

RHF050KHEA  
RHF100KHEA

# ERV Plus (ERV with DX-COIL) user & installation manual



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# Features of your new product

## Energy Recovery Ventilation

The product helps save energy and drive down operation costs of heaters and coolers by recycling thermal energy (energy load) efficiently.

## Interlocked operation with DVM

Controls of interlocked operation for energy saving, One remote controller can be used with air conditioners.

## Mounted for DX-coil unit for outdoor air treatment

This improves the dry and cooling effect in the summer and humidifying effect in the winter.

## Humidity Control

Fresh air conditions are guaranteed by recovering moisture in winter while exhausting it in summer. The high efficiency Humidifier element can be mounted.(Optional product)

## Low Noise and Low Power

With highly efficient motor and optimized system design, operation noise and electric consumption is minimized.

## The high efficiency filter

This protects the heat exchange element and cleans the polluted outdoor air before it enters the indoor room.

## Operation at Cold Area

Optimized automatic ventilation operation is conducted to prevent condensation and air volume reduction.

## Clean-UP operation

Prevent the odor and dust of other places such as bathroom and kitchen from entering inside by making supply air greater than the exhaustion air. (You can reverse this procedure to make the exhaustion air bigger than the supply air.)

## How to use this unit

This unit should be used with air conditioners. Air conditioning is impossible only by this unit, because this unit does not have temperature control function. (It's capacity is too small in order to control the room temperature to the whole) And should be operated in combination with standard indoor units. (Interlocked operation) Independent operation is possible, however, temperature setting by remote controller is impossible. In this ON/OFF operation by thermostat depends on factory setting, however, this value is changeable by installation/service mode on site. Model selection should be done not by cooling capacity but by ventilating air flow rate.

**Refer to following capacities when using the product with outdoor unit: RHF050KHEA - 3.6kW, RHF100KHEA - 7.1 kW**

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This product has been determined to be in compliance with the Low Voltage Directive (2006/95/EC), and the Electromagnetic Compatibility Directive (2004/108/EEC) of the European Union.



### **Correct Disposal of This Product (Waste Electrical & Electronic Equipment)**

#### ***(Applicable in the European Union and other European countries with separate collection systems)***

This marking shown on the product or its literature, indicates that it should not be disposed with other household wastes at the end of its working life. To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate this from other types of wastes and recycle it responsibly to promote the sustainable reuse of material resources.

Household users should contact either the retailer where they purchased this product, or their local government office, for details of where and how they can take this item for environmentally safe recycling.

Business users should contact their supplier and check the terms and conditions of the purchase contract.








This product should not be mixed with other commercial wastes for disposal.

## Safety precautions

Before using your new product, please read this manual thoroughly to ensure that you know how to safely and efficiently operate the extensive features and functions of your new appliance.


Because the following operating instructions cover various models, the characteristics of your product may differ slightly from those described in this manual. If you have any questions, call your nearest contact center or find help and information online at [www.samsung.com](http://www.samsung.com).

### Important safety symbols and precautions:

 <b>WARNING</b>	Hazards or unsafe practices that may result in <b>severe personal injury or death</b> .
 <b>CAUTION</b>	Hazards or unsafe practices that may result in <b>minor personal injury or property damage</b> .
	Follow directions.
	Do NOT attempt.
	Make sure the machine is grounded to prevent electric shock.
	Unplug the power plug from the wall socket.
	Do NOT disassemble.

### FOR INSTALLATION

### WARNING

-  **Use the power line with the power specifications of the product or higher and use the power line for this appliance only. In addition, do not use an extension line.**

- ▶ Extending the power line may result in electric shock or fire.
- ▶ Do not use an electric transformer. It may result in electric shock or fire.
- ▶ If the voltage/frequency/rated current condition is different, it may cause fire.

**The installation of this appliance must be performed by a qualified technician or service company.**


- ▶ Failing to do so may result in electric shock, fire, explosion, problems with the product, or injury.

**Install a switch and circuit breaker dedicated to the product.**

- ▶ Failing to do so may result in electric shock or fire.

**Fix the outdoor unit firmly so that the electric part of the outdoor unit is not exposed.**

- ▶ Failing to do so may result in electric shock or fire.

-  **Do not install this appliance near a heater, inflammable material. Do not install this appliance in a humid, oily or dusty location, in a location exposed to direct sunlight and water (rain drops). Do not install this appliance in a location where gas may leak.**

- ▶ This may result in electric shock or fire.

**Never install the outdoor unit in a location such as on a high external wall where it could fall.**

- ▶ If the outdoor unit falls, it may result in injury, death or property damage.

-  **This appliance must be properly grounded. Do not ground the appliance to a gas pipe, plastic water pipe, or telephone line.**

- ▶ Failure to do so may result in electric shock, fire, an explosion, or other problems with the product.
- ▶ Never plug the power cord into a socket that is not grounded correctly and make sure that it is in accordance with local and national codes.



## FOR INSTALLATION

### CAUTION



**Install your appliance on a level and hard floor that can support its weight.**

- ▶ Failing to do so may result in abnormal vibrations, noise, or problems with the product.

**Install the draining hose properly so that water is drained correctly.**

- ▶ Failing to do so may result in water overflowing and property damage.

**When installing the outdoor unit, make sure to connect the draining hose so that draining is performed correctly.**

- ▶ The water generated during the heating operation by the outdoor unit may overflow and result in property damage. In particular, in winter, if a block of ice falls, it may result in injury, death or property damage.



**Do not let the discharged air go back to the indoor through its air suction hole. It can contaminate indoor air.**

**Do not connect the electric heater to the product.**

**Hang down a blockage for bird in front of outdoor air suction duct. If something such as bird's nest blocks the air suction duct, it may result in oxygen shortage in indoors.**

## FOR POWER SUPPLY

### WARNING



**When the circuit breaker is damaged, contact your nearest service center.**



**Do not pull or excessively bend the power line. Do not twist or tie the power line. Do not hook the power line over a metal object, place a heavy object on the power line, insert the power line between objects, or push the power line into the space behind the appliance.**

- ▶ This may result in electric shock or fire.

## FOR POWER SUPPLY

### CAUTION



**When not using the product for a long period of time or during a thunder/lightning storm, cut the power at the circuit breaker.**

- ▶ Failing to do so may result in electric shock or fire.

## FOR USING

### WARNING



**If the appliance is flooded, please contact your nearest service center.**

- ▶ Failing to do so may result in electric shock or fire.

**If the appliance generates a strange noise, a burning smell or smoke, unplug the power plug immediately and contact your nearest service center.**

- ▶ Failing to do so may result in electric shock or fire.

**In the event of a gas leak (such as LNG, LPG or Liquefied natural gas, Liquefied petroleum gas, etc.), ventilate immediately without touching the power line.**

**Do not touch the appliance or power line.**

- ▶ Do not use a ventilating fan.
- ▶ A spark may result in an explosion or fire.

**To reinstall the product, please contact your nearest service center.**

- ▶ Failing to do so may result in problems with the product, water leakage, electric shock, or fire.
- ▶ A delivery service for the product is not provided. If you reinstall the product in another location, additional construction expenses and an installation fee will be charged.
- ▶ Especially, when you wish to install the product in an unusual location such as in an industrial area or near the seaside where it is exposed to the salt in the air, please contact your nearest service center.

# Safety precautions

## FOR USING

### WARNING



**Do not touch the circuit breaker with wet hands.**

▶ This may result in electric shock.

**Do not strike or pull the product with excessive force.**

▶ This may result in fire, injury, or problems with the product.

**Do not place an object near the outdoor unit that allows children to climb onto the machine.**

▶ This may result in children seriously injuring themselves.

**Do not turn the product off with the circuit breaker while it is operating.**

▶ Turning the product off and then on again with the circuit breaker may cause a spark and result in electric shock or fire.

**After unpacking the product, keep all packaging materials well out of the reach of children, as packaging materials can be dangerous to children.**

▶ If a child places a bag over its head, it may result in suffocation.

**Do not insert your fingers or foreign substances into the air inlet/outlet of the product.**

▶ Take special care that children do not injure themselves by inserting their fingers into the product.

**Do not use the product as a ventilator for a burner.**

▶ If you use a burner with gas or gasoline, you need to have separate ventilation system for the combustible apparatus.



**If any foreign substance such as water has entered the appliance, cut the power by unplugging the power plug and turning the circuit breaker off and then contact your nearest service center.**

▶ Failing to do so may result in electric shock or fire.



**Do not attempt to repair, disassemble, or modify the appliance yourself.**

▶ Do not use any fuse (such as cooper, steel wire, etc.) other than the standard fuse.

▶ Failing to do so may result in electric shock, fire, problems with the product, or injury.

## FOR USING

### CAUTION



**Do not place objects or devices under the indoor unit.**

▶ Water dripping from the indoor unit may result in fire or property damage.


**Check that the installation frame of the outdoor unit is not broken at least once a year.**

▶ Failing to do so may result in injury, death or property damage.

**Max current is measured according to IEC standard for safety and current is measured according to ISO standard for energy efficiency.**


## FOR USING

### CAUTION

-  **Do not stand on top of the appliance or place objects (such as laundry, lighted candles, lighted cigarettes, dishes, chemicals, metal objects, etc.) on the appliance.**
  - ▶ This may result in electric shock, fire, problems with the product, or injury.
- Do not operate the appliance with wet hands.**
  - ▶ This may result in electric shock.
- Do not spray volatile material such as insecticide onto the surface of the appliance.**
  - ▶ As well as being harmful to humans, it may also result in electric shock, fire or problems with the product.
- Do not drink the water from the product.**
  - ▶ The water may be harmful to humans.
- Do not apply a strong impact to the remote controller and do not disassemble the remote controller.**
- Do not touch the pipes connected with the product.**
  - ▶ This may result in burns or injury.
- Do not use this product to preserve precision equipment, food, animals, plants or cosmetics, or for any other unusual purposes.**
  - ▶ This may result in property damage.
- Avoid directly exposing humans, animals or plants from the air flow from the product for long periods of time.**
  - ▶ This may result in harm to humans, animals or plants.
- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.**



## FOR CLEANING

### WARNING

-  **Do not clean the appliance by spraying water directly onto it. Do not use benzene, thinner or alcohol to clean the appliance.**
  - ▶ This may result in discoloration, deformation, damage, electric shock or fire.
- Before cleaning or performing maintenance, unplug the product from the wall socket and wait until the fan stops.**
  - ▶ Failing to do so may result in electric shock or fire.

## FOR CLEANING

### CAUTION

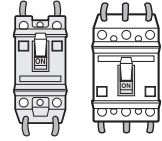
-  **Take care when cleaning the surface of the heat exchanger of the outdoor unit since it has sharp edges.**
  - ▶ To avoid cutting your fingers, wear thick cotton gloves when cleaning it.
-  **Do not clean the inside of the product by yourself.**
  - ▶ For cleaning inside the appliance, contact your nearest service center.
  - ▶ When cleaning the internal filter, refer to the descriptions in the 'Cleaning and maintaining the unit' section.
  - ▶ Failure to do so may result in damage, electric shock or fire.

# Checking before use

## Checking Up the Sub Power Supply

The sub power supply is a device to prevent electric leakage due to the over current. Install the sub power supply separately near the unit and turn it off when you clean the unit or you do not use the unit for a long period of time.

- ▶ Turn on the sub power supply which is installed separately.
  - The sub power supply is not supplied with the unit.
  - Purchase the sub power supply individually.



- If the circuit breaker (MCCB, ELB) is installed, the sub power supply does not need to be installed mandatorily.

## Install & Operation Ranges

Install condition	Outdoor air condition	Indoor air condition
0~40°C, 80%RH below	-15~40°C, 80%RH below	0~40°C, 80%RH below



- If the unit is operated under the condition other than are indicated, it may not operate due to the protective device in the unit. Especially, if outside temperature is under -15°C, the unit does not operate at all.
- Do not operate the unit when typhoon comes. Water may get in the room through the unit due to the rain and heavy winds.
- Avoid operating the unit in indoor or outdoor with high temperature and humidity since dew may form on the internal part of the product, including the heat exchanger. Especially avoid using it during the long rainy period in the summer.

## Maintaining your product

### Internal protections via the unit control system

► This internal protection operates if an internal fault occurs in the product.

Type	Description
Against cold air	The internal fan will be off to against cold air when the heat pump is heating.
De-frost cycle	The internal fan will be off to against cold air when the heat pump is heating.
Anti-protection of internal battery	The compressor will be off to protect internal battery when the product operates in Cool mode.
Protect compressor	The product does not start operating immediately to protect the compressor of the outdoor unit after it has been started.



NOTE

- If the heat pump is operating in Heat mode, De-ice cycle is actuated to remove frost from an outdoor unit that may have deposited at low temperatures.  
The internal fan is switched off automatically and restarted only after the de-ice cycle is completed.  
When the outdoor air suction temperature becomes lower than -10°C, the unit is changed to intermittent operation to prevent freezing of the heat exchanger element and dew condensation within the unit.

# Checking before use

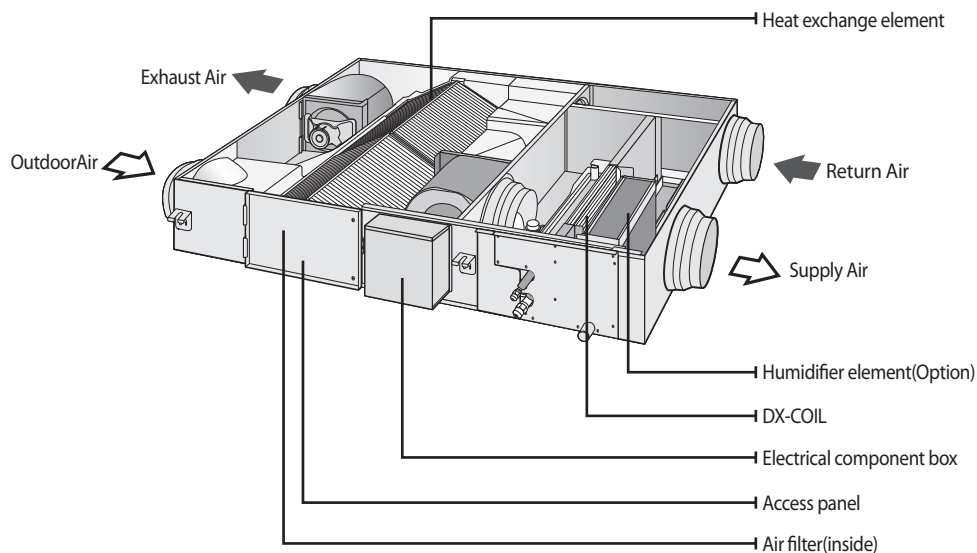
## Tips on using product

Here are some tips that you would follow when using your product.

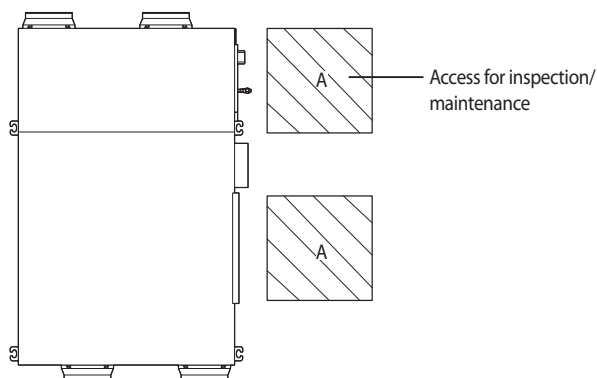
TOPIC	RECOMMENDATION
Heat-EX Mode	<ul style="list-style-type: none"> <li>Energy loss is minimized by recovering energy exhausted when indoor heating and cooling</li> </ul>
Quiet Mode	<ul style="list-style-type: none"> <li>This allows you to have quiet sleep and fresh air while sleeping.</li> <li>The ERV operation lamp will also be less bright.</li> </ul>
Outing Mode	<ul style="list-style-type: none"> <li>This allows you to operate the ERV while you are away from home.</li> <li>If the operational status is changed by another controller, the Outing mode is canceled.</li> </ul>
By-Pass Mode	<ul style="list-style-type: none"> <li>The ventilation method is used when temperature gap of indoor and outdoor is not big.</li> <li>Outdoor air flows into indoor.</li> </ul>
Auto Mode	<ul style="list-style-type: none"> <li>The air is automatically changed depending on the degree of pollution in the indoor air. (Available only when the additional CO<sub>2</sub> sensor is installed)</li> </ul>
Energy saving	<ul style="list-style-type: none"> <li>Make operating condition for optimized energy saving.</li> </ul>
Clean up	<ul style="list-style-type: none"> <li>Prevent the odor and dust of other places such as bathroom and kitchen from entering inside by making the supply air greater than the exhaust air. (You can reverse this procedure to make the exhaust air bigger than the supply air.)</li> </ul>
Cooling / Heating	<ul style="list-style-type: none"> <li>You can have cooling and heating operation through the DX-COIL.</li> <li>This unit should be used with air conditioners. Air conditioning is impossible only by this unit, because this unit does not have temperature control function. (It's capacity is too small in order to control the room temperature to the whole) and should be operated in combination with standard indoor units.</li> <li>When a remote controller is only connected to the ERV with DX-COIL, independent operation is possible. However, temperature setting by remote controller is not possible.</li> <li>In this ON/OFF operation by thermostat depends on factory setting. However, this value is changeable by installation/service mode on site.</li> </ul>
Frost & De-frost	<ul style="list-style-type: none"> <li>When the product runs in Heat mode, due to temperature difference between the unit and the outside air, frost will form.</li> <li>If this happens:               <ul style="list-style-type: none"> <li>The product stops heating.</li> <li>The product will operate automatically in De-ice mode for 10 minutes.</li> <li>The steam produced on the outdoor unit in De-ice mode is safe.</li> </ul> </li> <li>No intervention is required; after about 10 minutes, the product operates again normally.</li> <li>※ The unit will not operate when it starts to de-ice.</li> </ul>
High indoor/outdoor temperatures	<ul style="list-style-type: none"> <li>If both indoor and outdoor temperatures are high and the product is running in Heat mode, the outdoor unit's fan and compressor may stop at times. This is normal; wait until the product turns on again.</li> </ul>
Power failure	<ul style="list-style-type: none"> <li>If a power failure occurs during the operation of the product, the operating immediately stops and unit will be off. When power returns, the product will run automatically.</li> </ul>
Protection mechanism	<ul style="list-style-type: none"> <li>After the compressor has stopped or the power supply has been switched on, the compressor will not run for 3 minutes for its protection therefore cool/warm air does not come out of the unit immediately.</li> </ul>

# Checking the name of the parts

## Main parts



## Inspection hole



Model	'A' (mm)
RHF050KHEA	450 x 450
RHF100KHEA	550 x 550

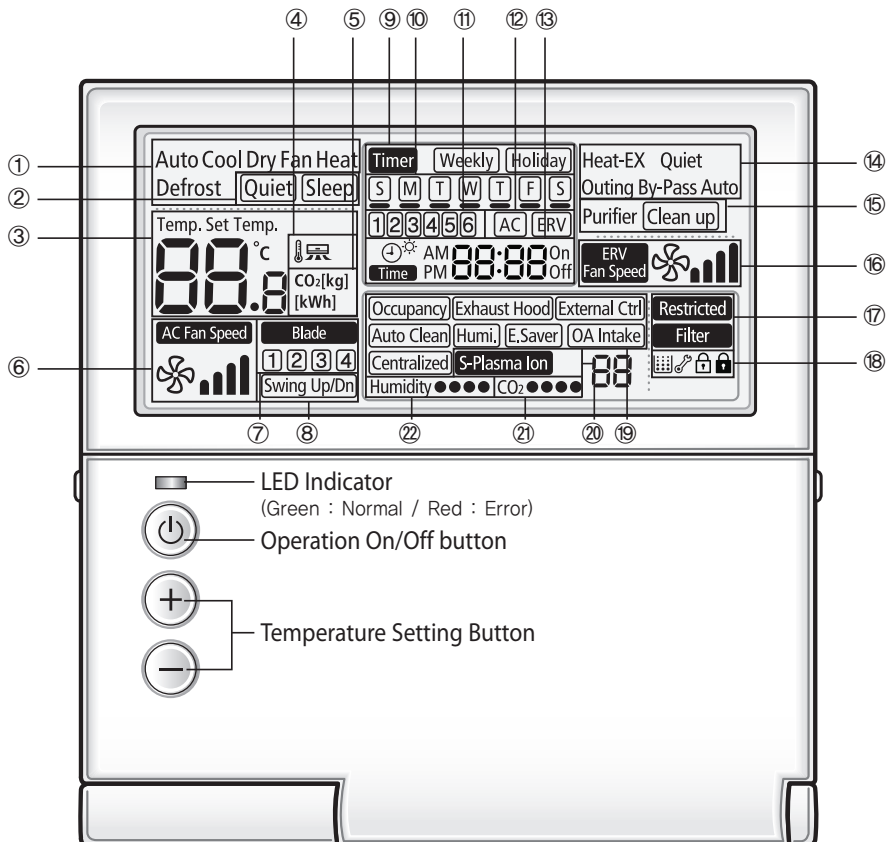
- There is access for inspection/maintenance for cleaning the air filter and the heat exchanger element.
- Lack of installation and maintenance spaces may cause injury or malfunction.
- There is also access for inspection/maintenance of the DX-coil and humidifier element.

# Checking the name of the parts

















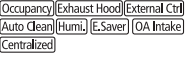



For detailed instruction, refer to the wired remote controller user manual.

- ▶ Wired remote controller (not supplied)
- ▶ Model: MWR-WE10

## Display

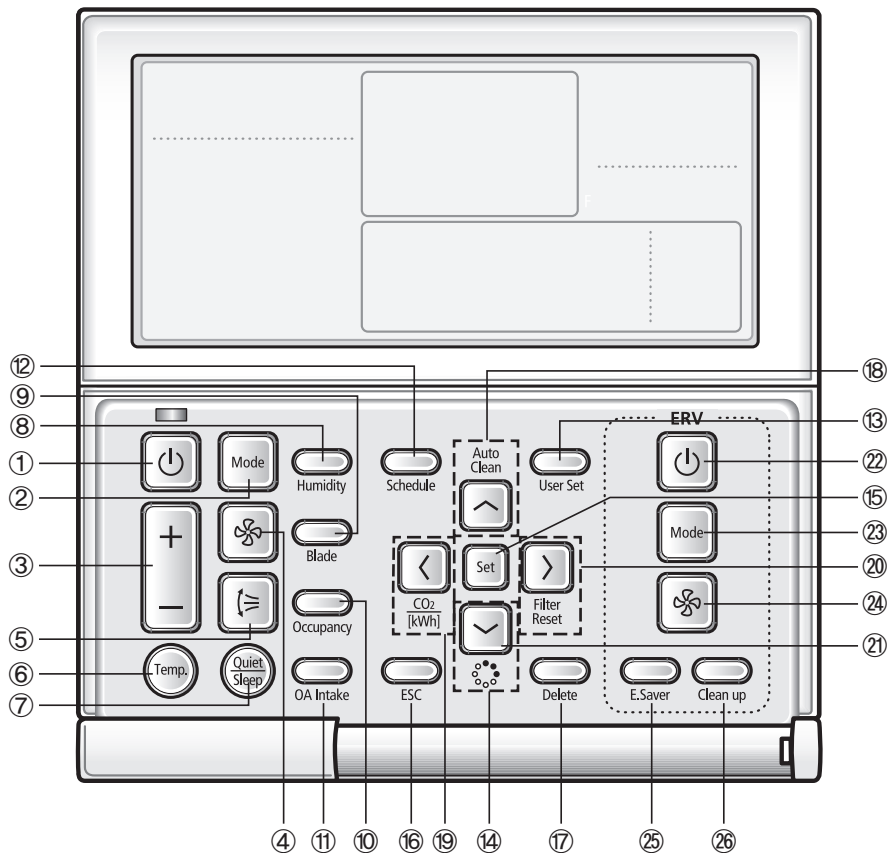























Classification	Indication	Function
Product Related Information	① Auto Cool Dry Fan Heat Defrost	Displays System operation
	② 	Displays Quiet/Sleep operation
	③ Temp. Set Temp. 	Displays Indoor temperature/Set temperature
	④ 	Displays discharge temperature control
	⑤ 	Displays CO <sub>2</sub> /power consumption
	⑥ 	Displays AC fan speed
	⑦ 	Displays Blade selection
	⑧ 	Displays Air swing(Up/Dn)
Schedule related information	⑨ 	Weekly schedule/Holiday setting displays
	⑩ 	Displays Current day(□) or scheduled day(●)
	⑪ 	Displays Schedule number
	⑫ 	Displays Scheduled device selection
	⑬ 	Displays Current time/summer time/scheduled time
Ventilator (ERV) related information	⑭ Heat-EX Quiet Outing By-Pass Auto Purifier	Displays Ventilator(ERV) operation
	⑮ 	Displays Clean up
	⑯ 	Displays Ventilator(ERV) fan speed
Common function related information	⑰ 	Displays Invalid operation /Filter cleaning (filter cleaning period)
	⑱ 	Displays Dust box cleaning alert/check/partial locking/full locking
	⑲ 	Displays occupancy detection/Exhaust hood/External interconnection control/Auto clean/ Humidifying/Energy saving/Outdoor air supply intake/ Centralized control
	⑳ 	Displays S-Plasma Ion
	㉑ 	Displays Indoor CO <sub>2</sub> density
	㉒ 	Displays Indoor humidity

# Checking the name of the parts

## Buttons




Classification	Button	Function	
Unit Related Information	①	Operation On/Off button	Turns the unit power On/Off
	②	Mode button	Selects the desired unit operation
	③	Temperature setting button	Sets the desired temperature
	④	Fan speed button	Changes the unit fan speed
	⑤	Air Swing button	Changes the air flow direction to move upward or downward
	⑥	Temp. button	Checks the indoor temperature
	⑦	Quiet/Sleep button	Selects Quiet or Sleep operation for the unit

Classification	Button	Function	
Unit Related Information	⑧ 	Humidity button	Turns the AHU humidifying function On/Off
	⑨ 	Blade button	Selects a blade for individual control
	⑩ 	Occupancy detection button	Set the power to automatically turn off if there is nobody in the room
	⑪ 	Outdoor air intake	Select the AHU Outdoor intake function
	⑫ 	Schedule Button	Select the schedule setting function
	⑬ 	User Set Button	Select the detailed setting function
Special Function Displays	⑭ 	Navigational buttons	Move between items or change the item value
	⑮ 	Set button	Save your new settings
	⑯ 	ESC button	Return to general mode from schedule and detailed setting screens
	⑰ 	Delete button	Cancel the schedule setting
	⑱ 	Auto Clean button	Use the auto cleaning function for your unit
	⑲ 	CO <sub>2</sub> /[kWh] button	Display the amount of CO <sub>2</sub> and the power consumption
	⑳ 	Filter Reset button	Turn off the filter cleaning displays (filter using time reset)
	㉑ 	S-Plasma Ion button	Choose the S-Plasma Ion function
Ventilator (ERV) Related Buttons	㉒ 	Operation On/Off button	Turn the Ventilator(ERV) On/Off
	㉓ 	Mode button	Select the desired operation for the Ventilator(ERV)
	㉔ 	Fan speed button	Change the fan speed for your Ventilator(ERV)
	㉕ 	E.Saver button	Begin Energy Saving Operation
	㉖ 	Clean up button	Select air purification through the in/out load controls



NOTE

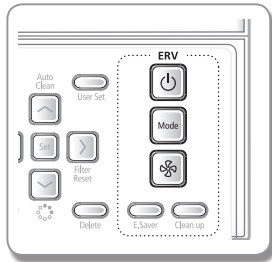
- After cleaning the filter, please press the **Filter Reset** button. The **Filter** lamp will turn off, and it will be turned on again upon the next cleaning period.
- If you press a functional button not supported by the unit, then the **Restricted** lamp will turn on.
- If the temperature display setting is set to indoor temperature and you press the **Temp.** button, the **Restricted** lamp display will appear. (When you install the wired remote controller, the setting is available.)
- If you press the **On/Off**  button when your Ventilator(ERV) is connected to a wired remote controller, then the air conditioner and the Ventilator(ERV) might operate or stop at the same time or only the air conditioner might operate or stop. The factory setting is set to simultaneous operation/stop. (When you install the wired remote controller, the setting is available.)
- Although the air conditioner and the Ventilator(ERV) are set to simultaneous operation/stop, you can individually control the air conditioner and the Ventilator(ERV) by using another controller (e.g. wireless remote controller, central controller, S-net mini) except for a wired remote controller.

# Basic operation

Basic operations can be selected after pressing the **Mode** button.

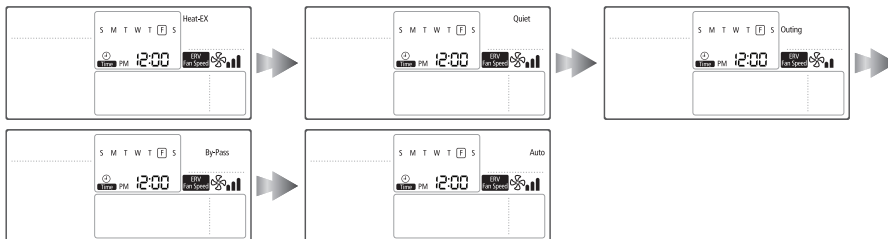
**When the wired remote controller is connected to an ERV with DX-COIL and an Air conditioner simultaneously**


**When controlling an ERV with DX-COIL**

















Press the  button to begin the ventilator(ERV) operation.

Press the  button to select the desired operation.



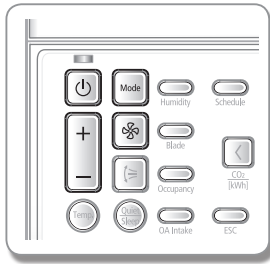
Press the  button to change the fan speed.

Heat-EX	 (High) ▷  (Turbo) ▷  (Medium)
Quiet	Can't change the fan speed.
Outing	 (Medium)
By-Pass	 (High) ▷  (Turbo) ▷  (Medium)
Auto	 (High) ▷  (Turbo) ▷  (Medium)

※ After installing a CO<sub>2</sub> sensor in your Ventilator(ERV), you can select from  (High) ▷  (Turbo) ▷  (Auto) ▷  (Medium).

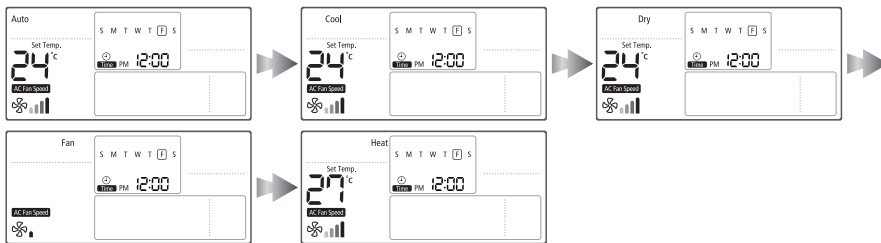
(Exception : Quiet Operation, Outing Operation)

## When controlling an Air conditioner

















Press the  button to begin operating the air conditioners.

Press the  button to select the desired operation.



Press the  button to select a fan speed.

Auto	 (Auto)
Cool	 (Low),  (Medium),  (High),  (Auto)
Dry	 (Auto)
Fan	 (Low),  (Medium),  (High)
Heat	 (Low),  (Medium),  (High),  (Auto)

Press the  button to set the desired temperature.

Auto	You can adjust the desired temperature by 1°C within a range of 18°C~30°C.
Cool	You can adjust the desired temperature by 1°C within a range of 18°C~30°C.
Dry	You can adjust the desired temperature by 1°C within a range of 18°C~30°C.
Fan	You can't change the desired temperature.
Heat	You can adjust the desired temperature by 1°C within a range of 16°C~30°C.

# Basic operation

## When controlling an ERV with DX-COIL and Air conditioner simultaneously

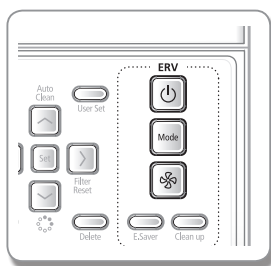
- ▶ Operate the ERV with DX-COIL and Air conditioners separately by referring to the operation of only the ERV with DX-COIL and only the Air conditioner.



- When you operate an ERV with DX-COIL only, cooling and heating operation is impossible.
- When you operate an ERV with DX-COIL and air conditioner at the same time, the ERV with DX-COIL follows the operation of the Air conditioner.

## When the wired remote controller is connected to an ERV with DX-COIL only

### When you operate the ventilation operation of an ERV with DX-COIL only

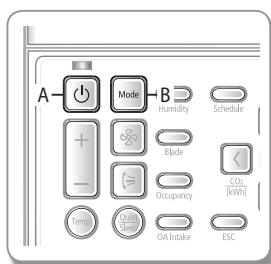


Press the button to begin the ventilator(ERV) operation.

Press the button to select the desired operation.

Press the button to change the fan speed.

### When you operate the cooling and heating operation of an ERV with DX-COIL

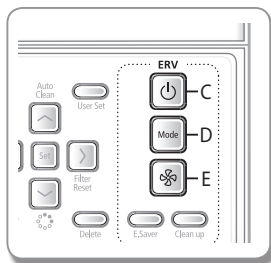


Press the (A or C) button to begin the ventilator(ERV) operation.

Press the (D) button to select the desired ventilator(ERV) operation.

Press the (E) button to change the fan speed.

Press the (B) button to select cooling and heating operation.



- You cannot set the temperature by an ERV with DX-COIL only.
- You cannot select the dry operation if you operate an ERV with DX-COIL only.

# Cleaning and maintaining the unit

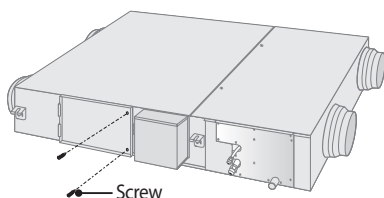
## Cleaning the Air filter

Clean the air filters at least twice a year. However, the frequency may vary depending on use and environment.

Clean the air filters more frequently in dusty place.

Make sure that the power supply is disconnected before cleaning the unit.

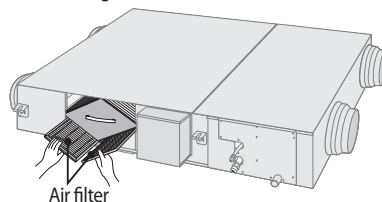
Remove 2 screws on the access panel.



Take off the access panel from the unit.

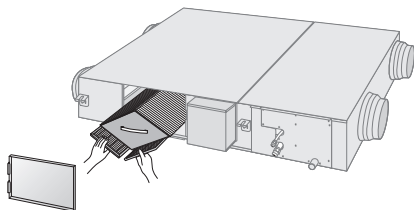
Detach the air filters by pulling them forward.

► There are totally 4 air filters on both sides of the heat exchange element.

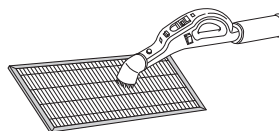


Reassemble the air filters and access panel.

► Make sure to insert the air filters correctly.  
If not, dust may accumulate on the heat exchange element decreasing the efficiency.



Remove all dust on the air filters with a vacuum cleaner or a brush.



NOTE

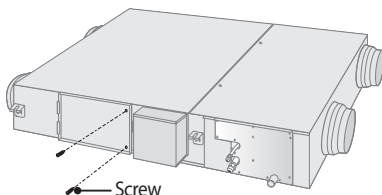
- Change the air filters in every two years. However, changing frequency may vary according to the used period and condition.
- If the air filter is damaged, purchase it individually in a customer care center or an agency that you bought the product.
- Make sure to turn off the power supply.

# Cleaning and maintaining the unit

## Cleaning the Heat Exchange Element

Clean the Heat exchange element at least twice a year. However, the frequency may vary depending on use and environment. Clean the Heat exchange element more frequently in dusty place. Make sure that the power supply is disconnected before cleaning the unit.

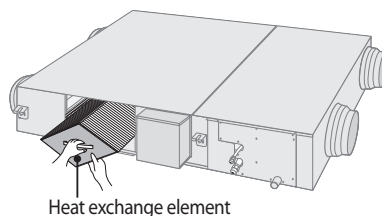
Remove 2 screws on the access panel.



Take off the access panel from the unit.

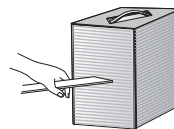
Detach the 2 heat exchange elements in order.

- ▶ The heat exchange element is heavy. Take care not to drop it.
- ▶ There are 2 heat exchange elements in the unit. Make sure clean them at once.



Remove all dust and particles on the heat exchange elements with a nozzle of a vacuum cleaner.

- ▶ Take care not to attach the nozzle too close. It may damage the heat exchange element.



Reassemble the heat exchange elements and access panel.



- If the heat exchange element is damaged, purchase it individually in a customer care center or an agency that you bought the product.
- Make sure to turn off the power supply.

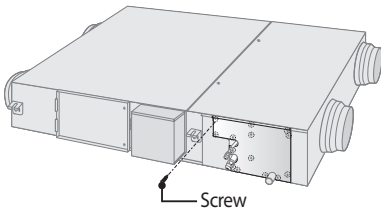


- Do not wash the heat exchange element. It may decrease its efficiency.

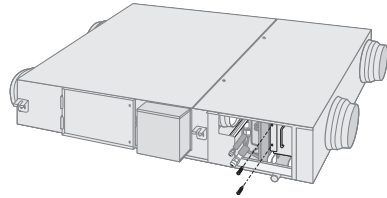


## Cleaning the Humidifier (Optional)

Remove 15 screws on the humidifier access panel.  
Take off the humidifier access panel.

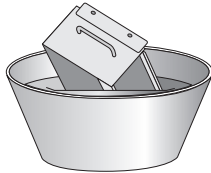


Remove 2 more screws.

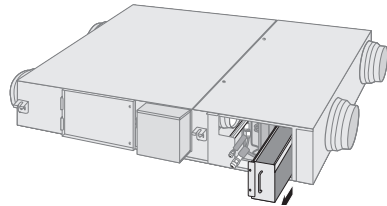


Submerge the humidifier element in water and  
move up and down with care to release any dirt.

- ▶ Do not scrub the humidifier element.
- ▶ Do not spray water directly onto the humidifier element with a hose.
- ▶ Do not use detergent or water hotter than 40°C.



Remove the element as illustrated.



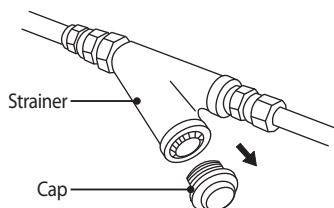
Reassemble the humidifier element and access panel.

- ▶ Check whether the humidifier element is correctly assembled. Otherwise, this may result in water leakage and performance deterioration.

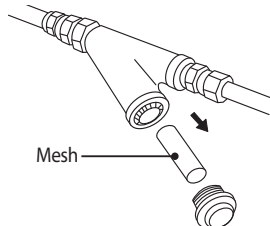
# Cleaning and maintaining the product

## Cleaning the Strainer (Optional)

Remove the Strainer cap.



Take out the mesh inside the strainer.



Clean the mesh with running water.



- Clean the mesh once a month.

# Maintaining your product

## Period of Replacement & Cleaning

### Basic parts

Parts	Replacement	Cleaning	Reasons for exchange or cleaning
Air filter	2 years	6 months	Dust clogging, Performance deterioration
Heat exchange element	-	6 months	Dust clogging
Drain pan	-	1 year	Pollution

### Option parts

Parts	Replacement	Cleaning	Reasons for exchange or cleaning
Electronic feed water valve	5 years	-	Deterioration, Clogging
Flow control valve	5 years	-	Deterioration, Clogging
Water piping	10 years	-	Deterioration, pipe water leak
Humidifier element	7~10 years (1,000hours/year)	1 year	Deterioration of saturation efficiency
Feed water strainer	10 years	1 month (Heating season)	Deterioration, Clogging



NOTE

- The product life and product durable years can be different from the table above according to installation condition and maintenance situation. The table above is applicable when the use of ERV follows the instruction and does the regular maintenance work and is in the general air conditioning condition.  
(If the ERV performs round-the-clock operation, replacement interval can be reduced to 1/3~2/5)

# Troubleshooting

Refer to the following chart if the product operates abnormally. This may save time and unnecessary expenses.

PROBLEM	SOLUTION
The product does not operate immediately after it has been restarted.	<ul style="list-style-type: none"> <li>Because of the protective mechanism, the appliance does not start operating immediately to keep the unit from overloading. The product will start in 3 minutes.</li> </ul>
The product does not work at all.	<ul style="list-style-type: none"> <li>Check that the power plug is properly connected. Insert the power plug into the wall socket correctly.</li> <li>Check if the circuit breaker is switched on.</li> <li>Check the sub power supply is on.</li> <li>Check if there is a power failure.</li> <li>Check your fuse. Make sure it is not blown out.</li> </ul>
The cool (warm) air does not come out of the product.	<ul style="list-style-type: none"> <li>Check if the set point temperature of the connected air conditioner is higher (lower) than the current temperature.</li> <li>Check if the product has just been turned on. If so, wait 3 minutes. Cool air does not come out to protect the compressor of the outdoor unit.</li> <li>Check if the product is installed in a place with a direct exposure to sunlight. Hang curtains on windows to boost cooling efficiency.</li> <li>Check if the cover or any obstacle is not near the outdoor unit.</li> <li>Check if the refrigerant pipe is too long.</li> <li>Check if the product is only available in Cool mode.</li> <li>Check if the remote control is only available for cooling model.</li> </ul>
The fan speed does not change.	<ul style="list-style-type: none"> <li>Check if you selected Quiet mode. The product automatically adjusts the fan speed to Auto in Quiet mode.</li> </ul>
Timer function does not set.	<ul style="list-style-type: none"> <li>Check if you press the <b>Power</b> button on the remote control after you have set the time.</li> </ul>
Odors permeate in the room during operation.	<ul style="list-style-type: none"> <li>Check if the appliance is running in a smoky area or if there is a smell entering from outside. Operate the product in Fan mode or open the windows to air out the room.</li> </ul>
The product makes a bubbling sound.	<ul style="list-style-type: none"> <li>A bubbling sound may be heard when the refrigerant is circulating through the compressor. Let the product operate in a selected mode.</li> <li>When you press the <b>Power</b> button on the remote control, noise may be heard from the drain pump inside the product.</li> </ul>
Water is dripping from the air flow blades.	<ul style="list-style-type: none"> <li>Check if the product has been cooling for an extended period of time with the air flow blades pointed downwards. Condensation may generate due to the difference in temperature.</li> </ul>
The product does not turn on or off with the wired remote control.	<ul style="list-style-type: none"> <li>Check if you set the wired remote control for group control.</li> </ul>
The wired remote control does not operate.	<ul style="list-style-type: none"> <li>Check if TEST indicator is displayed on the wired remote control. If so, turn off the unit and switch off the circuit breaker. Call your nearest contact center.</li> </ul>
The indicators of the digital display flashes.	<ul style="list-style-type: none"> <li>Press the <b>Power</b> button on the remote control to turn the unit off and switch the circuit breaker off. Then, switch it on again.</li> </ul>

PROBLEM	SOLUTION
The air does not come out from the air outlet.	<ul style="list-style-type: none"> <li>Check whether air filter or heat exchange element is blocked by dust. In case of dust accumulation, it may decrease the efficiency of the ventilator. Clean the air filter and the heat exchange element frequently.</li> <li>Check whether the air intake or outlet is blocked by dust. Remove all dust in the air intake.</li> </ul>
Water drops from the air intake.	<ul style="list-style-type: none"> <li>Check whether the ventilator is operated in By-Pass mode during heating. When heating, make sure to operate the ventilator in Heat-EX mode.</li> </ul>
Humidity operation doesn't work.	<ul style="list-style-type: none"> <li>Check whether the humidifier element is installed additionally for humidity operation.</li> <li>Check if the unit is in heat mode. (Humidity operation works only when the unit is in heat mode.)</li> <li>The on/off operation status of humidity operation is not indicated.</li> </ul>

## Safety precautions

Carefully follow the precautions listed below because they are essential to guarantee the safety of the equipment.

- Always disconnect the product from the power supply before servicing it or accessing its internal components.
- Verify that installation and testing operations are performed by qualified personnel.
- Verify that the product is not installed in an easily accessible area.

### General information

- ▶ Carefully read the content of this manual before installing the product and store the manual in a safe place in order to be able to use it as reference after installation.
- ▶ For maximum safety, installers should always carefully read the following warnings.
- ▶ Store the operation and installation manual in a safe location and remember to hand it over to the new owner if the product is sold or transferred.
- ▶ This manual explains how to install an indoor unit with a split system with two SAMSUNG units. The use of other types of units with different control systems may damage the units and invalidate the warranty. The manufacturer shall not be responsible for damages arising from the use of non compliant units.
- ▶ The product is compliant with the requirements of the Low Voltage Directive(72/23/EEC), the EMC Directive(89/336/EEC) and the Directive on pressurized equipment(97/23/EEC).
- ▶ The manufacturer shall not be responsible for damage originating from unauthorized changes or the improper connection of electric and hydraulic lines. Failure to comply with these instructions or to comply with the requirements set forth in the "Operating limits" table, included in the manual, shall immediately invalidate the warranty.
- ▶ The product should be used only for the applications for which it has been designed: the indoor unit is not suitable to be installed in areas used for laundry.
- ▶ Do not use the units if damaged. If problems occur, switch the unit off and disconnect it from the power supply.
- ▶ In order to prevent electric shocks, fires or injuries, always stop the unit, disable the protection switch and contact SAMSUNG's technical support if the unit produces smoke, if the power cable is hot or damaged or if the unit is very noisy.
- ▶ Always remember to inspect the unit, electric connections, refrigerant tubes and protections regularly. These operations should be performed by qualified personnel only.
- ▶ The unit contains moving parts, which should always be kept out of the reach of children.
- ▶ Do not attempt to repair, move, alter or reinstall the unit. If performed by unauthorized personnel, these operations may cause electric shocks or fires.
- ▶ Do not place containers with liquids or other objects on the unit.
- ▶ All the materials used for the manufacture and packaging of the product are recyclable.
- ▶ The product contains a refrigerant that has to be disposed of as special waste. At the end of its life cycle, the air conditioner must be disposed of in authorized centers or returned to the retailer so that it can be disposed of correctly and safely.

## Installing the unit

**IMPORTANT:** When installing the unit, always remember to connect first the refrigerant tubes, then the electrical lines. Always disassemble the electric lines before the refrigerant tubes.

- ▶ Upon receipt, inspect the product to verify that it has not been damaged during transport. If the product appears damaged, DO NOT INSTALL it and immediately report the damage to the carrier or retailer (if the installer or the authorized technician has collected the material from the retailer.)
- ▶ After completing the installation, always carry out a functional test and provide the instructions on how to operate the product to the user.
- ▶ Do not use the product in environments with hazardous substances or close to equipment that release free flames to avoid the occurrence of fires, explosions or injuries.
- ▶ The product should be used only for the applications for which it has been designed: the indoor unit is not suitable to be installed in areas used for laundry.
- ▶ Our units must be installed in compliance with the spaces indicated in the installation manual to ensure either accessibility from both sides or ability to perform routine maintenance and repairs. The units' components must be accessible and that can be disassembled in conditions of complete safety either for people or things. For this reason, where it is not observed as indicated into the Installation Manual, the cost necessary to reach and repair the unit (in safety, as required by current regulations in force) with slings, trucks, scaffolding or any other means of elevation won't be considered in-warranty and charged to end user.
- ▶ Hang down a blockage for bird in front of outdoor air suction duct. If something such as bird's nest blocks the air suction duct, it may result in oxygen shortage in indoors.

## Power supply line, fuse or circuit breaker

- ▶ Always make sure that the power supply is compliant with current safety standards. Always install the product in compliance with current local safety standards.
- ▶ Always verify that a suitable grounding connection is available.
- ▶ Verify that the voltage and frequency of the power supply comply with the specifications and that the installed power is sufficient to ensure the operation of any other domestic appliance connected to the same electric lines.
- ▶ Always verify that the cut-off and protection switches are suitably dimensioned.
- ▶ Verify that the product is connected to the power supply in accordance with the instructions provided in the wiring diagram included in the manual.
- ▶ Always verify that electric connections (cable entry, section of leads, protections...) are compliant with the electric specifications and with the instructions provided in the wiring scheme. Always verify that all connections comply with the standards applicable to the installation of products.

# Safety precautions



CAUTION

- Make sure that you earth the cables.
  - Do not connect the earth wire to the gas pipe, water pipe, lighting rod or telephone wire. If earthing is not complete, electric shock or fire may occur.
- Install the circuit breaker.
  - If the circuit breaker is not installed, electric shock or fire may occur.
- Make sure that the condensed water dripping from the drain hose runs out properly and safely.
- Install the power cable and communication cable of the indoor and outdoor unit at least 1m away from the electric appliance.
- Do not install the product in following places.
  - Place where there is mineral oil or arsenic acid.
    - Resin parts flame and the accessories may drop or water may leak.
    - The capacity of the heat exchanger may reduce or the product may be out of order.
  - The place where corrosive gas such as sulfurous acid gas generates from the vent pipe or air outlet.
    - The copper pipe or connection pipe may corrode and refrigerant may leak.
  - The place where there is a machine that generates electromagnetic waves.
    - The product may not operate normally due to control system
  - The place where there is a danger of existing combustible gas, carbon fiber or flammable dust.
    - The place where thinner or gasoline is handled.
    - Gas may leak and it may cause fire.
- Do not install the unit in a climate of high temperature and humidity. It may form dewdrop inside of the unit and heat exchange element.
  - Install & Operation ranges










Install condition	Outdoor air condition	Indoor air condition
0~40°C, 80%RH below	-15~40°C, 80%RH below	0~40°C, 80%RH below

- Noise may increase when there are large amount of exhausting air.
  - Be sure to install the duct based on standard air volume. When necessary, control the air volume by installing volume damper. If the noise continues, install the noise chamber or flexible noise reducer additionally. (Volume damper, noise chamber and flexible noise reducer are optional.)
- When cold air flows in to the product, frost may form within the product therefore make sure that the outlet of the air conditioner and the RA diffuser is installed at least 1.5m apart.
- Install the external grille (hood) designed to prevent rain water from entering.
  - (Highly recommended extra accessory)
- It is mandatory to install electric damper on the OA (outdoor air) side and back draft damper on the EA (exhaust air) side. It is also recommended to install them on RA (room air) and SA (supply air) side. You may prevent the dew formation within the product which forms due to outdoor air inflow or temperature difference between the indoor and outdoor. (Electric damper and back draft damper should be purchased separately.)
- Outdoor air duct must be installed at least 3m above the product.



# Accessories

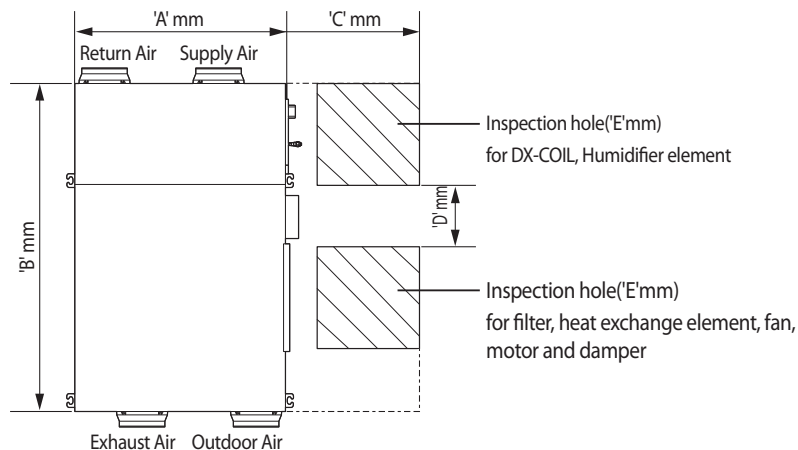
The following accessories are supplied with the indoor unit.  
The type and quantity may differ depending on the specifications.

User & Installation manual 	Insulation cover pipe in 	Insulation cover pipe out 	Insulation drain 	Insulation cover drain 	Insulation pipe 	Cable tie 
Flexible hose 	Clamp hose 					

## Selecting the installation location

- ▶ There must be no obstacles near the air inlet and outlet.
- ▶ Install the indoor unit on a ceiling that can support its weight.
- ▶ Maintain sufficient clearance around the indoor unit.
- ▶ Make sure that the water dripping from the drain hose runs away correctly and safely.
- ▶ The indoor unit must be installed in this way, that they are out of public access. (Not touchable by the users)
- ▶ After connecting a chamber, insulate the connection part between the indoor unit and the chamber with t10 or thicker insulation. Otherwise, there can be air leak or dew from the connection part.
- ▶ Rigid wall without vibration.
- ▶ Where it is not exposed to direct sunshine.
- ▶ Where the replacement parts. (air filter, heat exchange element, humidifier element) can be removed and cleaned easily.

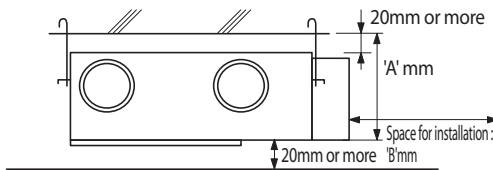
### Space Requirements



Model	A'	B'	C'	D'	E'
RHF050KHEA	1000	1553	600	200	450 x 450 or more
RHF100KHEA	1135	1763	800	300	550 x 550 or more

## Selecting the installation location

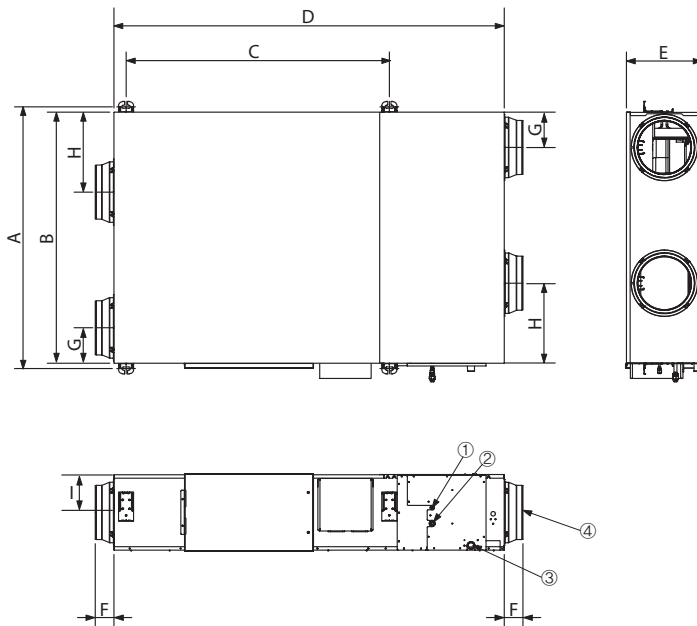
► The ventilator should be installed in a ceiling which has enough space above as seen in the picture.



Model	'A'	'B'
RHF050KHEA	320	600
RHF100KHEA	440	800

### Dimension of the indoor unit

Unit : mm



Model	A	B	C	D	E	F	G	H	I
RHF050KHEA	1036	1000	987	1553	270	99	130	253	135
RHF100KHEA	1183	1135	1189	1763	340	84	160	362	170

No.	Name	Description
①	Liquid pipe connection	ø6.35 (1/4")
②	Gas pipe connection	ø12.70 (1/2")
③	Drain pipe connection	VP25 (OD ø32, ID ø25)
④	Nominal diameter for duct	RHF050KHEA ø200
		RHF100KHEA ø250

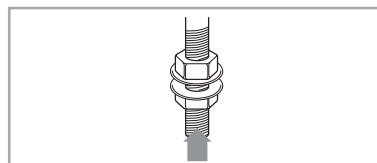
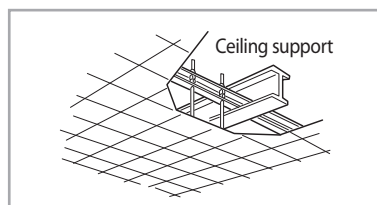
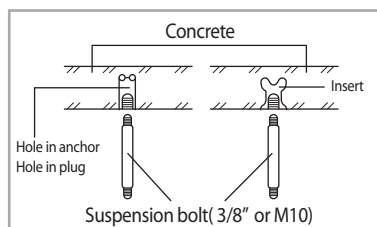
# Indoor unit installation

It is recommended to install the Y-joint before installing the indoor unit.

1. Insert bolt anchors, use existing ceiling supports or construct a suitable support as shown in figure.
2. Install the suspension bolts depending on the ceiling type.



- Ensure that the ceiling is strong enough to support the weight of the indoor unit. Before hanging the unit, test the strength of each attached suspension bolt.
- If the length of suspension bolt is more than 1.5m, it is required to prevent vibration.
- If this is not possible, create an opening on the false ceiling in order to be able to use it to perform the required operations on the indoor unit.

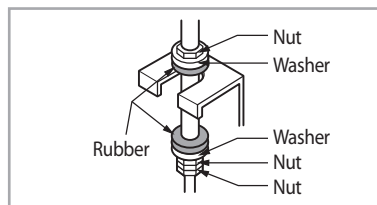


3. Fit two nuts on each suspension rod allowing space for the indoor unit between.



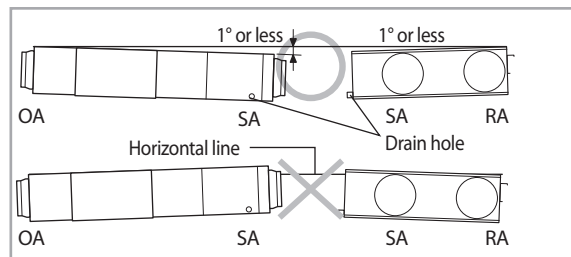
- You must install the suspension bolts more than four when installing the indoor unit.

4. Hang the indoor unit to the suspension bolts between two nuts.



5. Tighten the nuts securely to clamp the brackets on the unit and prevent movement.

6. Adjust level of the unit by using measurement plate for all 4 sides.



- For proper drainage of condensate, give 1° or less slant to the side of the unit which will be connected with the drain hose, as shown in the figure.

## Purging the unit

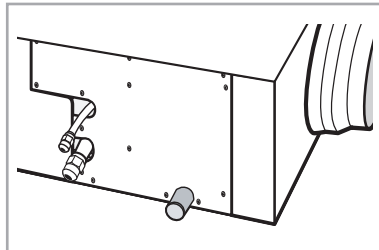
On delivery, the indoor unit is loaded with inert gas. All this gas must therefore be purged before connecting the assembly piping. To purge the inert gas, proceed as follows.

**Unscrew the pinch pipe at the end of each refrigerant pipe.**

**Result:** All inert gas escapes from the indoor unit.



- To prevent dirt or foreign objects from getting into the pipes during installation, do NOT remove the pinch pipe completely until you are ready to connect the piping.



※ The designs and shape are subject to change according to the model.

## Connecting the refrigerant pipe

There are two refrigerant pipes of differing diameters:

- ▶ A smaller one for the liquid refrigerant
- ▶ A larger one for the gas refrigerant
- ▶ The inside of the copper pipe must be clean, dry and free from debris.

The connection procedure for the refrigerant pipes varies according to the exit position of the pipes from the indoor unit, as seen when facing the indoor in the "A" side.

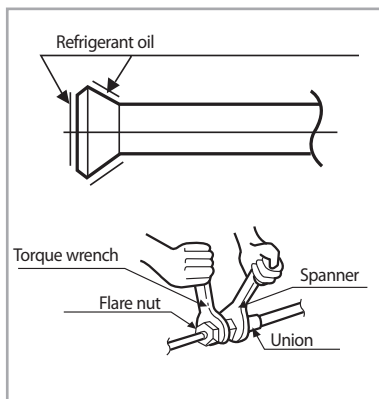
- ▶ Liquid refrigerant port
- ▶ Gas refrigerant port
- ▶ Drain hose port

1. Remove the pinch pipe on the pipes and connect the assembly pipes to each pipe, tightening the nuts, first manually and then with a torque wrench, a spanner applying the following torque.

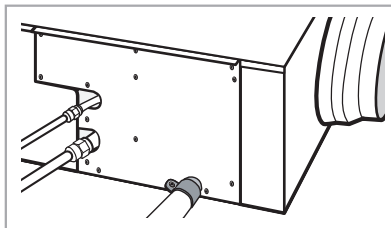
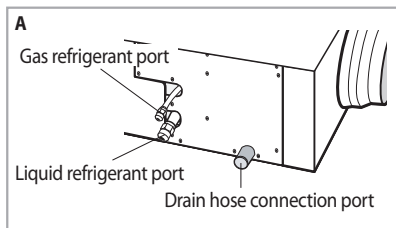
Outer Diameter	Torque (kgf·cm)
6.35 mm (1/4")	145~175
9.52 mm (3/8")	333~407
12.70 mm (1/2")	505~615
15.88 mm (5/8")	630~769



- Must apply refrigerant oil on the flaring area to prevent a leak.



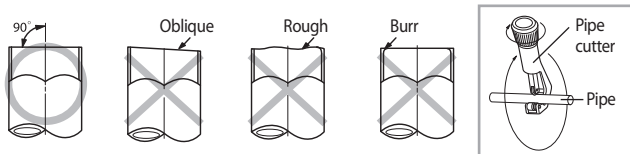
2. Ensure there are no kinks or cracks on pipe bends.



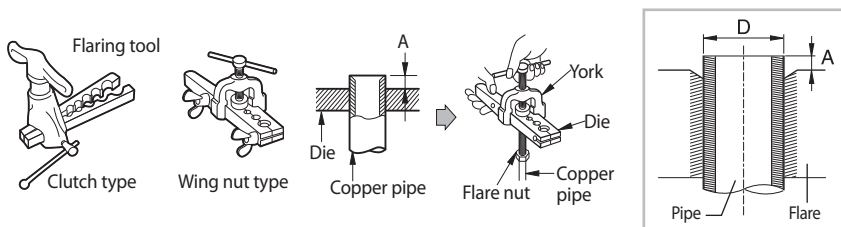
※ The designs and shape are subject to change according to the model.

# Cutting/flaring the pipe

1. Make sure that you prepared the required tools. (pipe cutter, reamer, flaring tool and pipe holder)
2. If you want to shorten the pipe, cut it using a pipe cutter ensuring that the cut edge remains at 90° with the side of the pipe. There are some examples of correctly and incorrectly cut edges below.



3. To prevent a gas leak, take care not to allow burrs to enter the pipe and clean the flare.
4. Carry out flaring work using flaring as shown below.



Outer diameter (mm)	Flare tool for R410A clutch type	A(mm)	
		Conventional flare tool	
		Clutch type	Wing nut type
ø6.35 mm	0~0.5	0~0.5	1.5~2.0
ø9.52 mm	0~0.5	0~0.5	1.5~2.0
ø12.70 mm	0~0.5	0~0.5	1.5~2.0
ø15.88 mm	0~0.5	0~0.5	1.5~2.0

5. Check if you flared the pipe correctly (see examples of incorrectly flared pipes below).



6. Align the pipes and tighten the flare nuts first manually and then with a torque wrench, applying the following torque.

Outer diameter (mm)	Connection Torque (kgf-cm)	Flare dimension (mm)	Flare shape (mm)
ø6.35 mm	145~175	8.70~9.10	
ø9.52 mm	333~407	12.80~13.20	
ø12.70mm	505~615	16.20~16.60	
ø15.88 mm	630~769	19.30~19.70	



• Purge pipe work with oxygen free nitrogen while brazing.

# Performing leak test & insulation

## Leak test

**LEAK TEST WITH NITROGEN** (before opening valves)

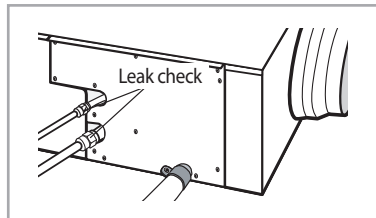
In order to detect basic refrigerant leaks, Pressure test the system to 4.1MPa with oxygen free nitrogen before vacuuming the system.

**LEAK TEST WITH R410A** (after opening valves)

Once the valves are opened and gauge manifold is disconnected, use a leak detector to check for leaks.



- Release the nitrogen slowly and safely before connecting gauges to the Vacuum pump.



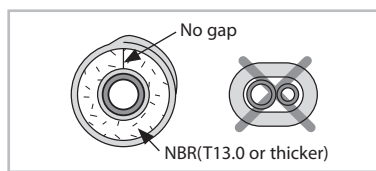
\* The designs and shape are subject to change according to the model.

## Insulation

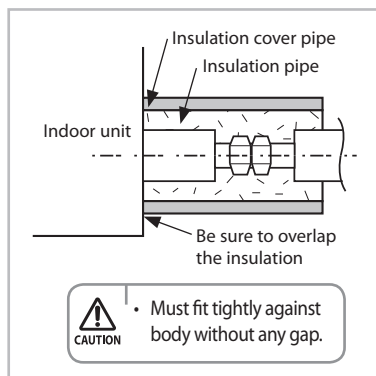
1. To avoid condensation problems, place **T13.0 or thicker Acrylonitrile Butadien Rubber** separately around each refrigerant pipe.



- Always make the seam of pipes face upwards.
- Any joints in the insulation must be taped or glued with approved materials to prevent water leaks.



2. Wind insulating tape around the pipes and drain hose avoiding to compress the insulation too much.
3. Finish wrapping insulating tape around the rest of the pipes leading to the outdoor unit.
4. The pipes and electrical cables connecting the indoor unit with the outdoor unit must be fixed to the wall with suitable fixings.



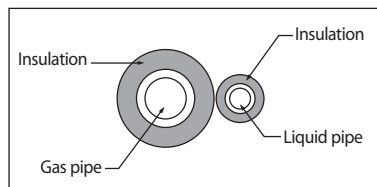
### 5. Selecting the insulation for the refrigerant pipes.

- ▶ Insulate the gas side and liquid side pipe referring to the thickness according to the pipe size.
- ▶ The thickness according to the pipe size is a standard of the indoor temperature of 27°C and humidity of 80%. If installing in an unfavorable conditions, use thicker one.
- ▶ Insulator's heat-resistance temperature should be more than 120°C.

Pipe size (mm)	Minimum thickness of insulator (mm)		Remarks
	PE foam	EPDM foam	
Ø6.35~Ø15.88	13	10	If you install the pipe underground, at the seaside, a spa or on the lake, use 1 grade thicker one according to the pipe size.
-	25	19	

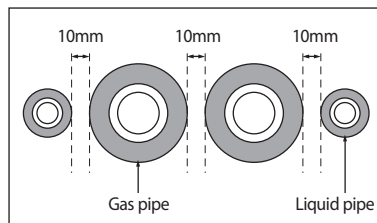
#### **Refrigerant pipe before EEV kit and MCU or without EEV kit and MCU**

- ▶ You can contact the gas side and liquid side pipes but the pipes should not be pressed.
- ▶ When contacting the gas side and gas side pipe, use 1 grade thicker insulator.

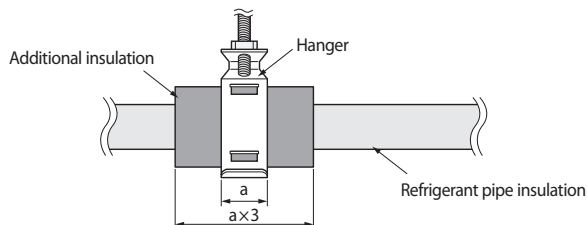


#### **Refrigerant pipe after EEV kit and MCU**

- ▶ Install the gas side and liquid side pipes, leave 10mm of space.
- ▶ When contacting the gas side and liquid side pipe, use 1 grade thicker insulator.

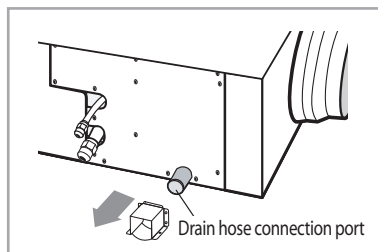


- Install the insulation not to get wider and use the adhesives on the connection part of it to prevent moisture from entering.
- Wind the refrigerant pipe with insulation tape if it is exposed to outside sunlight.
- Install the refrigerant pipe respecting that the insulation does not get thinner on the bent part or hanger of pipe.
- Add the additional insulation if the insulation plate gets thinner.
- Ensure that the pipe insulation is not crushed eg: on bends, where supported by hangers, where cable ties are used.



# Drain pipe and drain installaton

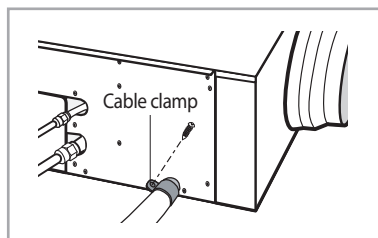
1. Unscrew the 4 tapped screws to remove the cover of the drain hose connection port.



2. Insert the flexible hose to the drain hose port.

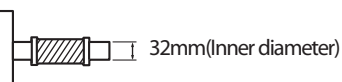


- Fix the flexible hose to the indoor unit with the supplied cable clamp securely. (Use the screwdriver to fix the flexible hose securely.)



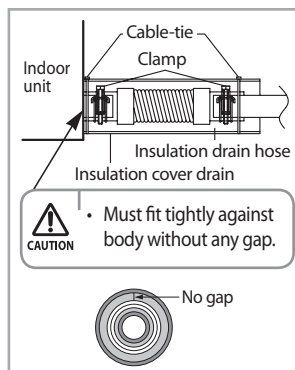
3. Install the drain hose so that its length can be as short as possible. Internal diameter of the drain hose should be the same or slightly bigger than the external diameter of the drain hose port.

- ▶ Inner diameter of the drain hose



- Install the drain hose with a slope away from the unit to give adequate drainage of condensate.
- Fix the flexible hose to the PVC with the supplied cable tie securely.

4. Wrap the drain hose with the insulation drain as shown in figure and secure it.

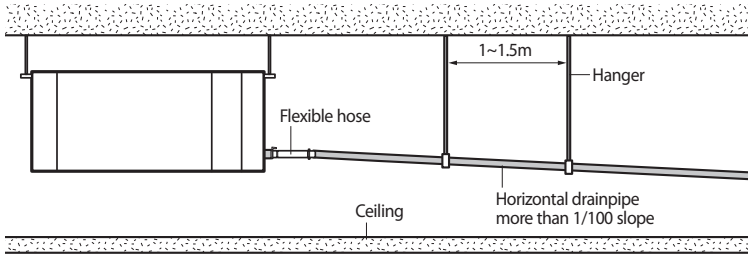




# Drain pipe and drain hose installaton

### Drainpipe Connection

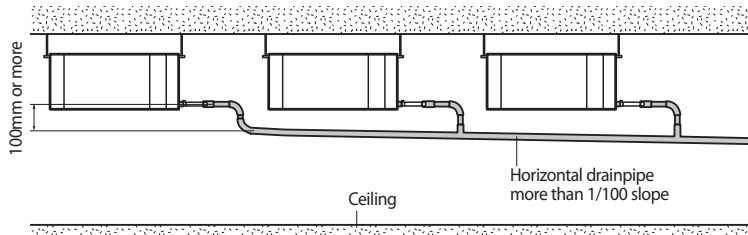
1. Install horizontal drainpipe with a slope of 1/100 or more and fix it by hanger space of 1.0~1.5m.
2. Install U-trap at the end of the drainpipe to prevent any odors reaching the indoor unit.
3. Do not install the drain with an upward inclination as it will prevent drainage.



- Do not use the drain pump and allow the natural drainage.

### Centralized Drainage

1. Install horizontal drainpipe with a slope of 1/100 or more and fix it by hanger space of 1.0~1.5m.
2. Install U-trap at the end of the drainpipe to prevent a nasty smell to reach the indoor unit.



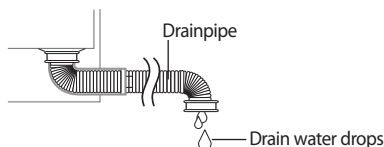
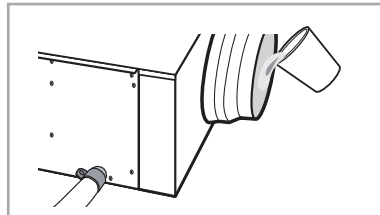
- Do not use the drain pump and allow the natural drainage.

# Drain pipe and drain hose installation

## Testing the drainage

Prepare a little water about 5 liters.

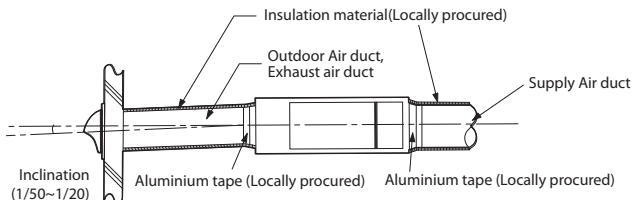
1. Pour water into the base pan in the indoor unit as shown in figure.
2. Confirm that the water flows out through the drain hose.
3. Check drain water drops at the end of the drain pipe.
4. Check that no water leaks from joints in the drain installation.
5. Reassemble the cover of water supply intake.



## Duct connection

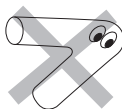
Make sure to insulate the duct referring to the picture.

- ▶ Wind the aluminum tape securely round the duct connection so that the air in the duct does not leak.
- ▶ To prevent rain from permeating duct connection, install the two outdoor ducts (OA, EA) on a slope.
- ▶ To prevent condensation from forming, insulate the three ducts. (Outdoor ducts and Indoor supply air duct)  
(Material: Glass wool of 25 mm thick)
- ▶ Outdoor air duct must be installed at least 3m above the product.
- ▶ Install electric damper and back draft damper during duct installation.



- The use of flexible hose made of fiber glass is recommended to minimize noise. Install the duct at least over 3m to reduce the noise as well.
- If the duct is not attached correctly and securely, it may result in malfunction.
- To prevent a short circuit, install the indoor air intake as far away as possible from an air outlet.

## Examples of incorrect duct installation



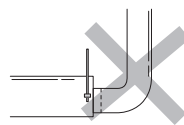
Extreme bend



Multi bend



Narrow diameter of connection part

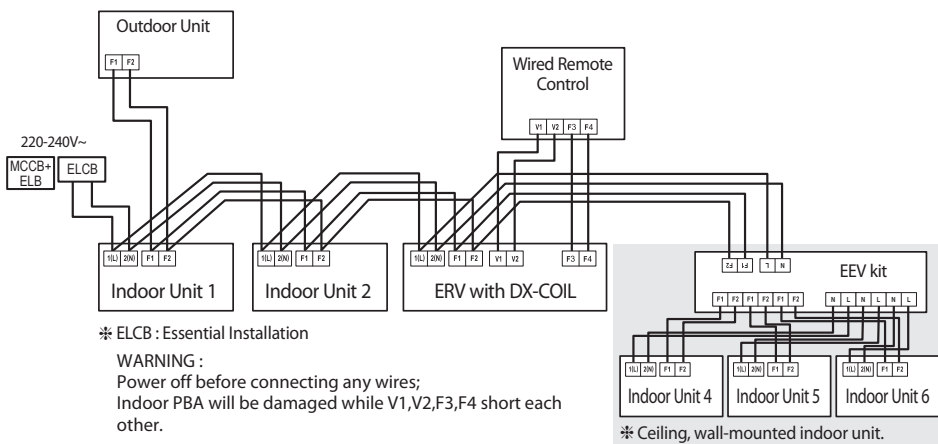


A bend right next to the outlet

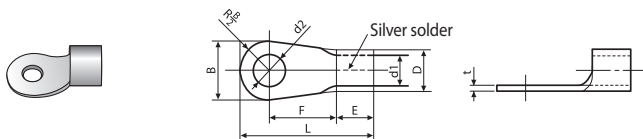
# Wiring work

## Power and communication cable connection

1. Before wiring work, you must turn off all power source.
2. Indoor unit power should be supplied through the breaker(ELCB or MCCB+ELB) separated by the outdoor power.  
ELCB: Earth Leakage Circuit Breaker  
MCCB:Molded Case Circuit Breaker  
ELB:Earth Leakage Breaker
3. The power cable should be used only copper wires.
4. Connect the power cable{1(L), 2(N)} among the units within maximum length and communication cable(F1, F2) each.
5. Connect V1, V2(for DC12V) and F3, F4(for communication) when installing the wired remote control.



## Selecting compressed ring terminal



Nominal dimensions for cable (mm²)	Nominal dimensions for screw (mm)	B		D		d1		E	F	L	d2		t
		Standard dimension (mm)	Allowance (mm)	Standard dimension (mm)	Allowance (mm)	Standard dimension (mm)	Allowance (mm)	Min.	Min.	Max.	Standard dimension (mm)	Allowance (mm)	Min.
1.5	4	6.6	±0.2	3.4	+0.3 -0.2	1.7	±0.2	4.1	6	16	4.3	+0.2 0	0.7
	4	8											
2.5	4	6.6	±0.2	4.2	+0.3 -0.2	2.3	±0.2	6	6	17.5	4.3	+0.2 0	0.8
	4	8.5											
4	4	9.5	±0.2	5.6	+0.3 -0.2	3.4	±0.2	6	5	20	4.3	+0.2 0	0.9

# Wiring work

## Specification of electric wire

Power supply	MCCB	ELB or ELCB	Power cable	Earth cable	Communication cable
Max : 242V Min : 198V	X A	X A, 30mmA 0.1 sec	2.5mm <sup>2</sup>	2.5mm <sup>2</sup>	0.75~1.5mm <sup>2</sup>

- Decide the capacity of ELCB(or MCCB+ELB) by below formula.

$$\text{The capacity of ELCB(or MCCB+ELB) X [A]} = 1.25 \times 1.1 \times \sum A_i$$

- \* X : The capacity of ELCB(or MCCB+ELB).
- \*  $\sum A_i$  : Sum of Rating currents of each indoor unit.
- \* Refer to each installation manual about the rating current of indoor unit.

- Decide the power cable specification and maximum length within 10% power drop among indoor units.

※ Rating current

Model	Rating current
RHF050KHEA	1.7A
RHF100KHEA	3.7A

$$\sum_{k=1}^n \left( \frac{\text{Coef} \times 35.6 \times L_k \times i_k}{1000 \times A_k} \right) < 10\% \text{ of input voltage [V]}$$

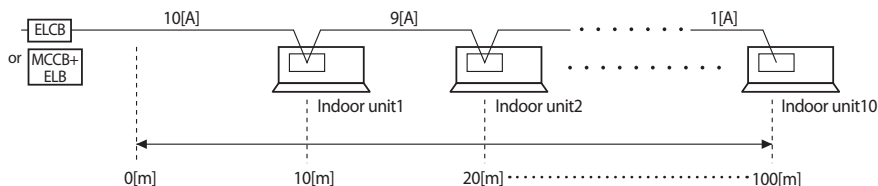
\* coef: 1.55

\*  $L_k$ : Distance among each indoor unit[m],  $A_k$ : Power cable specification[mm<sup>2</sup>]  
 $i_k$ : Running current of each unit[A]

## Example of Installation

- Total power cable length L = 100(m), Running current of each units 1[A]

- Total 10 indoor units were installed

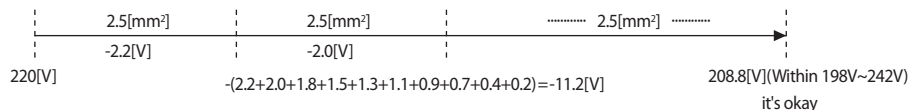


- Apply following equation.

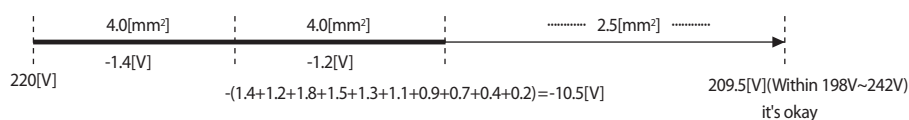
$$\sum_{k=1}^n \left( \frac{\text{Coef} \times 35.6 \times L_k \times i_k}{1000 \times A_k} \right) < 10\% \text{ of input voltage [V]}$$

※ Calculation

- Installing with one size cable.



- Installing with two size cables.





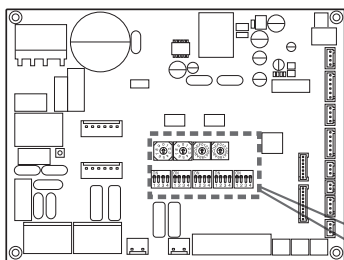
- Select the power cable in accordance with relevant local and national regulations.
- Wire size must comply with local and national code.
- For the power cable, use the grade of H07RN-F or H05RN-F materials.
- You should connect the power cable into the power cable terminal and fasten it with a clamp.
- The unbalanced power must be maintained within 10% of supply rating among whole indoor units.
- If the power is unbalanced greatly, it may shorten the life of the condenser. If the unbalanced power is exceeded over 10% of supply rating, the indoor unit is protected, stopped and the error mode indicates.
- To protect the product from water and possible shock, you should keep the power cable and the connection cord of the indoor and outdoor units in the iron pipe.
- Connect the power cable to the auxiliary circuit breaker.  
An all pole disconnection from the power supply must be incorporated in the fixed wiring( $\geq 3\text{mm}$ ).
- You must keep the cable in a protection tube.
- Keep distances of 50mm or more between power cable and communication cable.
- Maximum length of power cables are decided within 10% of power drop. If it exceeds, you must consider another power supplying method.
- The circuit breaker(ELCB or MCCB+ELB) should be considered more capacity if many indoor units are connected from one breaker.
- Use round pressure terminal for connections to the power terminal block.
- For wiring, use the designated power cable and connect it firmly, then secure to prevent outside pressure being exerted on the terminal board.
- Use an appropriate screwdriver for tightening the terminal screws. A screwdriver with a small head will strip the head and make proper tightening impossible.
- Over-tightening the terminal screws may break them.
- See the table below for tightening torque for the terminal screws.

Tightening torque(kgf·cm)	
M 4	12.0~14.7

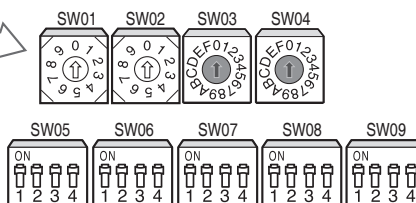
# Indoor unit setting

## Power and communication cable connectiona

1. Before installing the indoor unit, assign an address to the indoor unit according to the air conditioning system plan.
2. The address of the indoor unit is assigned by adjusting MAIN(SW01, SW02) and RMC(SW03, SW04) rotary switches.



※ The designs and shape are subject to change according to the model.



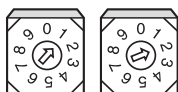
## Setting Main Address

- ▶ The MAIN address is for communication between the indoor unit and the outdoor unit. Therefore, you must set it to operate the product properly.
- ▶ You can set the MAIN address from '00' to '99' by mixing SW01 and SW02. The MAIN address from '00' to '99' should differ from each other.
- ▶ Check the indoor unit address on the plan that you are to install and set the address according to the plan.



You may not need to set main address if you selected Auto Address Setting from the outdoor unit: see details on the outdoor unit installation manual.

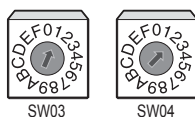
**For Example** When MAIN address is set as "12".



## Setting RMC Address

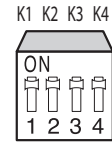
- ▶ The SW03, SW04 RMC switch is the address setting switch for controlling the indoor unit with the centralized controller.
- ▶ You must set the SW03, SW04 and K2 switch when using the centralized controller.
- ▶ You don't have to set the SW03 and SW04 RMC switch when not using the centralized controller.

**For Example** When RMC address is set as "12".



## Additional functions

No.		Function	ON	OFF
<b>SW05</b>	K1	External room sensor	Not use	Use
	K2	Centralized controller	Not use	Use
	K3	-	-	-
	K4	Humidifier	Not use	Use

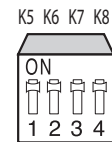


SW05

※ K1 OFF

Heating mode : Setting temperature compensation value = 0°C  
Thermo OFF → Fan OFF

No.		Function	ON	OFF
<b>SW06</b>	K5	Heating Current Temperature Compensation	+2°C	+5°C
	K6	Filter Time	1,000 hours	2,000 hours
	K7	-	-	-
	K8	-	-	-



SW06

No.		Function	ON	OFF
<b>SW07</b>	K9	Indoor Expansion Valve For Heating Stop	160 step	35/160 step
	K10	Master/Slave	Slave	Master
	K11	External control	Not use	Use
	K12	External control output	Thermo Check	Operation Check



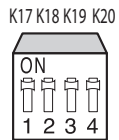
SW07

No.		Function	ON	OFF
<b>SW08</b>	K13	External damper	Not use	Use
	K14	S-Plasma ion	Not use	Use
	K15	CO <sub>2</sub> sensor	Not use	Use
	K16	-	-	-



SW08

No.		Function	ON	OFF
<b>SW09</b>	K17	Clean up	Exhaustion air RPM is fixed as Quiet mode RPM	Supply air RPM is fixed as Quiet mode RPM
	K18	-	-	-
	K19	-	-	-
	K20	-	-	-



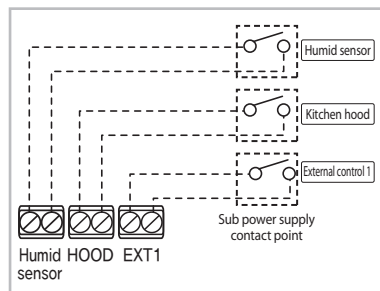
SW09

# Additional functions

## External Control

Use an external control to interlock control the ventilator with external device or external contact point.

- ▶ It connects both sides of EXT1.
  - Only 1 unit can be connected.
- ▶ The picture displays the condition that external controller, kitchen hood and humid sensor are connected. If the external controller 1 is set to ON position, ventilator is operated in the last used condition.
- ▶ If you enter a kitchen hood, the supply air operates in Turbo fan speed and exhaust air operates in Low fan speed.
- ▶ When a signal comes to the humidification sensor, the ventilator (ERV) continues its operation. However, the humidity solenoid valve of the ventilator (ERV) will be closed and this will result in stopping the humidification operation.

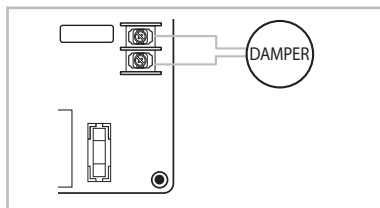
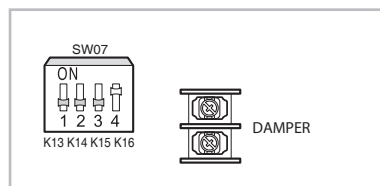


※ Humid sensor is not supplied.

## Connecting External Device

Connect to use humidifiers and dampers with the ventilator.

- ▶ Turn off the option switch to use,
  - K15: The use of dampers



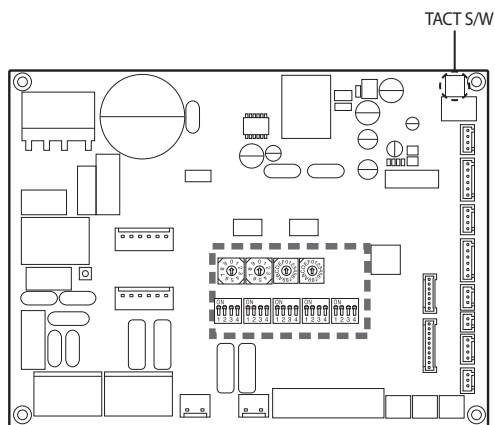
- If the ventilator is operated, the external damper is operated as well if it had been installed.
- Make sure that the current is not exceed to 0.5A. When you connect an external device over 0.5A, use an extra terminal relay.



# Trial operation

When you press the trial operation button, the unit operates as the table below.

TACT S/W PUSH	Operation		Power supply LED
	When the humidity option is not used. (K4 ON)	When the humidity option is used. (K4 OFF)	
One time	Not working	Start water supply by opening humidity SOLENOID VALVE.	LED lamp will be on and off one time
Two times	Damper operation * Opens and closes one time	Damper operation * Opens and closes one time. * Maintain the open status of humidity SOLENOID VALVE	LED lamp will be on and off two times.
Three times	Supply / Exhaust FAN operation * Turbo breeze is generated	Supply / Exhaust Fan operation * Turbo breeze is generated * Maintain the open status of humidity SOLENOID VALVE	LED lamp will be on and off three times.
Four times	Cancel the trial operation	Cancel the trial operation * Stop water supply by turning off humidity SOLENOID VALVE	Return to the power supply LED.



## Final checks and user tips

To complete the installation, perform the following checks and tests to ensure that the product operates correctly.

1. **Check the following.**
  - ▶ Strength of the installation site
  - ▶ Tightness of pipe connection to detect a gas leak
  - ▶ Electric wiring connections
  - ▶ Heat-resistant insulation of the pipe
  - ▶ Drainage
  - ▶ Earth conductor connection
  - ▶ Correct operation (follow the steps below)
  - ▶ Insulation

After finishing the installation of the product, you should explain the following to the user. Refer to appropriate pages in the user & installation manual.

1. **How to start and stop the product**
2. **How to select the modes and functions**
3. **How to adjust the temperature and fan speed**
4. **How to adjust the airflow direction**
5. **How to set the timers**
6. **How to clean and replace the filters**



NOTE

- When you complete the installation successfully, hand over the user & installation manual to the user for storage in a handy and safe place.

# Troubleshooting

If an error occurs during the operation, The Wired Remote controller show that Error mode.

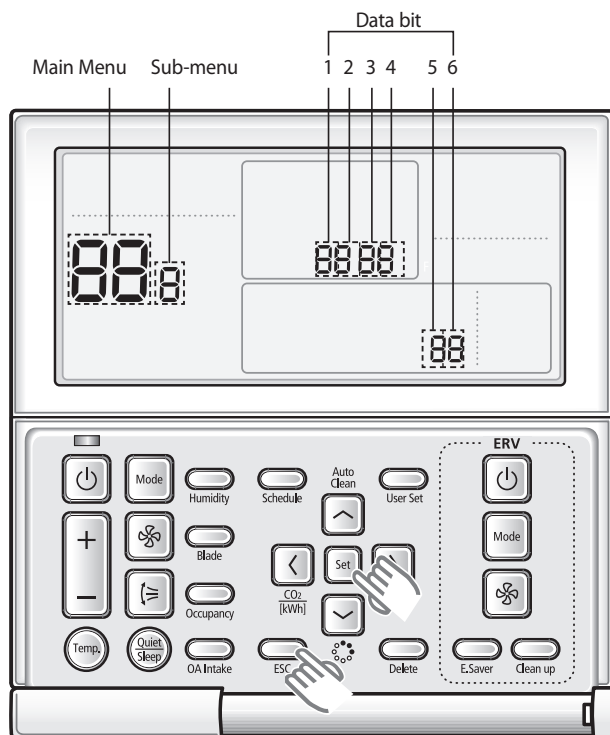
- When ERRORS related to cooling and heating operation occur, the ventilator (ERV) continues to perform in normal operation.
- When ERRORS related to a ventilator (ERV) occur, it stops operating.

## ERROR CODE DISPLAY on Wired remote controller

Error code	Explanation	Classifications
E101	No communication between indoor unit and outdoor unit	Errors related to cooling and heating operation
E102	Indoor unit receiving the communication error from outdoor unit	
E122	EVA-IN Sensor(open/short)	
E123	EVA-OUT Sensor(open/short)	
E128	Breakaway of EVA-IN Sensor	
E129	Breakaway of EVA-OUT Sensor	
E174	EVA-IN Air sensor(open/short)	
E151	Error of EEV open	
E152	Error of EEV close	
E161	Error of mixed operation	
E201	Communication error from outdoor unit due to the mismatching of the communication numbers and installed numbers after tracking	Errors related to ventilator (ERV) operation
E121	Indoor Temperature Sensor(open/short)	
E175	Outdoor Temperature Sensor(open/short)	
E139	CO <sub>2</sub> sensor (open/short)	
E162	EEPROM ERROR	
E163	EEPROM option setting error	
E186	SPI Error	
E561	Supply Air Fan Motor error	
E562	Exhaust Air Fan Motor error	
E654	Damper ERROR (When there is no switch input for 100 seconds while monitoring the damper)	

# Wired Remote Controller Installation/Service Mode

## Additional Functions of Your Wired Remote Controller



1. If you want to use the various additional functions for your Wired Remote Controller, press the **Set** and **Esc** buttons at the same time for more than three seconds.
  - ▶ You will enter the additional function settings, and the [main menu] will be displayed.
2. Refer to the list of additional functions for your Wired Remote Controller on the next page, and select the desired menu.
  - ▶ Using the [▲]/[▼] buttons, select a main menu number and press the [➤] button to enter the sub-menu setting screen.
  - ▶ Using the [▲]/[▼] buttons, select a sub-menu number and press the [➤] button to enter data setting screen.
  - ▶ When you enter the setting stage, the current setting will be displayed.
  - ▶ Refer to the chart for data settings.
  - ▶ Using the [▲]/[▼] buttons, select the settings. Press the [➤] button to move to the next setting.
  - ▶ Press the **Set** button to save the settings and exit to the sub-menu setting screen.
  - ▶ Press the **Esc** button to exit to normal mode.



- While setting the data, you can use the [◀]/[▶] buttons to set the range of Data bit.
- While configuring the setting, press the **Esc** button to exit to the setting sub-menu without saving your changes.



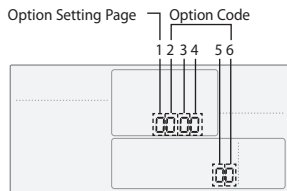
- If your indoor machine does not support the setting mode, then you may not be able to edit the settings or apply your changes.

Main menu	Sub menu	Function		Data bit	Factory setting	Description	Unit		
1	1	Wireless remote controller Option setting/checking (1)	Cooling/Heating selection	1	0	0 – Cooling/Heating, 1 – Cooling only	-		
			Use of wireless remote controller	2	1	0 – No use, 0 - Use	-		
			MAIN/SUB wired remote controller	3	0	0 – MAIN, 1- SUB	-		
			Temperature unit	4	0	0 – Celsius(°C), 1 – Fahrenheit(°F)	-		
	2	Wireless remote controller Option setting/checking (2)	Temperature sensor selection	1	0	0 – Indoor unit, 1 – Wired remote controller	-		
			Use of average temperature	2	0	0 – No use, 0 - Use	-		
			Use of Auto mode	3	1	0 – No use, 0 - Use	-		
			Temperature display	4	0	0 – Set temperature, 1 - Room temperature	-		
			AC On/Off button function	5	0	0 – Indoor unit + ERV, 1 – Indoor unit only, 2 – ERV only,	-		
			3	Blade setting/checking	Lock of Blade1	1	0	0 – Unlock, 1 – lock	-
					Lock of Blade2	2	0	0 – Unlock, 1 – lock	-
	Lock of Blade3	3			0	0 – Unlock, 1 – lock	-		
	Lock of Blade4	4			0	0 – Unlock, 1 – lock	-		
	4	ERV option Setting/checking	Use of By-Pass mode	1	0	0 – No use, 1 - Use	-		
			Use of Auto mode	2	0	0 – No use, 1 - Use	-		
			Use of air purification mode	3	0	0 – No use, 1 - Use	-		
			Use of external control	4	0	0 – No use, 1 - Use	-		
	5	Room Temperature compensation	Temperature control reference	1,2,3	0	-9 ~ 40(°C)	0.1(°C)		
			Temperature compensation value	4,5,6	0	-9.9 ~ 9.9(°C)	0.1(°C)		
	6	Number of connected units	Number of indoor units	1,2	-	0 ~ 16	-		
			Number of ERVs	3,4	-	0 ~ 16	-		
	7	Temperature increment/decrement (°C only)		1	0	0-1°C, 1-0.5°C, 2-0.1°C	-		
	0	Factory option setting		1	0	0 – Unchanged 1 – Factory setting	-		
2	1	Software code	1~6	-	Software code	-			
	2	Software version	1~6	-	Software version	-			
3	1	Indoor unit room temperature		1,2,3	-	Room temperature	°C		
	2	Indoor unit EVA IN temperature		1,2,3	-	EVA IN temperature	°C		
	3	Indoor unit EVA OUT temperature		1,2,3	-	EVA OUT temperature	°C		
	4	Indoor unit EEV step		1,2,3	-	EEV step	-		
	5	Indoor unit option checking (1)	Use of central control	1	-	0 – No use, 1 - Use	-		
			Use of drain pump	2	-	0 – No use, 1 - Use	-		
			Use of electric heater	3	-	0 – No use, 1 - Use	-		
			Use of hot water coil	4	-	0 – No use, 1 - Use	-		
	6	Indoor unit option checking (2)	Use of external control	1	-	0 – No use, 1 - Use	-		
			Use of RPM compensation	2	-	0 – No use, 1 - Use	-		
			Filter time	3	-	0 – 2000 hours, 1 – 1000 hours	-		
			Heating temperature compensation	4	-	0-2°C, 1-5°C	-		
			EEV stop step in heating	5	-	0 – 1/80 steps, 1 – 80	-		

# Wired Remote Controller Installation/Service Mode

Main menu	Sub menu	Function		Data bit	Factory setting	Description	Unit
4	1	Indoor unit main address checking		1,2	-	Main address (0~63)	-
		Indoor unit main address setting (outdoor unit reset is needed to set)		3,4	-	Main address (0~63)	-
		Indoor unit RMC address setting/checking		5,6	-	RMC address (00H~2FH)	-
	2	Indoor unit option code setting/checking		1)*	-	Indoor unit option code (24 bits)	-
5	3	Indoor unit option switch setting/checking		1)*	-	Refer to the indoor unit installation manual for details	-
	1	AHU setting/checking	Setting/checking the differential value	1,2	-	0~30	1
			RPM setting/checking	3,4	-	0~25	1 RPM
			filter performance	5	-	0 – Pre 1 – Medium performance 2 – High performance	-
			humidity setting/checking	6	-	0 – 30, 1 – 40, 2 – 50	-
	2	AHU discharge temperature setting/checking	Use of discharge temperature control	1	-	0 – No use, 1 – Use	-
			Cooling discharge temperature	3,4	-	10 ~25°C	1°C
			Heating discharge temperature	5,6	-	28 ~43°C	1°C
	3	Fresh Duct discharge temperature checking	Cooling discharge temperature	1,2	-	13~25	1°C
			Heating discharge temperature	3,4	-	18~30	1°C
6	1	ERV Plus setting/checking	Use of cold air prevention	1	-	0 – No use, 1 – Use	-
			Use of humidification when Heating thermo off	2	-	0 – No use, 1 – Use	-
			Use of fan operation in Defrost	3	-	0 – No use, 1 – Use	-
			Use of humidification when Heating	4	-	0 – No use, 1 – Use	-
	2	ERV Plus temperature setting/checking	Cooling	1,2	-	15~30°C	1°C
			Heating	3,4	-	15~30°C	1°C
	3	ERV Plus Auto mode temperature setting/checking	Set temperature	1,2	-	15~30°C	1°C
			Set temperature difference	3,4	-	5~15°C	1°C
	4	Setting/checking the compensating temperature A under the Heating EEV control for ERV Plus	Setting/checking the compensating temperature A under the Heating EEV control for ERV Plus	1,2	-	0~10°C	1°C
			Checking the compensating temperature B under the Heating EEV control for ERV Plus	3,4	-	0 – Non use of humidifier(0°C) 1 – Use humidifier(10°C)	-
	5	ERV Plus fan RPM setting/ checking	Air supply RPM	1,2	-	10~27 RPM	1 RPM
			Air exhaust RPM	3,4	-	10~27 RPM	1 RPM
0		Factory setting		1	-	0 – No use, 1 – Factory setting	-

1)\* Data1 is the option setting page. / Data2~6 stand for the option codes.

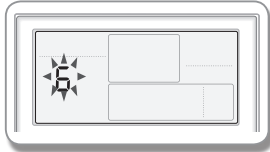


You can set the 24 digits options.

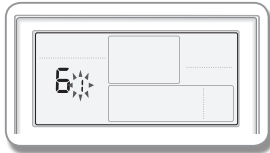
Page	Option Settings	How to Move Between Pages
PAGE 1	1 <sup>st</sup> ~5 <sup>th</sup> digit option setting	Press the [>] button to go to PAGE 2.
PAGE 2	6 <sup>th</sup> ~10 <sup>th</sup> digit option setting	Press the [>] button to go to PAGE 3.
PAGE 3	11 <sup>th</sup> ~15 <sup>th</sup> digit option setting	Press the [>] button to go to PAGE 4.
PAGE 4	16 <sup>th</sup> ~20 <sup>th</sup> digit option setting	Press the [>] button to go to PAGE 5.
PAGE 5	21 <sup>th</sup> ~24 <sup>th</sup> digit option setting	-

※ Regardless of Celsius and Fahrenheit setting, service mode setting is available only with Celsius.

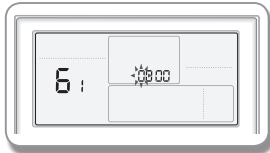
## The example of ERV PLUS option setting method



1. Press **Set** and **ESC** buttons at the same time for more than 3 seconds.
  - ▶ (Main menu) will be displayed and then press the [**^**]/[**V**] button to select no.6.

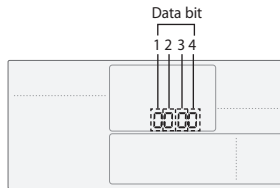


2. Press [**>**] button to select the number you will set.
  - ▶ Press [**^**]/[**V**] button and select no.1



3. Press [**>**] button to enter the data setting stage.
  - ▶ When you enter the setting stage, the current setting value will be displayed.

### Example of data setting stage display

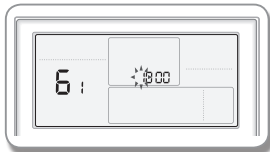


Data1: Nonuse of cold breeze prevention

Data2: Cold breeze prevention: Non use of humidification when the heating THERM is off

Data3: No operation for air supply fan of defrosting operation

Data4: Nonuse of humidification in heating operation



4. Press [**<**]/[**>**] button to select the desired Data1.
  - ▶ Press [**<**]/[**>**] button to select no.1.
  - ▶ The wired remote controller option is changed from "Nonuse of cold breeze prevention" to "Use of cold breeze prevention".

5. Press **Set** button to complete the option setting.
  - ▶ Save the setting value and exit to sub menu.

6. Press **Esc** button to exit to normal mode.



## QUESTIONS OR COMMENTS?

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