



LG

Ceiling Duct-Type Air Conditioner

OWNER'S MANUAL

LG

IMPORTANT

Please read through this manual. It contains valuable information about your air conditioner. This manual may help save time and money by explaining proper product maintenance and preventing improper use.

PRECAUTIONS

Pay close attention to precautions in order to prevent potential hazards and damage from misuse or improper installation. LG is not responsible for any damages caused by misuse of the product.

Prior to installation, this air-conditioning unit must be submitted for approval by the utility service which provides electricity (EN 61000-3 Norm.)

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1. Safety Precautions

2. Operating Instructions

3. Care and Maintenance

4. Before you call for service

For Your Records

Write the model and serial numbers here:

Model # _____

Serial # _____

You can find them on a label on the side of each unit.

Dealer's Name _____

Date Purchased _____

Read This Manual

Inside you will find many helpful hints on how to use and maintain your air conditioner properly. Just a little preventive care on your part can save you a great deal of time and money over the life of your air conditioner.

You'll find many answers to common problems in the chart of troubleshooting tips. If you review our chart of **Troubleshooting Tips** first, you may not need to call for service at all.





CAUTION

- Contact the authorized service technician for repair or maintenance of this unit.
- Contact the installer for installation of this unit.
- The air conditioner is not intended for use by young children or invalids without supervision.
- Young children should be supervised to ensure that they do not play with the air conditioner.
- When the power cord is to be replaced, replacement work shall be performed by authorized personnel only.
- Installation work must be performed in accordance with the national wiring standards by authorized personnel only.

To prevent injury and property damage, follow these instructions.

⚠ Incorrect operation due to ignoring instructions will cause harm or damage, the seriousness of which is indicated by the following symbols.

 **WARNING** This symbol shows the possibility of death or serious injury.

 **CAUTION** This symbol indicates the possibility of injury or damage to property.

	Never Do This
	Always Do This

Installation precautions

⚠ **WARNING**

■ **Do not install, remove and reinstall the unit by yourself.**

- Improper installation will cause water leakage, electrical shock, or fire. Please consult authorized dealer or specialist for the installation work. Please note fault caused by improper installation is not covered by warranty.
- Unit must be installed in an easily accessible area. Any additional cost required to hire a special equipment to service the unit will be the responsibility of the customer.

⚠ **WARNING**

Do not damage or use an unspecified power cord.	Do not operate switches with wet hands.	Plug in the power plug properly.
<ul style="list-style-type: none"> • It will cause electrical shock or fire. • If the supply cord is damaged, it must be replaced by the manufacturer or its service agent or a similarly qualified person in order to avoid a hazard. 	<ul style="list-style-type: none"> • It may cause electrical shock. 	<ul style="list-style-type: none"> • Otherwise, it will cause electrical shock or fire due to heat generation.
Do not operate or stop the unit by inserting or pulling out the power plug.	Do not insert your finger or stick, etc. into the air inlet/air outlet.	Do not expose the skin to cool air directly for a long time.
<ul style="list-style-type: none"> • It will cause electrical shock or fire due to heat generation. 	<ul style="list-style-type: none"> • Since the fan rotates at high speed, this may cause an injury or damage the unit. 	<ul style="list-style-type: none"> • This could damage your health.
⚠ When an abnormality (smell of burning, etc) occurs, stop the air conditioner, and turn off the breaker.	⚠ Repair or relocation should not be done by the customer.	
<ul style="list-style-type: none"> • If the unit continues to be operated in an abnormal condition, it may cause a fire, trouble, etc. In this case, consult your dealer. 	<ul style="list-style-type: none"> • If this is done in correctly, it may cause a fire, electric shock, injury by dropping of the unit, water leakage, etc. Consult your dealer. 	

⚠ CAUTION

- Contact the authorized Service technician for repair or maintenance of this unit.
- Contact the installer for installation of this unit.
- The air conditioner is not intended for use by young children or infirm persons without supervision.
- Young children should be supervised to ensure that they do not play with the air conditioner.

⚠ CAUTION

⊘ Do not clean the air conditioner with water.

- Water may enter the unit and degrade the insulation. It may cause an electric shock.

⊘ Ventilate well when used together with a stove, etc.

- An oxygen shortage may occur.

ⓘ When the unit is to be cleaned, switch off, and turn off the breaker.

- Since the fan rotates at high speed during operation, it may cause an injury.

ⓘ Do not put a pet or house plant where it will be exposed to direct air flow.

- This could injure the pet or plant.

⊘ Do not apply an insecticide or flammable spray.

- It may cause a fire or deformation of the cabinet.

⊘ Do not leave on installation stand which is damaged.

- The unit may drop or fall down and cause an injury.

⊘ Do not put a stove, etc. where is exposed to direct air flow.

- It may cause imperfect combustion.

⊘ When the unit is not going to be used for a long time, turn off the breaker.

- It may cause an injury.

⊘ Do not step on the outdoor unit and do not put anything on it.

- It may cause an injury through dropping or falling down.

⊘ Do not operate for a long time in high humidity, e.g. leaving a door or window open.

- In the cooling mode, if it is operated in a room with high humidity (80%r.h. or more) for a long time, water condensed in the air conditioner may drop and may wet and spoil furniture, etc.

ⓘ Do not step onto an unstable bench when attaching/detaching the panel.

- It may cause an injury, etc. by falling down.

⊘ Do not use for special purposes.

- Do not use this air conditioner to preserve precision devices, food, animal, plants and art objects. It may cause deterioration of quality, etc.

⊘ If the supply cord is damaged, it must be replaced by a special cord or assembly available from the manufacturer of its service agent.

- If will cause electrical shock or fire.

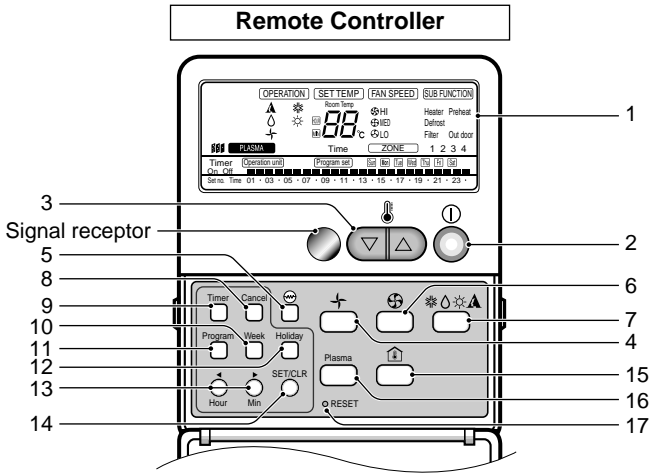
ⓘ When the air filter is to be removed, do not touch the metal parts of the indoor unit.

- It may cause an injury.

⊘ Do not insert hands through vanes when the air conditioner is operating.

- It will cause an injury by the rotating blower.

Name and Function of Remote Controller



- 1 Operation display**
Displays the operation conditions.
- 2 On/Off Button**
Operation starts when this button is pressed, and stops when the button is pressed again.
- 3 Set Temperature Button**
Used to set the temperature when the desired temperature is obtained.
- 4 FAN Operation Button**
Used to circulate room air without cooling or heating.
- 5 Electric Heater Button (optional: 48/60k ZL/ZA/ZP Model only)**
Used to set the Electric Heater.
- 6 Fan Speed Button**
Used to set desired fan speed.
- 7 Operation Mode Selection Button**
Used to select the operation mode.
 - Auto Operation Mode.
 - Cooling Operation Mode.
 - Soft Dry Operation Mode.
 - Heating Operation Mode. (except cooling model)
- 8 Timer Cancel Button**
Used to cancel the timer.
- 9 Timer Set Button**
Used to set the timer when the desired time is obtained.
- 10 Week Button**
Used to set a day of the week.
- 11 Program Button**
Used to set the weekly timer.
- 12 Holiday Button**
Used to set a holiday of the week.
- 13 Time Set Button**
Used to set the time of the day and change the time in the weekly timer Function.
- 14 Set and Clear Button**
Used to set and clear the weekly timer.
- 15 Room Temperature Checking Button**
Used to check the room temperature.
- 16 Plasma Air Clean Button (optional)**
- 17 Reset Button**
Used to set the current time and clear the setting time.

* Display temperature can be different from actual room temperature if the remote controller is installed at the place where sun-rays are falling directly or the place nearby heat source.

Optional Function

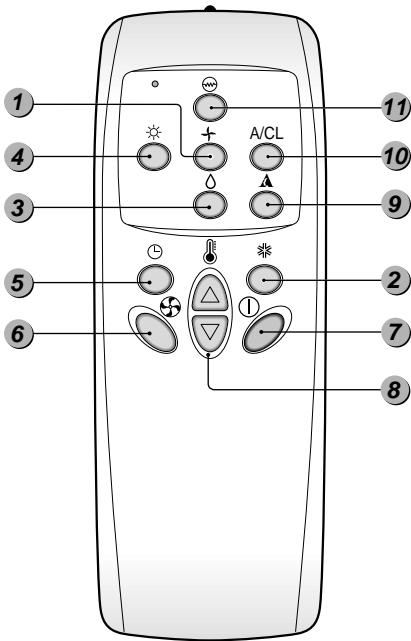
• WIRELESS REMOTE CONTROLLER

This air-conditioner is equipped with wired remote controller basically. But if you want to have the wireless remote controller, you pay for it.

Remote Controller

Signal transmitter

Transmits the signals to the signal receptor.



- 1 FAN Operation Button**
Used to circulate room air without cooling or heating.
- 2 Cooling Operation Button**
- 3 Soft Dry Operation Button**
Used to dehumidify without overcooling.
- 4 Heating Operation Button**
(Heat pump model only)
- 5 Timer Set Button**
Used to set the timer when the desired time is obtained.
Then the wired remote controller is set up to 24 hours by an hour but the wireless remote controller is set up to 7 hours by an hour. Therefore, if you want to set over 7 hours, use the wired remote controller.
- 6 Fan Speed Button**
Used to set the desired fan speed.
- 7 On/Off Button**
Operation starts when this button is pressed, and stops when the button is pressed again.
- 8 Set Temperature Button**
Used to set the temperature when the desired temperature is obtained
- 9 Auto Operation Button**
- 10 Plasma Air Clean Button(Optional)**
- 11 Electric Heater Button(Optional: 48/60k ZL/ZA/ZP Model only)**
Used to set the Electric Heater.

CAUTION

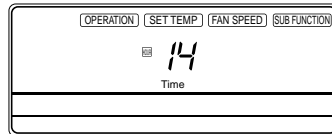
for handling the Remote Controller


- Aim at the signal receptor on the wired remote controller so as to operate.
- The remote control signal can be received at a distance of up to about 7m.
- Be sure that there are no obstructions between the remote controller and the signal receptor.
- Do not drop or throw the remote controller.
- Do not place the remote controller in a location exposed to direct sunlight, or near the heating unit, or any other heat source.
- Block a strong light over the signal receptor with a curtain or etc. so as to prevent the abnormal operation.
(ex:electronic quick start, ELBA, inverter type fluorescent lamp)

Set the Current Time and a day of the Week

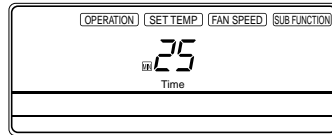
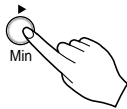
1 Press the '  ' button.

Each time the button is pressed, the number is changed from **00** to **23**.
You can set the number of the current hour.



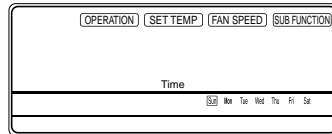
2 Press the '  ' button.


Each time the button is pressed, the number is increased from **00** to **59**.
You can set the number of the current minute.



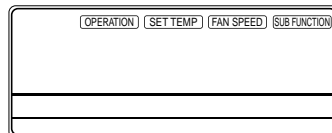
3 Press '  ' button.

Each time the button is pressed, a day of the week is shifted from Sunday to Saturday.
You can set the day of the week.



4 Press the '  RESET ' button.

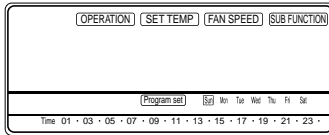
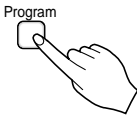
If you want to reset the current time and a day of the week, click the Reset button.



Weekly Programming

1 Press the Program button.

The remote controller is displayed like a picture. Then ' **Program set** ', ' **Sun** ' and '01' is blinked.



2 Press the ' **Week** ' button.

Press **Week** button repeatedly until desired mode appears.



For example, if you want Thu, press **Week** button 4 times.

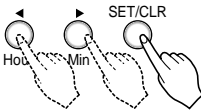
3 Select the time you want.

Press **Hour** or **Min** button, then blinking letter is shown.

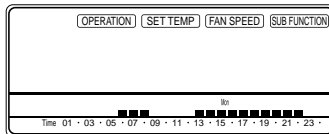
If you press **SET/CLR** button, then ' **■** ' shape appears.

' **■** ' shape means that five o'clock is reserved.

Using below buttons, you can reserve time.



* For example, the air-conditioner is on 6,7,8 and 13-22 o'clock.



4 Press the Program button again to finish weekly programming.



Holiday Setting

If Tuesday is a holiday in this week, you may set a holiday.

- 1 Press the Program button.



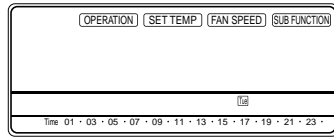
- 2 Press the Week button.
Select the Tuesday.



- 3 Press the Holiday button.



Then the remote controller will be displayed 'Tue'.
The outside rectangular means holiday.



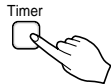
- 4 Press the Program button again to finish holiday setting.



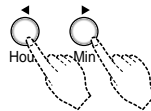
Timer Setting(Delay start/Pre-set stop)

This function is used to turn on or turn off in several hours.

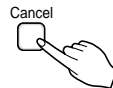
- 1 Press the Timer button
to turn Timer on or off.



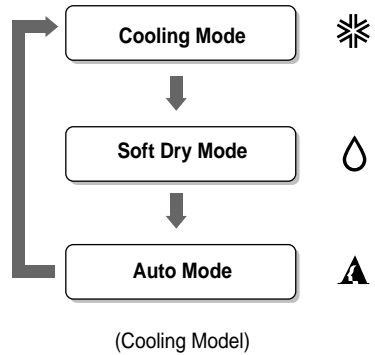
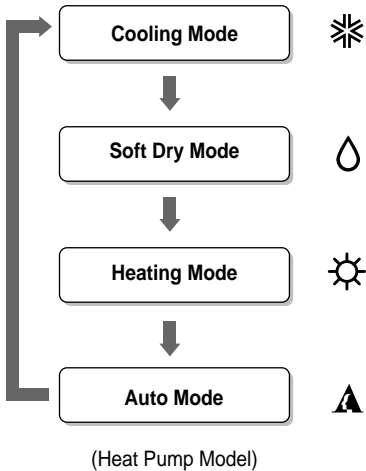
- 2 Change the timer setting until the desired time is set.



- 3 If you want to cancel the timer setting, press the Cancel button.



Operation Mode



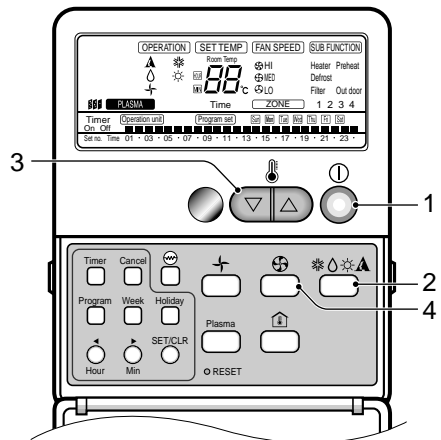
Operation Procedure

1st On/Off Button

2nd Operation Mode Selection Button

3rd Room Temperature Setting Button

4th Indoor Fan Speed Selection Button



Cooling Operation Mode

1 Press the On/Off Button.

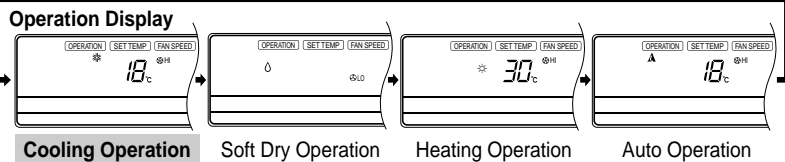


2 Select Cooling Operation.

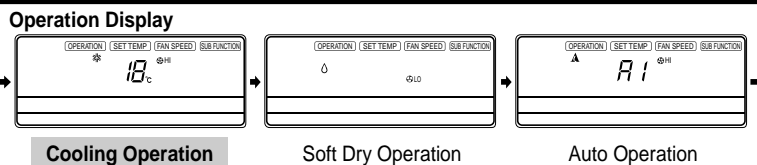
Press the Operation Mode Selection Button.

Each time the button is pressed, the operation mode is shifted in the arrow direction.

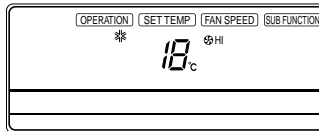
HEAT PUMP MODEL



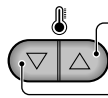
COOLING MODEL



3 Set the temperature lower than the room temperature.



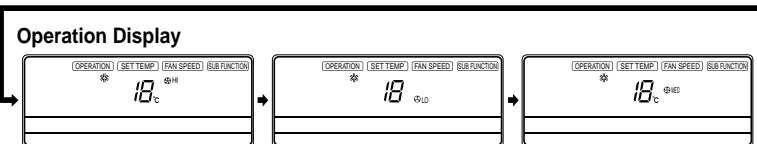
• The temperature can be set within a range of 18°C ~ 30°C by 1°C.



To raise the Temperature.

To lower the Temperature.

4 Set the fan speed.



- Select the fan speed in three steps- high, low, medium.
- The display shows high fan speed.
- Each time the button is pressed, the fan speed mode is shifted.

Soft Dry Operation Mode

This mode dehumidifies without overcooling.

1 Press the On/Off Button.

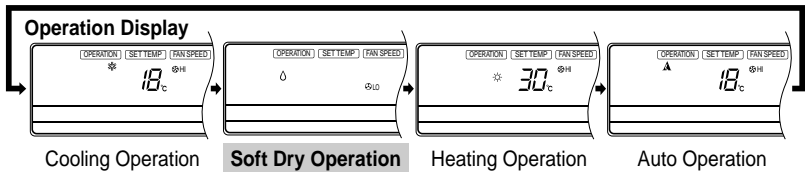


2 Select Soft Dry Operation.

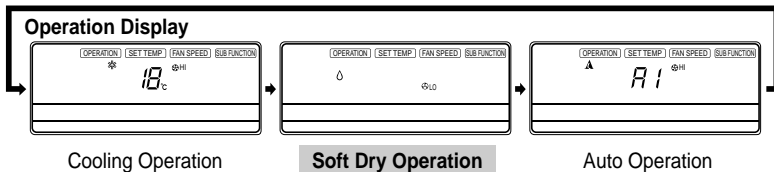
Press the operation Mode Selection Button.

Each time the button is pressed, the operation mode is shifted in the arrow direction.

HEAT PUMP MODEL



COOLING MODEL



3 During Soft Dry Operation.

- The indoor fan speed is automatically set to the low, so the shift of the indoor fan speed is impossible because it's already being set to the best speed for Dry Operation by Microm Control.

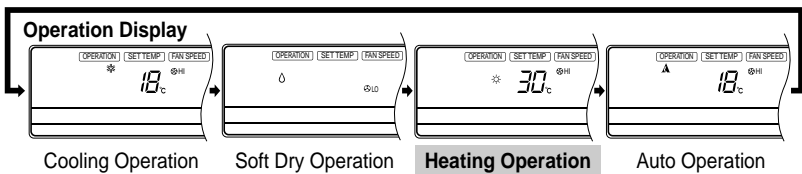
Heating Operation Mode (Heat pump model only)

1 Press the On/Off Button.

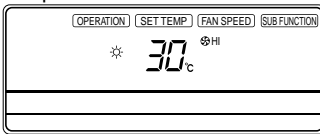


2 Select Heating Operation.

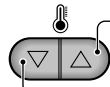
Press the Operation Mode Selection Button.
Each time the button is pressed, the operation mode is shifted in the arrow direction.



3 Set the temperature.



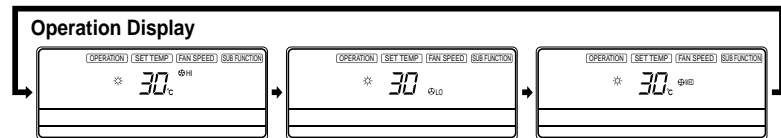
• The temperature can be set within a range of 16°C ~ 30°C by 1°C.



To raise the Temperature.

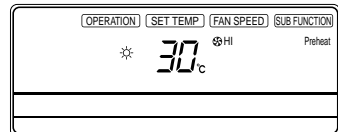
To lower the Temperature.

4 Set the fan speed.

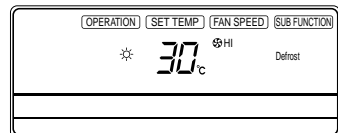


- Select the fan speed in three steps - high, low, medium.
- The display shows high fan speed
- Each time the button is pressed, the fan speed mode is shifted.

5 This air-conditioner is set to the hot start control in order not to discharge the cold air during the heating operation. This time, the remote controller indicates 'Preheat'.

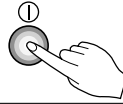


6 If the outdoor temperature is too low during the heating operation, this air-conditioner is set to the defrosting operation and the remote controller indicates 'Defrost'.



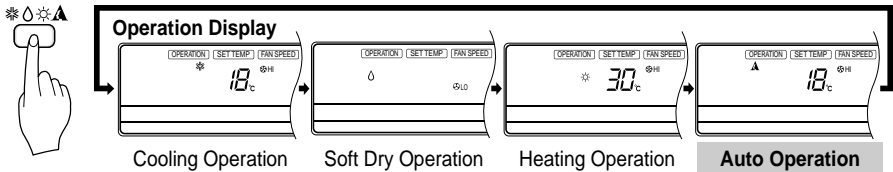
Auto Operation Mode

1 Press the On/Off Button.

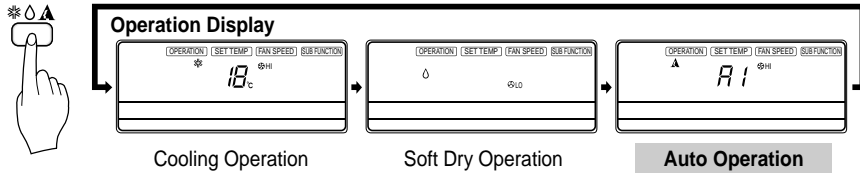


2 To select **Auto Operation**, press the Operation Mode Selection button.
Each time the button is pressed, the operation mode is shifted in the direction of the arrow.

HEAT PUMP MODEL



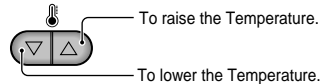
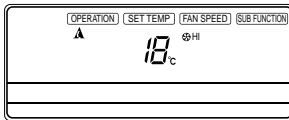
COOLING MODEL



3

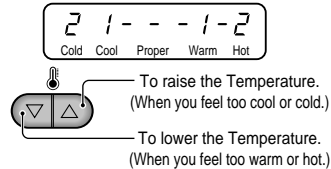
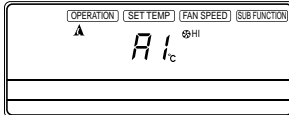
HEAT PUMP MODEL

Set the temperature lower than the room temperature.
The temperature can be set within a range of 18°C ~ 30°C by 1°C.



COOLING MODEL

Set the temperature upper or lower than the standard temperature.
The temperature can be set within a range of -2 ~ 2 by 1 level.



(This indication will be shifted to the initial Auto Mode Display state after 4 seconds.)

During Auto Operation:

- You can switch the indoor fan speed.
- The system will automatically switch from the cooling mode to the heating mode as the room temperature and set temperature. (Heat pump model only)

FAN Operation

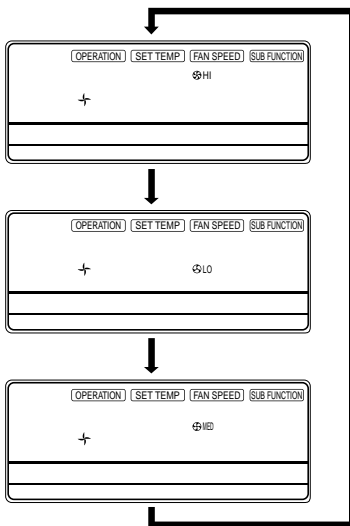
1 Press the On/Off Button.



2 Press FAN Operation Button.



3 Each time Indoor Fan Speed button is pressed, the fan speed mode is shifted in the arrow direction.



• Fan speed is high.

• Fan speed is low.

• Fan speed is medium.

* You can't set the temperature in Fan Operation mode. To exit this mode, press 'Operation Mode' button.

Electric Heater Operation Mode(Optional: 48/60k ZL/ZA/ZP Model Only)

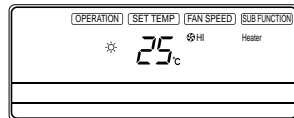
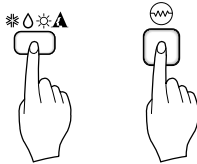
1 Press the On/Off Button.



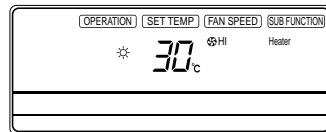
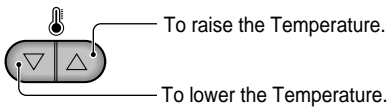
2 Select heating+ E/heater Operation.

Press the Operation Mode Selection Button.

Press the Heater Operation Button on the remote controller.(When the unit operates in heating mode.)



3 Set the temperature upper than the room temperature.
The temperature can be set within a range of 16°C~30°C by 1°C.

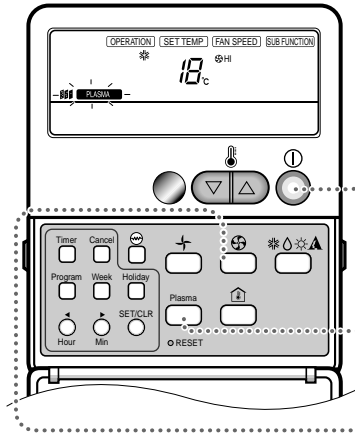


4 Set the Fan Speed.

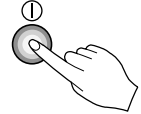


- Each time the Button is pressed, the Fan Speed mode is shifted.

PLASMA Purification Operation (Optional)



1 Press the On/Off button. The unit will start.



2 Open the door on the remote control. Press the PLASMA On/OFF button. Operation will start when the button is pressed and stop when the button is pressed again.



3 New Fan speed can be set after opening the door of the remote control. You can select the fan speed in three steps-low, medium or high. Each time the button is pressed, the fan speed mode is shifted.
* Air purifying operation (PLASMA) is available during cooling, heating or any other operations.



Child Lock Function

This is the Function that any children cannot used to the air-conditioner.

Operation procedure

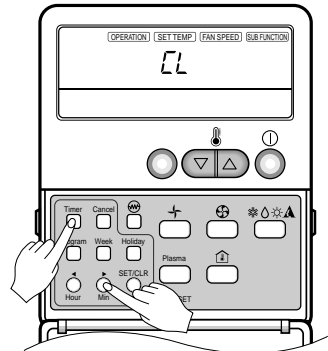
1 To set the Child-Lock Function

Press the Timer button and Minute Set button for three seconds. Then the operation mode shift to child lock mode and it is displayed 'CL' in the operation display.

When you press any button in this time, the remote controller is not converted to any selected mode and the 'CL' is displayed in the remote controller for about three seconds. But the Room Temperature function is operated in spite of child lock mode.

2 To cancel the Child-Lock Function

Press the Timer button and Minute Set button for three seconds. Then the child-lock mode is cancelled and the preselected mode is displayed in the remote controller.



Telephone Control Operation(optional)

Calling from outside, you can start the air conditioner to keep the room comfortable.

Even though you went out with the air conditioner on, you can turn it off using the phone outside.

1 TURN ON



- 1 Dial the number which is connected with the air conditioner.
- 2 After ringing 5 times.
- 3 You can hear the "Beep" sound (if the air conditioner is off), then press "0" "0" "7" "8" accordingly.
- 4 With the sound "Beep, Beep" the air conditioner starts on.
- 5 Hang up the phone.

2 TURN OFF



- 1 Dial the number which is connected with the air conditioner.
- 2 After ringing 5 times.
- 3 You can hear the "Beep Beep" sound (if the air conditioner is on), then press "0" "0" "7" "9" accordingly.
- 4 With the sound "Beep---" the air conditioner is turned off.
- 5 Hang up the phone.

Note:

- This product works after telephone rings 5 times.
- If internal user picks up the phone before 5 rings, Telephone control function does not work.
- If user doesn't push the telephone button 25 seconds after beep, Telephone control function doesn't work.
- If it is connected through EPABX system, Tele control doesn't work.

Telephone Control Operation(When using along with ARS telephone)

Calling from outside, you can start the air conditioner to keep the room comfortable.

Even though you went out with the air conditioner on, you can turn it off using the phone outside.

1 TURN ON



- 1 Dial the number which is connected with the air conditioner.
- 2 OGM guide is provided after signal sound rings four times and then "Beep"(sounds from telephone itself) sounds so that outside recording can be done.
- 3 Slowly press password "0" "0" "7" and "8" in order.
- 4 With the sound "Beep, Beep" the air conditioner starts on.
- 5 Hang up the phone.

2 TURN OFF



- 1 Dial the number which is connected with the air conditioner.
- 2 OGM guide is provided after signal sound rings four times and then "Beep"(sounds from telephone itself) sounds so that outside recording can be done.
- 3 Slowly press password "0" "0" "7" and "9" in order.
- 4 With the sound "Beep---" the air conditioner is turned off.
- 5 Hang up the phone.

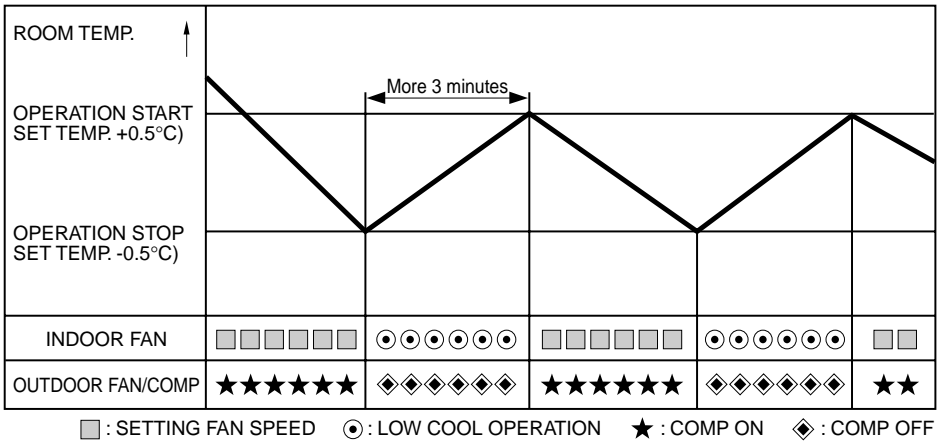
Note:

- The numbers of response bell should be adjusted to four times if pressing "Out-of-office" button or taking other action for automatic response.
- The recording time of OGM (Outgoing Message) should be less than approximately 15 seconds.
- If it is connected to key phone, it cannot be worked.

Operation Details

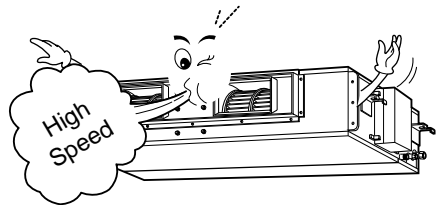
• Cooling Operation Mode

When the room temperature is higher than the set temperature, it operates in cooling mode at the set temperature, the set fan speed, and then it will be in automatically turn off when the room temperature reaches the set temperature +0.5°C.



Helpful information

Airflow speed and cooling capacity.
 The cooling capacity indicated in the specification is the value when the fan speed is set to high, and the capacity will be lower at low or medium fan speed.
 High fan speed is recommended when you wish to cool the room quickly.



- After main power is on, Fan will start 7 seconds later.

Self-Diagnosis Function

'CH' will flash in the remote controller display when a problem occurs. Then please contact your dealer.

Caution: Before performing any maintenance, turn off the main power to the system.

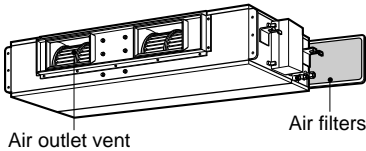
Indoor Unit

Grille, Case, and Remote Control

- Turn the system off before cleaning. To clean, wipe with a soft, dry cloth. Do not use bleach or abrasives.

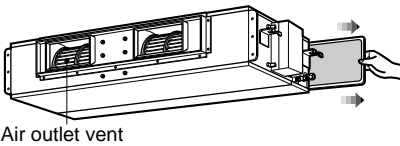
Note:

Supply power must be disconnected before cleaning the indoor unit.



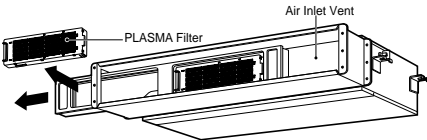
Air Filter


The air filters behind Indoor unit (the suction side) should be checked and cleaned once every 2 weeks or more often if necessary.



PLASMA Filter (Optional)

The PLASMA filter should be checked and cleaned, once every month or more often, if necessary.



 Don't touch this PLASMA Filter within 10 seconds after drawing out Air Cleaner Bracket, it may cause an electric shock.

- Never use any of the followings:

- Water hotter than 40°C
Could cause deformation and/or discoloration.
- Volatile substances
Could damage the surfaces of the air conditioner.



- 1 Clean the filter with a vacuum or warm, soapy water.
 - If very dirty, wash with a solution of detergent in lukewarm water.
 - If hot water (50°C or more) is used, filter may be deformed.
- 2 After washing with water, dry well in the shade.
- 3 Re-install the air filter.

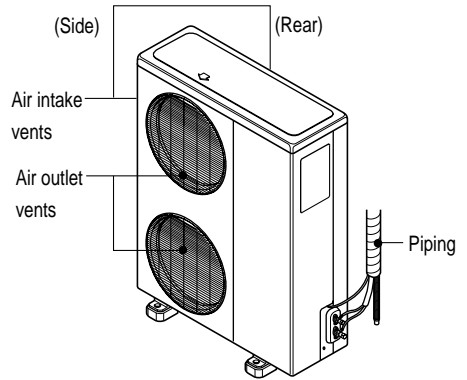
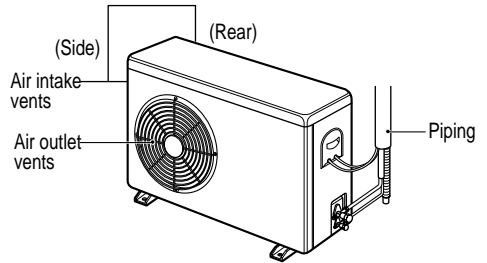
- 1 After removing the Panel-Cover, draw the Air Cleaner Bracket slightly sideward to remove the PLASMA filter.
- 2 Dip the PLASMA filter into the water mixed with mild detergent, for 20~30 minutes.
- 3 Dry the PLASMA filter in the shade for a day. (Especially, the humidity must be removed perfectly from this parts).
- 4 Be careful not to cut the electric discharge lines while washing.
- 5 Re-install the PLASMA filter to the original position.

Outdoor Unit

The heat exchanger coils and panel vents of the outdoor unit should be checked regularly. If clogged with dirt or soot, the heat exchanger and panel vents may be professionally steam cleaned.

Note:

Dirty or clogged coils will reduce the operating efficiency of the system and cause higher operating costs.



When the air conditioner is not going to be used for a long time.

When it is not going to be used for a long time.

- 1 Operate the air conditioner on Air circulation mode (Refer to page 15) for 2 to 3 hours.

- This will dry out the internal parts.

- 2 Turn off the circuit breaker.



Turn off the circuit breaker when the air conditioner is not going to be used for a long time.

Dirt may collect and may cause a fire.

When the air conditioner is to be used again.

- Check that the air inlet and outlet of the indoor/outdoor unit are not blocked.

Helpful information

The air filters and your electric bill.

If the air filters become clogged with dust, the cooling capacity will drop, and 6% of the electricity used to operate the air conditioner will be wasted.

Operation Tips

Do not overcool the room.

This is not good for the health and wastes electricity.

Clean the air filter regularly.

Blockages in the air filter reduce the airflow and lower cooling and dehumidifying effects. Clean at least once every two weeks.

Keep blinds or curtains closed.

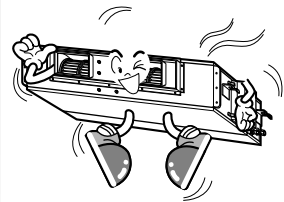
Do not let direct sunshine enter the room when the air conditioner is in operation.

Ventilate the room occasionally.

Since windows are kept closed, it is a good idea to open them and ventilate the room now and then.

Make sure that the doors and windows are shut tight.

Avoid opening doors and windows as much as possible to keep the cool air in the room.



Troubleshooting Tips! Save time and money!

Check the following points before requesting repairs or service.... If the malfunction persist, please contact your dealer.

Case	Explanation	See page
The air conditioner does not operate.	<ul style="list-style-type: none"> • Have you made a mistake in timer operation? • On first starting, the indoor unit operates in fifteen seconds. • Has the fuse blown or has the circuit breaker been tripped? 	9 -
The room has a peculiar odor.	<ul style="list-style-type: none"> • Check that this is not a damp smell exuded by the walls, carpet, furniture or cloth items in the room. 	-
It seems that condensate is leaking from the air Conditioner.	<ul style="list-style-type: none"> • Condensation occurs when the airflow from the air conditioner cools the warm room air. 	-
Air conditioner does not operate for about 3 minutes when restart.	<ul style="list-style-type: none"> • This is the protector of the mechanism. • Wait about three minutes and operation will begin. 	-
Does not cool or heat effectively.	<ul style="list-style-type: none"> • Is the air filter dirty? See air filter cleaning instructions. • The room may have been very hot when the room air conditioner was first turned on. Allow time for it to cool down. • Has the setting temperature been set incorrectly? • Are the indoor unit's air inlet or outlet vents obstructed? 	21 11, 13 -
The air conditioner operation is noisy.	<ul style="list-style-type: none"> • For a noise that sounds like water flowing. -This is the sound of freon flowing inside the air conditioner unit. • For a noise that sounds like the compressed air releasing into atmosphere. -This is the sound of the dehumidifying water being processed inside the air conditioning unit. 	-
Crack sound is heard.	<ul style="list-style-type: none"> • This sound is generated by the expansion/contraction of the inlet grille, etc. due to changes of temperature. 	
Remote control display is faint, or no display at all.	<ul style="list-style-type: none"> • Has the circuit breaker been tripped? 	-