HITACHI

PM | **NO. 0540E**

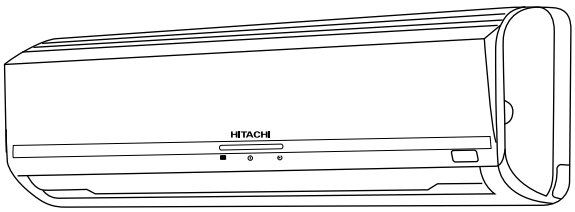
RAK-60PPA/RAC-60WPA

SERVICE MANUAL

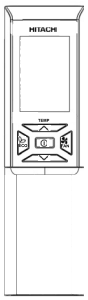
TECHNICAL INFORMATION

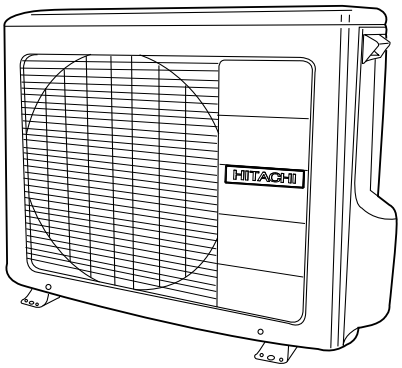
REFER TO THE FOUNDATION MANUAL

FOR SERVICE PERSONNEL ONLY



RAK-60PPA





RAC-60WPA

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SPECIFICATIONS

TYPE			(WALL TYPE)	
			INDOOR UNIT	OUTDOOR UNIT
MODEL			RAK-60PPA	RAC-60WPA
POWER SOURCE			1 PHASE, 50/60 Hz, 220-240V	
COOLING	TOTAL INPUT	(W)	1,850 (155 – 2,300)	
	TOTAL AMPERES	(A)	8.50 – 7.80	
	CAPACITY	(kW)	6.10 (0.9 – 6.5)	
		(B.T.U./h)	20,820 (3,070 – 22,190)	
HEATING	TOTAL INPUT	(W)	1,880 (155 – 2,550)	
	TOTAL AMPERES	(A)	8.60 – 7.90	
	CAPACITY	(kW)	6.80 (0.9 – 8.5)	
		(B.T.U./h)	23,210 (3,070 – 29,000)	
DIMENSIONS (mm)		W	1030	850
		H	295	650
		D	207	298
NET WEIGHT		(kg)	12	45

※ After installation

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

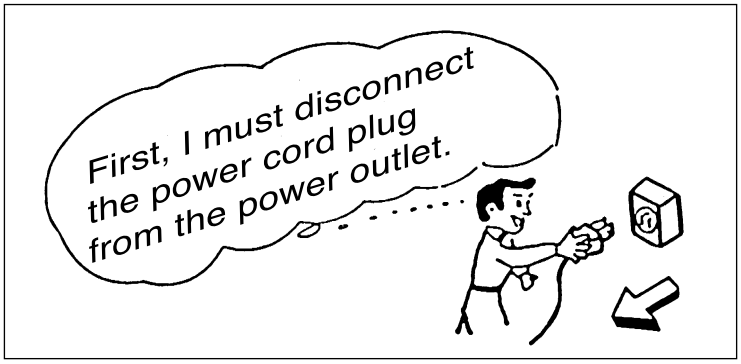
ROOM AIR CONDITIONER

INDOOR UNIT + OUTDOOR UNIT

FEBRUARY 2013 **Refrigeration & Air-Conditioning Division**

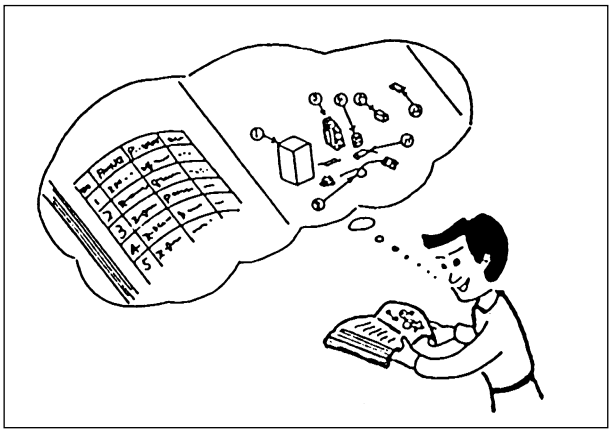
SAFETY DURING REPAIR WORK

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).

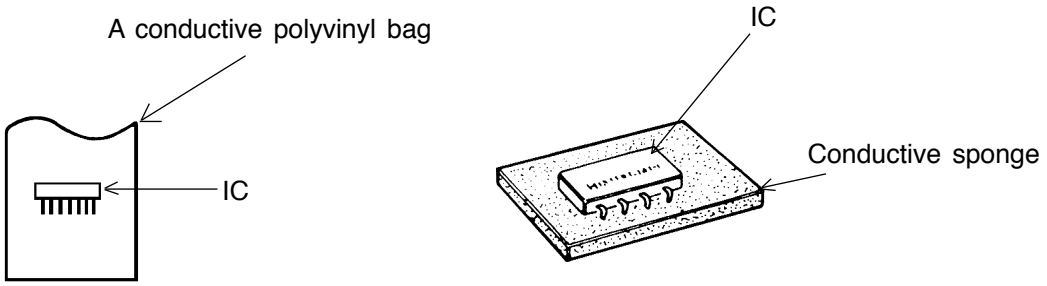


Fig. 1. Conductive Container

   (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.

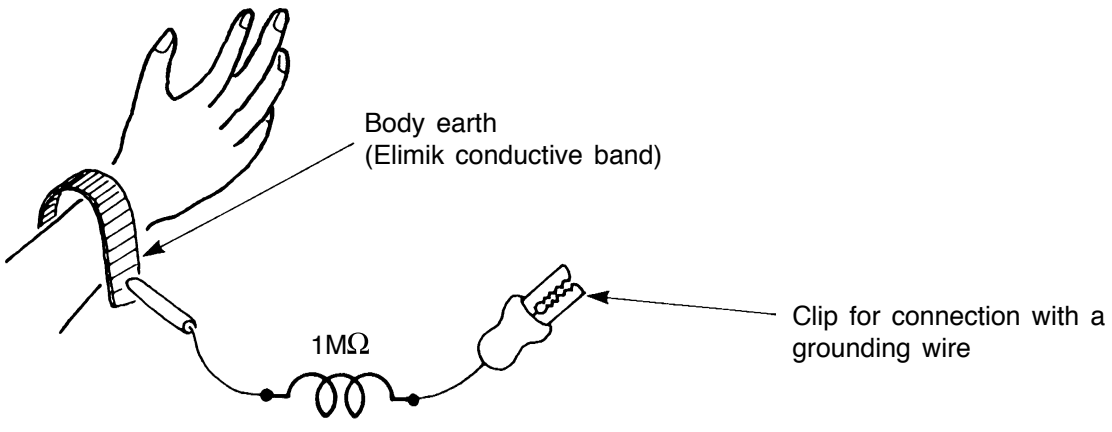


Fig. 2. Body Earth

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

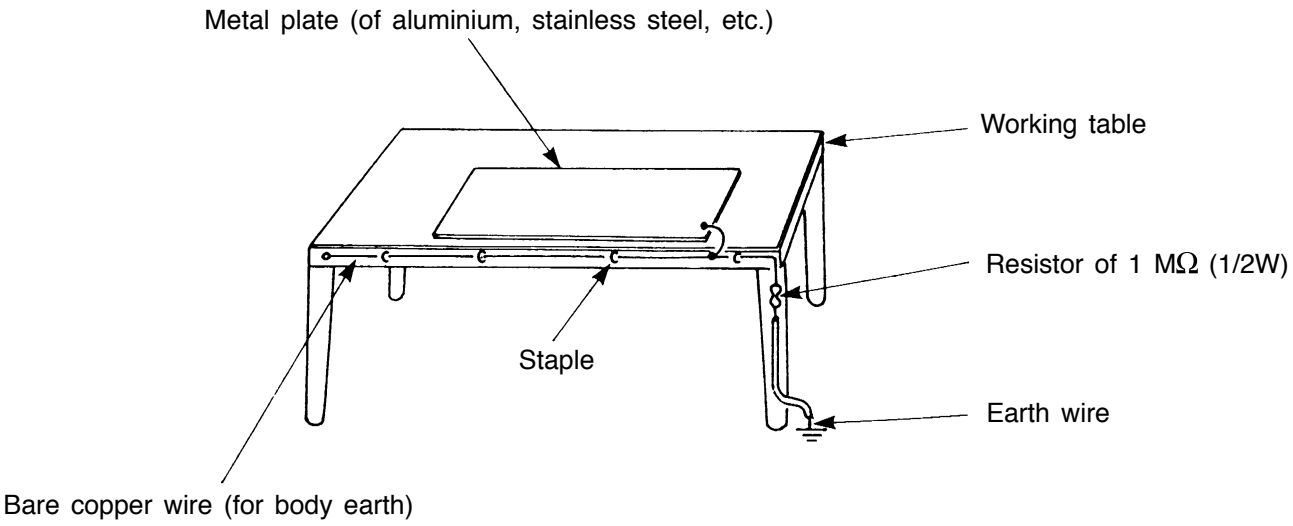


Fig. 3. Grounding of the working table

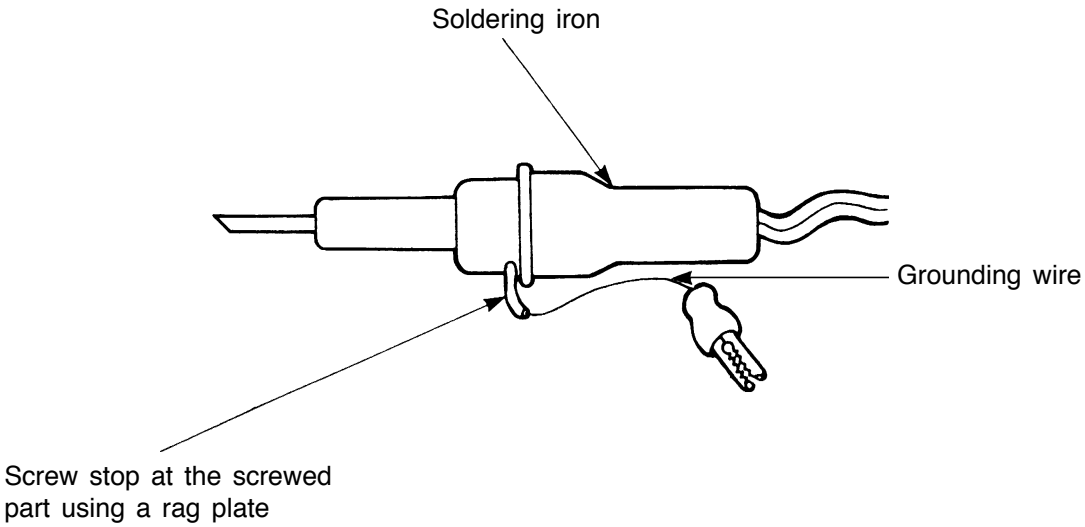


Fig. 4. Grounding a soldering iron

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

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

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

4. If the room air conditioner is stopped by adjusting thermostat, or 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 (14°F).

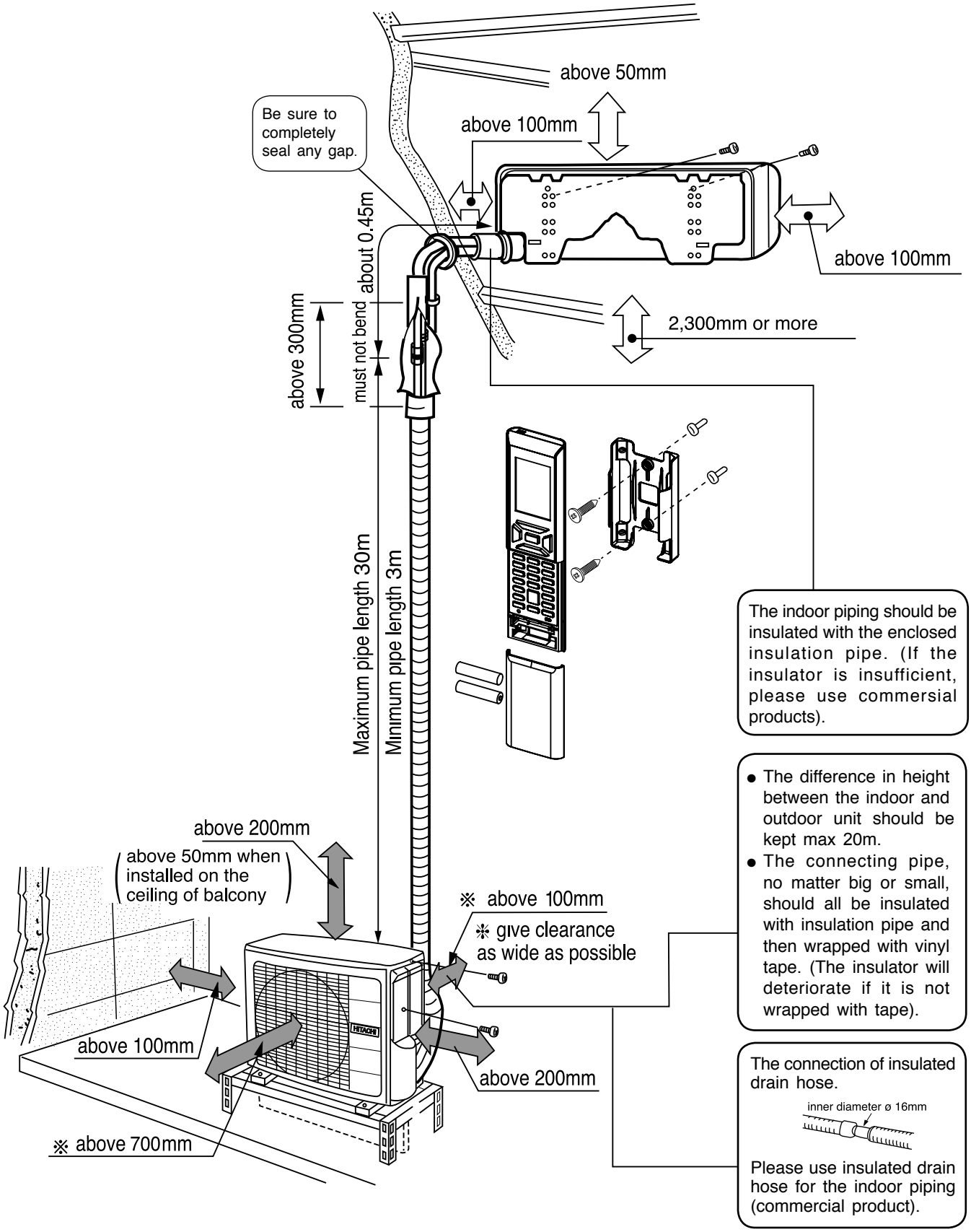
6. This room air conditioner (the reverse cycle) should not be used when the outside temperature is below –15°C (5°F).
   If the reverse cycle is used under this condition, the outside heat exchanger is frosted and efficiency falls.

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

SPECIFICATIONS

MODEL		RAK-60PPA	RAC-60WPA
FAN MOTOR		38 W	47 W
FAN MOTOR CAPACITOR		NO	NO
FAN MOTOR PROTECTOR		NO	NO
COMPRESSOR		–	JU1015D9
COMPRESSOR MOTOR CAPACITOR		NO	NO
OVERLOAD PROTECTOR		NO	YES (INTERNAL)
OVERHEAT PROTECTOR		NO	YES
FUSE (for MICROPROCESSOR)		3.15A	3.15A
POWER RELAY		G4A	G4A
POWER SWITCH		NO	NO
TEMPORARY SWITCH		YES	NO
TEST/SERVICE SWITCH		NO	YES
TRANSFORMER		NO	NO
VARISTOR		416NR	450NR
NOISE SUPPRESSOR		NO	YES
THERMOSTAT		YES(IC)	YES(IC)
REMOTE CONTROL SWITCH (LIQUID CRYSTAL)		YES	NO
REFRIGERANT CHARGING VOLUME (Refrigerant R410A)	UNIT	----------	❊ 1650g
	PIPES (MAX. 30m) (MIN. 3m)	ADDITIONAL REFRIGERANT R410A AT 10g PER EVERY METER IF PIPE LENGTH MORE THAN 8m.	

Figure showing the installation of Indoor and Outdoor unit





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.

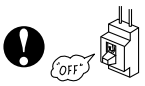


- Please ensure smooth flow of water when installing the drain hose.
- Do not install the indoor unit in a machine shop or kitchen where vapor from oil or its mist flows to the indoor unit. The oil will deposit on the heat exchanger, thereby reducing the indoor unit performance and may deform and in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

PRECAUTIONS DURING SHIFTING OR MAINTENANCE

⚠ WARNING

- Should abnormal situation arises (like burning smell), please stop operating the unit and turn off the circuit breaker. Contact your agent. Fault, short circuit or fire may occur if you continue to operate the unit under abnormal situation.



- Please contact your agent for maintenance. Improper self maintenance may cause electric shock and fire.
- Please contact your agent if you need to remove and reinstall the unit. Electric shock or fire may occur if you remove and reinstall the unit yourself improperly.
- If the supply cord is damaged, it must be replaced by the special cord obtainable at authorized service/parts centers.

PRECAUTIONS DURING OPERATION

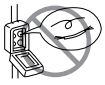
⚠ WARNING

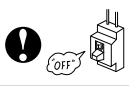
- Avoid an extended period of direct air flow for your health.





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





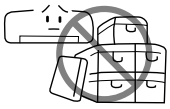
- During thunder storm, disconnect and turn off the circuit breaker.
- Spray cans and other combustibles should not be located within a meter of the air outlets of both indoor and outdoor units.
  As a spray can’s internal pressure can be increased by hot air, a rupture may result.



PRECAUTIONS DURING OPERATION

CAUTION

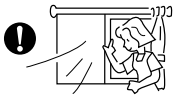
- The product shall be operated under the manufacturer specification and not for any other intended use.

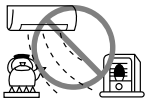




- Do not attempt to operate the unit with wet hands, this could cause fatal accident.

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





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

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

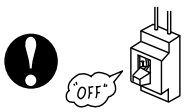




- Do not splash or direct water to the body of the unit when cleaning it as this may cause short circuit.

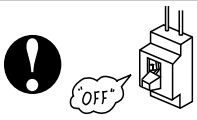
- Do not use any aerosol or hair sprays near the indoor unit. This chemical can adhere on heat exchanger fin and blocked the evaporation water flow to drain pan. The water will drop on tangential fan and cause water splashing out from indoor unit.





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

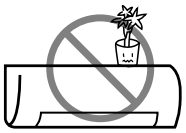
- Turn off the circuit breaker if the unit is not to be operated for a long period.

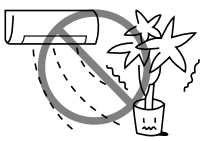




- Do not climb on the outdoor unit or put objects on it.

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





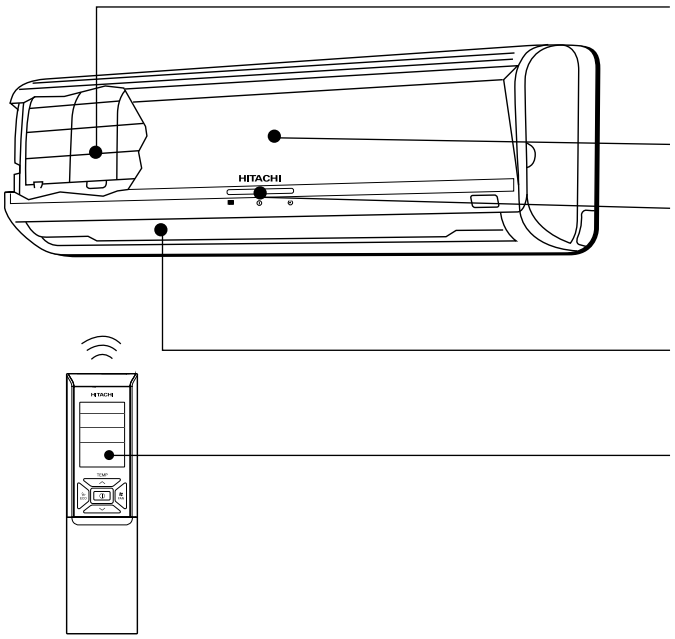
- Do not place plants directly under the air flow as it is bad for the plants.

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

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

NAMES AND FUNCTIONS OF EACH PART

INDOOR UNIT



PRE-FILTER
To prevent dust from coming into the indoor unit.
(Refer page 15)

FRONT PANEL

INDOOR UNIT INDICATORS
Light indicator showing the operating condition.
(Refer page 10)

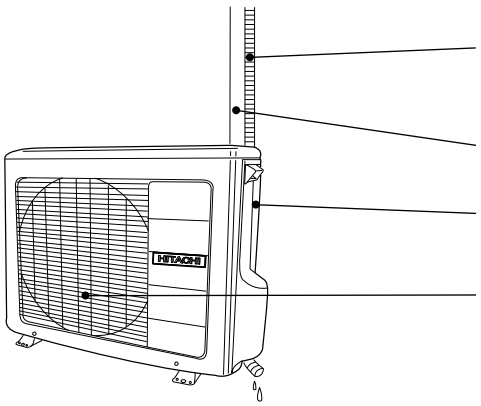
HORIZONTAL DEFLECTOR • VERTICAL DEFLECTOR (AIR OUTLET)

REMOTE CONTROLLER
Send out operation signal to the indoor unit. So as to operate the whole unit.
(Refer Remote control manual)

NOTE

- Air purifying filters are not washable. It is recommended to use vacuum to clean it. It can be use for 1 year time. Type number for this air purifying filter is <SPX-NTW1>. Please use this number for ordering when you want to replace it.

OUTDOOR UNIT



DRAIN PIPE
Condensed water drain to outside.

CONNECTING CORD

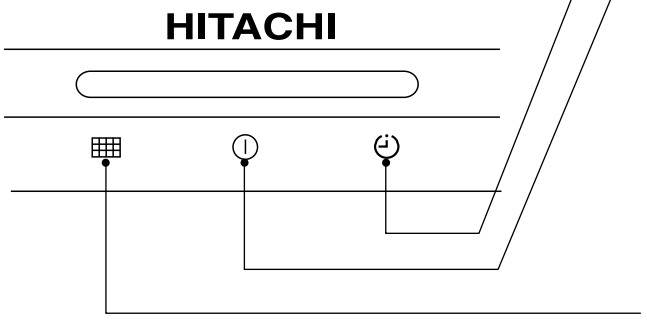
AIR INLET (BACK, LEFT SIDE)

AIR OUTLET

MODEL NAME AND DIMENSIONS

MODEL	WIDTH (mm)	HEIGHT (mm)	DEPTH (mm)
RAK-60PPA	1030	295	207
RAC-60WPA	850	650	298

INDOOR UNIT INDICATORS



TIMER LAMP
This lamp lights when the timer is working.

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

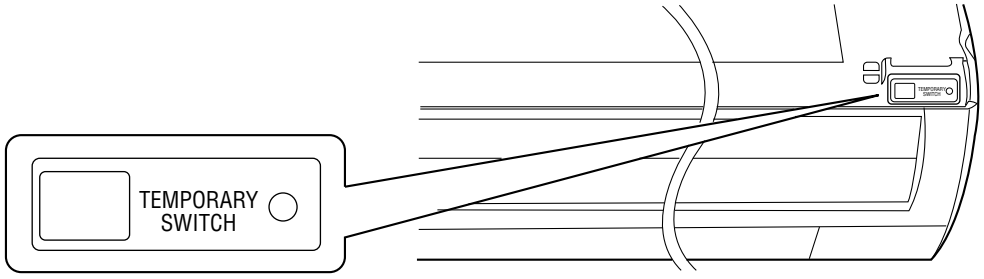
(1) During preheating
For about 2–3 minutes after starting up.

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

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

- This figure shows the opening condition of front panel. Refer to page 9 in relation to how to open or close the front panel.



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

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

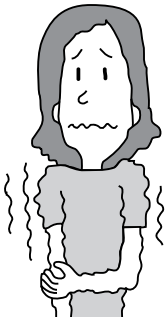
CIRCUIT BREAKER

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

MEMO

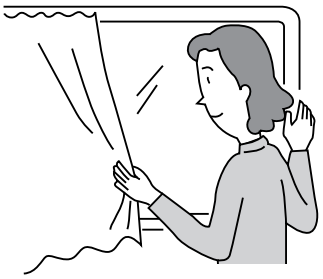
THE IDEAL WAYS OF OPERATION

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.

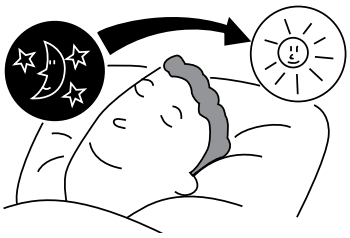
Ventilation

⚠ 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.



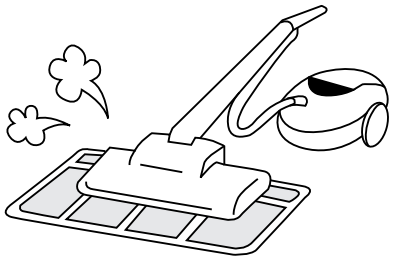
Effective Usage Of Timer

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.



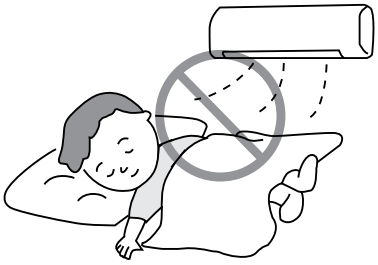
Do Not Forget To Clean The Pre-Filter

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



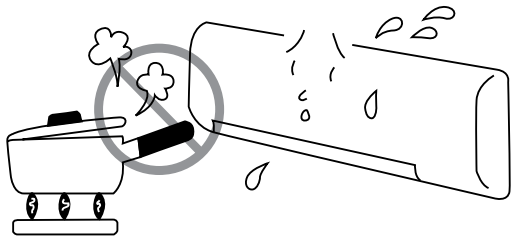
Please Adjust Suitable Temperature For Baby And Children

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.



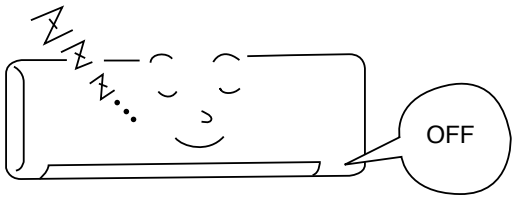
The Air Conditioner And The Heat Source In The Room

⚠ 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.



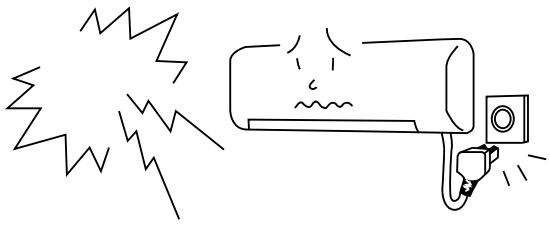
Not Operating For A Long Time

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.



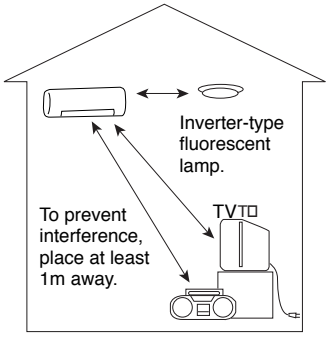
When Lightning Occurs

⚠ 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.



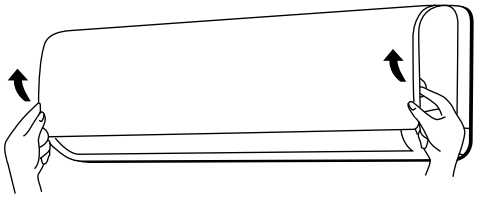
ATTACHING THE AIR PURIFYING FILTERS

⚠ CAUTION

Cleaning and maintenance must be carried out when filter lamp lights. Before cleaning, stop operation and switch off the power supply.

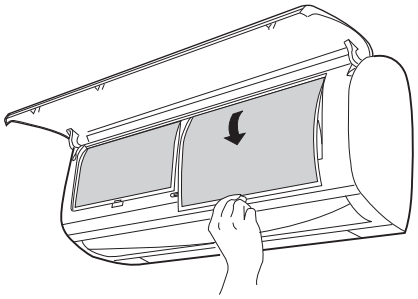
1 **Open the front panel**

- Pull up the front panel by holding it at both sides with both hands.



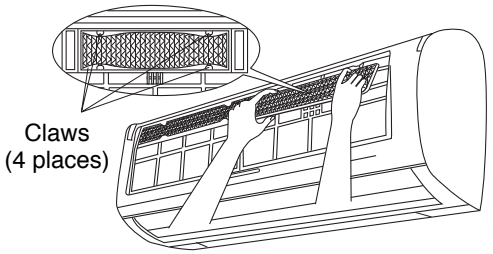
2 **Remove the Pre-filter**

- Push upward to release the claws and pull out the Pre-filter.



3 **Attaching the air purifying filters**

- Attach the air purifying filters to the frame by gently compress its both sides and release after insertion into Pre-filter frame.

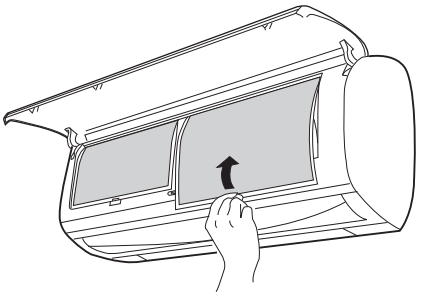


⚠ CAUTION

Do not bend the air purifying filter as it may cause damage to the structure.

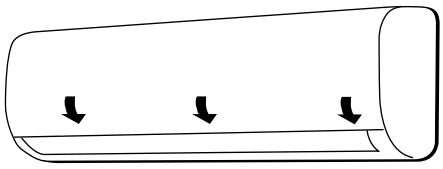
Please do not smell direct from source of filter.





4 **Attach the Pre-filters**

- Attach the Pre-filters by ensuring that the surface written “FRONT” is facing front.
- After attaching the Pre-filters, push the front panel at three arrow portions as shown in figure and close it.



NOTE

- In case of removing the air purifying filters, please follow the above procedures.
- The cooling capacity is slightly weakened and the cooling speed becomes slower when the air purifying filters are used. So, set the fan speed to "HIGH" when using it in this condition.
- Air purifying filters are not washable. It is recommended to use vacuum to clean it. It can be use for 1 year time. Type number for this air purifying filter is <SPX-NTW1>. Please use this number for ordering when you want to renew it.
- Do not operate the air conditioner without Pre-filter. Dust may enter the air conditioner and fault may occur.



MAINTENANCE

⚠ CAUTION

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

1. PRE-FILTER

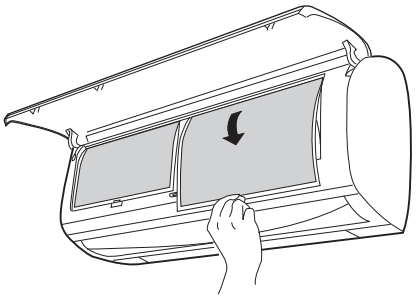
Clean the Pre-filter, as it removes dust inside the room. In case the Pre-filter is full of dust, the air flow will decrease and the cooling capacity will be reduced. Further, noise may occur. Be sure to clean the Pre-filter following the procedure below.

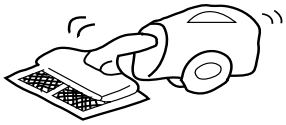
PROCEDURE

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

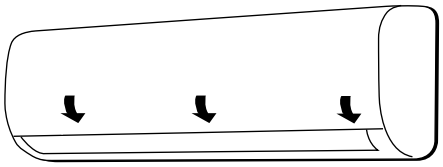


2 Vacuum dust from the Pre-filter and air purifying filter using vacuum cleaner. If there is too much dust, rinse under running tap water and gently brush it with soft bristle brush. Allow filters to dry in shade.





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

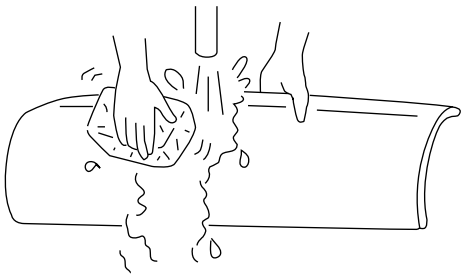


⚠ CAUTION

- Do not wash with hot water at more than 40°C. The pre-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 pre-filter may shrink.

2. Washable Front Panel

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



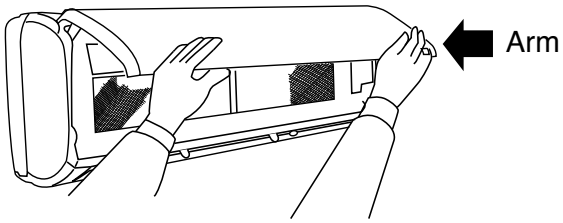
- When front panel is not removed, wipe it with a soft dry cloth. Wipe the remote controller thoroughly with a soft dry cloth.



- Wipe the water thoroughly.
  If water remains at indicators or signal receiver of indoor unit, it causes trouble.

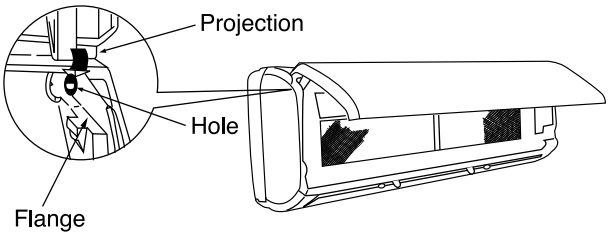
Method of removing the front panel.
Be sure to hold the front panel with both hands to detach and attach it.

Removing the Front Panel



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

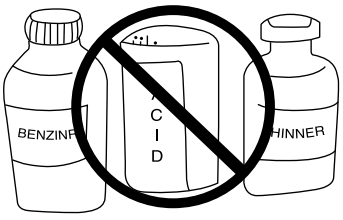
Attaching the Front Panel



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

⚠ CAUTION

- 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.

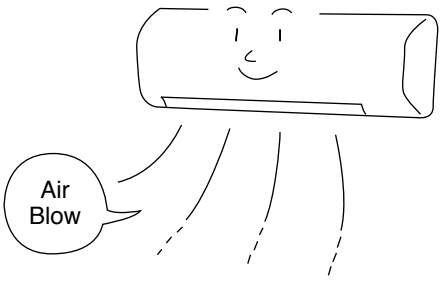


⚠ CAUTION

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

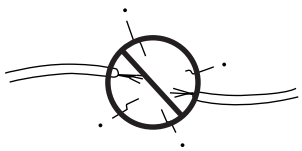
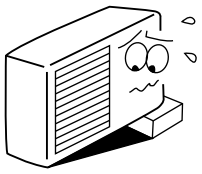
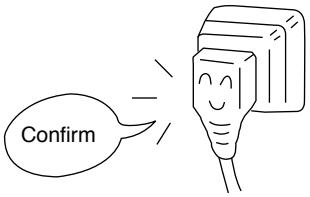
3. MAINTENANCE AT BEGINNING OF LONG OFF PERIOD

- 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.
- Switch off the power plug.



REGULAR INSPECTION

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

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

AFTER SALE SERVICE AND WARRANTY

WHEN ASKING FOR SERVICE, CHECK THE FOLLOWING POINTS.

CONDITION	CHECK THE FOLLOWING POINTS
If the remote controller is not transmitting a signal. Remote controller display is dim or blank.)	● Do the batteries need replacement? ● Is the polarity of the inserted batteries correct?
When it does not 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 pre-filter blocked with dust? ● Does sunlight fall directly on the outdoor unit? ● Is the air flow of the outdoor unit obstructed? ● Are the doors or windows opened, or is there any source of heat in the room? ● Is the set temperature suitable? ● Are the air inlets or air outlets of indoor and outdoor units blocked? ● Is the fan speed “LOW” or “SILENT”?



Notes

- In quiet operation or stopping the operation, the following phenomena may occassionally occur, but they are not abnormal for the operation.
  (1) Slight flowing noise of refrigerant in the refrigerating cycle.
  (2) Slight rubbing noise from the fan casing which is cooled and then gradually warmed as operation stops.
- The odor will possibly be emitted from the room air conditioner because the various odor, emitted by smoke, foodstuffs, cosmetics and so on, sticks to it. So the pre-filter and the evaporator regularly must be cleaned to reduce the odor.

- Please contact your sales agent immediately if the air conditioner still fails to operate normally after the above inspections. Inform your agent of the model of your unit, production number, date of installation. Please also inform him regarding the fault.
- Power supply shall be connected at the rated voltage, otherwise the unit will be broken or could not reach the specified capacity.

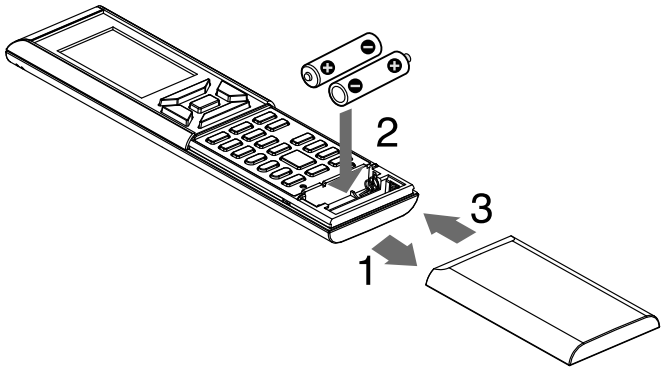
NOTE:

- 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

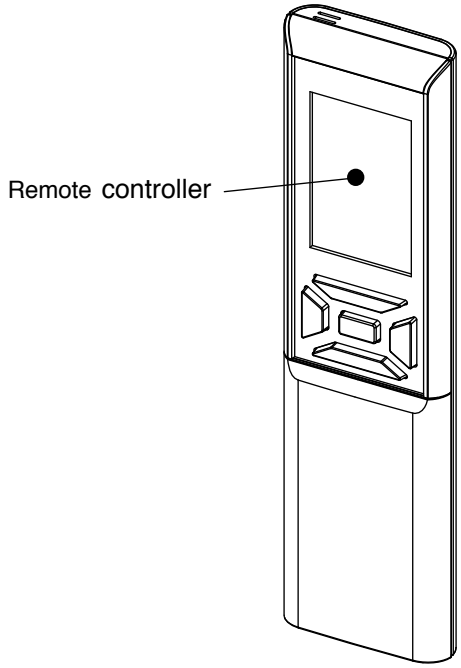
■ To install the batteries

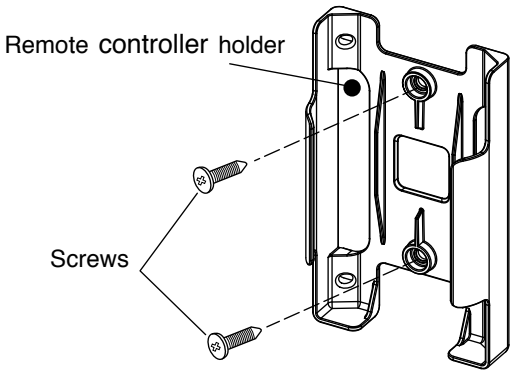
1. Slide the cover to take it off.
2. Install two dry batteries AAA.LR03 (alkaline).
   The direction of the batteries should match the marks in the case.
3. Replace the cover at its original position.



■ 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

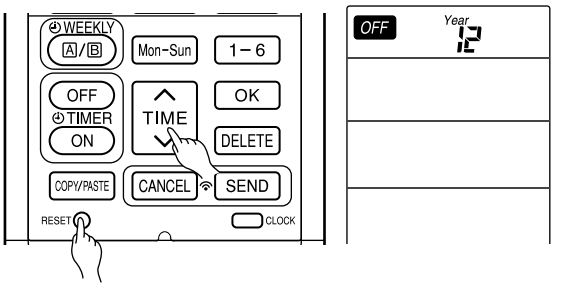
Notes on batteries

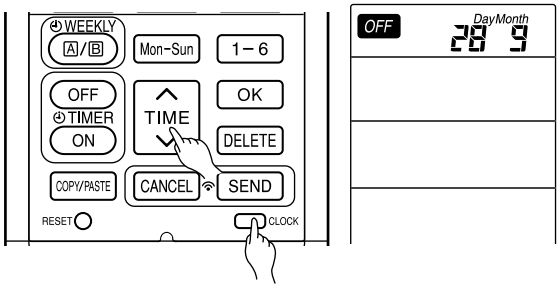
- When replacing the batteries, use batteries of the same type, and replace both old batteries together.
- When the system is not used for a long time, take the batteries out.
- The batteries will last for approximately 1 year. However, if the remote controller display begins to fade and degradation 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.

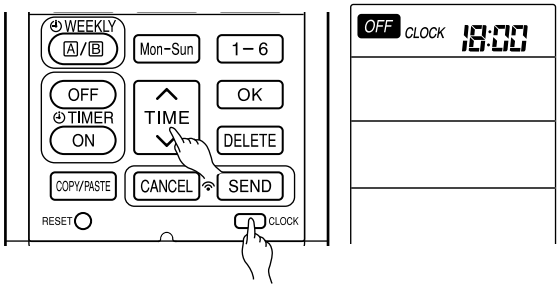
Notes on the remote controller

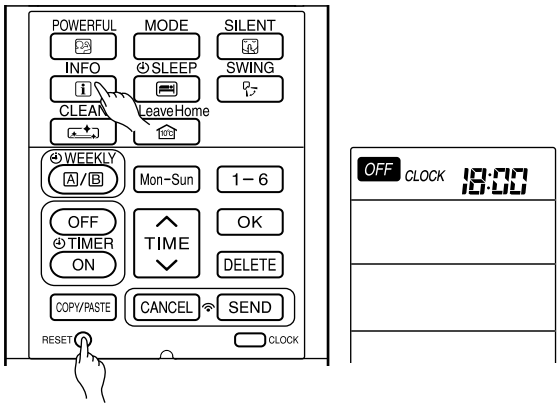
- Never expose the remote controller to direct sunlight.
- Dust on the signal transmitter or receiver will reduce the sensitivity. Wipe off dust with soft cloth.
- Signal communication may be disabled if an electronic-starter-type fluorescent lamp (such as inverter-type lamps) is in the room. Consult 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).

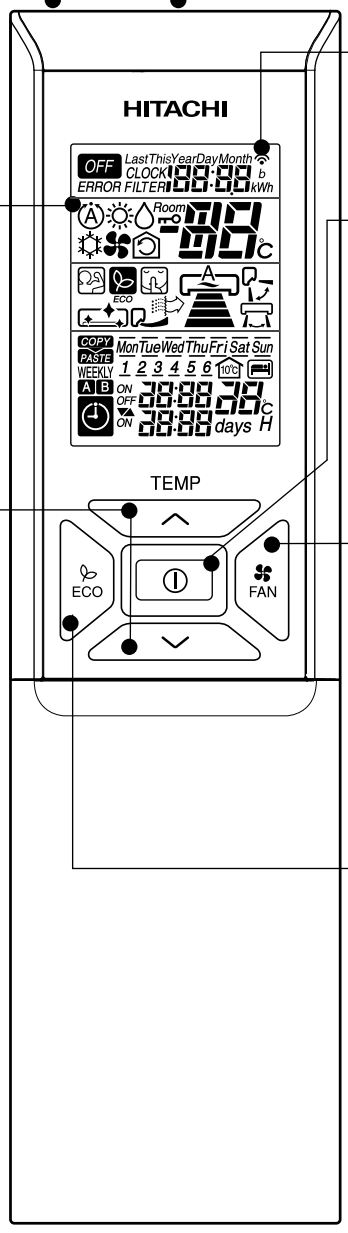
NOTE

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. 30)

NAMES AND FUNCTIONS OF REMOTE CONTROLLER

POWERFUL Button
Use this button to set the POWERFUL mode. (▶ p. 28)

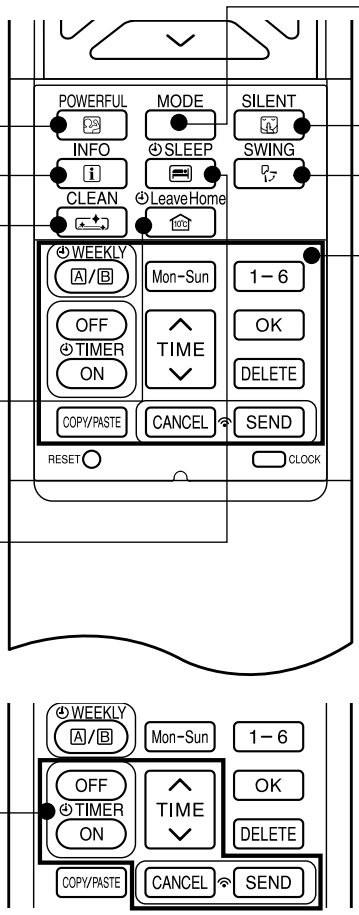
INFORMATION Button
(▶ p. 42)

ONE TOUCH CLEAN Button
(▶ p. 32)

LEAVE HOME Button
(▶ p. 31)

ECO SLEEP TIMER Button
Use this button to set the ECO sleep timer. (▶ p. 34)

ON / OFF TIMER setting Buttons
(▶ p. 33)



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. 29)

AUTO SWING (Vertical) Button
Controls the angle of the horizontal air deflector. (▶ p. 27)

WEEKLY TIMER setting Buttons
(▶ p. 36)

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

FAN	FAN
	POWERFUL
	SILENT
	INFO
	SLEEP TIMER
	AUTO SWING (VERTICAL)
10℃	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

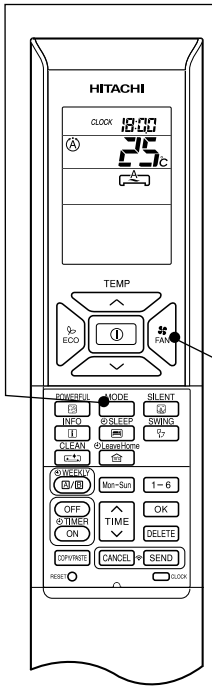
■ Auto Restart Control

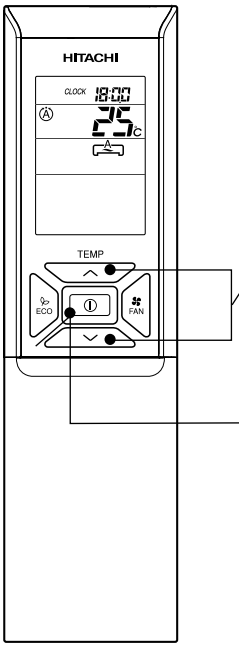
- If there is a power failure, operation will be automatically restarted when the power is resumed with previous operation mode and airflow direction.
  (As the operation is not stopped by remote controller.)
- If you intend not to continue the operation when the power is resumed, switch off the power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

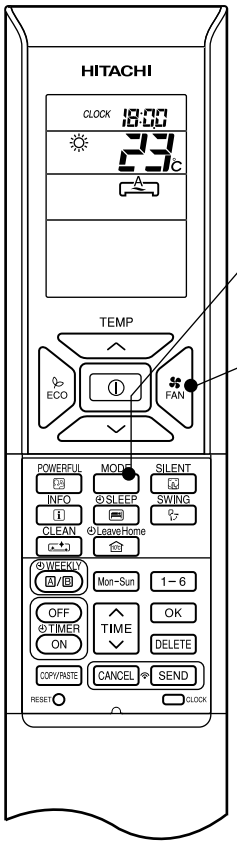
START / STOP Press the Ⓘ (START/STOP) button.
Operation starts with a beep.
Press the button again to stop operation.

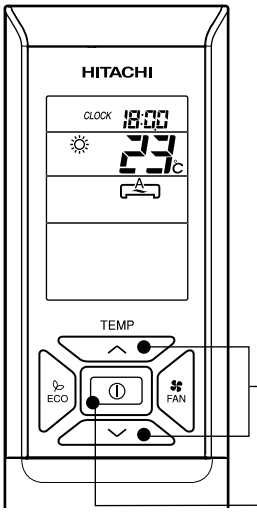
■ As the settings are stored in the memory of the remote controller, you only have to press the Ⓘ (START/STOP) button next time.

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.

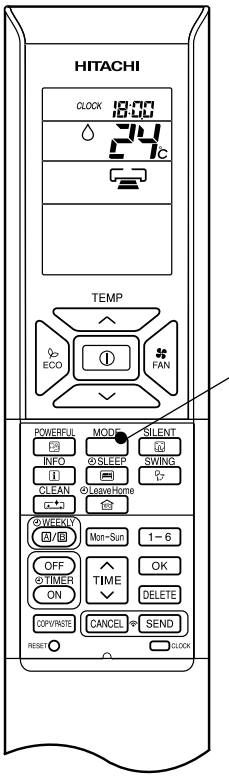
■ During AUTO fan, the fan speed automatically changes as below:
- When the difference between room temperature and setting temperature is large, fan starts to run at HI speed.
- After room temperature reaches the preset temperature, fan speed will be changed to lower speed to obtain optimum room temperature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

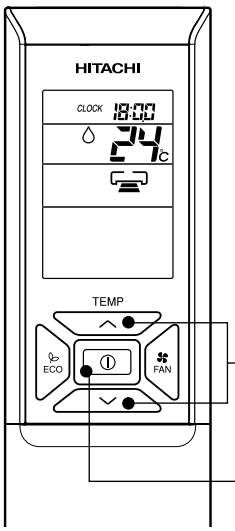
Defrosting

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

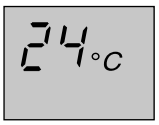
Use the device for dehumidifying when the room temperature is over 16°C.
When it is under 15°C, the dehumidifying function will not work.





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.

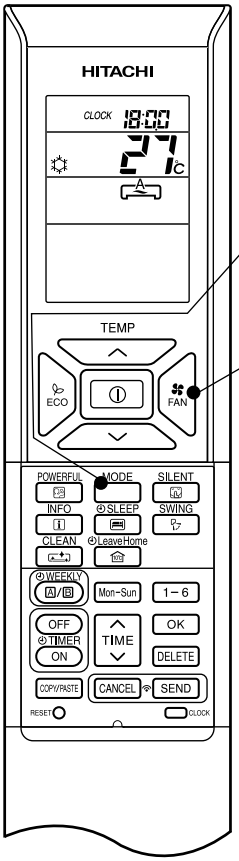
■ As the settings are stored in the memory of the remote controller, you only have to press the ⏻ (START/STOP) button next time.

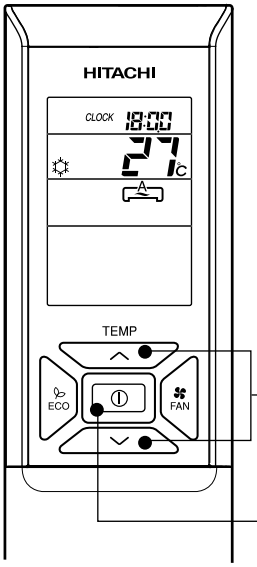
■ Dehumidifying Function

- 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).

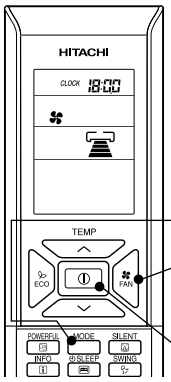
The temperature setting and the actual room temperature may vary depending on conditions.

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.



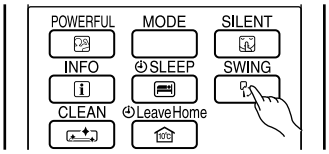
1 Press the MODE selector so that the display indicates (FAN).

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

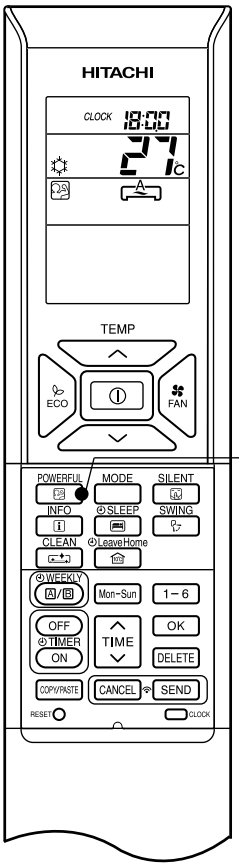
- Press (AUTO SWING (VERTICAL)) button again. The deflector(s) will stop in the current position.
  disappeared from the LCD.

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.

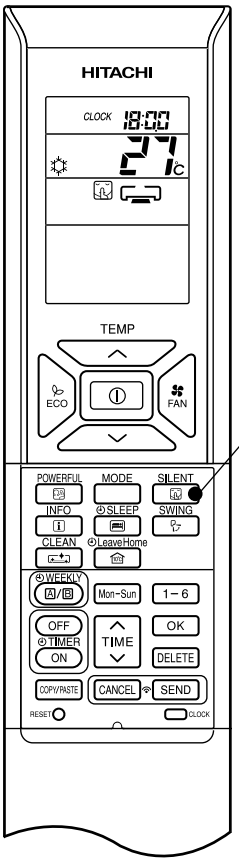
  " " disappears from the LCD.

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.

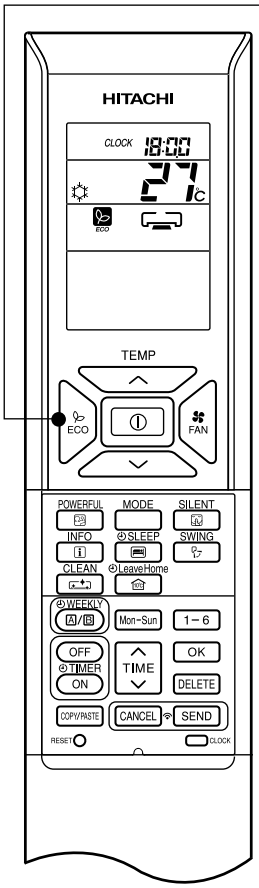
  " " disappears from the LCD.

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.

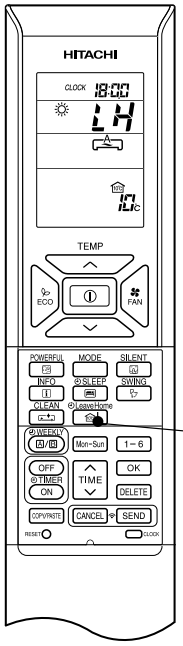
NOTE

- 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.

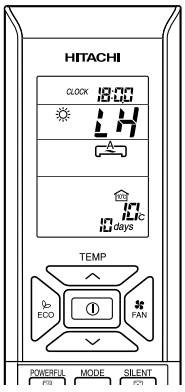
LEAVE HOME(LH) OPERATION

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

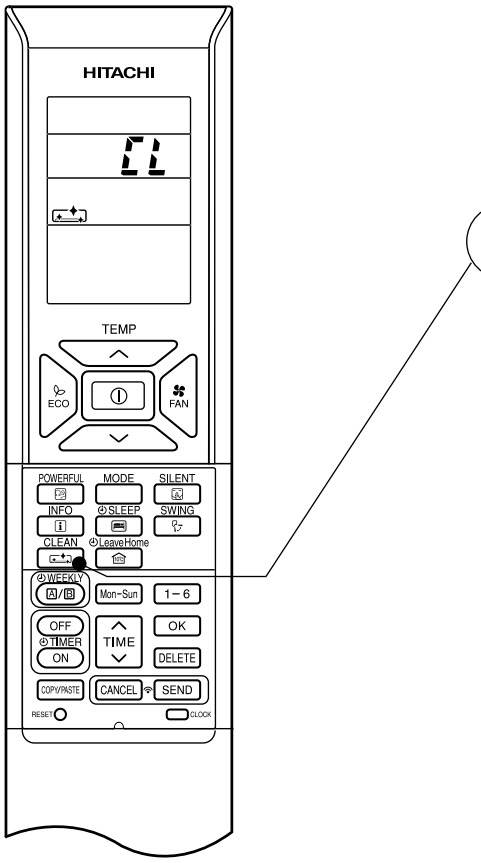
- Press ⏻ (START/STOP) button. Or
- Press LeaveHome (LEAVE HOME) button again.
  Return to previous operation mode. Or
- Change to other operation mode by pressing MODE (MODE) button.

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.

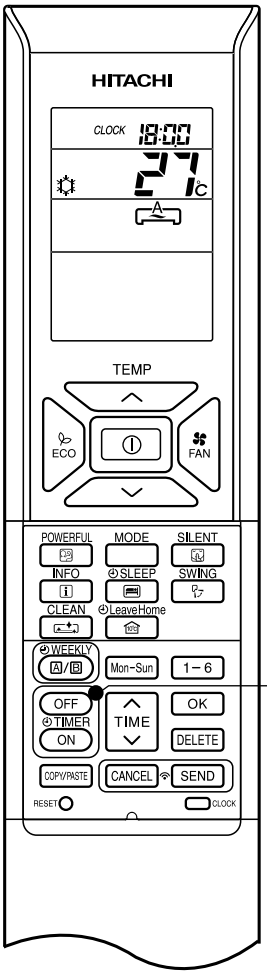
■ To cancel CLEAN operation

- 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.

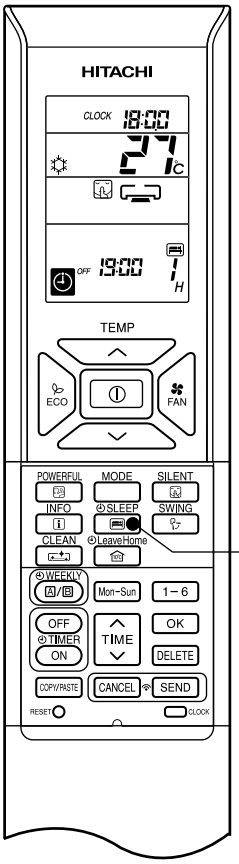
  and "ON or OFF set time" goes out with a beep and the (TIMER) lamp on the indoor unit turns off.

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:

1 H → 2 H → 3 H → 7 H → SLEEP TIMER off

- 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.

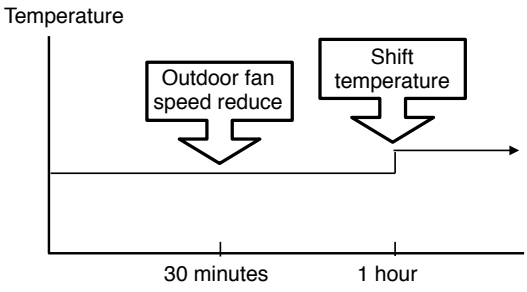
■ To cancel ECO SLEEP TIMER and ON TIMER operation

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

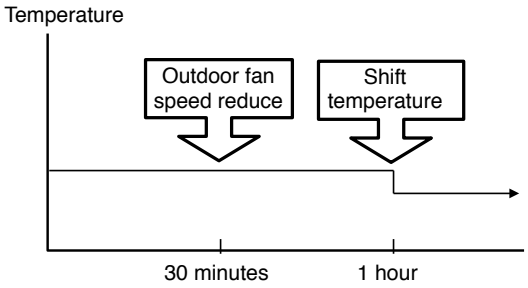
- " ", " ", " ", "OFF", off time, " ", number of hour, "ON" and ON TIMER set time disappear from the remote controller display.
- A beep sound emitted from indoor unit and the (TIMER) lamp on the indoor unit turns off.
- ECO SLEEP TIMER and ON TIMER reservations are cancelled.

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

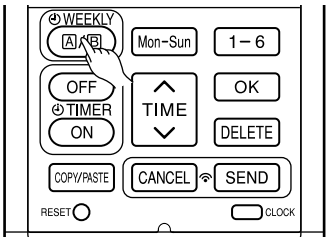
- If ECO SLEEP TIMER is set when OFF TIMER or ON/OFF TIMER has been set earlier, the ECO SLEEP TIMER becomes effective instead of the OFF TIMER or ON/OFF TIMER.

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).

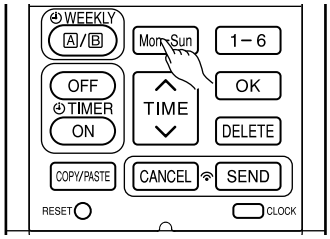
   Press (WEEKLY) button again, B and 🕘 blink on the display. (Mode B is selected).

   - 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

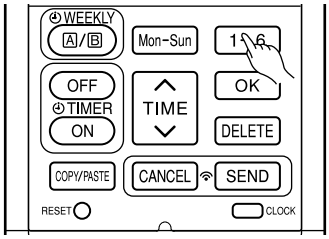
3. Select the desired day of the week

   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.



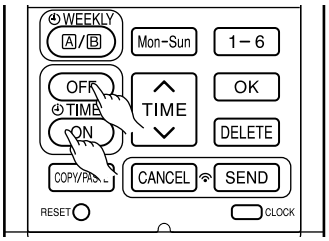
4

4. Press 1-6 button to select a program number.

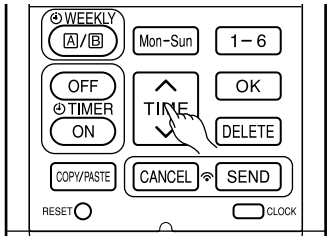
   The number changes from 1 ⟶ 2 ⟶ 3 ⟶ 4 ⟶ 5 ⟶ 6 ⟶ 1 ⟶ 2 .....

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

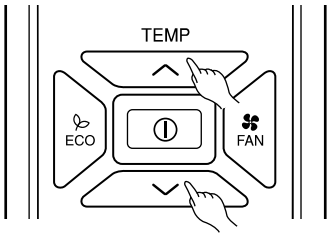
WEEKLY TIMER OPERATION



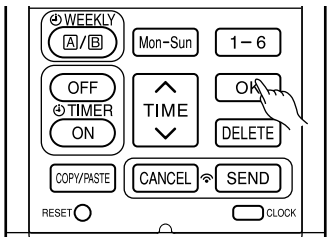
5



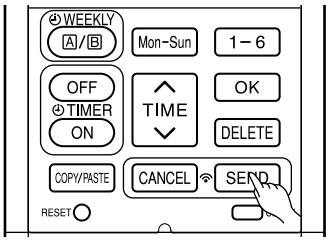
6



7



8



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.

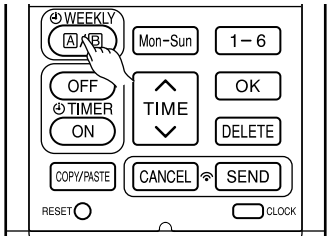
- If TIMER lamp on the indoor unit does not light up, press [SEND] (SEND) button while directing the remote controller towards the indoor unit for about 3 seconds.
- **CAUTION !** Do not press [CANCEL] (CANCEL) button during reservation setting because this will result in all reservation contents to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

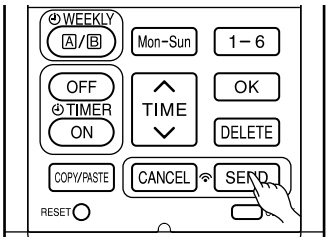


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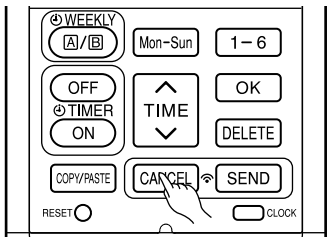
■ How to select Mode A or Mode B of WEEKLY TIMER setting.

1. Press WEEKLY (A/B) (WEEKLY) button. **A** and ◴ blink on the display. (Normally Mode A will blink first).
2. Press WEEKLY (A/B) (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 .

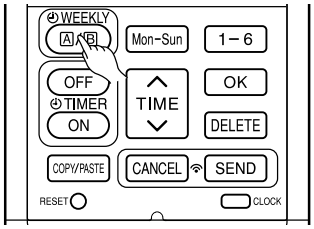
1. Direct the remote controller towards the indoor unit and press CANCEL (CANCEL) button.
   Beep sound will be emitted from indoor unit and TIMER lamp will be OFF.
   Reservation indication on remote display will also disappear.
   This indicates that non-active WEEKLY TIMER has been confirmed.

- 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

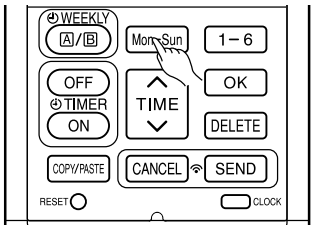
- When setting ONCE TIMER, operation of WEEKLY TIMER is interrupted. After ONCE TIMER operation is complete, WEEKLY TIMER operation will be activated.
- When ONCE TIMER is cancelled, operation of WEEKLY TIMER is also cancelled. Need to set WEEKLY TIMER operation for activation.
- After auto restart,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

Step 3: Copy and cancel the reservation schedule.

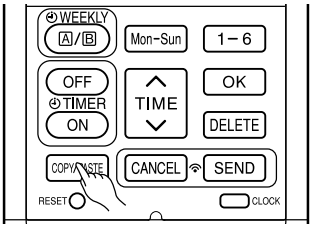


1

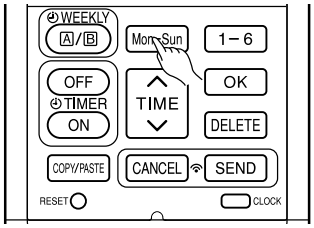
2



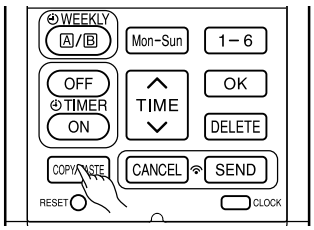
3



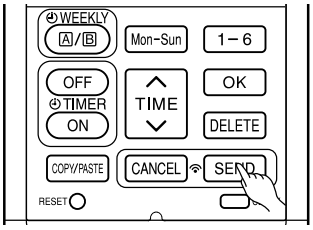
4



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) button to select Mode A or Mode B.
2. Press (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.

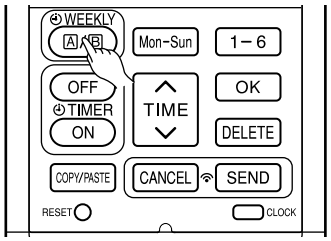
- Reservation data will not change if [SEND] (SEND) button is not pressed.

NOTE

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

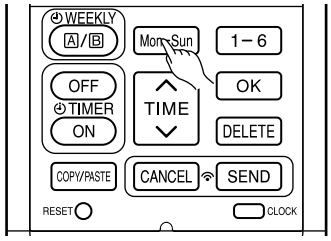
WEEKLY TIMER OPERATION

Step 3: Copy and cancel the reservation schedule.

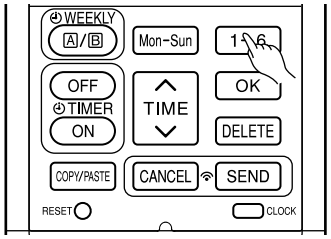


1

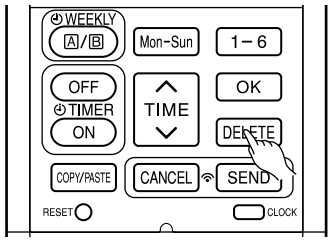
2



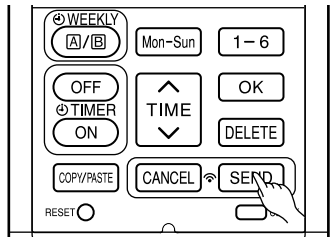
3



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6

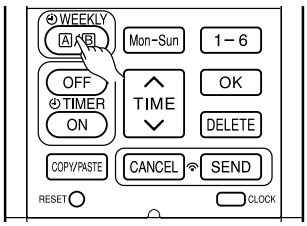
■ How to delete WEEKLY TIMER data.

[Delete one program number reservation]

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

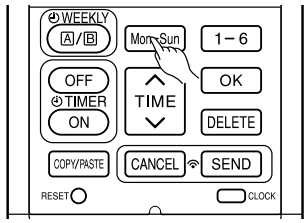
- Reservation will not change if SEND (SEND) button is not pressed.

Step 3: Copy and cancel the reservation schedule.

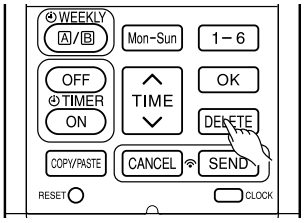


①

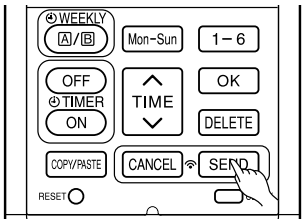
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③



④

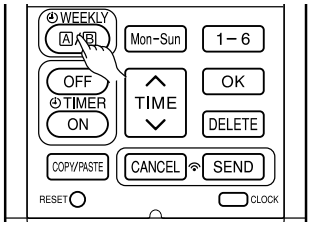


⑤

[Delete one day reservation]

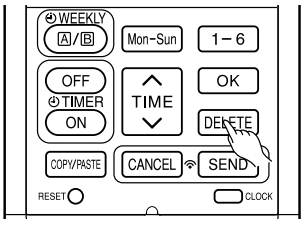
1. Press WEEKLY A/B (WEEKLY) button to select Mode A or Mode B.
2. Press WEEKLY A/B (WEEKLY) button for 3 seconds to start editing the reservation schedule.
3. Press Mon-Sun (DAY) button to select a day of the week to edit.
4. Press DELETE (DELETE) button for about 10 seconds. Reservations for all program numbers will be deleted.
   - If press for a short time, reservation for one program number will be deleted.
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.



①

②



[Delete Mode A or Mode B]

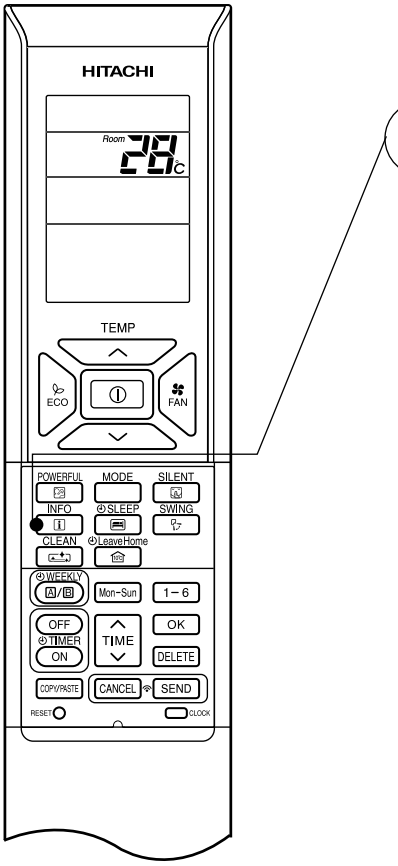
1. Press WEEKLY A/B (WEEKLY) button to select Mode A or Mode B.
2. Direct the remote controller towards the indoor unit and press DELETE (DELETE) button for about 10 seconds while Mode A or Mode B display blinks.
   After beep sound emitted from indoor unit, reservations for Mode A or Mode B will disappear.

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.

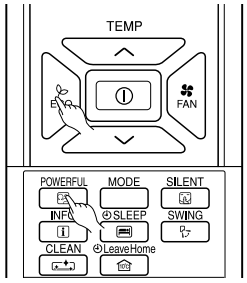
- If there is no power supply to indoor unit or calendar and clock have not been set, INFO function cannot be used for sending or receiving information.

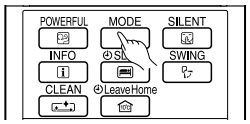
NOTE

- 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 fo 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.

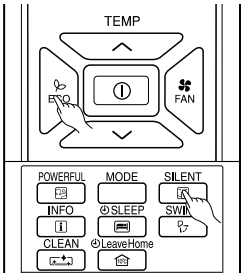
" ☼ ", " ✿ " and " 🔑 " will be displayed for about 10 seconds. Later, " ☼ " and " 🔑 " will remain.

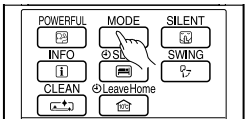
This indicates that HEATING mode operation is locked.

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.

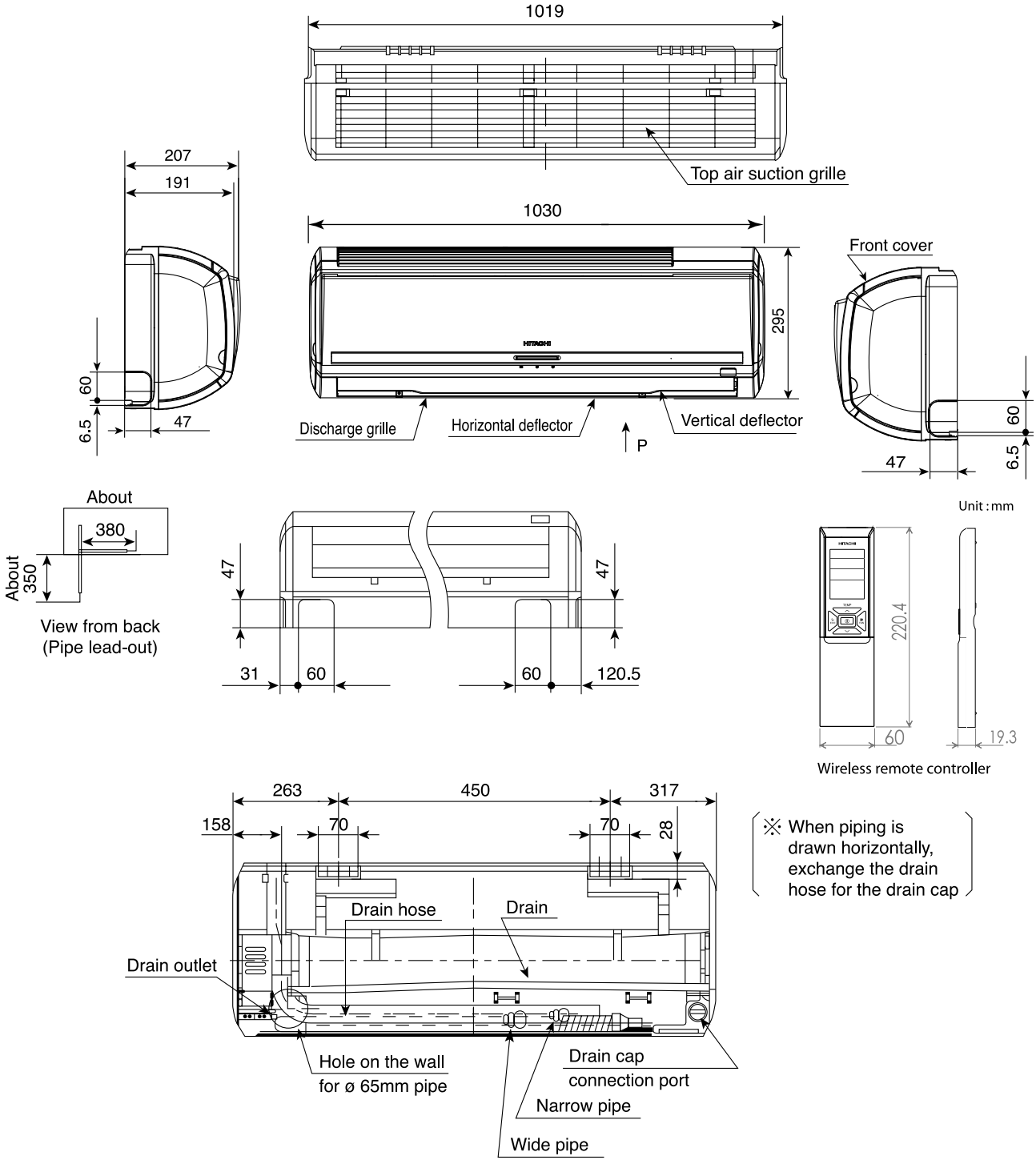
Press ECO (ECO) and SILENT (SILENT) buttons simultaneously for about 5 seconds when the remote controller is OFF.
All operation mode symbols will appear on the display for about 10 seconds. After that, operation mode symbol before cancellation will be displayed.
This indicates that COOLING and DEHUMIDIFYING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

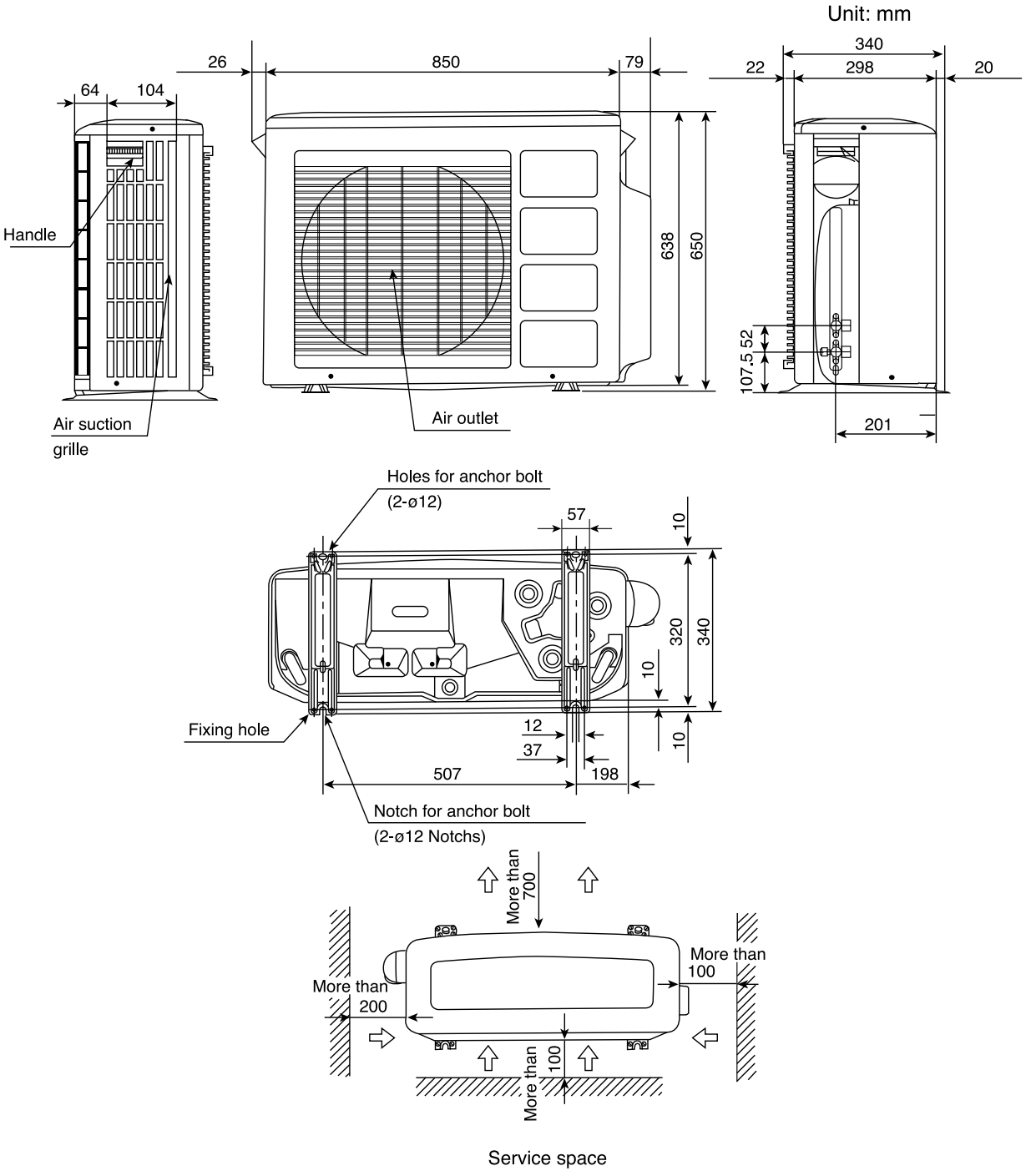
CONSTRUCTION AND DIMENSIONAL DIAGRAM

MODEL RAK-60PPA



CONSTRUCTION AND DIMENSIONAL DIAGRAM

MODEL RAC-60WPA



MAIN PARTS COMPONENT

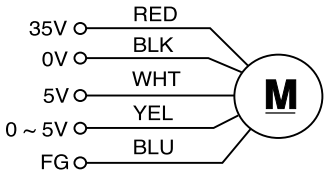
THERMOSTAT (Room Temperature Thermistor)

Thermostat Specifications

MODEL			RAK-60PPA	
THERMOSTAT MODEL			IC	
OPERATION MODE			COOL	HEAT
TEMPERATURE °C (°F)	INDICATION 16	ON	15.6 (60.1)	20.0 (68.0)
		OFF	15.3 (59.5)	20.7 (69.3)
	INDICATION 24	ON	23.6 (74.5)	28.0 (82.4)
		OFF	23.3 (73.9)	28.7 (83.7)
	INDICATION 32	ON	31.6 (88.9)	36.0 (96.8)
		OFF	31.3 (88.3)	36.7 (98.1)

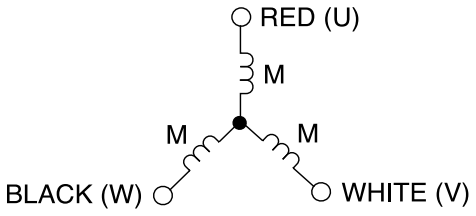
INDOOR FAN MOTOR

Fan Motor Specifications

MODEL	RAK-60PPA
POWER SOURCE	DC: 100 ~ 322V
OUTPUT	38W
CONNECTION	 (Control circuit built in)

OUTDOOR FAN MOTOR

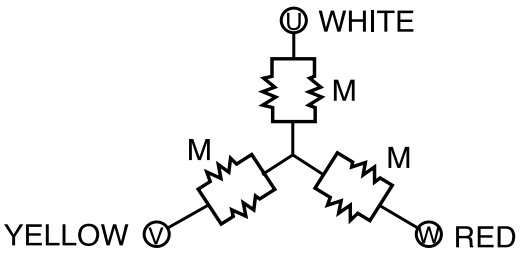
Fan Motor Specifications

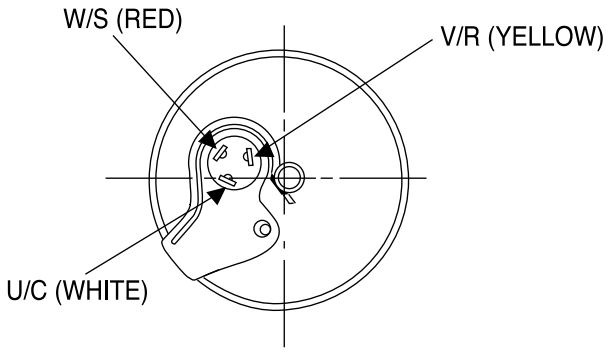
ITEM \ MODEL			RAC-60WPA
POWER SOURCE			DC: 120 ~ 380V
OUTPUT	(W) MAX		47
COIL			
RESISTANCE VALUE (Ω)	20°C	2M	U-V 35 ± 2.5 V-W 35 ± 2.5 W-U 35 ± 2.5

BLU : BLUE YEL : YELLOW BRN : BROWN WHT : WHITE
GRY : GRAY ORN : ORANGE GRN : GREEN RED : RED
BLK : BLACK PNK : PINK VIO : VIOLET

COMPRESSOR MOTOR

Compressor Motor Specifications

MODEL		RAC-60WPA
COMPRESSOR MODEL		JU1015D9
PHASE		SINGLE
RATED VOLTAGE		AC 220 ~ 240 V
RATED FREQUENCY		50 Hz
POLE NUMBER		4
CONNECTION		
RESISTANCE VALUE (Ω)	20°C (68°F)	2M = 1.2984
	75°C (167°F)	2M = 1.7671



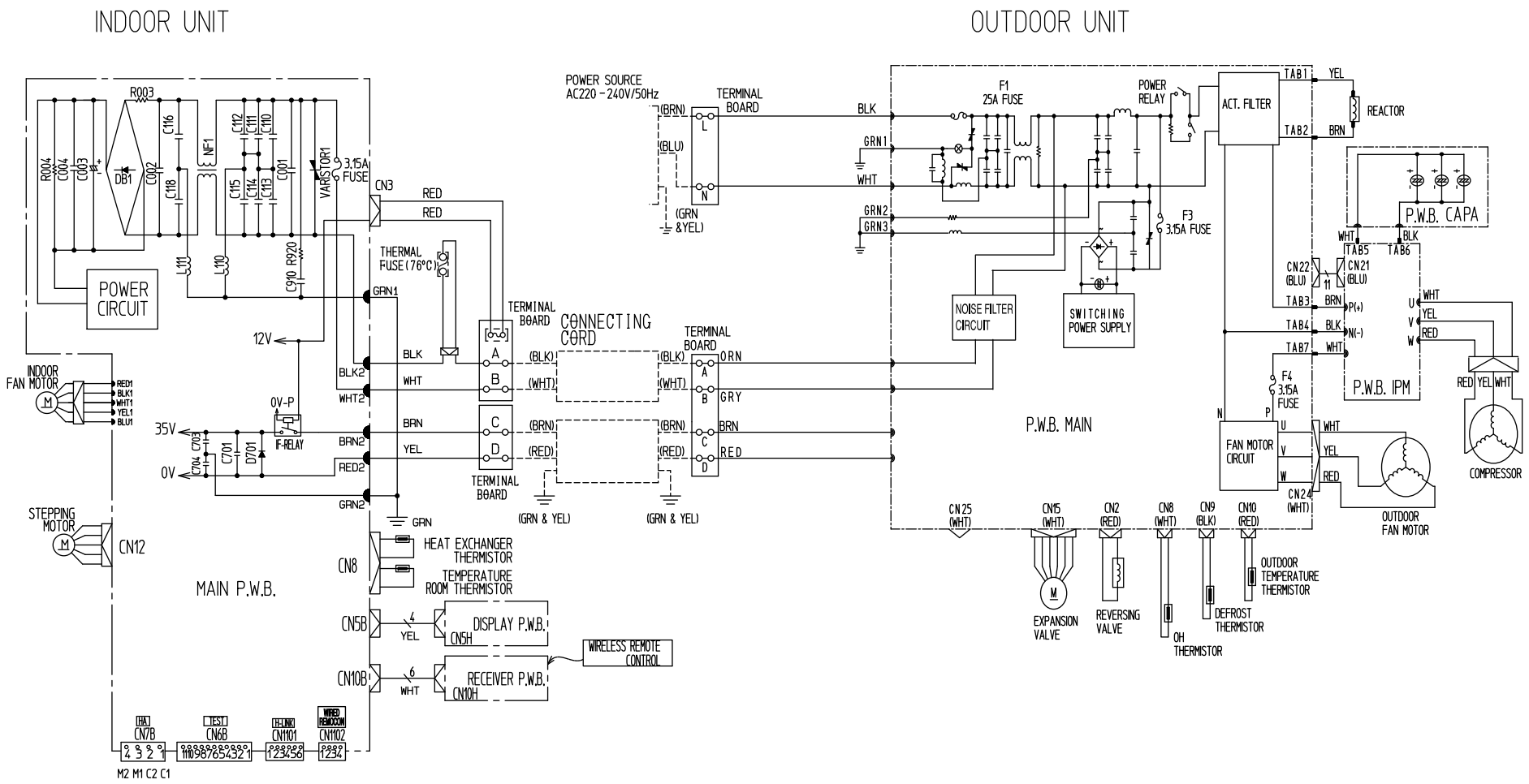
⚠ CAUTION

When the Air Conditioner has been operated for a long time with the capillary tubes clogged or crushed or with too little refrigerant, check the color of the refrigerant oil inside the compressor. If the color has been changed conspicuously, replace the compressor.

WIRING DIAGRAM

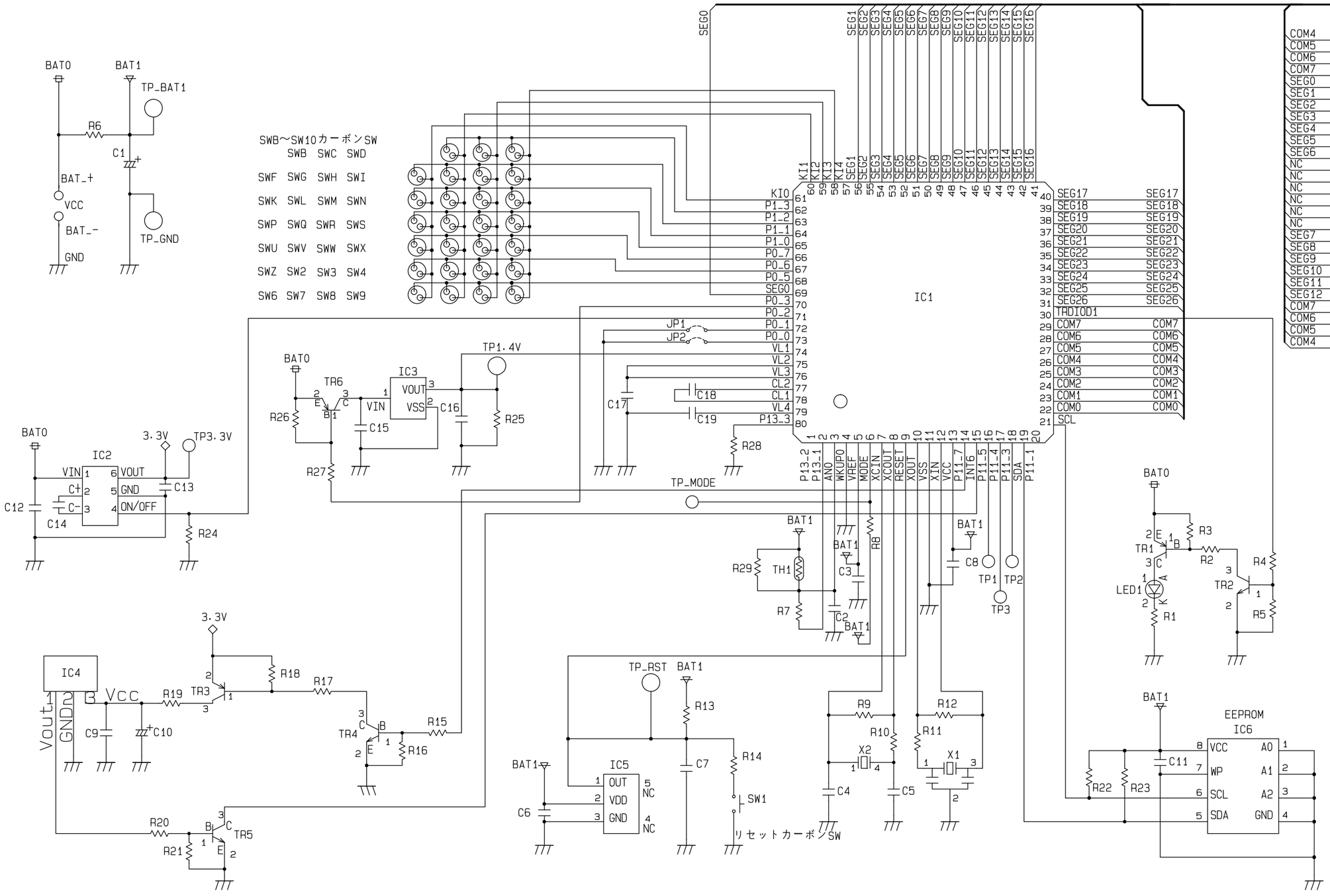
MODEL RAK-60PPA / RAC-60WPA

BLU	: BLUE	YEL	: YELLOW	BRN	: BROWN	WHT	: WHITE
GRY	: GRAY	ORN	: ORANGE	GRN	: GREEN	RED	: RED
BLK	: BLACK	PNK	: PINK	VIO	: VIOLET	IVO	: IVORY



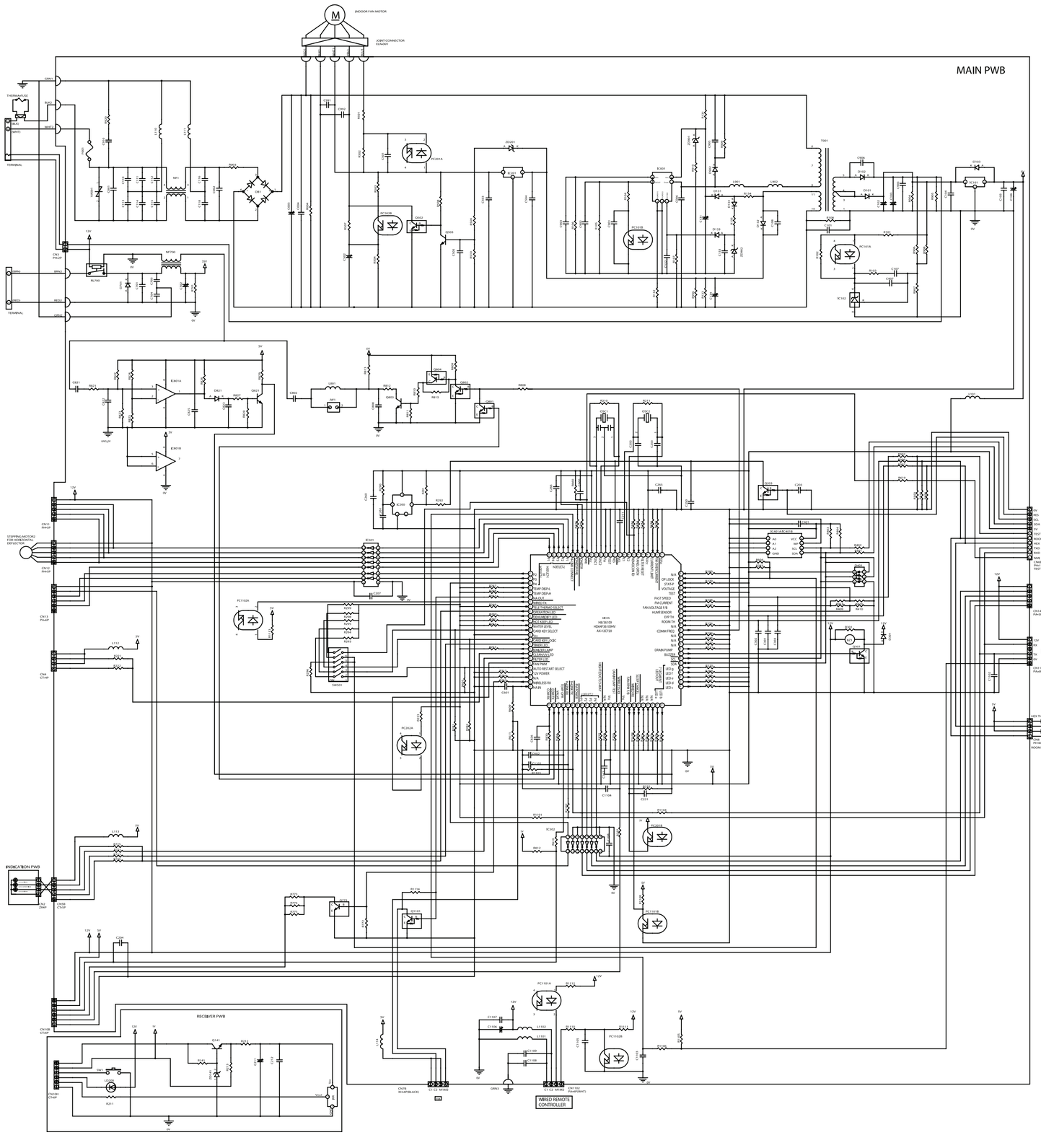
CIRCUIT DIAGRAM

Remote Control



CIRCUIT DIAGRAM

MODEL RAK-60PPA



MAIN P.W.B

RESISTOR

SYMBOL	VALUE (Ω)	TOL	P(W)	FORM	MOUNT SIDE	ASSY NO
R003	2.2	5%	5	A	A	6
R004	1M	5%	1/4	A	A	56
R101	620	5%	1/10	C	A	7
R102	1K	5%	1/10	C	A	8
R103	15K	5%	1/10	C	A	9
R104	2.2K	5%	1/10	C	A	10
R105	33K	5%	1/10	C	A	11
R106	150K	1%	1/10	C	B	12
R107	330	5%	1/4	C	A	13
R108					B	13
R131	1.2M	5%	1	A	A	60
R132	0.62	5%	2	A	A	58
R133	1M	5%	1/2	C	B	14
R134	22	5%	1/2	A	A	54
R135	750	5%	1/2	C	A	15
R210	1M	5%	1/10	C	A	21
R211	1M	5%	1/10	C	B	21
R221	390	5%	1/4	C	A	22
R222	390	5%	1/4	C	A	22
R232	1K	5%	1/10	C	A	8
R233	390	5%	1/10	C	A	24
R234	1K	5%	1/10	C	A	8
R240	10K	5%	1/10	C	B	19
R241	10K	5%	1/10	C	B	19
R242	10K	5%	1/10	C	B	19
R243	10K	5%	1/10	C	B	19
R244	10K	5%	1/10	C	B	19
R245	10K	5%	1/10	C	B	19
R246	10K	5%	1/10	C	B	19
R247	10K	5%	1/10	C	A	19
R248	10K	5%	1/10	C	A	19
R249	10K	5%	1/10	C	A	19
R250	10K	5%	1/10	C	A	19
R251	10K	5%	1/10	C	A	19
R252	10K	5%	1/10	C	A	19
R253	10K	5%	1/10	C	A	19
R254	10K	5%	1/10	C	A	19
R255	390	5%	1/4	C	A	22
R256	10K	5%	1/10	C	A	19
R257	10K	5%	1/10	C	A	19
R258	10K	5%	1/10	C	A	19
R259	10K	5%	1/10	C	A	19
R260	10K	5%	1/10	C	A	19
R261	10K	5%	1/10	C	A	19
R262	10K	5%	1/10	C	A	19
R263	10K	5%	1/10	C	A	19
R264	10K	5%	1/10	C	A	19
R265	10K	5%	1/10	C	A	19
R266	10K	5%	1/10	C	A	19
R267	10K	5%	1/10	C	A	19
R268	10K	5%	1/10	C	A	19
R269	10K	5%	1/10	C	A	19
R270	10K	5%	1/10	C	A	19
R271	10K	5%	1/10	C	B	19
R272	10K	5%	1/10	C	B	19
R273	10K	5%	1/10	C	B	19
R274	10K	5%	1/10	C	B	19
R276	10K	5%	1/10	C	A	19
R277	10K	5%	1/10	C	A	19
R278	10K	5%	1/10	C	A	19
R279	10K	5%	1/10	C	A	19
R280	10K	5%	1/10	C	A	19
R281	10K	5%	1/10	C	A	19
R282	10K	5%	1/10	C	A	19
R283	10K	5%	1/10	C	A	19
R290	1M	5%	1/10	C	A	21
R291	300K	5%	1/10	C	A	51
R292	1K	5%	1/10	C	A	8
R293	1K	5%	1/10	C	A	8
R294	1K	5%	1/10	C	A	8
R295	1K	5%	1/10	C	A	8
R296	1K	5%	1/10	C	A	8
R297	1K	5%	1/10	C	A	8
R298	1K	5%	1/10	C	A	8
R299	1K	5%	1/10	C	A	8
R301	3.3K	5%	1/10	C	B	25
R302	1K	5%	1/10	C	A	8
R303	10K	5%	1/10	C	A	19
R307	1K	5%	1/10	C	A	8
R308	12.7K	1%	1/10	C	A	26
R309	1K	5%	1/10	C	A	8
R310	12.7K	1%	1/10	C	A	26
R311	10K	5%	1/10	C	A	19
R313	10K	5%	1/10	C	A	19
R317	1K	5%	1/10	C	A	8
R401	390	5%	1/10	C	A	24
R402	390	5%	1/10	C	A	24
R403	5.1K	5%	1/10	C	B	16
R404	5.1K	5%	1/10	C	B	16
R409	5.1K	5%	1/10	C	A	16
R410	5.1K	5%	1/10	C	A	16
R413	5.1K	5%	1/10	C	A	16
R414	5.1K	5%	1/10	C	A	16
R501	4.3K	5%	1/4	C	B	28
R502	4.3K	5%	1/10	C	A	29
R503	4.7K	5%	1/8	C	A	30
R504	3.3K	5%	1/10	C	B	25
R507	7.5K	5%	1/2	C	B	31
R508	10K	5%	1/10	C	A	19
R509	100	5%	1/10	C	A	33
R510	15K	5%	1/10	C	A	9
R603	10K	5%	1/10	C	A	19
R604	10K	5%	1/10	C	A	19
R609	1K	5%	1/10	C	A	8
R610	1K	5%	1/10	C	A	8
R611	10K	5%	1/10	C	A	19
R612	10K	5%	1/10	C	A	19
R619	100	5%	1/10	C	A	33
R660	1K	5%	1/10	C	B	8
R701	20K	5%	1/6	C	B	48
R721	300	5%	1/10	C	A	43
R723	240	5%	1/10	C	A	35
R725	240	5%	1/10	C	A	35
R726	240	5%	1/10	C	A	35
R772	10K	5%	1/10	C	A	19
R773	75	5%	1/2	C	A	53
R774	75	5%	1/2	C	A	53
R775	75	5%	1/2	C	A	53
R808	5.6K	1%	1/10	C	A	50
R809	5.1K	5%	1/10	C	A	5
R810	680	5%	1/10	C	A	36
R811	2K	5%	1/10	C	A	49
R812	39	5%	1/4	C	A	37
R813	39	5%	1/4	C	A	37
R815					A	

RESISTOR

SYMBOL	VALUE (Ω)	TOL	P(W)	FORM	MOUNT SIDE	ASSY NO
R821	470	5%	1/10	C	A	23
R822	10K	5%	1/10	C	A	19
R823	10K	5%	1/10	C	A	19
R824	8.25K	1%	1/10	C	A	39
R825	10K	5%	1/10	C	A	19
R826	1K	5%	1/10	C	A	8
R827	3K	5%	1/10	C	A	40
R828	10K	5%	1/10	C	A	19
R829	5.1K	5%	1/10	C	A	16
R830	1K	5%	1/10	C	A	8
					B	8
R904	1M	5%	1/2	C	B	14
R905	1M	5%	1/2	C	B	14
R906	12K	1%	1/10	C	A	41
R907	2K	1%	1/10	C	A	42
R908	12K	1%	1/10	C	A	41
R909	220K	5%	2	A	A	59
R910	270K	5%	1/2	C	A	47
R920	10	5%	1/10	A	A	55
R996					B	55
R1101	10K	5%	1/10	C	A	19
R1102	1K	5%	1/10	C	A	8
R1103	10K	5%	1/10	C	A	19
R1104	1K	5%	1/10	C	A	8
R1105	10K	5%	1/16	C	A	19
R1106	1K	5%	1/4	C	A	46
R1108	2K	5%	1/10	C	A	49
R1109	1K	5%	1/10	C	A	8
R1110	620	5%	1/4	C	A	44
R1111	2K	5%	1/10	C	A	49
R1112	560	5%	1/10	C	A	45
R1113	560	5%	1/10	C	A	45
R1114	0	5%	1/10	C	A	52

TRANSISTOR

SYMBOL	MODEL	FORM	MOUNT SIDE	ASSY NO
Q203	DTC114EKA	C	A	98
Q204	DTC114EUA	C	A	99
Q301	DTC144EUA	C	A	99
Q502	KRC402E	C	A	100
Q503	2SC2412K-R	C	A	101
Q772	2SD596	C	A	97
Q801	RN1106TE85LF	C	A	102
Q802	RN1115TE85L	C	A	103
Q803	2SC3441E	C	A	104
Q804	DTA114EETL	C	A	106
Q821	2SC4738GR	C	A	105
Q1101	DTC114EUA	C	A	99

CAPACITOR

SYMBOL	μF	V	TYPE	FORM	MOUNT SIDE	ASSY NO
C001	0.68u	AC250	F	H	A	95
C002	0.01u	AC250	C	P	A	74
C003	100u	450	D	H	A	90
C004	0.01u	1000	C	P	A	80
C006	220P	1000	C	P	A	73
					A	
C101	2200P	AC250	C	R	A	79
C102	470u	25	D	R	A	83
C103	1800u	25	D	H	A	88
C104	0.1u	25	C	C	B	65
C105	0.1u	25	C	C	B	65
C106	220u	AC250	D	R	A	84
C107	0.1u	25	C	C	A	85
C108					A	
C110	0.01u	AC250	C	P	A	74
C111					A	
C112	0.01u	AC250	C	P	A	74
C113	0.01u	AC250	C	P	A	74
C114					A	
C115	0.01u	AC250	C	P	A	74
C116	1000P	AC250	C	P	A	75
C118	1000P	AC250	C	P	A	75
C131	10u	50	D	R	A	85
C132	470P	50	C	C	A	66
C133	22P	50	C	C	A	67
C134	68u	50	D	R	A	86
					A	
C203	0.1u	25	C	C	A	65
C204	0.1u	25	C	C	A	65
C207	0.1u	25	C	C	A	65
C208	0.1u	25	C	C	A	65
C231	1000P	50	C	C	A	68
C250	0.1u	25	C	C	B	65
C251	0.1u	25	C	C	B	65
C252	12p	50	C	C	B	63
C253	15p	50	C	C	B	64
C260	0.1u	25	C	C	A	65
C261	0.01u	50	C	C	A	70
C265	0.1u	25	C	C	B	65
C266	0.1u	25	C	C	B	65
C267	0.1u	25	C	C	B	65
					A	
C301	0.1u	25	C	C	A	65
C302	0.1u	25	C	C	A	65
C303	0.1u	25	C	C	A	65
					A	
C401	0.1u	25	C	C	A	65
					A	
C501	1000p	50	C	C	A	68
C502	10u	16	D	R	A	87
C503	0.1u	25	C	C	A	65
C504	0.1u	50	C	C	B	69
C505	1000p	50	C	C	B	68
					A	
C601	0.1u	25	C	C	A	65
C602	0.1u	25	C	C	A	65
C660	0.1u	25	C	C	B	65
					A	
C701	0.15u	50	F	R	A	94
C702	68u	50	D	R	A	82
C703	1000P	AC250	C	P	A	75
C704	1000P	AC250	C	P	A	75
					A	
C802	0.22U	50	F	R	A	62
C808	0.1u	25	C	C	A	65
C821	0.01u	50	F	R	A	93
C822	1000P	50	C	C	A	68
C823	0.047u	25	C	C	A	72

CAPACITOR

SYMBOL	μF	V	TYPE	FORM	MOUNT SIDE	ASSY NO
C825	0.1u	25	C	C	A	65
C826	0.01u	50	C	C	A	70
C901					A	
C902	0.47u	10	C	C	A	71
C903	0.01u	50	D	R	B	70
C905	0.01u	1000	C	P	A	76
C906	2200P	1000	C	P	A	77
C907					A	
C910	470p	AC250	C	P	A	78
C991	0.1u	50	C	C	B	69
C992	0.1u	50	C	C	B	69
C993	0.1u	50	C	C	B	69
C1101	1000P	50	C	C	A	68
C1102	1000P	50	C	C	A	68
C1103	0.1u	25	C	C	A	65
C1104	1000P	50	C	C	A	68
C1105	1000P	50	C	C	A	68
C1106	47u	25	D	R	A	89
C1107	0.1u	25	C	C	B	65
C1108	0.01u	AC250	C	P	A	74
C1109	0.01u	AC250	C	P	A	74

PHOTOCOUPLER

SYMBOL	MODEL	FORM	MOUNT SIDE	ASSY NO
PC101	LTV-817S-TA1	C	A	107
PC201	LTV-817S-TA1	C	A	107
PC202	LTV-817S-TA1	C	A	107
PC1101	LTV-817S-TA1	C	A	107
PC1102	LTV-817S-TA1	C	A	107

ZENER DIODE

SYMBOL	MODEL	FORM	MOUNT SIDE	ASSY NO
ZD201	RD15UJ-T1N3	C	A	110
ZD901	JUMPER	C	A	52
ZD902	UDZS3.6B	C	A	111

CHIP JUMPER

SYMBOL	MODEL	FORM	MOUNT SIDE	ASSY NO
JW1	NO MOUNT	C	A	

OSCILLATOR

SYMBOL	MODEL	FORM	MOUNT SIDE	ASSY NO
OSC1	CSTLS10MHZ	R	A	155
OSC2	CS2O63726	R	A	156

DIODE

SYMBOL	MODEL	FORM	MOUNT SIDE	ASSY NO
D101	RK16V1	C	A	143
D102	FMB-G16L	H	A	149
D103	ISS355	C	A	145
D131	U1GU44	C	A	146
D132	U1GU44	C	A	146
D133	ISS355	C	A	145
D134	U1GU44	C	A	146
D301	ISS355	C		145
D401	HVU10SFU	C	A	147
D701	DSM3MA2	C		148
D821	ISS355	C	A	145
D902	EGO1V1	H	A	144
DB1	D3SBA60	H	A	162

CONNECTOR

SYMBOL	MODEL	FORM	MOUNT SIDE	ASSY NO
CN3	B2B-PH-K-S	H	A	170
CN4	CT-4P-V	H	A	171
CN5A	CT-5P-V	H		172
CN5B	CT-5P-V	H	A	172
CN6A	B11B-PH-K-S	H		173
CN6B	B11B-PH-K-S	H	A	173
CN7A	B4B-XDE-K-BK	H		174
CN7B	B4B-XH-A-BK	H	A	174
CN8	B6B-PH-K-S	H	A	175
CN10A	B6P-PH-K	H		176
CN10B	B6B-PH-K-S	H	A	176
CN11	B5B-PH-K-K	H	A	177
CN12	B5B-PH-K-S	H	A	178
CN13	B6B-PASK-1	H	A	179
CN14	B5B-PASK-1	H	A	180
CN1103	B6B-PAKK-1	H	A	181
CN1102	B4B-PASK-1	H	A	182

INDUCTOR

SYMBOL	MODEL	FORM	RATED	ASSY NO
L101	BL01RN1A1F1A	A	A	129
L110	BL01RN1A1F1A	A	A	129
L111	JUMPER		A	135
L112	BL01RN1A1F1A	A	A	129
L113	BL01RN1A1F1A		A	129
L114	BL01RN1A1F1A	A	A	129
L801	LB2518-101M	C	A	128
L901	HF708TL3.5X6R	A	A	130
L902	HF708TL3.5X6R	A	A	130
L1101	BL01RN1A1F1A	A	A	129
L1102	BL01RN1A1F1A	A	A	129
NF1	SC-03-672	H	A	127
NF700	AZ-4616TH-121K	H	A	133
T001	200V-TRANS	H	A	132

IC

SYMBOL	MODEL	FORM	MOUNT SIDE	ASSY NO
IC1	HD64F36109HV	C	A	115
IC001	STR-V852	H	A	120
IC101	KIA7805API	H	A	121
IC102	KIA431A	R	A	119
IC200	RN5VD42C	C	A	123
IC201	KIA7815API	H	A	122
IC401A / IC401B	S24C16C-TB / S-24CS16A01-J8T1G	C	A	116
IC501	KBD65003AF	C	A	117
IC502	KBD65003AF	C	A	117
IC801	NJM2903M (TE3)	C	A	118

RECEIVER P.W.B

RESISTOR

SYMBOL	VALUE (Ω)	TOL	P(W)	FORM
R141	1K	5%	1/6	A
R211	1K	5%	1/6	A
R212	47	5%	1/6	A
R213	0	5%	1/6	A

CAPACITOR

SYMBOL	μF	V	TYPE	FORM
C211	47	16	D	R
C212	0.01	50	D	R

INFRARED RECIEVER

SYMBOL	MODEL	FORM
IRR	GP1UM261RKVF	H

TRANSISTOR

SYMBOL	MODEL	FORM
Q141	KTC3199-Y	H

ZENER DIODE

SYMBOL	MODEL	FORM
ZD141	1N5919BRLG	A

CONNECTOR

SYMBOL	MODEL	FORM
CN10H	B6B-PH-K-S	H

LED

SYMBOL	MODEL	FORM
LD200	SBI-345T3F	R

SWITCH

SYMBOL	MODEL	FORM	MOUNT SIDE	ASSY NO
SW501	CFS-0603B	C	A	140

BUZZER

SYMBOL	MODEL	FORM	MOUNT SIDE	ASSY NO
BZ1	PKM13EPY	H	A	160

FUSE

SYMBOL	MODEL	FORM	MOUNT SIDE	ASSY NO
F001	3.15A	H	A	153
FUSEHOLDER	TP00351-31	R	A	152
FUSEHOLDER	TP00351-31	R	A	152

SURGE ABSORBER

SYMBOL	MODEL	FORM	MOUNT SIDE	ASSY NO
VA001	416NR-12D	P	A	158

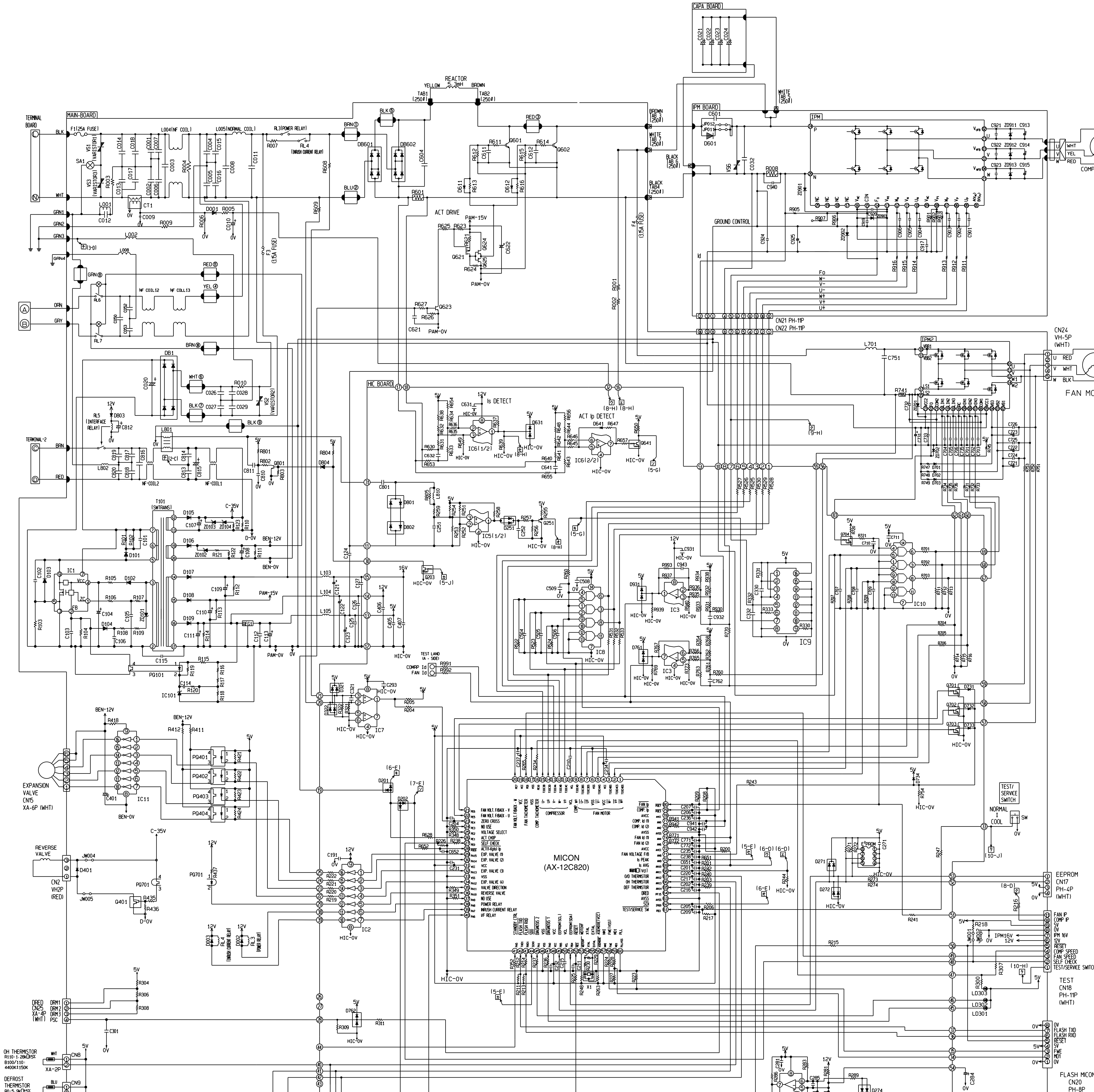
RELAY

SYMBOL	MODEL	FORM	MOUNT SIDE	ASSY NO
RL700	FTR-F3-AA	H	A	165

NOTES:

1. TYPE OF CAPACITOR
   - F- FILM CAPACITOR
   - C- CERAMIC CAPACITOR
   - D- ELETROLYTIC CAPACITOR
2. MOUNTING TYPE
   - A- AXIAL
   - R- RADIAL
   - P- RADIAL(7.5mm PITCH)
   - H- HAND INSERT
   - C- SURFACE MOUNT(SMT)
3. MOUNTING FACE
   - A- COMPONENT SIDE
   - B- SOLDER SIDE

CIRCUIT DIAGRAM
MODEL RAC-60WPA



FLASH MICON TERMINAL		
MODE	MD1	FWE
NORMAL	Hi	Lo
WRITE	Lo	Hi

MOUNTING STYLE
A: AXIAL INSERT
R: RADIAL INSERT
P: RADIAL INSERT (7.5mm PITCH)
H: MANUAL (HAND INSERT)
C: CHIP SMD
S: OTHER SMD

PCB
M : MAIN BOARD
HIC : HIC BOARD
IPM : IPM BOARD
CAPA : CAPA BOARD
TER : TER BOARD

RESISTANCE

SYM	RESISTANCE (Ω)	TOLERANCE	PWR (W)	MOUNTING STYLE	PCB	PART NO.	REMARK
R001	180K	0.5%	1/2	A	M	10	SN
R002	180K	0.5%	1/2	A	M	10	SN
R003	JUMPER	5%	1/6	A	M		5room
R004	470K	5%	1/2	A	M	11	5room
R005	1.69K	1%	1/6	A	M	12	5room
R006	1K	1%	1/6	A	M	13	5room
R007	100	5%	10	H	M	14	5room
R008	19.2m	3%	5	H	IPM	7	GROUP A B C
R009	JUMPER	5%	1/6	A	M		5room
R010	2.2	5%	5	H	M	15	5room
R101	100K	5%	3	H	M	16	5room
R102	100K	5%	3	H	M	16	5room
R103	0.27	5%	2	H	M	17	5room
R104	18K	1%	1/4	A	M	18	5room
R105	4.7	5%	1/4	A	M	19	5room
R106	10K	5%	1/4	A	M	20	5room
R107	10K	5%	1/4	A	M	20	5room
R108	11K	1%	1/4	A	M	21	5room
R109	JUMPER	5%	1/4	A	M		5room
R110	8.2K	5%	1	H	M	22	5room
R111	100K	5%	1/4	A	M	23	5room
R112	3.3K	5%	1/4	A	M	24	5room
R113	3.3K	5%	1/4	A	M	24	5room
R114	3.3K	5%	1/4	A	M	24	5room
R115	1.8K	5%	1/4	A	M	25	5room
R116	120	1%	1/4	A	M	26	5room
R117	9.1K	1%	1/4	A	M	27	5room
R118	2.4K	1%	1/4	A	M	28	5room
R119	1K	5%	1/4	A	M	29	5room
R120	10K	5%	1/4	A	M	20	5room
R121	59	1%	1/4	A	M	30	5room
R122	59	1%	1/4	A	M	30	5room
R123	1K	5%	1	H	M	31	5room
R200	10K	1%	1/16	C	HIC	6	1005
R201	510	5%	1/16	C	HIC	35	1005
R203	100	5%	1/16	C	HIC	24	1005
R204	100	5%	1/16	C	HIC	24	1005
R205	10K	5%	1/16	C	HIC	25	1005
R206	5.1K	5%	1/16	C	HIC	26	1005
R208	10K	5%	1/16	C	HIC	25	1005
R209	10K	5%	1/16	C	HIC	25	1005
R211	10K	5%	1/16	C	HIC	25	1005
R212	390	5%	1/16	C	HIC	27	1005
R213	10K	5%	1/16	C	HIC	25	1005
R214	390	5%	1/16	C	HIC	27	1005
R215	100	5%	1/16	C	HIC	24	1005
R216	100	5%	1/6	A	M	32	
R217	10K	5%	1/16	C	HIC	25	1005
R218	1K	5%	1/6	A	M	33	
R219	390	5%	1/16	C	HIC	27	1005
R220	390	5%	1/16	C	HIC	27	1005
R221	390	5%	1/16	C	HIC	27	1005
R222	390	5%	1/16	C	HIC	27	1005
R223	10K	5%	1/16	C	HIC	25	1005
R224	390	5%	1/16	C	HIC	27	1005
R225	5.1K	5%	1/16	C	HIC	26	1005
R226	20K	5%	1/16	C	HIC	28	1005
R227	20K	5%	1/16	C	HIC	28	1005
R228	390	5%	1/16	C	HIC	27	1005
R229	/	5%	1/16	C	HIC		1005
R230	330	5%	1/16	C	HIC	29	1005
R234	100	5%	1/16	C	HIC	24	1005
R236	2.2K	5%	1/16	C	HIC	37	1005
R237	2.2K	5%	1/16	C	HIC	37	1005
R238	1K	5%	1/16	C	HIC	31	1005
R239	100	5%	1/16	C	HIC	24	1005
R240	100	5%	1/16	C	HIC	24	1005
R241	100	5%	1/16	C	HIC	24	1005
R242	160	5%	1/16	C	HIC	32	1005
R243	CHIP JUMPER	5%	1/16	C	HIC	33	1005
R244	3.32K	1%	1/16	C	HIC	7	1005
R247	100	5%	1/16	C	HIC	24	1005
R248	10K	5%	1/16	C	HIC	25	1005
R251	8.25K	1%	1/16	C	HIC	8	1005
R252	10K	1%	1/16	C	HIC	6	1005
R253	10K	1%	1/16	C	HIC	6	1005
R254	10K	1%	1/16	C	HIC	6	1005
R255	2K	1%	1/16	C	HIC	30	1005
R256	10K	5%	1/16	C	HIC	25	1005
R257	3K	5%	1/16	C	HIC	34	1005
R258	2.2K	1%	1/16	C	HIC	9	1005
R259	470	5%	1/16	C	HIC	23	1005
R260	510	5%	1/16	C	HIC	35	1005
R263	10K	5%	1/16	C	HIC	25	1005
R265	100	5%	1/16	C	HIC	24	1005
R271	5.1K	5%	1/16	C	HIC	26	1005
R272	5.1K	5%	1/16	C	HIC	26	1005
R273	390	5%	1/16	C	HIC	27	1005
R274	390	5%	1/16	C	HIC	27	1005
R281	10K	1%	1/16	C	HIC	6	1005
R282	4.7K	1%	1/16	C	HIC	10	1005
R283	5.1K	1%	1/16	C	HIC	21	1005
R285	51K	5%	1/16	C	HIC	36	1005
R286	5.1K	5%	1/16	C	HIC	26	1005
R287	3K	1%	1/16	C	HIC	11	1005
R289	/	1%	1/16	C	HIC		1608

RESISTANCE

SYM	RESISTANCE (Ω)	TOLERANCE	PWR (W)	MOUNTING STYLE	PCB	PART NO.	REMARK
R300	2K	5%	1/6	A	M	34	
R301	3.74K	0.5%	1/16	C	HIC	42	1005
R302	3.01K	0.5%	1/16	C	HIC	43	1005
R303	3.01K	0.5%	1/16	C	HIC	43	1005
R304	1K	5%	1/6	A	M	33	
R306	1K	5%	1/6	A	M	33	
R307	1K	5%	1/6	A	M	33	
R308	1K	5%	1/6	A	M	33	
R309	1K	5%	1/16	C	HIC	31	1005
R311	1K	5%	1/16	C	HIC	31	1005
R321	1.8K	1%	1/16	C	HIC	12	1005
R322	1.8K	1%	1/16	C	HIC	12	1005
R330	10K	5%	1/16	C	HIC	25	1005
R331	100K	5%	1/16	C	HIC	44	1005
R332	10K	5%	1/16	C	HIC	25	1005
R333	10K	5%	1/16	C	HIC	25	1005
R348	10K	5%	1/16	C	HIC	25	1005
R349	10K	5%	1/16	C	HIC	25	1005
R350	10K	5%	1/16	C	HIC	25	1005
R351	10K	5%	1/16	C	HIC	25	1005
R352	1K	5%	1/16	C	HIC	31	1005
R411	7.5K	5%	1/6	A	M	55	
R412	7.5K	5%	1/6	A	M	55	
R418	JUMPER	5%	1/4	A	M		
R421	47K	5%	1/6	A	M	56	
R422	47K	5%	1/6	A	M	56	
R423	47K	5%	1/6	A	M	56	
R424	47K	5%	1/6	A	M	56	
R435	7.5K	5%	1/2	A	M	36	
R436	10K	5%	1/6	A	M	37	
R437	1.2K	5%	1/4	A	M	38	
R522	10K	5%	1/16	C	HIC	25	1005
R523	10K	5%	1/16	C	HIC	25	1005
R524	10K	5%	1/16	C	HIC	25	1005
R525	430	5%	1/16	C	HIC	41	1005
R526	430	5%	1/16	C	HIC	41	1005
R527	430	5%	1/16	C	HIC	41	1005
R528	430	5%	1/16	C	HIC	41	1005
R529	430	5%	1/16	C	HIC	41	1005
R530	430	5%	1/16	C	HIC	41	1005
R531	/	5%	1/16	C	HIC		1005
R532	/	5%	1/16	C	HIC		1005
R533	/	5%	1/16	C	HIC		1005
R601	12.5m	5%	5	H	M	39	CEMENT
R608	180K	1%	1/2	A	M	40	SN
R609	180K	1%	1/2	A	M	40	SN
R611	5.1	5%	1/4	A	M	41	
R612	20K	5%	1/6	A	M	42	
R613	75	5%	1/4	A	M	43	
R614	5.1	5%	1/4	A	M	41	
R615	20K	5%	1/6	A	M	42	
R616	75	5%	1/4	A	M	43	
R621	JUMPER	5%	1/6	A	M		
R623	820	5%	1/6	A	M	44	
R624	750	5%	1	H	M	45	
R625	1.2K	5%	1/6	A	M	46	
R626	1.2K	5%	1/6	A	M	46	
R627	330	5%	1/6	A	M	47	
R628	2.2K	5%	1/16	C	HIC	37	1005
R630	24	5%	1/16	C	HIC	38	1005
R631	5.11K	1%	1/16	C	HIC	13	1005
R632	5.11K	1%	1/16	C	HIC	13	1005
R633	5.11K	1%	1/16	C	HIC	13	1005
R634	5.76K	1%	1/16	C	HIC	19	1005
R635	24	5%	1/16	C	HIC	38	1005
R636	24	5%	1/16	C	HIC	38	1005
R637	21.5K	1%	1/16	C	HIC	20	1005
R638	24	5%	1/16	C	HIC	38	1005
R639	2K	1%	1/16	C	HIC	15	1005
R640	24	5%	1/16	C	HIC	38	1005
R641	3.3K	1%	1/16	C	HIC	18	1005
R642	5.11K	1%	1/16	C	HIC	13	1005
R643	5.11K	1%	1/16	C	HIC	13	1005
R644	5.11K	1%	1/16	C	HIC	13	1005
R645	CHIP JUMPER	5%	1/16	C	HIC	33	1005
R646	CHIP JUMPER	5%	1/16	C	HIC	33	1005
R647	47K	5%	1/16	C	HIC	40	1005
R648	24	5%	1/16	C	HIC	38	1005
R649	43.2K	1%	1/16	C	HIC	22	1005
R650	5.1K	5%	1/16	C	HIC	26	1005
R651	1K	5%	1/16	C	HIC	31	1005
R652	510	5%	1/16	C	HIC	35	1005
R653	24	5%	1/16	C	HIC	38	1005
R654	24	5%	1/16	C	HIC	38	1005
R655	24	5%	1/16	C	HIC	38	1005
R656	24	5%	1/16	C	HIC	38	1005
R657	20K	5%	1/16	C	HIC	28	1005

RESISTANCE

SYM	RESISTANCE (Ω)	TOLERANCE	PWR (W)	MOUNTING STYLE	PCB	PART NO.	REMARK
R701	240	5%	1/16	C	HIC	39	1005
R702	240	5%	1/16	C	HIC	39	1005
R703	240	5%	1/16	C	HIC	39	1005
R704	240	5%	1/16	C	HIC	39	1005
R705	240	5%	1/16	C	HIC	39	1005
R706	240	5%	1/16	C	HIC	39	1005
R707	10K	5%	1/16	C	HIC	25	1005
R708	10K	5%	1/16	C	HIC	25	1005
R709	10K	5%	1/16	C	HIC	25	1005
R711	10K	5%	1/16	C	HIC	25	1005
R712	10K	5%	1/16	C	HIC	25	1005
R713	10K	5%	1/16	C	HIC	25	1005
R714	10K	5%	1/16	C	HIC	25	1005
R715	10K	5%	1/16	C	HIC	25	1005
R716	10K	5%	1/16	C	HIC	25	1005
R720	10K	5%	1/16	C	HIC	25	1005
R721	100	5%	1/16	C	HIC	24	1005
R731	270	5%	1/6	A	M	48	
R732	270	5%	1/6	A	M	48	
R733	270	5%	1/6	A	M	48	
R734	270	5%	1/6	A	M	48	
R735	270	5%	1/6	A	M	48	
R736	270	5%	1/6	A	M	48	
R741	0.24	2%	1	H	M	49	
R745	1M	5%	1/6	A	M	50	
R747	10	5%	1/4	A	M	51	
R748	10	5%	1/4	A	M	51	
R749	10	5%	1/4	A	M	51	
R751	430K	1%	1/2	A	M	52	SN
R752	430K	1%	1/2	A	M	52	SN
R753	430K	1%	1/2	A	M	52	SN
R754	11K	1%	1/16	C	HIC	16	1005
R760	100	5%	1/16	C	HIC	24	1005
R761	5.11K	1%	1/16	C	HIC	13	1005
R762	5.11K	1%	1/16	C	HIC	13	1005
R763	5.11K	1%	1/16	C	HIC	13	1005
R764	5.11K	1%	1/16	C	HIC	13	1005
R765	CHIP JUMPER	5%	1/16	C	HIC	33	1005
R766	CHIP JUMPER	5%	1/16	C	HIC	33	1005
R767	18.7K	1%	1/16	C	HIC	14	1005
R768	100	5%	1/16	C	HIC	24	1005
R769	2K	1%	1/16	C	HIC	15	1005
R770	/	5%	1/16	C	HIC		1005
R771	100	5%	1/16	C	HIC	24	1005
R772	100	5%	1/16	C	HIC	24	1005
R773	/	1%	1/16	C	HIC		1005
R801	39	5%	1/4	A	M	53	
R802	39	5%	1/4	A	M	53	
R803	3K	5%	1/6	A	M	54	
R804	3K	5%	1/6	A	M	54	
R805	/	5%	1/16	C	HIC		1005
R901	22	5%	1/4	A	IPM	8	
R902	/	5%	1/4	A	IPM		
R903	/	5%	1/4	A	IPM		
R905	51.1	1%	1/6	A	IPM	9	GROUP A B C
R906	330	1%	1/6	A	IPM	10	
R907	2K	5%	1/6	A	IPM	11	
R911	51	5%	1/6	A	IPM	12	
R912	51	5%	1/6	A	IPM	12	
R913	51	5%	1/6	A	IPM	12	
R914	51	5%	1/6	A	IPM	12	
R915	51	5%	1/6	A	IPM	12	
R916	51	5%	1/6	A	IPM	12	
R930	24	5%	1/16	C	HIC	38	1005
R931	5.11K	1%	1/16	C	HIC	13	1005
R932	5.11K	1%	1/16	C	HIC	13	1005
R933	5.11K	1%	1/16	C	HIC	13	1005
R934	5.11K	1%	1/16	C	HIC	13	1005
R935	CHIP JUMPER	5%	1/16	C	HIC	33	1005
R936	CHIP JUMPER	5%	1/16	C	HIC	33	1005
R937	12.1K	1%	1/16	C	HIC	17	1005
R938	24	5%	1/16	C	HIC	38	1005
R939	2K	1%	1/16	C	HIC	15	1005
R940	/	1%	1/16	C	HIC		1005
R941	100	5%	1/16	C	HIC	24	1005
R942	100	5%	1/16	C	HIC	24	1005
R991	100	5%	1/16	C	HIC	24	1005
R992	100	5%	1/16	C	HIC	24	1005
R993	/	5%	1/16	C	HIC		1005

CAPACITOR

SYM	CAPACITANCE (μF)	VOLT (V)	TYPE	MOUNTING STYLE	PCB	PART NO.	REMARK
C001	0.01	AC250	C	P	M	59	IEC
C002	0.01	AC250	C	P	M	59	IEC
C003	3.3	AC275	F	H	M	63	OKAYA
C004	0.01	AC250	C	P	M	59	IEC
C005	0.01	AC250	C	P	M	59	IEC
C006	0.01	AC250	C	P	M	59	IEC
C007	0.01	AC250	C	P	M	59	IEC
C008	3.3	AC275	F	H	M	63	OKAYA
C009	0.1	50	C	R	M	61	RRCP 1667
C010	100	10	D	H	M	62	
C011	3.3	AC275	F	H	M	63	OKAYA
C012	0.0022	AC250	C	P	M	58	RRCP 2317
C013	0.01	AC250	C	P	M	59	IEC
C014	0.01	AC250	C	P	M	59	IEC
C015	0.01	AC250	C	P	M	59	IEC
C016	0.01	AC250	C	P	M	59	IEC
C017	0.01	AC250	C	P	M	59	IEC
C018	0.01	AC250	C	P	M	59	IEC
C020	68	450	D	H	M	64	KMX
C021	400	450	D	H	CAPA	5	
C022	400	450	D	H	CAPA	5	
C023	400	450	D	H	CAPA	5	
C024	400	450	D	H	CAPA	5	GROUP C & D ONLY
C026	0.01	AC250	C	P	M	59	IEC
C027	0.01	AC250	C	P	M	59	IEC
C028	0.01	AC250	C	P	M	59	IEC
C029	0.01	AC250	C	P	M	59	IEC
C032	0.1	450	F	H	IPM	15	RRCP 3102
C050	0.47	AC275	F	H	M	60	GROUP B C & D
C052	0.01	AC250	C	P	M	59	GROUP B C & D
C053	0.01	AC250	C	P	M	59	GROUP B C & D
C101	2200p	1k	C	R	M	66	RRCP 2884
C102	220p	2k	C	P	M	67	RRCP 2987
C103	1000p	50	F	P	M	68	
C104	68	25	D	R	M	69	
C105	100p	50	C	A	M	70	
C106	2200p	50	F	R	M	71	
C107	1000	50	D	H	M	88	
C108	330	25	D	H	M	73	
C109	100	25	D	R	M	74	
C110	100	25	D	R	M	74	
C111	220	25	D	R	M	75	
C112	0.1	50	C	R	M	61	RRCP 1667
C113	330	10	D	R	M	76	
C114	0.01	50	F	R	M	77	
C115	470p	AC250	C	R	M	78	RRCP 2314
C121	100 (struck)	25	D	R	M		
C122	100 (struck)	25	D	R	M		
C123	100 (struck)	25	D	R	M		
C124	0.1	50	C	A	M	85	B SPEC
C125	0.1	50	C	A	M	85	B SPEC
C126	0.1	50	C	A	M	85	B SPEC
C127	0.1	50	C	A	M	85	B SPEC
C191	0.1	16	C	C	HIC	49	1005
C201	0.1	16	C	C	HIC	49	1005
C202	0.1	16	C	C	HIC	49	1005
C204	470P	50	C	C	HIC	50	R SPEC 1005
C205	0.047	25	C	C	HIC	48	R SPEC 1005
C206	470P	50	C	C	HIC	50	R SPEC 1005
C207	470P	50	C	C	HIC	50	R SPEC 1005
C209	0.1	16	C	C	HIC	49	1005
C210	0.47	16	C	C	HIC	51	1005
C211	0.047	25	C	C	HIC	48	R SPEC 1005
C215	0.47	16	C	C	HIC	51	1005
C216	0.1	16	C	C	HIC	49	1005
C217	0.1	16	C	C	HIC	49	1005
C220	0.01	25	C	C	HIC	52	R SPEC 1005
C231	0.1	16	C	C	HIC	49	1005
C232	0.1	16	C	C	HIC	49	1005
C234	0.1	16	C	C	HIC	49	1005
C235	0.1	16	C	C	HIC	49	1005
C236	0.1	16	C	C	HIC	49	1005
C237	0.1	16	C	C	HIC	49	1005
C238	1000p	50	C	C	HIC	53	R SPEC 1005
C251	4700p	50	C	C	HIC	54	CH SPEC 1608
C252	0.068	25	C	C	HIC	55	R SPEC 1608
C271	0.1	16	C	C	HIC	49	1005
C281	0.1	16	C	C	HIC	49	1005
C282	0.1	16	C	C	HIC	49	1005
C283	0.1	25	C	C	HIC	56	R SPEC 1608
C284	2.2	50	D	R	M	86	NICHICON VR
C285	470p	50	C	C	HIC	57	B SPEC 1005
C293	0.1	16	C	C	HIC	49	1005
C301	0.01	50	C	R	M	65	
C321	0.01	50	C	C	HIC	58	F SPEC 1608
C330	0.1	25	C	C	HIC	59	F SPEC 1608
C332	2200p	50	C	C	HIC	63	CH SPEC 1608
C401	100	25	D	R	M	79	NICHICON VR
C405	0.1	16	C	C	HIC	49	1005
C406	0.1	25	C	C	HIC	59	F SPEC 1608
C407	0.1	25	C	C	HIC	59	F SPEC 1608

CAPACITOR

SYM	CAPACITANCE (μF)	VOLT (V)	TYPE	MOUNTING STYLE	PCB	PART NO.	REMARK
C504	100P	50	C	C	HIC	60	CH SPEC 1005
C505	100P	50	C	C	HIC	60	CH SPEC 1005
C506	100P	50	C	C	HIC	60	CH SPEC 1005
C508	0.1	16	C	C	HIC	49	1005
C509	220P	50	C	C	HIC	61	CH SPEC 1005
C601	4700p	1k	C	R	IPM	22	
C604	0.01	1k	C	R	M	80	
C611	0.01 (struck)	50	C	A	M		B SPEC
C612	0.01 (struck)	50	C	A	M		B SPEC
C621	100p	50	C	A	M	70	
C622	47	25	D	R	M	81	
C631	0.047	25	C	C	HIC	48	R SPEC 1005
C632	0.047	25	C	C	HIC	48	R SPEC 1005
C641	0.047	25	C	C	HIC	48	R SPEC 1005
C651	0.01	25	C	C	HIC	52	R SPEC 1005
C652	1000p	50	C	C	HIC	53	R SPEC 1005
C701	220p	50	C	A	M	82	CH SPEC
C702	220p	50	C	A	M	82	CH SPEC
C703	220p	50	C	A	M	82	CH SPEC
C704	220p	50	C	A	M	82	CH SPEC
C705	220p	50	C	A	M	82	CH SPEC
C706	220p	50	C	A	M	82	CH SPEC
C707	100p	50	C	C	HIC	60	CH SPEC 1005
C708	100p	50	C	C	HIC	60	CH SPEC 1005
C709	100p	50	C	C	HIC	60	CH SPEC 1005
C710	220p	50	C	C	HIC	61	B SPEC 1005
C711	0.1	16	C	C	HIC	49	1005
C721	10	25	D	R	M	89	
C722	10	25	D	R	M	89	
C723	10	25	D	R	M	89	
C724	/	25	C	R	M		
C725	/	25	C	R	M		
C726	/	25	C	R	M		
C731	100	25	D	R	M	79	NICHICON VR
C732	/	25	C	A	M		
C733	/	25	C	A	M		
C735	2200p	50	C	A	M	57	B SPEC
C751	0.01	DC1kV	C	P	M	80	RRCP 2793
C762	0.01	25	C	C	HIC	52	R SPEC 1005
C771	/	50	C	C	HIC		R SPEC 1005
C772	/	50	C	C	HIC		R SPEC 1005
C801	0.022	50	C	C	HIC	62	B SPEC 1608
C810	0.15	50	F	R	M	83	
C811	0.15	50	F	R	M	83	
C812	100	25	D	R	M	79	NICHICON VR
C813	0.01	AC250	C	P	M	59	IEC
C814	0.01	AC250	C	P	M	59	IEC
C815	68	50	D	R	M	84	
C816	0.15	50	F	R	M	83	
C817	0.01	AC250	C	P	M	59	IEC
C818	0.01	AC250	C	P	M	59	IEC
C819	0.01	AC250	C	P	M	59	IEC
C820	0.01	AC250	C	P	M	59	IEC
C901	680p	50	C	A	IPM	16	CH SPEC
C902	680p	50	C	A	IPM	16	CH SPEC
C903	680p	50	C	A	IPM	16	CH SPEC
C904	680p	50	C	A	IPM	16	CH SPEC
C905	680p	50	C	A	IPM	16	CH SPEC
C906	680p	50	C	A	IPM	16	CH SPEC
C913	33	25	D	R	IPM	17	NICHICON SV
C914	33	25	D	R	IPM	17	NICHICON SV
C915	33	25	D	R	IPM	17	NICHICON SV
C917	/	50	C	A	IPM		F SPEC
C919	0.068	50	C	A	IPM	18	B SPEC
C920	1	50	C	A	IPM	19	B SPEC
C921	0.1	50	C	A	IPM	20	F SPEC
C922	0.1	50	C	A	IPM	20	F SPEC
C923	0.1	50	C	A	IPM	20	F SPEC
C924	0.1	50	C	A	IPM	20	F SPEC
C925	220	50	D	R	IPM	21	NICHICON RZ
C931	0.047	25	C	C	HIC	48	R SPEC 1005
C932	0.047	25	C	C	HIC	48	R SPEC 1005
C940	0.1	50	C	A	IPM	20	F SPEC
C941	/	50	C	C	HIC		R SPEC 1005
C942	/	50	C	C	HIC		R SPEC 1005
C943	/	50	C	C	HIC		R SPEC 1005

DIODE

SYM	SPECIFICATION	MOUNTING STYLE	PCB	PART NO.	REMARK
D001	1SS120	A	M	90	RREB 1822
D002	1S2076A	A	M	91	RREB 1431
D003	1S2076A	A	M	91	RREB 1431
D101	EG01CV1	A	M	92	RREB 4886
D102	D1NL20U	A	M	93	AL01Z
D103	EG01CV1	A	M	92	RREB 4886
D104	D1NL20U	A	M	93	AL01Z
D105	RL4Z	H	M	94	RREB 4763
D106	D2S6M	H	M	95	RREB 5330
D107	D1NL20U	A	M	93	AL01Z
D108	D1NL20U	A	M	93	AL01Z
D109	D2S6M	H	M	95	RREB 5330
D201	KDS181-RTK/P	C	HIC	69	DAP202K
D202	KDS181-RTK/P	C	HIC	69	DAP202K
D251	KDS184-RTK/P	C	HIC	70	DAN202K
D271	KDS184-RTK/P	C	HIC	70	DAN202K
D272	KDS181-RTK/P	C	HIC	69	DAP202K
D274	KDS184-RTK/P (struck)	C	HIC		DAN202K
D321	KDS184-RTK/P	C	HIC	70	DAN202K
D322	KDS181-RTK/P	C	HIC	69	DAP202K
D401	D1NK60	A	M	98	RREB 4932
D601	D30L60	H	IPM	33	
D611	1SS133	A	M	97	RREB 8453
D612	1SS133	A	M	97	RREB 8453
D631	KDS226-RTK/P	C	HIC	71	DAN217
D641	1SS352TPH3F	C	HIC	72	1SS355
D701	D1NK60	A	M	98	RREB 4932
D702	D1NK60	A	M	98	RREB 4932
D703	D1NK60	A	M	98	RREB 4932
D731	1SS352TPH3F	C	HIC	72	1SS355
D732	1SS352TPH3F	C	HIC	72	1SS355
D733	1SS352TPH3F	C	HIC	72	1SS355
D734	1SS352TPH3F	C	HIC	72	1SS355
D761	KDS226-RTK/P	C	HIC	71	DAN217
D762	KDS226-RTK/P	C	HIC	71	DAN217
D801	KDS226-RTK/P (struck)	C	HIC		DAN217
D802	KDS226-RTK/P (struck)	C	HIC		DAN217
D803	1SS120	A	M	90	RREB 1822
D804	1S2076A	A	M	91	RREB 1431
D931	KDS226-RTK/P	C	HIC	71	DAN217
DB1	D2SB60A	H	M	100	RREB 4602
DB601	RBV-2506	H	M	101	RREB 5264
DB602	RBV-2506	H	M	101	RREB 5264

JUMPER

SYM	EXIST/ NON EXIST	MOUNTING STYLE	PCB	PART NO.	REMARK
JW001	J1/4ZCT52A	A	M		
JW002	J1/4ZCT52A	A	M		
JW004	EXIST	A	M		
JW005	EXIST	A	M		
JP011	EXIST	A	M		GROUP A B C ONLY
JP012	EXIST	A	M		GROUP A B C ONLY

JP011

LED

SYM	SPECIFICATION	MOUNTING STYLE	PCB	PART NO.	REMARK
LD301	SLR-342VCT87	R	M	102	RED
LD302	SLR-342VCT87	R	M	102	RED
LD303	SLR-342VCT87	R	M	102	RED

ZENER DIODE

SYM	SPECIFICATION	MOUNTING STYLE	PCB	PART NO.	REMARK
ZD101	HZ11C3	A	M	103	
ZD102	1N5927B	A	M	104	
ZD103	HZ11A1	A	M	105	
ZD104	HZ11A1	A	M	105	
ZD701	/	A	M		
ZD702	/	A	M		
ZD901	HZ22-1	A	IPM	24	
ZD902	HZ22-1	A	IPM	24	
ZD903	HZ22-1	A	IPM	24	
ZD911	/	A	IPM		
ZD912	/	A	IPM		
ZD913	/	A	IPM		

RELAY

SYM	SPECIFICATION	MOUNTING STYLE	PCB	PART NO.	REMARK
RL3	G4A-1A-PE	H	M	135	RRRA 1313
RL4	G5NB-1A	H	M	136	RRRA 1361
RL5	G5NB-1A	H	M	136	RRRA 1361
RL6	G5NB-1A	H	M	136	GROUP B C D
RL7	G5NB-1A	H	M	136	GROUP B C D

OSCILLATOR

SYM	SPECIFICATION	MOUNTING STYLE	PCB	PART NO.	REMARK
X1	CSTCE10M0G55	C	HIC	86	10MHZ

TRANSISTOR

SYM	SPECIFICATION	RATING I (A)	RATING V (V)	MOUNTING STYLE	PCB	REMARK	PART NO.
Q203	DTC143EE			C	HIC	RREG 4999	74
Q251	KTC3875S			C	HIC	2SC2412KS	76
Q401	2SC1214CTZ			R	M	RREG 1722	112
Q601	GT50J121	50	500	H	M	RREA 5185	107
Q602	GT50J121	50	500	H	M	RREA 5185	107
Q621	2SJ167			R	M	RREG 5261	108
Q623	2SC5058S			R	M	RREG 5264	109
Q624	2SC1214CTZ			R	M	RREG 1722	112
Q625	2SA673GZ			R	M	RANK C	111
Q641	RN1102TE			C	HIC	DTC114EE	75
Q701	RN1102TE			C	HIC	DTC114EE	75
Q702	RN1102TE			C	HIC	DTC114EE	75
Q703	RN1102TE			C	HIC	DTC114EE	75
Q704	RN1102TE			C	HIC	DTC114EE	75
Q801	2SC1214CTZ			R	M	RREG 1722	112

PHOTO COUPLER

SYM	SPECIFICATION	MOUNTING STYLE	PCB	PART NO.	REMARK
PQ101	TLP421BL	H	M	113	PC817X
PQ401	TLP421BL	H	M	113	PC817X
PQ402	TLP421BL	H	M	113	PC817X
PQ403	TLP421BL	H	M	113	PC817X
PQ404	TLP421BL	H	M	113	PC817X
PQ701	TLP421BL	H	M	113	PC817X

INDUCTOR

SYM	SPECIFICATION	MOUNTING STYLE	PCB	PART NO.	REMARK
L001	BL01RN1-F	A	M	122	BEAD
L002	BL01RN1-F	A	M	122	BEAD
L004	NF COIL1	H	M	123	RRMH 3681
L005	COIL	H	M	124	RRMH 4125
L008	JUMPER	A	M		GROUP B C D
NF-COIL1	NF COIL3.5	H	M	126	RRMH 3573
NF-COIL2	NF COIL3.5	H	M	126	RRMH 3573
NF-COIL12	NF-COIL6.7	H	M	121	GROUP B C D
NF-COIL13	NF-COIL	H	M	126	GROUP B C D
L103	JUMPER	A	M		
L104	JUMPER	A	M		
L105	JUMPER	A	M		
L701	JUMPER	A	M		
L801	IF-TRANS	H	M	128	RRMF 8458
L802	BL01RN1-F	A	M	122	BEAD
L810	LB2518B102M	C	HIC	88	
T101	RRMF3972	H	M	129	
CT1	S19-J299CT	H	M	130	RRMF 8454

SURGE ABSORBER

SYM	SPECIFICATION	MOUNTING STYLE	PCB	PART NO.	REMARK
VS1	450NR-120	H	M	131	RREL 1206
VS2	450NR-120	H	M	131	RREL 1206
VS3	450NR-120	H	M	131	RREL 1206
VS6	/	R	IPM		
SA1	DE37-102MF	R	M	132	RR2L 2528

IC

SYM	SPECIFICATION	MOUNTING STYLE	PCB	PART NO.	REMARK
REG1	MC7805CT	H	M	114	RREA 2855
IC1	MR4020	H	M	115	RREA 5096
IC2	ULN2003ANS	S	HIC	78	
IC3	NJM2742M	S	HIC	79	
IC5	KIA393F-EL/P	S	HIC	80	LM2903DR
IC6	NJM2742M	S	HIC	79	
IC7	KIA393F-EL/P	S	HIC	80	LM2903DR
IC8	SN74LV08APW	S	HIC	82	
IC9	TC4538BF	S	HIC	84	RREA 5674
IC10	SN74LV08APW	S	HIC	82	
IC11	TD62003APG	H	M	116	RREA 5250
IC101	K1A431A	R	M	117	
IPM	PS219A4	H	IPM	5	15A
IPM2	SLA6818M	H	M	118	RREP 5039
E²PROM	S24C32C1-J	S	HIC	83	
MICON	SH7146(AX-8X10)	Q	HIC	4	RREA 3236

SWITCH

SYM	SPECIFICATION	MOUNTING STYLE	PCB	PART NO.	REMARK
SW	KSHC614AT	R	M	119	

FUSE

SYM	SPECIFICATION	MOUNTING STYLE	PCB	PART NO.	REMARK
F1	250VTLNC25A	H	M	138	
F3	250V 3.15A	H	M	140	
F4	250V 3.15A	H	M	140	

CONNECTOR

SYM	SPECIFICATION	MOUNTING STYLE	PCB	PART NO.	REMARK
CN2	VH-2P(RED)	H	M	143	
CN8	XA-2P(WHT)	H	M	144	
CN9	XA-2P(BLU)	H	M	145	
CN10	XA-2P(RED)	H	M	146	
CN15	XA-6P	H	M	147	
CN17	PH-4P	H	M	148	
CN18	PH-11P	H	M	149	
CN20	PH-8P	H	M	150	
CN21	PH-11P(BLU)	H	IPM	27	
CN22	PH-11P(BLU)	H	M	151	
CN24	VH-5P (13.5 PIN)	H	M	152	
CN25	XA-4P(WHT)	H	M	153	
CN26	XA-4P(WHT)	H	TER	5	
CN27	4P TERMINAL BLOCK	H	TER	7	
CN28	RJ-45	H	TER	9	

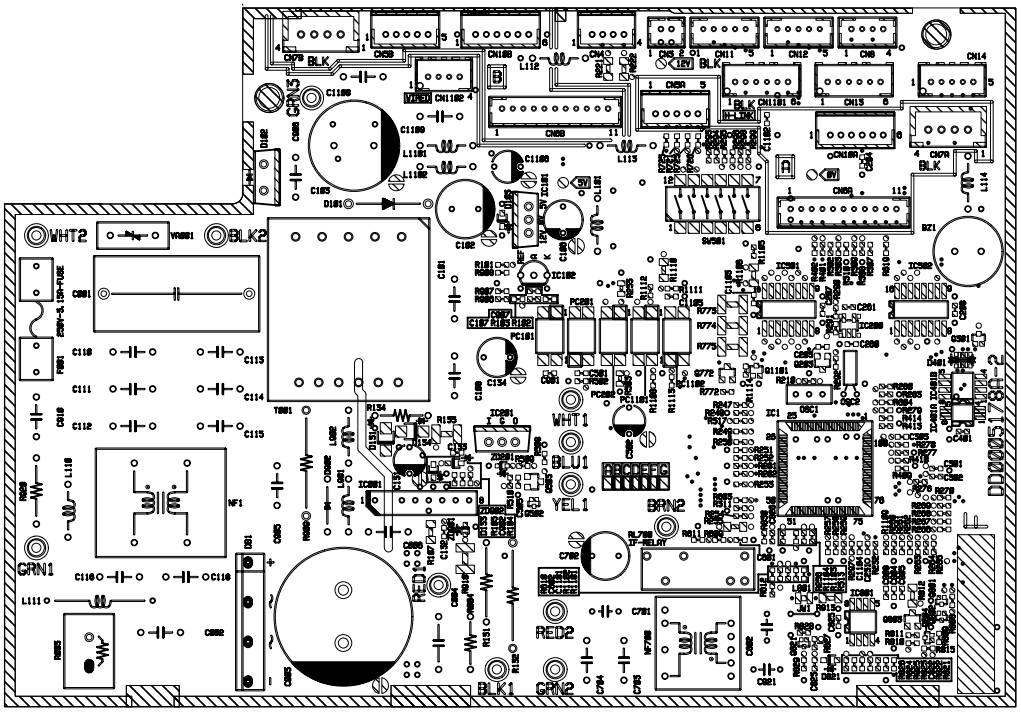
PRINTED WIRING BOARD LOCATION DIAGRAM

MODEL RAK-60PPA

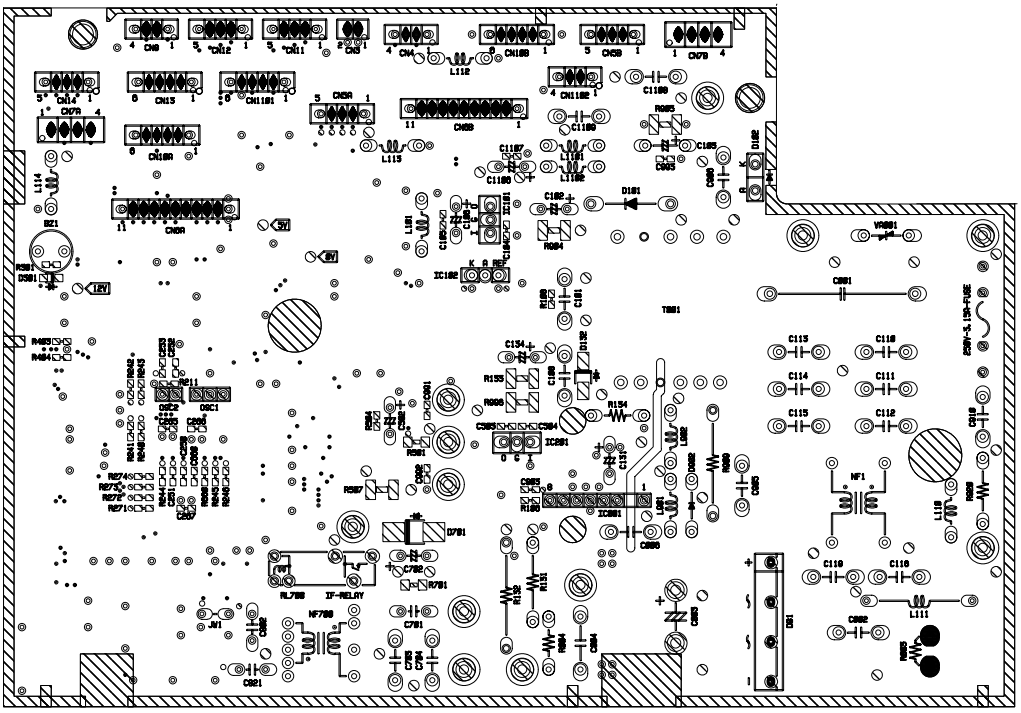
MAIN P.W.B.

Marking on P.W.B

COMPONENT SIDE

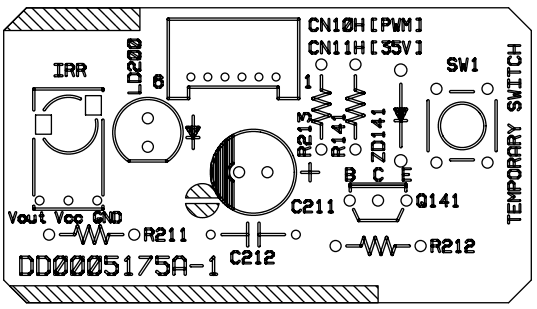


SOLDERING SIDE



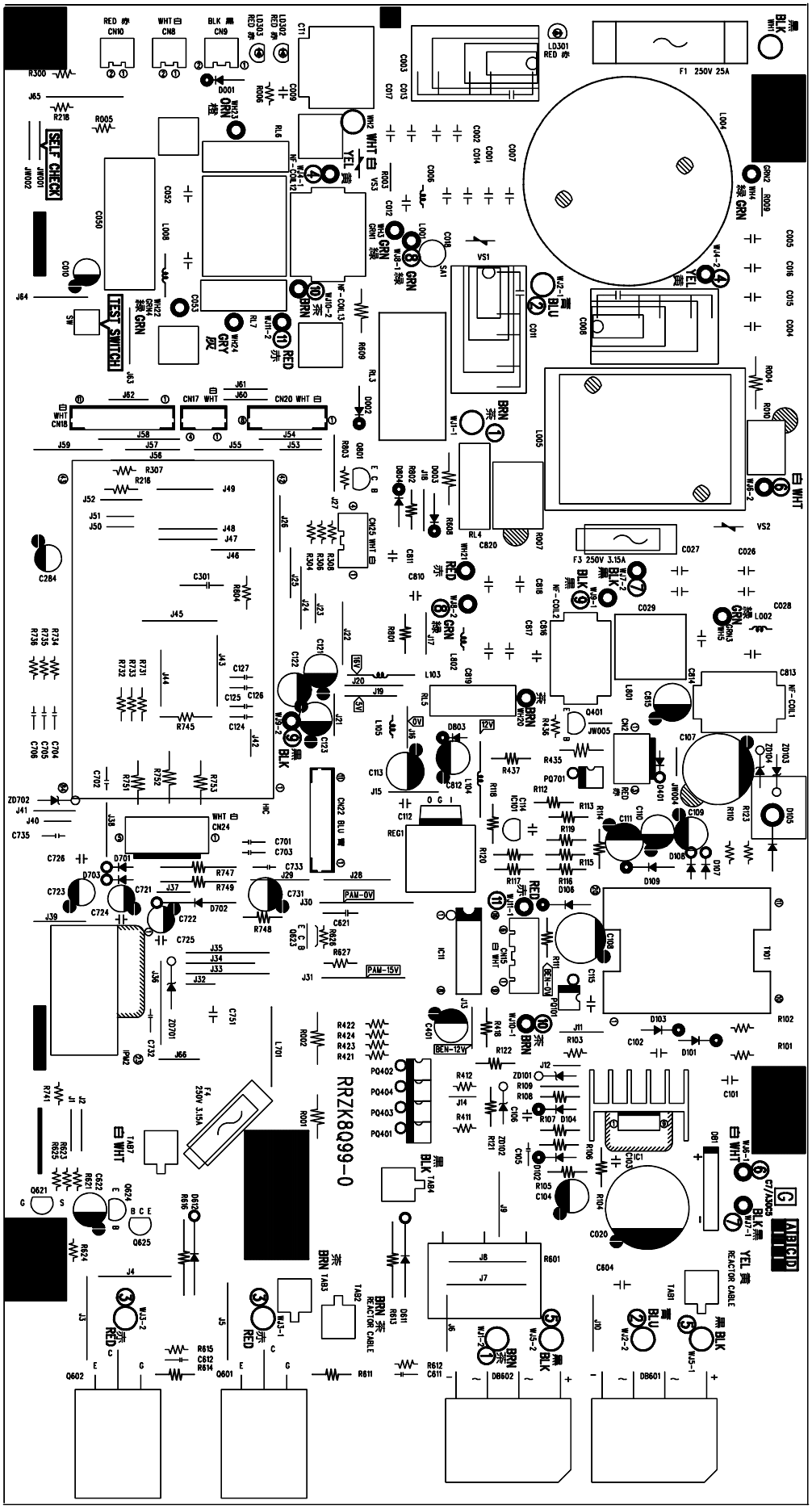
RECEIVING P.W.B.

Marking on P.W.B

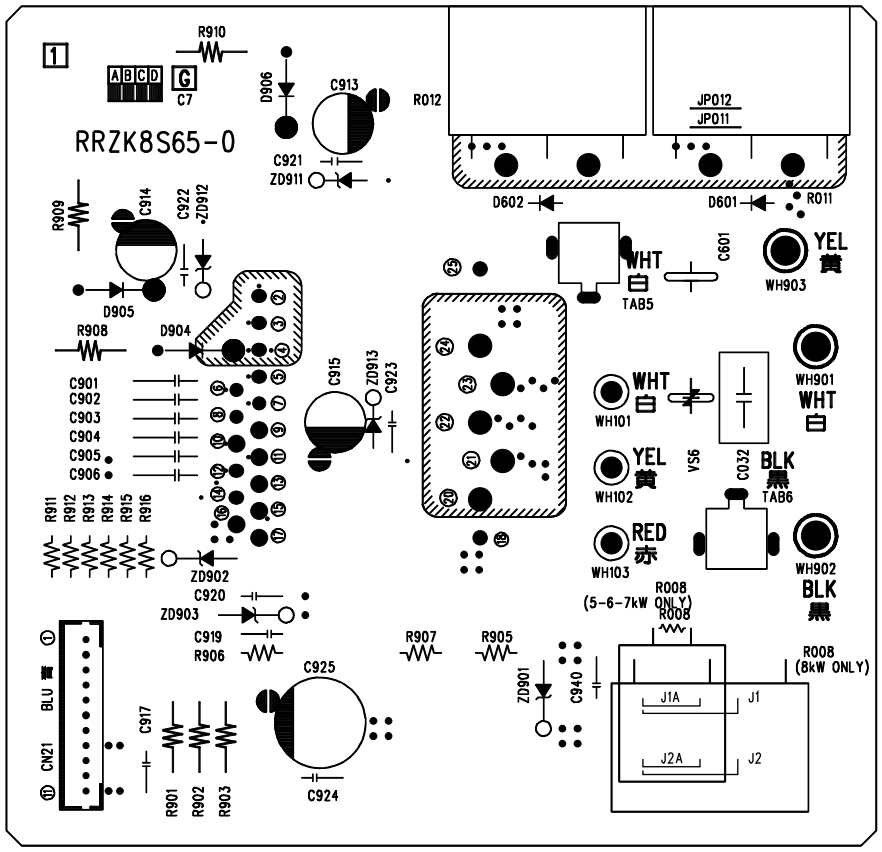


MODEL RAC-60WPA

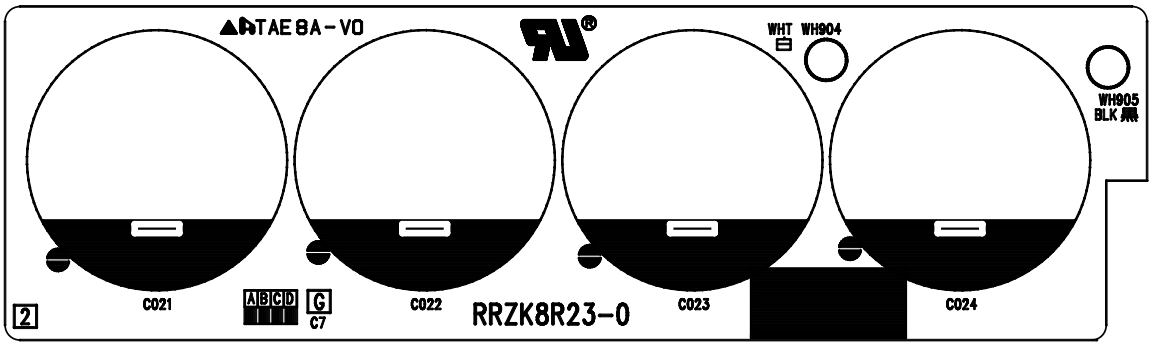
P.W.B. MAIN



P.W.B. IPM

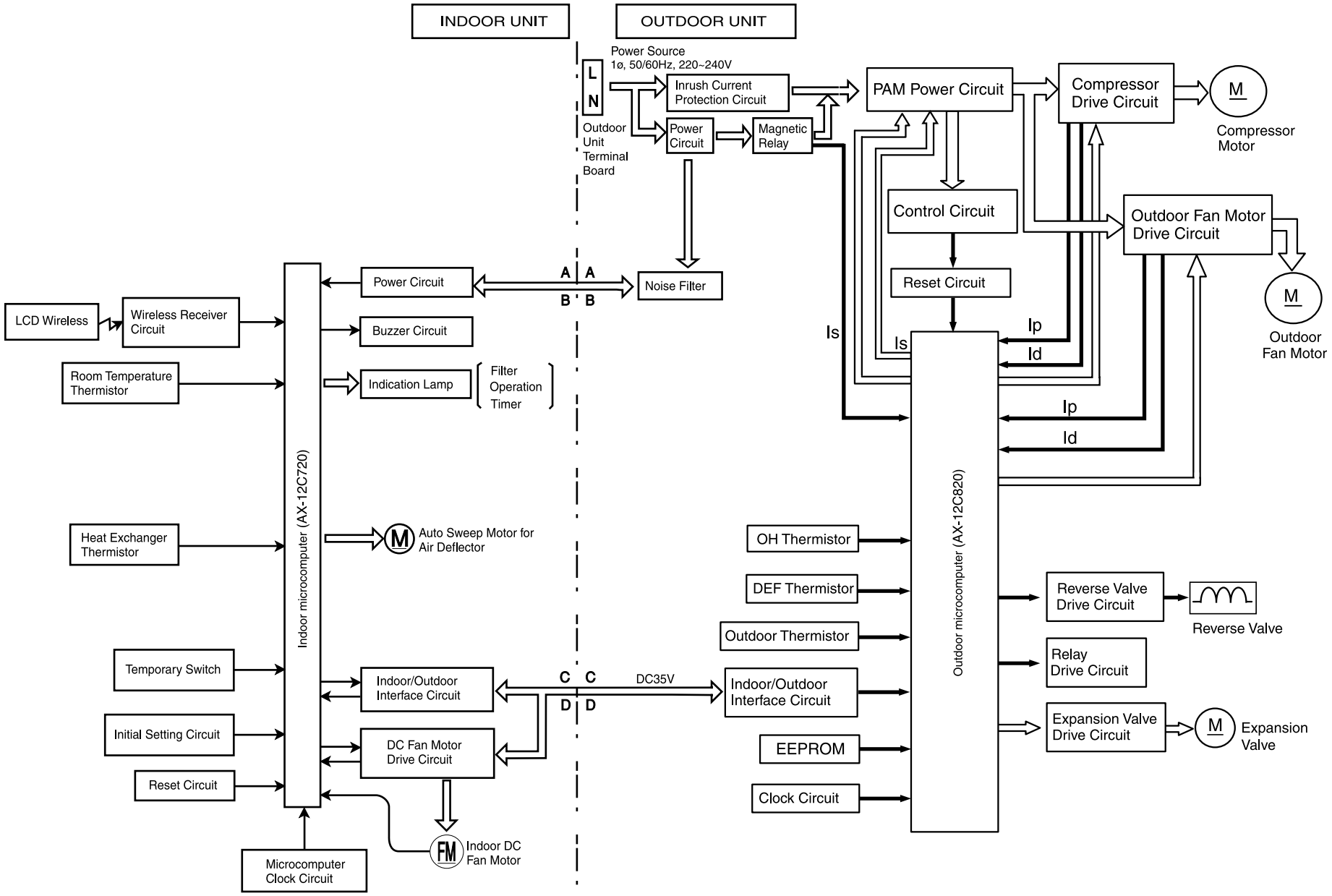


P.W.B. CAPA-BOARD



BLOCK DIAGRAM

MODEL RAK-60PPA/RAC-60WPA



BASIC MODE

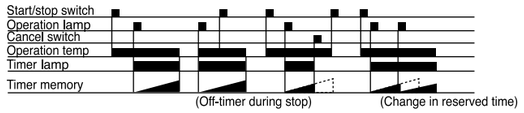
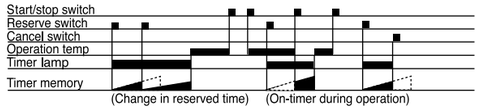
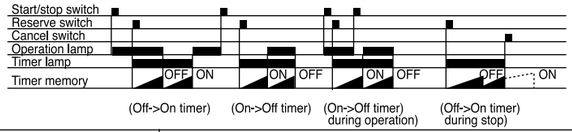
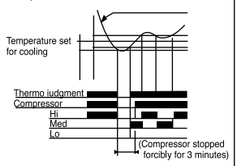
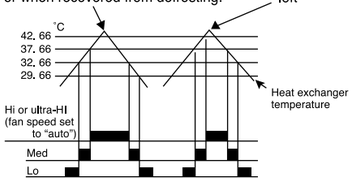
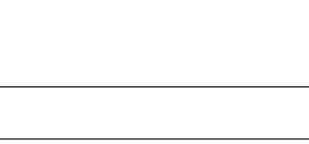
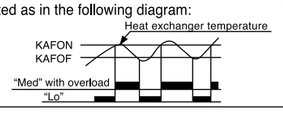
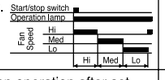
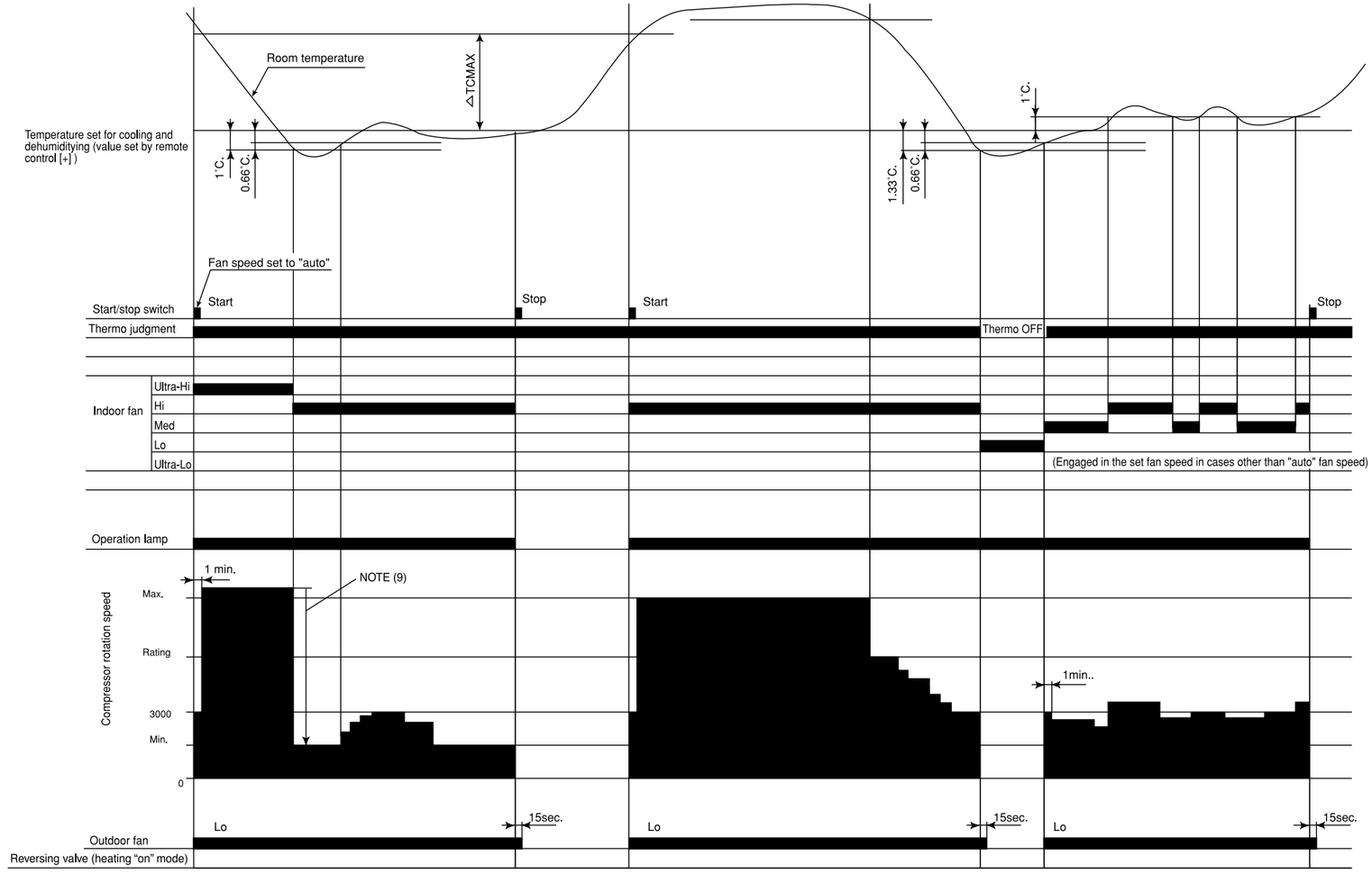
Operation mode		Fan	Cooling	Dehumidifying (dehumidifying operation by the function select button only, not including that engaged by the dehumidify button)	Heating	Auto
Basic operation of start/stop switch						
Timer functions	Off-timer					
	On-timer					
	Off -> On On -> Off timer					
Fan speed mode (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 exchange temperature. Set to “stop” if the room temperature is 25˚C in the “ultra-Lo” mode other than during preheating (cooling is recovered at 18.33˚C). When the compressor is running at maximum speed during hot dash or when recovered from defrosting. In modes other than left 	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
	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 room temperature is 25˚C in the “ultra-Lo” mode other than during preheating (cooling is recovered at 18.33˚C). Set to “ultra-Hi” when the compressor is running at maximum speed during hot dash or when recovered from defrosting.	
	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 room temperature is 25˚C in the “ultra-Lo” mode other than during preseating (cooling is recovered at 18.33˚C).	
	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 room temperature is 25˚C in the “ultra-Lo” mode other than during preseating (cooling is recovered at 18.33˚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 63.	See page 67.	See page 71.	
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 65.	• Same as at left • See page 69.	• Same as at left • See page 73.	• Same as at left. • Performs the sleep operation of each operation mode.

Table 1 Mode data file

	RAK-60PPA
LABEL NAME	**VALUE**
WMAX	5200 min^{-1}
WMAX2	5200 min^{-1}
WSTD	4750 min^{-1}
WBEMAX	3600 min^{-1}
CMAX	5000 min^{-1}
CSTD	4600 min^{-1}
CKYMAX	3900 min^{-1}
CJKMAX	3900 min^{-1}
CBEMAX	2300 min^{-1}
WMIN	1200 min^{-1}
CMIN	1600 min^{-1}
STARTMC	60 Seconds
DWNRATEW	100%
DWNRATEC	100%
SHIFTW	0°C
SHIFTC	1°C
CLMXTP	30.00°C
YNEOF	25.00°C
TEION	2.00°C
TEIOF	9.00°C
SFTDSW	0.66°C
DFTIM1	50 Minutes
DFTIM2	60 Minutes

Basic Cooling Operation



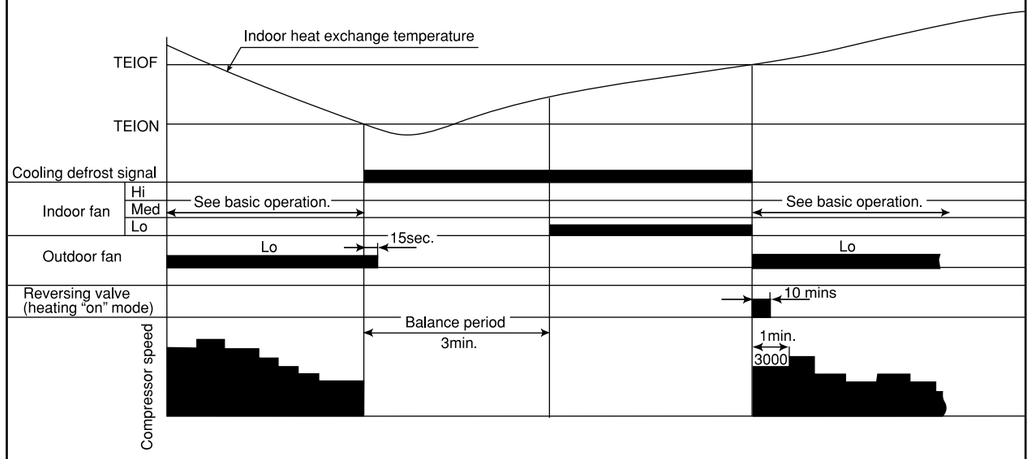
Notes:

(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 (calculated value in Table 2) larger than CMAX.
(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.

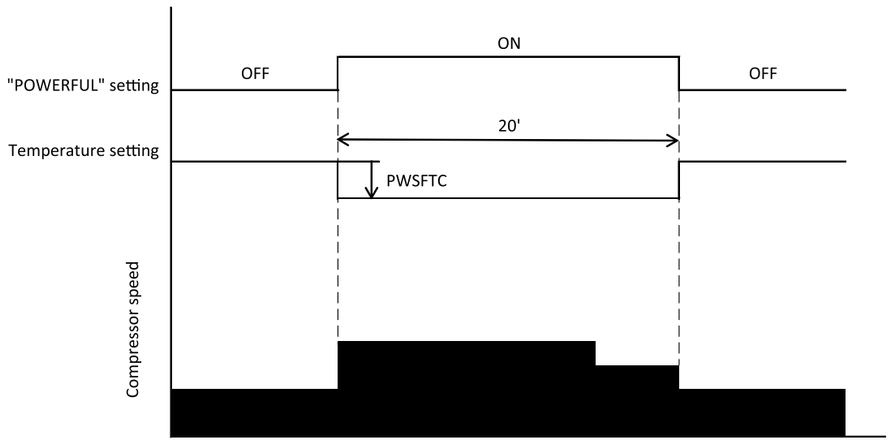
Table 2 ΔTCMAX

Temperature difference	Calculated compressor rpm
1.66	2265 min^{-1}
2	2435 min^{-1}
2.33	2600 min^{-1}
2.66	2765 min^{-1}
3	2935 min^{-1}
3.33	3100 min^{-1}
3.66	3265 min^{-1}
4	3435 min^{-1}
4.33	3600 min^{-1}
4.66	3765 min^{-1}
5	3935 min^{-1}
5.33	4100 min^{-1}
5.66	4265 min^{-1}
6	4435 min^{-1}
6.33	4600 min^{-1}
6.66	4765 min^{-1}
7	4935 min^{-1}
7.33	5100 min^{-1}
7.66	5265 min^{-1}
8	5435 min^{-1}
8.33	5600 min^{-1}
8.66	5765 min^{-1}
9	5935 min^{-1}
9.33	6100 min^{-1}
9.66	6265 min^{-1}
10	6435 min^{-1}
10.33	6600 min^{-1}
10.66	6765 min^{-1}
11	6935 min^{-1}

Cooling Defrost



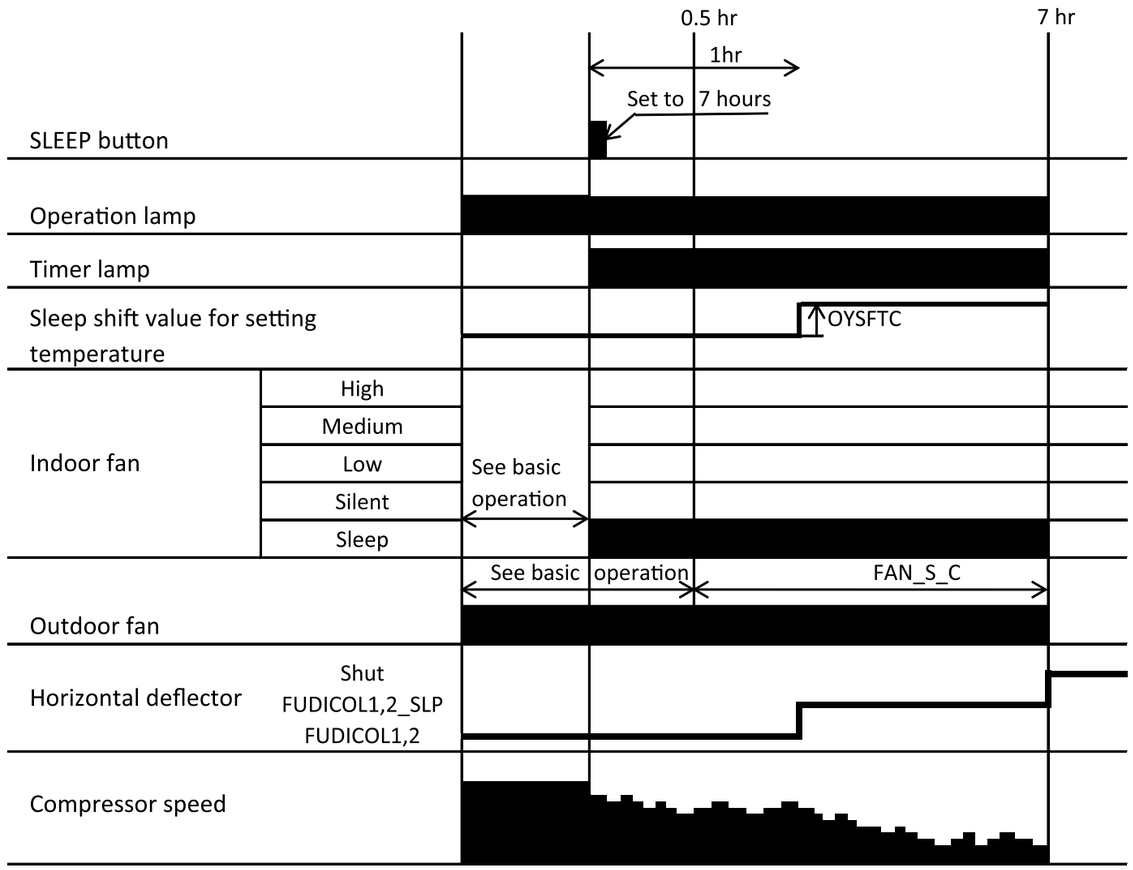
Cooling Powerful Operation



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.

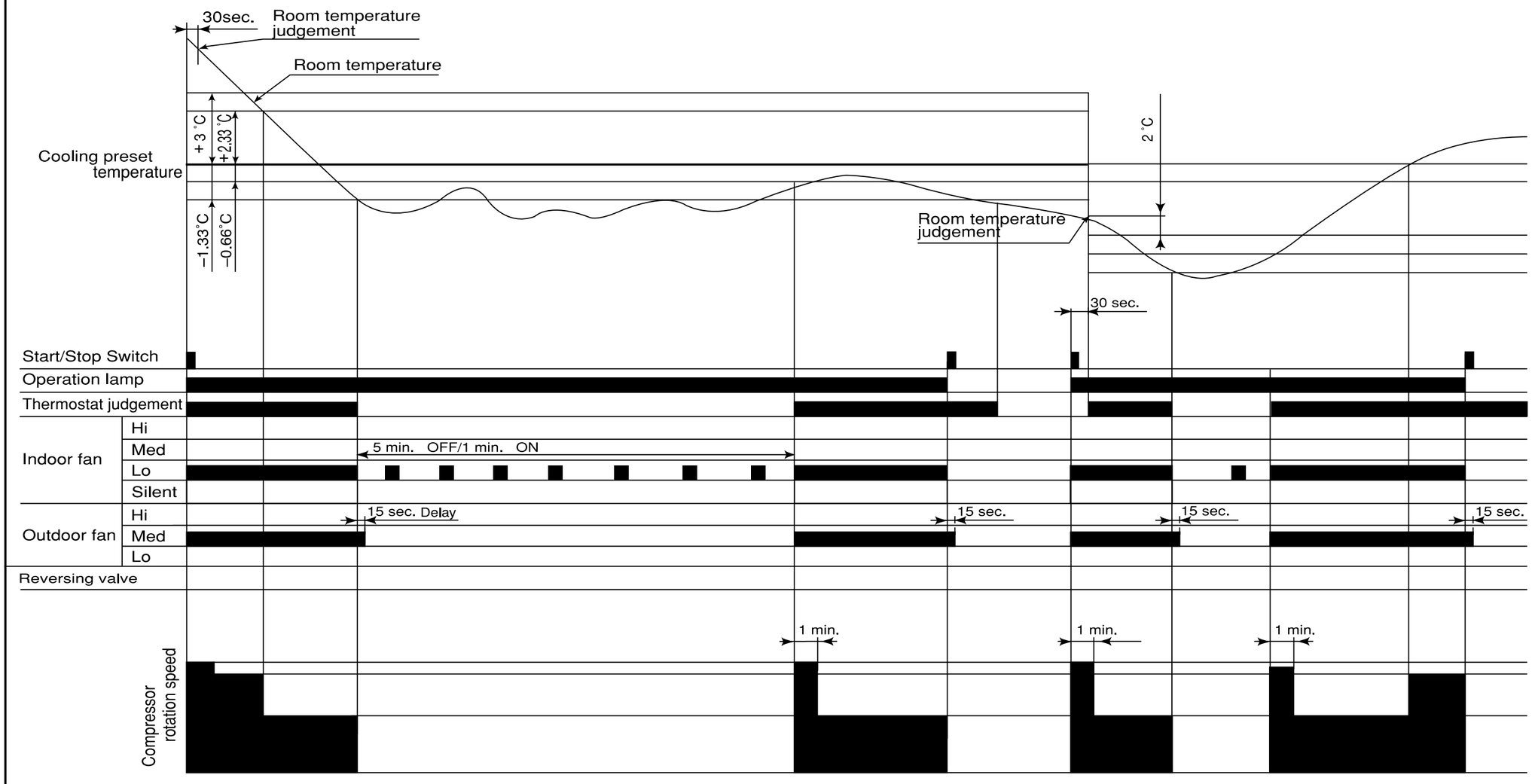
Cooling Sleep Operation



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).

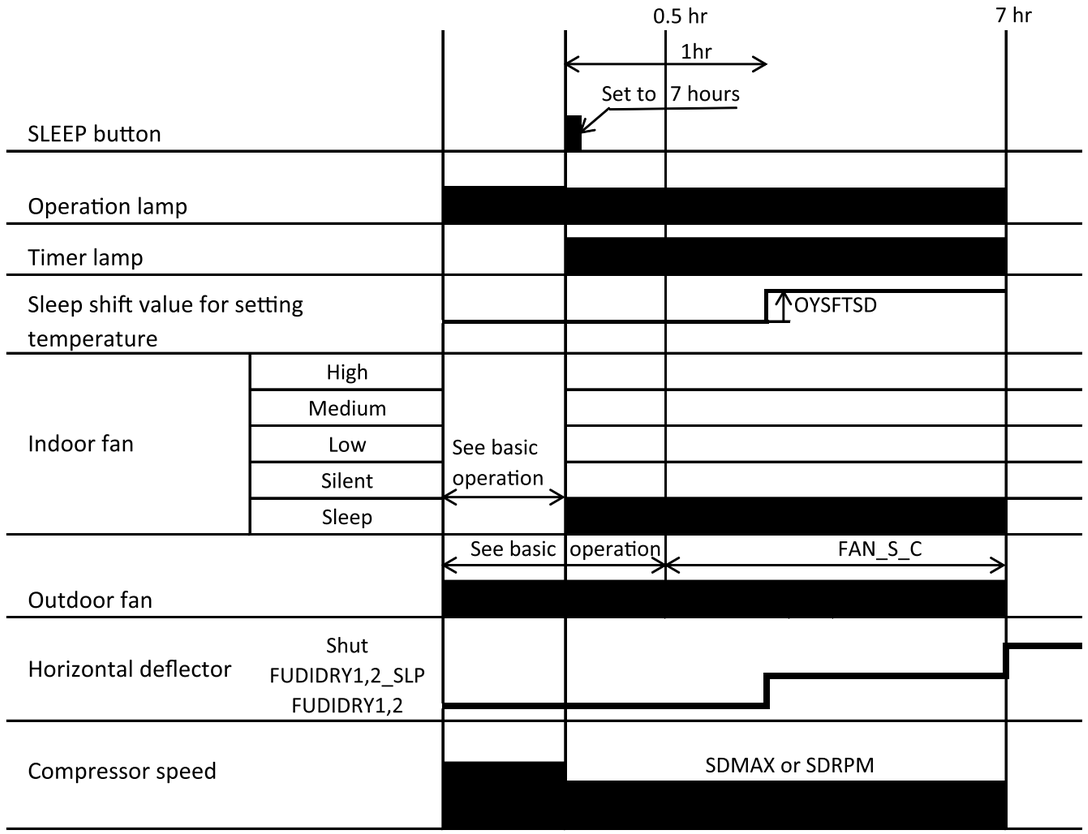
(2) The indoor fan is operated in the “Lo” mode. During thermo OFF indoor fan will be OFF for 5 minutes and ON for 1 minute.

(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.

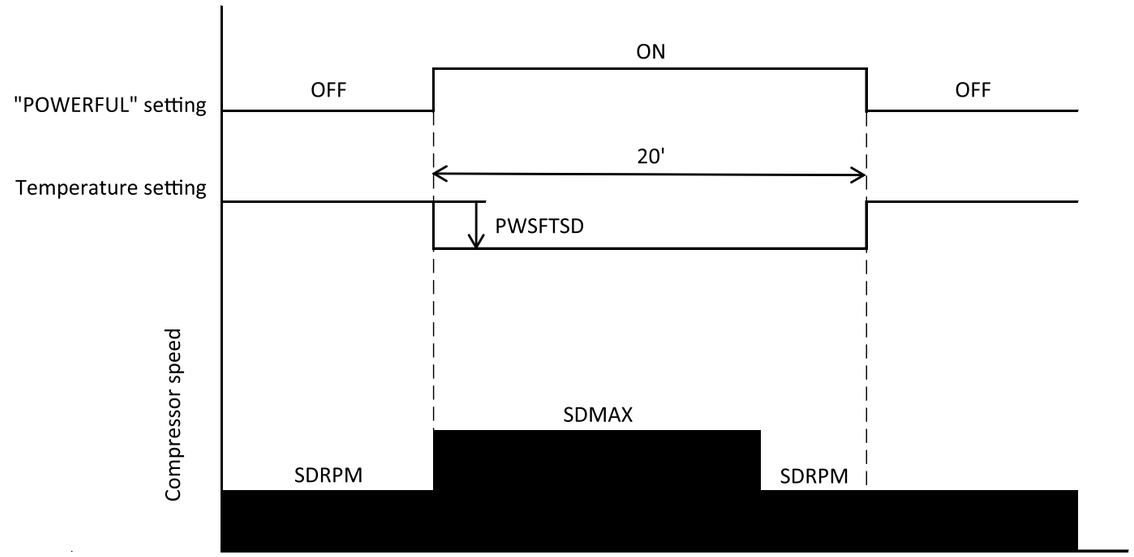
(5) The minimum ON time and OFF time of the compressor are 3 minutes.

Dehumidifying Sleep Operation



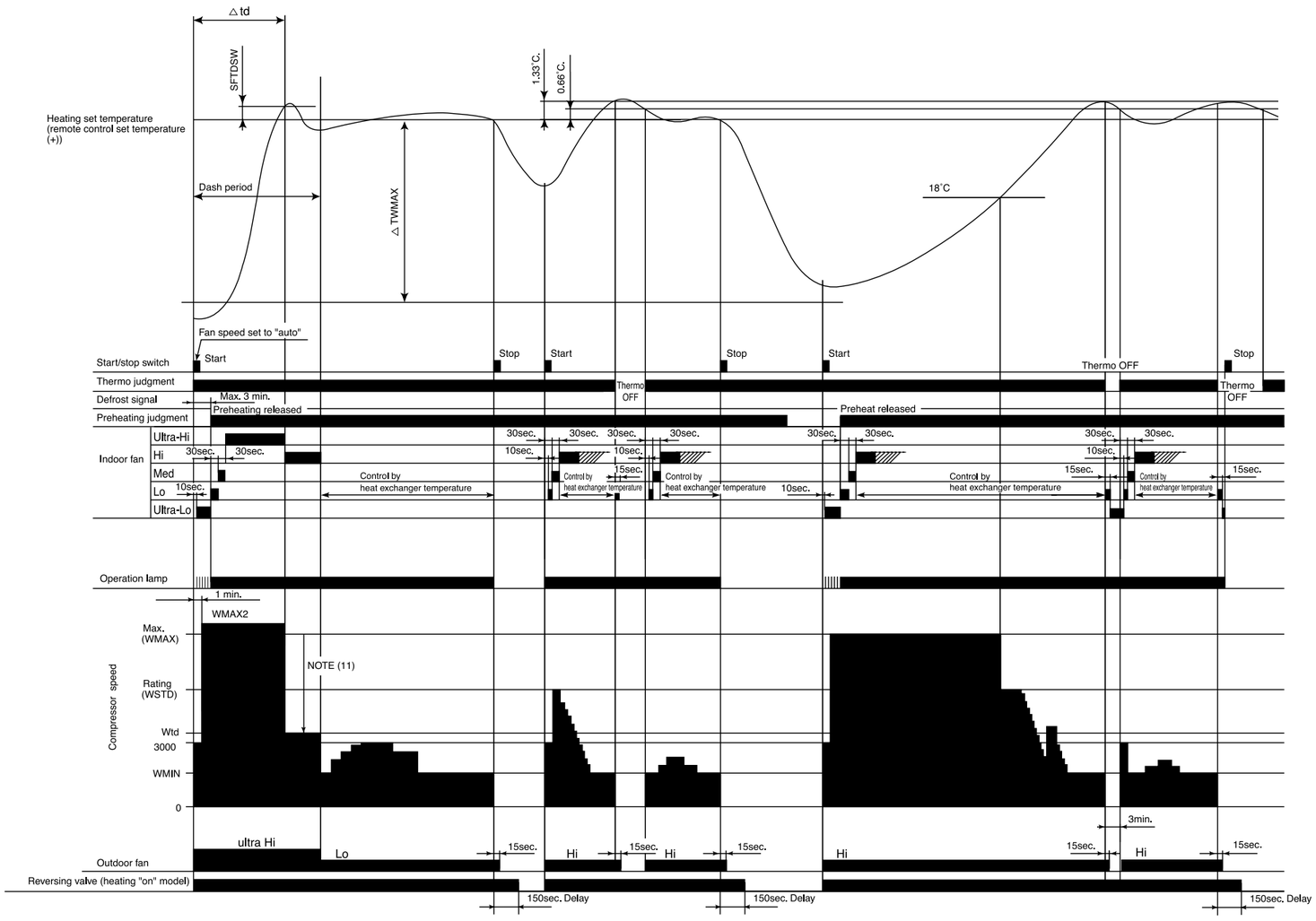
Notes :
(1) The sleep operation starts when the "SLEEP" button is pressed.
(2) When the sleep operation is set, the indoor fan set is "sleep"(FDOY_P).
(3) The indoor fan speed does not change even when the fan speed mode is changed.
(4) If sleep operation is canceled by the cancel button or sleep button, 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 (calculated value in Table 3) 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) +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 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.

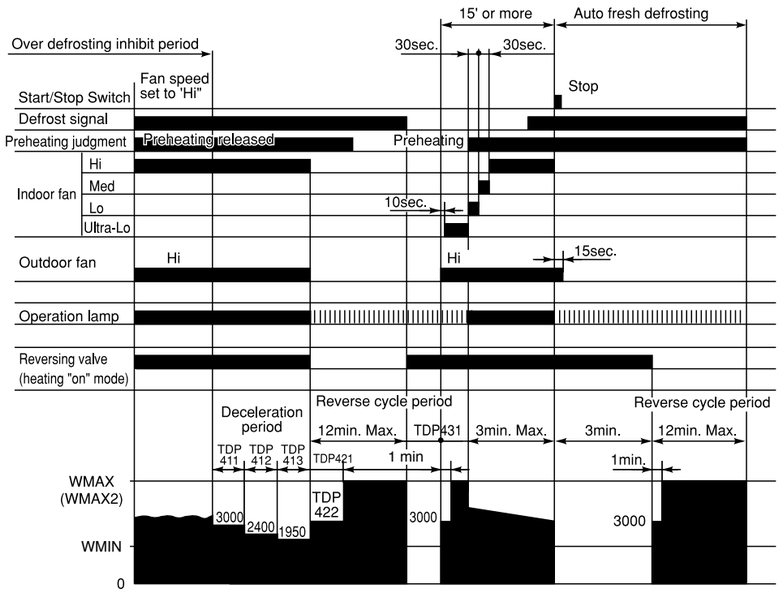
Table 3 ΔTWMAX

Temperature difference	Calculated compressor rpm
1.66	1965 min^{-1}
2	2135 min^{-1}
2.33	2300 min^{-1}
2.66	2465 min^{-1}
3	2635 min^{-1}
3.33	2800 min^{-1}
3.66	2965 min^{-1}
4	3135 min^{-1}
4.33	3300 min^{-1}
4.66	3465 min^{-1}
5	3635 min^{-1}
5.33	3800 min^{-1}
5.66	3965 min^{-1}
6	4135 min^{-1}
6.33	4300 min^{-1}
6.66	4465 min^{-1}
7	4635 min^{-1}
7.33	4800 min^{-1}
7.66	4965 min^{-1}
8	5135 min^{-1}
8.33	5300 min^{-1}
8.66	5465 min^{-1}
9	5635 min^{-1}
9.33	5800 min^{-1}
9.66	5965 min^{-1}
10	6135 min^{-1}
10.33	6300 min^{-1}
10.66	6465 min^{-1}
11	6635 min^{-1}

Notes:

1. See the data in Table 1 on page 47 for each constant in capital letters in the diagrams.

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.

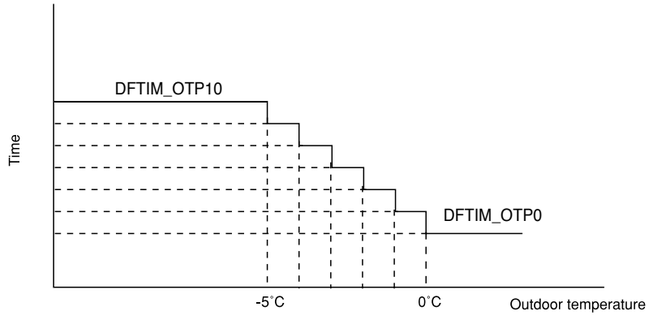
(2) If the difference between the room and outdoor temperature is large when defrosting is finished, the maximum compressor speed (WMAX) or (WMAX2) can be continued for 120 minutes maximum.

(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



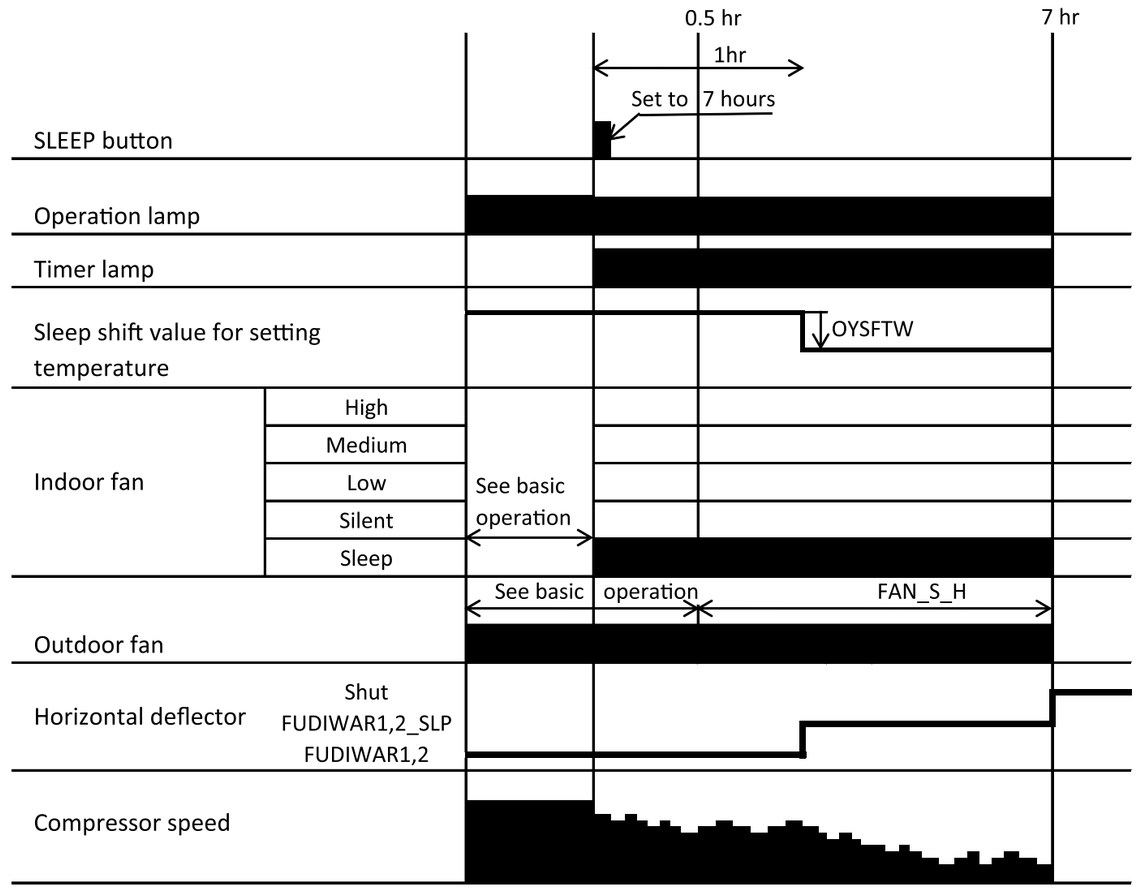
Notes:

(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.

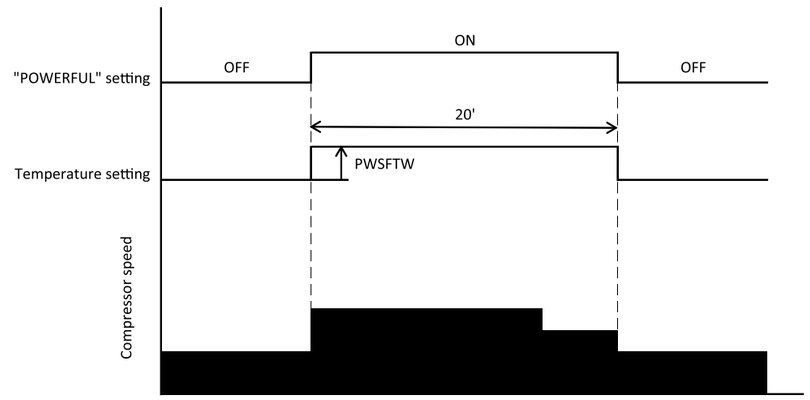
(2) When the sleep operation is set, the maximm compressor speed is limited to WSZMAX, and the indoor fan set is "sleep"(FWSOY_P).

(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.

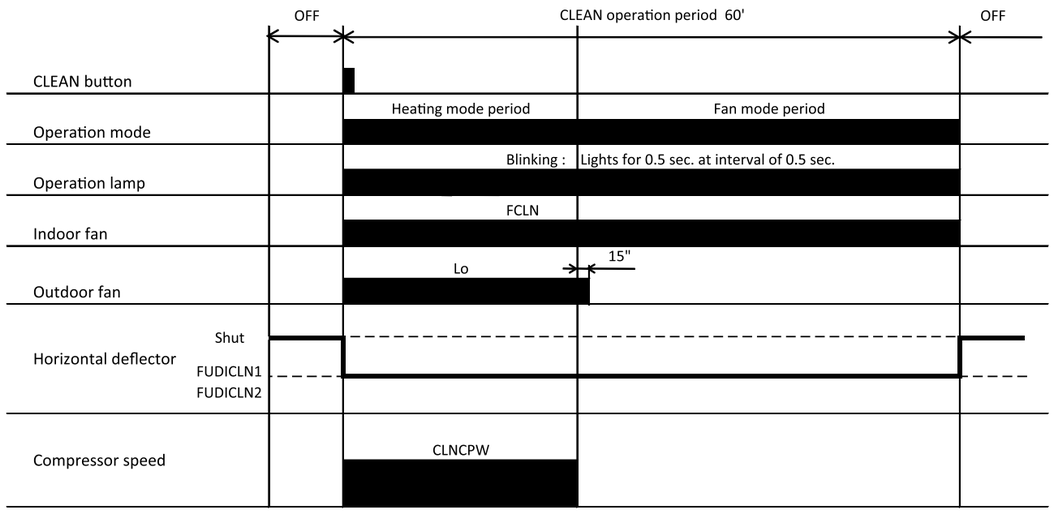
Heating Powerful Operation



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.

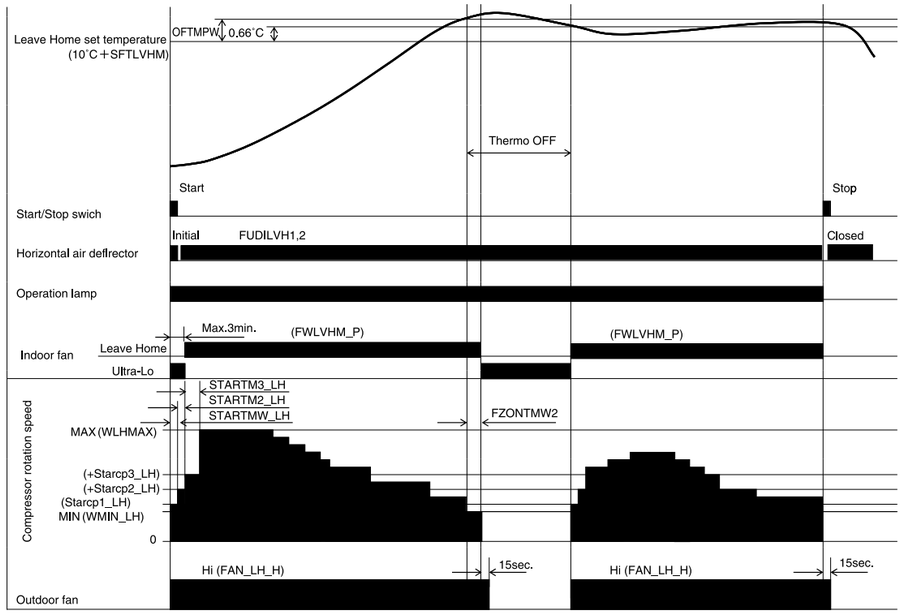
Clean Operation



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.

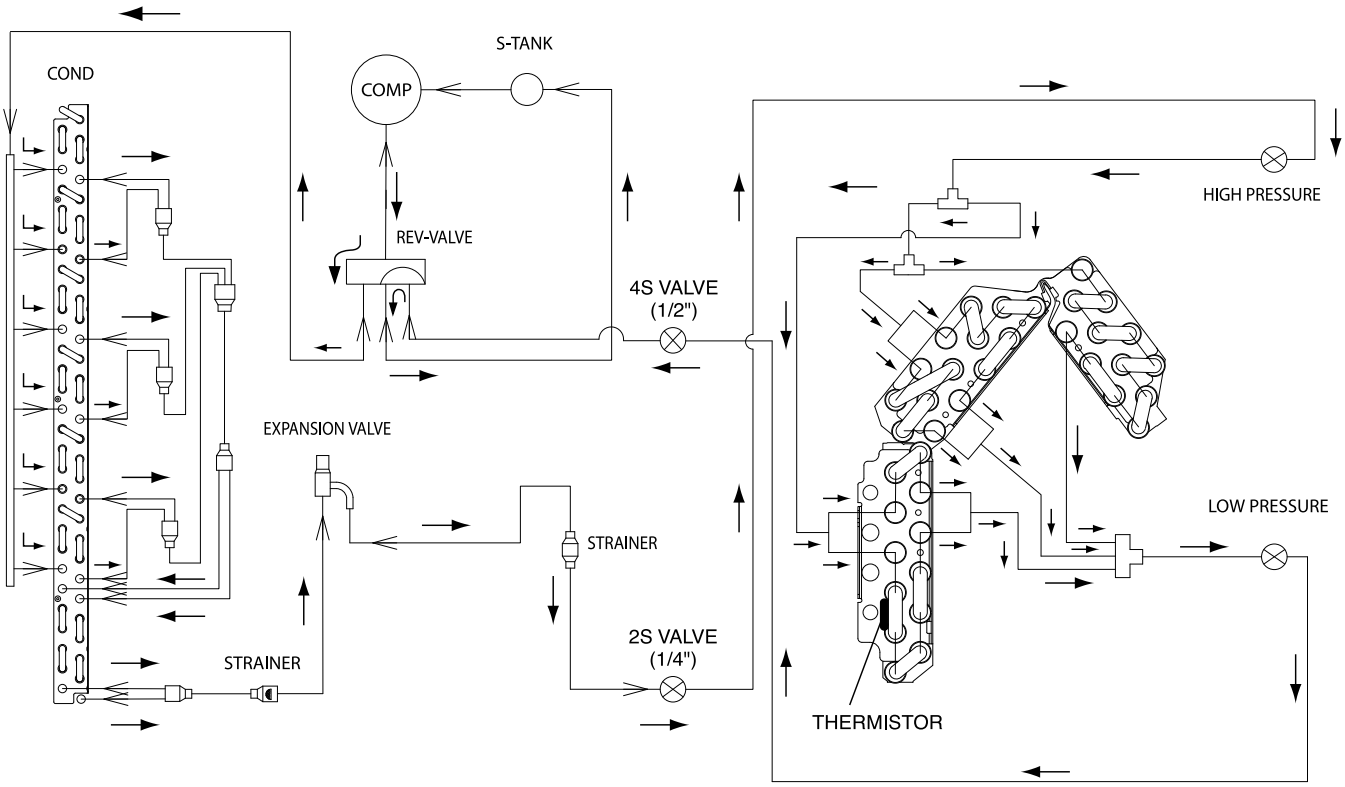
REFRIGERATING CYCLE DIAGRAM

MODEL RAK-60PPA/RAC-60WPA

COOLING, DEHUMIDIFYING, DEFROSTING

OUTDOOR UNIT

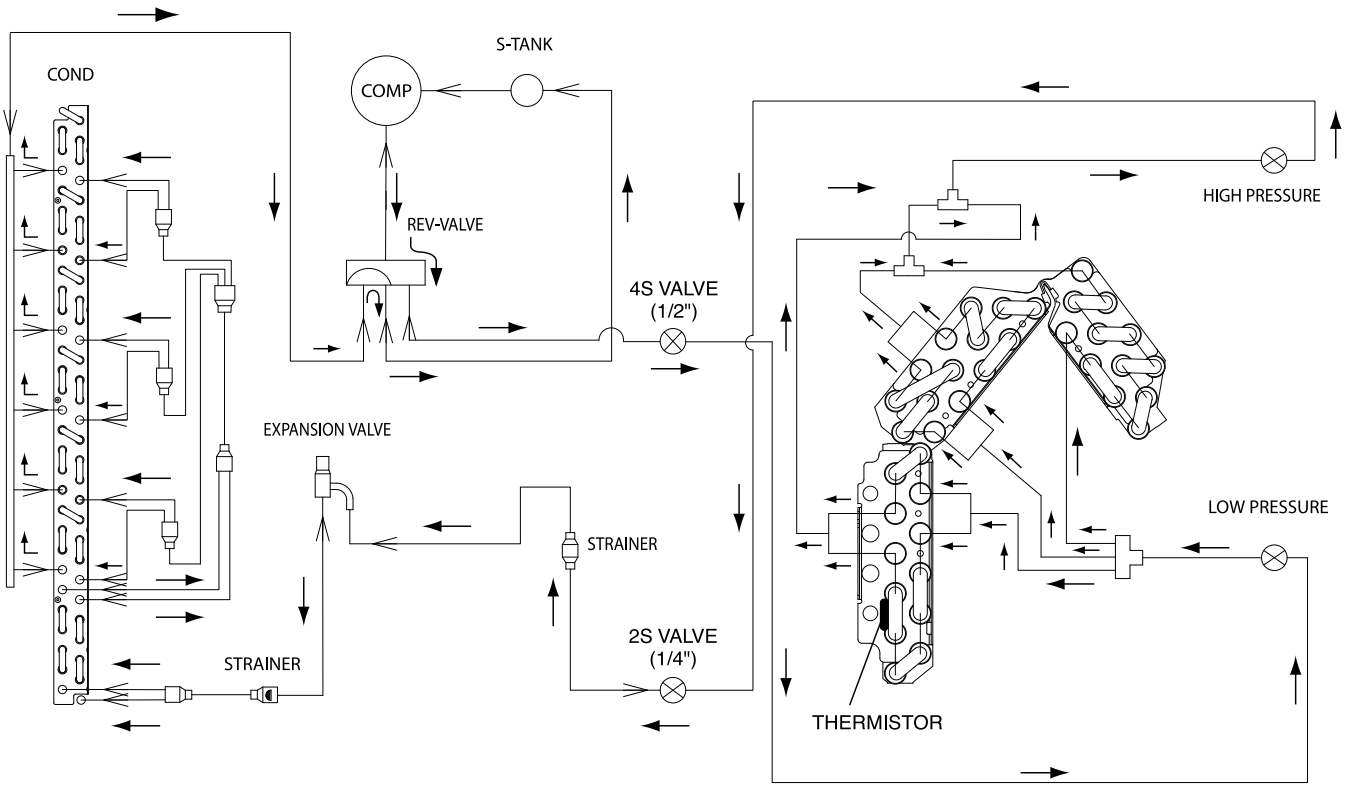
INDOOR UNIT



HEATING

OUTDOOR UNIT

INDOOR UNIT



AUTO SWING FUNCTION

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 HEAT 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 RAK-60PPA

1. Reset Circuit

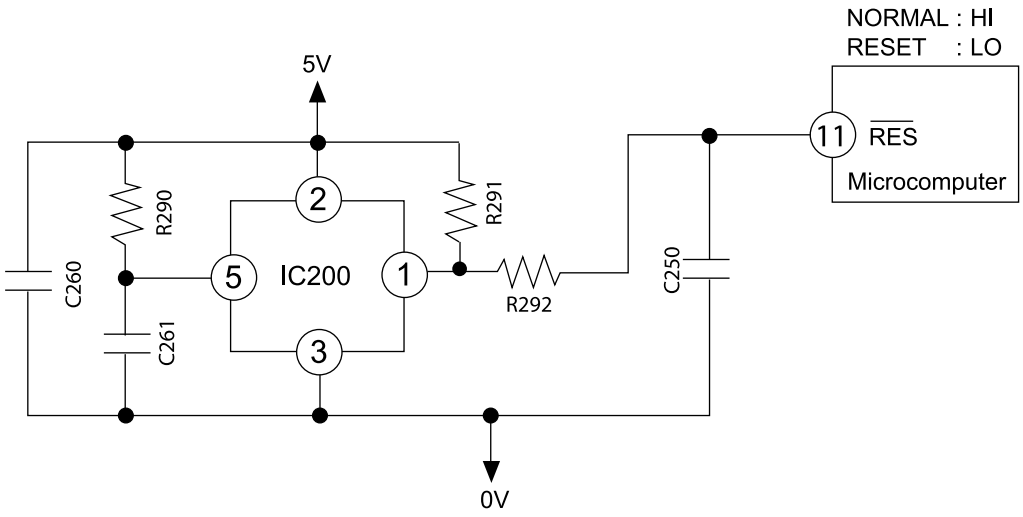


Fig. 1-1

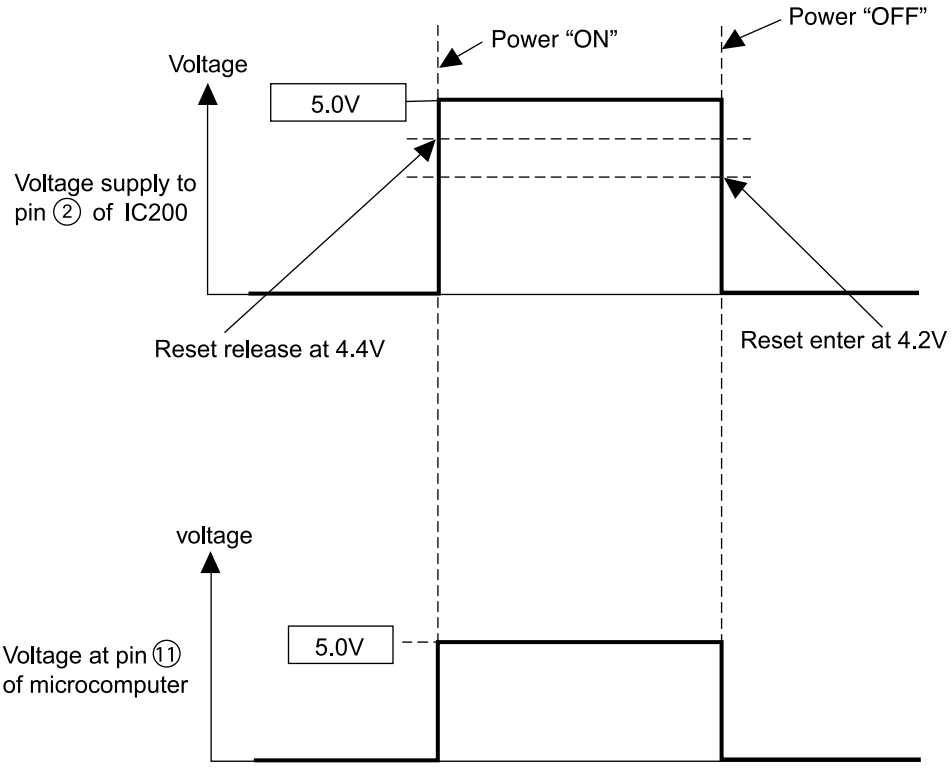
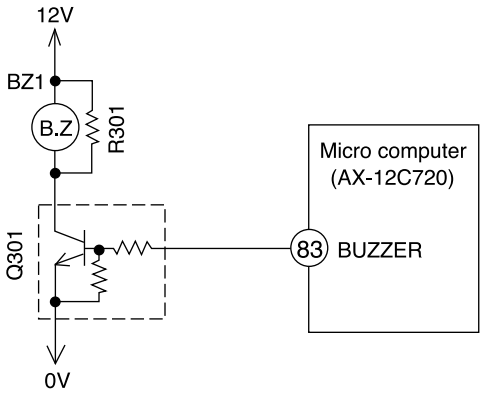


Fig. 1-2

- The reset circuit initializes the microcomputer program when power is ON or OFF.
- Low voltage at pin ⑪ resets the microcomputer and Hi activates the microcomputer.
- When power "ON" 5V voltage rises and reaches 4.4V, pin ① of IC200 is set to "Hi". At this time the microcomputer starts operation.
- When power "OFF" voltage drops and reaches 4.2V, pin ① of IC200 is set to "Low". This will RESET the microcomputer.

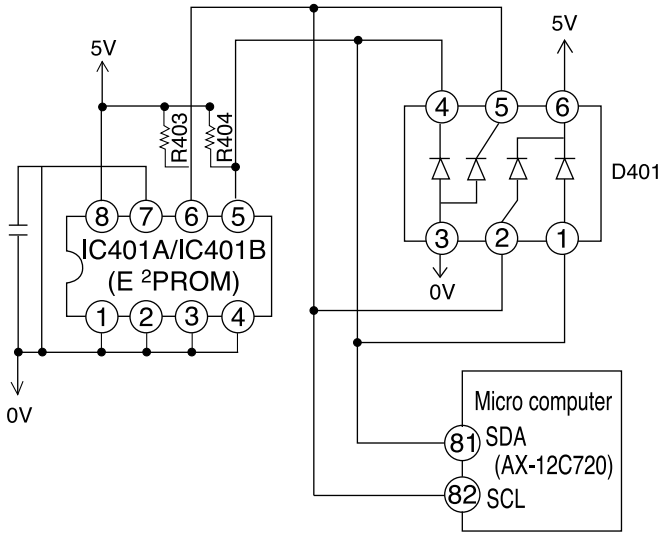
2. Buzzer Circuit



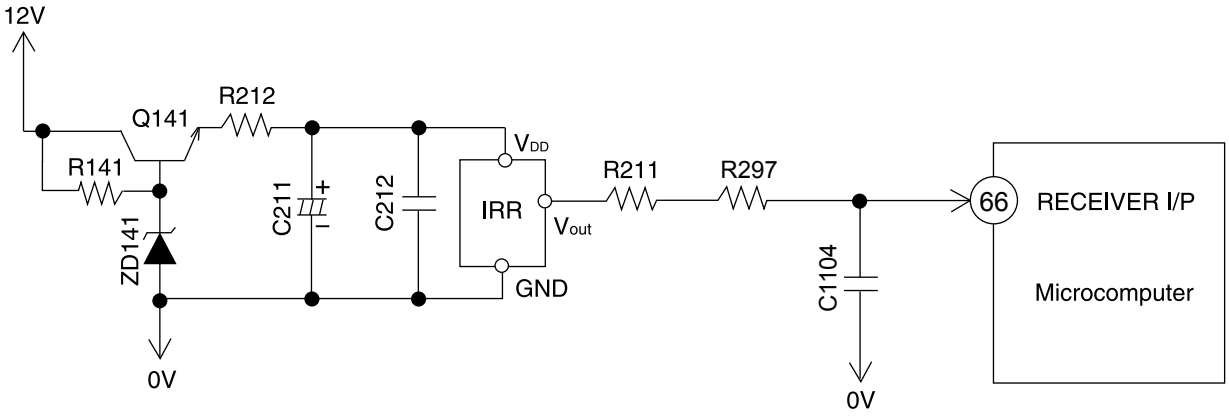
When the buzzer is to be activated, buzzer output pin ⑧③ of the micro computer alternates between ON and OFF repeatedly at 4kHz and Q301 is turned ON/OFF accordingly. A 4kHz voltage is applied to the buzzer and the diaphragm of the buzzer vibrates to output 4kHz sound.

3. Initial setting (IC401)

The pre-heating operation start value, ratings of the compressor, maximum rotation speed, etc. are preset in the micro computer.



4. Receiver Circuit



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

5. Auto Sweep Motor Circuit

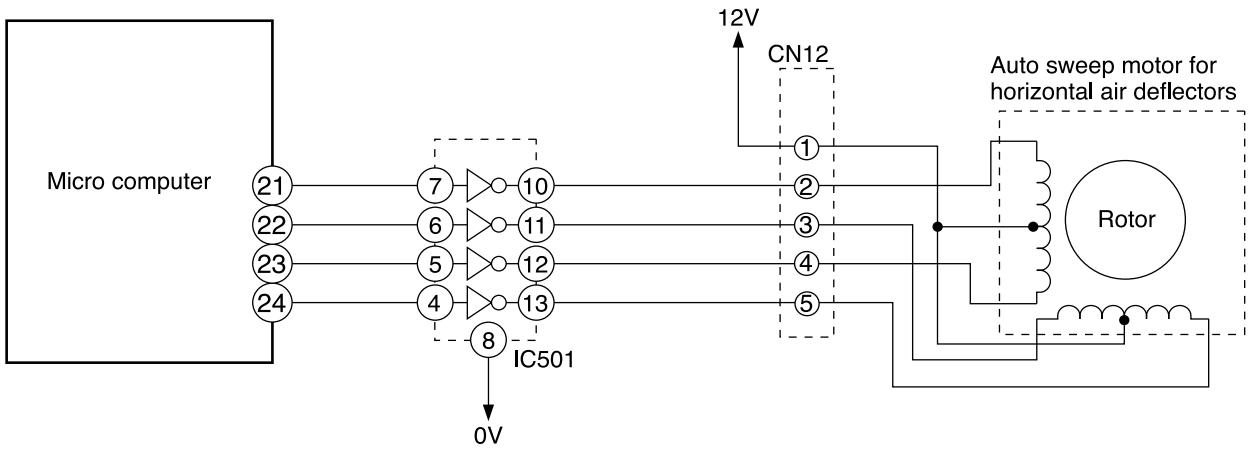


Fig. 5-1 Auto Sweep Motor Circuit (Horizontal air deflectors)

- Fig. 5-1 shows the Auto sweep motor drive circuit; the signals shown in Fig. 5-2 are output from pins ⑮–⑱ of the micro computer.

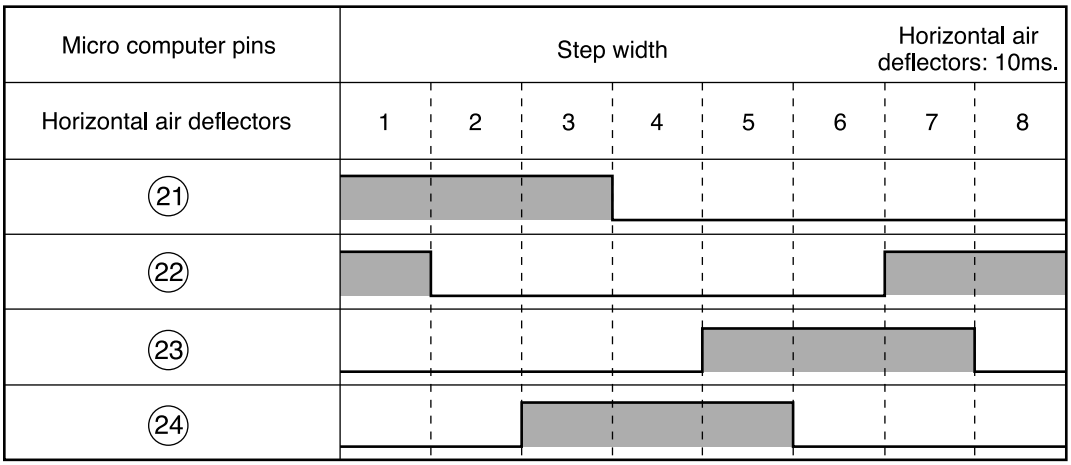


Fig. 5-2 Micro computer Output Signals

- As the micro computer's outputs change as shown in Fig. 5-2, the core of the auto sweep motor is excited to turn the rotor. Table 5-1 shows the rotation angle of horizontal air deflectors.

Table 5-1 Auto sweep Motor Rotation

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

6. Room Temperature Thermistor Circuit

- Fig. 6-1 shows the room temperature thermistor circuit.

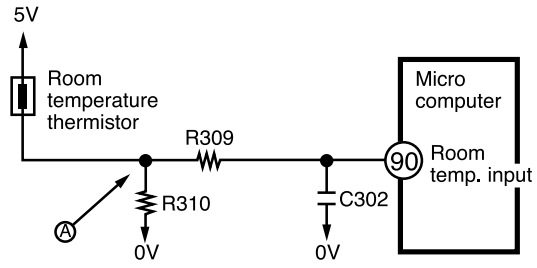


Fig. 6-1

- The voltage at Ⓐ depends on the room temperature as shown in Fig. 6-2.

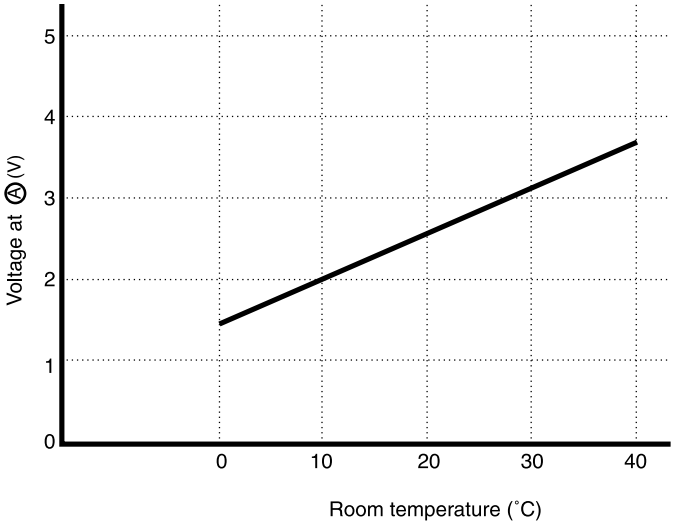


Fig. 6-2

7. Heat exchanger temperature thermistor circuit

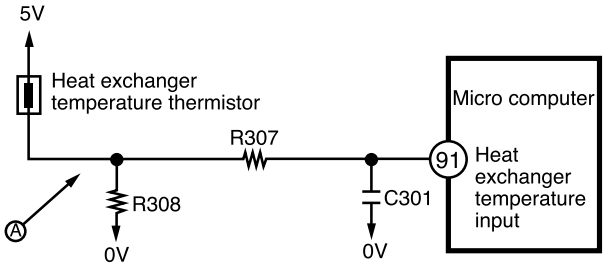


Fig. 7-1

- The circuit detects the indoor heat exchanger temperature and controls the following.

  (1) Low-temperature defrosting during cooling and dehumidifying operation.

  The voltage at Ⓐ depends on the heat exchanger temperature as shown in Fig. 7-2.

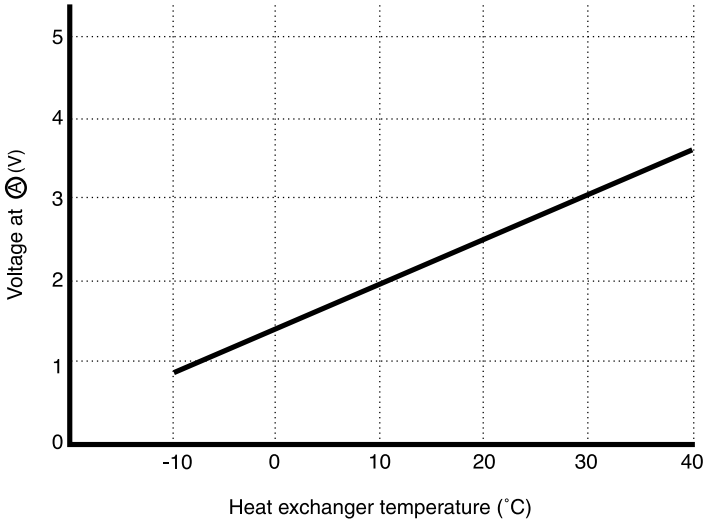


Fig. 7-2

8. Temporary Switch

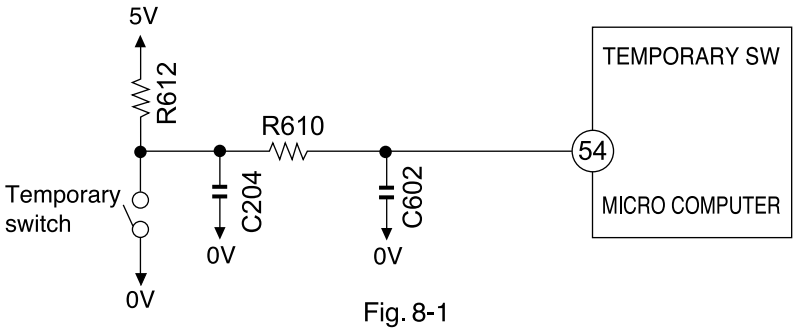


Fig. 8-1

- The temporary switch is used to operate the air conditioner temporarily when the wireless remote control is lost or faulty.
- The air conditioner operates in the previous mode at the previously set temperature. However, when the power switch is set to OFF, it starts automatic operation.

9. Indoor Fan Motor Feedback Circuit

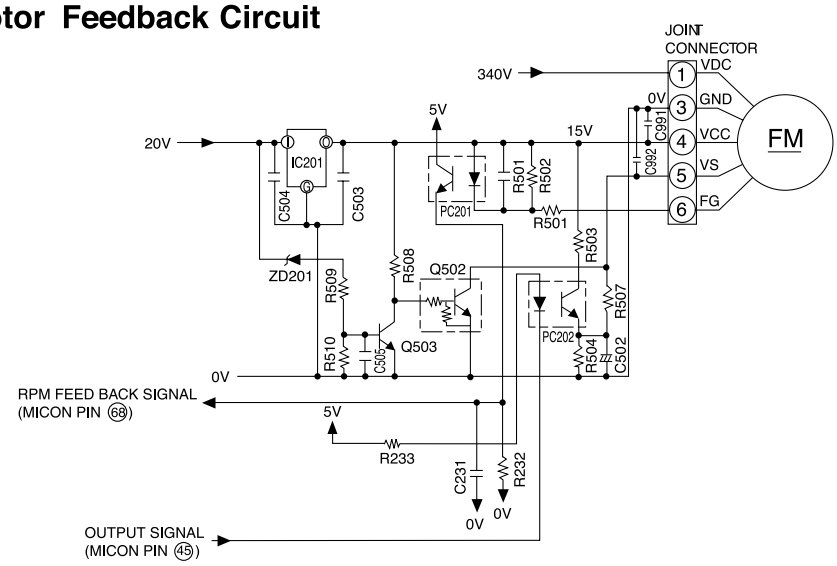


Fig. 9-1

- <Exp. of circuit wave>

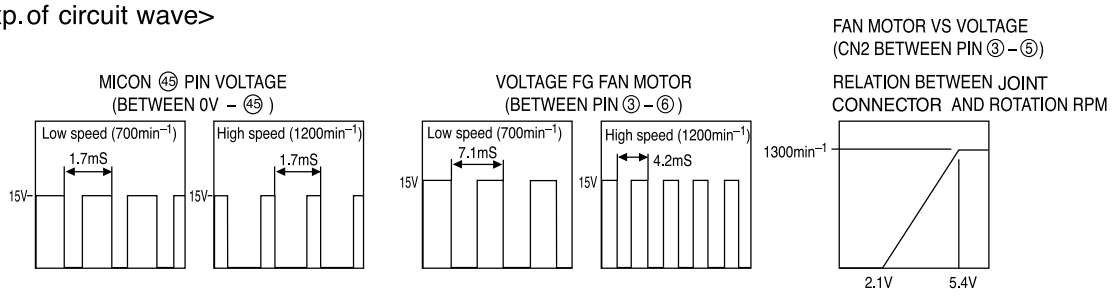


Fig. 9-2

- Fan motor will receive signal thru Joint Connector with VDC (Motor Drive Voltage), VCC (Motor Controller Power Supply), VSC (RPM Instruction) motor WCC return the FG sinal under frequency RPM.
- The circuit produces fan motor drive from 340V DC supplied from the indoor unit and controls the fan motor speed.

⚠ CAUTION 1

Indoor fan motor circuit will be connected with primary power source line and please take care of the electrical shock.

⚠ CAUTION 2

Pleasedo not disconnect the fan motor connector during running due to the high voltage supply, it will cause the damage at fan motor and PWB.

10. Dip-switch

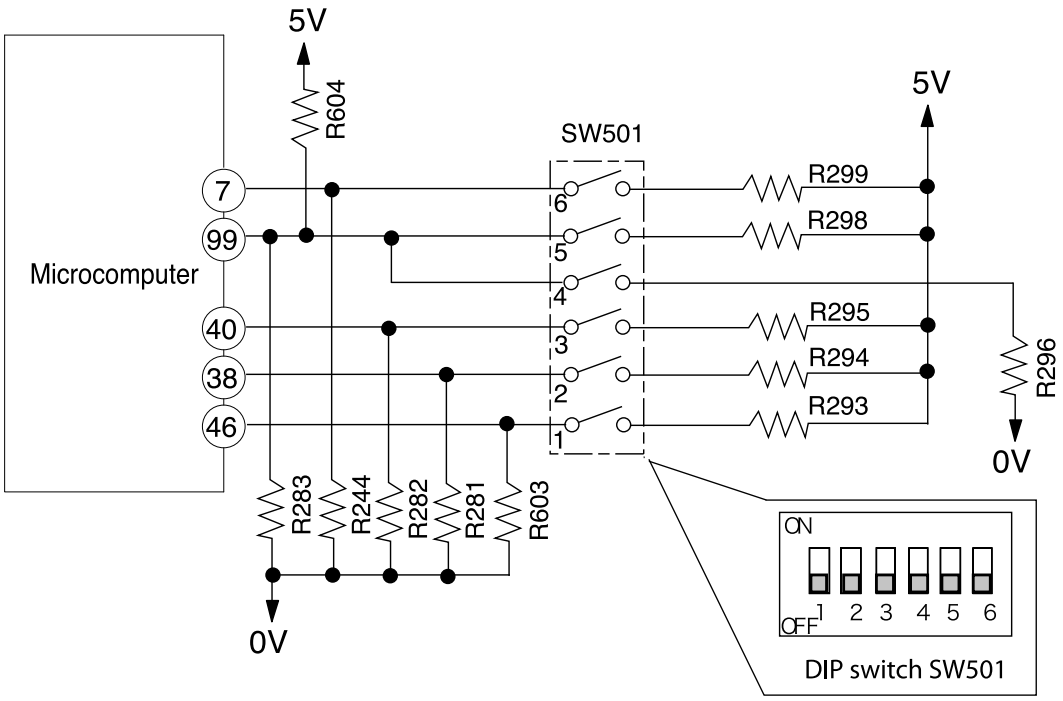


Fig. 10-1 Dip switch Circuit

- Fig. 10-1 shows the dip switch circuit; the table shown in Fig. 10-2 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. 10-2 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 113.

DESCRIPTION OF MAIN CIRCUIT OPERATION

1. Power Circuit

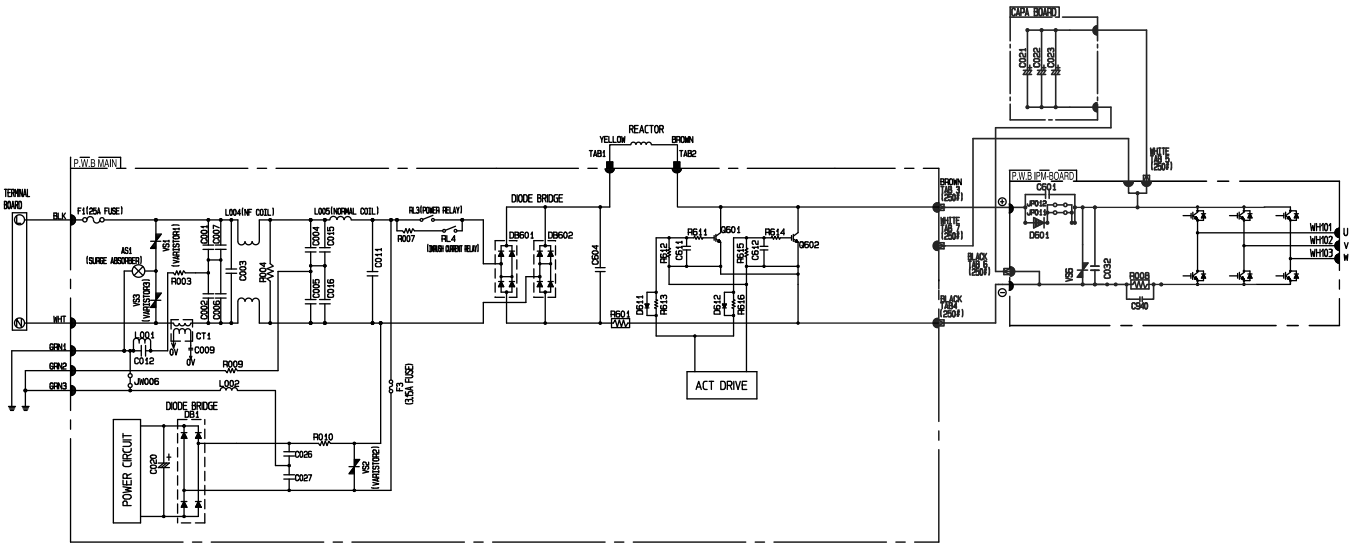


Fig 1-1

※ This circuit full-wave rectifies 220 - 240 VAC applied between terminals L and N and boosts it to a required voltage with the IPM to create a DC voltage.

The voltage become 320-360V when the compressor is operated.

※ Importance component

（1） Intelligence Power Module (IPM)

A module that constitute by an inverter part.

（2） Diode Stack（DB1, DB601, DB602）

These rectify the 220 - 240 VAC from terminal L and N to a DC power supply.

<Reference>

※ In case of Intelligence Power Module malfunction or connection failure immediately after compressor starts, its may stop due to error of [abnormal low speed], [switching failure],[Ip stop] and others.

<Reference>

※ If diode stack (DB601,DB602) are faulty, DC voltage may not be generated and the compressor may not operate at all. Also be aware that the 3.15A fuse might have blown.

(3) Smoothing capacitors (C021～C024, 400μF, 450V)

This smoothes (averages) the voltage rectified by the diode stack.

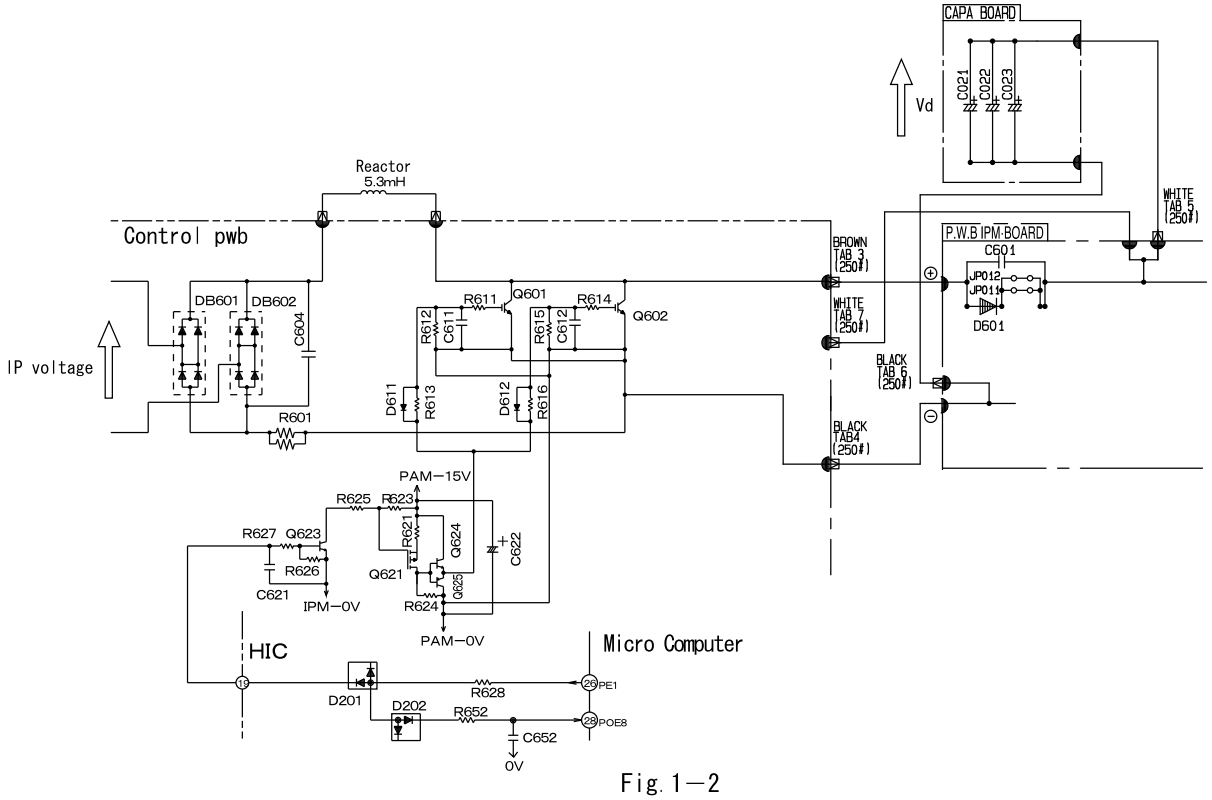


Fig.1−2

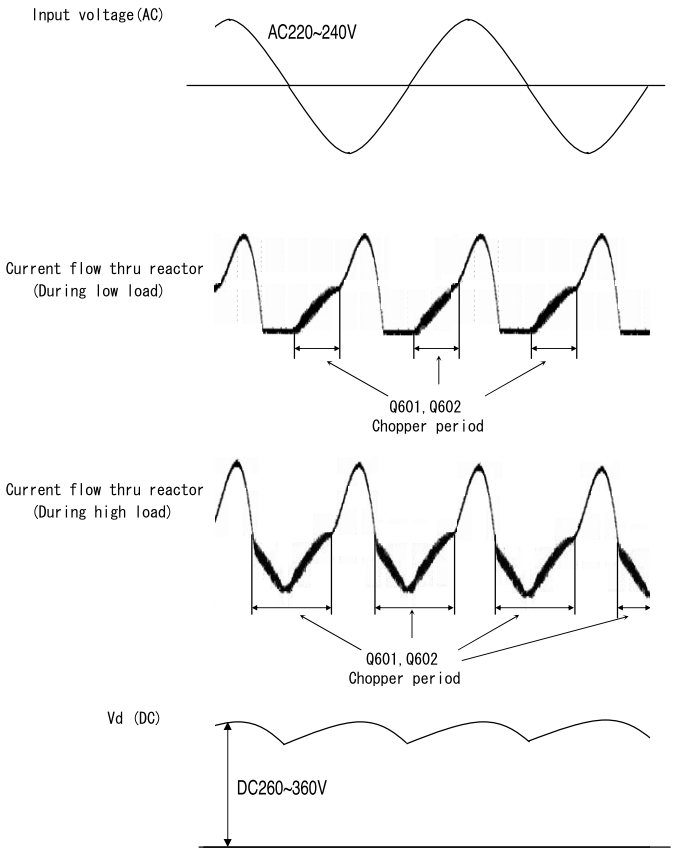


図1−3

(4) IGBT to improve efficiency (Q601,Q602)

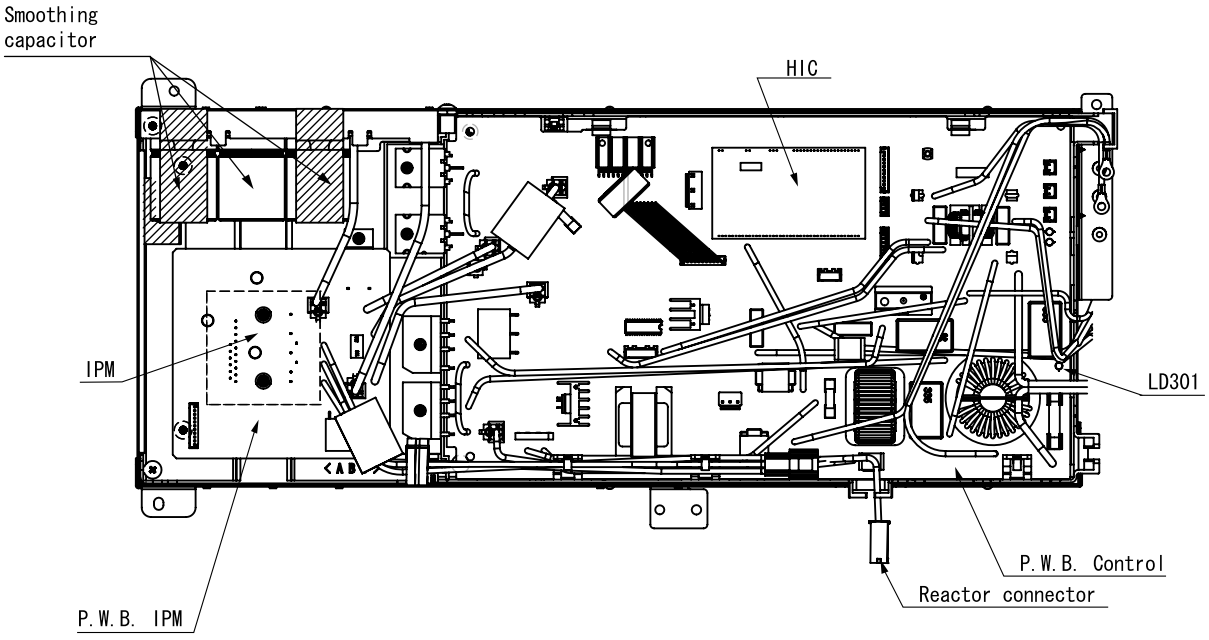
It will improve the efficiency during compressor load become heavy when current flow thru the chopper period of Q601,Q602.

(5) C001 ~ C007, C015, C016, C026, C027, L004, L005

These absorb electrical noise generated during operation of compressor and also absorb external noise entering from power line to protect electronic parts.

(6) Surge Absorber, Varistor1, 2, 3

These absorbs external power surge.



※Be careful to avoid an electric shock as a high voltage is generated. Also take care not to cause a short-circuit through incorrect connection of test equipment terminals. The circuit board can be damage.

2. PWB for power circuit

Voltage specification of power circuit as shown in below table.

〈Checking point〉

Output	Spec	Main load	Measuring point	Example of possible failure mode.
5V O/P	$5^{\pm 0.4}$V	Micon, Thermistor	Tester⊕ : J19 (5V) Tester⊖ : J16 (0V)	Outdoor not operate, no blinking indication
12V O/P	$12^{\pm 1}$V	Micon, IC2, 3, 4 Relay circuit	Tester⊕ : L104(12V) Tester⊖ : J16 (0V)	Outdoor not operate, no blinking indication
16V O/P	$15.5^{\pm 1.5}$V	IPM for Comp IPM for DC fan	Tester⊕ : L103(16V) Tester⊖ : J16 (0V)	Stop : LD301 3, 4 or 12 times blinking
PAM-15V O/P	$15^{\pm 1.55}$V	ACT circuit	Tester⊕ : J31 (PAM-15V) Tester⊖ : J16 (0V)	Stop : LD301 14 times blinking

※ Power circuit for pwb can consider normal if the result is satisfied with above specification.

3. Reversing valve control circuit

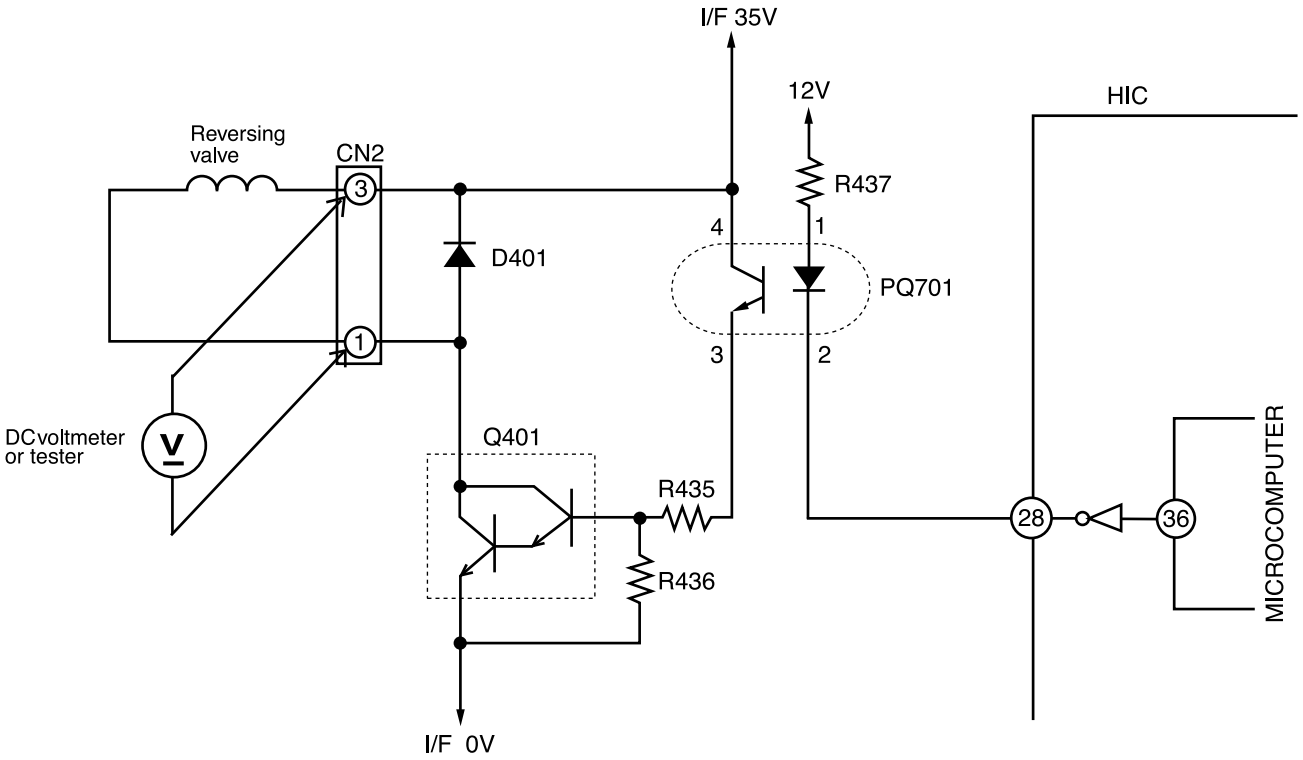


Fig. 3 – 1

- Reversing valve control circuit can switch reversing valve ON/OFF according to instruction from indoor microcomputer depending on the operation condition shows in Table 3-1.

  Voltage at each point in each operation condition is approximately as shown below when measured by tester. (When voltage between pin 1 and 3 CN2 is measured)

Table 3-1

Operation condition		Voltage between pin 1 and 3 CN2
Cooling	General operation of Cooling	About 0V
Heating	In normal heating operation	About 35V
	MAX. rotation speed instructed by indoor microcomputer after defrost is completed	About 35V
	Defrosting	About 0V
Dehumidifying	Sensor dry	About 0V

4. Temperature Detection Circuit

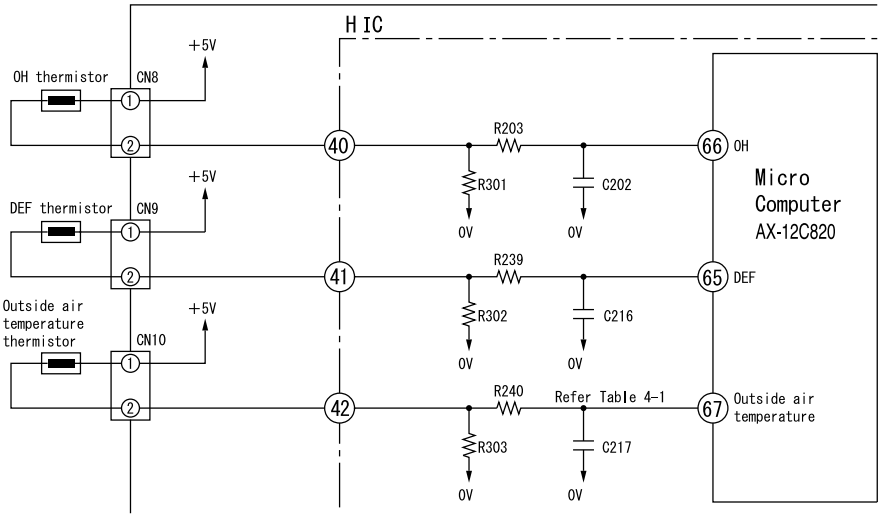


Fig.4−1

* OH thermistor circuit detect the temperature at the surface of compressor head, DEF thermistor circuit detect the defrosting operation temperature.
* A thermistor is a negative resistor element which has characteristics that the higher(lower) the temperature, the lower(higher) the resistance.
* When the compressor is heated, the resistance of the OH thermistor becomes low and ⊕5V is divided by OH thermistor and R301 and the voltage at pin 66 of microcomputer.
* Compare the voltage at microcomputer pin 66 and setting value stored inside. If the value exceed the set value, microcomputer will judge that the compressor is overheated and stop the operation.
* When frost is formed on the outdoor heat exchanger, the temperature at the exchanger drops abruptly. Therefore the resistance of the DEF thermistor becomes high and the voltage at pin 65 of micro computer drops. If this voltage becomes lower than the set value stored inside, microcomputer will enter the defrost control.
* During defrost operation, the microcomputer will transfer the defrosting condition command to indoor unit via SDO pin of interface of IF transmission output.
* The microcomputer read the outdoor temperature by Outside Air thermistor and transfer it to the indoor unit, thus controlling the compressor rotation speed according to the set value in the EEPROM of indoor unit and switching the operation mode (outdoor fan on/off etc.) to DRY mode.
  Below table show the typical values of outdoor temperature in relation to the voltage.

Table 4−1

Outside Air Temperature (℃)	−10	0	10	20	30	40
Voltage at both side of R303 (V)	1.19	1.69	2.23	2.75	3.22	3.62

<Reference>

When the thermistor is open,open condition or disconnect, microcomputer pin 65～67 are approx.0V;

When thermistor is shorted, they are approx.5V and LD301 will blink 7 times.

However, an error is detected when only the OH thermistor is shorted and will enter blinking mode after 12 minutes start the compressor operation.

5. Electric expansion valve circuit

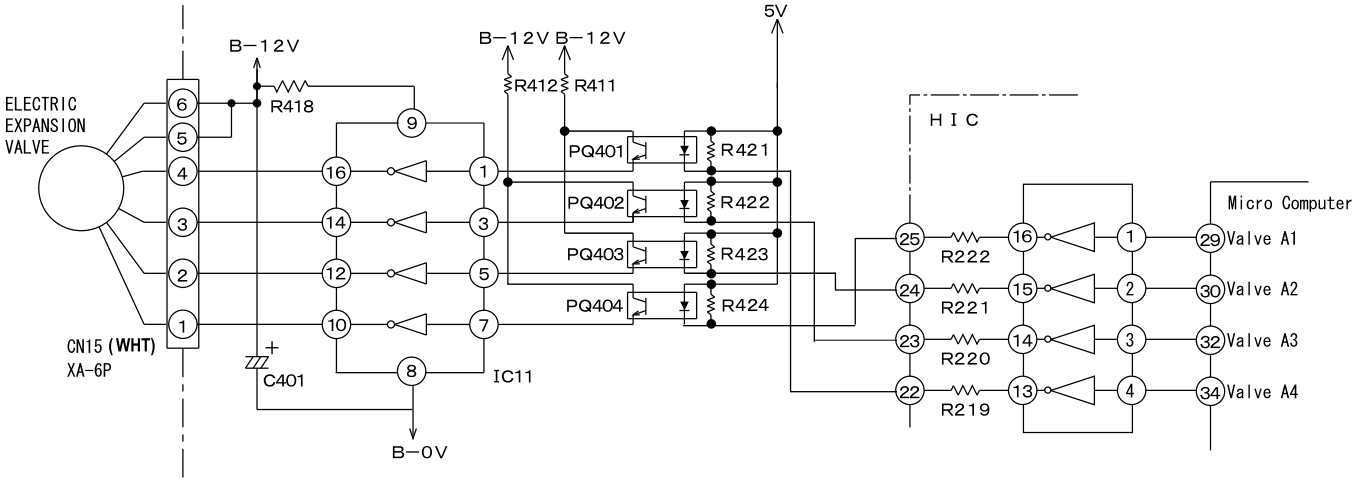


Fig.5−1

* The electric expansion valve is driven by DC12V. Power is supplied to 1 or 2 phases of 4-phase winding to switch magnetic pole of winding in order to control the opening degree.
* Relationship between power switching direction of phase and open/close direction is shown below. When power is supplied, voltages at pins 4 to 1 of CN15 are about 0.9V and 12V when no power is supplied. When power is reset, initial operation is performed for 10 or 20 seconds.During initial operation, measure all voltages at pin 4 to 1 of CN15 by using a multimeter. If there is any pin with voltage that has not changed from 0.9V or 12V, expansion valve or micro computer is broken.
* Fig.5-1 shows logic waveform when expansion valve is operating.

Table 5−1

CN15 pin no.	Wire	Drive status							
		1	2	3	4	5	6	7	8
①	WHT	ON	ON	OFF	OFF	OFF	OFF	OFF	ON
②	YEL	OFF	ON	ON	ON	OFF	OFF	OFF	OFF
③	ORN	OFF	OFF	OFF	ON	ON	ON	OFF	OFF
④	BLU	OFF	OFF	OFF	OFF	OFF	ON	ON	ON

Operation mode
1→2→3→4→5→6→7→8 VALVE CLOSE
8→7→6→5→4→3→2→1 VALVE OPEN

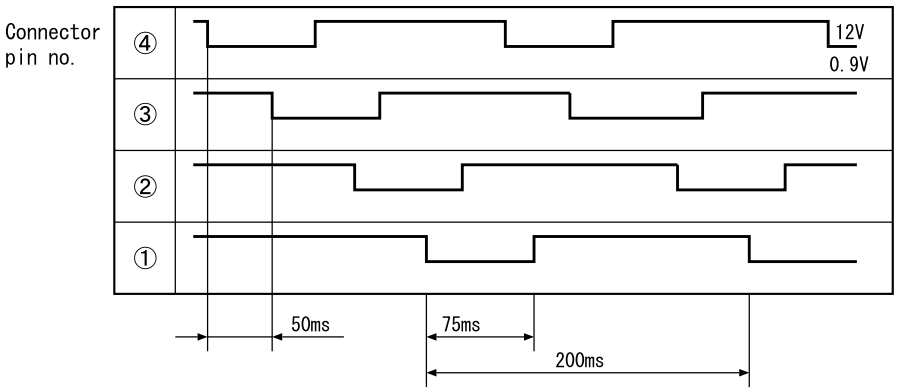


Fig.5−2

With expansion valve control, opening degree is adjusted to stabilize target temperature by detecting compressor head temperature. The period of control is about once per 20 seconds and output a few pulse.

6. Outdoor DC fan motor control circuit

* This model is built with DC fan motor control circuit inside outdoor electrical unit.

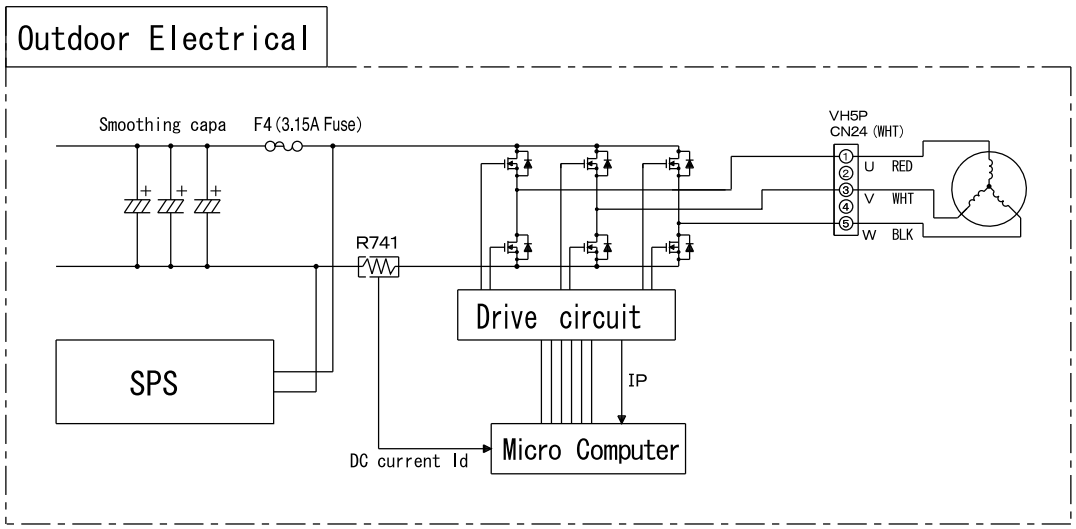


Fig 6−1

This DC fan motor is control by outdoor micro computer that follow the operating instruction received from indoor micro computer.The DC current that flow from R741 will presume actual operation speed and control the rotation to follow the operating instruction. Based on this DC current it will detect a over current and other fan motor failure.

(1) Fan motor speed controller during starting

Due to the interference of strong wind etc.,operation movement is changed based on fan direction and rotation speed as shown below during starting of operation.

In addition, the fair wind is define as wind that blow to outside direction using Mouth Ring part.

At strong and contrary wind ...The rotational speed is not controlled as to protect the equipment and fan will rotate reversely depend on the wind. Automatically start when wind condition become weak.

At contrary wind ...The rotational speed is controlled in fair wind direction after it slowly reduce the speed and finally stop.

At fair wind ...The rotational speed is controlled as it is.

At strong fair wind ...The rotational speed is not controlled as to protect the equipment and fan will rotate reversely depend on the wind. Automatically start when wind condition become weak.

(2) Fan motor speed controller during unit operating

There is a case where fan rpm is reducing during rotating caused by interference of strong wind If this condition continue in long period, fan will stop rotating.(LD301 : 11 times blinking)

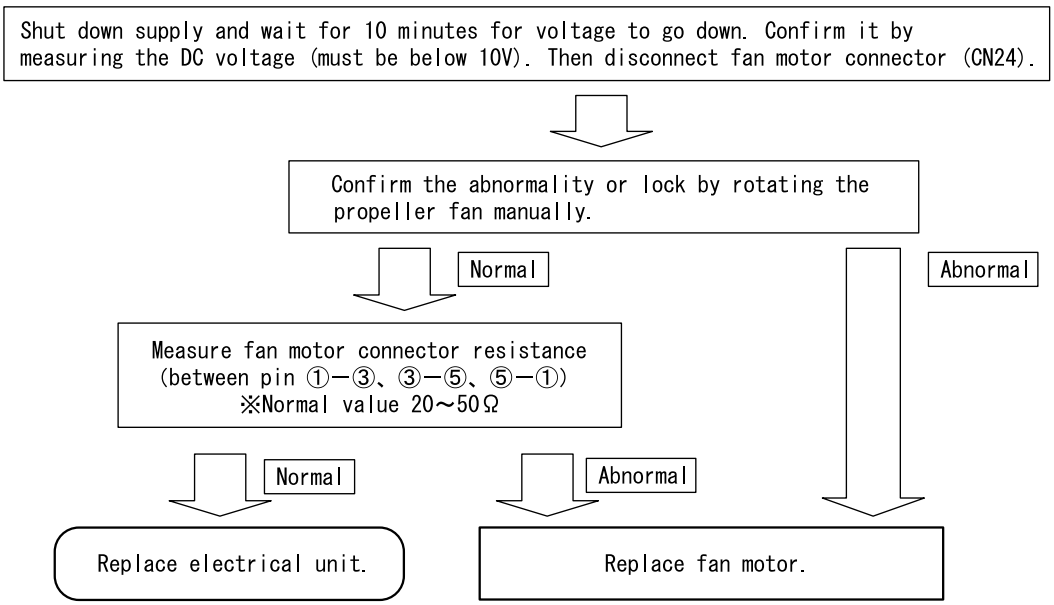
The unit will restart according to control as per during start (1).

(3) Method of confirming self diagnosis LD301 lamp : 12 times blinking

If the unit stop and LD301 on the pwb blinking 12 times [fan lock stop is detected], follow below steps to confirm it.

1. Fan lock stop is detected when something has disturb the fan rotation by inserting material into propeller fan or ice has growing inside outdoor unit caused by snow.
   Remove it if found something is bloking the fan.
2. Confirmed that CN24 connector is securely inserted. Fan lock stop is detected also when connector is not properly inserted. Please securely insert if found any disconnection.
3. Fan lock stop also can be detected where strong wind blown surrounding the unit.
   Please confirm after restart the unit.(It may take few minutes to operate the compressor)
   It is not a malfunction of electrical unit or fan motor if the unit run continuesly after restart the unit.
4. Check fan motor condition as below procedure.

[Checking Fan Motor] procedure



5. Reconnect again fan motor connector (CN24).

※ Please confirm above checking procedure if found F4(3.15A fuse) blown
   If fan motor is broken, replace both electrical unit and fan motor.

Reference

※ No power is supllied to the outdoor unit if F4(3.15A Fuse) is blown.
   Both DC fan motor and switching power supply is using same fuse.

Caution

※ Beware of electric shock due to high voltage when conducting an operation check.
   Power supply for DC fan motor and compressor is common (DC260~360V).

SERVICE CALL Q & A

COOLING MODE

Q1 The compressor has stopped suddenly during cooling operation.

A1 Check if 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

Q1 Sound of running water is heard from indoor unit during dehumidifying.

A1 Normal sound when refrigerant flows in pipe.

Q2 Compressor occasionally does not operate during dehumidifying.

A2 Compressor may not operate when room temperature is 10°C or less. It also stops when the humidity is preset humidity or less.

Q3 Cold air comes out during a dehumidifying operation.

A3 To improve the dehumidification efficiency performs quiet fan operation. Therefore the air is cold and it is not a malfunction.

Q4 The operation does not stop even by setting the temperature higher than room temperature on the remote controller.

A4 It sets to perform dehumidifying operation by setting the temperature slightly lower than remote controller setting.

HEATING MODE

Q1 The circulation stops occasionally during Heating mode.

A1 It occurs during defrosting Wait for 5 -10 minutes until the condenser is defrosted.

Q2 When the fan speed is set at HIGH or MED, the flow is actually Weak.

A2 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.

Q3 Heating operation stops while the temperature is preset at "30".

A3 If temperature is high in the outdoor, heating operation may stop to protect internal devices.

AUTO FRESH DEFROSTING

Q1 After the ON/OFF button is pressed to stop heating, the outdoor unit is still working with the OPERATION lamp lighting.

A1 Auto Fresh Defrosting is carried out : the system checks the outdoor heat exchanger and defrosts it as necessary before stopping operation.

AUTO OPERATION

Q1 Fan speed does not change when fan speed selector is changed during auto operation.

A1 At this point fan speed is automatic.

Q2 How is the automatic operation mode determined?

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

Q3 The room temperature cannot be controlled at an automatic operation.

A3 It is automatically set as follows.
At cooling: and heating: Set at 22°C
The room temperature setting can be raised 3°C by "∧" or lowered 3°C by "∨".

NICE TEMPERATURE RESERVATION

Q1 When on-timer has been programmed, operation starts before the preset time has been reached.

A1 This is because "Nice temperature reservation"function is operating. This function start operation earlier so the preset temperature is reached at the preset time. Operation may start maximum 60 minutes before the preset time.

Q2 Does "Nice temperature reservation" function operate during dehumidifying?

A2 It does not work. It works only during cooling and heating.

Q3 Even if the same time is preset, the operation start time varies.

A3 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 varies each day.

AT STARTING OPERATION

Q1 When only the power switch is turned on, the damper at the bottom air outlet moves even if the START/STOP button is not pressed.

A1 To ensure correct opening and closing of the damper, the damper will move when power is turned on or the unit is to be operated in order to check its fully opened and closed positions.

Q2 When the heating operation is started, the indoor fan does not start immediately and the damper at the bottom air outlet occasionally does not open.

A2 This is because the preheating device is working. It will not start to drive the fan until the refrigerating cycle warms up and warm air blows. Wait for a while. The damper does not open either during preheating or for one minute after preheating is finished.

Q3 When the unit built behind the gallery (lattice door) is to be started immediately after it has stopped, the unit occasionally will not start.

A3 Such a phenomenon may occur with built-in installation where heat is likely to be stuffy. Install the unit as near to the lattice door as possible so that air is not short-circuited, or provide a partition between the unit and lattice door.

OTHERS

Q1 The indoor fan varies among high air flow, low air flow and breeze in the auto fan speed mode. (Heating operation)

A1 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 fan speed mode. When the temperature is low, the fan speed varies among high air flow, low air flow and breeze.

Q2 Loud noise from the outdoor unit is heard when operation is started.

A2 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.

Q3 Noise from the outdoor unit occasionally changes.

A3 The compressor rotation speed changes according to the difference between the thermostat set temperature and room temperature.
This does not indicate a fault.

Q4 There is a difference between the set temperature and room temperature.

A4 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 level for the space.

Q5 Air does not flow immediately after operation is started.

A5 Preliminary operation is performed for one minute when the power switch is turned on and heating or dehumidifying is set. The operation lamp blinks during this time for heating. This does not indicate a fault.

Q6 Mold in the room cannot be inhibited even after performing the air conditioner drying operation.

A6 Air conditioner drying operation is to dry the interior of the indoor unit to inhibit the growth of mold. It is not to inhibit the mold growth in the room.

Q7 The interior of the indoor unit seems to be still damp even after performing the air conditioner drying operation.

A7 Condition of the interior of the indoor unit varies depending on usage of the unit and condition of the indoor unit. If it is not dried after the first try, perform the drying more than one time for better effect.

Q8 Even if the air conditioner drying is performed using the remote controller during the unit operation or timer programming, the air conditioner drying operation does not start.

A8 To perform the air conditioner drying, stop the unit operation or programming beforehand.

Q9 The unit is operated after built-in installation (behind the lattice door). It turns off for a long time and the room is not warmed (cooled).

A9 Check to see if warm (cool) air is being short-circuited behind the lattice door. A short-circuit is likely to occur when the deflector position is not appropriate, the lattice does not have a big enough opening, and/or the unit is installed in the inner part. Install the unit as near the lattice door as possible.

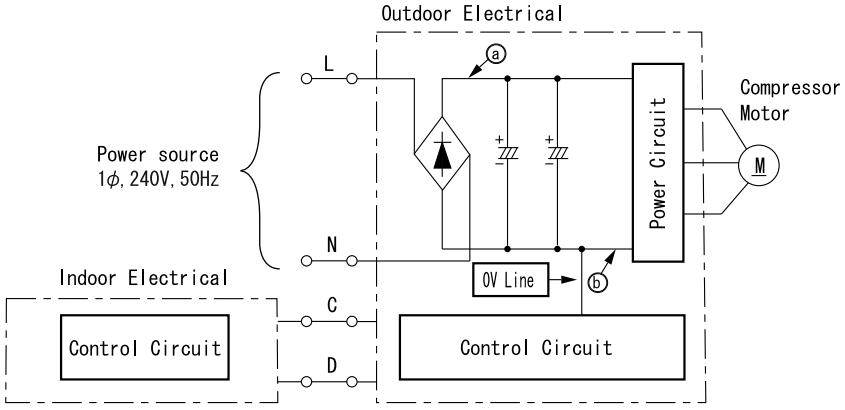
Q10 Strange sound is occasionally heard from the bottom air outlet.

A10 When the damper is switched, scrambling of air will occur between the top and bottom outlets due to the set fan speed during switching and filter clogged state, which, may generate some sound.

PRECAUTIONS FOR CHECKING

CAUTION

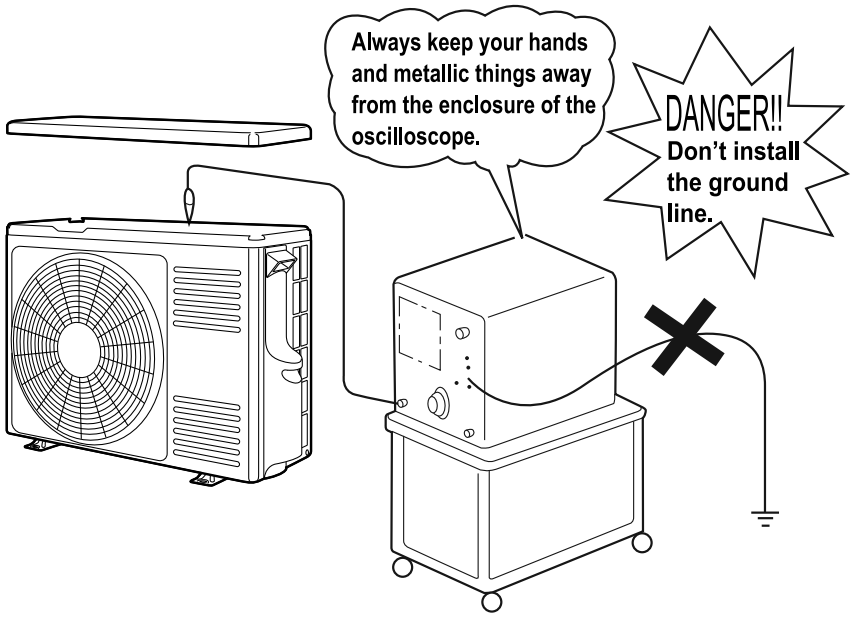
1. Remember that the 0V line is biased to 320 - 360V in reference to the ground level.
2. Also note that it takes about 10 minutes until the voltage fall after the power switch is turned off.



Across a - b (0V line) ----------approx 320 - 360V
Across a - ground ----------approx 155 - 170V
Across b (0V line) - ground -------approx 155 - 170V

CAUTION

When using an oscilloscope, never ground it. Don't forget that high voltages as noted above may apply to the oscilloscope.



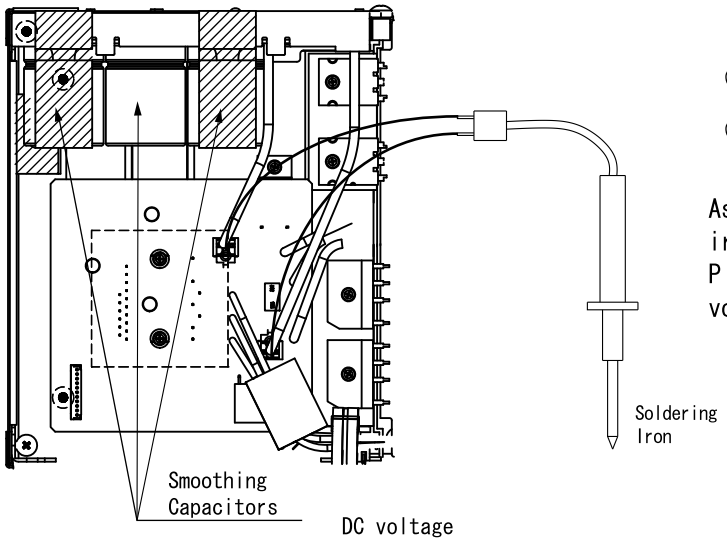
DISCHARGE PROCEDURE AND METHOD TO STOP ENERGIZE THE POWER CIRCUIT

⚠ WARNING ⚠

Caution

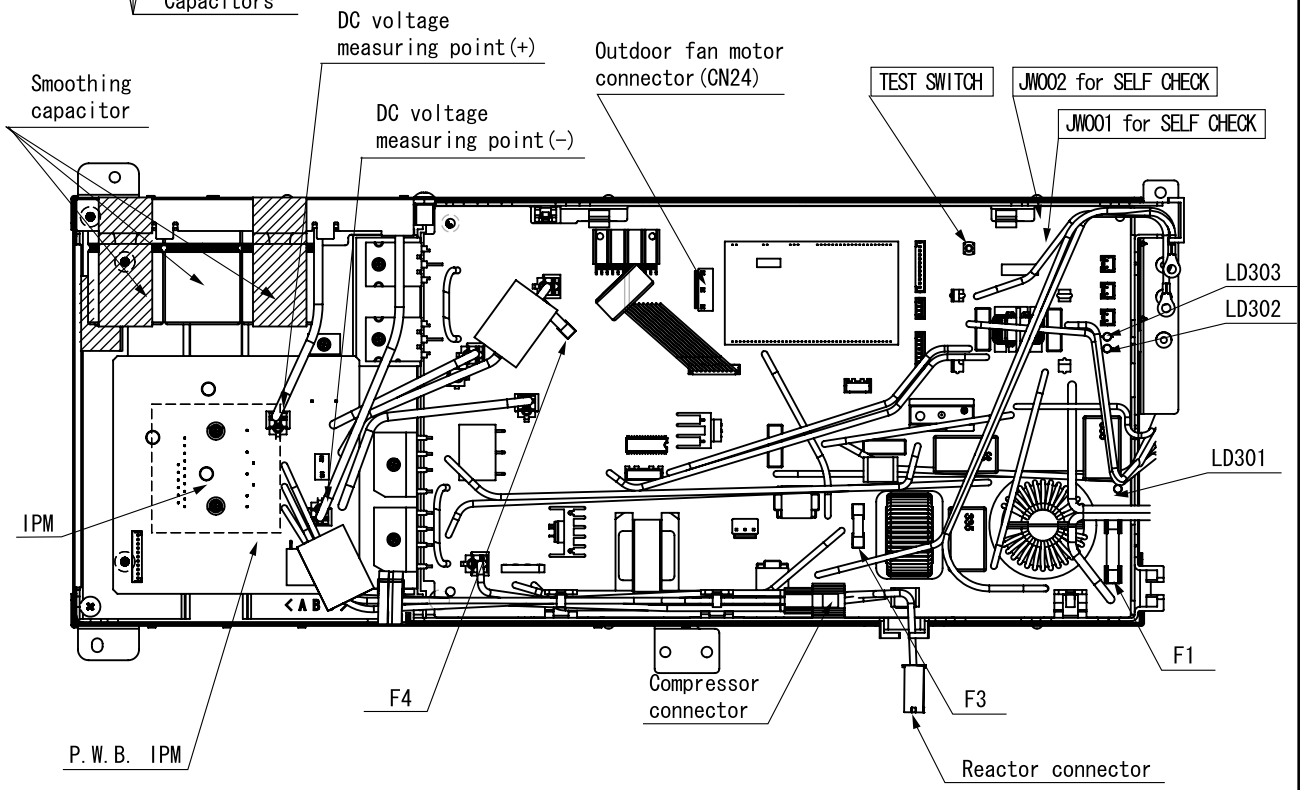
- Voltage of about 300-330V is charged between both ends of smoothing capacitors.
- During continuity check for each part of circuit in outdoor electrical parts, be sure to discharge smoothing capacitor to prevent secondary trouble.

1. Turn OFF power supply to the outdoor unit.
2. After power is turned OFF, wait for 15 minutes or more. Then remove electrical parts cover and apply soldering iron of 30 to 75W for 15 seconds or more to DC voltage ⊕ and DC voltage ⊖ terminals in order to discharge voltage in smoothing capacitors.



Do not use soldering iron with transformer. If not, theral fuse inside the transformer will be blown.

As shown in this figure, apply soldering iron to metal parts (receptacle) DC voltage P ⊕ and N ⊖ to discharge the charged voltage inside smoothing capacitors.

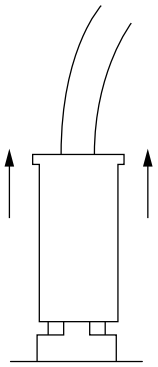


[Other cautions]

(1) Disconnection of tab terminal receptacle

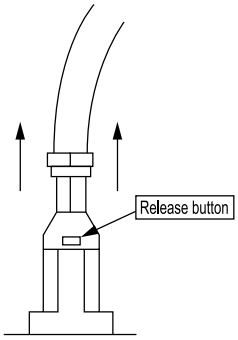
All recectacle used to connect with tab terminal are built with lock mechanism. Please take note that by using a force to pull out the receptacle without releasing the lock, can cause a damage.
Furthermore, during connecting the receptacle back make sure to securely insert until end.

＊ Receptacle type and procedure to releasing the lock



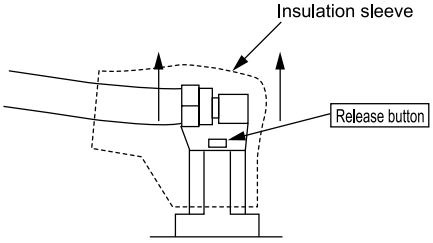
Vertical type (with plastic casing)

Pull out by holding the plastic casing.



Vertical type (without casing)

Pull out while pushing the release button.



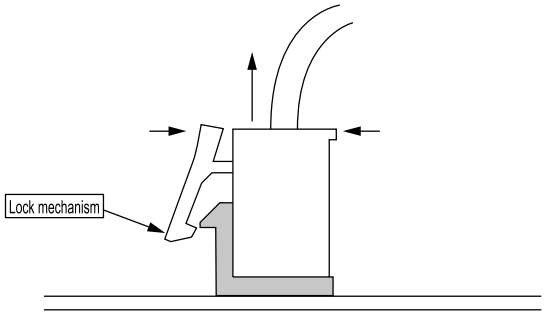
Horizontal type (with insulation sleeve)

Pull out from top of insulation sleeve while pushing the release button.

(2) Disconnecting on board connector

On board connector with lock machanism are widely used. Please take note that by using a force to pull out with out releasing the lock mechanism, can cause a damage.
Furthermore, during inserting back the connector make sure it surely done.

Release lock with finger before disconnecting.

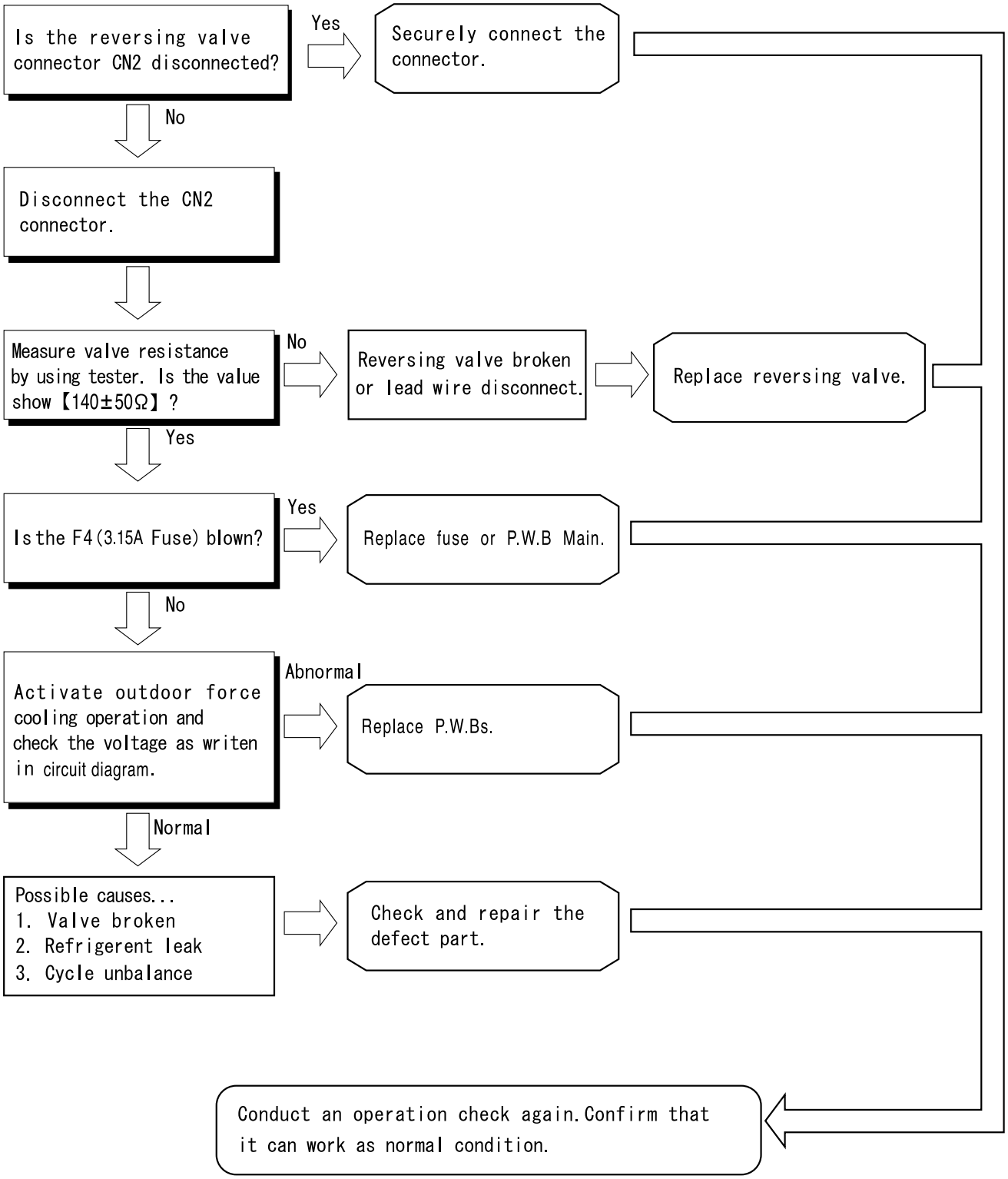


(3) Connector disconnection during discharge is prohibited

Disconnecting connector during discharge is extremely prohibited.Component on board and fan motor will damage.
Proceed trouble shooting process after confirming smoothing capacitor of indoor & outdoor pwb has been discharge.

CHECKING THE INDOOR TIMER LAMP IF BLINKING 1 TIME

<Caution> Please turn OFF power supply before proceed with below checking flow.



CHECKING THE INDOOR/OUTDOOR UNIT ELECTRICAL PARTS AND REFRIGERATING CYCLE

MODEL RAK-60PPA

Timer lamp

Does the timer lamp on the indoor unit blink?

See Troubleshooting when the timer lamp blinks .

No

Set to room temperature 16°C in the cooling mode or to 32°C in the heating mode, and press the start/stop button

Does the operation lamp on the indoor unit start to light or blink?

No

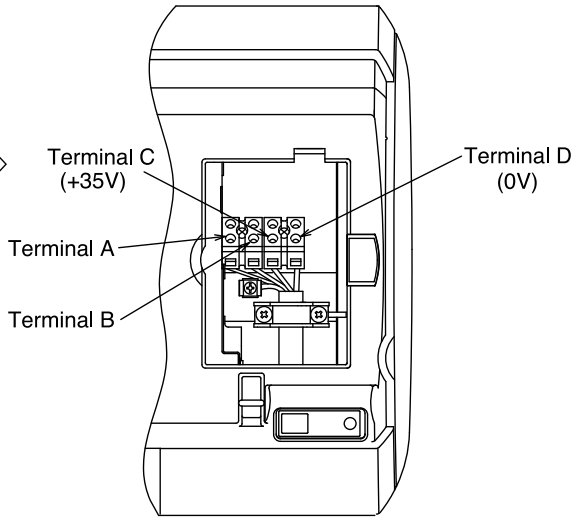
Yes

Is the compressor in the outdoor unit operating?

Yes

No

Remove the terminal cover and check the voltage between terminal (C) and terminal (D)



Is approx. DC 33 to 37V being generated? Is the polarity correct?

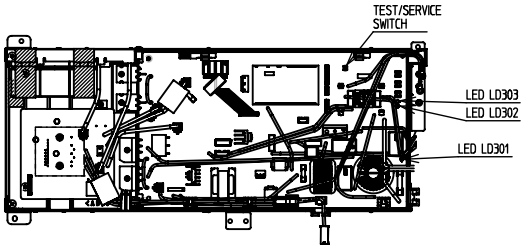
No

Yes

Check to see whether the connecting cable is connected incorrectly or disconnected

Normal

Remove the outdoor unit cover and electrical parts cover, and check self-diagnosis lamp LD301



Does LD301 blink one time ?
* Repeats 0.25-second on and 2-second off.

Blinking other than one time

One-time blinking

Press the service switch for 1 sec. Does the compressor operate? (After checking, be sure to press the service switch to stop the operation).

Yes

See Out door unit self-diagnosis lamp lighting mode .

No

Check the refrigerating cycle.

Check the outdoor electrical parts.

Check the indoor electrical parts.

TROUBLESHOOTING WHEN TIMER LAMP BLINKS.

MODEL RAK-60PPA

Perform troubleshooting according to the number of times the indoor timer lamp and outdoor LD301 blink.

SELF-DIAGNOSIS LIGHTING MODE

No.	Blinking of Timer lamp	Reason for indication	Possible cause
1	 1 time	Refrigerant cycle defective 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 the heating mode) (Note) The malfunction mode is entered the 3rd time this abnormal indication appears (read every 3 minutes).
2	 2 times	Outdoor unit forced operation When the outdoor unit is in forced operation or balancing operation after forced operation	Electrical parts in the outdoor unit
3	 3 times	Indoor/outdoor interface defective When the interface signal from the outdoor unit is 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	 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
6	 10 times	Over-current detection at the DC fan motor when over-current is detected at the DC fan motor of the indoor unit.	(1) Indoor fan locked (2) Indoor fan motor (3) Indoor control P.W.B.
7	 13 times	IC401 data reading error When data read from IC401 or IC402 is incorrect.	IC401 abnormal

(▮ – – Lights for 0.5 sec. at interval of 0.5 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 connecting 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 >

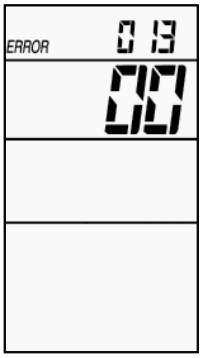
1. Redisplay the troubleshooting status. (See the above procedure.)
2. Turn the circuit breaker OFF.
3. By pressing MODE (MODE) button on the remote controller, set to Heating operation indicated by (HEAT).
4. Turn the circuit breaker ON.
5. Set the room temperature setting on the remote controller to 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.

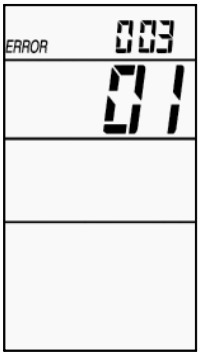
< How to display error code in case of failure just occurs>

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 :





	TIMER LAMP BLINKING	LD301 BLINKING	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
	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 or IC402 is incorrect.	1. IC401 or IC402 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
	-	11 times	011 01	Fan stop for strong wind	Fan motor load is too heavy or rotation disturbed by wind blow.	1. Fan motor 2. Outdoor condition (wind)
	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
	4 times	15 times	015 01	Abnormal PWB circuit	Active circuit abnormal.	1. P.W.B.s
	-	16 times	016 01	Software peak current cut		

< Cautions >

This function is effective only once immediately after the power is turned on. It will not work if you have performed another remote control operation beforehand.

Note also that it may not function in response to a procedure other than the above. (If it does not work, turn off the power, turn it back on and repeat the procedure.)

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

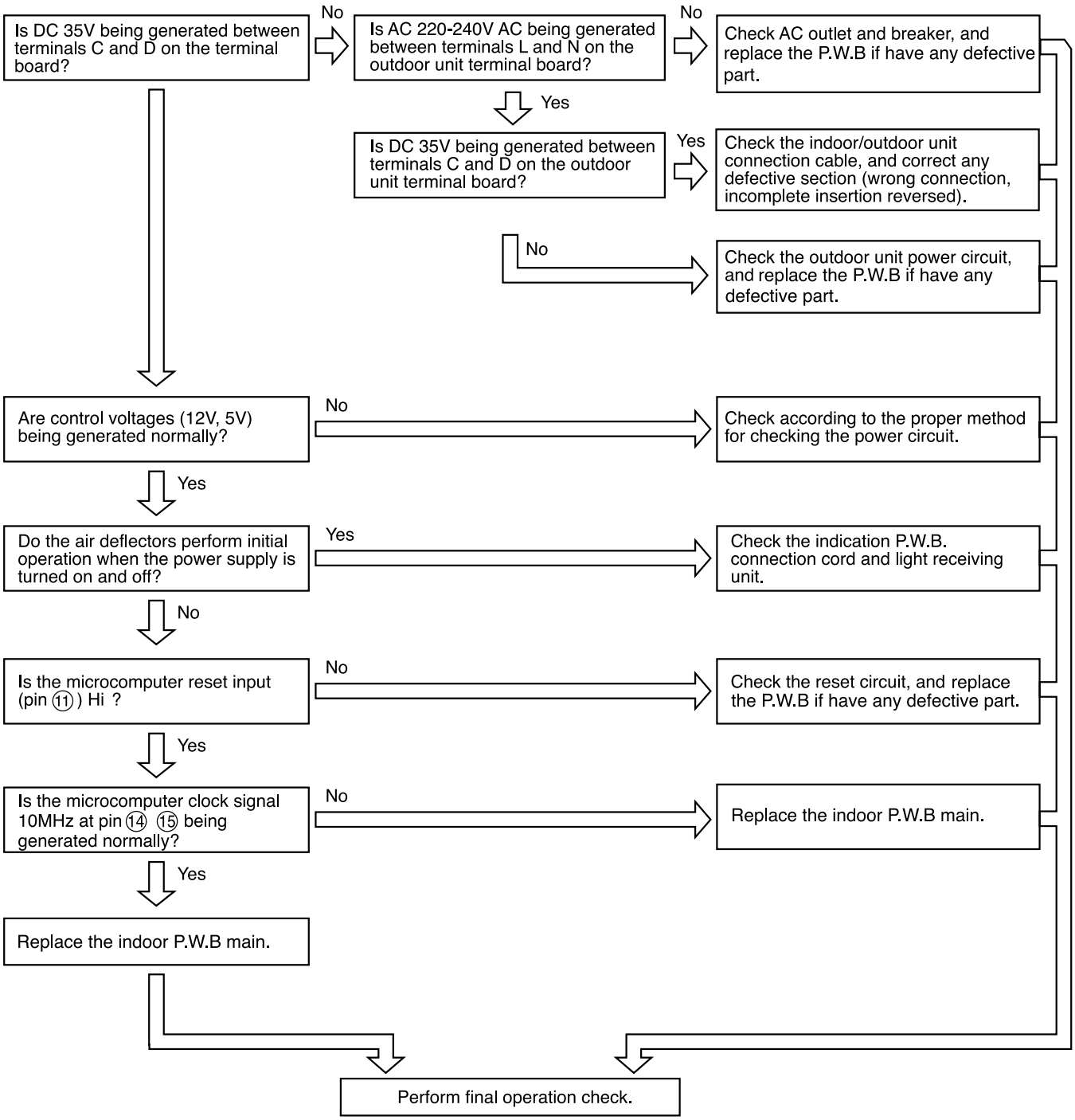
For a normal operation, turn off the power and turn it back on. After the above operation, the product will not receive a remote control signal normally.

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

CHECKING INDOOR UNIT ELECTRICAL PARTS

MODEL RAC-60WPA

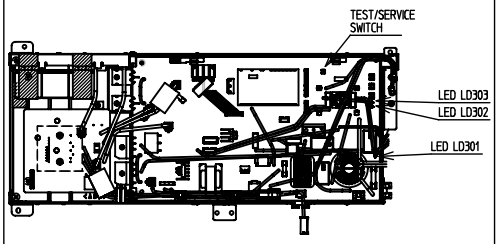
1. Power does not come on (no operation)



2. Outdoor unit does not operate (but receives remote infrared signal)

Set to room temperature 16°C in the cooling mode or to 32°C in the heating mode, and press the start/stop button.

Remove the outdoor unit cover and electrical parts cover, and check self-diagnosis lamp LD301.



Does LD301 blink one time?
*Repeats 0.25-second on and 2-second off.

Yes

Check the room temperature thermistor; if it is defective, replace it.
<Normal values>
10°C → approx. 20kΩ
25°C → approx. 10kΩ
30°C → approx. 8kΩ

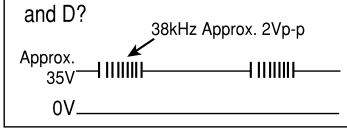
Check the heat exchanger thermistor; if it is defective, replace it.
<Normal values>
10°C → approx. 20kΩ
25°C → approx. 10kΩ
30°C → approx. 8kΩ

No

Does outdoor electrical part LD301 blink nine times?

Yes

Is the indoor/outdoor unit communication signal superimposed on 35V DC of connection wires C and D?

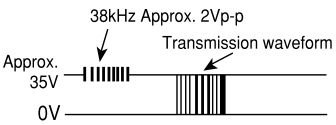


No

Check outdoor electrical parts, and replace the outdoor P.W.B main.

Yes

Is the indoor transmitting signal being generated at Q801's collector?



No

Check the indoor interface transmitting circuit. Replace the indoor P.W.B main.

Yes

Check outdoor electrical parts, and replace the outdoor P.W.B main.

No

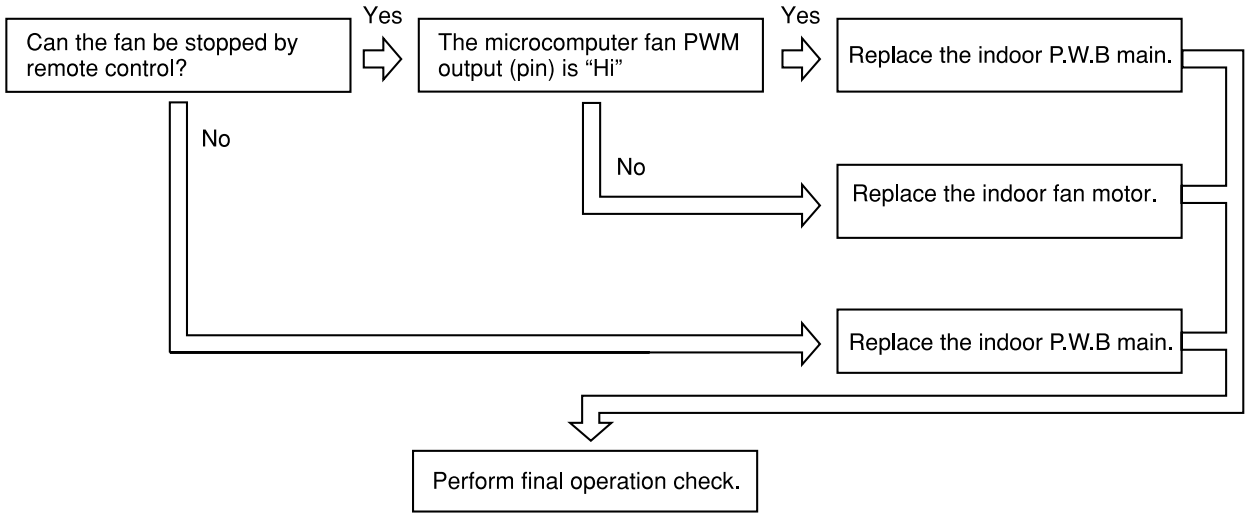
Does LD303 switch off several second after it lights?

Yes

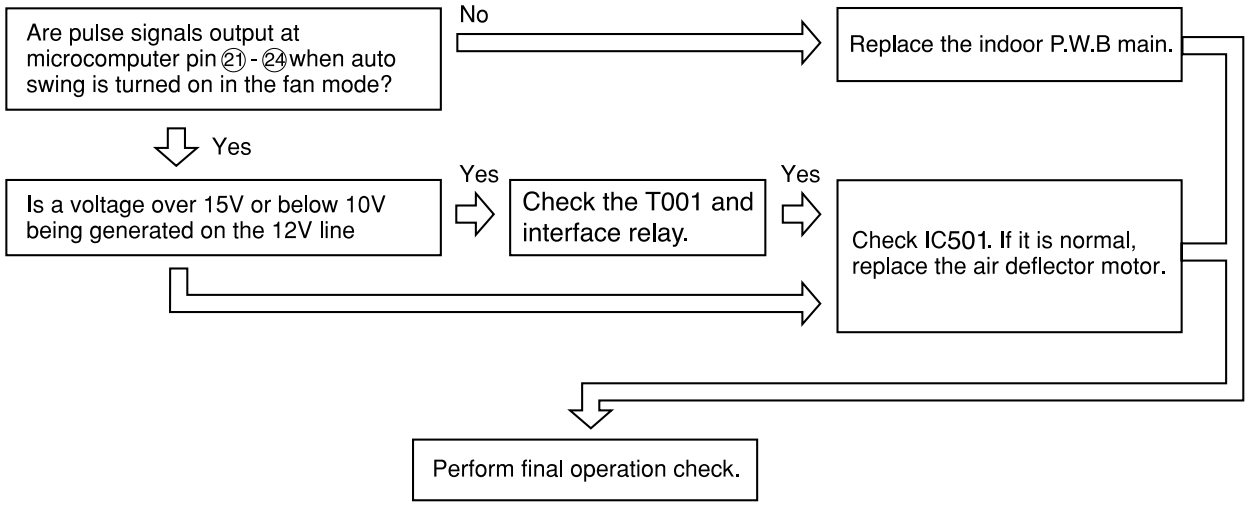
Check outdoor electrical parts, and replace the outdoor P.W.B. main.

Perform final operation check.

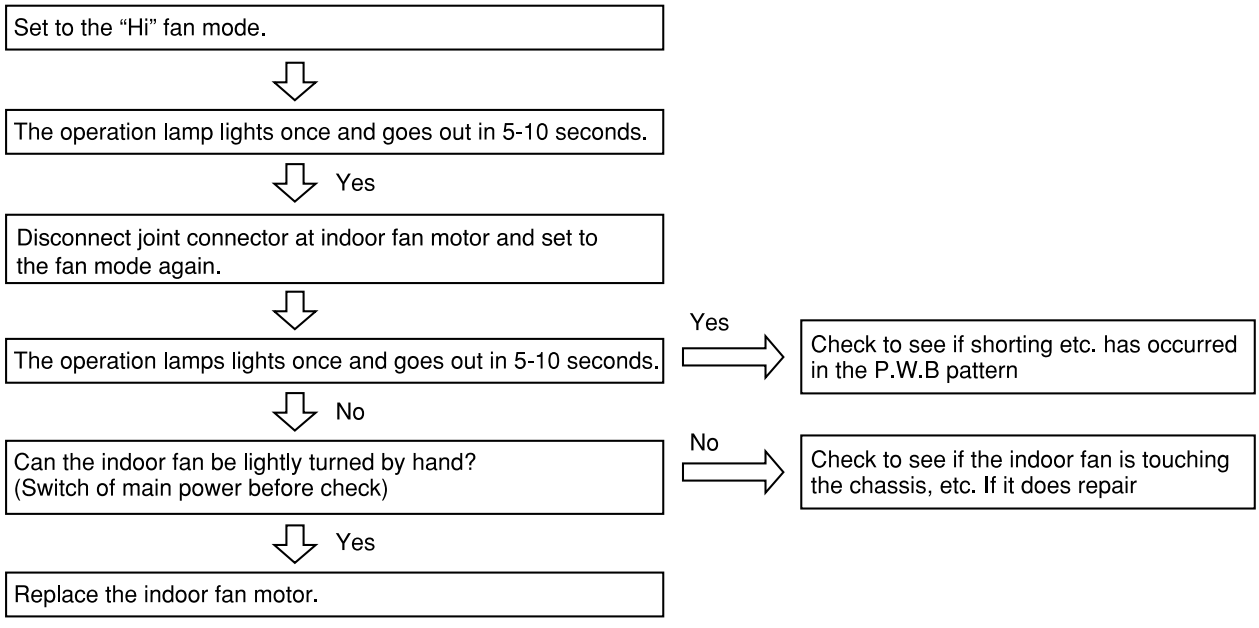
3. Only indoor fan does not operate (other is normal)



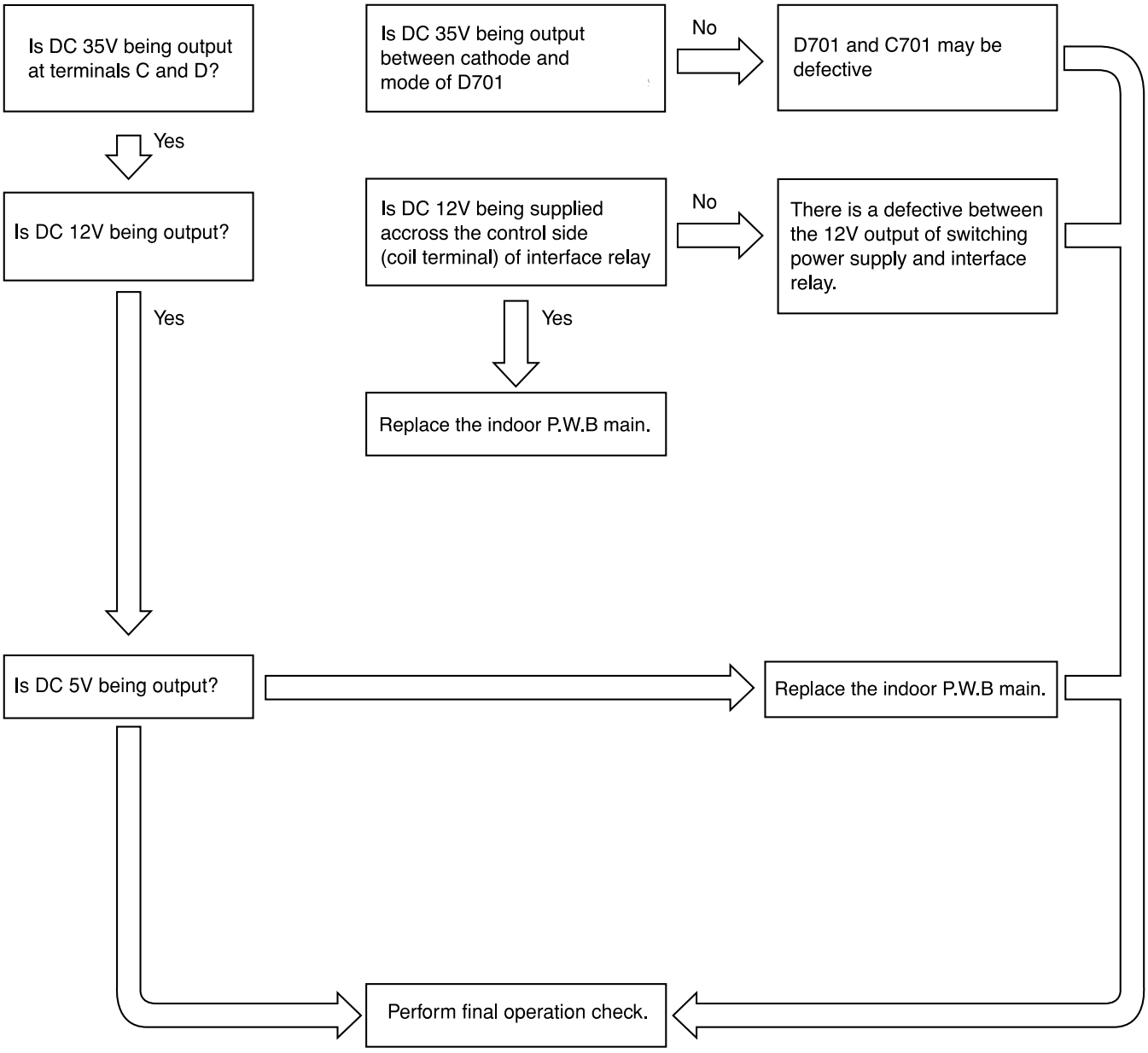
4. Air deflector does not move (others are normal)



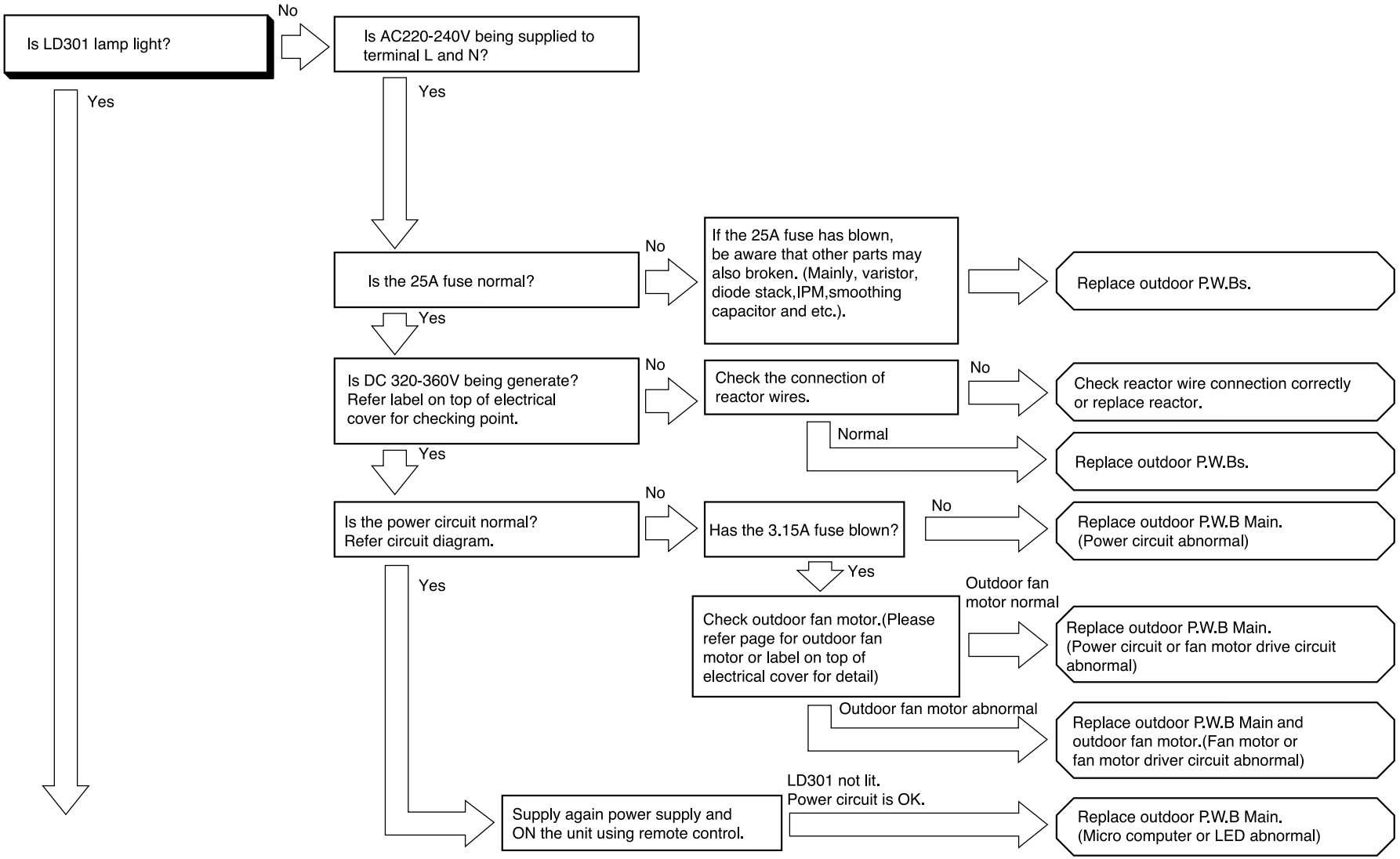
5. All systems stop from several seconds to several minutes after operation is started (all indicators are also off)

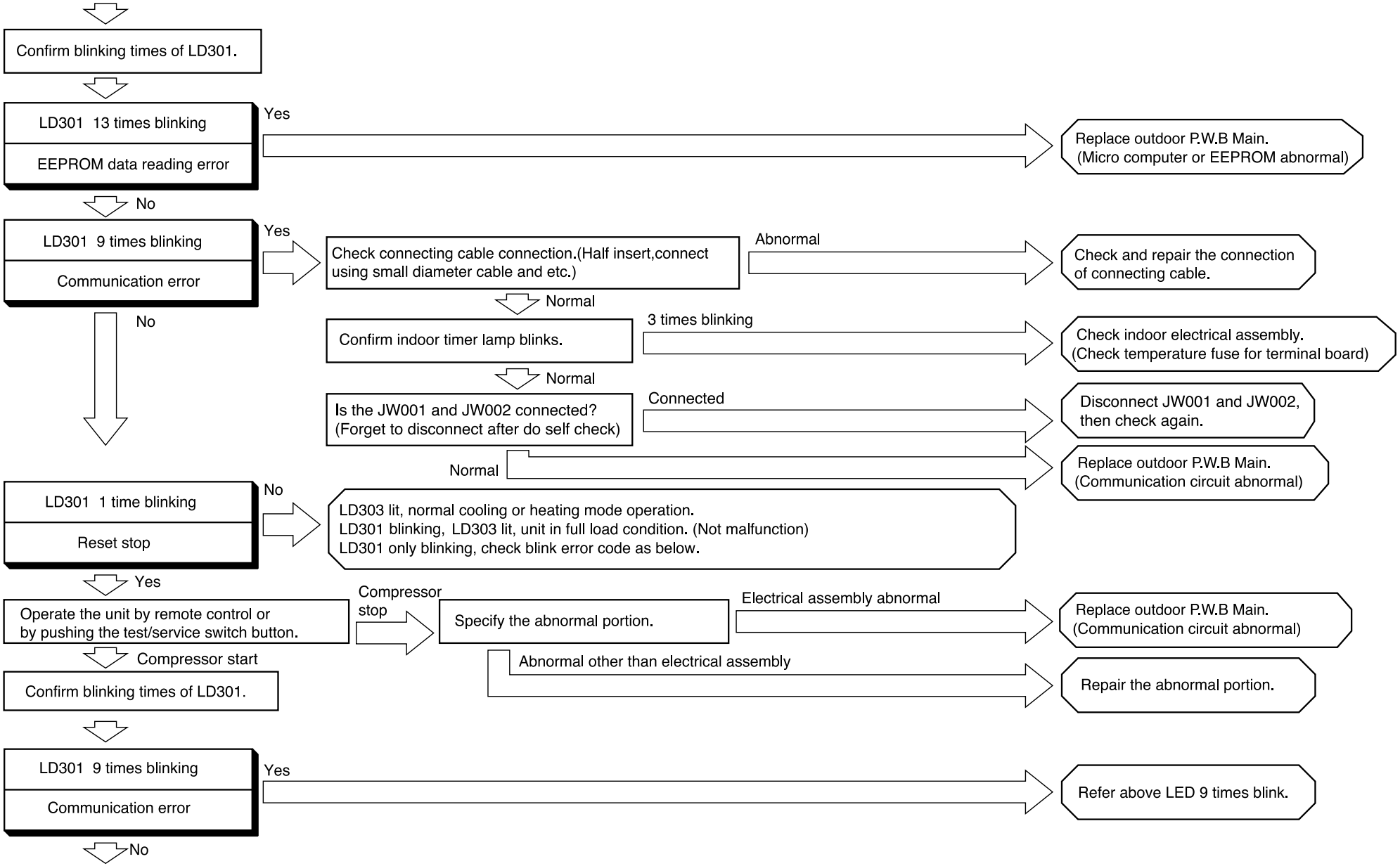


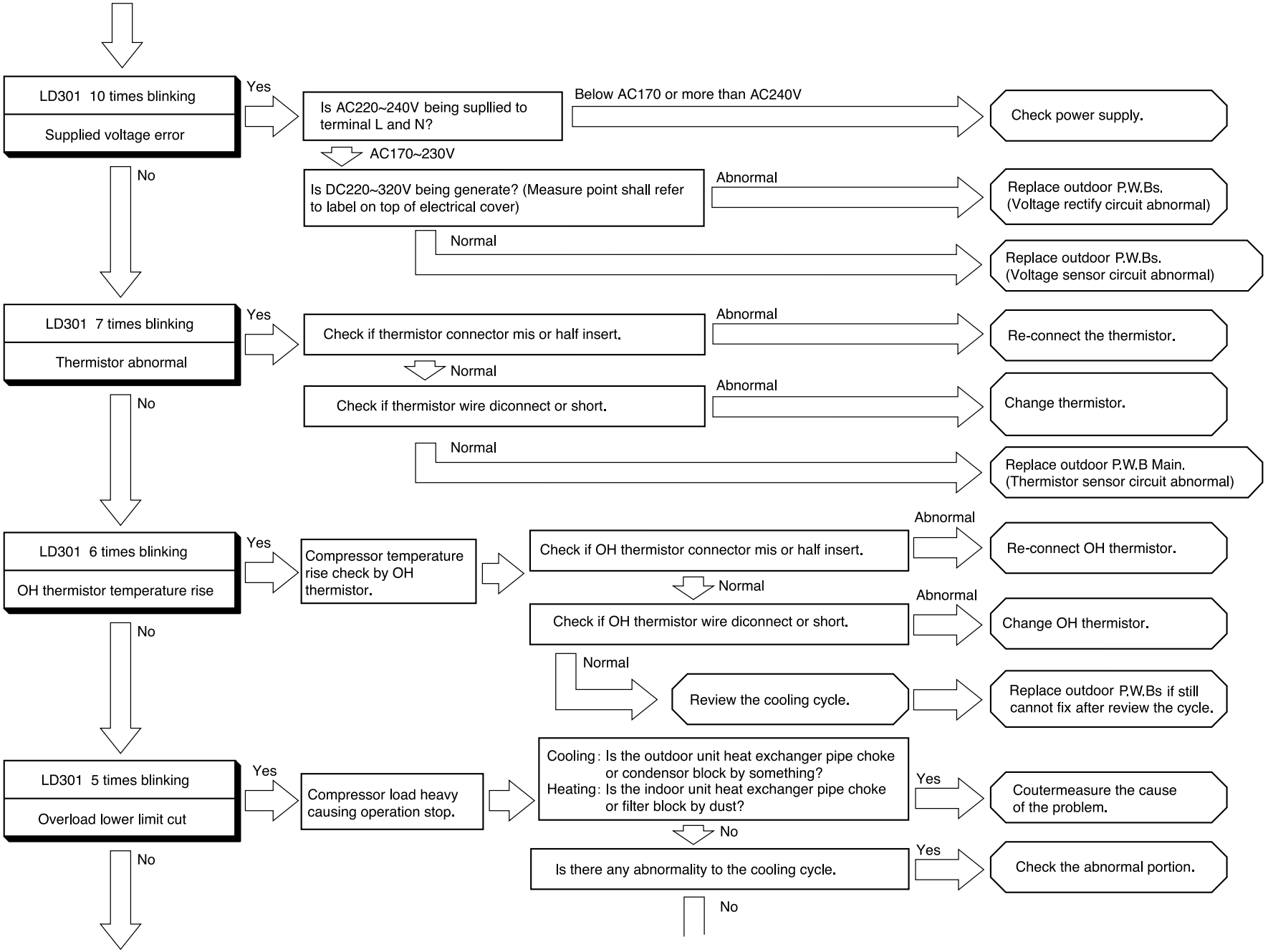
6. Check the main P.W.B (power circuit)

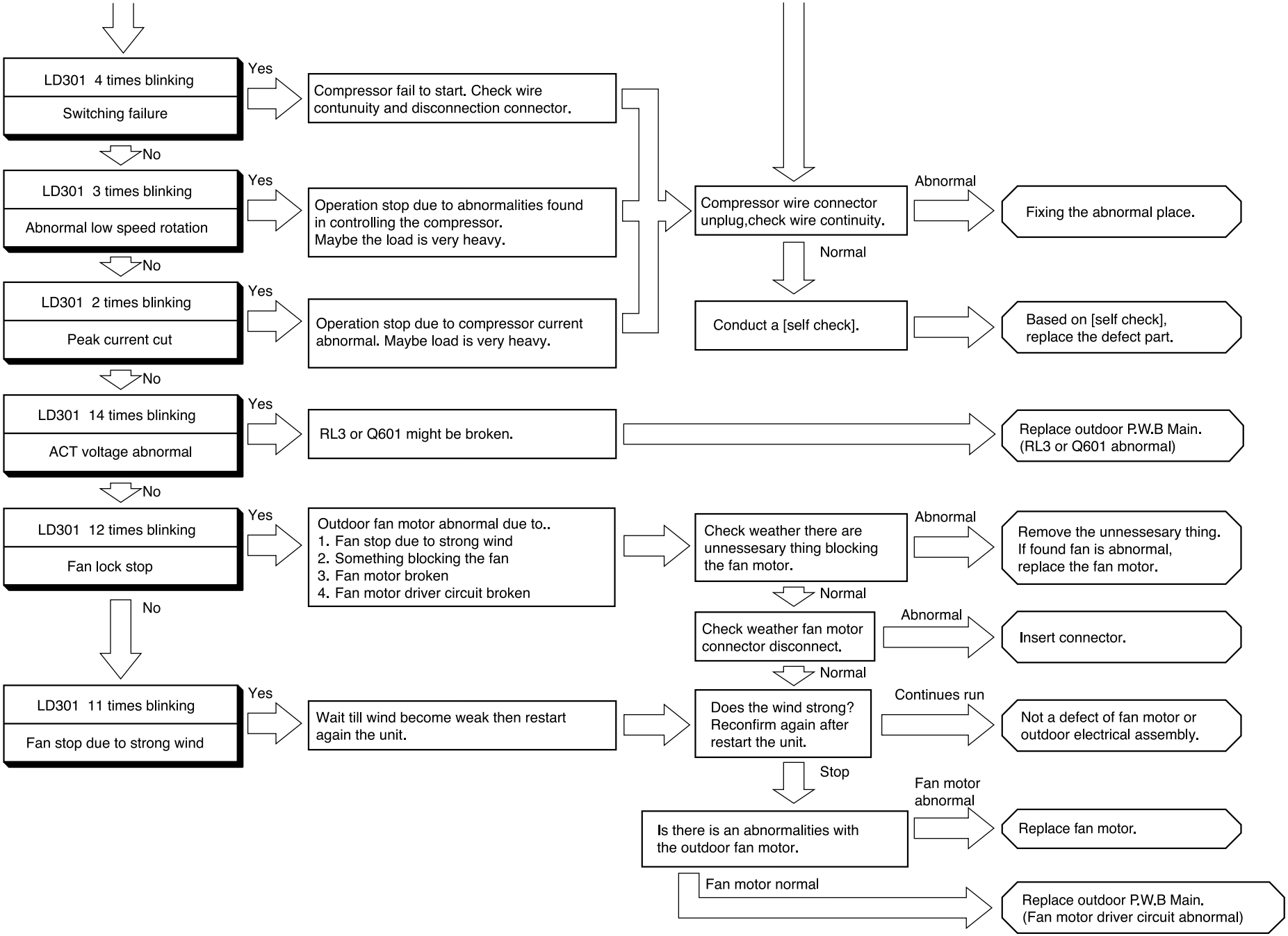


CHECKING THE OUTDOOR UNIT ELECTRICAL PART




Confirm blinking times of LD301.
LD301 13 times blinking
EEPROM data reading error
Yes
Replace outdoor P.W.B Main.
(Micro computer or EEPROM abnormal)
No
LD301 9 times blinking
Communication error
Yes
Check connecting cable connection.(Half insert,connect using small diameter cable and etc.)
Abnormal
Check and repair the connection of connecting cable.
Normal
Confirm indoor timer lamp blinks.
3 times blinking
Check indoor electrical assembly.
(Check temperature fuse for terminal board)
Normal
Is the JW001 and JW002 connected?
(Forget to disconnect after do self check)
Connected
Disconnect JW001 and JW002, then check again.
Normal
Replace outdoor P.W.B Main.
(Communication circuit abnormal)
No
LD301 1 time blinking
Reset stop
LD303 lit, normal cooling or heating mode operation.
LD301 blinking, LD303 lit, unit in full load condition. (Not malfunction)
LD301 only blinking, check blink error code as below.
Yes
Operate the unit by remote control or by pushing the test/service switch button.
Compressor stop
Specify the abnormal portion.
Electrical assembly abnormal
Replace outdoor P.W.B Main.
(Communication circuit abnormal)
Abnormal other than electrical assembly
Repair the abnormal portion.
Compressor start
Confirm blinking times of LD301.
LD301 9 times blinking
Communication error
Yes
Refer above LED 9 times blink.
No


LD301 10 times blinking
Supplied voltage error
Yes
Is AC220~240V being supllied to terminal L and N?
Below AC170 or more than AC240V
Check power supply.
AC170~230V
No
Is DC220~320V being generate? (Measure point shall refer to label on top of electrical cover)
Abnormal
Replace outdoor P.W.Bs. (Voltage rectify circuit abnormal)
Normal
Replace outdoor P.W.Bs. (Voltage sensor circuit abnormal)
LD301 7 times blinking
Thermistor abnormal
Yes
Check if thermistor connector mis or half insert.
Abnormal
Re-connect the thermistor.
Normal
No
Check if thermistor wire diconnect or short.
Abnormal
Change thermistor.
Normal
Replace outdoor P.W.B Main. (Thermistor sensor circuit abnormal)
LD301 6 times blinking
OH thermistor temperature rise
Yes
Compressor temperature rise check by OH thermistor.
Check if OH thermistor connector mis or half insert.
Abnormal
Re-connect OH thermistor.
Normal
No
Check if OH thermistor wire diconnect or short.
Abnormal
Change OH thermistor.
Normal
Review the cooling cycle.
Replace outdoor P.W.Bs if still cannot fix after review the cycle.
LD301 5 times blinking
Overload lower limit cut
Yes
Compressor load heavy causing operation stop.
Cooling : Is the outdoor unit heat exchanger pipe choke or condensor block by something?
Heating : Is the indoor unit heat exchanger pipe choke or filter block by dust?
Yes
Coutermeasure the cause of the problem.
No
No
Is there any abnormality to the cooling cycle.
Yes
Check the abnormal portion.
No


LD301 4 times blinking
Switching failure
Yes
Compressor fail to start. Check wire contunuity and disconnection connector.
No
LD301 3 times blinking
Abnormal low speed rotation
Yes
Operation stop due to abnormalities found in controlling the compressor. Maybe the load is very heavy.
No
LD301 2 times blinking
Peak current cut
Yes
Operation stop due to compressor current abnormal. Maybe load is very heavy.
No
LD301 14 times blinking
ACT voltage abnormal
Yes
RL3 or Q601 might be broken.
No
LD301 12 times blinking
Fan lock stop
Yes
Outdoor fan motor abnormal due to..
1. Fan stop due to strong wind
2. Something blocking the fan
3. Fan motor broken
4. Fan motor driver circuit broken
No
LD301 11 times blinking
Fan stop due to strong wind
Yes
Wait till wind become weak then restart again the unit.
Compressor wire connector unplug,check wire continuity.
Abnormal
Fixing the abnormal place.
Normal
Conduct a [self check].
Based on [self check], replace the defect part.
Replace outdoor P.W.B Main. (RL3 or Q601 abnormal)
Check weather there are unnessesary thing blocking the fan motor.
Abnormal
Remove the unnessesary thing. If found fan is abnormal, replace the fan motor.
Normal
Check weather fan motor connector disconnect.
Abnormal
Insert connector.
Normal
Does the wind strong? Reconfirm again after restart the unit.
Continues run
Not a defect of fan motor or outdoor electrical assembly.
Stop
Is there is an abnormalities with the outdoor fan motor.
Fan motor abnormal
Replace fan motor.
Fan motor normal
Replace outdoor P.W.B Main. (Fan motor driver circuit abnormal)

HOW TO CHANGE THE SHIFT VALUE SETTING TEMPERATURE

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 61)

PROCEDURES

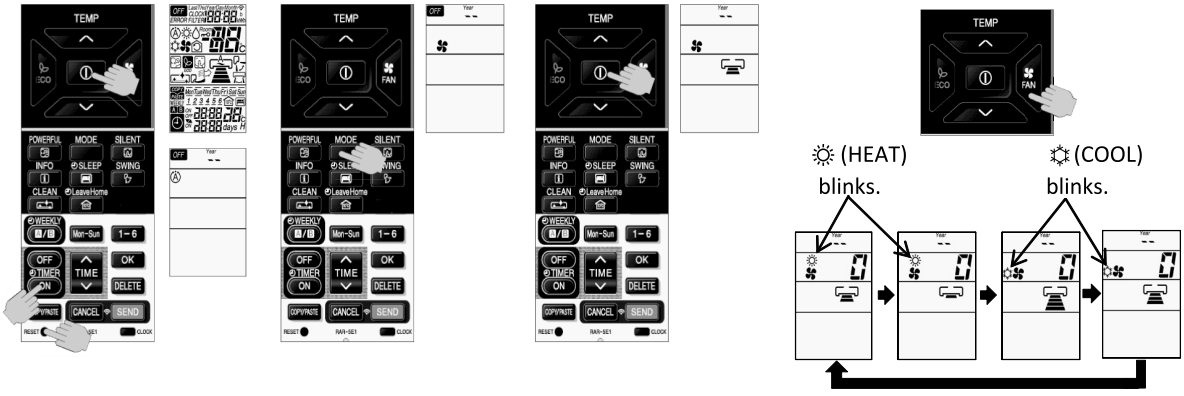
1. While pressing and holding ⏻ (START/STOP) button and TIMER ON (ON) button, press RESET ◯ [RESET] button on the same. Release RESET ◯ [RESET] button only and make sure that all marks on the remote controller display are indicated, then release the ⏻ (START/STOP) button and TIMER ON [ON] button.
   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.

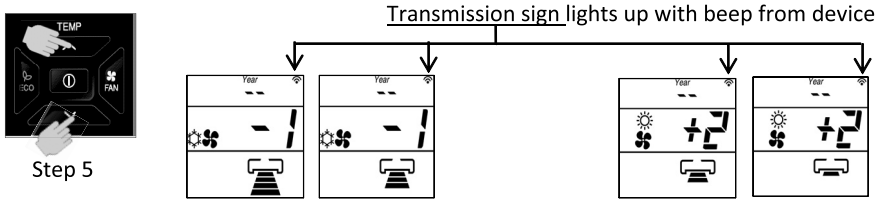
4. Set the FAN SPEED with the FAN (FAN SPEED) button according to the following FAN speed setting in order to choose the desired operation mode that is required for shift value setting temperature modification.

   - 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.

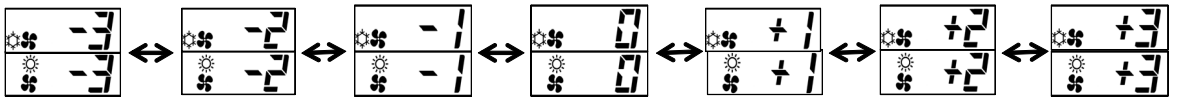


Step 1 Step 2 Step 3 Step 4

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.

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)

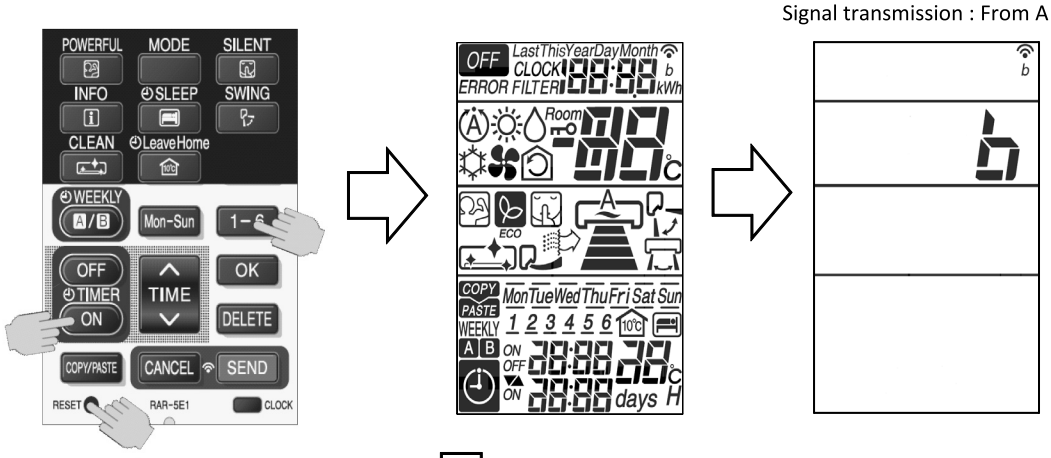
Case : 2 sets of indoor units installed near to each other.
If both indoor units can receive the same remote controller signal, please set the remote controller as below. (This setting will change the signal address of each remote controller.)

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.)

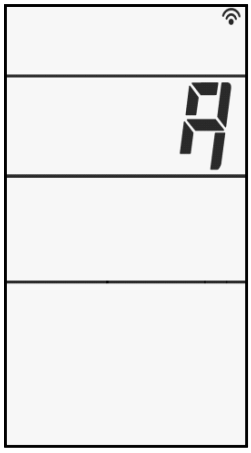
Signal transmission : From A to B



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

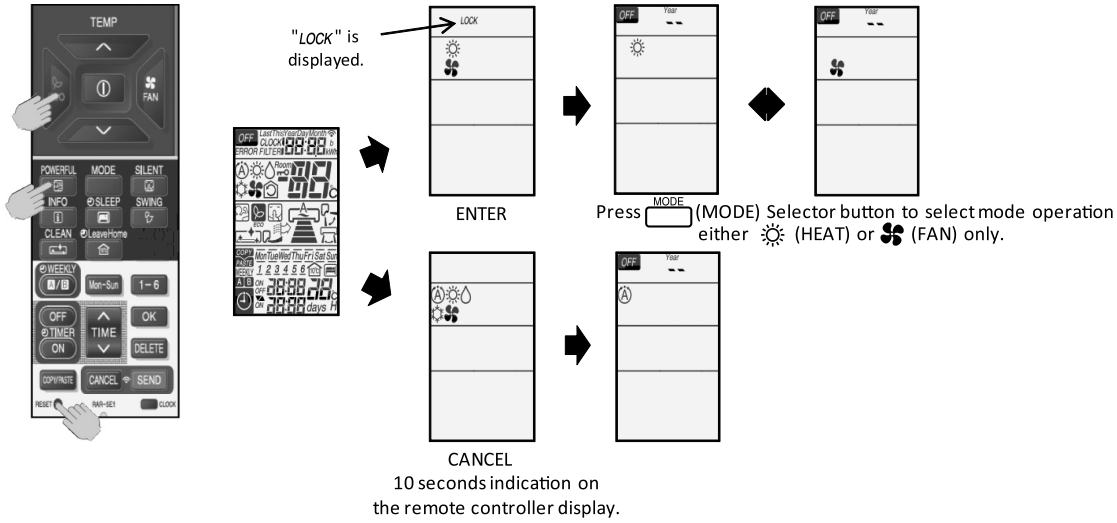
If Dip switch position is set at "Heating mode only" or "Cooling mode only" as mentioned on page 84, it is required to set the remote controller into operation mode lock setting. Without setting the remote controller, it will caused unmatch signal transmission between indoor unit and remote controller.

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".

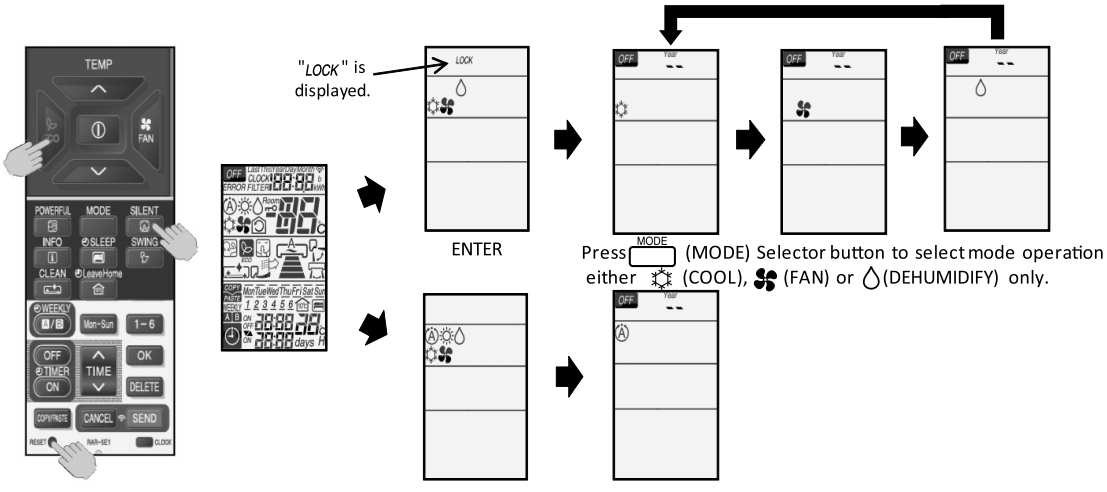
(b) To cancel the "Heating operation mode lock", repeat the above procedure (1(a)).



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.

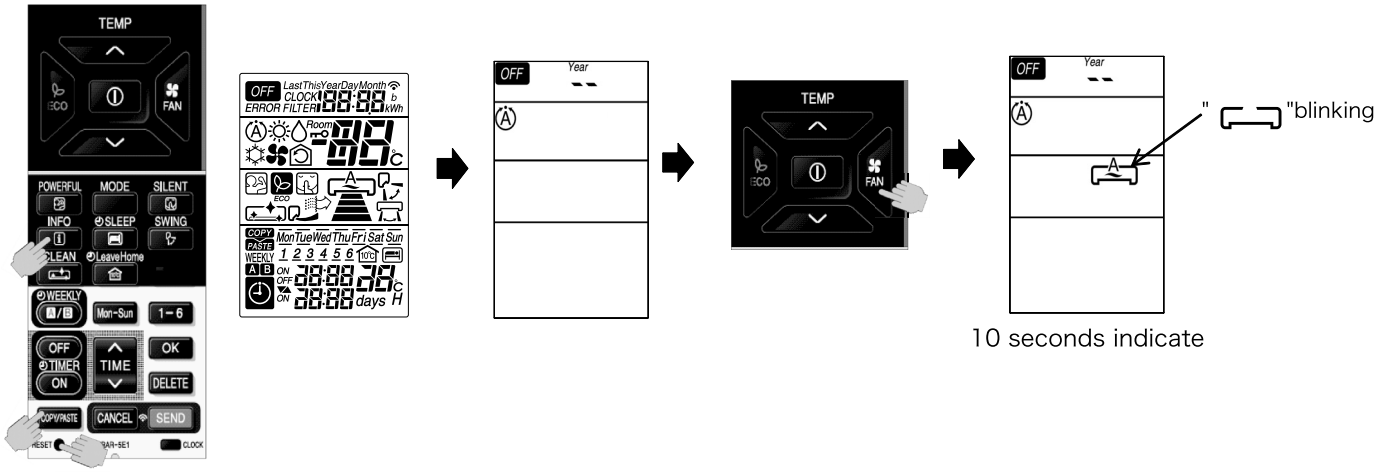
(2) The OPERATION MODE LOCK setting will remain in the remote controller memory eventhough the remote controller is ran out of battery.

DISPLAY OPERATION MODE SETTING

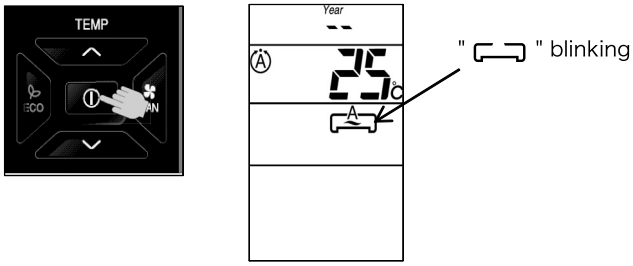
For operating indoor unit independently (without outdoor unit connection), remote controller has to be set according to below procedures before send the signal to the indoor unit. New communication format between indoor and outdoor is required to communicate with outdoor unit.

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.

SELF CHECK

When self-diagnosis lamp blinks 2,3,4 and 5 times happen, to determine whether compressor faulty or electrical unit faulty, please conduct a SELF CHECK as below.

1. Switch OFF main power supply.
2. Short circuit between JW001 and JW002.
3. Switch ON main power supply – LD301 will blink 1 time.
4. (Within 3 minutes) Press Test/Service Switch for 1 second or more.
5. Self-diagnosis result will be shown – LD303 will ON (LIT) and LD301 will be blinking. Then refer to diagnosis table 2.
6. Switch OFF main power supply. Then release back JW001 and JW002 to original condition (no short circuit condition).

* If step No. 6 is not carried out, the system will not operate properly until 3 minutes has lapsed after restore the power supply.

* SELF CHECK diagnosis result

SELF-DIAGNOSIS LIGHTING MODE ■ LIT ▨ BLINKING □ OFF				
LD301 RED	LD302 RED	LD303 RED	SELF-DIAGNOSIS RESULT	REPAIR METHOD
▨	□	■	ELECTRICAL OK	① CHANGE COMPRESSOR
1 TIME				
▨	□	■	PEAK CURRENT CUT OFF	① CHANGE P.W.B.s
2 TIMES				
▨	□	■	COMPRESSOR CURRENT ABNORMAL	① IF COMPRESSOR CONNECTOR LOOSE OR NG - CHECK CONNECTOR CONDITION ② IF COMPRESSOR CONNECTOR OK, - CHECK COMPRESSOR, CHANGE P.W.B.s
7 TIMES				
▨	□	■	DC VOLTAGE ABNORMAL	① IF AC VOLTAGE INPUT ABNORMAL (OVER STANDARD VOLTAGE ±10%), - FOLLOW STANDARD AC VOLTAGE INPUT ② IF AC VOLTAGE INPUT IS NORMAL (WITHIN ±10%), - CHANGE P.W.B.s
10 TIMES				
▨	□	■	EEPROM READING ERROR	① CHANGE P.W.B. MAIN
13 TIMES				

In case abnormalities found in measurement result, change the defect part.

In case electrical is normal and before it can be use, modify back

JW001 and JW002 as normal condition (before conduct a self check).

In case of service person forgot to release JW001 and JW002 to original condition;

Case 1:

If main power supply continuously ON, outdoor microcomputer will keep showing diagnosis result (LD303 will ON and LD301 will blinks).

Case 2:

If main power supply OFF at once, then switch ON again:

a) Outdoor microcomputer will wait the self check command (by pressing test/service switch) (LD301 blinks 1 time) and unit not running.

Case 3:

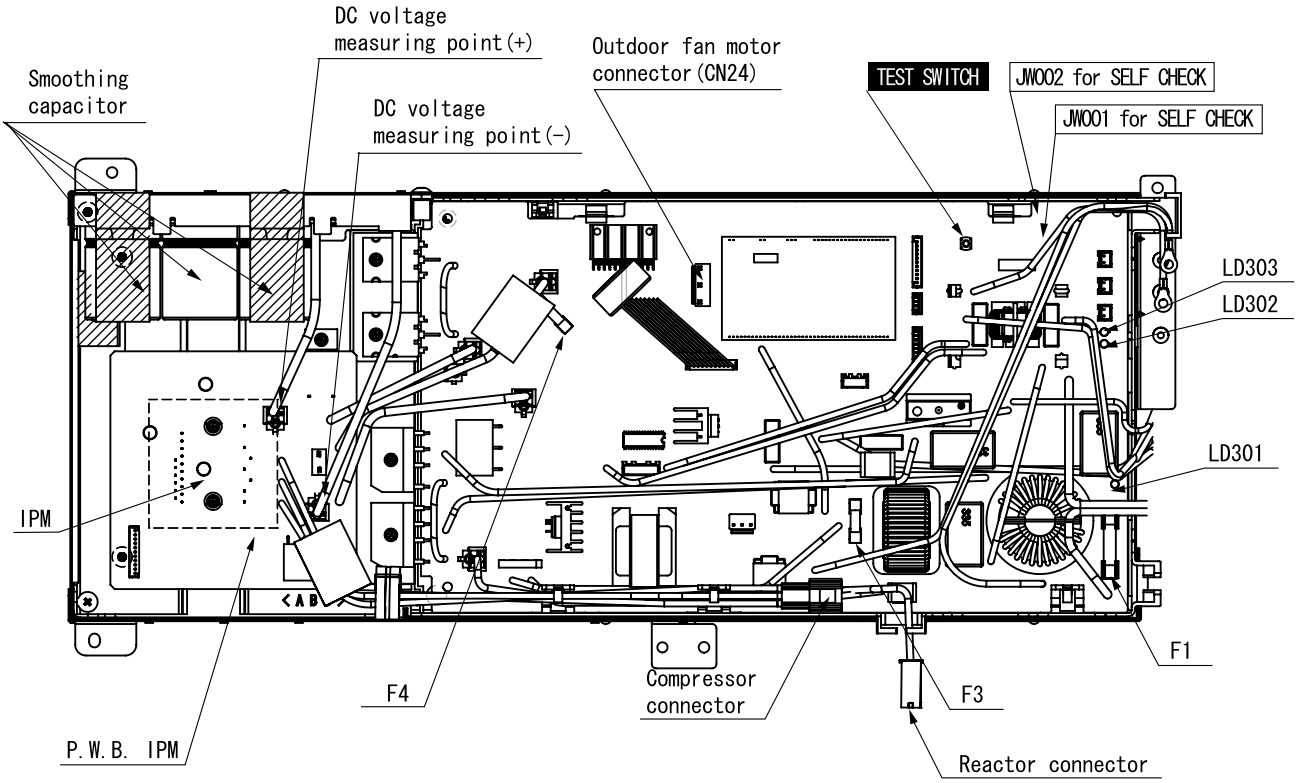
If main power supply OFF at once, then switch ON again and on indoor unit by remote control;

a) Indoor unit LD721 will blinks 4 times, outdoor unit LD301 blinks 1 time, and unit not running.

HOW TO OPERATE USING OUTDOOR UNIT TEST SWITCH

1. Pull out power cord plug and wait for 1 minute before plug in again.
2. Remove outdoor electrical cover and confirm that LD301 will blink 1 time.
3. Force cooling operation is start when TEST SWITCH is pressed for 1 second or more.

   ※ (There is a case where operation will only start after 1 minute after pressing the TEST SWITCH due to initilizing of the expansion valve)
5. Press again the TEST SWITCH for about 1 minute or more to stop the force cooling operation.

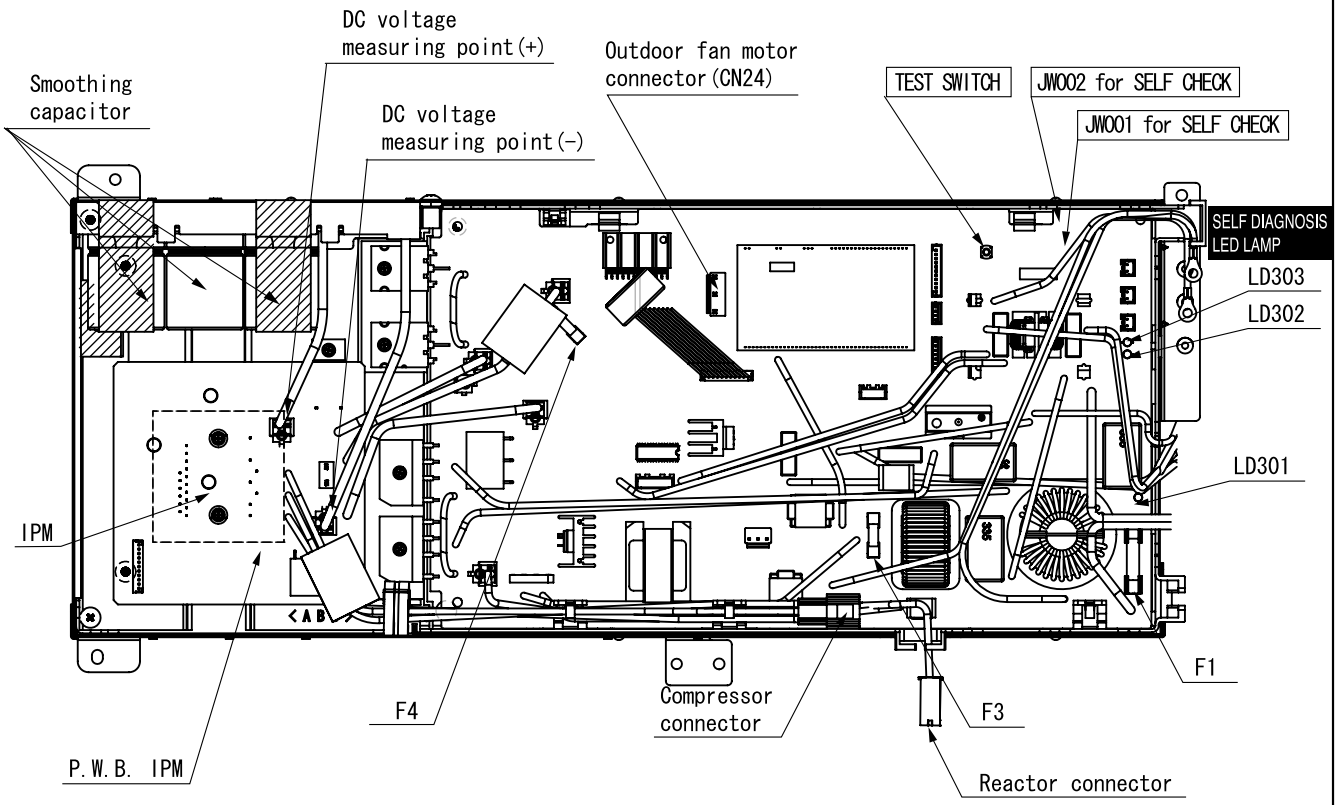


※ Caution

1. Turn OFF the breaker first before can start servicing.
2. Never operate the unit in this condition for more than 5 minutes.
3. If the checking is done with the compressor connector disconnected, the unit will continue normal operation when electrical part are normal, or it will repeat operating for approximate 1 minute and stop due to overload power limit cut
4 If interface signal (DC35V) terminal C and D are not connected when the outdoor unit TEST SWITCH is used for checking,LD301 will blink 9 times after operation to indicate a communication error.
5. To proceed with TEST SWITCH operation again, breaker must be turn OFF and ON it again. (TEST SWITCH will operate 1 time only once power is supplied)
6 When service operation is completed, restore the connection as original condition.

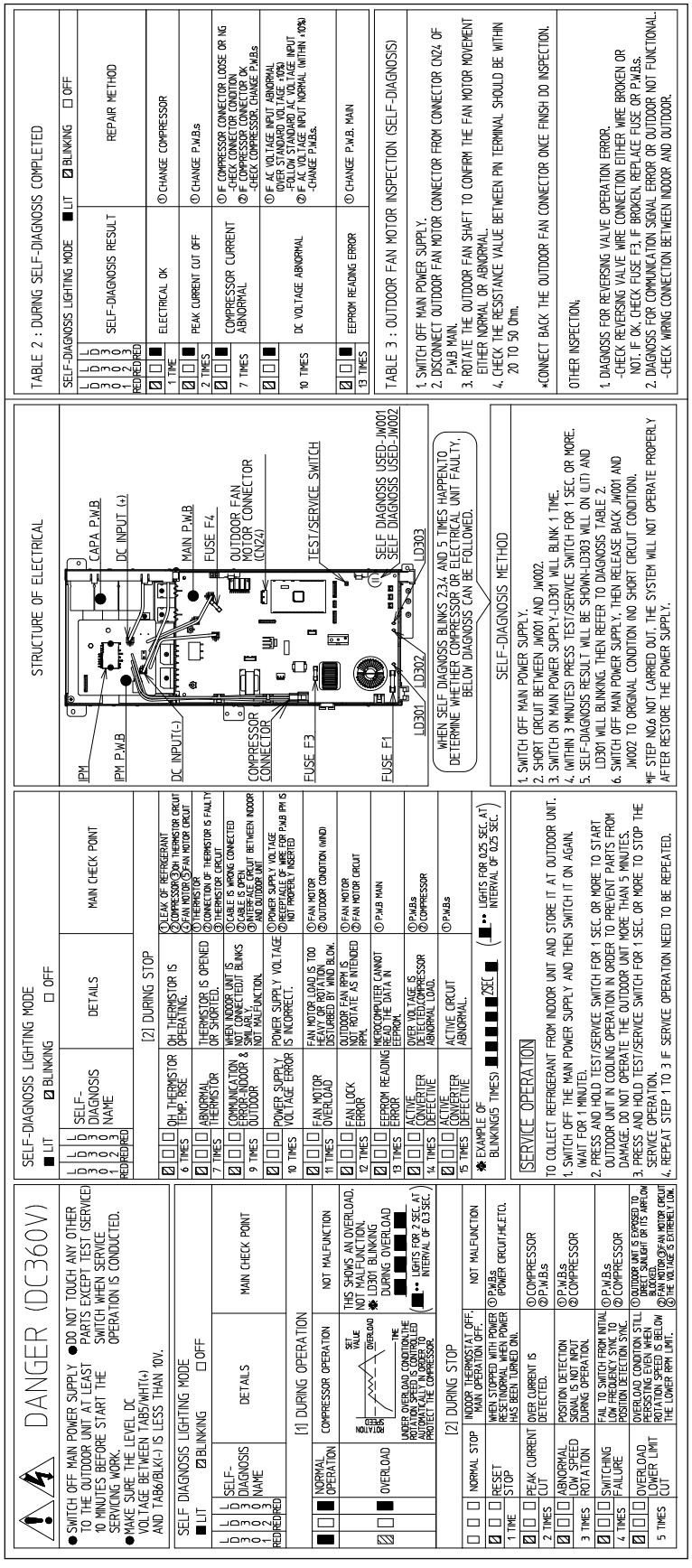
LIGHTING MODE OF SELF-DIAGNOSIS LAMP

1 POSITION OF SELF-DIAGNOSIS LAMP



LIGHTING MODE SELF-DIAGNOSIS LAMP

2 LIGHTING MODE SELF-DIAGNOSIS LAMP



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

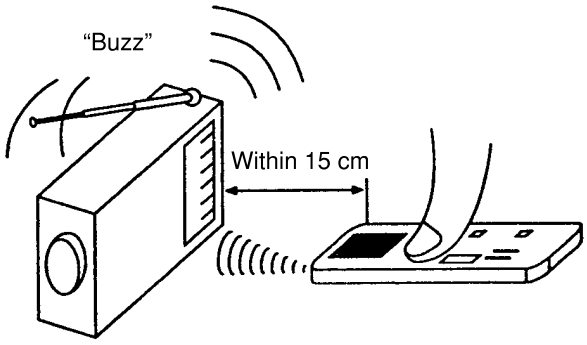
Turn on an AM radio, bring the remote control switch within 15 cm of the radio, and press the ON/OFF button.

Does the radio buzz noisily?

No

Check the LED (D1) with a multimeter.

Yes



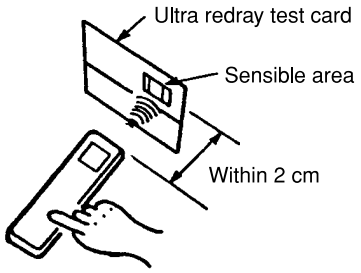
[AM radio]

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

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

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

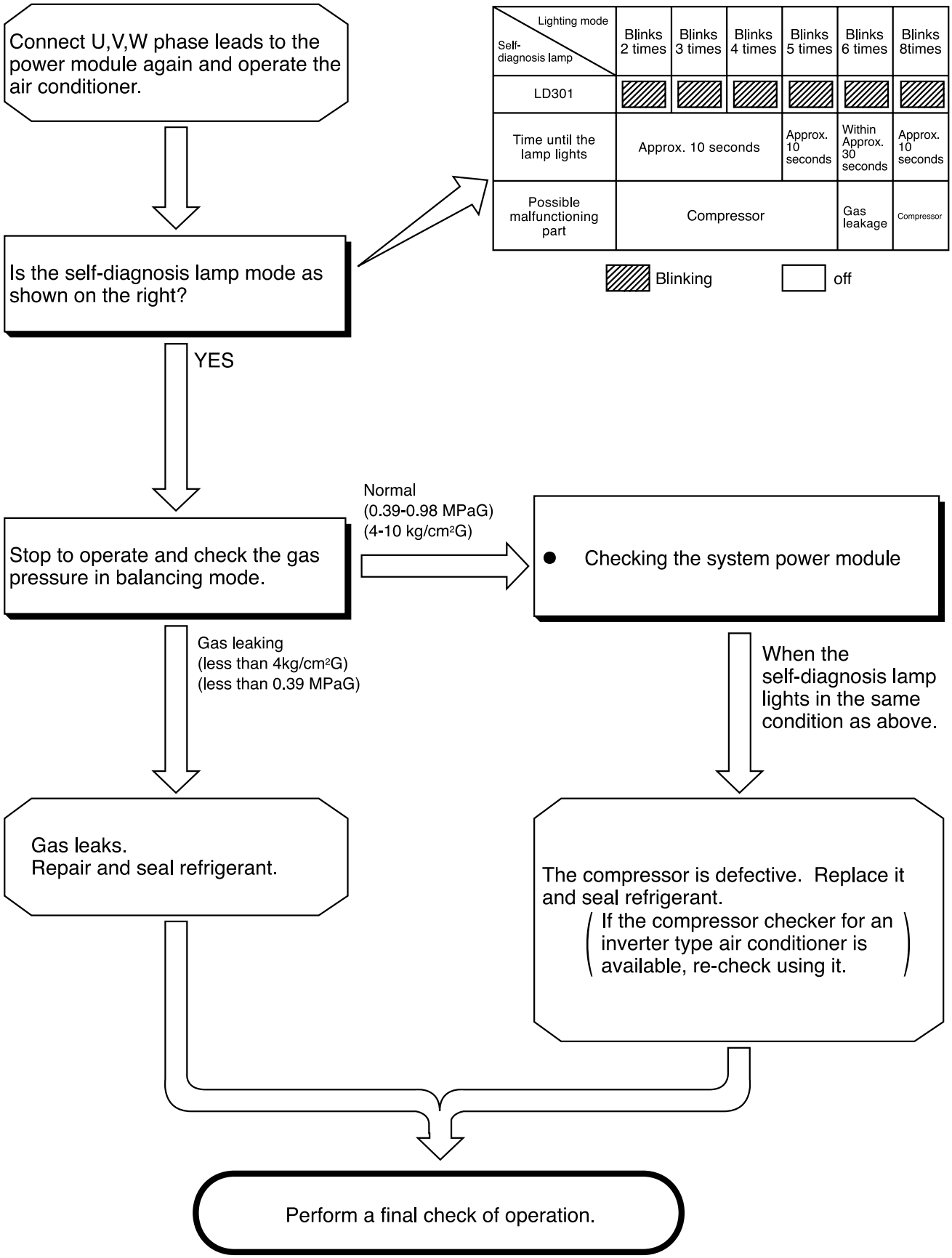
Using the test card



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

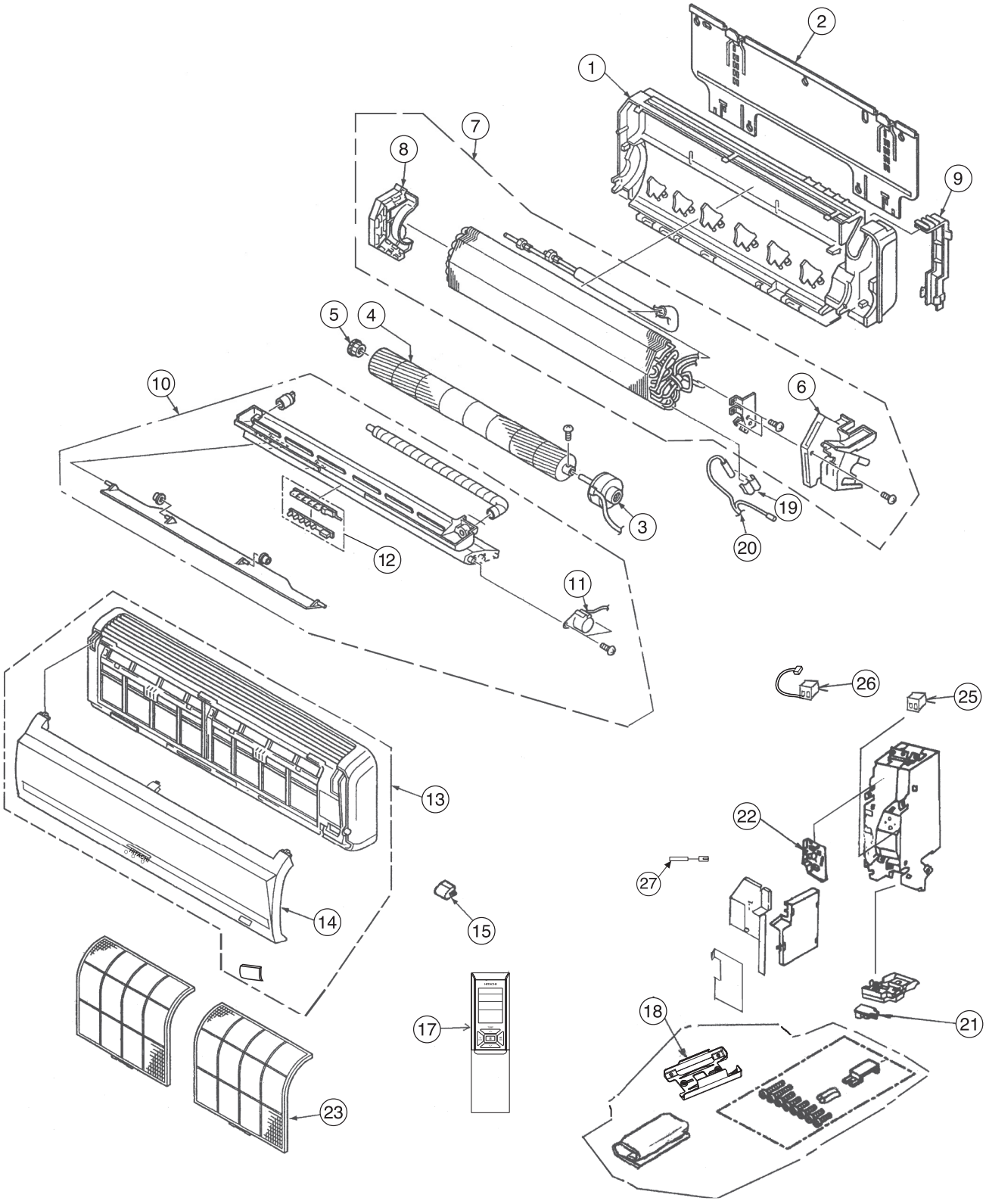
CHECKING THE REFRIGERATING CYCLE (JUDGING BETWEEN GAS LEAKAGE AND COMPRESSOR DEFECTIVE)

1. Troubleshooting procedure (No operation, No heating, No cooling)



PARTS LIST AND DIAGRAM

INDOOR UNIT
MODEL : RAK-60PPA

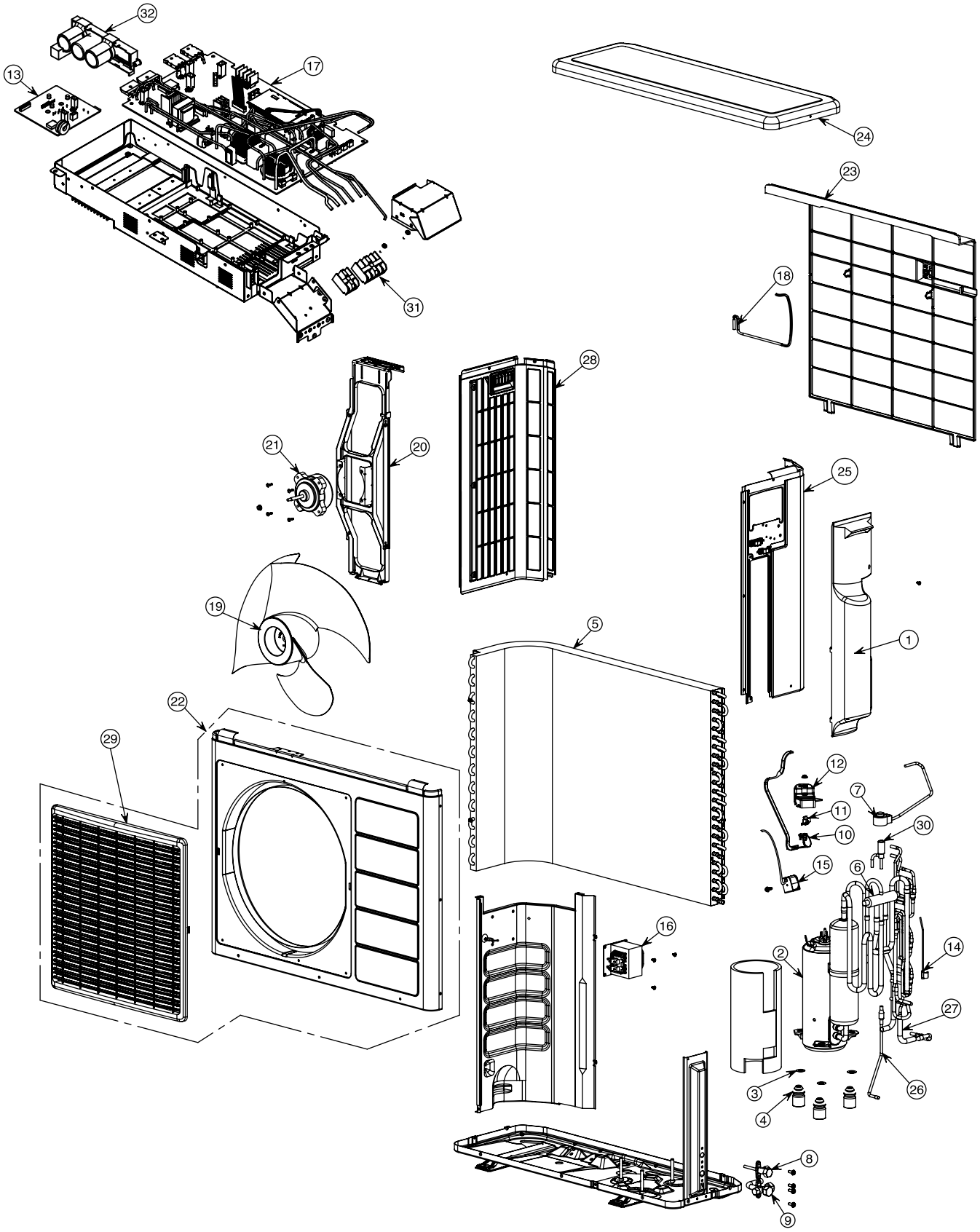


MODEL RAK-60PPA

NO.	PART NO. RAK-60PPA	Q'TY / UNIT	PARTS NAME
1	PMRAS-70YHA 001	1	CABINET
2	PMRAS-40CNH2 R23	1	MOUNTING PLATE
3	PMRAS-70YHA R13	1	FAN MOTOR
4	PMRAS-70YHA R10	1	TANGENTIAL FAN
5	PMRAS-25CNH2 005	1	P-BEARING ASSY
6	PMRAS-51CHA1 004	1	FAN MOTOR BASE
7	PMRAK-60PPA R03	1	CYCLE ASSY
8	PMRAS-51CHA1 R20	1	FAN COVER
9	PMRAS-18CP5 003	1	PIPE SUPPORT
10	PMRAS-70YHA R03	1	DRAIN PAN ASSY
11	PMRAS-18CP6 R02	1	AUTO SWEEP MOTOR
12	PMRAS-70YHA R07	1	P.W.B (LED)
13	PMRAS-60YH5 001	1	FRONT COVER ASSEMBLY
14	PMRAS-60YH5 002	1	FRONT PANEL
15	PMRAS-10C7M 008	3	CAP
17	PMRAI-25RPA R02	1	REMOTE CONTROL ASSEMBLY
18	PMRAK-50PPA R07	1	REMOTE CONTROL SUPPORT
19	PMRAS-40CNH2 R26	1	THERMISTOR SUPPORT
20	PMRAS-70YHA R12	1	THERMISTOR
21	PMRAK-60PPA R02	1	P.W.B (RECEIVER)
22	PMRAK-60PPA R01	1	P.W.B (MAIN)
23	PMRAS-60YH7 R02	2	FILTER
25	PMRAC-07CV1 R06	1	TERMINAL BOARD (2P)
26	PMRAS-70YHA R11	1	TERMINAL BOARD (2P)
27	PMRAK-60PPA R04	1	THERMAL FUSE

PARTS LIST AND DIAGRAM

OUTDOOR UNIT
MODEL : RAC-60WPA



MODEL RAC-60WPA

NO.	PART N0. RAC-60WPA		Q'TY / UNIT	PARTS NAME
1	PMRAC-60YHA2	S04	1	SV-COVER
2	PMRAC-60YH7	S01	1	COMPRESSOR
3	KPNT1	001	4	PUSH NUT
4	RAC-2226HV	805	3	COMPRESSOR RUBBER
5	PMRAC-50NH4	S02	1	CONDENSER
6	PMRAC-X24CAT	S02	1	REVERSING VALVE
7	PMRAC-25NPA	S02	1	ELECTRICAL EXPANSION COIL
8	PMRAC-50NH4	S03	1	VALVE (2S)
9	PMRAC-60YHA3	S06	1	VALVE (4S)
10	PMRAC-40CNH2	S14	1	THERMISTOR (OH)
11	PMRAC-25NH4	S09	1	OVERHEAT THERMISTOR SUPPORT
12	PMRAC-X13CX	906	1	OVERLOAD RELAY COVER
13	PMRAC-50YH7A	S02	1	P.W.B (IPM)
	PMRAC-50YH7A	S92	1	(OPTIONAL) P.W.B (IPM) TUFFY
14	PMRAC-50YHA2	S07	1	THERMISTOR (DEFROST)
15	PMRAC-50YHA2	S09	1	COIL (REVERSING VALVE)
16	PMRAC-50YHA2	S04	1	REACTOR
17	PMRAC-60WPA	S01	1	P.W.B (MAIN)
	PMRAC-60WPA	S91	1	(OPTIONAL) P.W.B (MAIN) TUFFY
18	PMRAC-50YHA2	S08	1	THERMISTOR (OUTSIDE TEMPERATURE)
19	PMRAC-70YHA	S07	1	PROPELLER FAN
20	PMRAC-40CNH2	S18	1	SUPPORT (FAN MOTOR)
21	PMRAC-50YHA2	S03	1	FAN MOTOR
22	PMRAC-50YH7	S04	1	CABINET
23	PMRAC-40CNH2	921	1	NET
24	PMRAC-40CNH2	922	1	TOP COVER
25	PMRAC-60YHA2	S06	1	SIDE PLATE-R
26	PMRAC-60YHA2	S02	1	STRAINER (PIPE)
27	PMRAC-60YHA2	S03	1	STRAINER (COND)
28	PMRAC-40CNH2	926	1	SIDE PLATE-L
29	PMRAM-52QH5	S03	1	GRILL
30	PMRAC-25NPA	S03	1	EXPANSION VALVE
31	PMRAC-51CHA1	S03	1	TERMINAL BOARD (4P)
32	PMRAC-50YH7A	S03	1	P.W.B (CAPA-BOARD)

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