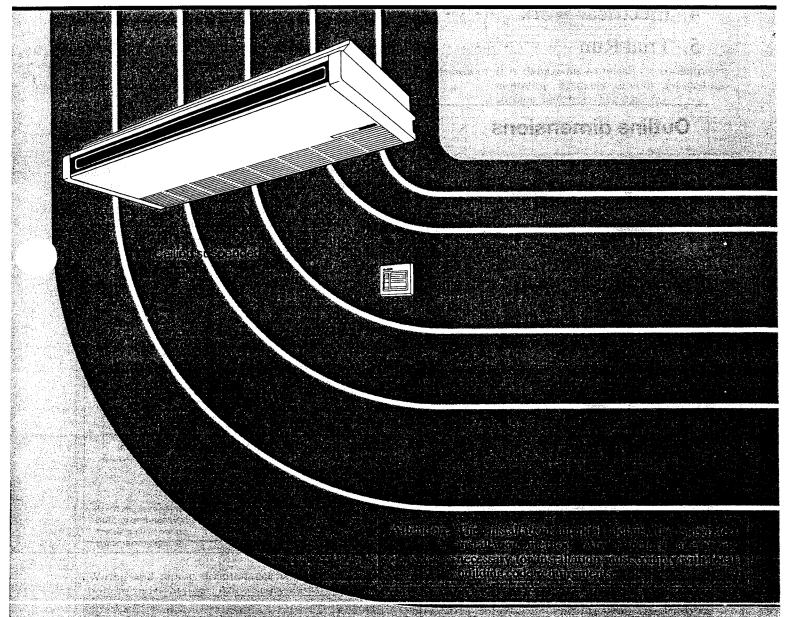


# MITSUBISHI ELECTRIC **Air-Conditioners**



Models: (PC24,)30, 36, 42EK

# **Installation Manual**

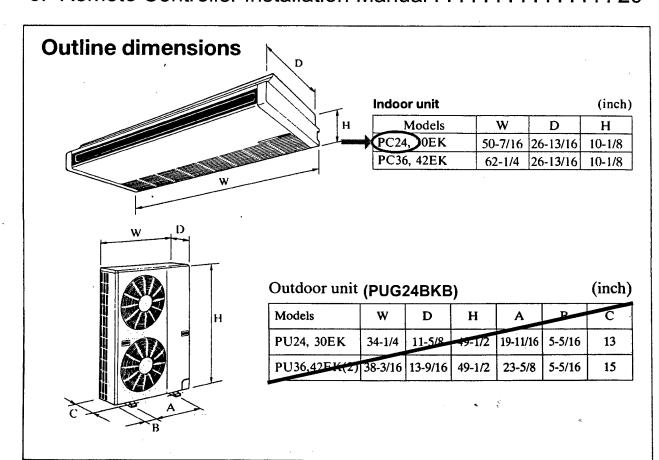


These air conditioners incorporate the latest technological advances of Mitsubishi Electric and are produced under strict quality control.



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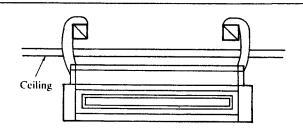
almissionid be installed by licensed contractor — 222c. According to local code requirements.

## 1. Selecting the Installation Location

## < Indoor Unit >

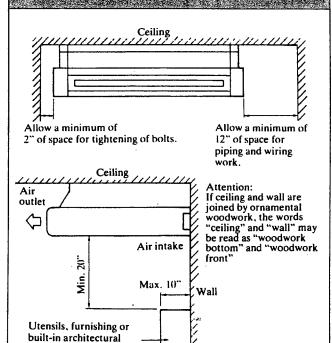
- •Before installing, determine route for carrying in unit.
- Select location not exposed to outside air.
- Select location free of obstructions to airflow in and out of unit.
- Select location with easy access to outside for refrigerant piping.
- •Select location from which air will be blown into all corners of the room.
- Avoid locations subject to splashing or steam.
- Avoid locations in which combustible gas may be generated, settle or leak.
- Aviod installation near machines emitting high-frequency waves. (High frequency welders etc.)

Suspend unit only from ceilings strong enough to bear unit weight.



Attention: It is dangerous to install air conditioner mounting brackets directly on ceiling surface material. (See page 6.)

#### Installation: Ensuring service space



Wiring and piping maintenance requires access to bottom and right sides. Allow space shown in drawing above.

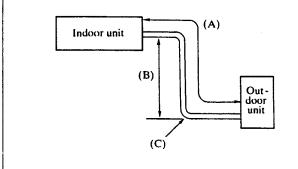
features must not pro-

trude more than 10",

Check that difference between heights of indoor and outdoor units, length of refrigerant piping and number of bends in piping are within limits shown below.

Models	(A) Piping length (one way)	(B) Height difference	(C) Number of bends (one way)	
PC24,30, 36, 42EK	Max. 164ft	*Max. 130ft	Max. of 15	

 Height difference limitations are binding regardless of which unit, indoor or outdoor, is positioned higher.



## < Outdoor Unit >

- •Install in location unexposed to direct sunlight or other radiated heat.

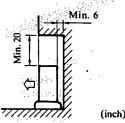
  If direct sunlight cannot be avoided, always install a sunshade to protect the outdoor unit from the sun.
- Select location from which noise emitted by unit will not inconvenience neighbors.
- Select location permitting easy wiring and piping to power source and indoor unit.
- Avoid locations in which combustible gas may be generated, settle or leak.
- Bear in mind that during operations drain water may flow from the unit.

## Free Space Required Around Outdoor Unit

### 1. When Outdoor Unit Installed Singly

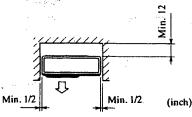
#### 1. Top side obstacles

If there are obstacles at the rear side only, other obstacles may be permitted as shown in the diagram of top side.



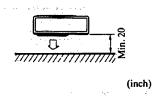
#### 2. Front side (blowing side) open

If only the space shown in diagram can be reserved, obstacles can be allowed in the other 3 directions (but top side open).



## Obstacles on front side (blowing side) only

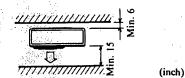
If there are obstacles on the front side, keep the back, left/right, & top sides open.



#### 4. Obstacles on front & rear sides

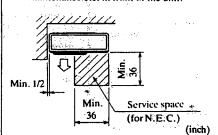
Unusable in case of the dimensions shown in following diagram. See item 5.4%





#### SERVICE SPACE

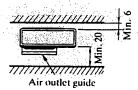
Allow the service space shown in the following diagram to remain open, for maintenance etc. in front of the unit.



#### 5. Obstacles on front & rear sides only

Becomes usable by fitting the outdoor air outlet guide which comes as an option (left/right & top sides open). But if natural wind, like that flowing between buildings, cannot be expected, keep the height or width of obstaces within the following range: Otherwise, there is the risk of short eyele occurring. (If the front or rear side satisfies the requirements, there is no special restriction on the remaining side).

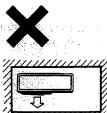
Obstruction width: 1.5 times width of outdoor unit or smaller Obstruction height: Unit height or lower



(inch)

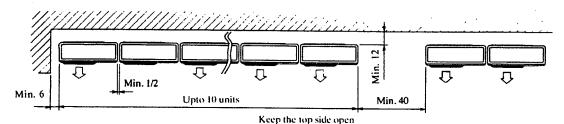
### 6. Obstacles on 4 surrounding sides

Unusable if there are obstacles on all 4 surrounding sides, even if there is more than the prescribed amount of space around the outdoor unit and even if the top side is open.

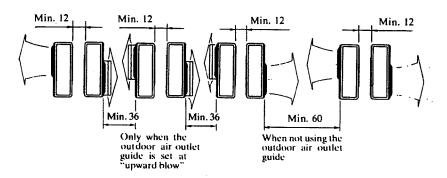


### 2. Relative Positioning of Unit Installed Together

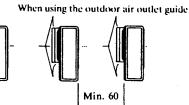
(1) When installed consecutively sideways • Remove the side screw of pipe cover



(2) When arranged longitudinally



When not using the outdoor air outlet guide



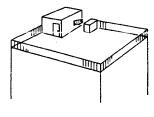
(inch)

• When installing unit on rooftop or other locations unprotected from wind, situate unit air outlet in direction not directly exposed to strong wind. Strong wind entering air outlet may impede normal airflow and cause malfunctions.

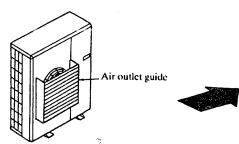
Examples -

Min. 150

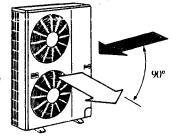
•Face outlet toward any available wall, 20 inch away from wall.



• Install optional air outlet guide, if the unit is installed at a place where the powerful blast of typhoon, etc. comes directly on the air outlet.



 Position unit so that air outlet blows in direction perpendicular to seasonal wind direction, if known.



## 2. Installing the Unit

# < Indoor Unit >

## Check for Indoor Unit Accessories and Parts

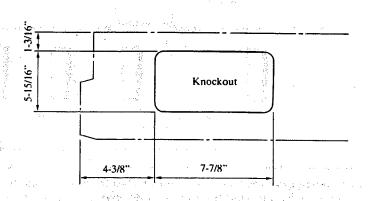
Check that indoor unit is provided with the following parts and accessories.

5-31	Accessory name	Q'ty-	Location in packaging
1	Paper installation pattern	1 1 W	Inside of packing material
2	Remote controller Part No. PC/PK MITSUBISHI ELECTRIC	1	Inside intake grille (See instructions enclosed in bags or boxes with accessories for details concerning their use.)
3	Refrigerant/Drain piping parts	l set	Inside intake grille (See page 10, 11 and 12.)

## Position of Hole to Taking in Fresh Oviside Air

Colorado Carp procede for Neverla

Remove rear-panel knockout to create hole for taking in fresh air.

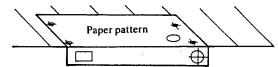


Viewed from front

## Mounting Suspension Bolts (Produce 3/8" DIA bolts locally.)

#### Locationing Suspension Bolts, Piping Holes and Air Intake Hole.

Use paper installation pattern to determine the locations of suspension bolts, piping holes and air intake hole.



\*Remove paper pattern before installation.

Details are printed on pattern.

Attention: Surrounding temperature and humidity conditions may cause paper pattern to shrink or expand. Measure dimensions before drilling holes.

Roof beam

Bracket

#### Suspension Structure

#### Wood frame structures

Select tie beam (one-story houses) or second-floor girder (two story houses) as reinforcement member.

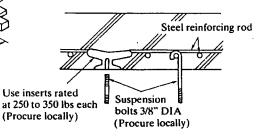
Wooden hangers for suspending air conditioners must be strong at least 2" × 4".

The size of the suspension bolts should be 3/8" DIA.

(The bolts do not come with the unit.)

## • Ferroconcrete Structures Secure suspension bolts as shown

Secure suspension bolts as shown below or use angle-stock bracework to install suspension bolts.



### Suspension Bolt Pitch

With suspension fixtures on inside

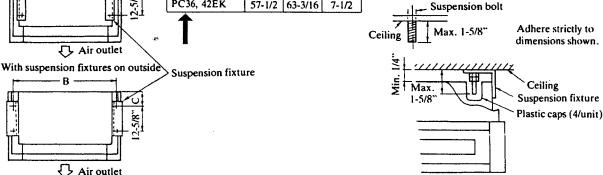
#### Suspension Bolt Pitch

Ceiling Rafter

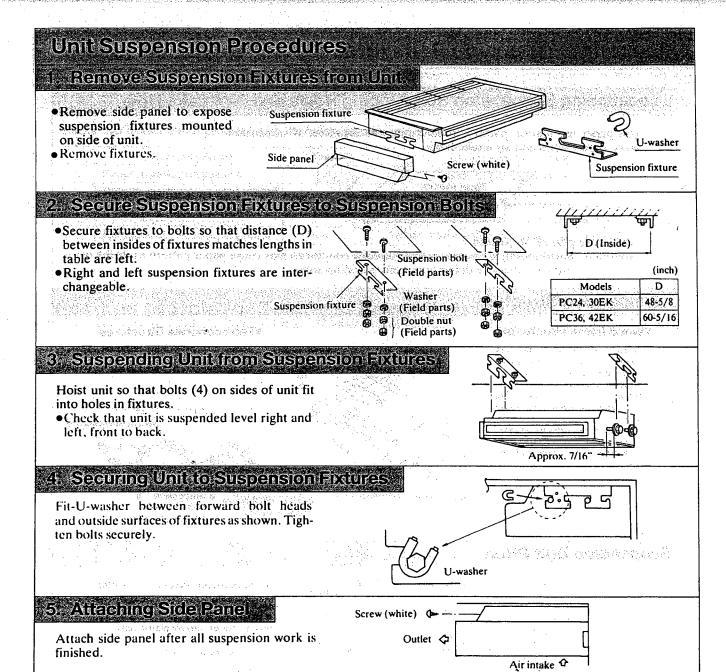
With suspension fixtures on inside

•Suspension bolts fit into plastic caps on inside unit top panel.

Attention: Never remove plastic caps.



"With suspension fixtures outside" refers to installation method in which ceiling contact surfaces of fixtures extend out from unit. Unit itself is suspended by the same one-touch method used by installation with suspension fixtures inside.



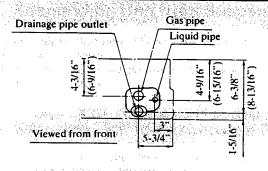
## Sa Prejitigieteiniteino Direineoje Pijoino

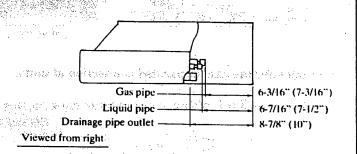
- Refrigerant pipes are sold separately. Read instructions carefully before starting work.
- Insulate both refrigerant piping (liquid and gas) and drainage piping so as to completely prevent condensation. When using commercially available copper piping, insulate both liquid and gas piping in commercially available heat insulation (heat-resistant insulation at least 1/2" thick). Insulate lengths of drainage piping passing through indoor areas with polyethylene foam insulation (least 3/8" thick).

िहिस्स	erant	and Deinege	Niping Sizes :	2-01/d <b>5</b> 1	ije glimičas iti sagrejo	្តាស់ព្រះលើមិនមិនប៉ុន្តែក
	Models	PC24EK	D. C.	Models	PC24EK	PC30, 36, 42EK
363.7	744	PC24EK	PC30, 36, 42EK	16ft	PACSK05FS	PACSK05FF
Refrigerant	Liquid	3/8" O. D.	1/2" O. D.	23ft	PACSK07FS	PACSK07FF
piping	Gas	5/8" O. D.	3/4" O. D.	33ft	PACSK 10FS	PACSK10FF
Drainage pip	ing	PVC pipe	: 1"O. D.	49ft	PACSK15FS	PACSK15FF

## Refigerational Drainage Plotoc Locations

Parentheses ( ... kindleate dimensions in a models (203) (223)





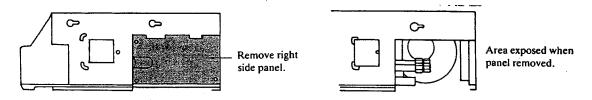
## Opanies for Raingeantant Deniega Piping

esed as the second of the seco

	Rear piping	Upper piping	Right piping
Main unit openings (Knock-outs)	For drainage For refrigerant    3/11-2-  -13/16-  2-7/16-	5.516.	Drain · refrigerant piping (2-3/8")    1-7/16" (1-3/4")   -9/18"
Wall and ceiling openings	Ceiling  (.c) (.c) (.c) (.c) (.c) (.c) (.c) (.c)	Ceiling opening  5-3/4"  Rear wall  4" DÎA ceiling opening	Slot traces pattern on inside surface. Use fret saw to cut out along slot.  For refrigerant piping For drainage piping

### Making Piping Connections

Remove right side panel, as shown in the figure below, to gain access to piping ends. piping can also be connected from bottom of unit. Replace right side panel after piping connections are completed.



## Refrigerant Piping Connection Work

This package contains the following parts. Check each item before use.

	Refrigerant piping						
Part No. Name Q'							
①	Refrigerant oil	1					
2	Pipe cover (Small diameter)	l					
	Pipe cover (Large diameter)	ı					
3	Band for temporary tightening	4					

- This unit has flared connections on both indoor and outdoor sides.
- The refrigerant pipes and the indoor unit contain a nitrogen holding charge which must be removed by evacuation.
- 1. When using optionally purchased refrigerant piping:
- a) Piping connection procedures

See that stop valve on outdoor unit is fully shut (unit is shipped with valve shut). Remove caps from piping and unit and make flare connection promptly. Repeat for each connection, one at a time.

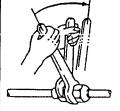
After all piping connections between indoor and outdoor unit have been completed, vacuum-purge air from system through the service port for the stop valve on the outdoor unit.

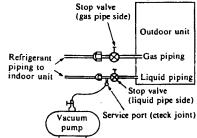
- b) Precautions concerning flexible tubing
  - Use flexible tubing for indoor piping connections only.
  - Avoid bending at angles more acute than 90°. Avoid repeated bending of same tube more that three times.
  - Locate bends as near as possible to center of piping lengths and make bend with as large of a bending radius as possible.
- 2. When using commercially available copper piping:
  - See that stop valve on outdoor unit is fully shut (unit is shipped with valve shut).

After all piping connections between indoor and outdoor unit have been completed, vacuum-purge air from system through the service port for the stop valve on the outdoor unit.

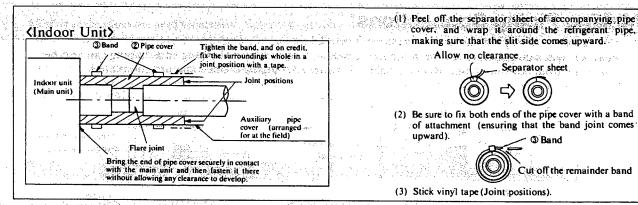
- 3. After completing procedures 1 or 2 above, open outdoor unit stop valves stem fully. This completes connection of refrigerant circuit between indoor and outdoor units. Stop valve instructions are marked on outdoor unit.
  - Apply thin layer of refrigerant oil provided with unit to pipe and joint seating surface before tightening flare nut.
  - Use two wrenches to tighten piping connections.

Pipe d	iameter	Tightening torque
mm	inch	(ft · lbs)
9.52	3/8	25 to 30
12.7	1/2	36 to 42
15.88	5/8	54 to 58
19.05	3/4	72 to 101



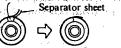


- Use leak detector or soapy water to check for gas leaks after connections are completed.
- Use refrigerant piping insulation provided to insulate indoor unit connections. Insulate carefully following instructions enclosed. Insulate both liquid and gas lines.



making sure that the slit side comes upward.

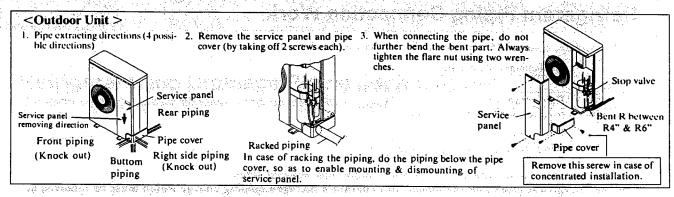
The state of Allow no clearance



(2) Be sure to fix both ends of the pipe cover with a band of attachment (ensuring that the band joint comes upward).

Cut off the remainder band

(3) Stick vinyl tape (Joint positions).



### Amount of Flategarant

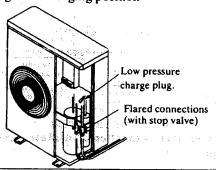
 Outdoor unit has been charged with refrigerant of amount sufficient for 100 feet of piping. When the actual length of the pipe exceeds 100 feet, charge an additional amount of refrigerant (R-22).

	Models	Additional charge/piping length exceeds 100 ft.
$\rightarrow$	PC24EK	0.7 oz/5 ft
13.4	PC30EK	
	PC36EK	1.6 oz/5 ft
	PC42EK	

Example

Models	Refrig	Refrigerant piping length (one way) [R-22(oz)]						
Models	≦100 ft	115 ft	130 ft	145 ft	160 ft	164 ft	Factory charged	
PC24EK	0.	2	4	- 6	8	9	9 lbs 15 oz	
PC30EK	0	5	10	14	19	20	10 lbs 2 øz	
PC36EK	0	5	10	14	19	20	10 lbs 9 oz	
PC42EK	0	5	10	14	19	20	12 lbs 9 oz	

Refrigerant charging position



Refrigerant charge:

• The refrigerant should be charged using the low pressure charge plug in the service panel as shown in the figure left.

Note: When charging refrigerant, always measure refrigerant.

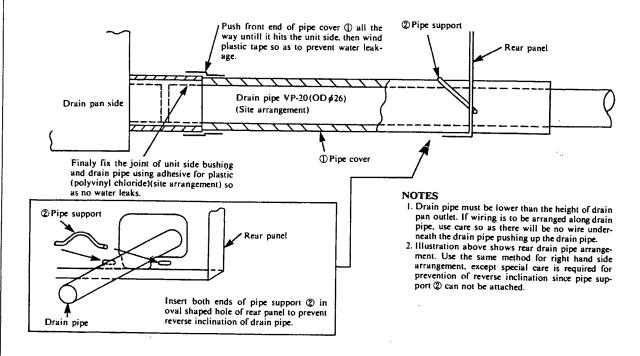
化环烷酸 横下 医原性 医自由性性神经病 血压性病 化二甲烷基甲烷基甲烷

### Drainage Plaing Work

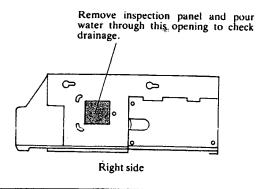
This package contains the following parts. Check each item before use.

	Drain piping	
Part No.	Name	Q'ty
①	Pipe cover (1-3/8" o.d×1" i.d×111-3/4")	1
2	Pipe support (Steel wire)	1

• Drain pipe must be firmly installed as shown below using care for prevention of dew drippage and reversed slope inclination.



- See that drainage piping runs downward at a gradient of at least 1/100.
- •Use parts provided and follow instruction enclosed when installing and insulating piping in unit.
- Avoid running drainage pipe into sewers from which sulfuric gases may be emitted.
- After connecting piping, check for leaks at joints and that drainage is properly performed.



#### Outdoor unit drainage pipe connection

• When drain piping is necessary, use the optional drain socket set and refer to attached instruction manual.

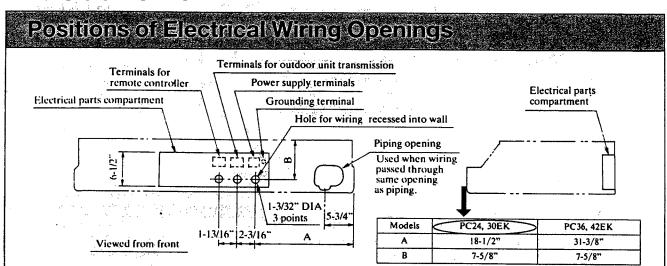
## 41. Ekonosi Work

- Supply power from independently branched circuit.
- Wiring work should conform to local code requirements.
- •The control circuit, wires of remote controller and power supply wires should be laid so that they should not touch each other.

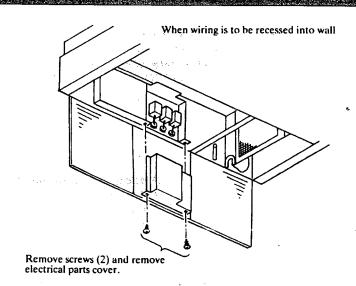
Alteria marine enimetro

- Never connect power supply directly to control wiring terminals.
- Be sure to wire together control wiring terminals of indoor and outdoor units. (Wire properly according to terminal numbers to avoid problems with polarity.)
- Wiring connections should be made following the diagram. Screws should be tightened so they won't loosen.
- "USE COPPER CONDUCTORS ONLY".

### < Indoor Unit >

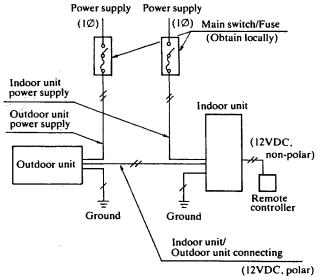


## Electrical Wiffing Connections and transmissions security



## Field Electrical Wiring (Example)

Wiring differs according to models. Refer to circuit diagrams for details when performing electrical work.



Make sure that air conditioners are grounded.

विवस्ताका ५०	eelleations		e de la compansión de l				
Indo	or unit		and the second s	the section of the se			
Models		PC24EK	PC30EK	PC36EK	PC42EK		
Power supply	(V, phase, Hz)	115, 1, 60	115, 1, 60	115, 1, 60	115, 1, 60		
Max. Fuse size (t	ime delay) (A)	15	15	15	15		
Min. Ampacity	(A)	3.0	3.0	3.0	3.0		
Fan motor	(F. L. A.)	1.8	1.8	2.4	2.4		
Outdo	or unit			**************************************			
Models		PU24EK	PU30EK	PU36EK	PU42EK2		
Power supply	(V, phase, Hz)	208/230, 1, 60	208/230, 1, 60	208/230, 1.60	208/230, 1, 60		
Max. Fuse size (t	ime delay) (A)	20 30 30		* 40			
Min. Ampacity	(A)	16	20	22	27		
Fan motor	(F. L. A.)	0.65 ± 0.65	0.65 + 0.65	0.75 + 0.75	0.8 + 0.8		
Commence	(R. L. A.)	11.5	14.0	17.5	20.0		
Compressor	(L. R. A.)	54	73	87	105		
Craphease heater	(A)	0.16/0.17	0.16/0.17	0.16/0.17	0.16/0.17		
Control circuit	Remote controller -Indoor unit	DC12V, 2 wires (Non-polar)					
rating	Indoor unit -Outdoor unit	DC12V, 2 wires (Polar)					

## indoor and Outdoor Control Wining

Attention: Connect indoor and outdoor unit control wiring properly according to terminal numbers to avoid problems with polarity.

## Connecting Remote Controller (Accessory)

To connect the remote controller, follow the instructions enclosed with it. (See page 19)

Securely fasten the remote controller to the indoor units terminal board using the 16 feet of cable supplied with the remote controller. The cable can be extended to a maximum length of 550 yards.

If more than 16 feet is required, use double insulated two wire cable equivalent to that provided in thickness of not less than AWG 22 - 300 volts. e.g. BELDEN 9407 cable.

Caution: Wiring should run from indoor unit to remote controller direct, NO SPLICES.

Caution: When running more than one set of remote controller wires together, the double insulated

two wire cable listed above is mandatory or use shielded two wire cable.

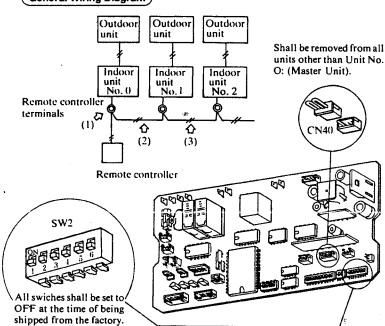




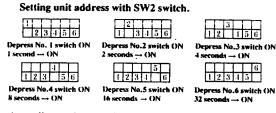
## System Controls one remote controller can be used to operate multiple units

This function of group control allows you to operate multiple units (maximum upto 50 units) as one group with one remote controller.

General Wiring Diagram



- Distribute wiring based on the following procedure.
- (1) Connect the remote controller to the terminal of the group master indoor unit (Unit No. O)
- (2) Connect the terminals of the master unit to the terminals of a subordinate unit with two wires. Then, connect the terminals of that subordinate unit to the terminals of the next unit and so on till all units are connected. (The total cord length of the remote controller and the connection among units should be not exceed 550 yards.)
- (3) Remove all of the CN 40 connectors from the indoor controller boards, of the subordinate units.
- (4) Now, all that remains to be done is to set the unit addresses of each unit. (Those addresses are also serving as a part of the sequential starting timer).



According to the combination of switch settings, upto 50
units can be started sequentially at one second intervals
between 1 through 50 seconds.

### Before Trial Run

- After installation, wiring and piping of indoor and outdoor units is complete, check, for refrigerant leakage, looseness in power supply or control wiring and mistaken polarity.
- Use a 500-volt megger to check that resistance between power supply terminals and ground is at least 1.0M $\Omega$ . Do not megger test the control wiring (low voltage circuit) terminals.

Attention :

Do not use the air conditioner if it is less than 1.0M $\Omega$ .

#### Trial Run Procedures (Read instruction manual perore starting). Turn on main switch, 12 hours before proceeding to step 2 to allow for Remote controller crankcase heater operation. Push the TEST RUN button twice and indication of TEST RUN will 2 be shown on the liquid crystal display. mr.sum Push the mode select button FAN or COOL/DRY to confirm that 3 air or cool air is blown out. POWER - ON/OFF MODE SELECT FAN COOL Push the fan speed button LOW/HIGH to check that the fan speed SET TEMPERATURE WARMER COOLER changes properly. TIMER MODE HOURS FAN SPEED LOW/HIGH Push the air sweep ON/OFF button to check the operation of the 5 swing louvers. AIR SWEEP ON/OFF TEST RUN Check the operation of outdoor unit fans. This unit controls the rotation speed and performance capacity of fans. In some cases, it may rotate at low speed as the condition of outside air requires and the speed will be kept unless the performance has become deficient. 6 Therefore, when the condition of outside air demands, there may be such cases as the fan stops or rotates reversely. TEST RUN butten Please note that these symptoms are not mulfunction. TEST RUN Display

\*The above figure shows the state of TEST RUN at cooling operation.

Indoor coil temperature code | Display

•When a TEST RUN is started, the timer shall be set to 2 hours. The unit will automatically turn off after 2 hours.

ON/OFF button.

After the check is finished leave the test run mode, push the power

It can also be stopped by pushing the timer MODE button.

•The indoor Coil Temperature Display shows the indoor coil temperature codes during a TEST RUN.

Note: The temperature code are indicated in numbers 1 through 15 which represent -40 to 194 °F.

Check the compressor operation by confirming that code number decreases for cooling.

7

Code	1	2	3	4	5	6	7	8
Indoor coil temperature	−40 ~ 34°F	~ 50°F	~ 59°F	~68°F	~ 77°F	~86°F	~ 95°F	~ 104°F
Code	9	10	× 11	12	13	14	15	
Indoor coil temperature	~ 113°F	~122°F	~131°F	~140°F	~158°F	~194°F	Sensor mulfunction	

• If the previously mentioned operations do not work properly, the problem may be due to one of the following causes. (The test run mode is assumed.)

Cause	Malfunction	n symptoms
	One to one system	Group control
Indoor - Outdoor connecting line is improperly installed or power for out- door units is connected in opposite phase.	Indoor coil temperature code changes for neither cooling nor heating. Remote controller display "-CENTRALLY CONTROLLED—" appears for an instant and then disappears. (The same for a short circuit in the remote controller wiring.)	<ul> <li>Improper wiring of the master unit (the unit to which the remote controller is connected) will result in symptoms similar to those listed at left.</li> <li>If a subordinate unit is wired improperly, either the fan will not operate or after a lapse of 9 to 10 minutes "PB" ← followed by the number of the improperly wired subordinate unit number is displayed.</li> </ul>
Error in remote control or indoor address.	<ul> <li>Display indicates "— CENTRALLY CONTROL —" and the switches do not function. (Before the unit leaves the factory, the remote controller and indoor addresses are set to 0. If the setting is mistakenly changed, a malfunction will arise.)</li> </ul>	<ul> <li>An error in master unit or remote controller setting will result in symptoms similar to those listed at left.</li> <li>If two or more subordinate units have been given the same address, " P?" followed by the duplicated address number is displayed.</li> </ul>
The remote controller is improperly connected or there is short circuit in the remote controller wiring	There is no display on the remote controller.	Similar symptoms to those listed as at left.
4. In the control mode using two remote controllers, subordinate remote controller setting has not been made (DIP SW17 No. 7 in remote controller is not turned on).	• Results in a display of P7, or no display.	Similar symptoms to those listed as at left.
5. The CN 40 connector on one or more of the indoor controller boards of the subordinate units (unit No. 1 and above) has not been removed.		There is no display whatsoever on the remote controller.

- The above mainly concerns problems due to improper installation. However, if a malfunction occurs in the unit itself, a check will result in a display of "EO" or "Pi-P8". In such a case, refer to the list of causes and remedies in the technical & service manual.
- If the centrally control system remote controller or the program timer etc., which are optional parts, are used, refer to also the instructions in the accompanying those optional parts.
- Conduct TEST RUN as above mentioned, and confirm no dew drops from refrigerant or drain pipes.
- Be sure to check if there are air leaks neither from the opening between units and grills nor the space between grills and ceiling. Such air leaks may cause dew drops.

Aller trial ageration is complete use the clustructions for Userland very and open money and properties to the cluster of the

#### REMOTE CONTROLLER INSTALLATION MANUAL

1. This package contains the following parts in addition to this manual. Be sure to check each parts before use.

No.	Name of parts	Parts code	Q'ty
0	Remote controller	PC/PK	1
2	Remote control cord (2-core, 16')	BB78K214G06	1
3	Wood screw (4.1×16)	Z003Z091H40	5-
<b>4</b>	Remote control cord clamp	BB25T441H01	3

NOTE: Remote controller ① consists 2 section as shown below.

Remote controller cover

When remote control cord becomes dirty clean with alcohol.

٤,

Remote controller body

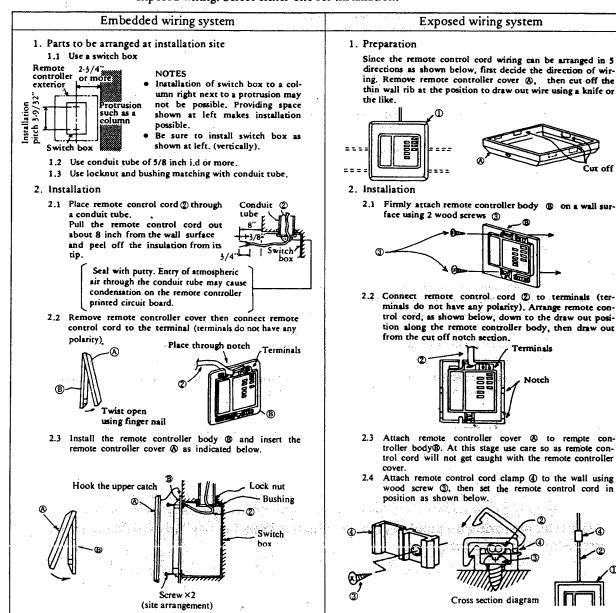
#### 2. Selection of installation position

Do not install the remote controller in any of the following.

- In a location exposed to direct sunlight. 1
- In a location near a source of heat.
- In a location susceptible to humidity and moisture.
- In a location near machines emitting high-frequency waves. (High frequency welders etc.)

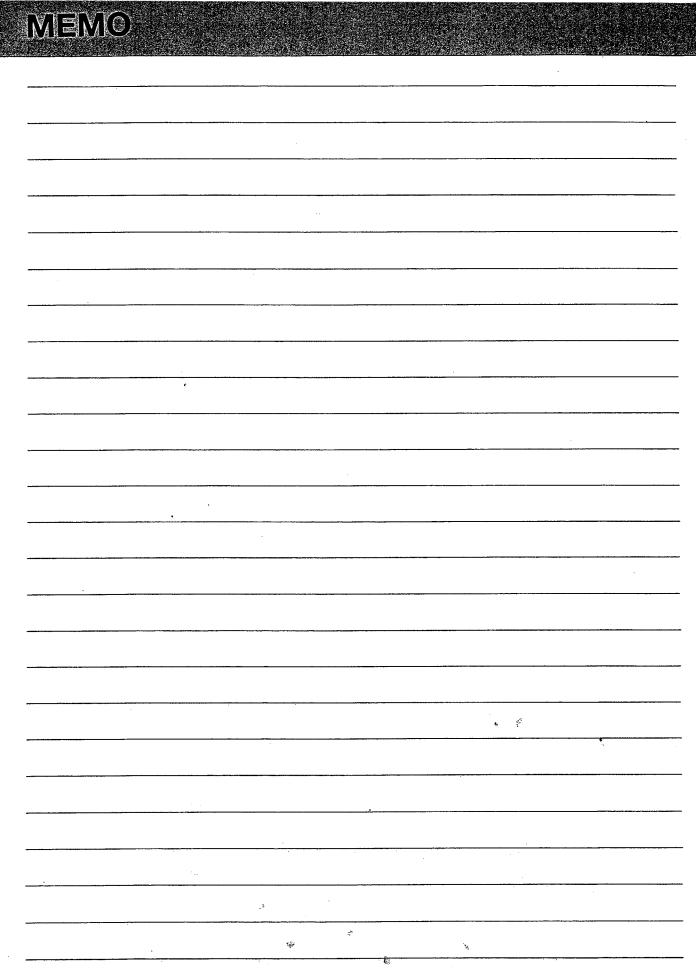
As shipped

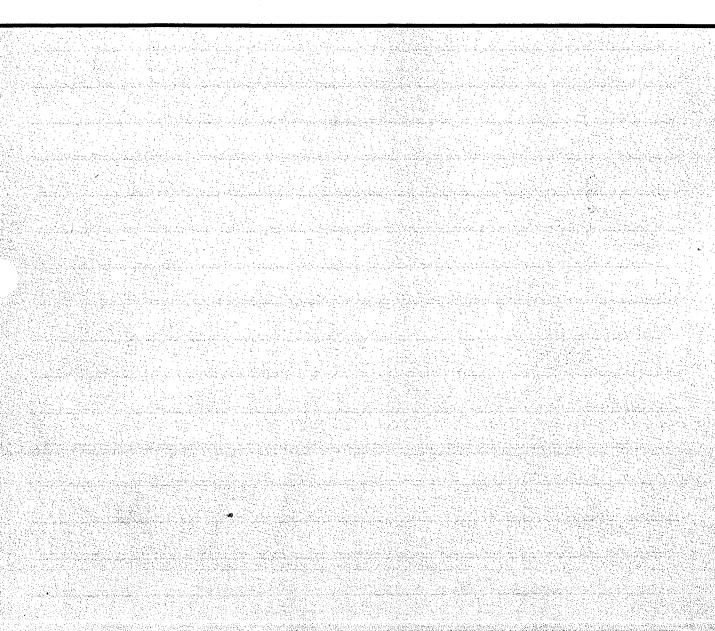
3. Installation . . . . This remote controller is designed for either embedded wiring or exposed wiring. Select either one for installation.





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## MITSUBISHI ELECTRIC CORPORATION HEAD OFFICE MITSUBISHI DENKI BLDG MARUNOUCHI TOKYO 100 TELEX J24532 CABLE MELGO TOKYO

BA79A973H03 Printed in Japan

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No. OC256 REVISED EDITION-B

## **TECHNICAL & SERVICE MANUAL**

Series PK Wall Mounted

[Models] PK18FL, PK12FK1 PK24FL, PK18FK1 PK30FL, PK24FK1 PK36FL, PK30FK1 PK36FK<sub>1</sub>

Series PC Ceiling Suspended

[Models] PC24EK1 PC30EK<sub>1</sub> PC36EK<sub>1</sub> PC42EK<sub>1</sub>

Series PL Ceiling Cassettes

[Models] PL12AK, PL12FK1 PL18AK, PL18FK21 PL24AK, PL24FK21 **PL30AK, PL30FK21 PL36AK**, **PL36FK3**1 PL42AK, PL42FK21

#### **CONTENTS**

······OC185-1
·····OC196-1
······OC192-1
······OC246-1
······OC194-1

#### Revision:

•PC24EK, PC30EK, PC36EK, PC42EK are deleted. •PK12FK1, PK18FK1, PK24FK1, PK30FK1, PK36FK1, are added.

•PC24EK1, PC30EK1, PC36EK1, PC42EK1, are added

•PL12FK1, PL18FK21, PL24FK21, PL30FK21, PL36FK31, PL42FK21 are added.







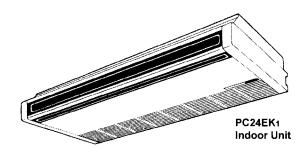


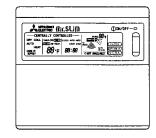


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### **FEATURES**





Microprocessor Remote controller

Cooling capacity	SEER
24,000 Btu/h	10.3
31,000 Btu/h	10.4
36,500 Btu/h	10.2
42,500 Btu/h	10.0
	31,000 Btu/h 36,500 Btu/h

#### 1. ADVANCED MICROPROCESSOR CONTROL

- (1) Easy to use Microprocessor (remote controller)
  - 1) Ultra-Thin Remote Controller

The streamlined, square controller is designed to blend with any kind of interior and the adoption of a sophisticated microprocessor allows you to carry out a wide range of operations easily.

- 2) Attractive Liquid Crystal Display (LCD)
  - Units operation mode, set temperature, room temperature, timer setting, fan speed, louver operation, and air flow direction are displayed on the remote controller with the easily understood visual Liquid Crystal Display (LCD).
- 3) Convenient 24-Hour ON-OFF Timer

The timer allows Mr.SLIM to be switched on and off automatically at the time you set. Once the timer is set, the remaining time is shown on the LCD.

- 4) Self-Diagnostic Feature Indicates Faults Instantly
  - In the rare case when a problem occurs, the unit stops operating and the set temperature indicator changes to the self-diagnostic indicator, indicating the location of the fault.
  - If the check switch is pressed twice, the unit stops operating and the check mode is initiated. The cause of the most recent problem stored in the memory is displayed on the LCD. This is extremely useful for maintenance purposes.
- 5) Useful Memory Feature for Storing Instructions

The previous set value is memorized so that constant temperature control can be obtained. This is convenient when, for example, a power failure occurs.

#### (2) Non-polar Two-Wire Remote Controller Cables

The non-polar, two-wire type remote controller cable is slim, installation is simple and trouble-free. Remote controller wire can be extended up to 550 yards.

#### 2. INNOVATIVE SYSTEM CONTROL BY MICROPROCESSORS

The most significant feature of the series PC-EK is the advanced microprocessor system control. Behind the development of this system is the recent world-wide trend in the air conditioning of larger buildings, away from centralized duct systems in favor of a large number of individual split type units. There are a number of reasons for this: first, costly, troublesome duct installation is eliminated; second, the overall air conditioning balance is excellent; and third, operation cost is low since flexible control of each unit is possible. This system control was developed exclusively by Mitsubishi in the light of this demand. Microprocessor control makes possible individual control, group control, control using two remote controllers, remote on/off control and individual control without troublesome modifications to the equipment.

#### (1) Individual Control by Gathering Remote Controllers

A Series PC-EK unit is installed in each room, and the remote controller are gathered together in separate location, where each unit is controlled individually.

Each remote controller is connected to its indoor unit by non-polar 2-wire cable to eliminate the possibility of mis-wiring. Separation can e as much as 550 yards, making this type of control extremely easy to implement. Thermistors in the indoor unit maintain each room at its own individually set temperature.

#### (2) Group Control by a Single Remote Controller

In an application requiring a number of air conditioner units in a large area on a single floor, up to 50 units can be centrally controlled using a single remote controller. The remote controller controls Power ON-OFF, set temperature, fan speed, swing louver ON-OFF timer, and auto vane position of all units of the group. Obviously, if all the units started simultaneously, the surge current would be unacceptably high. Therefore the microprocessor board of each indoor unit has a 8-toggle DIP switch that can be programmed to give sequential starting with up to 50 seconds delay. When the switch of the remote controller is pressed, master unit comes on immediately, followed by the other units in the programmed order. Thereafter the thermistor in each indoor unit controls compressor operation to keep the room at the set temperature. The remote controller is connected to the indoor units by non-polar 2-wire cable. Total cable length can be as much as 550 yards. This system can be applied to the air conditioning of large offices or conference rooms, supermarkets, etc.

#### (3) Control Using Two Remote Controllers

Two remote controllers can be used to control either one unit or several units in group control. This makes it possible to control units with ease either from a distance or at close range. Units operate according to the latest commands from either remote controller.

#### (4) Both Remote ON/OFF Control and Individual Control

All units can be turned on and off simultaneously using the remote ON/OFF switch, and also individual units can be controlled from the remote controllers.

This system is well suited to buildings having a large number of rooms. In offices, for example, all units can be started together to cool or heat the premises before workers arrive, operated as necessary by individual remote controllers during the day, and stopped together at the end of business.

#### 3. REDI-CHARGED REFRIGERANT SYSTEM

When refrigerant tubing is 100ft or less, it is unnecessary to charge additional refrigerant. This can contribute to enhance installation quality and reduce installation time.

#### 4. MAXIMUM COMFORT AIR CONDITIONING

#### (1) Indoor Unit Chargeable Air Outlet

PC-EK series have changeable air outlet.

Downward air flow can be obtained at an angle up to 30. Upward air flow at angle of 10- is able to stretch cool air in a room. This function enables comfortable air distribution.

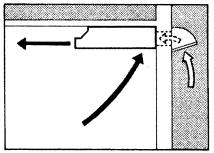
#### (2) Swing Flow Louvers

The swing Flow Louvers automatically change the air flow direction for desirable air distribution.

#### (3) Fresh-Air Intake

The PC-EK series also has fresh air intake, providing more comfortable, healthful air conditioning through better ventilation. The rear panel has a knock-out for the intake of fresh air.





## 5. STABLE COOLING EVEN AT OUTDOOR TEMPERATURES AS LOW AS 23-F MAKES YEAR-ROUND AIR-CONDITIONING POSSIBLE

The microprocessor automatically adjusts fan speed in accordance with outdoor temperature to maintain the coolant at an even condensing temperature. The result is smooth, efficient cooling even when temperatures outdoors drop as low as 23-F.

This makes the unit ideal for a wide range of specialized cooling needs, such as rooms with many office machines or computers and areas subject to strong sunlight.

#### 6. DRAIN PUMP FOR EASY PIPE CONNECTION (Option)

This mechanism, with its capacity to raise drain water 20" above the ceiling line, is convenient for removing water and avoiding piping contact with beams, etc.

Note: This can not be mounted in the unit.

#### 7. SLIM, COMPACT AND SPACE SAVING

#### (1) Space Saving Design

Because the PC-EK series indoor units are designed to be suspended from the ceiling, valuable floor space and wall surfaces are not used. The unit is only 7-11/16" high and 50-7/16" wide (PC24EK).

The outdoor units are also slim line, with a depth dimension of only 11-5/8" (PU24EK).

#### (2) Flush-To-The-Wall Installation

Since the units in the PC-EK series are installed flush against the back wall, connection pipes are hidden. This gives the room a touch of sleek sophistication.

#### 8. EASY INSTALLATION

Installation is simple, thanks to the easy-connection refrigerant lines. As all outdoor units are charged for 100' of line set and tested at the factory, there's no need for special on-site work.

The indoor unit is easy to mount and requires only a minimum of wiring, saving your time, labor, and money.

#### 9. HIGH RELIABILITY AND EASY SERVICING

In addition to the self-diagnostic function, units are also equipped with a 3-minute time delay mechanism, an auto restart function, an emergency operation function, a test run switch, etc., to assure high reliability and easy servicing.

#### 10. ECONOMICAL AND EFFICIENT OPERATION

- Mitsubishi exclusive LCD indicators show the temperature selected and the current room temperature. This system ensures full protection against excessive cooling.
- The Mitsubishi Electric split-type air-to-air PC models feature highly precise compressors with large-capacity heat exchangers for efficient operation.

#### 11. NITROGEN GAS IS CHARGED TO INDOOR UNIT

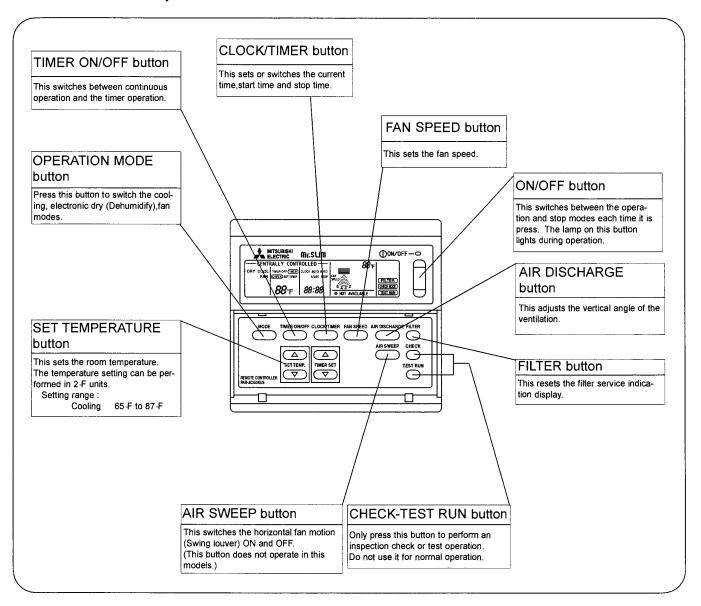
Indoor units of this series are changed with nitrogen gas (N2) instead of (R22) before shipment from the factory.

## PART NAMES AND FUNCTIONS

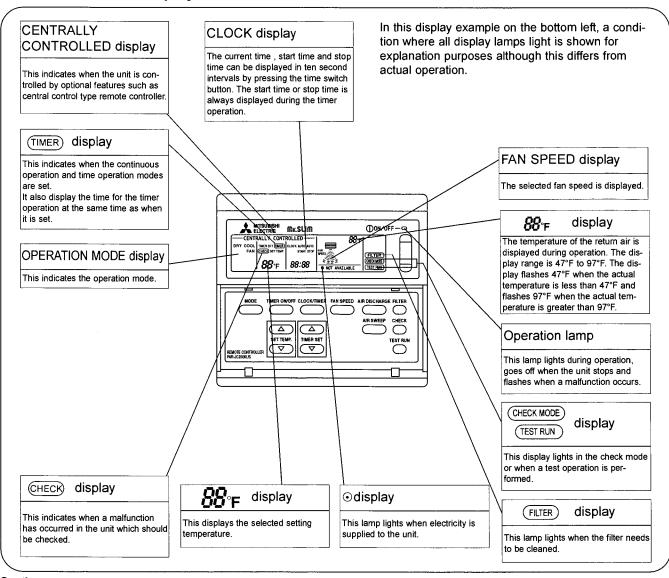
#### Remote controller

Once the controls are set, the same operation mode can be repeated by simply pressing the ON / OFF button.

#### Remote controller operation buttons



#### Remote controller display



#### Caution

Only the @isplay lights when the unit is stopped and power supplied to the unit.

When power is turned ON for the first time the (CENTRAL CTRL) display appears to go off momentarily but this is not a malfunction. When the central control remote control unit, which is sold separately, is used the ON-OFF button, OPERATION MODE button and SET TEMP. button do not operate.

"NOT AVAILABLE" is displayed when the AIR DISCHARGE button are pressed.

(AIR DISCHARGE function is not provided for PC series.)

## **SPECIFICATIONS**

#### MODELS: PC24/30/36/42EK1



		Model								
		Model	PC24EK1	PC30EK1	PC36EK <sub>1</sub>	PC42EK <sub>1</sub>				
Item										
Capacity	業1 Btu/h 業1 kW		24,000	31,000	36,500	42,500				
Power consumption	※ 1	kW	2.43	3.10	3.80	4.40				
ER ※1			9.9	10.0	9.6	9.7				
SEER			10.3	10.4	10.2	10.0				
INDOOR UNIT MODE	<u>EL</u>		PC24EK1	PC30EK1	PC36EK1	PC42EK <sub>1</sub>				
External finish				Munsell 2.5	Y 8/0.3 & N2					
Power supply		nase, Hz		115,	1, 60					
Max. fuse size (time o	lelay)	Α	15	15	15	15				
Min ampacity		A	3.0	3.0	3.0	3.0				
Fan motor		F.L.A.	1.8	1.8	2.1	2.4				
Airflow Hi-Lo	Dry	CFM	1,050-850	1,050-850	1,270-990	1,270-990				
Allilow Fil-Lo	Wet	CFM	900-730	900-730	1,100-860	1,100-860				
Moisture removal		Pints/h	7.2	9.6	11.1	12.6				
Sound level Hi-Lo		dB	50-43	50-43	52-44	52-44				
Unit drain pipe OD.		in.	1	1	1	1				
	W	in.	50-7	7/16	62	-1/4				
Dimensions	D	in.	26-1	3/16	26-13/16					
	Н	in.	10-	1/8	10-1/8					
Weight		lb	9	3	115					
OUTDOOR UNIT MO	DEL		PU24EK1	PU30EK1	PU36EK1	PU42EK2				
External finish			Munsell 5Y7/1							
Power supply	V, PI	nase, Hz	208/230, 1, 60							
Max. fuse size (time of	lelay)	Α	20	30	30	40				
Min. ampacity		Α	16	20	22	27				
Fan motor		F.L.A	0.65+0.65	0.65+0.65	0.75+0.75	0.8+0.8				
	Model		NH33NBD	NH41NAD	NH47NAD	NH569NXA				
Compressor		R.L.A	11.5	14.0	17.5	20				
		L.R.A	54	73	87	105				
Crankcase heater		A(W)	016/0.17 (33/39)	0.16/0.17 (33/39)	0.16/0.17 (33/39)	0.16/0.17 (33/39)				
Refrigerant control		`			ry tube					
Sound level		dB	55	55	55	56				
	W	in.	T	1/4		3/16				
Dimensions	D	in.	11-	5/8		9/16				
	Н	in.	<del></del>	9/16		9/16				
Weight		Ib.	207	208	220	260				
REMOTE CONTROL	_ER				door unit					
Control voltage (by bu	ilt-in transform	er)	Indoor	unit - remote controller : DC1		: DC12V				
REFRIGERANT PIPI		<del></del>			optional parts)					
	Liquid	in.	3/8		1/2					
Pipe size	Gas	in.	5/8		3/4					
	Indoors			Fla	red					
Connection method	Outdoors				ired					
Between the indoor	Height	ft								
& outdoor units	Piping length									
			P. 67°EWP outdoor : 06°EDI		UT					

NOTES: \* 1.Rating conditions —indoor: 80°FDB, 67°FWB outdoor: 95°FDB,75°FWB.

#### Operating range

		Indoor intake air temperature	Outdoor intake air temperature
Cooling	Maximum	95°FDB, 71°FWB	115°FDB
Cooming	Minimum	67°FDB, 57°FWB	0°FDB *

In case of the wind baffle is installed.
(In case of the wind baffle is not installed, the minimum temperature will be 23°FDB.)

## DATA

#### MODELS: PC24/30/36/42EK1 1. PERFORMANCE DATA

#### 1) COOLING CAPACITY

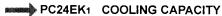
		Indoor a	ir						Outdo	or intake	air DB t	emperat	ure(°F)					
	Models	Airflow (CFM) B.F	IWB		75			85			95			105			115	
					(°F)	TC	SHC	TPC	TC	SHC	TPC	TC	SHC	TPC	TC	SHC	TPC	TC
			71	27.8	15.6	2.10	20.7	15.4	2.30	25.8	15.1	2.49	24.8	14.9	2.70	23.6	14.6	2.90
<b>→</b>	PC24EK <sub>1</sub>	900	67	26.2	18.3	2.05	25.2	17.9	2.24	24.0	17.5	2.43	23.2	17.2	2.62	22.2	16.8	2.82
		0.14	63	24.5	20.4	2.00	23.6	19.9	2.19	22.8	19.5	2.37	21.8	19.0	2.56	20.8	18.5	2.75
		900	71	35.9	17.7	2.67	34.5	17.3	2.90	33.1	16.9	3.18	31.7	16.6	3.45	30.2	16.1	3.73
	PC30EK <sub>1</sub>		67	33.3	21.1	2.60	32.3	20.6	2.82	31.0	20.1	3.10	29.6	19.5	3.35	28.2	19.0	3.62
	0.1	35	63	31.2	23.8	2.55	30.2	23.2	2.78	29.0	22.6	3.02	27.6	21.8	3.28	26.2	21.1	3.55
			71	42.3	21.6	3.23	40.9	21.2	3.53	39.3	20.7	3.88	37.5	20.3	4.25	35.7	19.8	4.62
	PC36EK <sub>1</sub>	<u>1,100</u> 0.12	67	39.3	25.5	3.18	37.9	24.9	3.46	36.5	24.3	3.80	34.9	23.7	4.13	33.3	23.1	4.49
		0.12	63	36.7	28.6	3.12	35.5	28.0	3.38	33.9	27.1	3.70	32.5	26.4	4.03	31.0	25.5	4.38
Ī			71	50.2	23.8	4.00	48.2	23.2	4.25	45.8	22.6	4.55	43.5	21.9	4.85	41.1	21.2	5.25
	PC42EK1	1,100 0.12	67	46.4	28.5	3.90	44.6	27.7	4.15	42.5	26.8	4.40	40.3	25.9	4.70	38.1	25.0	5.00
		37.12	63	43.3	32.2	3.80	41.5	31.2	4.00	39.5	30.1	4.25	37.3	28.9	4.50	35.1	27.6	4.75

Notes 1. B.F.: Bypass Factor, IWB: Intake air wet-bulb temperature
TC: Total Capacity (x10° Btu/h), SHC: Sensible Heat Capacity (x10° Btu/h)
TPC: Total Power Consumption (kW)
2. SHC is based on 80°FDB of indoor intake air temperature.

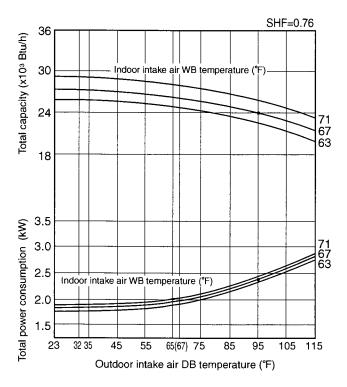
	MODEL	Refrigerant piping length (one way)											
-	WODEL	25ft (std)	40ft	55ft	70ft	85ft	100ft	115ft	130ft	150ft	164ft		
	PC24EK1	1.0	0.981	0.968	0.952	0.940	0.925	0.913	0.900	0.886	0.874		
	PC30EK <sub>1</sub>	1.0	0.981	0.986	0.952	0.940	0.925	0.913	0.900	0.886	0.874		
-	PC36EK1	1.0	0.981	0.968	0.952	0.940	0.925	0.913	0.900	0.886	0.874		
	PC42EK1	1.0	0.975	0.955	0.935	0.918	0.900	0.884	0.869	0.855	0.840		

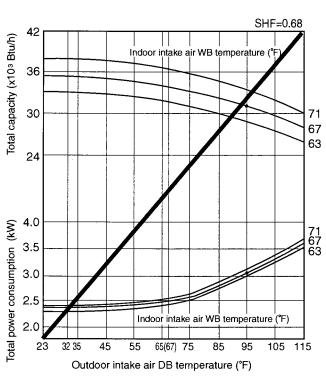
#### 2. PERFORMANCE CURVE

NOTES: A point on the curve shows the reference point.

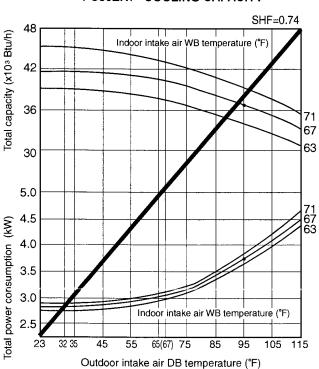


#### PC30EK1 COOLING CAPACITY

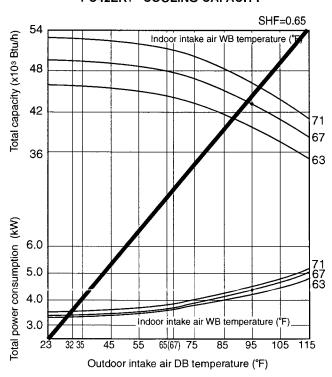




#### PC36EK1 COOLING CAPACITY



#### PC42EK1 COOLING CAPACITY



#### 3. CONDENSING PRESSURE AND SUCTION PRESSURE

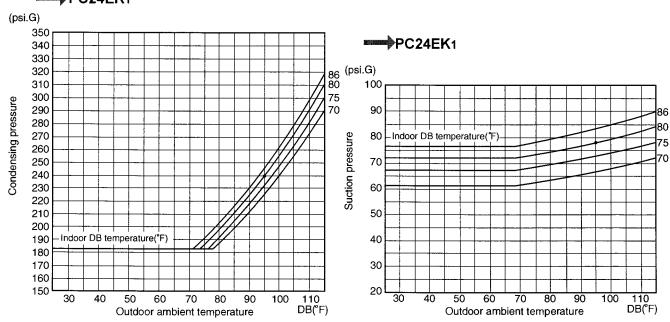
Data is based on the condition of indoor humidity 50%.

Air flow should be set at HI.

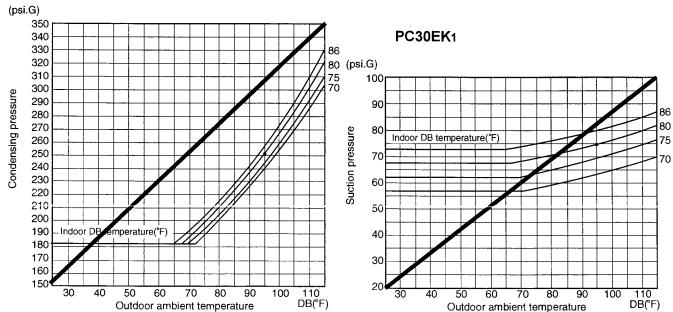
A point on the curve shows the reference point.

#### < Cooling mode>

#### PC24EK1



#### PC30EK1



### 4. STANDARD OPERATION DATA



Model				PC24	EK1	PC3	0EK1	PC3	6E <b>K</b> 1	PC4	-2EK1	
Item			Unit	Cool	ing	Cod	oling	Cod	ling	Cod	oling	
Total	Capacity	Btu / h	24,0	00	31,	000	36,500		42,500			
	SHF	_	0.7	6	0.68		0.74		0.65			
O SHF Input			kW	2.4	3	3	.1	3	.8	4	1.4	
	INDOOR UNIT MODEL			PC24	EK1	PC3	0EK1	PC3	6EK1	PC4	-2EK1	
	Power supply (V, phase, Hz)	)		115, 1	, 60	115,	1, 60	115,	1, 60	115,	1, 60	
	Input		kW	0.2	2	0	.2	0.	22	0.	.26	
ircui	Fan current		Α	1.8	3	1	.8	2	.1	2	2.4	
Electrical circuit	OUTDOOR UNIT MODEL			PU24	EK1	PU3	0EK <sub>1</sub>	PU3	6EK1	PU4	2EK2	
Electr	Power supply (V, phase, Hz)	)		208/230	, 1, 60	208/23	0, 1, 60	208/23	0, 1, 60	208/23	30, 1, 60	
"	Input		kW	2.2	3	2	.9	3.	58	4.	.14	
:	Comp. current		Α	11.	5	14	1.0	17	'.5	20.0		
	Fan current		Α	0.65+0	0.65	5 0.65+0		0.75+0.75		0.8+0.8		
	Condensing pressure		psi-G	237		236		2!	50	2	37	
<u>#</u>	Suction pressure		psi-G	78		7	5	8	1	7	71	
circu	Discharge temp.		°F	158		16	67	10	35	168		
erant	Condensing temp.		°F	113		113		1	17	1	13	
Refrigerant circuit	Suction temp.		°F	49		46		5	0	46		
ш.	Ref. pipe length		ft	ft 25		25		25		25		
	Refrigerant charge		_	9 lbs 1	5 oz	10 lbs 2 oz		10 lbs 9oz		12 lbs 9oz		
	Intake air temperature	DB	°F	80	)	8	0	8	0	8	30	
Φ	intake all temperature	WB	°F	67		6	7	67		6	67	
r sid	Discharge air temperature	DВ	°F	60	•	5	7	5	9	5	56	
Indoor side	Discharge an temperature	WB	°F	58		5	5	5	7	5	55	
_	Fan speed (High)		rpm	1,41	10	1,4	110	1,4	190	1,4	490	
	Airflow (High)		CFM	900	o	90	00	1,1	00	1,	100	
e e	Intake air temperature	DB	°F	95		9	5	95		95		
or siç	mano an temperature	WB	°F	_		_	_	_	_	-	_	
Outdoor side	Fan speed upper / lower		rpm	750	750	750	750	760	760	840	840	
	Airflow		CFM	3,17	70	3,1	70	3,350		3,350		

#### **OPERATING RANGE**

#### 1) POWER SUPPLY

	Rating	Allowable voltage
Indoor unit	115V 1 phase 60Hz	Min. 103V — Max. 127V
Outdoor unit	208/230V 1 phase 60Hz	Min. 198V — Max. 253V

#### 2) OPERATION

Function	Intake air temperature	Inc	loor	Outdoor		
Function	Condition	DB (°F)	WB (°F)	DB (°F)	WB (°F)	
	Standard temperature	80	67	95	75	
Cooling	Maximum temperature	95	71	115	75	
Cooling	Minimum temperature	67	57	23	_	
	Maximum humidity	80	75	80	75	

#### 6. OUTLET AIR SPEED AND COVERAGE RANGE

			PC24EK1 PC30EK1	PC36EK1	PC42EK1	
Standard	Airflow	(CFM)	1,050	1,270		
height	Air speed	(ft / sec.)	17.0	16.5		
(8.2ft)	Coverage range	(ft)	43	4	18	

<sup>1</sup>The air coverage range is the value up to the position where the air speed is 0.8ft/sec. when air is blown out horizontally from the unit at the High fan setting.

The coverage range should be used only as a general guideline since it varies according to the size of the room and furniture installed inside the room.

### 7. ADDITIONAL REFRIGERANT CHARGE (R22 (OZ))

Model	Outdoor unit precharged (up to 100ft)	Refrigerant piping length (over way)									
		25ft	40ft	55ft	70ft	85ft	100ft	115ft	130ft	150ft	164ft
PC24EK1	9 lbs 15 oz	0	0	0	0	0	0	2	4	7	9
PC30EK <sub>1</sub>	10 lbs 2 oz	0	0	0	0	0	0	5	10	16	20
PC36EK1	10 lbs 9 oz	0	0	0	0	0	0	5	10	16	20
PC42EK1	12 lbs 9 oz	0	0	0	0	0	0	5	10	16	20

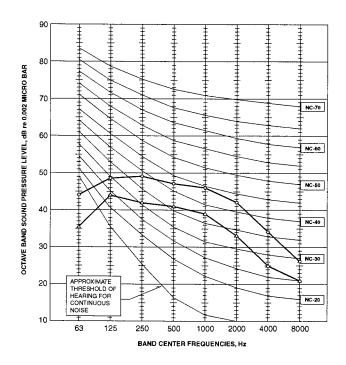
#### 8. NOISE CRITERION CURVES

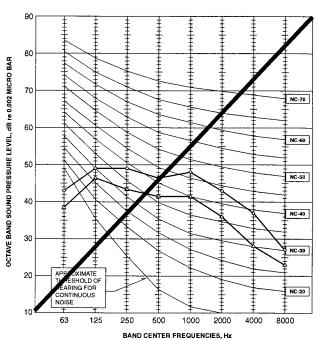
#### PC24EK<sub>1</sub>

NOTCH	SPL(db(A))	LINE
Hi	50	$\stackrel{\circ}{\longrightarrow}$
Lo	43	ΔΔ

#### PC36EK<sub>1</sub>

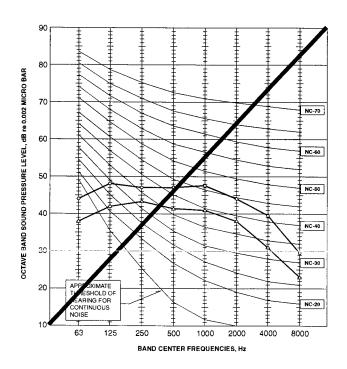
NOTCH	SPL(db(A))	LINE
Hi	51	<b>~</b>
Lo	45	ΔΔ

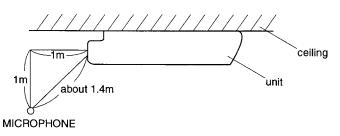




#### PC42EK<sub>1</sub>

NOTCH	SPL(db(A))	LINE
Hi	51	$\stackrel{\circ}{\longrightarrow}$
Lo	45	ΔΔ





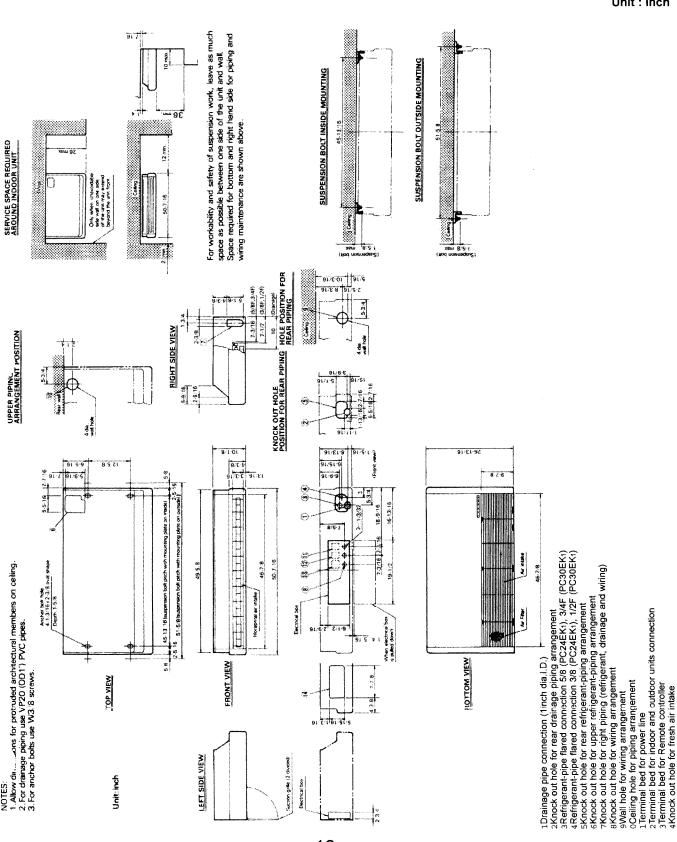
Ambient temperature 80°F

Test conditions are based on JIS Z8731

# **OUTLINES AND DIMENSIONS**

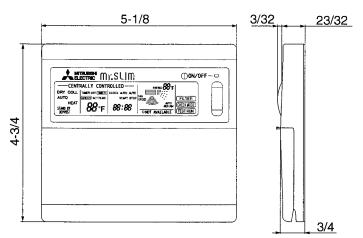
#### door Unit PC24EK1

Unit: inch



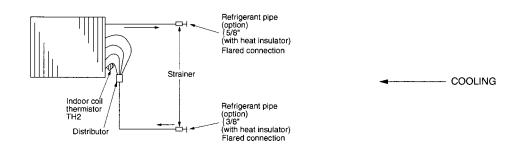
Unit: inch

#### Remote controller

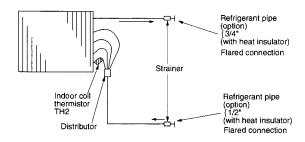


7 REFRIGERANT SYSTEM DIAGRAM

#### PC24EK1



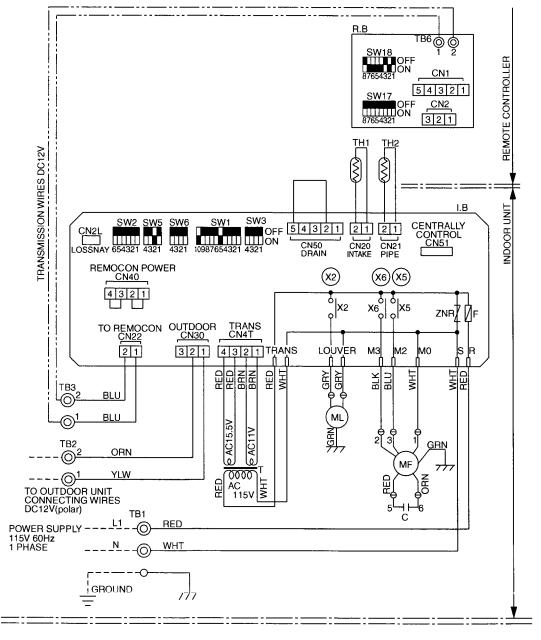
#### PC30/36/42EK1



## WIRING DIAGRAM

## MODELS PC24EK1)PC30EK1 PC36EK1 PC42EK1 WIRING DIAGRAM

SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
С	FAN MOTOR CAPACITOR	R.B	REMOTE CONTROLLER BOARD	TB1~6	TERMINAL BLOCK
CN1 <r.b></r.b>	PROGRAM TIMER CONNECTOR	SW1 <i.b></i.b>	MODE SELECTOR SWITCH	TH1	ROOM TEMPERATURE
CN2 <r.b></r.b>	REMOTE SWITCH CONNECTOR	SW2 <i.b></i.b>	ADDRESS SELECTOR SWITCH		THERMISTOR(32°F/15k", 77°F/5.4k")
CN51 <i.b></i.b>	CENTRALLY CONTROL CONNECTOR	SW3 <i.b></i.b>	EMERGENCY OPERATION SWITCH	TH2	PIPE TEMPERATURE
CN2L <i.b></i.b>	LOSSNAY CONNECTOR	SW5 <i.b></i.b>	MODEL SELECTOR SWITCH		THERMISTOR(32°F/15k", 77°F/5.4k")
F <i.b></i.b>	FUSE (6A)	SW6 <i.b></i.b>	MODEL SELECTOR SWITCH	X2 <i.b></i.b>	LOUVER MOTOR RELAY
I.B	INDOOR CONTROLLER BOARD	SW17 <r.b></r.b>	ADDRESS SELECTOR SWITCH	X5 <i.b></i.b>	FAN MOTOR RELAY
MF	FAN MOTOR (INNER THERMOSTAT)	SW18 <r.b></r.b>	FUNCTION SELECTOR SWITCH	X6 <i.b></i.b>	FAN MOTOR RELAY
ML	LOUVER MOTOR	T	TRANSFORMER	ZNR	VARISTOR



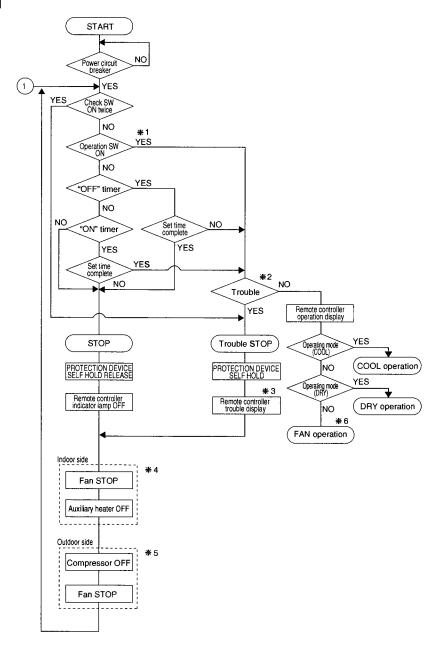
- 1. Since the outdoor side electric wiring may change be sure to check the outdoor unit electric wiring for servicing.
- 2.Indoor and outdoor connecting wires are made with polarities, make wiring matching terminals.

  3.Symbols used in wiring diagram above are, ③:Terminal block, ①, ☐ ☐ :connector, ☐ :PC board insertion tab.
- 4.Emergency operation

If a trouble occurs with either the remote controller or the indoor microcomputer and no other trouble exists, emergency operation for cooling can be performed by changing the setting of dip switch (SW3(I.B)) on the indoor controller board (emergency dry operation is not possible).

## **OPERATION FLOW-CHART**

#### MAIN OPERATION



- 1 In addition, the centralized and remote control can be operated.
- 2 The modes which indicate the sources of trouble are listed below.

E0=Signal transmitting/receiving error

P1=Room temperature thermistor malfunction

P2=Indoor coil thermistor malfunction

P4=Drain sensor malfunction

P5=Drain over flow

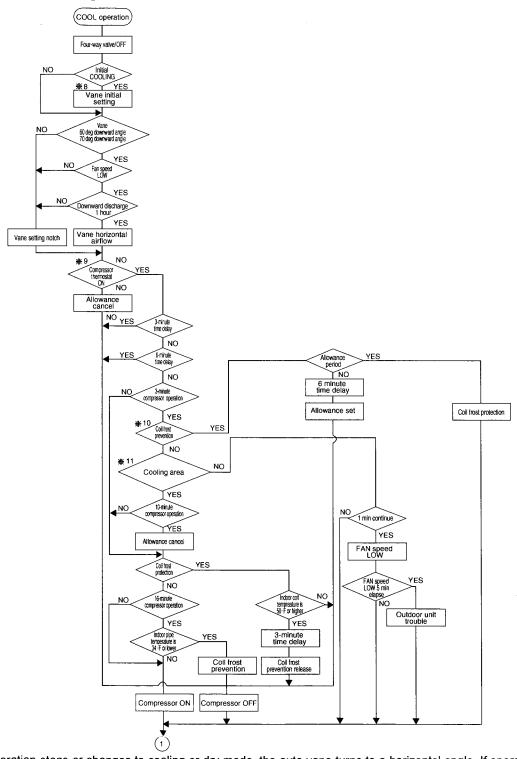
P6=Coil frost/overheat protection

P7=System error

P8=Outdoor unit trouble

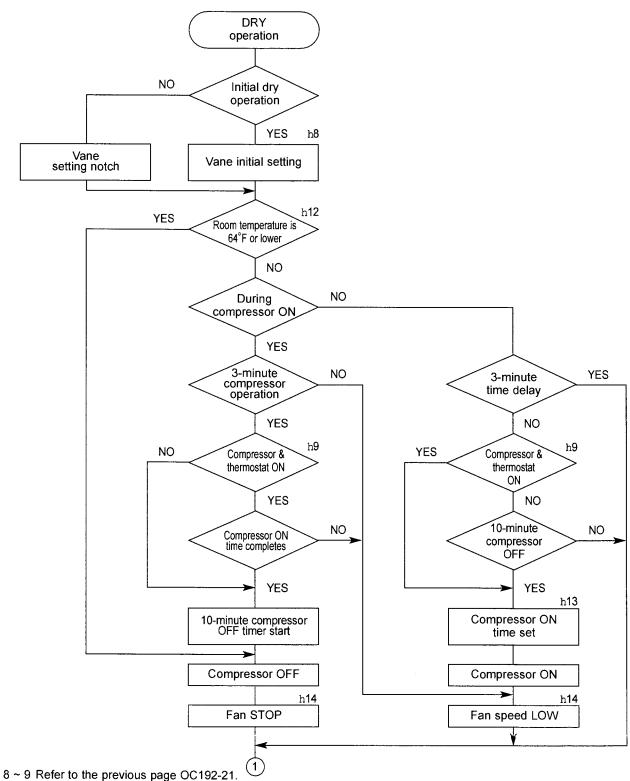
- 3 The CHECK switch will show if an error has occurred in the past.
- 4 Fan runs on low speed for 1 minute in order to remove overheat air.
- 5 The 3-minute (6 minutes ··· heating mode) time-delay functions after compressor stops.
- 6 FAN or AUTO mode is selected by the indoor dip switch setting.
- 7 In FAN mode, fan speed and vane operation depend on the remote controller setting. (Compressor is OFF.)

#### **COOLING OPERATION**



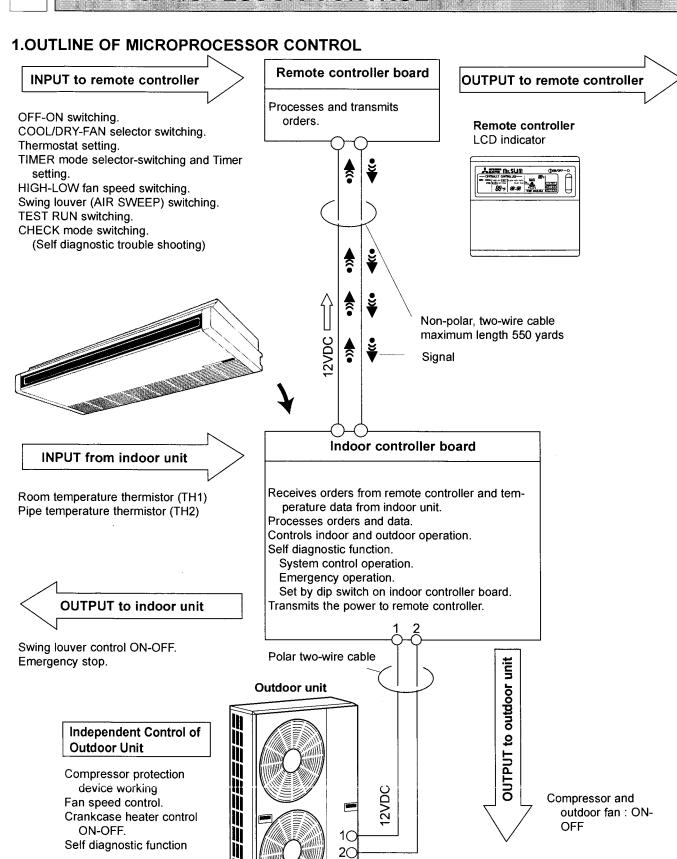
- 8 When operation stops or changes to cooling or dry mode, the auto vane turns to a horizontal angle. If operation changes during auto vane SWING, the auto vane will continue to swing.
- 9 When operating TEST RUN, the thermostat will be continuously ON.
- 10After 3 minute compressor operation, if the indoor coil thermistor reads -5°F or below for 3 minutes, the compressor will stop for 6 minutes.
- 11Cooling area: Indoor coil temperature is more than 5 degrees above the room temperature.
  - Heating area: Indoor coil temperature is more than 5 degrees below the room temperature.
  - FAN area: Indoor coil temperature is within 5 degrees either way of the room temperature.

#### **DRY OPERATION**



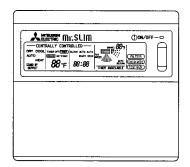
- When room temperature is 64°F or below, the compressor cannot operate.
  - When room temperature rises over 64°F, the compressor starts after a 3-minute time delay.
- 13 Compressor ON time is decided by room temperature. Refer to page OC192-27
- In dry operation, compressor ON makes the fan speed LOW and compressor OFF stops the fan. It is not possible to set the fan speed with the remote controller

## MICROPROCESSOR CONTROL



#### 2. INDOOR UNIT CONTROL

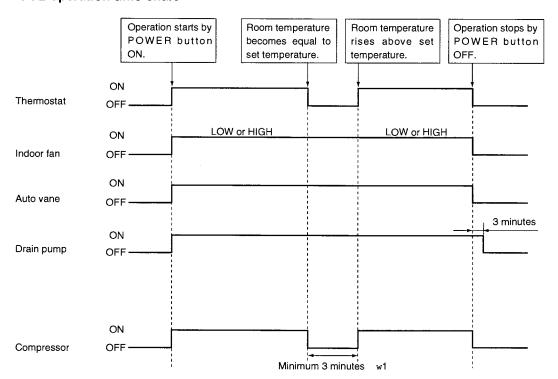
#### 2-1 COOL operation



#### <How to operate>

- 1 Press POWER ON/OFF button.
- 2 Press the MODE button to display COOL.
- 3 Press the SET TEMP. button to set the desired temperature. NOTE: Set temperature changes 2°F when the SET TEMP. button is pressed one time. Cooling 65 to 87°F.

#### <COOL operation time chart>



w1 Even if the room temperature rise above the set temperature during this period, the compressor will not start until this period has ended.

#### (1) Compressor control

- 1 3-minute time delay
  - To prevent overload, the compressor will not start within 3 minutes after stop.
- 2 The compressor runs when room temperature is higher than set temperature.
  - The compressor stops when room temperature is equal to or lower than the set temperature.
  - The compressor maintains the previous state when the room temperature minus the set temperature is 0 degrees or more, or lower than 2 degrees.
- 3 The compressor stops in check mode or during protective functions.
- 4 Coil frost prevention
  - To prevent indoor coil frost, the compressor will stop when the indoor coil thermistor (TH2) reads 34°F or below after the compressor has been continuously operated for at least 16 minutes or more. When the indoor coil temperature rises to 50°F or above, the compressor will start in a 3-minute(w2) time delay.
  - w2 When the indoor coil temperature is 30°F or less, the compressor starts in 6 minutes.
- NOTE: By turning OFF the dip switch SW1-3 on indoor controller board, the start temperature of coil frost prevention changes from 34°F to 36°F.

#### 5 Coil frost protection

When indoor coil temperature becomes 5°F or below, coil frost protection will proceed as follows.

#### <Start condition>

After the compressor has been continuously operated for 3 minutes or more, and the indoor coil temperature has been 5°F or below for 3 minutes, the coil frost protection will start.

#### <Coil frost protection>

Compressor stops for 6 minutes, and then restarts.

If the start condition is satisfied again during the first 10 minutes of compressor operation, both the indoor and outdoor units stop, displaying a check code of "P6" on the remote controller.

#### <Termination conditions>

Coil frost protection is released when the start condition is not satisfied again during the allowance, or when the COOL mode stops or changes to another mode.

#### (2) Indoor fan control

Indoor fan speed LOW/HIGH depends on the remote controller setting.

However, if an outdoor unit abnormality is detected, the indoor fan speed will be LOW, regardless of the remote controller

- (i) Fan speed LOW/HIGH depends on the remote controller setting regardless of the thermostat ON/OFF.
- (ii) Fan speed will remain on LOW if an abnormality in outdoor unit is detected. (5 minutes)

NOTE: Fan stops immediately if the unit stops or the check mode is started.

#### (3) Auto vane control

#### (1) Frequency judgement

When the unit operates for the first time after the circuit breaker turned to ON, the frequency, 50Hz or 60Hz, is judged by the horizontality sensing switch. If the frequency cannot be judged immediately for some reason, the sensing operation continues for 10 minutes with the vane motor at ON.

If the frequency cannot be judged yet after 10-minute sensing, the vane motor turns to OFF. But the AIR DISCHARGE DIRECTION display continues to be indicated.

#### (2) During cooling operation

When the cooling operation starts, the horizontal discharge is automatically set. However, the desired discharge among four modes below-listed can be selected with the AIR DIS-CHARGE UP/DOWN button on the remote controller.

1100%-horizontal discharge

260%-downward and 40%-horizontal discharge

380%-downward and 20%-horizontal discharge

4100%-downward discharge

NOTE: Discharge 2 is available only when the fan speed is HIGH.

<AUTO RETURN>

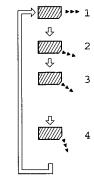
When discharge "3" or "4" continues for 1 hour with the fan speed at LOW, the discharge direction turns to the horizontal discharge automatically.

NOTE1: After that, the discharge "3" or "4" is available by setting with the remote controller, and it continues for 1 hour.

NOTE2: If the discharge direction changes from "3" or "4", the direction returns to the horizontal discharge when 1 hour has passed since the discharge "3" started.

NOTE3: If the discharge direction changes from "3" (or "4") to the horizontal discharge, the AIR DISCHARGE 1-hour timer to return the horizontal discharge is canceled at that time.

<Remote controller display>



Changes by pushing the UP/DOWN button:

- (3) During the operation OFF, the auto vane is in the horizontal position.
- (4) When the vane motor is out of order or the connector is badly connected, the air discharge display of the remote controller continues.

#### (4) Detecting abnormalities in the outdoor unit

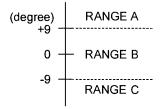
After the compressor has been continuously operated for 3 minutes, if the difference between the indoor coil temperature and room temperature is out of RANGE C for 1 minute, the indoor fan speed will turn to LOW. Five minutes later, if the difference is still out of RANGE C, the outdoor unit is functioning abnormally. Thus, the compressor stops and check code "P8" appears on remote controller.

RANGE A: Indoor coil temperature is more than 9 degrees above room temperature.

RANGE B: Indoor coil temperature is within 9 degrees either way of room temperature.

RANGE C: Indoor coil temperature is more than 9 degrees below room temperature.

Indoor coil temperature minus room temperature



#### (5) Drain pump control

The drain pump works in COOL or DRY operation. The drain pump does not work in check mode.

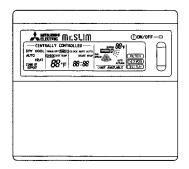
#### <Drain sensor>

When both the drain pump and unit are operating, the drain sensor detects the temperature. This temperature tells whether the drain water level is above or under the drain sensor. If the drain water level rises above the drain sensor due to a drain pump malfunction, the unit will stop operating in order to prevent drain from overflowing. The check code "P5" on the remote controller will display this occurrence.

#### (6) Dew prevention heater

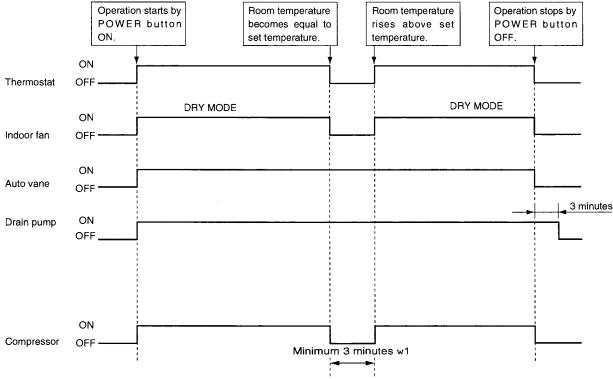
To prevent dew from accumulating on the grille, the dew prevention heater is continuously ON during COOL operation. It is independent of the thermostat ON/OFF.

#### 2-2 DRY operation



- <How to operate>
  1 Press POWER ON/OFF button.
- 2 Press the MODE button to display "DRY"
- 3 Press the SET TEMP. button to set the desired temperature. NOTE: The set temperature changes 2°F when the SET TEMP. button is pressed one time. Dry 64 to 86°F

#### <DRY operation time chart>



w1 Even if the room temperature rises above the set temperature during this period, the compressor will not start until this period has ended.

#### (1) Compressor control

- 1 3-minute time delay
  - To prevent overload, the compressor will not start within 3 minutes after stop.
- 2 The compressor runs when room temperature is higher than set temperature.
  - The compressor stops when room temperature is equal to or lower than the set temperature.
  - The compressor maintains the previous state when the room temperature minus the set temperature is 0°F or more, or lower than 2°F.
- 3 The compressor stops in check mode or during protective functions.

- 4The compressor will not start when the room temperature is 64°F or below.
- The compressor starts intermittent operation when the power is turned ON with room temperature above 64°F. The compressor ON/OFF time depends on the thermostat ON/OFF and the following room temperatures. After 3-minute compressor operation,
- If the room temperature thermistor reads above 85°F with thermostat ON, the compressor will operate for 6 more minutes and then stop for 3 minutes.
- If the room temperature thermistor reads 79°F~82°F with thermostat ON, the compressor will operate for 4 more minutes and then stop for 3 minutes.
- If the room temperature thermistor reads 75°F~79°F with thermostat ON, the compressor will operate for 2 more minutes and then stop for 3 minutes.
- If the room temperature thermistor reads below 75°F with thermostat ON, the compressor will stop for 3 minutes.
- If the thermostat is OFF regardless of room temperature, the compressor will stop for 10 minutes.
- 5Coil frost protection
- Coil frost protection in DRY operation is the same as in COOL operation.
- 6Coil frost prevention
  - Coil frost prevention does not operate in DRY operation.

#### (2) Indoor fan control

The indoor fan runs on LOW speed during compressor operation. The fan speed cannot be changed with the remote controller. Also, the indoor fan does not run during compressor OFF.

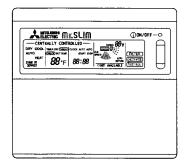
#### (3) Auto vane & drain pump controls

Same as in COOL operation

#### (4) Detecting abnormalities in the outdoor unit

An abnormality in the outdoor unit can not be detected in DRY operation.

#### 2-3 Auto vane control



#### <How to operate>

To change the air flow direction, press AIR DISCHARGE button.

1	2	3	4
100% horizontal	60% downward and 40% horizontal	80% downward and 20% horizontal	100% downward

#### (1) Frequency judgement

When the unit operates for the first time after the circuit breaker turned to ON, the frequency, 50Hz or 60Hz, is judged by the horizontality sensing switch. If the frequency cannot be judged immediately for some reason, the sensing operation continues for 10 minutes with the vane motor at ON.

If the frequency cannot be judged yet after 10-minute sensing, the vane motor turns to OFF. But the AIR DISCHARGE DIRECTION display continues to be indicated.

#### (2) During cooling operation

When the cooling operation starts, the horizontal discharge is automatically set. However, the desired discharge among four modes below-listed can be selected with the AIR DIS-CHARGE UP/DOWN button on the remote controller.

1100%-horizontal discharge

260%-downward and 40%-horizontal discharge

380%-downward and 20%-horizontal discharge

4100%-downward discharge

NOTE: Discharge 2 is available only when the fan speed is HIGH.

<AUTO RETURN>

When discharge "3" or "4" continues for 1 hour with the fan speed at LOW, the discharge direction turns to the horizontal discharge automatically.

NOTE1: After that, the discharge "3" or "4" is available by setting with the remote controller, and it continues for 1 hour.

NOTE2: If the discharge direction changes from "3" or "4", the direction returns to the horizontal discharge when 1 hour has passed since the discharge "3" started.

NOTE3: If the discharge direction changes from "3" (or "4") to the horizontal discharge, the AIR DISCHARGE 1-hour timer to return the horizontal discharge is canceled at that time.

Changes by pushing the UP/DOWN button:

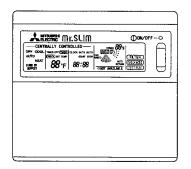
<Remote controller display>

小

(3) During the operation OFF, the auto vane is in the horizontal position.

(4) When the vane motor is out of order or the connector is badly connected, the air discharge display of the remote controller continues.

# 2-4 TIMER operation WIRED REMOTE CONTROLLER

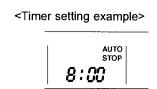


#### <Timer function>

AUTO STOP ......The air conditioner stops after the set time lapses. AUTO START ......The air conditioner starts after the set time lapses. AUTO OFF ......Timer is not active.

#### <How to operate>

- 1. Press POWER ON/OFF button.
- Press "TIMER ON/OFF" button to select AUTO STOP or AUTO START.
- Press "CLOCK/TIMER" button to set desired time.
   Time setting is in 1 hour units for up to 24 hours.
   Each time TIMER SET button is pressed, set time increases by 1 hour. When TIMER SET button is pressed and held, the set time increases by 1 hour every 0.5 seconds.
- 4. To cancel the timer operation, press POWER ON/OFF button.



This setting will stop the operation in 8hours. With the lapse of time, time display changes in 1hour units, showing remaining time.

#### 2-5 Test run

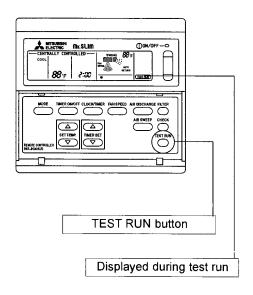
#### <Before test run>

After installing, wiring, and piping the indoor and outdoor units, check for refrigerant leakage, looseness in power supply or control wiring, and mistaken polarity.

Use a 500-volt measure to check the resistance between the power supply terminal block and ground to make sure that it is at least 1.0M?

#### Attention:

Do not use the air conditioner if resistance is less than 1.0M'.



#### <How to operate>

- 1. Turn ON main breaker.
- Press TEST RUN button twice. "TEST RUN" is displayed on remote controller.
- Select "COOL" with MODE button to check that cool air is beginning discharged.Select "HEAT" with MODE button to check that warm air is
- beginning discharged.(after a while)

  4. Select LOW/HIGH with FAN SPEED button to check that the fan
- speed changes properly.
- 5. Press AIR DISCHARGE button to check auto vane operation.
- 6. Check outdoor fan operation.
- 7. Check compressor operation referring to the indoor coil temperature code displayed on the remote controller.
- 8. After checking, press the ON/OFF button.

·The test run works for 2 hours and stops automatically. To cancel the test run, press ON / OFF button or TIMER ON / OFF button.

#### (1) Indoor coil temperature code

During the test run, the indoor coil temperature code from 1 to 15 is displayed on the remote controller instead of room temperature. The code should fall with the lapse of time in normal COOL operation, and should rise in normal HEAT operation.

Code	1	2	3	4	5	6	7	8
Indoor coil temperature	-40~34°F	~50°F	~59°F	~68°F	~77°F	~86°F	~95°F	~104°F
Code	9	10	11	12	13	14	15	
Indoor coil temperature	~113°F	~122°F	~131°F	~140°F	~158°F	~194°F	Thermistor abnormality	

#### (2) Trouble during test run

If the unit malfunctions during the test run, refer to section 10 in this manual entitled "TROUBLESHOOTING." 1When the optional program timer is connected to the conditioner, refer to its operating instructions.

#### 2-6 Emergency operation

When the remote controller or microprocessor malfunctions but all other parts are normal, emergency operation is started by setting the dip switch SW3 on the indoor controller board.

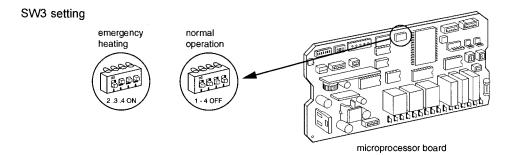
#### <Before emergency operation>

- 1. Make sure the compressor and the indoor fan are operating normally.
- 2. Locate the defect with the self-diagnostic function. When the self-diagnostic function indicates "protective function is working", release the protective function before starting the emergency operation.

CAUTION: When the self-diagnostic function indicates a check code of "P5" (drain pump malfunction), DO NOT start the emergency operation because the drain may overflow.

#### <How to operate>

1. For emergency cooling, set the dip switch SW3-1 to ON and SW3-2 to OFF.



- Turn ON the outdoor unit breaker and then ON the indoor unit breaker. Emergency operation will now start.
- 3. During emergency operation, the indoor fan operates on high speed, the auto vanes do not operate.
- 4. To stop emergency operation, turn OFF the indoor unit breaker.
- 5. Movements of the vanes do not work in emergency operation, therefore you have to slowly set them manually to the appropriate position.

NOTE: The remote controller POWER ON/OFF button can not start/stop emergency operations.

CAUTION: Do not use emergency cooling for more than 10 hours, as the indoor coil may freeze.

#### 3 DIP SWITCH FUNCTIONS

Each figure shows the initial setting by factory.

#### 3-1 On remote controller board

(1) SW17(Address selector)

8 7 6 5 4 3 2 1 OFF ON

SW17-1 ~ 6) Switch for address setting

SW17-7) When two remote controllers are used, this switch sets the controller function.

OFF: The remote controller is set as a main controller.

ON: The remote controller is set as a sub controller.

SW17-8) Switch for system back-up

This switch is not available for series PC.

(2) SW18 (Model selector)

SW18-1) Switch for timer mode setting

OFF : Single day

ON: Timer every day

SW18-2) Switch for filter sign display

OFF: Filter sign absent ON: Filter sign present

SW18-3) Switch for filter sign time setting

OFF: 100Hr

ON: 2500Hr

SW18-4) Switch for temperature unit

OFF: -C (Celsius)

ON: -F (Fahrenheit)

SW18-5) Switch for HEAT display

This switch is not available PC

SW18-6) Switch for auto vane display

OFF: Auto vane display present

ON: Auto vane display absent

SW18-7) Switch for swing display

OFF: Swing display present

ON: Swing display absent

SW18-8) Switch for louver display

OFF: Louver display present ON: Louver display absent

#### 3-2 On indoor controller board

(1) SW1 (Mode selector)

10 9 8 7 6 5 4 3 2 1 OFF ON

SW1-1) Switch to change over between FAN mode and AUTOMATIC COOLING-HEATING CHANGE OVER mode OFF: Fan mode for cooling-only models including series PC.

ON: AUTOMATIC COOLING-HEATING CHANGE OVER mode for heat pump models.

SW1-2) Switch to change over louver display

OFF : Swing ON : Rotary

SW1-3) Switch for auto vane

OFF: Unit without auto vane

ON: Unit with auto vane

SW1-4) Switch for drain pump(Drain lift-up mechanism)

OFF: The drain pump works in only cooling mode.

ON: The drain pump works in both cooling and heating mode. (For heat pump models)

SW1-5) Switch to change the temperature to start coil frost prevention

OFF: 36\_F (For previous special models)
ON: 34\_F (For For all current models)

- SW1-6) Switch for set temperature adjustment in heating mode This is not available for series PC.
- SW1-7) Switch for fan speed during thermostat OFF in heating mode This is not available for series PC.
- SW1-8) Switch for fan motor operation in heating mode This is not available for series PC.
- SW1-9) Switch for outdoor unit abnormality detection OFF: When abnormality occurs, it is detected

OFF: When abnormality occurs, it is detected.
ON: Even if abnormality occurs, it is not detected.

SW1-10) Switch for AUTO RESTART FUNCTION OFF: This function does not work.

ON: This function works.

(2) SW2 (Address selector)

6 5 4 3 2 1 OFF ON

Use SW2 to set unit-address for group control.

(3) SW3 (Emergency operation switch)

Normal operation(initial setting) For emergency cooling

0FF 0N 4 3 2 1

4 3 2 1 OFF U

(4) SW5 (Model selector)



SW5-1) OFF: For models without automatic swing mechanism

ON: For models with automatic swing mechanism

SW5-2) OFF: For models with heating mode and cooling mode

ON: For models with only cooling mode including PC

SW5-3) Not yet used

SW5-4) OFF : LOSSNAY on air intake
ON : LOSSNAY air intake

(5) SW6 (Model selector)



SW6 is set on site for twin/triple control. This switch is not available for series PC

#### **4 INDOOR FAN CONTROL**

Indoor fan relay output.

(a) During fan ON

The indoor fan relay turns ON. One second later, the phase control will start.

(b) During fan OFF

The phase control turns OFF. One second later, the indoor fan relay will turn OFF.

11

# TROUBLE SHOOTING

## 1. REMOTE CONTROLLER DISPLAY ABNORMALITY

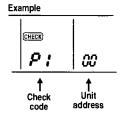
Display abnormality	Cause	Check points		
The display "centrally controlled" on remote controller does not disappear.	Wrong address setting of remote controller/indoor controller board.     Timer adapter is connected to the remote controller.     Signal transmission error between indoor unit and remote controller.	<ol> <li>Check the address setting of remote controller and indoor controller.</li> <li>Check if the timer adapter is used correctly.</li> <li>Turn another remote controller's DIP SW17 7 ON to make it sub controller.</li> <li>Connect the sub controller to the unit, and turn circuit breaker ON.</li> <li>If the display "centrally controlled" disappears replace the original remote controller.</li> <li>If the display remains the same, replace the indoor controller board.</li> </ol>		
When remote controller POWER switch is turned to ON, the check code "E0" appears.	Signal transmission error between indoor unit and remote controller	1) 1 Connect a sub remote controller. 2 Turn circuit breaker ON. If the display "centrally controlled" remains, replace the indoor controller board. 3 If the display disappears, turn the remote controller POWER switch ON and check as follows.		
		Remote controller Sub remote controller Malfunction		
		1 Operating Display E0 Display Malfunction of Indoor Unit		
		2 Operating Display Operating Display Malfunction of Remote controller		
		3 No Display E0 Display Malfunction of Indoor Unit and Remote Controller		
		4 No Display Operating Display Malfunction of Remote controller		
When remote controller POWER switch is turned to ON, operating display appears, but disappears soon.	Short circuit of indoor/outdoor connecting wire     Short circuit of transmission wire.     Wrong operation of remote controller due to noise wave emitted by other appliances.	1), 2) Check the wire     3) Turn the circuit breaker OFF, and then turn ON.  If the remote controller remains abnormal, despite the above measures, replace the indoor controller board.		
Despite turning POWER switch ON, the remote controller display does not appear.	1) Damaged remote controller. 2) Short circuit of transmission wire. 3) Bad contact of indoor CN40. 4) CN40 is attached to a sub unit. 5) Damaged transformer. 6) Bad contact of CN4T. 7) Broken fuse. 8) Circuit breaker OFF.	1) Measure the voltage between terminals of remote controller. If no voltage, remove the terminals and measure the voltage between wires. If the voltage is between 6VDC and 12V, replace the remote controller.  2) ~ 8) Check each point.  If normal, replace the indoor controller board.		

#### 2. SELF DIAGNOSTIC FUNCTION WITH REMOTE CONTROLLER

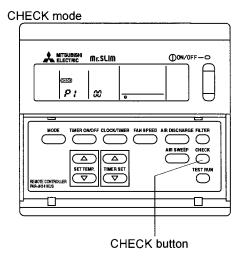
#### 2-1 When malfunction occurs during operation

When a malfunction occurs, the indoor and outdoor units stop and the malfunction is displayed on the LCD of the remote controller.

(1) ON the set temperature display part, "CHECK" appears, and the unit address and the check code are displayed at one-second intervals. (Check mode)



- (2) When one remote controller controls several units in the group control, the LCD shows the unit address and check code of the first malfunctioning unit.
- (3) To cancel the check mode, press the power ON/OFF button.



**NOTE**: The latest check code is memorized, even if the check mode is cancelled by the way mentioned above. It takes 60 seconds maximum to display the memorized check code.

#### 2-2 How to use the self diagnostic function for service

#### A. For normal control with one unit and one remote controller

- (1) Pressing the CHECK button on the remote controller twice starts the self diagnostic function.
- (2) During the self diagnostic function, "CHECK" appears at two positions on the remote controller display. Then, at least 10 seconds later, the unit address and the check code is displayed at one-second intervals.
- (3) Check and repair the unit according to the check code. (Refer to the next page.)

#### 2-3 For group control using one remote controller

- (1) Press the SET TEMP. button on the remote controller to advance or go back to the unit address. Each time SET TEMP.

  button is pressed, the unit address advances by one. Each time SET TEMP. button is pressed, the unit address goes back by one.
  - The check code and the unit address, appear will be displayed.
- (2) The check code "U8" means no malfunction has occurred since installation.
  - The check code "EO" means the following conditions:
  - 1The unit address displayed on the remote controller does not apply to any unit.
  - 1power is not supplied to the unit.
  - 1Signal transmitting / receiving circuit is abnormal.
- (3) Check and repair the unit according to the check code. (Refer to the next page.)

Check code	Diagnosis of malfunction	Cause	Check points
E0	Signal transmitting/receiving error Indoor controller does not respond to remote controller signal.	During individual unit control  1) Bad contact of transmission wire  2) Signal transmitting/receiving circuit is abnormal.	1) Check the transmission wire. 2) Check with another remote controller. If "E0" is still indicated, replace the indoor controller board. If other check code appears. replace the former remote controller.
P1	Abnormality of room temperature thermistor (TH1 or RT1)	Bad contact of thermistor     Damaged thermistor	1) Check the thermistor. 2) Measure the resistance of the thermistor. If normal, it should be as follows. 32-F····15k' 86-F····4.3k'
P2	Abnormality of pipe temperature thermistor (TH2 or RT2)		50-F····9.6k' 104-F····3.0k' 68-F····6.3k' If is normal, replace the indoor controller board.
P3	Signal transmission error (Remote controller does not respond to indoor controller signal.)	Bad contact of transmission wire     Signal transmitting/receiving circuit is abnormal.     Wrong operation of remote controller due to infrared signal from other appliances	1) Check the transmission wire. 2) Check with another remote controller. If "P3" is still indicated, replace the indoor board. If other check code appears, replace the original remote controller. 3) Short-circuit between 1 and 2 of CN40 and attach CN40 to the following units. 1Second unit in twin control 1Second and third units in triple control 1Sub units in group control
P4	Abnormality of drain sensor	Bad contact of transmission wire     Damaged thermistor	1) Check the connector. 2) Measure the resistance of the thermistor 4 - 5. As for the normal resistance, refer to the case P1. If normal, replace the indoor controller board.
P5	Malfunction of drain pump	Malfunction of drain pump     Damaged drain sensor	1) Check the drain pump. 2) 1Check the drain sensor. 1Check the drain sensor heater. If normal, its resistance should be 82? If normal, replace the indoor controller board.
P6	Coil frost protection has worked.	1) Short cycle of air cycle 2) Dirty air filter 3) Damaged fan 4) Abnormal refrigerant	1) Clear the obstructions from the air cycle. 2) Clean the air filter 3) Check the fan. 4) Check the refrigerant temperature.
P7	System error	Wrong address-setting     Signal transmitting/receiving circuit of remote controller is abnormal.     Wrong SW6-setting	1) Check the address-setting. 2) Check with another remote controller. If check code other than "P7" appears, replace the original remote controller. 3) Check SW6 setting.
	Signal transmission error In twin/triple control, the first unit has not received signal from the second unit or the third unit for 5 minutes.	Bad contact of transmission wire     Wrong operation due to infrared signal from other appliances	1) Check the transmission wire. 2) Short-circuit between 1 and 2 of CN40 and attach CN40 to the following unit. 1Second unit in twin control 1Second and third units in triple control 1Sub units in group control
P8	Abnormality in outdoor unit	Wrong wiring of indoor/outdoor connecting wire     Reversed phase     Protection device has worked     Damaged outdoor coil thermistor	1) Check the indoor/outdoor connecting wire. 2) Change the connection of electric wiring. 3) Check the detail of the protection device. 4) Measure the resistance of the pipe temperature thermistor. If normal, replace the outdoor controller board.

#### 3. WRONG WIRING ON SITE

#### 3-1 Between remote controller and indoor unit

If the wire is disconnected between the remote controller and the indoor unit, nothing is displayed on the remote controller when the POWER button is pressed. The beep sound will also not be heard.

#### 3-2 Phenomenon due to wrong wiring between indoor and outdoor units

Wrong wiring	Thermostat	Phenomenon
Indoor Outdoor	OFF	Operation stops.
1 0 1 2 0 2 3 0 3	ON	4-Way valve is turned to ON. 9 minutes later, the check code "P8" appears on the remote controller display.
Indoor Outdoor	OFF	The outdoor unit stops.
2 0 2 3	ON	Operation stops. 9 minutes later, the check code "P8" appears on the remote controller display.
Indoor Outdoor	OFF	The outdoor unit stops.
1 0 1 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	ON	Operation stops. 9 minutes later, the check code "P8" appears on the remote controller display.
Indoor Outdoor	OFF	The outdoor unit stops.
1 0 1 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	ON	Operation stops. 9 minutes later, the check code "P8" appears on the remote controller display.
Indoor Outdoor	OFF	The outdoor unit stops.
1 0 2 3	ON	Operation stops. 9 minutes later, the check code "P8" appears on the remote controller display.
Disconnection between 1 and 1 or 2 and 2.	OFF	Operation stops.
	ON	9 minutes later, the check code "P8" appears on the remote controller display.
Disconnection between 3 and 3.	OFF	Normal operation.
	ON	- Normal operation.

#### 4. OTHER TROUBLES AND CAUSES

vanes do not work.	Vane motor does not wor Limit switch does not wor Connector is badly conne Vane motor is badly asse Indoor controller board is	k. — Vane more ted. — Limit sw mbled. — Size of	otor has broken. otor relay has broken. ritch has broken. cam is not proper.
Unit stops after 5 to 20 seconds operation	——Protection function has bi	roken ——Refer to check of See page OC19	code on remote controller display. 92-36.
Air discharge display is OFF and air discharge UP/DOWN button is not available.  In this case, remote controller is normal.	Indoor unit is regarded as without auto vane.  Horizontal angle has not been detected.	Indoor controller has broken.  Dip switch setting is wrong.  Indoor controller has broken.  Vane motor has broken.  Vane motor limit switch is badly connected.	Vane motor limit switch has broken. Vane motor is broken.  Badly connect
Power ON/OFF switch is not available.	Beep sound is heard, but display is turned to OFF.	Auto vane is wired after power is turned to ON.  Indoor/outdoor connecting wire is wrong connected. Indoor/outdoor connecting wire shorts.	∟ Disconnected
	Beep sound is not heard, and display remains OFF.	<ul><li>Compressor protector has broken.</li><li>Deicer has broken.</li></ul>	
	—"Centrally controlled" is di	Remote controller has broken. Transmission wire is badly connected. splayed.	Transmission wire has broken.  Connector is badly connected.  Indoor terminal block is badly connected.  Remote controller terminal block is badly connected.

#### 5. How to check the parts

Parts nar	me	Check points					
Room temperathermistor	ature (TH1)	Disconnect the connector then measure the resistance using a tester. (Surrounding temperature 50-F~86-F)					
Liquid pipe		Normal	Abnormal	(Defer to the thermister)			
thermistor	(TH2)	4.3k"~9.6k"	Open or short	(Refer to the thermistor)			

# White 4 Orange 2 Red 1 5 3

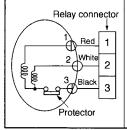
Vane motor

Measure the resistance between the terminals using a tester. (Surrounding temperature  $68-F{\sim}86-F$ )

	Normal			Abnavasi	
Connector	24EK1	30EK1 36,42EK1		Abnormal	
Red — Yellow					
Red — Blue	186~214"	140~160"	140~160"	Open or short	
Red — Orange					
Red — White					

#### Fan motor

Measure the resistance between the terminals using a tester.



Motor terminal		Normal		
_ or		PC	Abnormal	
Relay connector	24EK1	30EK1	36,42EK1	
Red-Black	45.0"	45.0"	20.4"	Open or short
White-Black	44.8"	44.8"	20.7"	Open of short

#### <Thermistor Characteristic graph>

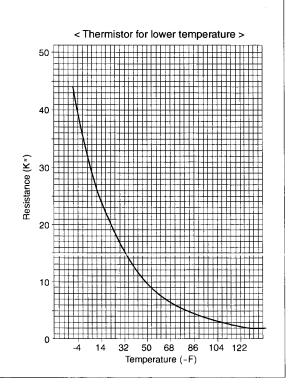
Thermistor for lower temperature

Room temperature thermistor(TH1) Liquid pipe thermistor(TH2)

Thermistor R<sub>0</sub>=15k'± 3% Fixed number of B=3480k'± 2%

Rt=15exp { 
$$3480(\frac{1}{273+\{(t-32)/1.8\}} - \frac{1}{273})$$
 } 32°F 15k'

50°F 9.6k′ 68°F 6.3k′ 77°F 5.2k′ 86°F 4.3k′ 104°F 3.0k′



#### 1. VARIETY OF SYSTEM CONTROL FUNCTIONS

1 Group control by a single remote con- troller (See page OC192-41.)	Unit Unit Unit Remote controller	A number of units, installed at different locations can be started and controlled with a single remote controller. The remote controller can be mounted in a different location using a non-polar two-wire cable, which can be extended up to 550 yards. A maximum of 50 units are controllable by a single remote controller. All units operate in the same mode.
2 Control using two remote controllers (See page OC192-42.)	Unit Unit Unit  Remote controller	Two remote controllers can be used to control either one unit or several units in group control. This enables to control units with ease either from a distance or close rang. Units operate according to the latest command from either remote controller.
3 Both remote ON/ OFF and individ- ual controls (See page OC192-42.)	Optional adapter Relay box  Hemote Remote Controller switch	All units can be turned on or off simultaneously using the remote ON-OFF switch. Besides each unit can be controlled individually by each remote controller. During remote ON-OFF control, a message of "CENTRALLY CONTROLLED" is displayed on the LCD of the remote controller. This method is available for both one unit control and several units control.
4 Individual control by grouping remote controllers (See pageOC192- 43.)	Remote controller	By grouping the controllers to one place, several units installed at different locations can be controlled individually, and operation conditions of all units are visible without a special control board. Control method is the same as that of the single unit with a single remote controller.
5 Multiple remote control display (See page OC192-44.)	Remote control display board controller	Several units can be controlled by remote control display board. Operation conditions of all the units are visible with the remote control display board. Individual control by each remote controller is also available.
6 AUTO RESTART FUNCTION (See page OC192-44.)	Circuit breaker  Remote controller	Units can be started or stopped by circuit breaker on or off.  Remote controller is also available.  By this function, when the power is restored after power failure, the unit restarts automatically.

#### 2. GROUP CONTROL BY A SINGLE REMOTE CONTROLLER

A maximum of 50 units can be started in order according to the dip switch settings

#### 2-1 How to wire

- (1) Connect the remote controller to the double terminal block on the indoor controller board of the master unit, that is, No.0 unit. (See Figure 1.)
- (2) Connect the double terminal block of the master unit to the double terminal block of No.1 unit.
- (3) Connect the double terminal block of No.1 unit to the double terminal block of No.2 unit.
- (4) Continue the process until all the units are connected with two-wire cables. (See Figure 2.)
- (5) Remove the connector CN40 from the indoor controller board of each unit except the master unit. (See Figure 3.)
- (6) Set the unit-address of each unit with SW2 on the indoor controller board following the instructions below.

#### 2-2 How to set unit-address

The unit-address also serves as a successive-start timer which starts each unit at intervals of 1 second. If two or more units have the same unit-address in a group control, operation stops due to system error. Be sure to set SW2 correctly following the instructions below.

(1) Each lever of SW2 shows the number as follows.

SW2-1:1

SW2-4:8

SW2-2:2

SW2-5 : 16

SW2-3:4

SW2-6:32

- (2) Total number of levers turned to ON shows the address of the unit.
  - If you turn ON SW2-1 and SW2-2, the unit-address is set as No.3.
- (3) In this way, set from the. master unit to the last unit. Do not forget to set the master (No. 0) unit.

#### Figure 1

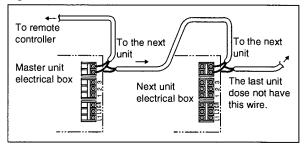


Figure 2

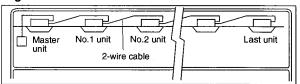
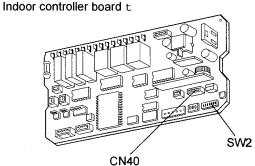


Figure 3



Disconnect CN40 (Except master unit)

#### Setting examples

	Master (No. 0) unit	No. 1 unit	No. 2 unit	No. 4 unit	No. 8 unit	No. 16 unit	No. 32 unit
	ALL OFF	1 ON	2 ON	3 ON	4 ON	5 ON	6 ON
SW2	in line	FIRE	ingille.	ilell	111111	illigg.	
Unit address & start delay in seconds.	0	1	2	4	8	16	32

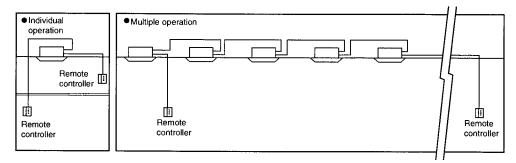
#### 2-3 Unit control

The remote controller can control all units ON/OFF, temperature, air flow, and swing louver. However, the thermostat in each unit turns to ON or OFF individually to adjust the room temperature.

#### 3. CONTROL USING TWO REMOTE CONTROLLERS

Two remote controllers are available for control of either one unit or a group of units. Units operate according to the latest command from either of the two remote controllers.

However, before operation, be sure to set one remote controller for "main controller" and the other for "sub controller", using dip switch SW17-7 of the remote controller.



#### 3-1 How to set SW17-7

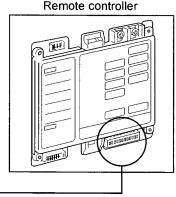
- (1) For the main remote controller, turn SW17-7 OFF. (See Figure 5.)
- (2) For the sub remote controller, turn SW17-7 ON.

#### 3-2 Remote controller LCD indication

- (1) The same indication always appear on both the main and sub remote controllers, excepting the timer operations.
- (2) Timer operation can be set with either of the two remote controllers. However, LCD indication appears only on the remote controller used for timer
- (3) If both remote controllers are set for timer operation with different time-settings, the timer operation of shorter remaining-time is effective.
- (4) Self-diagnostic function is available with either of the two remote controllers. If one of the remote controllers is used for the self-diagnostic function, the other remote controllers displays the check mode.

If the self-diagnostic function is reset by either of the two remote controllers,

both remote controllers are reset.



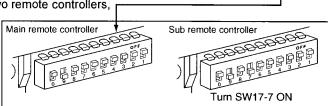


Figure 5

#### 4. REMOTE ON-OFF AND INDIVIDUAL REMOTE CONTROLS

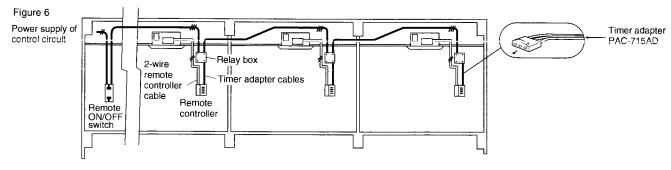
This method is available to control one unit or any number of units.

The following operations are available by connecting a relay, a timer adapter(PAC-715AD), and remote ON/OFF switch to the system. Timer adapter, (PAC-715AD), is an optional part. Other parts are on the market.

- (A) To start all units in order by remote ON-OFF switch
- (B) To stop all units simultaneously by remote ON-OFF switch
- (C) To switch from the remote ON-OFF control to the individual remote control

#### 4-1 System

Figure 6 shows the case of three units as an example. The same is the case with any number of units.



NOTE1: Install the relay box where you can be serviced easily.

NOTE2 : For control circuit wiring, use a wire of No. 14 AWG or a control cable according to the power supply of control circuit.

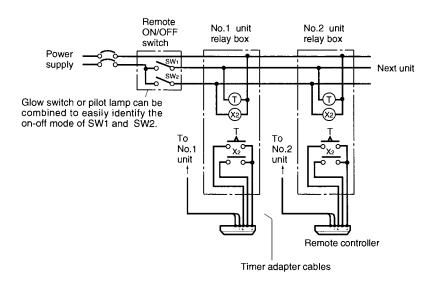
NOTE3: When the power supply of the control circuit is 115/230V AC,

Do not connect the control circuit wire to the remote controller cable directly.

Do not place the control circuit wire and the remote controller cable into the same conduit tube.

#### 4-2 Basic wiring

Caution: Before starting all units simultaneously by the remote ON-OFF switch, be sure to connect a sequence-start timer into the remote ON-OFF circuit. Otherwise, rush of starting current exert a bad influence upon the power supply.



#### 4-3 Switch function of remote ON-OFF switch

		SW (Switches between remote ON	· <del>_</del>
		ON (Remote ON-OFF control)	OFF (Individual control)
SW1 (Switches between	ON (Start)	All units start together. w 1 Individual control is not available.	Each unit can be controlled by each remote controller.
remote ON and OFF.)	OFF (Stop)	All units stop together. w2 Individual control is not available.	Remote ON-OFF switch is not available.

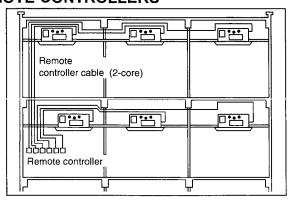
- 1 After all units start together, if SW2 is turned OFF, each unit can be individually stopped by each remote controller.
- 2 After all units stop together, if SW2 is turned OFF, each unit can be individually started by each remote controller.

#### 5. INDIVIDUAL CONTROL BY GROUPING THE REMOTE CONTROLLERS

Grouping the remote controllers allows individual control and centralized monitoring of units installed in different places without a special control board.

Remote control cables can be extended up to 550 yards. When the cable length exceeds 39 ft, use the double-insulated two-core cable such as Belden 9407, and the cable thickness must be No. 22 AWG or above.

When gathering the power ON/OFF switches of air conditioners near the remote controllers, you should also install the power ON/OFF switch near each unit to prevent electric trouble in servicing.

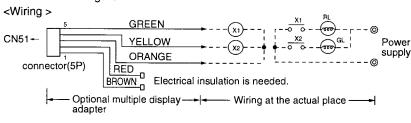


#### 6. MULTIPLE REMOTE CONTROL DISPLAY

You can control several units by a multiple remote control display, if you wire an optional multiple display adapter (PAC-725AD) with relays and lamps on the market.

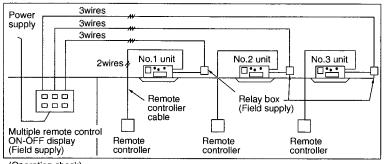
#### 6-1 How to wire

- (1) Connect the multiple display adapter to the connector CN51 on the indoor controller board.
- (2) Wire three of the five wires from the multiple display adapter as shown in the below figure.



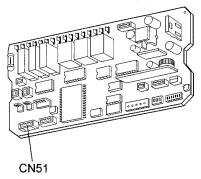
The maximum distance between indoor board and relay is 33 feet.

#### <System>



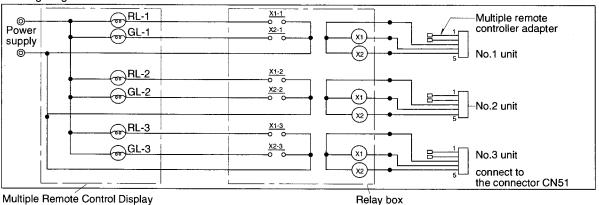
(Operation check)

#### Indoor controller board



[Notes on Signs]
X1:Relay (for check lamp)
X2:Relay (for operation lamp)
RL:Check Lamp
GL:Operation Lamp
[Field supplied parts]
Relays:DC 12V with rated coil power consumption below 0.9W.
Lamps:Matching to power supply voltage.

#### <Wiring diagram>

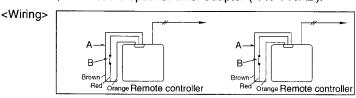


#### 7. AUTO RESTART FUNCTION

Unit can be started or stopped by power supply ON or OFF.

Therefore, after power failure, when the power is restored, the unit restarts automatically. To enable this function, turn ON the dip switch SW1-10 on the indoor controller board.

For remote control, connect the optional timer adapter (PAC-715AD).



A : an optional timer adapter

B: a single-throw switch

# DISASSEMBLY PROCEDURE

#### Indoor unit (PC24EK1)

PHOTOS&ILLUSTRATION
Figure 1  Side panel (L)  Air intake grille  Lower panel  Figure 2
Figure 3 Side panel (R)
Figure 4  Lower panel  Support bar
Photo 1  Electrical box  Clamps for fan lead

#### **OPERATING PROCEDURE**

- (4) Remove the electrical box set screws. (2 pcs) Pull down the electrical box and hang it from the rear panel using the S hooks located on the both sides of the box.
- (5) The electrical box has two covers. (R and L)
  Remove the 2 screws on the cover (R), and remove the screw on the cover (L). Then remove the box covers.
- (6) Now you can check the inside of the electrical box. (See fig. 6)

#### PHOTOS&ILLUSTRATION

#### Figure 5

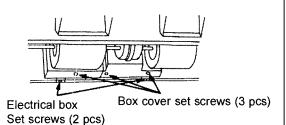
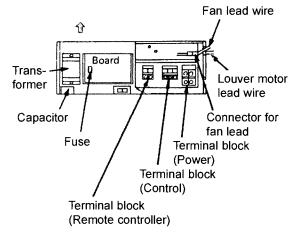


Figure 6



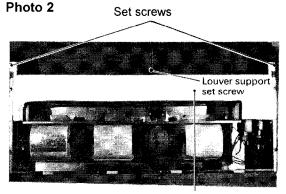
#### **OPERATING PROCEDURE**

#### 5. Removing the drain pan

After removing the lower panel:

- (1) Remove the drain pan support set screws (2 pcs)
- (2) Remove the louver support set screw. (See photo 2)
- (3) Remove the drain pan.

#### **PHOTOS**



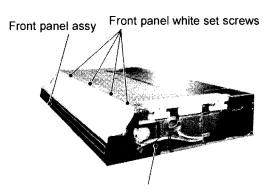
Drain pan

#### 6. Removing the front panel assembly

After removing the drain pan:

- (1) Pull the lower louver toward you and unhook the clasps. (2 points at the center)
- (2) Remove the front panel white set screws. (4 pcs)
- (3) Remove the side box set screws on the both sides. (4 screws on the side and front, 1 screw at the bottom, on each side.)
- (4) The panel assembly will be removed. (See photo 3)

#### Photo 3



Side box set screw

#### 7. Removing the louver motor

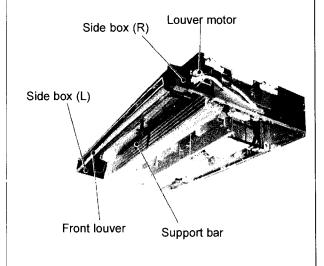
Remove only the right side panel to remove this motors.

(1) Remove setting screws of motor. (2 pcs) (See photo 5)

#### 8. Removing of the swing louver

- (1) Remove the swing louver from the joint on the right side.
- (2) Slide the louver out to the left side.

#### Photo 4



# **OPERATING PROCEDURE PHOTOS** 9. Removing the front louver (1) Pull and unhook the louver toward you. (Clasps are 5 pcs) Photo 5 Thrmistor check plate Louver motor set screw Front panel Side plate (S) Side box lower Thrmistor Right Photo 6 Swing louver Side box Front panel left lower

#### **OPERATING PROCEDURE**

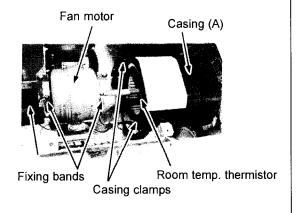
#### 10. Removing the fan motor

After remove the electrical box covers:

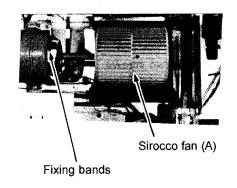
- (1) Disconnect the lead connector for fan.
- (2) Pull out the room temp. thermistor from the casing (A). (See photo 7)
- (3) Loose the shaft joint set screws (2 pcs) with a hexagonal wrench. (size 3mm).
- (4) Unhook the casing (A) by pushing. (2 points for each side)
- (5) Open about half of the casing (A) and take it out.
- (6) Loose the fixing band set screws. (1 pcs on the both sides of the fan motor.)
- (7) Remove the fixing bands.
- (8) Take out the fan motor.

#### **PHOTOS**

#### Photo 7



#### Photo 8



#### 11. Removing the room temperature thermistor

After removed the electrical box covers:

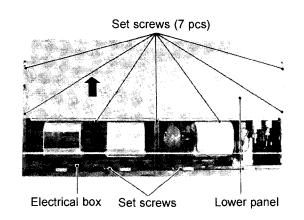
- Pull out the room temperature thermistor from the casing (A).
- (2) Disconnect the connector (CN-20) from the controller board in the electrical box.
- (3) Take out the thermistor.

#### 12. Removing the indoor coil thermistor

After removed the electrical box covers:

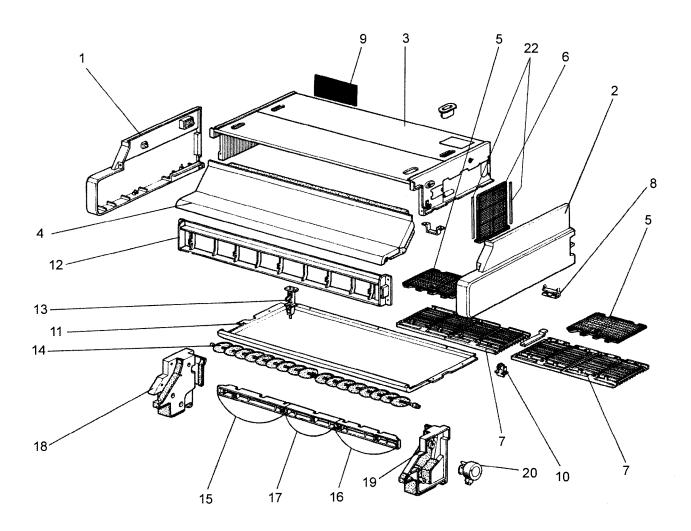
- (1) Remove the right side panel.
- (2) Remove the set screw of the thermistor check plate and the set screws of the side plate. (3 pcs) (See photo 5)
- (3) Remove the indoor coil thermistor from the heat exchanger.
- (4) Disconnect the connector (CN-21) from the controller board in the electrical box.
- (5) Take out the thermistor.

#### Photo 9



# 14 PARTS LIST

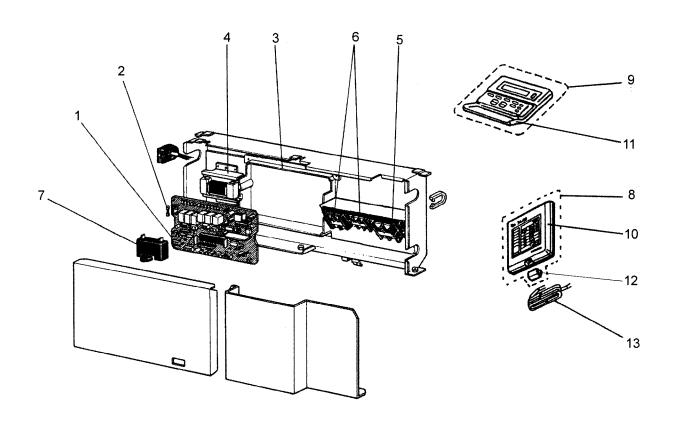
# PC24EK PC30EK STRUCTURAL PARTS PC24EK1 PC30EK1



Part number that is circled is not shown in the figure.

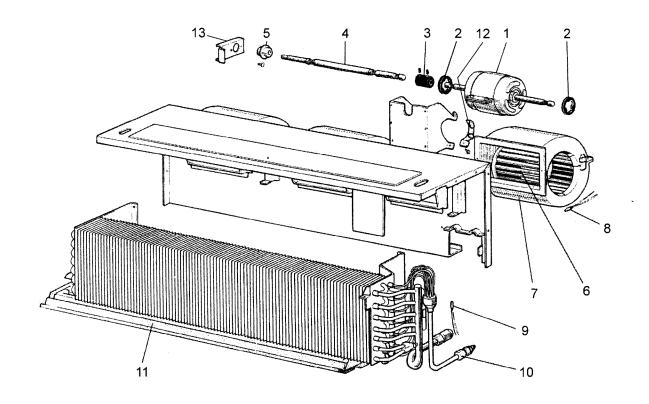
					Q'ty	/set			Cinavit	Recom-	Pr	ice
No.	Parts No.	Parts Name	Specifications			С		Remarks	Diagram			
1	raits ito.	i arts Name	Drawing No.		4		0		Symbol		Unit	Amount
1	R01 055 662	SIDE PANEL (LEFT)		EK 1	EK <sub>1</sub>	EK 1	EK <sub>1</sub>			_		
2		SIDE PANEL (RIGHT)		1	1	1	1					
3		REAR & TOP PLATE		1	1	1	1					
4	R01 051 651	FRONT PANEL		1	1	1	1				-	
5	R01 A25 500	AIR FILTER		4	4	4	4					
6	R01 055 501	AIR FILTER (SUB)		1	1	1	1					
7	R01 029 691	INTAKE GRILL		2	2	2	2					
8	R01 029 061	HINGE		4	4	4	4					
9	T7W 051 501	AIR FILTER		1	1	1	1					
10	R01 029 054	САТСН		4	4	4	4					
11	R01 146 669			1	1	1	1					
12	T7W 052 001			1	1	1	1					
13		LOUVER SUPPORT		1	1	1	1					
14		SWING LOUVER		1	1	1	1					
15		FRONT LOUVER (LEFT)		1	1	1	1					<u> </u>
16		FRONT LOUVER (RIGHT)		1	1	1	1					<u> </u>
17		FRONT LOUVER (CENTER)		1	1	1	1		ļ			1
		SIDE BOX (LEFT)		1	1	1	1		ļ .			<del> </del>
		SIDE BOX (RIGHT)		1	1	1	1					
20		LOUVER MOTOR		1	1	1	1		ML			ļ
21)	R01 045 808			2	2	2	2				<u> </u>	
22	R01 82E 656	FILTER GUIDE		1	1	1	1					

# PC24EK PC30EK PC36EK PC42EK ELECTRICAL PARTS PC24EK1 PC30EK1 PC36EK1 PC42EK1



	<u> </u>				· · · · · · · · · · · · · · · · · · ·			C	'ty	//s	et				<u> </u>		Pr	ice
No.	Pa	rte N			Specifications	ations PC								Remarks	Circuit	mended		
110.	۱ a	11311	0.	Drawing No.		-	4		0	_	6		2		Symbol	Q'ty	Unit	Amount
						EK	EK	EΚ	EK	EK	EK.	EK	EK <sub>1</sub>			-		
1	R01	K01	310	INDOOR CONTROLLER BOARD		1		1		1		1			I.B			
	T7W	E06	310	INDOOR CONTROLLER BOARD			1		1		1		1		I.B			
2	T7W	410	239	FUSE	250V 6A	1	1	1	1	1	1	1	1		F			
3	T7W	829	070	CONTROLLER CASE		1	1	1	1	1	1	1	1					
4	T7W	046	260	TRANSFORMER	RED:15.5VAC, 0.3A BRN:11.0VAC, 0.6A	1	1	1	1	1	1	1	1		T			
5	T7W	410	716	TERMINAL BLOCK	2P (L1,L2)	1	1	1	1	1	1	1	1		TB1			
6	R01	556	246	TERMINAL BLOCK	2P (1,2)	2		2		2		2			TB2,3			
Ü	T7W	E02	716	TERMINAL BLOCK	2P (1,2)		2		2		2		2		TB2,3			
7	T7W	046	255	FAN MOTOR CAPACITOR	12= 220V	1	1	1	1	1	1	1	1		С			
8	T7W	450	200	REMOTE CONTROLLER BOARD		1		1		1		1			R.B			
9	T7W	E01	713	REMOTE CONTROLLER BOARD			1		1		1		1	PAR-JC250KUS	R.B			
10	T7W	351	077	REMOTE CONTROLLER COVER		1		1		1		1						
11	T7W	E03	049	REMOTE CONTROLLER COVER			1		1		1		1					
12	R01	L72	095	SCREW CAP		1		1		1		1						
13	T7W	556	305	REMOTE CONTROLLER CABLE	39ft	1		1		1		1						
	T7W	A00	305	REMOTE CONTROLLER CABLE	33ft		1		1		1		1					

# PC24EK PC30EK FAN SECTION PARTS PC24EK1 PC30EK1



					Q'ty	/set			Cinavia	Recom-	Pr	rice
No.	Parts No.	Parts Name	arts Name Specifications PC		Remarks		mended					
		· and manie	Drawing No.		4 EK <sub>1</sub>		EK <sub>1</sub>		Symbol		Unit	Amount
1	T7W 052 762	FAN MOTOR	RB09CC	1	1	1	1	-	MF			
2	R01 811 105	RUBBER MOUNT		2	2	2	2					
3	R01 700 116	JOINT (SHAFT)		1		1						
3	R01 29J 116	JOINT (SHAFT)			1		1					
4	R01 G12 100	FAN SHAFT		1	1	1	1					
5	R01 621 103	SLEEVE BEARING		1	1	1	1					
6	R01 G18 114	SIROCCO FAN		3		3					• • • • • • • • • • • • • • • • • • • •	
	T7W E00 114	SIROCCO FAN			3		3					
7	R01 055 110	CASING SET		3		3						
Ľ	T7W E02 110	CASING SET			3		3					
8	R01 J21 202	ROOM TEMPERATURE THERMISTOR		1		1			RT1			
°	T7W E17 202	ROOM TEMPERATURE THERMISTOR			1		1		TH1			
9	R01 J07 202	PIPE TEMPERATURE THERMISTOR		1	1	1	1		RT2,TH2			
10	T7W 450 480	HEAT EXCHANGER		1	1							
10	T7W 451 480	HEAT EXCHANGER				1	1					
11	T7W 048 529	DRAIN PAN		1	1	1	1					
12	R01 83E 126	PIECE (MOTOR)		1	1	1	1					
13	R01 G24 145	BEARING SUPPORT		1	1	1	1					

### 15

## **OPTIONAL PARTS**

#### 1. TIMER

When using a program timer, a program timer adapter (PAC-825AD) is also needed. (PAC-825AD is included with PAC-SC32PTA.)

Part No.	PAC-SC32PTA (with set back function)
Model Name	Program timer

#### 1-1 Program timer specifications

Parts name	Program timer	
Parts No.	PAC-SC32PTA	
Exterior dimensions (inch)	5-4/32x4-23/32x23/32 (130x120x18mm)	
Installation	Wall mount	
Type of clock	Quartz	
Clock accuracy	±50 second / month at 77°F	
Display-Time	Liquid crystal display	
-Week	Liquid crystal display	
-Timer setting unit	Liquid crystal display	
Program cycle	24 hours	
Timer setting unit	30 minutes	
No. of set points	48 / day	
Power rating	5V DC ±5% (Supplied by Remote Controller)	

#### 1-2 Feature of program timer

(1) Daily timer function

Daily timer can be set in 30 minutes units for up to 24 hours.

Each unit can be set for unit ON, unit OFF, or setback operation.

(2) Setback operation (PAC-SC32PTA)

Set back operation is useful for reducing running costs

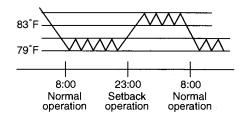
e.g. At a hotel with a 24-hour system

8:00~23:00 Cooling operation with set temperature at 79°F 23:00~8:00 Setback operation with 4 degrees of setback

As shown in the chart on the right, the set temperature rises 4 degrees automatically during the setback operation. When the setback operation ends, normal operation will begin.

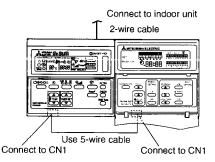
(3) Weekly timer function

Daily timer function can apply to each day of the week.

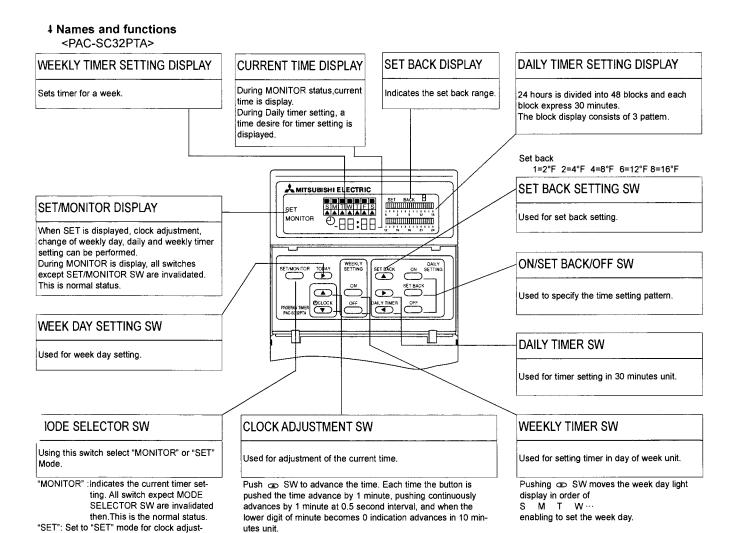


#### 1-3 How to connect program timer

- (1) Install the program timer next to the remote controller the same way as the remote controller is installed.
- (2) Connect the program timer and the remote controller with a 5-wire cable as shown in the figure below



NOTE: While the program timer is connected to the remote controller, the 24hour ON/OFF timer on the remote controller will not operate.



SW is used for reversing the time. Each time the button is

pushed the time reverses by 1 minute, pushing continuously reverses the time by 1 minute at 0.5 second interval, and when the lower digit of minute becomes 0 indication reverses in 10

minutes unit.

ment, charge of week day, daily and

weekly timer setting.





HEAD OFFICE: MITSUBISHI DENKI BLDG., 2-2-3, MARUNOUCHI CHIYODA-KU, TOKYO100-8310, JAPAN