



### FLOOR STANDING CABINET TYPE HEAT PUMP



COOLING CAPACITY: 4,6 kW - 12,6 Kw  
HEATING CAPACITY: 4,7 kW - 13,0 kW  
R410A – Scroll



### Features

- Optimized design for R410A refrigerant.
- Elegant and easy to install.
- Four way air flow.
- LCD display with local control.
- Remote control handset.
- Easy maintenance.
- Multiple fan speeds.
- Built in microprocessor continuously monitors and regulates all automatic functions.
- Low operating noise levels.
- On/off timer.
- Energy efficient scroll compressor.



## NOMENCLATURE

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I-X-XX-P-C-V-1  
1 2 3 4 5 6 7

**1 I-** Interklima

**2 I-**Indoor      **O-**Outdoor

**3 Model numbers** (aprox. capacity btu/h)  
15-24-43

**4 Unit type**  
P- (Packaged) Floor standing

**5 Refrigerant type**  
A-R22      B-R407C      C-R410a

**6 Electrical Characteristic**  
-V Single phase      -Y Three phase

**7 Version**  
-1

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# 1. Technical specifications

## II/IO-PCV1 (1&3 phase)

Model	indoor unit	II15PCV1 IO15PCV1	II24DCV1 IO24DCV1	II43DCV1 IO43DCV1
<b>nominal cooling capacity</b>	Btu/h	15,700	23,200	43,000
	kW	4.6	6.8	12.6
<b>nominal heating capacity</b>	Btu/h	16,100 + (3,580)	23,540 + (3,580)	44,400 + (9,210)
<b>(electric heater capacity)</b>	kW	4.7 + (1.05)	6.9 + (1.05)	13.0 + (2.70)
<b>COP</b>	kW/kW	2.94	3.21	2.77
	energy class	D	C	N/A
<b>EER</b>	kW/kW	2.88	2.81	2.65
	energy class	C	C	N/A
<b>Dehumidifying capacity</b>	L/h	1.50	1.75	3.70
<b>Electrical insulation protection class</b>			1	
<b>Water proof class (Outdoor unit)</b>			IP24	
<b>Rated input current</b>	Cool Amp	8.0	11.3	12.5
	Heat Amp	7.7 + 4.8	11.1 + 4.8	12 + 3.9
<b>Start current</b>	Amp	40.0	54.0	66.0
<b>Rated input</b>	Cool Kw	1.6	2.42	4.75
	Heat Kw	1.6 + 1.05	2.15 + 1.05	4.7 + 2.7
<b>Power supply</b>	230/1/50 or 400/3/50		1 Phase	3 Phase
<b>indoor unit</b>	<b>Model</b>	II15PCV1	II24PCV1	II43PCV1
	Airflow (H/M/L) m3/h	900/800/700	950/800/700	2,000/1,800/1,500
	Noise level @1M(H) dB(A)	48	55	62
	Dimensions H mm	1,695	1,740	1,900
	W mm	480	525	600
	D mm	280	280	380
	Net weight kg	41	48	60
<b>outdoor unit</b>	<b>Model</b>	IO15PCV1	IO24PCV1	IO43PCV1
	Construction Panel	PAINTED STEEL SHEET		
	Surface finish	POLYESTER FIREPROOF POWDER COATING		
	Compressor	ROTARY		SCROLL
	Refrigerant control	CAPILLARY TUBE		
<b>refrigerant piping</b>	Protection devices	COMPRESSOR OVERLOAD / MOTOR OVER HEATING		
	Noise level @1M dB(A)	58	62	68
	Dimensions H mm	686	688	1,250
	W mm	865	915	980
	D mm	370	370	412
	Net weight kg	46	49	110
<b>refrigerant piping</b>	Connection method Indoor side	FLARE		
	Outdoor side	FLARE		
	Refrigerant charge (5m) kg	1.40	1.65	3.65
	Pipe size OD Liquid in	1/4	3/8	3/8
	Gas in	1/2	5/8	3/4

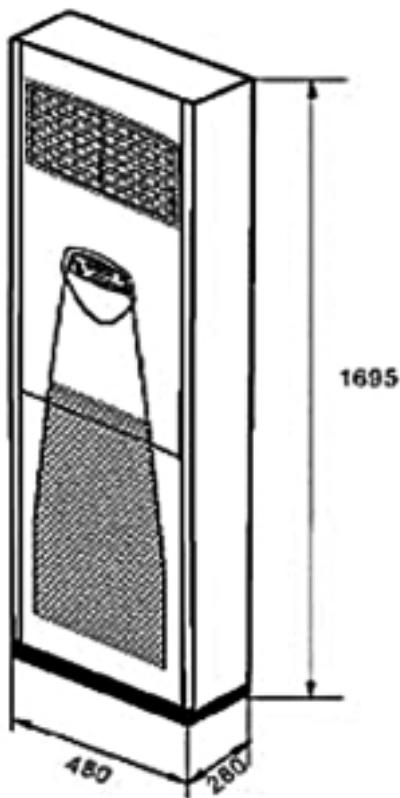
### NOTES

All capacities are based on: cooling: indoor 27°C DB, 19.5°C WB,  
heating: indoor 20°C DB,

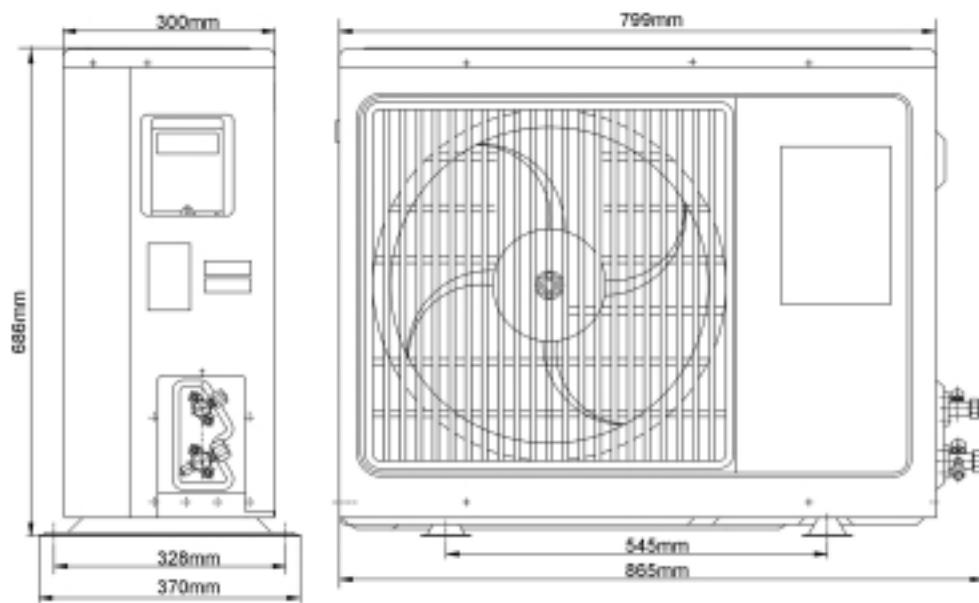
outdoor: 35°C DB, 24°C WB  
outdoor: 7°C DB, 6°C WB

## 2. Outlook drawings

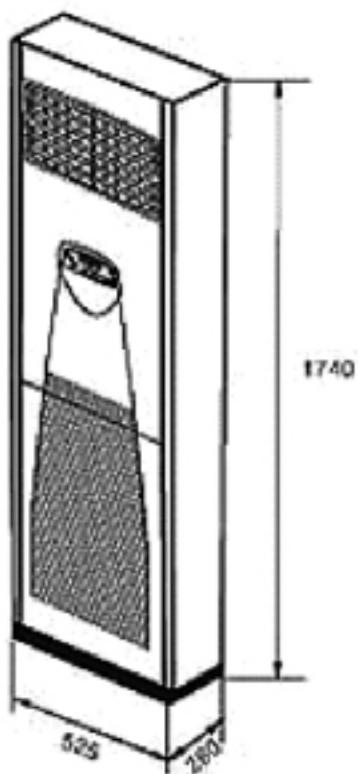
II15PCV1



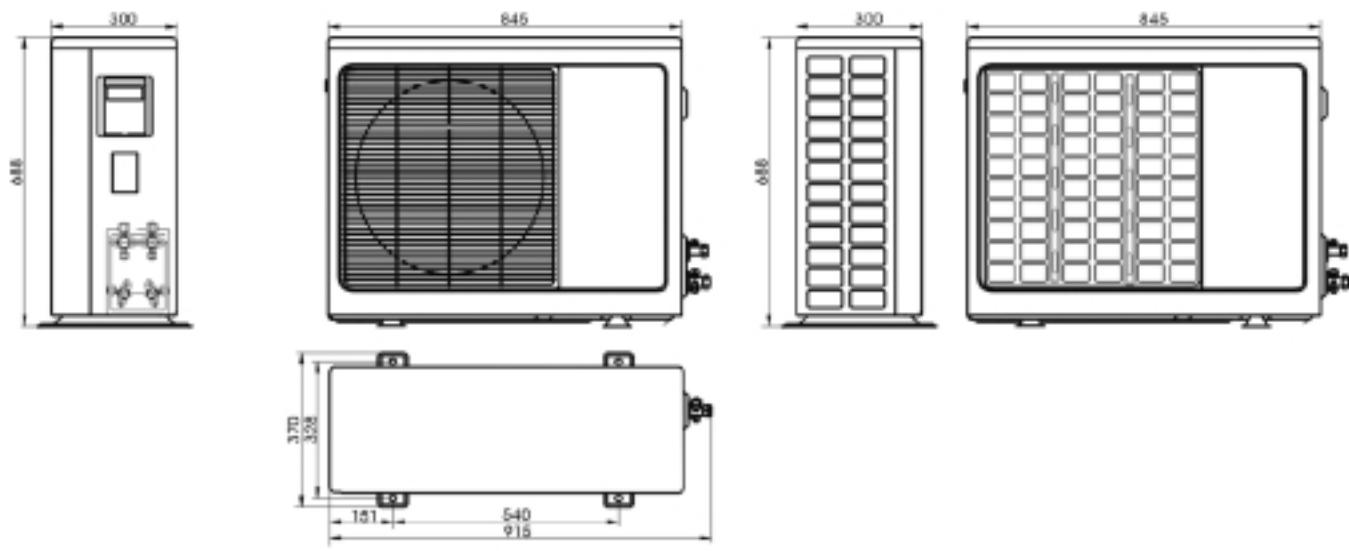
IO15PCV1



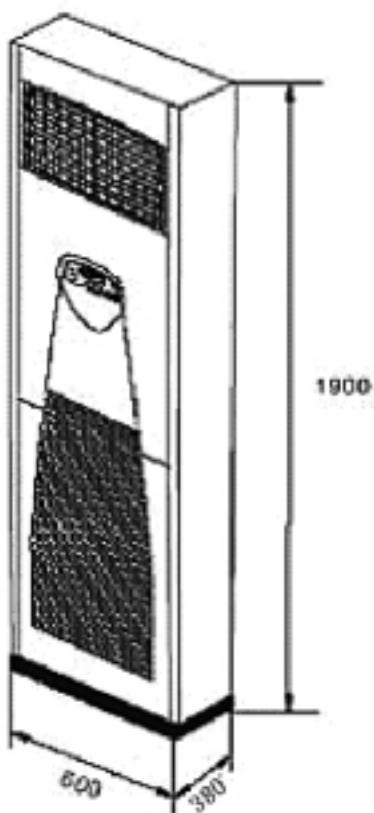
## II24PCV1



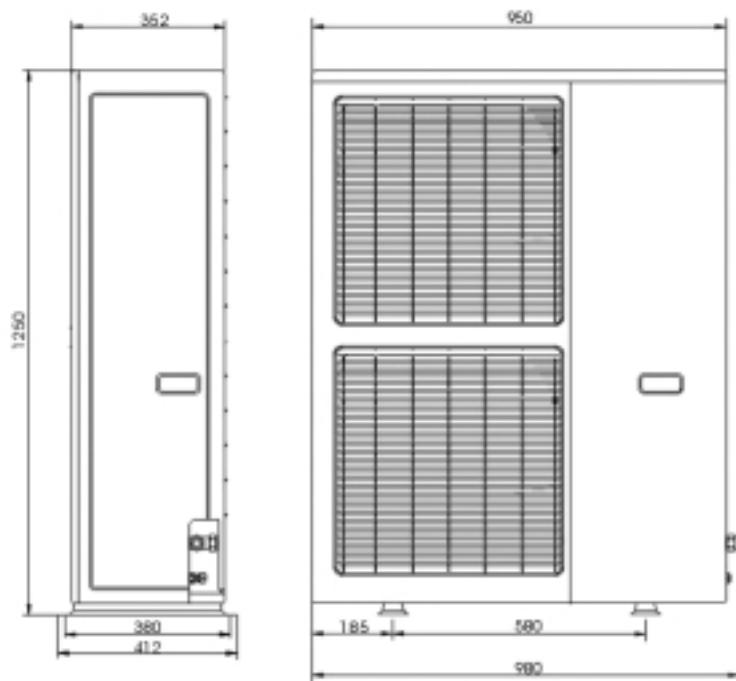
## IO24PCV1



II43PCV1

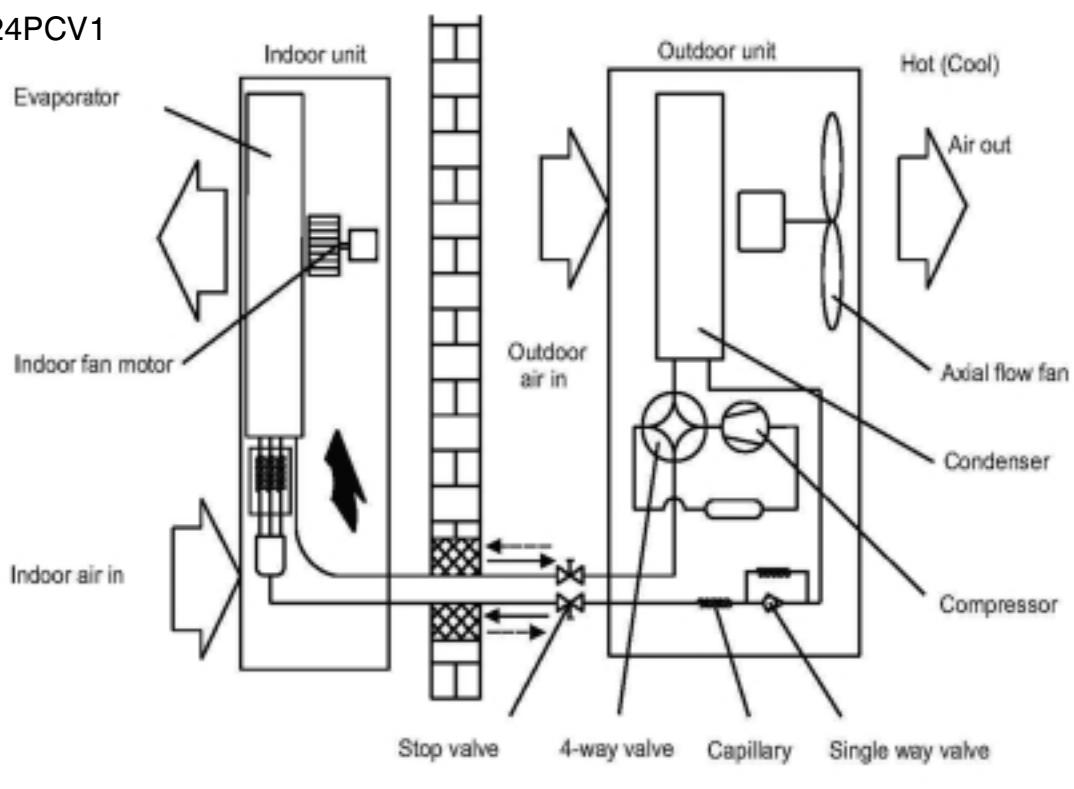


IO43PCV1



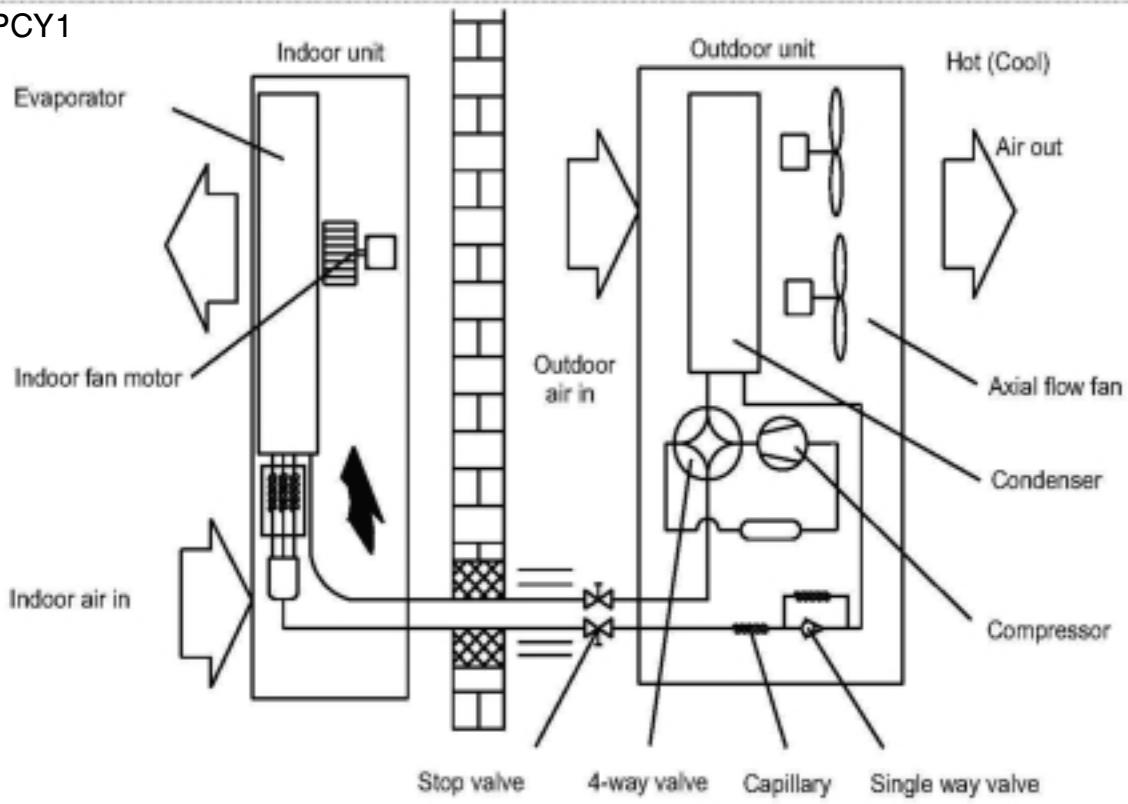
### 3. Refrigerant Circuit Diagram

IO15/24PCV1



Cooling route → Heating route →

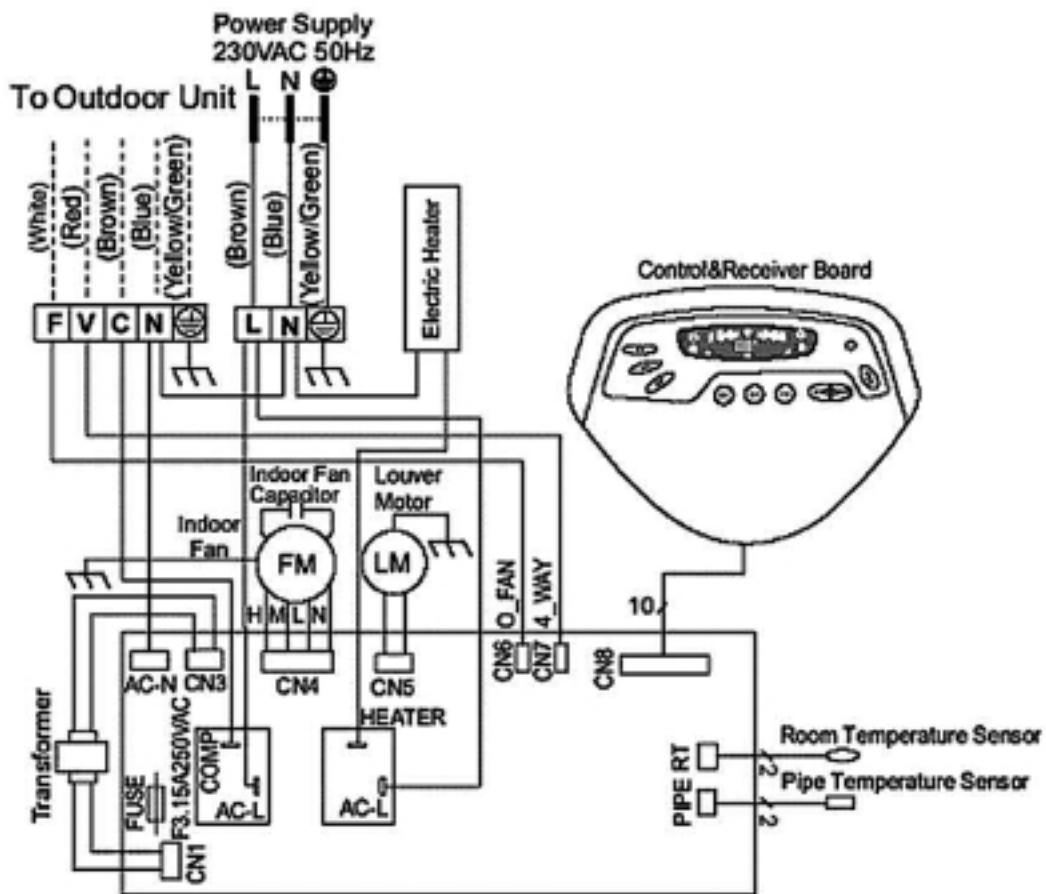
IO43PCY1



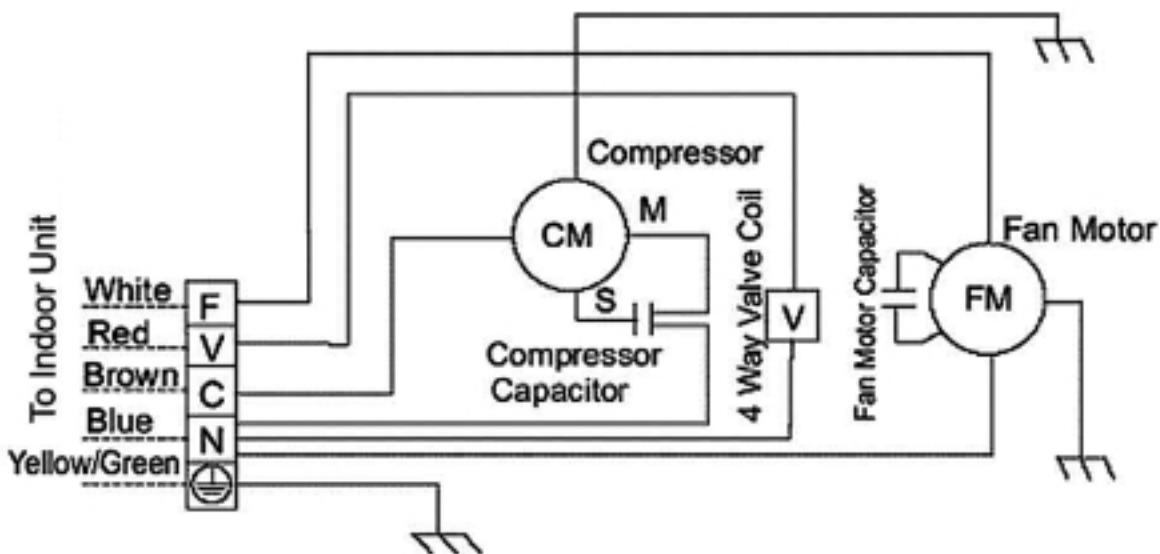
Cooling route → Heating route →

## 4. Wiring Diagram

II15PCV1



IO15PCV1

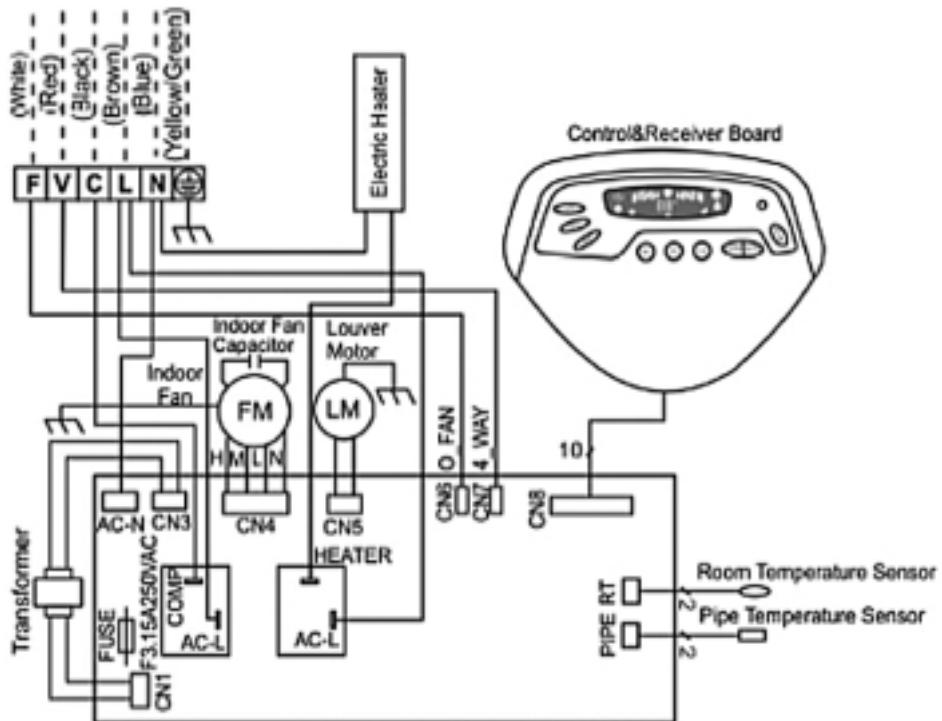


### NOTES

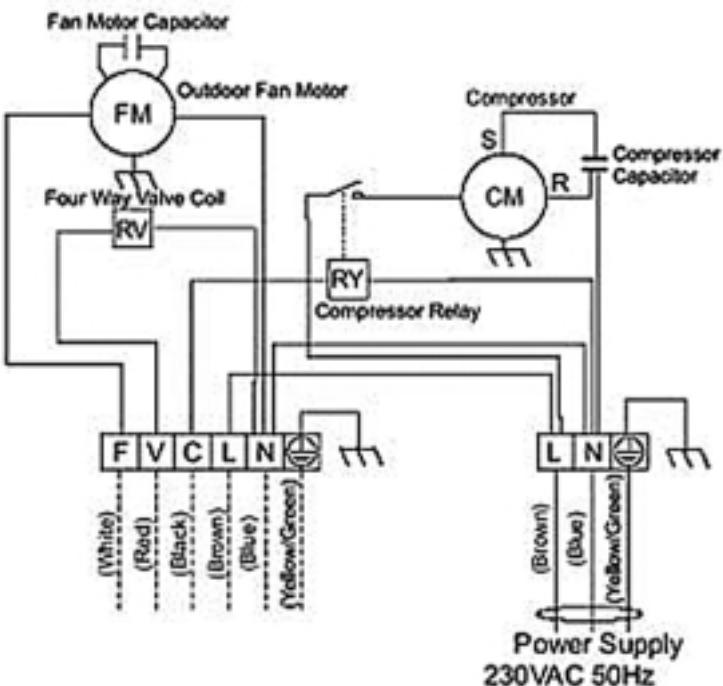
Wiring diagrams on units take precedence over manual

## II24PCV1

To Outdoor Unit



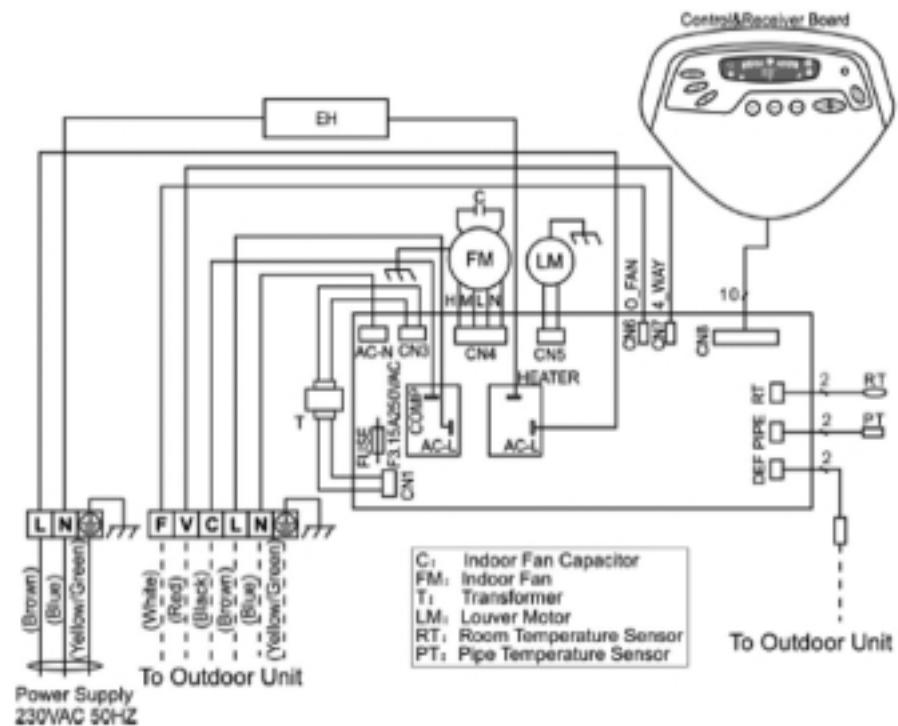
## IO24PCV1



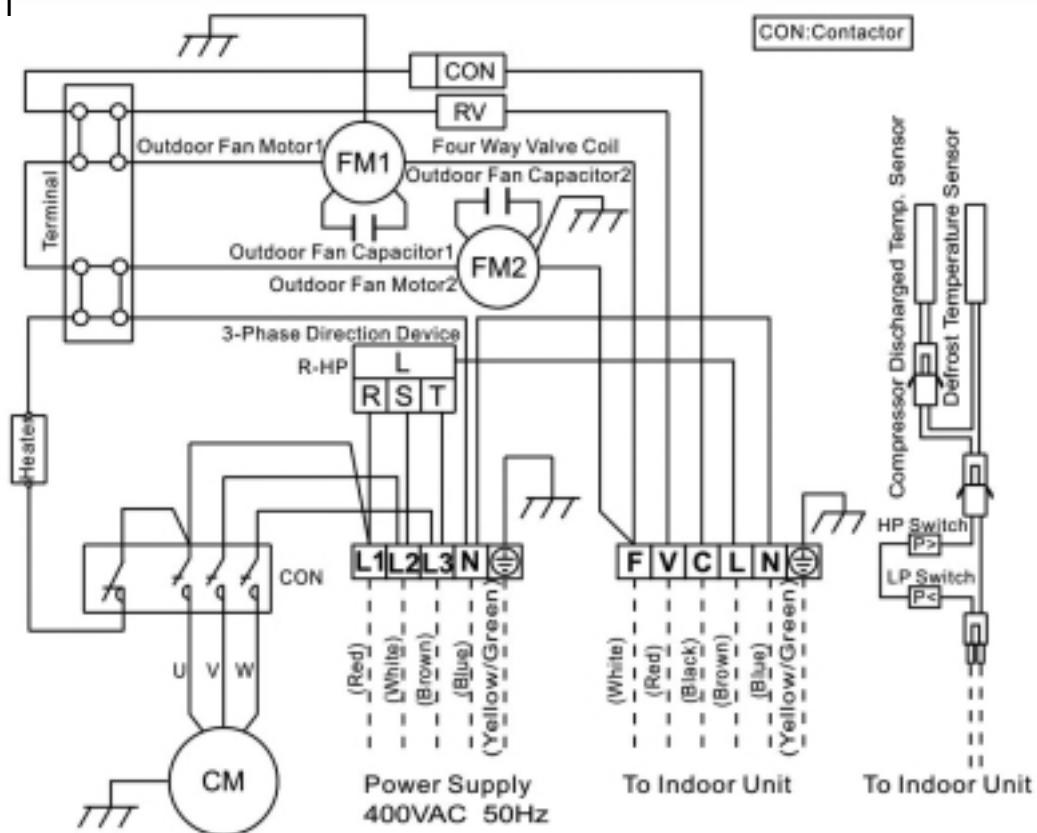
### NOTES

Wiring diagrams on units take precedence over manual

## II43PCV1



## IO43PCY1



### NOTES

Wiring diagrams on units take precedence over manual

## 5. Installation

### Start-up and service instructions for condensing Units

#### STEP 1 - Complete pre-installation checks

**Unpack unit** - Move unit to its final location. Remove the carton from unit being careful not to damage the service valves and grilles.

**Inspect shipment** - File a claim with the shipping company if the shipment is damaged or incomplete.

**Consider system requirements** - Consult the local building and national electrical codes for any special installation requirements. Allow sufficient space for air flow clearance, wiring, refrigerant piping, and servicing the unit. See fig. 1. Locate the unit so that the condenser's air flow is unrestricted on both sides. Refer to fig. 2. The unit may be mounted on a level pad directly on its base legs or mounted on raised pads at the support points.

#### STEP 2 - Rig and mount unit

**Mounting on ground** - Mount on a solid, level, concrete pad. Position unit so water or ice from the roof cannot drop directly onto the unit. If local codes require the unit be fastened to the pad, tie down bolts should be used and fastened through the slots provided in the unit's mounting feet.

**Mounting on roof** - Mount on a level platform or frame. See fig. 2.

#### Rigging

Be sure unit panels are securely in place prior to rigging.

Keep unit upright. Lift unit using slings. Use cardboard or padding under sling, and spreader bars to prevent any sling damage to the unit. Install the unit so that the coil does not face into prevailing winds. If this cannot be done, and constant winds above 22 Km/h are expected, use a wind baffle.

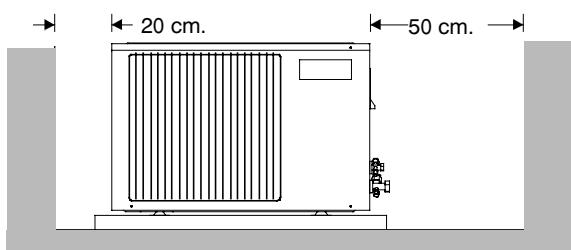


Fig.1

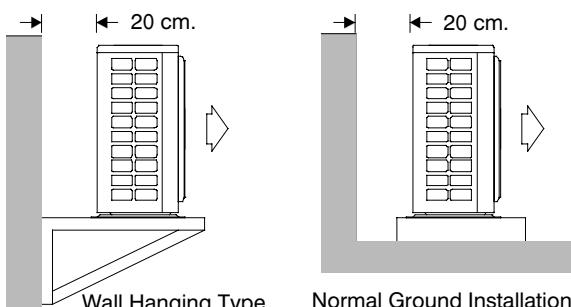


Fig.2

#### STEP 3 - Complete refrigerant piping connections

The condensing units may be connected to the evaporator section using field supplied tubing of the correct refrigerant grade, size and condition. Do not use less than 3m of interconnecting tubing and do not bury more than one metre of line set underground.

If more than the recommended length is buried, the refrigerant may migrate to the cooler buried section during extended periods of unit shutdown. This causes refrigerant slugging and possible compressor damage at start-up.

When more than 15 m of inter-connecting tubing and /or more than 10 m vertical lift is used, consider the amount of liquid lift and compressor oil return or contact your local distributor.

If either the refrigerant tubing or indoor coil is exposed to atmospheric conditions for longer than 1 minute, it must be evacuated to 1,000 microns to eliminate contamination and moisture in the system. Run the refrigerant tubes as directly as possible, avoiding unnecessary turns and bends. Suspend the refrigerant tubes so they do not damage

Insulation on the vapour tube and do not transmit vibration to the structure. Also, when passing the refrigerant tubes through the wall, seal the opening so vibration is not transmitted to the structure. Leave some slack in the refrigerant tubes between the structure and unit to absorb vibration. Refer to evaporator installation instructions for additional information.

#### Making piping flare connections

Both the suction and liquid lines of the units are equipped with flare connections which are closed off in the factory and ready for connection. Use refrigerant grade tubing. Assemble flared joint by aligning the tubing with the machined surface of the fitting. Turn the nut anti-clockwise and then clockwise until it is fully tightened. Leak test the joint to ensure it is leak free.

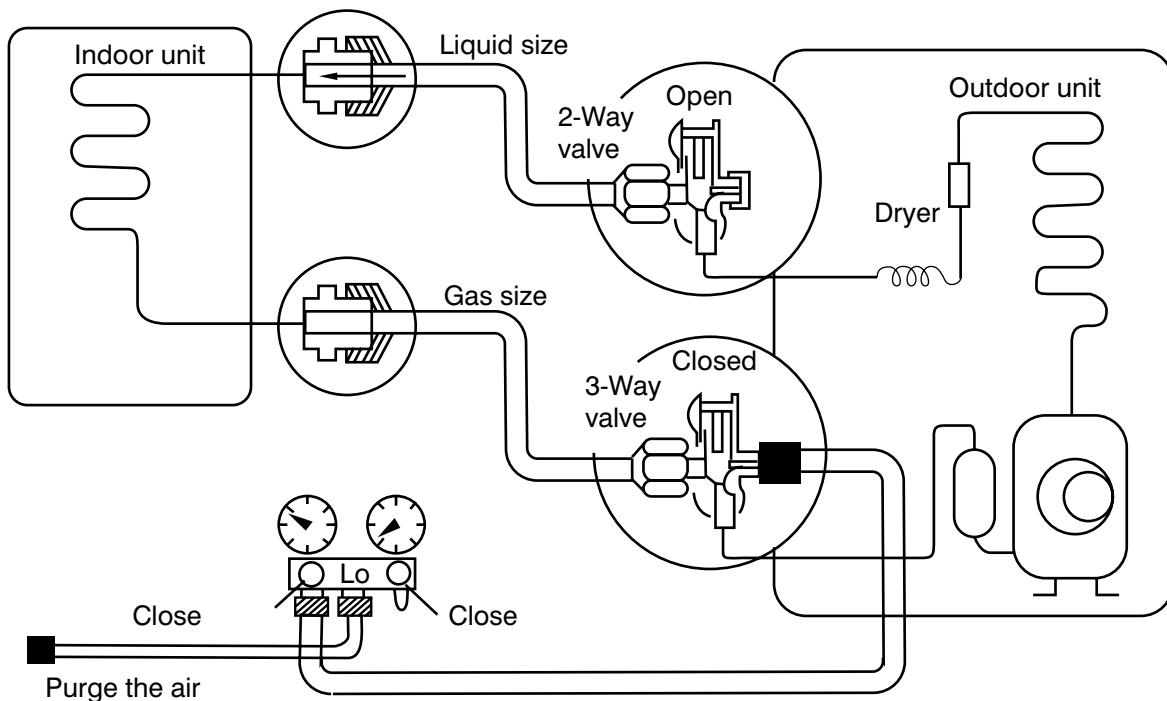
#### STEP 4 - Complete electrical connections

**Power wiring** - The unit is factory wired for the voltage shown on the name plate. Provide an adequate fused disconnect switch within sight of the unit, readily accessible, but out of reach of children. Provision for locking the switch open (off) is advisable to prevent power from being turned on while unit is being serviced.

Disconnect switch, fuses, and field wiring must comply with local code requirements. Use only copper wire between the disconnect switch and unit. Route power wires through the opening in unit's side panel and connect to the unit control box as shown on the unit's label wiring diagram. Unit must be grounded.

**Control circuit wiring** - The control voltage is 12 VDC. See unit label wiring diagram. Route the control wires through the opening in the unit's side panel to connect into the unit control box.

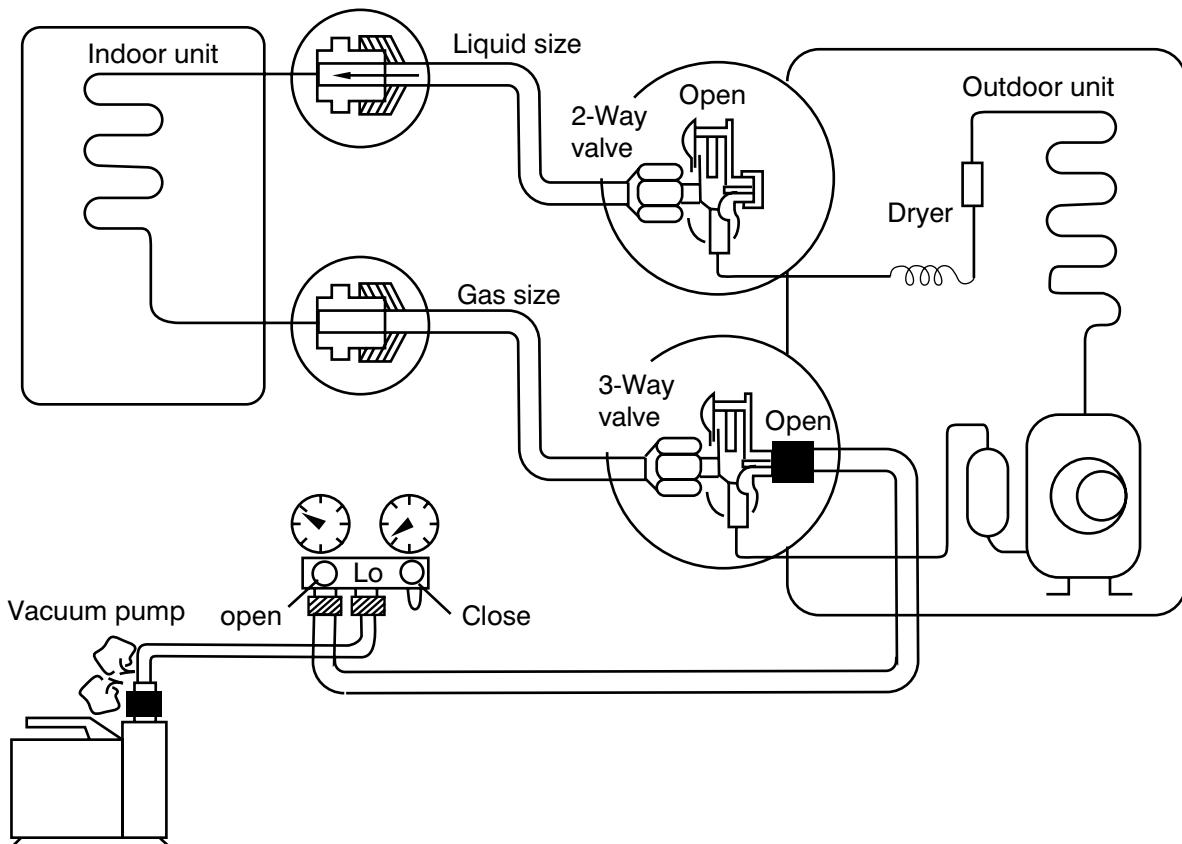
## 1. Evacuation Pumping down



### Procedure

1. Confirm that both the 2-way and 3-way valves are set to the open position.
  - Remove the valve stem caps and confirm that the valve stems are in the raised position.
  - Be sure to use a hexagonal wrench to operate the valve stems.
2. Operate the unit for 10 to 15 minutes.
3. Stop operation and wait for 3 minutes, then connect the charge set to the service port of the 3-way valve.
  - Connect the charge hose with the push pin to the service port.
4. Air purging of the charge hose.
  - Open the low-pressure valve on the charge set slightly to air purge from the charge hose.
  - Refrigerant must be recovered.
  - Don't vent the Refrigerant to the atmosphere.
5. Set the 2-way valve to the closed position.
6. Operate the air conditioner at the cooling cycle and stop it when the gauge indicates 0.1 Mpa.
7. Immediately set the 3-way valve to the Closed position.
  - Do this quickly so that the gauge ends up indicating 0.8 ~ 1.1MPa.
8. Disconnect the charge set, and mount the 2-way and 3-way valves' stem nuts and the service port nut.
  - Use a torque wrench to tighten the service port nut to a torque of 1.8 kg.m.
  - Be sure to check for gas leakage.

## 2. Evacuation (Total refrigerant leakage)



### Procedure

1. First, replace a dryer with new one.
2. Connect the vacuum pump to the charge sets center hose.
3. Evacuate for approximately one hour.
  - Confirm that the gauge needle has moved toward – 76 cmHg (vacuum of 4 mmHg or less).
4. Close the valve (Low side) on the charge set,
 

Turn off the vacuum pump, and confirm that the gauge needle does not move (approximately 5 minutes after turning off the vacuum pump).
5. Disconnect the charge hose from the vacuum pump.
  - Vacuum pump oil.  
If the vacuum pump oil becomes dirty or depleted, replenish as needed.

### Caution

1. Use a vacuum pump equipped with check valve to prevent backward flow.
2. For R410A, only liquid side is allowed to be charged.
3. Do not attempt to charge with larger amounts of liquid refrigerant while operating the air conditioner.

## 2-way, 3-way Valve

	2-way Valve (Liquid Side)	3-way Valve (Liquid Side)
<b>Works</b>	Shaft position	Shaft position
<b>Shipping</b>	Closed (with valve cap)	Closed (with valve cap)
1. Air purging (Installation)	Open (counter-clockwise)	Closed (clockwise)
	Open (with valve cap)	Open (with valve cap)
2. Pumping down (Transferring)	Open (clockwise)	Open (counter-clockwise)
3. Evacuation (Servicing)	Open	Open
4. Gas charging (Servicing)	Open	Open
5. Pressure check (Servicing)	Open	Open
6. Gas releasing (Servicing)	Open	Open

### Start-up

#### Preliminary checks

1. Check that all internal connections are tight and that all barriers, covers and panels are in place.
2. The field electrical power source must agree with the unit nameplate rating.
3. All service valves must be open.

**Leak test system** and field piping by pressure method. At approximately 170 kpa backed up with an inert gas to a total pressure not to exceed 1600 kpa.

**Evacuation and dehydration** of the field piping and fan coil is necessary. Service valves must be fully back-seated to close the service port. There is no valve at the service port and failure to back seat the valve could result in a loss of the system charge or personal injury.

**To start unit** - Ensure the main power is switched on by closing the disconnect switch and the cooling temperature required is set below room temperature. The unit compressor will start after a 3 minute delay. Operate the unit for 15 minutes, then check the system refrigerant charge. See refrigerant charging table.

### Service

**Service (Pack) valves**- The service valves in the condensing unit come from the factory closed. This means the refrigerant charge is isolated from the line side of the connection ports. The service valves must be opened (turned counter clockwise until seated) before the service port caps can be removed and the hoses of the gauge manifold connected. in this position, the refrigerant has access from and through the outdoor and indoor unit. The service valves can not be field repaired.

**Reversing valve** - In heat pumps, the change over between heating and cooling modes is accomplished with a valve that reverses the flow of refrigerant in the system. The reversing valve solenoid can be checked when the power is off with an ohm meter. Check for continuity and shorting to ground. With the control circuit (230V) power on, check for the correct voltage at the solenoid coil. Check for a burned or overheated solenoid. With the unit operating, other items can be checked, such as frost or condensate water on the refrigerant lines.

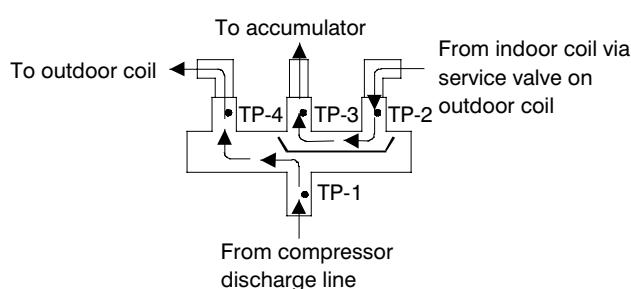
Using a remote measuring device, check the inlet and outlet line temperatures. Do not touch the lines. if the reversing valve is operating normally, the inlet and outlet temperatures on the appropriate lines should be close. Any difference would be

due to heat loss or gain across the valve body. Temperatures are best checked with a remote reading electronic type thermometer with multiple probes.

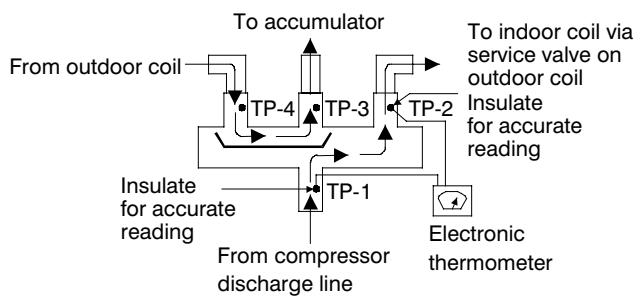
Figures 3 and 4 show test points (tp) on the reversing valve for recording temperatures. Insulate points for a more accurate

reading. If the valve is defective; shut off all power to the unit and remove all charge from the system. Remove the valve using a tubing cutter. Wrap the new valve with a wet rag to prevent over heating while brazing.

REVERSING VALVE IS ENERGISED WHEN CHANGING  
FROM COOL TO HEAT MODE OR FROM HEAT TO DEFROST MODE



**Fig.3**



Reversing valve (heating mode, solenoid de-energized)

**Fig.4**

After the valve is brazed in, check for leaks, evacuate and charge system. Operate the system in both heat and cool modes several times to be sure the valve functions properly.

## Refrigerant Charging

MODEL	II15	II24	II43
Pipe size (Diameter) Gas (in)	1/2	5/8	3/4
Liquid (in)	1/4	3/8	3/8
Refrigerant charge (5m) (Kg)	1.4	1.65	3.65
Max. Piping length (m)		40	
Max. Elevation (m)		15	
Add refrigerant (g/m)	25	45	65

### NOTES

When the length of connection pipes are longer than 5m, add refrigerant according to guidelines above until system pressures are balanced.

## Electrical data

MODEL NO.	15	24	43
Power Supply	230V/1/50	400V/3/50	
Starting current (AMPS)	40	54	66

## Operation temperature limits

Operation	Temperature		Indoor DB (°C)	Outdoor DB (°C)
	Max	Min		
Cool	32		45	
	18		7	
Heat	30		24	
	5		-5	

## Reduction in capacity (%) VS. increase in pipe length

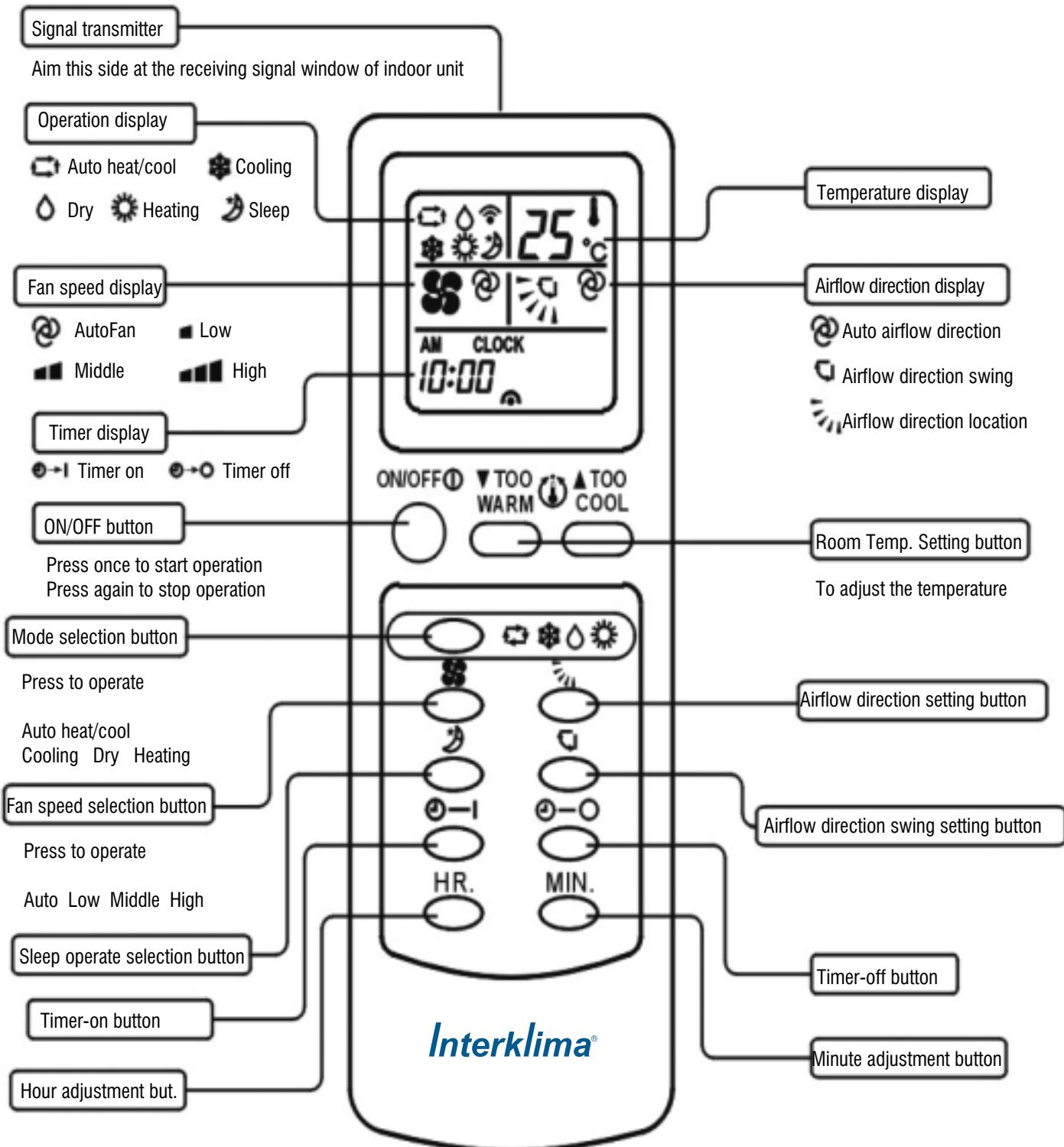
MODEL	PIPING DISTANCE							
	5 m (15ft)	10 m (33ft)	15 m (49ft)	20 m (66ft)	25 m (82ft)	30 m (82ft)	35 m (115ft)	40 m (131ft)
15	0	1.15	1.85	2.45	3.42	4.66	5.76	6.32
24	0	1.15	1.95	2.65	3.68	5.0	6.12	6.92
43	0	1.25	2.75	3.75	4.75	7.9	9.2	10.4

### NOTES

- The copper pipes must be installed level in both the horizontal and vertical plane.
- If actual distance above or below condenser exceeds 8 meters make a loop.
- If actual piping length exceeds 5 meters add refrigerant as refrigerant charging table above.
- Performance reduction data based on 10 meters height difference between indoor and outdoor unit at standard test temperature conditions.

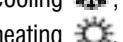
## 6. Controller

Instruction and Specifications  
Use of buttons on remote controller



## Names and functions of Handset Display Area

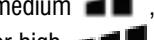
### 1. Operation display area:

Shows the selected operation mode.  
You can select Auto heat/cool , cooling , heating , dry , or sleep .

### 2. Temperature display:

Show the set temperature.

### 3. Fan speed display:

Shows the selected fan speed.  
You can select Auto Fan , low , medium , or high .

### 4. Airflow direction display (not applicable):

Shows the selected airflow direction.  
You can select  auto direction.

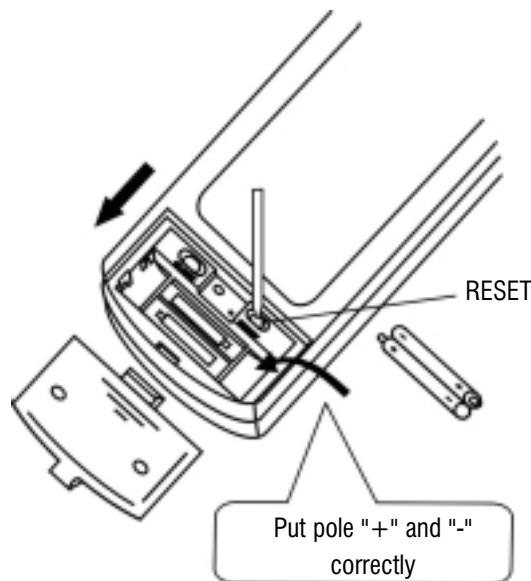
### 5. Time display area:

If you have set timer on or timer off, it will show your timing, or it will show you the current real time.

## Operation Instructions

### 1. How to insert new batteries

After inserting the batteries, please press the reset button to set the remote controller ready for use.



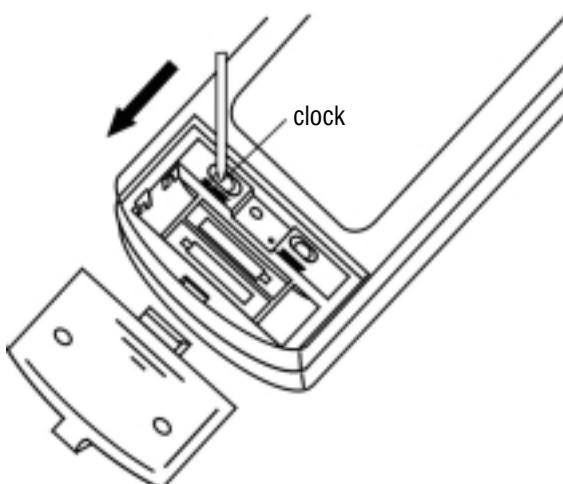
### 2. Adjusting the time of remote controller

Open the back cover of remote controller, press \* CLOCK button, when the display is flashing \* • and CLOCK, then begin to set the time.

Press  button and press  button to change the time.  
Press \*CLOCK to fix right time, then flashing will stop.

## NOTES

- All the icons shown in the picture of remote controller are for customer's reference. When in actual use, screen will only show you the corresponding area.
- If the air-conditioner is turned off, screen will show nothing. (Except for starting air-conditioner using timer-on.)



### 3. Auto operation

Press  button to start the air-conditioner. Now, fan speed is automatic (fan speed is selected by the micro computer to suit room cooling requirement). Press  to select desired fan speed.

Press  button to select auto heat / cool mode.

To stop working, press  button again.

Setting temperature is not shown on remote controller when in AUTO heat/cool operation.

When operation shifts from auto into heating or cooling operation, indoor fan speed can be set in low, middle, high speed or auto.

After air conditioner operation for 15 minutes, if you feel too warm, please push <  > or <  > to adjust the temperature.

Auto heat/cool operation is an economical mode, which selects suitable fan operation and mode according to room-temperature.

### 4. Cooling, dry and heating operation

Press  button to start air conditioner.

Press  mode button to select operation.

Each press of this button changes the mode of operation from auto heat/cool  cooling  dry  heating.

Press  button to set fan speed.

Press   button to set preferred temperature.

If you feel too warm, please press  or  to adjust the temperature.

Press  button again, to stop operation.

### 5. Adjustment of fan speed and how to do timer on-off.

To adjust fan speed, press  button. Fan speed changes in order from  low speed,  middle speed,  high speed to auto.

To set timer on-off, press  or  button, then press  or  to adjust time.

To cancel the timer function, press  button or  button again.

Press  to start sleep mode, press  again to cancel.

### Tips about remote controller

The range of handset signal is 6 metres distance from wall pad, without any obstruction.

Remote controller will show • by pressing any button and at the same time, wall pad will sound, meaning it has received the signal.

If this sound cannot be heard, please press the button again or check if unit is within signal receiving range.

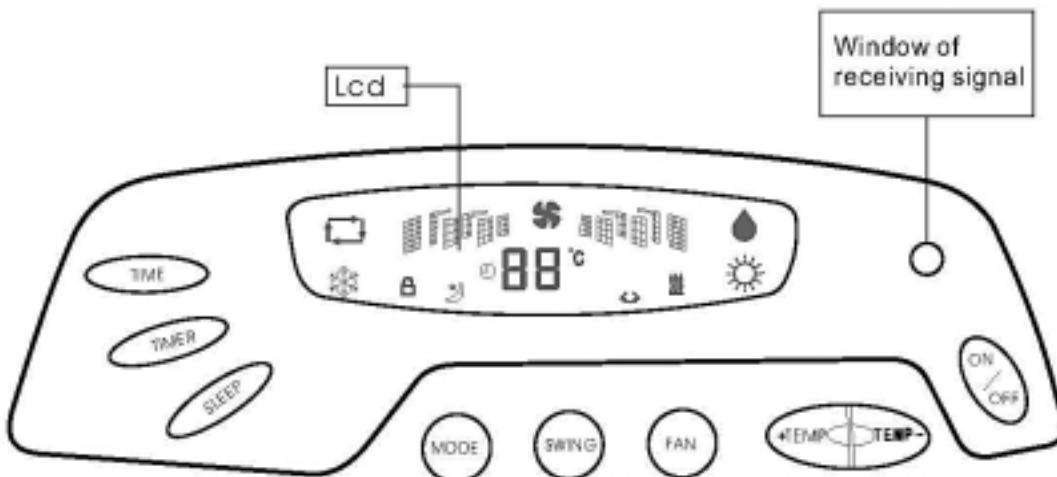
Remote controller must not be exposed to humidity, sunlight, heat source, or rough handling.

Signal transmitter must be aimed at signal receiving window, at a maximum angle of 30°.

Signal receiving window must not be exposed to strong light which will interfere with handset signal.

Pressing multiple buttons at the same time may damage the handset or wall pad.

## Operation Details of control board



- **TIME button**

After setting auto start or auto stop time, press time button to confirm the setting time.

- **TIMER button**

Press it once to set the auto stop time after starting air conditioner, press again to cancel the setting. If the auto stop time has been set, press time button for final confirmation. Press it once to set the auto start time after shutting down air conditioner, press again to cancel the setting. If the auto start time has been set, press time button for final confirmation.

- **SLEEP button**

Press it to start sleep mode

- **SWING button**

Press this button to select swing. Press it again to stop the swing.

- **TEMP-, TEMP+ button**

It will increase or decrease the value of temperature when setting temperature. It will increase or decrease the value of time when setting time.

- **FAN button**

Select the fan speed to be low, middle or high

- **MODE button**

Press it to select the operation mode. Mode will change by every push as the following order: Auto---Cooling---Dry---Ventilation---Heating

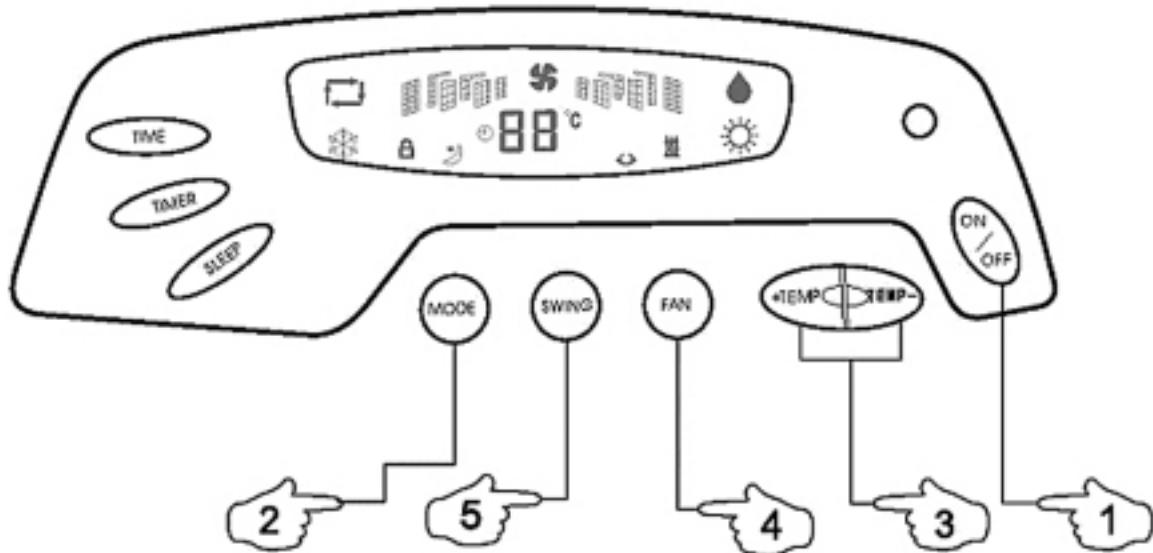
- **ON/OFF button**

Press this button to start, press again to shut down air conditioner.

## Cooling

The temperature default setting is 21°C. You may set the temperature between 16~31°C When indoor temp is lower than set temp, air conditioner will stop working; when indoor temp is higher than set temp, the air conditioner will resume working.

1. Press ON/OFF button.
2. Press MODE button to select cooling mode.
3. Press TEMP button to select desired temp.
4. Press FAN button to select proper speed.
5. Press SWING button to adjust the airflow direction, or for auto swing.
6. Press ON/OFF button to shut down the air conditioner

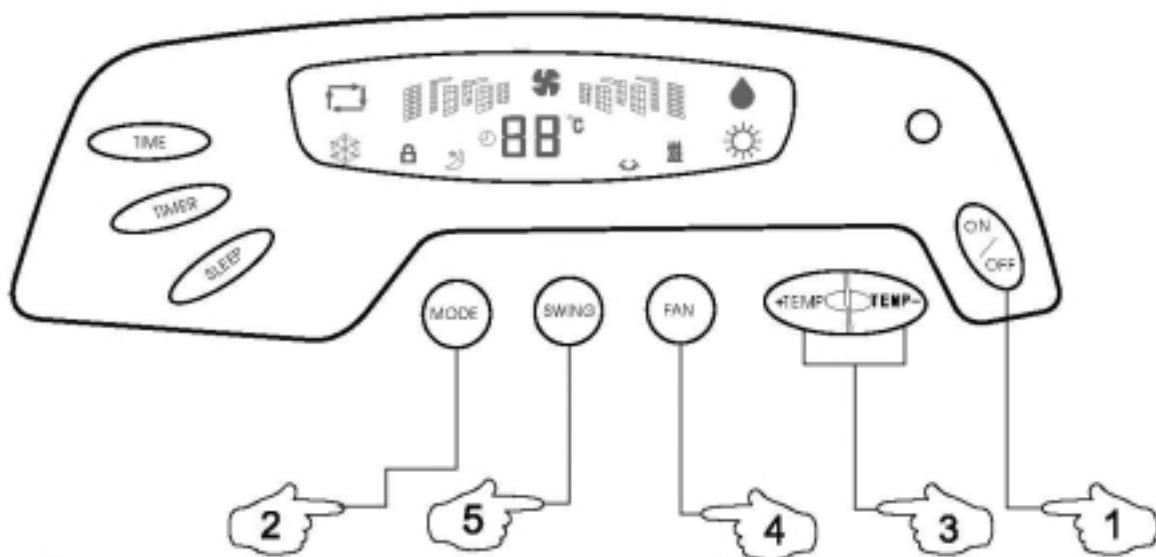


- Remote controller has the memory of the last setting when it is restarted, providing power is not disconnected.
- Press MODE button to select cooling mode. When operation mode has been set, LCD will show Cooling.
- Press TEMP-or TEMP+ button to select the desired temp.
- Press TIMER button to set auto start or auto stop
- Press SWING button to set louver swing mode. LCD will show the swing state after setting.
- Press FAN button to select desired fan speed. LCD will show the set fan speed after setting.

## Heating

The temperature default setting is 26°C. You may set the temperature between 16~31°C. When indoor temp is higher than set temp, air conditioner will stop working; when indoor temp is lower than set temp, air conditioner unit will resume working.

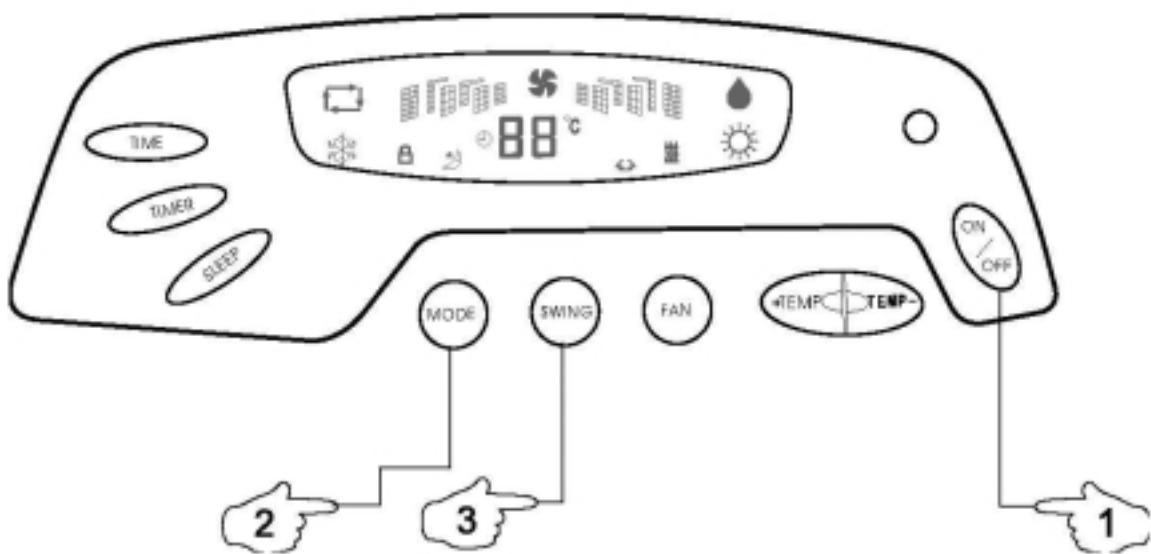
1. Press ON/OFF button.
2. Press MODE button to select heating mode.
3. Press TEMP button to select desired temp.
4. Press FAN button to select proper speed.
5. Press SWING button to adjust the airflow direction, or for auto swing.
6. Press ON/OFF button to shut down the air conditioner



- Remote controller has the memory of the last setting when it is restarted, providing power is not disconnected.
- Press MODE button to select heating mode. When operation mode has been set, LCD will show heating.
- Press TEMP-or TEMP+ button to select the desired temp. Press TIMER button to set auto start or auto stop.
- Press SWING button to set louver swing mode. LCD will show the swing state after setting
- Press FAN button to select desired fan speed. LCD will show the set fan speed after setting.
- When air conditioner has been running for a while, and the temp of air from outlet is rather low, air conditioner will begin to defrost. Outdoor (indoor) fan motor stops, LCD shows defrosting. When defrosting is over, outdoor (indoor) units resume working. Defrosting will disappear on the LCD display.
- When ambient temp is too low, air conditioner will auto start the auxiliary electric heating to enhance the heating efficiency.
- Fan will continue to run in order to distribute surplus heat for a while after the air conditioner has stopped.

## Dry

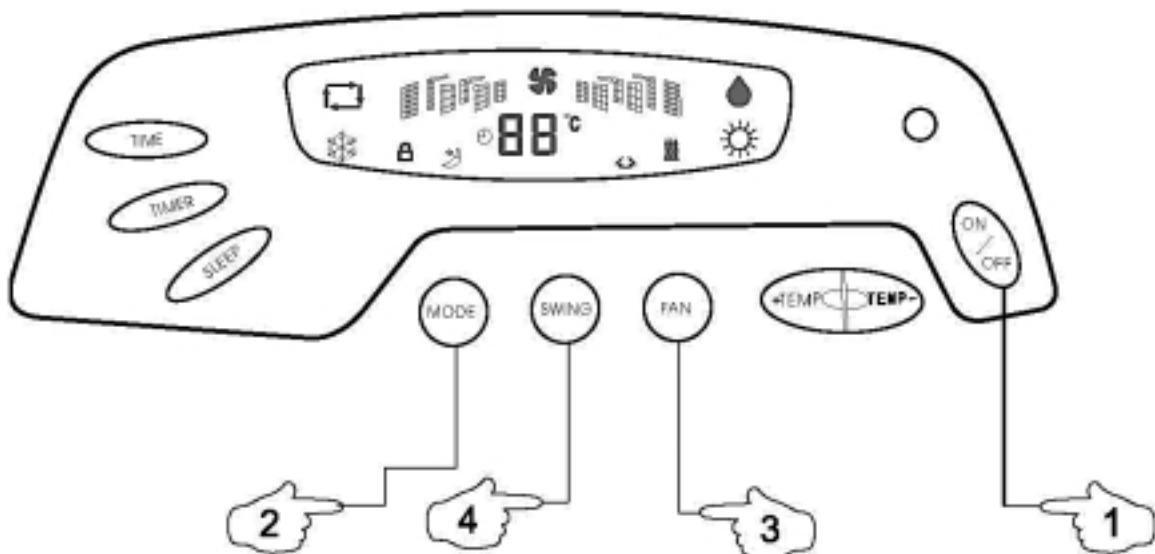
1. Press ON/OFF button
2. Press MODE button to select dry mode
3. Press SWING button to adjust the airflow direction, or for auto swing.
4. Press ON/OFF button to shut down the air conditioner



- Remote controller has the memory of the last setting when it is restarted, providing power is not disconnected.
- Press MODE button to select dry mode. When operation mode has been set, LCD will show "dry".
- Temp setting function is not available in dry mode.
- Press TIMER button to set auto start or auto stop.
- Press SWING button to swing the louver. LCD will show the swing state after setting.
- Fan speed control function is not available. Default setting is low fan speed.
- When indoor temp is lower than 16 oC, dry function could not be carried out.

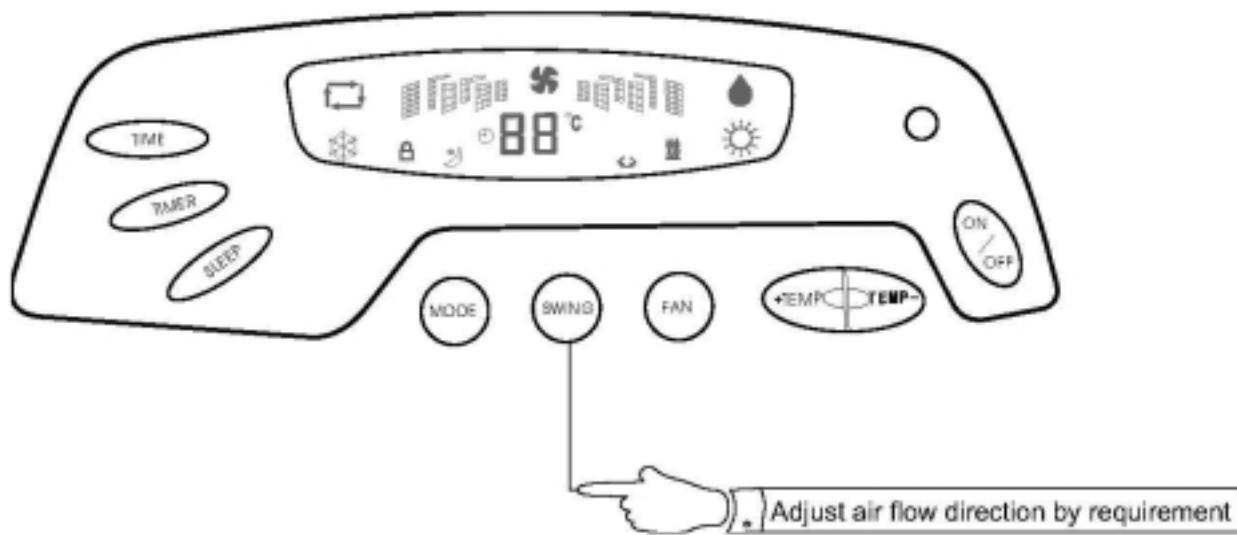
## Ventilation

1. Press ON/OFF button
2. Press MODE button to select ventilation mode
3. Press FAN button to select proper speed
4. Press SWING button to adjust the airflow direction, or for auto swing.
5. Press ON/OFF button to shut down the air conditioner



- Remote controller has the memory of the last setting when it is restarted, providing Power is not disconnected.
- Press MODE button to select ventilation mode. When operation mode has been set, LCD will show "Ventilation".
- Press TIMER button to set auto start or auto stop.
- Press SWING button to swing the louver. LCD will show the swing state after setting.
- Press FAN button to select desired fan speed. LCD will show the set fan speed after setting.
- Ventilation mode could be only set by the button on above panel.

## Adjust airflow direction

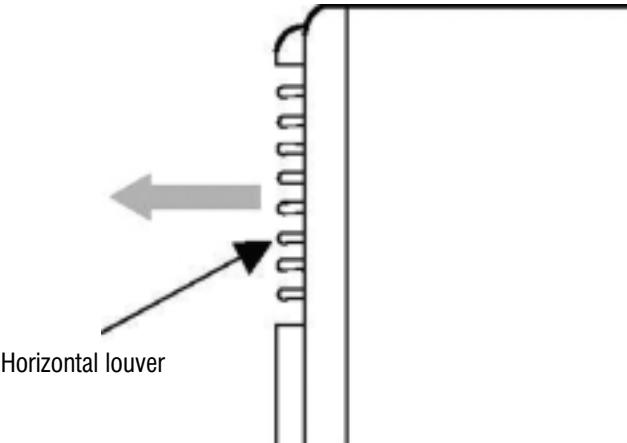


### 1. Adjust the vertical louver

- Press SWING button, vertical louver will work as swing, stop, swing. And you can see its state on LCD display.
- When vertical louver has swung to an angle you desire, press SWING button again to stop the swing. Then the air conditioner will continue to ventilate from this angle.

### 2. Adjust the horizontal louver

- Horizontal louver can be controlled manually.
- The angle of horizontal louver could be adjusted by grasp the two end of the louver. Generally speaking, the angle should be in middle or upward angle when cooling or ventilation.

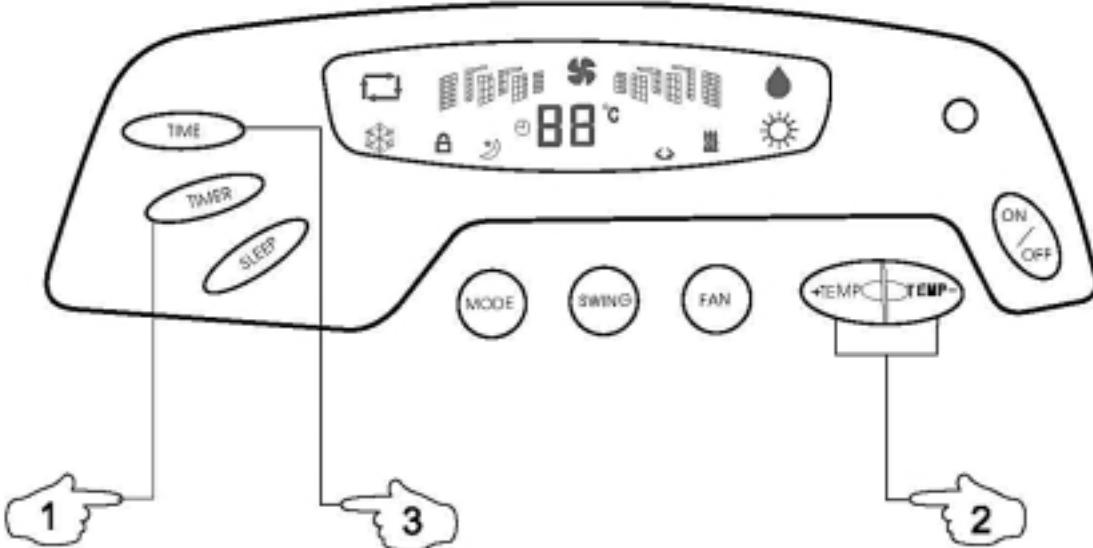


#### NOTES

Please don't adjust vertical louver by hand.

## Timer

1. Press TIMER button, to set the timer mode.
2. Press TEMP+ or TEMP-button, to select the time needed.
3. Press time to confirm.



### Auto start

- When the air conditioner is in standby, press TIMER button, LCD will indicate "open 12 hours later".
- Press TEMP+ or TEMP- button to select auto start, the default auto start time is 12 hours later.
- After setting, press TIME button, to start the air conditioner automatically when it reaches the set time.

### Auto stop

- When the air conditioner is running, press TIMER button, LCD will indicate "close 12 hours later".
- Press TEMP+ or TEMP- button to select auto stop time, the default time is 12 hours later.
- After setting, press CONFIRM button, to stop the air conditioner automatically when it reaches the set time.

### Cancel

- After setting, pressing CONFIRM button, will cancel the setting. The timer can set the time from 1 to 12 hours.
- The mode after setting is the same mode before setting auto stop or auto start, so before you set the timer, please set the mode you need.

## Operation Instructions

### 1. Auto operation

- Press  button to start the air conditioner, fan speed is according to last operation. Press  to select desired fan speed.
- To stop the air conditioner, press  button again.
- Setting temperature is not shown on screen of the control board when in AUTO heat/cool operation.
- When changing from auto fan into heating or cooling operation, indoor fan speed can be set to low speed, middle speed, high speed or auto speed.
- After air conditioner has run for 15 minutes, if you feel too warm or too cool, press  or  to adjust the temperature.
- Auto heat / cool model is an economical mode, which selects suitable fan operation and mode according to room temperature.

### 2. Cooling, dehumidification or heating operation

- Press  button to start the air-conditioner.
- Press  mode button to select operation. Each press of this button changes the mode of operation from auto heat / cool venting  cooling  dry  heating.
- Press  button to set fan speed.
- Press  or  button to set required temperature. If you feel too warm, press  to decrease the temperature; if you feel too cool, press  to increase the temperature.
- Press  button again, and air conditioner will stop.

### 3. Adjustment of fan speed and how to do timer ON – OFF

- Press  button to adjust fan speed. Fan speed changes from low speed  to medium speed , to high speed  to auto 
- To set timer, press  or  button, then press  or  to adjust time. To cancel the timer function, press  button or  button again.
- Sleep mode. Press  button to start sleep mode, press  again to cancel.

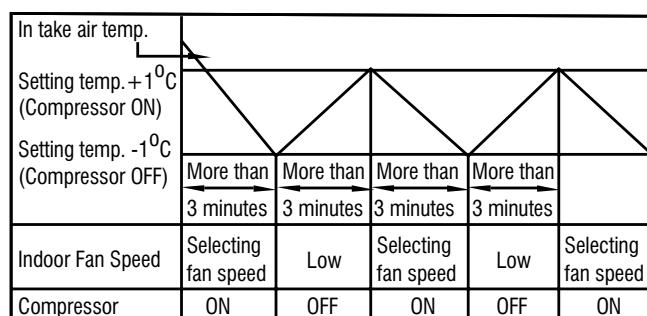
## Controls specification

### 1. Compressor Delay Safety Control

To ensure long compressor life, operation is delayed for 3 minutes to balance system pressures.

### 2. Cooling Mode Operation

When selecting Cooling () Mode Operation, the unit will operate according to the settings by the remote controller and the operation diagram as shown below.



### 3. Auto restart

If the power fails suddenly, the last settings will be kept in micro computer memory. After power is available again, units will automatically restart according to the last settings.

### 4. Electric heater (Option)

- a. Heater will start to work after the following conditions are met simultaneously:

1. Heating mode condition
2. After compressor is on for 30 seconds
3. Temperature of indoor coil is less than 50°C
4. Indoor fan is working
5. Setting temperature  $\geq$  room temperature +3°C

- b. Heater stops working after any of the following conditions are met:

1. Temperature of indoor coil  $>$  52°C
2. Temperature of room  $\geq$  Setting temperature.
3. Compressor stops

When unit is turned off, indoor fan will continue to run 20 seconds.

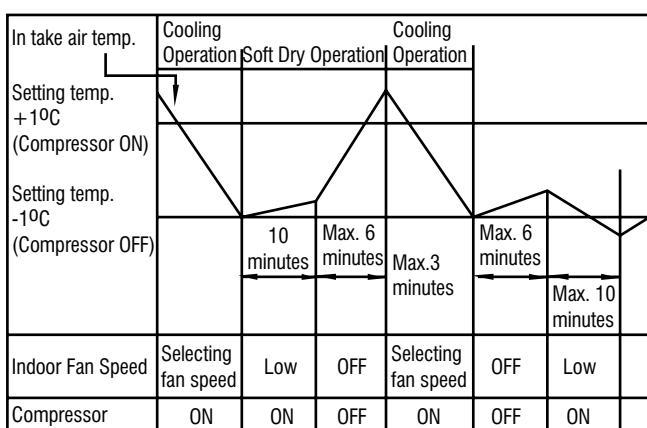
## 5. Soft Dry Operation (dehumidification) Mode

During Soft Dry Operation, cooling mode turns on, set temperature is plus 1, and the compressor is ON.

When the room temperature rises over set temperature, the operation mode is changed to Cooling mode.

When the room temperature falls between the compressor ON temperature and OFF temperature, the operation mode is changed to Soft Dry mode.

The operation diagram is shown below.



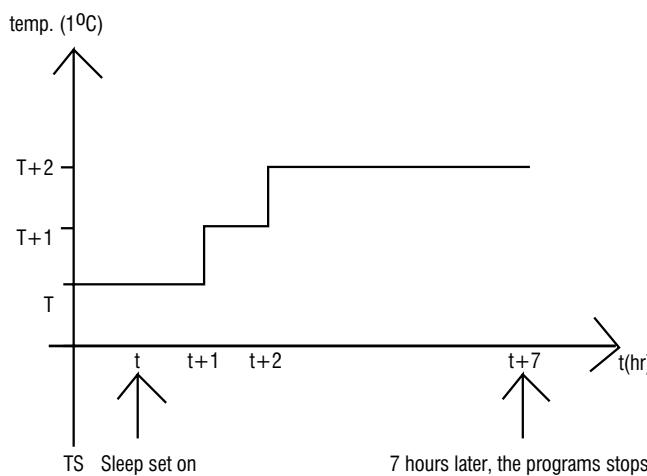
## 6. Cooling Mode with Sleep Mode Auto Control

a). When selecting Cooling (  ) mode combined with Sleep Mode Auto Control (  ), the operation diagram is shown below.

b). The setting temperature will be automatically raised by 1, 60 minutes later only twice.

c). If timer is set, it will take priority.  
d). Sleep mode will stop after 7 hours.

The COOL mode SLEEP profile is as follows:



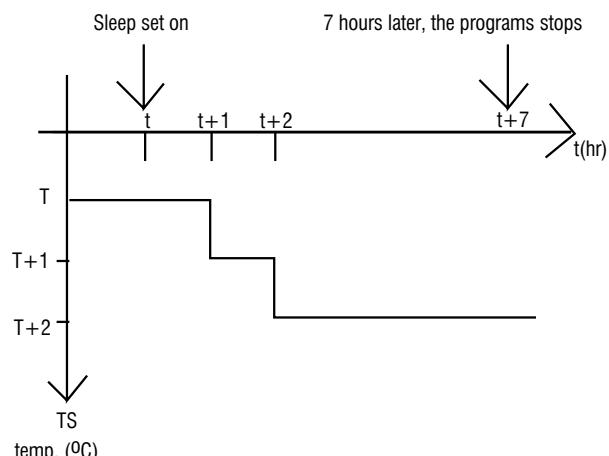
## 7. Heating Mode with Sleep Mode Auto Control

a). When selecting Heating (  ) mode combined with Sleep Mode Auto Control (  ), the operation diagram is shown below.

b). The setting temperature will be automatically lowered by 20C, 60 minutes later only twice.

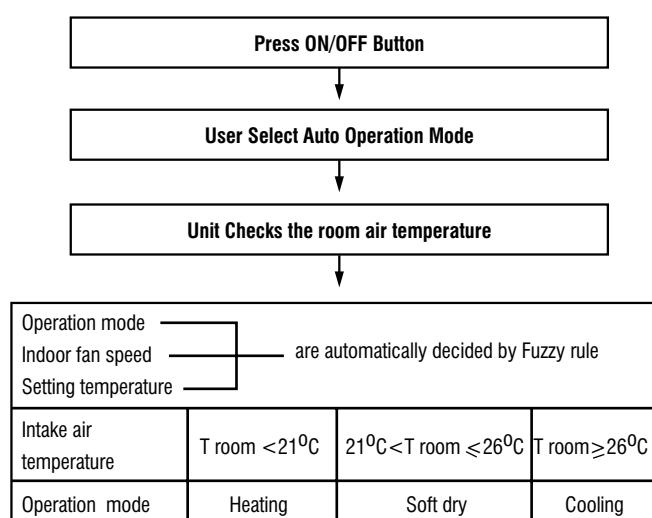
c). If timer is set, it will take priority.  
d). Sleep mode will stop after 7 hours.

The HEAT mode SLEEP profile is as follows:



## 8. Auto Heat-Dry-Cool Operation

The procedure is as follows.

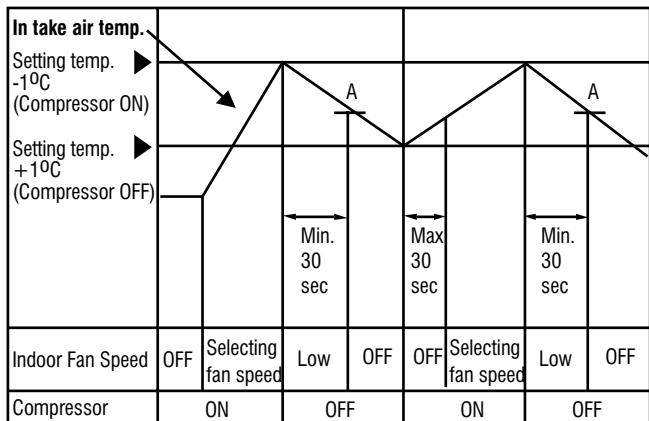


\* Initial operation mode is selected by room air temperature.

Operation mode remains on last selection when re-starting the unit.

## 9. Heating Mode Operation

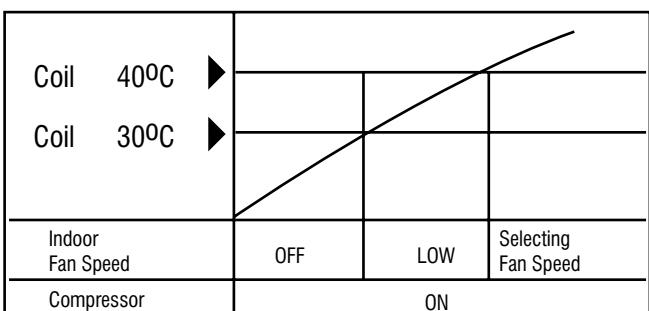
The unit will operate according to the setting by the remote controller and the operation diagram is shown below.



## 10. Hot-Start Control

The indoor fan does not start until the indoor coil temperature has reached 30 °C.

The operation diagram is shown below.



## 11. Deice Control of Indoor Unit

Indoor defrost cycle: when indoor coil reaches 0°C, compressor and outdoor unit fan stop with indoor fan continuing to operate at set speed. When indoor coil reaches 6°C, compressor and outdoor fan start again.

## 12. Deice Control with Outdoor Unit (In Heat Pump Function)

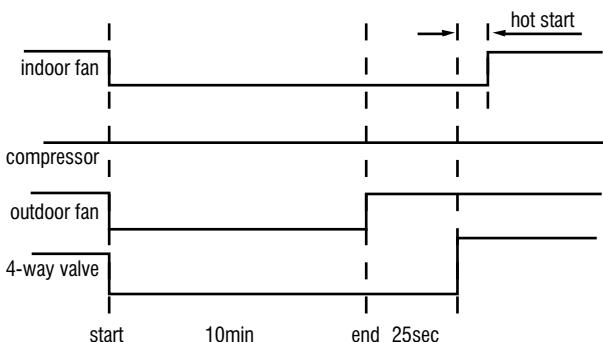
When the defrost sensor < 4°C the timer will start and the defrost function will commence 35 mins. (Tn) later:

In defrost operation the 4-way valve, indoor fan and outdoor fan stop, the compressor keeps running. In Tn+2 seconds, the system begins to judge.

When the defrost sensor rises to + 16°C, within 60 seconds, or the defrost period lasts Td minutes, the defrost ends.

The next time the defrost sensor detects less than 4°C the interval time (Tn) before defrost function commences will be according to table below:

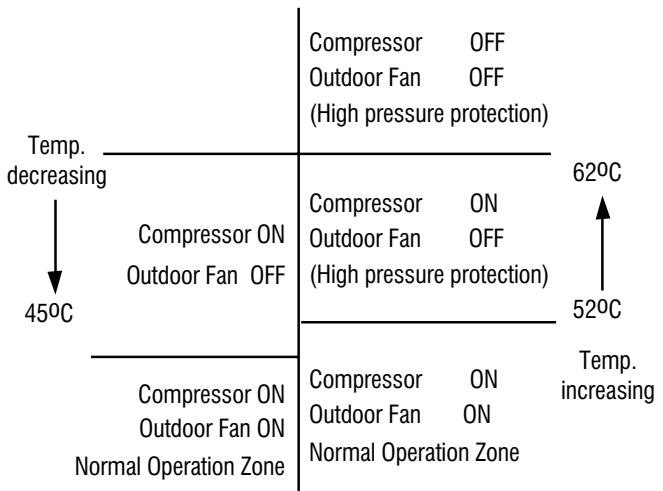
Present defrost time: Td (MAX 15mins. MIN: 3 mins)	Present defrost time: Td (MAX 60 mins. MIN: 15 mins)
Within 4 mins	last defrost interval time +10 mins
Within 4-6 mins	Same as last defrost interval time
Within 6-8 mins	last defrost interval time -10 mins
Above 8 mins	last defrost interval time -15 mins



## 13. High Pressure (Temperature Differential Control) Protection

If Indoor Coil Temperature > 52°C, the outdoor fan is turned off, compressor is on, after that, if Indoor Coil Temperature < 45°C, the outdoor fan will turn on again.

If Indoor Coil Temperature > 62°C, the outdoor fan and compressor are turned off, after that, if Indoor Coil Temperature < 45°C, the outdoor fan and compressor will turn on again.



#### **14. Low Pressure (Temperature Differential Control) Protection**

Tr = Room Temperature

Ti = Indoor Coil Temperature

##### a). Protection Activation

During COOL / DEHUMIDIFICATION / HEAT mode, compressor runs continuously 15 minutes,

If  $Ti - Tr \leq 30^{\circ}\text{C}$  for 5 minutes constantly, protection activates. Changing mode does not terminate protection function, except turning off unit.

During protection:

In COOL mode, outdoor unit stops, indoor fan runs at set speed.

In DEHUMIDIFICATION mode, outdoor unit stops, indoor fan runs at low speed.

In HEAT mode, outdoor unit and indoor fan stop.

##### b). Protection Deactivation

During COOL / DEHUMIDIFICATION / HEAT mode, compressor runs for 3 minutes.

If  $Ti - Tr > 30^{\circ}\text{C}$  for 10 seconds, protection deactivates.

#### **15. High Pressure Switch Protection**

This is to protect the system from high pressure operation.

System pressure is measured at gas discharge pipeline.

Protection activates when system pressure  $> 4.2 \text{ Mpa}$ , deactivates  $< 3.6 \text{ Mpa}$

- a). During COOL/DEHUMIDIFICATION mode, compressor stops, 3 minutes later outdoor fan stops, indoor fan runs continuously.
- b). During HEAT mode, compressor, outdoor and indoor fans stop, 4-way valve maintains position.

Note: This protection device is standard for I043PCY1.

#### **16. Low Pressure Switch Protection**

This is to protect the system from too low pressure operation.

Low system pressure is measured at gas suction pipeline.

Protection activates when system pressure  $< 0.15 \text{ Mpa}$ , deactivates  $> 0.25 \text{ Mpa}$ .

- a). During COOL/DEHUMIDIFICATION mode, compressor stops, 3 minutes later outdoor fan stops, indoor fan runs continuously.
- b). During HEAT mode, compressor, outdoor and indoor fans stop, 4-way valve maintains position.

Note: This protection device is standard for I043PCY1.

#### **17. Compressor protection**

This is to protect the compressor being over heated during operation, when gas discharge temperature reaches  $130^{\circ}\text{C}$ , is activated.

- a). During COOL/DEHUMIDIFICATION mode, compressor stops, 3 minutes later outdoor fan stops, indoor fan runs continuously.
- b). During HEAT mode, compressor, outdoor and indoor fans stop, 4-way valve maintains position.

Compressor protection deactivates when gas discharge temperature falls to  $100^{\circ}\text{C}$ .

Note: This compressor protection is standard for I043PCY1.

#### **18. Electric heater strip for Compressor**

This Electric heater strip is connected with 4-way valve in parallel.

- a). Stand- by mode: Indoor Temp.  $\leq 25^{\circ}\text{C}$ , the electric heater strip and 4-way valve are power-on.
- b). Stand-by mode: Indoor Temp.  $\geq 27^{\circ}\text{C}$ , the electric heater strip and 4-way valve are power-off.
- c). When the compressor is off after cooling operation, the electric heater strip and 4-way valve off.
- d). When the compressor is off after heating operation, the electric heater strip and 4-way valve operate under above conditions a and b.

Note: For rotary compressor models, this electric heater strip installation is optional.

#### **19. Outdoor Fan Speed Control (Option)**

The main purpose of outdoor fan speed control (OFSC) is to avoid freezing of indoor evaporator in cooling mode when outdoor ambient temperature is low:

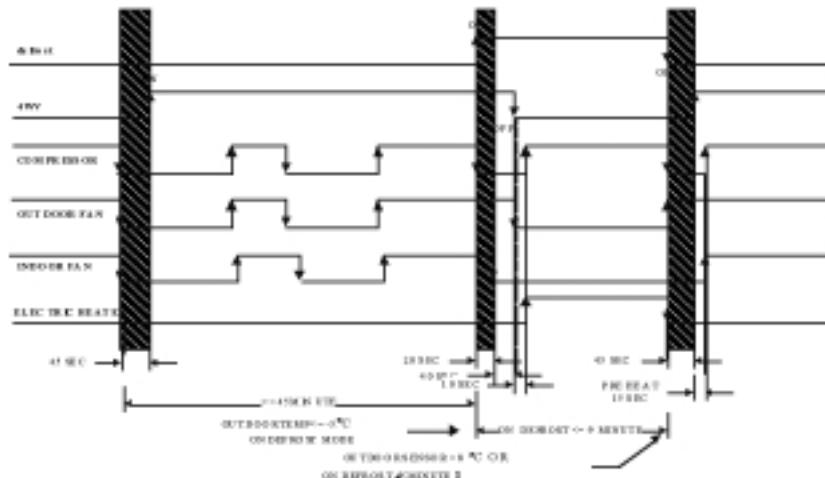
- a). When the indoor coil temperature descends below  $6^{\circ}\text{C}$ , the outdoor fan runs 60% and stops 40% of the operation cycle. When the indoor coil temperature descends below  $4^{\circ}\text{C}$ , the outdoor fan runs 30% and stops 70% of the operation cycle. When the indoor coil temperature descends below  $2^{\circ}\text{C}$ , the outdoor fan stops.
- b). When the indoor coil temperature rises over  $3^{\circ}\text{C}$ , the outdoor fan runs 30% and stops 70% of the operation cycle. When the indoor coil temperature rises over  $5^{\circ}\text{C}$ , the outdoor fan runs 60% and stops 40% of the operation cycle. When the indoor coil temperature rises over  $7^{\circ}\text{C}$ , the outdoor fan runs continuously.

The operation cycle for each of the above is 20 seconds.

## 20. Outdoor defrost

### With outdoor coil sensor

- a). After 45 minutes of continuous running and in heat mode over 8 minutes, if  $T_o \leq -5^{\circ}C$ , the outdoor defrost is activated.
- b). When defrost is to activate:
- Compressor is turned off.
  - Indoor fan will be turned off in 20 seconds.
  - Outdoor fan will be turned off in 60 seconds.
  - 4-way valve will be closed in 60 seconds.
  - Compressor and auxiliary electric heater will be on in 70 seconds.
- c). When defrosting over 9 minutes or  $T_o \geq 8^{\circ}C$  or the high pressure protection is on over 8 seconds, defrosting will stop.
- d). When defrost is to deactivate:
- Compressor and auxiliary electric heater is turned off.
  - Outdoor fan is on.
  - 4-way valve will be opened in 45 seconds.
  - Compressor will be on in 60 seconds.
  - Indoor fan will run in pre-heat condition.
  - Unit will operate in heat mode.

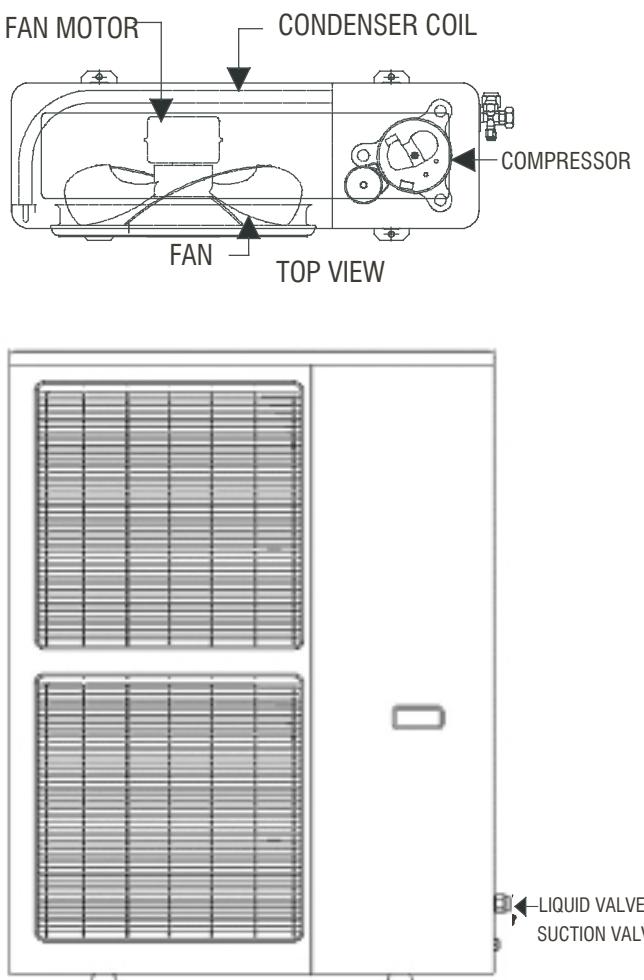


## 8. Service

### Cleaning coils

The coil should be washed out with water, or blown out with compressed air. Clean the coil annually, or as required by the location or outdoor air conditions. Inspect the coil monthly and clean as required. Dirt and debris may pass through the first coil section, then become trapped between the rows of fins and restrict the condenser air flow. Use a flashlight to determine if any dirt or debris has collected between the coil sections. Clean coil as follows:

1. Turn off unit power.
2. Using a water hose, or any other suitable equipment, flush the coil from the outside to remove dirt. Be sure to flush all dirt and debris from the drain holes in the base of the unit.



### Sensor resistance R-T Conversion table

R25: 5.00 KΩ ±1%

B25/50: 3470 KΩ ±1%

Tx (°C)	Rmin (KΩ)	Rnom (KΩ)	Rmax (KΩ)
-30	61.5127	63.7306	66.0228
-29	58.2546	60.3223	62.4578
-28	55.1899	57.1180	59.1081
-27	52.3059	54.1043	55.9593
-26	49.5909	51.2686	52.9981
-25	47.0340	48.5994	50.2122
-24	44.6249	46.0860	47.5902
-23	42.3544	43.7182	45.1215
-22	40.2135	41.4863	42.7962
-21	38.1942	39.3832	40.6052
-20	36.2887	37.3992	38.5398
-19	34.4490	35.5274	36.5922
-18	32.7916	33.7607	34.7549
-17	31.1872	32.0927	33.0211
-16	29.6710	30.5172	31.3843
-15	28.2377	29.0286	29.8385
-14	26.8824	27.6216	28.3782
-13	25.6003	26.2913	26.9981
-12	24.3870	25.0330	25.6934
-11	23.2384	23.8424	24.4595
-10	22.1508	22.7155	23.2922
-9	21.1205	21.6486	22.1875
-8	20.1443	20.6380	21.1417
-7	19.2189	19.6806	20.1513
-6	18.3414	18.7732	19.2131
-5	17.5092	17.9129	18.3241
-4	16.7195	17.0970	17.4813
-3	15.9700	16.3230	16.6822
-2	15.2585	15.5886	15.9242
-1	14.5827	14.8913	15.2050
0	13.9408	14.2293	14.5224
1	13.3320	13.6017	13.8757
2	12.7534	13.0057	13.2617
3	12.2035	12.4393	12.6786
4	11.6806	11.9011	12.1247
5	11.1833	11.3894	11.5983
6	10.7102	10.9028	11.0979
7	10.2599	10.4399	10.6221
8	9.8313	9.9995	10.1696
9	9.4231	9.5802	9.7390
10	9.0343	9.1810	9.3292
11	8.6638	8.8008	8.9391
12	8.3107	8.4385	8.5676
13	7.9740	8.0934	8.2137
14	7.6530	7.7643	7.8765
15	7.3468	7.4506	7.5551

16	7.0546	7.1513	7.2487	63	1.3030	1.3336	1.3648
17	6.7757	6.8658	6.9565	64	1.2623	1.2923	1.3230
18	6.5095	6.5934	6.6778	65	1.2231	1.2526	1.2827
19	6.2552	6.3333	6.4118	66	1.1852	1.2142	1.2438
20	6.0124	6.0850	6.1579	67	1.1487	1.1771	1.2062
21	5.7803	5.8479	5.9156	68	1.1134	1.1413	1.1699
22	5.5586	5.6213	5.6841	69	1.0794	1.1068	1.1348
23	5.3466	5.4048	5.4631	70	1.0465	1.0734	1.1010
24	5.1439	5.1978	5.2519	71	1.0148	1.0412	1.0682
25	4.9500	5.0000	5.0500	72	0.9842	1.0100	1.0366
26	4.7609	4.8108	4.8608	73	0.9546	0.9800	1.0061
27	4.5800	4.6298	4.6797	74	0.9260	0.9509	0.9765
28	4.4070	4.4566	4.5064	75	0.8984	0.9228	0.9480
29	4.2415	4.2909	4.3404	76	0.8717	0.8957	0.9204
30	4.0832	4.1323	4.1815	77	0.8460	0.8695	0.8937
31	3.9316	3.9804	4.0293	78	0.8211	0.8441	0.8679
32	3.7865	3.8349	3.8835	79	0.7970	0.8196	0.8429
33	3.6475	3.6955	3.7438	80	0.7737	0.7959	0.8188
34	3.5144	3.5620	3.6098	81	0.7512	0.7730	0.7954
35	3.3869	3.4340	3.4814	82	0.7294	0.7508	0.7728
36	3.2647	3.3113	3.3582	83	0.7084	0.7293	0.7510
37	3.1476	3.1937	3.2401	84	0.6880	0.7086	0.7298
38	3.0353	3.0809	3.1267	85	0.6683	0.6885	0.7093
39	2.9276	2.9727	3.0180	86	0.6493	0.6690	0.6895
40	2.8244	2.8688	2.9136	87	0.6308	0.6502	0.6703
41	2.7253	2.7692	2.8134	88	0.6130	0.6320	0.6517
42	2.6302	2.6735	2.7171	89	0.5957	0.6144	0.6337
43	2.5389	2.5816	2.6247	90	0.5790	0.5973	0.6163
44	2.4513	2.4934	2.5359	91	0.5628	0.5808	0.5994
45	2.3672	2.4087	2.4505	92	0.5471	0.5647	0.5830
46	2.2864	2.3273	2.3685	93	0.5319	0.5492	0.5672
47	2.2088	2.2491	2.2897	94	0.5173	0.5342	0.5518
48	2.1342	2.1739	2.2139	95	0.5030	0.5196	0.5369
49	2.0626	2.1016	2.1410	96	0.4892	0.5055	0.5225
50	1.9937	2.0321	2.0709	97	0.4759	0.4919	0.5085
51	1.9278	1.9656	2.0038	98	0.4629	0.4786	0.4949
52	1.8644	1.9015	1.9391	99	0.4504	0.4658	0.4818
53	1.8033	1.8399	1.8769	100	0.4382	0.4533	0.4690
54	1.7445	1.7804	1.8168	101	0.4264	0.4412	0.4566
55	1.6879	1.7232	1.7590	102	0.4150	0.4295	0.4446
56	1.6333	1.6680	1.7032	103	0.4039	0.4182	0.4330
57	1.5808	1.6149	1.6495	104	0.3932	0.4071	0.4217
58	1.5301	1.5636	1.5977	105	0.3827	0.3965	0.4107
59	1.4813	1.5142	1.5477				
60	1.4343	1.4666	1.4995				
61	1.3889	1.4206	1.4530				
62	1.3452	1.3763	1.4081				

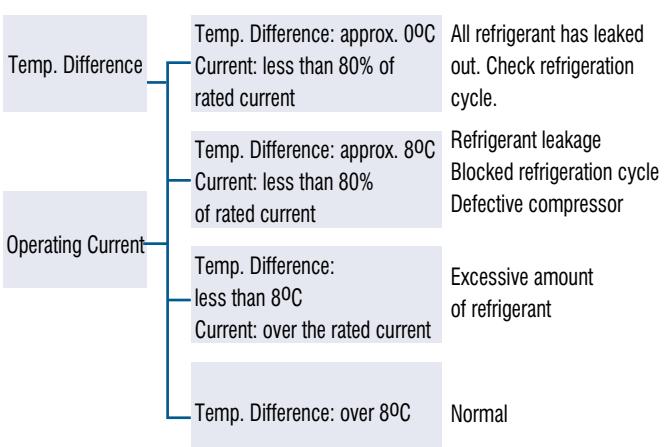
## System Troubleshooting Guide

Error code display on unit pad definition table.

CODE NO.	FAILURE SOURCE	ACTION
E2	INDOOR ROOM AIR TEMPERATURE SENSOR FAILURE	REPLACE SENSOR
E3	INDOOR COIL TEMPERATURE SENSOR FAILURE	REPLACE SENSOR
E5	OUTDOOR FAILURE	CHECK FOR GAS LEAKAGE OR COMPRESSOR FAILURE
E6	DEFROSTING FAILURE IN COOLING	CLEAN THE FILTER OR CHECK THE INDOOR MOTOR; OR THE OUTDOOR TEMPERATURE IS TOO LOW
E7	HEATING FAILURE	CHECK FOR GAS LEAKAGE OR COMPRESSOR FAILURE
E8	OVERHEAT IN HEATING	CLEAN THE FILTER OR CHECK THE INDOOR MOTOR; OR THE OUTDOOR TEMPERATURE IS TOO HIGH.

### Trouble analysis

- Check temperature difference between intake and discharge air.  
Check operating current.



### NOTES

Temperature difference between intake and discharge air depends on room air humidity. When the room air humidity is relatively high, temperature difference is smaller. When the room air humidity is relatively low temperature difference is larger.

### 2. Check temperature and pressure of refrigeration cycle.

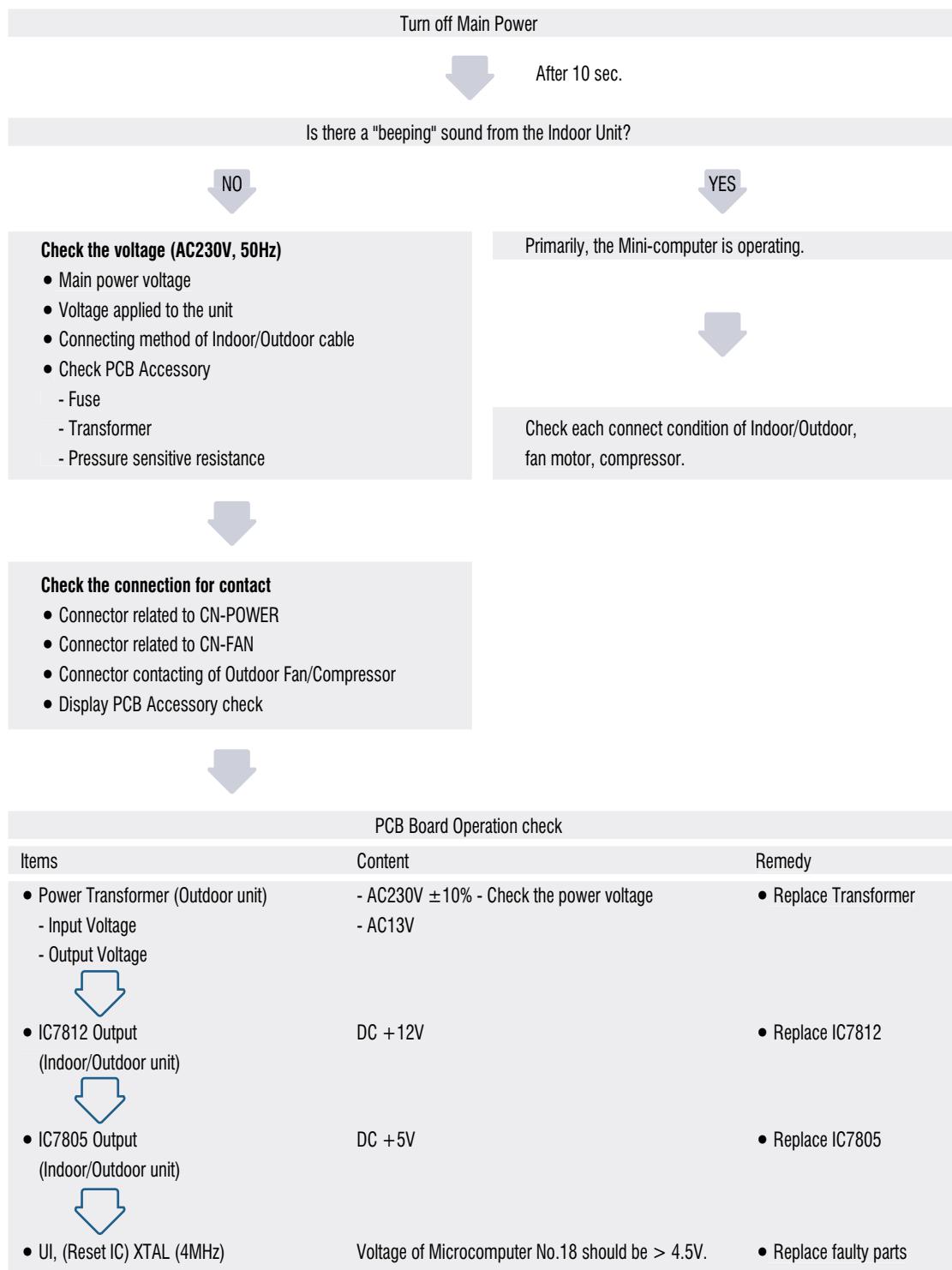
Suction pressure (Compared with The normal value)	Temperature (Compared with the normal value)	Cause of Trouble	Description
Higher	High	Defective compressor or Defective 4-way reversing valve	Current is low.
	Normal	Excessive amount of refrigerant	High pressure does not quickly rise at the beginning of operation.
Lower	Higher	Insufficient amount of Refrigerant (Leakage) or Clogging	Current is low.

### NOTES

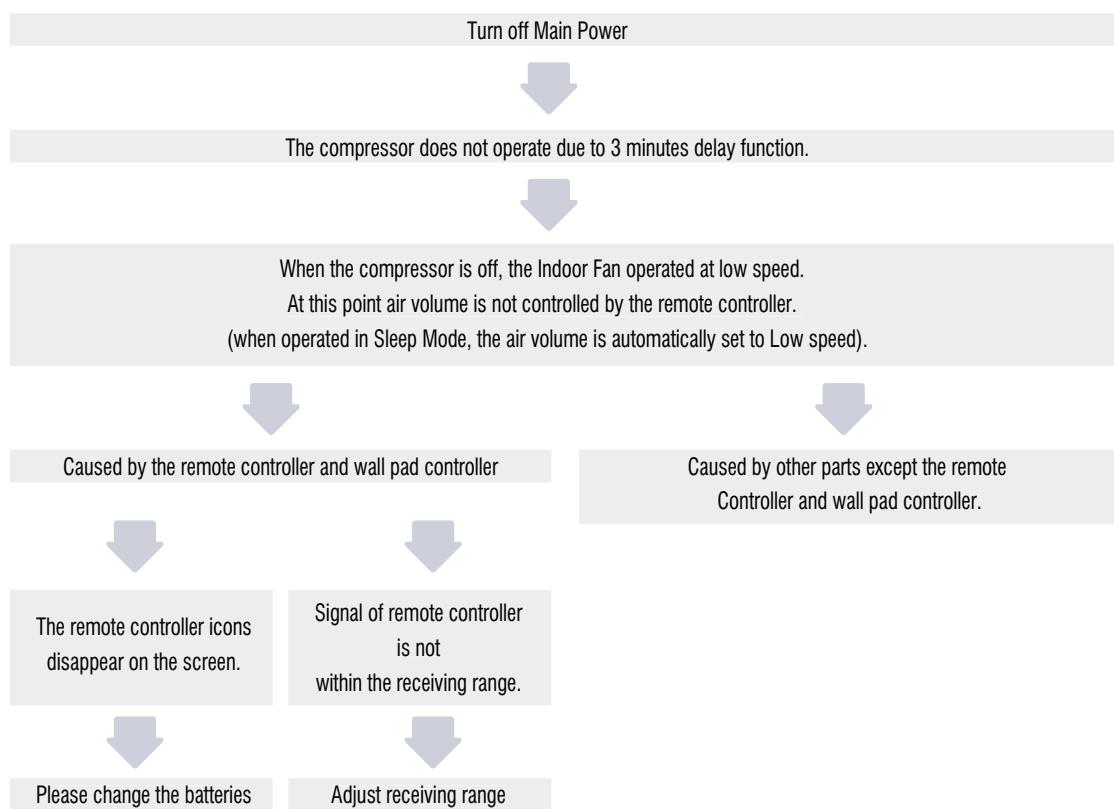
- The pressure is usually 5 ~ 7 kg/cm<sup>2</sup> (Cooling), 13 ~ 16 kg/cm<sup>2</sup> (Heating) at normal conditions.
- The temperature can be measured by attaching the thermometer to the low pressure tubing and wrapping it with putty.

## Electronic Parts Troubleshooting Guide

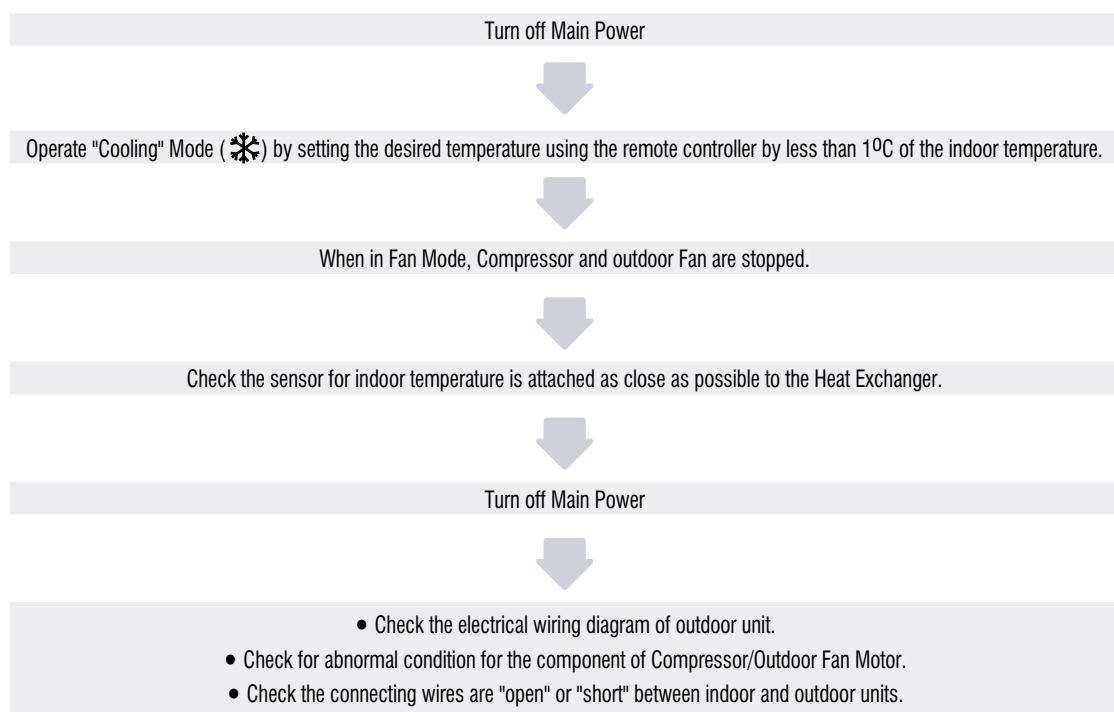
### 1. Product does not operate at all.



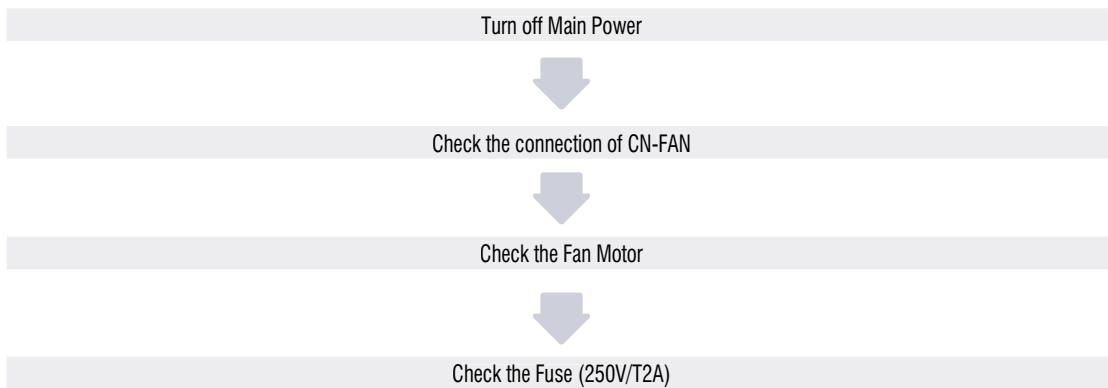
## 2. The product does not operate with the remote controller.



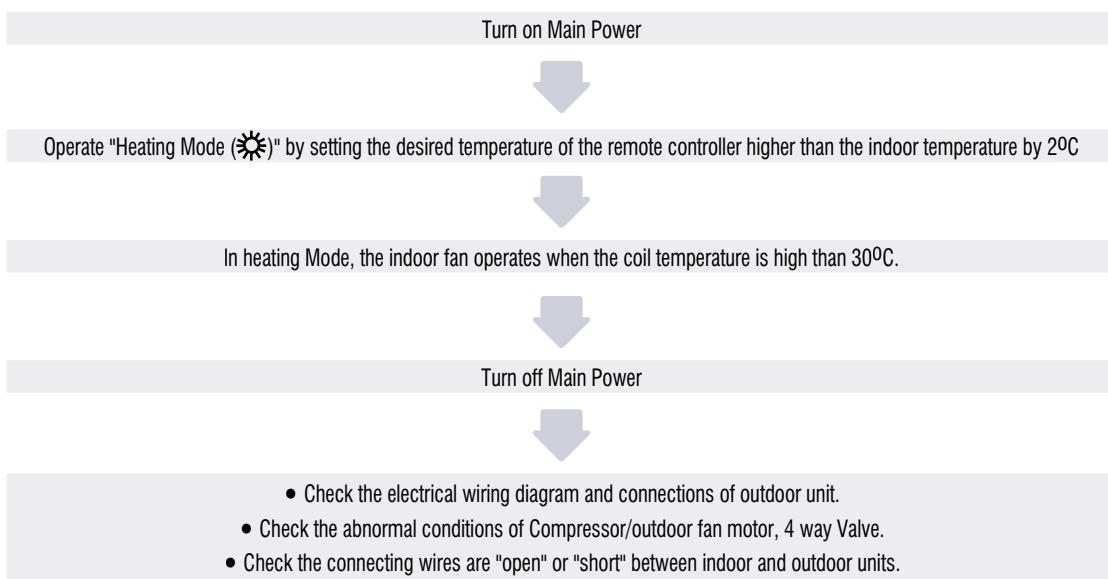
## 3. When Compressor/Outdoor Fan is unable to operate.



#### 4. When Indoor Fan is unable to operate.



#### 5. When Heating function does not operate.



## 6. Troubleshooting

Before calling your dealer, please check the following items.

Question	Reason	Deal with
The unit does not operate	1. Are the power supply plugs disconnected from the socket? 2. Has a circuit breaker been tripped or a fuse blown? 3. Is the voltage unstable? 4. Does setting temp reach room temp? 5. Is units in TIMER ON or OFF mode?	1. plug in?  2. Turn on or replace 3. Wait until power supply Return to normal.  5. Cancel Timer
There is a noise on the indoor unit	The air conditioner will expand or contract due to changes in temperature, causing a rattling sound.	Check copper tubes are not in contact with plastic parts.
The system does not cool or heat effectively	1. Are the air filters dirty? 2. Are the air intake or air outlet vents blocked? 3. Has the machine just started?	1. Clean air filter. 2. Remove blockage. 3. Wait
Smell from the indoor unit	1. Is anything in the room dispensing chemical odour? 2. Filter dirty?	Check.
Fog is blowing out from the indoor unit	This occurs when the air conditioner cools the room in high humidity.	This is normal.
Restart fails	3 minutes delay protects the compressor.	Wait 3 minutes

# Engineering Data 2007

Products are manufactured in ISO 9001:2000 certified factories. ISO 9001:2000 pertains to quality assurance regarding design, development, manufacturing and installation of products as well as to services related to the product.

Interklima units comply with the European regulations that guarantee the safety of the product



EN ISO 9001:2000



Specifications subject to change without notice

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design

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