# OWNER'S MANUAL AIR CONDITIONER

Please read this manual carefully before operating your set and retain it for future reference.

TYPE: AHU CONTROL KIT

Life's Good



P/NO: MFL62171707

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## **Safety Precautions**

To prevent injury to the user or other people and property damage, the following instructions must be followed.

■ Incorrect operation due to ignoring instruction will cause harm or damage. The seriousness is classified by the following indications.

### **A** WARNING

This symbol indicates the possibility of death or serious injury.

**A**CAUTION

This symbol indicates the possibility of injury or damage.

■ Meanings of symbols used in this manual are as shown below.

	Be sure not to do.
0	Be sure to follow the instruction.



#### Installation

System air conditioner can only be installed by specialized service provider with air condition installation certifications.

 Inappropriate installation can cause leakage, fire and electric shock.

Do not store or use flammable gas or volatile substance near the air conditioner.

• It can cause a fire or problem to the product.

When moving or reinstalling the air conditioner, please contact the MULTI VTM AHU installation service provider.

 Inappropriate installation can cause leakage, fire and electric shock.

Do not bend or damage the power cable.

· It can cause a fire or an electric shock.

Do not disassemble, repair or reconfigure the product arbitrarily.

 It can cause a fire and electric shock

For the electric construction, request for service to the distributor or the service center.

· Arbitrary disassembly or repair can cause a fire or an electric shock.

#### Always ground the product.

· If the product is not grounded properly, it can cause an electric shock.

When installing the product, always install the electric circuit breaker and the exclusive switch.

 If they are not installed, it can cause a fire or an electric shock.

Do not use damaged circuit breaker or exclusive switch.

· It can cause a fire or an electric shock

When opening the box or installing the product, be careful of any sharp objects.

• It can cause an injury.

The electric construction must be performed by an electrician for electric installation based on the installation manual and designated circuit diagram.

 Use of inappropriate wire and electric construction, can result in an electric shock or a fire. Technical standard for electric equipment Use the fuse of rated capacity.

 It can cause a fire or an electric shock.

Use designated installation material at the designated location for the product installation.

For the product installation, request for service to the service center or the installation service provider.

 It can cause a fire, an electric shock, an explosion or an injury.

Do not install the product outdoors.

#### ■ Operation

Do not let water get inside (Controller) the product. Especially do not wash the product with water.

 It can cause an electric shock or a problem to the product.

Use exclusive cable for the product.

It can cause a fire or an electric shock

Do not let the work or the user get on top of the product.

 He or she can fall over to get injured.

Do not operate the switch with wet hands.

It can cause a fire or an electric shock.

Do not leave the product near a heating device.

It can cause a fire.

If you hear or smell a weird sound or odor, or if you see smoke from the product or if you experience a power outage, pull down the main power switch.

• If not, it can cause a fire or an electric shock.

Do not use any heating devices near the power cable.

It can cause a fire or an electric shock.

If you are not planning to use the product for a long period of time, pull down the main power switch.

 It can cause a fire or an electric shock. Do not change or expend the power cord arbitrarily.

 It can cause a fire or an electric shock.

Do not put any heavy objects on top of the power cable.

 It can cause a fire or an electric shock.

Do not turn off the power with the main power switch while the product is operating.

It can cause a fire or an electric shock

If the gas leaks, open the window to ventilate the room before operating the product.

 It can cause an explosion or a fire.

#### Do not put containers with water on top of the product.

• If the water spills over, it can cause a fire or an electric shock.



#### ■ Operation

When installing the product, make sure to level the product.

· It can cause vibration or leakage.

Do not install the product at a location where flammable gas is leaking.

• It can cause a fire or a problem to the product. Do not carry the product by yourself.

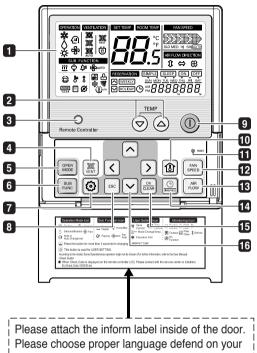
· You can get injured by doing

# **Necessary sensor by operating mode**

Operating mode	Necessary sensor	Function
Cooling	SA temperature sensor RA temperature sensor	- This runs indoor cooling Initial external air inlet setting is 30% of the air supply during the air conditioning and this can be changed by the user. But, when the damper actuator is installed on AHU, the setting can be changed.
Heating	SA temperature sensor RA temperature sensor	- This runs the indoor heating Initial external air inlet setting is 30% of the air supply during the heating and this can be changed by the user. But, when the damper actuator is installed on AHU, the setting can be changed.
Energy saving	SA temperature sensor RA temperature sensor OA temperature/ humidity sensor Damper actuator	- This is the operating function to run indoor air conditioning by controlling multiple outdoor units by comparing the enthalpy of the indoor/outdoor air.  - During the Energy saving operation, the operation switches between partial air conditioning operation (Controlling multiple outdoor units) and fresh air conditioning operation (Outdoor unit OFF, 100% external air flow).  - This is operating function is mainly used in between seasons. But if there is no OA temperature/humidity sensor and RA temperature/humidity sensor on the AHU, the energy saving operation cannot be selected.
Dehumidification	SA temperature sensor RA temperature sensor OA temperature/ humidity sensor	This is the operating function to remove the indoor humidity when the humidity level indoor is excessive.     During the dehumidification operation, the set value is 50%RH and the user cannot change this setting. But if there is no OA temperature/humidity sensor and RA temperature/humidity sensor on the AHU, the dehumidification operation cannot be selected.
Humidification	SA temperature sensor RA temperature sensor	This is the operating function to control the humidity to the set value by detecting the indoor humidity level.     This can be selected during heating operation. But if there is no humidifier/humidifying valve and RA temperature/humidity sensor on the AHU, the humidification operation cannot be selected.
Auto ventilation	SA temperature sensor RA temperature sensor CO <sub>2</sub> sensor Damper actuator	<ul> <li>This is the operating function to control the amount of external air flow so that the CO₂ level is controlled within the set level by detecting the indoor CO₂ level.</li> <li>The initial CO₂ level is set to 1000ppm, and can be changed by the user.</li> <li>This function operates when auto ventilation operation (Additional operation) is selected during air conditioning or heating operation. But if there is no CO₂ sensor and damper actuator on the AHU, the auto ventilation operation cannot be selected.</li> </ul>
Preheating	SA temperature sensor RA temperature sensor Mixing temperature/ humidity sensor	- When the mixing temperature during the heating operation is below the set value (5°C), preheating device automatically operates. The preheating device and mixing temperature sensor must be installed on AHU for this to operate automatically.

## **Part Description**

#### Name and Function of Remote Controller

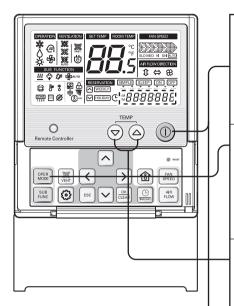


country.

- **1** OPERATION INDICATION **SCREEN**
- 2 SET TEMPERATURE Button
- **3** WIRELESS REMOTE **CONTROLLER RECEIVER** 
  - Some products don't receive the wireless signals.
- 4 VENTILATION Button
- **6** OPERATION MODE SELECTION Button
- 6 SUBFUNCTION Button
- **7** FUNCTION SETTING Button
- 8 EXIT Button
- ON/ OFF Button
- 10 ROOM TEMPERATURE Button
- RESET Button
- 12 FAN SPEED Button
- AIR FLOW Button
- **12** RESERVATION/ TIME SETTING **Button**
- 15 SETTING/ CANCEL Button
- 16 UP, DOWN, LEFT, RIGHT Button

- 3/4/12/13 does not work.
- 6 Additional operation button depends on the application of the sensor.

## Basic operation of wired remote controller

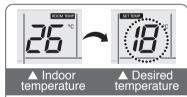


Press the On/Off button on the control part of the remote controller to start the operation.

Press the Operation Selection button to set the operating mode (Cooling/Heating etc.).

Press the Temperature Control button to set the desired temperature below the indoor temperature. (Based on air conditioning operation)

(Example) Remote controller display window

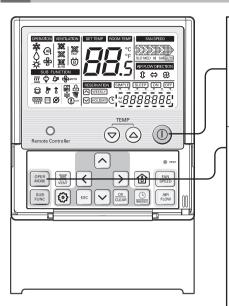


During the initial operation, the desired temperature is automatically set below the indoor temperature.

When you press the On/Off button during use, the operation will stop.



## Main function of wired remote controller



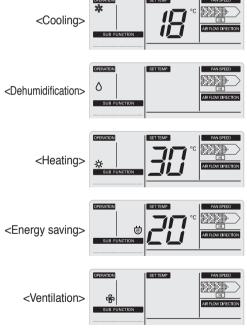
Every time you press the On/Off button, the ON and OFF will be repeated.

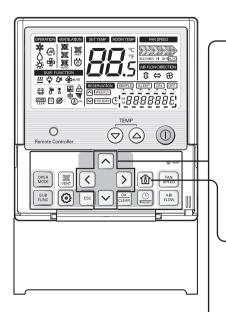


Every time you press the Operation Selection button, it will change in the order of Cooling → Dehumidification → Heating → Energy saving → Ventilation.

There are operating modes that cannot be set depending on the applied sensor.







Current humidity / CO2 level Function Setting Code

(Function set by code)

Code 01: Current humidity

\* Code 02: Current CO2 level

: Current humidity

: Current CO2 level

(Example)

 $\Pi$   $15\Pi$ 

<Current humidity: 50%>

02:15:00

<Current CO2 level: 1500ppm>

Every time you press the Temperature Control button and the Up/Down button. the desired temperature will change. Cooling/Energy saving:

> 18~30°C / Heating: 16~30°C Dehumidification/Ventilation:

Desired temperature cannot be changed

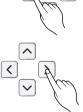


When you press the Indoor Temperature button, the Return Temperature of AHU will be displayed for about 5 seconds.



To check the current humidity, press the 'Left' button when the indoor temperature is displayed and the indoor humidity will be displayed at Display 'C'. To check the current CO2 level, press the 'Right' button when the indoor temperature is displayed and the current

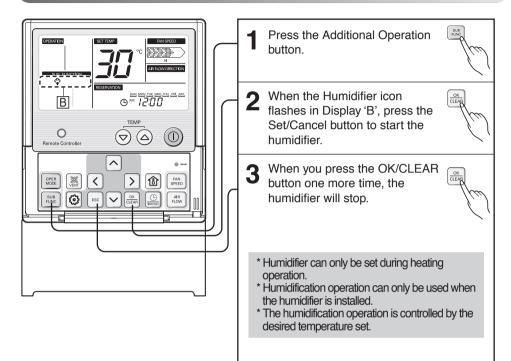
CO<sub>2</sub> level will be displayed at Display 'C'.



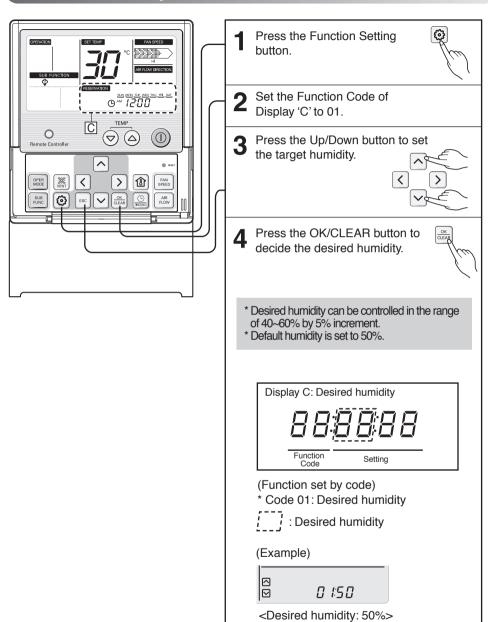
>

## Supplementary function of wired remote controller

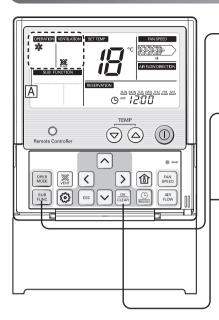
#### Humidifier



### Desired humidity control



### Auto ventilation



Press the Additional Operation button.



When the Auto icon flashes in Display 'A', press the OK/CLEAR button to start the Auto Ventilator.

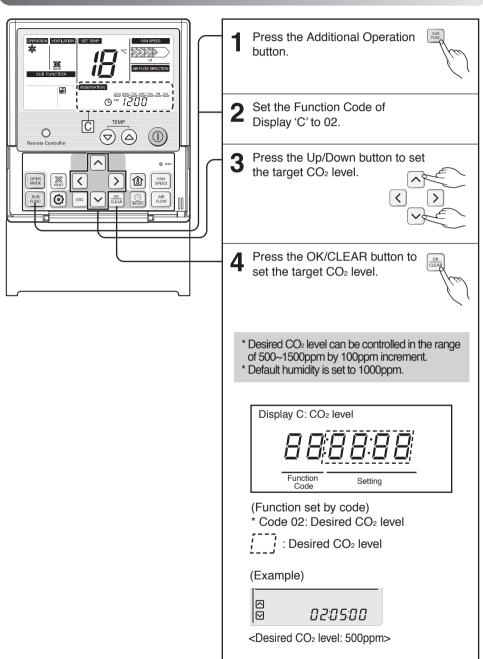


When you press the OK/CLEAR button one more time, the Auto Ventilator will be canceled and return to the previous operating condition.



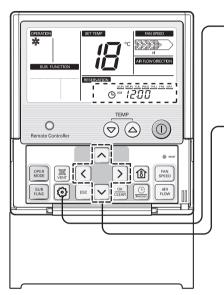
\* Auto Ventilator function can only be set during the Cooling/Heating operation.

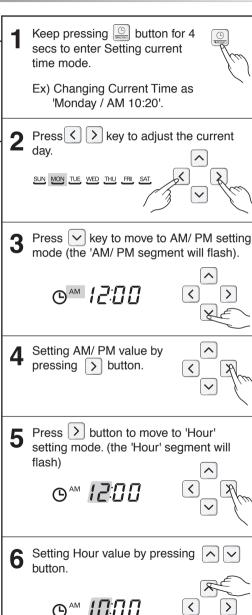
#### Desired CO2 level control

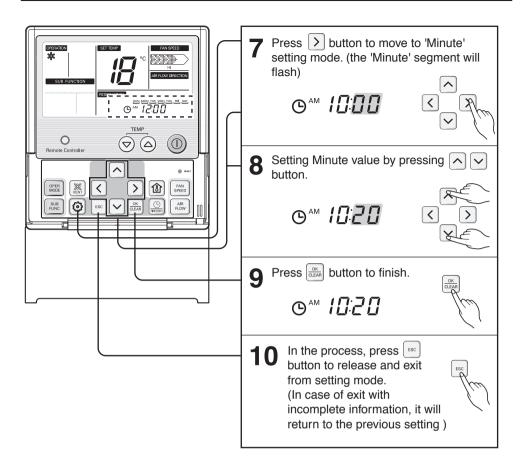


### Reservation function of wired remote controller

### Changing Current Time

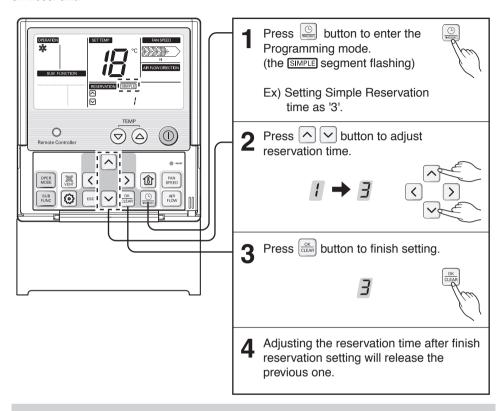






### Programming: Setting Simple Reservation

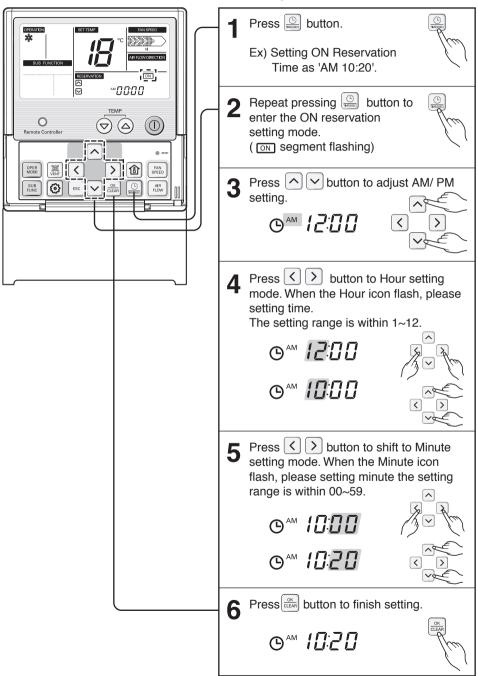
In case of there is not any reservation setup on system, it is possible to make a SIMPLE reservation on indoor unit.



\* If the indoor is ON, we can make the reservation for turning OFF. In reserve, if the indoor is OFF, we can set the timer for turning ON. The reservation time is from 1 to 7 hours.

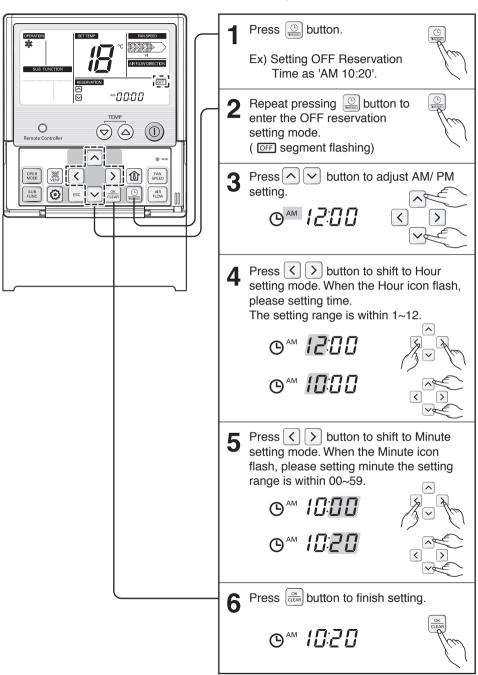
### Programming: Setting ON Reservation

This function is able to turn air conditioner ON after a setting time.



### Programming: Setting OFF Reservation

This function is able to turn air conditioner OFF after a setting time.

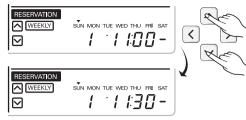


#### Programming: Weekly Reservation

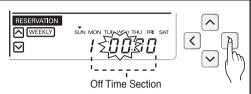
The weekly reservation is active after setting current time

Press programming button to enter SUN YON TUE WED THU FRI SAT the Programming mode, Repeat 0000 pressing button to select [Weekly reservation1. (The segment will be flashed) Ex) Setting one action as below. - Day: TUE - ON Time: 11:30 AM - OFF Time: 12:30 PM Press left, right button to adjust the SSUN MON TUE WED THU FRI SAT current day. SUN MON TUE WED THU FRI SAT Press up, down button to adjust the RESERVATION action number. WEEKLY <  $\square$ Press right button to move to 'Hour' RESERVATION Part on ON Time section. WEEKLY (The 'Hour' segment will be flashed) Start Time Section Press up, down button to adjust the RESERVATION Hour on Start Time section. WEEKLY RESERVATION WEEKLY SUN MON TUE WED THU FRI SAT  $\square$ 6 Press right button to move to RESERVATION 'Minute' Part on Start time section. WEEKLY SUN MON TUE WED THU FRI SAT (The 'Minute' segment will be flashed)

Press up, down button to adjust the Minute on Start Time section.



Press right button to move to 'Hour' Part on OFF Time section. (The 'Hour' segment will be flashed)



Please refer the process from No.5 to No.7 for setting OFF Time. It is same method.



If you finish the setting, press setting/cancel button to complete programming.

The under bar segment will be created, when it finished.



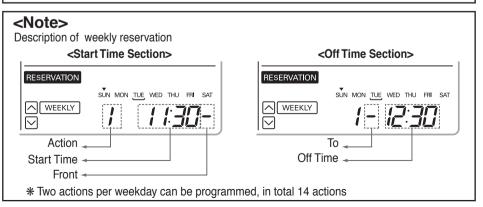


Please refer the process from No.2 to No.10 for setting other day weekly program. It is same method.



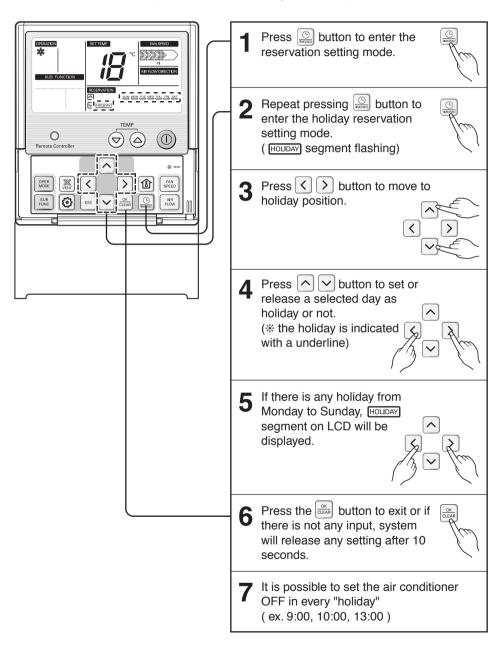
Press exit button to exit or system will automatically release without any input after 25 seconds.





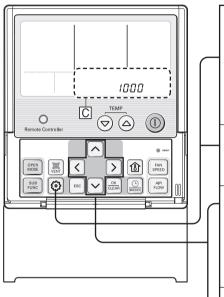
#### Programming: Holiday Reservation

This function is to automatically stop the machine working on some days.



## Setting function of wired remote controller installation

#### How to start installation setting mode



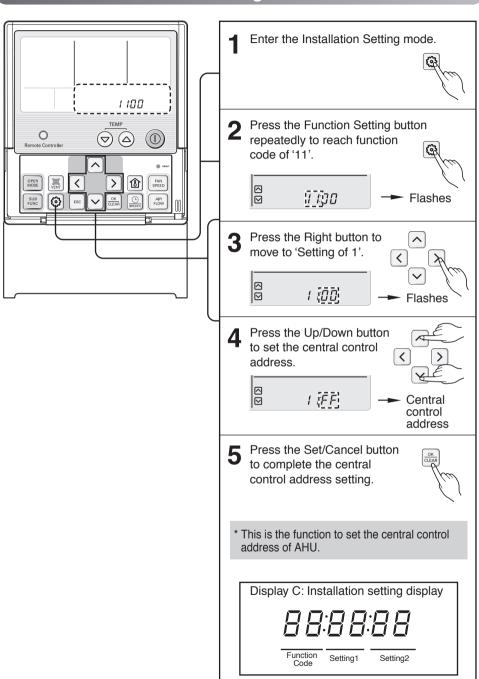
- Press the Function Setting button for more than 3 seconds and the Code will be displayed on Display 'C' to enter the installation mode.
- When you now press the Function Setting button, the function code will change.
- Press the Up/Down button to change the setting.
- Press the Left/Right button to navigate through the items.



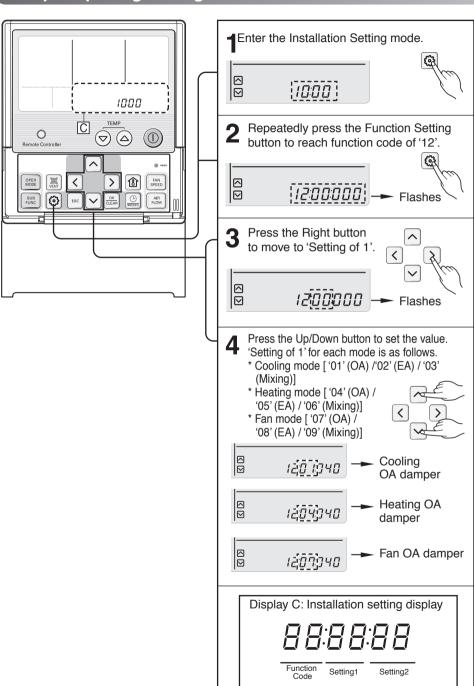
## Setting function by code

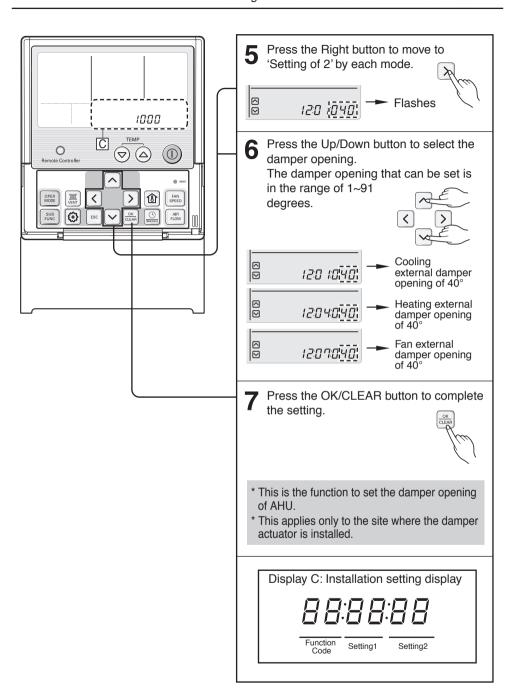
Code 10: Test run (AHU has no function)	
Code 11: Central control address setting	<i>  !:DD</i>
Code 12: Damper opening setting	120 1040
Code 13: Remote controller Master/Slave setting	13:0 1
Display C: Installation setting display  Function Setting1 Setting2	

### Central control address setting

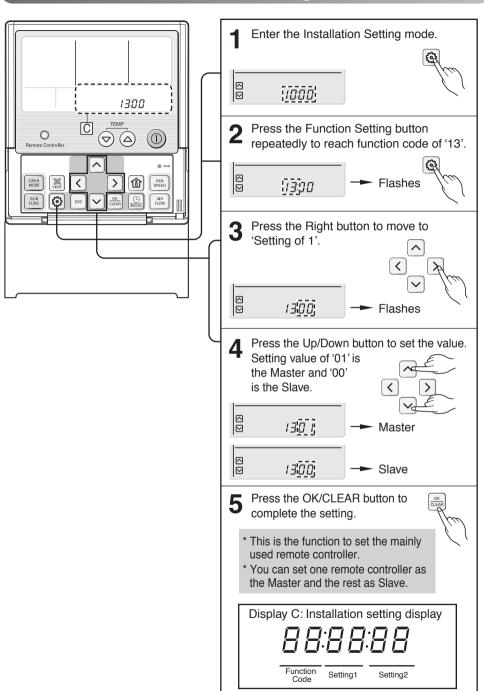


### Damper opening setting



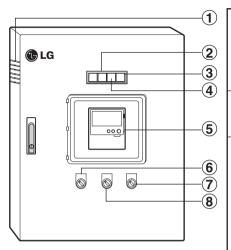


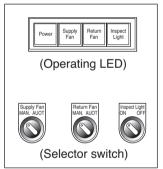
### Remote control Master/Slave setting



## Manual operating mode

#### SA fan operation





- 1 Vents (Left, Light)
- (2) SA fan operating LED
- (3) Inspect Light LED
- (4) RA fan operating LED
- (5) Wired remote controller
- (6) SA fan switch
- (7) Inspect Light switch
- (8) RA fan switch

- When you set the SA Fan Switch to ON, the SA fan will operate manually.
- SA fan operating LED will be turned on.
- 3 When you set the SA Fan Switch to OFF, the SA fan will stop operating and can be operated automatically with the wired remote controller.
  - \* The SA switch of the control kit during AHU operation with the wired remote controller must be maintained at OFF condition.

### RA fan operation

- When you set the RA Fan Switch to ON, the RA fan will operate manually.
- **?** RA fan operating LED will be turned on.
- **3** When you set the RA Fan Switch to OFF, the RA fan will stop operating and can be operated automatically with the wired remote controller.
  - \* The RA switch of the control kit during AHU operation with the wired remote controller must be maintained at OFF condition.

#### Inspect light operation

When you set the Inspect Light switch to ON, the Inspect Light will lights up



- Inspect Light LED will be turned on.
- 3 When you set the Inspect Light switch to OFF, the Inspect Light will stop operating and can be operated automatically with the wired remote controller.



\* The Inspect Light switch of the control kit during AHU operation with the wired remote controller must be maintained at OFF condition.

## Check before requesting for service

When there is a problem with the product, check the following detail before requesting for service to the service center.

Symptom	Check	Action
The product does	* Is the main switch turned off?	* Turn on the main power switch.
not work at all.	* Is there a power outage?	* Check the other electric appliances.
		(If the power works, try operating the product again.)
	* The fuse inside the product	* Request for service to the installation service provider or
	can be disconnected.	the service center.
The cool air does not	* Is the desired temperature set	* Set the desired temperature to be lower than the indoor
flow continuously.	higher than the indoor	temperature.
	temperature?	
	* Is the product running in	* Change the operating mode to air conditioning.
	Dehumidifier/Power save	
	mode?	
I cannot set the	* Is the schedule properly set?	* Refer to the manual and try setting up the schedule again.
scheduled operation.	* Did you check the current time?	* If the current time is incorrect, try setting again.
AHU automatically	* Is the OFF schedule set?	* Check the remote controller and cancel the OFF schedule.
goes off.		

## **Test run**

### Self diagnosis function

#### Error display

- This function displays the self diagnosis and the type of error if identified.
- For the error display, the applicable code is displayed on the 7 segment LED on the wired remote controller and AHU controller.
- If there are 2 or more errors simultaneously, the codes are displayed in the order of occurrence.
- Once you resolve the error, the error code will disappear.

#### Error display method

■ The first display on the 7 segment display refers to the error code and the second part refers to the location information of the communication PCB address or sensor location. Refer to the following for details.

Error type	Display condition	Example of output	Detail description	
Basic error	CH [Error code] 0	CH30	Error #3	
Communication PCB error	CH [Error code] [Address]	CH204	Error #2 in communication PCB with	
			address of '#4'	
Sensor error	CH [Error code] [Location]	CH1302	Air supply temperature sensor error	
Outdoor unit error	CH [Error code] [Address]	CH17304	4 Error #173 on the outdoor unit connected	
			to communication PCB with address of '#4'	

<sup>\*</sup> The address the communication PCB refers to the rotary switch number on the communication PCB.

Location number	Location name	Applicable sensor type
01	RA	Temperature sensor, humidity sensor
02	SA	Temperature sensor, humidity sensor
03	OA	Temperature sensor, humidity sensor
04	Mixing	Temperature sensor
05	Differential pressure	Differential pressure sensor
06	Static pressure	Static pressure sensor

<sup>\*</sup> The above table shows the information of the attached location by sensor.

#### Error display (AHU)

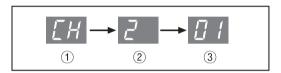
■ '##' refers to the address information of the communication PCB.

Display number			Error item	Cause of error	Cause or error
СН	2	##	Temperature sensor error at pipe inlet of indoor unit	Communication PCB rotary switch number ##	Temperature sensor disconnection or short circuit at pipe inlet of indoor unit
CH	3	00	Communication error between wired remote controller and AHU controller	-	No communication signal for more than 3 minutes from wired remote controller to the AHU controller
CH	4	##	Communication error between AHU controller and communication PCB	Communication PCB rotary switch number ##	No communication signal for more than 3 minutes from communication PCB to AHU controller
CH	5	##	Communication error between communication PCB and outdoor unit	Communication PCB rotary switch number ##	No communication signal for 5 minutes continuously from communication PCB to outdoor unit
СН	6	##	Temperature sensor error on pipe outlet of indoor unit	Communication PCB rotary switch number ##	Temperature sensor disconnection or short circuit on pipe outlet of indoor unit
СН	8	00	Emergency operation	-	The operating status of the smoke control mode through smoke detector is displayed
СН	13	01	Temperature sensor error	RA	Temperature sensor (RA/SA/Mixing) disconnection/short circuit/misconnection or when the sensor value is in the error
		02		SA	range
		04		Mixing	
CH	14	01	Humidity sensor error	RA	Humidity sensor (RA/SA/OA) disconnection/short
		02		SA	circuit/misconnection or when the sensor value is in the error
СН	15	03	CO concer array	OA	range CO <sub>2</sub> sensor disconnection/short circuit/misconnection or when
СП	15	00	CO₂ sensor error	<u>-</u>	the sensor value is in the error range
CH	16	05	Pressure sensor error	Differential pressure	Pressure sensor (Differential pressure, static pressure) disconnection/short
		06		Static pressure	circuit/misconnection or when the sensor value is in the error range
CH	17	01	Air flow sensor error	RA	Air flow sensor (RA, SA) disconnection/short circuit/misconnection
		02		SA	or when the sensor value is in the error range

#### Example of error

Situation	Error
Pipe inlet temperature sensor error (Communication PCB rotary switch number: 01)	$CH \rightarrow 2 \rightarrow 01$
Communication error between communication PCB and outdoor unit	$CH \rightarrow 5 \rightarrow 05$
(Communication PCB rotary switch number: 05)	
SA duct temperature error	CH → 13→ 02
RA duct humidity error	CH → 14→ 01

#### Sequence of error



- \* The occurrence of error is displays in the order of  $\bigcirc \rightarrow \bigcirc \rightarrow \bigcirc \rightarrow \bigcirc$  on 7 segment.
- \* Refer to page 43 for details of 2 and 3.

Refer to the MULTI V technical material for details on error code and checkpoints of the outdoor unit.

