HITACHI

SERVICE MANUAL

TECHNICAL INFORMATION

FOR SERVICE PERSONNEL ONLY

OUTDOOR UNIT

INDOOR UNIT

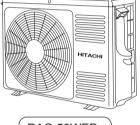




RAC-18WED RAC-25WED RAC-35WED



RAK-18PED







JCH-WH NO. 0105E

RAK-18PED/RAC-18WED RAK-25PED/RAC-25WED RAK-35PED/RAC-35WED RAK-50PED/RAC-50WED **RAK-25PEDC/RAC-25WED RAK-35PEDC/RAC-35WED** RAK-50PEDC/RAC-50WED

REFER TO THE FOUNDATION MANUAL

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SPECIFICATIONS

TYPE						DC INVEF	RTER			
1117			INDOOR UNIT	OUTDOOR UNIT	INDOOR UNIT	OUTDOOR UNIT	INDOOR UNIT	OUTDOOR UNIT	INDOOR UNIT	OUTDOOR UNIT
MODEL			RAK-18PED	RAC-18WED	RAK-25PED RAK-25PEDC	RAC-25WED	RAK-35PED RAK-35PEDC	RAC-35WED	RAK-50PED RAK-50PEDC	RAC-50WED
POWER SO	URCE		1 PHASE,50	Hz,220-230V	1 PHASE,50	0Hz,220-230V	1 PHASE,50	Hz,220-230V	1 PHASE,50	Hz, 220-230V
	TOTAL INP	JT (W)	580 (250) ~ 1,010)	700 (25	i0∼1,290)	1,090 (25	0∼1,460)	1,560 (50	00~2,100)
COOLING	TOTAL AMF	PERES (A)	3.19	-3.05	3.8	4-3.67	5.41-	-5.18	7.16	6-6.85
COOLING	CAPACITY	(KW)	2.00 (0.9	90~2.50)	2.50 (0.	.90~3.10)	3.50 (0.9	0~4.00)	5.00 (1.9	90~5.20)
	OAI AOITT	(B.T.U./h)	6,820 (3,0	70~8,530)	8,530 (3,0	070~10,580)	11,940 (3,07	70~13,650)	17,060 (6,4	80~17,740)
	TOTAL INP	JT (W)	620 (25	io~970)	880 (25	i0∼1,250)	1,100 (25	0~1,700)	1,660 (50	00~2,750)
HEATING	TOTAL AME	PERES (A)	3.62	-3.46	4.5	6-4.36	5.56	-5.31	7.62	2-7.29
TIEATING	CAPACITY	(KW)	2.50 (0.9	90~3.20)	3.40 (0.	.90~4.40)	4.20 (0.9	0∼5.00)	6.00 (2.2	20~7.30)
	OAI AOITT	(B.T.U./h)	8,530 (3,07	7 0∼10,920)	11,600 (3,0	070~15,010)	14,330 (3,07	70~17,060)	20,470 (7,5	10~24,910)
D.1145110101	10	W	780	660(+60) [*]	780	660(+60)**	780	660(+60)**	780	792(+91)**
DIMENSION (mm)	15	Н	280	530	280	530	280	530	280	600
		D	215	278(+55)**	215	278(+55)**	215	278(+55)**	215	299(+47)**
NET WEIGH	IT	(Kg)	7.5	23	7.5	23	7.5	24.5	8	39.5

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

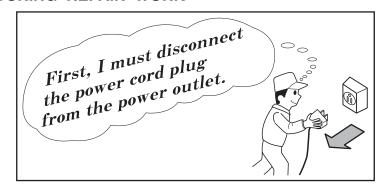
ROOM AIR CONDITIONER

INDOOR UNIT + OUTDOOR UNIT

Johnson Controls-Hitachi Air Conditioning Wuhu Co., Ltd.

SAFETY DURING REPAIR WORK

 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.



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.
- Lead wires should be connected and laid as in the initial state.
- Modification of the unit by the user himself should absolutely be prohibited.



- 6. Tools and measuring instruments for use in repairs or inspection should be accurately calibrated in advance.
- 7. In installing the unit having been repaired, be careful to prevent the occurrence 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 $1M\Omega$ 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 safe enough to support the repaired unit again.

 If it is found not so strong and safe the unit should be installed at the initial location after reinforced.
 - If it is found not so strong and safe, the unit should be installed at the initial location after reinforced or at a new location.
- 10. Any inflammable object must not be placed about the location of installation.
- 11. Check the grounding to see whether it is proper or not, and if it is found improper, connect the grounding terminal to the earth.



WORKING STANDARDS FOR PREVENTING BREAKAGE OF SEMICONDUCTORS

1. Scope

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

2. Object parts

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

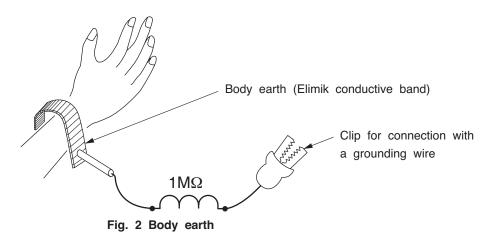
3. Items to be observed in handling

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



Fig. 1 Conductive container

- (2) When any part is handled uncovered (in counting, packing and the like), the handling person must always use himself as a body earth. (Make yourself a body earth by passing one M ohm 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.



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

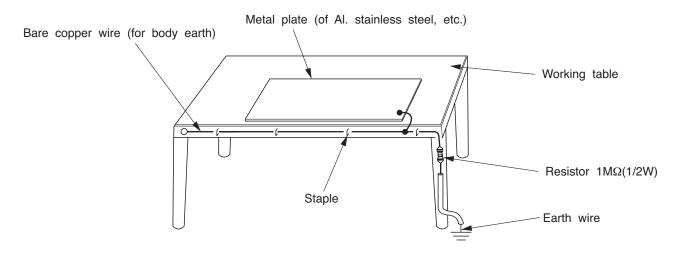


Fig.3 Grounding of the working table

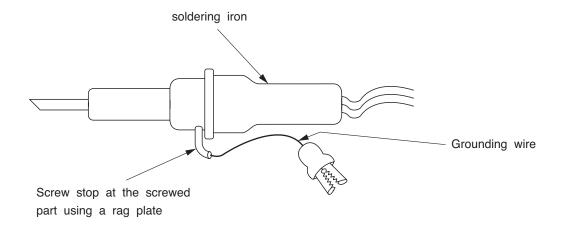


Fig.4 Grounding a solder iron

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

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

A 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 turn off the circuit breaker for safety.
- 3. In the event of power failure, the room air conditioner will restare automatically in the previously selected mode once the power is restored. In the event of power failure during TIMER operation, the room air comditioner 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-18PED RAK-25PED RAK-35PED RAK-50PED RAK-25PEDC RAK-35PEDC RAK-50PEDC	RAC-18WED RAC-25WED	RAC-35WED	RAC-50WED
FAN MOTOR		30W (DC325V)		47W (DC120~38)	0V)
FAN MOTOR CAPACITOR		NO		NO	
FAN MOTOR PROTECTOR		NO		NO	
COMPRESSOR		-	GSD088	SKQA6JK6	GTD130UKQA8JT6
COMPRESSOR MOTOR CAP	ACITOR	NO		NO	
OVERLOAD PROTECTOR		NO		YES(INTERN	AL)
OVERHEAT PROTECTOR		NO		YES	
FUSE (for MICROPROCESSO	DR)	3.15A	15A, 2A,	3A, 3.15A	25A, 2A, 3A, 3.15A
POWER RELAY		NO		HF161F	=
POWER SWITCH		NO		NO	
TEMPORARY SWITCH		YES		NO	
SERVICE SWITCH		NO		YES	
TRANSFORMER		YES		YES	
VARISTOR		ERZVA9V431	Т	VR10471,ERZVA9	9V431
NOISE SUPPRESSOR		NO		YES	
THERMOSTAT		YES(IC)		YES(IC)	
REMOTE CONTROL SWITCH CRYSTAL)	I (LIQUID	YES		NO	
REFRIGERANT CHARGING	UNIT		530g	700g	930g
VOLUME (Refrigerant R32)	PIPES (MAX. 20m) (MIN. 3m)			RIGERANT BECAI IS FLARE TYPE.	

Figure showing the installation of Indoor and Outdoor unit

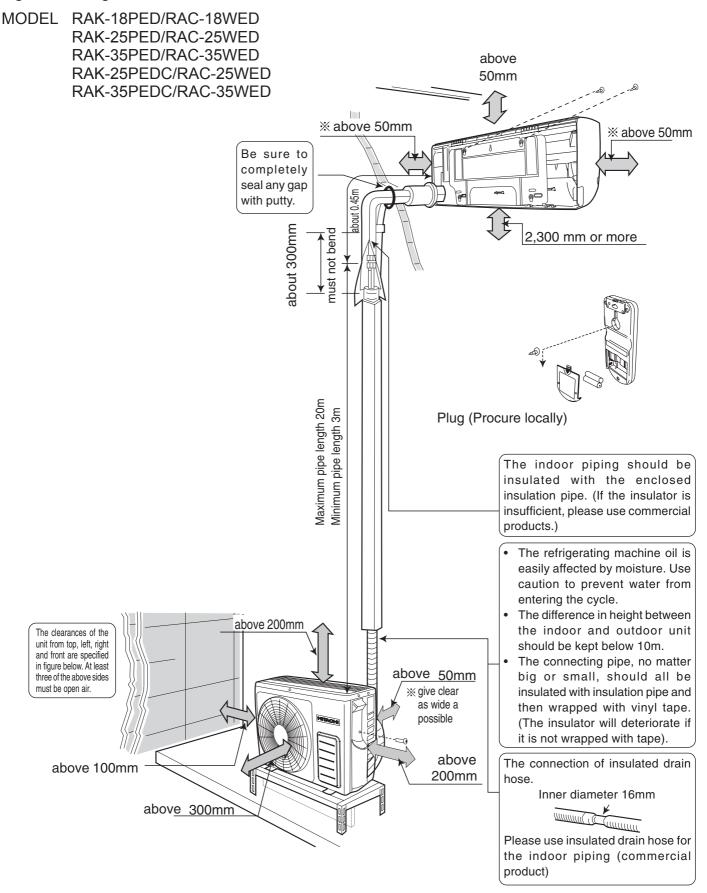
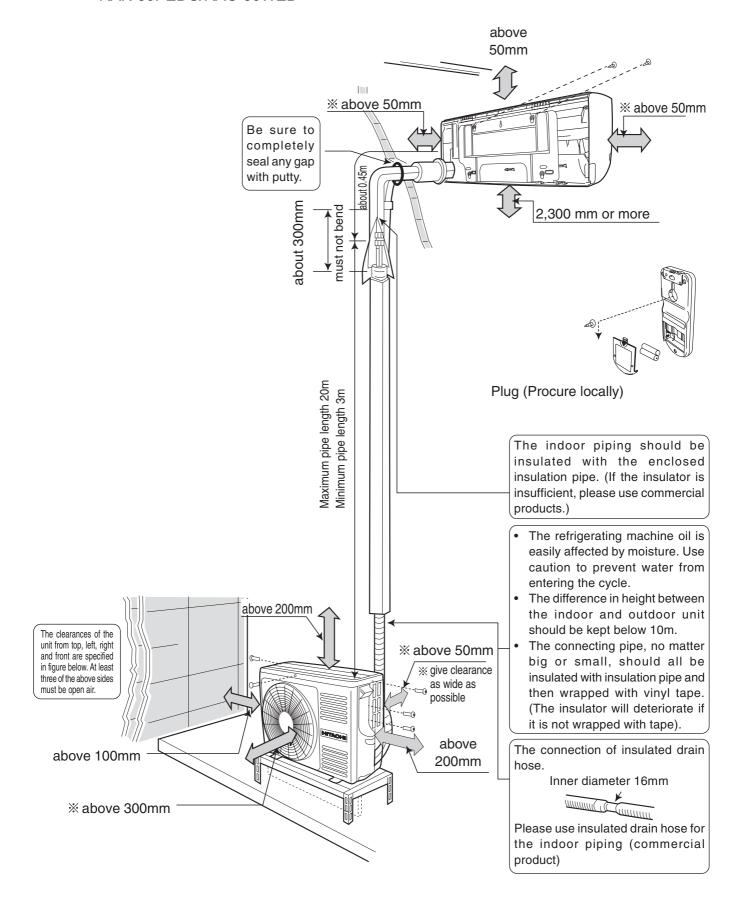


Figure showing the installation of Indoor and Outdoor unit

MODEL RAK-50PED/RAC-50WED RAK-50PEDC/RAC-50WED



MANUAL OPERATION [Heating • Dehumidify • Cooling]

■ Please use under below condition when you want to set the function mode, room temperature and fan speed manually.

ЕИСТІЗН

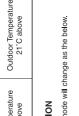
COOLING	Outdoor Temperature 21°C above
DEHUMIDIFYING	Room Temperature 16°C above
HEATING	Outdoor Temperature 24°C below

1 OPERATION MODE SELECTION

Every time you press the button, the mode will change as the below.

DEHUMIDIFYING

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ROOM TEMPERATURE SETTING 2

: COOLING

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3 FAN SPEED SETTING

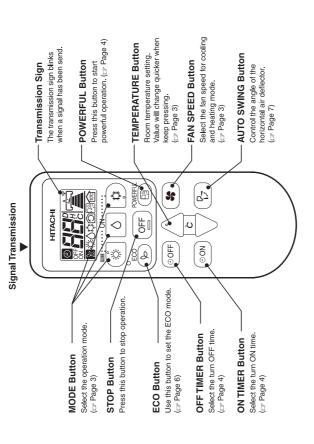
room temperature.

- Every time you press the button, fan speed will change as below sequence.
- AUTO → HIGH → MED → LOW → SILENT SILENT $\{$ DEHUMIDIFYING HEATING COOLING

- \uparrow
- Press the OFF (STOP) button
- Operation stops with a beep.

NAMES AND FUNCTIONS OF REMOTE CONTROLLER

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

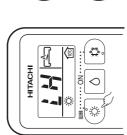


Precautions for Use

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

LEAVE HOME(LH) OPERATION

Prevent the room temperature from falling too much by setting temperature at 10 deg automatically when no one is at home.



Hold down the HEATING Button for 3-5 seconds to start Leave Home operation. START

• "读", "LH", "四", " @ ", is displayed on the LCD. Room temperature is automatically set at 10 deg.

Press the OFF (STOP) button. Change to other Operation Mode. (CANCEL)

ЕИВГІЗН

Operation stop at setting time

Timer Reservation

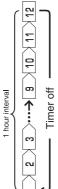
ON Timer and OFF Timer are available.

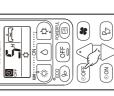
TIMER RESERVATION

(1) GOFF OFF TIME setting

Select the OFF TIME by pressing the (DOFF) (OFF)

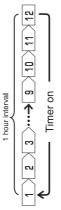
 Setting time will change according to the below sequence when you press the button. Button.

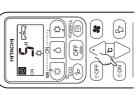




\mathbf{Z} on TIME setting

- Select the ON TIME by pressing the (OON) (ON) Button.
- Setting time will change according to the below sequence when you press the button.





POWERFUL OPERATION

- By pressing (FOWERFUL) button during HEATING, DEHUMIDIFYING, COOLING operation, the air conditioner performs at maximum power.
 Unring POWERFUL operation, cooler or warmer air will be blown out from indoor unit for COOLING or HEATING operation respectively. • "B" is displayed on the LCD POWERFLU, operation ends in 20 minutes. Then the system automatically operates with the previous settings used before POWERFLU, operation. Press the (POWERFUL) button during operation. START HINGH OF STATE OF STA
 - SANCEL)



Press the (POWERFUL) button again. • " B" disappears from the LCD

- When ECO 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.

During Leave Home operation, fan speed and horizontal air deflector position cannot be changed.

NOTE

ADJUSTING THE AIRFLOW DIRECTION

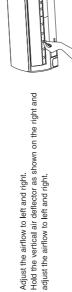
Adjust the airflow upward and downward.
According to operation, the horizontal air deflector is automatically set to the proper angle suitable for each operation. The deflector can be swings up and down and also set to the desired angle using the " $(\frac{77}{7})$ (AUTO SWING)" button.



- horizontal air deflector swings up and down. If the button is • If the " $\left(\overrightarrow{P_7} \right)$ (AUTO SWING) " button is pressed once, the pressed again, the deflector stops in its current position. Several seconde (about 6 seconds) may be required before the deflector starts to move.
 - When the operation is stopped, the horizontal air deflector moves and stops at the position where the air outlet closes.

♠ CAUTION

In "Cooling" operation, do not keep the horizontal air deflector swinging for a long time. Some dew may form on the horizontal air deflector and some dew may drop from it.



adjust the airflow to left and right.

HOW TO EXCHANGE THE BATTERIES IN THE REMOTE CONTROLLER

Install the new batteries.

The direction of the batteries should match the marks in the

Remove the cover as shown in the figure and take out the old

Push and pull to the dirction of arrow

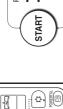


- 1. Do not use new and old batteries, or different kinds of batteries A CAUTION
- 2. Take out the batteries when you do not use the remote controller for 2 or 3 months.

ECO OPERATION

■ Energy saving operation by changing set temperature and by limiting the maximum power consumption





Press ⋈ (ECO) button during operation. " Is displayed on the LCD.



Energy saving operation will start by changing the set temperature higher or lower and saving operation power consumption.



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5 O

" lasappears from the LCD.



NO O © OFF

Press (off) (START/STOP) button. Press № (ECO) button again.

NOTE

- In case the power consumption is already low, ECO operation will not reduce the power consumption.
 - By pressing (POWERFUL) button, ECO operation is cancelled.
- After auto restart, ECO operation is cancelled and previous operation mode shall start.

(~)

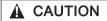
ADJUSTING THE AIRFLOW DIRECTION



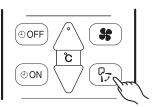
Adjust the airflow upward and downward.

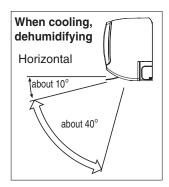
According to operation, the horizontal air deflector is automatically set to the proper angle suitable for each operation. The deflector can be swings up and down and also set to the desired angle using the " $\mathbb{Q}_{\overline{\mathcal{I}}}$ " (AUTO SWING)" button.

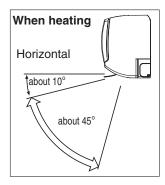
- If the " (AUTO SWING)" button is pressed once, the horizontal air deflector swings up and down. If the button is pressed again, the deflector stops in its current position. Several seconde (about 6 seconds) may be required before the deflector starts to move.
- The adjusting range of the horizontal air deflector is shown on the right.
- When the operation is stopped, the horizontal air deflector moves and stops at the position where the air outlet closes.



 In "Cooling" operation, do not keep the horizontal air deflector swinging for a long time. Some dew may form on the horizontal air deflector and some dew may drop from it.



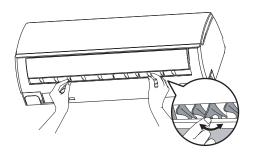






Adjust the airflow to left and right.

Hold the vertical air deflector as shown on the right and adjust the airflow to left and right.



PRECAUTIONS DURING OPERATION

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,





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 of effect. If not, the outdoor unit may collapse and cause danger.



Do not wash the unit with water or place a water container such as a vase on the indoor unit.

The indoor unit.

The indoor unit.

The indoor unit.



Be sure to stop the operation by using the remote controller and turn off the circuit breaker during cleaning, the high-speed fan inside the unit may cause













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.

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



WARNING

your sales agent.

Vody sales agent.

Vody de damerically available detergent or similar can damage the plastic parts or Josop a commercially available detergent or similar can damage the plastic parts. Indoor unit cleaning must be performed by authorized personnel only. Consult

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.







Do not touch the refrigerant pipe and connecting valve. Burns may result.

unit You may get hurt.

This appliance is not to be used by children or persons with reduced physical, sensory or mental
capabilities, or lack of experience and rivowledge, unless they thave been given supervision or
instruction. Children must be supervised not to play with the appliance.

SAFETY PRECAUTION

ЕИСГІЗН

- | A This appliance is filled with R32. | Please read the "Safety Precaution" carefully before operating the unit to ensure correct usage of the unit. Pay special attention to signs of "**A Warning**" and "**A Caution**". The "Varning" section contains matters which, if not observed strictly, may cause death or service in the "Caution" section contains matters which may result in serious consequences find to beserved properly. Please observe all instructions strictly to ensure safety.

Make sure to connect earth line.
 Indicates the instructions that must be followed.

Please keep this manual after

This sign in the figure indicates prohibition.

PRECAUTIONS DURING INSTALLATION

Do not reconstruct the unit.
 Water leakage, fault, short circuit or fire may occur if you reconstruct the unit by





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 or fire.

WARNING

 Be sure to use the specified piping set for R32. Otherwise, this may result in broken copper pipes of raths.
 To not use refrigered or faths.
 Do not use refrigerant other the one indicated on the outdoor unit (R32) when installing, moving or repairing. Using other refrigerants may cause trouble or damage to the unit, and personal injury.

 A circuit breaker should be installed depending on the mounting site of the unit.
 Without a circuit breaker, the danger of electric shock exists. CAUTION

Do not install the unit near a 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.

Make sure that a single phase 220V-230V power source is used.
 The use of other power sources may cause electrical components to overheat and lead to fine.



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PRECAUTIONS DURING SHIFTING OR MAINTENANCE

 Should abnormal situation arise (like burning small), 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

(H)



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 improperty.

PRECAUTIONS DURING OPERATION

Avoid an extended period of direct airflow for your health.





Do not use any conductor as fuse wire, this could cause fatal accident



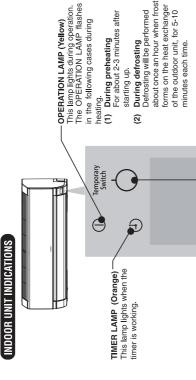
During thunder storm, disconnect the plug top and turn off breaker.

WARNING

the circuit

Spray cans and other combustibles should not be located within a meter of the
air outles of both indoor and outloor units.
 as a pray can's internal pressure can be increased by hot air, a rupture may result.

NAMES AND FUNCTIONS OF EACH PART



TEMPORARY SWITCH

Use this switch to start and stop when the remote

 By pressing the temporary switch, the operation is controller does not work.

 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.

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

♠ CAUTION

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

OPERATING RANGE

ЕИСГІЗН

Heating	-15 to 21°C	
Cooling / Dehumidifying	-10 to 43°C	
Operation mode	Outdoor temperature	

NAMES AND FUNCTIONS OF EACH PART

INDOOR UNIT

Air filterTo prevent dust from coming into the indoor unit. (Refer page 6)

Front panel

(Refer page 7)

Indoor unit indicators
Light indicator showing the operating condition (Refer page 5)

Horizontal deflector Vertical deflector (Air Outlet)

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

OUTDOOR UNIT

Air outlet
When ''neating' operation is performed, cool air blows and when ''cooling' or 'rehumidifying'' operation is performed, warm air blows. RAC-18WED RAC-25WED RAC-35WED

Drain hoseDrains the dehumidified water from the indoor unit to the outdoor during "cooling" or "dehumidifying" operation. Piping and Wiring Air inlets (Rear and left sides)

Air outlet
When 'heating' operation is
performed, cool air blows and
when 'cooling' or 'dehumidifying'
operation is performed, warm air
blows.

RAC-50WED

Earth terminal

Drain port

Drain hoseDrains the dehumidified water from the indoor unit to the outdoor during "cooling" or "dehumidifying" operation. Air inlets (Rear and left sides) Piping and Wiring

About the outdoor unit:

When "Stop" is selected during operation of the indoor unit, the fan of the outdoor unit to thin use a turning for 10 to 60 seconds to cool the electric parts down.

In heating operation, condensate on water due to defrosting will flow.

Do not cover the drain port of the outdoor unit because such water may freeze in the chilly area.

When the outdoor unit is hung on the wall, install the bush and drain pipe on the drain port and drain pipe

_	_
MENCIONS	INITIATIONS
U UNV	
NAME	ב ווחוור
MODE	

Earth termina

Drain port

MODEL	WIDTH (mm)	HEIGHT (mm)	DEPTH (mm)
RAK-18/25/35/50PED,RAK-25/35/50PEDC	780	280	215
RAC-18/25/35WED	099	530	278
RAC-50WED	792	009	299

- 4 -

- 5

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. AIR FILTER

Please clean the filter once about every two weeks. By doing so, the power rates are saved. In case the air 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 filter following the procedure below.

PROCEDURE

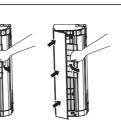
Open the front panel carefully and remove the filter.







- (C)
- Set the filter with "FRONT" mark facing front, and slot them into the original state.
 Atter attaching the filters, push the front panel at three arrow portions as shown in figure and dose



▲ CAUTION

- Do not wash with hot water at more than 40°C. The filter may shrink.
 When washing it, shake off moisture completely and dry it in the shade; do not expose it directly to the sun. The filter may shrink.
 Dorlt operate the unit without filter. Fault may occur if you continue.

ЕИСПЗН

Attaching the Front Panel

7

Wipe the water thoroughly.

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

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

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

2. CLEANING OF FRONT PANEL

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 Θ ⊗ Arm -

Push



Securely insert the shaft of the right arm along the step of the built into the hole.
 Make sure that the front panel is securely attached, and then dose the front panel.

▲ CAUTION

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

- 2 -

- 9 -

REGULAR INSPECTION

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

Check to see if the unit's earth line has been connected correctly. If the earth line is disconnected or faulty, unit failure or electric shock hazard may result.	Check to see if the mounting frame has rusted excessively or if the outdoor unit has tilted or become unstable. It could collapse or fall, causing injury.
▲ WARNING	▲ Warning
-	2

ЕИСГІЗН

INFORMATION

CAPABILITIES

Heating Capability

This room air conditioner utilizes a heat pump system that absorbs
exerifor heat and brings it into a room to be heated. As the ambient to a room to be the acted. As the ambient and the performance gets tower, heating capability will also lower. In such a roamy other sation capability from decreasing. If the unit's heating performence is still unsatisfactory, other heating appliances should be used to the incoordinate this unit's performance.

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

Cooling and Dehumidifying Capabilities

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

-

AFTER SALES SERVICE AND WARRANTY

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 routif breaker "ON"? Is the power plug inserted? Do you have any power cut?
When it does not cool well. When it does not heat well.	Is the air filter blocked with dust? Is the set temperature suitable? Have horizontal air deflectors been adjusted to their correct positions according to the operation mode selected? Are the air inlets or air outlets of indoor and outdoor units blocked? Is the fan speed "LOW" or "SILENT"?

failure.
unit
indicate
not
q ob
phenomena
following
The

, the operation sand air blow stops y sounds	<u>></u>	<operation start=""></operation>
nd air blow stops ounds		unit is preparing to blow warm air. Please wait.
spuno		operation>
spunc	T T	s outdoor unit is defrosting. Please wait.
		Refrigerant flow noise in the pipe or valve sound generated when flow rate is
		usted.
		Noise generated when the unit expands or contracts due to temperature changes.
		Noise generated with the indoor unit fan's rpm changing such as operation start
		98.
	Clicking noise No	Noise of the motorized valve when the unit is switched on.

Perking noise	Noise of the ventilation fan sucking in air present in the drain hose and blowing out dehumidifying water that had accumulated in the condensed water collector. For details, consult your sales agent.
Changing operation noise	Operation noise changes due to power variations according to room temperature changes.
Mist emission	Mist is generated as the air within the room is suddenly cooled by conditioned air.
Steam emitted from the outdoor unit	Water generated during defrosting operation evaporates and steam is emitted.
Odors	Caused as the smells and particles of smoke, food, cosmetics, etc. present in room air become attached the unit and blown off into the room again.
The outdoor unit continues to operate even if operation is stopped.	Defrosting is underway (as the heating operation is stopped, the microcomputer checks frost accumulated in the outdoor unit and instructs the unit to perform automatic defrosting if necessary).
The OPERATION lamp is blinking.	Shows preheating or defrosting operation is underway. As the protective critical or preheat sensor operates when unit operation is stopped during preheating and then restanted, or when operation mode is switched from cooling to heating, the lamp continues to bilink.
Does not reach the temperature setting	Actual room temperature may deviate slightly from the remote controller's temperature esting depending on the number of people in the room, indoor or authors conditions.

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

Contact your sales agent immediately if the following phenomena should occur.

The dirout breaker switches off or the fuse blows frequently.

The switch operation is not stable.

The switch operation is not stable.

The power cord gets excessively hot or its insulation is tom or stripped.

TIMER lamp on the indoor unit display blinks.

-

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As the nature of the failure can be identified by the blinking cycle, check the blinking cycle before turning off the circuit breaker.



Notes

In quiet operation or stopping the running, the following phenomena may occasionally 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 please clean the air filter and the evaporator regularly to reduce the odor.

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

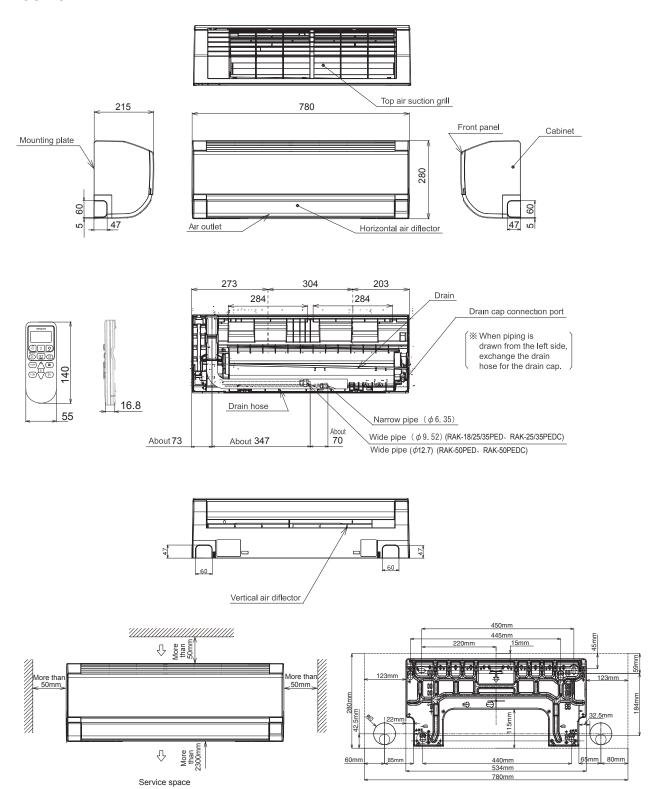
Please note:
On switching on the equipment, particularly when the room light is dimmed, a slight brightness fluctuation may occur. This is of no consequence. The conditions of the local Power Supply Companies are to be observed.

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CONSTRUCTION AND DIMENSIONAL DIAGRAM

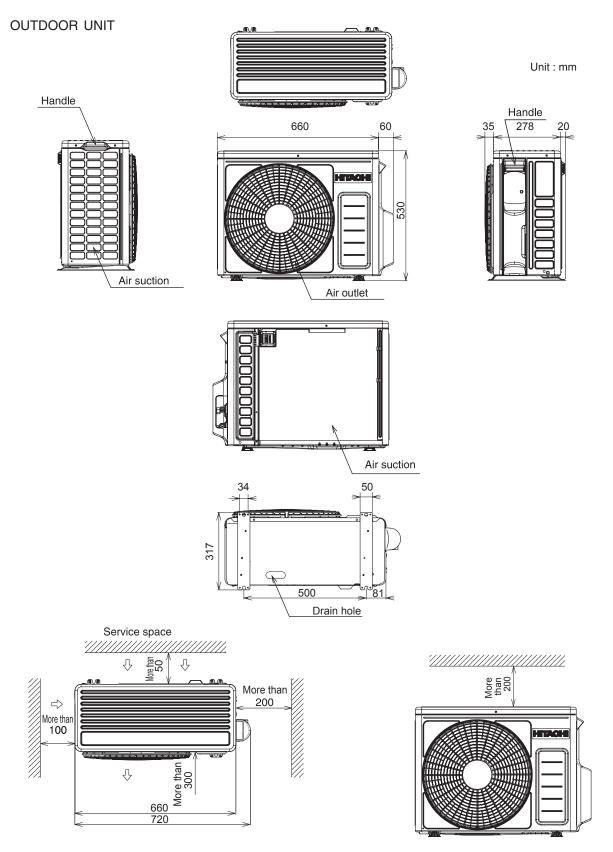
MODEL RAK-18PED,RAK-25PED,RAK-35PED,RAK-50PED RAK-25PEDC,RAK-35PEDC,RAK-50PEDC

INDOOR UNIT Unit: mm



CONSTRUCTION AND DIMENSIONAL DIAGRAM

MODEL RAC-18WED, RAC-25WED, RAC-35WED

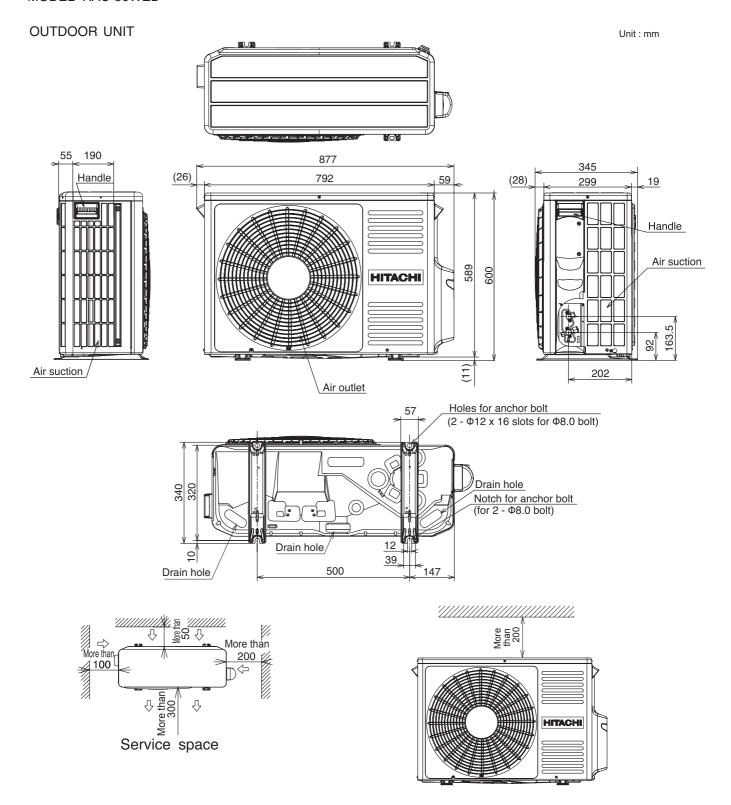


NOTE:

- 1. For outdoor unit installation, allow at least 2 sides of space around the unit ensure ventilation flue.
- 2. The connecting pipe, should all the insulated with insulation pipe.
- 3. Piping length is within 20m.
- 4. Height different of the piping between the indoor unit and outdoor unit should be within 10m.

CONSTRUCTION AND DIMENSIONAL DIAGRAM

MODEL RAC-50WED



NOTE:

- 1. For outdoor unit installation, allow at least 2 sides of space around the unit ensure ventilation flue.
- 2. The connecting pipe, should all the insulated with insulation pipe.
- 3. Piping length is within 20m.
- 4. Height different of the piping between the indoor unit and outdoor unit should be within 10m.

MAIN PARTS COMPONENT

THERMOSTAT (Room temperature Thermistor)

Thermostat Specifications

MODEL				RAK-18/25/3 RAK-25/35/		
THERMOSTAT MODE	L				IC	
OPERATION MODE			CC	OOL	HE	AT
	INDICATION	ON	15.3	(59.54)	16.7	(62.06)
	16	OFF	15.0	(59.00)	16.7	(62.06)
TEMPERATURE	INDICATION	ON	23.3	(73.94)	24.7	(76.46)
°C (°F)	24	OFF	23.0	(73.40)	24.7	(76.46)
	INDICATION	ON	31.3	(88.34)	32.7	(90.86)
	32	OFF	31.0	(87.80)	32.7	(90.86)

FAN MOTOR

Fan Motor Specifications

MODEL	RAK-18/25/35/50PED RAK-25/35/50PEDC	RAC-18/25/35/50WED
POWER SOURCE	DC : 325V	DC : 120 - 380V
OUTPUT	30W	47W
CONNECTION	325V RED WHT 0-6.5V YEL OV BLU OV BLK (Control circuit built in)	M M M M BLK(W)

BLU : BLUE YEL : YELLOW BRN : BROWN WHT : WHITE GRY : GRAY ORN : ORANGE GRN : GREEN RED : RED

BLK: BLACK PNK: PINK VIO: VIOLET

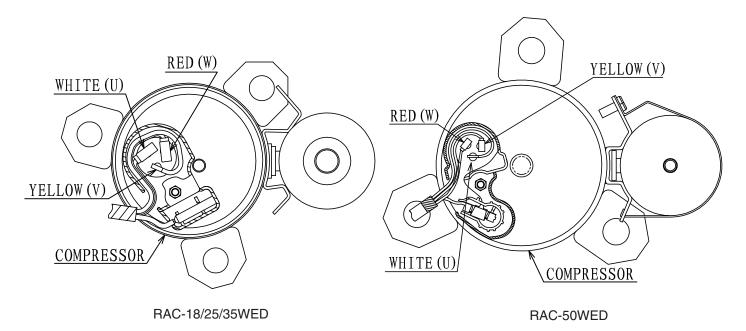
MAIN ELECTRIC COMPONENTS FOR OUTDOOR UNIT

PARTS NAME	RESISTANCE VALUE(Ω)	APPLICABLE MODELS
COIL(REVERSING VALVE)	1470 Ω (20 °C)	RAC-18/25/35/50WED
COIL(EXPANSION VALVE)	46Ω/PHASE (AT 20 °C)	RAC-18/25/35/50WED
REACTOR	15 (mH) 226 mΩ MAX (20 °C)	RAC-18/25/35WED
	5.3 (mH) 67 m Ω MAX (20 °C)	RAC-50WED

COMPRESSOR MOTOR

Compressor Motor Specifications

MODEL		RAC-18/25/35WED	RAC-50WED
COMPRESSOR TYPE		GSD088SKQA6JK6	GTD130UKQA8JT6
POWER SOURCE		220 - 350 V	220 - 350 V
OUTPUT		840W	1350W
CONNECTION		(U) O WHITE M M (W) (V) O YELLOW O RE	D
RESISTANCE VALUE (Ω)	20°C	2M= 2.167	2M= 1.354
TILOIOTANOL VALUE (12)	75°C		



ACAUTION

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

WIRING DIAGRAM

INDOOR UNIT

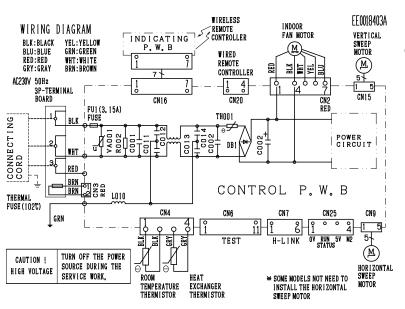
MODEL RAK-18/25/35/50PED RAK-25/35/50PEDC

OUTDOOR UNIT

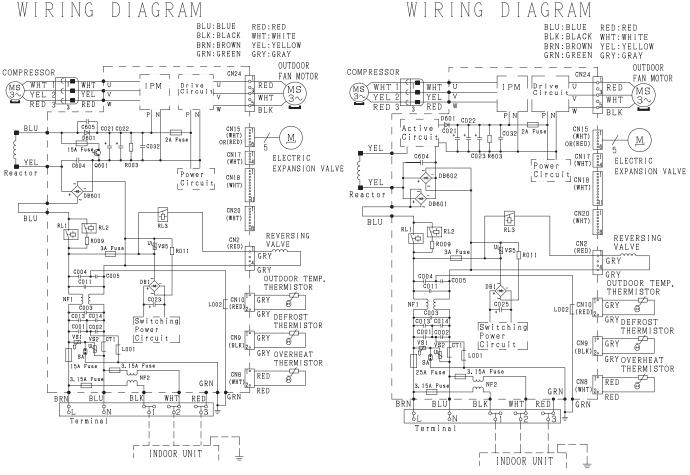
MODEL RAC-18/25/35WED

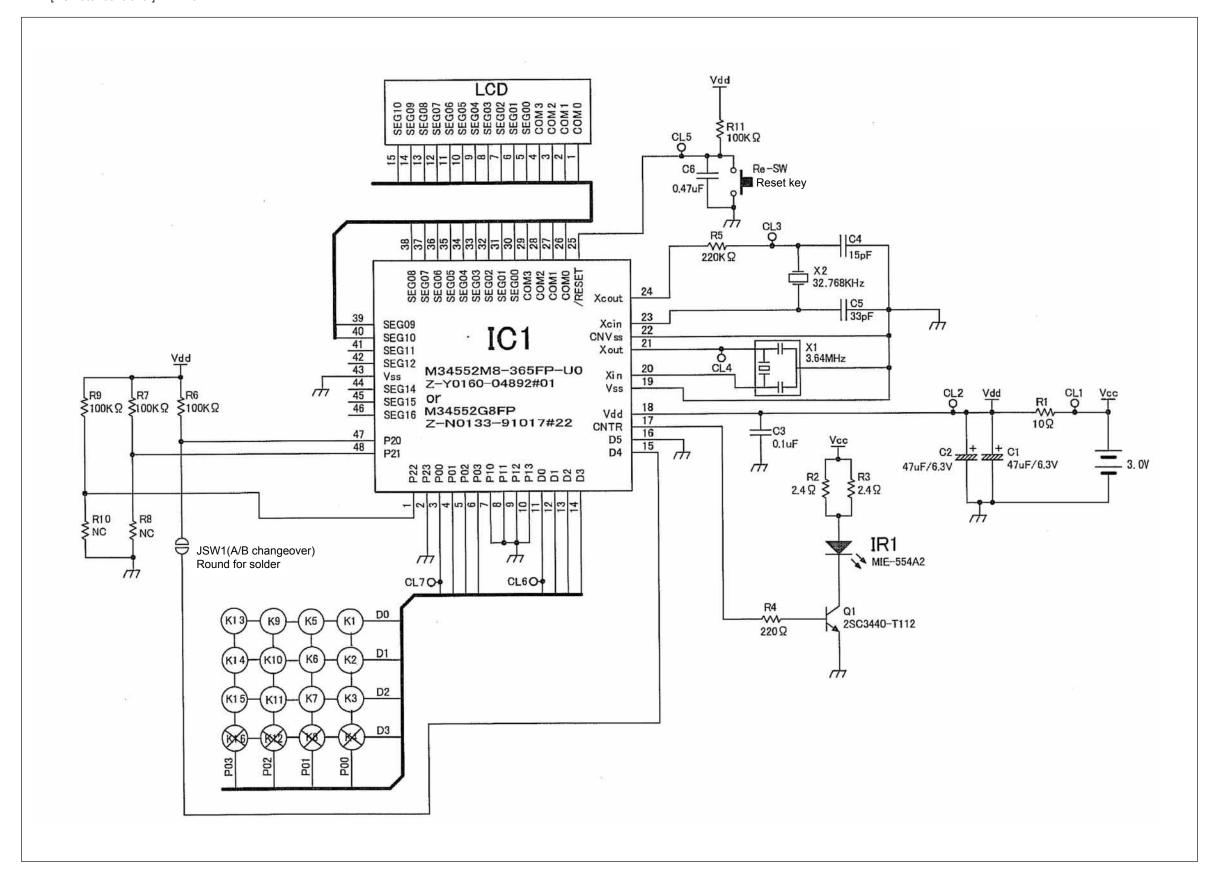
OUTDOOR UNIT MODEL RAC-50WED

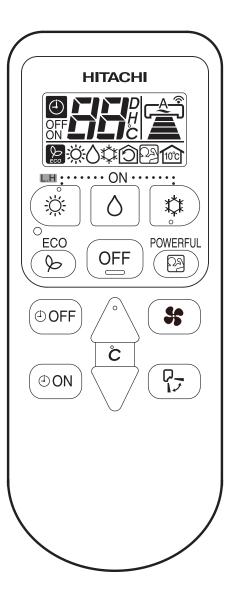
WIRING DIAGRAM



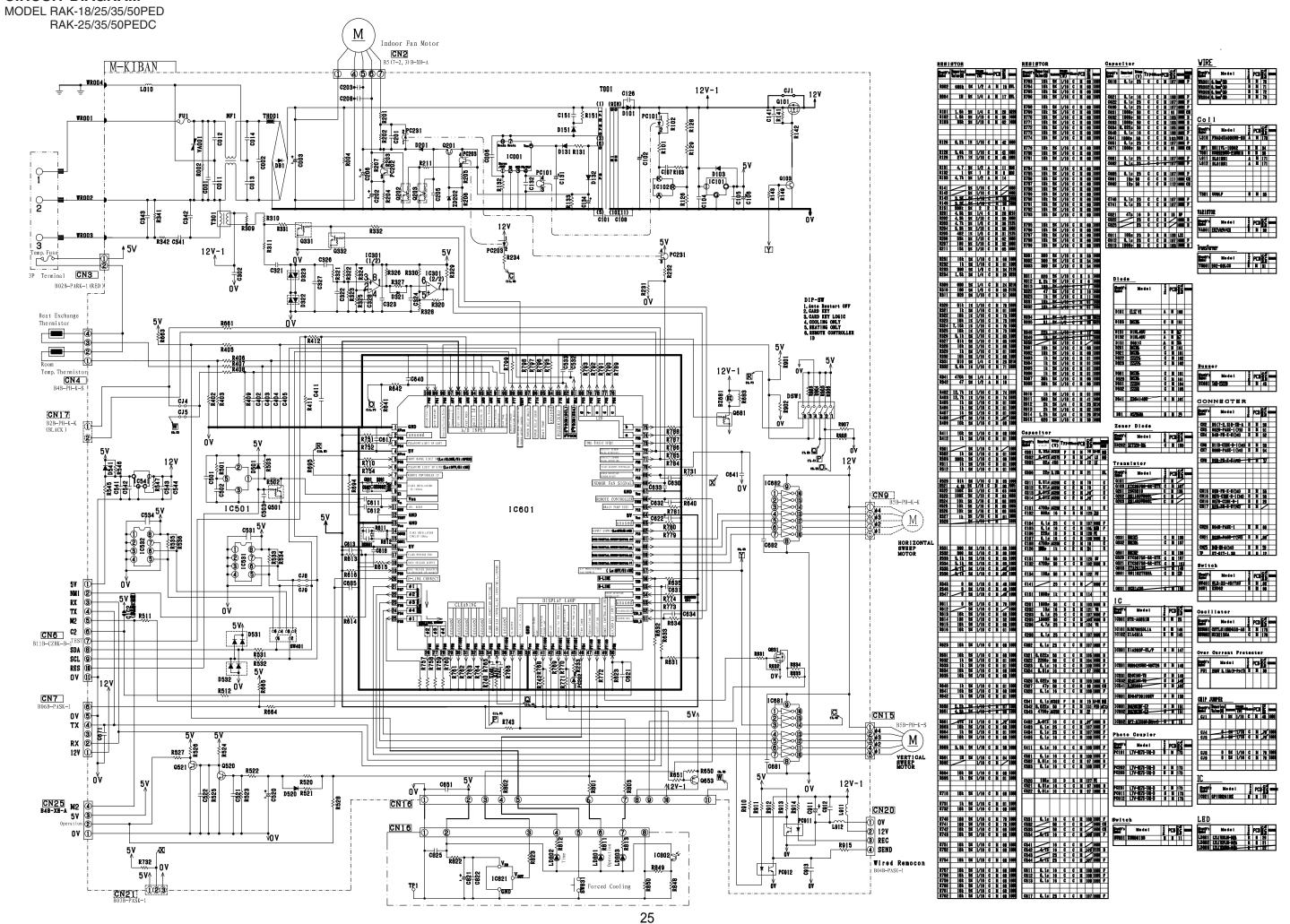
WIRING DIAGRAM

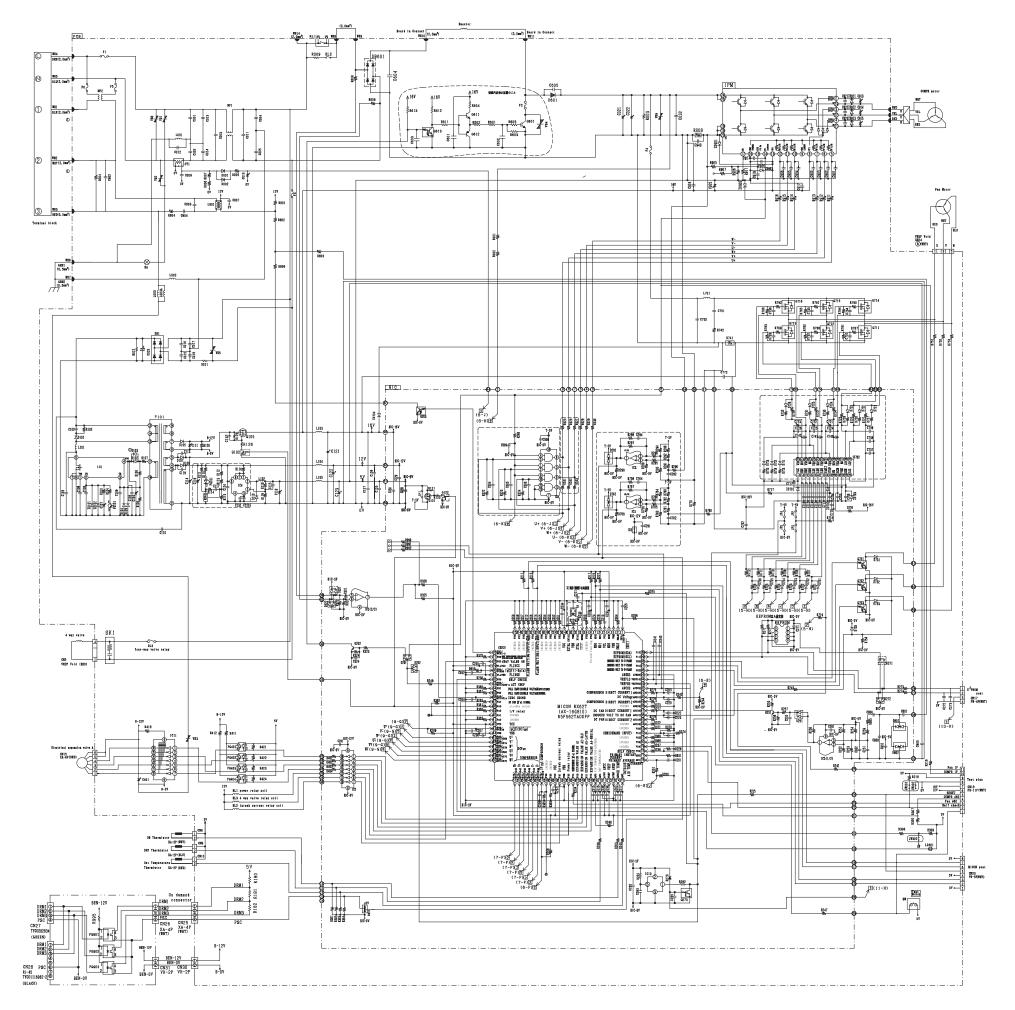






CIRCUIT DIAGRAM





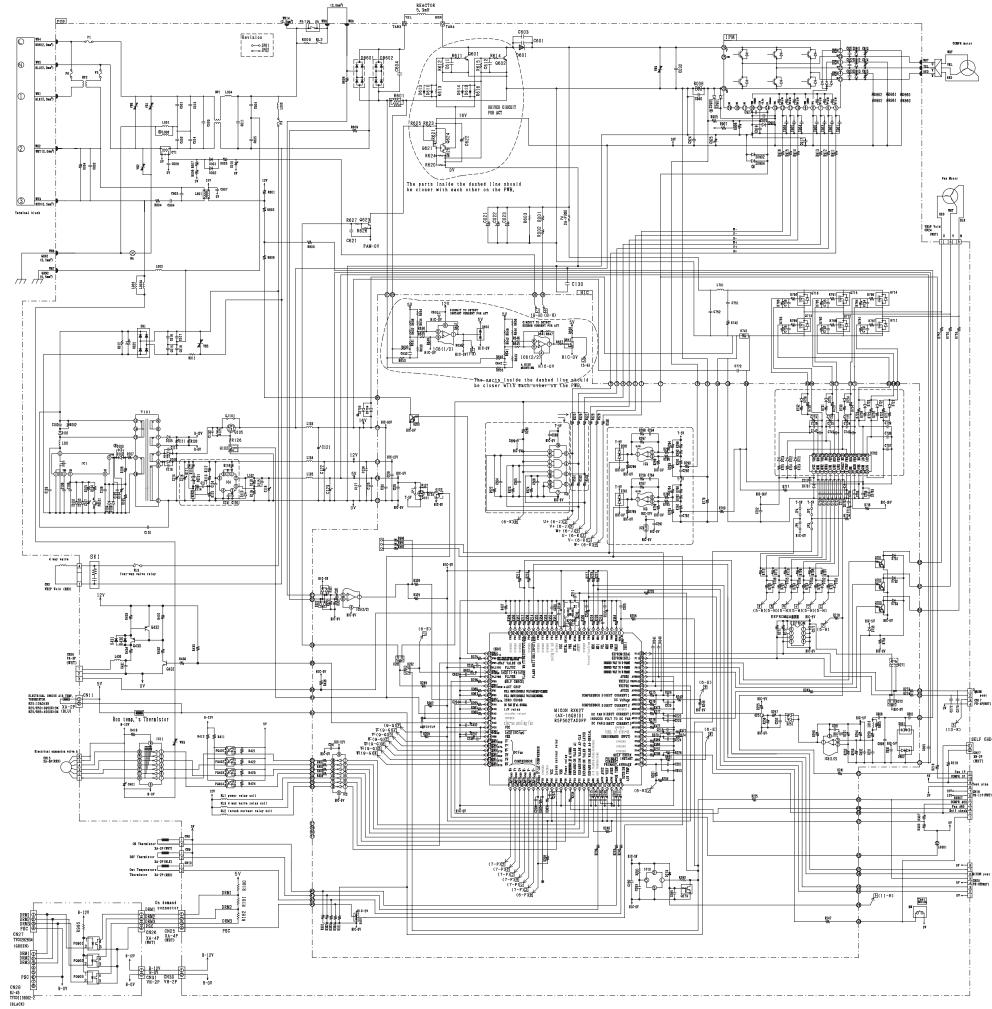
Mounting PCB M: Main PCB(#MBOARD-AS MAIN P.C.B

Way of mount mark
A: Axial inserter
R: Radial inserter
R: Radial inserter(7,5mm pitch)
H: Hand insertion
C: Chia

MAIN P. C. B			
Resistance	Capacitor	Diode	Photo coupler
Rating	Rating		
R001 180K 0.54 1/2 A M 14	Symbol Caractir Manager	D101 SARS01 A M 94	Symbol Type
R002 180K 0,5x 1/2 A M 14	C102 2200p lk C P M 53	D102 DA2JF23 C M B 91	PQ401 PS2861B C M B 117
R003 470K 5% 1/2 A M 11 R004 470K 5% 1/4 A M 24	C103 220p 2k C P M 52 C104 100 50 D R M 55	D103 D1N1-280 A M D104 RB72-19 A M M	PQ402 PS2861B C M B 117 PQ403 PS2861B C M B 117
R005 1,96K 1% 1/6 A M	C105 0.150 C C M B 81	D105 D2S6M A M 99	PQ404 PS2861B C M B 117
R006 1K 1% 1/6 A M 49 R007 20 1% 1/6 A M 46	C106 1 50 C A M 63 C107 22 25 D R M 66	D107 D1NL20U A M 92	Dolov
R008 25m5% 10 H M 7 R009 1005% 10 H M 6	C108 0.047 50 C A M 67 C109 15p 50 C A M 68	D108 EL1Z A M 118 D109 DB2J314 C M B 119	Relay
R011 2.25% 5 H M 9	C110 BW C R M	D110 AK04 A M 120	Symbol Type
R012 14 5% 1/4 A M	C111 470 25 D & M 74	DOO1 LSS120-TA A M	RL1 G4A-1A/HF161F H M 102 RL2 ALD112B01 H M 103
	C113 C R M	D002 KDS4148U C M B 93	RL3 ALD112B01 H M 103
R102 100K 5% 2 R M 10 spr	C114 470 25 D B M 74 C115 470 50 C A M 77 C116 470 25 D B M 75	D601 D30L60 H M 97	
R103 1K 5% 1/10 C M 38 1608	C116 470 33 D B M 75 C117 0.150 C C M B 81		
R105 47K 5% 1/6 A M 20	C118 330 16 D R M 78	DB1 D2SB60A H M 95 DB601 LN25XB60 H M 96	Fuse
R106 68K 5% 1/6 A M 21 R107 JUNPER A M	C119		Symbol Type maganina
17.01	C121 100 25 D R M 88	Zener diode	F1 15Ak1~7 H M 142 mm m
R110 1K 5% I/I0 C M 38 1608	C122 25 D R M C123 100 10 D R M 89	Symbol Type	F 2 FCU250V15A0H17 H M 143 MAN TIPE F 3 3A-FUSE-WE H M 144 MAN TIPE
R111 2.2K 5% 1/6 A M 22 R112 33K 1% 1/6 A M 23	C124	ZD101 GDMTZJ43C A M 100 ZD102 C M B	F 4 2A-FUSE-WE H M 145 EEU TIPE F 5 3. 15A-FUSE H M 146 BULGE TIP
R113 5, 1K 1% 1/6 A M 25	C126 0.1 50 C C M B 81	ZD704 TFZ-22B C M B 101	F 6 3, 15A-FUSE H M 146 BUILT TO
R114 470 5% 1/2 A M 26 R115 10K 1% 1/6 A M 27	C127 0.150 C C M B 81	ZD901 TFZ-22B C M B 101	
R116 0.62 2% I/4 A M 28	C131 C A M	ZD902 TFZ-22B C M B 101	Fuse Clip
R118 8.2K 0.5x 1/6 A M 29 R119 2.7K 0.5x 1/6 A M 30	C132 -0.156 C C M B 96	ZD903	
R119 2, 7K 0,54 1/6 A M 30 R120 20K 5% 1/6 A M 12	COO1 0.01 26 C R M 57	ZD912	Symbol Type
K120 20K 3A 1/0 A M 12	COOPER OF LASE CIRIMI 157	20913 G M B	- RRPM1075 H M 141 H 4431.6 - RRPM14292 H M 147 H 445.24888
R125 100K 5% I/I0 C M B 45 1608	C003 0.68 45 F H M 70 C004 0.01 45 C R M 57	Transistor	
R125 100K 5x 1/10 C M B 45 1608 R126 100K 5x 1/10 C M B 45 1608	C005 0.01 28 C R M 57	5	
R180 5% 1/10 C M B 1608	C0 1 0 1 1 0 0 5 0 D R M 62	Symbol Type marine bures Q102 DTC123YK C M B 110	Connector
R181 5% 1/10 C M B 1608 R182 5% 1/10 C M B 1608	CO11 3,3 M F H M 71		Punkal Punk
	CO13 0.01 es C R M 57	Q105 RRR040P03TL C M B 121	Symbol Type tacks CN2 VH 2P(/4) H M 148 mm
R216 100 5% I/I0 C M B 35 I608 R218 1K 5% I/I0 C M B 38 I608	CO13 0.01 % C R M 57 CO14 0.01 % C R M 57 CO15 4265 C R M 57 CO16 4266 C R M 60 CO16 4266 K C R M 60 CO17 4266 K C R M 60		CN8 XA 2P H M 149
	CO 1 6 4780 F 48 C R M 60 CO 1 7 4780 F 48 C R M 60		CN9 XA 2P H M 150 NAO CN10 XA 2P H M 151 NED
	CO18 47806 26 C R M 60	Q601 STGX30NC60S H M 111	CN 1 5 XA 6P
R306 10K 5% 1/10 C M B 42 1608 R307 1K 5% 1/10 C M B 38 1608	CO21 375 420 D H M 58	Q6 1 1 KTC200-Y-AT/P R M 112 Q6 1 2 KTA200-Y-AT/P R M 113	CN17 PH 4P H M 153 entr CN18 PH 11P H M 155 entr
R309 10K 5% 1/10 C M B 42 1608	CO22 375 420 D H M 58	Q612 KTA200-Y-AT/P R M 113 Q613 KRC105-AT R M 114	CN20 PH 8P H M 154 _{mette}
	C023 68 450 D H M 73 C032 0, 1 450 F H M 72	Q711 P5F50NP2F H M 115	CN24 VH 3P (/5) H M 156 HITS CN25 XA 4P H M
		Q712 P5F50NP2F H M 115	CN30 VH 2P H M
	C272 100p 50 C A M 82 C273 100p 50 C A M 82	Q714 P5F50NP2F H M 115	
R411 7. 5K 5% 1/8 C M B 41 2012 R412 7. 5K 5% 1/8 C M B 41 2012		Q715 P5F50NP2F H M 115 Q716 P5F50NP2F H M 115	Switch
		2110 1000021 11 11	
R418 JUMPER A M	C401 100 25 D R M 64	1 C	Symbol Type SW EVQPAEO7K H M 136
R421 47K 5% I/II C M B 44 I608 R422 47K 5% I/II C M B 44 I608		Sunhal Type	SW EVERABULE IN M 130
R423 47K5% 1/10 C M R 44 1608	C601 58 C A M	Symbol Type Type	Jumper
R424 47K 5% I/II C M B 44 1608	C602 0.022 50 C A M 86 C603 2200p 50 C A M 85	1 C 1 M1P4140S H M 106 1 C 4 NJM2392D H M 105	
		I C 1 1 BAI2003B H M 107	JW001 Exist A M
R601 20 5% 1/6 A M 33	C605 2200p	REG2 KIA431-A-AT/PC R M 108	JW002 Exist A M
R602 20 5% 1/6 A M 33	C701 000 E0 C C M D 07	1 DM 0001004-00/164\ U M 100	
R602 20 5% 1/6 A M 33 R603 20K 5% 1/10 C M B 43 1608 R604 510 5% 1/6 A M 37	C731 220p 50 C C M B 87 C732 220p 50 C C M B 87	1 PM PS21984-CS(15A) H M 109	JW302 No 🚜 M
R602 20 5% 1/6 A M 33	C732 220p 50 C C M B 87 C733 220p 50 C C M B 87		JW302 No X M JP101 No Z M Z
R602 20 Sx 1/8 A M 33 R603 20 K 5x 1/10 C M B 43 1408 R604 5 10 5x 1/6 A M 37 R605 24 5x 1/8 C M B 34 2012 R608 360K 1x 1/4 A M 13	C732 220p 50 C C M B 87 C733 220p 50 C C M B 87 C734 220p 50 C C M B 87 C735 220p 50 C C M B 87	1 PM PS21984-CS(15A) H M 109	
R602 20 58 I/R A M 33 R603 20 K5x I/M C M B 43 I ⁶⁶⁶ R604 5 10 5x I/M C M B 34 I ⁶⁶⁶ R605 24 5x I/R C M B 34 I ⁶⁶¹ R608 360K IX I/A A M 13 R609 360K IX I/A A M 13	C732 220p 50 C C M B 87 C733 220p 50 C C M B 87 C734 220p 50 C C M B 87	Inductor Symbol Type	
R602 20 5% I/6 A M 33 R603 20 K5 I/II C M B 43 F69 R604 510 5% I/6 A M 37 R605 24 5% I/8 C M B 34 F69 R608 360 K I% I/4 A M 13 R609 360 K I% I/4 A M 13	C732 220p 50 C C N B B87 C733 220p 50 C C N B B87 C734 220p 50 C C N B B7 C735 220p 50 C C N B B7 C735 220p 50 C C N B B7 C736 220p 50 C C N B S7 C756 220p 50 C R N 54	Inductor Symbol Type LOOI JUMPER A.M.	
R602 20 58 I/R A M 33 R603 20 K5x I/M C M B 43 I ⁶⁶⁶ R604 5 10 5x I/M C M B 34 I ⁶⁶⁶ R605 24 5x I/R C M B 34 I ⁶⁶¹ R608 360K IX I/A A M 13 R609 360K IX I/A A M 13	C732 220p 50 C C N B B87 C733 220p 50 C C N B B87 C734 220p 50 C C N B B7 C734 220p 50 C C N B B7 C735 220p 50 C C N B B7 C736 220p 50 C C N B B7 C756 220p 50 C C N B B7 C751 0.01 F C R M 54 C752 Z X M	Inductor Symbol Type LOOI JUMPER A M LOOZ JUMPER A M LOOZ JUMPER A M	
R602 20 5% I/R A M 33 R603 20 (5% 5/ I/R C M B 43) F60 R604 5 10 5% I/R A M 37 R605 24 5% I/R A M 37 R605 36 K I% I/R A M 37 R606 360 K I% I/A A M 13 R611 100 5% I/R C M B 35 F606 R612 5, IK 5% I/R C M B 40 F806 R613 10K 5% I/R C M B 40 F806 R613 0, 24 2% I R M 8	C732 220p 50 C C N B B87 C733 220p 50 C C N B B87 C734 220p 50 C C N B B7 C735 220p 50 C C N B B7 C735 220p 50 C C N B B7 C736 220p 50 C C N B S7 C756 220p 50 C R N 54	Inductor Symbol Type LOO1 JUMPER A M LOO2 JUMPER A M	
R602 20 5x I/R A M 33 R603 20 K5 I/R A M 37 R604 510 5x I/R A M 37 R605 24 6x I/R A M 37 R605 24 6x I/R A M 37 R606 360 K IX I/A A M 13 R609 360 K IX I/A A M 13 R609 360 K IX I/A A M 13 R611 100 5x I/R C M 8 35 1668 R612 5.1 K 5x I/R C M 8 30 1668 R613 10 K 5x I/R C M 8 40 1668	C732 220 50 C C M B B87 C733 220 50 C C M B B87 C734 220 50 C C M B B87 C734 220 50 C C M B B7 C735 220 50 C C M B B7 C736 220 50 C C M B B7 C736 C7 C7 C7 C C M B B7 C756 C C M B B87 C751 0.01 F C R M 54 C752 Z Z Z Z Z M M Z Z	Inductor	
R602 20 58 I/R A M 33 R603 20 K5 I/R A M 37 R604 510 58 I/R A M 37 R605 24 58 I/R A M 37 R605 24 58 I/R A M 37 R606 36 K I K I/A A M 13 R606 36 K K I K I/A A M 13 R609 36 K K I K I/A A M 13 R611 100 58 I/R C M B 35 1668 R612 5.1 K 58 I/R C M B 40 1668 R613 10K 58 I/R C M B 40 1668 R741 0.24 28 I R M 8 R742 I JWEER A M R	C732 220p 50 C C M B B87 C733 220p 50 C C M B B87 C734 220p 50 C C M B B87 C734 220p 50 C C M B B87 C735 220p 50 C C M B B87 C736 220p 50 C C M B B87 C736 220p 50 C C M B B7 C751 0.01 FC C M B S7 C752 Z Z M M 54 C772 0.1 50 C C M B B1 C802 4700p 45 C R M 56 C803 0.02250 F R M 76	Inductor	
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R602	C732 220	Inductor	
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Resistance	Resistance	Capacitor	Diode
Symbol (0) Land 100 to the same to the same to	Symbol Rating	Symbol Capacity Interest Control Capacity Interest Capacity Intere	Symbol Type
R121 100 5% 1/16 C HIC A 12 1005	R371 10K5% 1/16 C HIC B 12 1005	C128 0.1 16 C C HIC B 55 1005	D201 KDS181-RTK/P C HIC B 79
R122 5-1K 5% 1/16 C BIC A 16 1005	R372 10K 5% 1/16 C HIC B 12 1005 R373 10K 5% 1/16 C HIC A 12 1005	C129 0.1 25 C C HIC B 59 1608 C130 0.1 25 C C HIC B 59 1608	D202 KDS181-RTK/P C HIC B 79 D251 KDS184-RTK/P C HIC A 82
	R374 1 K 5% 1/16 C E1C A 21 1005		D271 KDS184-RTK/P C HIC B 82
R200 10K 1% 1/16 C HIC B 13 1005	R375 10K5% 1/16 C HIC A 12 1005 R401 1K5% 1/16 C HIC B 21 1005	C191 0.125 C C HIC B 63 1888	D272 KDS181-RTK/P C HIC B 79 D273 ISS352TPH3F C HIC B 85
R201 510 5% 1/16 C BIC B 7 1005	R402 1 K 5% 1/16 C HIC B 21 1005	C201 0.116 C C HIC A 55 1005	D 2 9 1 KDS226-RTK/P C HIC A B3
R203 100 5% 1/16 C BIC B B 1005	R403 1 K 5% I/16 C HIC B 21 1005 R404 1 K 5% I/16 C HIC B 21 1005	C202 0.116 C C HIC A 551005 C203 8 HIC X 1005	D310 KDS226-RTK/P C HIC B 83 D321 KDS184-RTK/P C HIC B 82
100 00 1/10 0 210 2 0 1005	11.00 1/10 0 210 0 21 1005	[C2O4] 470p [50 C C HIC A 60 1885	D322 KDS181-RTK/P C HIC A 79
R206 5, 1K 5% 1/16 C HIC B 16 1005		C205 0.047 25 C C HIC B 54 1885 C206 470p 50 C C HIC B 60 1885	
	R522 10K 5% I/I6 C HIC B 12 1005 R523 10K 5% I/I6 C HIC B 12 1005	C207 470p 50 C C HIC A 60 1865	
R208 10K 5x 1/16 C IIIC B 12 1005 R209 10K 5x 1/16 C IIIC B 12 1005	R523 10K 5% I/16 C HIC B 12 1005 R524 10K 5% I/16 C HIC B 12 1005	C209 0.116 C C HIC A 55 1005 C210 0.116 C C HIC B 55 1005	D701 8 HIC 8 TO
	R525 430 5% 1/16 C HIC B 45 1005	C211 0.047 25 C C HIC B 54 1805	D703 RHICB
R211 10K 5x 1/16 C HIC A 12 1005 R212 390 5x 1/16 C HIC A 17 1005	R526 430 5% 1/16 C HIC B 45 1005 R527 430 5% 1/16 C HIC B 45 1005	C215 C C HIC A 1005	D704 8 HIC 8
R213 10K 5% 1/16 C HIC A 12 1005	R528 430 5% 1/16 C HIC A 45 1005	C216 0.1 16 C C HIC A 55 1005	D706 BHICB
R214 390 5% 1/16 C IIIC A 17 1005 R215 100 5% 1/16 C IIIC B B 1005	R529 430 5% 1/16 C HIC A 45 1005 R530 430 5% 1/16 C HIC A 45 1005	C217 0.116 C C HIC A 55 1005	D711 D1FK60 C HIC A 84
	R 5 3 1 5% 1/16 C HIC B 38 1005	C220 0.01 25 C C HIC B 70 1 問5	D712 D1FK60 C HIC A 84
R217 10K 5% 1/16 C BIC A 12 1005	R 5 3 2 من المسلولية (5 x 1/16 C 1110 B 3/8 1005 R 5 3 3 من المسلولية (5 x 1/16 C 1110 B 3/8 1005 R 5 3 3 من المسلولية (5 x 5 3 3 3 من المسلولية (5 x 5 3 3 3 3 من المسلولية (5 x 5 3 3 3 3 3 من المسلولية (5 x 5 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	C222 R HIC K 1005	D713 D1FK60 C HIC A 84
R223 10K 5% 1/16 C HIC A 12 1005		C223 1000p 50 C C H C B 68 -開	D721 ISS355VM C HIC B 80
R224 390 5% 1/16 C BIC A 17 1005 R225 5. 1K 5% 1/16 C BIC B 16 1005	R650 10K 5% 1/16 C HIC A 12 1005 R651 10K 5% 1/16 C HIC A 12 1005	C224 0.116 C C HIC B 55 1005 C231 0.116 C C HIC B 55 1005	D722 ISS355VM C HIC B 80 D723 ISS355VM C HIC B 80
R226 10K 5% /16 C HIC A 12 1005			D724 ISS355VM C HIC A 80
R228 390 5% 1/16 C HIC A 17 1004	R701 1.5K 5% I/16 C HIC B 41 1005 R702 1.5K 5% I/16 C HIC B 41 1005	C234 0.1 16 C C HIC B 55 1005 C235 0.1 16 C C HIC B 55 1005	D725 ISS355VM C HIC A 80 D726 ISS355VM C HIC A 80
R229 C HIC A JINNS	R703 1.5K 5% / 6 C E C B 41 ₁₀₀₅	C236 0,1 16 C C HIC B 55 ₁₀₀₅	
R230 330 5% I/I6 C HIC A 48 1005 R234 100 5% I/I6 C HIC B B 1005	R704 1.5K5% 1/16 C HIC B 41 1005 R705 1.5K5% 1/16 C HIC B 41 1005	C237 0.1 16 C C HIC B 55 1005 C238 0.1 16 C C HIC B 55 1005	D731 ISS355VM C HTC B 80 D732 ISS355VM C HTC B 80
	R706 1.5 K 5% 1/16 C EIC B 41 1005	C239 0.1 16 C C HIC B 55 1005	D733 ISS355VM C HIC B 80
R236 2.2K 5% 1/16 C BIC B 18 1005 R237 2.2K 5% 1/16 C BIC A 18 1005	R707 20K5% I/I6 C HIC B 19 1005 R708 20K5% I/I6 C HIC B 19 1005	C240 0.1 16 C C HIC B 55 1005 C241 0.1 16 C C HIC B 55 1005	D735 ISS355VM C HIC B 80
R238	R709 20K 5% 1/16 C HIC B 19 1005		
R239 100 5x 1/16 C HIC B B 1005	R710 20K5% 1/16 C HIC B 19 1005 R711 20K5% 1/16 C HIC B 19 1005	C251 2200p 50 C C HIC B 61 CHB C252 0.068 25 C C HIC A 62 CHB C	D 7 6 1 KDS226-RTK/P C HIC A 83
R240 100 5% 1/16 C BIC B B 1005	R712 20K5% 1/16 C HIC B 19 1005		D801 KDS226-RTK/P C HIC A 83
R241 100 5% 1/16 C BIC B B 1005 R242 160 5% 1/16 C BIC A 24 1005	R713 10 5% I/4 C HIC B 49 3216 R714 10 5% I/4 C HIC B 49 3216	C271 0.116 C C HIC A 55 1005	D802 KDS226-RTK/P C HIC A 83
R243 100 5% 1/16 C ETC B B 1005	R715 10 5% 1/4 C HIC B 49 3216	C281 0.116 C C HIC A 55 1005	
R244 3, 32K 1% 1/16 C HIC A 25 1005	R716 1M 5% 1/10 C HIC B 50 1608 R717 1K 5% 1/16 C HIC A 21 1005	C282 0.116 C C HIC A 55 1005 C283 0.2216 C C HIC B 57 108	
R247 100 5x 1/16 C IIIC A 8 1005	R 7 1 8 Ohis JUNEER 5% 1/16 C HIC B 38 1005		
R248 10K 5x 1/16 C IIIC B 12 1005 R249 3. 9K 5x 1/16 C IIIC A 26 1005	R 7 1 9 Calip JUMPER 5% 1/16 C HIC A 38 1005	C285 0, 1 16 C C HIC B 55 1005	1 C
	R721 2K 5% I/I6 C HIC A 20 1005 R722 2K 5% I/I6 C HIC A 20 1005	C291 0.125 C C HIC A 59 1608 C292 0.047 25 C C HIC A 54 105	Symbol Type
R251 7.15K 1% 1/16 C HIC A 27 1005 R252 10K 1% 1/16 C HIC A 13 1005	R723 2K 5% 1/16 C H1C A 20 1005		I C2 BAI2003BF-E2 S HIC B 101
R253 10K 1% 1/16 C HIC B 13 1005	R724 2K 5% 1/16 C HIC A 20 1005	C294 R HIC A 1005	1 C3 NJM2742M S HIC A 102
R255 2K 5% 1/16 C HIC A 20 1005	R725 2K 5% I/I6 C HIC A 20 1005 R726 2K 5% I/I6 C HIC A 20 1005	C321 0.033 50 C C HIC A 65 1888 C324 100p 50 C C HIC B 76 1885	I C 5 NJM2903E S NIC A 105
R256 10K 5x 1/16 C HIC A 12 1005 R257 3K 5x 1/16 C HIC A 28 1005	R727 100 5% I/I6 C IIC A 8 1005 R728 100 5% I/I6 C IIC A 8 1005	C324 100p 50 C C HIC B 76 1885	
R258 2, 2K 1 % 1/16 c HIC A 29 1005	R729 100 5% 1/16 C HIC A 8 1005	C504 100p 50 C C HIC B 76 185	ICB 74AHCO8PW S NIC A 106
R259 1K 5% I/16 C HIC B 21 1005	R730 100 5% I/I6 C HIC A 8 1005 R731 100 5% I/I6 C HIC A 8 1005	C505 100p 50 C C HIC B 76 005	
R260 510 5% 1/16 c HIC B 7 1005	R731 100 5% 1/16 C HIC A 8 1005		I C 1 O R3112N421C-TR S HIC B 100
R265 100 5% J/16 C HIC B B 1005		C508 0.116 C C HIC B 55 1005 C509 220p 50 C C HIC B 67 1005	1C702 6ED003L06-F2 S HIC A 103
		C3U9 22UP 3U C C HIG B 07 1805	EPROM \$-24C32C1-TBT1U3 S HIC A 99
R271 5. 1K 5x 1/16 C HIC A 16 1005 R272 5. 1K 5x 1/16 C HIC A 16 1005	R758 C HIC A 1005	C652 58 8 8 HIC A 1005	MICON RX62T S HIC A 97
R273 390 5% II/16 C HIC A 17 _{1 nn5}	R760 24 5% 1/16 C HIC A 35 1005	C702 0.3325 C C HIC B 74 125	MICON RAUZI S NIC A 97
R274 390 5x 1/16 C HIC A 17 1005 R275 100 5x 1/16 C IIC A 8 1005	R761 5.11K 1% 1/16 C HIC A 36 1005 R762 5.11K 1% 1/16 C HIC A 36 1005	C703 2200p 50 C C HIC B 75 1005 C704 1000p 50 C C HIC A 68 1005	
R276 100 5% 1/16 C HIC A B 1 nns	R763 5, 11K 1% 1/16 C HIC A 36 1005		
R277 100 5x 1/16 C HIC A 8 1005 R278 100 5x 1/16 C HIC A 8 1005	R763 5, 11 K 1% 1/16 C BIC A 36 1995 R764 5, 11 K 1% 1/16 C BIC A 36 1995 R765 0th Jumes 5% 1/16 C BIC A 38 1995	C706 0.1 16 C C HIC B 55 1005	Zener diode
R281 51 NK 5% 1/16 C HIC B 40 1005	[R 7 6 6 Ohis JUNPER 5% 1/16 C HIC A 38 1005	C711 100p 50 C C HIC A 73 1889	Cumba J Type
R282 1K 5% 1/16 C HIC B 21 1005	R767 18.7K 1% 1/16 C HIC A 46 1005 R768 24 5% 1/16 C HIC A 35 1005	C712 100p 50 C C HIC A 73 問題 C713 100p 50 C C HIC A 73 問題	ZD701 RHIC A
	R769 1 DK 1% 1/16 C HIC A 13 1005	C714 100p 50 C C HIC A 73 Pmg	ZD702 E HIC B
	R770 C BIC A 1005	C715 100p 50 C C HIC A 73 問題 C716 100p 50 C C HIC A 73 問題	ZD703 E HIC B
	R805 Chip JUMPER 5% 1/16 C HIC A 38 1005	C717 8 8 HIC B 2125	
R288 C HIC A 1005 R289 C HIC A 1005	R990 100 5% I/I6 C HIC A 8 1005	C718 #IC B 1608	m
	R991 100 5% 1/16 C HIC A 8 1005	C721 10 25 D C HIC A 72 WR	Transistor
R290 24 5% //6 C HIC A 35 1005 R291 5.11K1% //6 C HIC A 36 1005	R992 100 5% I/I6 C HIC A B 1005	C722 10 25 D C HIC A 72 WR C723 10 25 D C HIC A 72 WR	Symbol Type
R292 5. 11K1% //6 C HIC A 36 1005 R293 5. 11K1% //6 C HIC A 36 1005		C723 10 25 D C HIC A 72 mg C724 0.1 25 C C HIC A 63 1609 C725 0.1 25 C C HIC A 63 1609	Q121 SSM3J314T C HIC A 92 Q122 RN11157E85L C HIC A 93
R294 5, 11K1% 1/16 C HIC A 36 1005		C726 0.1 25 C C HIC A 63 1608	Q202 KTC3875SGR C HIC B 88
R295 Chip JUNESE 5% 1/16 C HIC A 38 1005 R296 Chip JUNESE 5% 1/16 C HIC A 38 1005		C737 100p 50 C C HIC B 73 1608	Q203 DTC143EEBTL C HIC B 90 Q251 KTC3875SGR C HIC A B8
R297 12.1k 1% 1/16 C HIC A 51 1005		C738 100p 50 C C HIC B 73 1608	
R298 24 5% 1/16 C HIC A 35 1005 R299 10K1% 1/16 C HIC A 13 1005	 	C739 100p 50 C C HIC B 73 1608 C740 100p 50 C C HIC A 73 1608	Q273 RN1102TE C HIC \$ 91
		C741 100p 50 C C HIC A 73 1608	Q701 DTC114EEBTL C HIC A 89
R301 3. 74K0.5x1/16 C HIC B 42 1005 R302 3. 01K0.5x1/16 C HIC B 43 1005		C742 100p 50 C C HIC A 73 1608	Q702 DTC114EEBTL C HIC A B9
R 3 O 3 3. O 1 K 0.5 x 1/16 C H C B 43 1 nns		C762 0.01 25 C C HIC A 70 1805	379 / 7
R304 C HIC B 1005 R305 10K 5% I/16 C HIC A 12 1005		C764 & HIC A 1005	Inducto-
		C801 0.022 50 C C HIC A 69 9808	Inductor
R321 1.8K 1% 1/16 C HIC A 44 1005 R322 1.8K 1% 1/16 C HIC A 44 1005		C806 0.022 50 C C HIC A 69 9808	Symbol Type
R323 3. 9K 5% 1/16 C HIG B 26 1005			L810 @ BK X
R324 3K 5% 1/16 C HIC B 28 1005 R325 1 0 K 5% 1/16 C HIC B 12 1005		C808 47p 50 C C BIC A 66 CBBs	
R326 Gais Jumpin 5% 1/16 C HIC A 38 1005		C931 0.116 C C HIC B 55 1805	
R350 10K 5% 1/16 C HIC A 12 1005		C932 0.116 C C HIC A 55 1005	Oscillator
R351 10K 5% 1/16 C HIC A 12 1005			Cymbol Type
R352 10K 5% 1/16 C HIC A 12 1005 R353 10K 5% 1/16 C HIC A 12 1005			X 1 CSTCE 2M5G C HIC A 96 12,500
R354 10K 5% / 6 C HIC A 12 ₁₀₀₅			
R356 10K 5% 1/16 C HIC A 12 1005			Jumper
R357 10K 5% 1/16 C HIC A 12 1005			Symbol Exist/No
R358 10K 5% 1/16 C HIC A 12 1005 R359 10K 5% 1/16 C HIC A 12 1005			JP1 Exist C HIC A 38 1005
R360 10K 5% 1/16 C HIC A 12 1005			JP2 No RHIGK Joos
R362 10K 5% / 6 C H C B 2 ₁₀₀₅			JP4 Exist C HIC A 38 1005
R363 10K 5% / 6 C H C A 12 ₁₀₀₅			JP5 無/No C HIC A 1005
R364 10K 5% 1/16 C HIC B 12 1005 R365 10K 5% 1/16 C HIC B 12 1005			
R366 10K5% //6 C HIC A 12 1005 R367 10K5% //6 C HIC A 12 1005			
R368 10K 5% / 6 C H C B 12 ₁₀₀₅			
R369 10K 5% //6 C HIC B 12 1005 R370 10K 5% //6 C HIC B 12 1005			



Way of mount mark
A: Axial inserter
R: Radial inserter
R: Radial inserter(7,5mm pitch)
H: Hand insertion
C: Chip

	stan				. I	_		
Symbol ROO1	Ratin (Q) Malausons 180 K	O es	00 1 /2	A	М	-	14	Benerks
R001 R002	180K	0, 3%	1/2	A	M		14	
R004	470K	5% 1 %	1/4	A	M		24 50	
R006 R007	I 1K	I1%	11/6	A	M		49	
R008 R009	25m	5% 5%	10	H	M		46 7 6	
R011 R012	1 2.2	5% 5%	ΙĐΙ	H	M		9	
NUIZ	-170	U.A.	1/4	^	m			
PINO	100%	54	2	R	м		10	SPR
R102 R103 R104	100K	5% 5%	1/6	Α	М		38	
R105	47K	5%	1/6	A	M		19 20	
R106 R107	JUMPER	5%	1/6	A	M		21	
R110	1 K	50	1 /8	_	14		20	
R111	12 2K	5%	1/6	A A	M M		38 22 23	
R112 R113 R114	5.1K 470	1% 1%	1/6	Α	M M		25	
R115	10K	1%	1/6	A	М		26 27	
R116		2%		A	M		28	
R118 R119	2. /K	ll ø	1/6		M		29 30	
R120	20K	5%	1/6	A	M		12	
R125	100K	5%	1/10	C	M	В	62	1608
					M	В	62	1608
R180 R181		5% 5%	1/10	C	M	B	2	1608
R182		5%	1/10	С	М	В	\leq	1608
R216 R218	100 1K	5% 5%	1/6 1/6	A	M	É	54 38	Ē
R300				Α	М	E	40	
		H	H			E		Ε
R307	1 K	5%	1/6	Α	M	E	38	
		E	E	E	E	E	E	Ε
		F	F		E	E		
R411	7.5K 7.5K	5%	1/8	С	M	В	41	2012
		5%	1/8	С	M	В	41	2012
	JUMPER	F		Α	M			
R421 R422	47K 47K	5% 5%	1/10 1/10	C	M	B B	44 44	1608 1608
R422 R423 R424	47K	5% 5%	1/10 1/10	С	M	B	44	1608 1608
D 400	E 11/			A	М	É	59	
R431	10K	5% 5%	1/6	A	M		60 58	
R433	4.7 JUMPER 15K	5% 5¥	1/4	A	M M		53	
R435	15K	5%	1/6	A	M		61	
REDI	12.5m	E+*	10		,,		33	
				H	М		11	
	470K			Α.				
R609	360K	1 %	1/4	A	M		13 13	
R611	5, 1	5%	1/4	Α	м		37	
R612 R613	75	5%	1/4	A	M		12 43	
R614 R615	5. 1 20 K	5% 5%	1/4	A	M		12	
R616	75	5%	1/4	Α	М	Ė	43	E
R620 R621	1.5K JUMPER	5%	1/2	A	M M	Ē	34	
R623	300			Α	м	E	56	
R624 R625 R626 R627	300 1.5K 680	5%	1/6	A C	M	E	34 57	E
R626	1.2K 330	5%	1/10 1/4	C	М	В	206	1608
R627				A		L	55	_
-		H	Н		m		99	
-		H	Н	A R	M		8	
R741 R742 R751	0.24 JUMPER	2%	1	A R A	M		8	
R741 R742 R751	0.24 JUMPER	2% 1%	1	A A A	M M		8 16 16	
R741 R742 R751 R752 R753	0.24 JUMPER 430K 430K 430K	2x 1x 1x 1x	1 1/2 1/2	R A A	M M M		8 16 16	1808
R741 R742 R751 R752 R753 R781 R782	0.24 JUMPER 430K 430K 430K	2% 1% 1% 1%	1 1/2 1/2 1/2	R A A C C	M M M M M	B B	8 16 16 16 42	1608
R741 R742 R751 R752 R753 R781 R782 R783 R784	0.24 JUMPER 430K 430K 430K 10K 10K	2% 1% 1% 5% 5% 5%	1 1/2 1/2 1/10 1/10 1/10	R A A C C C C	M M M M M M M	B B B	8 16 16 16 42 42 42 42	1608 1608 1608
R741 R742 R751 R752 R753 R781 R782 R783 R784 R785 R786	0.24 JUMPER 430K 430K 430K 10K 10K 10K 10K	2x 1x 1x 5x 5x 5x 5x 5x	1 1/2 1/2 1/10 1/10 1/10 1/10	R A C C C C C C C	M M M M M M M M	B B B	8 16 16 16 42 42 42 42 42 42	1608 1608 1608 1608 1608
R741 R742 R751 R752 R753 R781 R782 R783 R784 R785 R786 R786 R787 R788	0.24 JUMPER 430K 430K 430K 10K 10K 10K 10K 10K 10K 10K	2% 1% 1% 5% 5% 5% 5% 5% 5% 5%	1 1/2 1/2 1/10 1/10 1/10 1/10 1/10 1/10	R A A C C C C C C C C C	M M M M M M M M M	B B B B B	8 16 16 16 42 42 42 42 42 35 35	1608 1608 1608 1608 1608 1608
R741 R742 R751 R752 R753 R781 R782 R783 R784 R785 R786 R786 R786 R786 R788 R788	0, 24 JUMPER 430K 430K 430K 10K 10K 10K 10K 10K 10O 100	2x 1x 1x 1x 5x 5x 5x 5x 5x 5x 5x 5x 5x 5x 5x	1 1/2 1/2 1/2 1/10 1/10 1/10 1/10 1/10 1	R A A CCCCCCCCC	M M M M M M M M M M M	B B B B B B B	8 16 16 16 42 42 42 42 42 35 35 35 35	1608 1608 1608 1608 1608 1608 1608 1608
R741 R742 R751 R752 R753 R781 R782 R783 R784 R785 R786 R786 R787 R788	0.24 JUMPER 430K 430K 430K 10K 10K 10K 10K 10C 100 100	2x 1x 1x 1x 5x 5x 5x 5x 5x 5x 5x 5x 5x 5x 5x	1 1/2 1/2 1/10 1/10 1/10 1/10 1/10 1/10	R A A C C C C C C C C	M M M M M M M M M M	B B B B B	8 16 16 16 42 42 42 42 42 35 35 35	1608 1608 1608 1608 1608 1608 1608
R741 R742 R751 R752 R753 R781 R782 R783 R784 R785 R786 R786 R787 R788 R789 R790 R791 R792	0.24 JUMPER 430K 430K 430K 10K 10K 10K 10K 10K 10O 100 100 100	2x 1x 1x 1x 5x 5x 5x 5x 5x 5x 5x 5x 5x 5x 5x 5x 5x	1 1/2 1/2 1/2 1/10 1/10 1/10 1/10 1/10 1	R A A C C C C C C C C C C C C C C C C C	M M M M M M M M M M M M M M M M M M M	B B B B B B B	8 16 16 16 42 42 42 42 42 35 35 35 35 35	1608 1608 1608 1608 1608 1608 1608 1608
R741 R742 R751 R752 R753 R781 R782 R783 R784 R785 R786 R787 R788 R789 R790 R791 R792 R801 R802 R803	0.24 JUMPER 430K 430K 430K 10K 10K 10K 10K 10C 100 100 100 100 100	2x 1x 1x 1x 1x 5x 5x 5x 5x 5x 5x 5x 5x 5x 5x 5x 5x 5x	1 1/2 1/2 1/2 1/10 1/10 1/10 1/10 1/10 1	R A A C C C C C C C C C C	M M M M M M M M M M M M M	B B B B B B B	8 16 16 16 42 42 42 42 42 35 35 35 35 35 35 35 36 48	1608 1608 1608 1608 1608 1608 1608 1608
R741 R742 R751 R752 R753 R781 R782 R783 R784 R785 R786 R786 R787 R788 R789 R790 R790 R791 R792 R801 R801	0.24 JUMPER 430K 430K 430K 10K 10K 10K 10K 10C 100 100 100 100 100	2x 1x 1x 1x 5x 5x 5x 5x 5x 5x 5x 5x 5x 5x 5x 5x 5x	1 1/2 1/2 1/2 1/10 1/10 1/10 1/10 1/10 1	R A C C C C C C C C C C C C C C C C C C	M M M M M M M M M M M M M M M M M M M	B B B B B B B	8 16 16 16 42 42 42 42 42 35 35 35 35 35 35	1608 1608 1608 1608 1608 1608 1608 1608
R741 R742 R751 R752 R753 R781 R782 R783 R784 R785 R786 R787 R788 R789 R790 R791 R792 R801 R802 R803	0, 244 JUMPER 430.K 430.K 430.K 10.K 10.K 10.K 10.C 10.0 10.0 10.0 10.0 10.0 10.0 10.0	2x 1x 1x 5x 5x 5x 5x 5x 5x 5x 5x 5x 5x 5x 5x 5x	1 1/2 1/2 1/10 1/10 1/10 1/10 1/10 1/10	R A C C C C C C C C C C C C C C C C C C	M M M M M M M M M M M M M M M M M M M	B B B B B B B	8 16 16 16 42 42 42 42 42 35 35 35 35 35 35 35 35 35 35	1608 1608 1608 1608 1608 1608 1608 1608
R741 R742 R751 R752 R753 R781 R782 R783 R784 R785 R786 R786 R788 R789 R790 R791 R790 R801 R802 R803 R804 R806	0. 24 JUMPER 430.K 430.K 430.K 10K 10K 10K 10K 10K 10K 10K 10C 100 100 100 100 100 100 100 100 100	2x 1x 1x 5x 5x 5x 5x 5x 5x 5x 5x 5x 5x 5x 5x 5x	1 1/4 1/10	R A C C C C C C C C C C C C C C C C C C	M M M M M M M M M M M M M M M M M M M	B B B B B B B B B B B B B B B B B B B	8 16 16 16 42 42 42 42 42 35 35 35 35 35 35 35 35 35 35	1608 1608 1608 1608 1608 1608 1608 1608
R741 R742 R751 R752 R753 R781 R782 R783 R784 R785 R786 R787 R788 R789 R790 R791 R792 R801 R802 R804 R804 R806 R866 R866	0. 24 JUMPER 430.K 430.K 430.K 10.K 10.K 10.K 10.K 10.K 10.C 10.C 10.C 10.C 10.C 10.C 10.C 10.C	2x 1x 1x 1x 5x 5x 5x 5x 5x 5x 5x 5x 5x 5x 5x 5x 5x	1 1/2 1/2 1/2 1/10 1/10 1/10 1/10 1/10 1	R A A A C C C C C C C C C C C C C C C C	M M M M M M M M M M M M M M M M M M M	B B B B B B B B B B B B B B B B B B B	8 16 16 16 16 42 42 42 42 42 42 35 35 35 35 35 35 18 48 15 17	1608 1608 1608 1608 1608 1608 1608 1608
R741 R742 R751 R752 R753 R781 R782 R783 R784 R785 R786 R787 R791 R791 R801 R802 R803 R803 R804 R806 R860 R866 R866 R866 R866 R866 R866	0. 24 JUMPER 430KW430KW430KW10KW10KW10KW10KW10KW10KW10KW10KW10KW1	2x 1x 1x 5x 5x 5x 5x 5x 5x 5x 5x 5x 5	1 1/2 1/2 1/2 1/2 1/10 1	R A A A C C C C C C C C C C C C C C C C	M M M M M M M M M M M M M M M M M M M	B B B B B B B B B B B B B B B B B B B	8 16 16 16 42 42 42 42 42 42 42 42 42 42 42 42 42	1608 1608 1608 1608 1608 1608 1608 1608
R741 R742 R751 R752 R753 R781 R782 R783 R784 R785 R786 R785 R786 R787 R788 R787 R790 R790 R801 R802 R804 R806 R860 R861 R862 R860 R861 R862 R860 R861 R862 R860 R866 R866 R866 R866 R866 R866 R866	0. 24 JUMPER 430K 430K 430K 10K 10K 10K 10K 10K 10K 10K 10K 10K 1	2x 1x 1x 1x 5x 5x 5x 5x 5x 5x 5x 5x 5x 5	1 1/2 1/2 1/2 1/2 1/10 1	R A A A A A A A A A A A A A A A A A A A	M M M M M M M M M M M M M M M M M M M	B B B B B B B B B B B B B B B B B B B	8 16 16 16 16 42 42 42 42 42 42 42 43 53 53 53 53 53 53 53 53 53 5	1608 1608 1608 1608 1608 1608 1608 1608
R741 R742 R751 R752 R753 R781 R782 R783 R784 R785 R786 R786 R787 R791 R802 R803 R804 R806 R861 R866 R866 R866 R866 R866 R866 R86	0. 24 JUMPER 430.K 430.K 430.K 10K 10K 10K 10K 10K 10K 10K 10C 100 100 100 100 100 100 100 100 222 222	2x 1x 1x 1x 5x 5x 5x 5x 5x 5x 5x 5x 5x 5	1 1/2 1/2 1/2 1/10	R R A A A A A A A A A A A A A A A A A A	M M M M M M M M M M M M M M M M M M M	B B B B B B B B B B B B B B B B B B B	8 16 16 16 16 16 16 42 42 42 42 42 42 42 43 53 53 53 53 53 53 53 53 53 5	1608 1608 1608 1608 1608 1608 1608 1608
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	D1NL20U	A	М		109
D108	EL1Z	Α	М		121
D109 D110	DB2 J314 AK04	C	M		186 123
D001	155133/188120 DA3X+01K	A C	M	В	108
	155133/188120 DA3X+01K	A	M	В	108
D601	D30L60	Н	М	Н	113
			М		108
D612	155133/188120 155133/188120 DA3X+01X	A	М		108
D613 D614	DA3X+01K DA3X+01K	C	M	B	4
	D1NK60	A	м		118
D861	D1NK60	A	М	П	118
D802	D1NK60	-A	M		118
DB1	D2SB60A	Н	М	Н	111
DB601	D25XB60	Н			112
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ZD904	BZX55B22	Ā	М		117
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Q431 Q432			M		132
Q601 Q602		H	M		128 128
Q621	281496	R	М	+	133
Q623		R			134
Q624 Q625	2SC1214CTZ	R	М		135
<u>≈∪∠3</u>	2SA673CTZ	R	М	t	136
Q711	P5F50NP2F	Н			138
Q712	P5F50NP2F P5F50NP2F	H		Т	138
Q714	P5F50NP2F		M		138
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Symbol L001 L002 L003 L003A L004 L005 L006 L101 L102 L103 L103 L104 L105	Type JUMPER JUMPER JUMPER NLCV32T4R7 NORMAL COIL JUMPER F6A048A66088-00 JUMPER RCE108MP-33IK JUMPER JUMPER JUMPER	A C H A A A A A	M M M M M M M M M	В	152 3225 189 180 181
Symbol L001 L002 L003 L003 L004 L005 L006 L101 L102 L103 L104 L105 L430	Type JUMPER JUMPER NLCV32T4R7 NORMAL COIL JUMPER PBAD48466008-00 JUMPER RCS1084P-331K JUMPER JUMPER JUMPER JUMPER JUMPER	A C H A A A A A	M M M M M M M M M	В	152 3225 189 189 180 181
Symbol L001 L002 L003 L003A L004 L005 L101 L102 L103 L104 L105 L430	Type JUMPER JUMPER JUMPER NORMAL GOIL JUMPER REGISSOR JUMPER JUMPER JUMPER JUMPER JUMPER JUMPER JUMPER JUMPER JUMPER	A C H A A A A A A	M M M M M M M M M M M M	В	152 3225 189 140 141 153
Symbol L001 L002 L003 L003 A L004 L005 L006 L101 L102 L103 L103 L104 L105 L430 L701 L801 T101 CT1	Type JUMPER JUMPER NCOVSTART NCOVSTART NCOVSTART JUMPER FEMANDER JUMPER	A C H A A A A A A A H H H	M M M M M M M M M M M M M M M M M M M	В	152 3225 169 140 140 153
Symbol L001 L002 L003 A L003 A L004 L004 L004 L005 L101 L102 L103 L104 L105 L430 L701 L801 L701 L801 L701 L801 L701 L801 NF1	Type JUMPER JUMPER NLCV32T4R7 NCRAAL COIL JUMPER PARAMETER NCV32T4R7 NORAAL COIL JUMPER FALMAMETER JUMPER JUMPER JUMPER JUMPER JUMPER JUMPER HF-TRAKS REGERSSAMMETER HE-TRAKS	A C H A A A A A A A H H H	M M M M M M M M M M M M M M M M M M M	В	152 3225 189 190 191 153 148 148 146 147
Symbol L001 L002 L003 L003 L003 L004 L005 L006 L101 L102 L103 L104 L105 L701 L801 L701 L801 L701 L801 L701 L801 L701 L801 L701 L801 L701 L701 L701 L701 L701 L701 L701 L7	Type JUMPER JUMPER JUMPER NLCY327487 NLCY3274 NLC	A A A A A H H H H H	M M M M M M M M M M M M M M M M M M M	В	152 3225 169 140 140 153
Symbol L001 L002 L003 L004 L005 L006 L101 L102 L103 L104 L105 L430 L701 L801 L801 L801 L801 L801 L801 L801 L8	Type JUMPER JUMPER NLCV3274R7 NCRAL COIL JUMPER REGISSP-31K JUMPER	A A A A A H H H H H	M M M M M M M M M M M M M M M M M M M	В	152 3225 189 190 191 153 148 148 146 147
Symbol L001 L001 L001 L001 L003 L003 L003 L005 L005 L005 L005 L005	Type JUMPER JUMPER NLCY327487 NLCY32748 NLCY3274 N	A A C C H A A A A A A A H H H H H H	M M M M M M M M M M M M M M M M M M M	В	152 3225 189 190 191 153 148 148 146 147
Symbol LO01 LO01 LO01 LO01 LO02 LO03 LO03 LO03 LO03 LO04 LO05 LO06 LO01 LO02 LO05 LO05 LO05 LO05 LO05 LO05 LO05 LO05	Type JUMPER JUMPER NLCY327487 NLCY32748 NLCY3274 N	A A A A A A A A A A A A A A A A A A A	M M M M M M M M M M M M M M M M M M M	B 8 158	152 5225 189 189 189 181 153 181 181 181 181 181 181 181 181 181 181

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     R211 10X 5X //M C
R212 390 5X //M C
R213 10X 5X //M C
R213 10X 5X //M C
R213 10X 5X //M C
R214 390 5X //M C
R215 10X 5X //M C
R225 1.1 (5 X //M C
R226 10X 5X //M C
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R230 7
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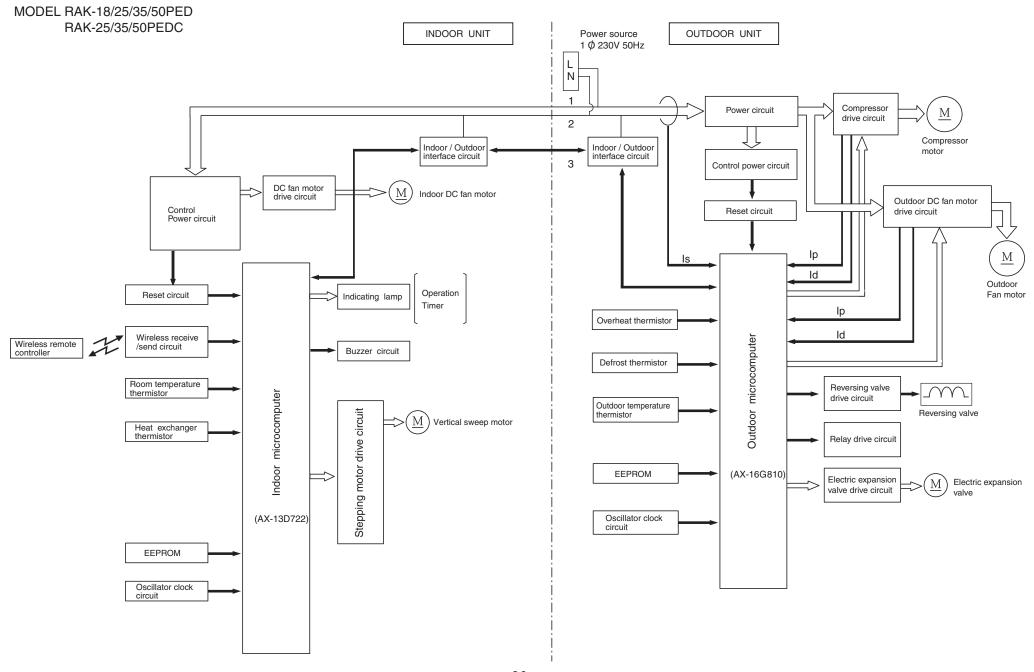
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	実装		40 8#	借号		Resi						_		
				1005 1005		Symbol R371	Ratin (0)	g	erini:					Emarks
Ü	пIС	В	16	1005										
						R373 R374 R375	10K	5% 5%	1/16	C	HIC	A	12	1005
C	HIC HIC	A	13 7	1005		R375	10K	5%	1/16	č	HIC	В	12	1005
	HIC			1005		R401 R402	1 K	5%	1/16	C	HIC	В	21	1005
_	Ü	É	Ĕ			R403	1 K	5%	1/16 1/16	C	HIC	В	21	1005
С	HIC	В	16	1005		R404								
С	HIC	В	12	1005		R436	5, 1K 10K	5% 5%	1/16 1/16	C	HIC	A	16	1005
C	HIC	В	12	1005		101		Ë		Ĺ	Í	Ė	Ė	
C	HIC	A	12	1005		R522	10K	5%	1/16	C	HIC	В	12	1005
C	HIG	A	112	1005		R523 R524	10K	5%	1/16	C	HIC	В	12	1005
Ć	HIC	В	8	1005		R524 R525 R526	430	5% 5%	1/16 1/16	C	HIC	В	45 45	1005
С	HIC	Α	12	1005		R527	430	5% 5%	1/16 1/16	C	HIC	Y R	45	1005
C	HIC	A	12	1005		R529 R530	430 430	5% 5%	1/16 1/16	C	HIC	A	45 45	1005
C	BIC	R	116			R531	CLIPTOPE	5%	1/16	C	HIC	B	138	1005
C	HIC	A	12	1005 1005 1005			Chip-HWFER Chip-HWFER			С	HIC	В	38	1005
						R630	24	5%	1/16	C	HIC	A	35	1005
C	HIC	A	48 8	1005		R632	24 5, 11K 5, 11K 5, 11K 5, 76K 24 24 21, 5K	1%	1/16	C	EIC	A	36	1005
С	HIC	В	18	1005		R634	5.11K 5.76K	1%	1/16 1/16	C	BIC	A	31	1005 1005
Ċ	HIC	В	18	1005 1005 1005		R635 R636	24	5% 5%	1/16 1/16	C	IIC IIC	A	35 35	1005
C	HIC	В	8	1005			24	5%	1/16	C	FIC	A	35	1005
	HIC	В	l			R639 R640	10K	1%	1/16	C	BIC	A	13	1005 1005
C	HIC	В	8 24	1005 1005 1005		R641	13.3K	11%	1/16	C	EIC	A	133	1005
C	HIC HIC	B	8	1005 1005 1005		R643	5.11K 5.11K	1%	1/16 1/16	C	BIC	A	36	1005 1005 1005
						R644 R645	5, 11K 5, 11K CHIP JUNPER	1% 5%	1/16 1/16	C	210	Ι Α	IXK.	1005
C	HIC	A	12	1005 1005 1005		R646 R647	I CE IP JUNGPER	5% 1%	1/16	c	HIC	A	38 34	1005
						R647 R648 R649	24	5% 1×	1/16	Ċ	EIC	A	35 47	1005
C	HIC	A	27 13	1005		R650	5, 1K 1K 510 24	1%	1/16	Ç	HIC	A	22	1005
C	HIC	A	13	1005 1005 1005 1005		R651 R652	1 K 510	5%	1/16 1/16	C	EIC	A	7	1005 1005
						K034	24	5% 5%	1/16 1/16	C	EIC	A	35 35	1005
C	HIC	В	28	1005 1005 1005		R655 R656	24	5% 5%	1/16	C	EIC	A	35 35	1005
C	HIC	A	29 21	1005		R657	20K	5%	1/16	Č	EIC	A	19	1005
	HIC			1005		R701 R702								
	HIC			1005		R703	1.5K	5%	1/16 1/16	C	HIC	В	41	1005
						R703 R704 R705 R706 R707 R708 R709 R710	1.5K	5×	1/16 1/16	C	HIC	В	41	1005
C	HIC	Δ	116	1005		R706 R707	1.5K	5% 5%	1/16 1/16	C	HIC	В	41 19	1005
C	HIC	A	17 17	1005 1005 1005		R708	20 K	5% 5*	1/16	C	EIC	B	19	1005
C	HIC	A	8	1005		R710	20K	5%	1/16	Ç	HIC	B	19	1005
C	HIC	Α	8	1005		R712	20 K	5%	1/16 1/16	C	EIC	В	19	1005
С	HIC	В	40	1005		R711 R711 R712 R713	10	5% 5%	1/4 1/4	C	⊞IC ⊞IC	В	49 49	3216 3216
ť	HIC	В	21	1005		K / I O	10	5% 5%	1/4	C	⊞IC	В	49 50	3216
	H	Ė	Ė			R716 R717 R718	1 K Chip JUNPER	5×	1/10	Ċ	⊞IC ⊞IC	Ā	21	3216 3216 1608 1005 1005
С	HIC	A	F	1005		R719	Chip JUNPER	5%	1/16	Č	EIC	В	38	1005
C	HIC	A	Ż	1005		R721		5%	1/16	C	HIC	A	20	1005
C	HIC	A	35	1005		R722 R723	2 K	15×	1/16	C	HIC	A	120	1005
C	HIC	A	36 36	1005 1005 1005 1005		R724 R725	2K	5×	1/16	C	HIC	A	20	1005
C	HIC	A	36 36	1005		R726	2 K	5×	1/16	C	HIC	A	20	1005
c	HIC	Â	38	1005	 	R728	100	5×	110	200	HIC	A	8	1005
C	HIC	A	51 35	1005		R729 R730	1 1 1 1 1	15×	1/16	C	HIC	A	8	1005
Č	HIC	A	13	1005		R731 R732	100	5×	1/16 1/16	C	HIC	A	8	1005 1005
C	HIC	В	42	1005		R754								1005
C	HIC	I R	IN 3	1005 1005 1005 1005		R758		Ė	Ï		HIC	A	-	
c	HIC HIC	B	12	1005		R759		Ź		С	HIC	Α	Ź	1005
	HIC		ı	1005		R760 R761	24 5.11K 5.11K	5% 1%	1/16 1/16	C	HIC	A	36	1005
			l			R763	[5.11K	11%	1/16	C	HIC	A	36 36	1005
C	HIC	В	44	1005		IR764	15. 11K	11%	1/16	C	HIC	A	136	1005
С	HIC	Α	12	1005		R765 R766	Chip JUNER	5%	1/16	ć	HIC	A	38	1005
С	HIC	A	38	1005		R767 R768	24	5×	1/16	C	HIC	A	135	1005
C	HIC	A	12	1005 1005		R769 R770	10K	ď	/16 	C	HIC	A	13	1005
С	HIC	A	112	1005		R805	Chip JUNPER	5%	1/16	С	HIC			1005
C	HIC	A	12	1005 1005 1005										
С	HIC	I A	112	1005		R991 R992	100	5×	1/16	Č	HIC	A	8	1005
C	HIC	A	12	1005 1005 1005		V 8 8 5	100	ίχ	1/10	Ü	n16	A	ď	1005
ć	HIC	A	12	1005 1005 1005				E					E	
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C	HIC	B	12	1005 1005 1005										
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Сара	cito	r							
	Rat	isg	Ē	Ē	Ē	Ē			Symbo
Symbol C128	(aF) Cereity 0, 1	16	С	C	HIC	В	55	1005	D201 D202
C129	0,1	25	C	С	HIC HIC	В	59	1608	D251
1133		25	С					1608	D271 D272
191	0, 1	25	С	С	HIC	В	63	1008	D273 D291
C201	0.1	16	С	С	HIC	Α	55	1005	D310
C202	0.1	16	C	C	HIC	В	55	1005	D321
C204	470p	50	c	С	HIC	Α	60	1005 1005	D322
C205 C206	0.047 470p 470p	25	C	C	HIC	В	54	1005 1005	D631
C207	470p	50	C	С	HIC	Α	60	1005	D641
C209	0.1	116	l C	C	HIC HIC	A	155	1005	D701
C210	0.1 0.047	25	C	C	HIC	В	54	1005	D702
C215			С		HIC		L		D703 D704
C216	0,1	16	C	С	HIC	В	55	1005 1005	D705
C217	0, 1	16	C		HIC		55 55	1005	D706
								1005	D711
C220	0.01	25	С	С	HIC	В	70	1005	D712 D713
C222		Z	e		HIC		Z	1005	
C223	1000p 0.1	50	C	C	HIC	B	68 55	1005	D721
C231	0.1	16	C	C	HIC	В	55	1005	D722 D723
C234	0.1	16	С	С	HIC	R	55	1005	D724 D725
C235	0.1	16	С	C	HIC	В	55	1005	D726
C236 C237	0, 1	16	C		HIC		bb	1005 1005	D731
C238	0,1	16	С	С	HIC	В	55	1005	D732
C239	0.1	116	C	C	HIC				D733
C240	0, 1	16	C	C	HIC	В	IJb	1005 1005	D735
		П		ı					
C251	2200p 0.068	50 25	C	C	HIC	A	61	CHM 1608 RM 1608	D761
						_			D801
C271	0.1	16	С	С	HIC	Α	55	1005	D802
C281	0.1	16	С		HIC		55	1005	
C282	0,1	16	C	С	HIC	Α	55	1005	
C283	0,22	16	С	С	HIC	В	57	1608	<u>1 C</u>
C285	0.1	16	С	С	HIC	Α	55	1005	
C291	0,1	25	C	C	HIC	Α			Symbo
C292	0.047	25	c	c	HIC	A	54	1608 1005	1C2 1C3
		Ę							
C294	\vdash	K	e	2	HIC	A	K	1005	1 C 5 1 C 6
C321	0.033	50	С	С	HIC	В	65	1608	
C430	0, 1	16	С	С	HIC	A	55	1005	108
									1010
C432	0,1	16	С	C	HIC	В			10702
C504	100p	50	С		HIC		76	CHE 1005	
C505	100p 100p	50 50	C		HIC		76 76	CHA 1005 CHA 1005 CHA 1005	E ² PRO
							_		MICON
C508 C509	0.1 220p	16 50	C	C	HIC		55 67	1005 8# 1005	
C631 C632	0.047	25	C	C	EIC EIC	A	54	1005 1005	
		П	П						Zener
C641	0.047	25	С	С	HIC	A	54	1005	e
C652		58	e	e	HIC	Α	b	1005	Symbol ZD701
C653	0.1	16	Ċ	C	HIC	В	55	1005	ZD702
C702	0.33	25	С	С	HIC	В	74	2125	ZD703
C703	2200p	50	C	С	HIC	В	75	2125 1005 1005	
U/04	1000p	150	С	С	HIC	A	68	1005	m
C706	0, 1	16	С	С	HIC	В	55	1005	Tran
C711	100p	50	С	C	HIC	A	72	CHW_	Symbo
C712 C713	1 1 U U P	IJU	6	č	HIC	A	73	CHE	Q121
C713	100p	50 50	C	C	HIC	A	73	1608 CHW	Q122
C715	100p	50	С	C	HIC	A	73	CH08 1608	Q203
C716 C717	1009	50	C	U	HIC HIC	A	13	1608	Q251
C718		É	è		HIC		b	2125 1608	Q273
		05					7.		
C721	10 10		D D	~	HIC	Λ	72 72		Q641
C723	1 10	125	D	C	HIC	A	72	R R 1608 1608	Q701
C724 C725	0.1	25	C	C	HIC	A	63	1608	Q702 Q703
C726	0.1	25	Ċ	Č	HIC	A	63	1608	<u> </u>
C737	100p	50	С	С	HIC	B	73	1608	<u>Indu</u>
C738	100p	50	С	С	HIC	В	173	1608	
C739 C740	100p	50	C	C	HIC		173	1608 1608	Symbol L810
CZNU	100p	50 50	С	C	HIC	Α	73	1608	12010
C741	100p	50	Ċ		HIC	A	73	1608	
C740 C741 C742		25	С	С	HIC	A	70	R# 1005	<u>0scil</u>
C741 C742	0.01	Ž	ĕ		HIC		Ž	1005	
C741	0,01		С	C	BIC	Α	60	1608	Symbol X 1
C741 C742 C762 C764		50	ř						[
C741 C742 C762 C764 C801	0.022		_	C	HIC	Α	69	1608	Jump
C741 C742 C762 C764 C801			С	-			_	CH#	
C741 C742 C762 C764 C801	0.022	50	С		HIC	Α	66	1005	. I
C741 C742 C762 C764 C801 C806	0.022 0.022 47p	50 50	С	С					Symbol
C741 C742 C762 C764 C801 C806 C808	0.022 0.022 47p	50 50	С	C		Α	55	1005	JP1 JP2
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Display
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D202 BSSSI-REKP C HIC B 79
December
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DECEMBER
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DT01
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D706 D1760 C B10 A B4
DT12 D1FK00
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D721 ISS355VM C BIO BIO D722 ISS355VM C BIO BIO D723 ISS355VM C BIO BIO D724 ISS355VM C BIO BIO D724 ISS355VM C BIO BIO D725 ISS355VM C BIO A BIO D726 ISS355VM C BIO A BIO D726 ISS355VM C BIO A BIO D726 ISS355VM C BIO A BIO D731 ISS355VM C BIO A BIO D732 ISS355VM C BIO A BIO D733 ISS355VM C BIO A BIO D735 ISS355VM C BIO A BIO A BIO D735 ISS355VM C BIO A BIO A BIO D735 ISS355VM C BIO A BI
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D730 18834594
D795 ISS355VM C HI B B D
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DB01 IDS226-RTL/P C IIC A 83 DB02 IDS226-RTL/P C IIC A B3 DB02 IDS226-RTL/P C IIC A B3 DB02 IDS226-RTL/P C IIC A B4 IDS226-RTL/P IDS226-RTL/P IDS226-RTL/P
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Type
Symbol Type
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10702 650003.06-f2 S BIC A B3
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Symbol Type
Symbol Type
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Inductor Symbol Type
Symbol Type Bit K
Symbol Type Bit K
L810 & IIC X
L810 & IIC X
Oscillator
Symbol Type market and the teach
X1 CSTCE12M5G C HIC A 96 12.9E
Jumper
Symbol Exist/No
JP1 No 2 IIIC X 1005
JP2 No 2/1 mid 1/ 1
JP2 No R BCA 1005 JP3 Exist C BIC A 38 1005 JP4 Exist C BIC A 38 1005

SK1 RE1201-C H M 161

BLOCK DIAGRAM



BASIC MODE

MODEL RAK-18/25/35/50PED RAK-25/35/50PEDC

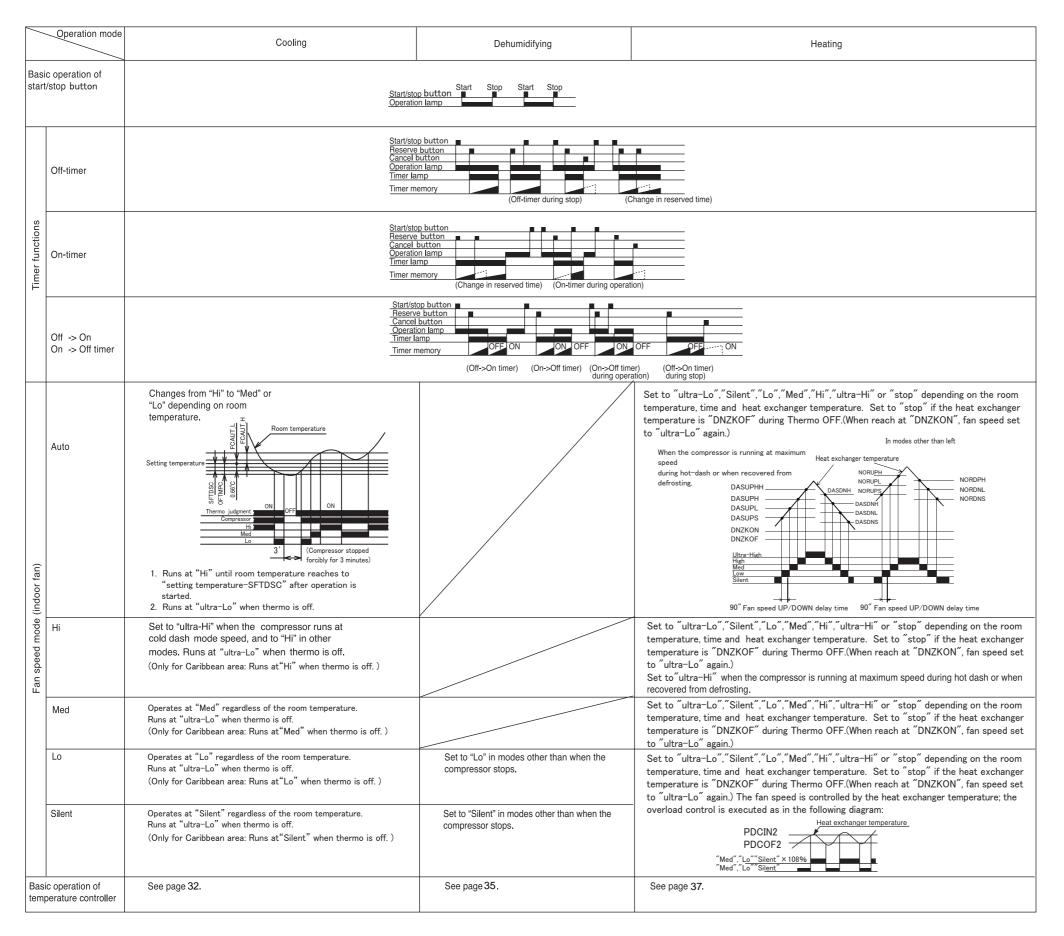
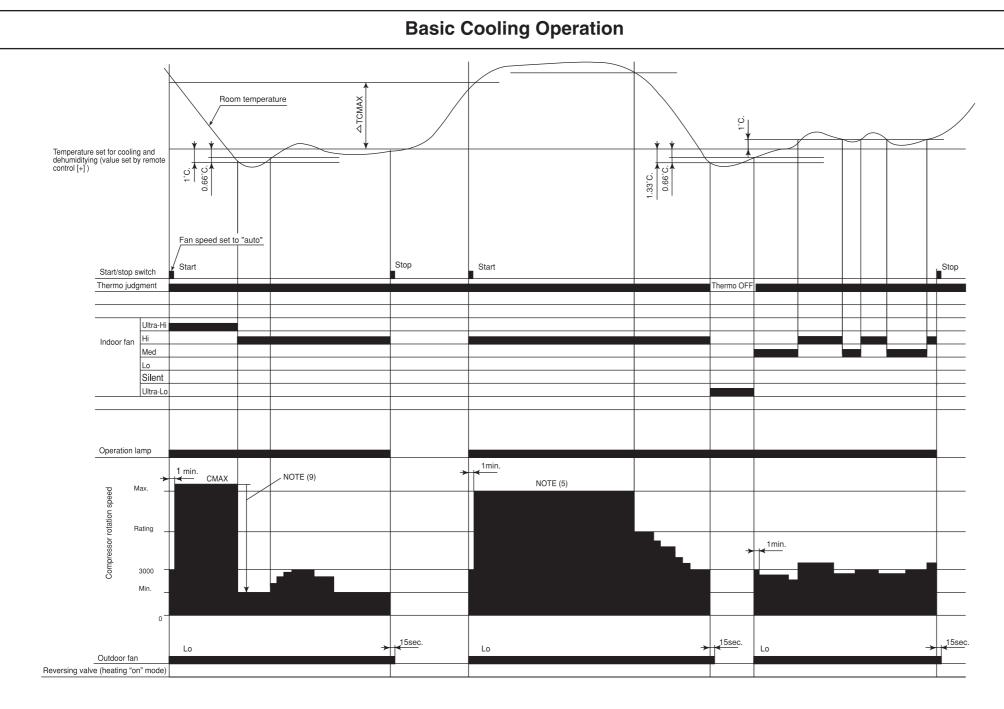
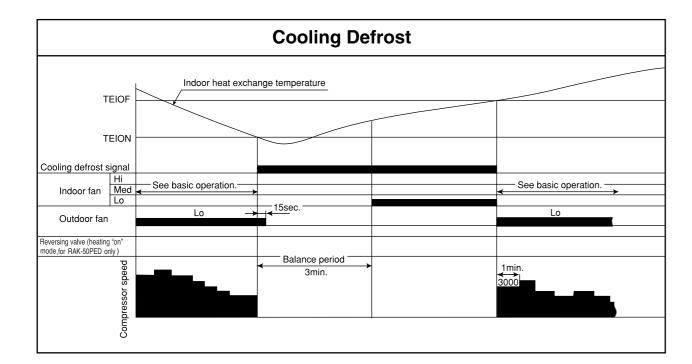


Table 1 Mode data file

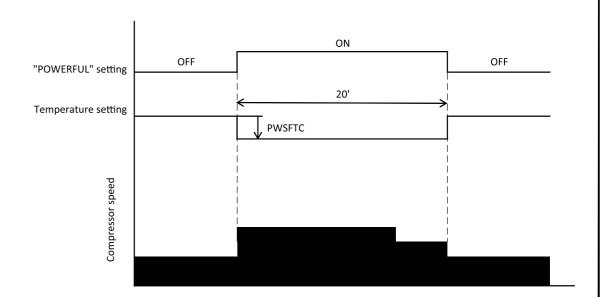
MODEL	RAK-18PED	RAK-25PED RAK-25PEDC	RAK-35PED RAK-35PEDC	RAK-50PED RAK-50PEDC
LABEL NAME	VALUE			
WMAX	4200 min ⁻¹	5800 min ⁻¹	6250 min ⁻¹	5700 min ⁻¹
WMAX2	4200 min ⁻¹	5800 min ⁻¹	6250 min⁻¹	5700 min ⁻¹
WSTD	3100 min ⁻¹	4550 min ⁻¹	5200 min⁻¹	4700 min ⁻¹
WJKMAX	2800 min ⁻¹	4200 min ⁻¹	5000 min⁻¹	4200 min ⁻¹
WBEMAX	2800 min ⁻¹	3800 min ⁻¹	4550 min ⁻¹	3600 min ⁻¹
WSZMAX	2800 min ⁻¹	3500 min ⁻¹	3500 min⁻¹	3000 min ⁻¹
CMAX	4300 min ⁻¹	4600 min ⁻¹	5850 min⁻¹	5500 min ⁻¹
CMAX2	4300 min ⁻¹	4600 min ⁻¹	5850 min ⁻¹	5500 min ⁻¹
CSTD	3200 min ⁻¹	3200 min ⁻¹	4500 min⁻¹	4500 min ⁻¹
CJKMAX	3000 min⁻¹	3000 min ⁻¹	4300 min⁻¹	3900 min ⁻¹
CBEMAX	2800 min ⁻¹	2800 min ⁻¹	3700 min⁻¹	2800 min ⁻¹
CSZMAX	2200 min ⁻¹	2200 min ⁻¹	2900 min ⁻¹	2400 min ⁻¹
WIN-CMPH	2000 min ⁻¹	2000 min ⁻¹	2000 min ⁻¹	2300 min ⁻¹
WIN-CMPL	2000 min ⁻¹	2000 min ⁻¹	2000 min ⁻¹	2300 min ⁻¹
CMIN	1900 min ⁻¹	1900 min ⁻¹	2000 min ⁻¹	1800 min ⁻¹
STARTMC	90 Seconds	90 Seconds	90 Seconds	90 Seconds
DWNRATEW	80%	80%	80%	80%
DWNRATEC	60%	60%	60%	70%
SHIFTW	0.00℃	0.00℃	0.00℃	0.00℃
SHIFTC	0.00℃	0.00℃	0.00℃	0.00℃
CLMXTP	30.00℃	30.00℃	30.00℃	30.00℃
TEION	2.00℃	2.00℃	2.00℃	2.00℃
TEIOF	6.00℃	6.00℃	6.00℃	9.00℃
SFTDSW	1.00℃	1.00℃	0.66℃	0.66℃
DFTIM-OTP0	43 Minutes	43 Minutes	43 Minutes	43 Minutes
DFTIM-OTP5	43 Minutes	43 Minutes	43 Minutes	43 Minutes
DFTIM-OTP10	43 Minutes	43 Minutes	43 Minutes	43 Minutes
FCAUT-L	0.66 ℃	0.66℃	0.66℃	0.66 ℃
FCAUT-H	2.00 ℃	2.00℃	2.00℃	2.00 ℃
SFTDSC	0.66 ℃	0.66℃	0.66℃	0.66 ℃
OFTMPC	1.00 ℃	1.00℃	1.00℃	1.00 ℃
DASUPHH	43.00	45.00	45.00	39.00
DASDNHH	39.00	41.00	41.00	36.00
DASUPH	38.00	40.00	40.00	35.00
DASDNH	33.33	35.33	35.33	32.00
DASUPL	33.00	35.00	35.00	31.00
DASDNL	28.00	28.00	28.00	29.00
DASUPS	28.00	28.00	28.00	28.00
DASDNS	27.00	27.00	27.00	26.00
NORUPH	45.00	45.00	45.00	45.00
NORDNH	36.00	40.00	40.00	38.00
NORUPL	36.00	37.00	37.00	37.00
NORDNL	33.00	33.00	33.00	33.66
NORUPS	33.00	33.00	33.00	33.00
NORDNS	30.00	30.00	30.00	30.00
PDCIN2	50.00	50.00	54.00	50.00
PDCOF2	45.00	45.00	48.00	48.00
DNZKON	15.00	15.00	15.00	15.00
DNZKOF	13.00	13.00	13.00	13.00
FNUPPW-C	30 min ⁻¹	30 min ⁻¹	30 min ⁻¹	30 min ⁻¹
DFMAX-STD	5500 min ⁻¹	5500 min ⁻¹	5500 min ⁻¹	5000 min ⁻¹
DFMAX-ATF	5500 min ⁻¹	5500 min ⁻¹	5500 min ⁻¹	4000 min ⁻¹



- (1) Condition for entering into Cool Dashed mode. When fan set to "Hi" or "Auto and when the compressor speed (P section) due to temperature difference between setting temperature (including the correction shift only) and room temperature is CMAX or higher.
- (2) Cool Dashed will release when i) a maximum 25 minutes is lapsed and ii) room temperature is lower than set temperature –3°C (thermo off) and iii) when room temperature has achieved setting temperature –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 CSTD.
- (7) When fan is set to "Med", compressor rpm will be limited to CJKMAX.
- (8) When fan is set to "Lo", compressor rpm will be limited to CBEMAX.
- (9) During Cool Dashed, when room temperature reaches set temperature −1°C compressor rpm is actual rpm x DWNRATEC.

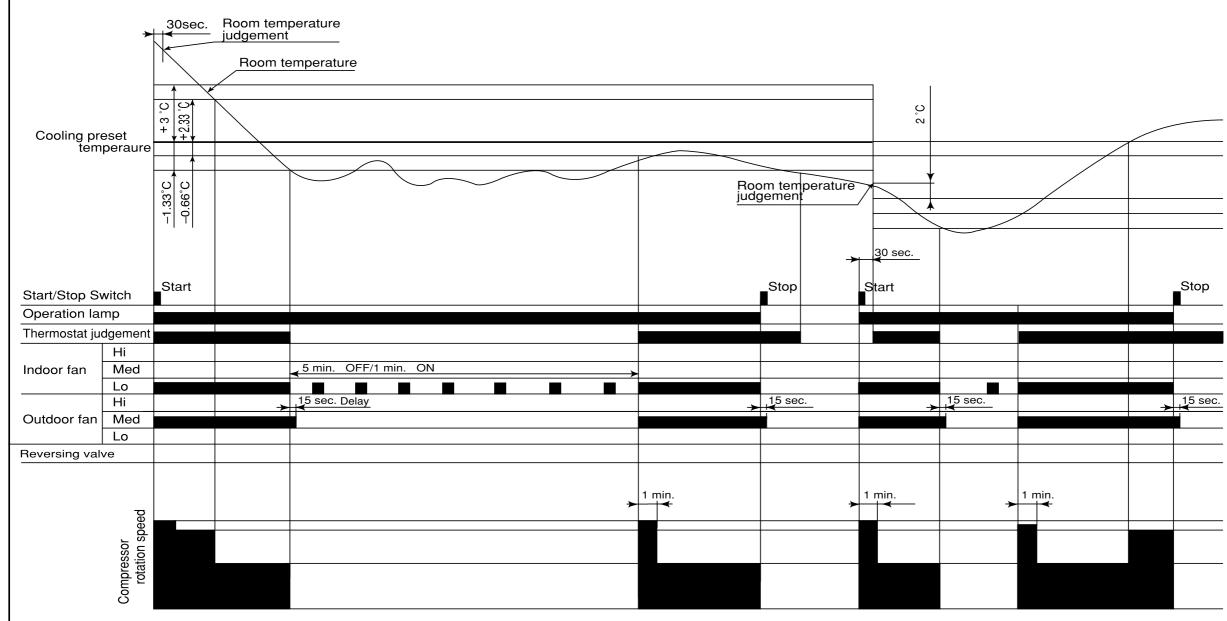


Cooling Powerful Operation



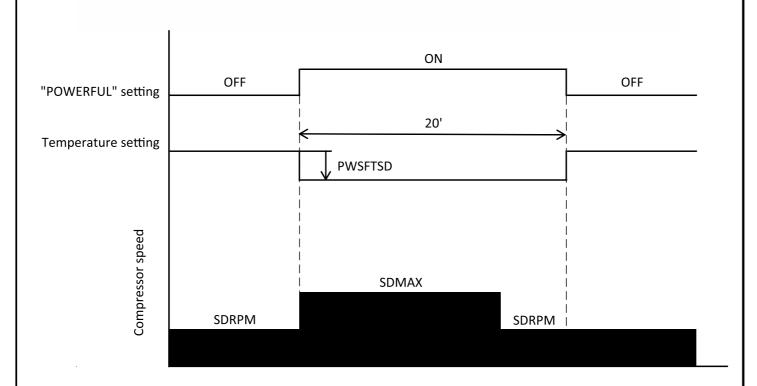
- (1) Pressing the "POWERFUL" button will reduce the temperature setting by PWSFTC.
- (2) The powerful operation is for 20 minutes after setting.
- (3) Operation is continued forcibly thermo-ON for 20 minutes after the powerful operation is finished.
- (4) Pressing the "START/STOP" button and "POWERFUL"button 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) When the powerful operation is set, the fan speed will be set to "HIGH" and the compressor's maximum speed will be set to CMAX2 during powerful operation. The compressor's lower limit speed is CKYMIN_PW.
- (7) The fan speed increases by ${\sf FNUPPW_C}.$
- (8) After the powerful operation is ended, the system automatically operates with the previous settings used before the powerful operation.

Dehumidifying



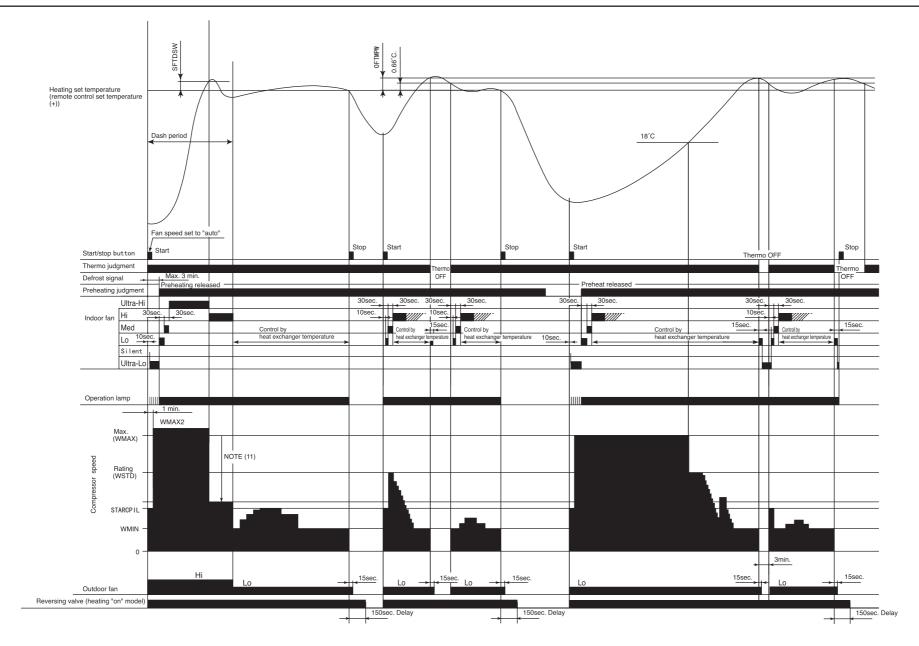
- (1) If the room temperature is (cooling preset temperature) (1.33°C) or less after 30 seconds from starting the operation, the operation is done assuming as the preset temperature = (room temperature at the time) (2°C).
- (2) The indoor fan is operated in the "Lo" mode. During thermo OFF indoor fan 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.





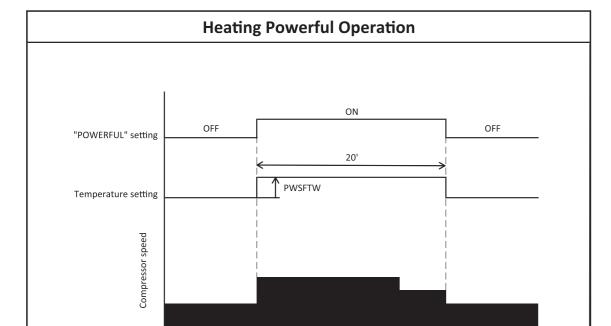
- (1) Pressing the "POWERFUL" button will reduce the temperature setting by PWSFTSD.
- (2) The powerful operation is for 20 minutes after setting.
- (3) Operation is continued forcibly thermo-ON for 20 minutes after the powerful operation is finished.
- (4) Pressing the "START/STOP" button and "POWERFUL" button during powerful operation will cancel the powerful operation.
- $(5) \ \ \text{If the sleep timer is set during powerful operation, the powerful operation will be canceled.}$
- (6) If the differential (the room temperature the temperature setting) is "the differential ≥ 3 °C" after powerful setting, the compressor's maximum speed during powerful operation will be set to SDMAX. Then the differential reduce "the differential ≤ 2.33 °C" 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 $^{\circ}$ C" after powerful setting , the compressor's minimum speed during powerful operation will be set to SDRPM.
- (7) After the powerful operation is ended, the system automatically operates with the previous settings used before the powerful operation.

Basic Heating Operation



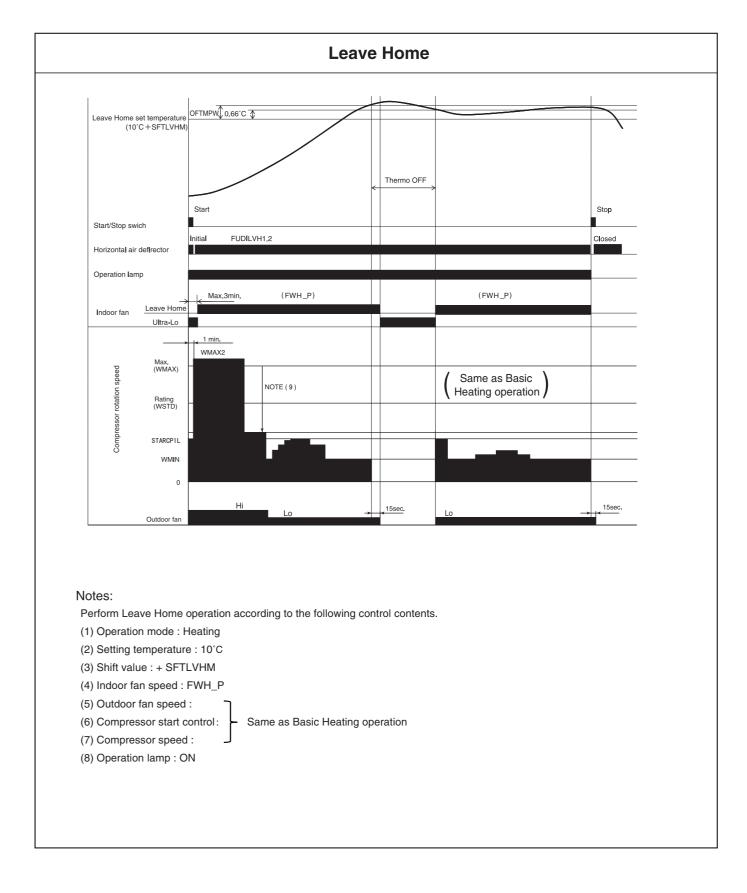
Notes:

- (1) Condition for entering into hot dashed mode. When fan set to "Hi" or "Auto" and i) room temperature is 18 or less, and ii) outdoor temperature is 10 or less, and iii) compressor speed (P section) due to temperature difference between setting temperature(including shift value only) and room temperature is WMAX or more.
- (2) The maximum compressor speed period during hot dash is finished when i) room temperature has reached the setting temperature + SFTDSW. ii) thermo off.
- (3) During hot dashed operation, thermo off temperature is setting temperature (with shift value) +3. After thermo off, operation continue inn Fuzzy control mode.
- (4) Minimum "ON" time and minimum "OFF" time of compressor operation is 3 minutes.
- (5) During normal heating mode, compressor maximum rpm WMAX will maintain for 120 minutes. No time limit constrain if room temperature is 18 or less and outdoor temperature is 2 or less.
- (6) During preheating or defrosting or auto fresh defrosting mode, indoor unit operation lamp will blink at interval of 2 seconds "ON" and 1 second "OFF".
- (7) When heating mode starts, it will enter into preheating mode if indoor heat exchanger temperature is less than YNEOF + 0.33.
- (8) When fan is set to "Med" or "Lo" or "Silent", compressor rpm will be limited to "WJKMAX" or "WBEMAX" or "WSZMAX".
- (9) During "Ultra-Lo" mode, if room temperature is 18 or less, indoor fan will stop. If room temperature is 18 + 0.33 or more, fan will continue in "Ultra-Lo" mode. However, "Ulrta-Lo" mode during preheating or preheating after defrosting does not stop if room temperature is 18 or less.
- (10) During hot dashed or outdoor temperature is -5 or less, compressor rpm is WMAX2.
- (11) During hot dashed, when room temperature reaches setting temperature + SFTDSW compressor rpm is actual rpm x DWNRATEW.

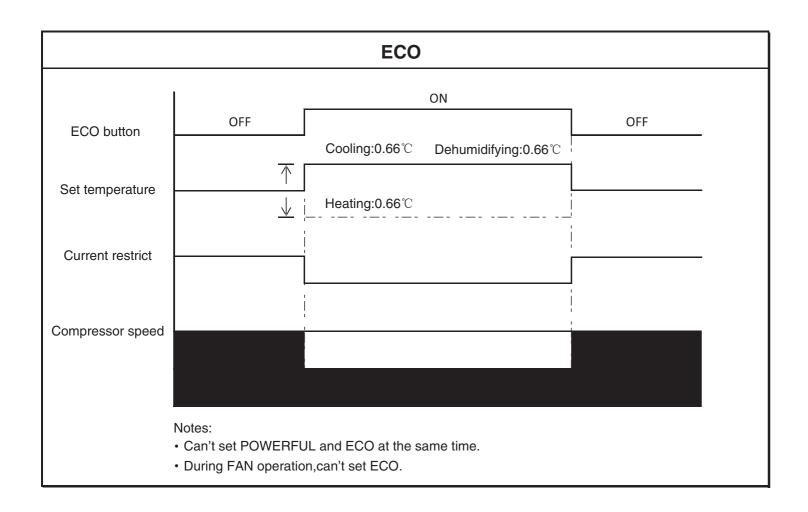


Notes:

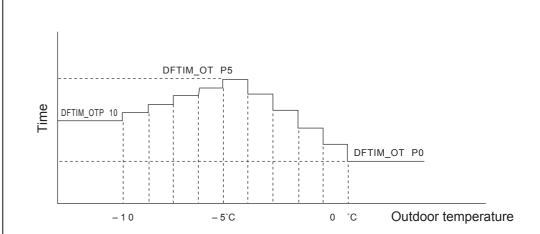
- (1) Pressing the "POWERFUL" button will increase the temperature setting by PWSFTW.
- (2) The powerful operation is for 20 minutes after setting.
- (3) Operation is continued forcibly thermo-ON for 20 minutes after the powerful operation is finished.
- (4) Defrost is inhibited for 20 minutes after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



38



Setting Defrosting Inhibit Period

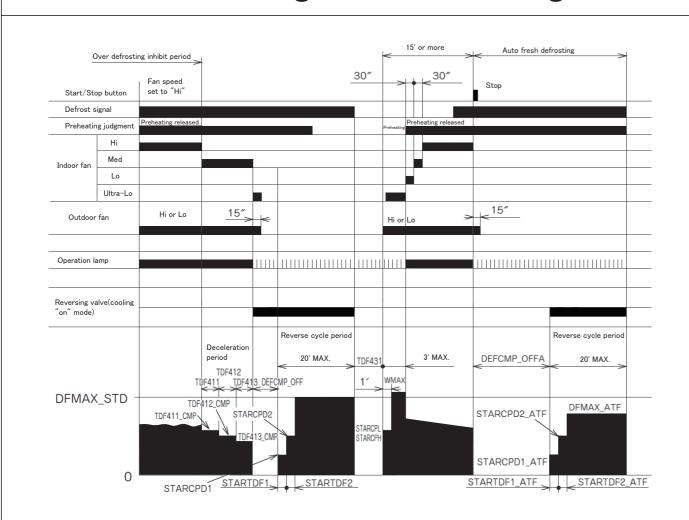


- (1) The first inhibit time after operation start is set to DFTIM_FST.(2) From the second time onwards, the inhibit time is set according to the time required for

Reverse cycle operation time \geq [DEFCOL] : DEFTIM_COL is set. Reverse cycle operation time < [DEFCOL] : The time corresponding to outdoor temperature is set.

RAK-18/25/35PED RAK-25/35PEDC

Reversing valve defrosting

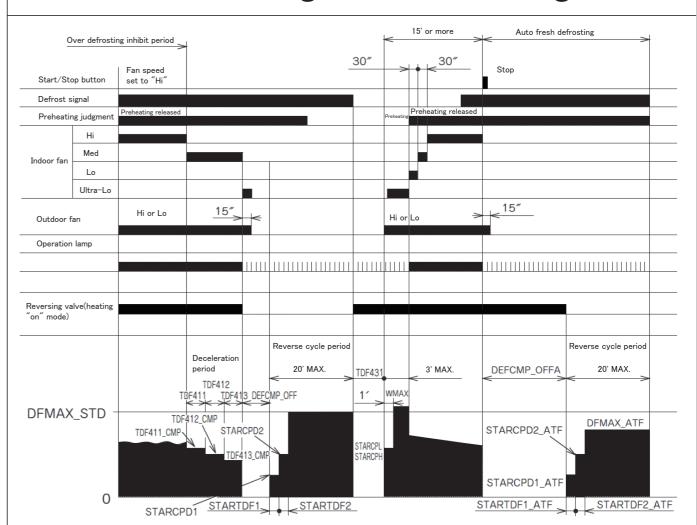


Notes

- (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 20 minutes maximum.
- (4) When operation is stopped during defrosting, it is switched to auto refresh defrosting.
- (5) Auto refresh defrosting cannot be engaged within 15 minutes after operation is started or defrosting is finished.

RAK-50PEDC

Reversing valve defrosting

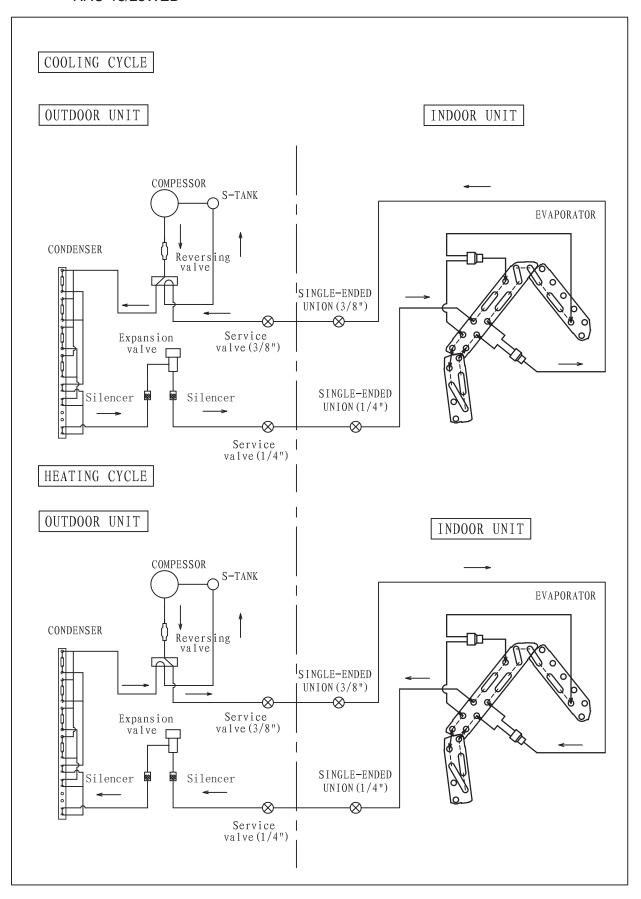


Notes

- (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 20 minutes maximum.
- (4) When operation is stopped during defrosting, it is switched to auto refresh defrosting.
- (5) Auto refresh defrosting cannot be engaged within 15 minutes after operation is started or defrosting is finished.

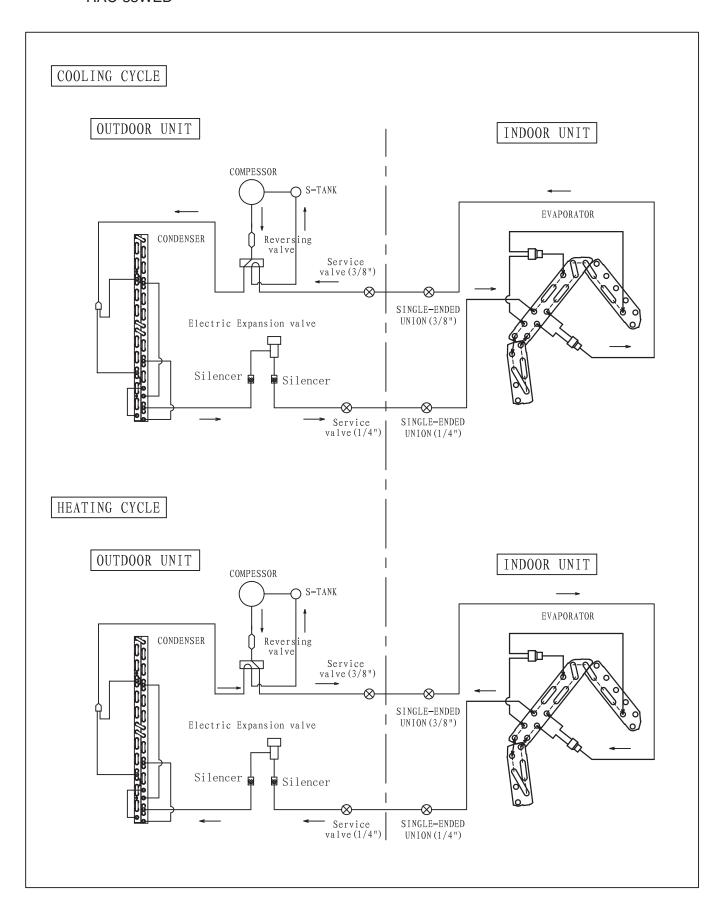
REFRIGERATING CYCLE DIAGRAM

MODEL RAK-18/25PED,RAK-25PEDC RAC-18/25WED



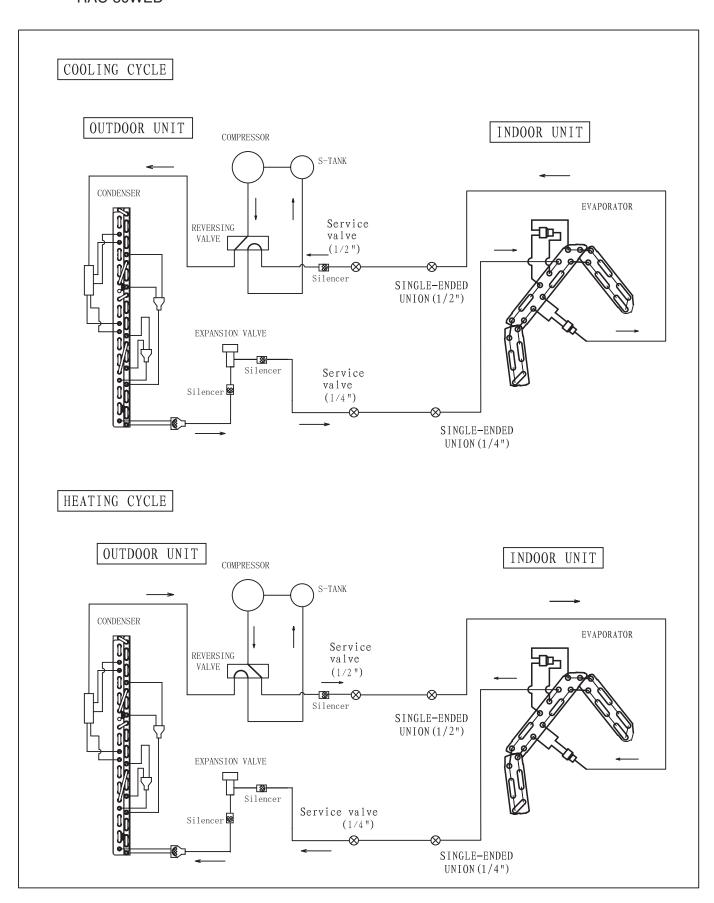
REFRIGERATING CYCLE DIAGRAM

MODEL RAK-35PED,RAK-35PEDC RAC-35WED



REFRIGERATING CYCLE DIAGRAM

MODEL RAK-50PED,RAK-50PEDC RAC-50WED

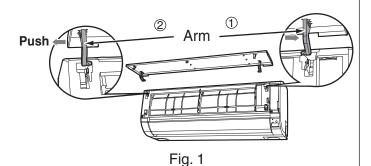


Procedure for Disassembly and Reassembly

INDOOR UNIT RAK-18/25/35/50PED RAK-25/35/50PEDC

1. Front Panel

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

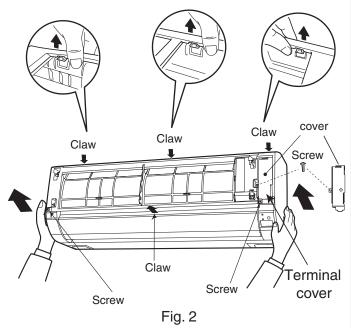


1. Push the end of the right-side arm outward to release the tab.

2. Move the left-side arm outward to release the left tab, and then pull the panel towards you.

2. Front cover

- (1) After removing the screw of fixing the terminal cover, hold the handle of terminal cover and remove it.
- (2) After removing two screws, pull the center of the front cover forward and release the claws
- (3) Hold the front cover at both lower sides and pull them forward to remove.



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

- (1) Remove each connector from the lead wire.
- (2) Remove the four P.W.B. supports from the control P.W.B.

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

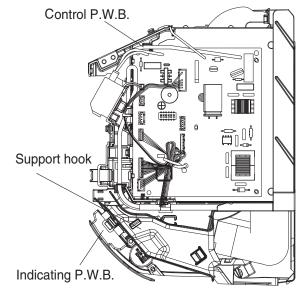


Fig. 3

4. Tangential air flow fan and fan motor

(1)Loosen the fan lock screw.

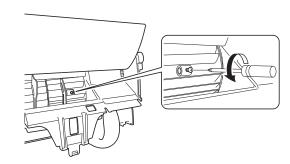


Fig. 4

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

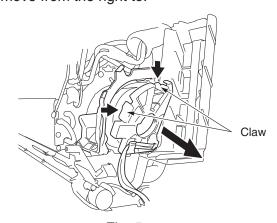


Fig. 5

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

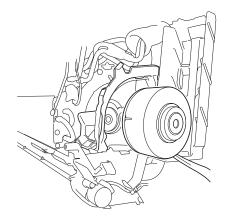


Fig. 6

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

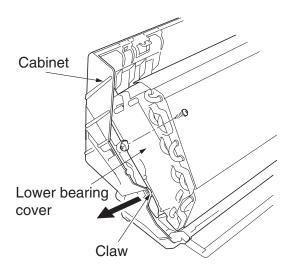


Fig. 7

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

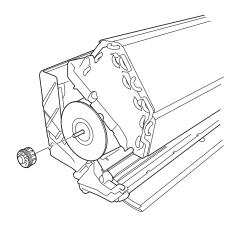
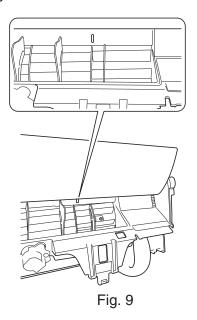


Fig. 8

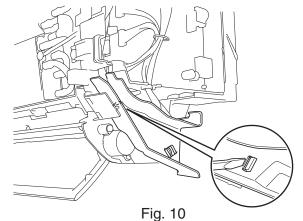
Points for attention of fan motor and tangential air flow fan installation.

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

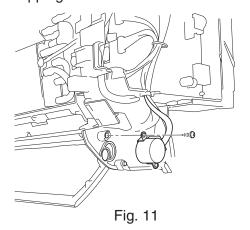


5. Stepping motor

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



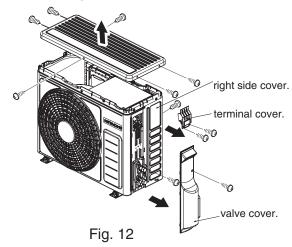
(2)Remove the stepping motor screws and take off the stepping motor.



<OUTDOOR UNIT> MODEL RAC-18/25/35WED

1. Electrical Parts

- (1) Remove the upper cover fixing screws and lift the cover to remove it.
- (2) Remove the service valve cover.
- (3) Remove the terminal plate cover.
- (4) Remove the right side cover.



(5) Remove the electrical box fixing screws and GND wire fixing screw.

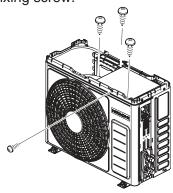


Fig. 13

- (6) Remove P lock which binds lead wires.
- (7) Set the electrical box upside down.

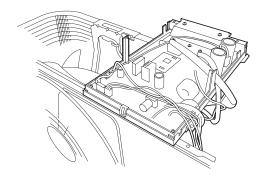


Fig. 14

(8) Remove P.W.B. fixing screws (2 locations) and radiation fin fixing screws (7 locations), and remove the P.W.B. from the support.

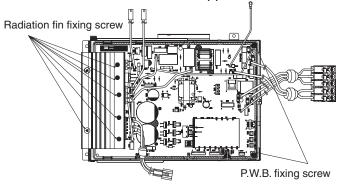
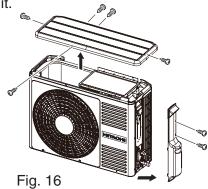


Fig. 15

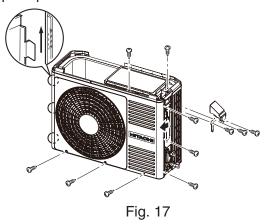
OUTDOOR UNIT MODEL RAC-50WED

1. Electrical parts

- (1) Remove the service value cover lock screws and lower the cover to remove it.
- (2) Remove the top cover lock screw and raise the cover to remove it.



- (3) Remove the front cover lock screw.
- (4) Lower the right side of the front cover and pull it forward. Then, remove the cover from the hook.
- (5) Pull the right side of the front cover a little and pull up the left side to remove it from the hook.



(6) Remove each connector and earth cable from the lead wire. Then, remove the electrical box.

DESCRIPTION OF MAIN CIRCUIT OPERATION

MODEL RAK-18/25/35/50PED RAK-25/35/50PEDC

1. Control power circuit

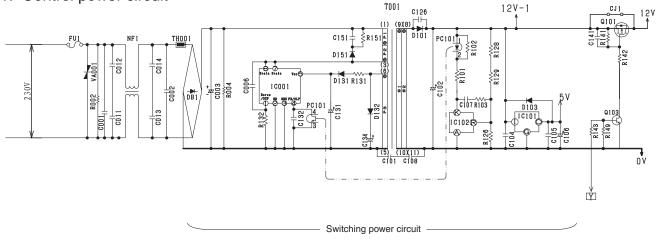


Fig. 1-1

- · An AC power supply from outdoor unit passes through the 3.15 A fuse, varistor (VA001), and noise filter circuit and rectified and smoothed by DB1 and C003 to become a DC current 325 V. It is then supplied to indoor fan motor drive circuit, and switching power circuit.
- · The switching power circuit, as controlled by IC001, drives the primary winding of the transformer (T001) to produce a specified voltage at the output winding. [The output terminal (pin ⑦⑧) of IC001 has a switching voltage. But it changes in voltage peak and oscillation period depending on the power load. usually,the oscillation frequency when the air condition operation is about 67 kHz. In the standby state, the oscillation frequency is lowered to a level as low as 20 kHz or so to reduce the standby power.]
- The outputs of the output windings of the transformer is rectified and smoothed to become DC voltages at primary 18.5 V, and 12 V respectively. The primary 18.5 V is supplied to the drive circuit of the indoor fan motor, the 12 V is supplied to each vane motor and to the drive circuits of the cleaning unit driving motor and other equipment, the 12 V is adjusted to a stable 5 V by the 3-terminal regulator IC (IC101) and supplied to the microcomputer peripheral circuit.

Check

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

Check

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

Caution

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

2. Reset Circuit

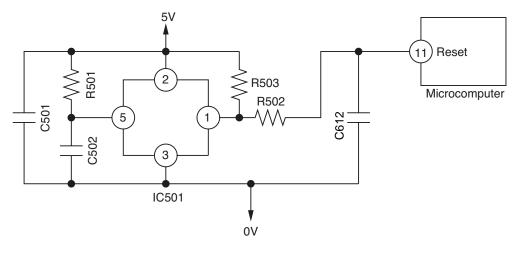
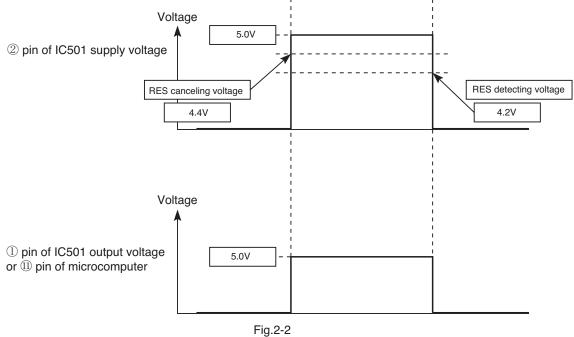


Fig.2-1





- Reset circuit is to initialize the indoor unit microcomputer when switching ON the power or after recovering from power failure.
- Microcomputer operates when ① pin of the indoor unit microcomputer (reset input) is "Lo" for resetting and "Hi" for heating.
- Waveform of each part when switching ON the power and when shutting down is shown in the Fig. 2-2.
- ullet After switching ON the power, oxdot pin of IC501 supply voltage and oxdot pin of microcomputer becomes Hi when DC5V line rises and reaches approximately 4.4V or higher.
 - Then, resetting will be cancelled and microcomputer starts operating.
- After shutting down the power, ① pin of IC501 supply voltage and ① pin of microcomputer becomes Lo when DC5V line falls and reaches approximately 4.2V or lower.
 - Then, the microcomputer will be in reset condition.

3. Drive circuit of the indoor fan motor

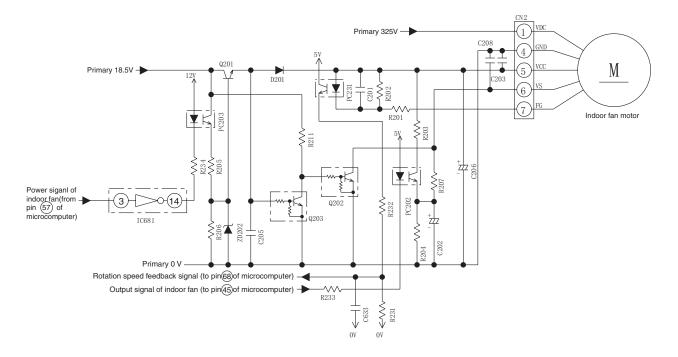


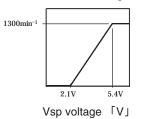
Fig. 3-1

< The circuit check (For test) >

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

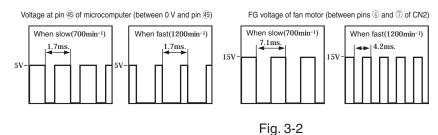
- * The voltage above is all motor operation vol. when yon start the test, take care of your connector, do not touch the different pin together.
- * The voltage of pin 6 pin 4 , pin 7 4 maybe diffierent from above.

< Pin 6 - Pin 4 voltage one example >



* The different mode maybe have different FAN rotation speed.

< Typical circuit waveform >



- The indoor fan motor receives VDC (motor drive power supply), VCC (power supply for the control circuit inside the motor), and VS (speed command voltage) from CN2. The indoor fan motor returns an FG signal of a frequency that matches the rotation speed.
- VCC stabilizes the primary 18.5 V power supply into 15 V by using Q201 and supplies it.
- · While on standby for a remote control signal, the Q201 shuts down the VCC and reduces the standby power.
- The VS receives a command voltage from the microcomputer (IC601). The VS terminal undergoes an analog voltage that matches the Lo level time ratio of the pulse signal from pin (5) of the microcomputer. (See Fig. 3-2.)
- The FG terminal undergoes a signal of 12 pulses per revolution of the motor shaft. By counting the pulse rate, the microcomputer (IC601) recognizes the motor speed, thereby performing feedback control.

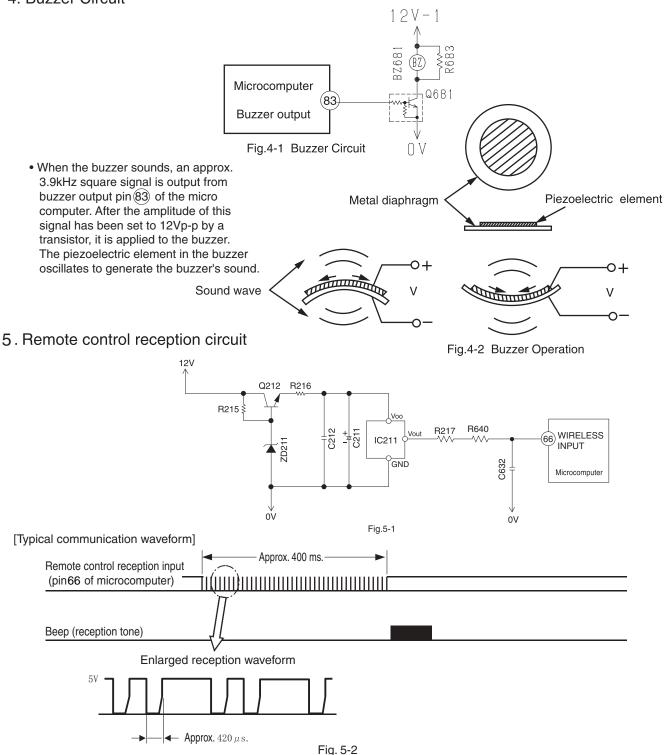
Caution

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

Caution

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

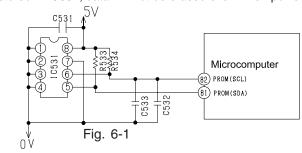
4. Buzzer Circuit



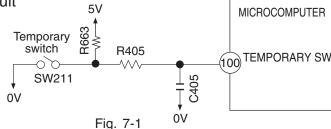
• An infrared signal from the remote control unit is converted to an electrical signal by the remote control light-receiving unit (IC821) and is received by the microcomputer. Data is transmitted as digital data 0 and 1 by changing the interval of the basic pulses at about 420 µs.

6. Initial Setting Circuit (IC531)

- When power is supplied, the microcomputer reads the data in IC531 (E²PROM) and sets the preheating activation value and the rating and maximum speed of the compressor, etc. to their initial values.
- Data of self-diagnosis mode is stored in IC531; data will not be erased even when power is turned off.



7. Temporary Switch Circuit



- 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.

8. Room Temperature Thermistor Circuit

A room temperature thermistor circuit is shown in Fig. 8-1.

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

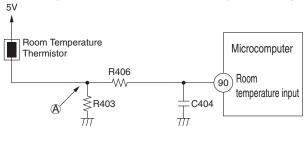
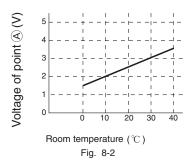


Fig. 8-1



9. Heat Exchanger Thermistor Circuit

Heat exchanger temperature is noticed inside the room

- (1) Preheating
- (2) Low-temperature defrosts at cooling and dehumidification operation time.
- (3) Not working of reversing valve or detection of opening of heat exchange thermistor is controlled.

According to heat exchange temperature, the voltage of point (a) becomes as it is shown in Fig. 9-2.

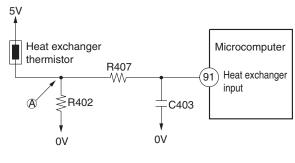
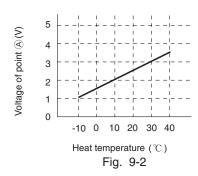


Fig. 9-1



10. Dip-switch

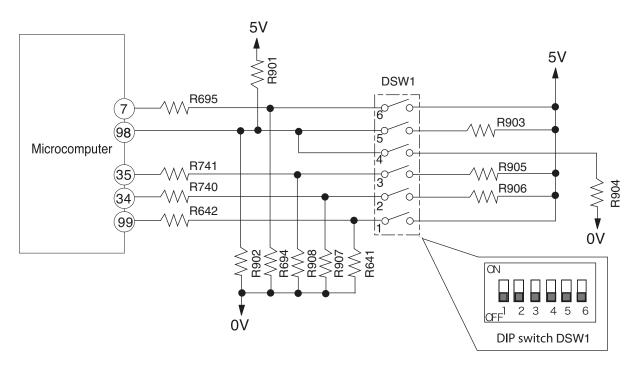


Fig.10-1Dip switch Circuit

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.

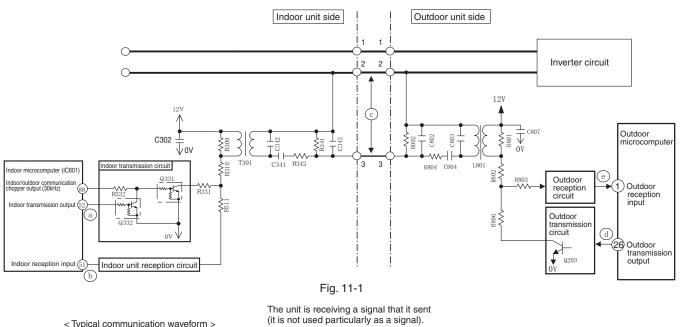
SW No.	ITEM		F U N C T I O N					
1	AUTO RESTART		ENABLE	ON	DISABLE			
2	CARD KEY MODE	OFF*	DISABLE		ENABLE			
3	CARD KEY LOGIC SELECT	OFF*	INPUT HIGH ACTIVE	ON	INPUT LOW ACTIVE			
4	HEATING/COOLING ONLY MODE SELECT	OFF*	HEATING	OFF	HEATING ONLY	ON COOLING ONLY ON HEATING &		
5	HEATING/COOLING ONLY MODE SELECT	OFF*	COOLING	ON	THEATING ONLI	OFF ON COOLING		
6	REMOCON ID SELECT	OFF*	SELECT ID : A	ON	SELECT ID : B			

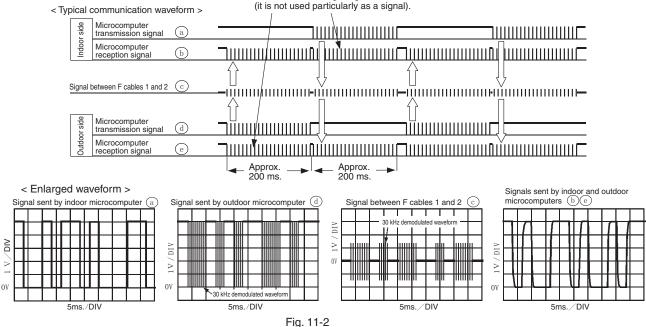
Fig.10-2 Functions of Dip switch

NOTE:

* Marking is position of shipping [FACTORY default setting]

11. Indoor/outdoor communication circuits





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

Check

If a cable poorly inserted in the indoor terminal board or some other failure overheats the terminal board and the temperature fuse of the terminal board blows out, the power to the indoor communication circuit will be shut down to stop the communications function. (In that case, the failure will be displayed by the timer lamp blinking 3 times.)

Check

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

12. Stepping motor drive circuit

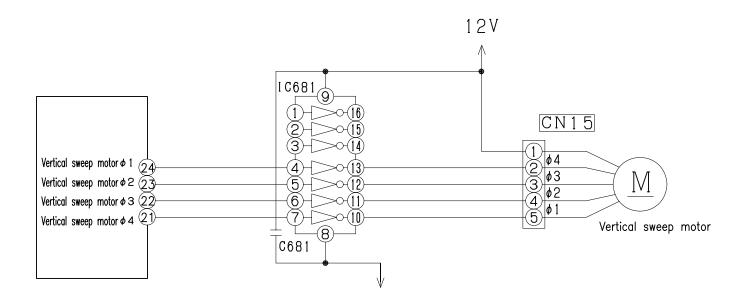
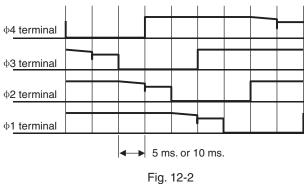


Fig. 12-1

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



- · Each stepping motor runs as excited in 1 or 2 phases at 100 PPS or 200 PPS.
- · The excitation pattern passes the microcomputer (IC601) and then the driver IC and excites the coil of each stepping motor.

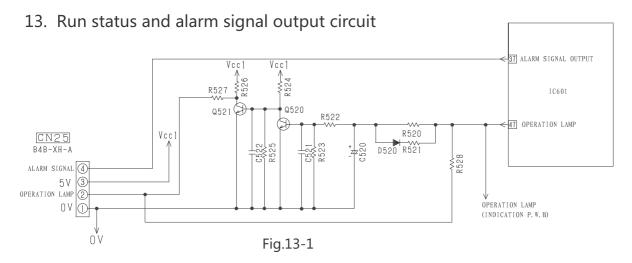
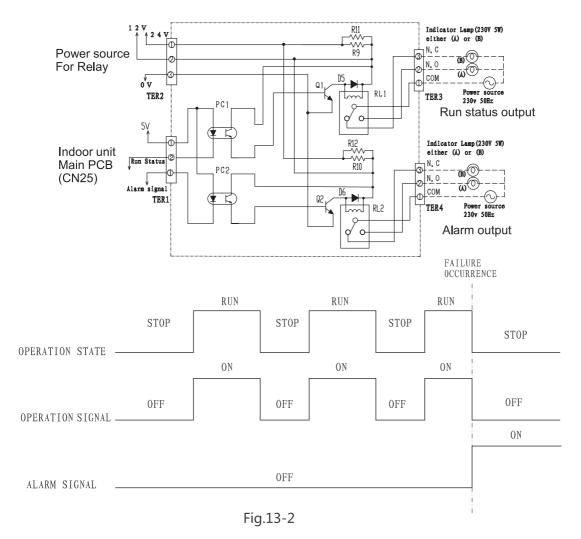
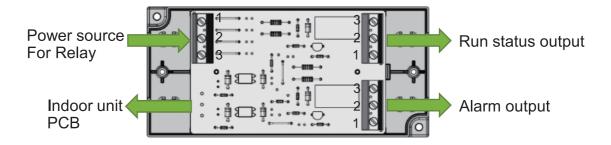


Fig.13-1 is the control circuit of run status and signal output in main PWB. The pin② of CN25 is used to show run status and the pin④ of CN25 is used to warn people when failure occurrence. If customer want to use this function, need to use the adapter (sold separately) to achieve it. the adapter is optional and the detail circuit refer to following circuit.



RL1 is on When air-condition is running and is off When air-condition is stopping. We can know the status of air-condition by RL1. RL2 is off When air-condition in normal condition and is on when air-condition in failure occurrence, we can repair it in time.



- When operating RAC, Run Status signal is output.
- When operation stops, the signal disappears.
- When RAC gets malfunction, alarm signal is output.
- Each signal has to be taken out through the Adapter.
- ** The adapter must to be used because of noise interference. The noise will cause air-condition failure. the voltage from customer's home supply to adapter must be in the 5 ~ 24V, the current is less than 10mA. If the voltage is lower than 5V, optocouplers will not be action; once the voltage is higher than 24V, optocouplers adapter will be damaged.

Load side is a high voltage line, please be careful from electric shock and install the Indication Lamp as near as possible to the Relay Kit. The maximum length of the wiring cable should be below 100m.

MODEL RAC-18/25/35WED

1. Power Circuit

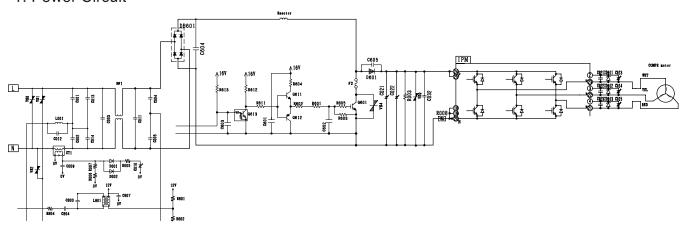


Fig 1-1

* This circuit full-wave rectifies 230VAC applied between terminals L and N and boosts it to a required voltage with the IPM to create a DC voltage.

The voltage become 300-330V when the compressor is operated.

- Main parts
- (1) Intelligence Power Module (IPM)A module that constitute by an inverter part.
- (2) Diode Stack (DB601) These rectify the 230VAC from terminal L and N to a DC power supply.
- (3) Smoothing capacitors (CO21-CO22,375 μ F,420V)
- (4) IGBT to improve efficiency (Q601)

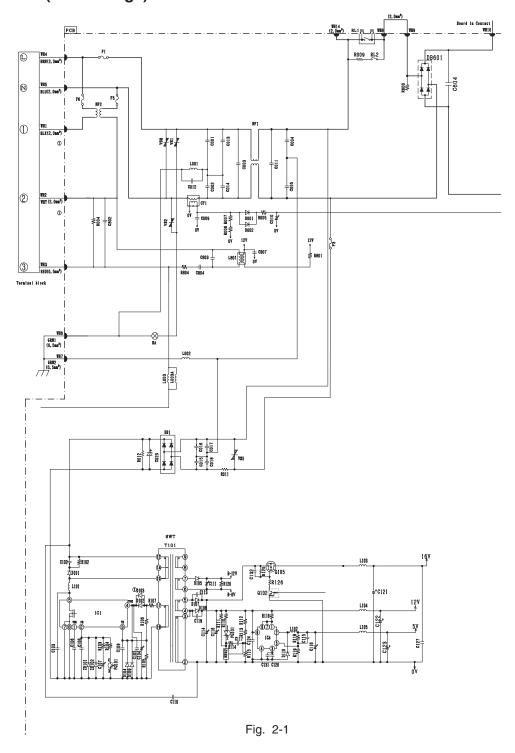
<Reference>

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) are faulty, DC voltage may not be generated and the compressor may not operate at all. Also be aware that the 15A fuse might have blown.
- * This smoothes (averages) the voltage rectified by the diode stack.
- It will improve the efficiency during compressor load become heavy when current flow thru the chopper period of Q601.

2. Power circuit (Low voltage)



- The 230V AC voltage is rectified to DC voltage (B-12V,16V,12V,5V) pass through switching control IC (ICI), switching transformer.
 - (1) B-12V Power supply for electrical expansion valve.
 - (2) 16V Power supply for IPM driver circuit of compressor and fan motor, IGBT action.
 - (3) 12V Power supply for 4 way valve relay, power relay, inrush current relay,motor current amplification,
 - (4) 5V Power supply for microcomputer, peripheral circuits.

Main parts

(1) C001,C002,C003,C004,C005,C011,C013,C014, NF1

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

- (2) Surge Absorber, Varistor1,2,5,8.
 These absorbs external power surge.
- (2) IC4 DC/DC convertor IC (DC12V → DC5V).

3. P.W.B. for power circuit

Voltage specification of power circuit as shown in below table. $\langle \text{Checking point} \rangle$

Output	Spec	Main load	Measuring point	Example of possible failure mode.
5V 0/P	5 ±0.4V	Micon, Thermistor	Tester⊕ : L105 (JUMPER) Tester⊖ : D110 (EARTH)	Outdoor not operate, no blinking indication
12V 0/P	12 ±0.5V	Micon, IC2,3,4 Relay circuit	Tester⊕ : L104 (JUMPER) Tester⊖ : D110 (EARTH)	Outdoor not operate, no blinking indication
16V 0/P	15.5 ⁺ 1.5V - 1.0V	IPM for Comp IPM for DC fan	Tester⊕ : L103 (JUMPER) Tester⊝ : D110 (EARTH)	Stop: LD301 3,4 or 12 times blinking
B-12V O/P	13 + 2.5V - 1.0V	Expansion valve	Tester⊕ : R120(B-12V) Tester⊝ : R120(B-0V)	Stop: LD301 5 times blinking

^{**} Power circuit for P.W.B can consider normal if the result is satisfied with above specification.

4. Reversing valve control circuit

This model reversing valve control used to control the relay ON/OFF of the revesing valve, and also control the coil of the reversing valve ON/OFF.

The relay ON/OFF has different type when in the different operation mode.

You can see each operation mode as fllows. If the reaversing valve not connected or all the condition not the same as follow, it may be something wrong with the reversing valve circuit.

operatio	Point n mode	micon 28pin - 0V	HIC 34 pin - 0V	CN2①- CN2④
Cooling	Usual cooling	Hi	0V	AC230V
Heating	Usual heating	Lo	12V	0V
	Defrost	Hi	0V	AC230V

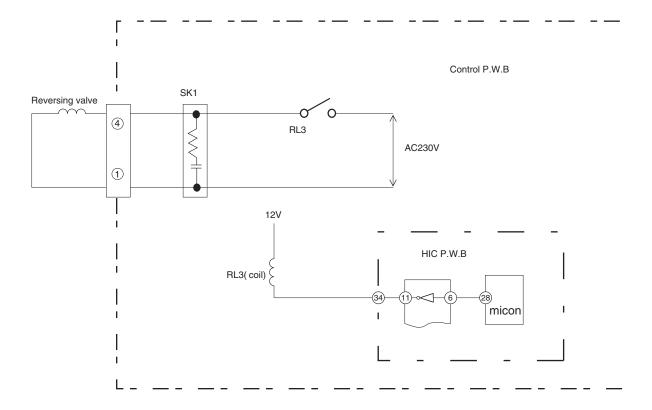


Fig.4-1

5. Temperature Detection Circuit

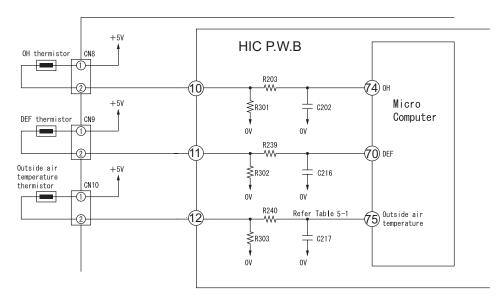


Fig. 5-1

- 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 \oplus 5V is divided by OH thermistor and R301 and the voltage at pin 74 of microcomputer.
- Compare the voltage at microcomputer pin (74) 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 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 5-1

Outside Air Temperature (°C)	-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 condition or disconnect, microcomputer pin 70 (4) 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.

6. Electric expansion valve circuit

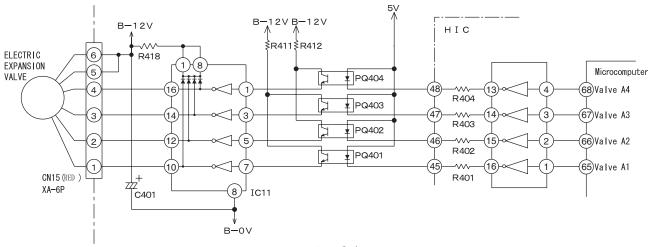


Fig. 6-1

- 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 microcomputer is broken.
- Fig. 6-2 shows logic waveform when expansion valve is operating.

				Table	6-1					
CN15	Wire		Drive status							
pin no.	wire	1	2	3	4	5	6	7	8	
1	WHT	ON	ON	0FF	0FF	0FF	0FF	0FF	ON	
2	YEL	0FF	ON	ON	ON	0FF	0FF	0FF	0FF	
3	ORG	0FF	0FF	0FF	ON	ON	ON	0FF	0FF	
4	BLU	0FF	0FF	0FF	0FF	0FF	ON	ON	ON	
Operation mode $1 \rightarrow 2 \rightarrow 3 \rightarrow 4 \rightarrow 5 \rightarrow 6 \rightarrow 7 \rightarrow 8 \text{VALVE CLOSE}$ $8 \rightarrow 7 \rightarrow 6 \rightarrow 5 \rightarrow 4 \rightarrow 3 \rightarrow 2 \rightarrow 1 \text{VALVE OPEN}$										

Fig. 6-2

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.

7. Outdoor DC fan motor control circuit

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

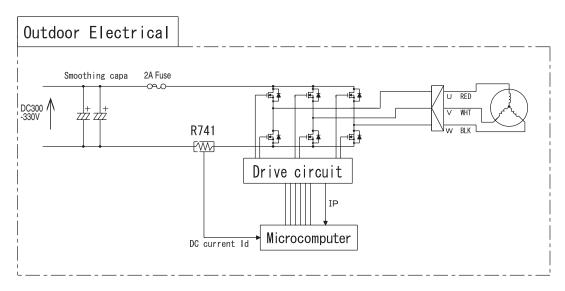


Fig 7-1

This DC fan motor is control by outdoor microcomputer that follow the operating instruction received from indoor microcomputer. 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)

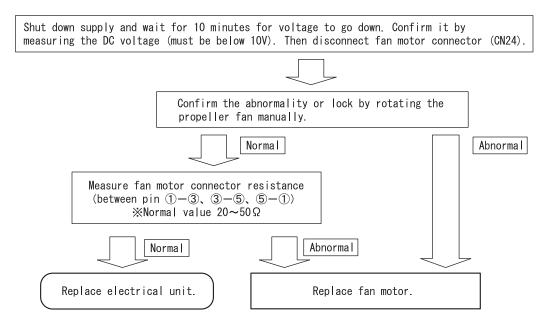
The unit will restart according to control as per during start (1).

- (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 2A fuse blown.

If fan motor is broken, replace both electrical unit and fan motor.

Caution

**Beware of electric shock due to high voltage when conducting an operation check. Power supply for DC fan motor and compressor is common (DC300-330V).

MODEL RAC-50WED

1. Power Circuit

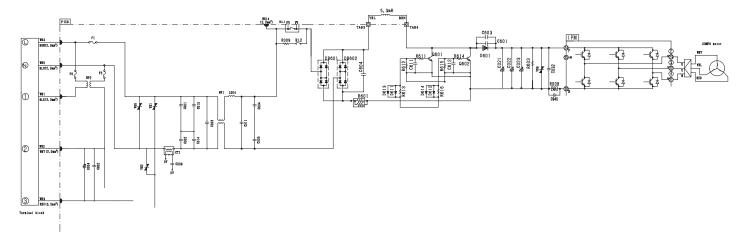


Fig 1-1

* This circuit full-wave rectifies 230VAC applied between terminals L and N and boosts it to a required voltage with the IPM to create a DC voltage.

The voltage become 300-330V when the compressor is operated.

- * Importance component
- (1) Intelligence Power Module (IPM)A module that constitute by an inverter part.
- (2) Diode Stack (DB601, DB602)These rectify the 230VAC from terminal L and N to a DC power supply.

<Reference>

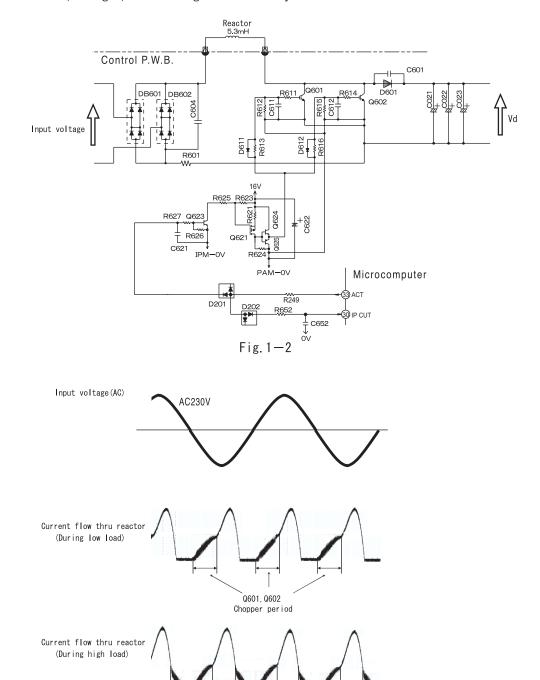
In case of Intelligence Power Module malfunction or connection failure immediately after compressor starts, its may stop due to error of [abnormal low speed], [switching failure],[Ip stop] and others.

<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 25A fuse might have blown.

(3) Smoothing capacitors (CO21-CO23,500 μ F,450V)

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



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

Vd (DC)

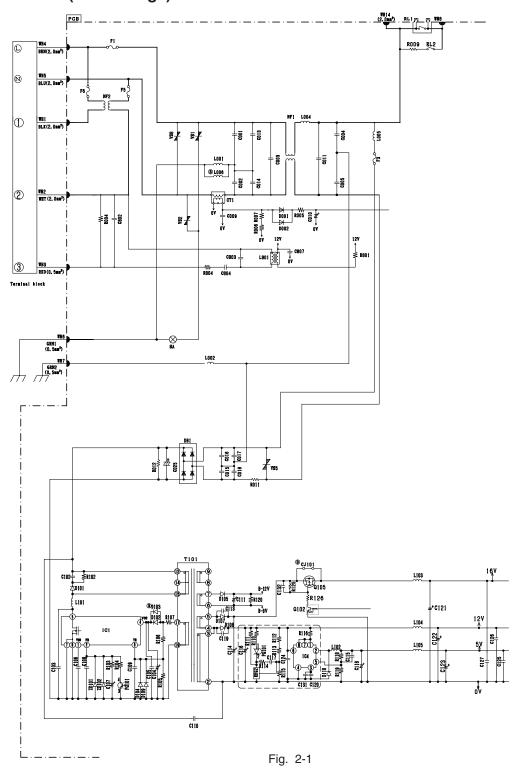
It will improve the efficiency during compressor load become heavy when current flow thru the chopper period of Q601, Q602.

Q601, Q602 Chopper period

Fig. 1-3

DC300-330V

2. Power circuit (Low voltage)



- The 230V AC voltage is rectified to DC voltage (B-12V,16V,12V,5V) pass through switching control IC (ICI), switching transformer.
 - (1) B-12V Power supply for electrical expansion valve.
 - (2) 16V Power supply for IPM driver circuit of compressor and fan motor, IGBT action.
 - (3) 12V Power supply for 4 way valve relay, power relay, inrush current relay,motor current amplification,
 - (4) 5V Power supply for microcomputer, peripheral circuits.

Main parts

(1) C001,C002,C003,C004,C005,C011,C013,C014, NF1

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

(2) Surge Absorber, Varistor1,2,5,8.

These absorbs external power surge.

(2) IC4 DC/DC convertor IC (DC12V → DC5V).

3. P.W.B. for power circuit

Voltage specification of power circuit as shown in below table. (Checking point)

Output	Spec	Main Ioad	Measuring point	Example of possible failure mode.
5V 0/P	5 ±0. 4 V	Micon, Thermistor	Tester⊕ : L105 (JUMPER) Tester⊖ : D110 (EARTH)	Outdoor not operate, no blinking indication
12V 0/P	12 ±0.5V	Micon, IC2,3,4 Relay circuit	Tester⊕ : L104 (JUMPER) Tester⊖ : D110 (EARTH)	Outdoor not operate, no blinking indication
16V 0/P	15.5 ⁺ 1.5V - 1.0V	IPM for Comp IPM for DC fan	Tester⊕ : L103 (JUMPER) Tester⊖ : D110 (EARTH)	Stop: LD301 3,4 or 12 times blinking
B-12V O/P	13 + 2.5V - 1.0V	Expansion valve	Tester⊕ : R418(B-12V) Tester⊖ : C401("-")	Stop : LD301 5 times blinking

^{**} Power circuit for P.W.B can consider normal if the result is satisfied with above specification.

4. Reversing valve control circuit

This model reversing valve control used to control the relay ON/OFF of the revesing valve, and also control the coil of the reversing valve ON/OFF.

The relay ON/OFF has different type when in the different operation mode.

You can see each operation mode as fllows. If the reaversing valve not connected or all the condition not the same as follow, it may be something wrong with the reversing valve circuit.

operatio	Point n mode	micon 28pin - 0V	HIC 28 pin - 0V	CN2①- CN2④	
Cooling	Usual cooling	Hi	0V	AC230V	
Heating	Usual heating	Lo	12V	0V	
	Defrost	Hi	0V	AC230V	

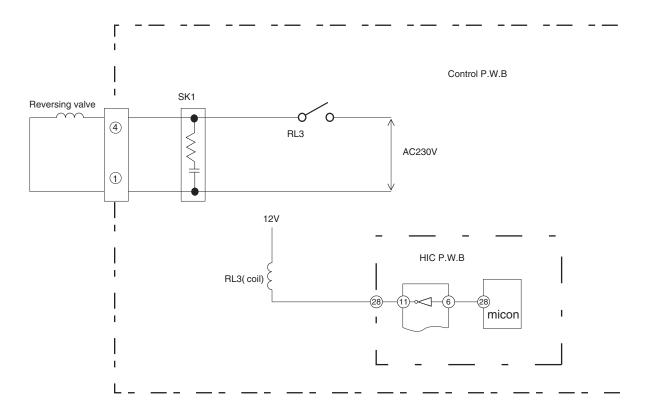


Fig.4-1

5. Temperature Detection Circuit

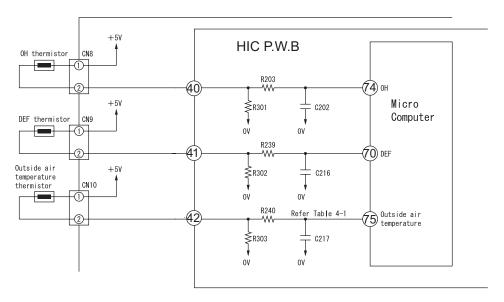


Fig. 5-1

- 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 \oplus 5V is divided by OH thermistor and R301 and the voltage at pin 74 of microcomputer.
- Compare the voltage at microcomputer pin (74) 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 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 5-1

Outside Air Temperature (°C)	-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 condition or disconnect, microcomputer pin 70 (4) 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.

6. Electric expansion valve circuit

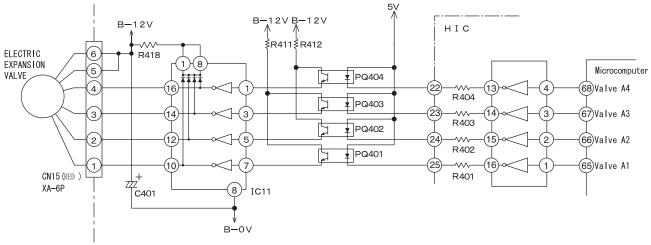
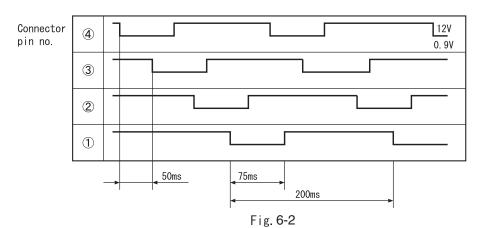


Fig. 6-1

- 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 microcomputer is broken.
- Fig. 6-2 shows logic waveform when expansion valve is operating.

				Table	6-1				
CN15	Wire		Drive status						
pin no.	wire	1	2	3	4	5	6	7	8
1	WHT	ON	ON	0FF	0FF	0FF	0FF	0FF	ON
2	YEL	0FF	ON	ON	ON	0FF	0FF	0FF	0FF
3	ORG	0FF	0FF	0FF	ON	ON	ON	0FF	0FF
4	BLU	0FF	0FF	0FF	0FF	0FF	ON	ON	ON
Operation mode									
$1 \rightarrow 2 \rightarrow 3 \rightarrow 4 \rightarrow 5 \rightarrow 6 \rightarrow 7 \rightarrow 8$ VALVE CLOSE									
8→7→6	5→5→4	32-	→1 VA	LVE OPE	N				



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.

7. Outdoor DC fan motor control circuit

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

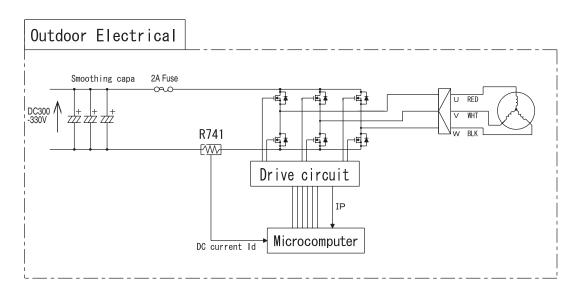


Fig 7-1

This DC fan motor is control by outdoor microcomputer that follow the operating instruction received from indoor microcomputer. 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 windThe 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

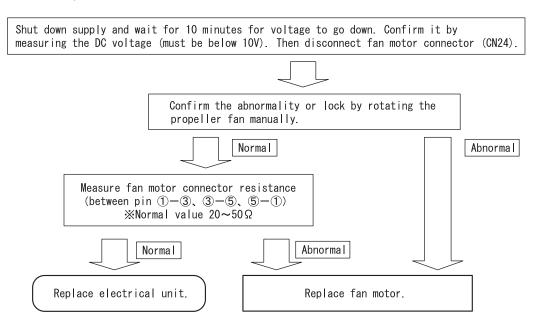
There is a case where fan rpm is reducing during rotating caused by interference of strong wind If this condition continue in long period, fan will stop rotating. (LD301 : 11 times blinking) The unit will restart according to control as per during start (1).

- (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).
 - XPlease confirm above checking procedure if found 2A fuse blown.

If fan motor is broken, replace both electrical unit and fan motor.

Caution

**Beware of electric shock due to high voltage when conducting an operation check. Power supply for DC fan motor and compressor is common (DC300-330V).

SERVICE CALL Q&A

Cooling operation The compressor sometimes Q1 Cooling when the room Check if the heat stops during cooling. temperature is low may exchanger of the indoor cause the heat exchanger unit is covered with frost. of the indoor unit to gather Wait for 3 to 4 minutes frost. until the frost disappears. Dehumidification The indoor unit produces a noise that Q1 **A1** That is a noise produced by refrigerant flowing through goes "shaaahhh" during the pipe. dehumidification. Q2 Cold air comes out during a To improve the dehumidification efficiency performs dehumidifying operation. quiet fan operation. Therefore the air is cold and it is not a malfunction. Q3 The operation does not stop even by It sets to perform dehumidifying operation by setting setting the temperature higher than the temperature slightly lower than remote controller room temperature on the remote setting. controller. Heating operation Q1 Defrosting is in progress. Wait 5 to 10 minutes until The product sometimes fails to Α1 produce a wind during heating. the frost on the outdoor unit disappears. At the first of the heating, the product will run for 30 seconds with a slight fan speed. When set to strong fan speed, the The product begins with a slight fan Q2 speed during heating even though set product will begin with a slight fan speed operation, producing to "Hi fan" or "Med fan" or "Low fan" or a weak fan speed for 30 seconds, and then switch to strong "silent fan". fan speed. Q3 АЗ When heating is conducted despite the high outdoor The product stops during heating temperature, the product may stop to protect its even though it is set to "30°C." equipment. Auto-fresh defrost Q1 During heating, I turned off the The "auto-fresh defrost" should be working. When product by using the START/STOP stopped, the product will check its outdoor unit for frost button. But the "operation lamp" is and, if there is any frost, conduct defrosting and then blinking and the outdoor unit is stop operating. running.

Common, etc.	
In "automatic fan speed" mode, the indoor fan changes from strong fan speed to weak fan speed to slight fan speed.	This does not abnormal. It is because the cold fan speed prevention is working. In fan speed "automatic" mode, the product will sense the heat exchange temperature and, when the temperature goes down, the product will automatically switch to strong wind to weak fan speed to slight fan speed.
At operation startup, the outdoor unit becomes noisy.	At operation startup, the product will set the rotation speed of the compressor to full power and increase its heating and cooling capacity, resulting in a slightly higher noise level. This is not a sign of a breakdown.
Q3 The outdoor unit sometimes changes in its noise.	The difference between the thermometer temperature setting and room temperature will change the rotation speed of the compressor. This is not a sign of a breakdown.
There is a difference between the temperature setting and room temperature in room temperature control.	The room structure, air stream, or other factor may cause a gap between the room temperature setting and actual room temperature. If there is any difference between the setting and the room temperature, adjust the temperature setting to match the living space to a comfortable temperature.
The product will not produce wind right after startup.	After turning ON the power switch or breaker, setting the product to heating or dehumidification will activate a preliminary operation for 1 minute. At that time, heating will cause the operation lamp to blink. This is not a sign of a breakdown.
I performed internal cleaning, but didn't succeed in controlling the mold in the room.	Internal cleaning will clean the inside of the indoor unit of the air-conditioner, thereby controlling mold generation. This will not control the mold in the room.

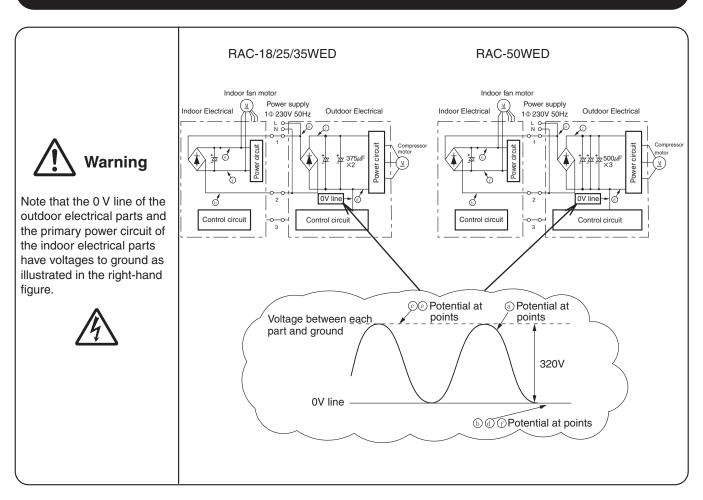
Wireless remote control Q1 The timer will not become set. Have you set the product to the current time? The timer cannot be set unless it is set to the current time. The current time When set to the current Q₂ The current time display will disappears 10 seconds time setting, the reading disappear at once. later. The timer set blinks for about 3 minutes. display is given priority. Q3 **A3** I made a timer "reservation". But Is the time not past the reserved time? the time setting has disappeared. The set time disappears when the current time reaches the reserved time. Q4 I tried to set the "sleep" timer The time set in the "sleep" timer can be set with a while the ON timer is reserved. time up to the time set with the ON timer. If the end But it will not set itself to a desired time of the "sleep" timer is past the time set with the time. ON timer, you cannot make that setting. **A5** Q5 I set the "sleep" timer during 1)This occurs when the room temperature and humidity have reached their settings during dehumidification and operation.But the air-conditioner is in a pause. The product will begin 1) the indoor fan will not run (it will again to run within about 3 minutes. not produce wind) 2The product will run with the wind speed set to a "quiet" (2) wind intensity will not change. state. Q6 I tried to change the setting with You cannot make this setting when the product is in "air the "room temperature" button of purification" mode. Moreover, you cannot set the product the remote control unit in vain. to a desired setting when quick laundry or dew control is being performed with the "auto" or "quick dehumidification" button. The temperature setting field on the The product will give a display when you operate the product remote control unit displays in "auto" using the operation switch button. This can be + $\int^{\circ} \mathbb{C}$ or - $\int^{\circ} \mathbb{C}$. controlled within the range of ± 3 °C. The product will display + $\int_{-\infty}^{\infty}$ if the temperature is $\int_{-\infty}^{\infty}$ higher than the room temperature in automatic setting. The product will display - $\int_{-\infty}^{\infty}$ if the temperature is $\int_{-\infty}^{\infty}$ lower than the room temperature in automatic setting. **8**A Q8 The remote control unit will give no The remote control unit displays nothing. display in response to a push of the

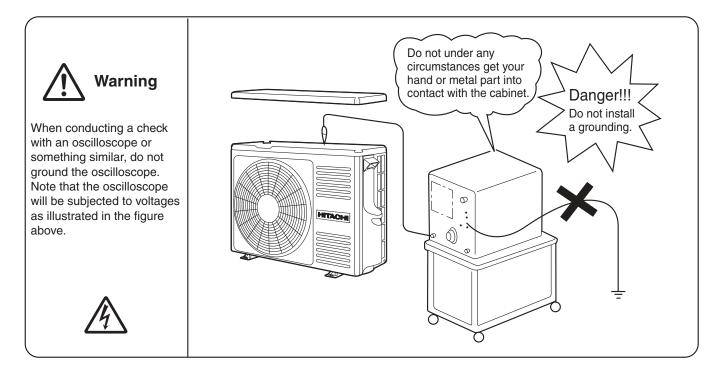
"vertical vane" button.

TROUBLE SHOOTING

MODEL RAC-18/25/35/50WED

Inspection instructions





DISCHARGE, PROCEDURE AND POWER SHUT OFF METHOD FOR POWER CIRCUIT



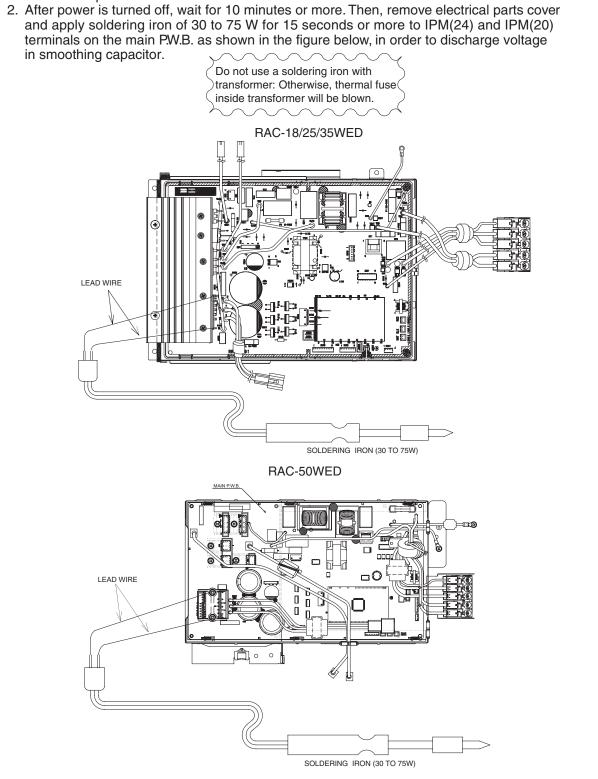


Caution

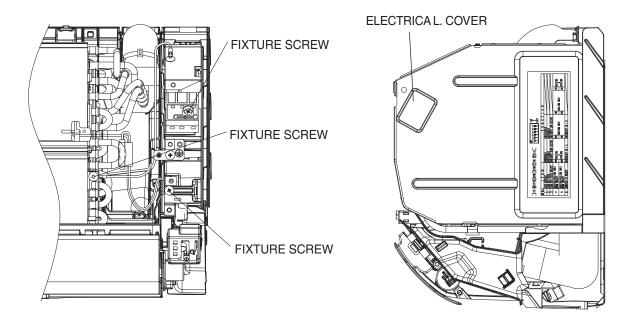
- Voltage of about 350 V is charged between the terminal of smoothing capacitors.
- During continuity check for each circuit part of the outdoor unit, be sure to discharge the smoothing capacitors.

Discharge Procedure

1. Turn off the power.

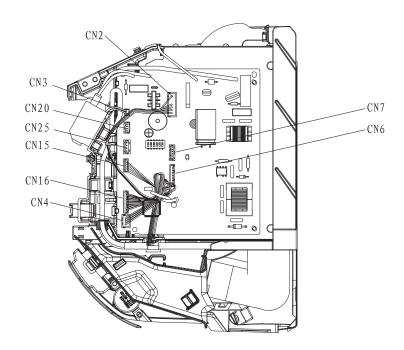


STRUCTURE OF AN INDOOR UNIT ELECTRIC PARTS RAK-18/25/35/50PED RAK-25/35/50PEDC



Removing electrical parts

- 1. Remove the electrical parts cover.
- 2. Remove the connectors from the CN4 (heat exchange thermistor), CN15 (stepping motor) and CN2 (fan motor).
- 3. Remove three lock screws.



Removing control P.W.B.

- 1. Remove the connectors from the CN3.
- 2. Remove the P.W.B. from the P.W.B. support.

Removing the indicating P.W.B.

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

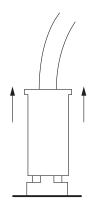
Other instructions

(1) Detaching and reattaching the receptacles for tab terminal

All the receptacles for connecting tab terminals are with a locking mechanism. Forcibly pulling any such receptacle without unlocking it will destroy it. Be on guard.

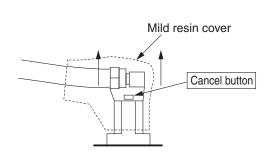
When reconnecting it, insert it securely all the way home.

· Receptacle types and how to unlock them



Vertical (with a resin case)

Hold the resin case and pull it out.



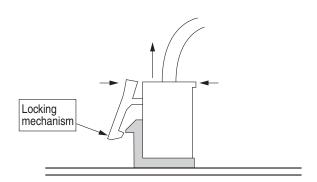
Horizontal (with a mild resin cover)

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

(2) Detaching and reattaching the board connector

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

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



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

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

Troubleshooting support

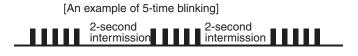
Nº	Function	Description
1	Self-diagnosis display [Display on the indoor unit side]	 The failure mode detected on the indoor unit side is displayed by blinking the "timer lamp". And a failure detected on the outdoor unit side will be indicated by the "time lamp" blinking 4 times. If the outdoor unit side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

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

Self-diagnosis display function (indoor side display)

While the "timer lamp" (orange), of the indoor unit is blinking, troubleshoot the product while referring to the table below.

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



2. If you wish to try another operation while the lamp is blinking, operate the START/STOP button on the remote control unit twice. The first push will reset the indoor microcomputer, while the second will activate the product

DESCRIPTION OF THE SELF-DIAGNOSIS INDICATION

REFER TO THE TABLE BELOW IF THE TIMER INDICATOR (ORANGE) IS BLINKING.

LAMP BLINKING		MAIN DEFECTIVE
2 sec	ONCE	REFRIGERANT CYCLE DEFECTIVE
2 sec — — — —	2 TIMES	FORCED COOLING OPERATION
2 sec — — —	3 TIMES	INTERFACE DEFECTIVE (INDOOR)
2 sec — — —	4 TIMES	OUTDOOR UNIT DEFECTIVE
	9 TIMES	INDOOR THERMISTOR DEFECTIVE
	10 TIMES	ABNORMAL ROTATING NUMBERS OF DC FAN MOTOR
		INTERFACE DEFECTIVE (OUTDOOR)
	13 TIMES	IC531 DEFECTIVE

 $\mbox{\tt \#IF}$ THE INTERFACE CIRCUIT IS DEFECTIVE WHEN THE POWER IS TURNED ON.

THE SELF-DIAGNOSIS INDICATION WILL NOT WORK.

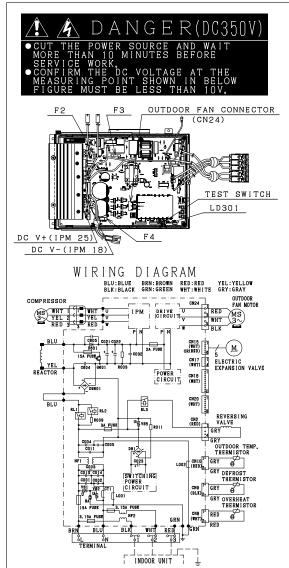
*IF THE INDOOR UNIT CAN NOT BE OPERATED AT ALL,

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

CHECK POINT	ACTION/REPLACEMENT PARTS, etc
FU1(3.15A) FUSE BLOWN	REPLACE THE PART WHICH CAUSED BLOWING /DISCONNECTION OF FU1(3.15A) FUSE
COME OFF OR DISCONNECTION OF THE CONNECTOR FOR INDICATING P. W. B	FIX CN16 CONNECTOR
FAILURE OF CONTROL P.W.B	REFER TO THE SERVICE GUIDE FOR HOW TO DETERMINE THE FAILED PART

SELF-DIAGNOSIS LIGHTING MODE

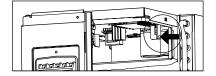
MODEL RAC-18/25/35WED



		DURING STOP	
S	ELF-DIAGNOS	SIS BLINKING MODE	∅ :BLINK □:OFF
LD301 (RED)	SELF DIAGNOSIS CONTENTS	MAIN CHECK POINT	HOW TO REPAIR
OFF	NORMAL STOP (STOPPED BY INDOOR THERMO- STAT OR MAIN OPERATION OFF)	1. NO NEED TO CHECK →	
ONCE	RESET STOP	1. MICROPROCESSOR WAS REBOOTED	1. CHANGE ODU CONTROLLER
2 TIMES	PEAK CURRENT CUT	1. ODU CONTOROLLER DEFECTIVE ⇒ 2. COMPRESSOR ABNORMAL LOAD ⇒	1. CHANGE ODU CONTROLLER 2. CHECK THE COMPRESSOR
3 TIMES	ABNORMAL LOW SPEED ROTATION	1. ODU CONTROLLER DEFECTIVE ⇒ 2. COMPRESSOR ABNORMAL LOAD ⇒	2. CHECK THE COMPRESSOR
4 TIMES	SWITCHING FAILURE	1. COMPRESSOR CONNECTOR OPEN ⇒ 2. COMPRESSOR ABNORMAL LOAD ⇒ 3. ODU CONTROLLER DEFECTIVE ⇒	2. CHECK THE COMPRESSOR 3. CHANGE ODU CONTROLLER
5 TIMES	OVERLOAD LOWER	1. OBSTACLE SURROUND THE ODU MAY CAUSE 2. OTHER CAUSE	2, CHECK CYCLE PIPE
	OH THERMISTOR TEMPERATURE RISE	1. DUE TO OPEN CONNECTOR 2. LEAKAGE OF REFRIGERANT 3. OTHER CAUSE	1. INSERT THE CONNECTOR 2. CHECK THE CYCLE PIPE AND RECHARGE THE REFRIGERANT 3. CHANGE ODU CONTROLLER
7 TIMES	THERMISTOR ABNORMAL	1. CONNECTOR INSERT MISS > 2. OPEN CIRCUIT/SHORT CIR- CUIT OF THERMISTOR WIRE	1. INSERT PROPERLY 2. CHANGE THE THERMISTOR
	COMMUNICATIONS ERROR	3. ODU CONTROLLER DEFECTIVE 1. F CABLE MISS CONNECTION 2. F CABLE DISCONNECTION 3. ODU CONTROLLER DEFECTIVE 4. IDU CONTROLLER DEFECTIVE	1. F CABLE CONNECT PROPERLY 2. CHANGE THE F CABLE 3. CHANGE ODU CONTROLLER
10 TIMES	ABNORMAL POWER SOURCE	1. REACTOR IS UNCONNECTED >> 2. ABNORMAL AC INPUT: >>	1. CONNECT REACTOR PROPERLY 2. CONNECT TO NORMAL AC POWER SOURCE
11 TIMES	ODU FAN STOP BY STRONG REVERSE WIND	1. OUTDOOR FAN STOP BY STRONG REVERSE WIND	THE WIND BECOME WEAK
12 TIMES	OUTDOOR FAN LOCK ERROR	1. OUTDOOR FAN STOP BY STRONG REVERSE WIND 2. PROPELLER FAN LOCK 3. OUTDOOR FAN MOTOR LOCK 4. OUTDOOR FAN MOTOR OK 4. OUTDOOR FAN MOTOR OK	1. AUTOMATICALLY RE-START AFTER WIND BECOME WEAK 2. REMOVE THE OBSTRUCTION 3. CHANGE THE FAN MOTOR 4. CHANGE ODU CONTROLLER
13 TIMES	EEPROM READ ERROR	·CHANGE OUTDOOR UNIT CONTROLL	ER
14 TIMES	ACTIVE VOLTAGE ABNORMAL	1. ABNORMAL OUTDOOR CONTROLLER 2. ABNORMAL COMPRESSOR LOAD	1. CHANGE ODU CONTROLLER 2. CHECK THE COMPRESSOR
15 TIMES	CIRCUIT ABNORMAL	·CHANGE OUTDOOR UNIT CONTROLL	
16 TIMES	HIGH LORD STOP	1. SERVICE VALVE CLOSE 2. OBSTACLE SURROUND THE ODU MAY CAUSE 3. CLOGGED FILTER IN INDOOR UNIT GAUSE.	



RIGHT SIDE ARROW INDICATE THE POSSITION OF TEST SWITCH LEVER ON THE SIDE PANEL (SHOWN IN UNDER FIGURE.)



DU	RING STOP
LD301	CONTENTS
LIGHT	NORMAL OPERATION
2 SEC LIGHTING AND 0.3 SEC LIGHTS OUT	OVERLOAD OPERATION
REPETITION	(NORMAL OPERATION)

***ODU=OUTDOOR UNIT, IDU=INDOOR UNIT**

***OTHERS CHECK POINTS**

- 1. DIAGNOSIS FOR [REVERSING VALVE OPERATION ERROR]; ⇒CHECK REVERSING VALVE WIRE CONNECTION EITHER WIRE BROKEN OR NOT, IF OK CHECK 3, 15A FUSE, IF BROKEN REPLACE FUSE OR ODU CONTROLLER
- 2, IWHEN DISPLAY THE COMMUNICATION ERROR OR THE OUTDOOR DO NOT RUN AT ALLI.
- ⇒PLEASE CHECK THE CONTINUITY OF THE INDOOR ⇔ OUTDOOR CONNECTING CORD(F CABLE).

[OUTDOOR FAN MOTOR CHECK] DIAGNOSIS METHOD

- I. PUT THE POWER OFF.
 2. REMOVE THE OUTDOOR FAN MOTOR'S CONNECTOR FROM"
 G.N.24TE THE FAN MOTOR BY HAND AND CHECK
 WHETHER THE FAN MOTOR IS LOCKED OR NOT.
 4. TERMINAL OF THE FAN MOTOR CONNECTOR,
 NORMAL RESISTANCE BETWEEN EACH TERMINAL
 REFER TO THE SERVICE MANUAL.
- *INSERT THE FAN MOTOR'S CONNECTOR
 AFTER FINISHING STEPS 1 TO 4.

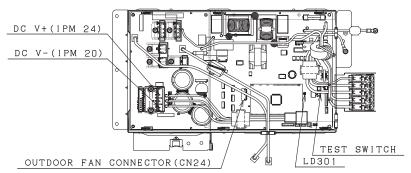
***OTHERS SELF-DIAGNOSIS CONTENTS** REFER TO THE SERVICE MANUAL.

SELF-DIAGNOSIS LIGHTING MODE

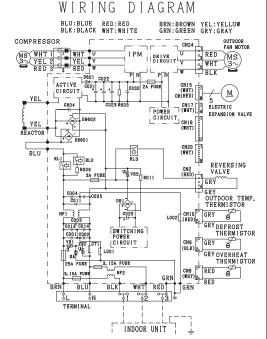
MODEL RAC-50WED



DURING STOP					
LD301	CONTENTS				
LIGHT	NORMAL OPERATION				
2 SEC LIGHTING AND 0.3 SEC LIGHTS OUT REPETITION	OVERLOAD OPERATION(NORMAL OPERATION)				



SELF-DIAGNOSIS BLINKING MODE SELF
CED CONTENTS
CSTOPPED BY INDORR THERMOSTAT OR MAIN OPERATION OFF) 1. NO NEED TO CHECK 1. NOT ANY MALFUNCTION
ONCE PEAK CURRENT 1. ODU CONTROLLER DEFECTIVE 1. CHANGE ODU CONTROLLER 2. COMPRESSOR ABNORMAL LOAD 2. CHECK THE COMPRESSOR 3. TIMES 2. CHECK THE COMPRESSOR 3. TIMES 3. ODU CONTROLLER DEFECTIVE 3. CHANGE ODU CONTROLLER 3. ODU CONTROLLER DEFECTIVE 3. CHECK THE COMPRESSOR 3. ODU CONTROLLER DEFECTIVE 3. CHANGE ODU CONTROLLER 4. TIMES 4. COMPRESSOR CONNECTOR OPEN 1. INSERT THE COMPRESSOR 3. ODU CONTROLLER DEFECTIVE 3. CHANGE ODU CONTROLLER 5. TIMES 5. TIMES 5. CHECK THE COMPRESSOR 5. CHECK THE COMPRESSOR 5. CHECK THE COMPRESSOR 5. CHECK THE COMPRESSOR 5. CHECK THE CONNECTOR 5. TIMES 5. CHECK THE CONNECTOR 5. CHECK THE CONNECTOR 5. CHECK THE CYCLE PIPE 5. CHANGE ODU CONTROLLER 5. CHANGE THE THERMISTOR 5. CHANGE THE THERMI
2 TIMES CUT 2 COMPRESSOR ABNORMAL LOAD ⇒ 2. CHECK THE COMPRESSOR ABNORMAL LOW 3 TIMES SPEED ROTATION 1. ODU CONTROLLER DEFECTIVE ⇒ 2. CHECK THE COMPRESSOR 2. COMPRESSOR ABNORMAL LOAD ⇒ 2. CHECK THE COMPRESSOR 4 TIMES SWITCHING FAILURE 1. COMPRESSOR CONNECTOR OPEN ⇒ 1. INSERT THE CONNECTOR 2. COMPRESSOR ABNORMAL LOAD ⇒ 2. CHECK THE COMPRESSOR 3. ODU CONTROLLER DEFECTIVE ⇒ 3. CHANGE ODU CONTROLLER 5 TIMES OF THE CAUSE ↑ 1. DUE TO OPEN CONNECTOR ↑ 2. CHECK THE COMPRESSOR 3. OTHER CAUSE ↑ 2. CHECK CYCLE PIPE 1. LDUE TO OPEN CONNECTOR ↑ 2. CHECK THE CYCLE PIPE ↑ 3. CHECK THE CONNECTOR ↑ 3. CHECK THE CONNECTOR ↑ 3. CHECK THE C
3 TIMES SPEED ROTATION 2, COMPRESSOR ABNORMAL LOAD ⇒ 2, CHECK THE COMPRESSOR 1, COMPRESSOR CONNECTOR OPEN ⇒ 2, CHECK THE COMPRESSOR 2, COMPRESSOR ABNORMAL LOAD ⇒ 2, CHECK THE COMPRESSOR 3, ODU CONTROLLER 4, CHANGE 5 TIMES 1, CHANGE 1, CHANGE 1, CHANGE 1, CHECK THE CYCLE 1, REMOVE THE OBSTRUCTION THE ODU MAY CAUSE 2, CHECK CYCLE 1, REMOVE THE OBSTRUCTION THE CONTROLTOR 1, INSERT THE CONNECTOR 1, INSERT THE CONNECTOR 2, CHECK CYCLE 1, PE 1, INSERT THE CONNECTOR 2, CHECK THE CYCLE 1, PE 1, INSERT THE CONNECTOR 2, CHECK THE CYCLE 1, PE 1, INSERT THE CONNECTOR 2, CHECK THE CYCLE 1, PE 1, INSERT THE CONNECTOR 2, CHECK THE CYCLE 1, INSERT THE CONNECTOR 2, CHECK THE CYCLE 1, INSERT THE CONNECTOR 2, CHECK CYCLE 2, CHECK CYCLE
4 TIMES
THE ODU MAY CAUSE 2. OTHER CAUSE 2. OTHER CAUSE 2. OTHER CAUSE 3. OTHER CAUSE 3. OTHER CAUSE 4. LEAKAGE OF REFRIGERANT 5. LEAKAGE OF REFRIGERANT 6. TIMES 7. TIMES 1. DUE TO OPEN CONNECTOR 2. LEAKAGE OF REFRIGERANT 3. OTHER CAUSE 4. THERMISTOR 4. THERMISTOR 5. CHECK CYCLE PIPE 4. CHECK CYCLE PIPE 4. CHECK CYCLE 5. C
TEMPERATURE RISE 2. LEAKAGE OF REFRIGERANT 2. CHECK THE CYCLE PIPE A RECHARGE THE REFRIGERA RECHARGE THE TROPERLY REPROPERLY REPROP
THERMISTOR ABNORMAL 7 TIMES COMMUNICATIONS COMMUNICATIONS 1. CONNECTOR INSERT MISS 2. OPEN CIRCUIT/SHORT CIR- 3. ODU CONTROLLER DEFECTIVE 3. CHANGE THE THERMISTOR 3. ODU CONTROLLER CONNECTION 2. F CABLE MISS CONNECTION 2. F CABLE DISCONNECTION 2. F CABLE DISCONNECTION 3. ODU CONTROLLER DEFECTIVE 4. IDU CONTROLLER DEFECTIVE 5. CHANGE THE THERMISTOR 5. CHANGE ODU CONTROLLER 6. CHANGE THE THERMISTOR 6. CHAN
9 TIMES COMMUNICATIONS 1. F CABLE MISS CONNECTION ⇒ 1. F CABLE CONNECT PROPER 2. CHANGE THE F CABLE DISCONNECTION ⇒ 2. CHANGE THE F CABLE 3. ODU CONTROLLER DEFECTIVE ⇒ 3. CHANGE ODU CONTROLLER DEFECTIVE ⇒ 4. IDU CONTROLLER DEFECTIVE → 4. IDU CON
□ ABNORMAL 1. REACTOR IS UNCONNECTED ⇒ 1. CONNECT REACTOR PROPER
ABNORMAL POWER SOURCE 10 TIMES 1, REACTOR IS UNCONNECTED \$\ightharpoonup \] 1, CONNECT REACTOR PROPER 2, ABNORMAL AC INPUT: \$\ightharpoonup \] 2, CONNECT TO NORMAL AC POWER SOURCE 3, AC INPUT IS NORMAL \$\ightharpoonup \] 3, CHANGE ODU CONTROLLER
ODU FAN STOP BY STRONG REVERSE WIND ODU FAN STOP BY STRONG REVERSE WIND ODU FAN STOP BY STRONG STRONG REVERSE WIND ODU FAN STOP BY STRONG THE WIND BECOME WEAK
OUTDOOR FAN 1. OUTDOOR FAN STOP BY
EEPROM CHANGE OUTDOOR UNIT CONTROLLER
□ ACTIVE VOLTAGE 1. ABNORMAL OUTDOOR 1. CHANGE ODU CONTROLLER CONTROLLER CONTROLLER 2. ABNORMAL COMPRESSOR LOAD 2. CHECK THE COMPRESSOR
GIRCUIT 15 TIMES ABNORMAL -CHANGE OUTDOOR UNIT CONTROLLER
HIGH LORD STOP 1. SERVICE VALVE CLOSE 1. CHECK SERVICE VALVE 2. OBSTACLE SURROUND 2. REMOVE THE OBSTRUCTION THE ODU MAY CAUSE 3. CLOGGED FILTER IN INDOOR 3. CHECK FILTER



***ODU=OUTDOOR UNIT, IDU=INDOOR UNIT** [OUTDOOR FAN MOTOR CHECK]DIAGNOSIS METHOD TOUTDOOR FAN MOTOR CHECK DIAGNOSIS METHOD
1. PUT THE POWER OFF
2. REMOVE THE OUTDOOR FAN MOTOR'S CONNECTOR FROM CN24".
3. ROTATE THE FAN MOTOR BY HAND AND CHECK
WHETHER THE FAN MOTOR IS LOCKED OR NOT.
4. MEASURE THE RESISTANCE BETWEEN EACH
TERMINAL OF THE FAN MOTOR GONDECTOR.
NORMAL RESISTANCE BETWEEN EACH TERMINAL
REFER TO THE SERVICE MANUAL.
WHOSELE THE RESISTANCE MANUAL. *INSERT THE FAN MOTOR'S CONNECTOR AFTER FINISHING STEPS 1 TO 4.

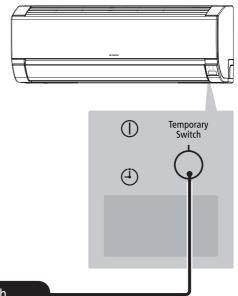
*OTHERS CHECK POINTS

- 1.DIAGNOSIS FOR TREVERSING VALVE OPERATION ERROR]; ⇒CHECK REVERSING VALVE WIRE CONNECTION EITHER WIRE BROKEN
- CONNECTING CORD(F CABLE).
- *OTHERS SELF-DIAGNOSIS CONTENTS REFER TO THE SERVICE MANUAL.

Forced cooling operation

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

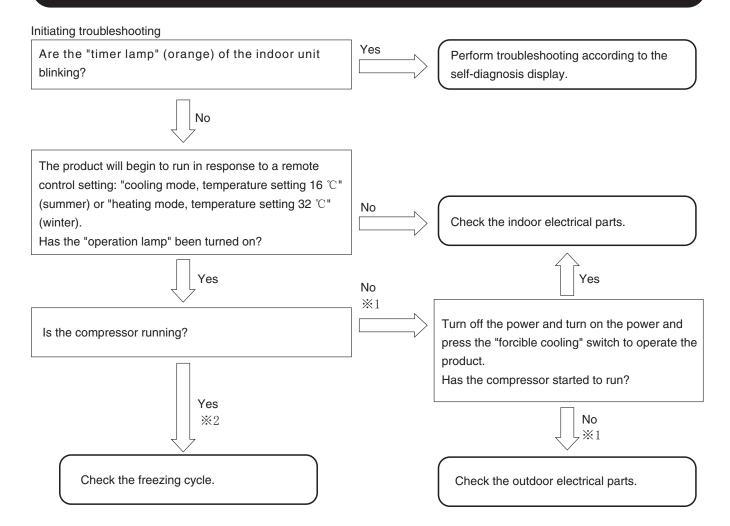
- <How to start the operation>
- The operation of the unit should be stopped.
- Press and hold the "Temporary operation SW" shown in the right figure for 5 sec.
- <How to stop the operation>
- Press and hold the "Temporary operation SW" again.
 Or stop the operation using the remote controller.
 - **During the forced cooling operation, the "Timer indicator" blinks twice.



Temporary operation switch

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

Diagnosis and troubleshooting of indoor electric parts, outdoor electric parts and refrigerating cycle



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

Steps 1. Clear the troubleshooting data.

- 2. Run the product for several minutes under the conditions where the compressor runs.
- 3. Redisplay and check the data written in the self-diagnosis memory.
- · The self-diagnosis memory function can also be used to catch sporadic failure phenomena.

Steps

- 1. Clear the troubleshooting data.
- 2. Have the user use the product as usual until a failure phenomenon occurs. (The period depends on the incidence of the phenomenon.)
- 3. At a later date, redisplay and check the data written in the self-diagnosis memory.
- For the outdoor self-diagnosis display (OH thermistor heat-up, overload lower limit cut) stemming from the freezing cycle or operating condition, the time lag is long from operation startup to the emergence of the phenomenon. Moreover, it is affected by the temperature, sunshine, operating hours, and other factors of the day, so that the phenomenon may not be able to be identified at the time of a repair service visit. In that case too, use the self-diagnosis memory function (\times 2).
- The outdoor self-diagnosis display "overload lower limit cut" and "OH thermistor heat-up" can be identified only when you are using the self-diagnosis lamp of the outdoor unit and the self-diagnosis memory function of the indoor unit.

 Note that this will not be automatically displayed on the indoor unit side.

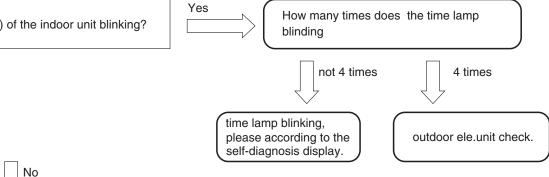
Checking the indoor unit electrical parts

Introduction

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

Initiating troubleshooting

Is the "timer lamp" (orange) of the indoor unit blinking?



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

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



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

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

If you responded "Yes" to Check 2:

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

If you responded "No" to Check 2:

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

Check results and next check items

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

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

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

[Estimated failure locations]

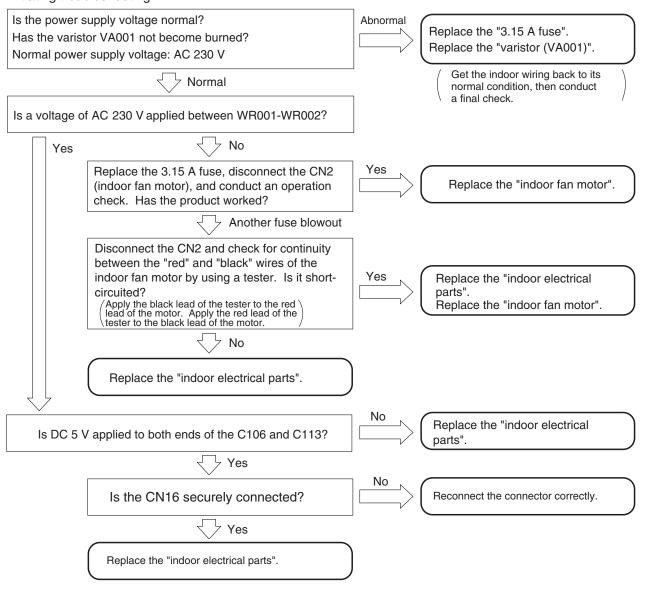
- 3.15 A fuse blown outControl power circuit
- Estimated cause of fuse blowout · Abnormally high voltage applied to the power supply
 - · Indoor fan motor out of order
 - Power circuit out of order

· Connector loose, wire break

[Cautions]

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

[Diagnosis flow] Initiating troubleshooting



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

[Situation] The product does not receive a remote control signal. It is not very responsive.

(The product does run normally in response to the emergency operation switch.)

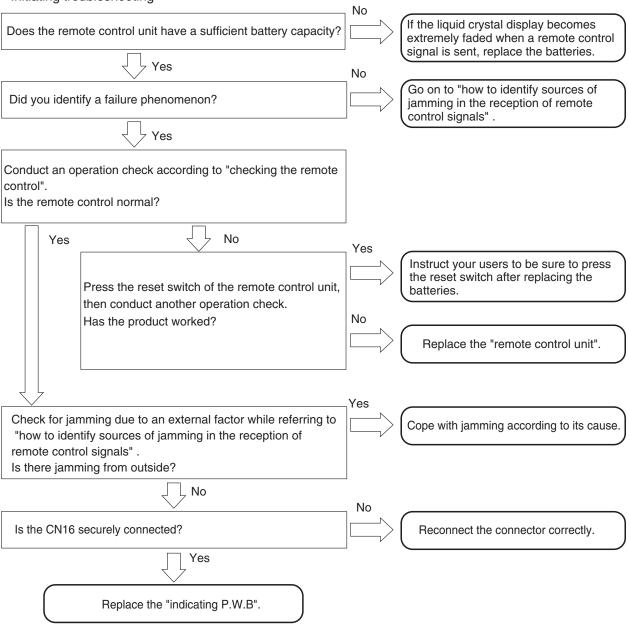
[Estimated failure locations]

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

[Cautions]

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

[Diagnosis flow] Initiating troubleshooting



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

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

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

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

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

Checking and actions]

Effects of lighting equipment (fluorescent lamps)

Checking points

- Turn on and off the lighting equipment and check for its effects on the reception of remote control signals.
- When cold, the fluorescent lamp tends to emit infrared rays with wavelengths close to those used in remote control.

If you cannot detect the phenomenon about which your user is complaining at the time of your visit, such as "the product sometimes fails to receive remote control signals" and "the product fails to receive remote control signals in the morning alone", then turn off the lighting for about 20-30 minutes and wait for the fluorescent lamps to cool down before conducting another check.

There are even cases where the product fails to receive remote control signals for 1 to 2 minutes only after the lighting equipment is turned on.

- The noise status may vary with the dimming of the lighting equipment. In the case of lighting equipment with a dimmer, therefore, conduct a check with all the light intensities.
- If the lighting equipment is the source of the jamming, the remote control light-receiving unit output usually shows a noise waveform as shown in the right-hand figure. In the case of slight jamming, this kind of waveform will not cause practical problems. However, intense degrees of jamming will disable the reception of remote control signals.
- · When the fluorescent lamp is old and is flickering, it may cause disorders in the reception of remote control signals.

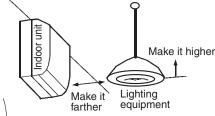
remote control light-receiving unit 10 ms (or 8 ms) period

Output waveform of the

Actions proposed

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

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

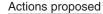


- 2. Add an interference filter to the front panel of the remote control light-receiving unit.
- ※ Lighting equipment that produces strong jamming exists although rarely. Some problems may therefore be unsolvable by managing the air-conditioner side alone.

Effects of the remote control units of other equipment

Checking points

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



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



Effects of other electrical products

Checking points

- · Check the effects of light and power noises coming from other electrical products.
- Turn on and off the electrical products, turn off the power and turn on the power, and check their effects on the reception of remote control signals.
- · For products whose operating states change, check the effects of each state.

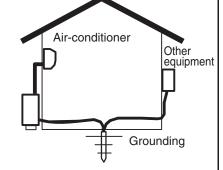
Actions proposed

- · Change the location relationship between the air-conditioner and the target products.
- · Use a different wall outlet for the target products.

Sharing a grounding

Checking points

- Check for effects of electrical noises coming into the airconditioner through grounding wires.
- Check if the grounding works is for the air-conditioner alone or shared with other equipment. If there is any equipment that shares it, turn on and off that equipment and detach and reattach the power plugs and examine their effects on the reception of remote control signals.



Actions proposed

· Establish an independent grounding for the air-conditioner.

Effects of radio waves

Checking points

- · Using a wireless transmitter near the air-conditioner may affect the reception of remote control signals.
- · Have your users try sending signals with a wireless transmitter and examine their effects on the reception of remote control signals.

Actions proposed

- · Add a ferrite core to the power cord and F cable.
- · Add a ferrite core to the internal wiring of the indoor unit.
- · Move the wireless antenna.

Effects of direct sunlight

Checking points

- Direct sunlight and other intense light make the remote control light-receiving unit less sensitive.
- \cdot Check for any time zone where the remote control light-receiving unit of the indoor unit is affected by direct sunlight depending on the location of the sun and mirror reflection.

Actions proposed

· Block the sunlight to protect against direct sunlight.

3. Failure phenomenon: The compressor will not run.

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

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

· Microcomputer peripheral circuit

[Diagnosis flow] Initiating troubleshooting Is the "timer lamp" (oran blinking?

Is the "timer lamp" (orange) of the indoor unit blinking?

Yes

No

Check for failures according to the self-diagnosis display.

Did the self-diagnosis lamp (LD301) of the outdoor unit blink once or become turned off?

No

LD301) of the outdoor rned off?

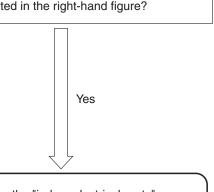
Check for failures according to the self-diagnosis display.



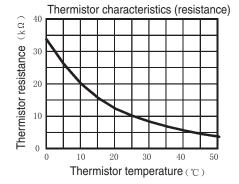
Remove the connector (CN4) of the room temperature thermistor and heat exchanger thermistor and measure the thermistor resistance. Did the reading roughly agree with the resistance values indicated in the right-hand figure?

No

Replace the "room temperature and heat exchanger thermistors".



Replace the "indoor electrical parts".



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

[Situation] have conducted the stop operation on the product by remote control, but the indoor fan motor will not stop. (It stopped about 10 minutes later.) [Estimated failure locations] · Indoor fan motor · Fan motor drive circuit [Diagnosis flow] Initiating troubleshooting Run the product by remote control and then stop it. Yes (Reproduce the failure phenomenon.) Replace the "indoor fan motor". Is the voltage between pins 4 and 6 of the fan motor connector (CN2) below 1.5 V? (Take measurements while the failure phenomenon is present.) No Replace the "indoor electrical parts".

5. Timer lamp blinking: blinking once

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

[Estimated failure locations]

- · Reversing valve defective.
- . The refrigerating cycle block gas leak.

6. Timer lamp blinking: blinking twice

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

7. Timer lamp blinking: blinking three times

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

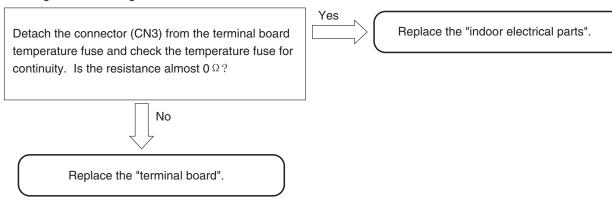
[Estimated failure locations]

- · Meltdown of the terminal board temperature fuse (the terminal board poorly inserted into the F cable)
- · Outdoor communication circuit out of order

[Cautions]

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

[Diagnosis flow] Initiating troubleshooting



8. Timer lamp blinking: blinking four times

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

[Estimated failure locations] · Outdoor unit error.

· Please confirm the times of the LD301 blinking, and then see the outdoor selfcheck lable.

9. Timer lamp blinking: blinking 9 times

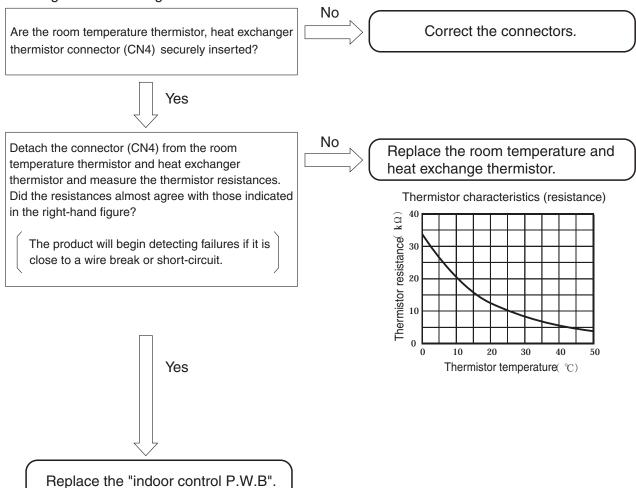
[Situation] The timer lamp blinks 9 times and the product will not run.

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

[Cautions] • Starting the product by remote control will initiate failure detection.

(Merely turning on the power will not activate the failure detection function.)

[Diagnosis flow] Initiating troubleshooting



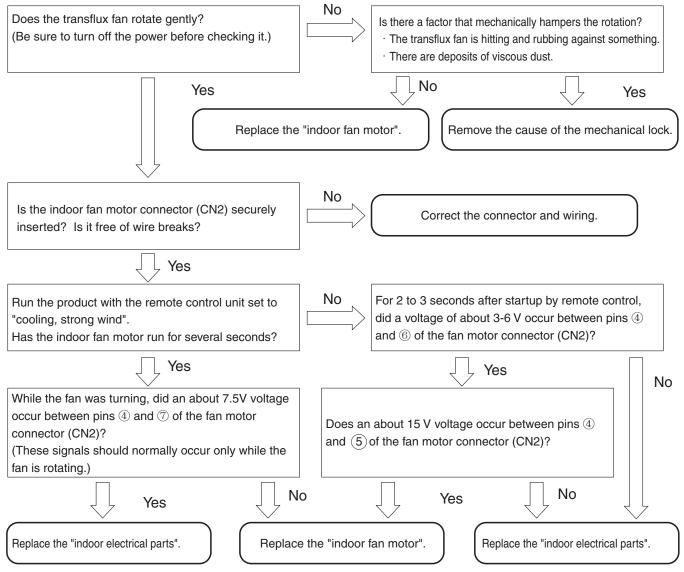
10. Timer lamp blinking: blinking 10 times

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

[Estimated failure locations]

- · Loose connector or wire break in the indoor fan motor
- Indoor fan motor mechanically locked
- Indoor fan motor
- · Indoor fan motor drive circuit

[Diagnosis flow] Initiating troubleshooting

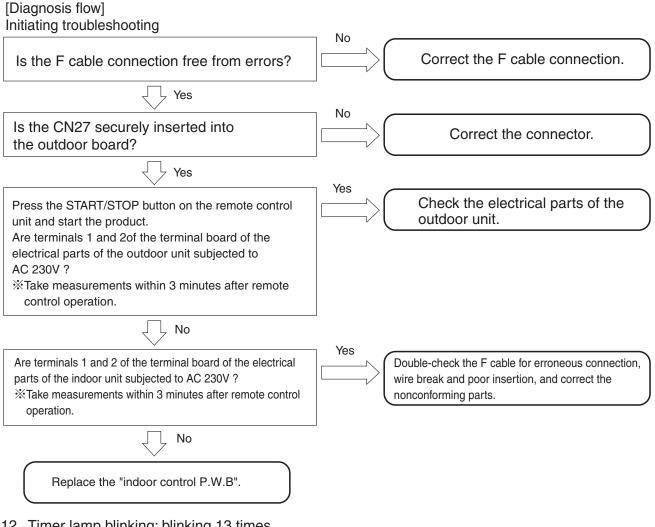


11. Timer lamp blinking: blinking 12 times

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

- [Estimated failure locations] Erroneous connection in the indoor-outdoor connection line (F cable)
 - · Forget to connect CN27 of outdoor P.W.B
 - Wire break or poor insertion of the indoor-outdoor connection line (F cable)
 - Electrical parts in the outdoor unit (communication circuit, power circuit error)
 - · Communication error due to noise in other home electronics
 - *This does not constitute a failure in the air-conditioner.

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



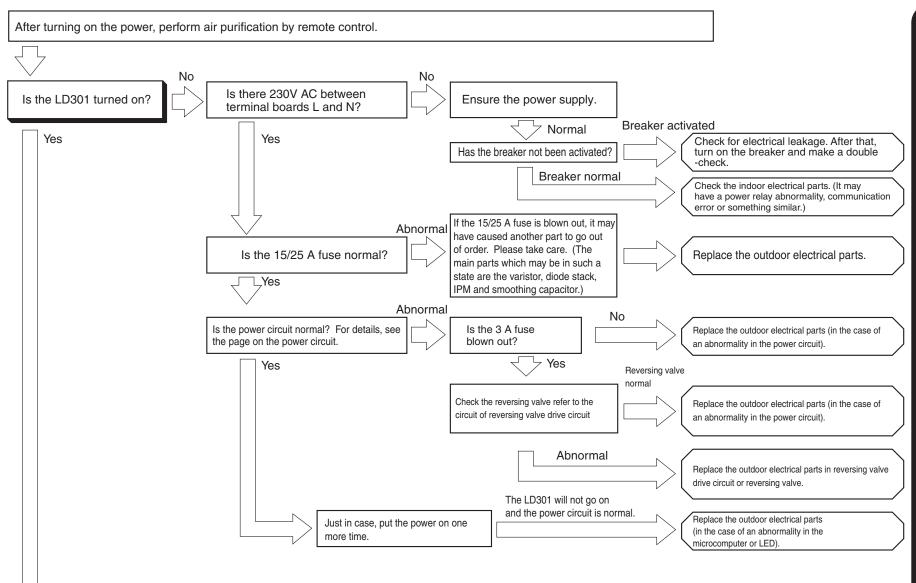
12. Timer lamp blinking: blinking 13 times

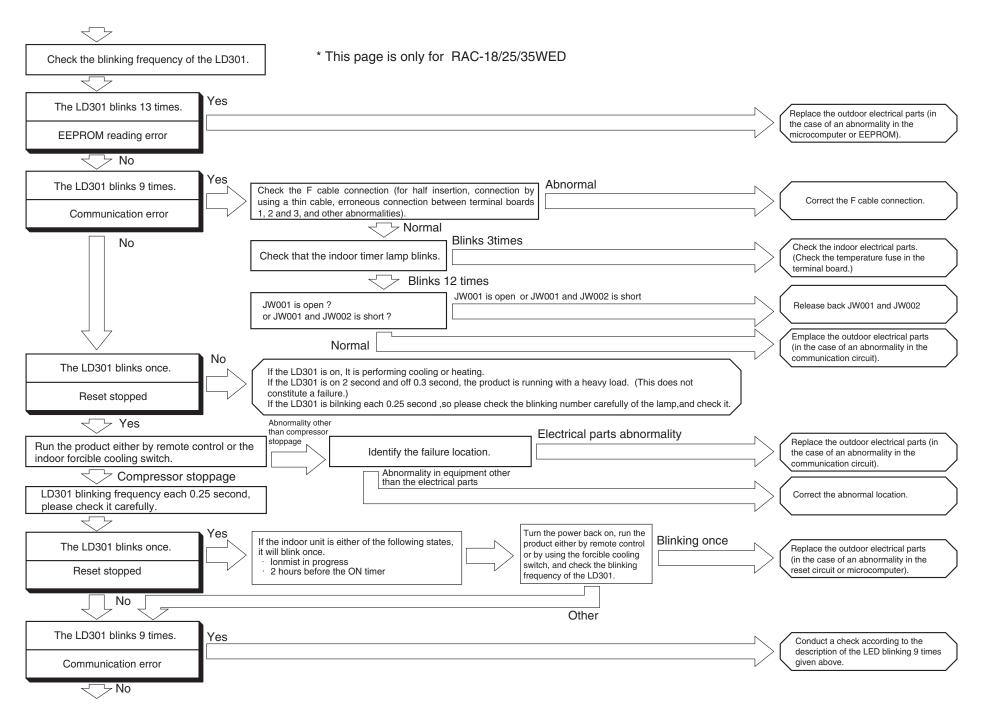
[Situation] The timer lamp blinks 13 times and the product will not run.

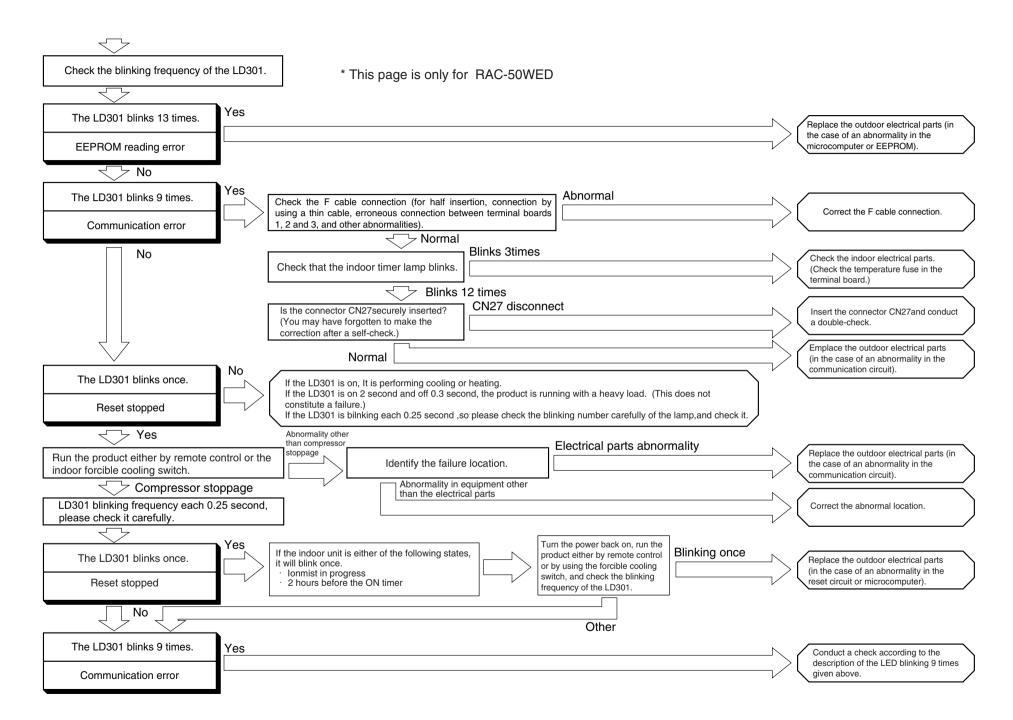
[Estimated failure location] • EEPROM, microcomputer

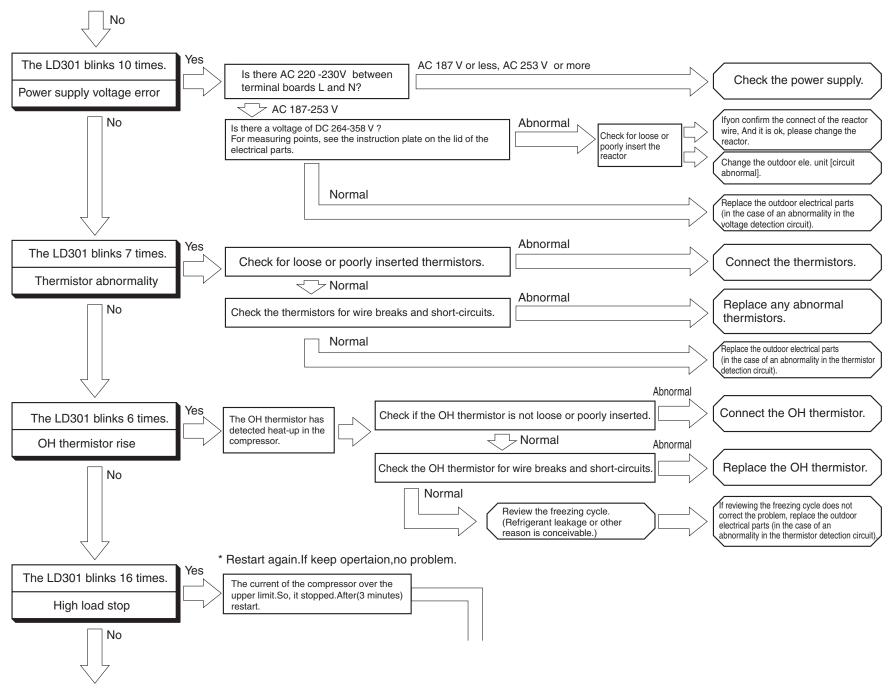
[Diagnosis flow]

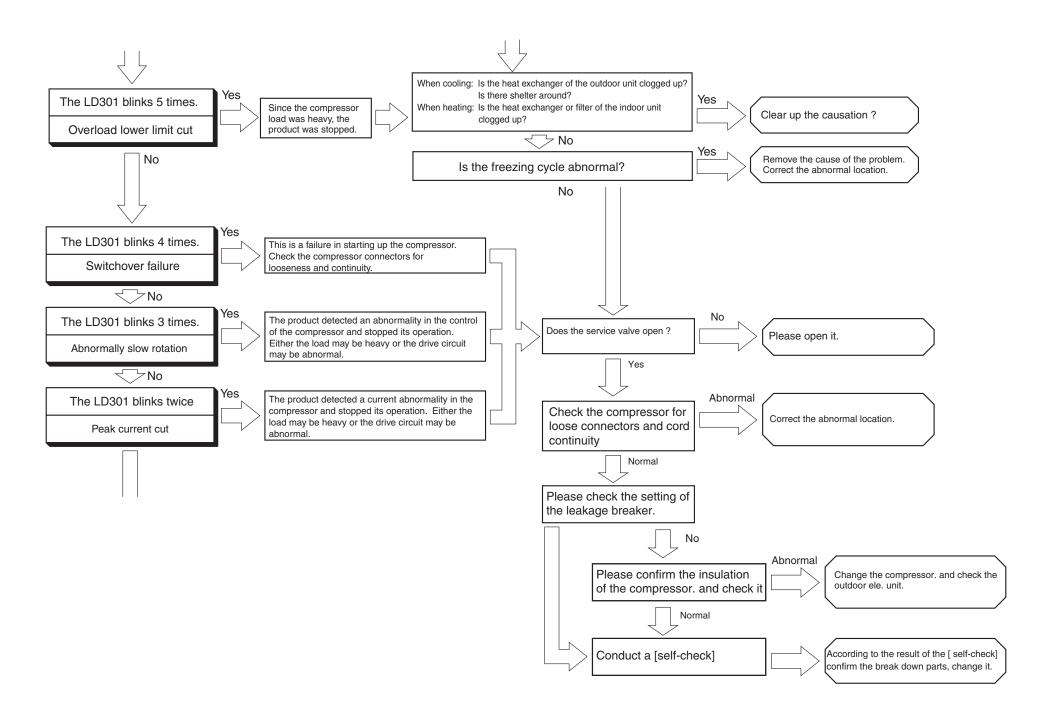
Replace the "indoor control P.W.B".

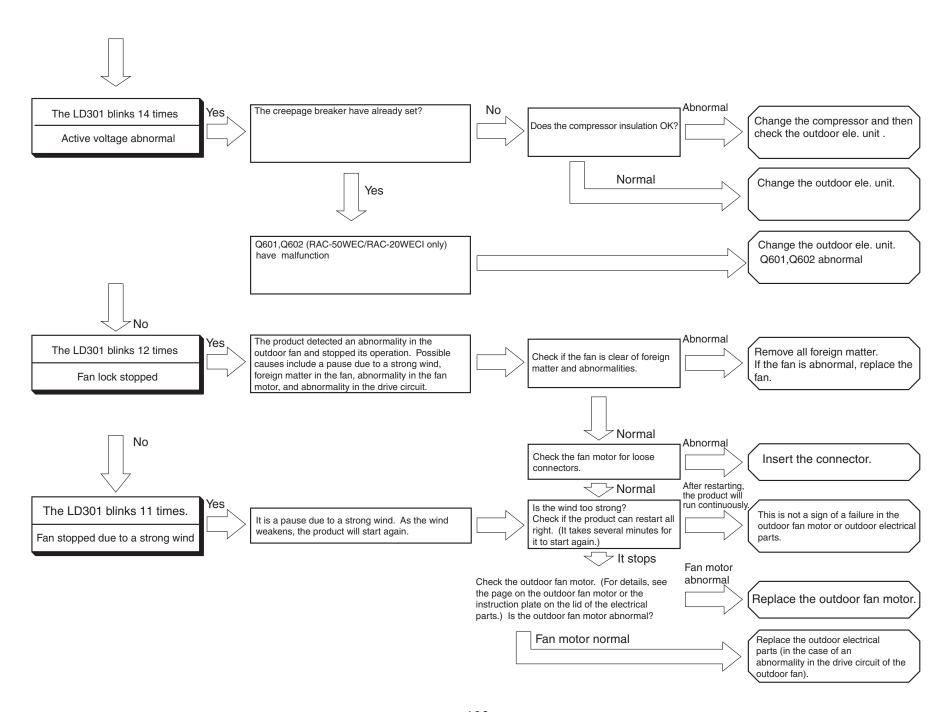












SETTING THE PREVENTION OF MUTUAL INTERFERENCE FOR REMOTE CONTROLLER

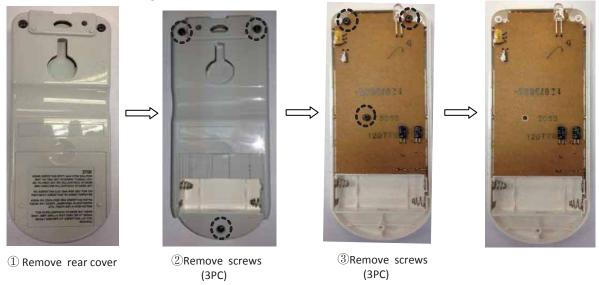
Case: 2 sets of indoor units installed near to each other.

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 \boldsymbol{A}

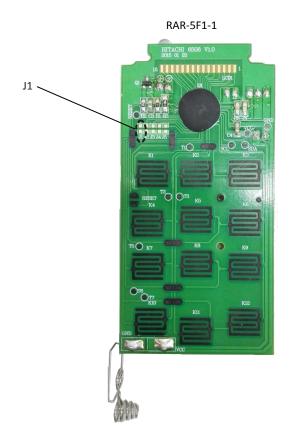
This procedure change the remote controller signal address from A to B.

1.Remove rear cover as shown in figure



2. Short the J1 ON PCB according to different supplier.

For distinguishing them, we attached different type label in the battery case as below.



NOTE: Please set the DIP switch No.6 to ON accordingly (Refer to page 52).

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.)

PROCEDURES

- 1. Press and hold OFF (OFF) button and ON (ON) button.
- 2. Press O [RESET] button on the same time. Release O [RESET] button only, then release OFF (OFF)

and (ON) button once Screen 1 appears.

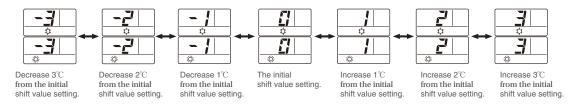


3. Press the 🙆 button to display 🟶 fan mode (Screen 3).



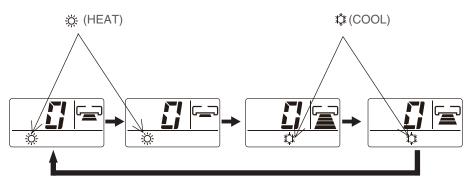
Screen 3

1. Press the Temperature button $(\bigcap_{|c|} \text{or } \bigvee^{|c|})$ to change the shift value. (The shift value is changed with a beep.)



2. Select (FAN SPEED) button to choose Heating Shift or Cooling Shift Mode (Screen 4).

By setting fan speed to HIGH \blacksquare or MED \blacksquare , it will go to Cooling Shift mode. By setting fan speed to LOW \blacksquare or SILENT \blacksquare , it will go to Heating Shift mode.

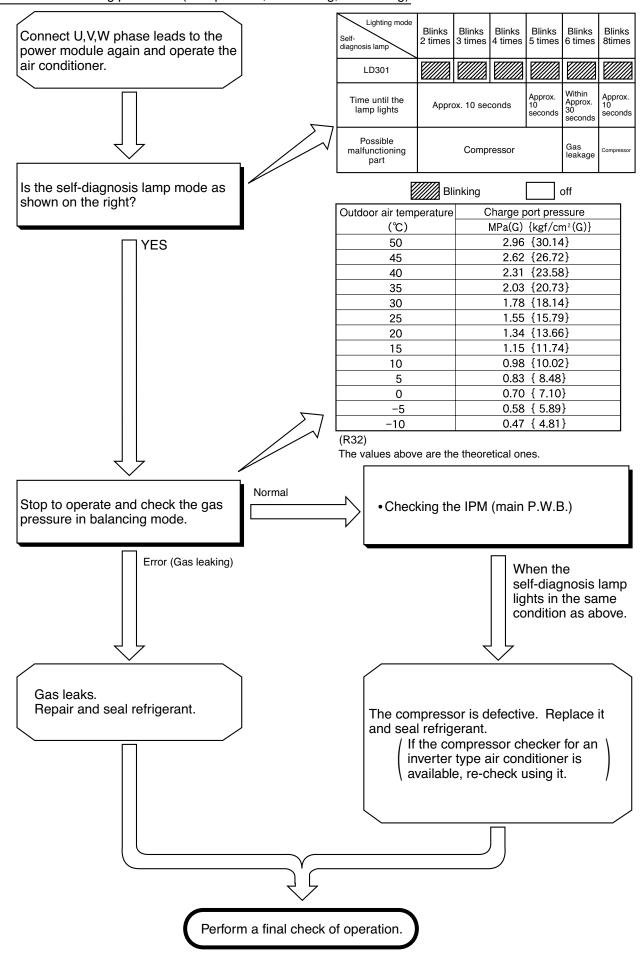


Screen 4

NOTE:

- 1. There are total of 7 shift values ranging from -3 to 3.
- 2. The displayed shift value, 🔆 (HEAT) and 🌣 (COOL) symbol on the remote controller display will be disappear after 10 seconds
- 3. The changed shift value will remain unchanged after turned off the power.
- 4. If "0" is displayed on the remote controller display, it indicates the shift value is now at the initial setting.

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



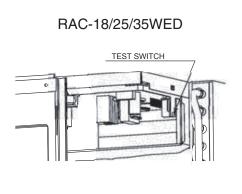
How to run the product with the outdoor unit test switch

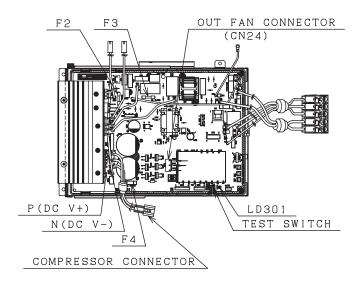
If the indoor electrical parts is out of order and if you wish to run the outdoor unit

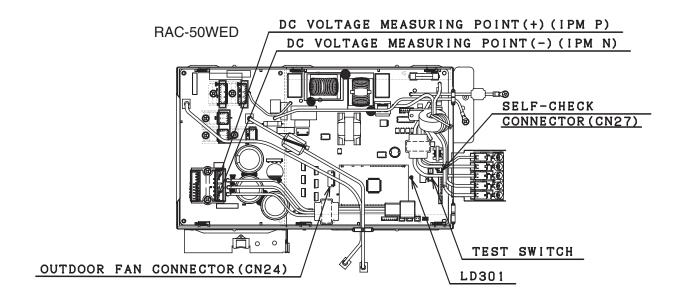
- 1. Turn on the outdoor terminal boards L and N (220-230 V AC).
- 2. Confirm that the "LD301" blinks once from the terminal side of the outdoor unit. Afterwards (when about 30 sec elapses after the power turns on), confirm that the "LD301" changes to blinking 9 times (communication error).
- 3. When the "LD301" is blinks 9 times, if you press the test switch, the "LD301" lights up.

If you release your finger from the test switch within 1 sec to 5 sec after pressing the switch, the forced cooling operation starts. %(If you press the test switch for 5 sec or longer, the self-check diagnosis starts. In this case, turn the power off and start the procedure from 1 again.)

- %(For the initialization of the expansion valve, it may take 1 min until the operation starts.)
- 4. When you press the test switch again for 1 sec or longer, the unit stops the operation.







%Cautions

- 1. Applying power directly to the outdoor unit will cause a rush current to stress the outdoor unit. Therefore, if the indoor unit is not out of order, do not use the method descried in 2).
- 2. Before making the connections, be sure to turn off the breaker.

1. Connect the large dia. pipe side and small dia. pipe side service valve using a pipe.

- 3. Do not under any circumstances run the product for more than 5 minutes.
- 4. Doing work with the compressor connector removed will cause the LD301 to blink 4 times. It will not start.
- 5. For another test run, turn off the breaker and turn it back on. (The test switch is accepted only once after power-on. After operation by remote control, it is not accepted.)
- 6. When the operation with the test switch is over, turn off the breaker and set the connectors back.

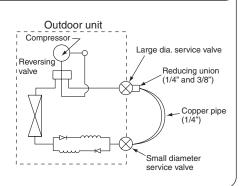
HOW TO OPERATE THE OUTDOOR UNIT INDEPENDENTLY

RAC-18/25/35WED

Connect the small diameter service valve and the large diameter service valve using the reducing union and

copper pipe as shown on the right.

Charge refrigerant of 300g after vacuuming (x_1)



Parts to be prepared

- (1) Reducing union 1/4" (6.35 mm) 3/8" (9.52 mm)
- (2) Copper pipe (1/4" and 3/8")

Do not operate for more than 5 minutes

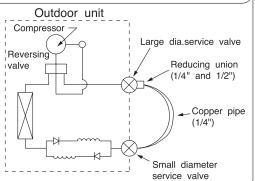
The operation method is the same as "How to operate using the connector to servicing the outdoor unit". %1 The charging amount of 300g is equivalent to the load in normal operation.

RAC-50WED

1. Connect the large dia. pipe side and small dia. pipe side service valves using a pipe.

Connect the small diameter service value and the large diameter service valve using the reducing union and copper pipe as shown on the right.

Charge refrigerant of 300g after vacuuming (%1)



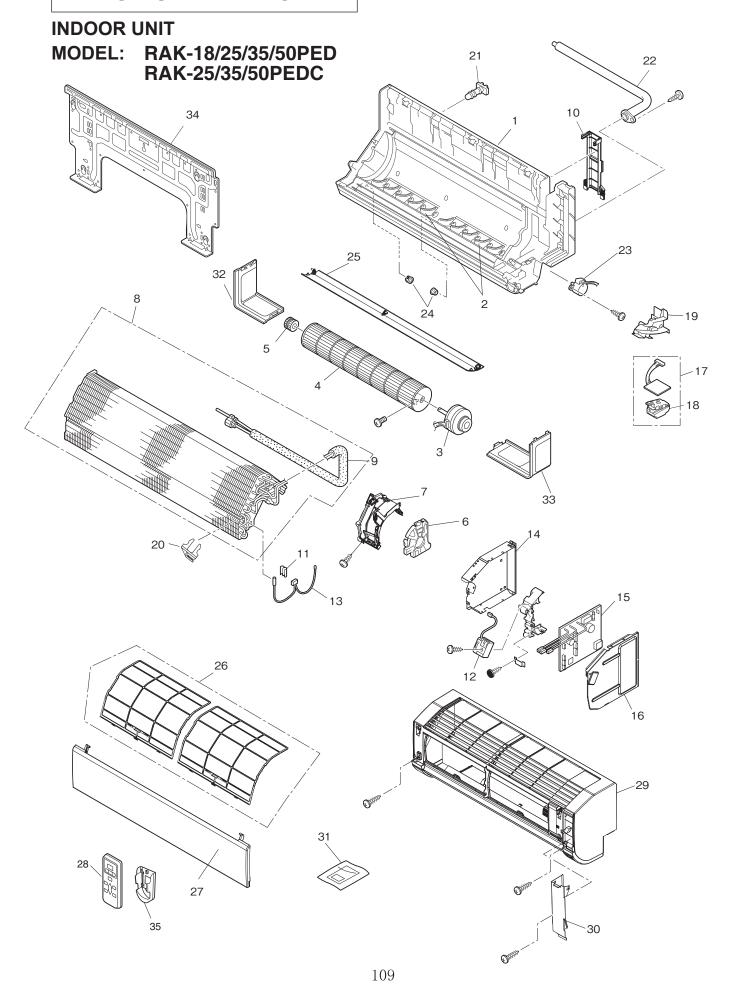
Parts to be prepared

- (1) Reducing union 1/4" (6.35mm) 1/2" (12.7mm)
- (2) Copper pipe (1/4" and 1/2")
- (3) Shorting leads2 leads approx. 10 cm long with alligator clip or IC clip

Do not operate for 5 minutes or more.

The operation method is the same as "How to operate using the connector to servicing the outdoor unit". %1 The charging amount of 300g is equivalent to the load in normal operation.

PARTS LIST AND DIAGRAM



INDOOR UNIT

MODEL: RAK-18/25/35/50PED

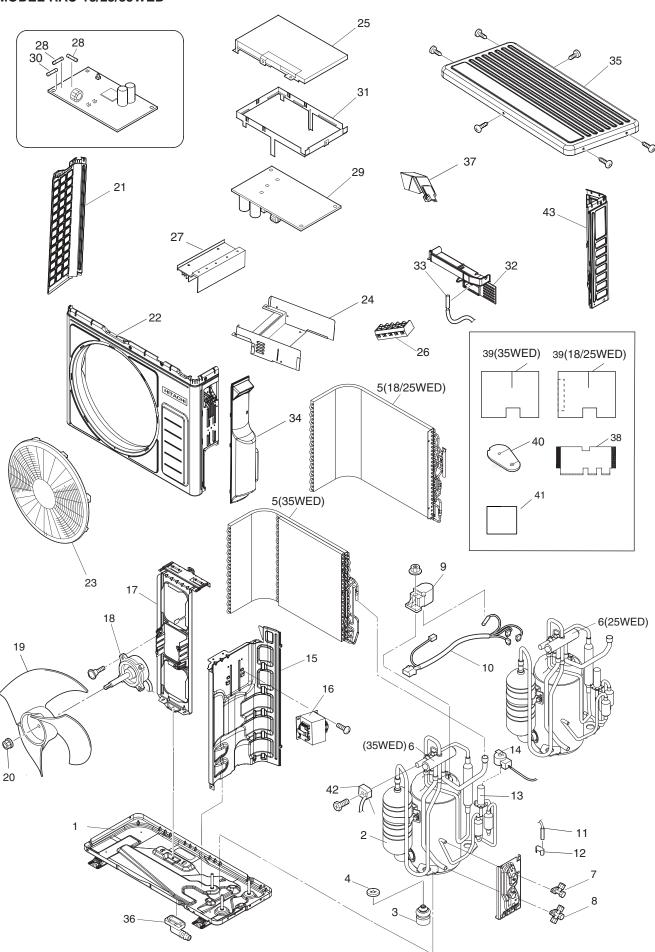
NO	HHAW PARTS NO				Q'TY/	DADWO MAND
NO -	RAK-18PED	RAK-25PED	RAK-3 5P ED	RAK-50PED	UNIT	PARTS NAME
1		HWRAK-18	PED A01		1	CABINET ASS'Y
2		HWRAK-18	PED A02		2	VERTICAL AIR DEFLECTOR
3		HWRAS-K1	OHCG 903		1	FAN MOTOR
4		HWRAK-18	PSPA 902		1	TANGENTIAL AIR FLOW FAN
5		HWRAK-18	PED A03		1	FAN SUPPORT ASS'Y
6		HWRAK-18	PED A04		1	FAN MOTOR SUPPORT-R
7		HWRAK-18	PED A05		1	FAN MOTOR SUPPORT-L
8		HWRAK-18PED A06		HWRAK-50PED A01	1	EVAPORATOR ASS'Y
9		HWRAK-18PED A07		HWRAK-50PED A02	1	PIPING ASS'Y
10		HWRAK-18	PED A08		1	UPPER COVER
11		HWRAK-18PED A09		HWRAS-25YH4 A15	1	SPRING
12		HWRAS-K1	OHCG 908		1	TERMINAL BOARD (3P)
13		HWRAK-18	PED A10		1	THERMISTOR ASS'Y
14		HWRAK-18	PED A11		1	COVER (ELECTRIC)
15	HWRAK-18PED A12	HWRAK-25PED A01	HWRAK-35PED A01	HWRAK-50PED A03	1	P. W. B. (MAIN)
16		HWRAK-18F	ED A13		1	ELEC-COVER
17		HWRAK-18F	ED A14		1	INDICATION BOX
18		HWRAK-18	PED A15		1	LED-COVER
19		HWRAK-18	PED A16		1	FC-GUIDE
20		HWRAK-18	PED A17		1	PIPE COVER
21		HWRAK-18F	SPA 919		1	DRAIN CAP
22		HWRAS-E1	OH3 921		1	DRAINAGE PIPE
23		HWRAK-18	PED A18		1	STEPPING MOTOR
24		HWRAS-25	/H4 A28		2	DEFLECTOR SUPPORT
25		HWRAK-18	PED A19		1	HORIZONTAL AIR DEFLECTOR
26		HWRAK-18	PED A20		2	AIR FILTER
27		HWRAK-18	PED A21		1	FRONT PANEL AS
28		HWRAS-K10	HCG 919		1	REMOTE CONTROL ASS'Y
29		HWRAK-18	PED A22		1	FRONT COVER
30		HWRAK-18	PED A23		1	T-COVER ASS'Y
31		HWRAK-18	PED A24		1	H-LABEL
32	HWRAK-18PED A25				1	S-COVER-L
33		HWRAK-18	PED A26		1	S-COVER-R
34		HWRAK-18	PED A27		1	MOUNTING PLATE
35		HWRAS-E10	CXK 014		1	RE-HOLDER

INDOOR UNIT

MODEL: RAK-25/35/50PEDC

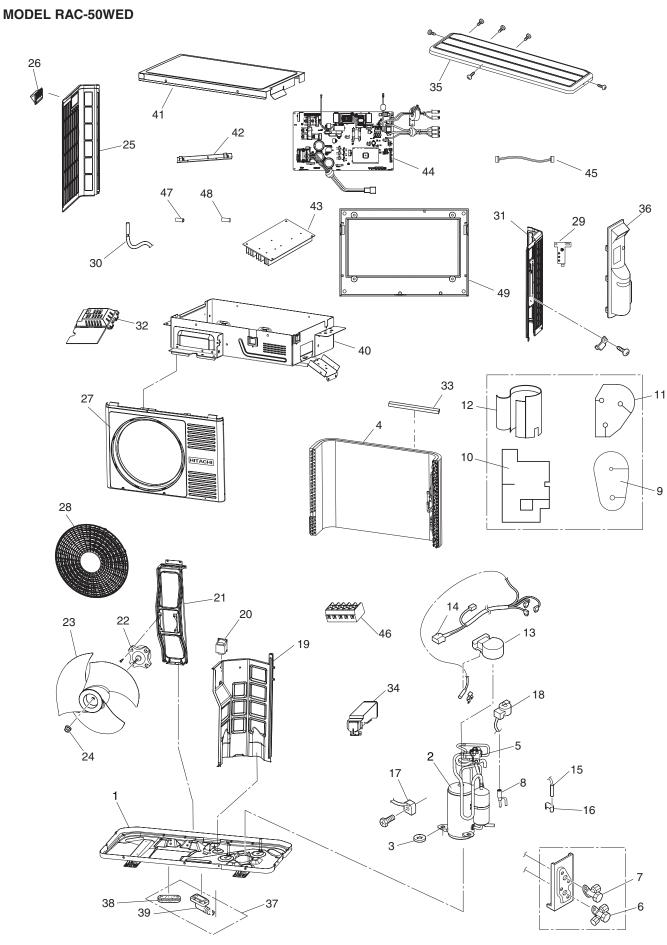
NO-	HHAW PARTS NO		Q'TY/	DADEC NAME	
NU	RAK-25PEDC	RAK-35PEDC	RAK-50PEDC	UNIT	PARTS NAME
1	HW RA	AK-18PED A01		1	CABINET ASS'Y
2	HW RA	AK-18PED A02		2	VERTICAL AIR DEFLECTOR
3	HW RA	AS-K10HCG 903		1	FAN MOTOR
4	HW RA	AK-18PSPA 902		1	TANGENTIAL AIR FLOW FAN
5	HW RA	AK-18PED A03		1	FAN SUPPORT ASS'Y
6	HW RA	AK-18PED A04		1	FAN MOTOR SUPPORT-R
7	HW RA	AK-18PED A05		1	FAN MOTOR SUPPORT-L
8	HWRAK-18PED	A06	HWRAK-50PED AC	1 1	EVAPORATOR ASS'Y
9	HWRAK-18PED	A07	HWRAK-50PED AC	2 1	PIPING ASS'Y
10	HW RA	AK-18PED A08		1	UPPER COVER
11	HWRAK-18PED	A09	HWRAS-25YH4 A1	5 1	SPRING
12	HW RA	AS-K10HCG 908		1	TERMINAL BOARD (3P)
13	HW RA	AK-18PED A10		1	THERMISTOR ASS'Y
14	HW RA	AK-18PED A11		1	COVER (ELECTRIC)
15	HWRAS-25PEDC A01 HWRA	AS-35PEDC A01	HWRAS-50PEDC A0	1 1	P. W. B. (MAIN)
16	HWRA	AK-18PED A13		1	ELEC-COVER
17	HWRA	AK-18PED A14		1	INDICATION BOX
18	HW RA	AK-18PED A15		1	LED-COVE R
19	HW RA	AK-18PED A16		1	FC-GUIDE
20	HW RA	AK-18PED A17		1	PIPE COVER
21	HWRA	NK-18PSPA 919		1	DRAIN CAP
22	HW RA	AS-E10H3 921		1	DRAINAGE PIPE
23	HW RA	AK-18PED A18		1	STEPPING MOTOR
24	HW RA	AS-25YH4 A28		2	DEFLECTOR SUPPORT
25	HW RA	AK-18PED A19		1	HORIZONTAL AIR DEFLECTOR
26	HW RA	AK-18PED A20		2	AIR FILTER
27	HW RA	AK-18PED A21		1	FRONT PANEL AS
28	HWRA	NS-K10HCG 919		1	REMOTE CONTROL ASS'Y
29	HW RA	AK-18PED A22		1	FRONT COVER
30	HW RA	AK-18PED A23		1	T-COVER ASS' Y
31	HW RA	AK-18PED A24		1	H-LABEL
32	HW RA	AK-18PED A25		1	S-COVER-L
33	HW RA	AK-18PED A26		1	S-COVER-R
34	HW RA	AK-18PED A27		1	MOUNTING PLATE
35	HWRAS	S-E10CXK 014		1	RE-HOLDE R

MODEL RAC-18/25/35WED



MODEL: RAC-18/25/35WED

RAC-18WED	HHAW PARTS NO					Q'TY/	DADTO NAME
The content of the	NU	RAC-18WED	RAC-25WED	RAC-35WED		UNIT	PARTS NAME
A	1		HWRAC-18WED A01			1	BASE
HWRAC-18WED A04	2		HWRAC-18WED A02			1	COMPRESSOR
The content of the	3		HWRAC-18WED A03			3	COMPRESSOR RUBBER
HWRAC-18WED A05	4		HWRAC-18WEB A04			3	PUSH NUT
The content of the	5	HWRAC-1		HWRAC-35WED	A01	1	CONDENSER
S	6	HWRAC-1	L8WED A05	HWRAC-35WED	A02	1	REVERSING VALVE
9	7		HWRAC-50WEA A06			1	
10						1	
11	9					1	
12						1	` '
13						1	
14						1	
15						1	
1						1	
HWRAC-18WED A08						1	
18						1	
19		HWRAC-1		HWRAC-35WED	A03	1	
Discharge Grill						1	
21 HWRAC-18WED A10 1 SIDE COVER (L) 22 HWRAC-18WED A11 1 FRONT COVER 23 HWRAC-18WED A12 1 DISCHARGE GRILL 24 HWRAC-18WED A13 1 ELECTRIC PARTS PLATE 25 HWRAC-18WED A13 1 ELECTRIC PARTS COVER 26 HWRAC-50WED A16 1 TERMINAL BOARD (5P) 27 HWRAC-18WEB A20 HWRAC-35WEB A01 1 HEAT SINK 28 HWRAC-18WEB A20 HWRAC-35WEB A01 1 HEAT SINK 29 HWRAC-18WED A14 HWRAC-25WED A01 HWRAC-35WED A04 1 P. W. B. (MAIN) 30 HWRAC-18WED A21 1 FUSE (15A) 31 HWRAC-18WED A15 1 COVER (OUTDOOR THERMISTOR) 32 HWRAC-18WED A16 1 EV-COV-ZU 33 HWRAC-18WED A17 1 THERMISTOR (OUTDOOR THERMISTOR) <td></td> <td></td> <td></td> <td></td> <td></td> <td>1</td> <td></td>						1	
22 HWRAC-18WED A11 1 FRONT COVER 23 HWRAC-18WED A12 1 DISCHARGE GRILL 24 HWRAC-18WED A11 1 ELECTRIC PARTS PLATE 25 HWRAC-18WED A13 1 ELECTRIC PARTS COVER 26 HWRAC-50WED A16 1 TERMINAL BOARD (5P) 27 HWRAC-18WEB A20 HWRAC-35WEB A01 1 HEAT SINK 28 HWRAC-50NX2 A52 2 FUSE (3.15A) 29 HWRAC-18WED A14 HWRAC-25WED A01 HWRAC-35WED A04 1 P. W. B. (MAIN) 30 HWRAC-18WED A21 1 FUSE (15A) 31 HWRAC-18WED A15 1 SUPPORT (P. W. B.) 32 HWRAC-18WED A15 1 COVER (OUTDOOR THERMISTOR) 33 HWRAC-18WED A16 1 EV-COV-ZU 35 HWRAC-18WED A17 1 T-COVERZU 36 HWRAC-25YHA4						1	
DISCHARGE GRILL 24						1	
24 HWRAC-K10HCG A11 1 ELECTRIC PARTS PLATE 25 HWRAC-18WED A13 1 ELECTRIC PARTS COVER 26 HWRAC-50WED A16 1 TERMINAL BOARD (5P) 27 HWRAC-18WEB A20 HWRAC-35WEB A01 1 HEAT SINK 28 HWRAC-18WED A52 2 FUSE (3.15A) 29 HWRAC-18WED A14 HWRAC-25WED A01 HWRAC-35WED A04 1 P. W. B. (MAIN) 30 HWRAC-18WED A23 1 SUPPORT (P. W. B.) 31 HWRAC-18WED A15 1 COVER (OUTDOOR THERMISTOR) 32 HWRAC-18WED A15 1 THERMISTOR (OUTDOOR TEMP.) 34 HWRAC-18WED A16 1 EV-COV-ZU 35 HWRAC-18WED A17 1 T-COVERZU 36 HWRAC-18WED A18 1 TERMINAL COVER 37 HWRAC-18WED A18 1 TERMINAL COVER 38 HWR						1	
Description						1	
26 HWRAC-50WED A16 1 TERMINAL BOARD (5P) 27 HWRAC-18WEB A20 HWRAC-35WEB A01 1 HEAT SINK 28 HWRAC-50NX2 A52 2 FUSE (3.15A) 29 HWRAC-18WED A14 HWRAC-25WED A01 HWRAC-35WED A04 1 P. W. B. (MAIN) 30 HWRAC-18WED A21 1 FUSE (15A) 31 HWRAC-18WEB A23 1 SUPPORT (P. W. B.) 32 HWRAC-18WED A15 1 COVER (OUTDOOR THERMISTOR) 33 HWRAC-18WED A16 1 EV-COV-ZU 35 HWRAC-18WED A17 1 T-COVERZU 36 HWRAC-25YHA4 A50 1 DRAIN PIPE 37 HWRAC-18WED A18 1 TERMINAL COVER 38 HWRAC-18WED A19 1 SOUND PROOF COVER ASS' Y 39 HWRAC-K10HCG A17 HWRAC-K14HCG A03 1 SOUND PROOF COVER ASS' Y <td></td> <td></td> <td></td> <td></td> <td></td> <td>1</td> <td></td>						1	
27 HWRAC-18WEB A20 HWRAC-35WEB A01 1 HEAT SINK 28 HWRAC-50NX2 A52 2 FUSE (3. 15A) 29 HWRAC-18WED A14 HWRAC-25WED A01 HWRAC-35WED A04 1 P. W. B. (MAIN) 30 HWRAC-18WED A21 1 FUSE (15A) 31 HWRAC-18WEB A23 1 SUPPORT (P. W. B.) 32 HWRAC-18WED A15 1 COVER (OUTDOOR THERMISTOR) 33 HWRAC-18WED A16 1 EV-COV-ZU 35 HWRAC-18WED A17 1 T-COVERZU 36 HWRAC-25YHA4 A50 1 DRAIN PIPE 37 HWRAC-18WED A18 1 TERMINAL COVER 38 HWRAC-18WED A19 1 SOUND PROOF COVER ASS'Y 39 HWRAC-K10HCG A17 HWRAC-K14HCG A03 1 SOUND PROOF COVER ASS'Y						1	
28 HWRAC-50NX2 A52 2 FUSE (3.15A) 29 HWRAC-18WED A14 HWRAC-25WED A01 HWRAC-35WED A04 1 P. W. B. (MAIN) 30 HWRAC-K10HCG A21 1 FUSE (15A) 31 HWRAC-18WEB A23 1 SUPPORT (P. W. B.) 32 HWRAC-18WED A15 1 COVER (OUTDOOR THERMISTOR) 33 HWRAC-18WED A17 1 THERMISTOR (OUTDOOR TEMP.) 34 HWRAC-18WED A16 1 EV-COV-ZU 35 HWRAC-18WED A17 1 T-COVERZU 36 HWRAC-25YHA4 A50 1 DRAIN PIPE 37 HWRAC-18WED A18 1 TERMINAL COVER 38 HWRAC-18WED A19 1 SOUND PROOF COVER ASS'Y 39 HWRAC-K10HCG A17 HWRAC-K14HCG A03 1 SOUND PROOF COVER ASS'Y	-	THID LO I		THIRD A G. O. SHIPD	101	1	
29 HWRAC-18WED A14 HWRAC-25WED A01 HWRAC-35WED A04 1 P. W. B. (MAIN) 30 HWRAC-K10HCG A21 1 FUSE (15A) 31 HWRAC-18WEB A23 1 SUPPORT (P. W. B.) 32 HWRAC-18WED A15 1 COVER (OUTDOOR THERMISTOR) 33 HWRAC-D10EX A17 1 THERMISTOR (OUTDOOR TEMP.) 34 HWRAC-18WED A16 1 EV-COV-ZU 35 HWRAC-18WED A17 1 T-COVERZU 36 HWRAC-25YHA4 A50 1 DRAIN PIPE 37 HWRAC-18WED A18 1 TERMINAL COVER 38 HWRAC-18WED A19 1 SOUND PROOF COVER ASS'Y 39 HWRAC-K10HCG A17 HWRAC-K14HCG A03 1 SOUND PROOF COVER ASS'Y		HWKAC-J		HWRAC-35WEB	A01	1	
30		HINDAG TOWED ATA		TIMD O O CINED	101	2	
31 HWRAC-18WEB A23 1 SUPPORT (P. W. B.) 32 HWRAC-18WED A15 1 COVER (OUTDOOR THERMISTOR) 33 HWRAC-D10EX A17 1 THERMISTOR (OUTDOOR TEMP.) 34 HWRAC-18WED A16 1 EV-COV-ZU 35 HWRAC-18WED A17 1 T-COVERZU 36 HWRAC-25YHA4 A50 1 DRAIN PIPE 37 HWRAC-18WED A18 1 TERMINAL COVER 38 HWRAC-18WED A19 1 SOUND PROOF COVER ASS'Y 39 HWRAC-K10HCG A17 HWRAC-K14HCG A03 1 SOUND PROOF COVER ASS'Y		HWKAC-18WED A14	_	HWRAC-35WED	A04	1	
32						1	
33 HWRAC-D10EX A17 1 THERMISTOR (OUTDOOR TEMP.) 34 HWRAC-18WED A16 1 EV-COV-ZU 35 HWRAC-18WED A17 1 T-COVERZU 36 HWRAC-25YHA4 A50 1 DRAIN PIPE 37 HWRAC-18WED A18 1 TERMINAL COVER 38 HWRAC-18WED A19 1 SOUND PROOF COVER ASS'Y 39 HWRAC-K10HCG A17 HWRAC-K14HCG A03 1 SOUND PROOF COVER ASS'Y						1	
34 HWRAC-18WED A16 1 EV-COV-ZU 35 HWRAC-18WED A17 1 T-COVERZU 36 HWRAC-25YHA4 A50 1 DRAIN PIPE 37 HWRAC-18WED A18 1 TERMINAL COVER 38 HWRAC-18WED A19 1 SOUND PROOF COVER ASS'Y 39 HWRAC-K10HCG A17 HWRAC-K14HCG A03 1 SOUND PROOF COVER ASS'Y	-					1	
35						1	
36 HWRAC-25YHA4 A50 1 DRAIN PIPE 37 HWRAC-18WED A18 1 TERMINAL COVER 38 HWRAC-18WED A19 1 SOUND PROOF COVER ASS'Y 39 HWRAC-K10HCG A17 HWRAC-K14HCG A03 1 SOUND PROOF COVER ASS'Y						1	
37HWRAC-18WEDA181TERMINAL COVER38HWRAC-18WEDA191SOUND PROOF COVER ASS'Y39HWRAC-K10HCGA17HWRAC-K14HCGA031SOUND PROOF COVER ASS'Y						1	
38 HWRAC-18WED A19 1 SOUND PROOF COVER ASS'Y 39 HWRAC-K10HCG A17 HWRAC-K14HCG A03 1 SOUND PROOF COVER ASS'Y						1	
39 HWRAC-K10HCG A17 HWRAC-K14HCG A03 1 SOUND PROOF COVER ASS'Y						1	
		HWR A C - N		HWRAC-K14HCC	VU3	1	
TO THE PROOF ATO TO TO THE POOL OF A PARTY AND T		HiiMO I		I IIIIIII NITTIOU	AUU	1	
41 HWRAC-18WEB A30 1 SOUND PROOF COVER ASS'Y						1	
42 HWRAC-50WED A06 1 COIL (REVERSING VALVE)						1	
43 HWRAC-18WED A20 1 SIDE COVER (R)						1	



MODEL: RAC-50WED

NO -	HHAW PARTS NO RAC-50WED	Q'TY/ UNIT	PARTS NAME
1	HWRAC-50WPC A01	1	BASE
2	HWRAC-50WED A01	1	COMPRESSOR
3	HWRAC-50NX2 A04	3	PUSH NUT
	HWRAC-50WEC A01	1	CONDENSER
4 5	HWRAC-50WED A02	1	REVERSING VALVE
6	HWRAC-50WEA A05	1	SERVICE VALVE
7	HWRAC-50WEA A06	1	SERVICE VALVE SERVICE VALVE
8	HWRAC-50WED A03	1	ELECTRIC EXPANSION VALVE
9	HWRAC-50WED A04	1	SOUND PROOF
10	HWRAC-50WPC A04	1	SOUND PROOF
11		1	SOUND PROOF
12	HWRAC-50WEC A07	1	
13	HWRAC-50WED A05	1	SOUND PROOF O. L. R COVER
13	HWRAC-50WPC A05 HWRAC-50WEA A12	1	CONNECTING CORD (COMP)
		_	
15 16	HWRAC-50NX2 A16	1	THERMISTOR (DEFROST) THERMISTOR SUPPORT
	HWRAC FOWED AGE	_	
17	HWRAC-50WED A06	1	COIL (REVERSING VALVE)
18	HWRAC-50WED A07	1	COIL (EXPANSION VALVE)
19	HWRAC-50WED A08	1	PARTITION
20	HWRAC-50WED A09	1	REACTOR
21	HWRAC-50WEB A02	1	FAN MOTOR SUPPORT
22	HWRAC-50WED A10	1	FAN MOTOR
23	HWRAC-50WEC A12	1	PROPELLER FAN
24	HWRAC-50NX2 A25	1	NUT (PROPELLER FAN)
25	HWRAC-50NX2 A26	1	SIDE COVER (L)
26	HWRAC-50NX2 A27	1	HANDLE COVER
27 28	HWRAC-50WED A11	1	FRONT COVER
	HWRAC-50WEC A14	1	DISCHARGE GRILL
29	HWRAC-50WEA A14	1	EARTH-PLATE
30	HWRAC-E14H3 914	1	THERMISTOR (OUTDOOR TEMPERATURE)
31	HWRAC-50WED A12	1	SIDE COVER (R)
32	HWRAC-18WSPA A24	1	TC-COVER
33	HWRAC-50WEC A15	1	H-SHEET
34 35	HWRAC-50WEC A16	1	TERMINAL COVER
	HWRAC-SX18HAK A28	1	TOP COVER
36	HWRAC-50WED A13	1	SERVICE VALVE COVER
37	HWRAC-50NX2 A36 HWRAC-50NX2 A37	2	BUSH ASSEMBLY
38		1	BUSH DDAIN DIDE
39	HWRAC-50NX2 A38	1	DRAIN PIPE ELECTRIC PARTS PLATE
40	HWRAC-50WEC A17 HWRAC-50WED A14	1	ELECTRIC PARTS PLATE ELECTRIC PARTS COVER
42	HWRAC-50WEB A07	1	SUPPORT2 (P. W. B.)
43	RAC-1F50KVY014	1	HEAT SINK
44	HWRAC-50WED A15	1	P. W. B. (MAIN)
45	HWRAC-50WEB A11	1	CORD (REACTOR)
46	HWRAC-50WED A16	1	TERMINAL BOARD (5P)
47	HWRAC-50WED A17	1	FUSE (25A)
48	HWRAC-50NX2 A52	2	FUSE (3. 15A)

HITACHI

RAK-18PED/RAC-18WED

RAK-25PED/RAC-25WED

RAK-35PED/RAC-35WED

RAK-50PED/RAC-50WED

RAK-25PEDC/RAC-25WED

RAK-35PEDC/RAC-35WED

RAK-50PEDC/RAC-50WED

JCH-WH NO. 0105E