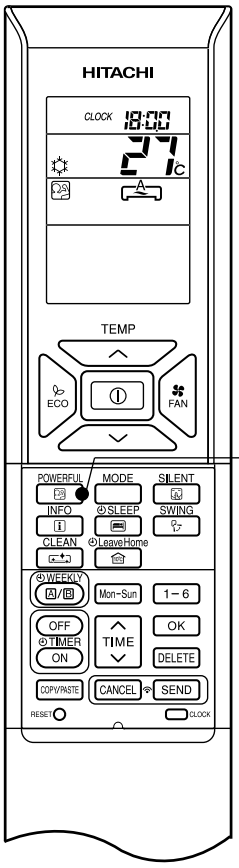
- Press (AUTO SWING (VERTICAL)) button again. The deflector(s) will stop in the current position.
  disappeared from the LCD.

NOTE

- During cooling and dehumidifying operation, do not keep the deflectors swinging or in the lower position (in the case of vertical auto swing) for a long time. It may cause dew condensation on the deflectors.

POWERFUL OPERATION

- By pressing POWERFUL (POWERFUL) button during AUTO, HEATING, DEHUMIDIFYING, COOLING or FAN operation, the air conditioner performs at the maximum power.
- During POWERFUL operation, cooler or warmer air will be blown out from indoor unit for COOLING or HEATING operation respectively.



■ To start POWERFUL operation

1

- Press POWERFUL (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.

■ To cancel POWERFUL operation

- Press the ⏻ (START/STOP) button. Or
- Press POWERFUL (POWERFUL) button again.

  POWERFUL operation stops.

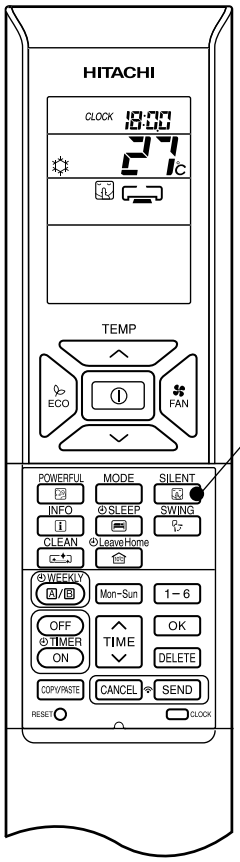
  " " disappears from the LCD.

NOTE

- When SLEEP mode, ECO mode, SILENT mode or LEAVE HOME mode is selected, POWERFUL operation is 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).
- After auto restart, POWERFUL operation is cancelled and previous operation shall start.
- For multi model connections, POWERFUL operation may not function depending on operation conditions.

SILENT OPERATION

- By pressing SILENT (SILENT) button during AUTO, HEATING, DEHUMIDIFYING, COOLING or FAN operation, the fan speed will change to ultra slow.



■ To start SILENT operation

1

- Press SILENT (SILENT) button during operation.

  " " is displayed on the LCD. Fan speed will be ultra slow.

■ To cancel SILENT operation

- Press ⏻ (START/STOP) button. Or
- Press SILENT (SILENT) button again or FAN (FAN SPEED) button.

  Fan speed will return to previous fan speed before SILENT operation starts.

  SILENT operation stops.

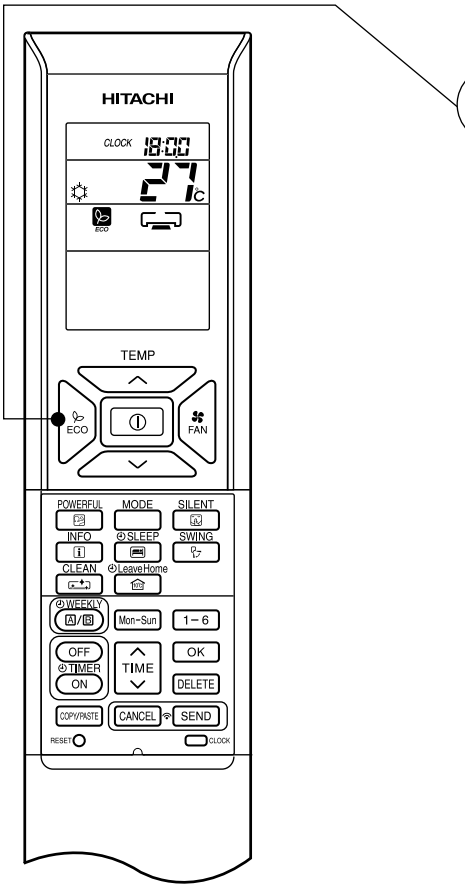
  " " disappears from the LCD.

NOTE

- When POWERFUL operation is selected, SILENT operation is cancelled. Fan speed will return to previous fan speed before SILENT operation.
- After auto restart, SILENT operation is cancelled. Fan speed will return to previous fan speed before SILENT operation.
- During any operation with fan speed (SILENT), if press SILENT (SILENT) button, fan speed will not change.

ECO OPERATION

ECO operation is an energy saving function by changing set temperature automatically and by limiting the maximum power consumption value.



1

- By pressing the ECO (ECO) button during AUTO, HEATING, DEHUMIDIFYING or COOLING operation, the air conditioner performs the "ECO" operation.

■ To start ECO operation

- Press ECO (ECO) button during operation.

  " ECO " is displayed on the LCD.

  Energy saving operation will start by changing the set temperature higher or lower automatically and reducing operation power consumption. This function may vary based on the connected outdoor unit.

■ To cancel ECO operation

- Press ⏻ (START/STOP) button. Or
- Press ECO (ECO) button again.

  " ECO " disappears from the LCD.

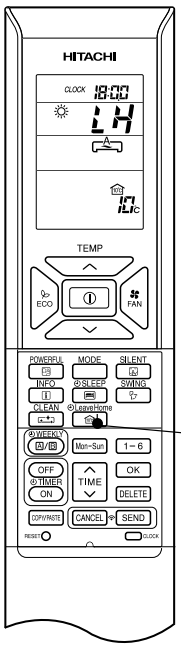
NOTE

- ECO function will not be effective when power consumption is low.
- By pressing (POWERFUL) button, ECO operation is cancelled.
- After auto restart, ECO operation is cancelled and previous operation mode shall start.
- For multi model connections, energy saving operation shall start only by changing set temperature higher or lower automatically. However, effectiveness of ECO depends on operation conditions.

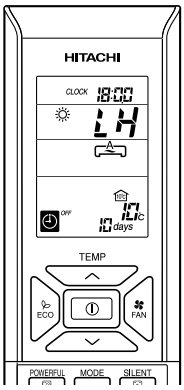
LEAVE HOME(LH) OPERATION

Prevent the room temperature from falling too much by setting temperature 10°C automatically when no one is at home.
This operation is able to operate by "Continuous operation" or "Day timer operation". Please use "Day timer operation" to set the number of days up to 99 days.

Continuous operation



Day timer operation



■ To start LEAVE HOME operation

Option 1. Continuous operation.

- Press LeaveHome (LEAVE HOME) button during stop or operation.
  Room temperature is set at 10°C and heating operation starts.
  " ☼ ", " LH ", " ⌂ ", " 10°C " is displayed on the LCD.

Option 2. Day timer operation.

- Press LeaveHome (LEAVE HOME) button during stop or operation.
  Room temperature is set at 10°C and heating operation starts.
  " ☼ ", " LH ", " ⌂ ", " 10°C " is displayed on the LCD.
- Set number of operation days (1 to 99 days), if needed.
  Press TIME (TIME) button to select number of days.
  Number of days blink.
  * Press " ∧ (UP)" to set number of days from 1 day, 2 days, 3 days ..... 98 days, 99 days, 1 day and so on.
  * Press " ∨ (DOWN)" to set number of days from 99 days, 98 days, 97 days .... 3 days, 2 days, 1 day, 99 days and so on.
  * Number of day is counted when clock indicates 0:00.
- Press SEND (SEND) button to confirm number of operation days. Display for number of operation days will stop blinking.
- Press CANCEL (CANCEL) button to reset number of operation days or to have continuous operation.

■ To cancel LEAVE HOME operation

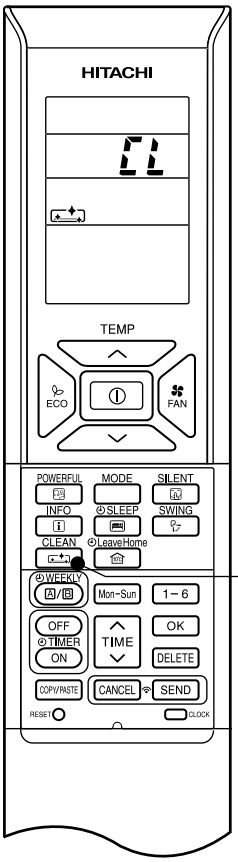
- Press ⏻ (START/STOP) button. Or
- Press LeaveHome (LEAVE HOME) button again.
  Return to previous operation mode. Or
- Change to other operation mode by pressing MODE (MODE) button.

NOTE

- After reaching the set number of operation days for Leave Home or by pressing the (Leave Home) button again, the unit will operate in previous mode.
- During Leave Home operation, fan speed and horizontal air deflector position cannot be changed.
- By pressing (Leave Home) button, implementation of Weekly Timer or Once Timer is cancelled.
- In case of power supply shut down, after autorestart, all setting for number of days operation will be reset and unit shall be in continuous operation.
- For multi connections, when each room is running in different operation modes such as FAN only, COOLING, DEHUMIDIFYING or AUTO mode, Leave Home operation cannot operate even though it is possible to set Leave Home operation.
  In order to start Leave Home operation, all rooms must stop its operation. Then, press (LEAVE HOME) button to operate Leave Home operation.
- For multi connections, when all rooms are running HEATING operation, it is possible to operate Leave Home operation by pressing the (LEAVE HOME) button.
- For multi connections, if two or more rooms are set to operate Leave Home operation, the capability to reach the set temperature at 10°C may not possible. In addition, this also depends on outdoor temperature.
- POWERFUL, SILENT and ECO operations are not applicable during Leave Home operation.

CLEAN (ONE TOUCH CLEAN) OPERATION

Drying indoor heat exchanger after cooling operation to prevent mildew.



■ To start CLEAN operation

1

- Press CLEAN (CLEAN) button when unit is OFF.
  Total time taken for One Touch Clean operation is 60 minutes. During this operation, HEATING or FAN operation shall operate.
  During one touch clean, operation lamp is blinking.
  "CL", " " is displayed on the LCD.

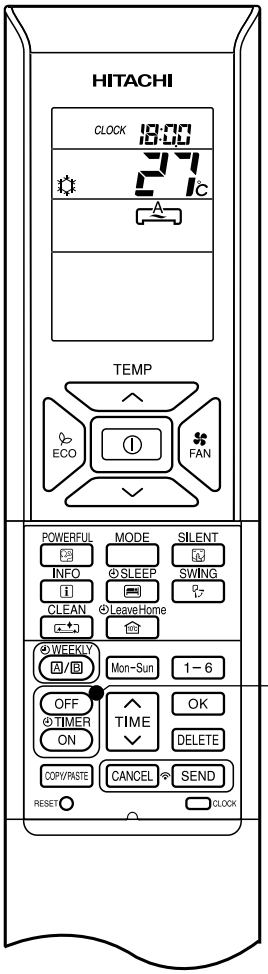
■ To cancel CLEAN operation

- Press ⏻ (START/STOP) button. Or
- Press CLEAN (CLEAN) button again.

NOTE

- When CLEAN operation finish, unit will switch OFF automatically.
- If Weekly Timer or Once Timer is set, there is a need to cancel those timer before operating CLEAN function.
- For multi connections, when pressing CLEAN (CLEAN) button, operation is limited to FAN operation.
- For multi connections, when one room operates CLEAN operation first, other rooms can operate COOLING, DEHUMIDIFYING or FAN operation. However, when other rooms need to operate HEATING operation, air conditioner will be in STANDBY mode. After CLEAN operation finish, HEATING operation will start.

ONCE TIMER (ON/OFF TIMER) OPERATION



1

OFF TIMER

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

1. Press OFF TIMER (OFF-TIMER) button. OFF and 0:00 blink on the display.
2. Set the "turn-off time" with TIME (TIME) button.
3. After setting, direct the remote controller towards the indoor and press SEND (SEND) button.

   OFF and "set time" lights up instead of blinking.

   A beep sound emitted from indoor unit and the (TIMER) lamp on the indoor unit lights up.

ON TIMER

The device will turn on at a designated time.

1. Press TIMER ON (ON-TIMER) button. ON and 0:00 blink on the display.
2. Set the "turn-on time" with TIME (TIME) button.
3. After setting, direct the remote controller towards the indoor and press SEND (SEND) button.

   ON and "set time" light up instead of blinking.

   A beep sound emitted from indoor unit and the (TIMER) lamp on the indoor unit lights up.

ON/OFF TIMER

- The device will turn on (off) and off (on) at the designated time.
- The switching occurs first at the preset time that comes earlier.
- The arrow mark appears on the display to indicate the sequence of switching operations.

1. Press OFF TIMER (OFF-TIMER) button so that OFF and 0:00 blink on the display.
2. Set the "turn-off" time with TIME (TIME) button. After setting, direct the remote controller towards the indoor and press SEND (SEND) button.
3. Press TIMER ON (ON-TIMER) button so that OFF and set "turn-off" time light up.

   The ON and 0:00 blink.
4. Set the "turn-on" time with TIME (TIME) button.
5. After setting, direct the remote controller towards the indoor and press SEND (SEND) button

   ON and set "turn-on" time light up instead of blinking.

   A beep sound emitted from indoor unit and the (TIMER) lamp on the indoor unit lights up.

■ The timer may be used in three ways: OFF-timer, ON-timer and ON/OFF (OFF/ON)-timer. Set the current time first because it serves as a reference.

■ To cancel Reservation

- Point the signal window of the remote controller towards the indoor unit and press CANCEL (CANCEL) button.

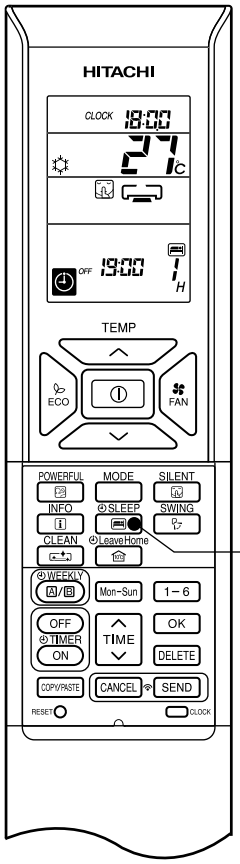
  and "ON or OFF set time" goes out with a beep and the (TIMER) lamp on the indoor unit turns off.

NOTE

- User can set only one of the OFF-timer, ON-timer or ON/OFF-timer.
- If WEEKLY TIMER already set, by setting the ONCE TIMER, ONCE TIMER operation is prioritized. When ONCE TIMER operation is complete, WEEKLY TIMER operation will be activated.

SLEEP ECO SLEEP TIMER OPERATION

The timer can be set up to a duration of 7 hours.
By pressing SLEEP (SLEEP) button during AUTO, HEATING, DEHUMIDIFYING, COOLING or FAN operation, the unit shifts the room temperature and reduces the fan speed. It results in energy saving.
Set the current time first before operating the ECO SLEEP TIMER operation.



1

■ To start ECO SLEEP TIMER operation

Press SLEEP (SLEEP) button during operation.

- " ", " ", " ", "OFF", off time, " " and number of hour are displayed on the remote controller display.
- During ECO SLEEP TIMER operation, fan speed will be ultra slow.
- A beep sound emitted from indoor unit and the (TIMER) lamp on the indoor unit lights up.

Pressing SLEEP (SLEEP) button repeatedly, the number of hours will change as below:

- During ECO SLEEP TIMER operation, air conditioner will continue to operate for the designated number of hours and then turn off.
- When the ECO SLEEP TIMER has been set, the display on the remote controller indicates the turn off time.

Example: If ECO SLEEP TIMER is set for 1 hour at 18:00, the switch off time will be at 19:00.

■ To cancel ECO SLEEP TIMER operation

Press (START/STOP) button.

- Room air conditioner will switch off.

Press SLEEP (SLEEP) button again until " ", " ", " ", off time, " " and number of hour disappear from the remote controller display.

Press CANCEL (CANCEL) button.

- A beep sound emitted from indoor unit and the (TIMER) lamp on the indoor unit turns off.
- SLEEP TIMER operation is cancelled.

SLEEP ECO SLEEP TIMER OPERATION

■ To set ECO SLEEP TIMER and ON TIMER

The air conditioner will be turned off by ECO SLEEP TIMER and turned on by ON TIMER.

1. Set the ON TIMER.
2. Press SLEEP (SLEEP) button and set ECO SLEEP TIMER.

Example:
In this case, air conditioner will turn off in 2 hours (at 1:38) and it will be turned on at 6:00 the next morning.

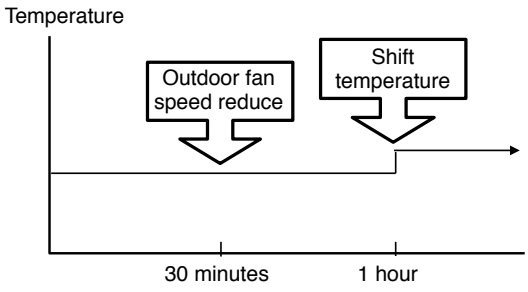
■ To cancel ECO SLEEP TIMER and ON TIMER operation

Direct the remote controller towards the indoor unit and press CANCEL (CANCEL) button.

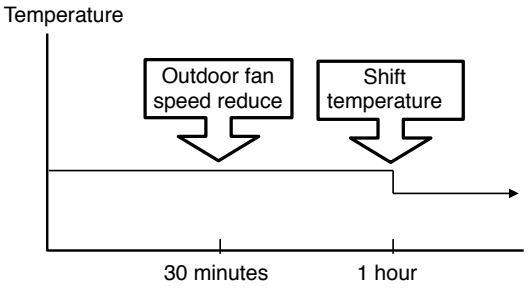
- " ", " ", " ", "OFF", off time, " ", number of hour, "ON" and ON TIMER set time disappear from the remote controller display.
- A beep sound emitted from indoor unit and the (TIMER) lamp on the indoor unit turns off.
- ECO SLEEP TIMER and ON TIMER reservations are cancelled.

30 minutes after setting ECO SLEEP TIMER, outdoor fan speed will be reduced to lower the noise level and to have comfort operation.
1 hour after setting ECO SLEEP TIMER, set temperature will be slightly shifted. Amount of temperature shifted depends on type of air conditioner.
These automatic operation changes contribute to energy saving without losing comfort.
The level of energy consumption depends on outside temperature, room temperature, set temperature or air conditioner type.

Cooling operation [diagram representation for illustrative purpose only]



Heating operation [diagram representation for illustrative purpose only]



NOTE

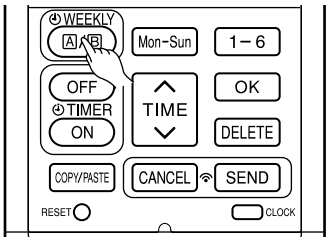
- If ECO SLEEP TIMER is set when OFF TIMER or ON/OFF TIMER has been set earlier, the ECO SLEEP TIMER becomes effective instead of the OFF TIMER or ON/OFF TIMER.

WEEKLY TIMER OPERATION

- It is possible to select Mode A or Mode B. For each mode, up to 6 programs can be set per day. In total, a maximum of 42 programs can be set for a week for each mode.
- If calendar and clock are not set, the reservation setting for WEEKLY TIMER cannot be set.
- If calendar and clock are not set correctly, WEEKLY TIMER will not operate correctly.
- Reservation for calendar and clock shall be set first before operating WEEKLY TIMER.

Step 1 : Set the reservation schedule to the remote controller. Send the registered reservation to indoor unit and then operate.
Step 2 : Select Mode A or Mode B and activate or deactivate WEEKLY TIMER .
Step 3 : Copy and cancel the reservation schedule.

Step 1 : Set reservation schedule to the remote controller. Send the registered reservation to indoor unit and then operate.



① ②

■ How to set a WEEKLY TIMER.

1. Select Mode A or Mode B

   Press (WEEKLY) button. WEEKLY lights up. A and ◴ blink on the display. (Mode A is selected).

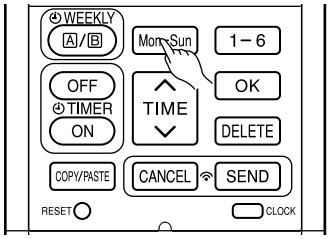
   Press (WEEKLY) button again, B and ◴ blink on the display. (Mode B is selected).

   - If no reservation has been made, ON/OFF, --:-- , --°C appear.
   - If reservation has been made, ON/OFF, --:-- , --°C will not appear.

2. Set a program

   Press (WEEKLY) button for about 3 seconds. The selection mode can be changed.

   ◴, day: Mon, program no. : 1, ON/OFF, setting time and setting temperature blink on the display.



③

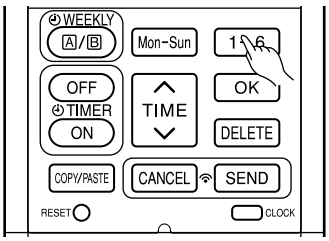
3. Select the desired day of the week

   Press [Mon-Sun] (DAY) button.

   The day changes from Mon ⟶ Tue ⟶ Wed ⟶ Thu ⟶ Fri ⟶ Sat ⟶ Sun ⟶ Mon, Tue, Wed, Thu, Fri, Sat, Sun [Full days] ⟶ Mon, Tue, Wed, Thu, Fri [weekday] ⟶ Sat, Sun [weekend] ⟶ Mon ⟶ Tue .....

   Select [Full days] for daily reservation.
   Select [weekday] for Monday to Friday reservation.
   Select [weekend] for Saturday and Sunday reservation.

   - After reservation has been set, it is easy to check and edit at the same time.



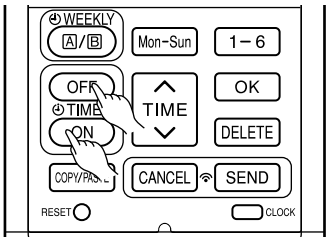
④

4. Press [1 – 6] button to select a program number.

   The number changes from 1 ⟶ 2 ⟶ 3 ⟶ 4 ⟶ 5 ⟶ 6 ⟶ 1 ⟶ 2 .....

   - If program number has been set, follow above in order to make changes.

WEEKLY TIMER OPERATION



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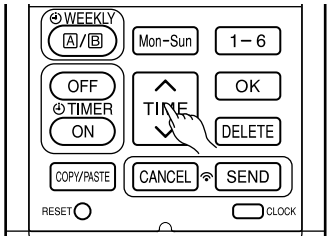

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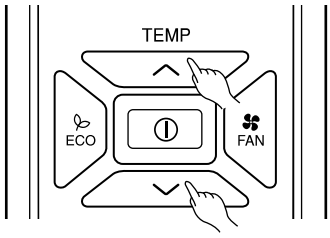

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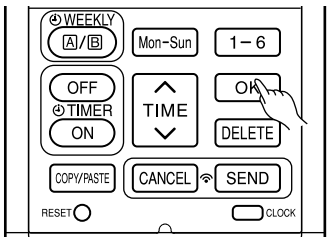

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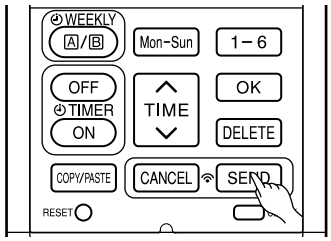


9

5. Press (OFF TIMER ON) (ON-OFF TIMER) button to select ON TIMER or OFF TIMER reservation.
6. Press (TIME) (TIME) button to set time reservation.
7. Press (TEMP ∧ or ∨) button to set temperature reservation.
8. Press [OK] (OK) button. The reservations are set. Day, program number, ON reservation, setting temperature will light up. ◴ will be continuously blinks. If reservation is not complete, settings will not be stored in memory.

To continue with the reservation, press [Mon-Sun] [1–6] (TIME) (OFF TIMER ON) buttons. Follow step 3 to 8 for reservation.

9. After all the reservations have been set, press [SEND] (SEND) button while directing the remote controller towards the indoor unit for about 3 seconds. Timer lamp on the indoor unit will blink rapidly.
   After beep sound emitted from indoor unit, TIMER lamp will light up.
   Please ensure that the TIMER lamp lights up.
   This indicates that the reservation has been stored in the indoor unit and Timer function has been completed.
   The reservation contents will appear on the remote controller display.

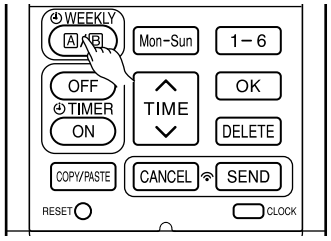
- If TIMER lamp on the indoor unit does not light up, press [SEND] (SEND) button while directing the remote controller towards the indoor unit for about 3 seconds.
- **CAUTION !** Do not press [CANCEL] (CANCEL) button during reservation setting because this will result in all reservation contents to be lost.
- The reservation contents will not stored in the indoor unit until [SEND] (SEND) button has been pressed.

NOTE

- Up to 6 programs can be set per day. Setting ON TIMER or OFF TIMER for each program number can be at random. When pressing [SEND] (SEND) button, the set ON TIMER or OFF TIMER for each program number will automatically arranged so that program number 1 shall have the earliest time and program number 6 shall have the latest time.
  If the setting time is the same, Priority will be given to the latest reservation contents.
- **CAUTION !** If the remote controller is left idle and [SEND] (SEND) button is not pressed within 3 minutes after reservations have been made , all current reservations will be lost.

WEEKLY TIMER OPERATION

Step 2: Select Mode A or Mode B and activate or deactivate WEEKLY TIMER.

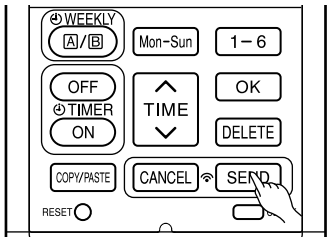


1

2

■ How to select Mode A or Mode B of WEEKLY TIMER setting.

1. Press (WEEKLY) button. **A** and blink on the display. (Normally Mode A will blink first).
2. Press (WEEKLY) button again. **B** and blink on the display.
3. Select Mode A or Mode B. Press SEND (SEND) button while directing the remote controller towards the indoor unit for about 3 seconds. Timer lamp on the indoor unit will blink rapidly.

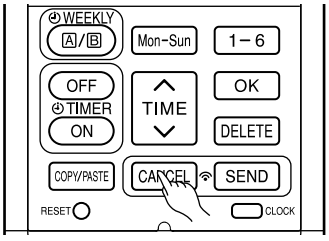


3

After beep sound emitted from indoor unit, TIMER lamp will light up.

Please ensure that the TIMER lamp lights up.

This indicates that Mode A or Mode B selection and active WEEKLY TIMER have been confirmed.



1

■ Setting non-active WEEKLY TIMER .

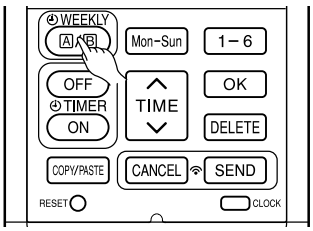
1. Direct the remote controller towards the indoor unit and press CANCEL (CANCEL) button.
   Beep sound will be emitted from indoor unit and TIMER lamp will be OFF.
   Reservation indication on remote display will also disappear.
   This indicates that non-active WEEKLY TIMER has been confirmed.

   - To activate back the setting of WEEKLY TIMER , repeat the steps for "How to select Mode A or Mode B of WEEKLY TIMER setting".

NOTE

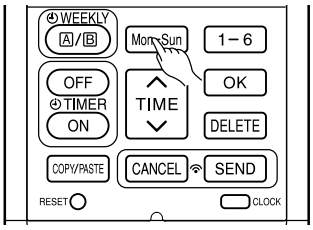
- When setting ONCE TIMER, operation of WEEKLY TIMER is interrupted. After ONCE TIMER operation is complete, WEEKLY TIMER operation will be activated.
- When ONCE TIMER is cancelled, operation of WEEKLY TIMER is also cancelled. Need to set WEEKLY TIMER operation for activation.
- After auto restart, WEEKLY TIMER operation is cancelled. Need to set WEEKLY TIMER operation for activation.

Step 3: Copy and cancel the reservation schedule.

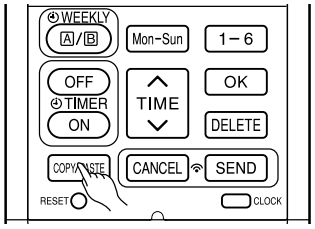


1

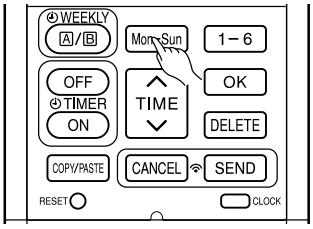
2



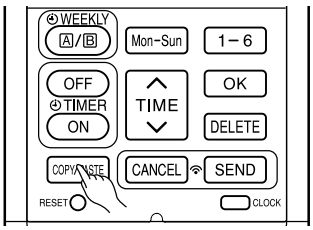
3



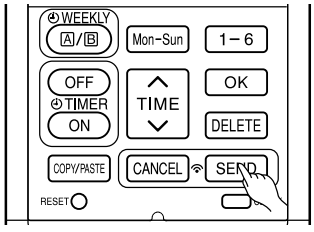
4



5



6



8

■ How to copy and paste.

Editing the reservation schedule is easy by copying data from one day to another day.

1. Press WEEKLY A/B (WEEKLY) button to select Mode A or Mode B.
2. Press WEEKLY A/B (WEEKLY) button for about 3 seconds to start editing the reservation schedule.
3. Press Mon-Sun (DAY) button to select a day of the week to copy.
4. Press COPY/PASTE (COPY/PASTE) button. Then "PASTE" blinks on the display.
   * Press CANCEL (CANCEL) button to cancel the COPY mode. Normal setting mode is activated.
5. Press Mon-Sun (DAY) button to select a day of the week to paste.
6. Press COPY/PASTE (COPY/PASTE) button one more time to paste. ◴ only blinks on the display.
7. To continue copying to other days, press Mon-Sun or 1–6 or TIME or OFF TIMER ON .

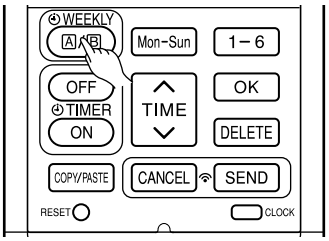
   Then start from step 3.
8. After copy and paste completed, press SEND (SEND) button while directing the remote controller towards the indoor unit for about 3 seconds. Timer lamp on the indoor unit will blink rapidly.
   After beep sound emitted from indoor unit, TIMER lamp will light up.
   Please ensure that the TIMER lamp lights up.
   If TIMER lamp does not light up, Press SEND (SEND) button again.

- Reservation data will not change if SEND (SEND) button is not pressed.

NOTE

- If there is no reservation data, copying data from one day to another day cannot be done.

Step 3: Copy and cancel the reservation schedule.

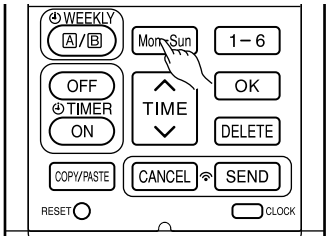


1
2

■ How to delete WEEKLY TIMER data.

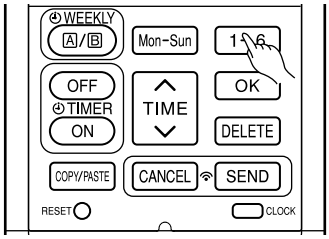
[Delete one program number reservation]

1. Press WEEKLY A/B (WEEKLY) button to select Mode A or Mode B.
2. Press WEEKLY A/B (WEEKLY) button for 3 seconds to start editing the reservation schedule.



3

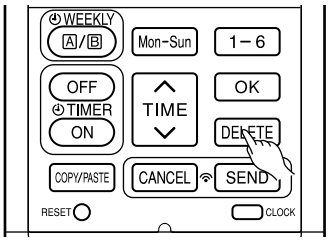
3. Press Mon-Sun (DAY) button to select a day of the week to edit.
4. Press 1 – 6 to select program number. Selected program number will blink.
5. Press DELETE (DELETE) button. Reservation of selected program number is deleted.



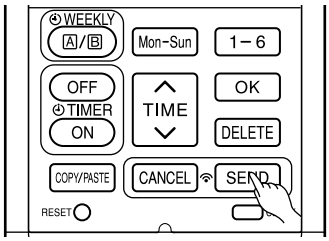
4

6. After deleting, press SEND (SEND) button while directing the remote controller towards the indoor unit for about 3 seconds. Timer lamp on the indoor unit will blink rapidly.
   After beep sound emitted from indoor unit, TIMER lamp will light up.
   Please ensure that the TIMER lamp lights up.

- Reservation will not change if SEND (SEND) button is not pressed.



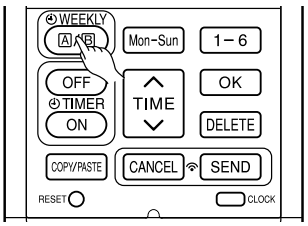
5



6

WEEKLY TIMER OPERATION

Step 3: Copy and cancel the reservation schedule.

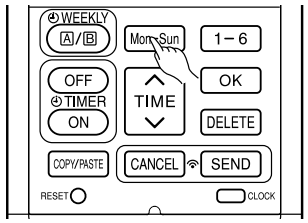


(1)

(2)

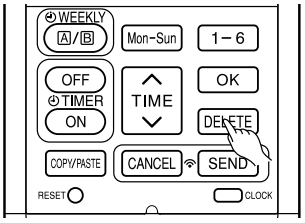
[Delete one day reservation]

1. Press WEEKLY A/B (WEEKLY) button to select Mode A or Mode B.
2. Press WEEKLY A/B (WEEKLY) button for 3 seconds to start editing the reservation schedule.



(3)

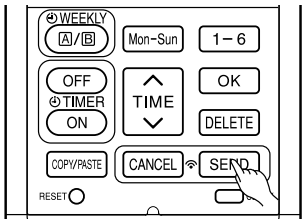
3. Press Mon-Sun (DAY) button to select a day of the week to edit.
4. Press DELETE (DELETE) button for about 10 seconds. Reservations for all program numbers will be deleted.
   - If press for a short time, reservation for one program number will be deleted.



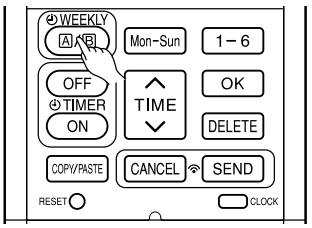
(4)

5. After deleting, press SEND (SEND) button while directing the remote controller towards the indoor unit for about 3 seconds. Timer lamp on the indoor unit will blink rapidly.
   After beep sound emitted from indoor unit, TIMER lamp will light up.
   Please ensure that the TIMER lamp lights up.

- Reservation will not change if SEND (SEND) button is not pressed.



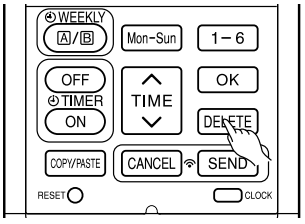
(5)



(1)

[Delete Mode A or Mode B]

1. Press WEEKLY A/B (WEEKLY) button to select Mode A or Mode B.
2. Direct the remote controller towards the indoor unit and press DELETE (DELETE) button for about 10 seconds while Mode A or Mode B display blinks.
   After beep sound emitted from indoor unit, reservations for Mode A or Mode B will disappear.



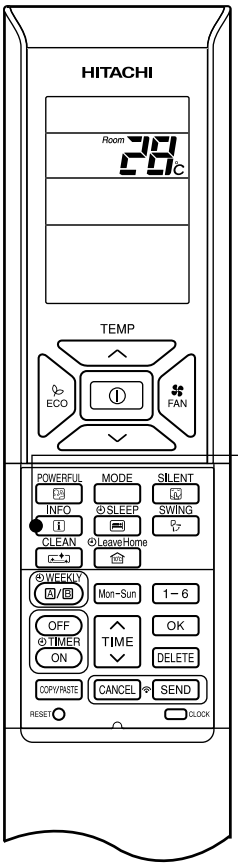
(2)

NOTE

- If all reservations in the remote controller were deleted and pressed SEND (SEND) button, no signal will be transmitted to indoor unit. TIMER lamp will remain off and no changes will be done to the reservations stored in the indoor unit.

INFO FUNCTION

- By pressing INFO (INFO) button, temperature around remote controller and monthly power consumption will be displayed on the remote controller.
- After changing the batteries, direct the remote controller towards the indoor unit and press INFO (INFO) button. Current calendar and clock will be transmitted from indoor unit.
- In order to receive information from indoor unit, the distance between remote controller and receiver of indoor units is within 2 meters.



■ To check temperature around remote controller

1 Press INFO (INFO) button.

Temperature will be displayed for 10 seconds.

■ To check monthly power consumption

Direct the remote controller towards the receiver of indoor unit (within 2 meters in front of indoor unit) and press INFO (INFO) button. Wait for 2 seconds for signal transmission.

While temperature around remote controller is displayed, press INFO (INFO) button repeatedly. The display will show as below:

this month power consumption amount for heating → last month power consumption amount for heating → this month power consumption amount for cooling → last month power consumption amount for cooling → temperature around remote controller → this month power consumption amount for heating ..... cyclically.

- If indication is not given, bring remote controller closer to the receiver of the indoor unit.
- Indicated value shall be regarded as a guide only.

■ Current calendar and clock can be retrieved from indoor unit

Direct the remote controller towards the receiver of indoor unit (within 2 meters in front of indoor unit) and press INFO (INFO) button. Wait for 2 seconds for signal transmission.

Once received the current calendar and clock, check whether they are correct or not by pressing CLOCK (CLOCK) button.

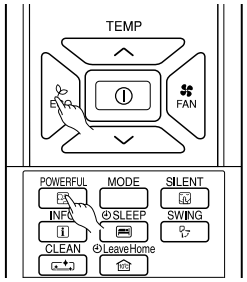
- If there is no power supply to indoor unit or calendar and clock have not been set, INFO function cannot be used for sending or receiving information.

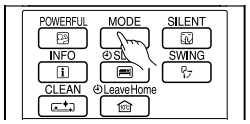
NOTE

- In case failure occurs to the air conditioner, by pressing INFO (INFO) button, an error code will be displayed. Direct the remote controller towards the receiver of indoor unit (within 2 meters in front of indoor unit) and press INFO (INFO) button. Wait for 2 seconds for signal transmission.
  An error code will be displayed.
  Call service center and inform the error code.
- Information of “Monthly power consumption” are not available for model RAM-130NP6A.
- Info Function to check monthly power consumption.
  During installation, in case of power failure or breaker ON / OFF, ensure to set the clock and calendar for each indoor unit (unit in standby mode or auto restart), for single or multi connection, by pressing ⏻ (START / STOP) button.
  Failure to do the above, monthly power consumption amount will not be displayed on the remote controller.

OPERATION MODE LOCK

The remote controller can be set to fix the HEATING mode (including FAN), COOLING mode (including FAN) and DEHUMIDIFYING mode (including FAN) operations.





■ Method to lock HEATING mode (including FAN) operation.

Press ECO (ECO) and POWERFUL (POWERFUL) buttons simultaneously for about 5 seconds when the remote controller is OFF.

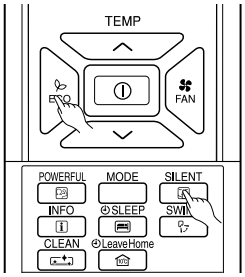
" ☼ ", " ✿ " and " 🔑 " will be displayed for about 10 seconds. Later, " ☼ " and " 🔑 " will remain.

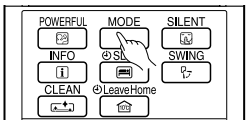
This indicates that HEATING mode operation is locked.

When pressing MODE (MODE) button, " ☼ " or " ✿ " will be displayed.

■ Method to unlock HEATING mode (including FAN) operation.

Press ECO (ECO) and POWERFUL (POWERFUL) buttons simultaneously for about 5 seconds when the remote controller is OFF.
All operation mode symbols will appear on the display for about 10 seconds. After that, operation mode symbol before cancellation will be displayed.
This indicates that HEATING mode operation is unlocked.





■ Method to lock COOLING and DEHUMIDIFYING modes (including FAN) operations.

Press ECO (ECO) and SILENT (SILENT) buttons simultaneously for about 5 seconds when the remote controller is OFF.

" ☼ ", "◇", " ✿ " and " 🔑 " will be displayed for about 10 seconds. Later, " ☼ " and " 🔑 " will remain.

This indicates that COOLING and DEHUMIDIFYING mode operation is locked.

When pressing MODE (MODE) button, " ☼ ", " ✿ " or " ◇ " will be displayed.

■ Method to unlock COOLING and DEHUMIDIFYING modes (including FAN) operations.

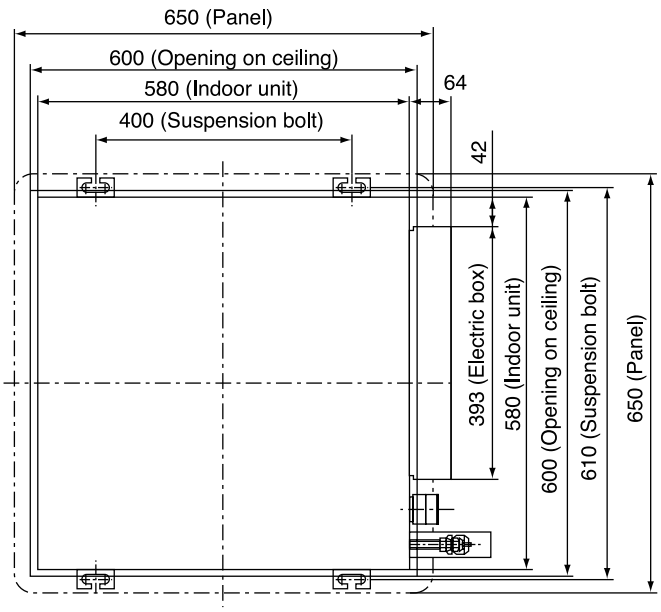
Press ECO (ECO) and SILENT (SILENT) buttons simultaneously for about 5 seconds when the remote controller is OFF.
All operation mode symbols will appear on the display for about 10 seconds. After that, operation mode symbol before cancellation will be displayed.
This indicates that COOLING and DEHUMIDIFYING modes operation is unlocked.

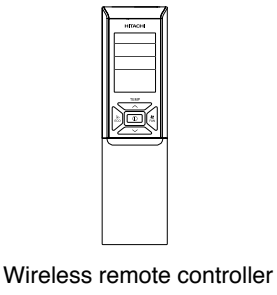
NOTE

- Operation Mode Lock function will not activate if TIMER reservations activate.
  TIMER reservations shall be deactivated first. Then, Operation Mode Lock function can be activated.
- HEATING, COOLING and DEHUMIDIFYING mode (including FAN) operations can be unlocked by pressing the RESET◯ (RESET) button. However, by pressing the RESET◯ (RESET) button, all the information stored in the remote controller will disappear. You may need to set the necessary information again.
- For multi connections, unit and mode which is set to lock HEATING and switched on first shall have higher priority. Other units which are chosen to operate at different modes shall be in STANDBY until either the first unit operation is switched off or the mode is selected to be same as the first unit.

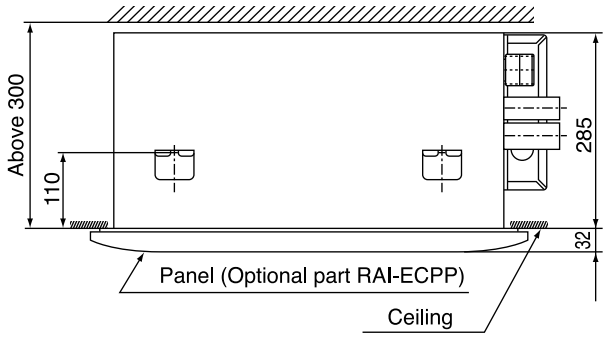
CONSTRUCTION AND DIMENSIONAL DIAGRAM

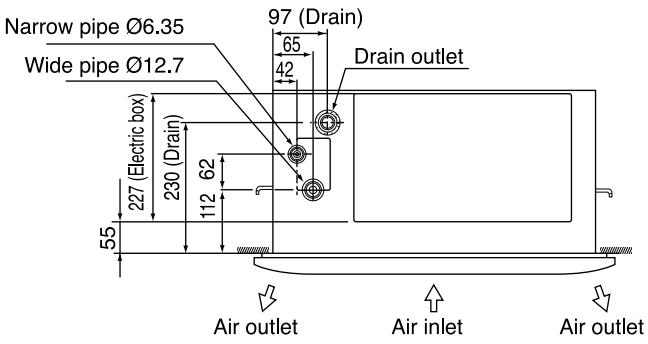
MODEL RAI-25RPA, RAI-35RPA, RAI-50RPA





Wireless remote controller





Note:

1. Insulated pipes should be used for both the narrow and wide dia. pipes.
2. Piping length is within 20m.
3. Height difference of the piping between the indoor unit and the outdoor unit should be within 10m.
4. An F-cable 1.6mm or 2.0mm dia. X 3 (control side) is used for the connection cable.

MAIN PARTS COMPONENT

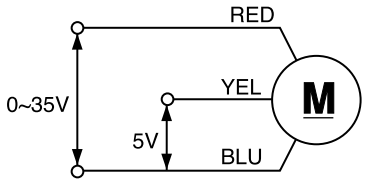
THERMOSTAT

Thermostat Specifications

THERMOSTAT MODEL			IC			
OPERATION MODE			COOL			HEAT
MODEL			RAI-25RPA	RAI-35RPA	RAI-50RPA	RAI-25RPA RAI-35RPA RAI-50RPA
TEMPERATURE °C (°F)	INDICATION 16	ON	15.0 (59.0)	13.0 (55.4)	13.0 (55.4)	20.0 (68.0)
		OFF	14.7 (58.5)	12.7 (54.9)	12.7 (54.9)	20.3 (68.5)
	INDICATION 24	ON	23.0 (73.4)	21.0 (69.8)	21.0 (69.8)	28.0 (82.4)
		OFF	22.7 (72.9)	20.7 (69.3)	20.7 (69.3)	28.3 (82.9)
	INDICATION 32	ON	31.0 (87.8)	29.0 (84.2)	29.0 (84.2)	36.0 (96.8)
		OFF	30.7 (87.3)	28.7 (83.7)	28.7 (83.7)	36.3 (97.9)

FAN MOTOR

Fan Motor Specifications

MODEL	RAI-25RPA / RAI-35RPA / RAI-50RPA
POWER SOURCE	DC: 0 ~ 35V
OUTPUT	25W
CONNECTION	 (Control circuit built in)

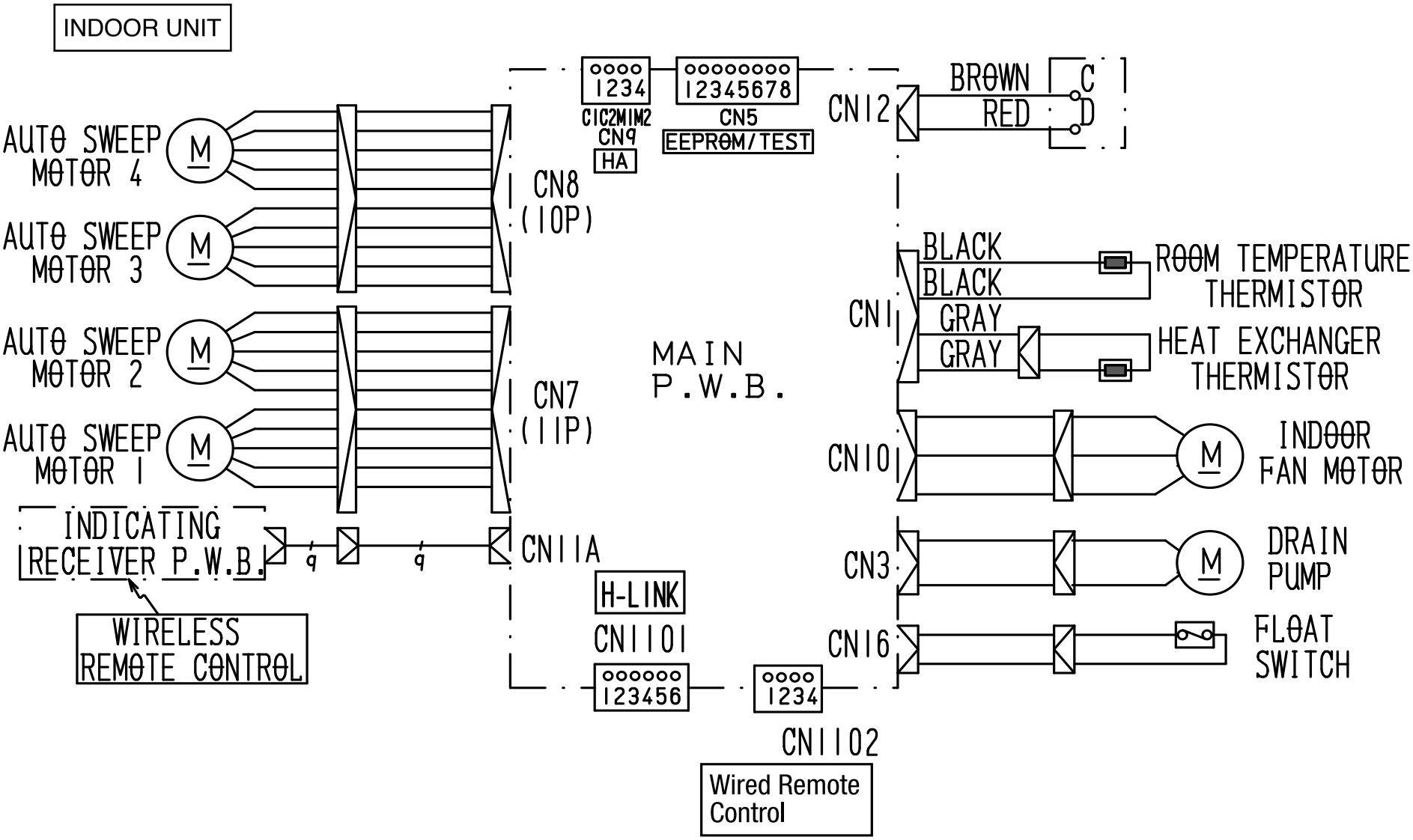
BLU : BLUE YEL : YELLOW BRN : BROWN WHT : WHITE

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

BLK : BLACK PNK : PINK VIO : VIOLET

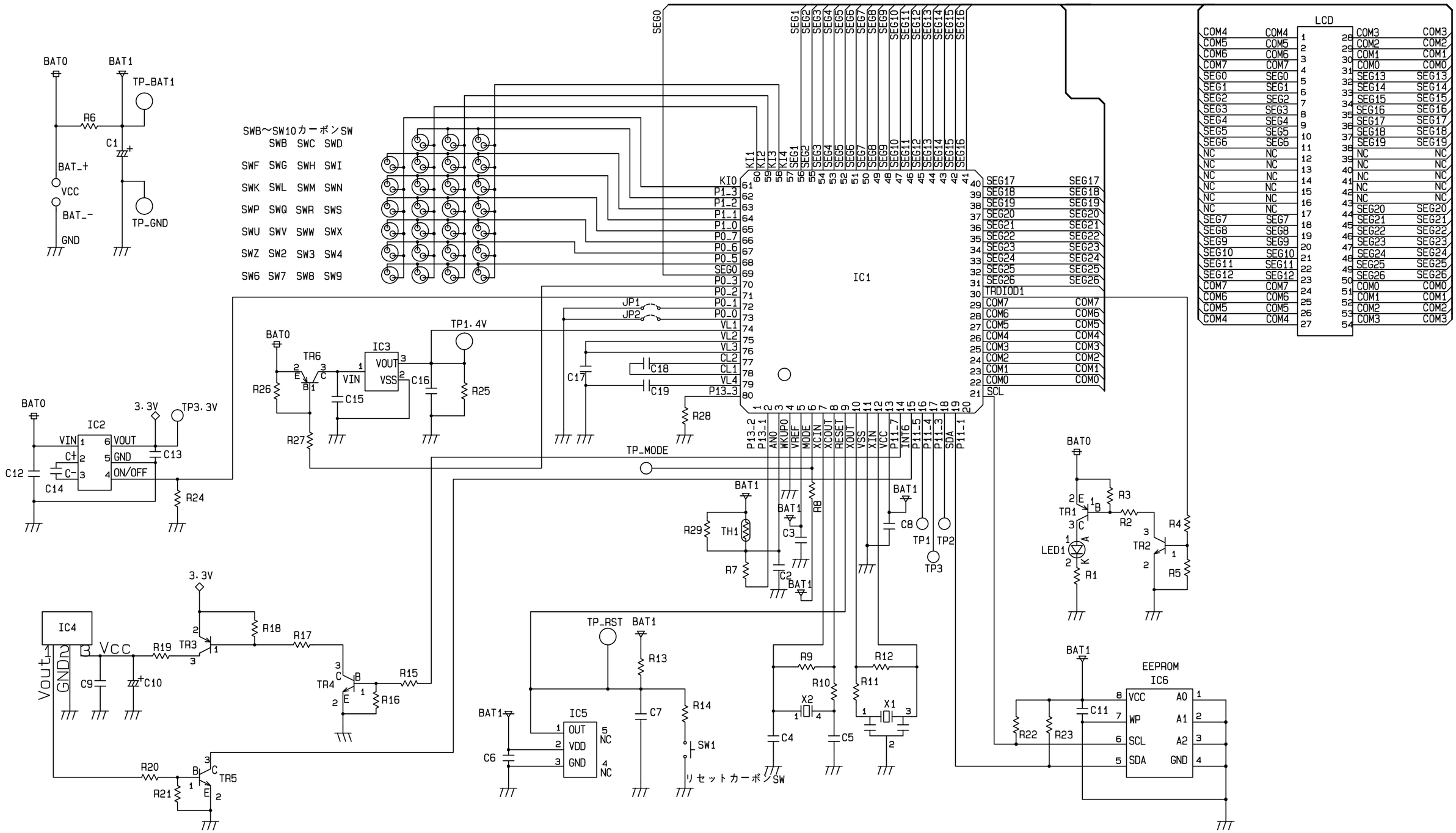
WIRING DIAGRAM

MODEL RAI-25RPA / RAI-35RPA / RAI-50RPA



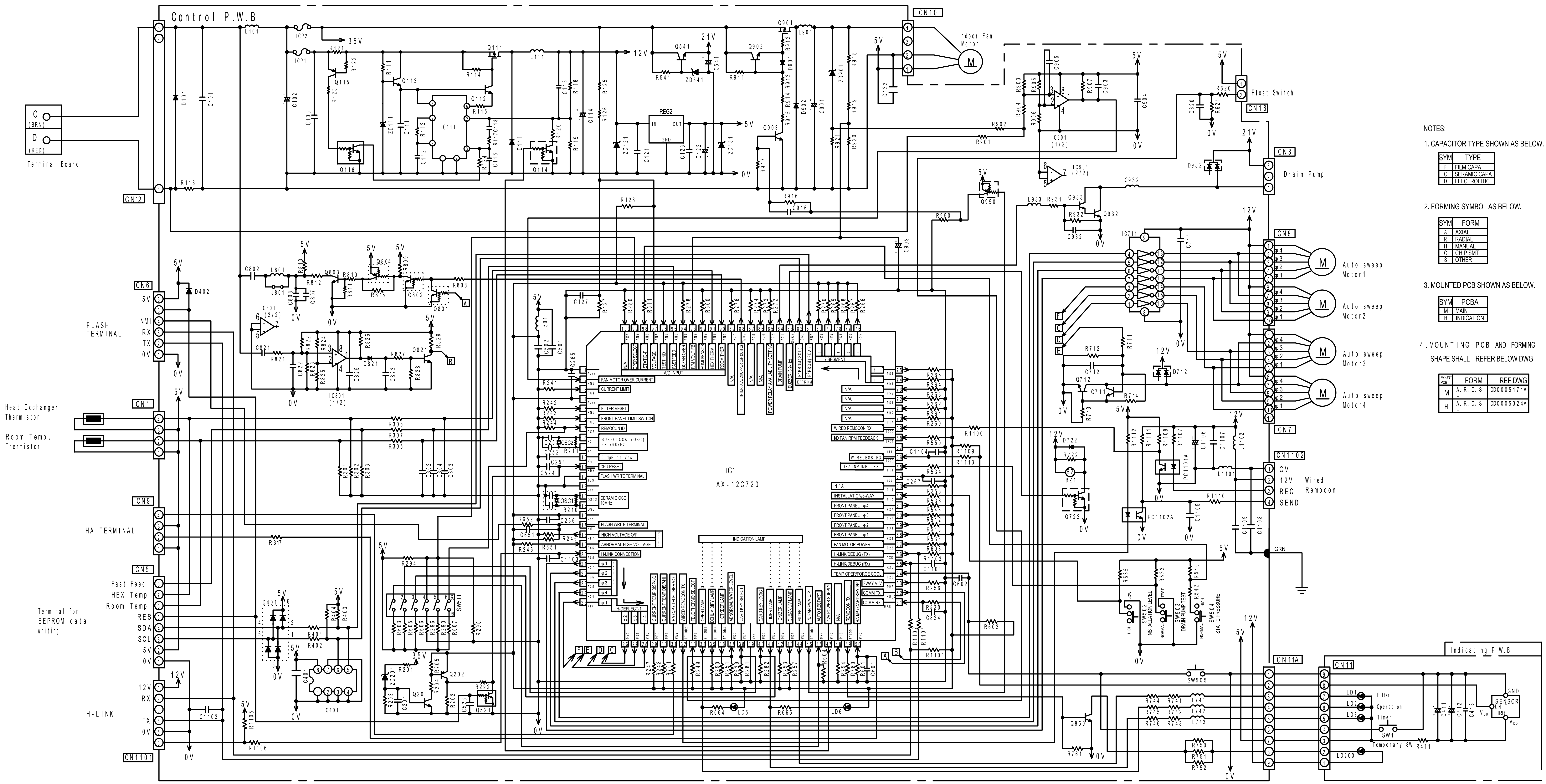
CIRCUIT DIAGRAM

Remote Control



CIRCUIT DIAGRAM

MODEL RAI-25RPA, RAI-35RPA, RAI-50RPA



NOTES:

1. CAPACITOR TYPE SHOWN AS BELOW.

SYM	TYPE
F	FILM CAPA
C	SERAMIC CAPA
D	ELECTROLITIC

2. FORMING SYMBOL AS BELOW.

SYM	FORM
A	AXIAL
R	RADIAL
H	MANUAL
C	CHIP SMT
S	OTHER

3. MOUNTED PCB SHOWN AS BELOW.

SYM	PCBA
M	MAIN
H	INDICATION

4. MOUNTING PCB AND FORMING SHAPE SHALL REFER BELOW DWG.

MOUNT PCB	FORM	REF DWG
M	A, R, C, S, H	DD0005171A
H	A, R, C, S, H	DD0005324A

RESISTOR

SYMBOL	VALUE (Ω)	TOL	POWER (W)	FORM	MOUNT PCB	ASSY PART#	REMARK
R111	27k	5%	1/10	C	M	6	1608
R112	30k	5%	1/10	C	M	7	1608
R113	0.3	5%	1	A	M	8	
R114	750	5%	1/8	C	M	9	2125
R115	560	5%	1/8	C	M	10	2125
R117	68k	5%	1/10	C	M	11	1608
R118	75k	2%	1/10	C	M	12	1608
R119	6.98k	1%	1/10	C	M	13	1608
R120	—	2%	1/16	C	M	—	1608
R121	0.56	5%	1/4	C	M	14	3216
R122	100	5%	1/10	C	M	15	1608
R123	33k	5%	1/10	C	M	16	1608
R124	100	5%	1/10	C	M	15	1608
R125	—	5%	1/10	C	M	—	1608
R126	—	5%	1/10	C	M	—	1608
R127	—	5%	1/10	C	M	—	1608
R128	10k	5%	1/16	C	M	17	1608
R201	5.1k	5%	1/8	C	M	18	2125
R202	5.1k	5%	1/10	C	M	19	1608
R203	2k	5%	1/10	C	H	20	1608
R204	5.1k	5%	1/10	C	H	19	1608
R205	2.7k	5%	1/8	C	H	21	2125
R210	—	5%	1/16	C	M	—	1608
R211	—	5%	1/16	C	M	—	1608
R241	10k	5%	1/16	C	M	17	1608
R242	10k	5%	1/16	C	M	17	1608
R243	10k	5%	1/16	C	M	17	1608
R244	10k	5%	1/16	C	M	17	1608
R245	10k	5%	1/16	C	M	17	1608
R246	10k	5%	1/16	C	M	17	1608
R247	10k	5%	1/16	C	M	17	1608
R248	10k	5%	1/16	C	M	17	1608
R249	10k	5%	1/16	C	M	17	1608
R250	10k	5%	1/16	C	M	17	1608
R251	10k	5%	1/16	C	M	17	1608
R253	10k	5%	1/16	C	M	17	1608
R254	10k	5%	1/16	C	M	17	1608
R256	10k	5%	1/16	C	M	17	1608
R257	10k	5%	1/16	C	M	17	1608
R258	10k	5%	1/16	C	M	17	1608

SYMBOL	VALUE (Ω)	TOL	POWER (W)	FORM	MOUNT PCB	ASSY PART#	REMARK
R260	10k	5%	1/16	C	M	17	1608
R261	10k	5%	1/16	C	M	17	1608
R262	10k	5%	1/16	C	M	17	1608
R263	10k	5%	1/16	C	M	17	1608
R264	10k	5%	1/16	C	M	17	1608
R265	10k	5%	1/16	C	M	17	1608
R266	10k	5%	1/16	C	M	17	1608
R267	10k	5%	1/16	C	M	17	1608
R268	10k	5%	1/16	C	M	17	1608
R269	10k	5%	1/16	C	M	17	1608
R270	10k	5%	1/16	C	M	17	1608
R272	10k	5%	1/16	C	M	17	1608
R273	10k	5%	1/16	C	M	17	1608
R274	10k	5%	1/16	C	M	17	1608
R276	10k	5%	1/16	C	M	17	1608
R278	10k	5%	1/16	C	M	17	1608
R280	10k	5%	1/16	C	M	17	1608
R281	10k	5%	1/16	C	M	17	1608
R282	10k	5%	1/16	C	M	17	1608
R292	1k	5%	1/10	C	M	24	1608
R293	1k	5%	1/10	C	M	24	1608
R294	10k	5%	1/10	C	M	27	1608
R295	10k	5%	1/10	C	M	27	1608
R296	1k	5%	1/10	C	M	24	1608
R301	12.7k	1%	1/10	C	M	26	1608
R302	12.7k	1%	1/10	C	M	26	1608
R303	10k	5%	1/10	C	M	27	1608
R305	1k	5%	1/10	C	M	24	1608
R306	1k	5%	1/10	C	M	24	1608
R307	1k	5%	1/10	C	M	24	1608
R317	1k	5%	1/16	C	M	28	1608
R401	390	5%	1/10	C	M	29	1608
R402	390	5%	1/10	C	M	29	1608
R403	5.1k	5%	1/10	C	M	19	1608
R404	5.1k	5%	1/10	C	M	19	1608

SYMBOL	VALUE (Ω)	TOL	POWER (W)	FORM	MOUNT PCB	ASSY PART#	REMARK
R411	47	5%	1/6	C	H	19	1608
R500	10k	5%	1/16	C	M	17	1608
R511	1k	5%	1/10	C	M	24	1608
R512	10k	5%	1/16	C	M	17	1608
R513	10k	5%	1/16	C	M	17	1608
R533	10k	5%	1/10	C	M	27	1608
R534	1k	5%	1/10	C	M	24	1608
R535	10k	5%	1/10	C	M	27	1608
R536	1k	5%	1/10	C	M	24	1608
R538	10k	5%	1/16	C	M	17	1608
R539	—	5%	1/16	C	M	—	1608
R540	10k	5%	1/10	C	M	27	1608
R541	3.9k	5%	1/4	C	M	30	3216
R542	10k	5%	1/10	C	M	27	1608
R545	10k	5%	1/16	C	M	17	1608
R550	10k	5%	1/16	C	M	17	1608
R601	10k	5%	1/10	C	M	27	1608
R602	10k	5%	1/10	C	M	27	1608
R603	1k	5%	1/16	C	M	28	1608
R604	10k	5%	1/16	C	M	17	1608
R605	1k	5%	1/16	C	M	28	1608
R606	1k	5%	1/16	C	M	28	1608
R607	1k	5%	1/16	C	M	28	1608
R608	10k	5%	1/16	C	M	17	1608
R620	1k	5%	1/10	C	M	24	1608
R621	10k	5%	1/10	C	M	27	1608
R651	1k	5%	1/10	C	M	24	1608
R652	100	5%	1/10	C	M	15	1608
R664	1k	5%	1/10	C	M	24	1608
R665	1k	5%	1/10	C	M	24	1608

SYMBOL	VALUE (Ω)	TOL	POWER (W)	FORM	MOUNT PCB	ASSY PART#	REMARK
R701	1k	5%	1/10	C	M	24	1608
R711	3k	5%	1/16	C	M	32	1608
R712	—	5%	1/16	C	M	—	1608
R713	3k	5%	1/16	C	M	32	1608
R714	7.2k	5%	1/16	C	M	32	1608
R722	3.3k	5%	1/10	C	M	33	1608
R741	240	5%	1/10	C	M	34	1608
R742	240	5%	1/10	C	M	34	1608
R743	240	5%	1/10	C	M	34	1608
R744	130	5%	1/10	C	M	35	1608
R745	130	5%	1/10	C	M	35	1608
R746	130	5%	1/10	C	M	35	1608
R750	75	5%	1/2	C	M	56	4532
R751	75	5%	1/2	C	M	56	4532
R752	75	5%	1/2	C	M	56	4532
R760	390	5%	1/10	C	M	29	1608
R761	10k	5%	1/10	C	M	27	1608
R808	5.6k	5%	1/16	C	M	36	1608
R809	—	5%	1/10	C	M	—	1608
R810	680	5%	1/10	C	M	37	1608
R811	2k	5%	1/16	C	M	38	1608
R812	39	5%	1/4	C	M	39	3216
R813	39	5%	1/4	C	M	39	3216
R815	—	5%		C	M	—	1608
R821	1k	5%	1/16	C	M	28	1608
R822	10k	1%	1/16	C	M	40	1608
R823	10k	1%	1/16	C	M	40	1608
R824	8.25k	1%	1/16	C	M	41	1608
R825	10k	1%	1/16	C	M	40	1608
R826	1k	5%	1/16	C	M	28	1608
R827	3k	5%	1/16	C	M	32	1608
R828	10k	5%	1/16	C	M	17	1608
R829	5.1k	5%	1/16	C	M	42	1608
R830	1k	5%	1/10	C	M	24	1608
R901	1k	1%	1/10	C	M	43	1608
R902	62k	1%	1/10	C	M	44	1608
R903	8.25k	1%	1/10	C	M	45	1608
R904	0	1%	1/10	C	M	46	1608
R905	12.7k	1%	1/16	C	M	47	1608
R906	1k	1%	1/10	C	M	43	1608
R907	2.7k	1%	1/10	C	M	48	1608

SYMBOL	VALUE (Ω)	TOL	POWER (W)	FORM	MOUNT PCB	ASSY PART#	REMARK
R911	1k	5%	1/4	C	M	23	3216
R912	47	5%	1/10	C	M	49	1608
R913	1k	5%	1/4	C	M	23	3216
R914	1k	5%	1/4	C	M	23	3216
R915	1k	5%	1/4	C	M	23	3216
R916	3.3k	5%	1/10	C	M	33	1608
R917	3.3k	5%	1/10	C	M	33	1608
R918	10k	1%	1/10	C	M	50	1608
R919	10k	1%	1/10	C	M	50	1608
R920	2.21k	1%	1/10	C	M	51	1608
R921	12k	5%	1/10	C	M	52	1608
R931	3k	5%	1/10	C	M	53	1608
R932	10k	5%	1/16	C	M	17	1608
R950	1k	5%	1/10	C	M	24	1608
R1100	1k	5%	1/10	C	M	24	1608
R1101	10k	5%	1/10	C	M	27	1608
R1102	1k	5%	1/10	C	M	24	1608
R1103	10k	5%	1/10	C	M	27	1608
R1104	1k	5%	1/10	C	M	24	1608
R1105	10k	5%	1/10	C	M	27	1608
R1106	1k	5%	1/4	C	M	23	3216
R1107	1.2k	5%	1/8	C	M	54	2125
R1108	2k	5%	1/10	C	M	20	1608
R1109	—	5%	1/10	C	M	—	1608
R1110	620	5%	1/8	C	M	55	2125
R1111	2k	5%	1/10	C	M	20	1608
R1112	560	5%	1/10	C	M	25	1608
R1113	1k	5%	1/10	C	M	24	1608

CAPACITOR

SYMBOL	VALUE (μF)	VOLT (V)	TYPE	FORM	MOUNT PCB	ASSY PART#	REMARK	TEMP CHAR
C101	0.22μ	50	F	R	M	60	QYX	
C102	330μ	63	D	H	M	61	LXZ	
C103	470p	630	C	C	M	62	3216	
C111	2.2μ	10	C	C	M	63	3216	
C112	1000p	50	C	C	M	64	1608	B
C113	0.047μ	25	C	C	M	65	1608	
C114	220μ	25	D	R	M	66	LXZ	
C115	—	50	D	C	M	—	1608	
C116	—	50	D	C	M	—	1608	
C121	0.1μ	25	C	C	M	68	1608	
C122	100μ	10	D	R	M	69	SMG	
C123	0.1μ	25	C	C	M	68	1608	
C127	—	50	C	C	M	—	1608	
C132	0.1μ	25	C	C	M	68	1608	
C201	100μ	50	D	R	M	71	LXZ	
C251	0.1μ	25	C	C	M	68	1608	
C252	12p	50	C	C	M	78	1608	
C253	15p	50	C	C	M	79	1608	
C265	0.1μ	25	C	C	M	68	1608	
C266	0.1μ	25	C	C	M	68	1608	
C267	0.1μ	25	C	C	M	68	1608	
C302	0.1μ	25	C	C	M	68	1608	
C303	0.1μ	25	C	C	M	68	1608	
C304	0.1μ	25	C	C	M	68	1608	
C401	0.1μ	25	C	C	M	68	1608	
C411	47μ	10	D	R	H	13	UMF	
C412	47μ	10	D	R	H	13	UMF	
C413	0.01μ	50	C	C	H	14		
C523	0.1μ	25	C	C	M	68	1608	
C524	0.1μ	25	C	C	M	68	1608	

SYMBOL	VALUE (μF)	VOLT (V)	TYPE	FORM	MOUNT PCB	ASSY PART#	REMARK	TEMP CHAR
C541	100μ	50	D	R	M	70	LXZ	
C601	0.1μ	25	C	C	M	68	1608	
C620	0.1μ	25	C	C	M	68	1608	
C651	0.1μ	25	C	C	M	68	1608	
C711	0.1μ	25	C	C	M	68	1608	
C712	—	16	C	C	M	—	2125	
C802	0.22μ	50	D	R	M	60	QYX	
C807	—		C	C	M	—	1608	
C808	0.1μ	25	C	C	M	68	1608	
C821	0.01μ	50	D	R	M	73	QYX	
C822	1000p	50	C	C	M	64	1608	B
C823	0.047μ	25	C	C	M	65	1608	
C824	0.01μ	50	C	C	M	74	1608	
C825	0.1μ	25	C	C	M	68	1608	
C901	330μ	63	D	H	M	61	LXZ	
C903	1000p	50	C	C	M	64	1068	
C904	0.1μ	25	C	C	M	68	1608	
C905	1μ	16	C	C	M	72	2125	
C909	10μ	16	D	H	M	75	UVR	
C916	—							
C932	1μ	16	C	C	M	72	2125	

SYMBOL	VALUE (μF)	VOLT (V)	TYPE	FORM	MOUNT PCB	ASSY PART#	REMARK	TEMP CHAR
C1101	1000p	50	C	C	M	64	1068	
C1102	1000p	50	C	C	M	64	1068	
C1103	0.1μ	25	C	C	M	68	1608	
C1104	1000p	50	C	C	M	64	1068	
C1105	1000p	50	C	C	M	64	1068	
C1106	47μ	25	D	R	M	76	UVR	
C1107	0.1μ	25	C	C	M	68	1608	
C1108	0.01μ	AC250	C	R	M	77		
C1109	0.01μ	AC250	C	R	M	77		

TRANSISTOR

SYMBOL	MODEL NAME	FORM	MOUNT PCB	ASSY PART#	REMARK
Q111	2SJ518	C	M	98	
Q112	2SC5209H	C	M	99	
Q113	2SC5209H	C	M	99	
Q114	DTC114EE	C	M	—	
Q115	2SA1162Y	C	M	101	
Q116	KRC402E	C	M	104	
Q201	2SC2462LC	C	M	102	
Q202	2SA1121SC	C	M	103	
Q521	KRC402E	C	M	104	
Q541	2SD1266	C	M	105	
Q711	2SC5383	C	M	106	
Q712	2SC3441E	C	M	107	
Q722	KRC402E	C	M	104	
Q801	KRC402E	C	M	104	
Q802	KRC402E	C	M	104	
Q803	2SC3441E	C	M	107	
Q804	DTA114EEL	C	M	108	
Q821	2SC5383	C	M	106	
Q850	2SD956	C	M	112	
Q901	2SJ245S	C	M	109	
Q902	2SC2462LC	C	M	102	
Q903	2SC3360	C	M	110	
Q932	2SC5209H	C	M	99	
Q933	2SC5383	C	M	106	
Q950	DTA114EEL	C	M	108	

DIODE

SYMBOL	MODEL NAME	FORM	MOUNT PCB	ASSY PART#	REMARK
D101	RN3Z-F	C	M	81	
D111	D1FS6	C	M	82	
D401	HN1D03FU	C	M	83	
D402	KDS4148U	C	M	84	
D712	KDS184	C	M	85	
D722	1SS355	C	M	86	
D821	KDS4148U	C	M	84	
D901	LFB01	C	M	87	
D902	D1FL20U	C	M	88	
D932	KDS184	C	M	86	

ZENER DIODE

SYMBOL	MODEL NAME	FORM	MOUNT PCB	ASSY PART#	REMARK
ZD111	RD6.2UJN2	C	M	120	
ZD121	PTZ20A	C	M	121	
ZD131	RLZ6.8A	C	M	122	
ZD201	MTZJT-27B	C	H	123	
ZD541	RD22UJN2	C	H	124	
ZD901	UDZ-15B	C	H	125	

LED

SYMBOL	MODEL NAME	FORM	MOUNT PCB	ASSY PART#	REMARK
LD1	LED-G (GRN)	H	H	9	
LD2	LED-Y (YEL)	H	H	8	
LD3	LED-D (ORG)	H	H	7	
LD5	SEL2710K	H	M	150	
LD6	SEL2410E	H	M	151	
LD200	SIR-34ST3F	H	H	10	

PHOTO COUPLER

SYMBOL	MODEL NAME	FORM	MOUNT PCB	ASSY PART#	REMARK
PC1101	TLP781	S	M	172	
PC1102	TLP781	S	M	172	

IC

SYMBOL	MODEL NAME	FORM	MOUNT PCB	ASSY PART#	REMARK
IC1	HD64F36109HV	S	M	91	
IC111	NJM2340M	S	M	92	
IC401	S-24C16A01-J8T1G	S	M	93	
IC711	KID65003AF	S	M	94	
IC801	KIA393F	S	M	95	
IC901	KIA393F	S	M	95	
REG2	KIA7805API	S	M	117	

COIL

SYMBOL	MODEL NAME	FORM	MOUNT PCB	ASSY PART#	REMARK
L101	82μ 1.3A	H	M	162	
L111	560μ 0.4A	H	M	163	
L501	EXCELSA35	H	M	164	
L741	CHIP JUMPER	C	M	165	1608
L742	CHIP JUMPER	C	M	165	1608
L743	CHIP JUMPER	C	M	165	1608
L801	LB2518-101	A	M	166	
L901	HT039	A	M	167	
L932	BLM11A601	A	M	168	
L933	BLM11A601	A	M	168	
L1101	LEAD JUMPER	A	M	169	
L1102	LEAD JUMPER	A	M	169	

IN-CIRCUIT PROTECTOR

SYMBOL	MODEL NAME	FORM	MOUNT PCB	ASSY PART#	REMARK
ICP1	CCP2E-20(0.8A)	C	M	114	
ICP2	CCP2E-50(2.0A)	C	M	115	
ICP3	—	C	M	—	1005

OSCILATOR

SYMBOL	MODEL NAME	FORM	MOUNT PCB	ASSY PART#	REMARK
OSC1	CSTLS10M0G53-A0	R	M	143	
OSC2	CFS2063276	C	M	144	

IR RECEIVER

SYMBOL	MODEL NAME	FORM	MOUNT PCB	ASSY PART#	REMARK
IRR	GP1UM281RK	H	H	15	

BUZZER

SYMBOL	MODEL NAME	FORM	MOUNT PCB	ASSY PART#	REMARK
BZ681	PKM13EPY	H	M	159	

SWITCH

SYMBOL	MODEL NAME	FORM	MOUNT PCB	ASSY PART#	REMARK
SW501	CSW-0603B	H	M	154	
SW502	SSSS912000	H	M	155	
SW503	SSSS912000	H	M	155	
SW504	SSSS912000	H	M	155	
SW505	EVQ11A09K	H	M	156	
SW1	SKHHLU	H	H	17	

LEAD JUMPER

SYMBOL	MODEL NAME	FORM	MOUNT PCB	ASSY PART#	REMARK
JP1	LEAD JUMPER	H	H	21	
JP2	LEAD JUMPER	H	H	21	

WIRES

SYMBOL	MODEL NAME	FORM	MOUNT PCB	ASSY PART#	REMARK
GRN	EARTH WIRE	H	M	147	

CONNECTOR

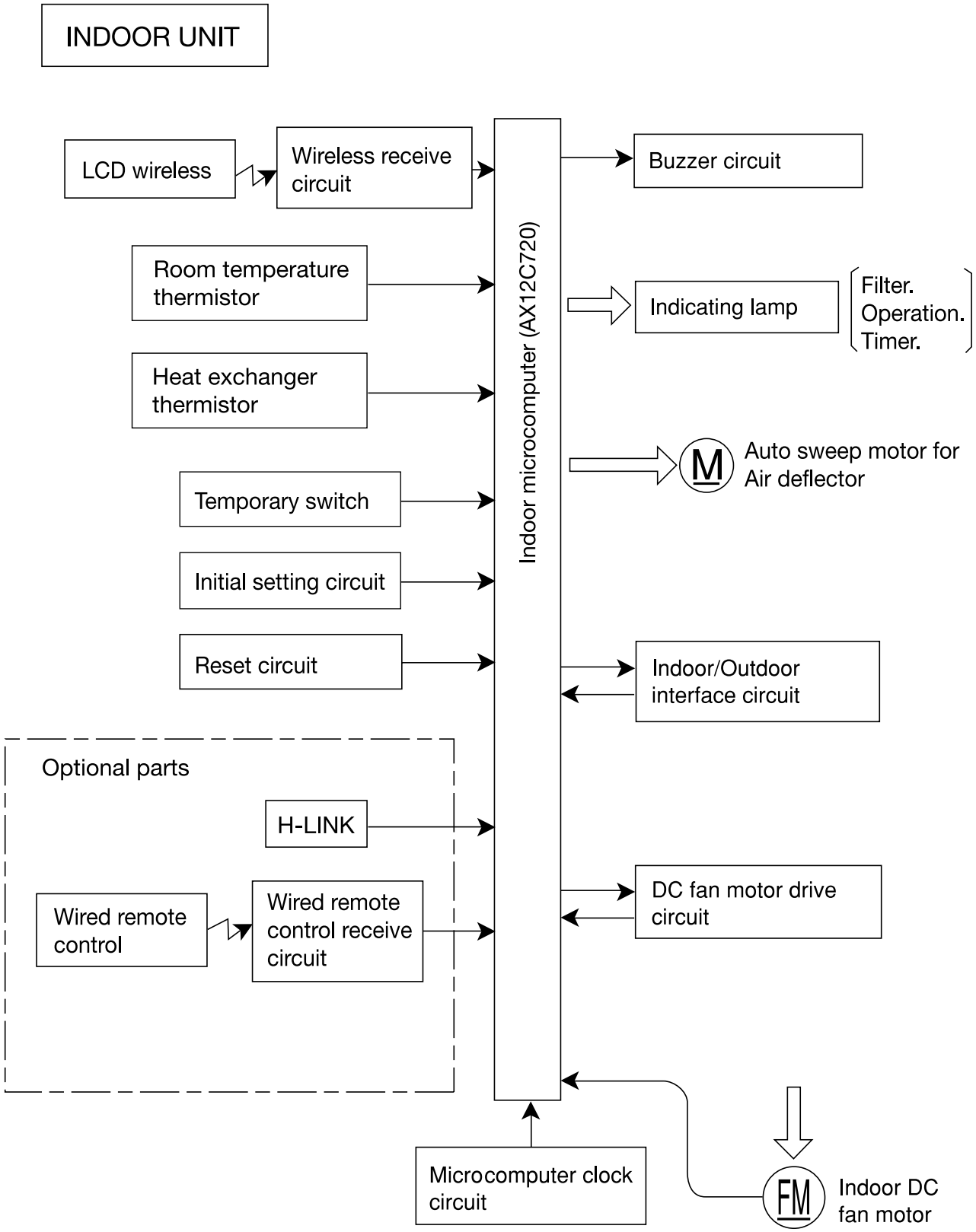
SYMBOL	MODEL NAME	FORM	MOUNT PCB	ASSY PART#	REMARK
CN1	B4B-PH-K-S	H	M	128	
CN3	B2(5,0)B-XASK-1	H	M	129	
CN4	—	H	M	—	
CN5	B8B-ZR-SM3-TF	H	M	130	
CN6	B6B-ZR-SM3	H	M	131	
CN7	B11B-PH-K-S	H	M	132	
CN8	B10B-PH-K-S	H	M	133	
CN9	B04B-XH-A-BK	H	M	134	
CN10	B4B-XASK-1	H	M	135	
CN11A	PH-POST-9P	H	M	136	
CN11	SJN-HOU-9P	H	H	19	
CN12	B2(3)B-XH-A	H	M	137	
CN16	B2B-XASK-1	H	M	138	
CN1101	B6B-PASK-1	H	M	139	
CN1102	B4B-PASK-1	H	M	140	

Table 1. DSW1 (explaination of detail function)

No.	Content	Switch condition/function					
1	Auto restart	OFF	Yes	ON	No		
2	Card Key function	OFF	No	ON	Yes		
3	Card Key input	OFF	Hi input	ON	Lo input		
4	Operation mode selection	OFF	Normal	OFF	Heating only	ON	Cooling only
5		OFF		ON		OFF	
6	Remocon ID	OFF	Factory	ON	Select		

BLOCK DIAGRAM

MODEL RAI-25RPA, RAI-35RPA, RAI-50RPA



BASIC MODE

MODEL RAI-25RPA, RAI-35RPA, RAI-50RPA

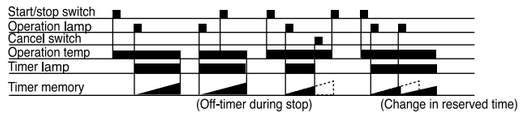
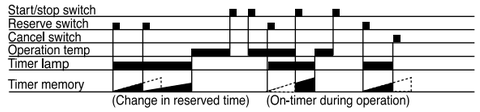
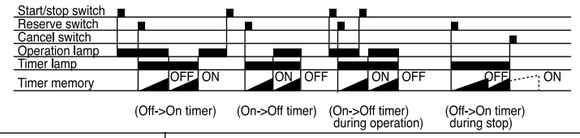
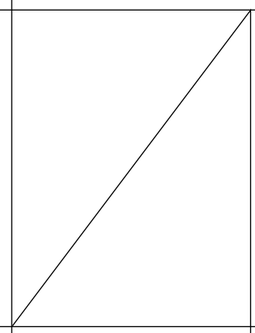
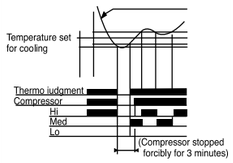
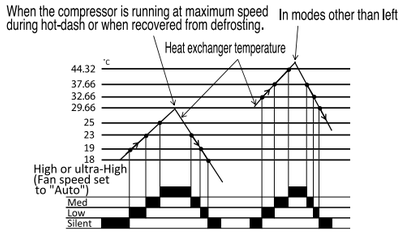
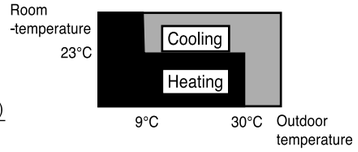
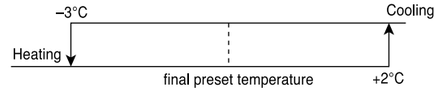
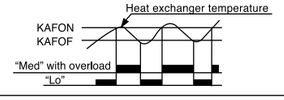
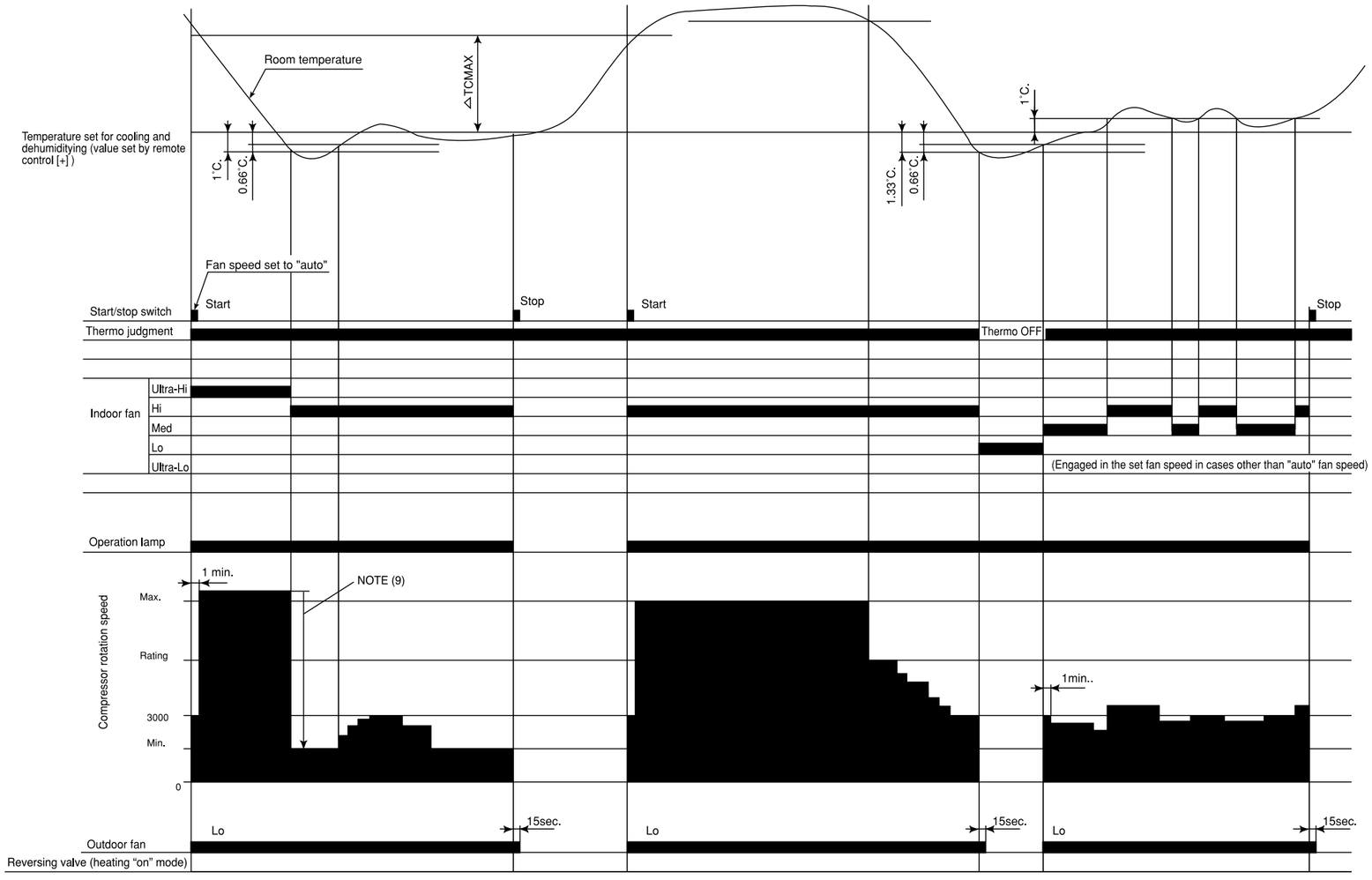
Operation mode	Fan	Cooling	Dehumidifying (dehumidifying operation by the function select button only, not including that engaged by the dehumidify button)	Heating	Auto
Basic operation of start/stop switch					
Timer functions — Off-timer					
Timer functions — On-timer					
Timer functions — Off -> On / On -> Off timer					
Fan speed mode (indoor fan) — Auto		Changes from “Hi” to “Med” or “Lo” depending on room temperature.  1. Runs at “Hi” until first thermo off after operation is started. 2. Runs at “Lo” when thermo is off.	Changes between “Lo” and “Med” depending on the room temperature. Temperature division / Fan speed Division 1 — Lo Division 2 — Lo Division 3 — Med Division 4 — Med 1. The indoor fan also stops when the compressor is in stop status.	Set to “ultra-Lo”, “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 18˚C in the “ultra-Lo” mode other than during preheating (cooling is recovered at 20˚C). 	Operating mode is judged by room temperature and outdoor temperature. (1) Judging by outdoor temperature • Operating mode is judged by outdoor temperature. Only when the mode is not restricted by this judgment, the judgment by room temperature in the next paragraph will be performed. (a) Outdoor temperature ≧ 30°C : Restricted to cooling (b) Outdoor temperature ≦ 9°C : Restricted to heating (2) 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 1 hour has elapsed since the operation was stopped. • 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 • Room temperature ≧ 23°C ±3°C : Cooling • Room temperature < 23°C ±3°C : Heating ※ ±3°C is the fine adjustment value from the remote controller.  Judging operating mode change during operation (Continuous judgment) (a) Conditions for judgment (any of the followings) • The mode is reviewed at every interval time. • When auto operation is started again before 1 hour has elapsed since the operation was stopped. (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 the sum of the basic preset temperature and each type of shift value (e.g. ±3°C by remote controller, preset temperature correction value, powerful 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 
Fan speed mode (indoor fan) — Hi	Operates at “Hi” regardless of the room temperature.	Set to “ultra-Hi” when the compressor runs at maximum speed, and to “Hi” in other modes.	Set to “Hi” in modes other than when the compressor stops.	Set to “ultra-Lo”, “Lo”, “Med”, “Hi”, “ultra-Hi” or “stop” depending on the room temperature, and time. Set to “stop” if the heat exchanger temperature is 18˚C in the “ultra-Lo” mode other than during preheating (cooling is recovered at 20˚C). Set to “ultra-Hi” when the compressor is running at maximum speed during hot dash or when recovered from defrosting.	
Fan speed mode (indoor fan) — Med	Operates at “Med” regardless of the room temperature.	Same as at left.	Set to “Med” in modes other than when the compressor stops.	Set to “ultra-Lo”, “Lo”, “Med” or “stop” depending on the room temperature and time. Set to “stop” if the heat exchanger temperature is 18˚C in the “ultra-Lo” mode other than during preseating (cooling is recovered at 20˚C).	
Fan speed mode (indoor fan) — Lo	Operates at “Lo” regardless of the room temperature.	Same as at left.	Set to “Lo” in modes other than when the compressor stops.	Set to “ultra-Lo”, “Lo”, or “stop” depending on the room temperature and time. Set to “stop” if the heat exchanger temperature is 18˚C in the “ultra-Lo” mode other than during preseating (cooling is recovered at 20˚C). The fan speed is controlled by the heat exchanger temperature; the overload control is executed as in the following diagram: 	
Basic operation of temperature controller	Performs only fan operation at the set speed regardless of the room temperature. 	See page 55.	See page 59.	See page 63.	
Sleep operation (with sleep button ON)	• Enters sleep operation after set as on the left. • Action during sleep operation Lo (sleep) operation	• Same as at left • See page 57.	• Same as at left • See page 61.	• Same as at left • See page 65.	• Same as at left. • Performs the sleep operation of each operation mode.

Table 1 Mode data file

	RAI-25RPA	RAI-35RPA	RAI-50RPA
LABEL NAME	**VALUE**		
WMAX	4400 min^{-1}	5500 min^{-1}	6000 min^{-1}
WMAX2	4500 min^{-1}	5600 min^{-1}	6000 min^{-1}
WSTD	3300 min^{-1}	4400 min^{-1}	4250 min^{-1}
WBEMAX	2800 min^{-1}	2800 min^{-1}	3500 min^{-1}
CMAX	2900 min^{-1}	3700 min^{-1}	4700 min^{-1}
CMAX2	3000 min^{-1}	3550 min^{-1}	4700 min^{-1}
CSTD	2350 min^{-1}	3550 min^{-1}	4100 min^{-1}
CKYMAX	2200 min^{-1}	2500 min^{-1}	3500 min^{-1}
CJKMAX	1800 min^{-1}	2500 min^{-1}	2700 min^{-1}
CBEMAX	1600 min^{-1}	2200 min^{-1}	2000 min^{-1}
WMIN	1500 min^{-1}	1200 min^{-1}	1800 min^{-1}
CMIN	1500 min^{-1}	1500 min^{-1}	1800 min^{-1}
STARTMC	60 Seconds	60 Seconds	60 Seconds
DWNRATEW	80%	80%	80%
DWNRATEC	80%	80%	80%
SHIFTW	4.00°C	4.00°C	4.00°C
SHIFTC	–1.00°C	–1.00°C	–2.99°C
CLMXTP	30.00°C	30.00°C	30.00°C
YNEOF	21.00°C	21.00°C	21.00°C
TEION	2.00°C	2.00°C	2.00°C
TEIOF	6.00°C	6.00°C	6.00°C
SFTDSW	2.66°C	2.66°C	2.66°C
DFTIM1	50 Minutes	50 Minutes	50 Minutes
DFTIM2	90 Minutes	90 Minutes	90 Minutes
DFTIM3	60 Minutes	60 Minutes	60 Minutes

Basic Cooling Operation



Notes:

(1) Condition for entering into Cool Dashed mode. When fan set to “Hi” or “Auto mode” and temperature difference between indoor temperature and set temperature has a corresponding compressor rpm larger than WMAX.

(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 –1°C 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 CLMXTP. No time constrain if indoor temperature is higher than CLMXTP.

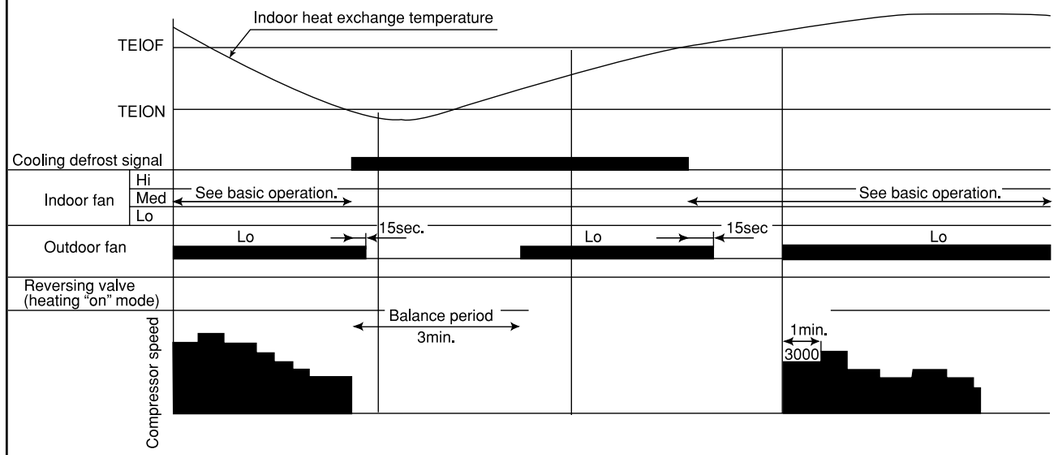
(6) When fan is set to “Hi”, compressor rpm will be limited to CKYMAX.

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

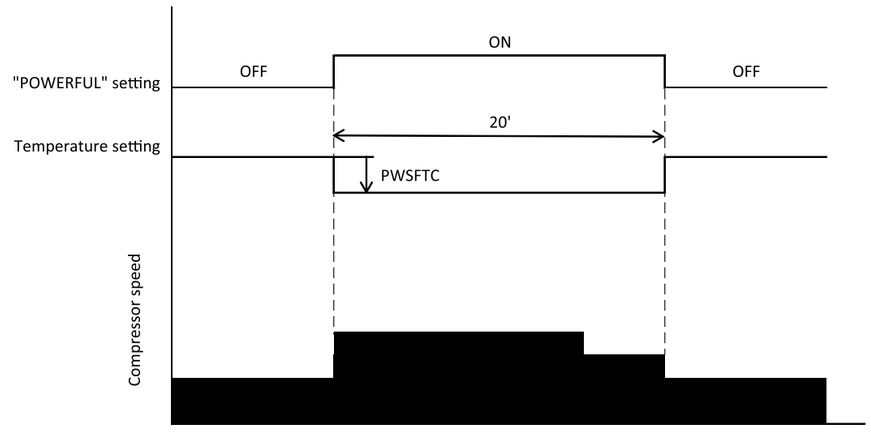
(8) When fan is set to “Lo”, compressor rpm will be limited to CBEMAX.

(9) During Cool Dashed, when room temperature reaches set temperature –1°C compressor rpm is actual rpm x DWNRATEC.

Cooling Defrost



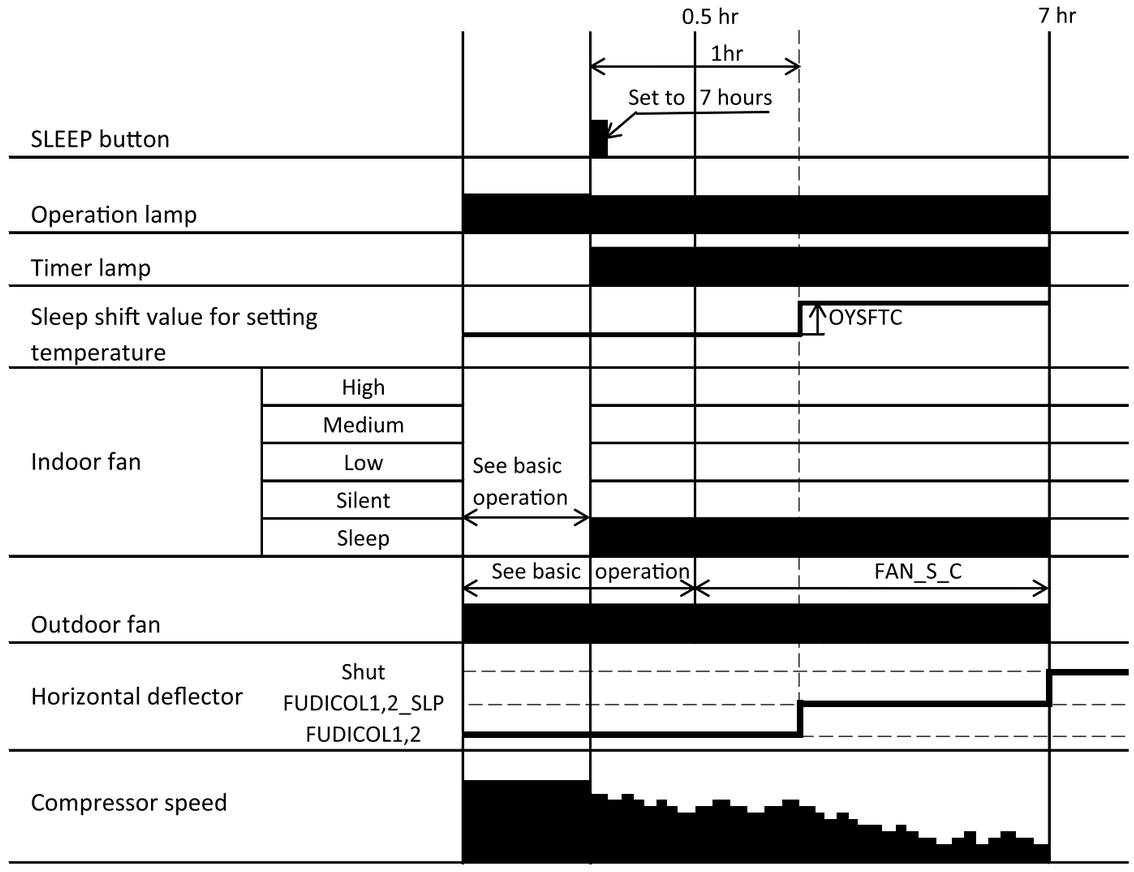
Cooling Powerful Operation



Notes :

(1) Pressing the "POWERFUL" button will reduce the temperature setting by PWSFTC.
(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 will cancel the powerful operation.
(5) If the sleep timer is set during powerful operation, the powerful operation will be canceled.
(6) If the fan speed of the remote controller is set to "AUTO" or "HIGH", the compressor's maximum speed during powerful operation will be set to CMAX2. The lower limit speed is CKYMIN_PW.
(7) If the fan speed of the remote controller is set to "MED" , the compressor's maximum speed during powerful operation will be set to CJKMAX_PW. The lower limit speed is CJKMIN_PW.
(8) If the fan speed of the remote controller is set to "LOW" , the compressor's maximum speed during powerful operation will be set to CBEMAX_PW. The lower limit speed is CBEMIN_PW.
(9) If the fan speed of the remote controller is set to "SILENT" , the compressor's maximum speed during powerful operation will be set to CSZMAX_PW. The lower limit speed is CSZMIN_PW.
(10) The fan speed increases by FNUPPW_C.

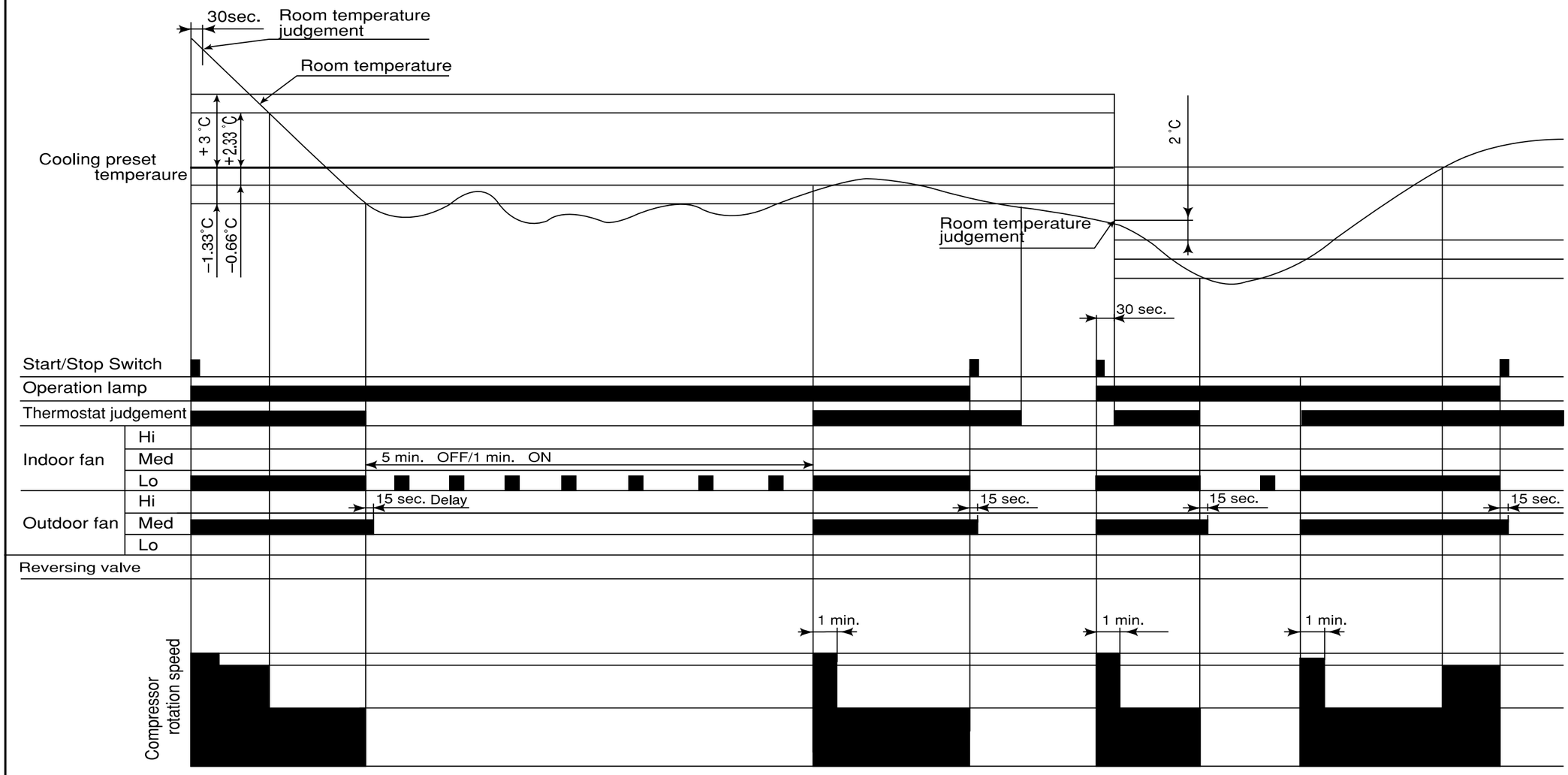
Cooling Sleep Operation



Notes :

(1) The sleep operation starts when the "SLEEP" button is pressed.
(2) When the sleep operation is set, the maximm compressor speed is limited to CSZMAX, and the indoor fan set is "sleep"(FCSOY_P).
(3) The indoor fan speed does not change even when the fan speed mode is changed.
(4) If sleep operation is canceled by the cancel button or sleep button, all data is cleared.
(5) 1 hour after the sleep operation is set, the sleep shift value(OYSFTC) is added.

Dehumidifying



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).

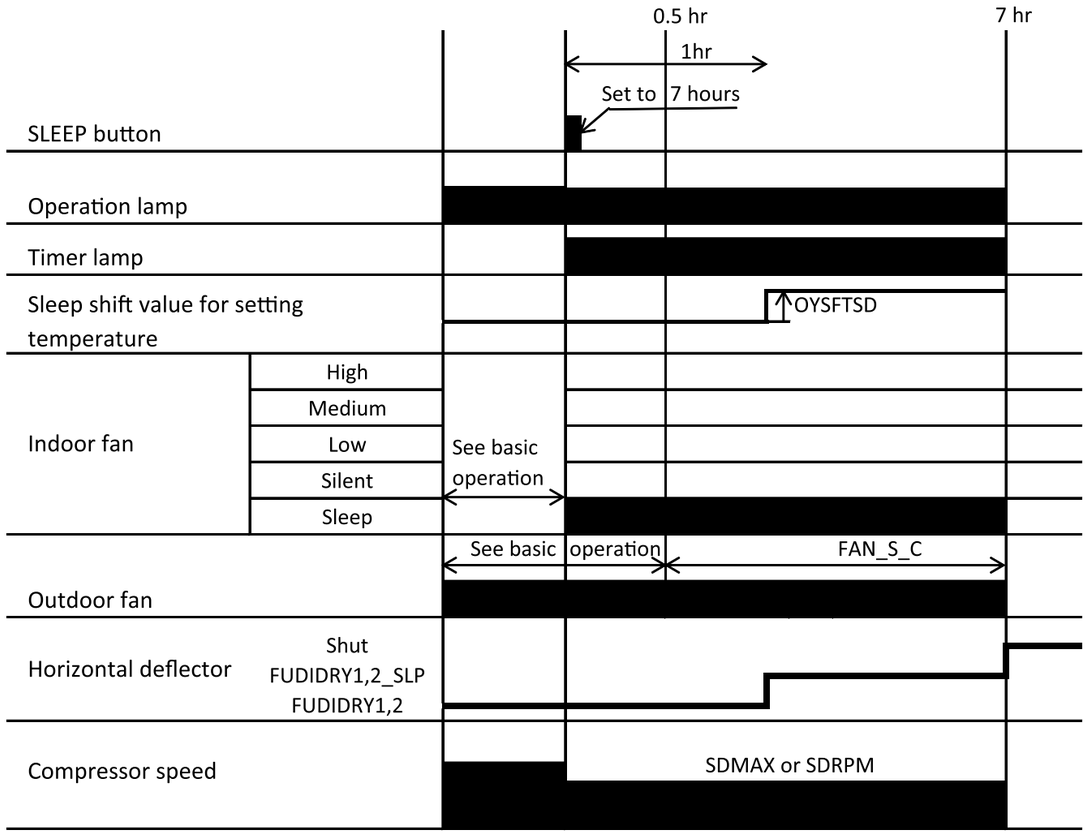
(2) The indoor fan is operated in the “Lo” mode. During thermo OFF indoor fan will be OFF for 5 minutes and ON for 1 minute.

(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.

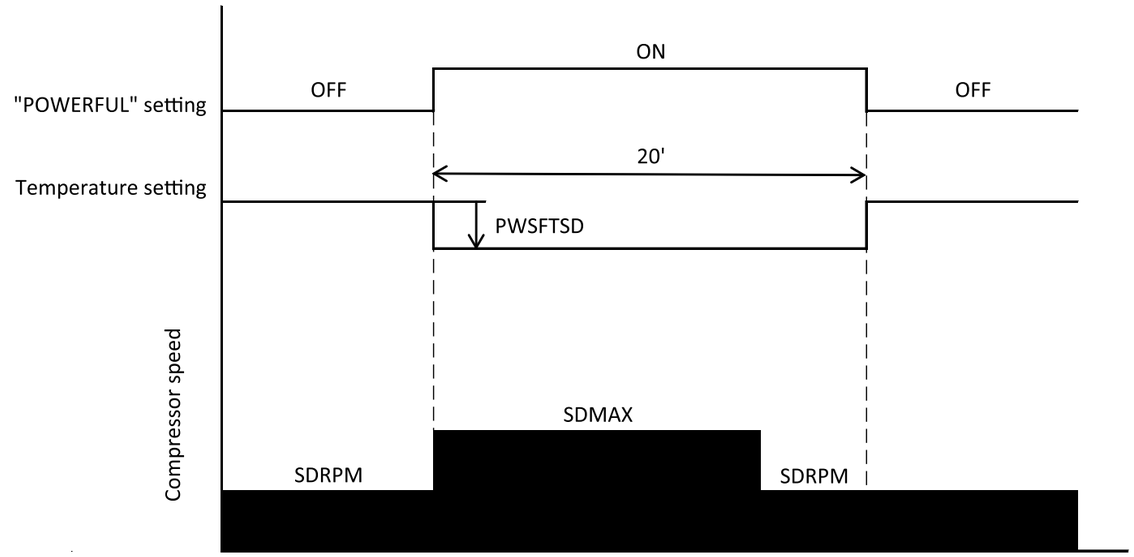
(5) The minimum ON time and OFF time of the compressor are 3 minutes.

Dehumidifying Sleep Operation



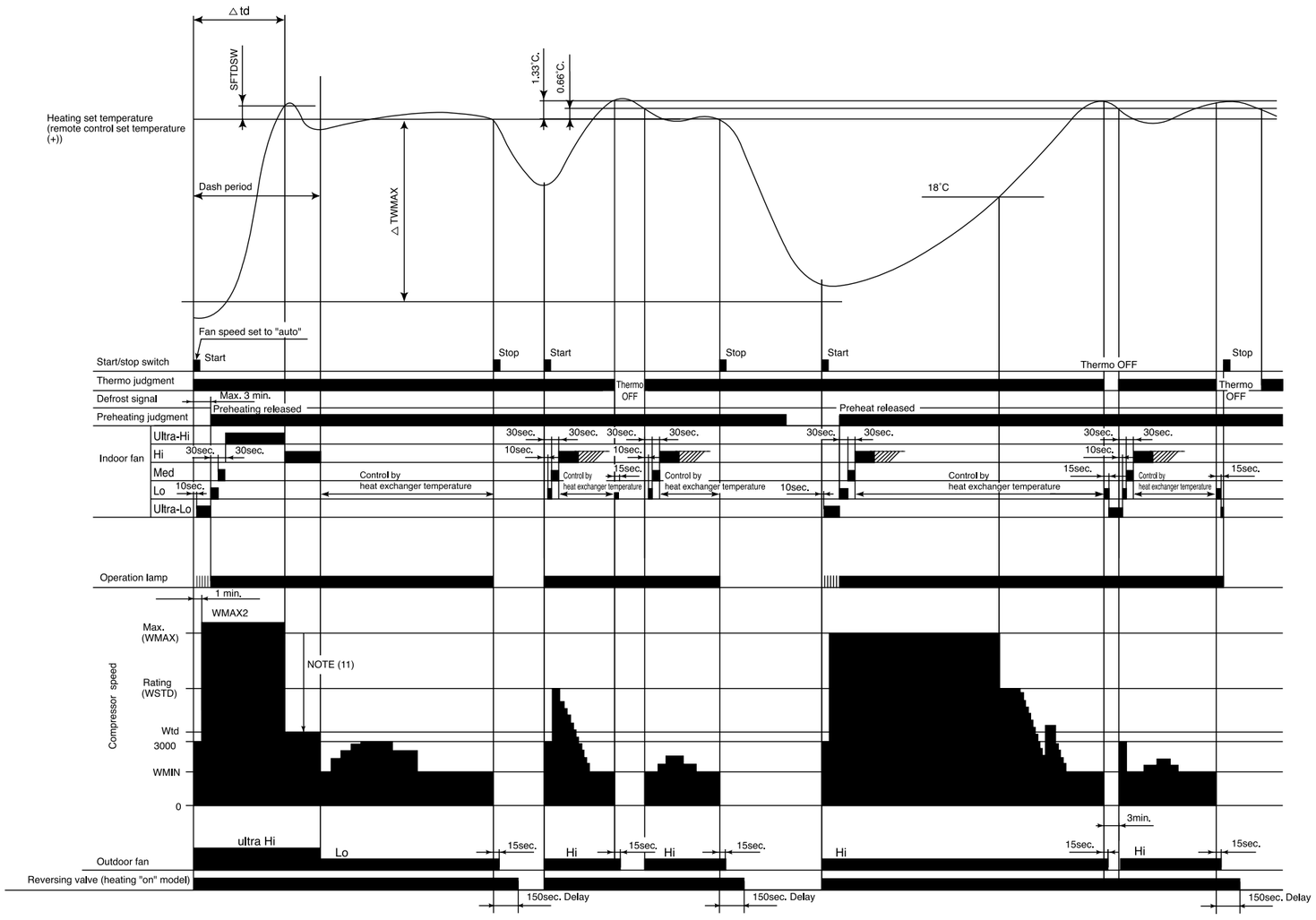
Notes :
(1) The sleep operation starts when the "SLEEP" button is pressed.
(2) When the sleep operation is set, the indoor fan set is "sleep"(FDOY_P).
(3) The indoor fan speed does not change even when the fan speed mode is changed.
(4) If sleep operation is canceled by the cancel button or sleep button, all data is cleared.
(5) 1 hour after the sleep operation is set, the sleep shift value(OYSFTSD) is added.

Dehumidifying 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 sleep 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 ≦ 2.33℃" 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) The fan speed increases by FNUPPW_D.

Basic Heating Operation



Notes:

(1) Condition for entering into Hot Dashed mode. When fan set to “Hi” or “Auto mode” and i) Indoor temperature is lower than 18°C, and ii) outdoor temperature is lower than 10°C, and iii) Temperature difference between indoor temperature and set temperature has a corresponding compressor rpm larger than WMAX.

(2) Hot Dashed will release when i) Room temperature has achieved the set temperature + SFTDSW. ii) Thermo off.

(3) During Hot Dashed operation, thermo off temperature is set temperature (with shift value) +4°C. After thermo off, operation continue in Fuzzy control mode.

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

(5) During normal heating mode, compressor maximum rpm WMAX will maintain for 120 minutes if indoor temperature is higher than 18°C. No time limit constrain if indoor temperature is lower than 18°C and outdoor temperature is lower than 2°C.

(6) During Hotkeep or Defrost mode, indoor operation lamp will blink at interval of 3 seconds “ON” and 0.5 second “OFF”.

(7) When heating mode starts, it will enter into Hotkeep mode if indoor heat exchanger temperature is lower than YNEOF + 0.33°C.

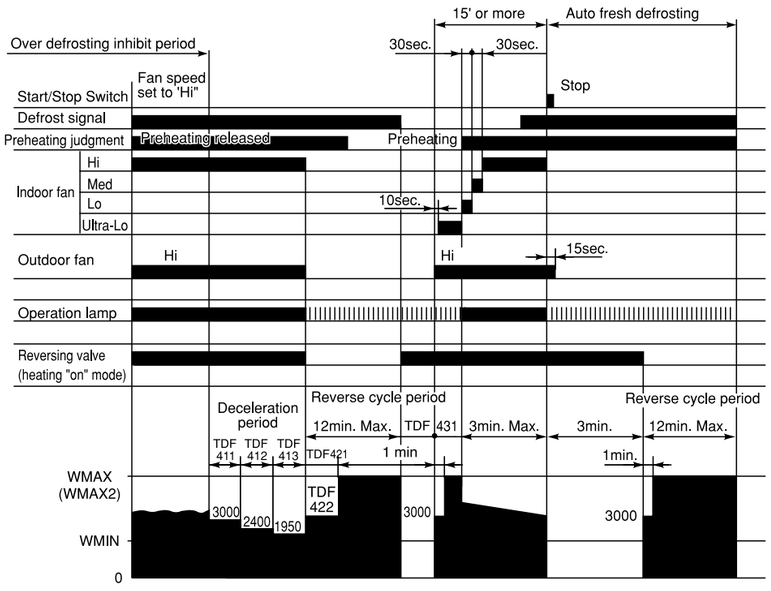
(8) When fan is set to “Med” or “Lo”, compressor rpm will be limited to WBEMAX.

(9) In “Ultra-Lo” fan mode, if indoor temperature is lower than 18°C, indoor fan will stop. If indoor temperature is higher than 18°C + 0.33°C, fan will continue in “Ultra-Lo” mode. During Hotkeep or Defrost mode, fan will continue in “Ultra-Lo” mode.

(10) During Hot Dashed or outdoor temperature is lower than –5°C, compressor rpm is WMAX2.

(11) During Hot Dashed, when room temperature reaches set temperature + SFTDSW compressor rpm is actual rpm x DWNRATEW.

Reversing Valve Defrosting



Notes:

(1) The defrosting inhibit period is set as shown in the diagram below. 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.

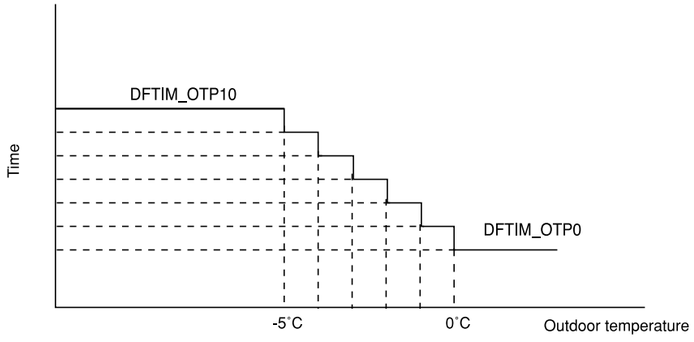
(2) If the difference between the room and outdoor temperature is large when defrosting is finished, the maximum compressor speed (WMAX) or (WMAX2) can be continued for 120 minutes maximum.

(3) The defrosting period is 12 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.

Setting Defrosting Inhibit Period



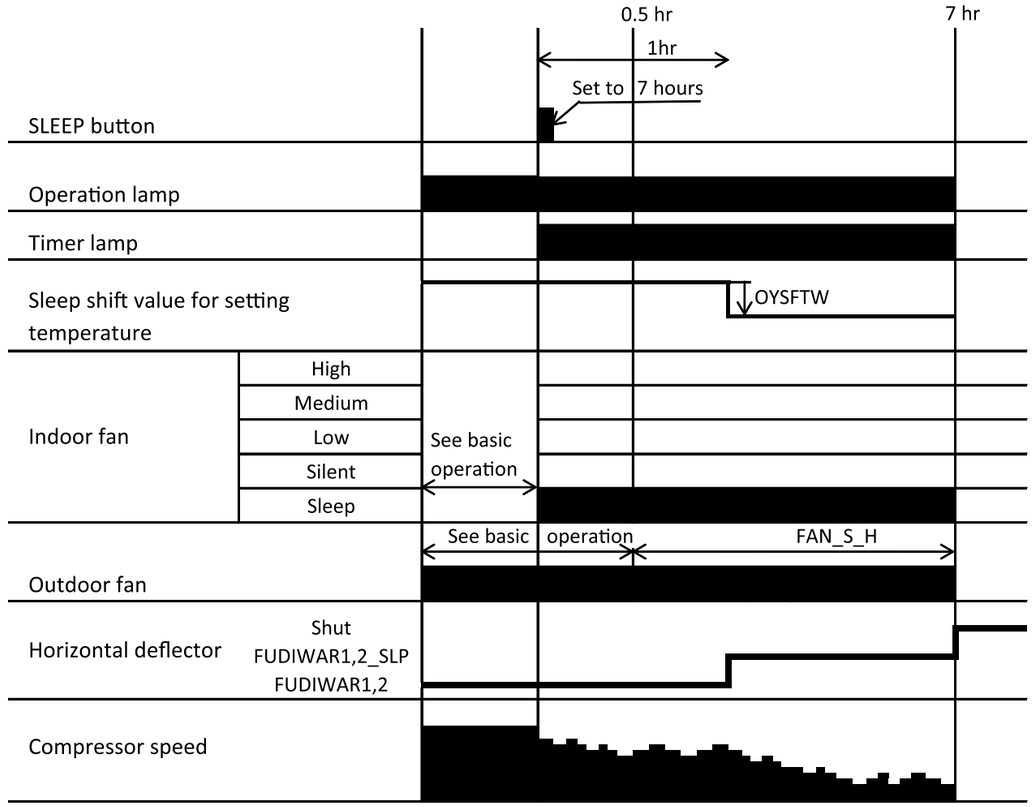
Notes:

(1) The time is set according to the outdoor temperature when it is between 0˚C and -5˚C.

(2) DFTIM_OTP0 is used when the outdoor temperature ≧ 0˚C.

(3) DFTIM_OTP10 is used when the outdoor temperature ≦ -5˚C.

Heating Sleep Operation



Notes :

(1) The sleep operation starts when the "SLEEP" button is pressed.

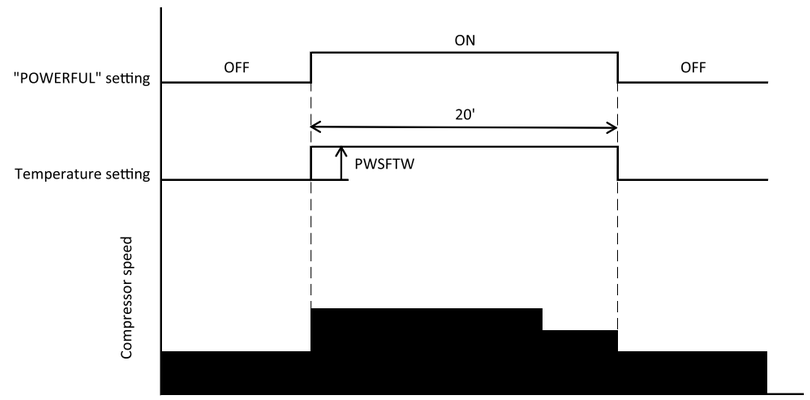
(2) When the sleep operation is set, the maximm compressor speed is limited to WSZMAX, and the indoor fan set is "sleep"(FWSOY_P).

(3) The indoor fan speed does not change even when the fan speed mode is changed.

(4) If sleep operation is canceled by the cancel button or sleep button, all data is cleared.

(5) 1 hour after the sleep operation is set, the sleep shift value(OYSFTW) is reduced.

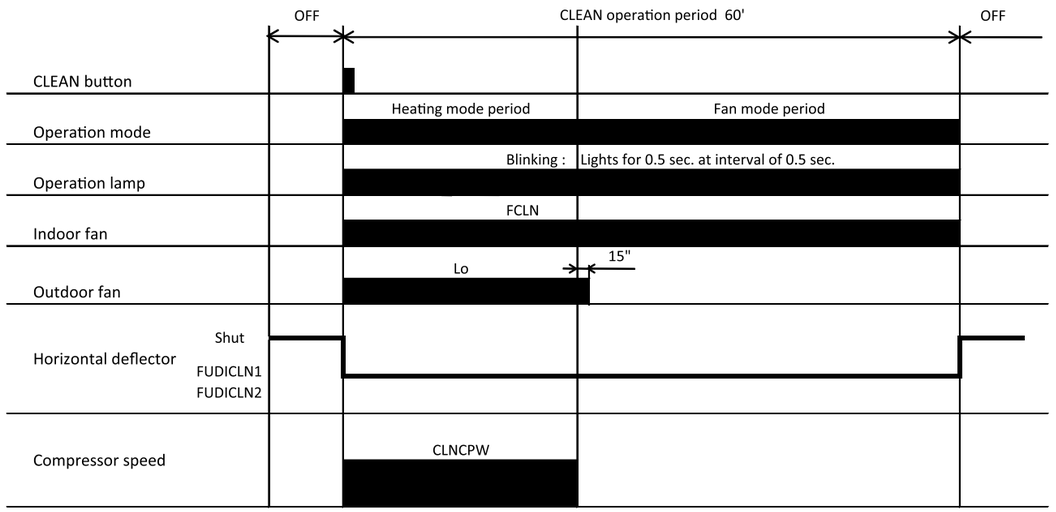
Heating Powerful Operation



Notes :

(1) Pressing the "POWERFUL" button will reduce 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 will cancel the powerful operation.
(6) If the sllep timer is set during powerful operation, the powerful operation will be canceled.
(7) If the fan speed of the remote controller is set to "AUTO" or "HIGH", the compressor's maximum speed during powerful operation will be set to WMAX2. The lower limit speed is WKYMIN_PW.
(8) If the fan speed of the remote controller is set to "MED" , the compressor's maximum speed during powerful operation will be set to WJKMAX_PW. The lower limit speed is WJKMIN_PW.
(9) If the fan speed of the remote controller is set to "LOW" , the compressor's maximum speed during powerful operation will be set to WBEMAX_PW. The lower limit speed is WBEMIN_PW.
(10) If the fan speed of the remote controller is set to "SILENT" , the compressor's maximum speed during powerful operation will be set to WSZMAX_PW. The lower limit speed is WSZMIN_PW.
(11) The fan speed increases by FNUPPW_W.

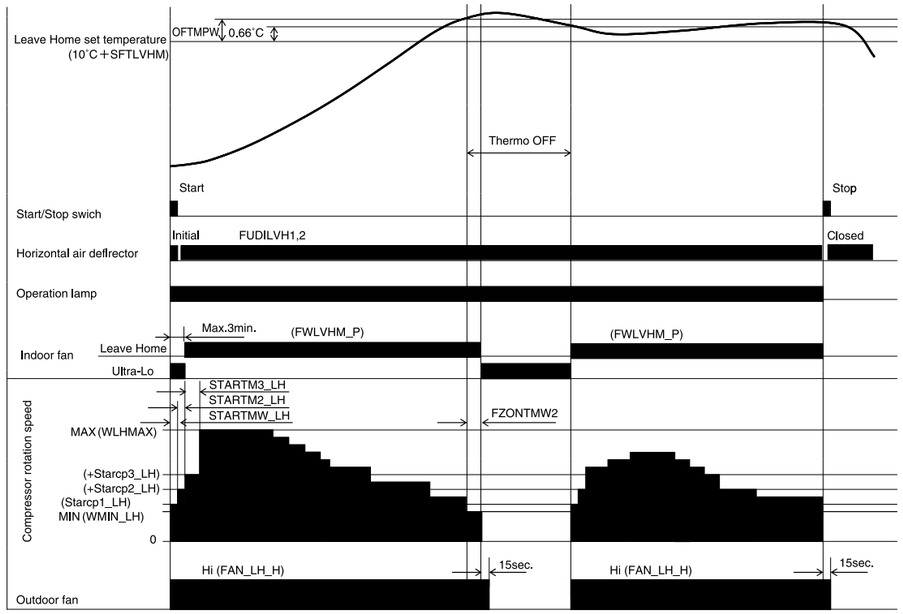
Clean Operation



Notes :

(1) During CLEAN operation period, heating mode will change to fan mode when HEX temparature is "CLNEVP" or more except force 3 minutes operation.
(2) For multi connections, CLEAN operation is limited to fan mode.

Leave Home



Notes:

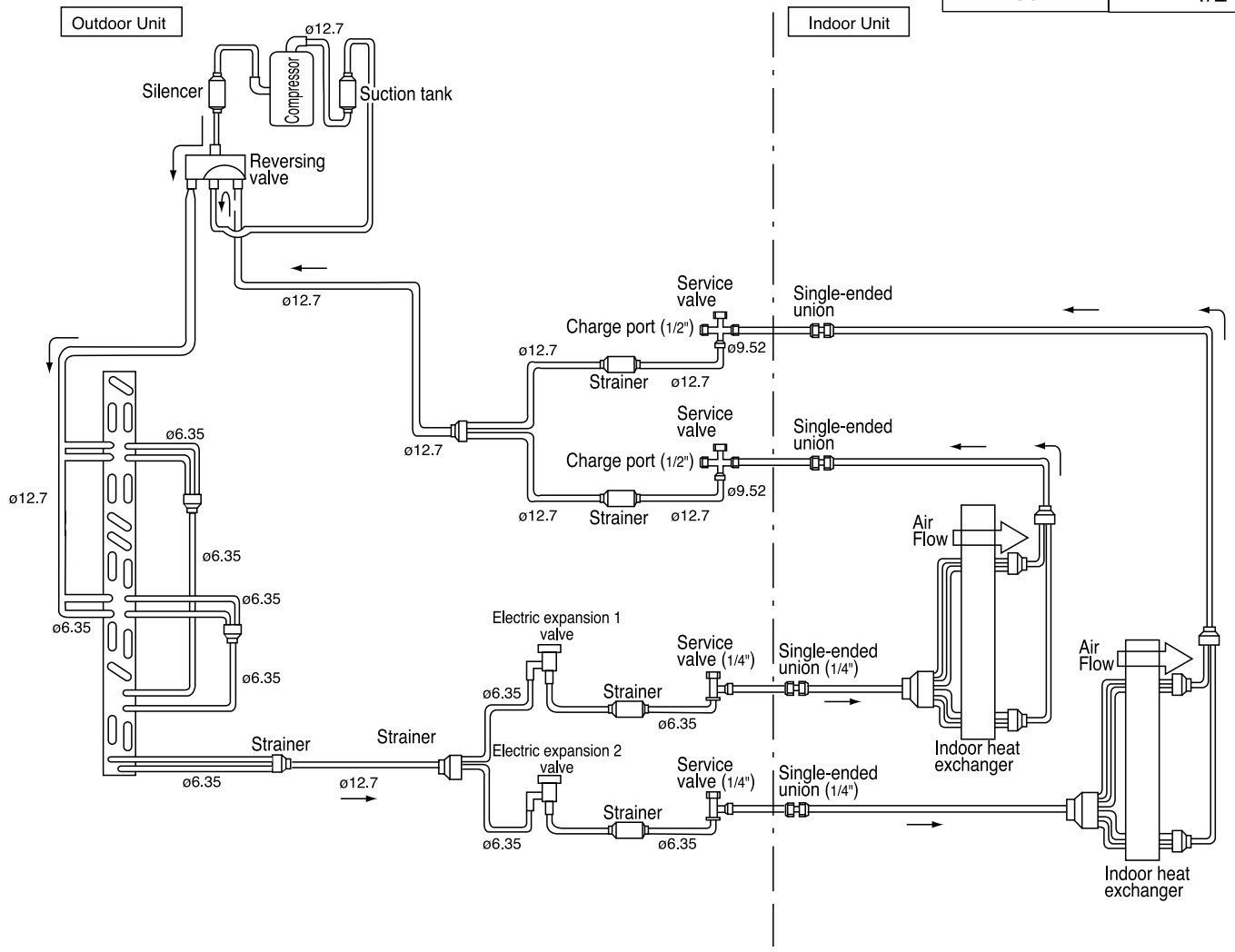
Perform Leave Home operation according to the following control contents.

① Operation mode : Heating
② Temperature set : 10˚C
③ Temperature setting correction shift : + 『SFTLVHM』
④ Indoor fan : 『FWLVHM_P』
⑤ Outdoor fan : 『FAN_LH_H』
⑥ Compressor start control : Set the start control using the special value for the Leave Home mode.
⑦ Compressor rotation speed : Upper limit speed by fuzzy control 『WLHMAX』
Lower limit speed by fuzzy control 『WMIN_LH』
⑧ Operation lamp : The timer lamp lights up when the timer for the desired number of days is set.
※ The vertical air deflection plate is initially operated when the Leave Home mode is activated; this serves as a notification that the Leave Home mode has been set.

REFRIGERATING CYCLE DIAGRAM
RAI-25RPA / RAI-35RPA / RAI-50RPA

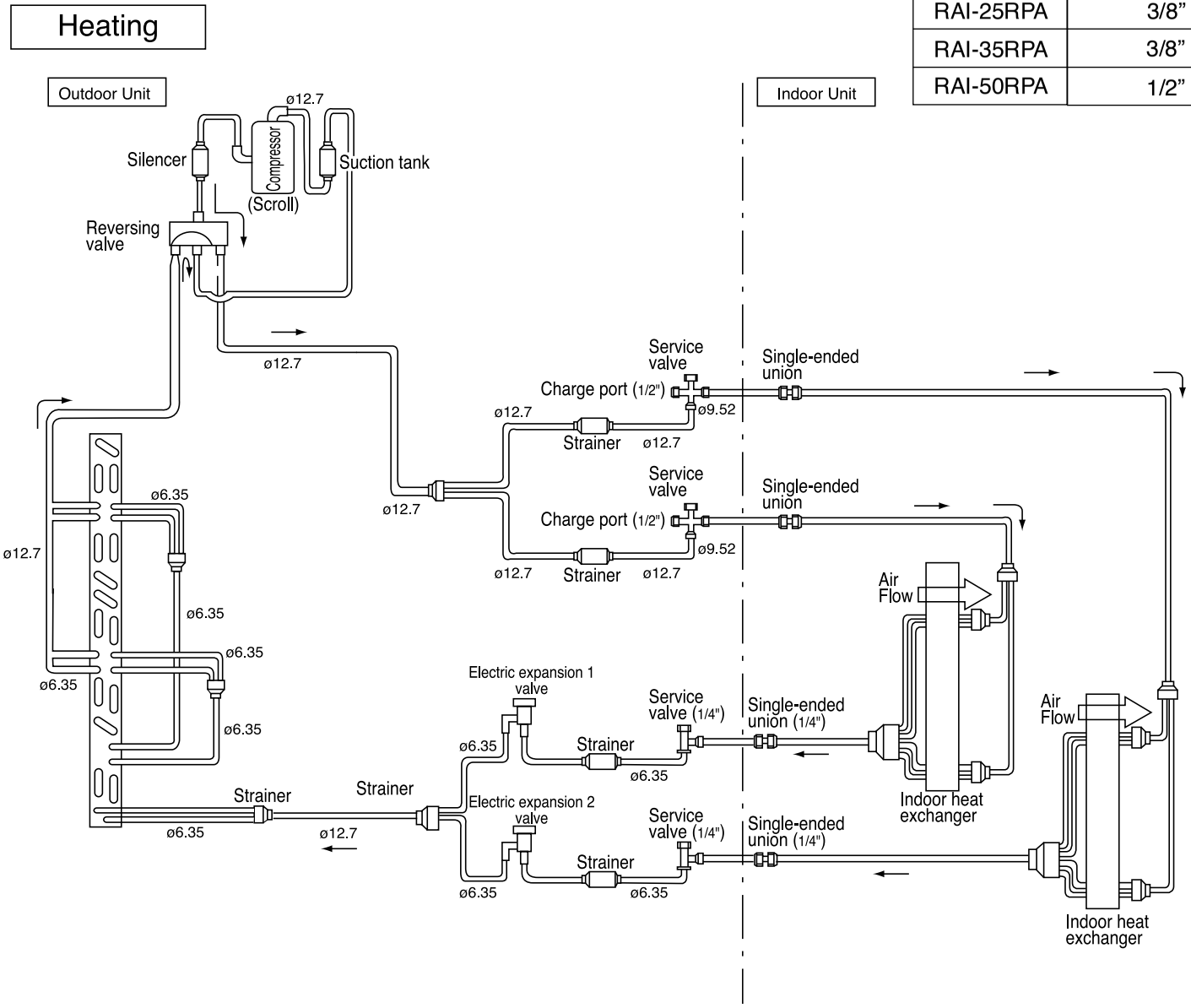
	HIGH PRESSURE	
	Service Valve	Single-ended union
RAI-25RPA	3/8”	3/8”
RAI-35RPA	3/8”	3/8”
RAI-50RPA	1/2”	1/2”

Cooling, dehumidifying, defrosting



REFRIGERATING CYCLE DIAGRAM
RAI-25RPA / RAI-35RPA / RAI-50RPA

	HIGH PRESSURE	
	Service Valve	Single-ended union
RAI-25RPA	3/8”	3/8”
RAI-35RPA	3/8”	3/8”
RAI-50RPA	1/2”	1/2”



AUTO SWING FUNCTION

MODEL: RAI-25RPA, RAI-35RPA, RAI-50RPA

INPUT SIGNAL	PRESENT CONDITION			OPERATING SPECIFICATION	REFERENCE
	OPERATION	OPERATION MODE	AIR DEFLECTOR		
KEY INPUT	STOP	EACH MODE	STOP	ONE SWING (CLOSING AIR DEFLECTOR) ① DOWNWARD ② UPWARD	INITIALIZE AT NEXT OPERATION.
			DURING ONE SWING	STOP AT THE MOMENT.	
	DURING OPERATION	AUTO COOL COOL FAN AUTO DRY DRY	STOP	START SWINGING ① DOWNWARD ② UPWARD ③ DOWNWARD	
			DURING SWINGING	STOP AT THE MOMENT.	
		AUTO HEAT HEAT CIRCULATOR	STOP	START SWINGING ① DOWNWARD ② UPWARD ③ DOWNWARD	
			DURING SWINGING	STOP AT THE MOMENT.	
THERMO. ON (INTERNAL FAN ON)	DURING OPERATION	AUTO DRY DRY AUTO HAET HEAT CIRCULATOR	TEMPORARY STOP	START SWING AGAIN.	
THERMO. ON (INTERNAL FAN OFF)			DURING SWINGING	STOP SWINGING TEMPORARILY. (SWING MODE IS CLEARED IF SWING COMMAND IS TRANSMITTED DURING TEMPORARY STOP.)	
MAIN SWITCH ON	STOP	COOL FAN DRY	STOP DURING ONE SWING	INITIALIZE ① DOWNWARD ② UPWARD	
		HEAT CIRCULATOR	STOP DURING ONE SWING	INITIALIZE ① DOWNWARD	
MAIN SWITCH OFF	DURING OPERATION	EACH MODE	STOP DURING SWINGING	ONE SWING (CLOSING AIR DEFLECTOR) ① DOWNWARD ② UPWARD	INITIALIZE AT NEXT OPERATION.
			DURING INITIALIZING		
CHANGE OF OPERATION	DURING OPERATION	EACH MODE	STOP	INITIALIZING CONDITION OF EACH MODE.	
			DURING SWINGING	STOP SWINGING AND MODE BECOMES INITIALIZING CONDITION.	

DESCRIPTION OF MAIN CIRCUIT OPERATION

MODEL RAI-25RPA, RAI-35RPA, RAI-50RPA

1. Receiver Circuit

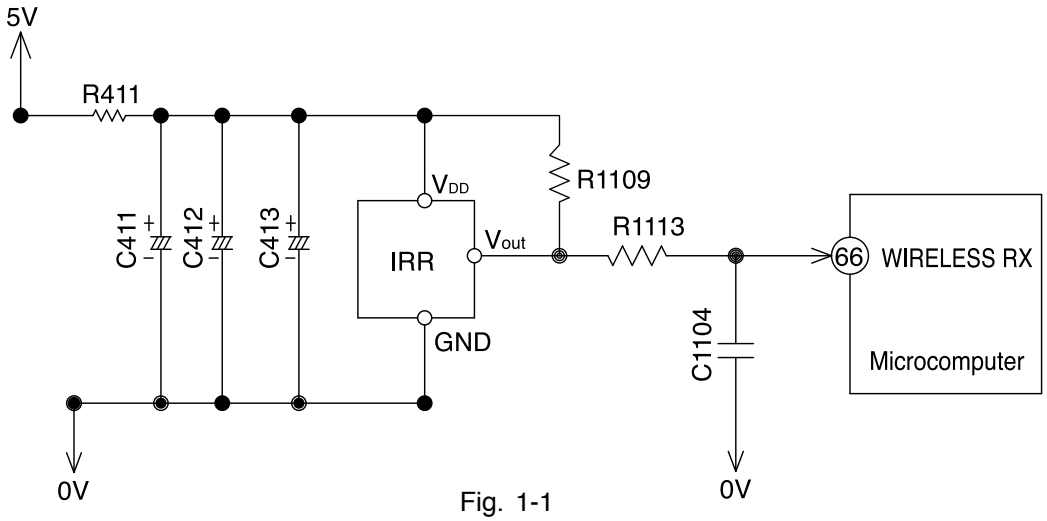


Fig. 1-1

- The light receiver unit receives the infrared signal from the wireless remote control. The receiver amplifies and shapes the signal and outputs it.

2. Buzzer Circuit

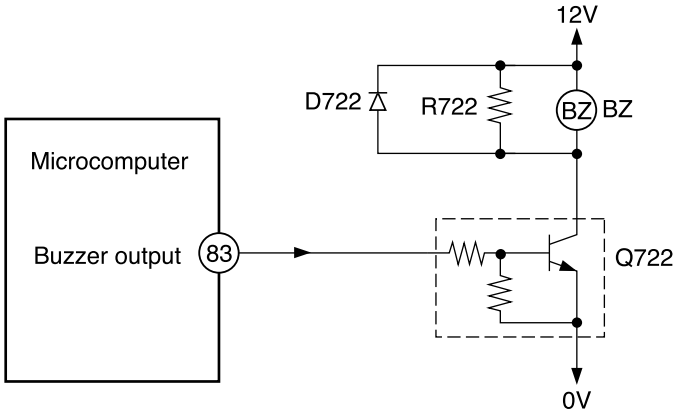


Fig. 2-1 Buzzer Circuit

- When the buzzer sounds, an approx. 3.9kHz square signal is output from buzzer output pin (83) of the microcomputer. 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.

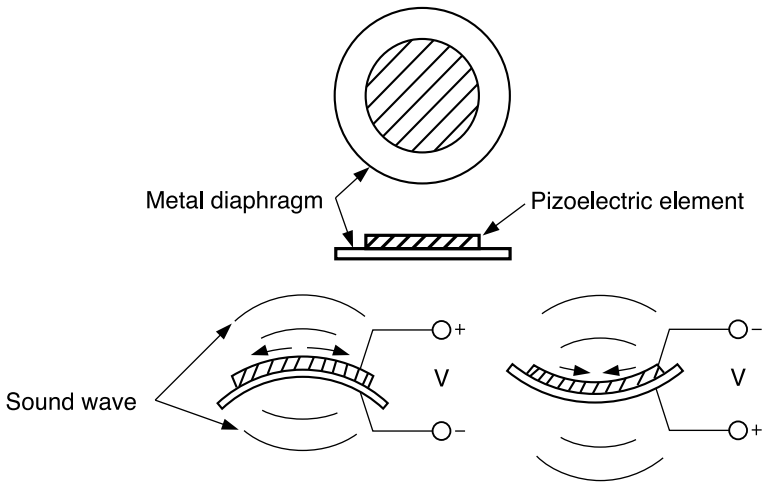


Fig. 2-2 Buzzer Operation

3. Auto Sweep Motor Circuit

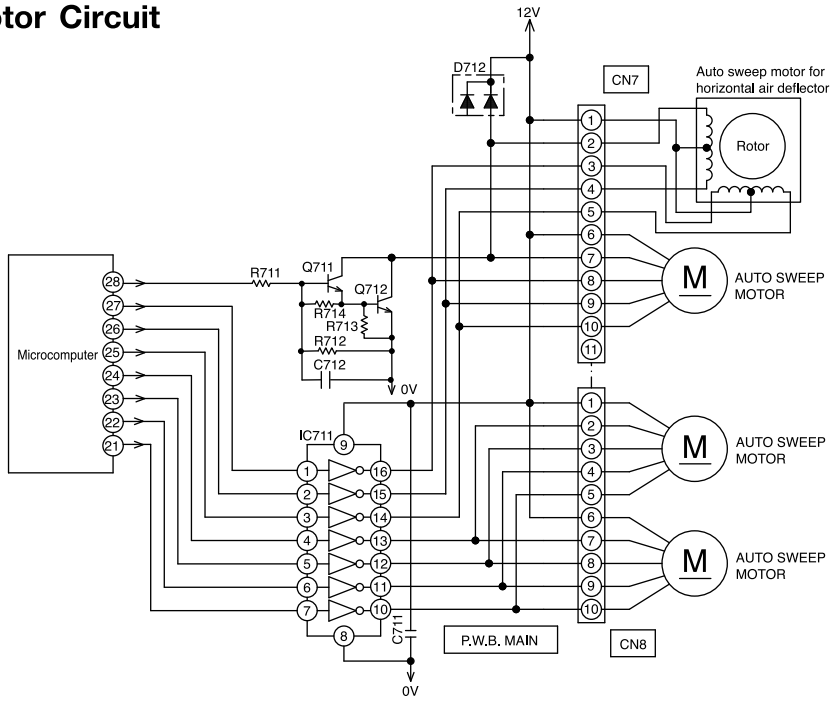


Fig. 3-1

- Fig. 3-1 shows the Auto sweep motor drive circuit; the signals shown in Fig. 3-2 are output from pins (21) – (28) of microcomputer.

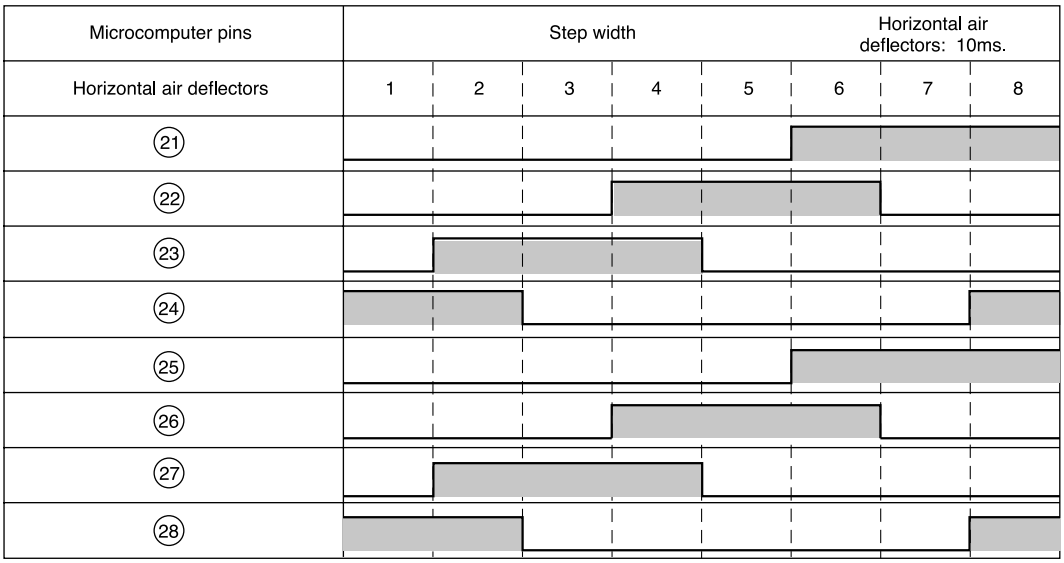


Fig. 3-2 Microcomputer Output Signals

- As the microcomputer's outputs change as shown in Fig. 3-2, the core of the auto sweep motor is excited to turn the rotor. Table 3-1 shows the rotation angle of horizontal air deflectors.

Table 3-1 Auto sweep Motor Rotation

	Rotation angle per step (°)	Time per step (ms.)
Horizontal air deflectors	0.0879	10

- The air deflectors are driven by the stepping motors, which are instructed by the microcomputer.
- The air deflectors on the left and right are each driven by two stepping motors.
- The stepping motors and main unit are connected via relay connectors. The air deflectors will not operate unless the relay connectors are connected: Securely connect the relay connectors identified by colors when attaching the panel.
- Before removing the panel for servicing, be sure to disconnect the relay connector to protect the lead wires.

4. Room Temperature Thermistor Circuit

- Fig. 4-1 shows the room temperature thermistor circuit.

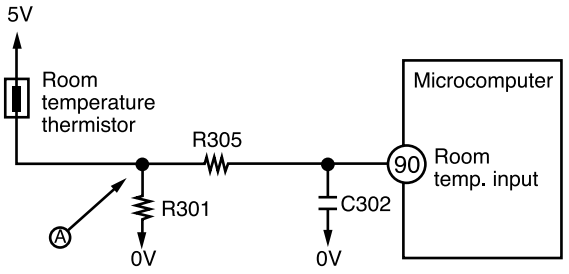


Fig. 4-1

- The voltage at Ⓐ depends on the room temperature as shown in Fig. 4-2.

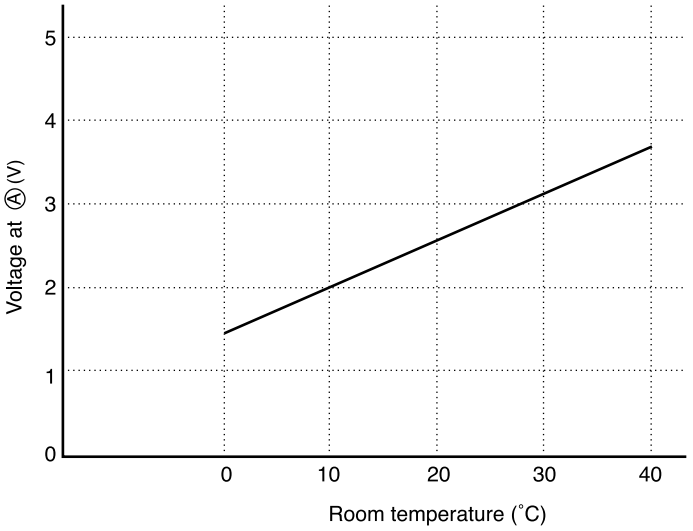


Fig. 4-2

5. Heat exchanger temperature thermistor circuit

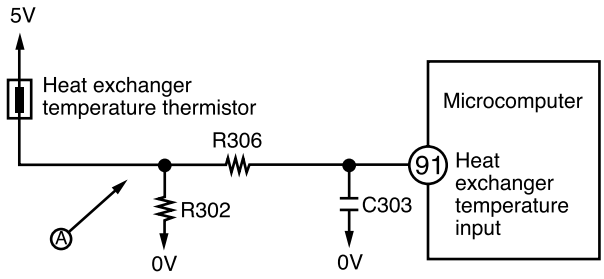


Fig. 5-1

- The circuit detects the indoor heat exchanger temperature and controls the following.
  - (1) Preheating.
  - (2) Low-temperature defrosting during cooling and dehumidifying operation.
  - (3) Detection of the reversing valve non-operation or heat exchanger temperature thermistor open.

  The voltage at Ⓐ depends on the heat exchanger temperature as shown in Fig. 5-2.

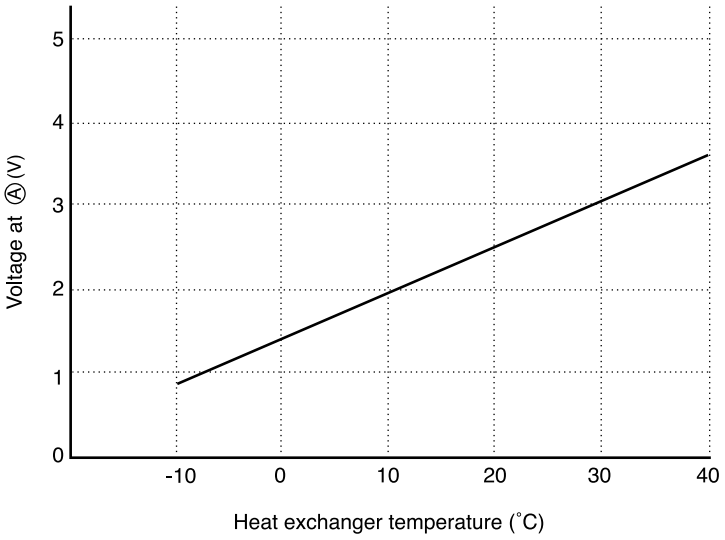


Fig. 5-2

6. Initial Setting Circuit (IC401)

- When power is supplied, the microcomputer reads the data in IC401 (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 IC401; data will not be erased even when power is turned off.

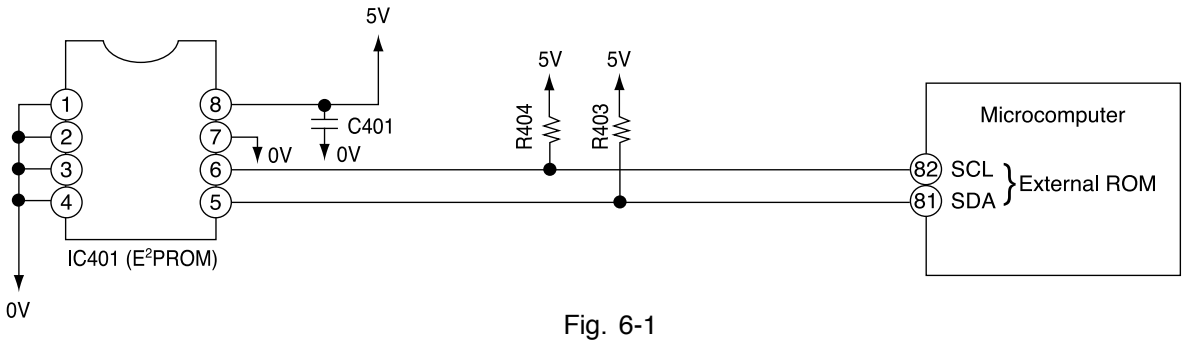


Fig. 6-1

7. Dip-switch

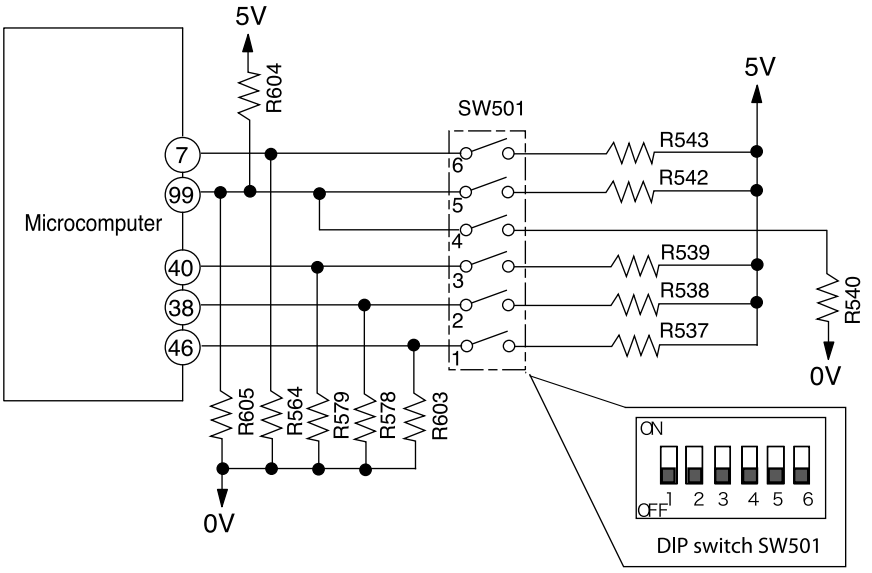


Fig. 7-1 Dip switch Circuit

- Fig. 7-1 shows the dip switch circuit; the table shown in Fig. 7-2 are function and setting position from ①–⑥ of the switch no.

Switch No.	FUNCTION	Switch Position/Setting.					
1	AUTO RESTART	OFF※	ENABLE	ON	DISABLE	----------	
2	CARD KEY MODE	OFF※	DISABLE	ON	ENABLE	----------	
3	CARD KEY LOGIC SELECT	OFF※	INPUT HIGH ACTIVE	ON	INPUT LOW ACTIVE	----------	
4	HEATING/COOLING ONLY MODE SELECT	OFF※	NORMAL (HEAT AND COOL)	OFF	HEATING ONLY	ON	COOLING ONLY
5	HEATING/COOLING ONLY MODE SELECT	OFF※		ON		OFF	
6	REMOCON ID SELECT ※1	OFF※	SELECT ID A	ON	SELECT ID B	----------	

Fig. 7-2 Functions of Dip switch

NOTE:

※ Marking is position of shipping [FACTORY default setting]

※1 Weekly Timer wireless remocon for new model have function of setting remocon ID A or B. This remocon using model can not operate “DIP SWITCH 6” (disabled by EEPROM data flag.)

- If the dip switch is set to “Heating mode only” or “Cooling mode only”, the wireless remote controller must be set to operation mode lock setting as indicated on page 87.

SERVICE CALL Q & A

Model **RAI-25RPA**
RAI-35RPA
RAI-50RPA

COOLING MODE

Q1 The compressor has stopped suddenly during cooling operation.

A1 Check if the indoor heat exchanger is frosted. Wait for 3-4 minutes until it is defrosted.

If the air conditioner operates in cooling mode when it is cold, the evaporator may get frosted.

DEHUMIDIFYING MODE

Q2 Sound of running water is heard from indoor unit during dehumidifying.

A2 Normal sound when refrigerant flows in pipe.

Q3 Compressor occasionally does not operate during dehumidifying.

A3 Compressor may not operate when room temperature is 10°C or less. It also stops when the humidity is preset humidity or less.

HEATING MODE

Q4 The circulation stops occasionally during Heating mode.

A4 It occurs during defrosting. Wait for 5-10 minutes until the condenser is defrosted.

Q5 When the fan speed is set at HIGH or MED, the flow is actually Weak.

A5 At the beginning of heating, the fan speed remains LOW for 30 seconds. If HIGH is selected, it switches to LOW and again to MED after additional 30 seconds.

Q6 Heating operation stops while the temperature is preset at “30”.

A6 If temperature is high in the outdoor, heating operation may stop to protect internal devices.

AUTO FRESH DEFROSTING

Q7 After the ON/OFF button is pressed to stop heating, the outdoor unit is still working with the OPERATION lamp blinking.

A7 Auto Fresh Defrosting is carried out : the system checks the outdoor heat exchanger and defrosts it as necessary before stopping operation.

AUTO OPERATION

Q8 Fan speed does not change when fan speed selector is changed during auto operation.

A8 At this point fan speed is automatic.

NICE TEMPERATURE RESERVATION

Q9 When on-timer has been programmed, operation starts before the preset time has been reached.

A9 This is because “Nice temperature reservation” function is operating. This function starts operation earlier so the preset temperature is reached at the preset time. Operation may start maximum 60 minutes before the preset time.

Q10 Does “Nice temperature reservation” function operate during dehumidifying?

A10 It does not work. It works only during cooling and heating.

Q11 Even if the same time is preset, the operation start time varies.

A11 This is because “Nice temperature reservation” function is operating. The start time varies according to the load of room. Since load varies greatly during heating, the operation start time is corrected, so it will vary each day.

INFRARED REMOTE CONTROL

Q12 Timer cannot be set.

A12 Has the clock been set? Timer cannot be set unless the clock has been set.

Q13 The current time display disappears soon.

A13 The current time disappears in approx. 10 seconds. The time set display has priority.

When the current time is set the display flashes for approx 3 minutes.

Q14 The timer has been programmed, but the preset time disappears.

A14 Is the current time past the preset time? When the preset time reaches the current time, it disappears.

OTHERS

Q15 The indoor fan varies among high air flow, low air flow and breeze in the auto fan speed mode. (Heating operation)

A15 This is because the cool wind prevention function is operating, and does not indicate a fault.

The heat exchanger temperature is sensed in the auto speed mode. When the temperature is low, the fan speed varies among high air flow, low air flow and breeze.

Q16 Loud noise from the outdoor unit is heard when operation is started.

A16 When operation is started, the compressor rotation speed goes to maximum to increase the heating or cooling capability, so noise becomes slightly louder. This does not indicate a fault.

Q17 Noise from the outdoor unit occasionally changes.

A17 The compressor rotation speed changes according to the difference between the thermostat set temperature and room temperature. This does not indicate a fault.

Q18 There is a difference between the set temperature and room temperature.

A18 There may be a difference between the set temperature and room temperature because of construction of room, air current, etc. Set the temperature at a comfortable for the space.

Q19 Air does not flow immediately after operation is started.

A19 Preliminary operation is performed for one minute when the power switch on and heating or dehumidifying is set. The operation lamp blinks during this time for heating. This does not indicate a fault.

TROUBLESHOOTING WHEN TIMER LAMP BLINKS.
Model RAI-25RPA, RAI-35RPA, RAI-50RPA
Perform troubleshooting according to the number of times the indoor timer lamp and outdoor LD301 blink.

SELF-DIAGNOSIS LIGHTING MODE
Model: RAI-25RPA, RAI-35RPA, RAI-50RPA

No.	Timer indicator flashing mode	Reason for display	Section of estimated fault
1	 – – – – – – – – Once	**Four-way valve faulty** The room heat exchange temperature is low during heating, or it is high during cooling.	(1) Four-way valve faulty. (2) Disconnection in heat exchange thermistor (only during heating)
2	 – – – – – – – Twice	**Outdoor unit forced operation** The outdoor unit is in forced operation or undergoing balancing after forced operation.	Service SW in outdoor electrical parts turned ON.
3	 – – – – – – 3 times	**Indoor/outdoor interface faulty** The interface signal from the outdoor unit has been interrupted.	(1) Indoor interface circuit (2) Outdoor interface circuit
4	 – – – 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	 – – – 6 times	**Abnormal water level detection** All stop when the float switch has been activated.	(1) Drain stopped up (2) Drain pump (3) Float switch
6	 – – 7 times	**Drain pump forced operation.** When the knob of drain pump test switch at Indoor P.W.B main slide to 'test' position.	(1) Indoor P.W.B. Main.
7	 – – 9 times	**Room thermistor or heat exchanger thermistor is faulty** When room thermistor or heat exchanger thermistor is opened circuit or short circuit.	(1) Room thermistor (2) Heat exchanger thermistor
8	 – – 10 times	**DC fan motor overcurrent detection** Overcurrent in indoor DC fan motor has been detected.	(1) Indoor fan locked (2) Indoor fan motor (3) Indoor P.W.B. Main
※1 9	 – – 13 times	**IC401 data reading fault** There was error in the data read from IC401	IC401 faulty

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

<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 F-cable is connected or disconnected.

(3) To check operation again when the timer lamp is blinking, you can use the remote control for operation (except for mode mark ※1).

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.

< How to redisplay failure diagnosis >

1. Turn the circuit breaker OFF.
2. Set the remote controller to OFF condition, indicated by OFF on the display.
3. By pressing MODE (MODE) button on the remote controller, set to Cooling operation indicated by (COOL).
4. Turn the circuit breaker ON.
5. Set the room temperature setting on the remote controller to 32˚C by pressing the (TEMP ﹀ or ﹀) button.
6. Set the fan speed with the FAN (FAN SPEED) button according to the desired failure information. (Refer to the corresponding table below)

Fan speed settings for failure data

Fan Speed	Data
AUTO	Newest
HI	Second newest
MED	Third newest
LOW	Fourth newest
SILENT	Oldest

7. While directing the remote controller towards the receiver of the indoor unit, press (TEMP ﹀) button and (START/STOP) button simultaneously. (The remote controller perform signal transmission with the device.)
8. The device beeps [Pi-] to indicate that it has just received the signal to redisplays the failure mode.
9. Direct the remote controller towards the receiver of indoor unit (within 2 meters in front of indoor unit) and press the INFO (INFO) button. Wait for 2 seconds for signal transmission. An error code will be displayed on the remote controller display.

< How to clear the troubleshooting data >

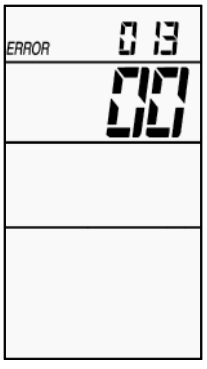
1. Redisplay the troubleshooting status. (See the above procedure.)
2. Turn the circuit breaker OFF.
3. By pressing MODE (MODE) button on the remote controller, set to Heating operation indicated by (HEAT).
4. Turn the circuit breaker ON.
5. Set the room temperature setting on the remote controller to 16˚C by pressing the (TEMP ﹀ or ﹀) button.
6. While directing the remote controller towards the receiver of the indoor unit, press (TEMP ﹀) button and (START/STOP) button simultaneously. (The remote controller perform signal transmission with the device.)
7. The product beeps for a second [Pi--] to indicated that it has just received the signal. The data has now been cleared.

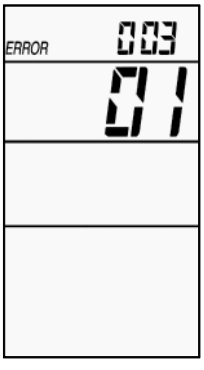
< How to display error code in case of failure just occurs>

If timer lamp of the indoor unit blinking and operation stops, please perform below procedures.

1. Direct the remote controller towards the receiver of indoor unit (within 2m in front of the indoor unit) and press INFO (INFO) button.
2. Wait for 2 seconds for signal transmission.
3. Indication of error code will be shown on the remote controller display for 10 seconds.

For example :





For details information regarding error code, please refer to page 81.

	TIMER LAMP BLINKING	LD301 BLINKING	WIRELESS REMOCON CODE	WIRED REMOCON CODE	MEANING	DETAILS	MAIN CHECK POINT
INDOOR	-	-	000 00	-	Normal		
	1 time	-	001 00		Refrigerant cycle fault	When the indoor heat exchanger temperature is too low in the heating mode or it is too high in the cooling mode.	1. Reversing valve defective 2. Heat exchanger thermistor disconnected. (only in heating mode)
	2 times	-	-	-	Outdoor unit is under forced operation.	It is not failure. Outdoor unit is in forced operation or balancing operation after forced operation.	1. Electrical parts in the outdoor unit.
	3 times	-	003 00		Communication error between indoor and outdoor units.	Interface signal from the outdoor unit is interrupted.	1. Indoor interface circuit 2. Outdoor interface circuit
	6 times	-	006 00		Abnormal water level: ceiling / small duct	All stop when the float switch has been activated	1. Drain stopped up 2. Drain pump 3. Float switch
	9 times	-	009 00		Indoor thermistor	Room thermistor or heat exchanger thermistor is opened circuit or short circuit.	1. Room thermistor 2. Heat exchanger thermistor
	10 times	-	010 00		Abnormal rotating numbers of DC fan motor	Overcurrent is detected at the DC fan motor of the indoor unit.	1. Indoor interface circuit 2. Outdoor interface circuit 3. Indoor control P.W.B
	13 times	-	013 00		IC401 data reading error	When data read from IC401 is incorrect.	1. IC401 abnormal
OUTDOOR	4 times	2 times	002 01		Peak current cut	Over current is detected.	1.Compressor 2. P.W.B.s
	4 times	3 times	003 01		Compressor abnormal low speed rotation	Position detection signal is not input during operation.	1. P.W.B.s 2.Compressor
	4 times	4 times	004 01		Compressor switching failure	Fail to switch from initial low frequency sync to position detection sync.	1. P.W.B.s 2.Compressor
	4 times	5 times	005 01		Overload lower limit cut	Overload condition still persisting even when rotation speed is below the lower rpm limit.	1. Outdoor unit is exposed to direct sunlight or its air flow blocked. 2. Fan motor 3. Fan motor circuit 4. The voltage is extremely low.
	-	6 times	006 01	-	OH thermistor temperature rise	OH thermistor is operating.	1. Leak of refrigerant 2. Compressor 3. OH thermistor circuit 4. Fan motor 5. Fan motor circuit
	4 times	7 times	007 01		Abnormal outdoor thermistor	Thermistor is opened or shorted.	1. Thermistor 2. Connection of thermistor is faulty 3. Thermistor circuit
	4 times	8 times	008 01		Acceleration defective		
	-	9 times	009 01	-	Communication error	When indoor unit is not connected, it blinks similarly, not malfunction.	1. Cable is wrong connected 2. Cable is open 3. Interface circuit between indoor and outdoor unit
	-	10 times	010 01	-	Abnormal power source	Power supply voltage is incorrect.	1. Power supply voltage 2. Receptacle of wire for P.W.B IPM is not properly inserted
	4 times	12 times	012 01		Fan motor fault	Outdoor fan rpm is not rotate as intended rpm.	1. Fan motor 2. Fan motor circuit
	4 times	13 times	013 01		EEPROM reading error	Microcomputer cannot read the data in EEPROM.	1. P.W.B main
	4 times	14 times	014 01		Active converter defective	Over voltage is detected, compressor abnormal load.	1. P.W.B.s 2. Compressor

< 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 before hand 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.)

Remarks:
When this unit were mean to be connected to multi outdoor unit system, below diagnosis table shall be use.
If LD301 lit and at the same time LD302 blinks in a number of times, this indicates thermistor faulty.

	TIMER LAMP BLINKING	LD302 BLINKING	WIRELESS REMOCON CODE	WIRED REMOCON CODE	MEANING	DETAILS	MAIN CHECK POINT
OUTDOOR	4 times	1 time	071 01		OVERHEAT THERMISTOR	THERMISTOR IS OPENED OR SHORTED	1. THERMISTOR 2. CONNECTION OF THERMISTOR IS FAULTY 3. THERMISTOR CIRCUIT
	4 times	2 times	072 01		DEFROST THERMISTOR		
	4 times	3 times	073 01		OUTDOOR TEMPERATURE THERMISTOR		
	4 times	4 times	074 01		NARROW PIPE THERMISTOR (INDOOR NO.1)		
	4 times	5 times	075 01		WIDE PIPE THERMISTOR (INDOOR NO.1)		
	4 times	6 times	076 01		NARROW PIPE THERMISTOR (INDOOR NO.2)		
	4 times	7 times	077 01		WIDE PIPE THERMISTOR (INDOOR NO.2)		
	4 times	8 times	078 01		NARROW PIPE THERMISTOR (INDOOR NO.3)		
	4 times	9 times	079 01		WIDE PIPE THERMISTOR (INDOOR NO.3)		
	4 times	10 times	080 01		NARROW PIPE THERMISTOR (INDOOR NO.4)		
	4 times	11 times	081 01		WIDE PIPE THERMISTOR (INDOOR NO.4)		
	4 times	12 times	082 01		NARROW PIPE THERMISTOR (INDOOR NO.5)		
	4 times	13 times	083 01		WIDE PIPE THERMISTOR (INDOOR NO.5)		

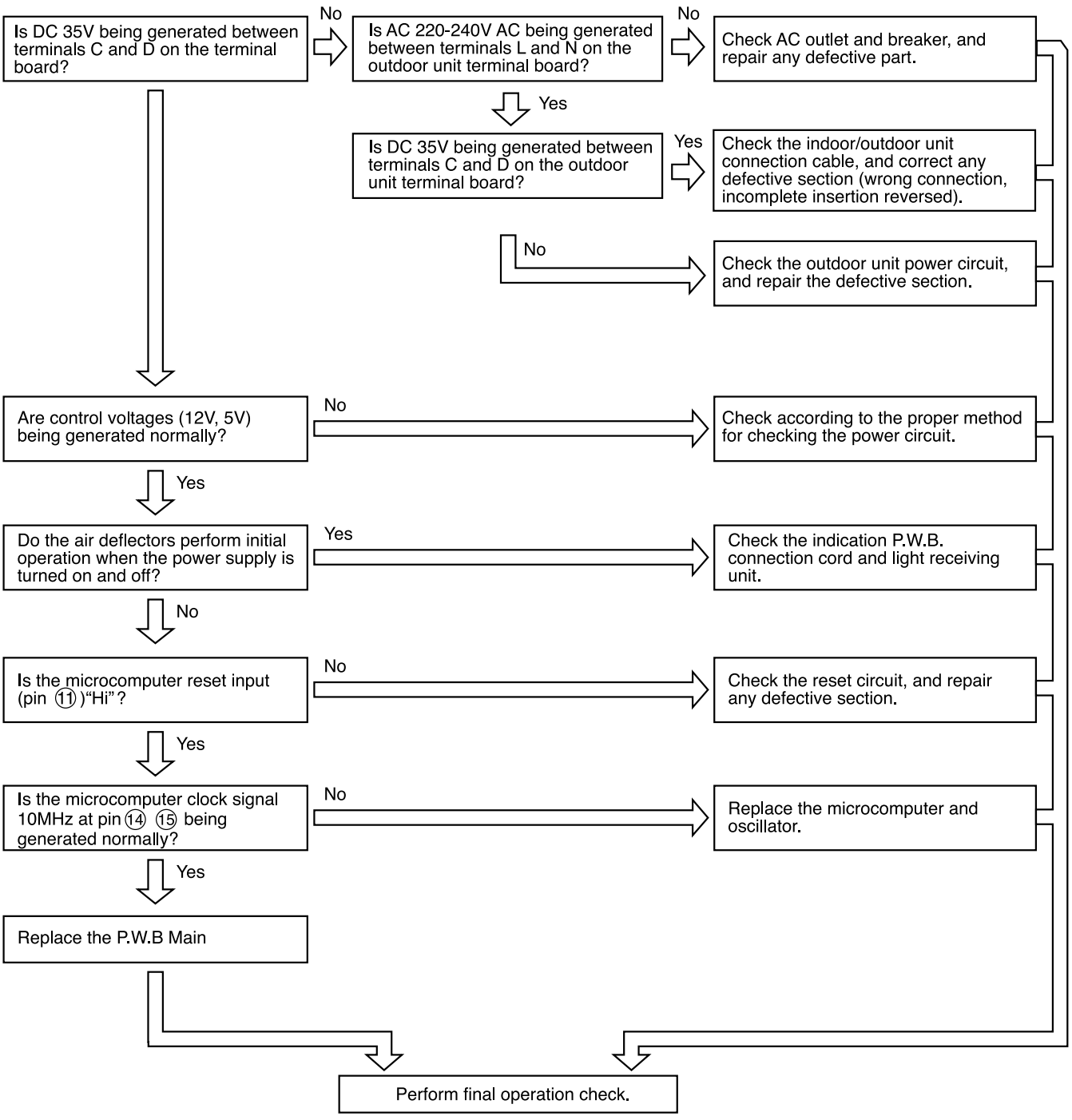
If LD304 blinks, the number of blinks indicates a communication error with the corresponding indoor unit connection.
Detail as per below table.

	TIMER LAMP BLINKING	LD304 BLINKING	WIRELESS REMOCON CODE	WIRED REMOCON CODE	MEANING	DETAILS	MAIN CHECK POINT
OUTDOOR	-	1 time	009 01		COMMUNICATION ERROR BETWEEN OUTDOOR AND INDOOR UNIT NO.1	EVEN WHEN INDOOR UNIT IS NOT CONNECTED, IT BLINKS SIMILARLY. (NOT MALFUNCTION)	1. INDOOR TO OUTDOOR C-D LINE CABLE NOT CONNECTED PROPERLY. 2. COMMUNICATION CIRCUIT DAMAGED. 3. DC35V POWER SUPPLY DAMAGED. 4. EFFECT OF EXTERNAL NOISE TO C-D LINE CABLE.
	-	2 times			COMMUNICATION ERROR BETWEEN OUTDOOR AND INDOOR UNIT NO.2		
	-	3 times			COMMUNICATION ERROR BETWEEN OUTDOOR AND INDOOR UNIT NO.3		
	-	4 times			COMMUNICATION ERROR BETWEEN OUTDOOR AND INDOOR UNIT NO.4		

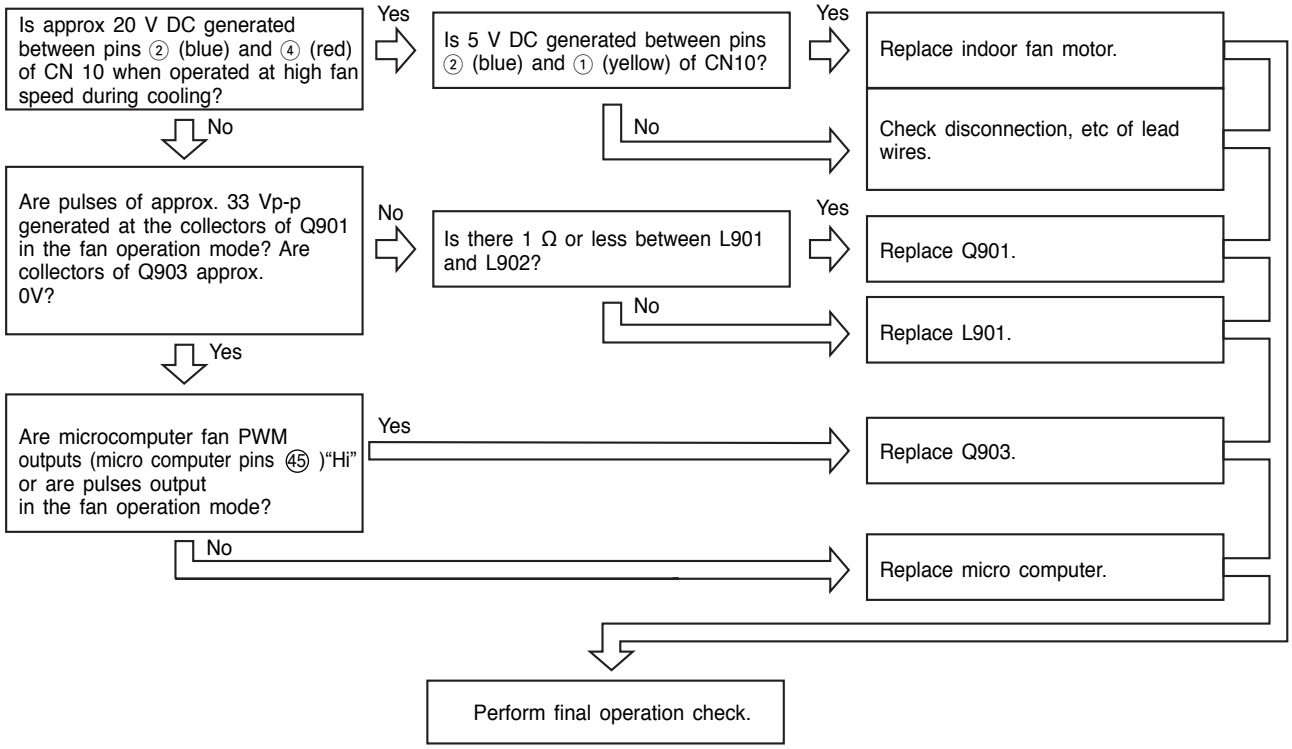
Note : This communication error diagnosis table only applicable for 2 rooms until 4 rooms multi system model.
Other shall refer to diagnosis table on the electrical cover or inside outdoor service manual.

CHECKING INDOOR UNIT ELECTRICAL PARTS

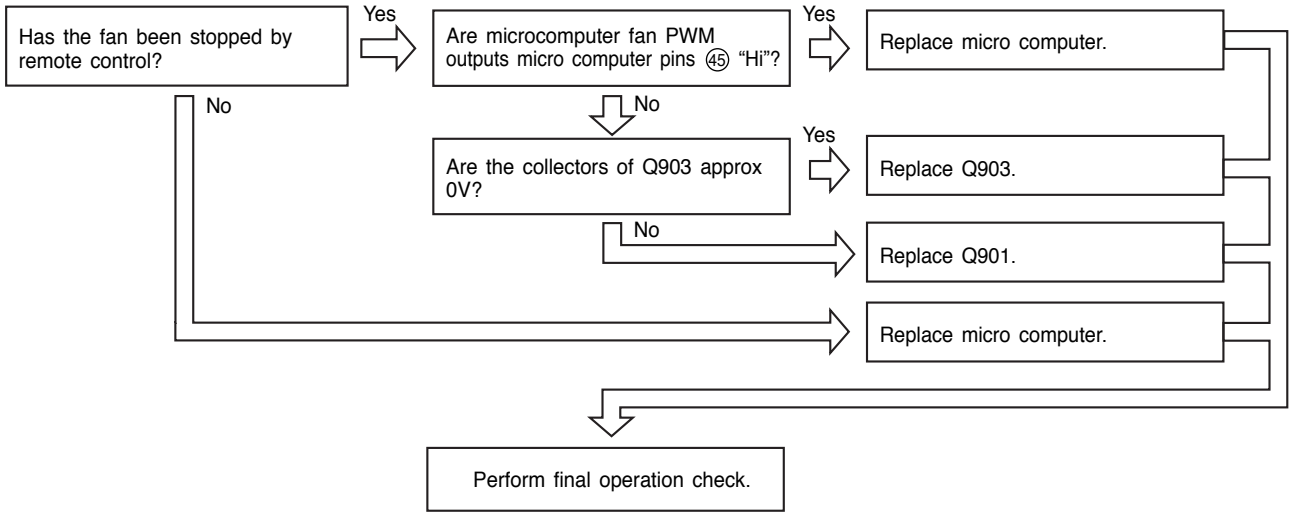
1. Power does not come on (no operation)



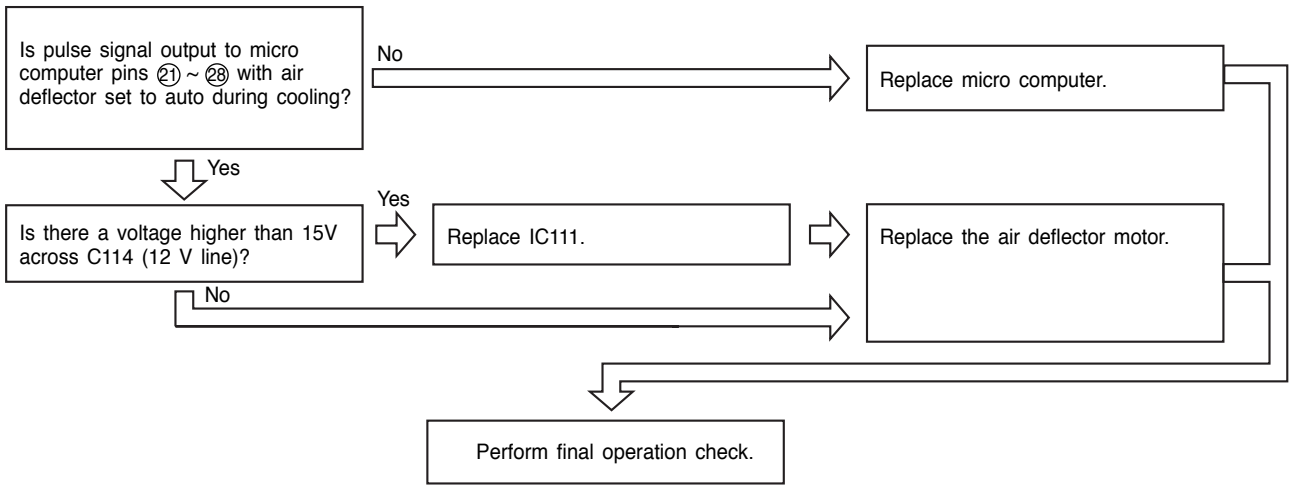
2. Only indoor fan does not operate (other is normal)

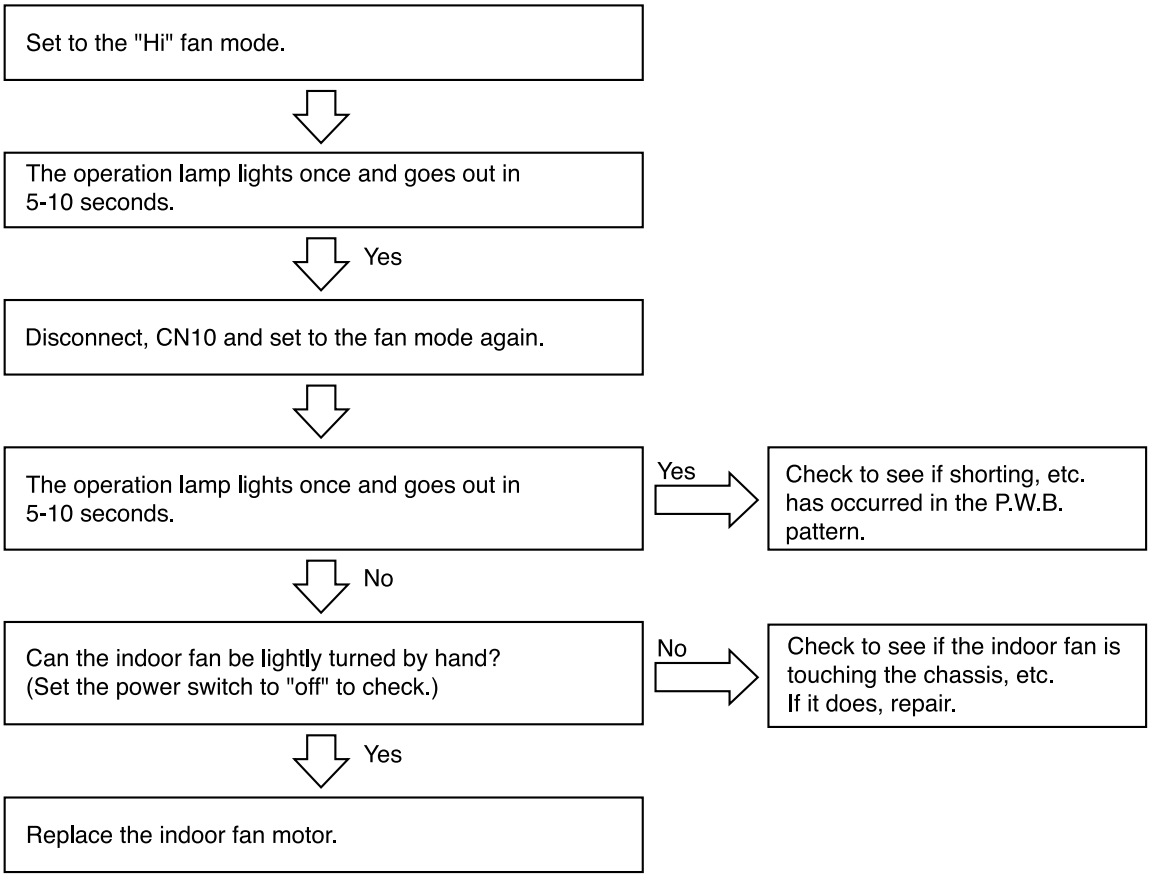


3. Indoor fan speed does not change (other is normal)



4. Air deflector does not move (other is normal)




Set to the "Hi" fan mode.
The operation lamp lights once and goes out in 5-10 seconds.
Yes
Disconnect, CN10 and set to the fan mode again.
The operation lamp lights once and goes out in 5-10 seconds.
Yes
Check to see if shorting, etc. has occurred in the P.W.B. pattern.
No
Can the indoor fan be lightly turned by hand? (Set the power switch to "off" to check.)
No
Check to see if the indoor fan is touching the chassis, etc. If it does, repair.
Yes
Replace the indoor fan motor.

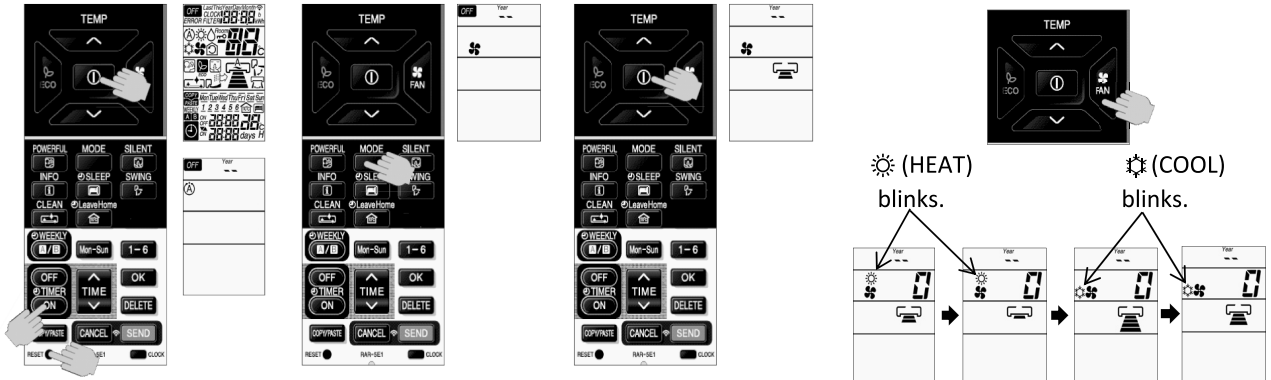
HOW TO CHANGE THE SHIFT VALUE SETTING TEMPERATURE USING WIRELESS REMOTE CONTROLLER

The shift value setting temperature for Cooling and Heating mode operation can be change using remote controller. (This procedure shall be implemented strictly by service personnel only.)

(For initial shift value temperature setting for Cooling mode (SHIFTC) and Heating operation mode (SHIFTW) : Please refer to page 53)

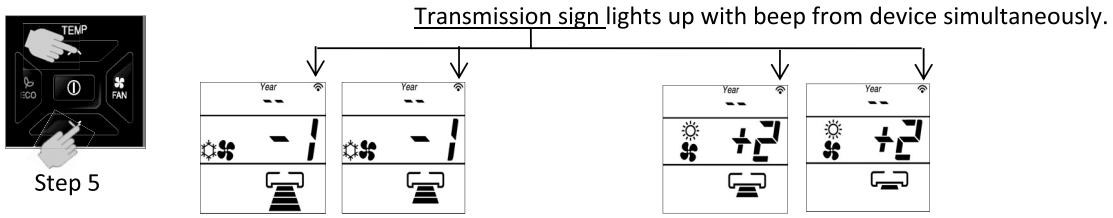
PROCEDURES

1. While pressing and holding ⏻ (START/STOP) button and TIMER ON (ON) button, press RESET [RESET] button on the same. Release RESET [RESET] button only and make sure that all marks on the remote controller display are indicated, then release the ⏻ (START/STOP) button and TIMER ON [ON] button.
   Remote controller now enters "Shift Value Change Mode".
2. Press the MODE (MODE) selector button so that the display indicates (FAN) mode.
3. Press the ⏻(START/STOP) button and FAN operation will be started.
4. Set the FAN SPEED with the FAN (FAN SPEED) button according to the following FAN speed setting in order to choose the desired operation mode that is required for shift value setting temperature modification.
   - To change the shift value for COOLING mode operation, select either (HIGH) or (MED) FAN SPEED.
   - To change the shift value for HEATING mode operation, select either (LOW) or (SILENT) FAN SPEED.

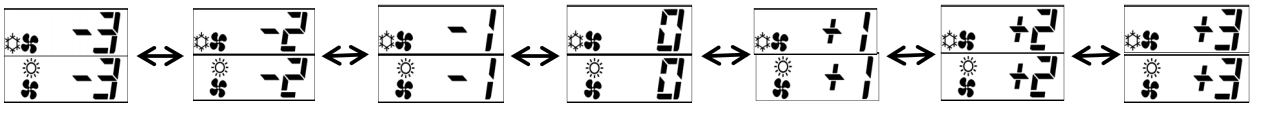


Step 1 Step 2 Step 3 Step 4

5. Press the (TEMP ∨ or ∧) button to change the shift value.
   (The shift value changed with device beep sound.)



Step 5



Decrease 3˚C from the initial shift value setting. | Decrease 2˚C from the initial shift value setting. | Decrease 1˚C from the initial shift value setting. | The initial shift value setting. | Increase 1˚C from the initial shift value setting. | Increase 2˚C from the initial shift value setting. | Increase 3˚C from the initial shift value setting.

NOTE :

(1) The displayed shift value, (HEAT) and (COOL) symbol on the remote controller display will be disappear after 10 seconds.

(2) The changed shift value will remain unchanged after turned off the power.

(3) If "0" is displayed on the remote controller display, it indicates the shift value is now at the initial setting.

HOW TO CHANGE THE SHIFT VALUE for SETTING TEMPERATURE USING WIRED REMOTE CONTROLLER

Shift value for COOLING and HEATING mode operation can be changed using wired remote controller.
(This procedure shall be strictly carried out by service personnel).
(For initial shift value temperature setting for Cooling mode (SHIFTC) and Heating operation mode (SHIFTW):
Please refer to page 53)

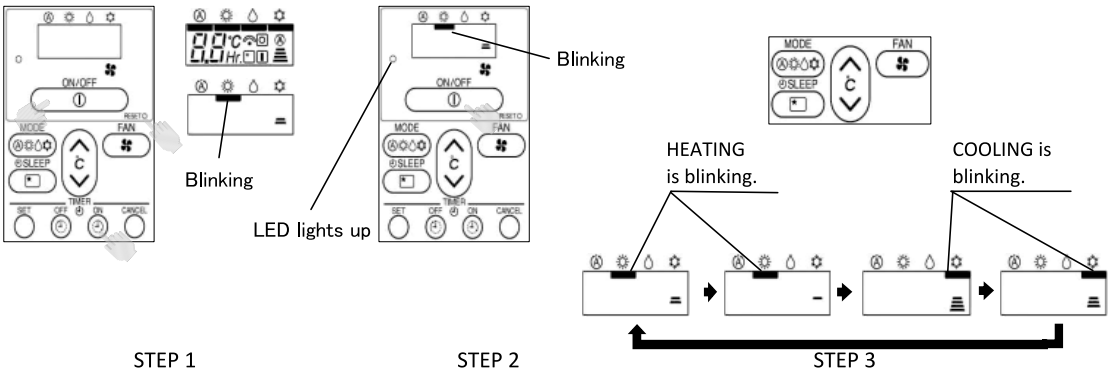
PROCEDURE

1. While pressing the ⏻ ON/OFF and ON TIMER button, press and release the RESET RESET button once.
All icon will be displayed on the LCD screen and shortly disappear.
Initial cursor will be at AUTO mode. After about 5 sec, cursor will shift and blink continously at HEATING mode. Release hold of ⏻ ON/OFF and ON TIMER button.
The remote is now in **SHIFT VALUE CHANGE MODE**.

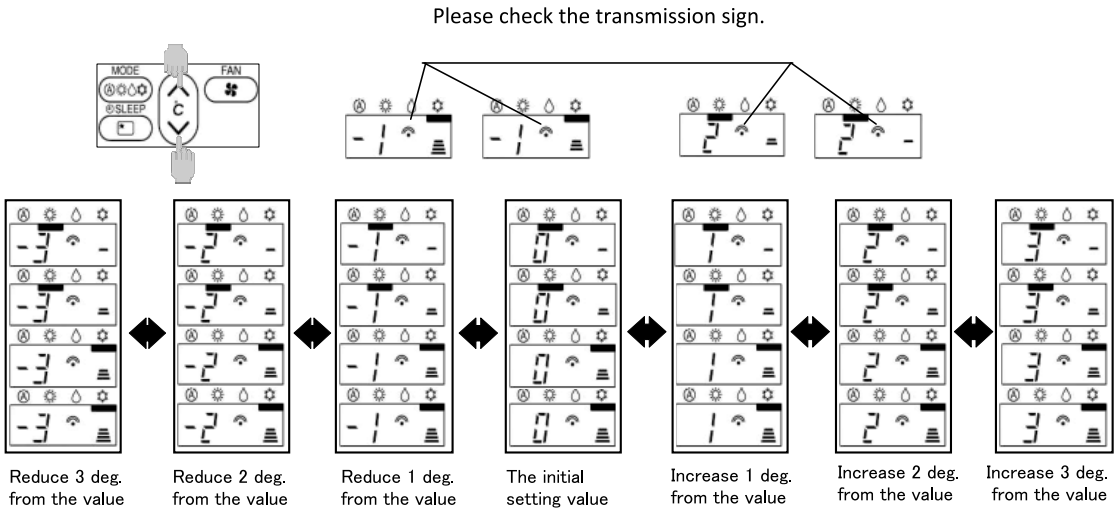
2. Press ⏻ ON/OFF button. Operation LED will ON. Cursor will stop blinking. Unit will operate in FAN mode.

3. Set the FAN SPEED with the FAN (FAN SPEED) button according to the following FAN speed setting in order to choose the desired operation mode that is required for shift value setting temperature modification.

- To change the shift value of COOLING mode operation, select either ≡ (HIGH) or ≡ (MED) FAN SPEED.
- To change the shift value of HEATING mode operation, select either = (LOW) or – (SILENT) FAN SPEED.



4. Press the (TEMP V or Λ) button to change the shift value.



5. Press the ⏻ [ON/OFF] button to end "Shift value change mode".

NOTE :
1. Shift value is everytime temperature button is pressed. Maximum 7 shift values only. (-3°C to + 3°C)
2. Changed shift value remain even after power supply is switched off.
3. By default the Shift value is set at "0°C" on the remote display. This indicates the unit is set to initial setting.

SETTING THE PREVENTION OF MUTUAL INTERFERENCE FOR REMOTE CONTROLLER

(Applicable for Remote controller model : RAR-5E1, RAR-5E2, RAR-5E3, RAR-5E4 and RAR-5E5)

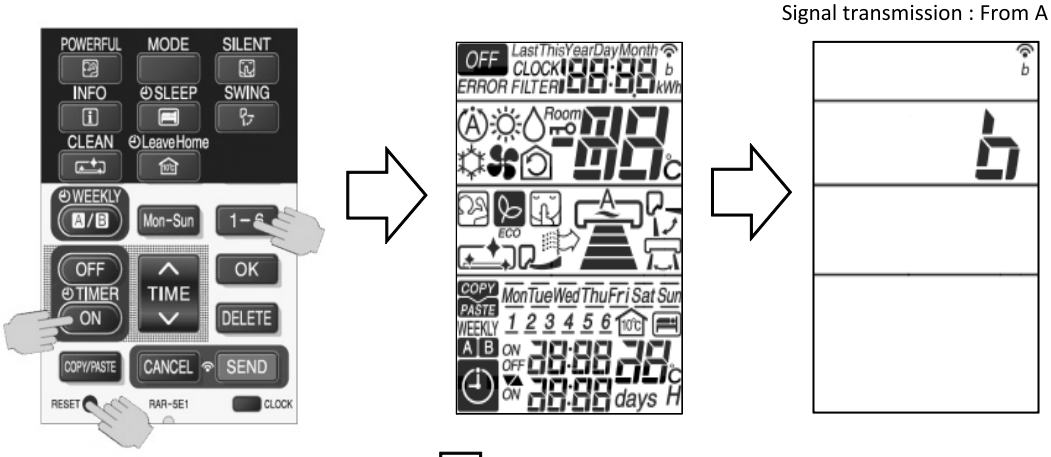
Case : 2 sets of indoor units installed near to each other.
If both indoor units can receive the same remote controller signal, please set the remote controller as below. (This setting will change the signal address of each remote controller.)

Initial remote controller signal address setting is A.
This procedure change the remote controller signal address from A to **B**.

1. The circuit breaker for the other unit shall be OFF.

2. Slide the remote controller cover to take it off.
3. While directing the remote controller towards the receiver of the indoor unit, press 1~6 button, ⏲TIMER ON (ON TIMER) button and RESET (RESET) button simultaneously. (The remote controller perform signal transmission with the device.)

Signal transmission : From A to B

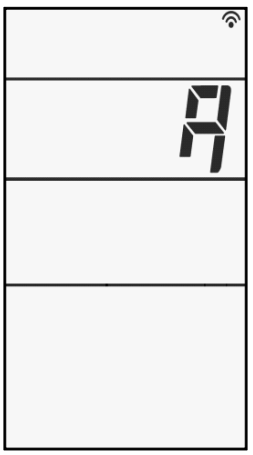


4. The indoor unit beeps [Pip] to indicate that it has just received the signal from remote controller.

5. Please check the usability of each set of indoor unit using its own remote controller.

Signal transmission : From B to A

Note : If indoor unit still not receive the correct signal from the correct remote controller, setting shall be made again.
By setting again for the 2nd time, the signal address will change from B to **A**. Then, if repeat again for the 3rd time, the remote controller signal address will change from A to **B**.



OPERATION MODE LOCK SETTING

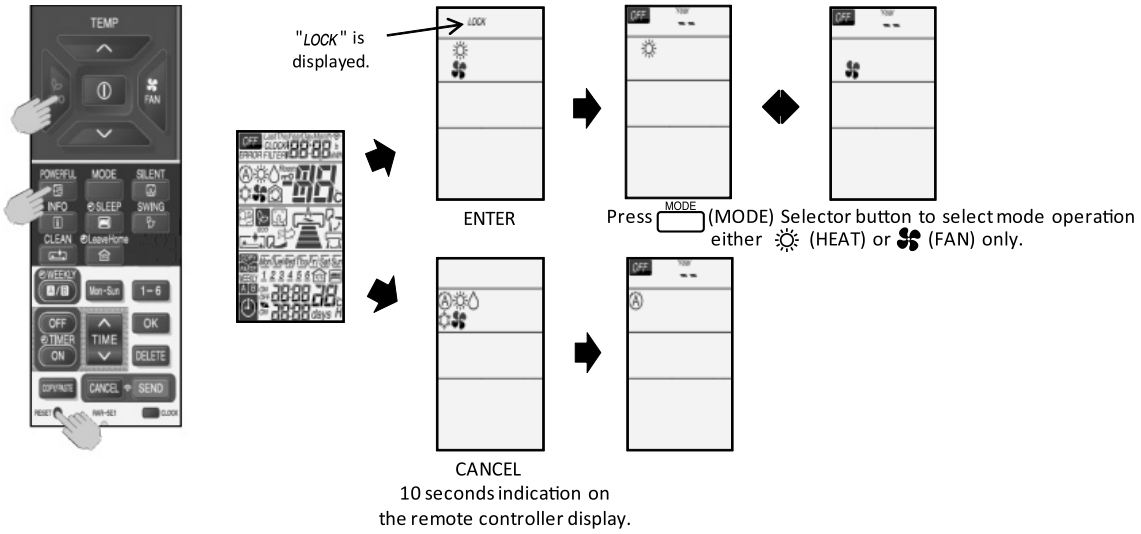
If Dip switch position is set at "Heating mode only" or "Cooling mode only" as mentioned on page 75, it is required to set the remote controller into operation mode lock setting. Without setting the remote controller, it will caused unmatch signal transmission between indoor unit and remote controller.

PROCEDURE

1. Heating operation mode lock setting

(a) While pressing and holding ECO (ECO) button and POWERFUL (POWERFUL) button, press RESET (RESET) button on the same time. Release RESET (RESET) button only and make sure that all marks on the remote controller display are indicated, then release the ECO (ECO) button and POWERFUL (POWERFUL) button.
Remote controller now enters "Heating operation mode lock".

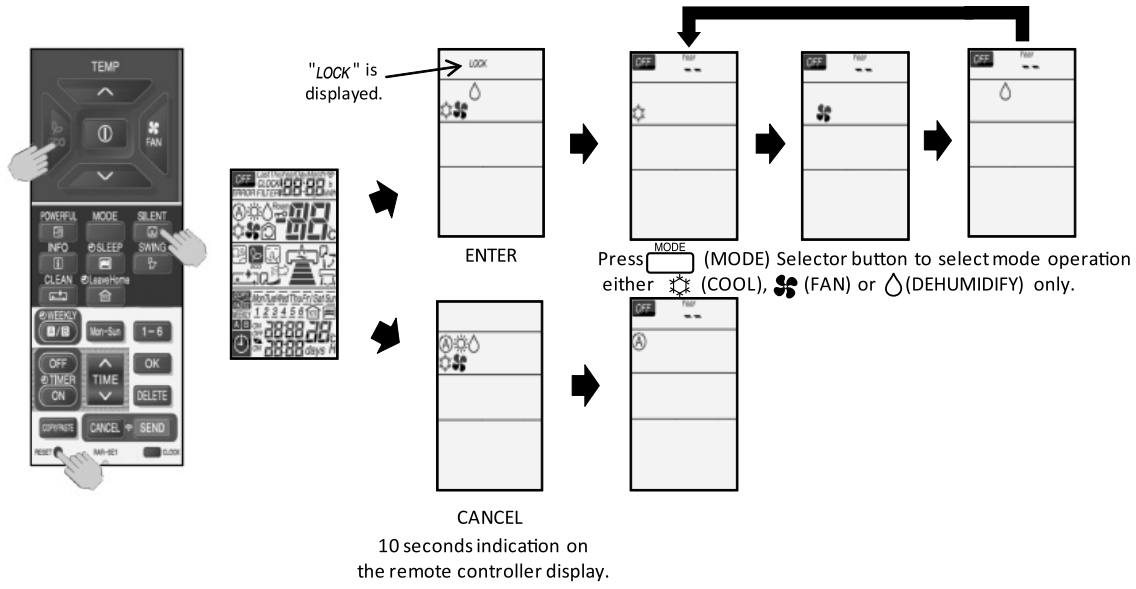
(b) To cancel the "Heating operation mode lock", repeat the above procedure (1(a)).



2. Cooling opearation mode lock setting

(a) While pressing and holding ECO (ECO) button and SILENT (SILENT) button, press RESET (RESET) button on the same time. Release RESET (RESET) button only and make sure that all marks on the remote controller display are indicated, then release the ECO (ECO) button and SILENT (SILENT) button.
Remote controller now enters "Cooling operation mode lock".

(b) To cancel the "Cooling operation mode lock", repeat the above procedure (2(a)).



NOTE :

(1) The indication of " LOCK " and (" "(HEAT), " " (COOL)," " (FAN) or " " (DEHUMIDIFY)) mode operation symbol on the remote controler display will disappear after 10 seconds and it will enters to OFF condition indicated by OFF on the display.

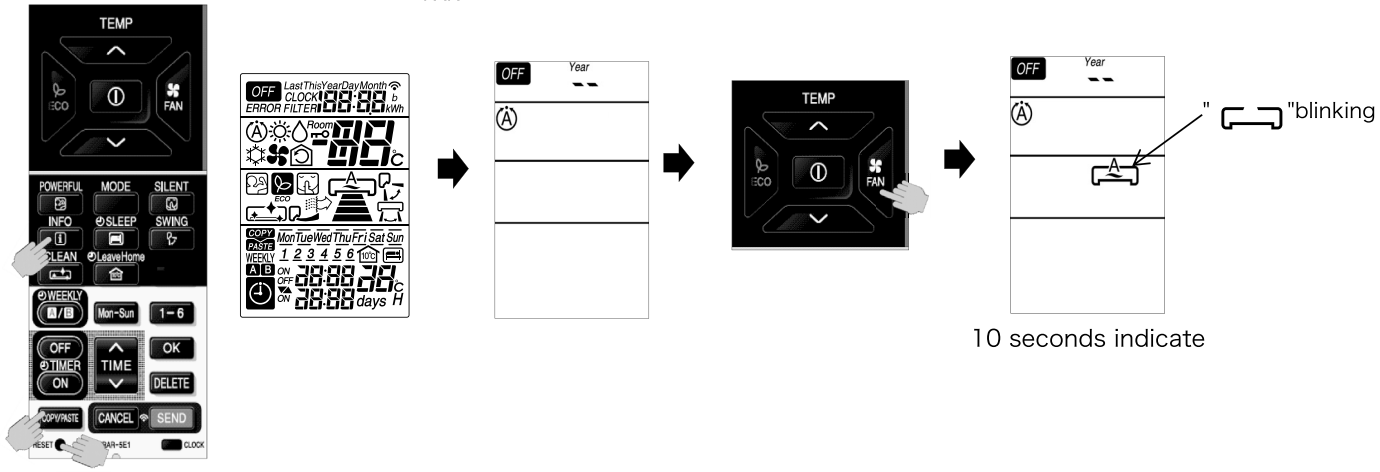
(2) The OPERATION MODE LOCK setting will remain in the remote controller memory eventhough the remote controller is ran out of battery.

DISPLAY OPERATION MODE SETTING

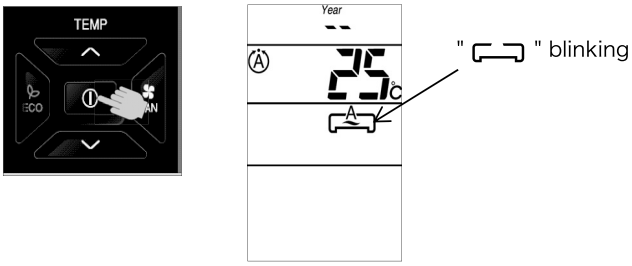
For operating indoor unit independently (without outdoor unit connection), remote controller has to be set according to below procedures before send the signal to the indoor unit. New communication format between indoor and outdoor is required to communicate with outdoor unit.

PROCEDURE

1. While pressing and holding INFO (INFO) button and COPY/PASTE (COPY/PASTE) button, press RESET (RESET) button on the same time. Release RESET (RESET) button only and make sure that all marks on the LCD display are indicated, then release the INFO (INFO) button and COPY/PASTE (COPY/PASTE) button.
   Remote controller now enters "DISPLAY OPERATION MODE" for the indoor unit to run independently.
   Please ensure that when pressing FAN (FAN) button, "▭" will blinking.



2. Press the MODE (MODE) selector button to choose the desired operation mode.
3. Press ⏻ (START/STOP) button.
   Then, the indoor unit will starts to operate independently accoring the selected operation mode.



NOTE :

(1) During "DISPLAY OPERATION MODE", "▭" blinks on LCD of remote controller.

(2) When operation stops, "DISPLAY OPERATION MODE" is canceled.

CHECKING THE REMOTE CONTROLLER

Is battery polarity correct?

No

Install the battery in the correct polarity.

Yes

Is the battery check sign + − flashing?

Yes

Replace the battery.

No

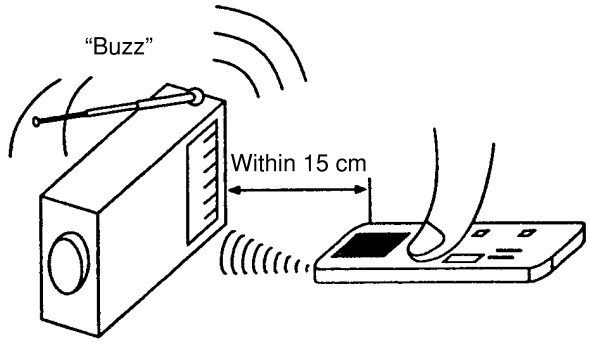
Turn on an AM radio, bring the remote control switch within 15 cm of the radio, and press the ON/OFF button.

Does the radio buzz noisily?

No

Check the LED (D1) with a multimeter.

Yes

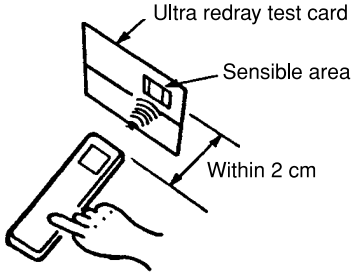


[AM radio]

Check the indoor unit signal receiving P. W. B..
If it is good, check the main P. W. B..

You can check the remote control switch by other methods as explained below.

Using the test card



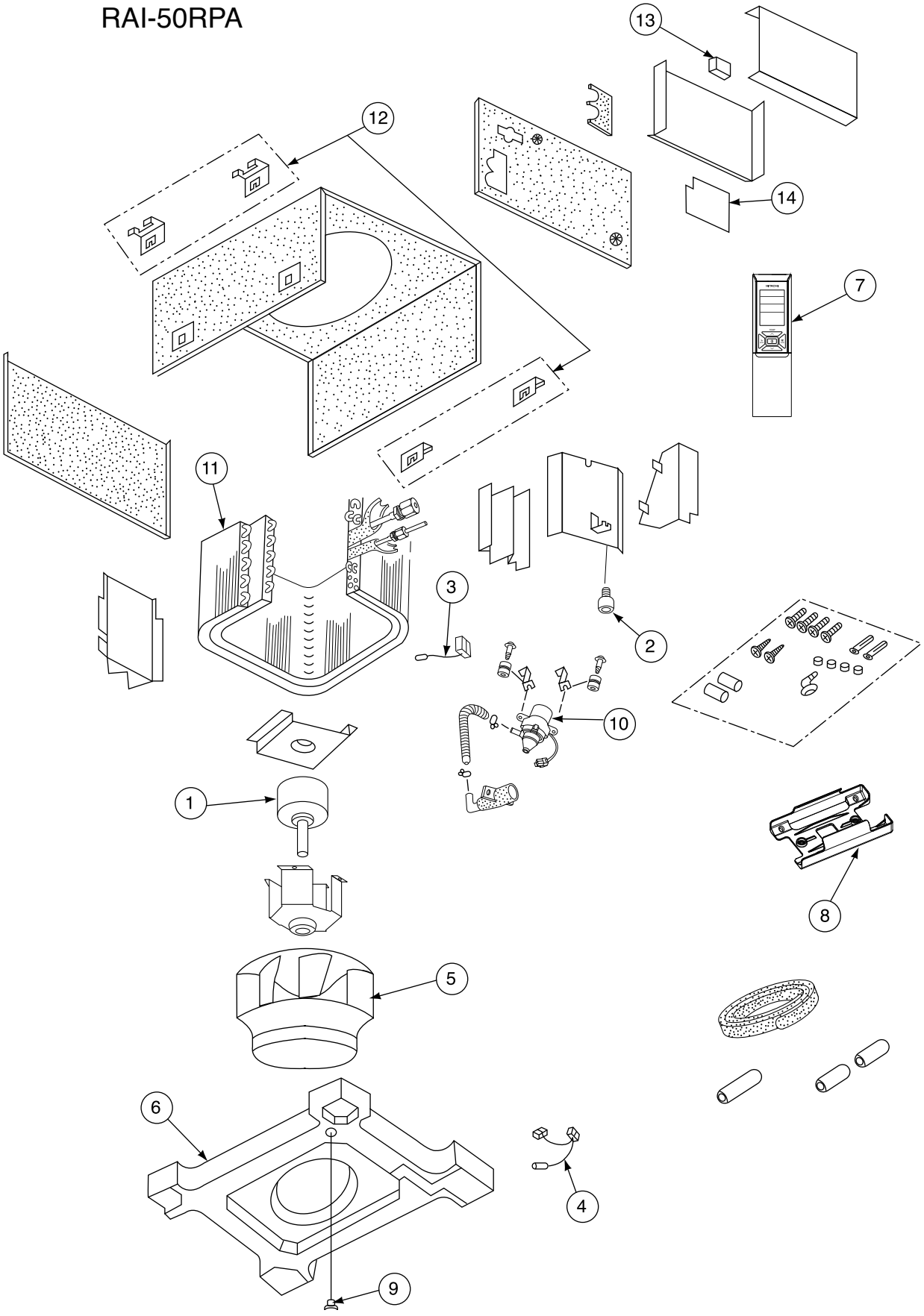
The sensible area should flash in orange when you operate the remote control unit if it is good.

Check functions again.
If it does not work, replace the remote controller.

PARTS LIST AND DIAGRAM

INDOOR UNIT

MODEL : RAI-25RPA
RAI-35RPA
RAI-50RPA



MODEL RAI-25RPA

NO.	PART N0. RAI-25RPA	Q'TY / UNIT	PARTS NAME
1	PMRAI-25NH4R R01	1	FAN MOTOR
2	PMRAMD-350BW R11	1	FLOAT SWITCH
3	PMRAI-32CNH2 R02	1	THERMISTOR (HEAT EXCHANGER)
4	PMRAI-32CNH2 R03	1	THERMISTOR (ROOM TEMPERATURE)
5	PMRAI-32CNH2 R04	1	TURBO FAN
6	PMRAI-32CNH2 R05	1	DRAIN PAN ASSEMBLY
7	PMRAI-25RPA R02	1	REMOTE CONTROL ASSEMBLY
8	PMRAK-50PPA R07	1	REMOTE CONTROL SUPPORT
9	PMRAI-32CNH2 010	1	DRAIN CAP
10	PMRAI-25NH4 R04	1	DRAIN PUMP ASSEMBLY
11	PMRAI-25RPA R03	1	CYCLE ASSEMBLY
12	PMRAI-25NH4 007	4	SUSP. CLAMP
13	PMRAC-07CV1 R06	1	TERMINAL BOARD (2P)
14	PMRAI-25RPA R01	1	P.W.B. (MAIN)

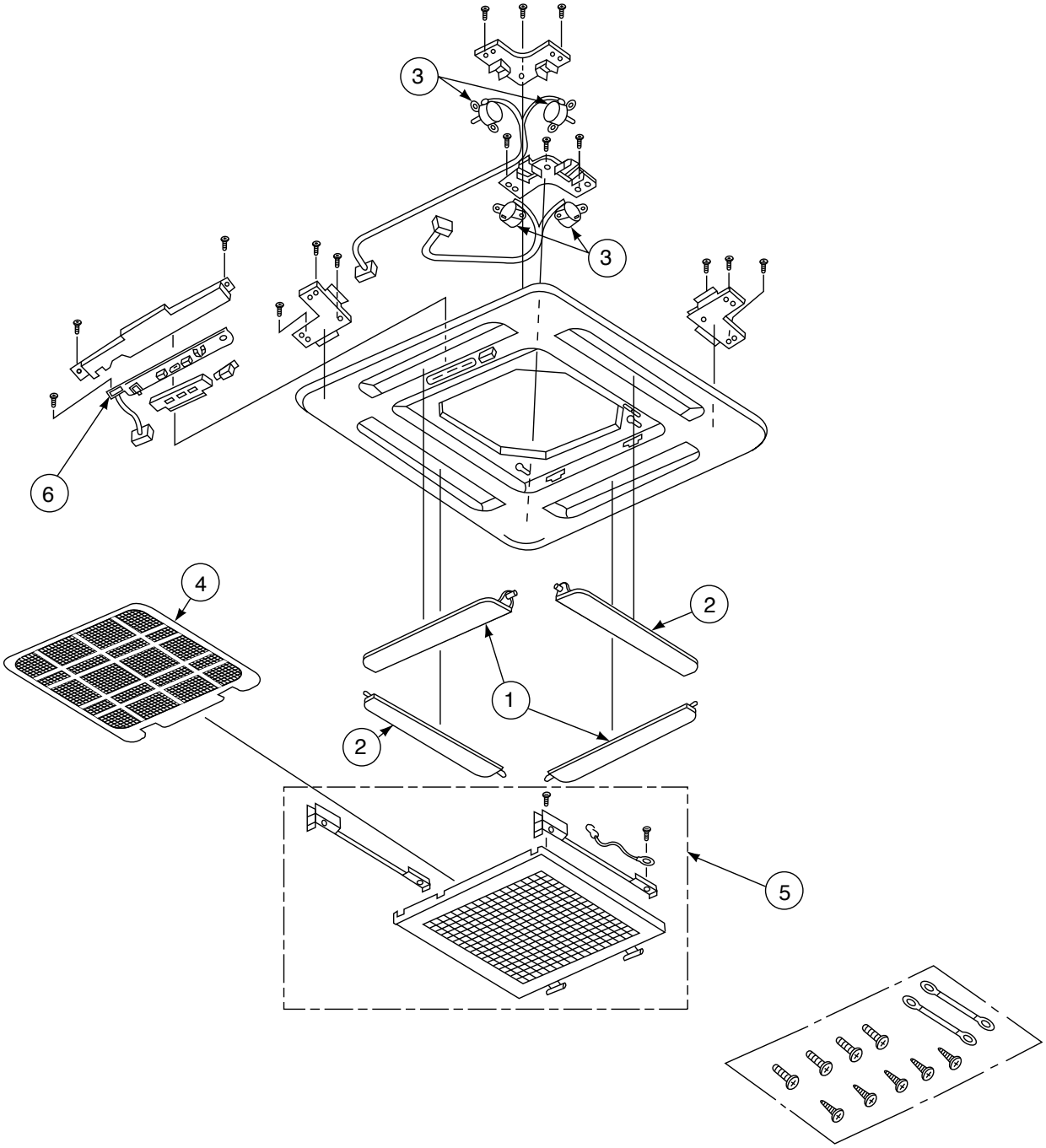
MODEL RAI-35RPA

NO.	PART N0. RAI-35RPA	Q'TY / UNIT	PARTS NAME
1	PMRAI-25NH4R R01	1	FAN MOTOR
2	PMRAMD-350BW R11	1	FLOAT SWITCH
3	PMRAI-32CNH2 R02	1	THERMISTOR (HEAT EXCHANGER)
4	PMRAI-32CNH2 R03	1	THERMISTOR (ROOM TEMPERATURE)
5	PMRAI-32CNH2 R04	1	TURBO FAN
6	PMRAI-32CNH2 R05	1	DRAIN PAN ASSEMBLY
7	PMRAI-25RPA R02	1	REMOTE CONTROL ASSEMBLY
8	PMRAK-50PPA R07	1	REMOTE CONTROL SUPPORT
9	PMRAI-32CNH2 010	1	DRAIN CAP
10	PMRAI-25NH4 R04	1	DRAIN PUMP ASSEMBLY
11	PMRAI-25RPA R03	1	CYCLE ASSEMBLY
12	PMRAI-25NH4 007	4	SUSP. CLAMP
13	PMRAC-07CV1 R06	1	TERMINAL BOARD (2P)
14	PMRAI-35RPA R01	1	P.W.B. (MAIN)

MODEL RAI-50RPA

NO.	PART N0. RAI-50RPA	Q'TY / UNIT	PARTS NAME
1	PMRAI-25NH4R R01	1	FAN MOTOR
2	PMRAMD-350BW R11	1	FLOAT SWITCH
3	PMRAI-32CNH2 R02	1	THERMISTOR (HEAT EXCHANGER)
4	PMRAI-32CNH2 R03	1	THERMISTOR (ROOM TEMPERATURE)
5	PMRAI-32CNH2 R04	1	TURBO FAN
6	PMRAI-32CNH2 R05	1	DRAIN PAN ASSEMBLY
7	PMRAI-25RPA R02	1	REMOTE CONTROL ASSEMBLY
8	PMRAK-50PPA R07	1	REMOTE CONTROL SUPPORT
9	PMRAI-32CNH2 010	1	DRAIN CAP
10	PMRAI-25NH4 R04	1	DRAIN PUMP ASSEMBLY
11	PMRAI-50RPA R02	1	CYCLE ASSEMBLY
12	PMRAI-25NH4 007	4	SUSP. CLAMP
13	PMRAC-07VC1 R06	1	TERMINAL BOARD (2P)
14	PMRAI-50RPA R01	1	P.W.B. (MAIN)

MODEL : RAI-ECPP (PANEL)



MODEL RAI-ECPP

NO.	PART N0. RAI-ECPP	Q'TY / UNIT	PARTS NAME
1	PMRAI-ECPM 001	2	HORIZONTAL AIR DEFLECTOR 1
2	PMRAI-ECPM 002	2	HORIZONTAL AIR DEFLECTOR 2
3	PMRAI-ECPM 003	4	STEPPING MOTOR
4	PMRAI-ECPL 004	1	FILTER
5	PMRAI-ECPM 004	1	SUCTION GRILL
6	PMRAI-ECPP R01	1	P.W.B. (DISPLAY)

HITACHI

RAI-25RPA
RAI-35RPA
RAI-50RPA

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