LG AIRCONDITIONER ENGINEERING PRODUCT DATA BOOK

MULTI V™ Network Solution
V-NET

0CAA0-03A (Replaces:0CAA0-02B)

LG
Life's Good

LG Airconditioners Product Data

MULTI V™ V-nET Network Solution

1. Control Devices

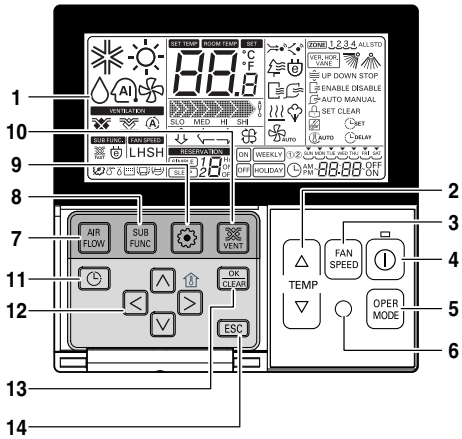
2. Central Control Devices

3. Interface Devices

1.1 Wired Remote Controller

PQRCVSL0 / PQRCVSL0QW

Appearance

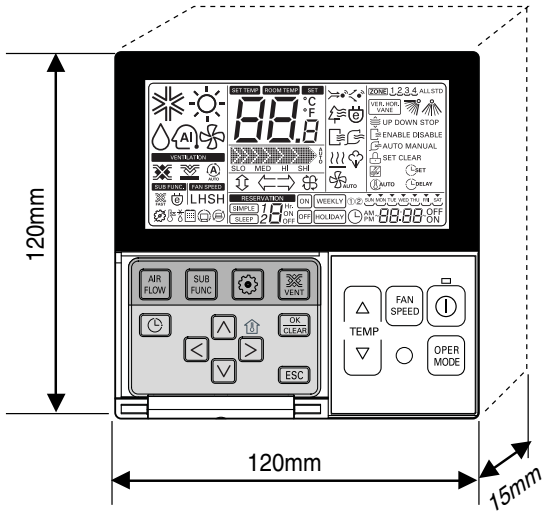


Functions (Button Descriptions)

No.	Name	Function
1	Operation indication screen	- Display the operating condition.
2	Set temperature button	- Used to set the temperature when required.
3	Fan speed button	- Used to set the desired fan speed
4	On/Off button	- Operation starts when this button is pressed, and stops when the button is pressed again.
5	Operation mode selection button	- Used to select the operation mode.
6	Wireless remote controller Receiver	- Some products do not receive wireless remote controller signal.
7	Air flow button	- Used to set the direction of wind
8	Sub-Function button	- Used to select the additional operation mode. *Air cleaner, Heater, Humidifier, Auto fan
9	Function setting button	- Used to set the function and into the installer setting mode. * Function : Wind angle, Child lock, Elevator grill
10	Ventilation butto	- Ventilator control function can only be set for the product with the ventilation function.
11	Reservation Time setting button	- Used to set the Time and Program. * Program : simple, Sleep, ON/OFF, Weekly, Holiday
12	Up,Down,Left,Right button	- Right button used to Room temperature function.
13	Setting/Cancel button	-
14	Exit button	-

• LCD Backlight function.

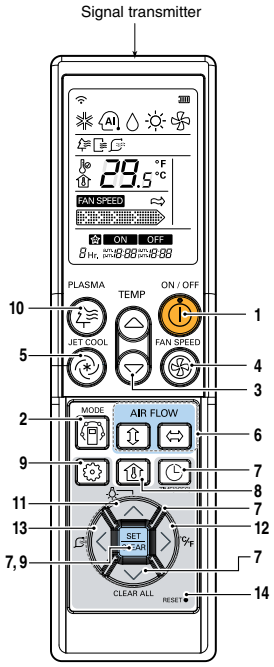
✻ **PQRCVSL0 : Black Color**
PQRCVSL0QW : White Color



Weight : 240g

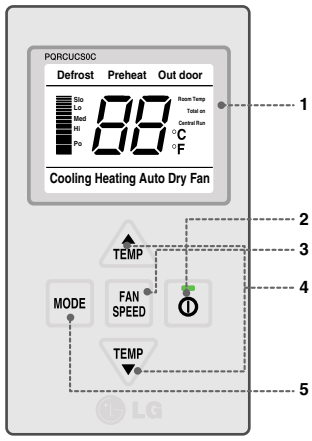
1.2 Wireless Remote Controller

H/P:PQWRHDF0 C/O:PQWRCDF0

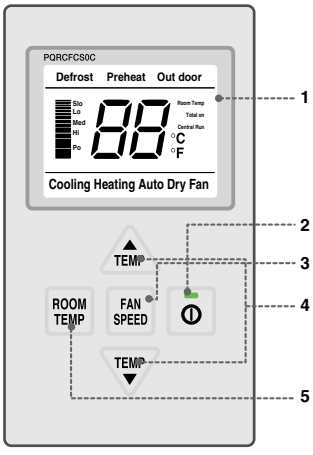
Appearance	Functions (Button Descriptions)			
	No.		Name	Function
	1	ON / OFF	On/Off	Operation starts when this button is pressed and stops when the button is pressed again.
	2	MODE	Operation Mode Selection	Used to select the operation mode.
	3	TEMP	Room temperature Setting	Used to select the room temperature.
	4	FAN SPEED	Fan Speed Selection	Used to select fan speed in four steps (low, medium, high, or CHAOS.)
	5	JET COOL	Jet Cool	Used to start or stop the speed cooling. (Speedcooling/heating operates super high fan speed in cooling mode.)
	6	AIR FLOW	Air Flow Direction Selection	Used to stop or start louver movement and set the desired up/down(auto swing) & left/right airflow direction.
	7		Timer & Time Setting	Used to select desired timer of sleep/on/off timer or used to set the current time (push for 3 sec.)
			Timer & Time Setting	Used to adjust the time when set the timer or current time.
		SET CLEAR	Timer Set/Clear	Used to set timer or clear the selected timer.
		CLEAR ALL	Timer all Clear	Used to clear all timer operation.
	8		Room Temperature Checking	Used to check the room temperature.
	9	SET CLEAR	Auto Clean & Smart Clean (Optional)	Used to set Auto Clean mode or Smart Clean mode. - Set AUTO CLEAN : Push 1 time and Set button. - Set SMART CLEAN : Push 2 times and Set button.
	10	PLASMA	Plasma(Optional)	Used to start or stop the plasma-purification function.
	11		Lighting(Optional)	Used to control lightness of display of Indoor unit.
	12	°F	°C/°F Switch Button	Used to switch temperature reading from Celsius to Fahrenheit.
	13		Smart Clean (Optional)	Used to start or stop smart clean mode when operation stops.
	14	RESET	Reset Button	Used prior to resetting time or after replacing batteries.

1.3 Simple Wired Remote Controller

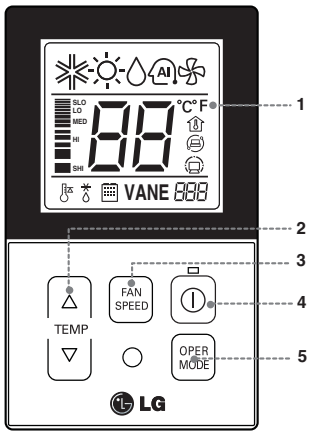
PQRCUCS0C

Appearance	Functions(Button Descriptions)		
Simple wired remote controller (normal) 	No.	Name	Function
	1	Operation display	Displays the operating conditions.
	2	On/Off	Operation starts when this button is pressed, and stops when the button is pressed again.
	3	Fan speed	Used to set the desired fan speed.
	4	Room temperature setting	Used to set the room temperature when required.
	5	Operation mode selection	Used to select the operation mode.

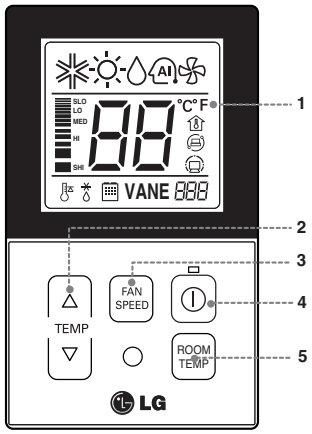
PQRCFCS0C(Mode Change is impossible)(Preliminary)

Appearance	Functions(Button Descriptions)		
Simple wired remote controller for hotel. 	No.	Name	Function
	1	Operation display	Displays the operating conditions.
	2	On/Off	Operation starts when this button is pressed, and stops when the button is pressed again.
	3	Fan speed	Used to set the desired fan speed.
	4	Room temperature setting	Used to set the room temperature when required.
	5	Room temperature checking	Used to check the room temperature.

PQRCVCL0Q/ PQRCVCL0QW

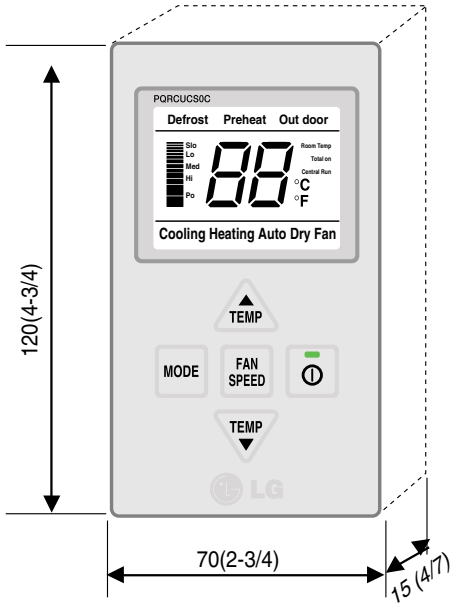
Appearance	Functions(Button Descriptions)		
New Simple wired remote controller (normal)  ※ PQRCVCL0Q : Black Color PQRCVCL0QW : White Color	No.	Name	Function
	1	Operation display	Displays the operating conditions.
	2	Room temperature setting	Used to set the room temperature when required.
	3	Fan speed	Used to set the desired fan speed.
	4	On/Off	Operation starts when this button is pressed, and stops when the button is pressed again.
	5	Operation mode selection	Used to select the operation mode.

PQRCHCA0Q / PQRCHCA0QW

Appearance	Functions(Button Descriptions)		
New Simple wired remote controller for hotel.  ※ PQRCHCA0Q : Black Color PQRCHCA0QW : White Color	No.	Name	Function
	1	Operation display	Displays the operating conditions.
	2	Room temperature setting	Used to set the room temperature when required.
	3	Fan speed	Used to set the desired fan speed.
	4	On/Off	Operation starts when this button is pressed, and stops when the button is pressed again.
	5	Room temperature checking	Used to check the room temperature.

PQRCUCS0C / PQRCFCS0C

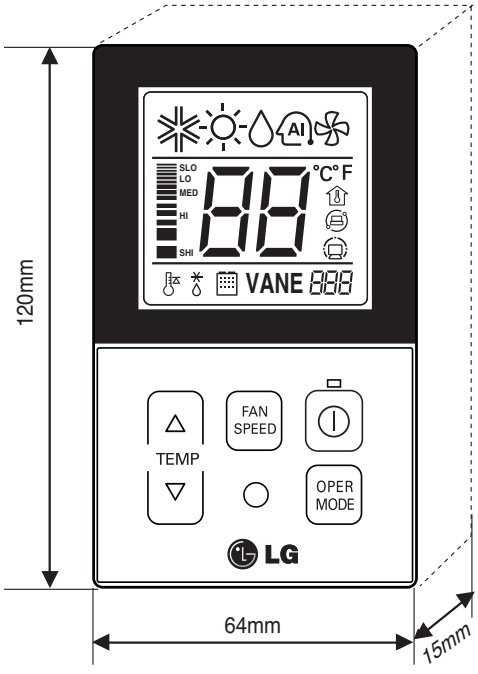
Unit:mm(inch)



Weight : 80g(0.18 lb)

PQRCVCL0Q / PQRCVCL0QW / PQRCHCA0Q / PQRCHCA0QW

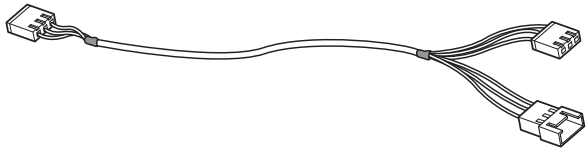
- **LCD Backlight function.**



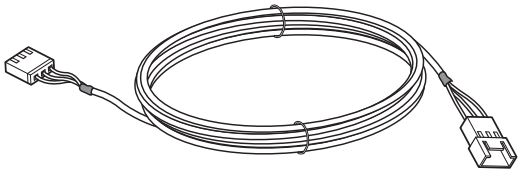
PZCWRCG3

Part Description

This Accessory is used to help Wired Remote group control



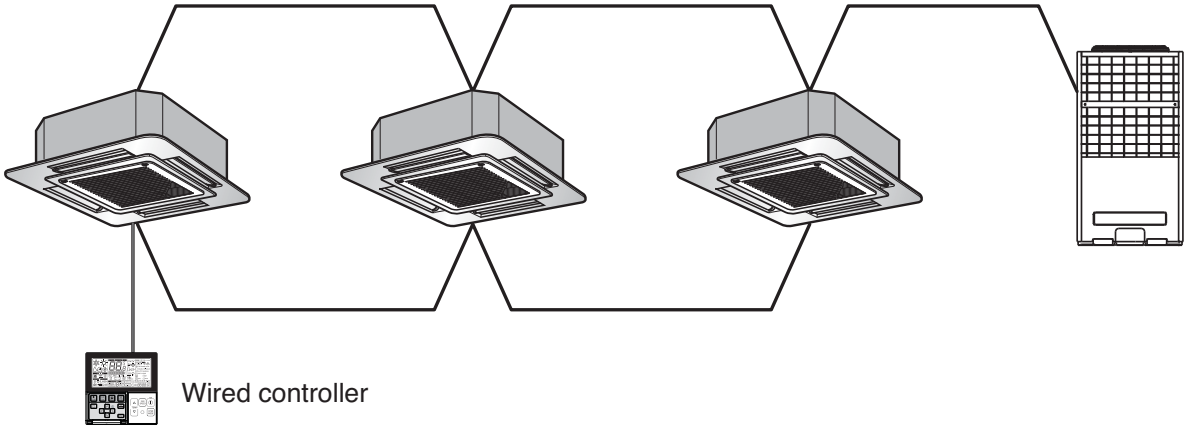
1 Cable assembly for indoor units: 1EA



2 Cable assembly for Connecting indooor to indoor: 1EA

Installation Guide

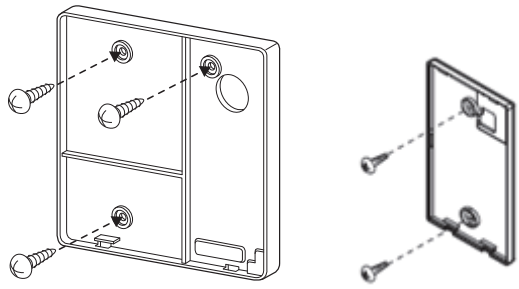
Wiring diagram to use Group control



Installation step_PQRCVSL0 / PQRCVSL0QW / PQRCVCL0Q / PQRCVCL0QW / PQRCHCA0Q / PQRCHCA0QW

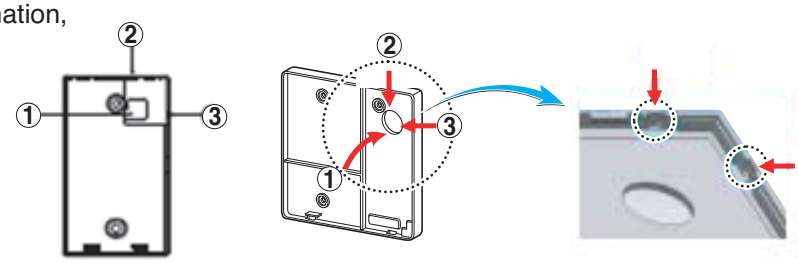
1. Please fix tightly using provided screw after placing remote controller setup board on the place where you like to setup.

- Please set it up not to bend because poor setup could take place if setup board bends. Please set up remote controller board fit to the reclamation box if there is a reclamation box.



2. Can set up Wired remote controller cable into three directions.

- Setup direction: the surface of wall reclamation, upper, right
- If setting up remote controller cable into upper and right side, please set up after removing remote controller cable guide groove.



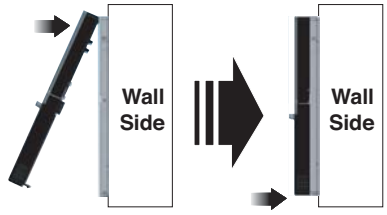
<Wire guide grooves>

❊ Remove guide groove with long nose.
① Reclamation to the surface of the wall
② Upper direction guide groove
③ Right part guide groove

3. Please fix remote controller upper part into the setup board attached to the surface of the wall, as the picture below, and then, connect with setup board by pressing lower part.

- Please connect not to make a gap at the remote controller and setup board's upper and lower, right and left part.

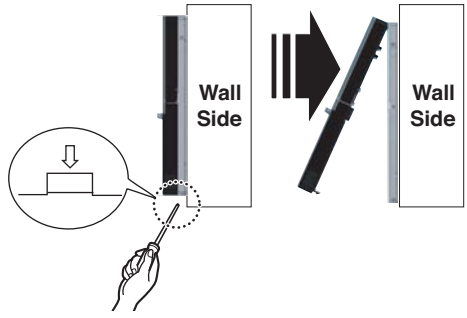
<Connecting order>



When separating remote controller from setup board, as the picture below, after inserting into the lower separating hole using screw driver and then, spinning clockwise, remote controller is separated.

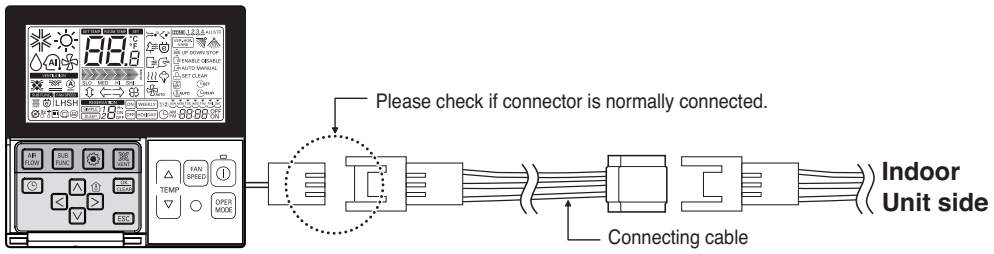
- There are two separating holes. Please individually separate one at a time.
- Please be careful not to damage the inside components when separating.

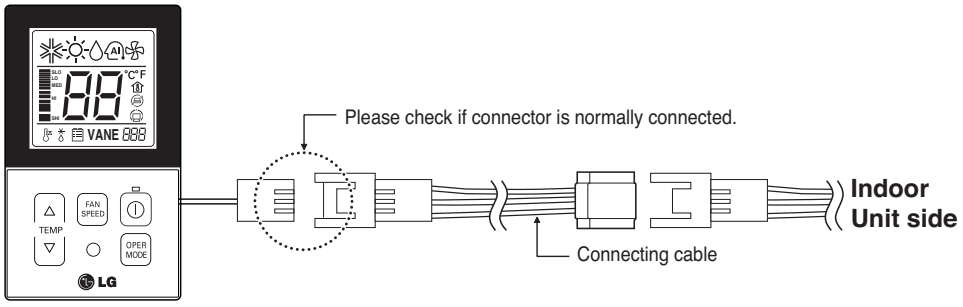
<Separating order>



4. Please connect indoor unit and remote controller using connection cable.

12V	Red
Signal	Yellow
GND	Black





5. Please use extension cable if the distance between wired remote controller and indoor unit is more than 10m.

⚠ CAUTION:

When installing the wired remote controller, do not bury it in the wall.
(It can cause damage in the temperature sensor.)

Do not install the cable to be 50m or above. (It can cause communication error.)

- **When installing the extension cable, check the connecting direction of the connector of the remote controller side and the product side for correct installation.**
- **If you install the extension cable in the opposite direction, the connector will not be connected.**
- **Specification of extension cable: 2547 1007 22# 2 core 3 shield 5 or above.**

2.1 Overview

2.1.1 Control device

Control Method		Objective/ Use	Unit Name and Model	Function	Parts	Features
Central Control	Simple Central Controller	• ON/OFF operation of all indoor units just like remote controller	PQCSB101S0 	• Remote Control • Monitoring • Indoor unit 16 / 1 Simple Controller	• Controller • Manual • Screw 4EA	• 16 Indoor Units On/Off Control • Max 16 Central Controller expansion • Connectable with Function Controller
	Function Controller	• Function control joint With Simple central controller (PQCSB101S0)	PQCSC101S0 	• Fan Speed • Mode • Set Temp • Search	• Controller • manual • Screw 6EA • Install • supporter	• joint with Max 8 simple central controller 8*16 = 128 indoors
	Function Scheduler	• Function control including Schedule Function With Simple central controller (PQCSB101S0)	PQCSD130A0 	• Fan Speed • Operation Mode • Temp Setting • Searching • Weekly schedule Reservation	• Controller • Manual • Screw 4EA	• Connect with Maximum 8 Simple Central Controllers 8*16=128 indoors • Schedule Automatic Operation
	AC Ez	• Function control including Schedule Function	PQCSZ250S0 (AC Ez) 	• Remote Control / Monitoring • 32 Indoor Units On_Off/Operation Mode/Fan Speed/Temp 2 Group available • Weekly schedule 8 event/Day	Controller Manual Screw 5EA Bracket	• 32 Indoor Units (Ventilators) /1AC Ez • Connect with Maximum 8 AC Ez controllers 8*32=256 indoors • Schedule Automatic Operation
	AC Smart	• To Control all indoor unit just like remote controller	PQCSW320A0E  PQCSW320A1E (AC Smart II) 	• Control/Monitoring • Schedule • History • Auto control (Auto Changeover, temperature limit control) • Setting • Other setting Multi Language Emergency Stop Max 64 Indoor units	• AC Smart controller • Power cord • Manual	• Touch screen • Zone/Group/Unit control Function Lock & Set Temp range restriction Icon/List View • Easy upgrade by using USB
	128 unit Expansion Kit	• To expand Control unit of AC Smart	PQCSE440U0 	• To expand form 64 unit to 128 unit of AC Smart	• Expansion Kit • Manual	• Shortly connect communication line to AC Smart, expand maximum control unit from 64 to 128 of AC Smart

Control Method		Objective/ Use	Unit Name and Model	Function	Parts	Features
Central Control	AC Smart II Option Kit	• To add option function of AC Smart II	PQCSE341A0 PQCSE342A0 	• Web Schedule Web Schedule +PDI	• Option Kit Manual	• SD Card Insert the provided SD card into the SD card slot of the AC SMART II terminal.
	DO Kit	• To control On/Off device	PQNFP00T0 	• Control On/Off device by using the central controller	• DO Kit • Manual	• Control On/Off device by using the central controller (simple central controller, AC Smart, ACP)
	ACP	• To Control all indoor unit just like remote controller	PQCPA11A0E 	• Control/Monitoring • Schedule • History Peak Power Control PDI Monitoring • Setting Max 256 Indoor units Without IO (Install with AC Manager, Interlocking is impossible)	• ACP • Power cord • Manual	• Embedded web server (Can connected internet) • Include Central Program in the ACP Web Server Directly IP Setting by using key & LCD Without DI/DO Port
		• To Control all indoor unit just like remote controller	PQCPB11A0E 	• Control/Monitoring • Schedule • History Peak Power Control PDI Monitoring • Setting Max 256 Indoor units With IO (Install with AC Manager, Interlocking is possible)	• ACP • Power cord • Manual	• Embedded web server (Can connected internet) • Include Central Program in the ACP Web Server Directly IP Setting by using key & LCD With DI/DO Port
	AC Manager	• To Control all indoor unit just like remote controller	PQCSS520A0E 	• Control/Monitoring • Schedule • History Peak Power Control • Auto control (Auto Changeover, temperature limit control) Interlocking PDI data Manage • Setting Max 4,096 Indoor units	• PC S/W(CD) • Lock key • Manual	• Install with several ACP supply more detail control & upgraded function Print & down with excel of all data Function Lock & Set Temp range restriction Icon/List View individual unit operating time manage • Max 16 ACP connectable (Max 4.096 Indoors)

Notes:

All the central control devices listed above are optional accessory, so these should be purchased separately when needed.

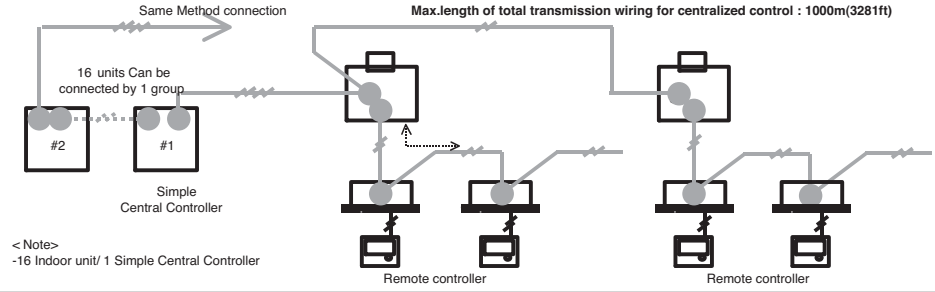
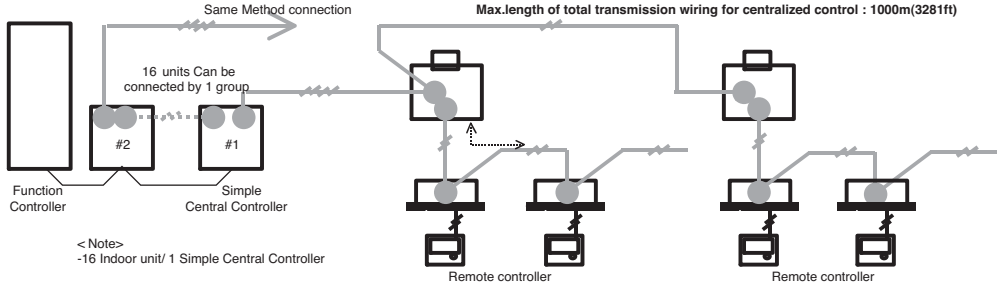
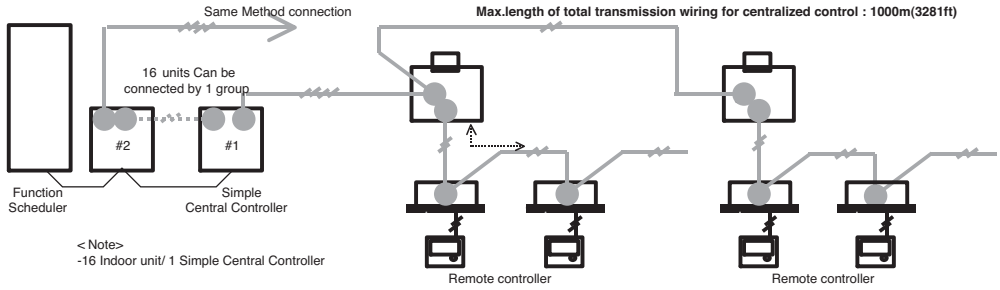
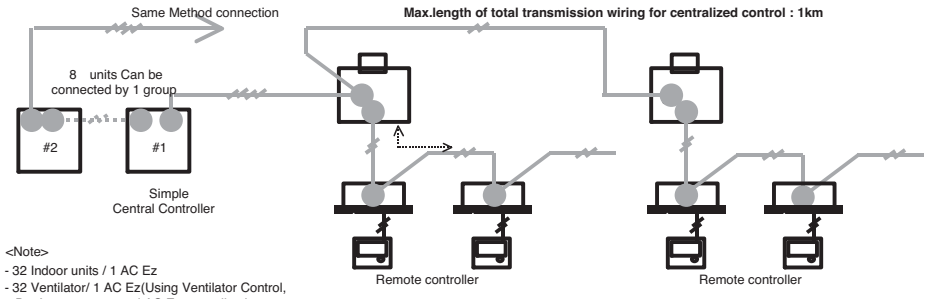
Control Method		Objective/ Use	Unit Name and Model	Function	Parts	Features
Interface Device	Cool /Heat Selector	• To Select Operation Mode	PRDSBM 	• External dry contact switch to select operation Mode	• Contact Switch • Manual	• 1EA/1outdoor unit
	Dry Contact	• For Connect Indoor unit to other Forced on/off Controller	PQDSB1 	• Contact signal to air-con signal converter	• PCB Assembly • Top/Bottom case • Screw • Lead wire 3ea • Sub PCB set (1LEAD wire+ 1Sub PCB) • Manual	• 1set/1 indoor unit • 1 Contact point • Input power AC24V(PQDSB1)
	Dry Contact	• For Connect Indoor unit to other Forced on/off Controller	PQDSBC 	• Contact signal to air-con signal converter	• PCB Assembly • Top/Bottom case • Screw • Lead wire 3ea • Sub PCB set (1LEAD wire+ 1Sub PCB) • Manual	• 1set/1 indoor unit • 2 Contact points • No need AC input • Expected temperature setting is possible
	BNU-LW	• To Connect Outdoor units to LONWORKS BMS system	PQNFB16A1 	• RS485 To LONWORKS Protocol Converter	• Interface Assembly • 12V DC adaptor • Manual	• 64 Indoor units / 1BNU-LW commission with Web Access can be install with simple central controller or AC Smart
	Remote Temperature Sensor	• Sensor for detecting the room temperature.	PQRSTA0 	• External Room temperature Sensor	• Sensor assembly • Connection wire • Screw • Manual	• 1set/1Indoor unit

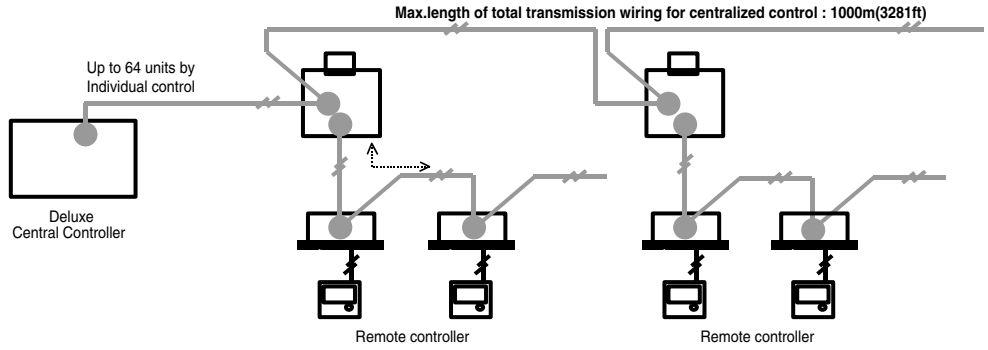
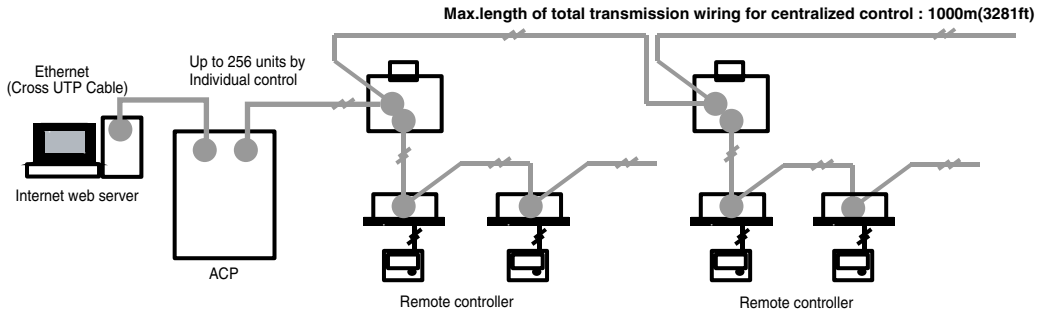
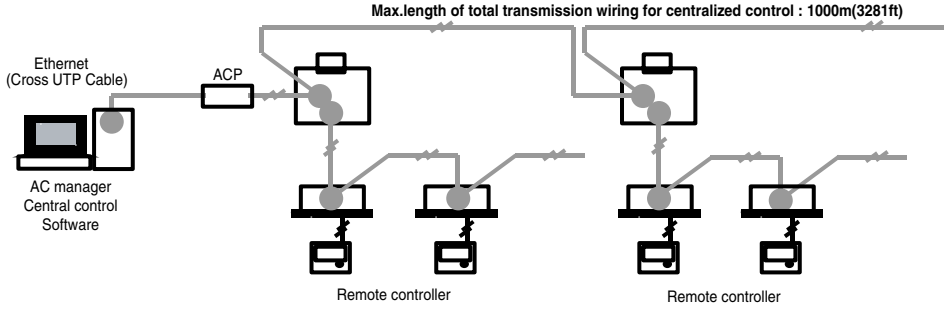
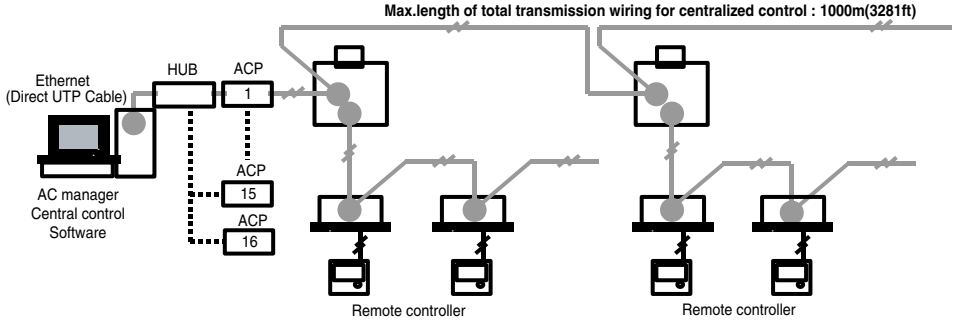
Control Method		Objective/ Use	Unit Name and Model	Function	Parts	Features
Interface Device	BNU-BAC	• To connect Outdoor units to BACnet BMS system	PQNFB17B0 	• RS485 to BACnet protocol converter	• Interface Assembly 12V DC adaptor Manual	• 256 Indoor units/ 1 BNU-BAC commissioned with Web Access can be installed with simple central controller or AC Smart Direct IP Setting by using key & LCD
	PDI	• To determine Power consumption Distribution of each indoor unit	PQNUD1S01 	• Accumulation of total power consumption • Indication of current power in use • Indication of accumulated power for period • Indication of standby power (option setting) • ACP(PQCPA11A0E/ PQCPB11A0E) connection is possible	• PDI Assembly Manual • 9V DC adaptor	• 1 PDI / 1 OUTDOOR

Notes:

- All the central control devices listed above are optional accessories, so these should be purchased separately when needed.
- PI485 should be purchased separately except for Multi V(2 Series).
- In case of Multi V(2 Series), PI485 is inbuilt in the main PCB.

2.1.2 Various Central Control systems

Control Method		Outline of System
Central Control	Simple Central Controller	
	Function Controller	
	Function Scheduler	
	AC Ez	

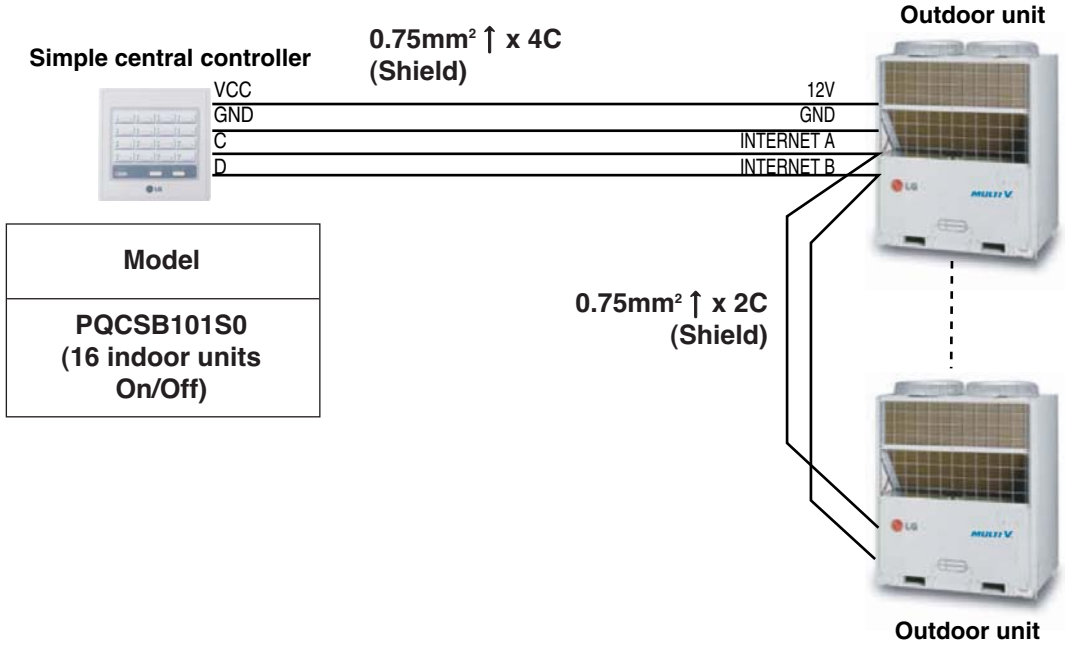
Control Method		Outline of System
Central Control	AC Smart	
	ACP	
	AC Manager	■ When Connecting only 1 ACP with PC, then Cross UTP Cable must be used without HUB  ■ When Connecting 16 ACP with PC, then Direct UTP Cable must be used with HUB 

Note:

All central controllers can not be used at the same time.

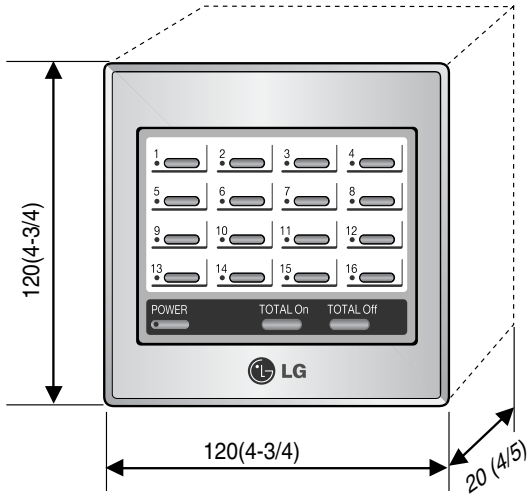
2.2 Simple Central Controller

2.2.1 Overview



Model
PQCSB101S0 (16 indoor units On/Off)

Unit:mm(inch)



Weight : 140g(0.31 lb)

Combination

16 Indoor Unit can be connected in a simple central controller. Total 16 simple central controller can be connected together.

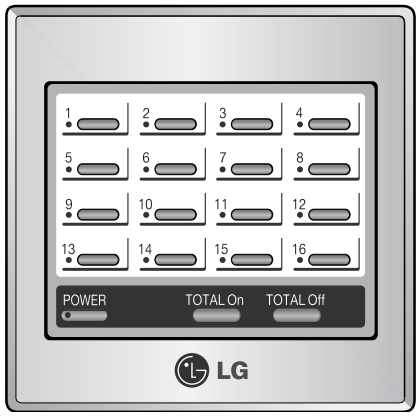
(One of simple central controller is setting 'MASTER' , the others of it to be 'SLAVE')

Control wirings

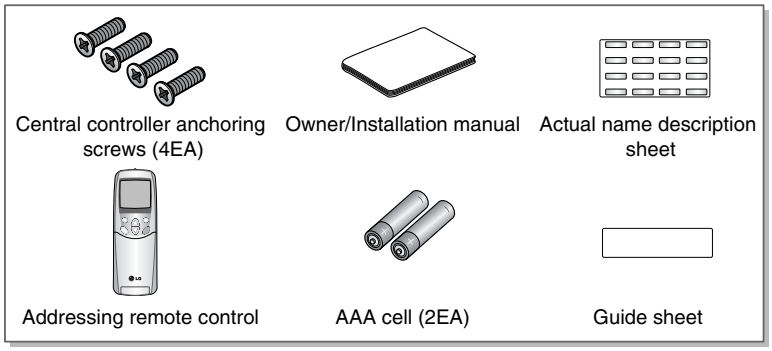
All Outdoor Units should be connected with control wiring in parallel.

12V/GND is connected to simple central controller from an outdoor unit and the other outdoor units are connected to Internet A/B Communicating wires.

2.2.2 Features & Parts



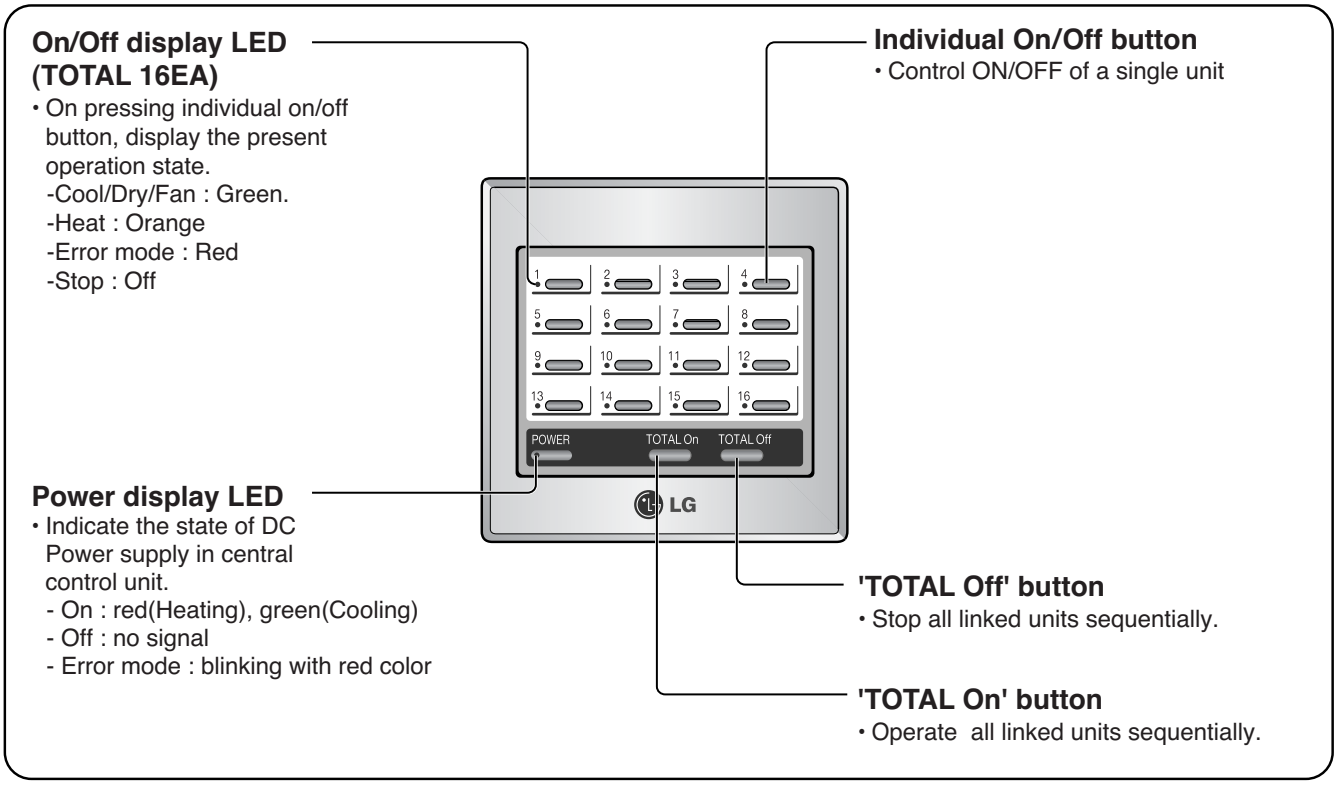
- Easy operation button.
- Independent operation for 16 indoor units each.
- Simultaneously, turn ON/OFF all of indoor units connected.
- Easy change operation mode to cooling or heating
- Set and clear lock-mode for each indoor unit
- Simultaneously set and clear lock-mode for all indoor units connected.
- Display function for all of indoor units connected.



(Parts)

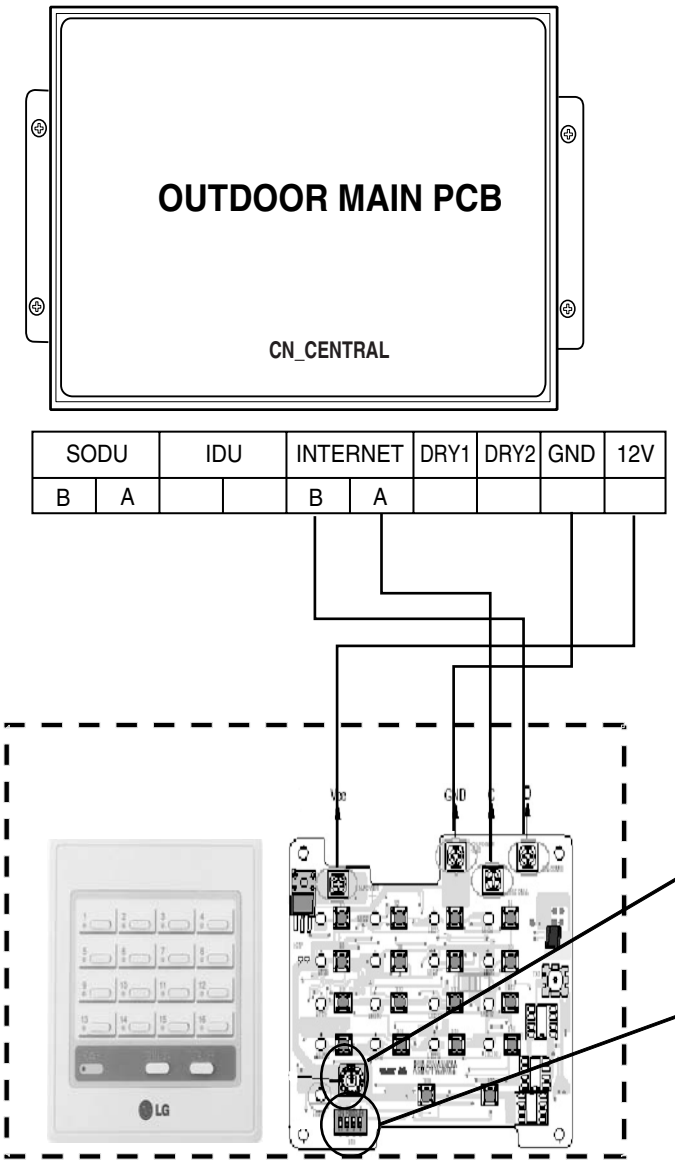
2.2.3 Terminology of each part and their function

PQCSB101S0



2.2.4 Electrical wiring

■ PICTORIAL VIEW OF THE CONNECTION

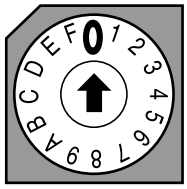


ROTARY SWITCH SETTING
The setting of Group Number
in the Central Control

DIP SWITCH SETTING
In the case of two or more
central controls.
Select 'MASTER' or 'Slave'

■ ROTARY SWITCH SETTING

The setting of Group Number in the Central Control is done by the rotary switch as shown in the figure below.

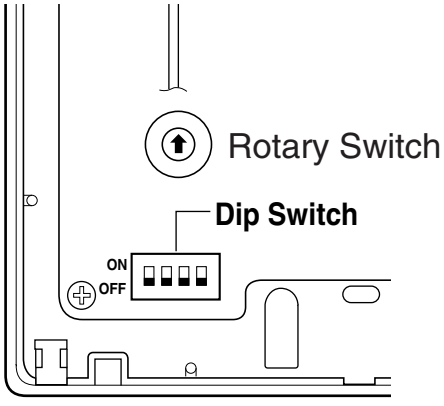


It is possible to set 0~15 Group(Total 16 Groups). All the numbers on the rotary switch represent the different Group Numbers. By changing the knob we can set rotary switch to the group number we want to control. The above fig. shows the control of group number “0”. Similarly we can control all the 16 Groups.

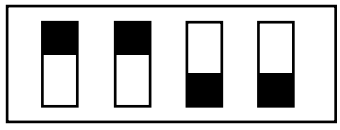
■ DIP SWITCH SETTING(INSTALLATION FOR 2 OR MORE SIMPLE CENTRAL CONTROL)

CAUTION

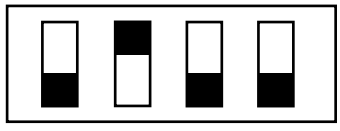
- Dip switch is now used only for the setting of master or slave mode.(In the case of two or more central controls.)
- Set one to Master, the others to slave.



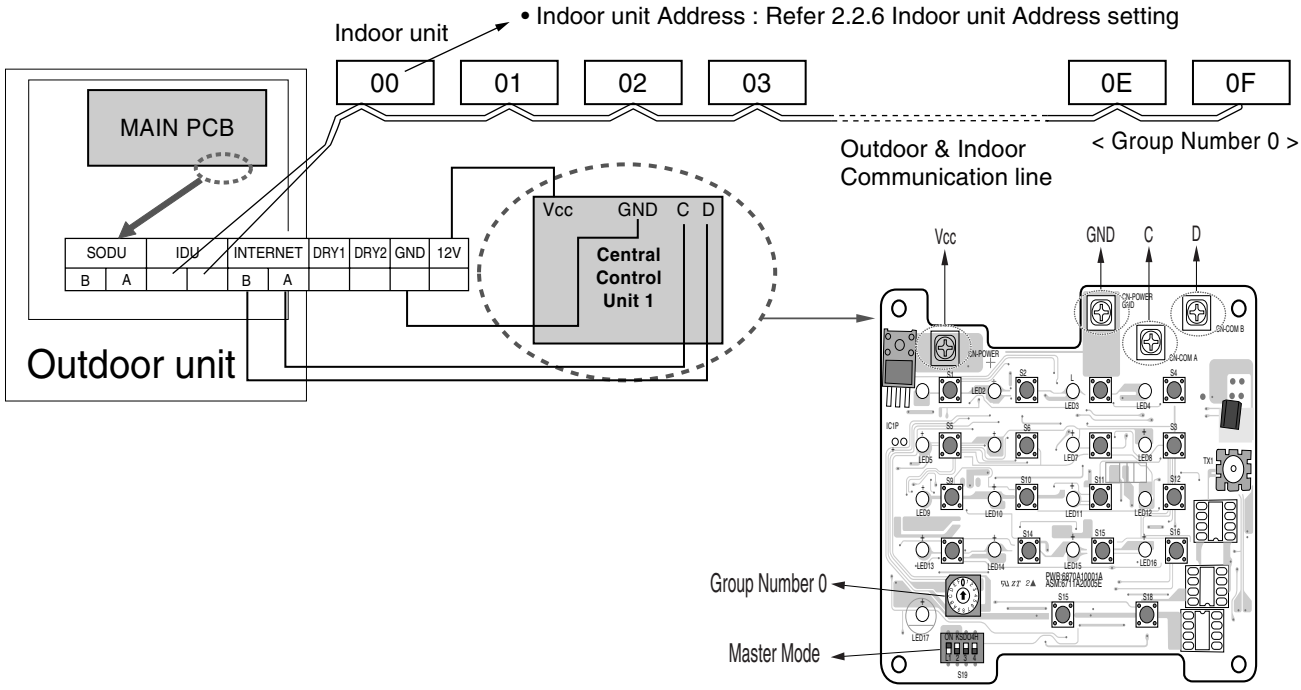
Master Mode



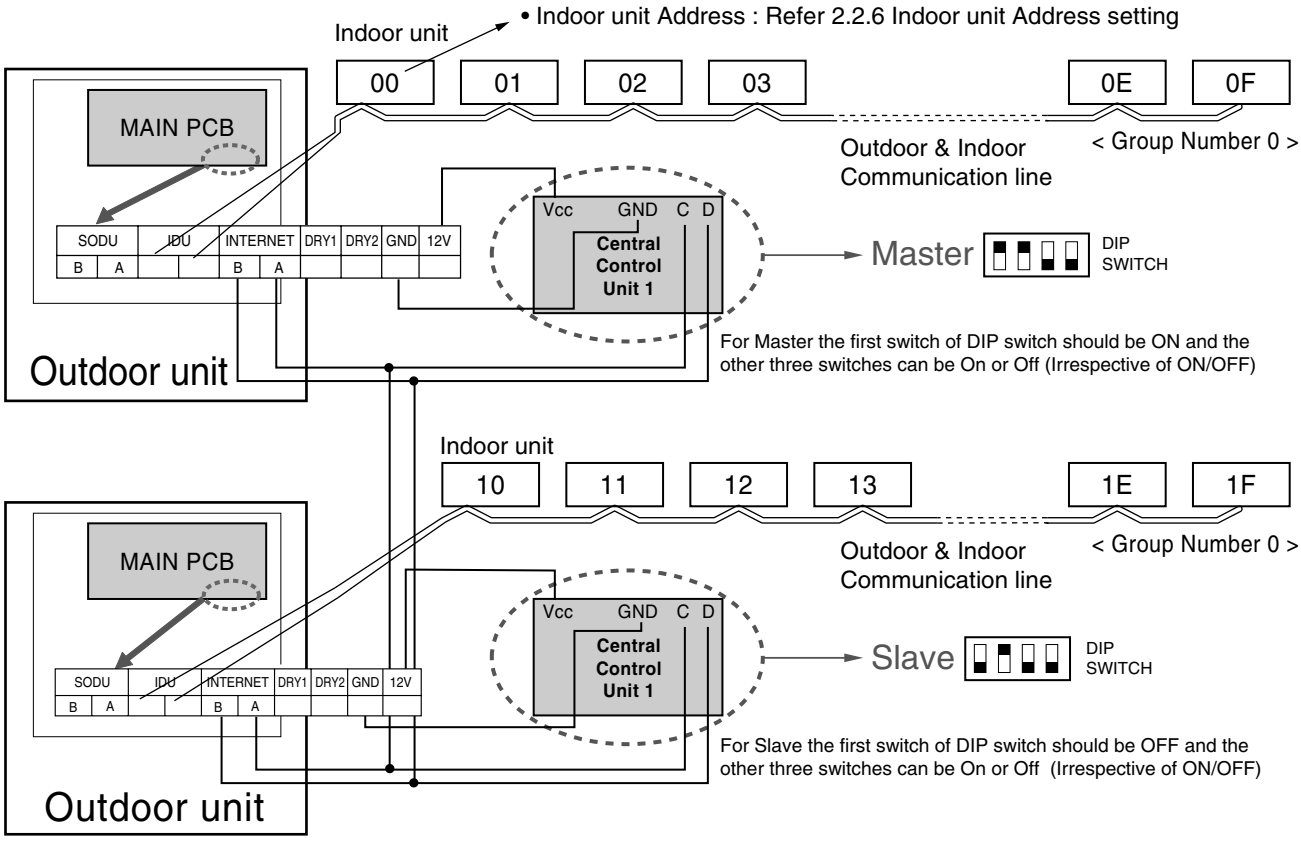
Slave Mode



■ ONE SIMPLE CENTRAL CONTROL CONNECTION



• 2 or MORE SIMPLE CENTRAL CONTROL CONNECTION



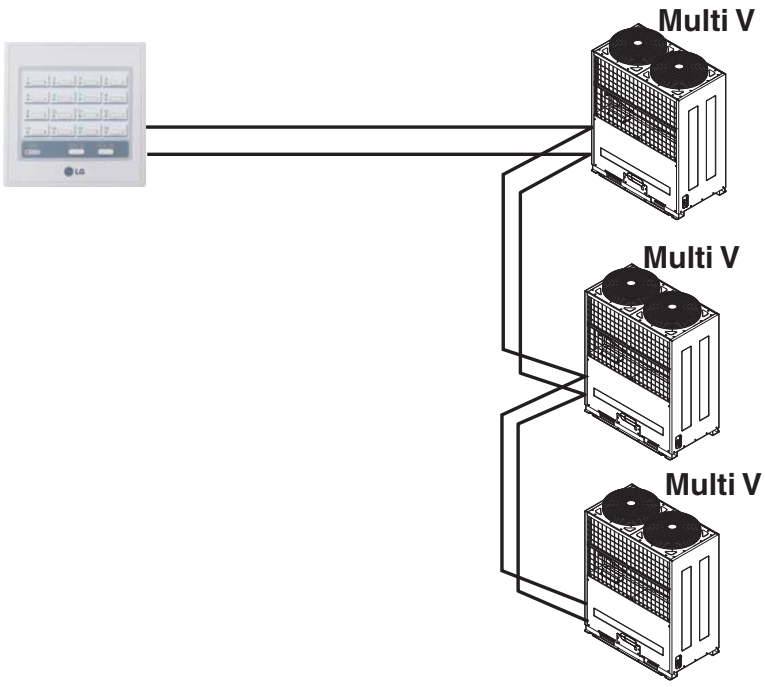
■ Information : Connecting the RS485 of the Simple central controller

16 indoor units at maximum can be connected to one simple central controller.

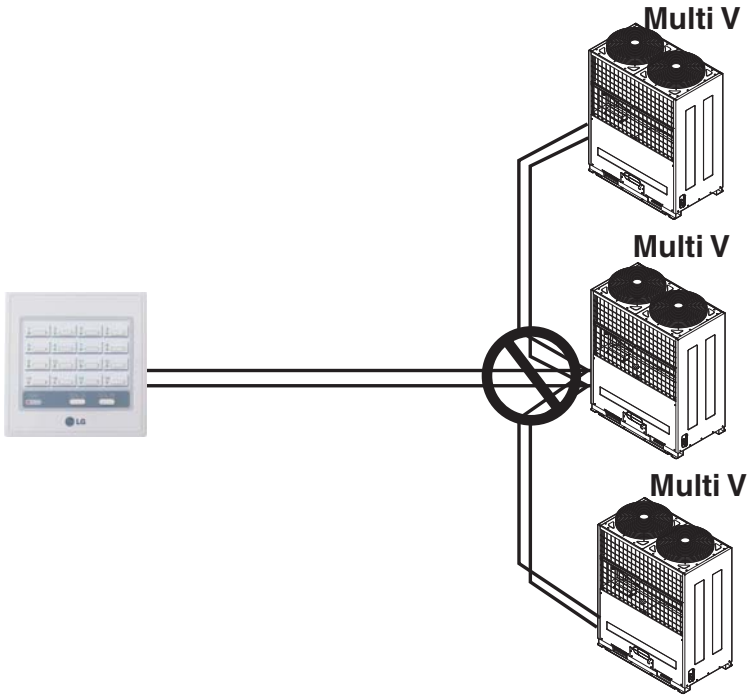
When there are many outdoor units to connect, connect the outdoor units with the BUS form.

Otherwise, the simple central controller may cause the malfunction.

The following figure shows the example for connecting with the BUS form.



The following figure shows the example of the incorrect connection of the RS485 of the simple central controller.



2.2.5 Method to Set Switch

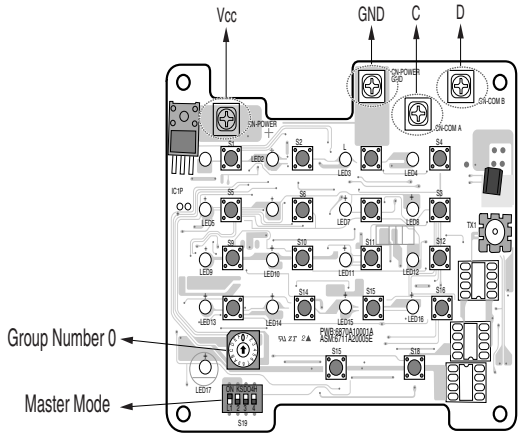
■ GROUP SETTING

Select the group using rotary switch in the front of controller PCB for the central controller.

Group number	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Setting of rotary switch	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

■ SETTING OF MASTER/SLAVE

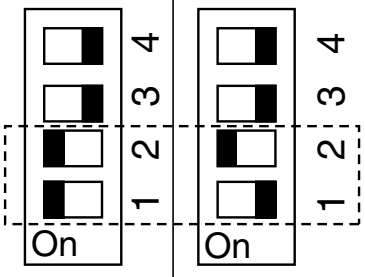
Using dip switch no.1 located in the front of controller PCB, set the relevant central controller as master/slave as per the requirement.



⚠ CAUTION:

1. **For setting of Group/Master, use precise driver [(-) 20mm(W)] and set applied weight to 198N (2kg) or less. When applying unreasonable force, PCB and switch may be damaged due to shock.**
2. **Do not set more than 2 Masters. Where multiple of Master is set, communication with the outdoor unit is not done and thus it becomes impossible to control the indoor unit.**
3. **Always initialize power after setting the switches. If power is not initialized, it becomes impossible to recognize the settings of group and master/slave.**

Select the on/off of dip switch no. 2 located on the front side of the controller PCB to decide whether to apply LGAP or not.
Multiv PLUSII Series Products are applied LGAP , You should set ON the dip switch no.2

Master Slave Classification	**Master** Controller for **LGAP**	**Slave** Controller for **LGAP**
Dip switch setting		

- When you turn on the dip switch no. 2, the LGAP protocol will be applied.

When communicating with the product using LGAP, turn on the dip switch no. 2.

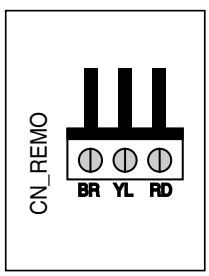
- The master/slave setting is applied by turn on/off the dip switch no.1.

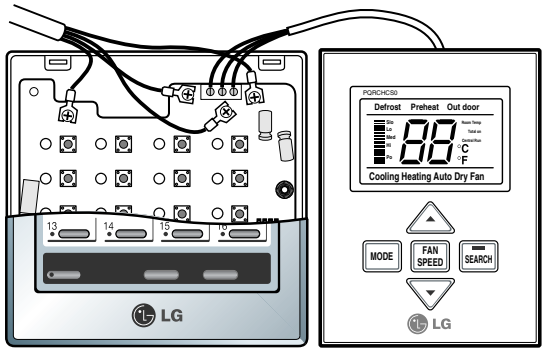
■ CONNECTION METHOD OF FUNCTION CONTROLLER(PQCSC101S0)

Power should always be off while connecting function controller to the central controller.

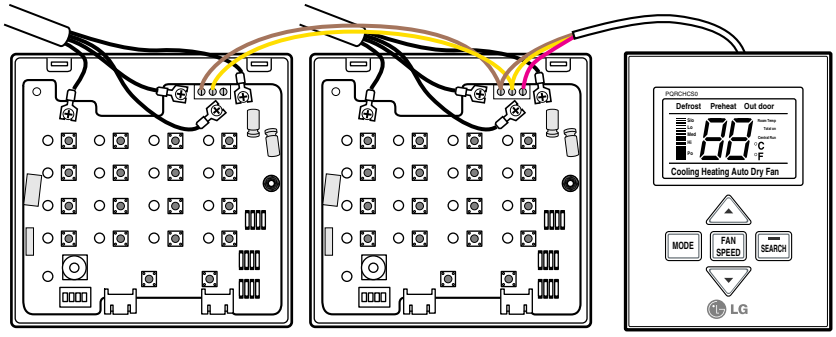
1 Connect the function controller as shown below. Symbols shown as CN_REMO at the terminal block of the central controller and color of cable connecting the function controller must correspond.

Central controller CN_REMO	Function controller cable
RD terminal (12V)	Red
YL terminal (signal)	Yellow
BR terminal (GND)	Brown





2 Connect red wires and brown wires to the relevant terminals of the central controller at CN_REMO respectively a where a function controller is also installed as shown below.



3 Close the central controller case and check the operation after application of power.

⚠ CAUTION

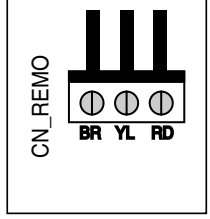
1. Adhere the communication cable between function controller and central controller.
2. Use 3P-0.75 square wires where cable extension is required.
3. Installed cable length should be within 1m(3.3ft).
4. If wiring is not proper, the product may be damaged or not operate when the power is applied.

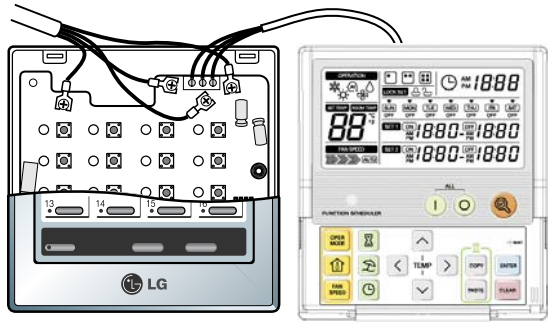
■ CONNECTION METHOD OF FUNCTION SCHEDULER(PQCSD130A0)

Power should always be off while connecting Function Scheduler to the central controller.

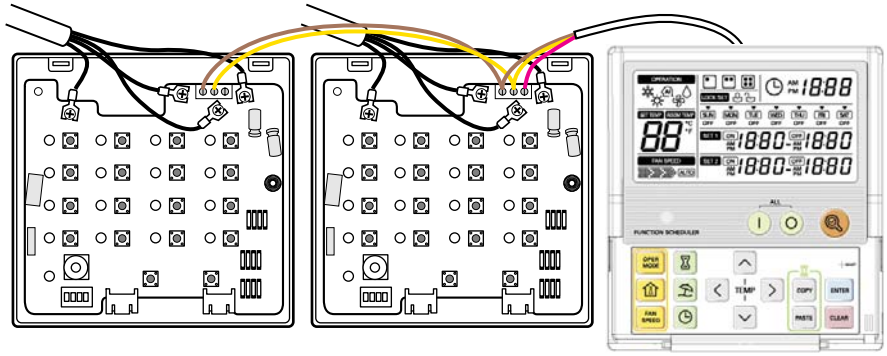
1 Connect the Function Scheduler as shown below. Symbols shown as CN_REMO at the terminal block of the central controller and color of cable connecting the Function Scheduler must correspond.

Central controller CN_REMO	Function controller cable
RD terminal (12V)	Red
YL terminal (signal)	Yellow
BR terminal (GND)	Black





2 Connect red wires and brown wires to the relevant terminals of the central controller at CN_REMO respectively a where a Function Scheduler is also installed as shown below.
The group address of central controllers must be set between 0 and 7.



3 Close the central controller case and check the operation after application of power.

⚠ CAUTION

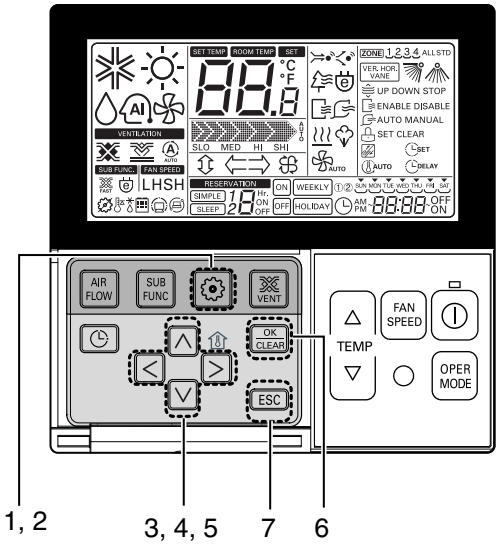
1. Adhere the communication cable between function Scheduler and Central Controller.
2. Use 3P-0.75 square wires where cable extension is required.
3. Installed cable length should be within 1m(3.3ft).
4. If wiring is not proper, the product may be damaged or not operate when the power is applied.

2.2.6 Indoor unit Address setting

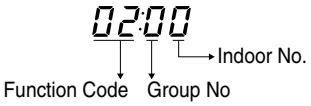
■ Using wired remote controller

• PQRCVSL0, PQRCVSL0QW

It's the function to use for connecting central control. Please refer to central controller manual for the details



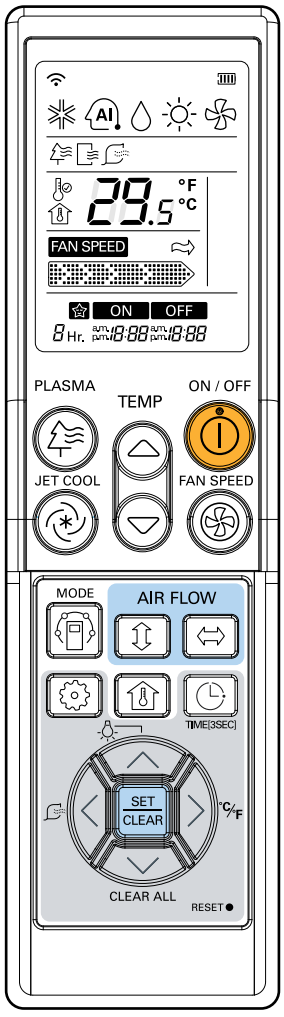
1. Press the Function Setting button for 4 seconds to enter the installer setting mode until timer segment displays "01:01".
2. Repeatedly pressing Function Setting button to select function code 02
   Ex) Setting Address as 'F5'



3. Set Group No. by pressing Up/Down button.(0~F)
4. Move to Indoor No. setting option by pressing Right button.
5. Set Indoor No. by pressing Up/Down button.
6. Press OK/CLEAR button to save.
7. Press ESC button to exit or system will automatically exit after 25 seconds

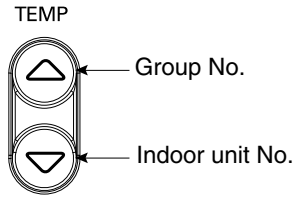
❊ When exiting without pressing set button, the manipulated value is not reflected.

■ When using the wireless remote controller



Address setting mode

1. While the MODE button pressed, press the Reset button .
2. By using the temperature adjustment button, set the indoor unit address.
   Setting range: 00~FF



3. After setting the address, press the ON/OFF button toward the indoor unit 1 time.
4. The indoor unit will display the set address to complete the address setting. (The address display time and method can differ by the indoor unit type.)
5. Reset the remote controller to use the general operation mode.

Address check mode

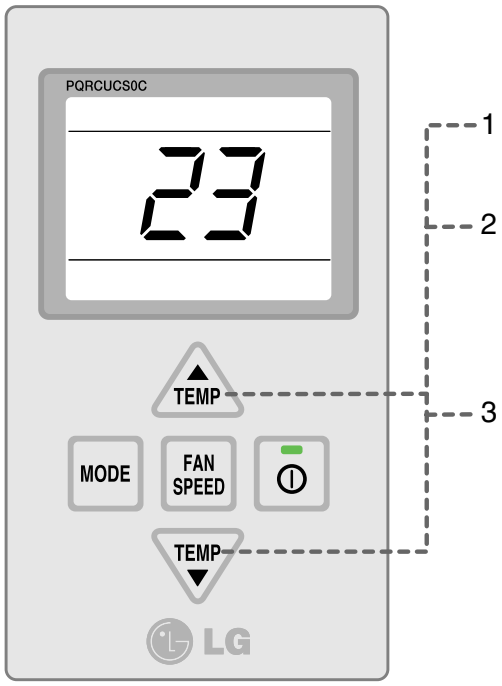
1. With the PLASMA button pressed, press the Reset button.
2. Press the ON/OFF button toward the indoor unit 1 time, and the indoor unit will display the set address in the display window. (The address display time and method can differ by the indoor unit type.)
3. Reset the remote controller to use the general operation mode.

❊ The above function might not work for some remote controllers depending on the manufactured date of the wired/wireless remote controller.
It is not relevant for the consumer use and you can set the address with a remote controller that has the address setting functionality during the installation.

■ Using simple wired remote controller

Please set the address when using the central controller.

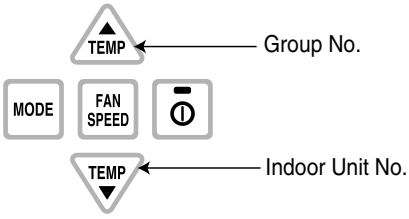
You don't need to set address If you don't use central controller.



1 If you want to set the address on the temperature display, press the two temperature control buttons (▲/▼) at the same time for three seconds.

2 Press the temperature-increasing button to change the group number. Press the temperature-decreasing button to change the indoor unit number.
EX) Group Address: 2
Indoor Unit Number: 3

3 Set the address by pressing the two temperature control buttons (▲/▼) at the same time for three seconds.



- **If you connect the indoor unit to the central controller, you should set the network address of the indoor unit so that the central controller could recognize it.**
- **The center-control address is composed of the group number and the indoor-unit number.**

2.2.7 Test run method

1. Set the wiring of system and indoor unit.
2. Apply power to the setting.
3. Do auto addressing to the outdoor unit.
4. After addressing then initialize the central controller(Manual initialize: Total on + total off + 16 key).

• Cooling: Setting basically(Total On + Total Off + 4 key)

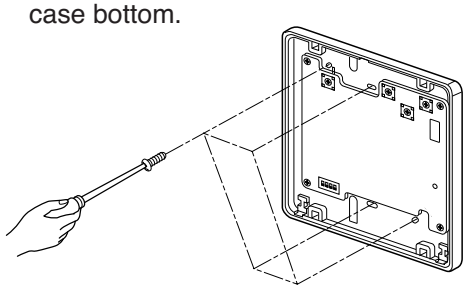
• Heating: Total On + Total Off + 8 key. -> Red power lamp 'On'

5. Check up On/Off with a related indoor key pressing.

2.2.8 Installation sequence operations

1. Remove upper & lower case.

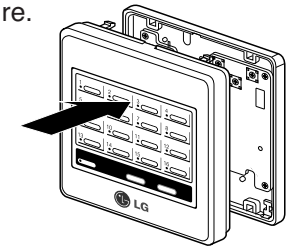
2. Fixate screw in the holes of the case bottom.



3. For Dip switch, and rotary switch setting, refer to the page “How to Install”.

4. For wiring connection, refer to the “Installation Procedure”

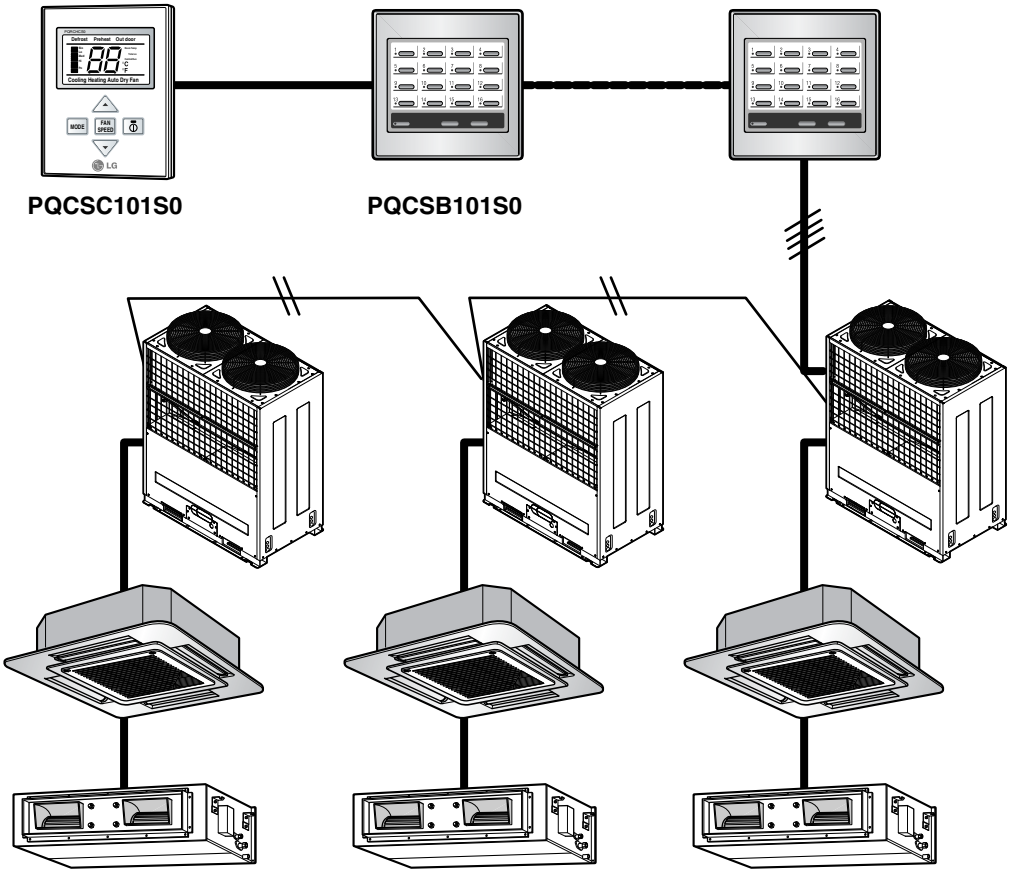
5. Adjust the upper case in accordance with back case while assembling as shown in the figure.



6. Check the operation by supplying the power.

2.2.9 Function Controller

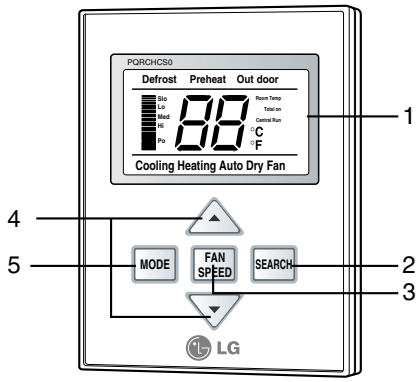
Over view



One Function Controller can connect Max 8 Simple Central Controller(PQCSB101S0)
(Max Indoor Unit = 8 * 16 = 128 Indoors)
The distance from Simple Central Controller to Function Controller is maximum 1m(3.3ft)

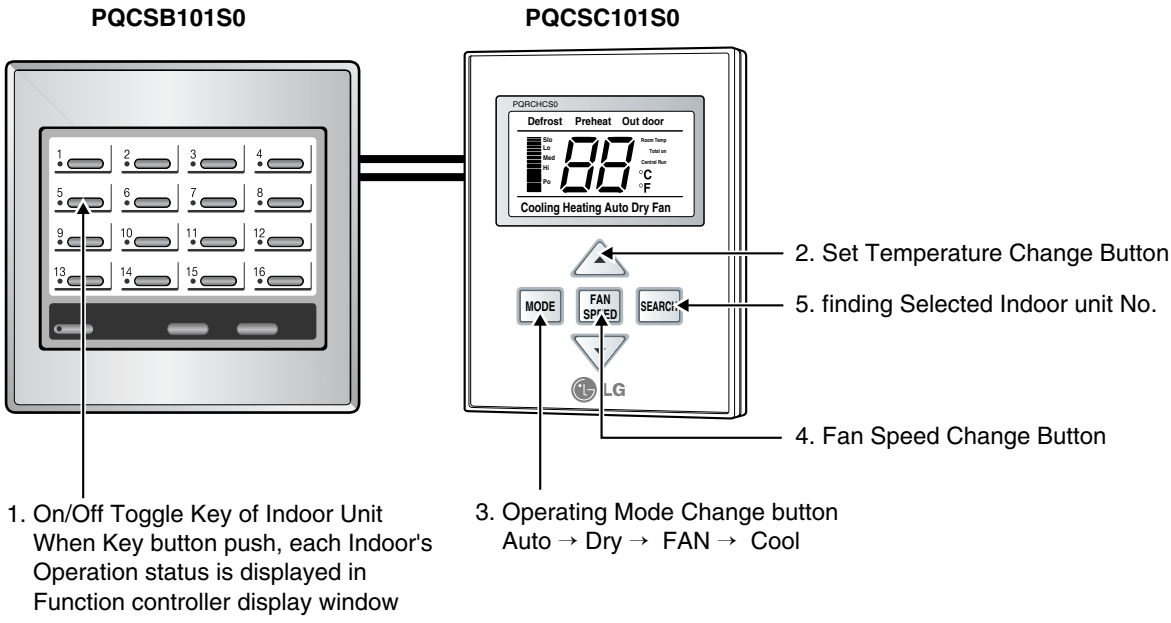
Feature

Controller Display



1. LCD Display
2. Indoor Search Key
3. Fan Speed Key
4. Set Temperature key
5. Mode Change Key

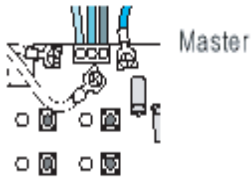
Description

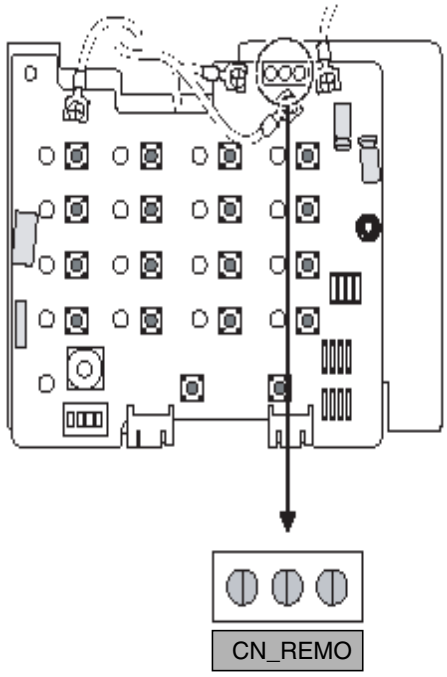


Wiring

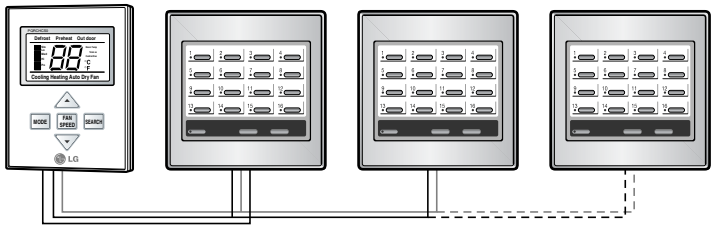
1. Connect the CN_REMO on master central controller to the cable from function controller according to the following color

CN_REMO	Cable
RD (12V)	RED
YL (Signal)	YELLOW
BR (GND)	BROWN



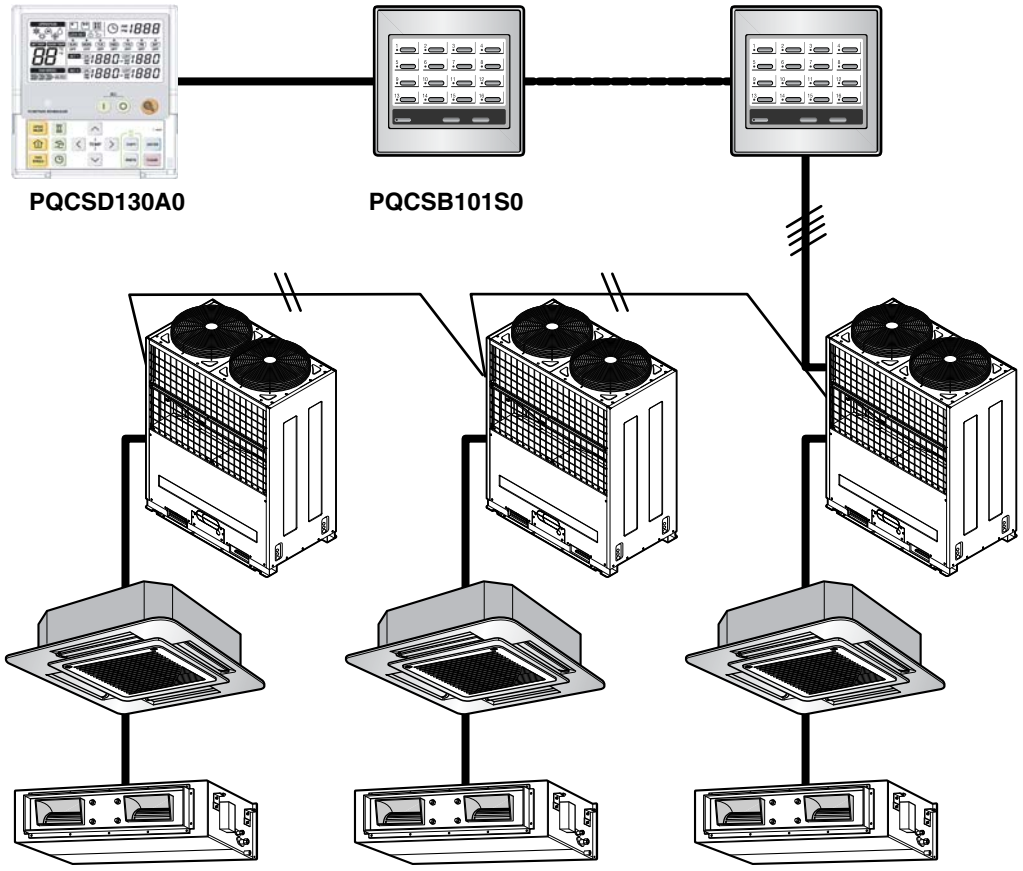


2. While connecting several central controller, connect yellow & brown cable from Master central controller to slave central controller as follows (one function controller can connect max 8 simple central controller)



2.2.10 Function Scheduler

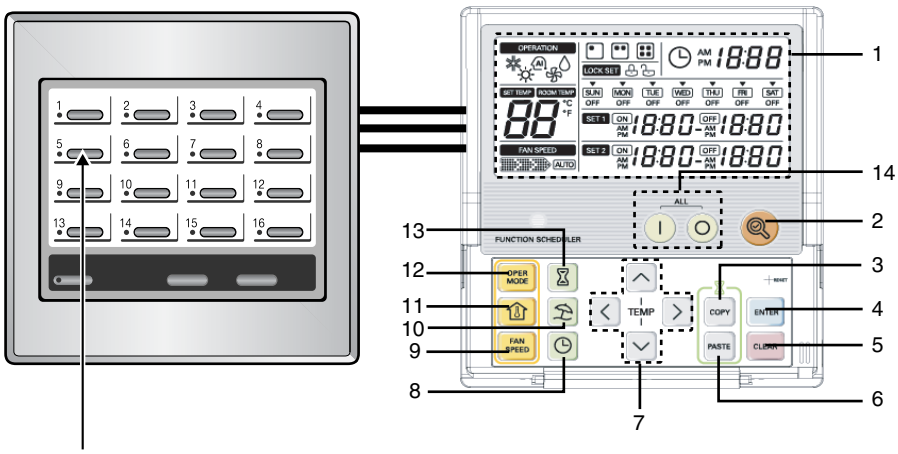
Over view



One Function Scheduler can connect Max 8 Simple Central Controller(PQCSB101S0)
(Max Indoor Unit = 8 * 16 = 128 Indoors)
The distance from Simple Central Controller to Function Scheduler is maximum 1m(3.3ft)
Indoor address must be set between 00 and 7F in hexadecimal code.

Feature & Description

PQCSB101S0 **PQCSD130A0**



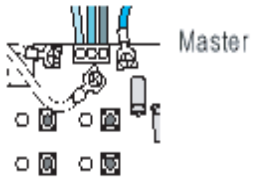
On/Off Toggle Key of Indoor Unit.
When press this button, the Indoor's Operation status will be displayed on Function Scheduler's LCD.

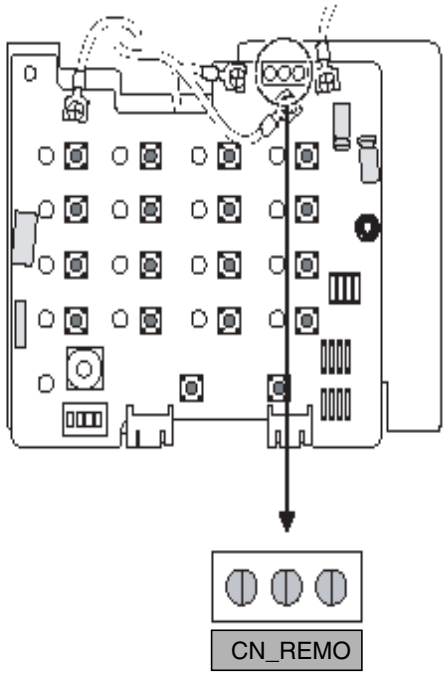
Functions (Button Descriptions)		
No.	**Name**	**Function**
1	LCD screen	- Display the Operation condition
2	Indoor Searching button	- to search the current Indoor on display
3	Reservation Copy button	- to copy the reservation
4	Setup button	- to set the operation
5	Clear button	- to clear the operation
6	Reservation Cancellation button	- to cancel the reservation
7	Up/Down/Left/Right button	- to adjust the setting - use the Up/Down button to set the temperature.
8	Current Time button	- to set the current time
9	Fan Speed selection button	- to set the desired fan speed
10	Holiday Setup button	- to set the holiday
11	Room Temperature button	- to check the room temperature
12	Operation mode Selection button	- to select the operation mode
13	Reservation Setup button	- to set the Reservation time and program
14	Total Indoor On/Off button	- to operate/stop all indoor units

Wiring

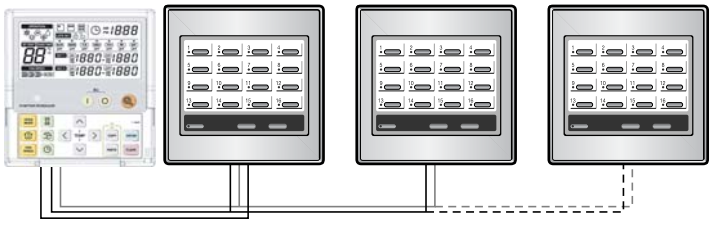
1. Connect the CN_REMO on master central controller to the cable from Function Scheduler according to the following color

CN_REMO	Cable
RD (12V)	RED
YL (Signal)	YELLOW
BR (GND)	Black





2. While connecting several central controller, connect yellow & brown cable from Master central controller to slave central controller as follows (one Function Scheduler can connect max 8 simple central controller)

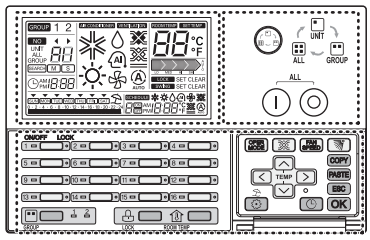


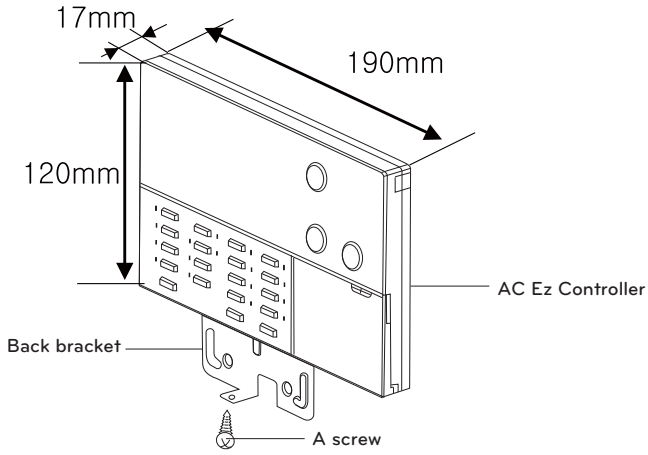
2.3 AC Ez

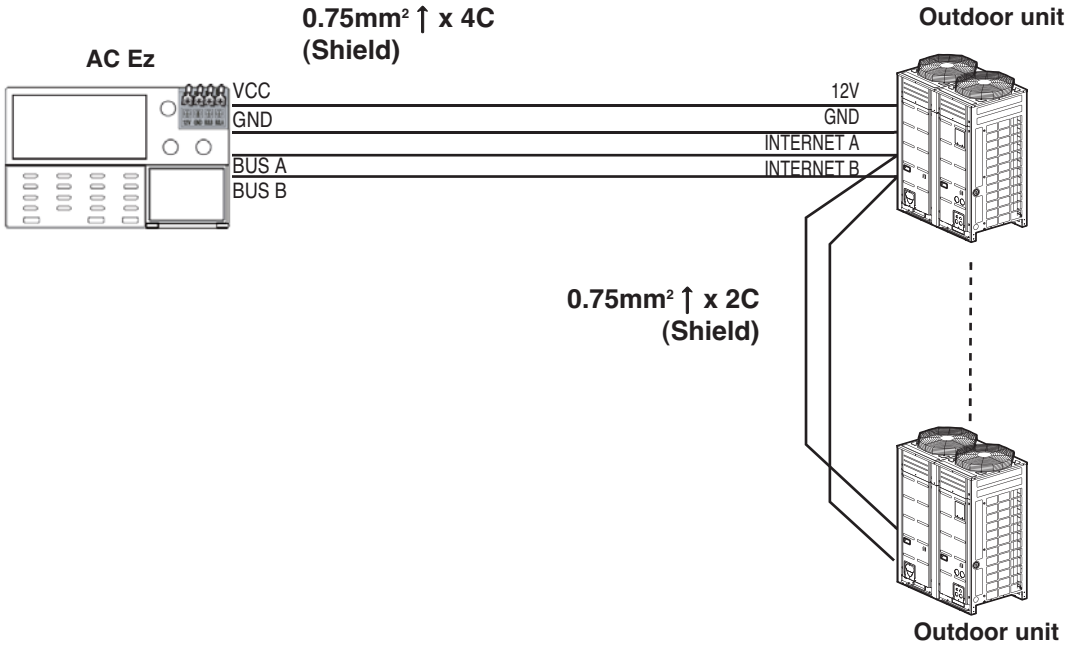
2.3.1 Over view

Model name : PQCSZ250S0

■ Specification Dimensions : 190 x 120 x 17 mm







Combination

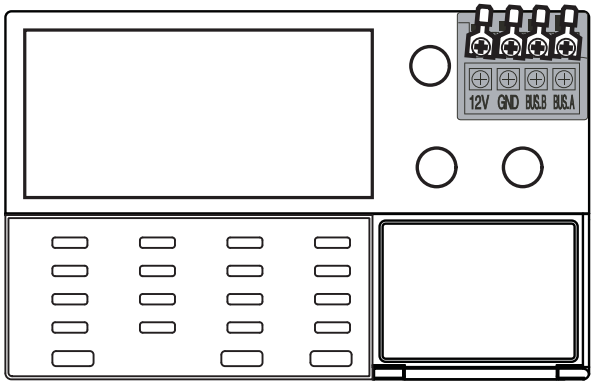
32 Indoor Unit can be connected in a AC Ez controller. Total 8 AC Ez controller can be connected together. (One of AC Ez is setting 'MASTER' , the others of it to be 'SLAVE')

> ***Note :***
> Don't use master / slave mode incase of ventilator or Single Product too many load will be able to low Communication reliability

Control wirings

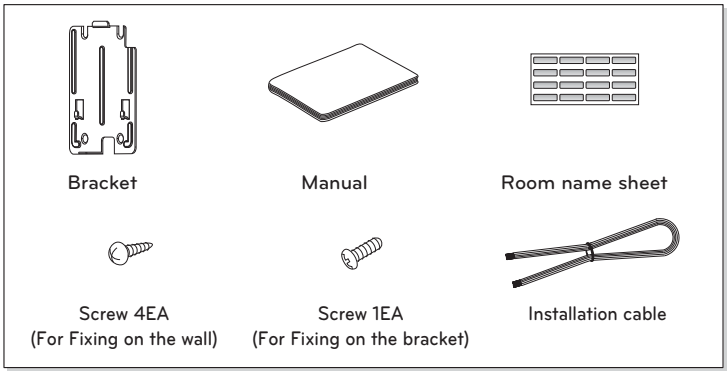
All Outdoor Units should be connected with control wiring in parallel. 12V/GND is connected to AC Ez from an outdoor unit and the other outdoor units are connected to Internet A/B Communicating wires.

2.3.2 Features

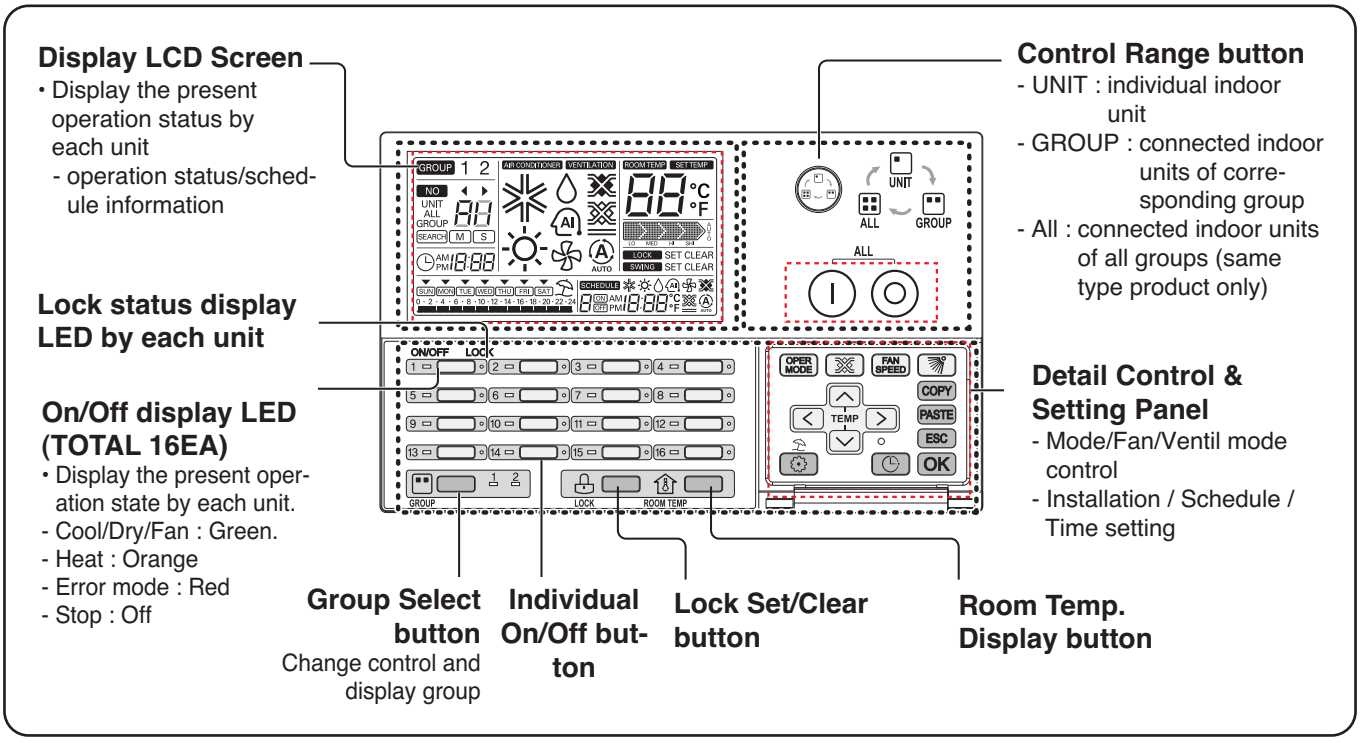


1. Apart from On/Off control, operation mode, fan speed, scheduling, additional functions can be displayed and easily controlled.
2. Mode control, temperature control etc and monitoring of up to 32 units (A/C & Ventilation) is possible by roup/Unit
3. Linked control is possible total 8 AC Ez controller can be connected together.
   (Max 256 indoor units can ne controlled in same time)
4. Schedule(8 event per day) function is possible by Group/Unit

■ Accessory

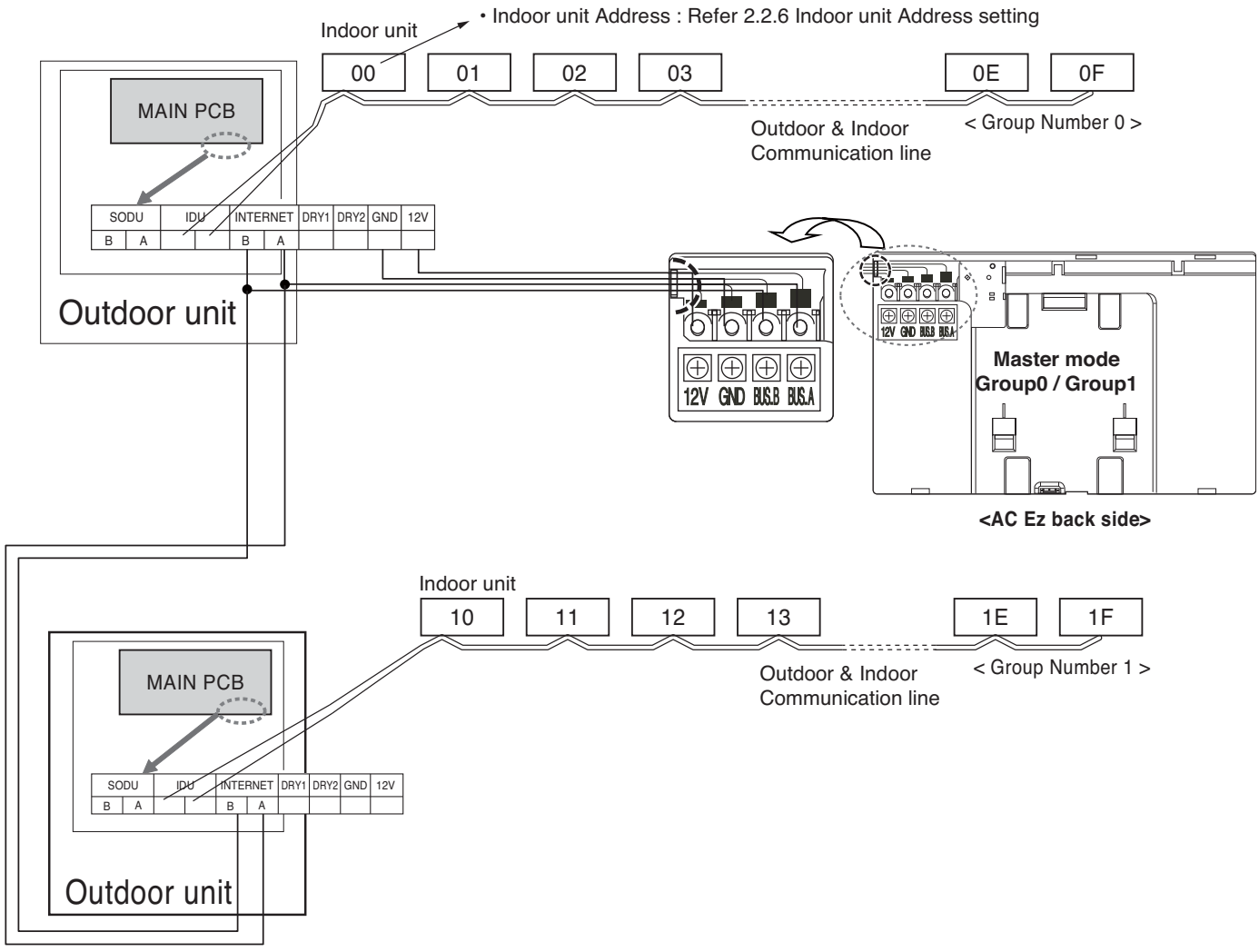


2.3.3 Terminology of each part and their function

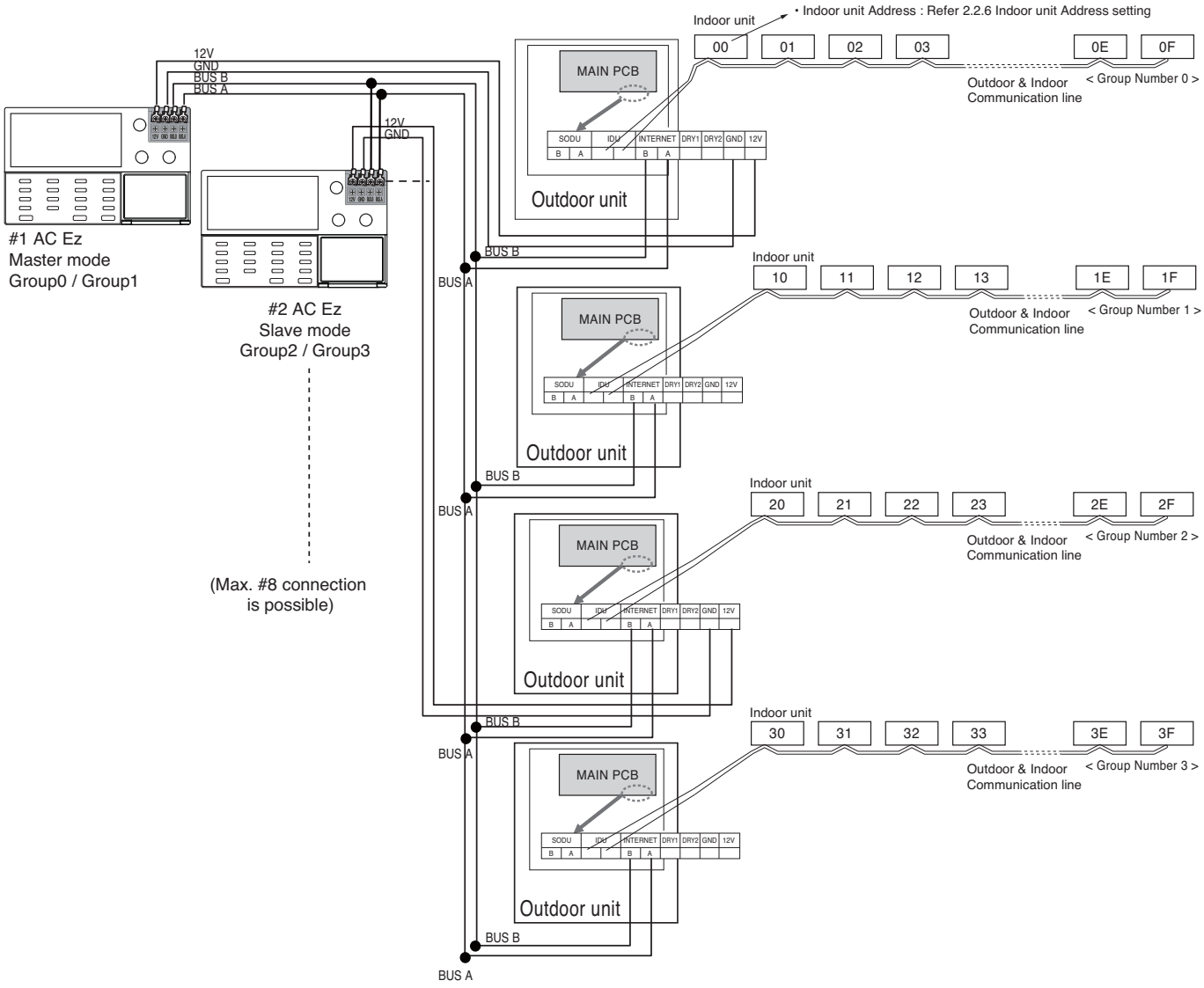


2.3.4 Electrical wiring

■ One AC Ez Connection



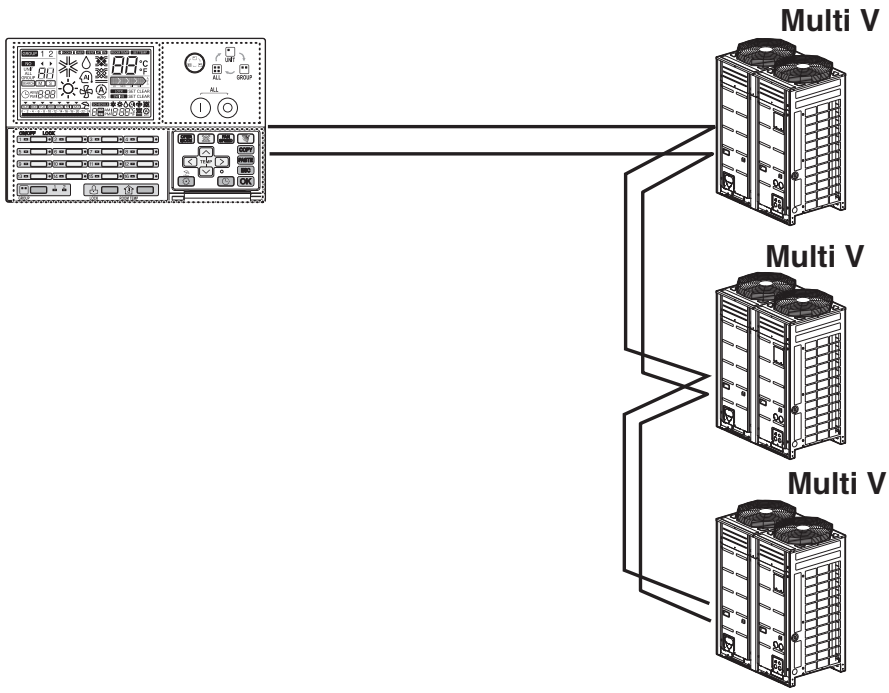
■ 2 or more AC Ez Connection



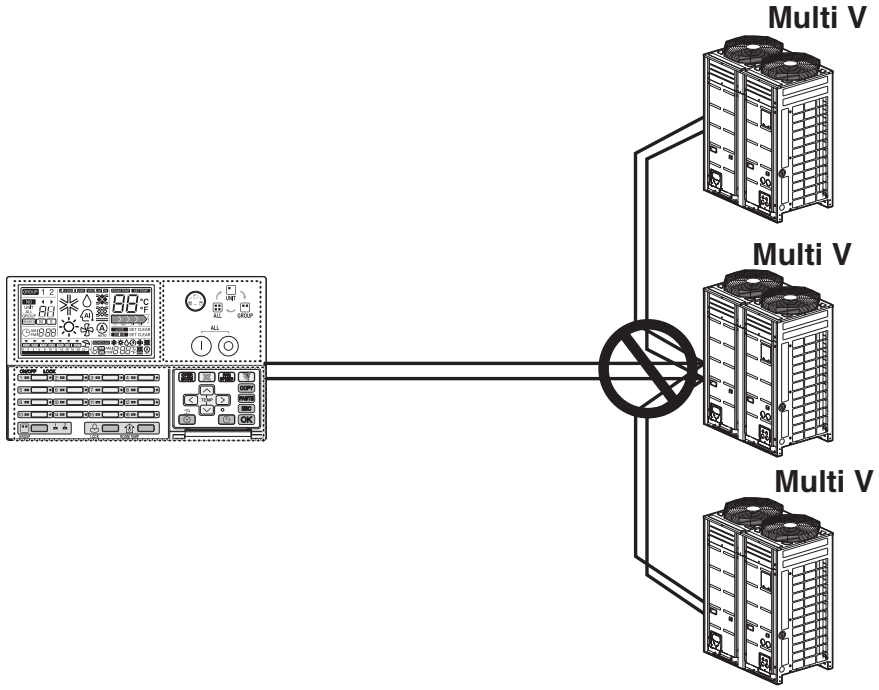
■ Information : Connecting the RS485 of the AC Ez.

32 indoor units at maximum can be connected to one AC Ez.
When there are many outdoor units to connect, connect the outdoor units with the BUS form.
Otherwise, the simple central controller may cause the malfunction.

The following figure shows the example for connecting with the BUS form.



The following figure shows the example of the incorrect connection of the RS485 of the AC Ez.



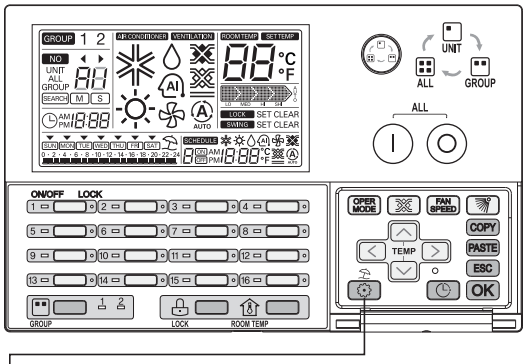
2.3.5 set up

Installation setup mode _ How to enter installer setup mode

CAUTION

Installer setting mode is to set the detail function of the AC Ez.

If the installer setting mode is not set correctly, it can cause problems to the product, Injury to user or property damage. This must be set by an certificated installer, and any installation or change that is carried out by a non-certified, user should be responsible for the results.
In this case, free service cannot be provided.



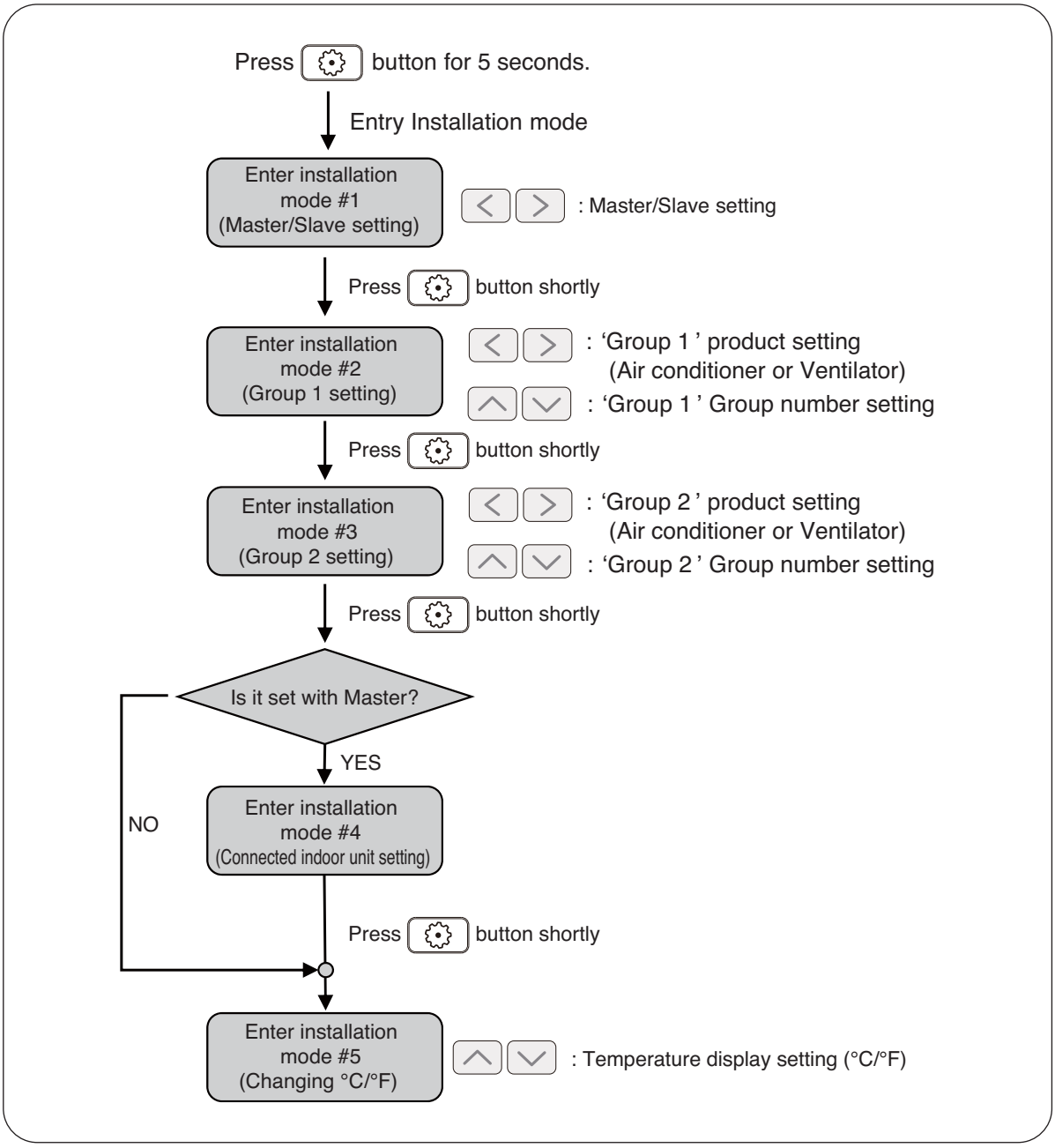
1 If pressing [⊙] button long for 5 seconds, it enters into AC Ez setup mode.
- If pressing once shortly, it doesn't enter into installer setup mode.
Please press more than 5 seconds for sure.

2 When you enter the setting mode initially, function code is displayed and on/off led of indoor #1 is blinking.

Installer Setting Code Table

No.	Function	Code	Value
1	Master/Slave Setting	1	[M] : Master [S] : Slave
2	Group 1 product Select	2	Airconditioner / Ventilator
	Group Number Setting		0~F : Group Address - : No use of this group
3	Group 2 product Select	3	Airconditioner / Ventilator
	Group No. Setting		0~F : Group Address - : No use of this group
4	Indoor units searching (Master controller only)	4	Indoor unit searching
5	°C / °F setting	5	°C : Celsius
			°F : Fahrenheit

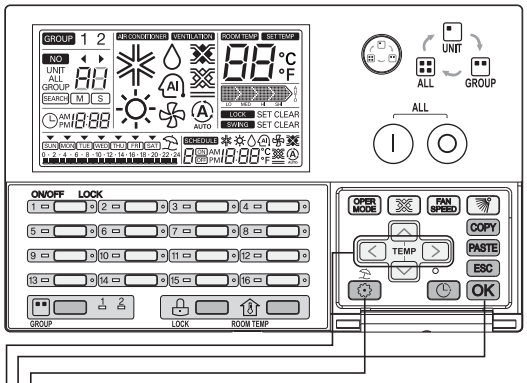
Flow chart for Installer setup mode



NOTE

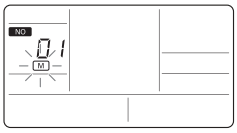
In each installation mode, if you press the OK button, it is operated or saved current setting condition.
If you press the ESC button, it is returned before setting condition and exits from installation mode.

Installation setup mode #1 _ Master/Slave setting



1 If pressing ⚙ button long for 5 seconds, it enters into AC Ez setup mode.
- If pressing once shortly, it doesn't enter into installer setup mode. Please press more than 5 seconds for sure.

2 When entering the Master/Slave setting mode, it displays '01' and blinks M or S in LCD. It shows on #1 of setup mode by blinking the on/off led of indoor #1.



3 Select Master/Slave setting condition by pressing < > button.

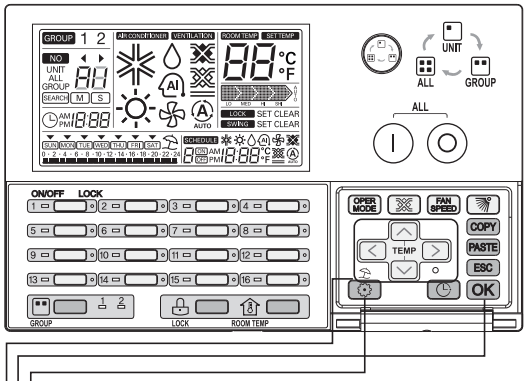
4 Apply desired time setting by pressing the OK button.
After pressing OK button, corresponding setting condition is saved, M or S of LCD stops blinking.

NOTE

- After setting, if you press the ESC button or it doesn't have any button input for 20 seconds, it exits from installation mode automatically.
- If you exit installation mode without pressing OK button, changed value don't apply.
- If you press individual on/off button of corresponding installation mode to change, you can enter corresponding installation mode directly.

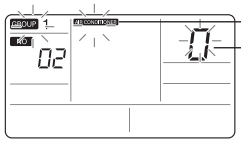
Installation setup mode #2 _ Group 1 product Select & Group Number Setting

This function is used for setting the product type and group number of group 1.



1 If pressing ⚙ button long for 5 seconds, it enters into AC Ez setup mode.
- If pressing once shortly, it doesn't enter into installer setup mode. Please press more than 5 seconds for sure.

2 If entering into product and group number setup mode of group 1 by using ⚙ button, it indicates as picture below. It shows on #2 of setup mode by blinking the on/off led of indoor #2.



3 Select the product type of group 1 by pressing ◁ ▷ button.

4 Select the group number of group 1 by pressing △ ▽ button.

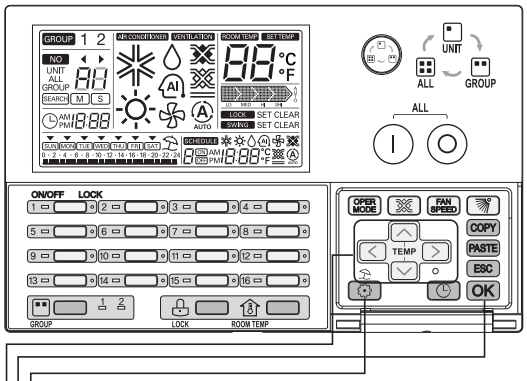
5 Save the product type and group number of group 1 by pressing OK button.
After pressing OK button, corresponding setting condition is saved, group type and group number stops blinking.

NOTE

- After setting, if you press the ESC button or it doesn't have any button input for 20 seconds, it exits from installation mode automatically.
- If you exit installation mode without pressing OK button, changed value don't apply.
- If you press individual on/off button of corresponding installation mode to change, you can enter corresponding installation mode directly.

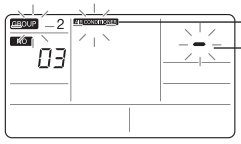
Installation setup mode #3 _ Group 2 product Select & Group Number Setting

This function is used for setting the product type and group number of group 2.



1 If pressing [⚙] button long for 5 seconds, it enters into AC Ez setup mode.
- If pressing once shortly, it doesn't enter into installer setup mode. Please press more than 5 seconds for sure.

2 If entering into product and group number setup mode of group 2 by using [⚙] button, it indicates as picture below. It shows on #3 of setup mode by blinking the on/off led of indoor #3.



→ Product type
→ Group number

3 Select the product type of group 2 by pressing [<][>] button.

4 Select the group number of group 2 by pressing [^][v] button.

5 Save the product type and group number of group 2 by pressing [OK] button.
After pressing [OK] button, corresponding setting condition is saved, group type and group number stops blinking.

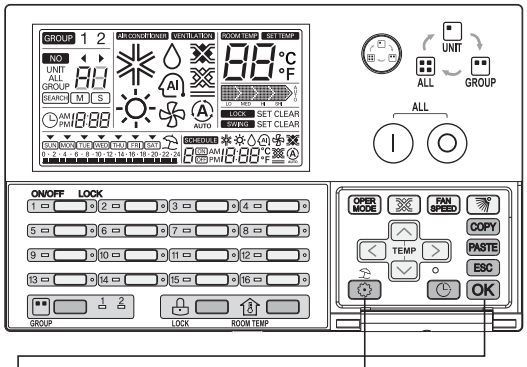
NOTE

- After setting, if you press the [ESC] button or it doesn't have any button input for 20 seconds, it exits from installation mode automatically.
- If you exit installation mode without pressing [OK] button, changed value don't apply.
- If you press individual on/off button of corresponding installation mode to change, you can enter corresponding installation mode directly.

Installation setup mode #4 _ Searching the Connected indoor unit (Master Only)

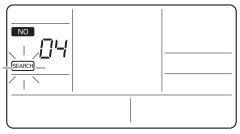
This function is searching connected indoor unit. This function can use only AC Ez controller of set Master.

After central address setting of indoor unit and auto-addressing of outdoor unit, start searching the connected indoor unit. If you don't do it before, it might not search the connected indoor unit normally.



1 If pressing ⚙ button long for 5 seconds, it enters into AC Ez setup mode.
- If pressing once shortly, it doesn't enter into installer setup mode. Please press more than 5 seconds for sure.

2 If entering into searching mode of connected indoor unit by using ⚙ button, it indicates as picture below.



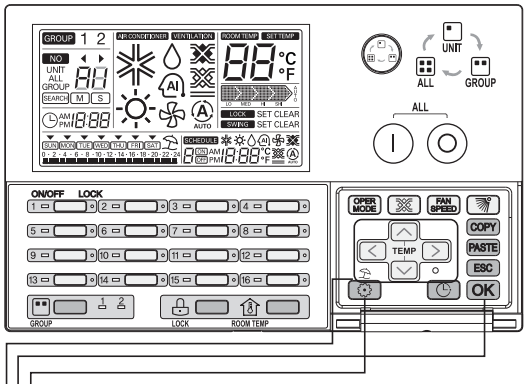
3 After pressing OK button, searching the connected indoor unit starts. individual on/off led is blinking by rotation and SEARCH of LCD is blinking.

NOTE

- After setting, if you press the ESC button or it doesn't have any button input for 20 seconds, it exits from installation mode automatically.
- If you exit installation mode without pressing OK button, changed value don't apply.
- If you press individual on/off button of corresponding installation mode to change, you can enter corresponding installation mode directly.

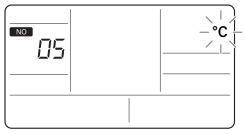
Installation setup mode #5 _ Celsius/Fahrenheit Switching

To change temperature dislay type from Celsius to Fahrenheit and vise versa



1 If pressing ⚙ button long for 5 seconds, it enters into AC Ez setup mode.
- If pressing once shortly, it doesn't enter into installer setup mode. Please press more than 5 seconds for sure.

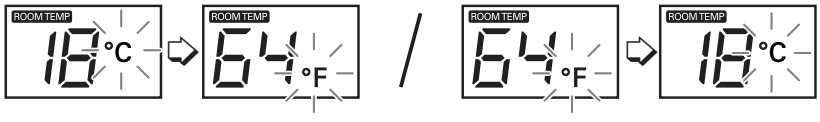
2 If entering into Celsius/Fahrenheit switching mode by using ⚙ button, it indicates as picture below.
It shows on #5 of installation setup mode by blinking the on/off led of indoor #5.



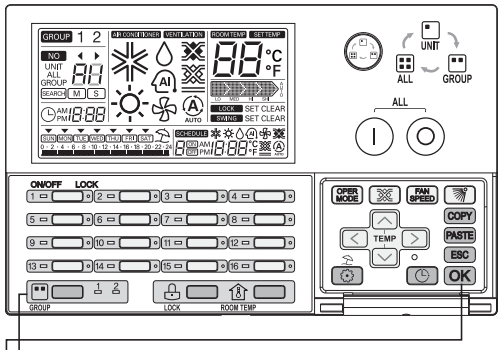
When entering the Celsius/Fahrenheit switching mode , it displays '05' and blinks '°C' or '°F' in LCD.

3 Select temperature display method either °C or °F by pressing ▲▼ button.

4 Setup the selected temperature display method by pressing OK button.
After pressing OK button, corresponding setting is saved.
It displays set temperature display method on operation condition.



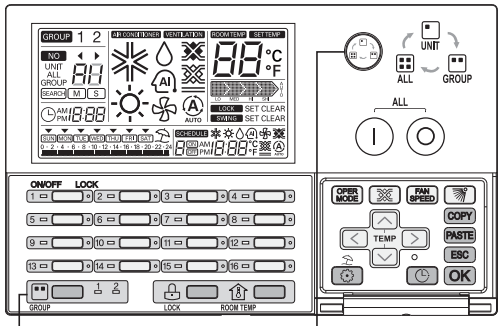
Checking mode _ Confirmation of connected indoor unit



1 Select the group to control and display by pressing “GROUP SELECT” button. When pressing “GROUP SELECT” button, Group 1 and group 2 is changed in turn.

2 When pressing the OK button, it indicates connected indoor units by blinking corresponding individual on/off led of connected indoor unit 5 times.

Checking mode _ Confirmation the set group address



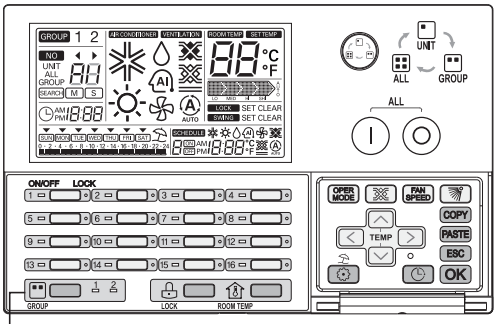
1 Select corresponding group to want to confirm the group number by pressing “GROUP SELECT” button. When pressing “GROUP SELECT” button, Group 1 and group 2 is changed in turn.

2 Select “GROUP” selection of control selection mode by pressing button.
When selecting group selection mode, it displays “GROUP” icon of LCD and group number of corresponding group in “88” seg of LCD

❊ The group number displays group number + 1 of set corresponding group in installation mode.
(group number setting : 0~F, group number display : 1~16)

Ex) If you setup group number to “0” in installation mode, it displays group number to “1” in normal group selection condition.

Group selection



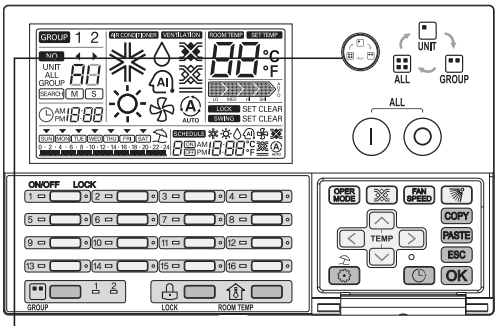
1 Select the group to control and display by pressing “GROUP SELECT” button. When pressing “GROUP SELECT” button, Group 1 and group 2 is changed in turn.

2 When pressing “GROUP SELECTION” button, LED is turned on as set group and displayed corresponding current condition by using LCD and LED.

NOTE

• In case of Eco-V DX, it is possible to control and display in ventilation group.

Control range selection



Select product range to control by pressing button.

- **UNIT :** Individual indoor unit
- **GROUP :** Connected indoor units of corresponding group
- **All :** Connected indoor units of all groups (same type product only)

Selected product range is changed as following by pressing button.
(UNIT → GROUP→ ALL → UNIT)
※ Set central controller of slave is changed as following. (UNIT→ GROUP → UNIT)

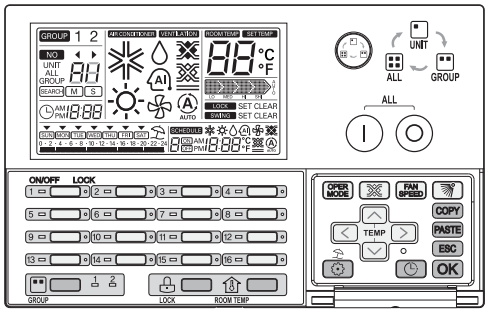
NOTE

When selecting GROUP ALL , controlled indoor unit condition at the latest is displayed in LCD. If you control in this condition, all indoor units of selected product range is changed equally. When selecting all group condition, if it doesn’t have any button input for 20 seconds, it returns individual unit selection mode automatically.

2.3.6 usage

Individual unit operation

This is the function to control on/off condition of individual indoor unit .



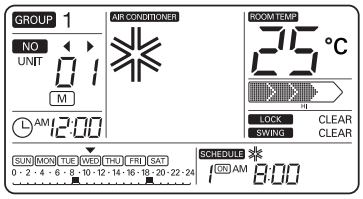
1 **In case of off condition**

- If corresponding indoor unit is selected already
  When pressing individual ON/OFF button, corresponding indoor unit is operated and is turned on individual on/off LED.
- If other indoor unit is selected,
  When pressing individual ON/OFF button, corresponding indoor unit is selected and is still turned off the LCD display and individual on/off LED.

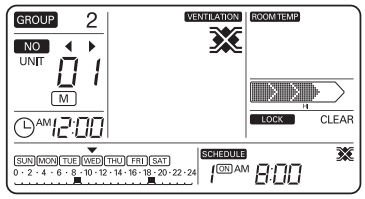
2 **In case of on condition**

- If corresponding indoor unit is selected already
  When pressing individual ON/OFF button, corresponding indoor unit is stopped and is turned off the LCD display and individual on/off LED.
- If other indoor unit is selected,
  When pressing individual ON/OFF button, corresponding indoor unit is selected and is still turned on the LCD display and individual on/off LED.

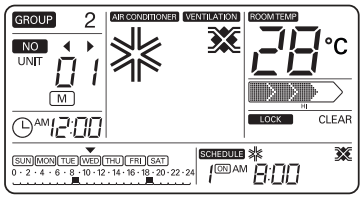
※ It indicates on transmission by blinking the group LED.
EX) Group 1 product type : Air-conditioner
Group 2 product type : Ventilator



<Air-Conditioner display condition>



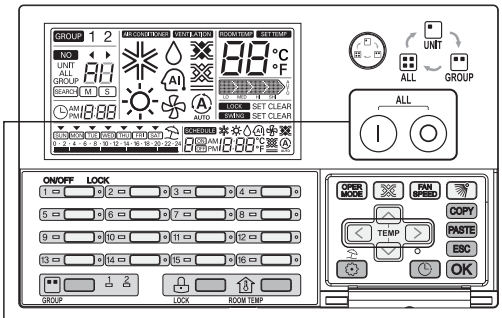
<Ventilator display condition>



<Eco-V DX display condition>

Group operation

This is the function to control on/off condition of group units.



1 **In case of operation Off condition**

When pressing ⏻ button, all connected units of corresponding group are operated and are turned on it in regular sequence.
At that time, corresponding group number and controlled indoor unit condition the latest is displayed in LCD.

※ If you control in this condition, all indoor units of selected group are changed equally.

2 **In case of operation on condition**

When pressing ⏻ button, all connected units of corresponding group are stopped and are turn off individual on/off LEDs in regular sequence.

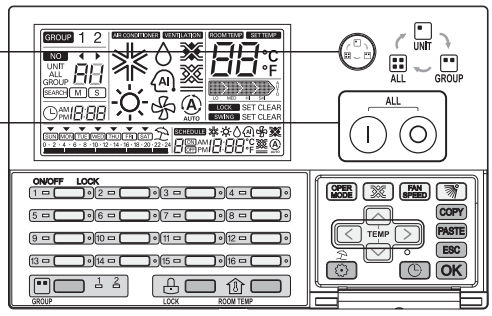
At that time, indoor unit condition in LCD is disappeared.

NOTE

- If you select group control mode by pressing UNIT button, you can select corresponding group without changed operation condition.
- After selecting group selection mode, if it doesn't have any button input for 20 seconds, it returns individual unit selection mode automatically.

All operation (Master AC Ez only)

This is the function to control on/off condition of all units.
This function is used for master AC Ez controller only.



1 Select “ALL” control mode by pressing ⏲ button of Master AC Ez controller.
Master AC Ez controller indicates [M] icon in LCD.
- In case of Slave AC Ez controller cannot select this mode.

2 It displays “ALL” icon and AII seg in LCD.
At that time, the latest controlled indoor unit condition is displayed in LCD.
- If you control in this condition, all indoor units of selected product type are changed equally.

When selecting All Control,

- If you press ⏽ button, all connected units of corresponding product type are operated and are turn on individual on/off LEDs in regular sequence. At that time, indoor unit condition in LCD is appeared.

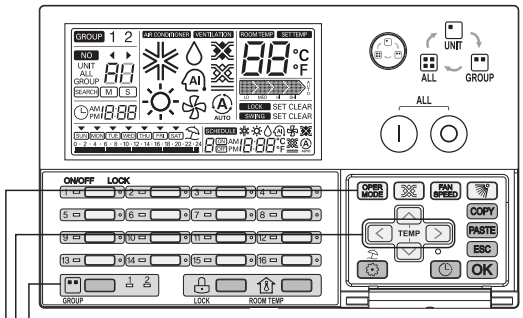
- If you press ⏾ button, all connected units of corresponding product type are stopped and are turn off individual on/off LEDs in regular sequence. At that time, indoor unit condition in LCD is disappeared.

NOTE

- If you select group control mode by pressing ⏲ button, you can select corresponding group without changed operation condition.
- After selecting group selection mode, if it doesn’t have any button input for 20 seconds, it returns individual unit selection mode automatically.

Air-conditioner operation mode setting

This is the function to control operation mode of Air-conditioner / Eco-V DX



1 Select the group to control by pressing “GROUP SELECT” button.
(In case of ventilator, this function is not working.)

2 Select indoor unit to control by pressing individual on/off button.
(Or select indoor unit to control by pressing < > button.)

3 Select operation mode of corresponding indoor unit by pressing < > button.

- It is changed for operation mode by pressing OPER MODE button.
  *Air-conditioner : Cooling → Heating → Auto → Dehumidification → Fan
  *Eco-V DX : Cooling → Heating → Auto → OFF
- It is changed for corresponding individual on/off LED display as changing operation mode.

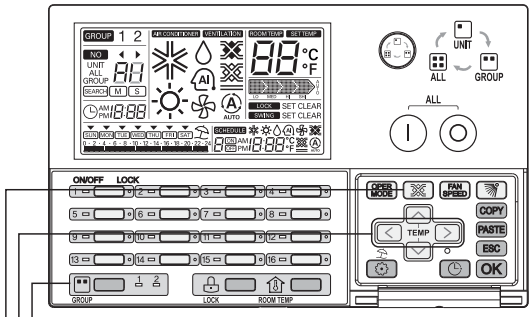
- Cooling/Dehumidification/fan : Green
- Heating : Amber
- Failure status : Red
- Stop : Off

NOTE

• It is changed for the operation mode of selected indoor unit as control selection condition.
- When selecting group control mode,
  If you change the operation mode in this condition, all indoor units of corresponding group are changed equally.
- When selecting all control mode,
  If you change the operation mode ins this condition, all indoor units of selected product type are changed equally.

Ventilation mode setting

This is the function to control ventilation mode of ventilator / Eco-V DX



1 Select ventilation product by pressing “GROUP SELECT” button. (In case of air-conditioner, this function is not working.)

2 Select indoor unit to control by pressing individual on/off button.
(Or select indoor unit to control by pressing < > button.)

3 Select the ventilation mode of corresponding ventilator by pressing button.
(Heat exchange →Normal → Automatic)

- It is changed for corresponding individual on/off LED display as changing ventilation mode.

- Ventilation mode on : Green
- Ventilation mode Stop : Off

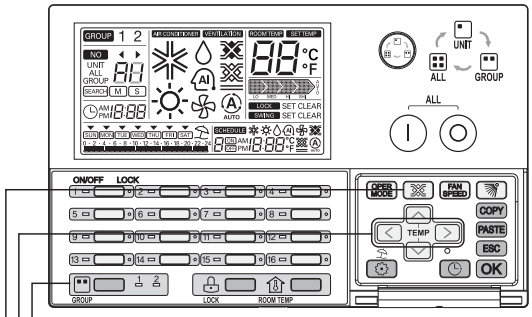
NOTE

• It is changed for the ventilation mode of selected ventilation unit as control selection condition.

- When selecting group control mode,
  If you change the ventilation mode in this condition, all ventilation units of corresponding group are changed equally.
- When selecting all control mode,
  If you change the ventilation mode ins this condition, all ventilation units of selected product type are changed equally.

Desired temperature setting

This function is used for setting desired temperature of air-conditioner / Eco-V DX.



1 Select the group to control by pressing “GROUP SELECT” button.

2 Select indoor unit to control by pressing individual on/off button.
(Or select indoor unit to control by pressing < > button.)

3 Setup the desired temperature by pressing ^ v button.

– Temperature can be set between 18 °C and 30 °C. (Temperature can be set between 64 °F and 86 °F.)

^ : Temperature increases 1°C by pressing the button once.

v : Temperature decreases 1°C by pressing the button once.

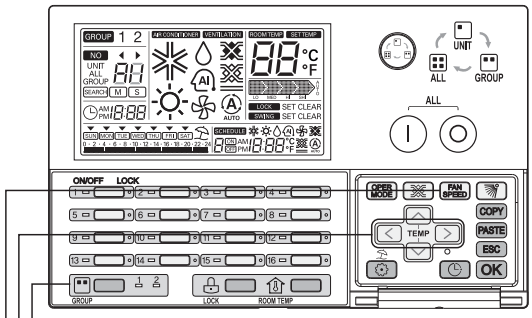
- In case of ventilation unit, desired temperature setting is not working.
- In case of Eco-V DX unit, desired temperature setting is possible to control when turning on the air-conditioner.

NOTE

- It is changed for the desired temperature of selected indoor unit as control selection condition.
  - When selecting group control mode,
    If you change the desired temperature in this condition, all indoor units of corresponding group are changed equally.
  - When selecting all control mode,
    If you change the desired temperature in this condition, all indoor units of selected product type are changed equally.

Fan speed setting

The function is used to control desired fan speed.



1 Select the group to control by pressing “GROUP SELECT” button.

2 Select indoor unit to control by pressing individual on/off button.
(Or select indoor unit to control by pressing < > button.)

3 Setup the desired fan speed to control by pressing FAN SPEED button.
- It is changed for corresponding fan speed by pressing FAN SPEED button.

Air-conditioner : Low → Middle → High → Auto

Fan speed	Window display
Low	LO
Middle	MED
High	HI
Auto	AUTO

Ventilation unit/Eco-V DX : Low → High → Super High

Fan speed	Window display
Low	LO
High	HI
Super High	SHI

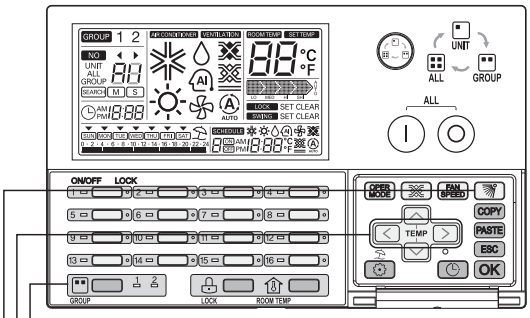
* In case of SLO, it displays Low.
* In case of Po, it displays High.

NOTE

• It is changed for the desired fan speed of selected indoor unit as control selection condition.
- While selecting group control mode,
If you change the desired fan speed, all indoor units of corresponding group are changed simultaneously.
- While selecting all control mode,
If you change the desired fan speed, all indoor units of selected product type are changed simultaneously.

Air flow direction setting

This function is used to control air flow direction of air-conditioner.



1 Select the group to control by pressing “GROUP SELECT” button.

2 Select indoor unit to control by pressing individual on/off button.
(Or select indoor unit to control by pressing < > button.)

3 Select the setting condition of air flow direction by pressing button.

- It is changed for corresponding air flow direction by pressing button.
(Set ↔ Clear)

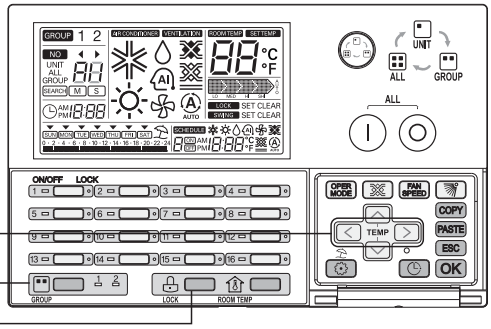
- SET : The air flow direction is changed automatically.
- CLEAR : The air flow direction is fixed.

NOTE

- It is changed for air flow setting condition of selected indoor unit as control selection condition.
  - While selecting group control mode,
    If you change the desired air flow setting condition, all indoor units of corresponding group are changed simultaneously.
  - While selecting all control mode,
    If you change the desired air flow setting condition, all indoor units of selected product type are changed simultaneously.

Lock setting

This function is used to limit the indoor unit control of remote controller.
In this condition, it is possible to control indoor unit by central controller only.



1 Select the group to control by pressing “GROUP SELECT” button.

2 Select indoor unit to control by pressing individual on/off button.
(Or select indoor unit to control by pressing < > button.)

3 Select lock setting application by pressing LOCK button.
- It is changed for lock setting condition of corresponding indoor unit by pressing LOCK button.

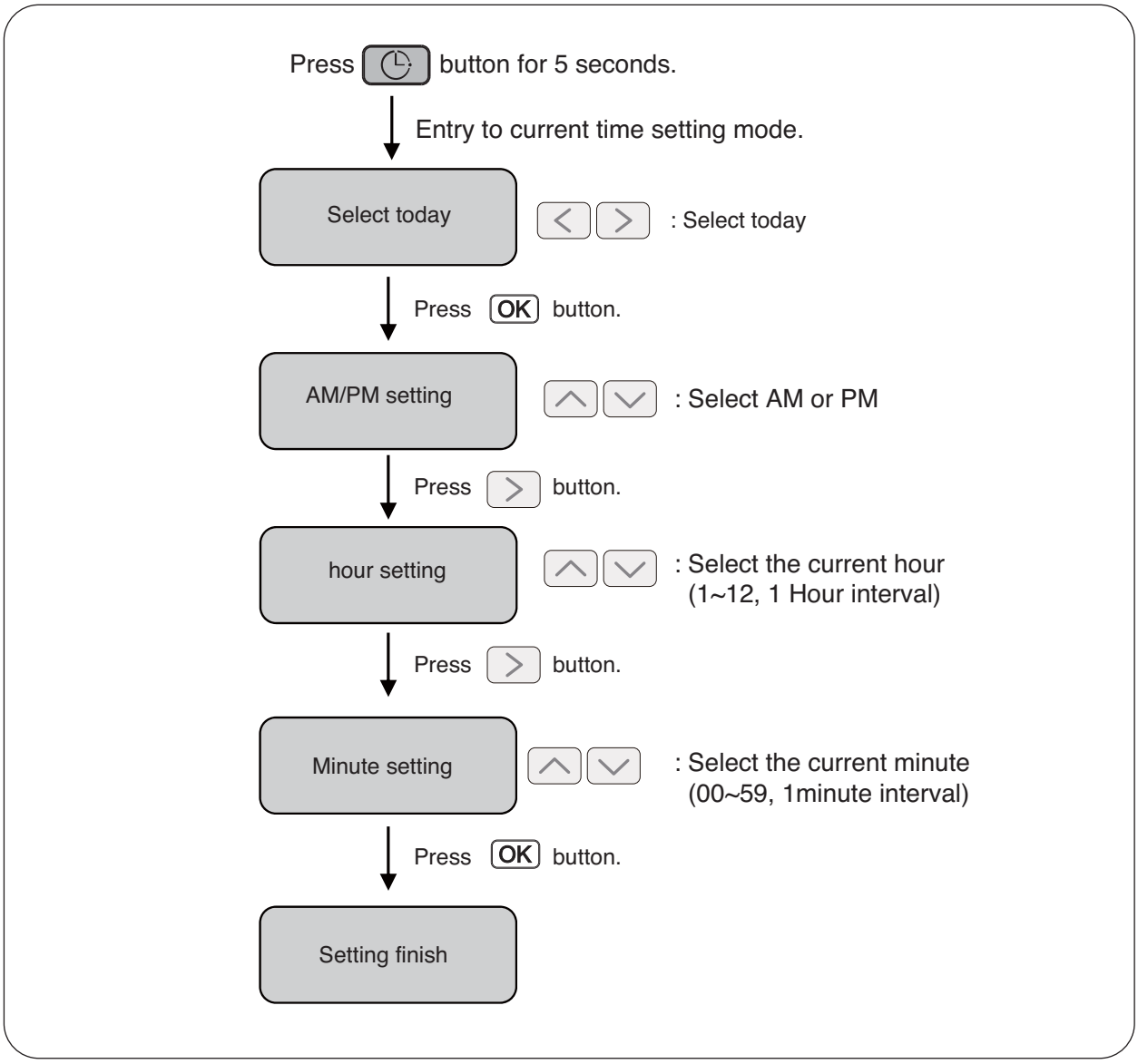
- SET : Corresponding indoor unit is locked.
- CLEAR : Corresponding indoor unit is unlocked.

NOTE

- It is changed for lock setting condition of selected indoor unit as control selection condition.
  - While selecting group control mode,
    If you change the lock setting condition, all indoor units of corresponding group are changed simultaneously.
  - While selecting all control mode,
    If you change the lock setting condition, all indoor units of selected product type are changed simultaneously.

Flow chart for current time setting

• **Current time setting**

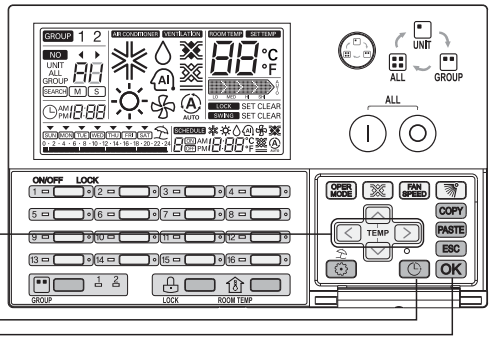


NOTE

• If you press ESC button, the time is changed back to previously configured condition and it exits from current time setting mode.

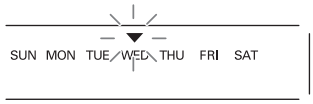
Changing current time

This function is used to change current time.



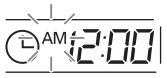
1 Press ⏲ button for 5 seconds to enter 'Current time' setting mode.
The current day of the week will blink on window.

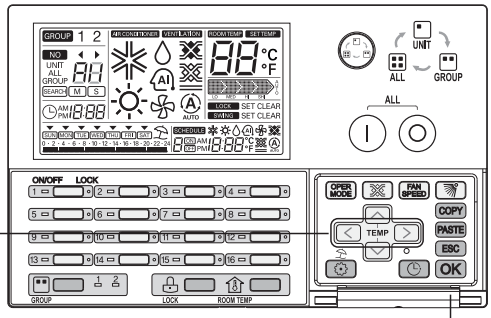
2 Select the current day by pressing the < > button.



3 After selecting current day, press the OK button to move to time setting mode.
Inverted triangle is displayed above corresponding day of week.

4 Select the AM/PM by pressing the ^ v button.





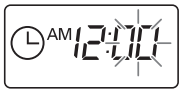
5 Enter ‘hour’ setting mode by pressing the (>) button. The hour in window will blink.

6 Select current hour by pressing the (∧ ∨) button.

(1~12, 1 Hour interval)

7 Enter ‘minute’ setting mode by pressing the (>) button. The minute in window will blink.

8 Select current hour by pressing the (∧ ∨) button.



00 ~ 59 (1 Minutes interval)

9 Apply desired time setting by pressing the OK button.

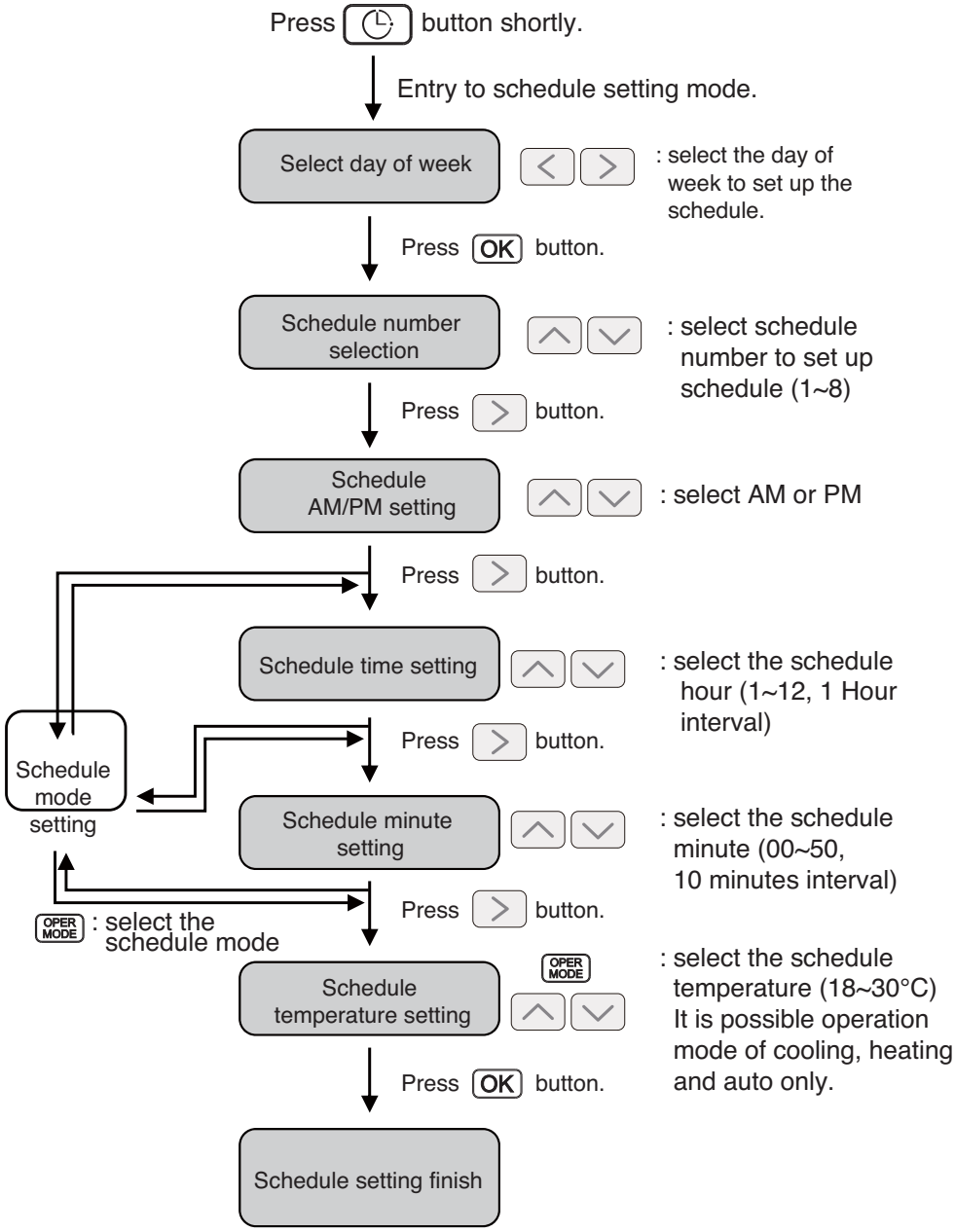
• After pressing OK button, the schedule display is updated. While updating, the schedule icon blinks.

NOTE

• To cancel time setting mode during setting, press ESC button.
at that time, current time will be back to previously configured time and it exits from current time setting mode.

Flow chart for schedule setting

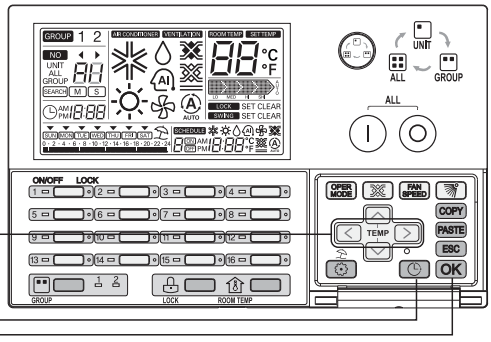
• **Schedule setting**



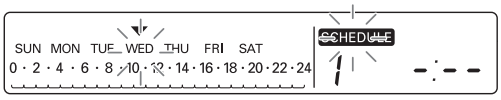
NOTE

• If you press ESC button, the schedule setting condition is changed back to previously configured condition and it exits from schedule setting mode.

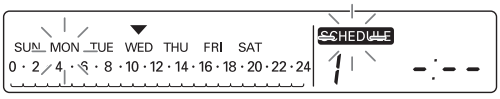
Schedule reservation



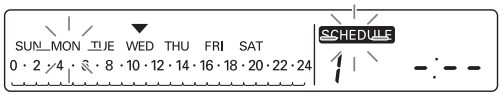
1 Press (clock) button shortly to enter 'schedule' setting mode. Day of the week will blink.



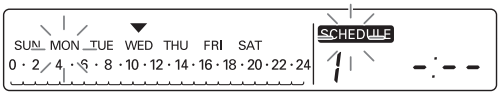
2 Select desired schedule day by pressing the (<)(>) button.

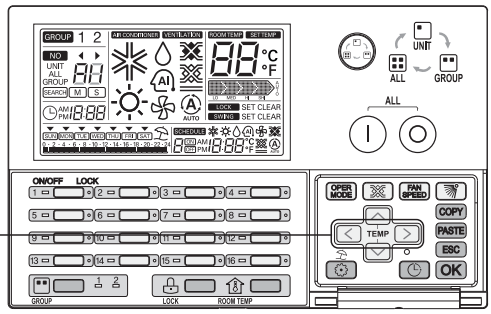


3 After selecting the desired day, press the OK button to enter to schedule time setting mode.

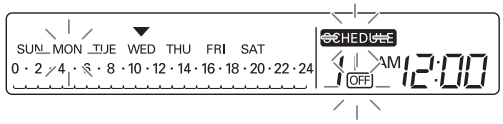


4 Select desired schedule number to set by pressing (^)(v) button.

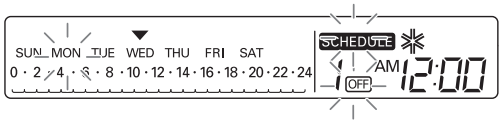




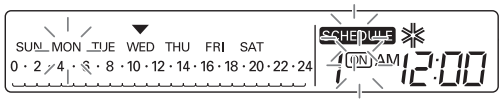
5 Enter ON/OFF setting mode by pressing the (>) button. ON or OFF icon in the window will blink.



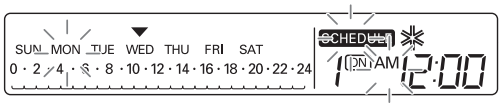
6 Select ON/OFF condition of schedule by pressing (^ v) button.



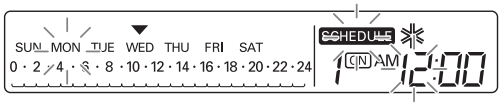
7 Enter AM/PM setting mode by pressing the (>) button. AM or PM icon in window will blink.

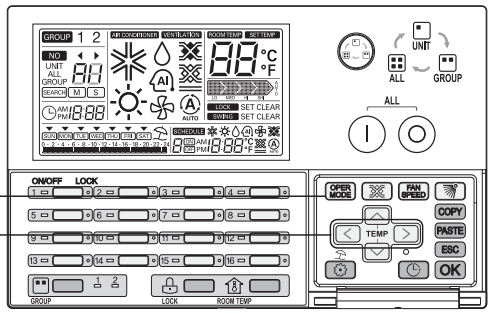


8 Select the AM/PM by pressing the (^ v) button.

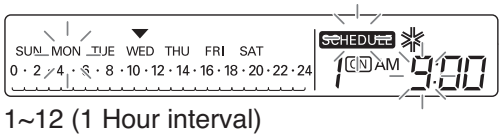


9 Enter 'hour' setting mode by pressing the (>) button. The hour icon in window will blink.



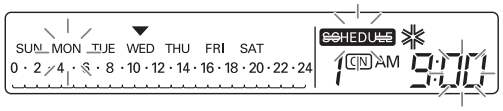


10 Select desired hour by pressing the ⌃⌄ button.

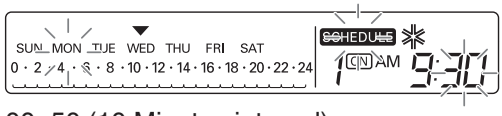


1~12 (1 Hour interval)

11 Enter 'minute' setting mode by pressing the > button. The minute in window will blink.

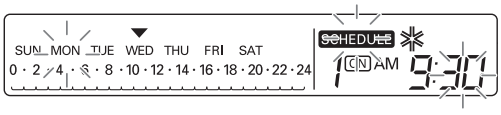


12 Select desired minute by pressing the ⌃⌄ button.



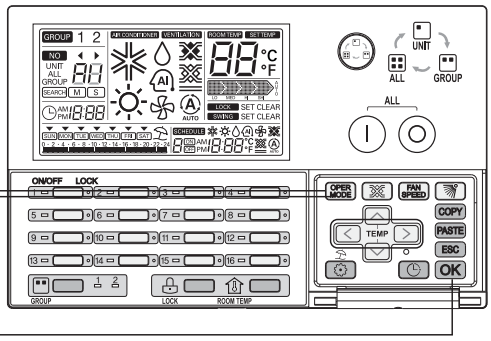
00~50 (10 Minutes interval)

13 Select operation mode by pressing the OPER MODE button. (Air-conditioner and Eco-V DX only)

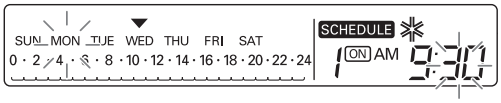


Air-conditioner : Cooling → Heating → Auto → Dehumidification → Fan

Eco-V DX : Cooling → Heating → Auto → OFF

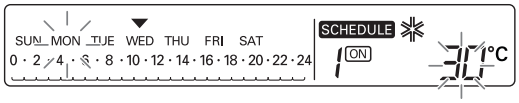


14 Select operation mode by pressing the [ ] button. (Ventilator and Eco-V DX only)

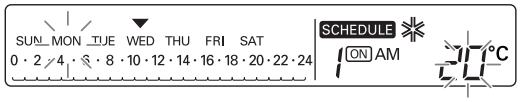


Ventilation unit / Eco-V DX : Heat exchange →Normal → Automatic

15 Enter desired temperature setting mode by pressing the [ ] button.
The desired temperature in window will blink. (This function is possible ON schedule only.)

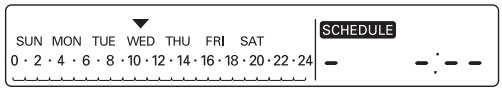


16 Select desired temperature by pressing the [ ] button.



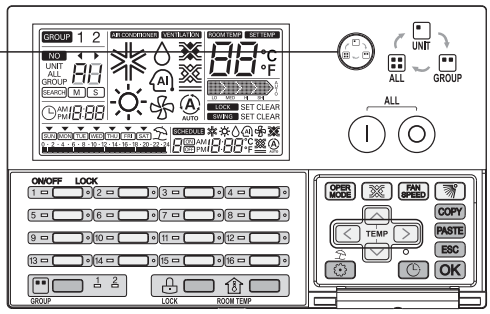
- In case of ℃ : 18 ℃ ~30 ℃ (1℃ interval)
- In case of ℉ : 64℉ ~86℉ (2℉ interval)

17 Apply desired schedule reservation by pressing the [OK] button.
It indicates set schedule of corresponding by displaying the border like [MON] .



NOTE

- After pressing [OK] button, the schedule display is updated. While updating, the schedule icon blinks.



Group Schedule setting

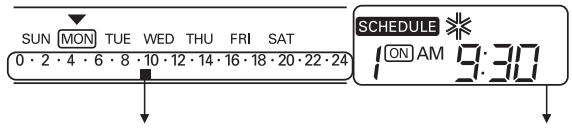
- While selecting group control mode,
- If you set up the schedule in this condition, all indoor units of corresponding group will set the schedule simultaneously.

NOTE

- To cancel schedule reservation during setting, press ESC button.
  at that time, current time will be back to previously configured schedule condition and it exits from schedule setting mode.

Schedule display

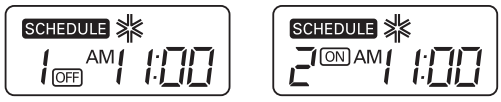
By setting schedule day, it indicates schedule overview of the day and executed next schedule time as same as following figure.



<Schedule overview of the day> <Schedule details of executed next schedule>

Schedule Priority

If two more schedules are setup at the same time, it operates higher priority schedule.
Lower number schedule has higher priority.



Ex) In case of the same schedule time of schedule 1 and 2, as the schedule time of schedule 1 has higher priority than schedule 2, corresponding indoor unit will stop the operation at AM 11:00.

Schedule caution

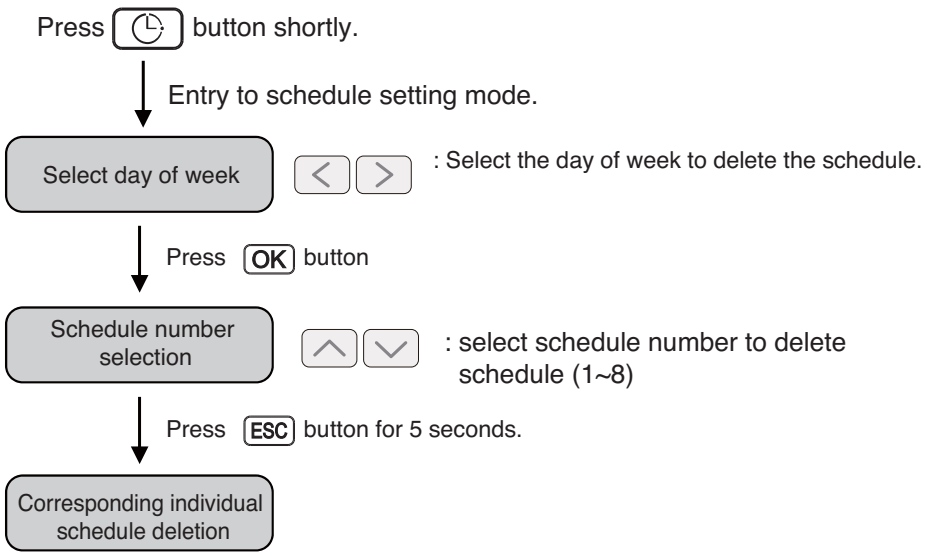
During executing schedule(s), Indoor units doesn't take any other command for several minutes (Remote controller and AC Ez may not operate normally during this period.)

During the Blackout

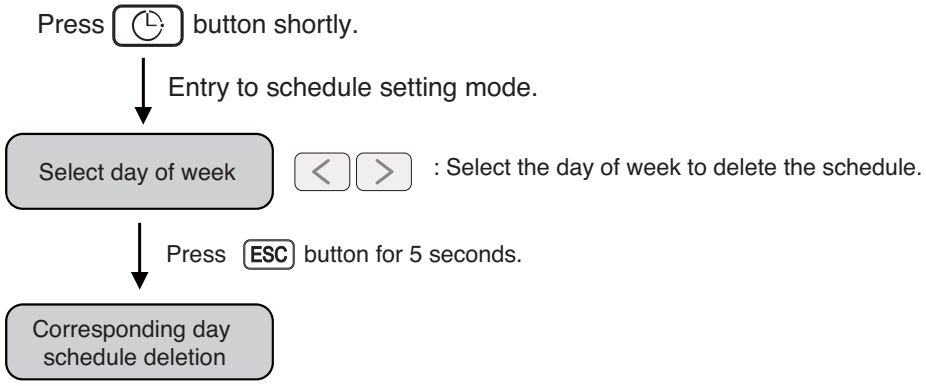
1 If a blackout lasts longer than 2 hours, the already set schedule will not be executed after the blackout. (The current time must be set again.)
2 During the blackout, the set schedule will not be executed.

Flow chart of schedule deletion

• Individual schedule deletion



• Day schedule deletion

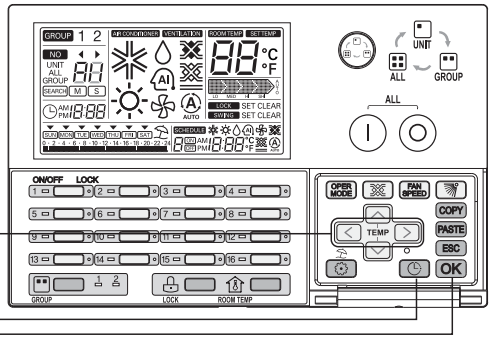


NOTE

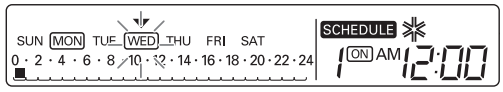
• If you press ESC button, it exits from schedule setting mode.

Programming : Deletion schedule(Individual schedule)

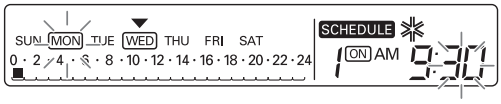
To delete only one schedule of one indoor unit



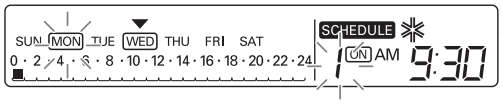
1 Press ⏲ button shortly to enter 'schedule' setting mode. The day of week will blink.



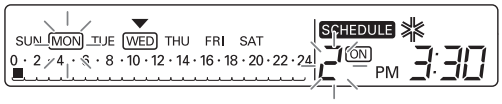
2 Select desired day of schedule deletion by pressing the < > button.

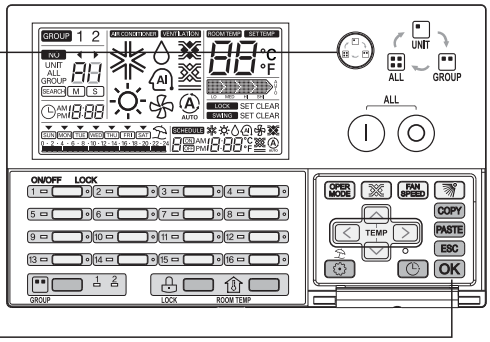


3 If desired day of week is selected, press the OK button to move to schedule setting mode.

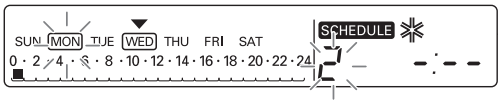


4 Select desired schedule number to delete by pressing ^ v button.





5 If desired day of schedule deletion is selected, press the ESC button for 5 seconds to delete schedule of desired day.



Corresponding schedule is deleted and it exits from schedule setting mode.

Programming : Deletion individual schedule(Group Schedule)

To delete only one schedule of one indoor unit

1 Press button to select 'group' setting mode.

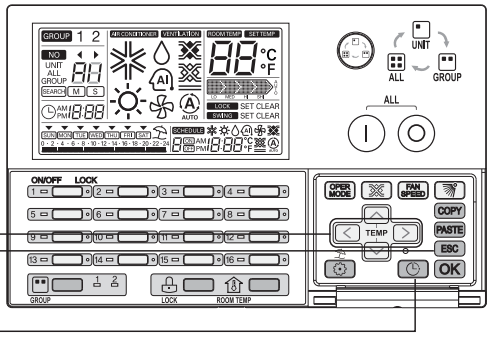
2 If you delete the schedule in this condition, all units of corresponding group is deleted the schedule of corresponding number.

NOTE

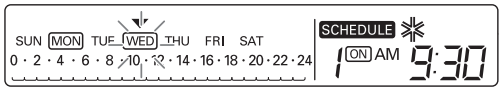
- If you press ESC button shortly, it exits from schedule setting mode.

Programming : Deletion schedule(Day schedule)

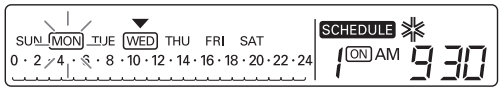
This is function that uses to delete one day schedule of one indoor unit.



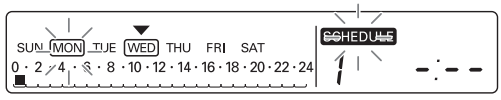
1 Press (clock) button shortly to enter 'schedule' setting mode. The day of week will blink.



2 Select desired day of schedule deletion by pressing the < > button.

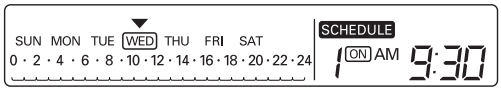


3 If desired day of schedule deletion is selected, press the ESC button for 5 seconds to delete schedule of desired day.

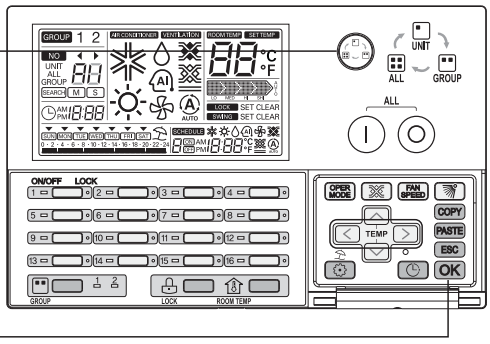


The schedule of the day is deleted, it exits from schedule setting mode.

It indicates that it didn't have schedule of the day by disappearing the border of corresponding day in LCD.



Programming : Deletion day schedule(Group schedule)



1 Press ⏲ button to select 'group' setting mode.

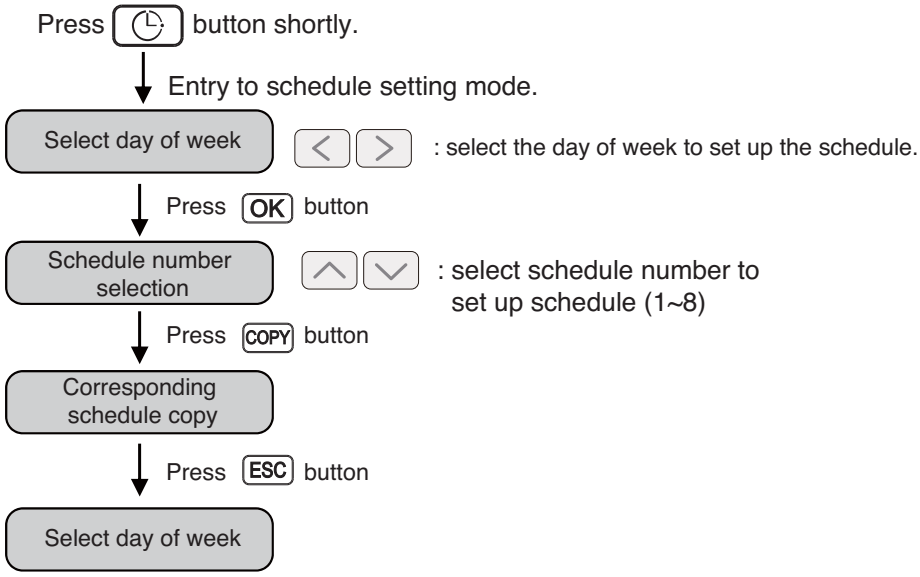
2 If you delete the schedule in this condition, corresponding group units will be deleted the schedule of corresponding day.

NOTE

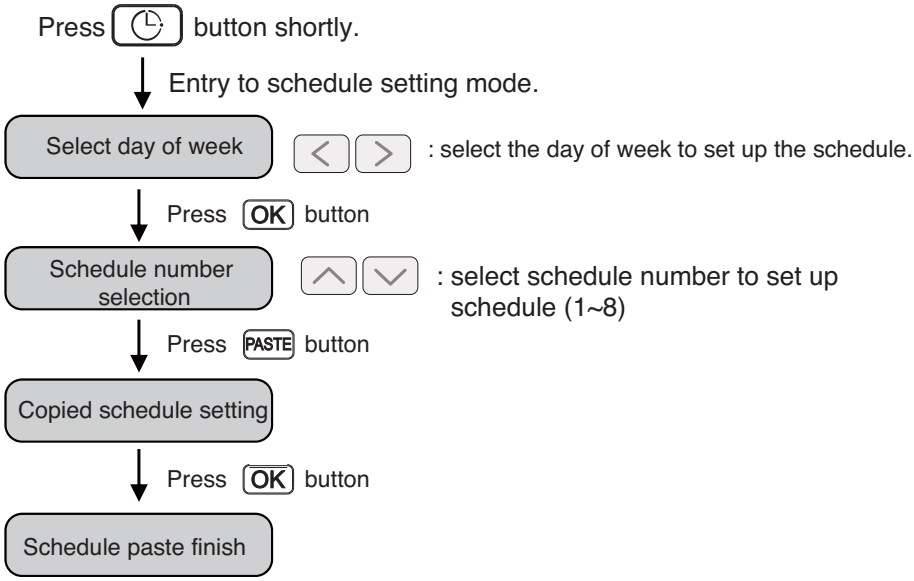
• If you press ESC button, it exits from schedule setting mode.

Flow chart for individual schedule copy

• Schedule copy



• Schedule paste



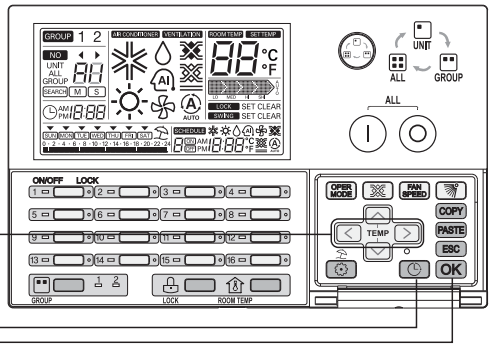
NOTE

• If you press ESC button, it exits from schedule setting mode.

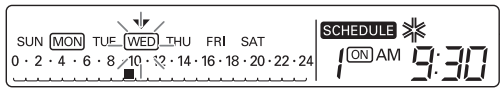
Programming : schedule copy(Individual schedule)

To apply a schedule to other days.
Example. To make a the second schedule of Monday be same with Tuesday's first schedule, use individual schedule copy/paste function)

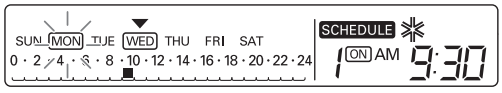
• **Schedule copy**



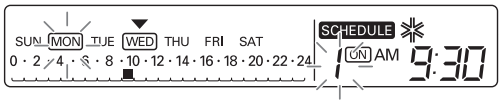
1 Press (clock) button shortly to enter 'schedule' setting mode. The day of week will blink.



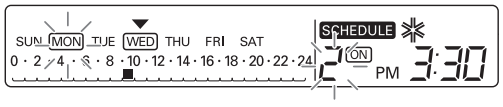
2 Select desired day of schedule to copy by pressing the < > button.

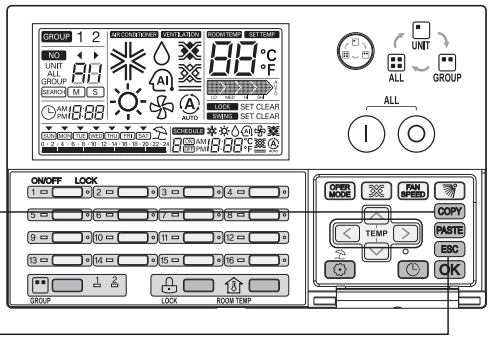


3 If desired day of the week is selected, press the OK button to enter to schedule time setting mode.

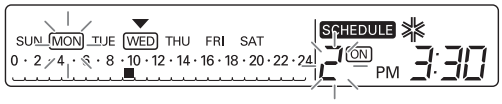


4 Select desired schedule number to set by pressing ^ v button.





5 If desired day of schedule to copy is selected, press the COPY button to copy schedule of desired day.

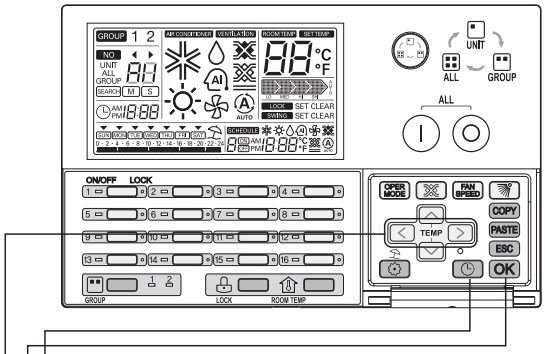


6 Exit the schedule setting mode by pressing ESC button.

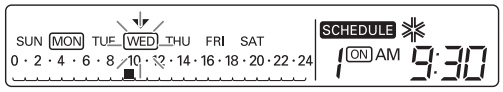
NOTE

- If you press ESC button, it exits from schedule setting mode.

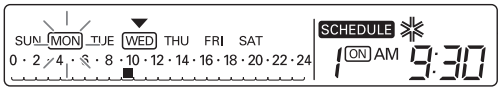
• **Schedule paste**



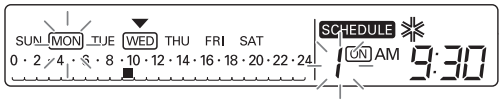
1 Press (clock) button shortly to enter 'schedule' setting mode. The day of week will blink.



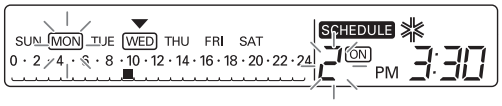
2 Select desired day of schedule to paste by pressing the < > button.

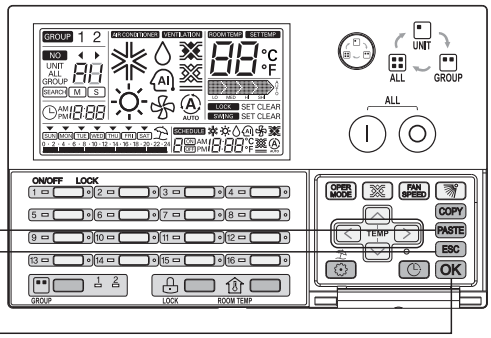


3 If desired day of the week is selected, press the OK button to enter to schedule time setting mode.

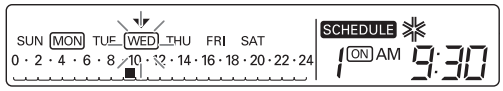


4 Select desired schedule number to set by pressing ^ v button.



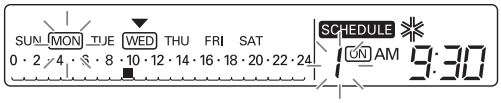


5 If desired number of schedule day to paste is selected, press the PASTE button to paste the schedule number of desired day.



6 Exit the schedule setting mode by pressing ESC button.

7 Apply pasted schedule by pressing the OK button.
It indicates set schedule of corresponding by displaying the border like FRI .



Group individual schedule paste

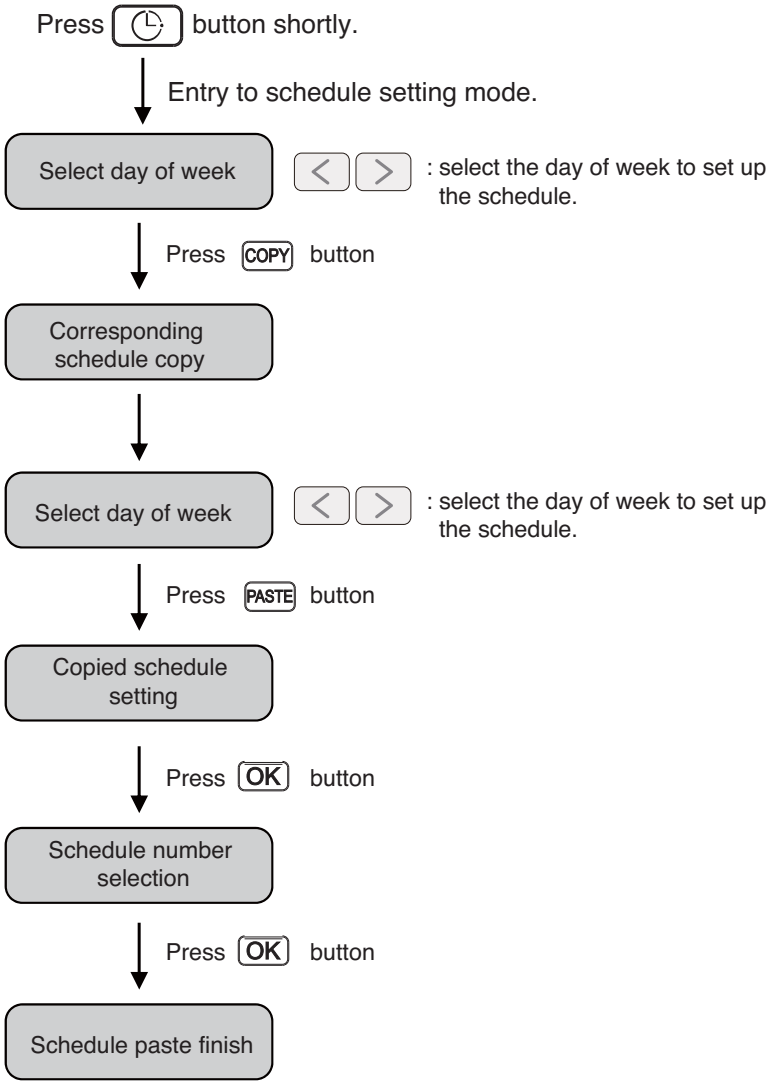
- While setting schedule copy,
  Before pasting copied individual schedule, If you select the group control mode, all indoor units of corresponding group will set the copied individual schedule simultaneously.

NOTE

• If you press ESC button, it exits from schedule setting mode.

Flow chart for day schedule copy

• **Day schedule copy**

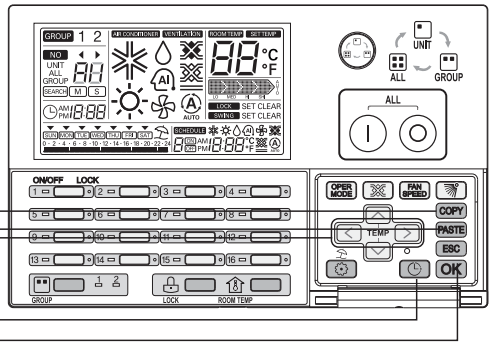


NOTE

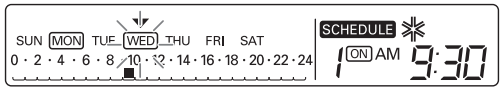
• If you press ESC button, it exits from schedule setting mode.

Programming : Schdule copy(day schedule)

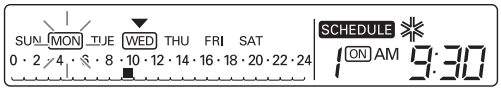
To apply a schedule to other days (Example. To make the schedule of monday be same with tuesday's one, use schedule copy/paste function.)



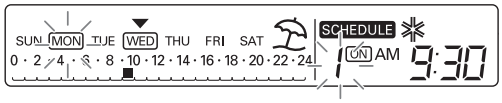
1 Press (clock) button shortly to enter 'schedule' setting mode. The day of week will blink.



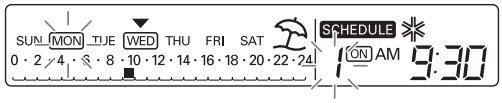
2 Select desired day of schedule to copy by pressing the < > button.



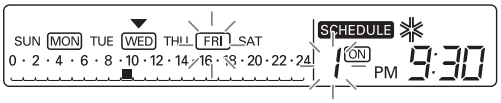
3 If desired day of schedule to copy is selected, press the COPY button to copy schedule of desired day.



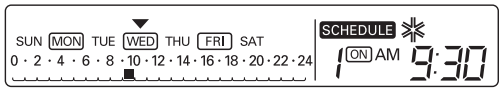
4 Select desired day of schedule to paste by pressing the ^ v button.



5 If desired day of schedule to paste is selected, press the PASTE button to paste copied schedule.



6 Apply pasted schedule by pressing the OK button. It indicates set schedule of corresponding by displaying the border like FRI .



Group day schedule paste

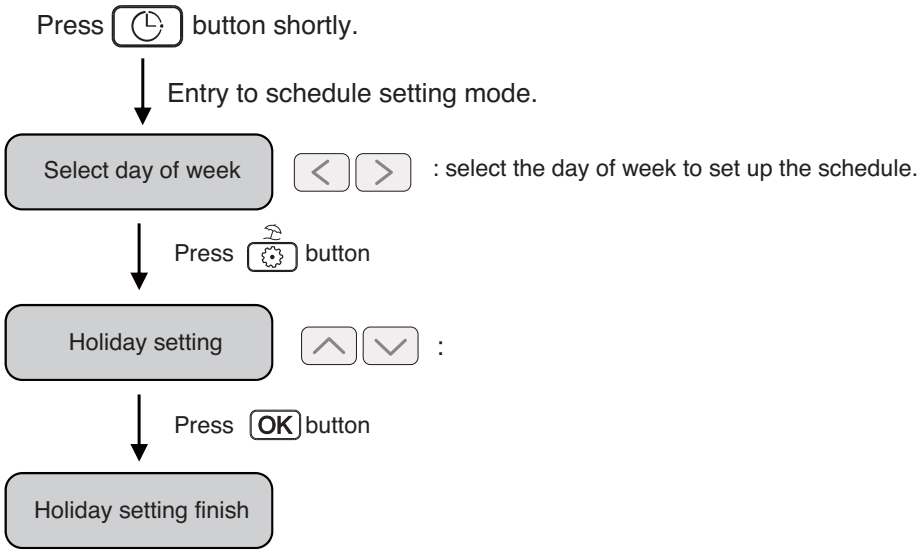
- While setting schedule copy, Before pasting copied day schedule, If you select the group control mode, all indoor units of corresponding group will set the copied day schedule simultaneously.

NOTE

• If you press ESC button, it exits from schedule setting mode.

Flow chart for holiday setting

• **Holiday setting**

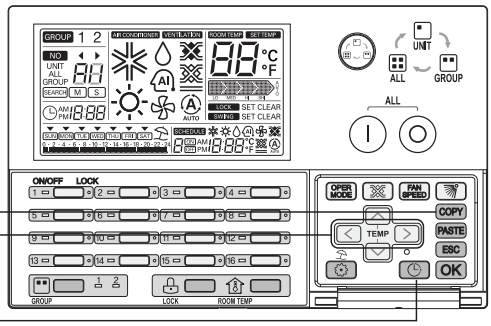


NOTE

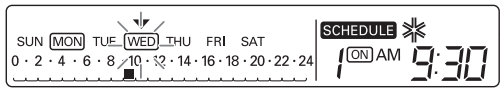
• If you press ESC button, it exits from schedule setting mode.

Programming : Holiday reservation

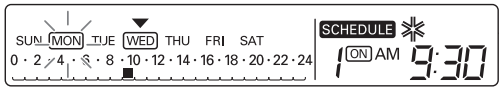
This function is to prevent from keeping air conditioners turned on 'holiday or Off day'.
Icon is displayed at the day programmed as 'Holiday'.



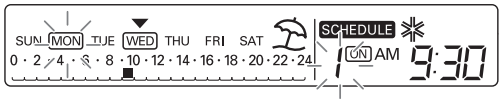
1 Press ⏲ button shortly to enter 'schedule' setting mode. The day of week will blink.



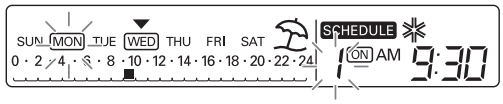
2 Select desired day to set holiday by pressing the < > button.



3 If desired day to set holiday is selected, press the ⚙ button to set holiday schedule. (Set ↔ Clear)
When setting up the holiday schedule, it is displayed ⛱ icon in LCD.



4 Apply holiday schedule by pressing the OK button.
It indicates set schedule of corresponding by displaying the border like SUN.



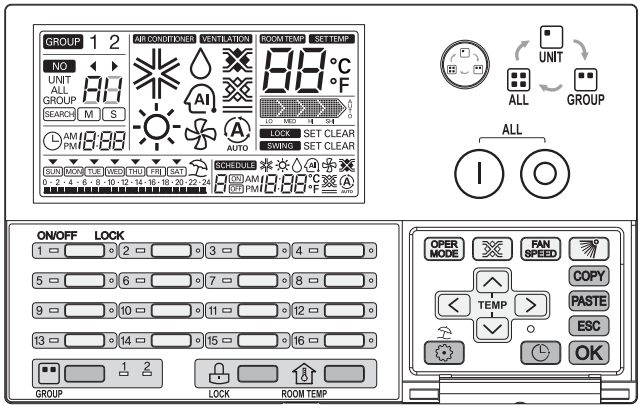
• When set schedule day, it indicates ⛱ icon and is executed off schedule every hour.

Group holiday setting

- While setting holiday setting,
  Before pasting copied day schedule, If you select the group control mode, all indoor units of corresponding group will set the copied day schedule simultaneously.

Self-diagnosis of indoor unit

This function is to display when check code is received from corresponding unit.

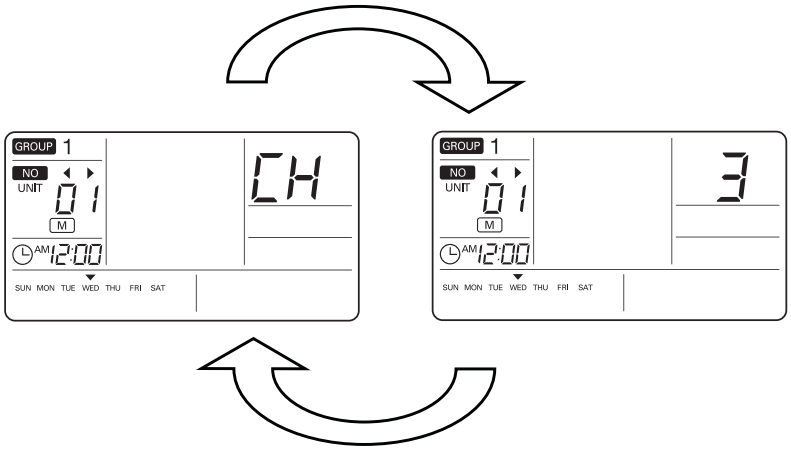


1 If corresponding indoor has some failure status, it indicates RED LED of individual on/off LED.

2 A " CH" or "xx" (number) is repeatedly displayed on the LCD to represent failure status code.

3 When failure code is displayed on the LCD, please contact with the service center or installers.

EX) In case of failure status code 3 : CH 3



2.4 AC Smart

2.4.1 AC Smart Introduction

Model name : PQCSW320A0E / PQCSW320A1E

■ Specification

Dimensions:
217 x 124 x 40 mm
(8-17/32 x 4-7/8 x 1-9/16 inch)

Screen:-
7 Inch Touch Screen

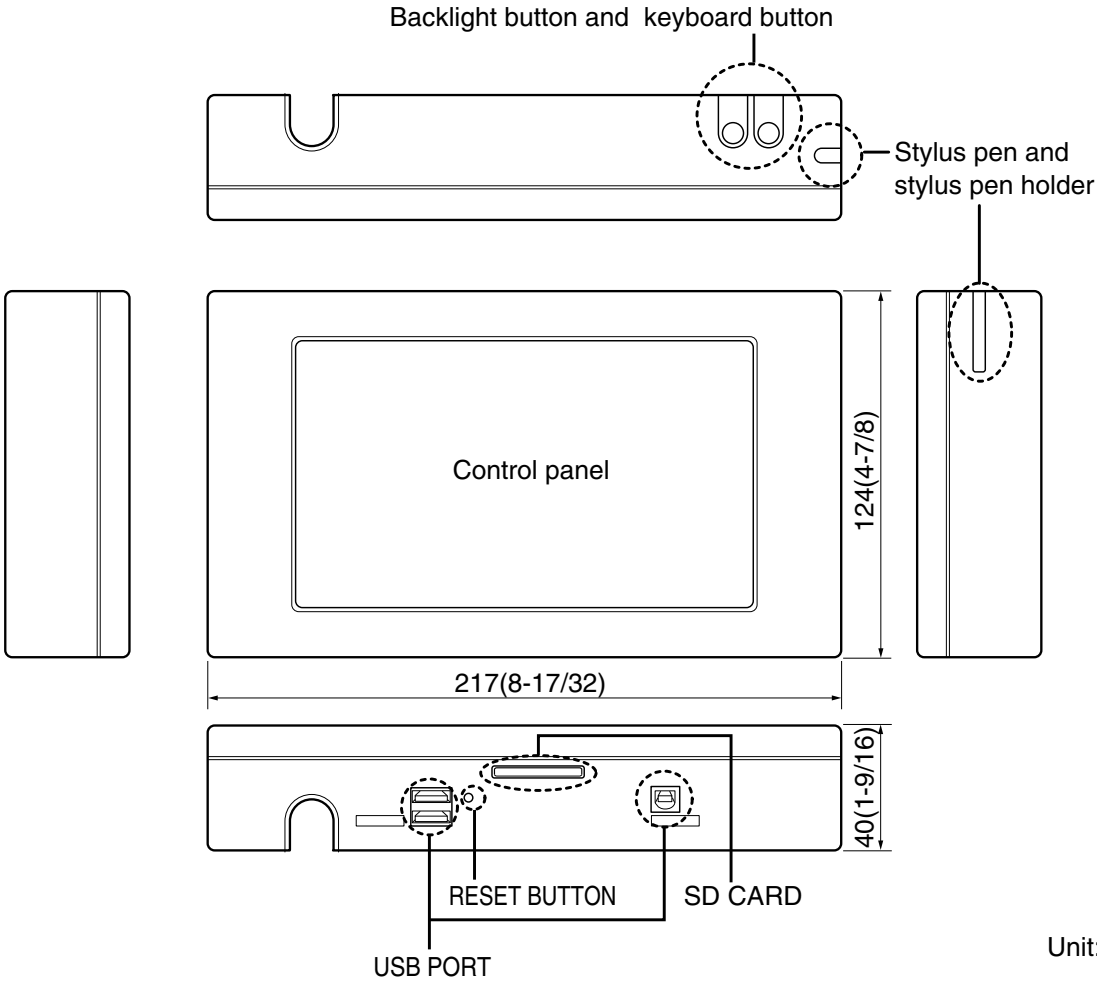
PQCSW320A0E

PQCSW320A1E

■ Description

The product specially designed for small and medium building, luxury shops etc. It can control up to 64 indoor units.(A/C & Ventilation)

■ Exterior



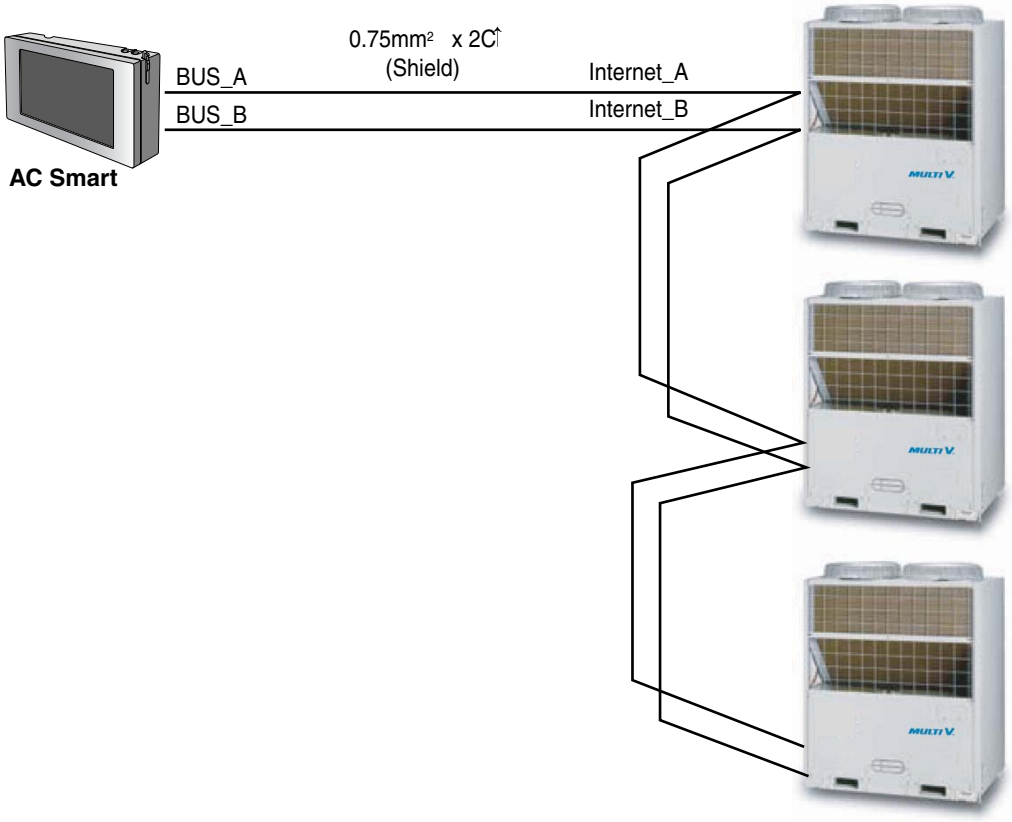
Unit:mm(inch)

■ Features

1. Mode control, temperature control etc and monitoring of up to 64 unit(A/C & Ventilation) is possible by Zone/Group/Unit
2. You can monitor the operating status by Icon or List View. so you can operate the controller very easily 2.AC Smart is directly connected to Outdoor unit(Internet A and B).
3. Individual indoor Function control locking so that except administrator nobody can change the function. (Temperature, Mode, Fan Speed separately)
4. Temperature Setting Range restriction on individual controller, so management is very powerful and energy saving is possible
5. In schedule setup administrator can schedule the indoor Operating as well as the function locking
6. Operating and error history is saved in AC Smart
7. It has Automatic control function, Auto_changeover and temperature limit, Auto_Changeover function is automatically change operating mode cool and heat, so no need of changing the mode in season change period Temperature limit function. Protect the building from freezing and overheat by auto operation and auto stop
8. You can select the AC Smart display's language[English, Spanish, French, German, Dutch, Italian, Russian]
9. By using Emergency Stop Interlocking function. You can connect fire detect sensor to AC Smart, when fire happened, all air_conditioner will be stop automatically
10. Easy upgrade the software by using USB
11. Compatible with Multi V, Multi as well as single unit., also, connect with Simple Central controller
12. By using Expansion Kit, Maximum 128 Indoor Unit can be connected
13. When not using Central Controller, AC Smart can display Digital Watch
14. In AC Smart Monitoring, report of each indoor's operation time & operation ratio, is available.
    By using this, you can distribute the power consumption by referring to the information
15. In Temperature Limit control, the setting range of temperature was expanded, so you can use it for more comfortable function. for example, In the hotel, when customer key out the hotel card key, Indoor temperature will be increased, then AC Smart will operate the indoor, and automatically turn off after temperature is decreased.
16. New Auto control of AC Smart, Time Limit control: You can set the time limit from1~4Hrs and set available day of week. In time limit function for available period, indoors can operate up to maxim setting time continuously.
    For example: Set as 2 Hr and available on Saturday & Sunday.
    When someone operates the indoor, AC Smart will check the continuous operating time.
    If the time is over 2hr, AC Smart will automatically stop the indoor operation.
17. Web Access Function is available basically, so you can access AC Smart anywhere by using Internet Explorer.
    Web Access level is distinguished to 2 Level: Administrator and User.
    When login to administrator:
    Can register user's ID & Password, and allocate accessible address for each user; can operate all indoor.
    When login to user: Can operate allocated indoor for each user.
18. In AC Smart controller access level is distinguished to 3 Level: Installer, Administrator & User
    When login to Installer: Can register administrator & user's ID & Password; and register Unit; can operate all Function.
    When login to A Administrator: Can operate all Function except unit register, id & pw register
    When login to User: Can operate only control & monitoring
19. New e-mail function was applied: By using this function, you can register e-mail address. So when error occurs or some fixed time automatic e-mail will be executed, so customer can easily maintain all connected air conditioner's status

20. Applied language was expanded: Dutch & Russian language was applied in AC Smart
21. By using DO Unit, AC Smart can control on/off of other equipment. It can easily register another equipment and control it.

■ Wiring



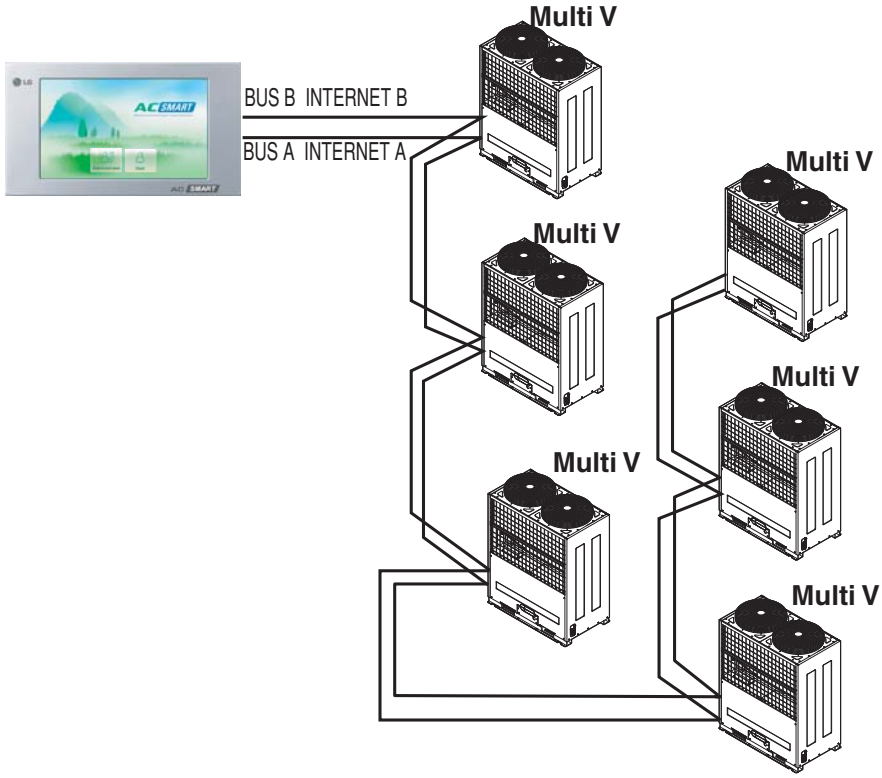
■ Information : Connecting the RS485 of the AC Smart

64 indoor units at maximum can be connected to one AC Smart.

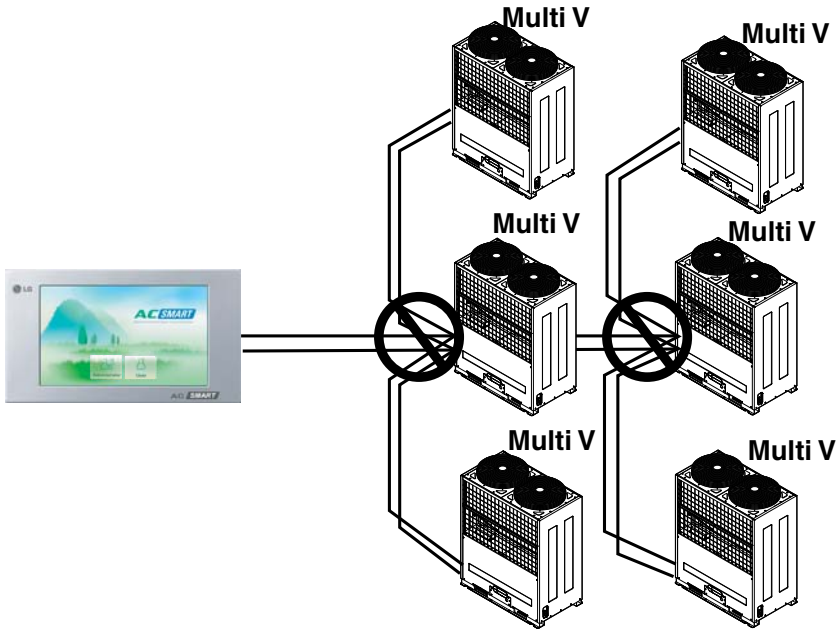
When there are many outdoor units to connect, connect the outdoor units with the BUS form.

Otherwise, the AC Smart may cause the malfunction.

The following figure shows the example for connecting with the BUS form.



The following figure shows the example of the incorrect connection of the RS485 of the AC Smart.



Icon/list View Monitor

You can monitor the operating status in Icon or list view

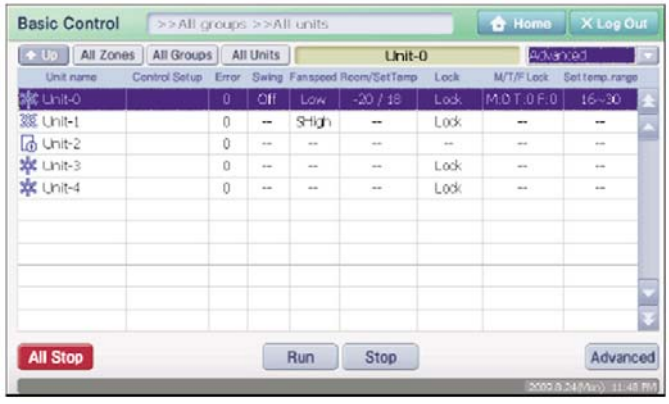
[Icon View]

PQCSW320A0E

PQCSW320A1E

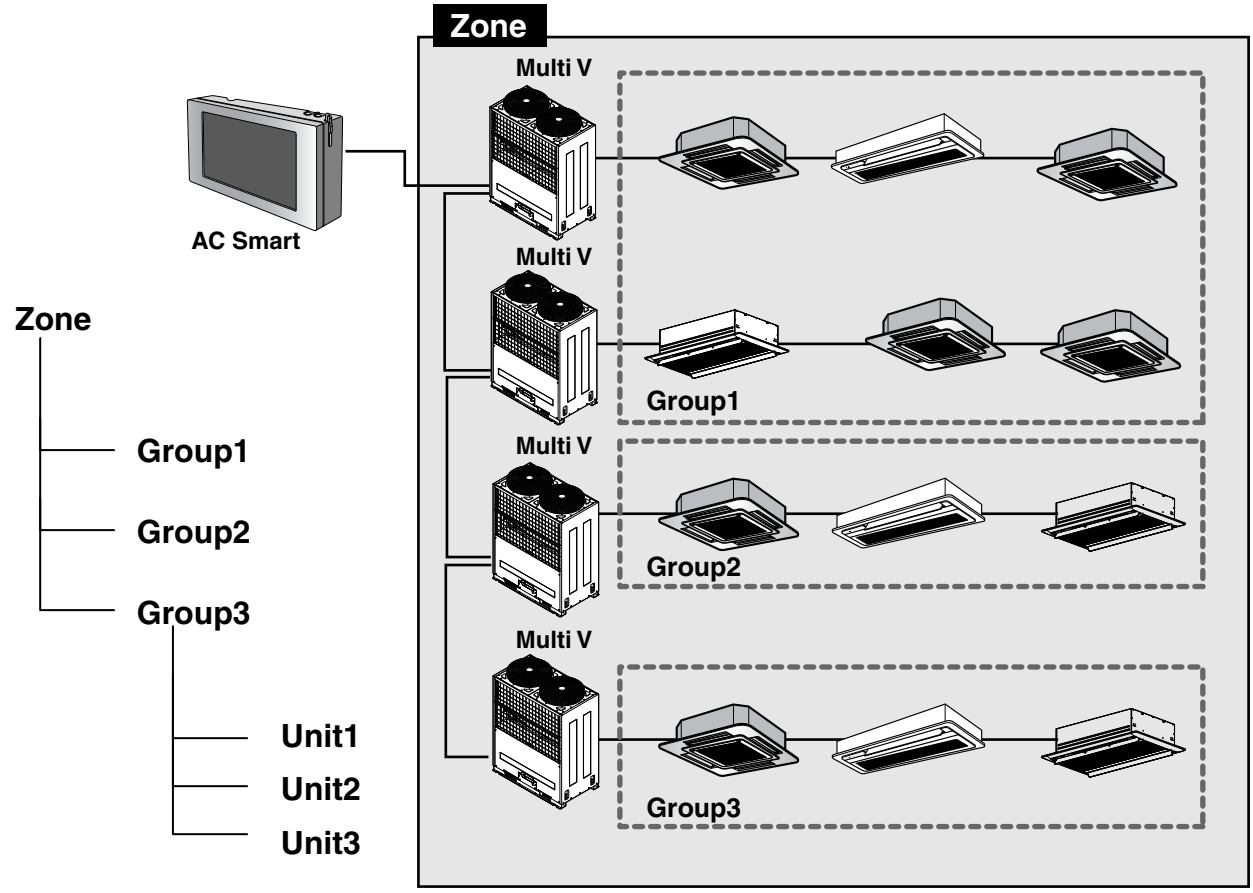
[List View]

PQCSW320A0E



PQCSW320A1E

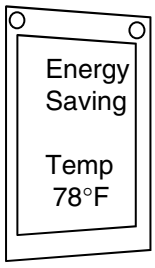
Zone/Group/Unit Control



You can Select Zone or Group or Unit
You can control all to same method by only one click
Also, several unit select is possible .

Individual Lock

Function Locking in AC Smart, then in the individual remocon, can not change the locking function
(For example, if Temperature lock in the AC Smart, you can not change the setting temperature in the remocon,

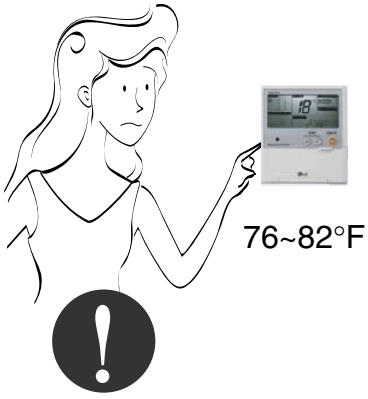


78°F Fix

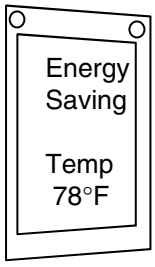
temperature Change is impossible
Other function is possible

Total, Mode, Temperature, Speed Lock

Setting Temperature range restriction



76~82°F



76~82°F adjustable

temperature Change is possible
only in the range setting from AC Smart

Function Lock Schedule

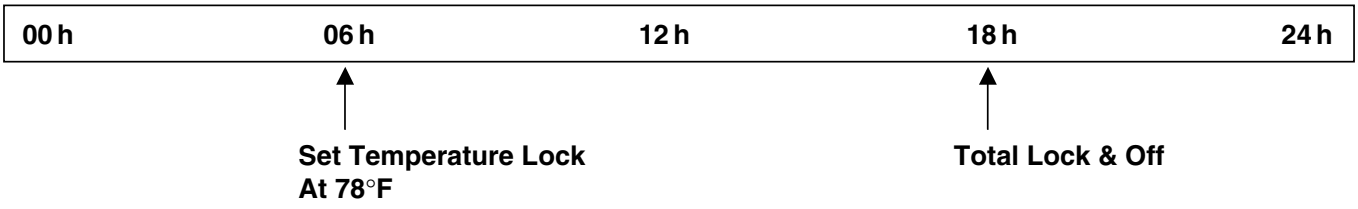
When Schedule mode setting, you can select only changing point, not all mode

For example, if you want to set temperature 78°F, others are same before operating in 9 o'clock PM

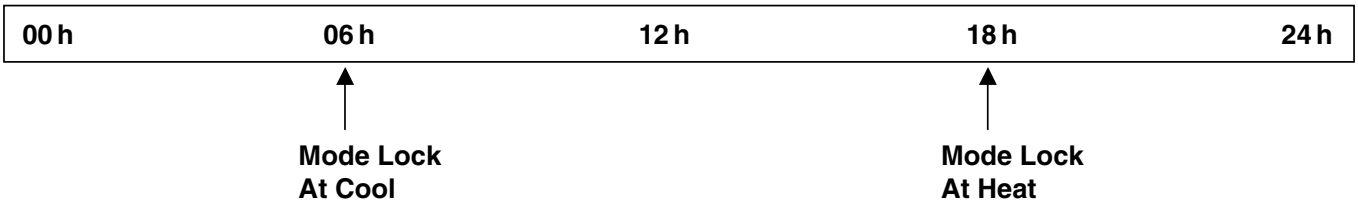
You can select only set temperature.

In the same way, if you want to set temperature lock in 8 o'clock PM, you can select only the set temperature lock

Example1)



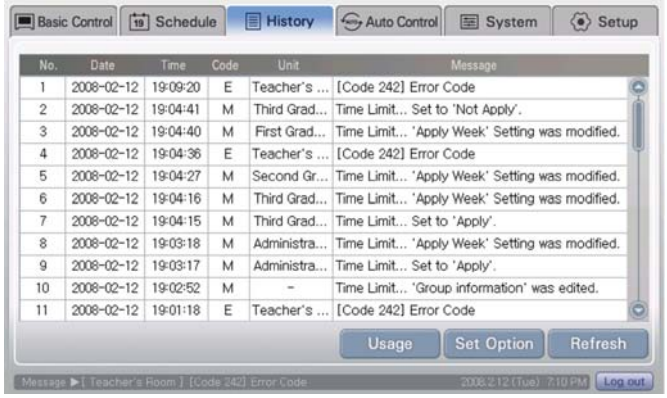
Example2)



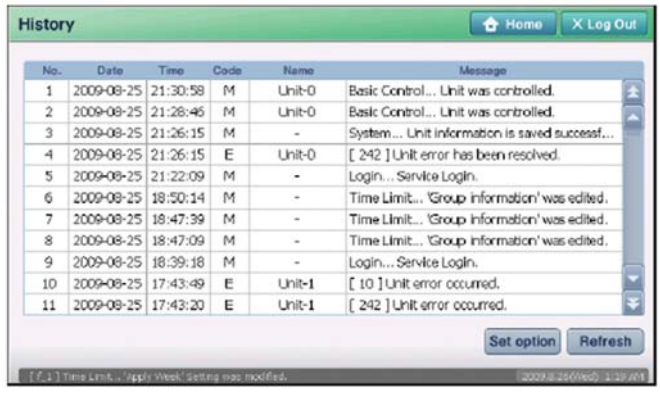
History

AC Smart Control & Error History will be display and Saved in the AC Smart

The data count is maximum 3,000 items, data saving period is maximum 30 days



PQCSW320A0E



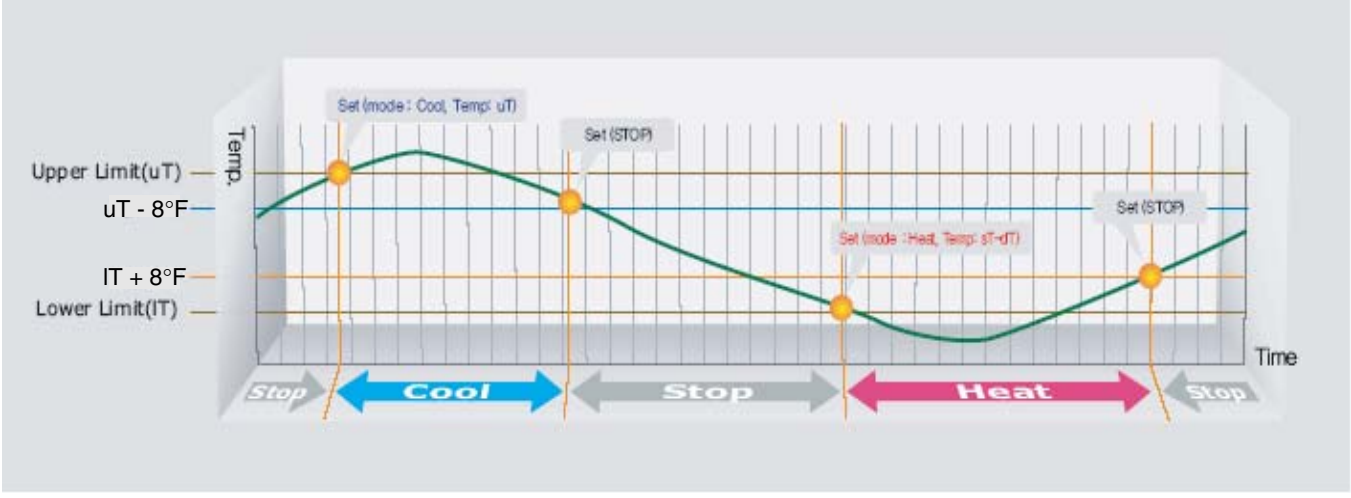
PQCSW320A1E

Auto Changeover

- sT (Set Temp.) : 64~86°F
- dT (Difference Temp.) : 2~14°F
- aT (Alpha Temp.) : 4°F
- Upper Limit (sT+dT+aT) : Change Point(Heat ➔ Cool)
- Lower Limit (sT-dT-aT) : Change Point(Heat ➔ Cool)

Temperature Limit Control

(For Anti-Freeze or Overheat of building)

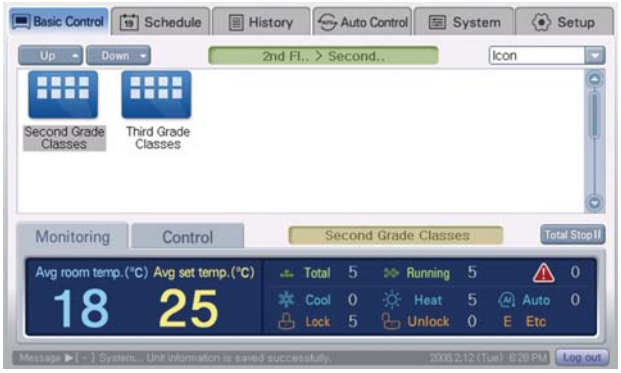


- Upper Limit (uT : Upper Temp.) : 94~110°F
- Lower Limit (lT : Lower Temp.) : 34~54°F
- uT - 8°F : after Auto COOL, off condition
- lT + 8°F : after Auto Heat, off condition

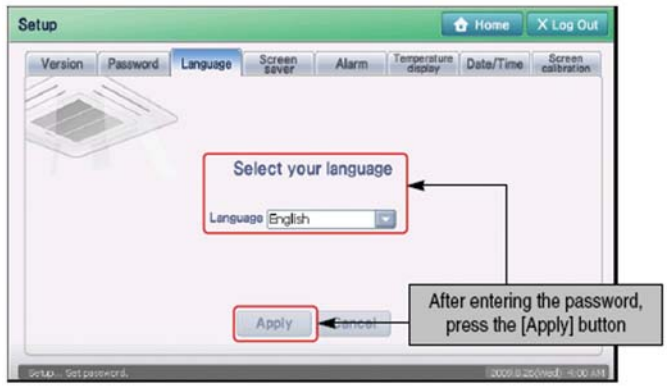
Multi Language

Setting the language, all GUI will be changed to the selected language
[English, Spanish, French, German, Dutch, Italian, Russian]

[English]



PQCSW320A0E

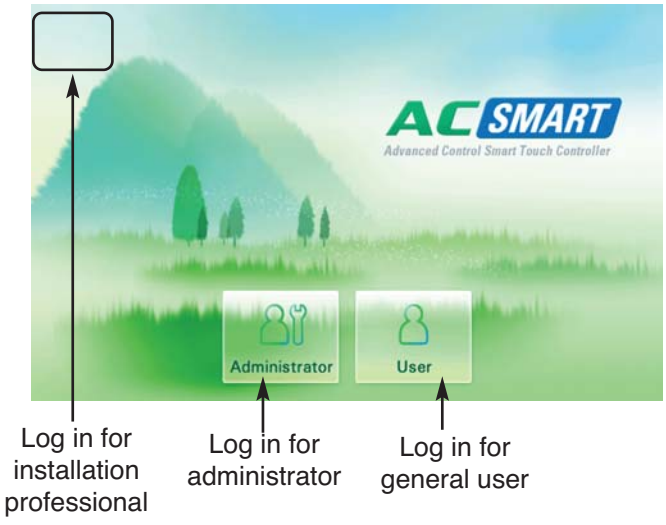


PQCSW320A1E

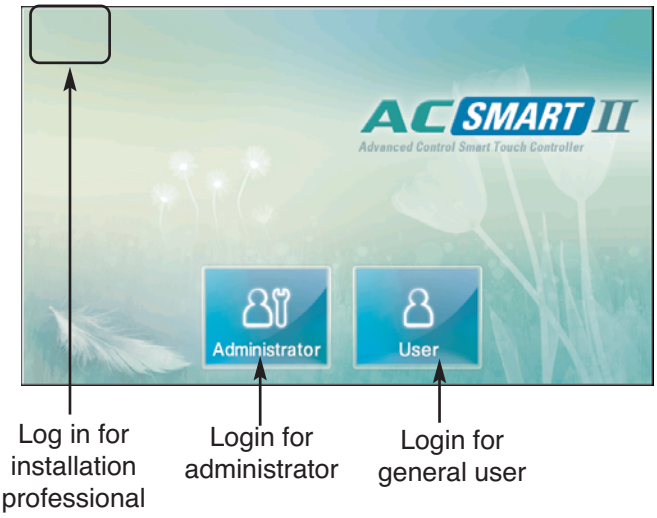
Password for Administrator

AC Smart has installer professional mode, administrator mode and user mode as follows:

PQCSW320A0E



PQCSW320A1E



Log in for installation professional

When you log in as installation professional, you can set all functions related to the installation of the AC Smart. When logged in as administrator or general user, the following menus are hidden.

- Setting the model to be locked in detail and managing the unit from the system setting menu
- Network, E-mail, S/W upgrade and DB management function from the environment setting menu

We recommend using the log-in for the installation professional only when changing the critical setting related to the installation.

Log in for administrator

When you log in as administrator, you can all functions excepting some menus related to the installation and the environment setting offered at the installation professional only.

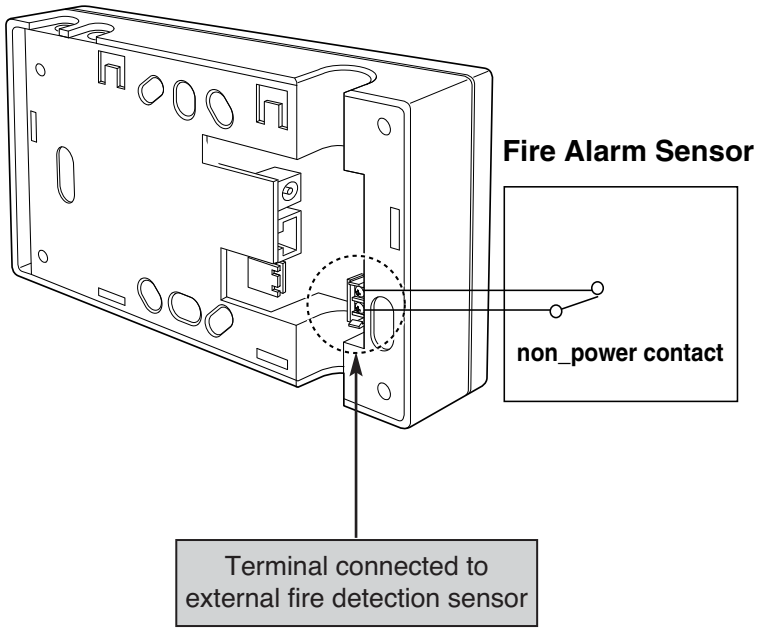
Log in for general user

When you log in as general user, you can use only the 'Control/Monitoring' menu to monitor and control the operation of the current air conditioner and cannot use other functions.

Emergency Stop

Connection with fire alarm in non_voltage contact.

When detecting, all connected air_conditioner will be stop



Easy Upgrade

System Data Backup & Upload is Possible

1. Save the target program to USB
2. Connect USB to AC Smart

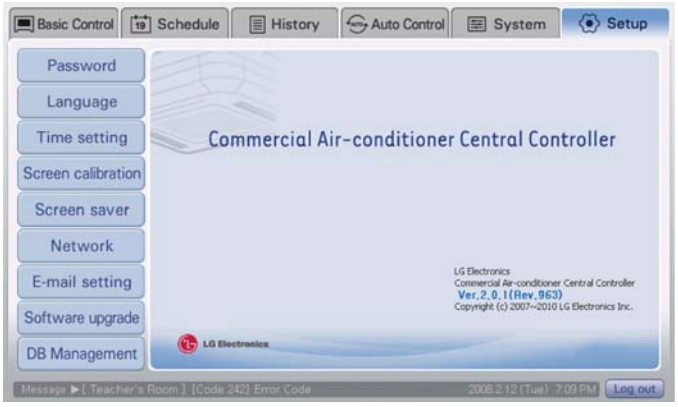
PQCSW320A0E

USB

PQCSW320A1E

USB

3. Select the menu Setup ➔ Software Upgrade



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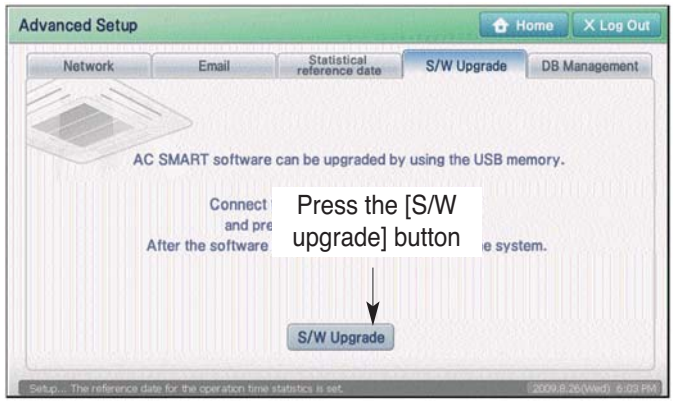
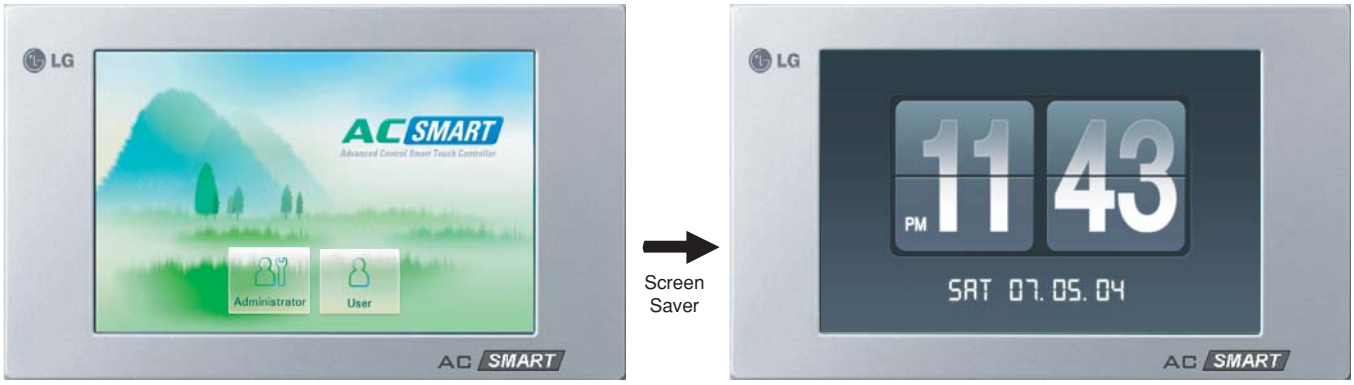


PQCSW320A1E

It will take about 10 minutes.
After complete upgrade, automatically restart the AC Smart Program, then get out the USB

Digital Watch

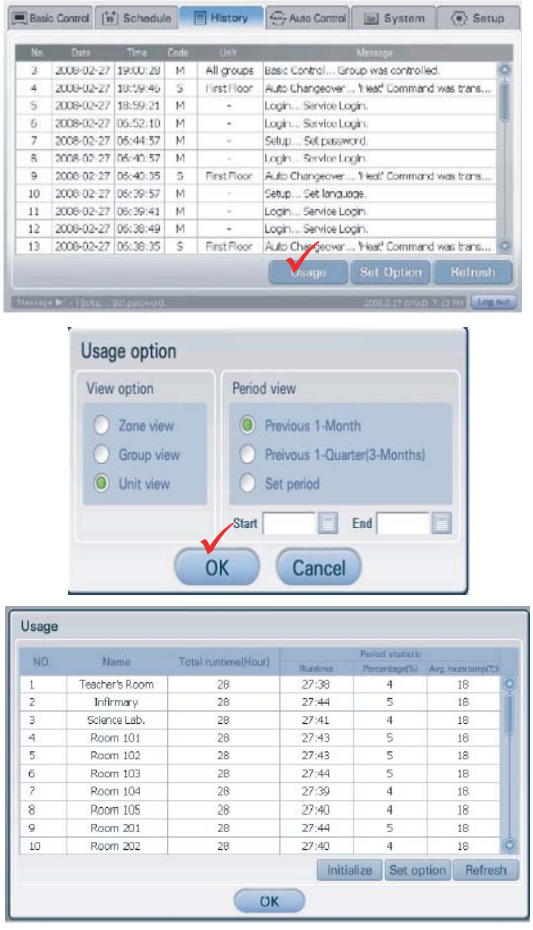
When not using Central Controller, AC Smart can display Digital Watch



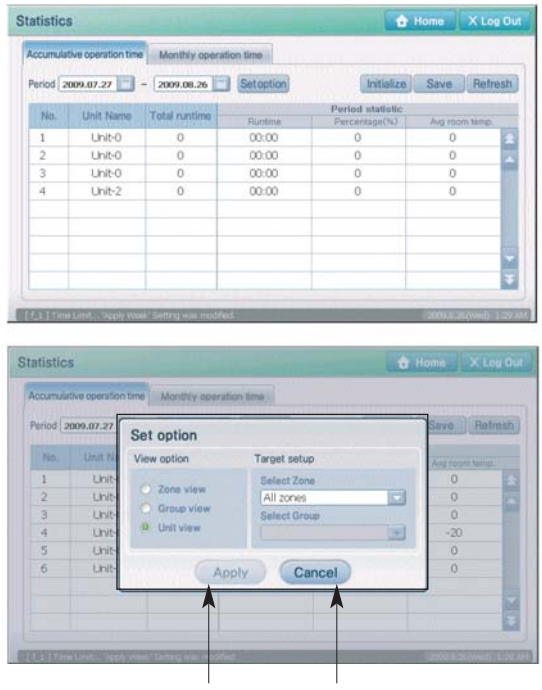
Operation Ratio Calculation

In AC Smart Monitoring, report of each indoor's operation time & operation ratio, is available.

By using this, you can distribute the power consumption by referring to the information.



PQCSW320A0E



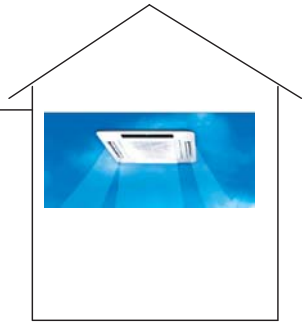
PQCSW320A1E

Time Limit Control

New Auto control of AC Smart, Time Limit control. You can set the time limit 1~4Hr, and set available day of week.

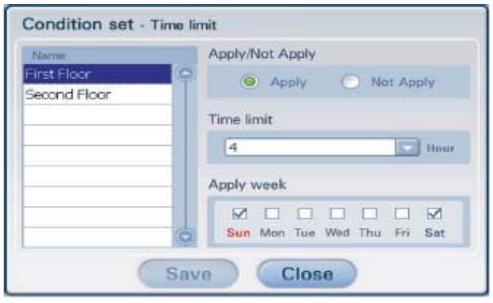
In time limit function for available period, indoors can operate up to maxim setting time continuously.

For example: Set as 2 Hr, and available on Saturday & Sunday. When someone operate indoor, AC Smart will check the continuous operating time. If the time is over 2hr, AC Smart automatically stops the indoor operation.

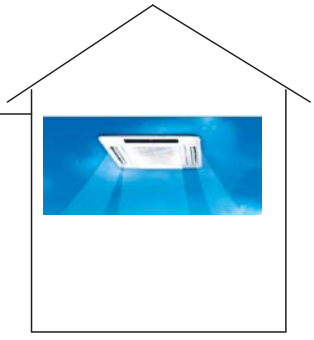


Register group
Limit Time Set : 1 ~ 4 hr.
Set available day of week

Turn On the air conditioner
After limited time
Automatically stop air conditioner

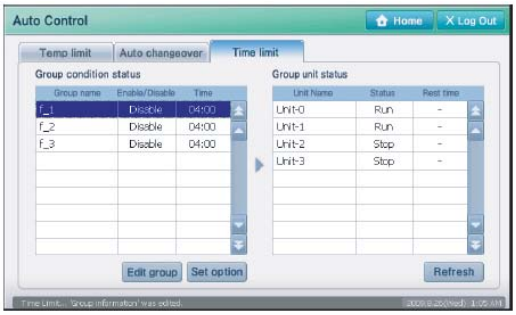


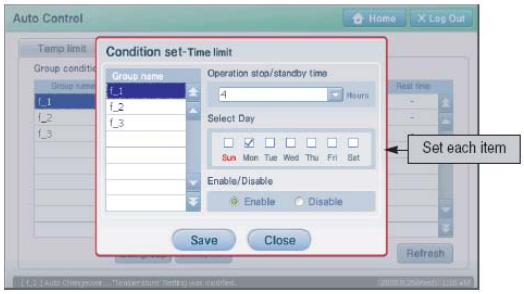
PQCSW320A0E



Register group
Limit Time Set : 1 ~ 4 hr.
Set available day of week

Turn On the air conditioner
After limited time
Automatically stop air conditioner





PQCSW320A1E

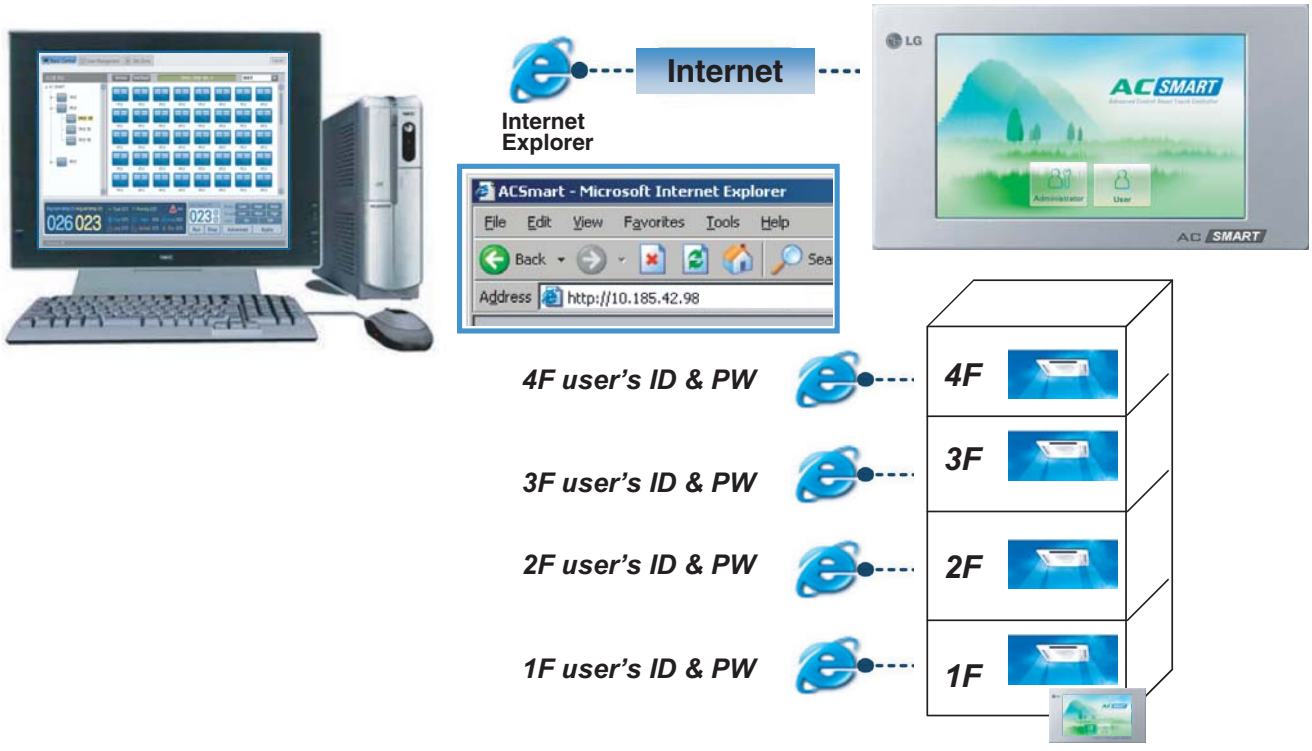
Web Access

Web Access Function is available basically, so you can access AC Smart anywhere by using Internet Explorer.

Web Access level is distinguished to 2 Level; Administrator & User.

When login to administrator: Can register user's ID & Password (max 10 users), and allocate accessible address for each user; can operate all indoor

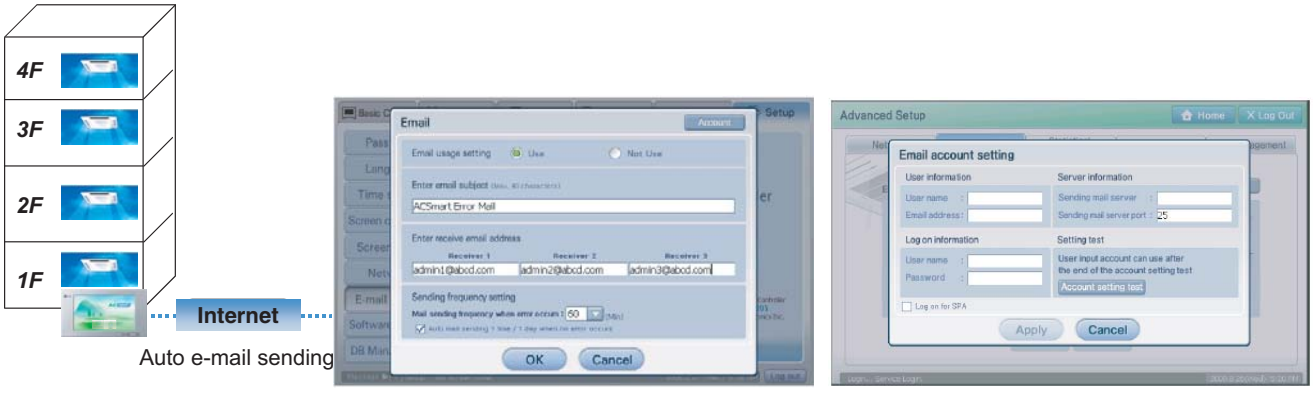
When login to User: Can operate allocated indoor for each user.



Administrator can control all units

Auto e-mail

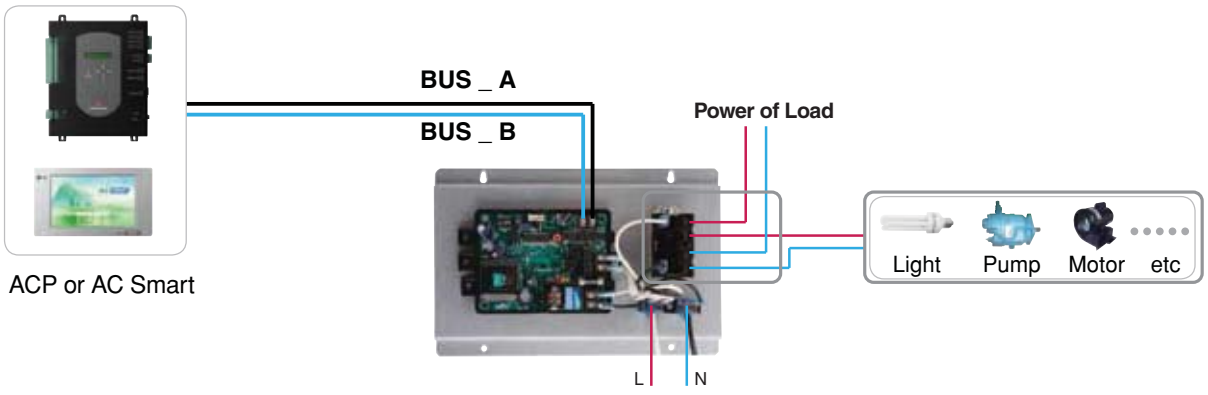
New e-mail function was applied. By using this function, you can register e-mail address, so when error happen or some fixed time automatic e-mail will be executed. So customer can easily maintain all connected air conditioner's status.



PQCSW320A0E **PQCSW320A1E**

Do Unit connection

By using Do Unit, AC Smart can control on/off of other equipment. It can easily register another equipment and control it.



Do Kit : PQNFP00T0

2.5 AC Smart 128 Unit Expansion Kit

2.5.1 AC Smart 128 Unit Expansion Kit Introduction

Model name : PQCSE440U0

■ AC Smart 128 Unit Expansion Kit Specification

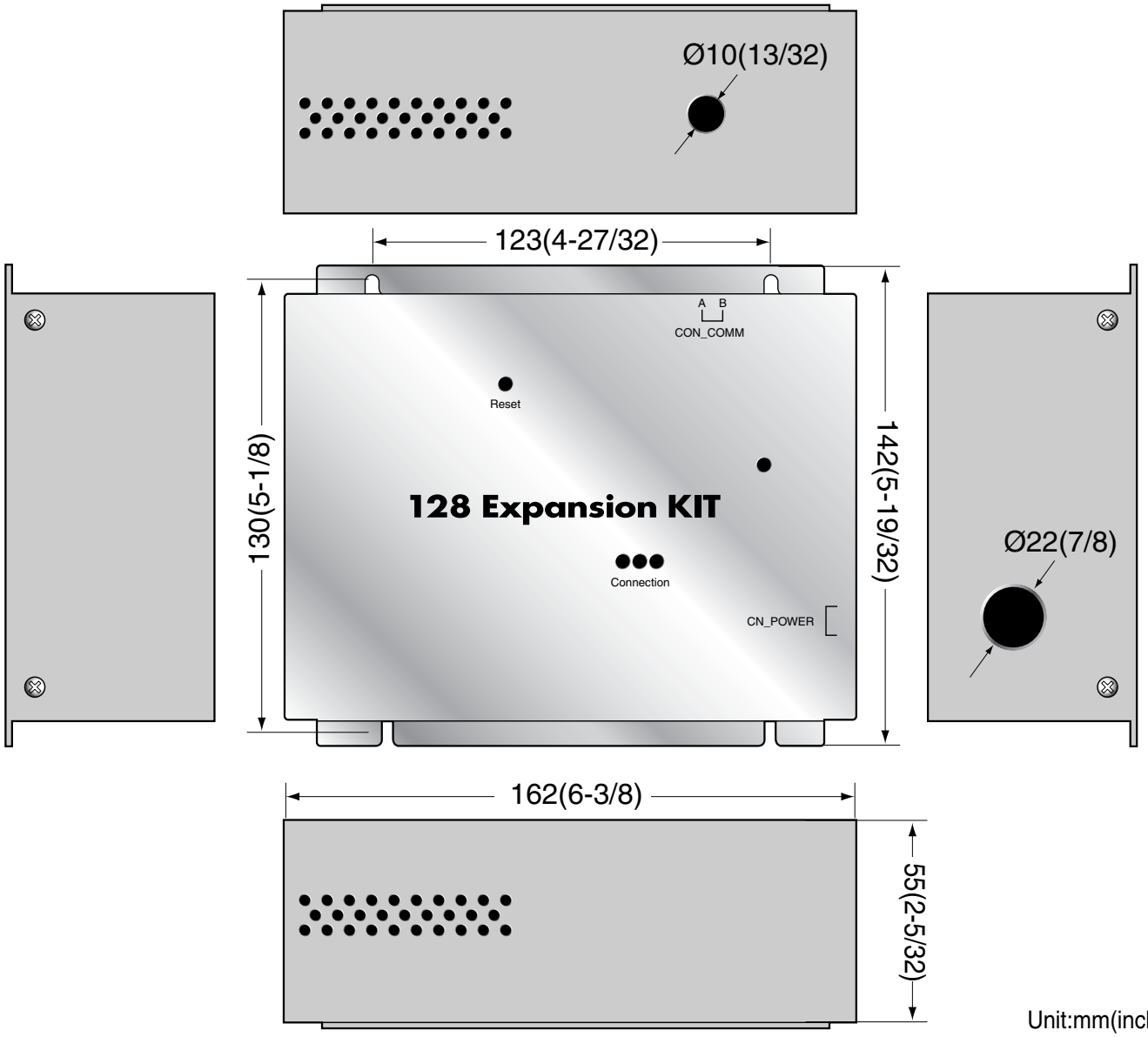
Dimension :

162 x 142 x 55 mm
(6-3/8 x 5-19/32 x 2-5/32 inch)

■ Description

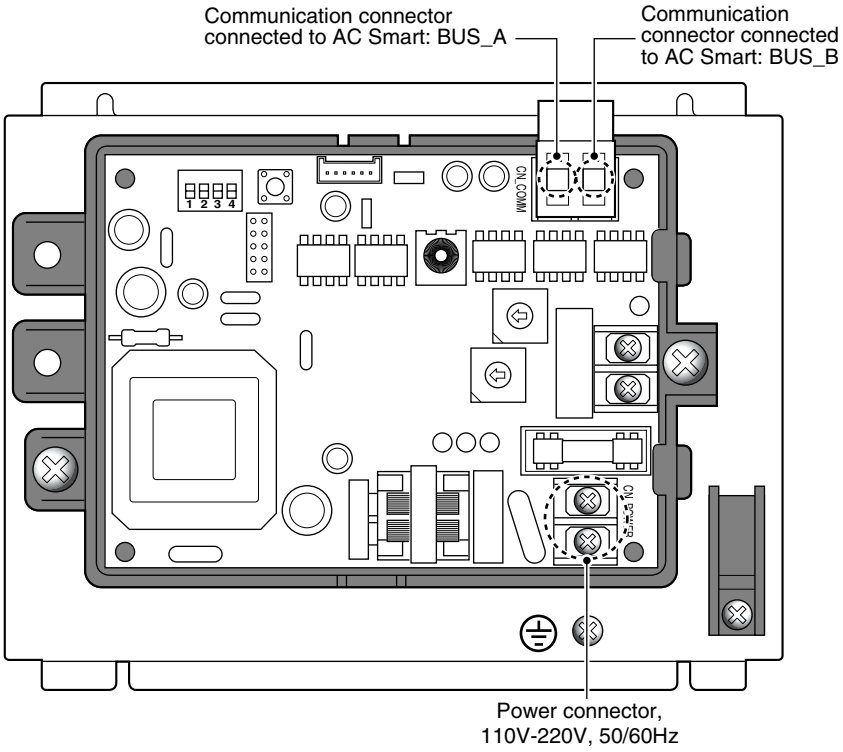
AC Smart 128 Expansion Kit is a device that is connected to AC Smart. AC Smart can basically control maximum of 64 units. When the AC Smart 128 Expansion Kit is connected to AC Smart, the number of units that can be controlled by AC Smart is automatically expanded to 128 units.

■ Exterior



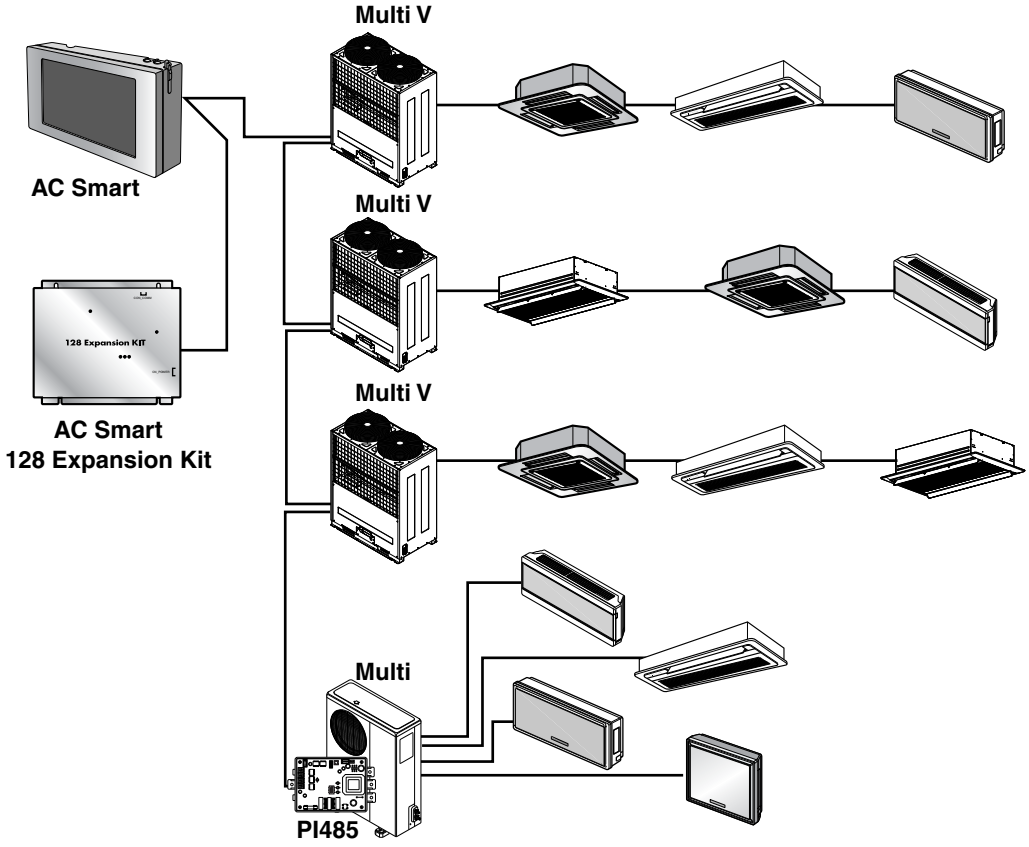
Unit:mm(inch)

■ Interior



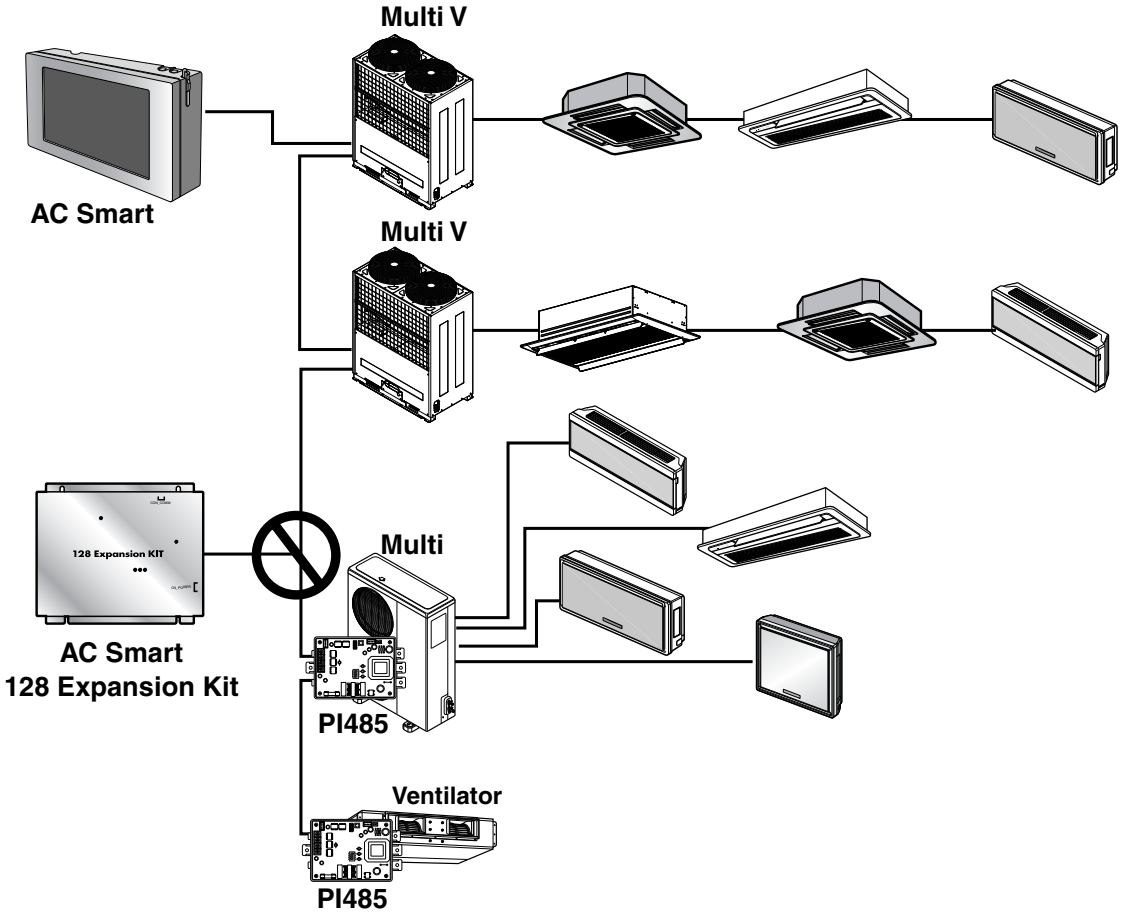
■ Structure

Below picture shows the bus method connection diagram based on normal installation. Connect as follows.



AC Smart 128 Unit Expansion Kit and AC Smart must be connected in parallel connection
With bus communication method.

The following picture shows the incorrect star connection



2.6 AC Smart II option Kit

Model name : PQCSE341A0 / PQCSE342A0

■ Description

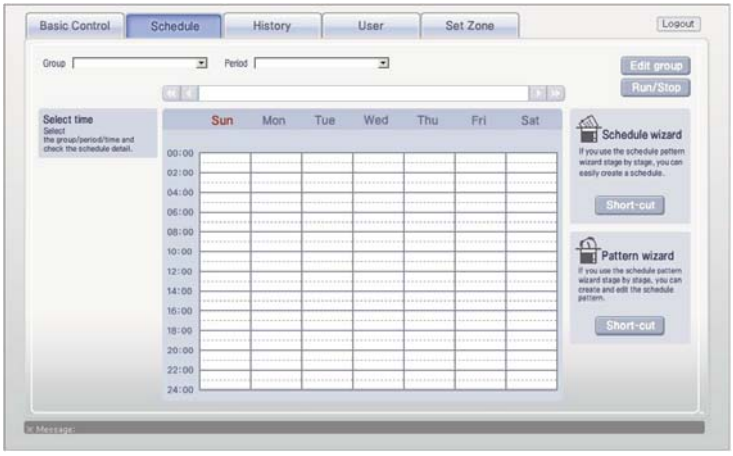
AC Smart 128 Expansion Kit is a device that is connected to AC Smart. AC Smart can basically control maximum of 64 units. When the AC Smart 128 Expansion Kit is connected to AC Smart, the number of units that can be controlled by AC Smart is automatically expanded to 128 units.

■ Option Function

- Web schedule + Power consumption statistics function (PQCSE342A0)
- Web schedule function (PQCSE341A0)

■ Web based schedule setting function

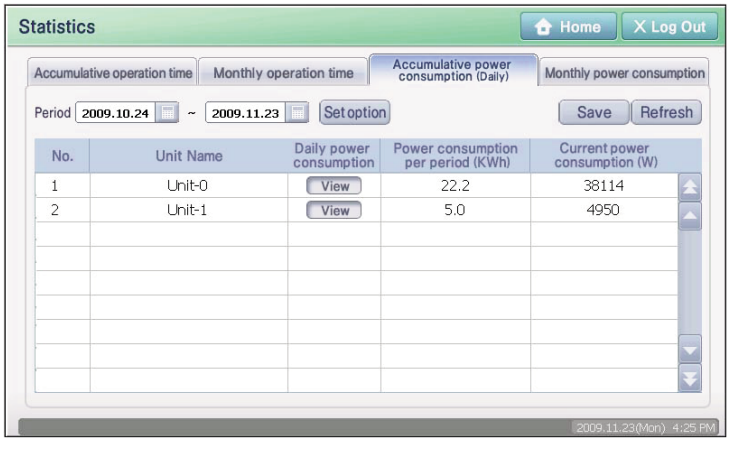
By using the web server function of AC SMART II, you can set and apply the schedule of AC SMART II even from remote locations. The administrator can manage the schedule of AC SMART II through the network free from where he or she is and reduce any unnecessary operations of the unit by using the schedule functions.



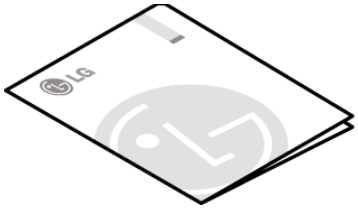
■ Power consumption statistics function

You can view the power consumption information of the air conditioner. The power consumption is provided in various methods including total usage, usage by period, monthly/daily usage etc. By using the statistics information, the administrator can effectively analyze and manage the energy usage.

To use the power consumption statistics function, the PDI and watt-meter to measure the power consumption must be connected to AC SMART II.

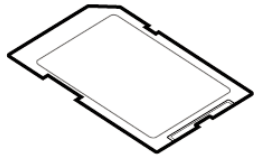


■ Components of option function



Quick guide

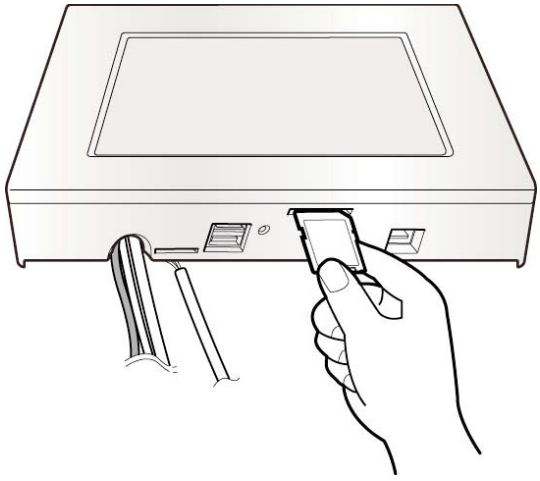
Manual CD



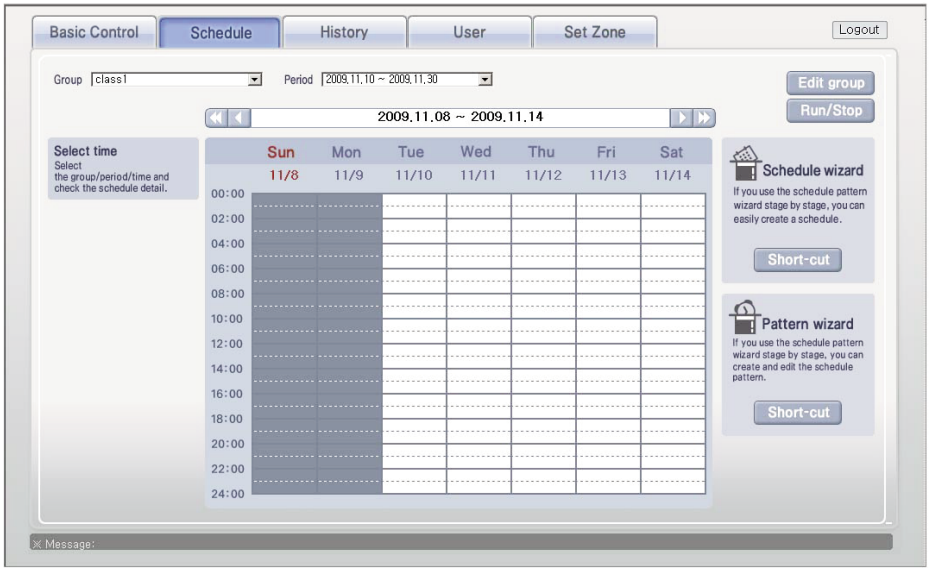
SD card (Option kit)

■ Option Kit Installation

1. To use the option function, insert the provided SD card into the SD card slot located at the bottom of the AC SMART II terminal.
   Insert the card having the part with the product name facing up as shown below. Push the card in until you hear the 'Click' sound.



2. With the AC SMART II terminal turned on, press the keyboard button and the software keyboard will be displayed on the screen.

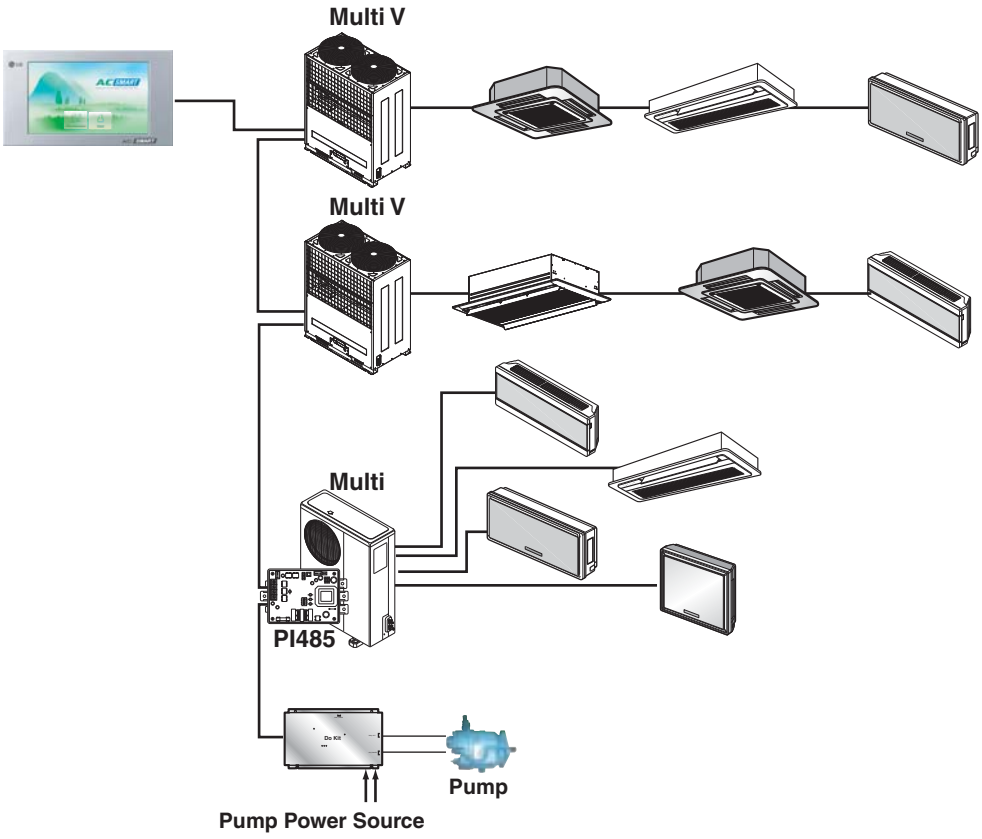


2.7 Do Kit (PQNFP00T0)

■ Introduction

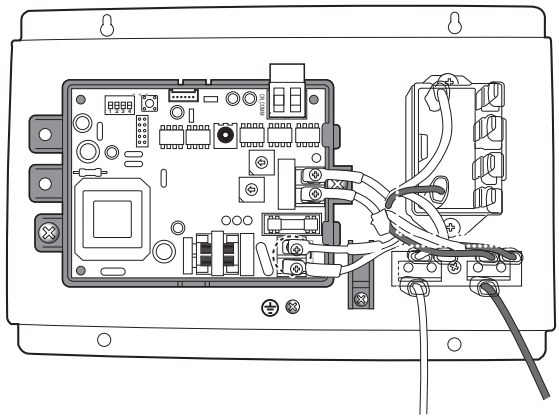
By using Do Kit, you can control on/off Device by the central controller(Simple, AC Smart, ACP)

■ System Structure

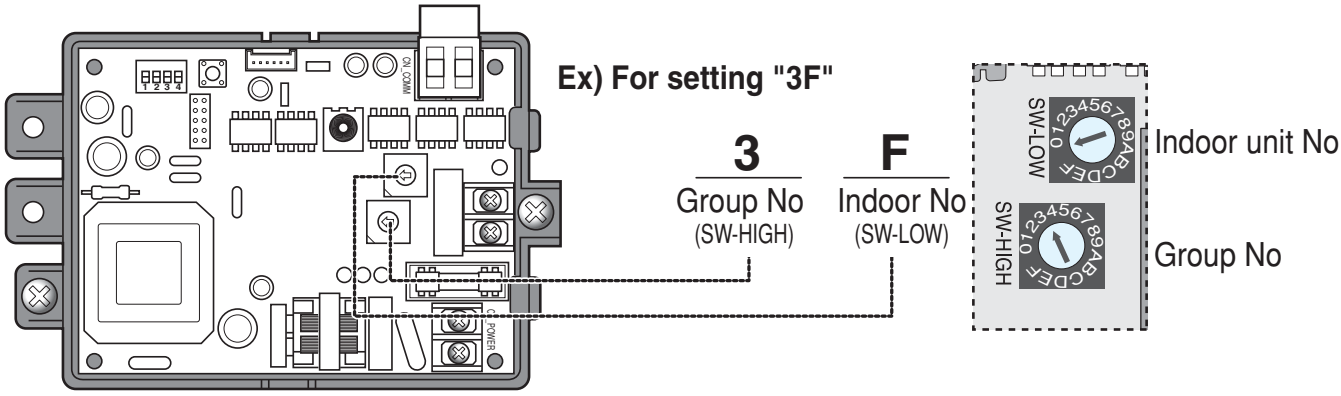


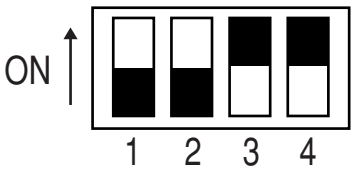
■ Installation Process

1. Open the case



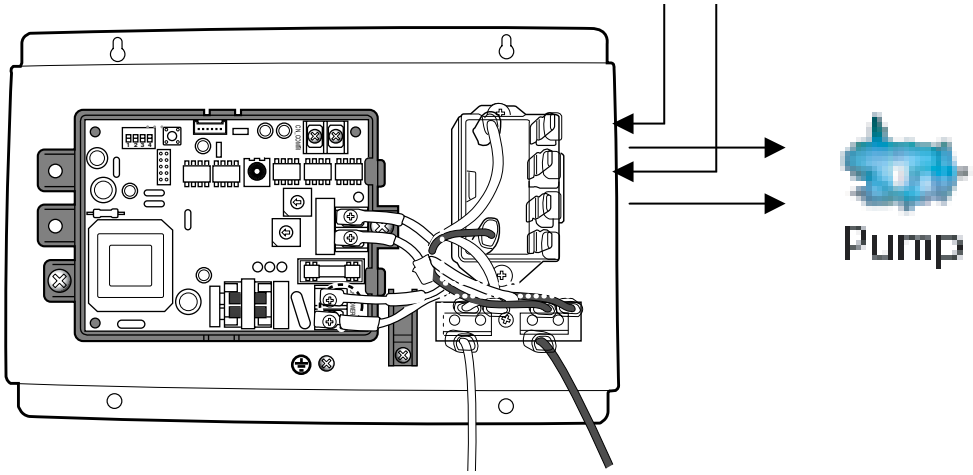
2. Wiring RS485 Line & Address Setting, Dip Switch Setting





• No. 1 S/W ON	: The initial relay is turned on when the power is applied to the contact PI-485
• No. 1 S/W OFF	: The initial relay is turned off when the power is applied to the contact PI-485
• No. 2 S/W	: Set to OFF
• No. 3 S/W ON	: The 3-minute delay is disabled when the relay is turned on/off.
• No. 3 S/W OFF	: The 3-minute delay is enabled when the relay is turned on/off.
• No. 4 S/W	: Set to ON

3. Wiring Load Power Source & Output (Max. 250V AC 25A)



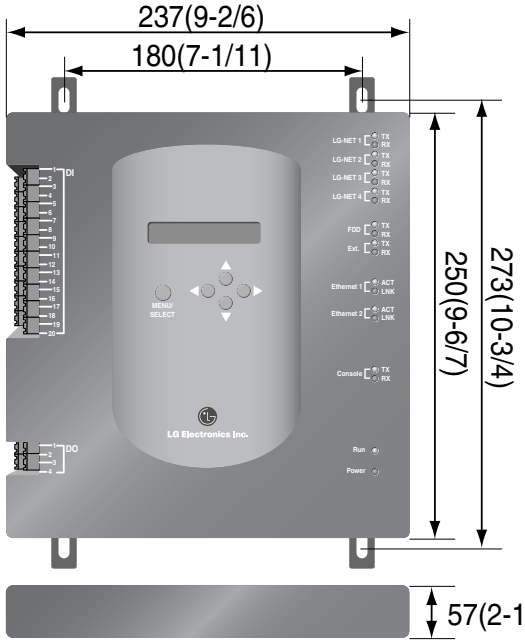
2.8 ACP & AC Manager

2.8.1 ACP & AC Manager Introduction

Model name :

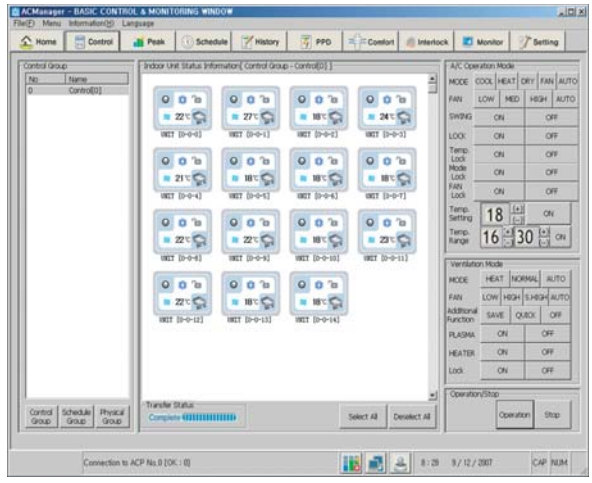
■ **ACP : PQCPA11A0E(Without IO)**
PQCPB11A0E(With IO)

■ **AC Manager : PQCSS520A0E**



Unit:mm(inch)

[ACP]



[AC Manager]

■ ACP Specification

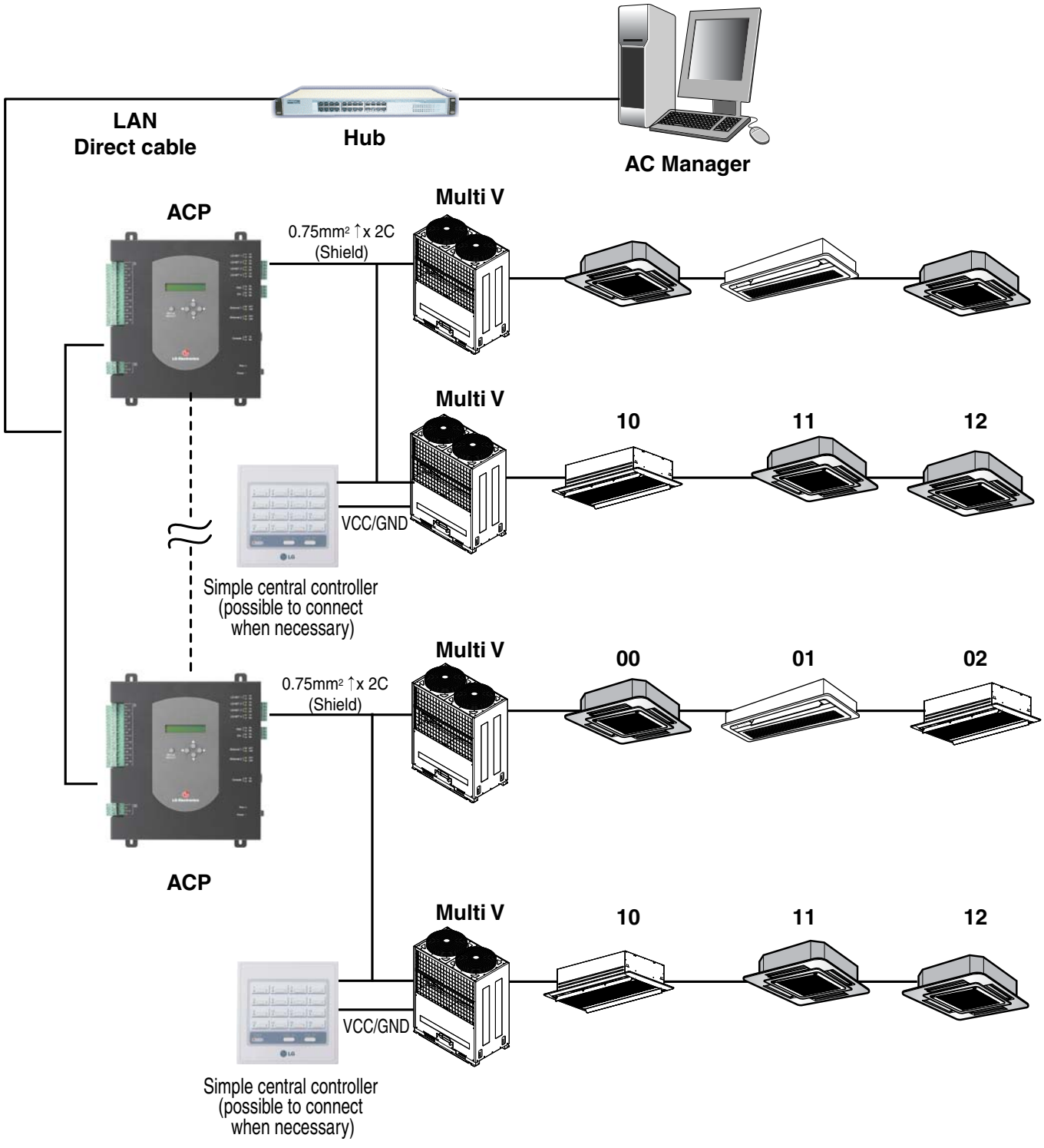
ACP Dimensions:
237 x 250 x 57 mm(9-2/6 x 9-5/6 x 2-1/4 inch)
Weight : 2750g(6.06 lb)

AC Manager :
S/W CD & Hard_Lock Key

■ Description

The product specially designed for large buildings. It can sense the external sensor inputs and can control the air conditioner as well as external devices depending upon the input conditions.

■ Structure

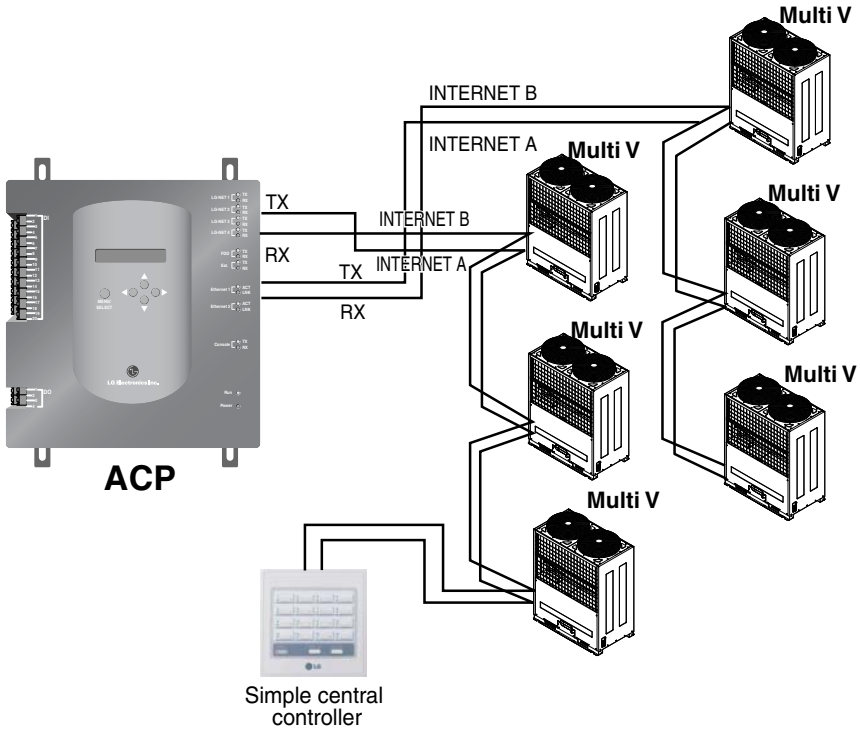

LAN
Direct cable
Hub
AC Manager
ACP
0.75mm² ↑x 2C
(Shield)
Multi V
Multi V
10
11
12
VCC/GND
Simple central controller
(possible to connect
when necessary)
Multi V
00
01
02
0.75mm² ↑x 2C
(Shield)
ACP
Multi V
10
11
12
VCC/GND
Simple central controller
(possible to connect
when necessary)

■ Information : Connecting the RS485 of the ACP

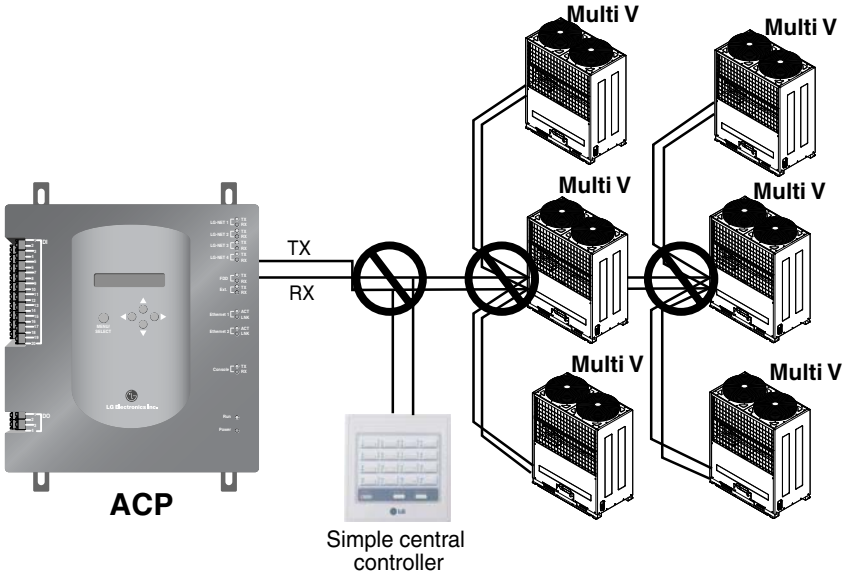
64 outdoor units at maximum can be connected to one port of the RS485 of the ACP and 256 indoor units at maximum can be connected to one ACP. When there are many outdoor units to connect, connect the outdoor units suitably from LG-NET1 to LG-NET4 with the BUS form.

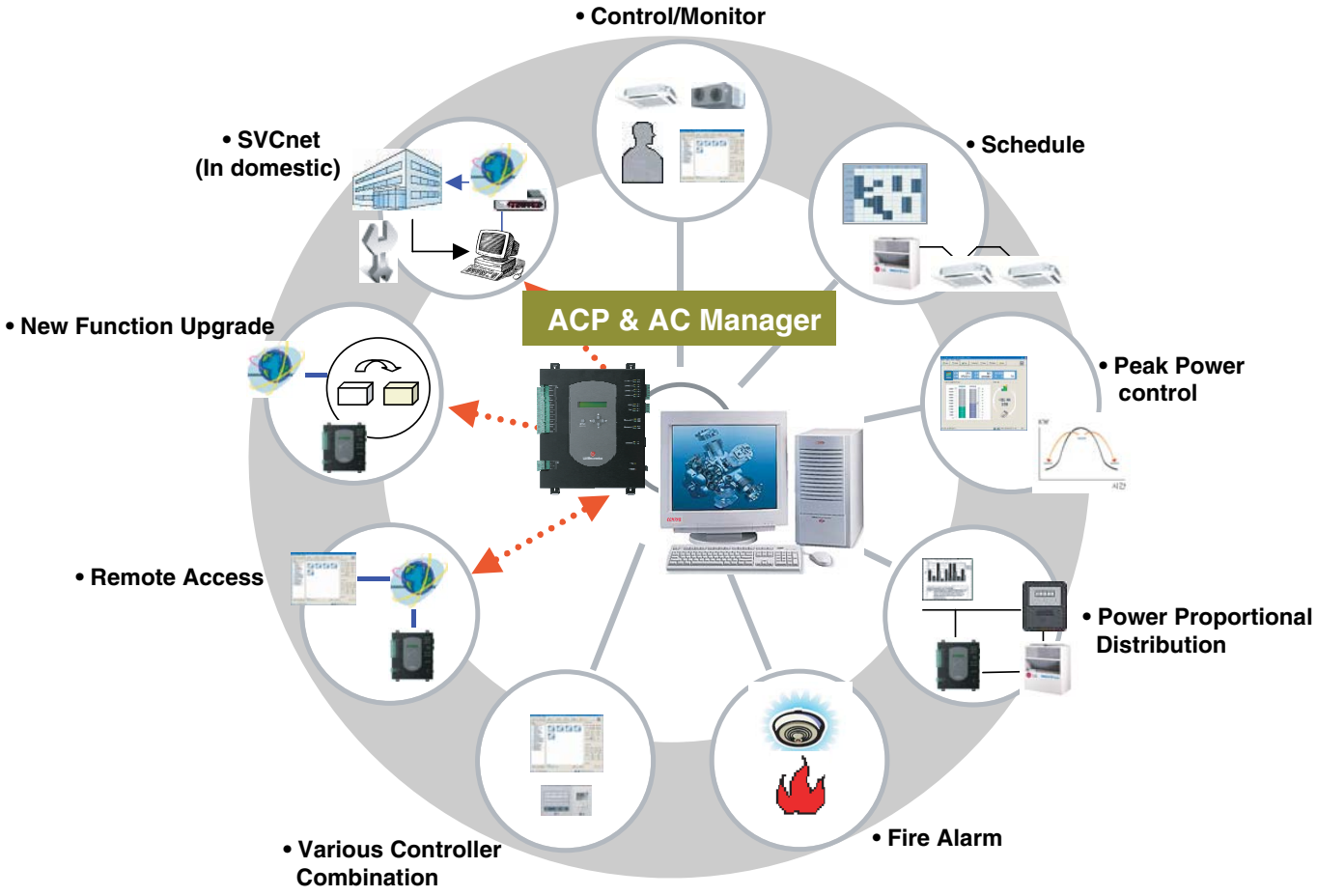
Otherwise, the ACP may cause the malfunction.

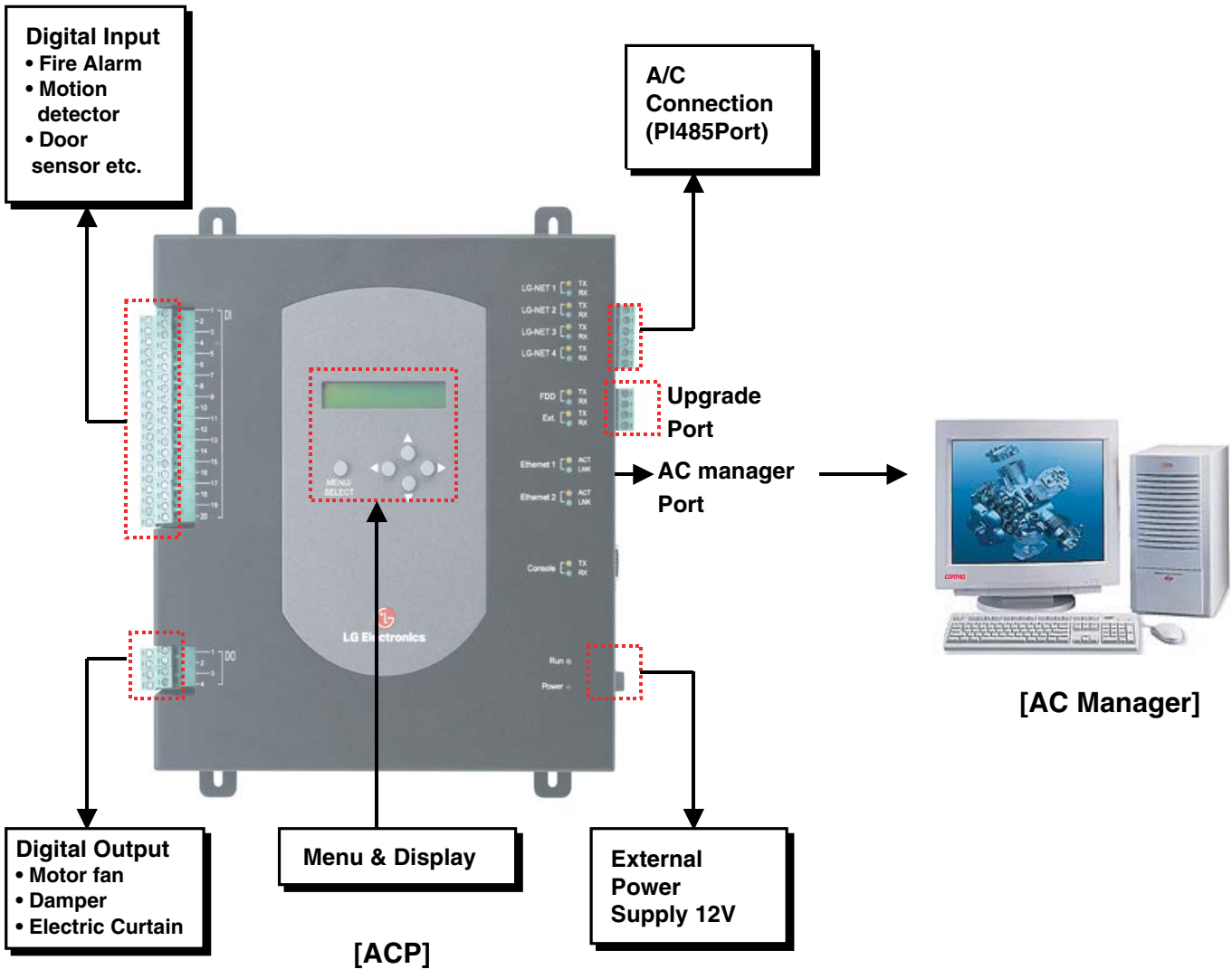
The following figure shows the example for separately connecting the LG-NET1 and the LG-NET2 with the BUS form



The following figure shows the example of the incorrect connection of the RS485 of the ACP.




• Control/Monitor
• SVCnet
(In domestic)
• Schedule
ACP & AC Manager
• New Function Upgrade
• Peak Power
control
• Remote Access
• Power Proportional
Distribution
• Various Controller
Combination
• Fire Alarm


Digital Input
• Fire Alarm
• Motion detector
• Door sensor etc.
A/C Connection (PI485Port)
Upgrade Port
AC manager Port
[AC Manager]
Digital Output
• Motor fan
• Damper
• Electric Curtain
Menu & Display
External Power Supply 12V
[ACP]

■ Features

ACP

Through embedded web control function in ACP one can access the air conditioner(Max. 256 Indoors)
- Web Control Function

1. Basic Control & Monitoring
2. Schedule Function. It can store all the schedule of air conditioner in its internal memory.
3. ACP is directly connected to Outdoor unit(Internet A and B).
4. Individual indoor Temperature control locking so that except administrator nobody can change the set temperature
5. After setting from Web, Without PC, only ACP can manage site From ACP(Schedule, Peak Power control,Fire Detection..)
6. Peak Power Control is possible, manage the air_conditioner operating ratio, so one can save total power consumption
7. Operating and error history is saved in ACP
8. PDI connection is possible, so one can see the each indoor's power consumption in daily and selected interval

AC Manager

Connection with MAX. 16 ACP, More upgrade function and manage function can be supplied from AC Manager.

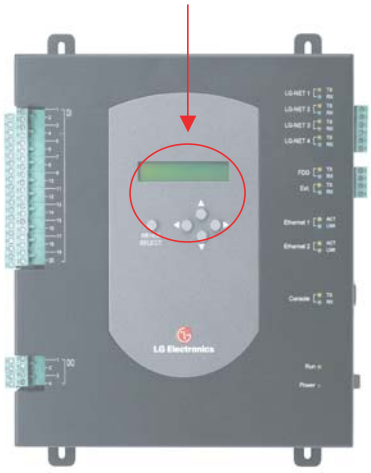
1. Basic Control & Monitoring, from Simple Icon/Detail list view, one can monitor all air_conditioner's status in one screen
2. Individual indoor Function control locking so that except administrator nobody can change the function. (Temperature,Mode,Fan Speed separately)
3. Temperature Setting Range restriction on individual controller, so management is very powerful and energy saving is possible
4 In schedule setup administrator can schedule the indoor Operating as well as the function locking
5. One can set the interlocking of DI input state & Indoor's operation, for example, fire sensor, door sensor,motion sensor…
6. Peak Power Control is possible, manage the air_conditioner operating ratio, so one can save total power consumption
7. Operating and error history is saved in AC Manager
8. PDI connection is possible, so one can see the each indoor's power consumption in daily and selected interval
9. one can print the system setting information, PDI data, Monitoring data…..by one click.
10. You can select the AC Manager display's language(English, Italian,Spanish,French,German)
11. It has Automatic control function, Auto_changeover and temperature limit, Auto_Changeover function is automatically change operating mode cool and heat, so no need of changing the mode in season change period Temperature limit function. Protect the building from freezing and overheat by auto operation and auto stop

Web Access

By open Internet Explorer, connect to ACP IP address.

Then Automatically open PC Central controller program (no need Especial other Program)

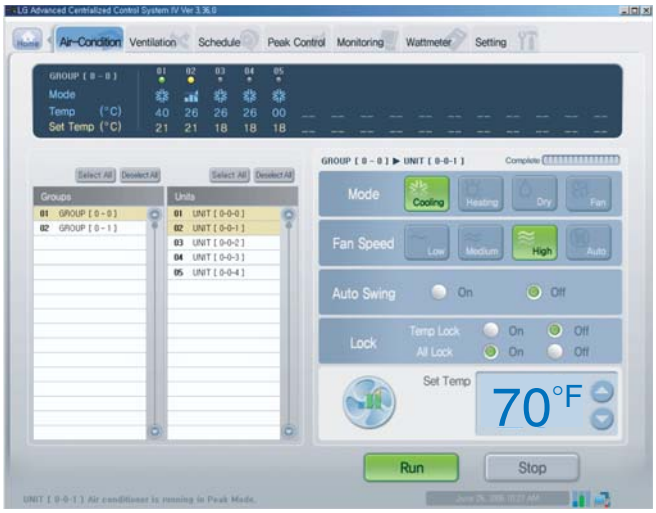
LCD Display(BACK Light) and Key : easy IP setting



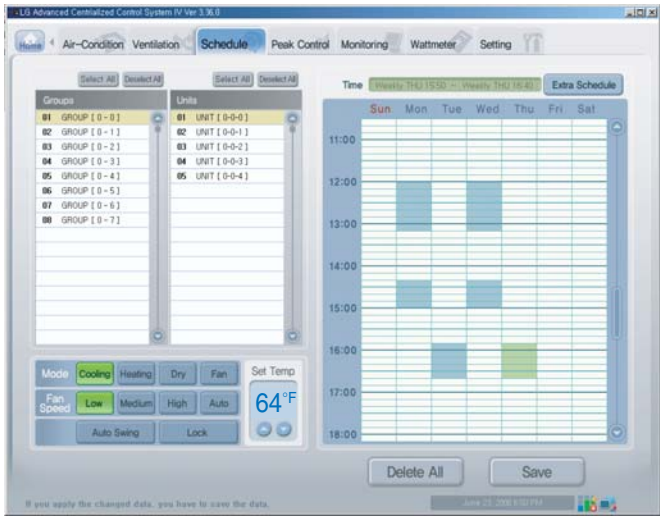
Basic Control & Schedule

By Web access, you can control air_conditioner & ventilation
One can schedule by web similar to PC Central Controller Method

[Basic Control]

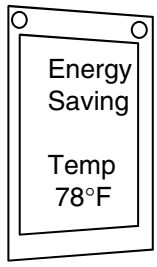


[Schedule]



Setting Temperature Locking

temperature Locking in ACP, then in the individual remocon, can not change the Setting Temperature



78°F Fix

temperature Change is impossible
Other function is possible

Stand Alone

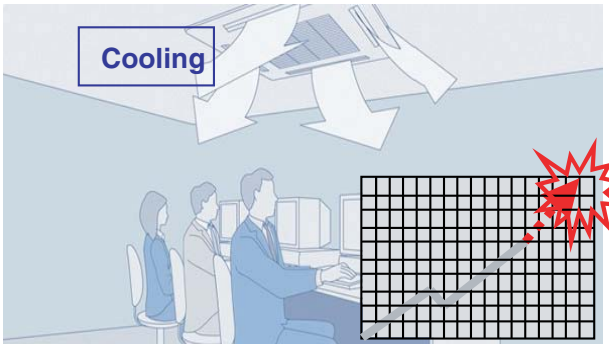
From Web access, after setting schedule, Peak setting, when PC off, ACP executing all function from ACP

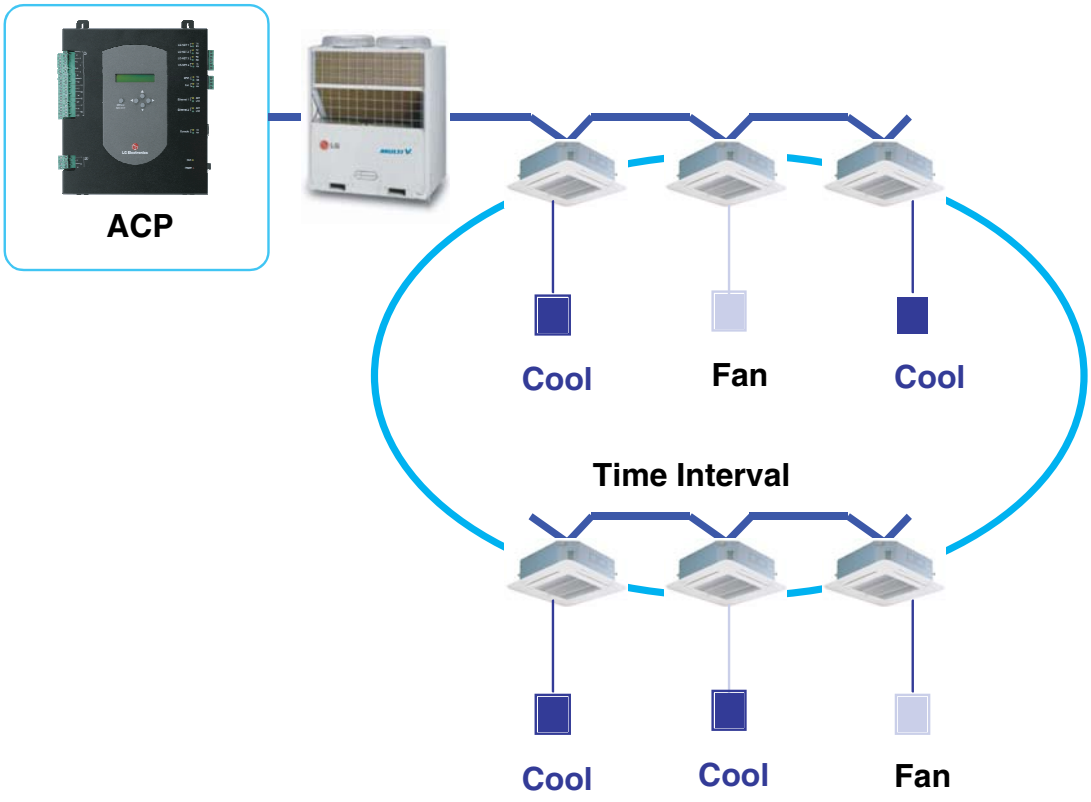
PC Off

Manage site from ACP

Peak Power Control

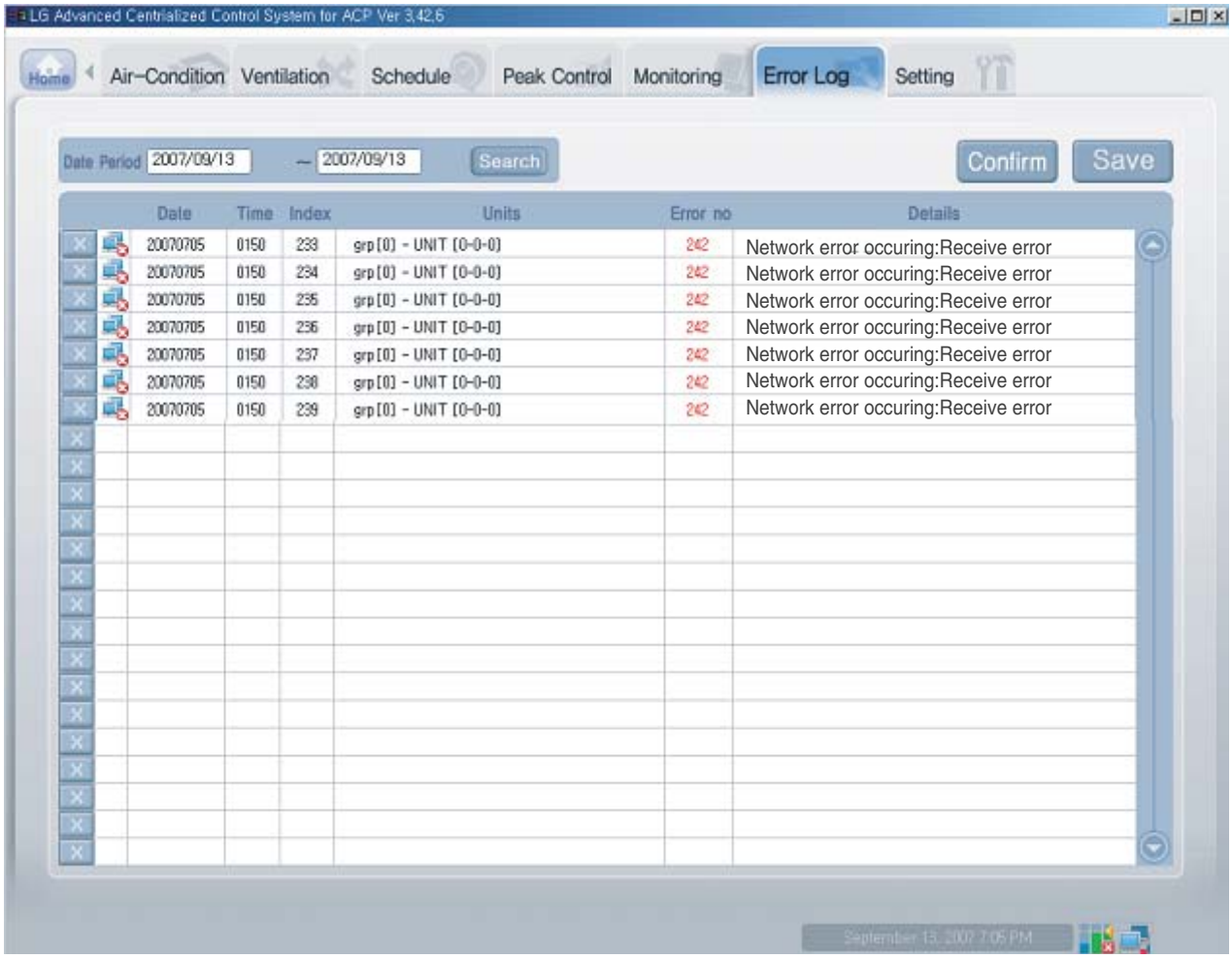
Monitor and manage the site's air_conditioner operating ratio under the setting value
When Peak_over, cooling or heating(cycle on mode) air_conditioner is changed to peak mode(fan or off)





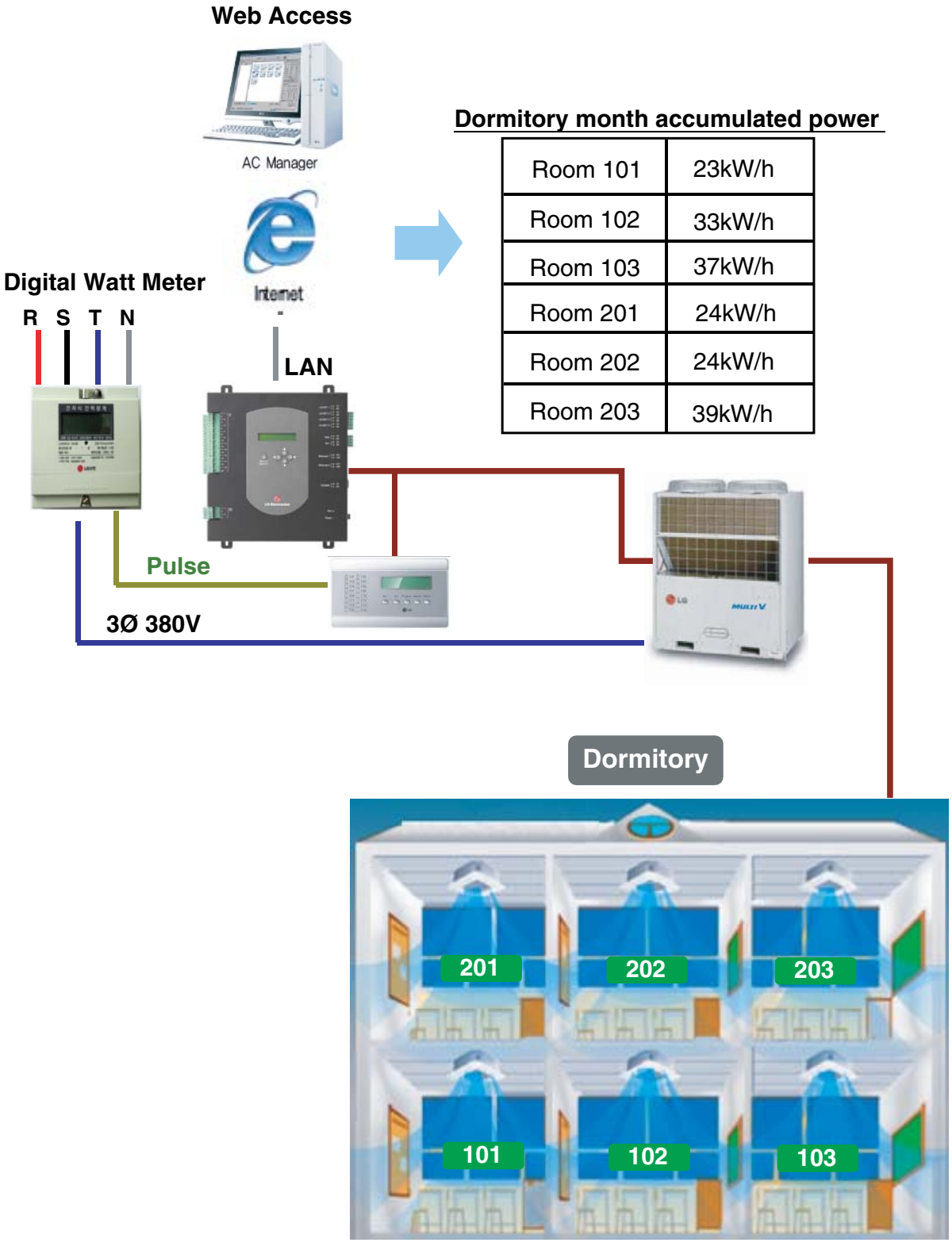
History

ACP Control & Error History will be display and Saved in the ACP Memories.
The data count is maximum 3,000 items, data saving period is maximum 30 days



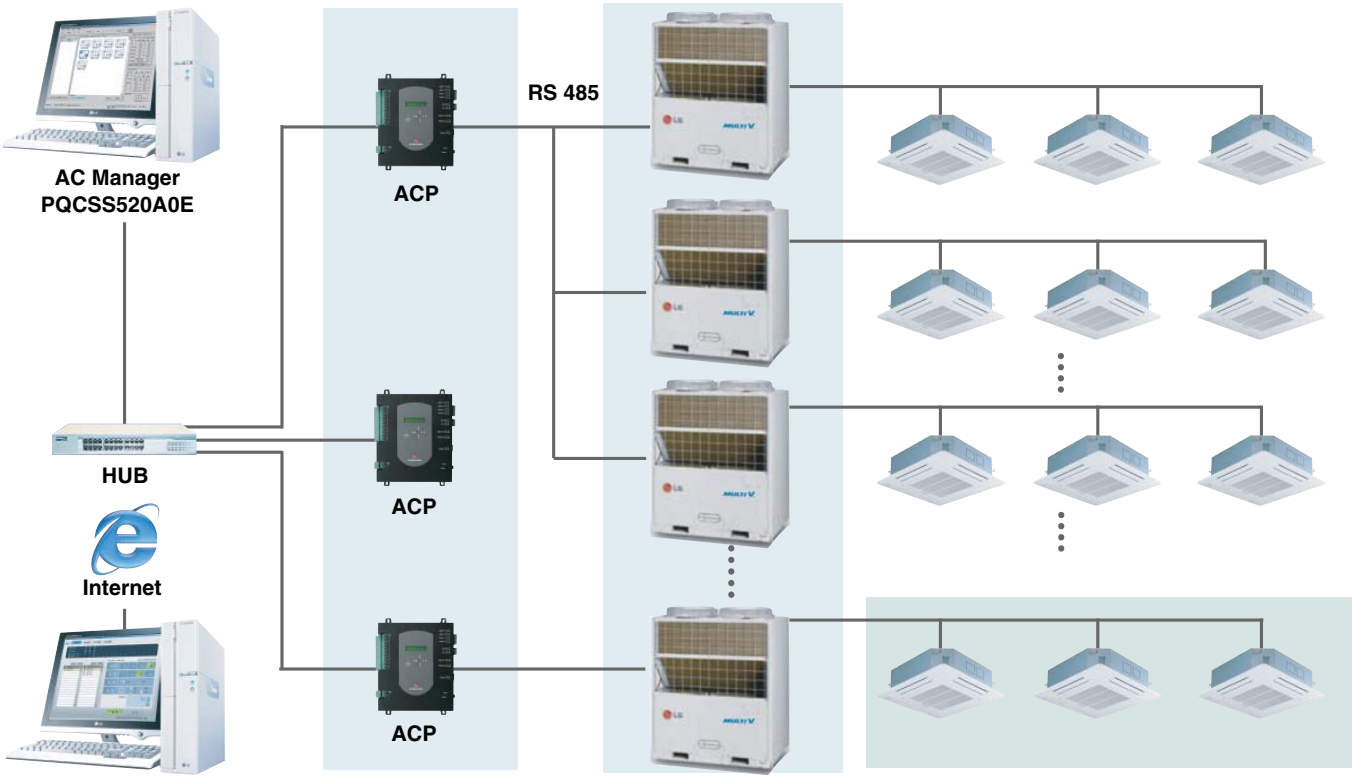
PDI Data Monitoring

- ACP and PDI connection, remote PDI data monitor
- PDI Data save and Print in AC Manager



2.8.3 ACP & AC Manager Introduction

AC Manager can connect Max. 16 ACP, 4,096 Indoors

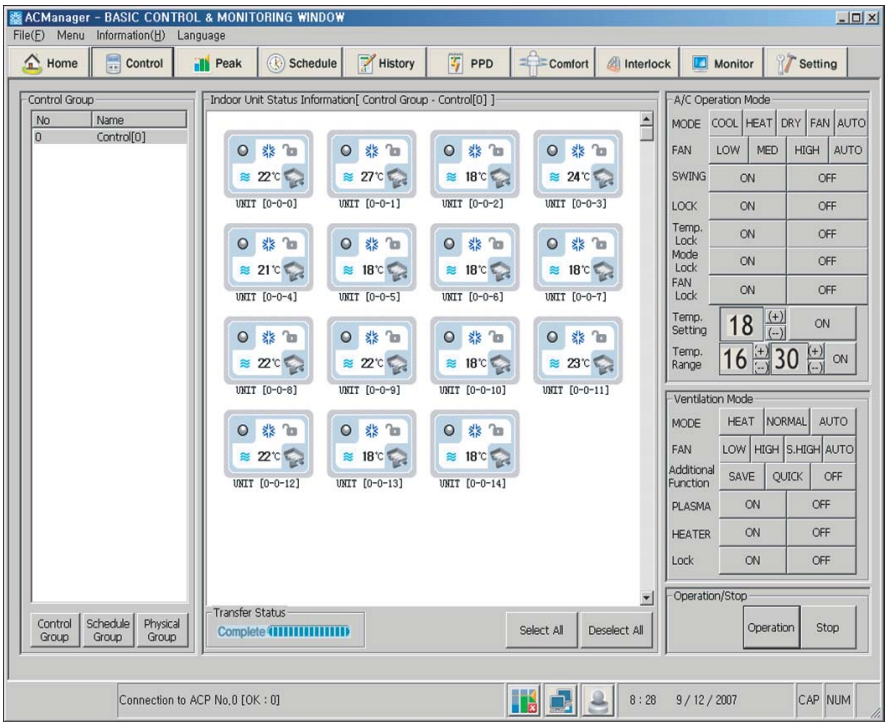


ACP Max. 16

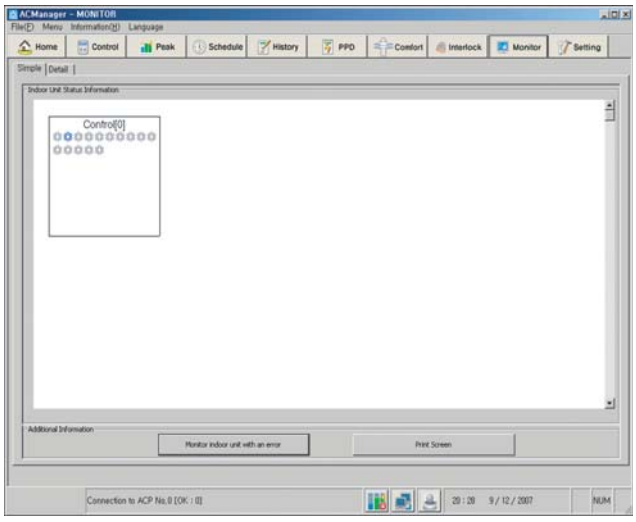
Normal View, Simple Icon/List View Monitor

You can monitor the operating status in Icon or list view

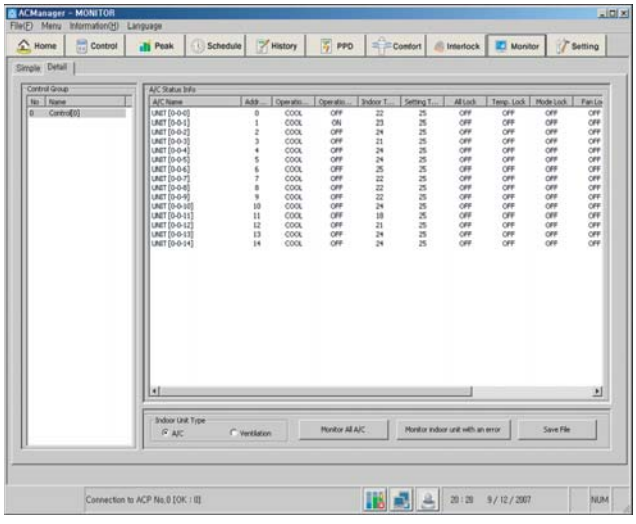
[Normal]



[Simple Icon]

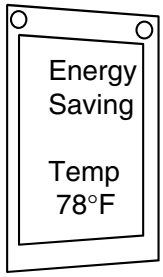


[Detail List]



Individual Function Control Locking

Function Locking in AC Smart, then in the individual remocon, can not change the locking function
(For example, if Temperature lock in the AC Smart, you can not change the setting temperature in the remocon,

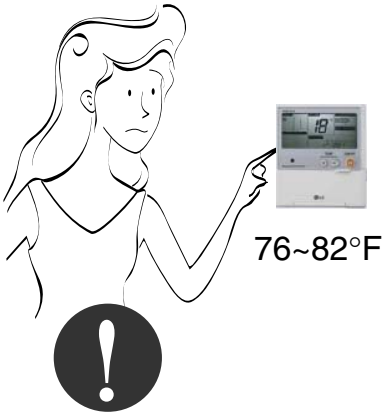


78°F Fix

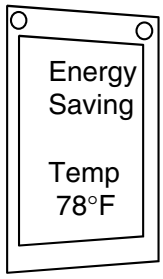
temperature Change is impossible
Other function is possible

Total, Mode, Temperature, Speed Lock

Setting Temperature range restriction



76~82°F



76~82°F adjustable

temperature Change is possible
only in the range setting from AC Smart

Function Lock Schedule

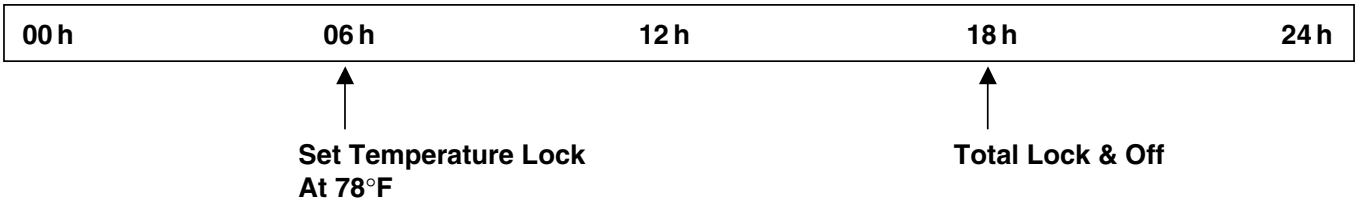
When Schedule mode setting, you can select only changing point, not all mode

For example, if you want to set temperature 78°F,others are same before operating in 9 o'clock PM

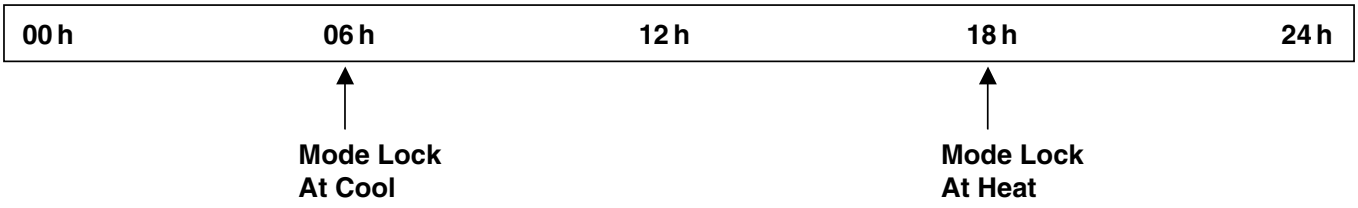
You can select only set temperature.

In the same way, if you want to set temperature lock in 8 o'clock PM, you can select only the set temperature lock

Example1)



Example2)



DI Setting

When ACP is installed with AC Manager, Interlocking function is operating
Connection with DI Port in non_voltage contact.
When detecting, air_conditioner link and start_stop setting is possible

DI Port : 20ea

Fire Sensor

Motion Detectot

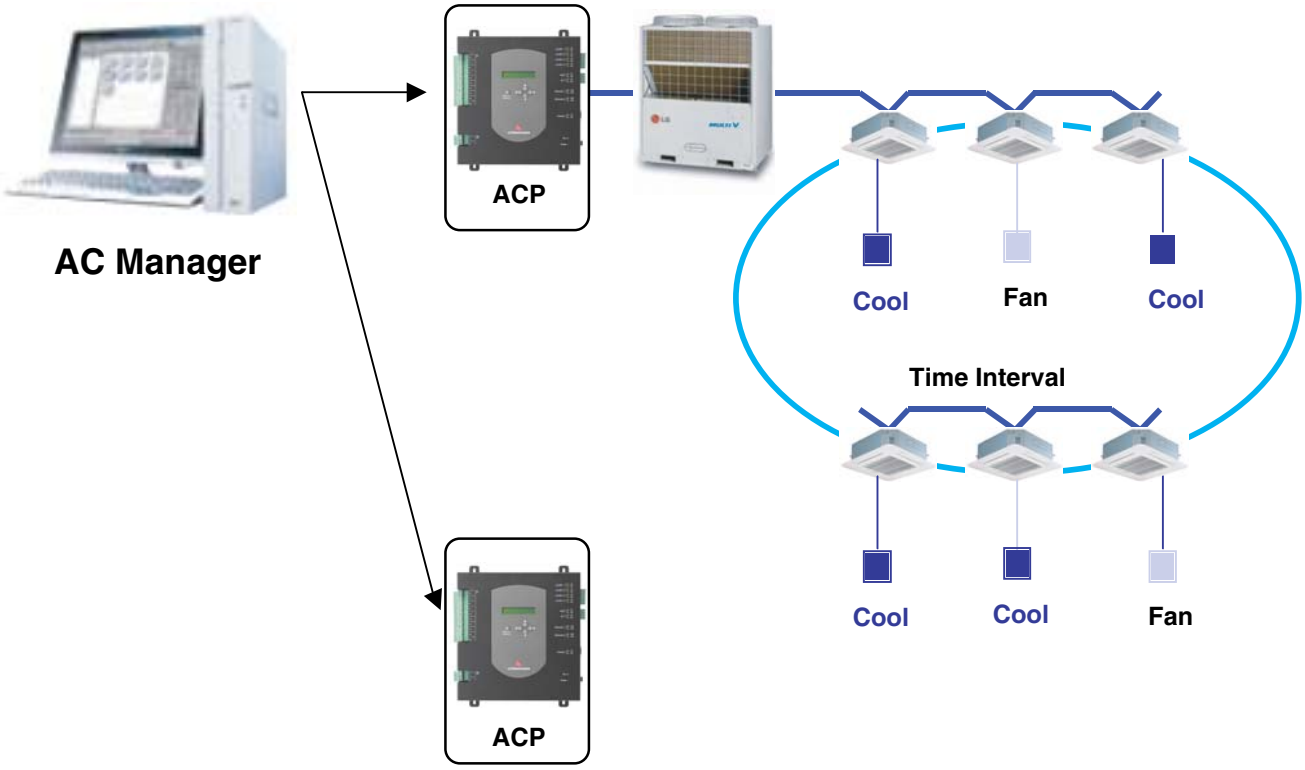
Light Sensor

Timer

Interlock Setting
Only PQCPB11A0E

Peak Power Control

Monitor and manage the site's air_conditioner operating ratio under the setting value
When Peak_over, cooling or heating(cycle on mode) air_conditioner is changed to peak mode(fan or off)



History

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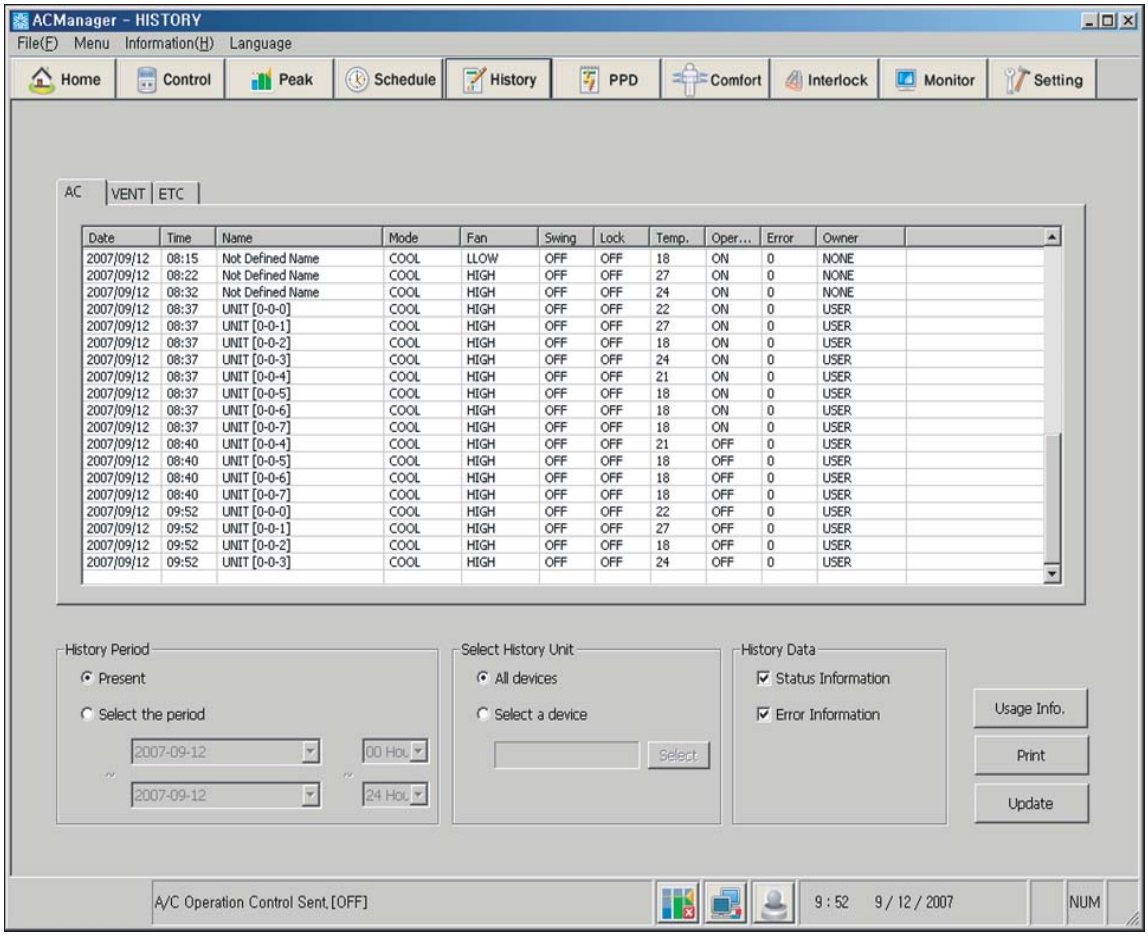
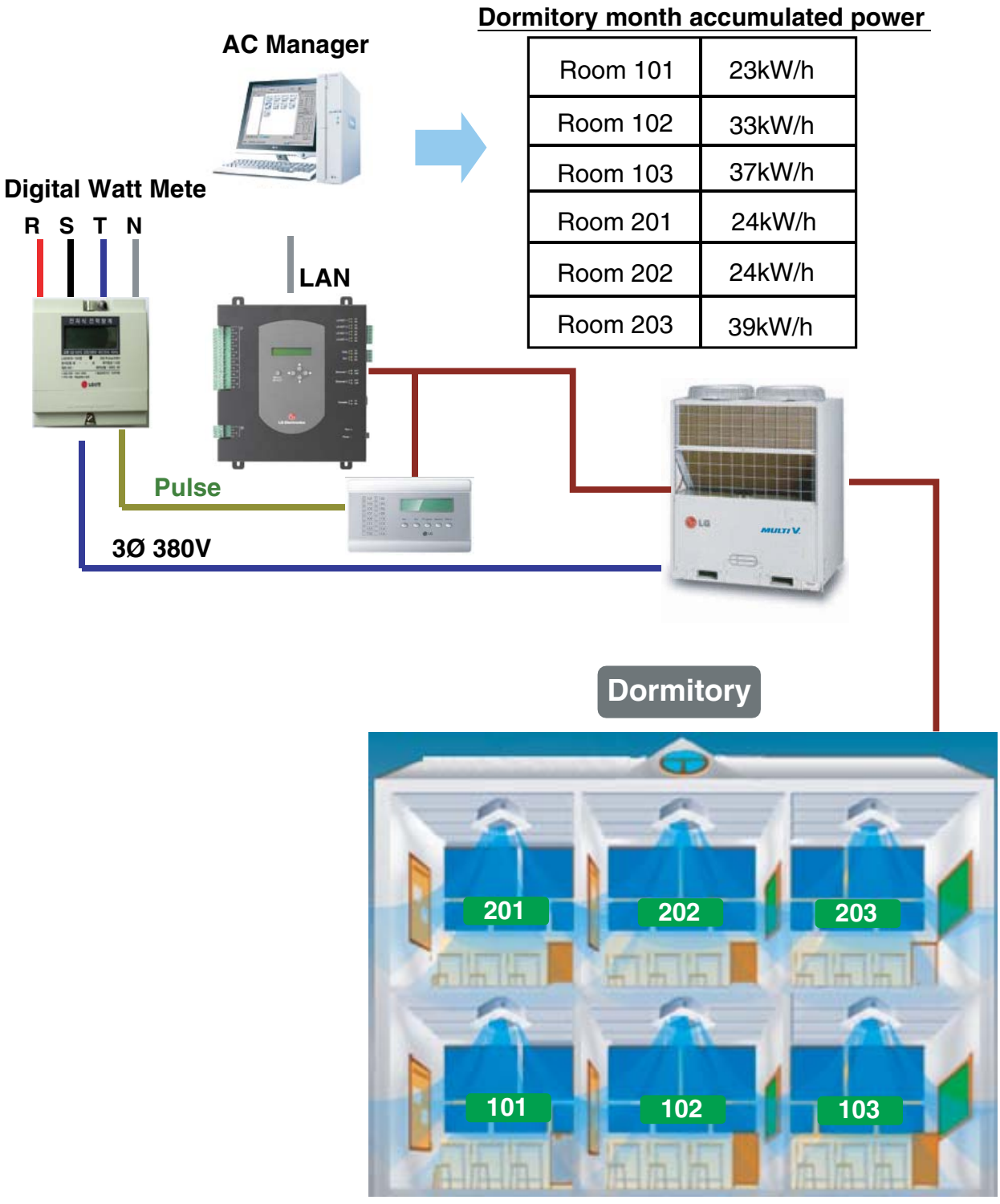
The data count is maximum 3,000 items, data saving period is maximum 30 days



PDI Data Monitoring

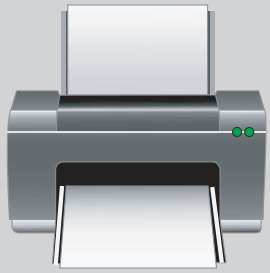
- ACP and PDI connection, remote PDI data monitor
- PDI Data save and Print

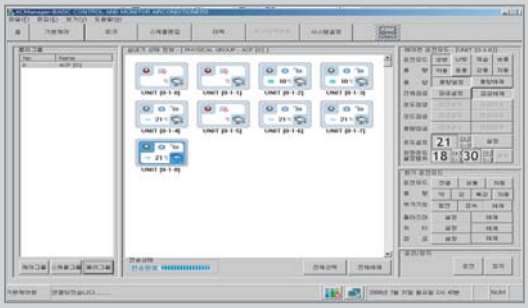


Data Print & Save

- **Print**
  - ➠ **System setting, history, PDI,..... direct print button**
- **Save**
  - ➠ **History Data Back-Up**

Print



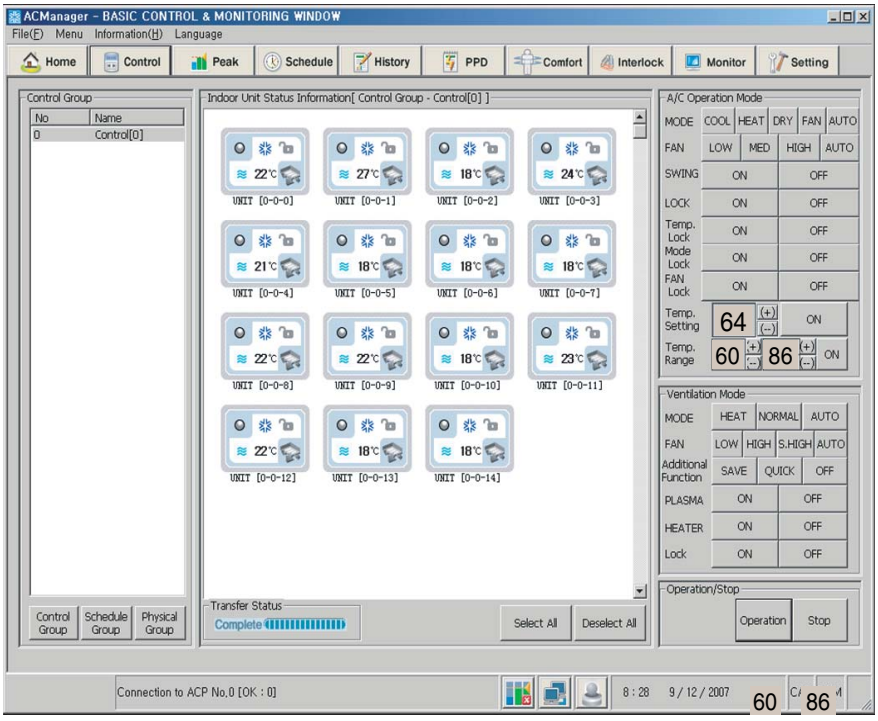


Save

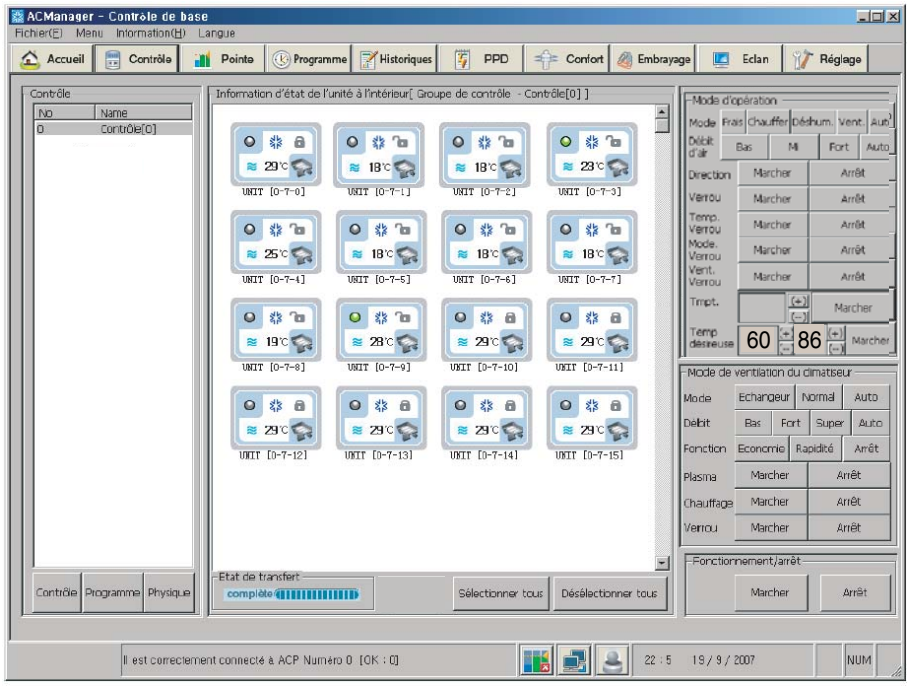
Multi Language

Setting the language, all GUI will be changed to the selected language
[English, French, Spanish, Italian,German]

[English]



[French]

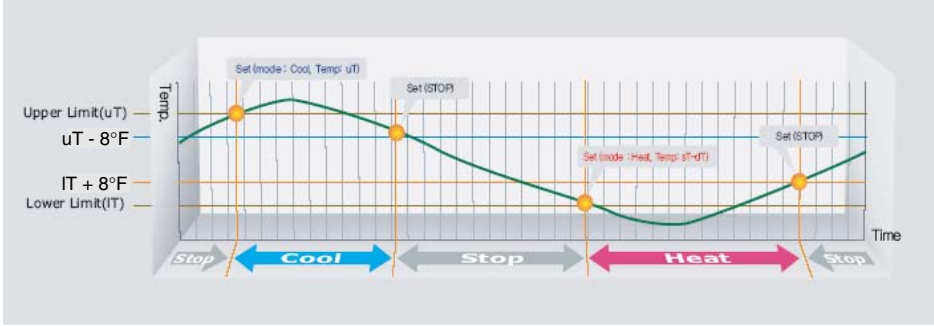


Automatic Control Function

- Auto Changeover

- sT (Set Temp.) :64~86 °F
- dT (Difference Temp.) : 2~14°F
- aT (Alpha Temp.) : 4°F
- Upper Limit (sT+dT+aT) : Change Point(Heat ➔ Cool)
- Lower Limit (sT-dT-aT) : Change Point(Heat ➔ Cool)

- Temperature Limit (For Anti-Freeze or Overheat of building)



- Upper Limit (uT : Upper Temp.) : 94~110°F
- Lower Limit (IT : Lower Temp.) : 34~54°F
- uT - 8°F : after Auto COOL, off condition
- IT + 8°F : after Auto Heat, off condition

AC Manager System

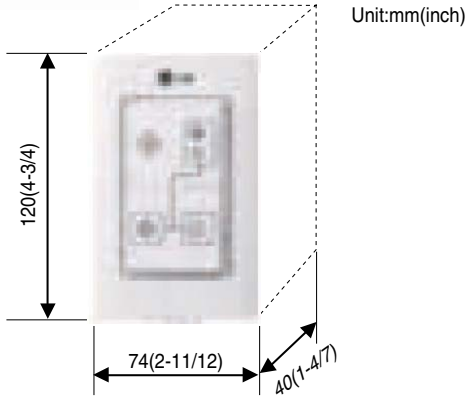
AC Manager System

3.1 Cool/Heat Selector (PRDSBM)

■ Overview

• This switch enables selection of heating, cooling or fan mode.
So it can prevent that cooling & heating mixing error occurs during the change of season.
To use the cool/heat selector function you should set dip switch of outdoor main PCB Refer outdoor PDB

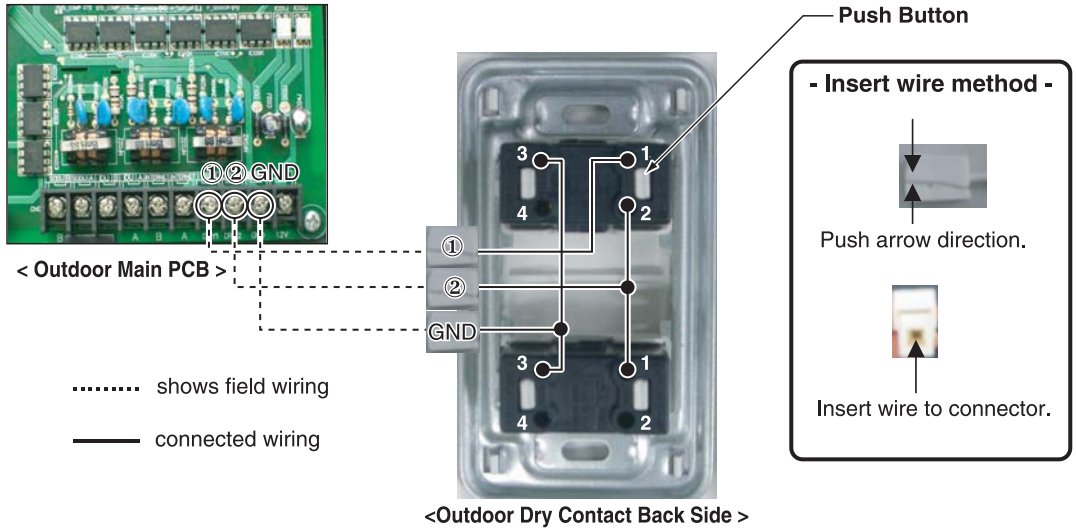
• Indoor unit control without central controller
• Select operation mode : Cooling, Heating, Fan mode
• Mode lock for cooling & heating mixing error-proof during the change of season.



Weight : 200g(0.44 lb)

■ Installation

• Connect trminals (①, ②, GND) on the back side of Cool/Heat Selector to terminals (①, ②, GND) of Outdoor Main PCB.



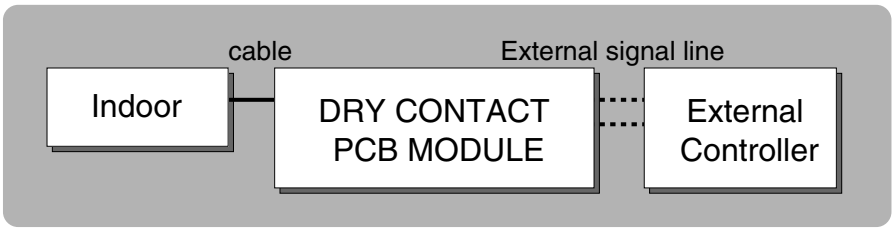
<Outdoor Dry Contact Back Side >

❊ Communication line length can be maximum 300m(984ft), use communication line as thick as 1.25mm².

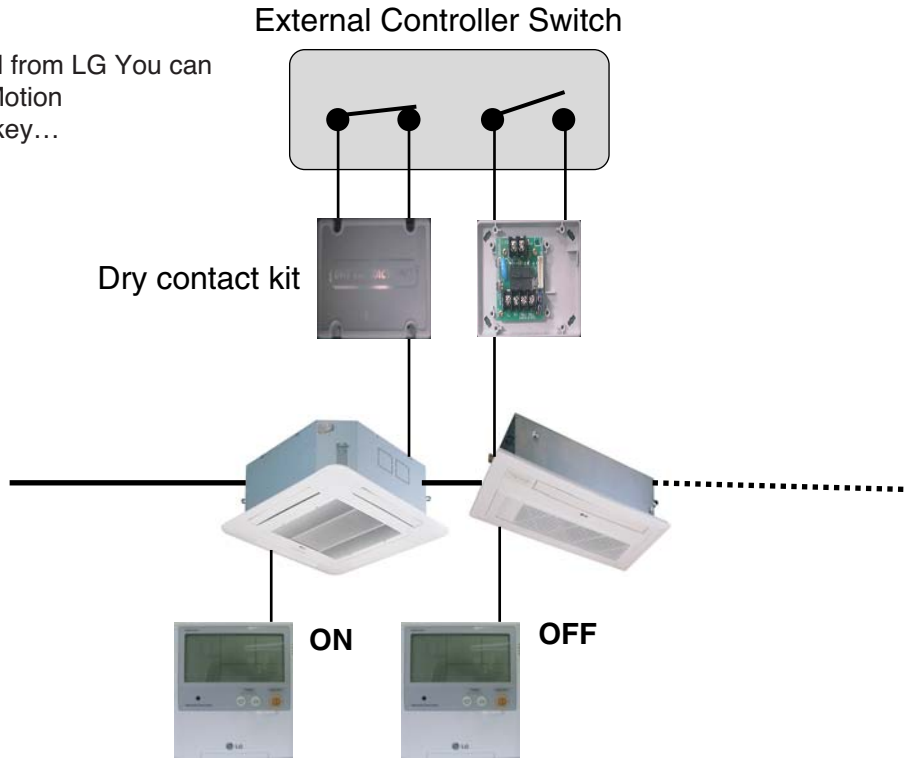
3.2 Dry Contact(PQDSB1/PQDSBC)

■ Overview

- It is possible to do on/off control of indoor units with The External Forced on/off Switch or Simple BMS on/off signal



Controller is not provided from LG You can connect any controller, Motion detect/Timer/Hotel card key…



■ Function table

	PQDSB1	PQDSBC
Contact poing	1 contact point	2 contact points
Power input	AC 24V from outside power source	DC5V & 12V from indoor unit PCB
Voltage/Non voltage input		✓
On_Off control	✓	✓
Lock/ Unlock	✓	✓
Fan speed setting		✓
Thermo off		✓
Energy saving		✓
Expected temperatue setting		✓
Error display	✓	✓
Operation monitoring	✓	✓

■ Automatic operation change method (PQDSB1 only)

It toggles into On/OFF of Automatic Operation when pressing the Reservation Cancel button of the Wireless Remote Controller in a series of 3 times within 3 minutes, with it facing the main body.

At first, the Automatic Operation is not set.

1. When it is on the Automatic Operation,

• It(Air-conditioner) operates when the contact of controller is ON during its stop.

At this time, it is possible to stop/operate it by using controller.

• It stops when the contact of controller is OFF during its operation.

At this time, it is not possible to control with the controller as it stops and at once converts into the Lock mode.

• RY1 is turned OFF when not in the 'Automatic Operation' mode.

(However, RY1 can repeat its ON/OFF when generating error, depending on the model.)

• RY2 becomes ON when generating error and RY2 becomes OFF in case of no error.

2. When it is not on the Automatic Operation,

• It(Air-conditioner) is possible to operate when the contact of controller is ON during its stop.

At this time, it is possible to stop/operate it by using controller.

• It stops when the contact of controller is OFF during its operation.

At this time, it is not possible to control with the controller as it stops and at once converts into the Lock mode.

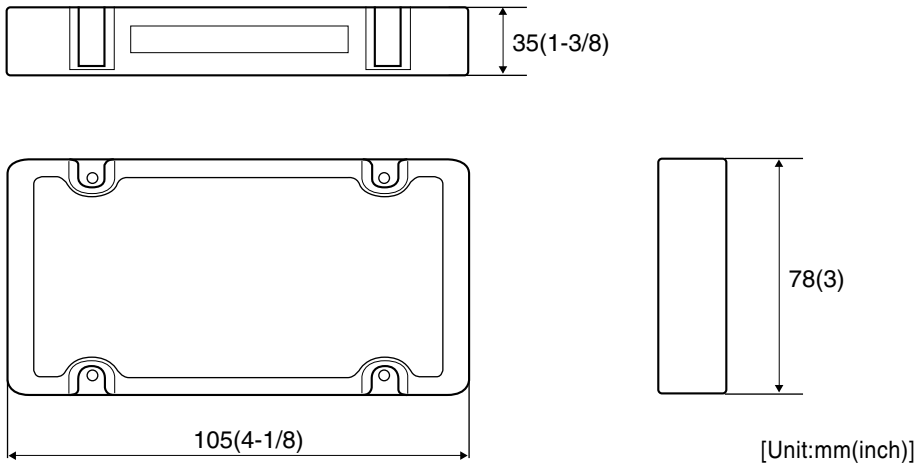
• RY1 becomes ON during the operation and RY1 becomes OFF during the stop.

(However, RY1 can repeat its ON/OFF when generating error, depending on the model.)

• RY2 becomes ON when generating error and RY2 becomes OFF in case of no error.

■ Dimension

PQDSB1 (Drycontact)

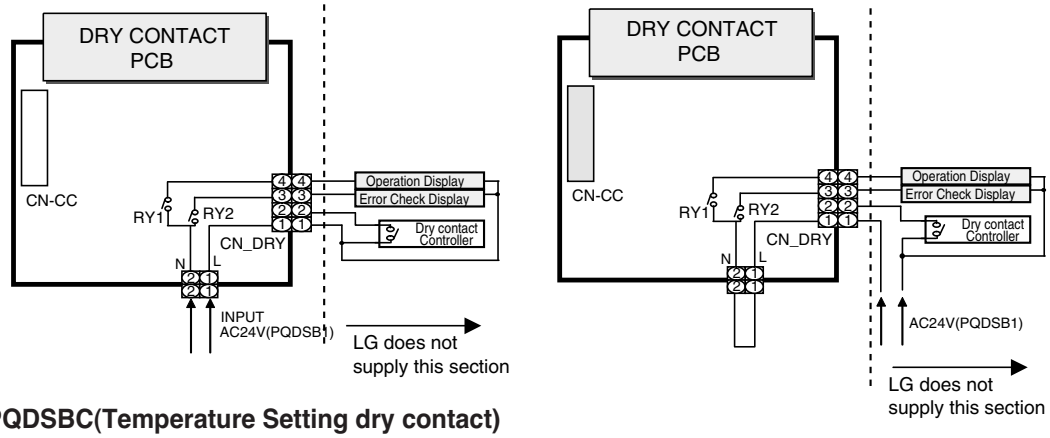


[Unit:mm(inch)]

■ Installation

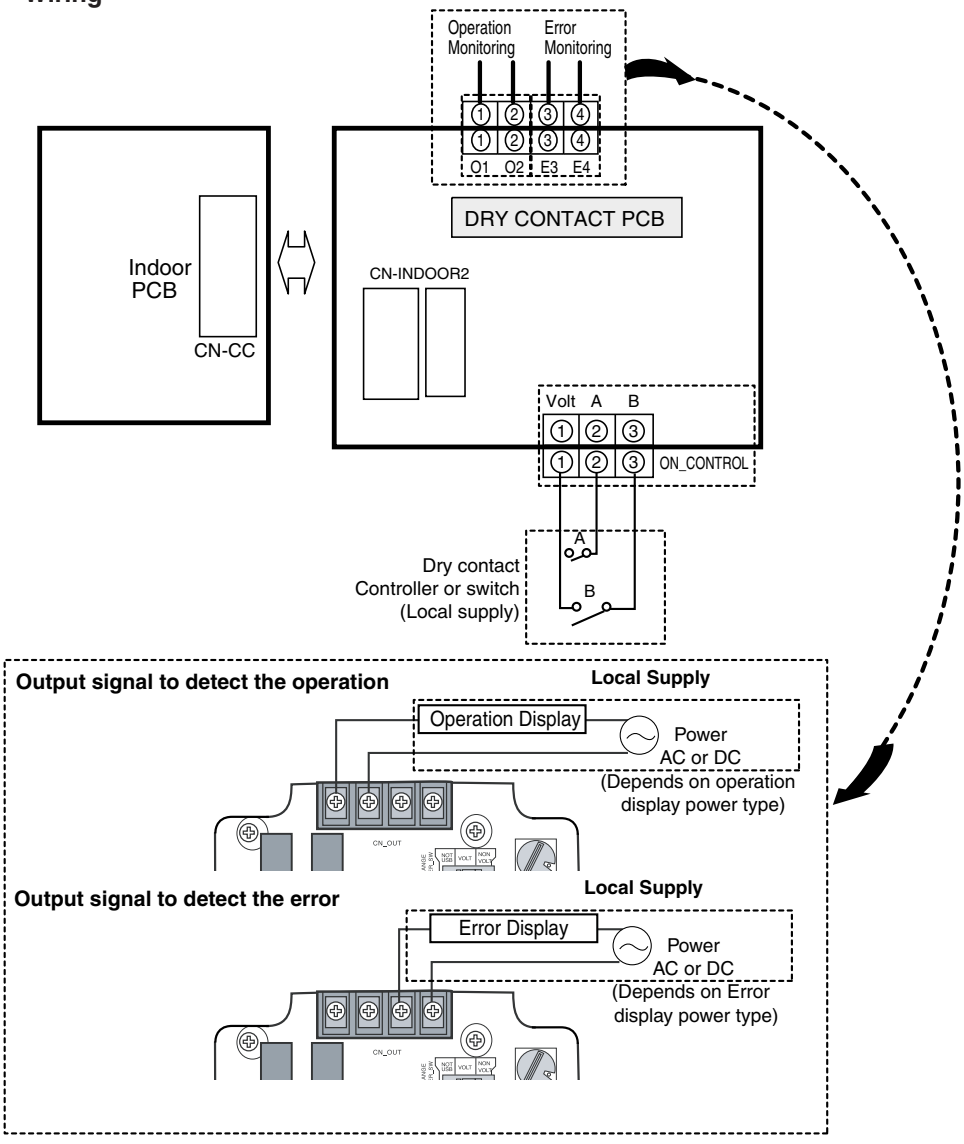
1. PQDSB1

- Connection of Dry contact only



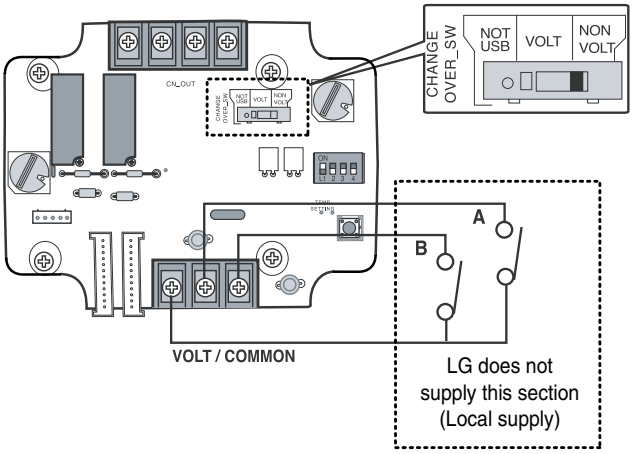
2. PQDSBC(Temperature Setting dry contact)

- Wiring

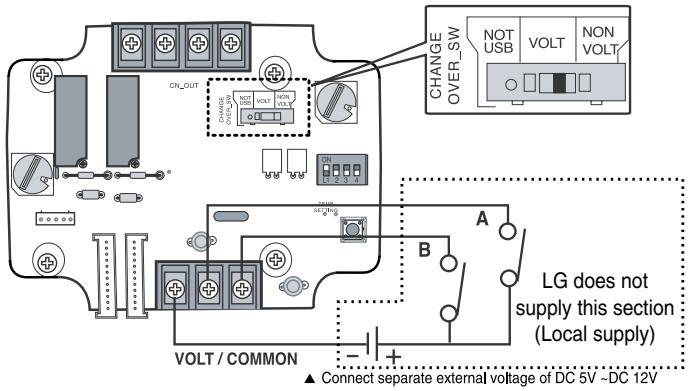


■ Setting of Contact signal input

• In case Non Voltage signal



• In case Voltage signal

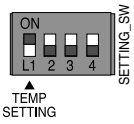


■ Setting the desired temperature

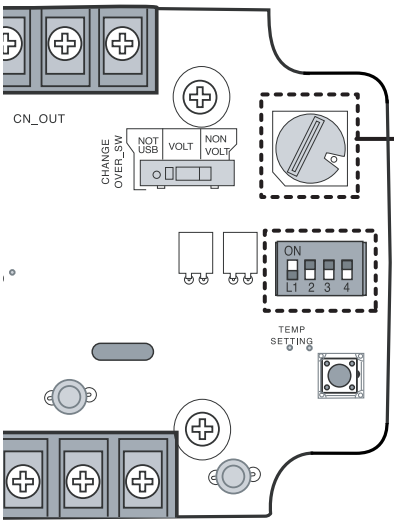
• When setting the desired temperature of the Dry contact for communication

: When operating the indoor unit, set the desired temperature according to the TEMP_SW setting. When the indoor unit is unlocked, the desired temperature can be reset by other controller

1) Turn on the TEMP_SETTING switch of SETTING_SW.



2) Use the TEMP_SW to set the temperature as shown below.



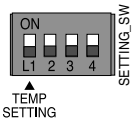
Desired temperature setting table

TEMP SW setting	0	1	2	3	4	5	6	7
Temperature setting(°F)	64	66	68	70	72	74	76	76

TEMP SW setting	8	9	A	B	C	D	E	F
Temperature setting(°F)	78	80	82	84	86	86	86	86

• When not using the desired temperature setting of Dry contact for communication

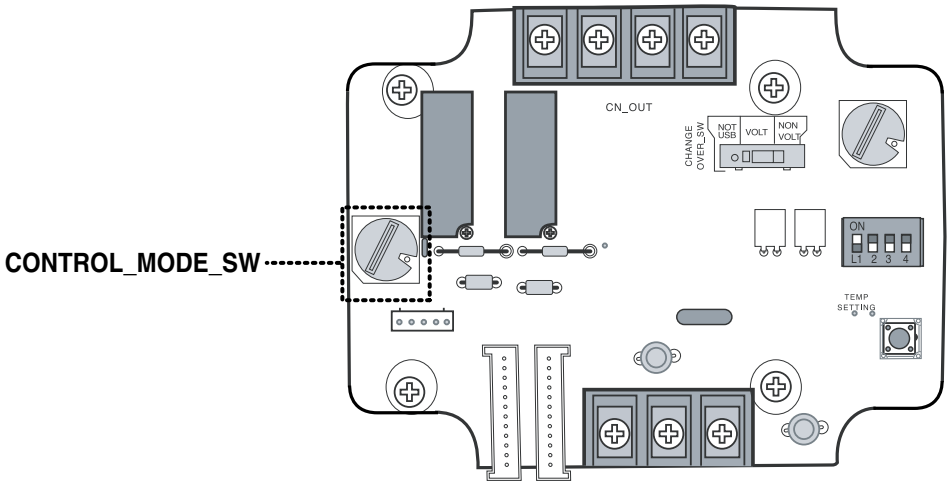
1) Turn off the TEMP_SETTING switch of SETTING_SW.



➲ When operating the indoor unit initially in Dry contact for communication, set the desired temperature to 18°C(64.4°F).

■ Control mode setting

• Use the CONTROL_MODE_SW to set the control mode you want from 0~D.



➲ Indoor control priority
Central control > Dry contact for communication > Wired/Wireless remote controller, indoor unit button
➲ Dry contact for communication controls the indoor unit according to the applicable mode when there is a change in input of A and B.

• Description of each control mode

1) Cancel mode for use of dry contact for communication

CONTROL_ MODE S/W	Input A	Input B	Operating mode
0	OFF	OFF	The indoor unit cannot be controlled through the Dry contact for communication No change in indoor unit condition
	ON	OFF	
	OFF	ON	
	ON	ON	

➲ Set this when the Dry contact for communication is connected but not used.

2) General mode

CONTROL_ MODE S/W	Input A	Input B	Operating mode
1	OFF	OFF	Indoor unit stopped, locked
	ON	OFF	Indoor unit prior operating condition maintained, unlocked
	OFF	ON	Indoor unit stopped, locked
	ON	ON	Indoor unit stopped, locked
2	OFF	OFF	Indoor unit stopped, locked
	ON	OFF	Indoor unit operating, unlocked
	OFF	ON	Indoor unit stopped, locked
	ON	ON	Indoor unit stopped, locked
3	OFF	OFF	Indoor unit stopped, locked
	ON	OFF	Indoor unit stopped, locked
	OFF	ON	Indoor unit prior operating condition maintained, unlocked
	ON	ON	Indoor unit operating, unlocked
4	OFF	OFF	Indoor unit stopped, locked
	ON	OFF	Indoor unit stopped, locked
	OFF	ON	Indoor unit prior operating condition maintained, unlocked
	ON	ON	Indoor unit prior operating condition maintained, unlocked
5	OFF	OFF	Indoor unit prior operating condition maintained, locked
	ON	OFF	Indoor unit prior operating condition maintained, locked
	OFF	ON	Indoor unit prior operating condition maintained, locked
	ON	ON	Indoor unit prior operating condition maintained, unlocked
6	OFF	OFF	Indoor unit prior operating condition maintained, locked
	ON	OFF	Indoor unit prior operating condition maintained, locked
	OFF	ON	Indoor unit prior operating condition maintained, locked
	ON	ON	Indoor unit operating, unlocked

3) Fan level setting mode

CONTROL_ MODE S/W	Input A	Input B	Operating mode
7	OFF	OFF	Indoor unit operating at low level, locked
	ON	OFF	Indoor unit operating at low level, unlocked
	OFF	ON	Indoor unit stopped, locked
	ON	ON	Indoor unit stopped, locked
8	OFF	OFF	Indoor unit operating at low level, locked
	ON	OFF	Indoor unit operating at low level, unlocked
	OFF	ON	Indoor unit stopped, locked
	ON	ON	Indoor unit prior operating condition maintained, unlocked

➲ When the indoor unit is operating in Dry contact for communication, the fan level can be changed by other controller when the fan level is set to low level and the indoor is in unlocked condition.

4) Power save mode

CONTROL_ MODE S/W	Input A	Input B	Operating mode
9	OFF	OFF	Indoor unit operating in power save mode, locked
	ON	OFF	Indoor unit operating in power save mode, unlocked
	OFF	ON	Indoor unit stopped, locked
	ON	ON	Indoor unit operating not in power save mode, unlocked
A	OFF	OFF	Indoor unit operating in power save mode, locked
	ON	OFF	Indoor unit operating in power save mode, unlocked
	OFF	ON	Indoor unit stopped, locked
	ON	ON	Indoor unit stopped, locked

➲ When setting 9, A mode, the TEMP_SETTING must always be set to ON.
➲ Power save mode: Adjust the set temperature to +3°C(37.4°F) for cooling and -3°C(26.6°F) for heating.

5) Compressor stop mode

CONTROL_ MODE S/W	Input A	Input B	Operating mode
B	OFF	OFF	Indoor unit operating (Compressor in stop mode), locked
	ON	OFF	Indoor unit prior operating condition maintained (Compressor not in stop mode), unlocked
	OFF	ON	Indoor unit stopped, locked
	ON	ON	Indoor unit stopped, locked

➲ Compressor stop mode: The compressor is stopped during cool/heat operation.

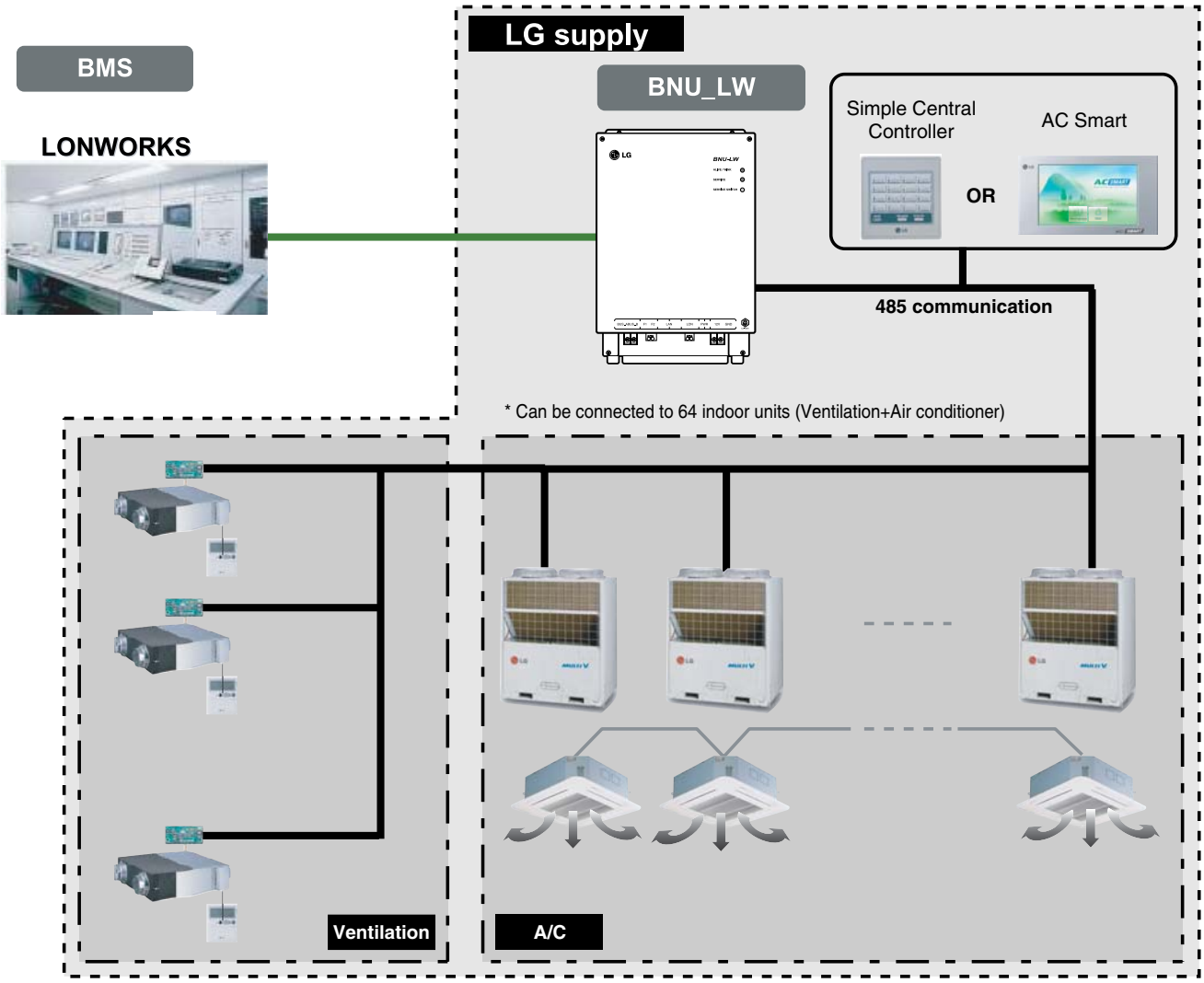
6) Operating mode selection mode

CONTROL_ MODE S/W	Input A	Input B	Operating mode
C	OFF	OFF	Indoor unit stopped, unlocked
	ON	OFF	Indoor unit in cool/high operation, unlocked
	OFF	ON	Indoor unit in heat/high operation, unlocked
	ON	ON	Indoor unit in fan/high operation, unlocked
D	OFF	OFF	Indoor unit stopped, unlocked
	ON	OFF	Indoor unit in cool/high operation, unlocked
	OFF	ON	Indoor unit in heat/high operation, unlocked
	ON	ON	Indoor unit in fan/high operation, unlocked

➲ Power save mode: Adjust the set temperature to +3°C(37.4°F) for cooling and -3°C(26.6°F) for heating.

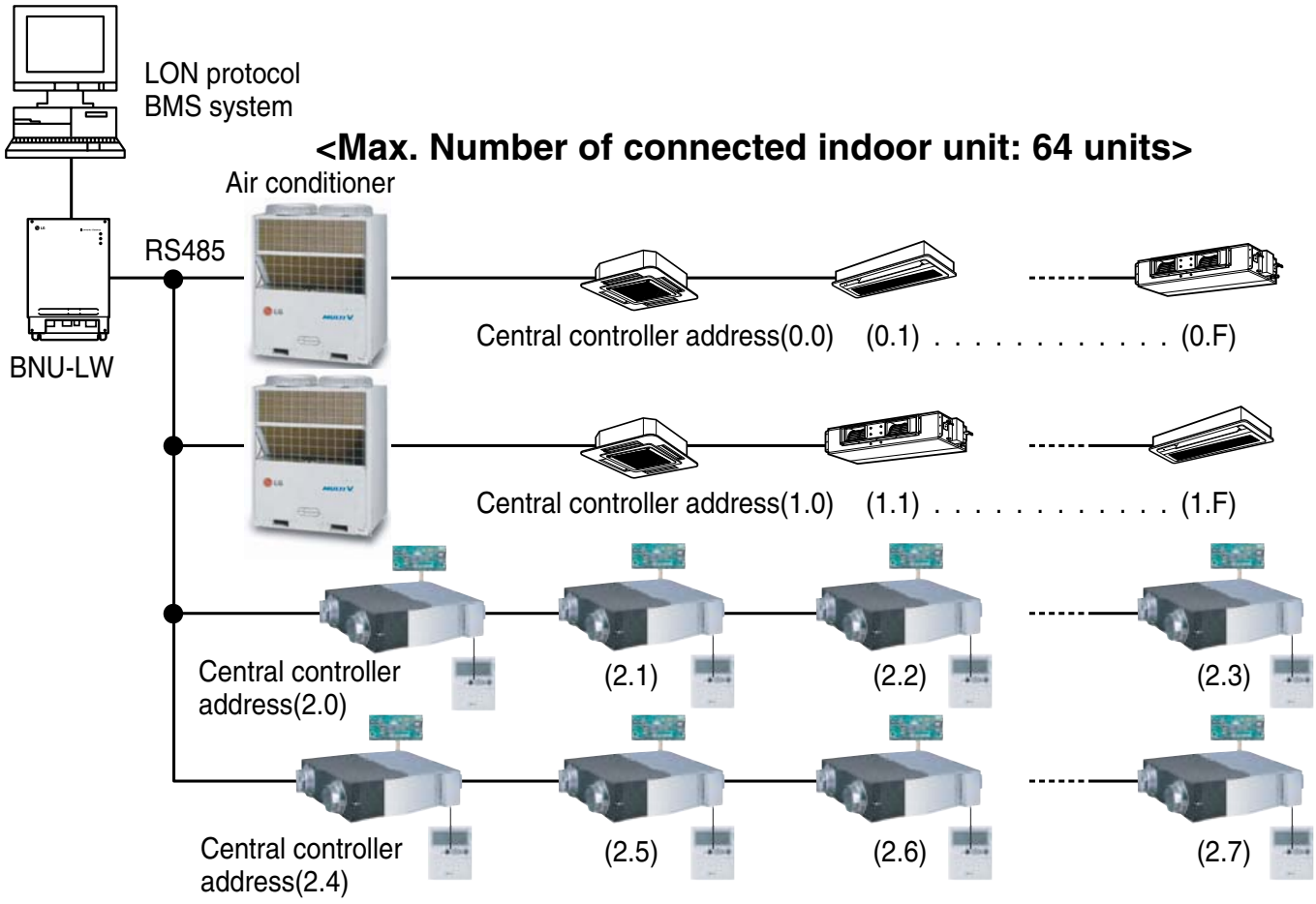
3.3 Lonworks Gateway(PQNFB16A1)

3.3.1 Overall system diagram



* PQNFB16A1 (Lon Gateway) can be used in connection with the simple central controller or AC Smart.

3.3.2 External wiring diagram



- When the address of the indoor unit of the air conditioner is duplicated with that of the ventilation unit, it will not operate normally.
- Maximum of 64 units of the indoor unit (Air conditioner+Ventilation) can be connected to the BNU-LW.
- Ventilation products cannot be interfaced with the simple central controller.

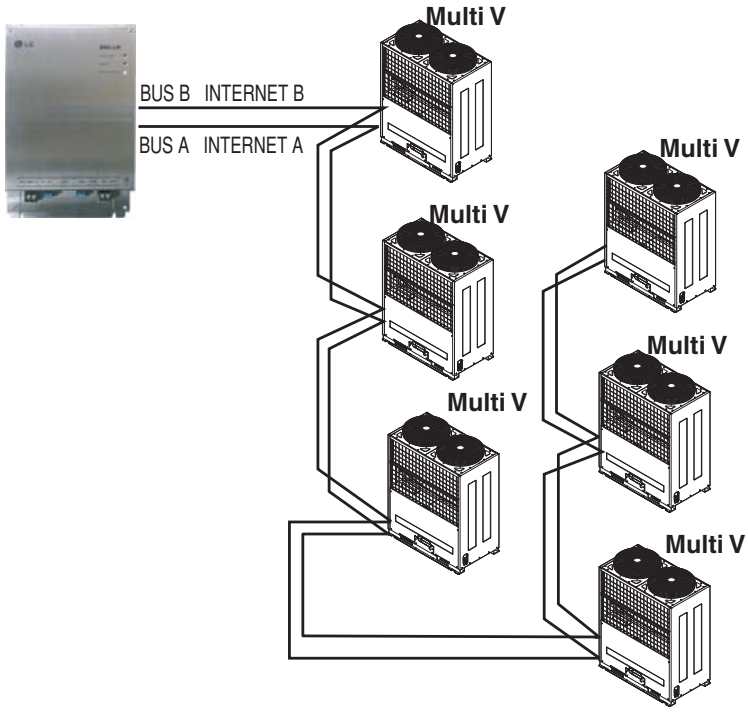
■ Information : Connecting the RS485 of the Lonworks Gateway

64 indoor units at maximum can be connected to one Lonworks Gateway

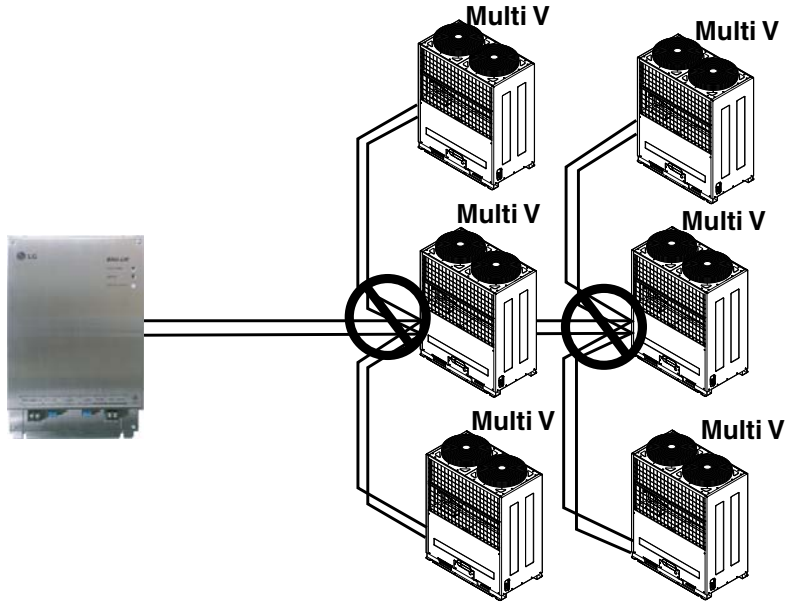
When there are many outdoor units to connect, connect the outdoor units with the BUS form.

Otherwise, the Lonworks Gateway may cause the malfunction.

The following figure shows the example for connecting with the BUS form.



The following figure shows the example of the incorrect connection of the RS485 of the Lonworks Gateway.



■ Communication line specification

1. RS-485 communication line specification: 0.75mm² or above 2C shield, product to product: 200m(656ft), total length: 1km(3280ft)
2. FT-10 communication line: Refer to the following table.

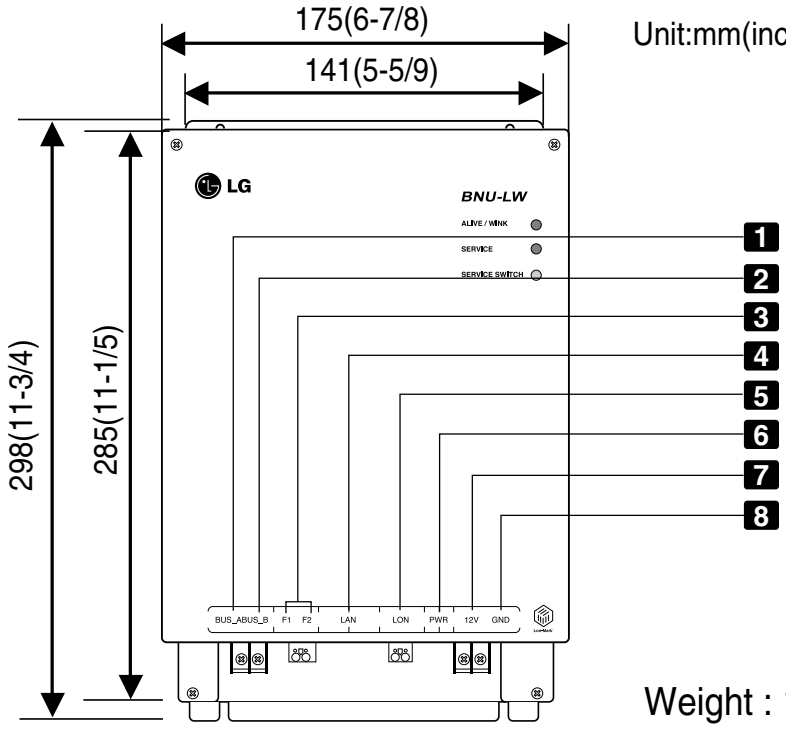
Cable Type	Line thickness (AWG)	Diameter
TIA 568A Category 5 cable	24	0.5mm(0.01 inch)
Belden 88471 (PVC jacket) or equivalent cable	16	1.3mm(0.5 inch)
Belden 85102(Tefzel jacket) or equal cable	16	1.3mm(0.5 inch)
Level IV cable	22	0.65mm(0.02 inch)
JY(st)Y 2x2x0.8	20.4	0.8mm(0.03 inch)

* Nod to node distance (max): 250m(820ft), maximum distance: 450m(1476ft)

* AWG: American Wire Gauge

3.3.3 Name of each part

■ LONWORKS GATEWAY



Weight : 1440g(3.17 lb)

1 BUS_A: 485 communication line A (+)

2 BUS_B: 485 communication line B (-)

3 F1, F2: Fire detection function (external device) contact point connection

4 LAN: LAN port necessary for web function

5 LON: TP/FT-10 communication line (Lonworks system communication line) non-polarity

6 PWR: Connection to DC 12V power adapter

7 12V: Connection when not using DC 12V power adapter

8 GND: Connection when not using GNS adapter

ALIVE/WINK: It flashes every 1 second when it is normal
It flashes 5 times when receiving WINK command from Lonworks system (Green)

SERVICE: It is turned off when it is normal and flashes when it is not connected to the Lonworks system. It is turned on when the service switch is pressed.

SERVICE SWITCH: When you press the switch the Neuron ID is transmitted to the Lonworks system, and the service LED is turned on.

Lon-Mark

BNU-LW (PNF-B16A1) product is a product certified of LON-MARK, an international standard. (Lon Mark Version 3.3)

⚠ WARNING

No. 6 and No. 7,8 are all for power supply. Therefore, only one of two combinations should be used.
When DC 12V is used for the power, Connect No. 6 to the power (not necessary to use No. 7,8.)
When DC 12V is NOT used for the power, Connect No. 7, 8 to the power (not necessary to use No. 6.)

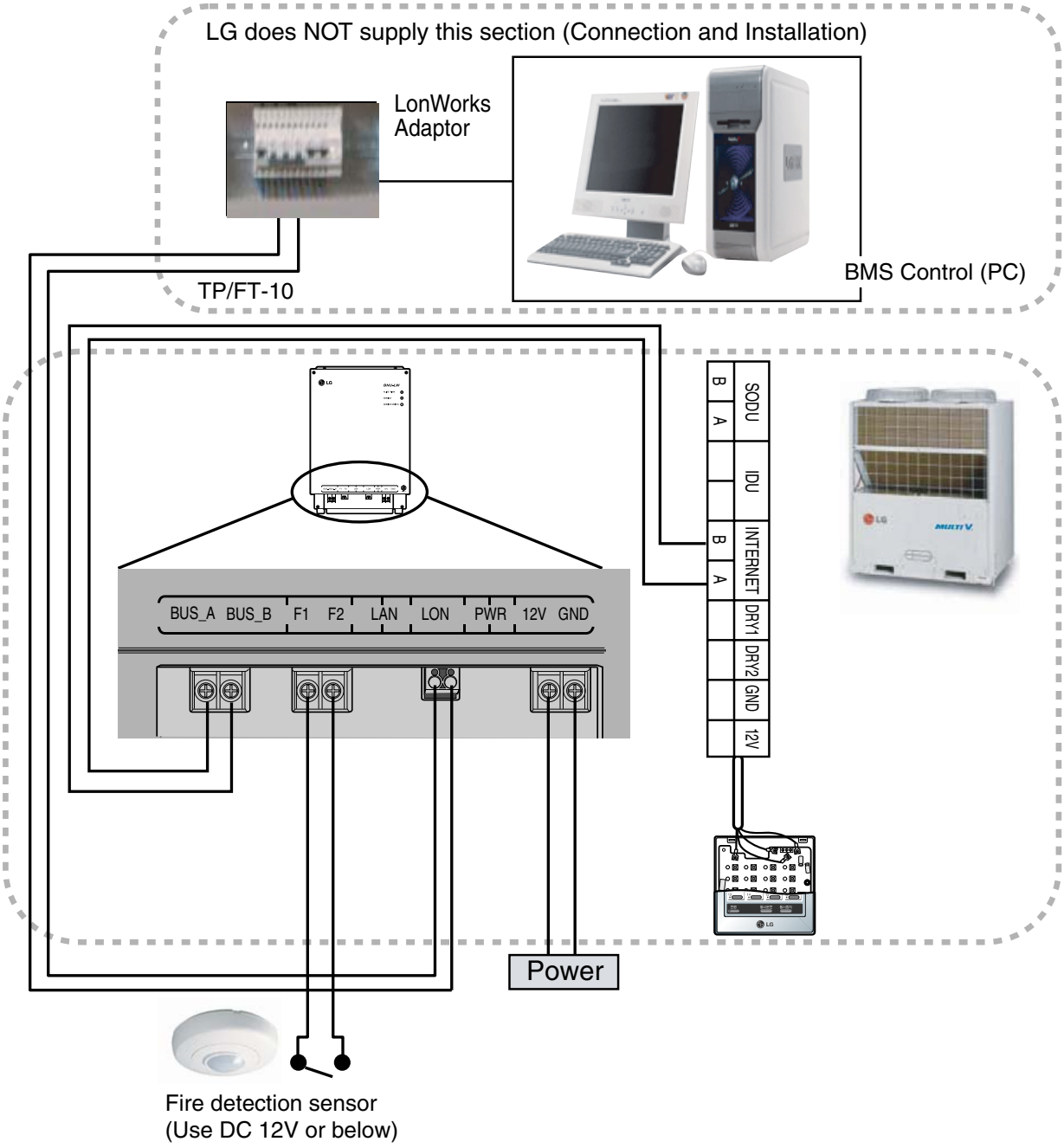
3.3.4 Installation order

1. Install the product according to the setting of the central controller address of the indoor unit.
2. Connect BUS_A and BUS_B (485 communication line) while paying attention to the connecting polarity. (Refer to the next page.)
3. LON (TP/FT-10 line ➠ Lonworks Gateway communication line connection) TP/FT-10 communication line does not have polarity. Connect the 2 communication lines to BMS.
4. PWR (Power supply)
   You can select either one of the two for the power supply.
   ① Use DC 12V power adapter
   Connect to No. 6 in name of each part.
   ② When separate DC12 can be supplied
   Connect 12V and GND to No. 7 and 8 terminals.
5. When you press the service switch after connecting to the Lonworks system, the service LED is turned on and the neuron ID is automatically transmitted to the Lonworks system.
6. Check whether the service LED is in normal condition (OFF condition) within 10 minutes. If the service LED is in normal condition, the installation has been done normally.
7. When using the fire detection port, connect the two terminals of the fire diction sensor to F1 and F2. (Fire detection sensor must be used for DC output of 12V or below.)
8. After the installation, connect the LAN cable between the PCs to use the web server so that you can check whether the LG product has been installed normally. – Refer to the remote diagnosis function part for details.

⚠ CAUTION

When connecting the signal line to the terminal of Lonworks Gateway, always use a manual driver.
(Careful attention is required not to damage the terminal block and PCB.)

3.3.5 BNU-LW wiring order



[Wiring sequence]

1. Connect 485 communication line
   - Pay attention to BUS A and BUS B polarity
2. Connect the Lonworks communication line (TP/FT-10)
   - No polarity.
3. Power supply (Select one from No. 1 or 2)
   ① Use DC 12V adapter
   - Connect to No. 6 jack from name of each part.
   ② Supply DC 12V to installation site
   - Connect 12V and GND to No. 7 and 8 terminals.
4. Interface with simple central controller
   - Set the DIP S/W No. 2 of the simple central controller to ON and configure the setting according to the rotary S/W address. (Refer to setting part when connection to simple central controller for details.)
5. Connect fire detection sensor
   - When the signal of DC 12 or below is transmitted in case of a fire, the indoor unit and ventilation product that is connected to BNU-LW will all be turned off.

3.3.6 Air conditioner/ventilation function table

■ **Air conditioner indoor unit function**

Classification	Control	Monitoring
Function	 BMS  BNU-LW  Air conditioner	 Air conditioner  BNU-LW  BMS
Indoor unit individual control	O	O
Operating Mode Change	O	O
Fan level change	O	O
Temperature adjustment function	O	O
Lock Function	O	O
Automatic fan direction	O	O
Indoor unit temperature check	X	O
Error check	X	O
Simultaneous operation/stop	O	X

Binding (connection) function: Binding function refers to the case when the output of a unit has been bound to the input of another unit and the process of input change from the output change. The binding function is possible with Lon unit of other manufacturer.

Ex) When the ON/OFF output of the indoor unit No. 1 is bound to ON/OFF input of indoor unit of No. 2 and when the indoor unit No. 1 is turned on, the indoor unit No. 2 also gets turned on from receiving the signal.

■ Ventilation indoor unit function

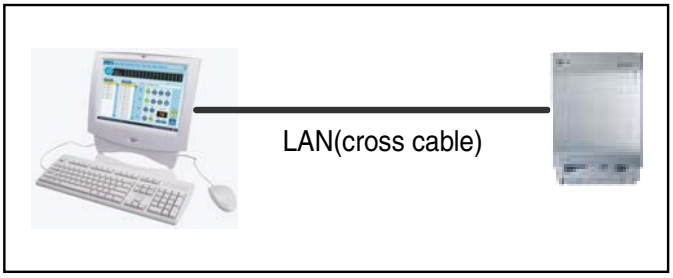
Classification	Control	Monitoring
Function	 BMS  BNU-LW  Ventilation	 Ventilation  BNU-LW  BMS
Indoor unit individual control	O	O
Operating Mode Change	O	O
Fan level change	O	O
User operation mode (Quick ventilation, power save, heating)	O	O
Lock Function	O	O
Error check	X	O
Simultaneous operation/stop	O	X

Binding (connection) function: Binding function refers to the case when the output of a unit has been bound to the input of another unit and the process of input change from the output change. The binding function is possible with Lon unit of other manufacturer.

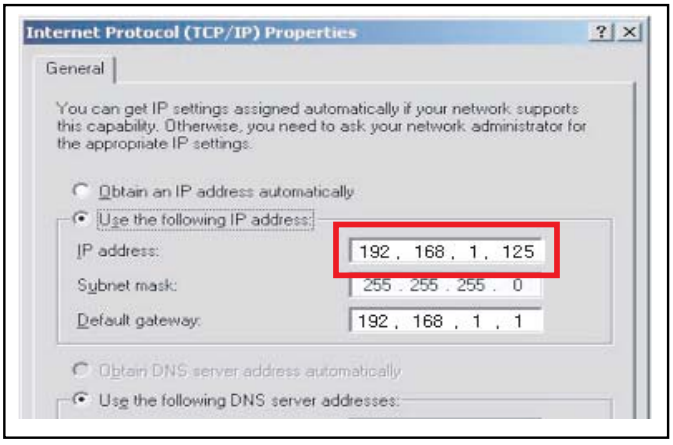
Ex) When the ON/OFF output of the indoor unit No. 1 is bound to ON/OFF input of indoor unit of No. 2 and when the indoor unit No. 1 is turned on, the indoor unit No. 2 also gets turned on from receiving the signal.

3.3.7 BNU-LW remote diagnosis function

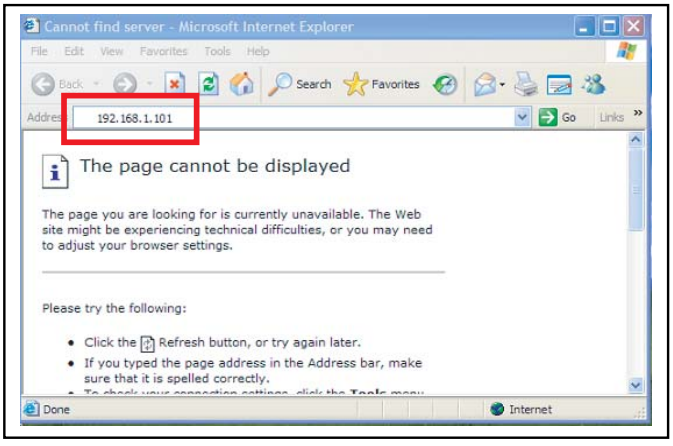
■ Setting method



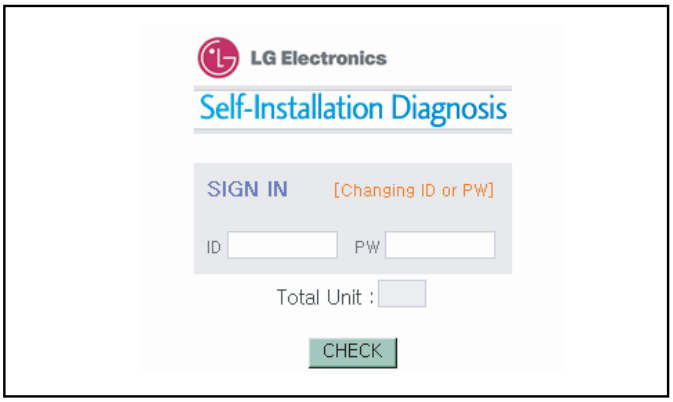
1. Connect the LAN line between the PC and the LAN port of the BNU-LW.



2. Set the network IP of the used PC to 192.168.1.xxx (except 101).



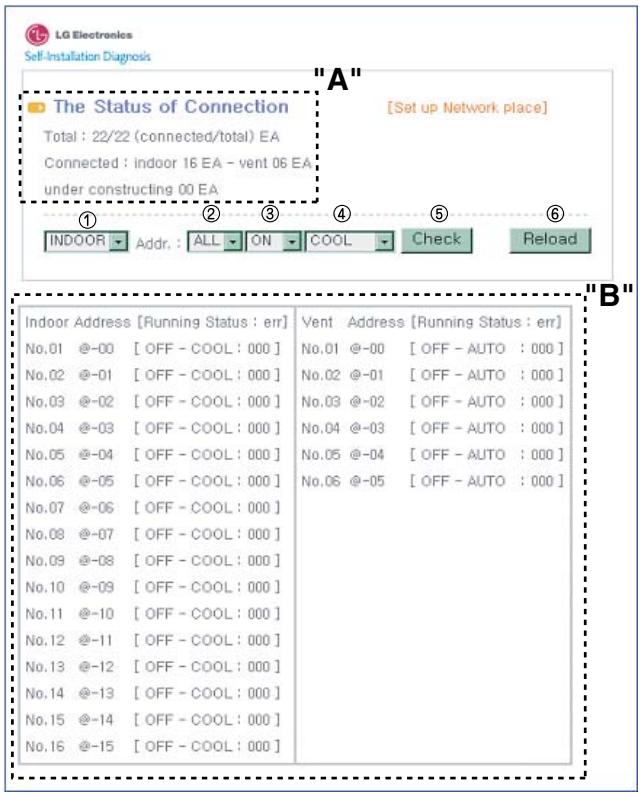
3. Enter 192.168.1.101 in the Internet Explorer.



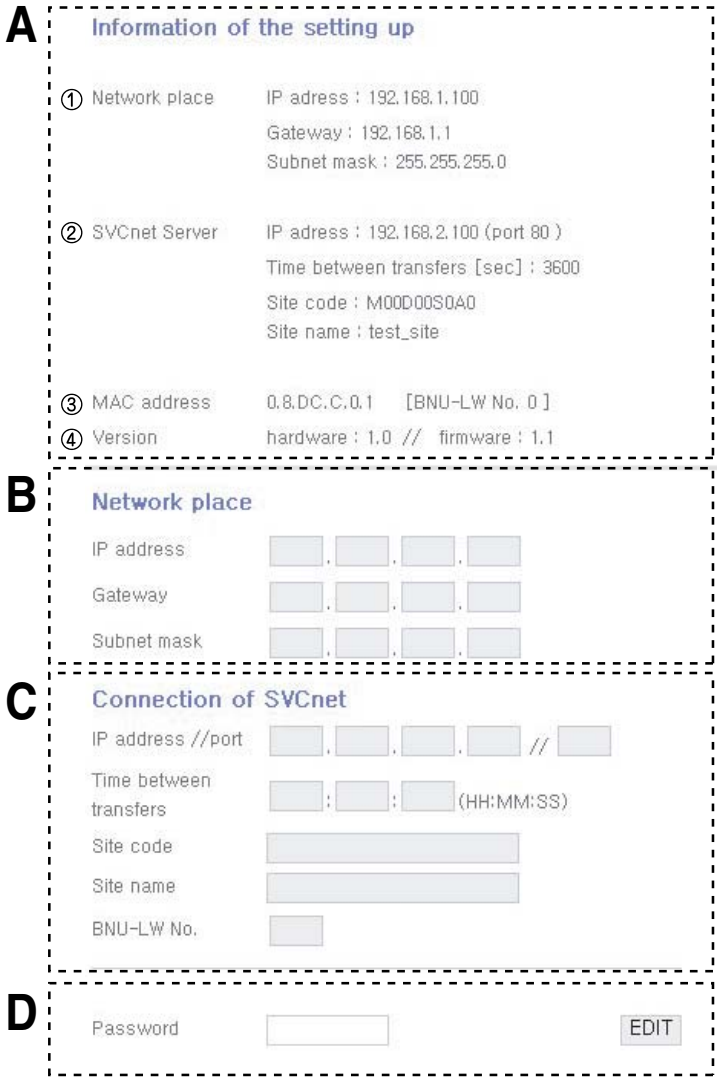
4. The above picture is shown when connected normally.

- Initial ID: lonwork
- Initial password: lonwork
- Enter the total number of connected indoor units in the Total Unit block.

■ Configuration



- After entering the ID and password, the air condition and ventilation products currently connected are displays as shown in the picture.
- "A" part displays the number of air condition and ventilation products are currently connected.
- When you would like to control a product ① Select the product – ② Set the address – ③ Command ON/OFF – ④ Select the mode – ⑤ Click on check to control the product.
- When you would like to check the current status ⑥ Click on Reload and you will be able to check the current indoor unit status in the "B" part.
- When you would like to change the IP, click on [Set up Network place] to change the IP.



A: ① It displays the current IP, Gateway, Subnet mask information.
② When you would like to use the SVCnet Server, it displays the SVCnet Server information.
③ It displays the MAC address information.
④ It displays the current version information of the BNU-LW.

B: When you would like to change the IP and Gateway, Subnet mask information, press the Edit button next to the information you would like to change.

C: This is the space to enter the SVCnet Server information to connect.
SVCnet Server is the service that monitors the air conditioner status connected to BNU-LW through the LAN in the future by the LG Electronics Service Center to provide early notification in case of a problem.

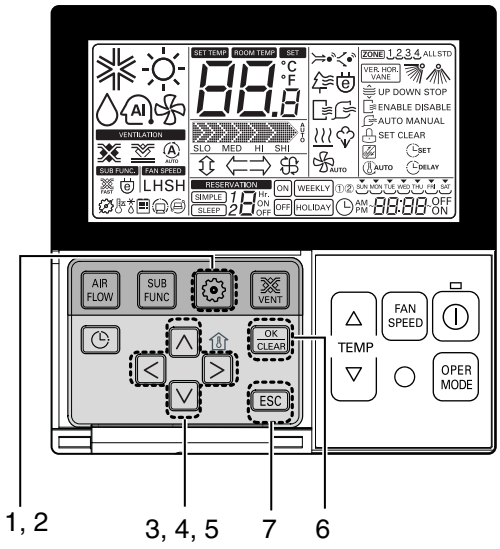
D: In order to prevent the network or arbitrary change, a security function has been applied for you to enter the initial login password to change the network setting.

3.3.8 Setting the indoor unit address

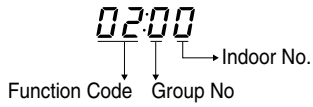
■ Setting the indoor unit address

• PQRCVSL0, PQRCVSL0QW

It's the function to use for connecting central control. Please refer to central controller manual for the details



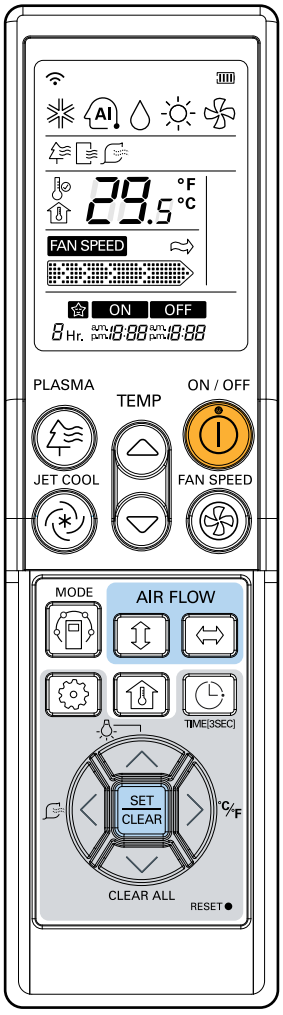
1. Press the Function Setting button for 4 seconds to enter the installer setting mode until timer segment displays "01:01".
2. Repeatedly pressing Function Setting button to select function code 02
   Ex) Setting Address as 'F5'



3. Set Group No. by pressing Up/Down button.(0~F)
4. Move to Indoor No. setting option by pressing Right button.
5. Set Indoor No. by pressing Up/Down button.
6. Press OK/CLEAR button to save.
7. Press ESC button to exit or system will automatically exit after 25 seconds

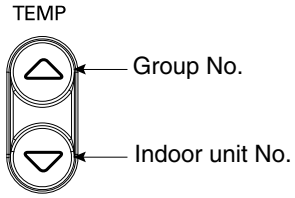
❊ When exiting without pressing set button, the manipulated value is not reflected.

■ When using the wireless remote controller



Address setting mode

1. While the MODE button pressed, press the Reset button .
2. By using the temperature adjustment button, set the indoor unit address.
   Setting range: 00~FF



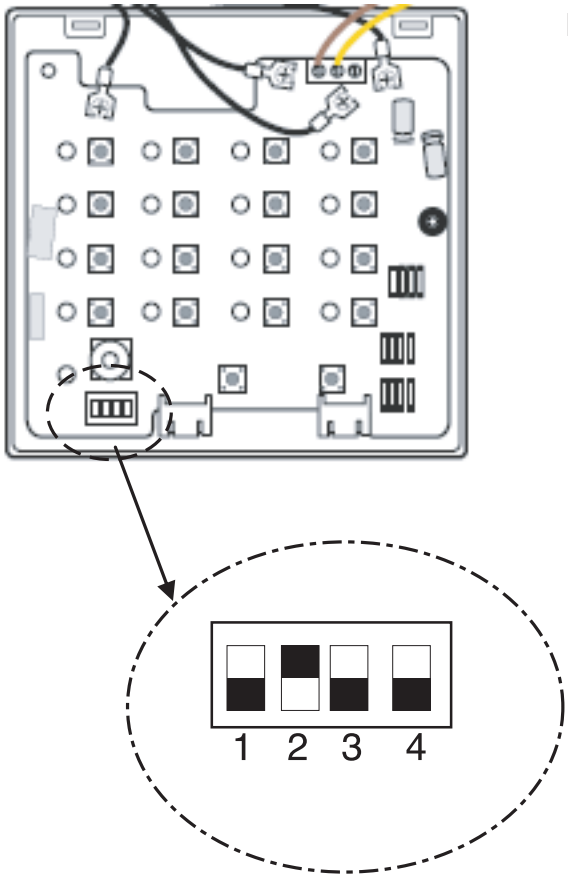
3. After setting the address, press the ON/OFF button toward the indoor unit 1 time.
4. The indoor unit will display the set address to complete the address setting. (The address display time and method can differ by the indoor unit type.)
5. Reset the remote controller to use the general operation mode.

Address check mode

1. With the PLASMA button pressed, press the Reset button.
2. Press the ON/OFF button toward the indoor unit 1 time, and the indoor unit will display the set address in the display window. (The address display time and method can differ by the indoor unit type.)
3. Reset the remote controller to use the general operation mode.

❉ The above function might not work for some remote controllers depending on the manufactured date of the wired/wireless remote controller.
It is not relevant for the consumer use and you can set the address with a remote controller that has the address setting functionality during the installation.

3.3.9 Interfacing with simple central controller



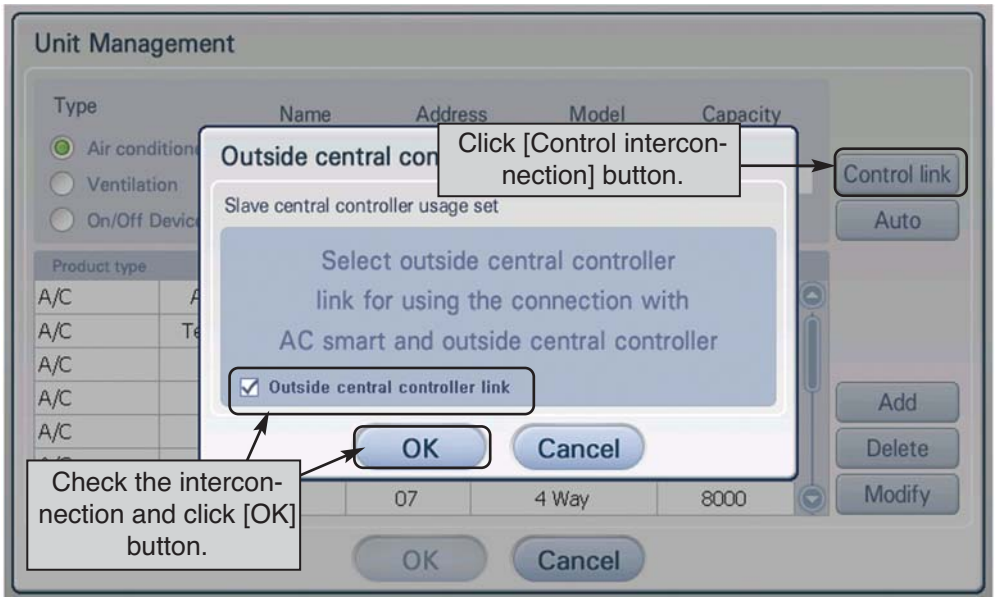
How to interface with simple central controller

- When interfacing with simple central controller, turn the DIP S/W No. 2 of the simple central controller ON.
- Set the rotary S/W to the group address of the indoor unit you would like to control.

3.3.10 Interfacing with AC Smart

The AC Smart offer the function controlling the unit by interconnecting with other central controllers.
In the case, the Lonworks gateway operates as master while the AC Smart operates as slave.
When Lonworks gateway interfacing with AC Smart, AC Smart must be set as slave.

In order to set interfacing with AC Smart, press [Control link] button 'Unit Management' screen.
And then check 'Outside central controller link' at the bottom and press [OK] button.

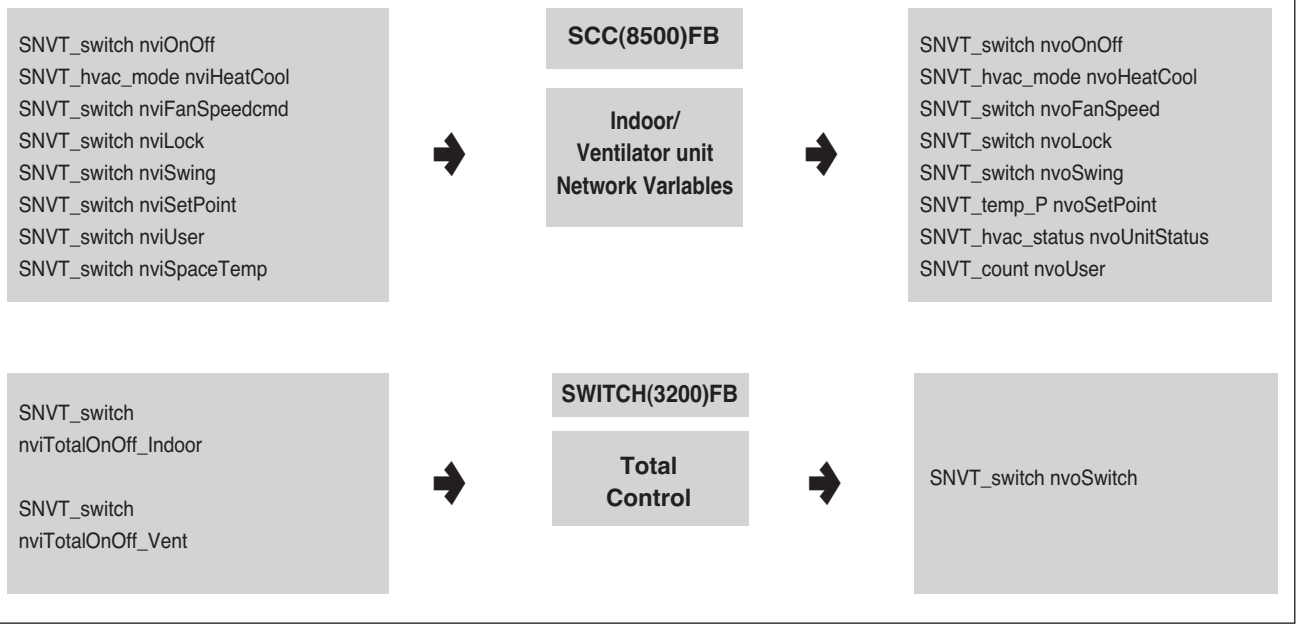


3.3.11 Appendix

- The appendix carries information necessary for interfacing with BMS and not necessary for actual installation.

■ A/C Objects

Standard Fundtion Block



Control	Monitoring
On/Off command	On/Off status monitoring
Mode selection command	Mode status monitoring
Fan level selection command	Fan level status monitoring
Indoor unit lock command	Lock status monitoring
Fan direction command	Fan direction status monitoring
Temperature setting command	Temperature setting status monitoring
Ventilation additional function command (Only applies for ventilation product)	Current temperature monitoring
Air conditioner total On/Off control	Error display
Ventilation total On/Off control	Ventilation additional function status monitoring (Only applies for ventilation product)

- You can enable control and monitoring as shown in the figure for one air conditioner/ventilation unit.
- The network variable can differ from the actual.
  (Refer to the XIF file for correct network variable.)

Point No.	Name	Object Name (nn: Air conditioner and ventilation group/indoor unit address)	Object Type	Unit							
				code 0	code 1	code 2	code 3	code 4	code 5	code 9	code14
1	ON/OFF (setting)	SNVT_switch nviOnOff_nn	input	Stop	Operation						
2	ON/OFF (status)	SNVT_switch nvoOnOff_nn	output	Stop	Operation						
3	Lock (setting)	SNVT_switch nviLock_nn	input	Cancel	Setting						
4	Lock (status)	SNVT_switch nvoLock_nn	output	Cancel	Setting						
5	Operation Mode (setting)	SNVT_hvac_modenviHeatCool_nn	input	Auto	Heating		Cooling			Fan	Dry
6	Operation Mode (status)	SNVT_hvac_mode nviHeatCool_nn	output	Auto	Heating		Cooling			Fan	Dry
7	Swing(setting)	SNVT_switch nviSwing_nn	input	Cancel	Setting						
8	Swing(status)	SNVT_switch nvoSwing_nn	output	Cancel	Setting						
9	Fan speed(setting)	SNVT_switch nviFanSpeedCmd_nn	input		Low	Med	High	Auto	Super Low		
10	Fan speed(status)	SNVT_switch nvoFanSpeed_nn	output		Low	Med	High	Auto	Super Low		
11	Set Room Temperature	SNVT_temp_p nviSetPointCmd_nn	input	°C(°F)							
12	Set Room Temperature	SNVT_temp_p nvoSetPoint_nn	output	°C(°F)							
13	Room Temperature	SNVT_temp_p nvoSpaceTemp_nn	output	°C(°F)							
14	Error Code	SNVT_hvac_status nvoUnitStatus_nn	output	no errorRefer to the LG Air Conditioner Error Code.							

Point No.	Name	Object Name (nn: Air conditioner and ventilation group/indoor unit address)	Object Type	Unit					
				code 0	code 1	code 2	code 3	code 5	code 9
1	ON/OFF (setting)	SNVT_switch nviOnOff_nn	input	Stop	Operation				
2	ON/OFF (status)	SNVT_switch nvoOnOff_nn	output	Stop	Operation				
3	Lock (setting)	SNVT_switch nviLock_nn	input	Cancel	Setting				
4	Lock (status)	SNVT_switch nvoLock_nn	output	Cancel	Setting				
5	Operation Mode (setting)	SNVT_hvac_modenviHeatCool_nn	input	Auto	Heat exchange				Normal
6	Operation Mode (status)	SNVT_hvac_mode nviHeatCool_nn	output	Auto	Heat exchange				Normal
7	Fan speed(setting)	SNVT_switch nviFanSpeedCmd_nn	input		Low	High	Very high		
8	Fan speed(status)	SNVT_switch nvoFanSpeed_nn	output		Low	High	Very high		
9	Error Code	SNVT_hvac_status nvoUnitStatus_nn	output	Refer to the LG Air Conditioner Error Code.					
10	User Mode(setting)	SNVT_count nviUser_nn	output		Quick	Power save	heat		
11	User Mode(status)	SNVT_count nvoUser_nn	output		Quick	Power save	heat		

■ Network variables

1) Individual operation/stop input/output (Air conditioner/ventilation)

Input	Function	Operation/stop input
	Using NV	Network input variable : SNVT_switch nviOnOff_n
	Operation	It controls the operation/stop of each product (air conditioner/ventilation)
Output	Function	Operation/stop status display
	Using NV	Network output variable : SNVT_switch nvoOnOff_n
	Operation	It monitors the operating status of each product (air conditioner/ventilation)

Valid Range

NV	Filed	Operation
SNVT_switch (Index : 95)	value	not used (set in 0% usually)
	state	0 = Air conditioner/ventilation product OFF
		1 = Air conditioner/ventilation product ON
	Default Value	

2) Operating mode input/output (Air conditioner/ventilation)

Input	Function	Operating mode command input
	Using NV	Network input variable : SNVT_hvac_mode nviHeatCool_n
	Operation	It controls the operating mode of each air conditioner/ventilation product.
Output	Function	Operating mode status display
	Using NV	Network output variable : SNVT_hvac_mode nvoHeatCool_n
	Operation	It monitors the operating status of each air conditioner/ventilation product.

Valid Range

NV	Operation
SNVT_hvac_mode (Index : 108)	HVAC_AUTO : 0 = AUTO mode(air conditional), Auto (ventilation)
	HVAC_HEAT : 1 = Heat mode(air conditional), heat exchange(ventilation)
	HVAC_COOL: 3 = Cool mode (cool)
	HVAC_FAN_ONLY: 9 = Fan mode (fan) normal ventilation
	HVAC_DEHUMID:14=Dry Mode (dehumidication)
	Default Value

3) Fan level command input/output (Air conditioner/ventilation)

Input	Function	Fan level command input
	Using NV	Network input variable : SNVT_switc nviFanSpeedCmd_n
	Operation	It controls the fan level of each indoor unit.
Output	Function	Fan level status display
	Using NV	Network output variable : SNVT_switch nvoFanSpeed_n
	Operation	It monitors the fan level of each product (air conditioner/ventilation)

Valid Range

NV	Filed	Operation
SNVT_switch (Index : 95)	value	1: Air conditioner, ventilation low fan
		2: Air condition med fan, ventilation high fan
		3: Air condition high fan, ventilation very high fan
		4: Air condition, ventilation auto fan
		5. Air conditioner super low fan
	state	0: Product not applied, 1: Product applied
	Default Value	

4) Lock input/output (Air conditioner/ventilation)

Input	Function	Lock setting command input
	Using NV	Network input variable : SNVT_switch nviLock_n
	Operation	It controls the lock status of each product (air conditioner/ventilation)
Output	Function	Lock status display
	Using NV	Network output variable : SNVT_switch nvoLock_n
	Operation	It monitors the lock status of each product (air conditioner/ventilation)

Valid Range

NV	Filed	Operation
SNVT_switch (Index : 95)	value	not used (set in 0% usually)
	state	0 = Air conditioner/ventilation product lock OFF
		1 = Air conditioner/ventilation product lock ON
	Default Value	

5) Fan direction auto input/output (Only applies to air conditioner)

Input	Function	Fan direction auto command input
	Using NV	Network input variable : SNVT_switch nviSwing_n
	Operation	It controls the fan direction of each product (air conditioner/ventilation)
Output	Function	Fan direction auto status display
	Using NV	Network output variable : SNVT_switch nvoSwing_n
	Operation	It monitors the fan direction of each product (air conditioner/ventilation)

Valid Range

NV	Filed	Operation
SNVT_switch (Index : 95)	value	not used (set in 0% usually)
	state	0 = Fan direction fixed for air conditioner product
		1 = Fan direction auto for air conditioner product
	Default Value	

6) Temperature setting input/output (Only applies to air conditioner)

Input	Function	Set temperature range input
	Using NV	Network input variable : SNVT_switch nviSetPoint_n
	Operation	It controls the temperature setting of each product (air conditioner/ventilation)
Output	Function	Set temperature range status display
	Using NV	Network output variable : SNVT_switch nvoSetPoint_n
	Operation	It monitors the set temperature of each product (air conditioner/ventilation)

Valid Range

NV	Operation
SNVT_switch (Index : 95)	At Cool mode : 18~30°C(64.4~86°F)
	At Heat mode : 18~30°C(64.4~86°F)
	At Dry mode and Fan mode : Not available
	Default Value

7) Indoor temperature status display (Only applies to air conditioner)

Output	Function	Indoor temperature status display
	Using NV	Network output variable : SNVT_switch nvoSpaceTemp_n
	Operation	It monitors the indoor temperature.

Valid Range

NV	Operation
SNVT_switch (Index : 95)	At Cool mode : 10~40°C(50~104°F)
	At Heat mode : 10~40°C(50~104°F)
	At Dry, Fan mode : Not available
	Default Value

8) Error output (Air conditioner/ventilation)

Output	Function	Error status display
	Using NV	Network input variable : SNVT_hvac_Status nvoUnitStatus_n
	Operation	It monitors the error status of each product (air conditioner/ventilation)

Valid Range

NV	Filed	Operation
SNVT_switch (Index : 112)	Mode	Currently operating mode display
	Heat_output_primary	Not used
	Heat_output_Secondary	Not used
	Cool_output	Not used
	Cool_output	Not used
	Econ_output	Not used
	fan_output	Not used
	In_alarm	Error code display

* Refer to the Error Code table of the product manual for the error code.

9) Ventilation function command (Only applies to ventilation product)

Input	Function	Ventilation user operating mode input
	Using NV	Network input variable : SNVT_count nviUser_n
	Operation	It controls the product function of each ventilation product.
Output	Function	Ventilation user operating mode status
	Using NV	Network output variable : SNVT_count nvoUser_n
	Operation	It monitors the function status of each ventilation product.

Valid Range

NV	Filed	Operation
SNVT_count (Index : 8)	value	0 = Not used
		1 = Quick mode
		2 = Power save mode
		3 = Heat

10) Total operation/stop air conditioner indoor unit

Input	Function	Total stop command input
	Using NV	Network input variable : SNVT_switch nviTotalONOFF_indoor
	Operation	It turns ON or OFF all the indoor units.

11) Total operation/stop ventilation indoor unit

Input	Function	Total stop command input
	Using NV	Network input variable : SNVT_switch nviTotalONOFF_indoor
	Operation	It turns ON or OFF all the ventilation units.

Valid Range

NV	Filed	Operation
SNVT_switch (Index : 95)	value	not used
	state	1 = All ON indoor/Vent unit
		0 = All OFF indoor/Vent unit
	Default Value	

3.4 PDI(Power Distribution Indicator)(PQNUD1S01)

■ Overview

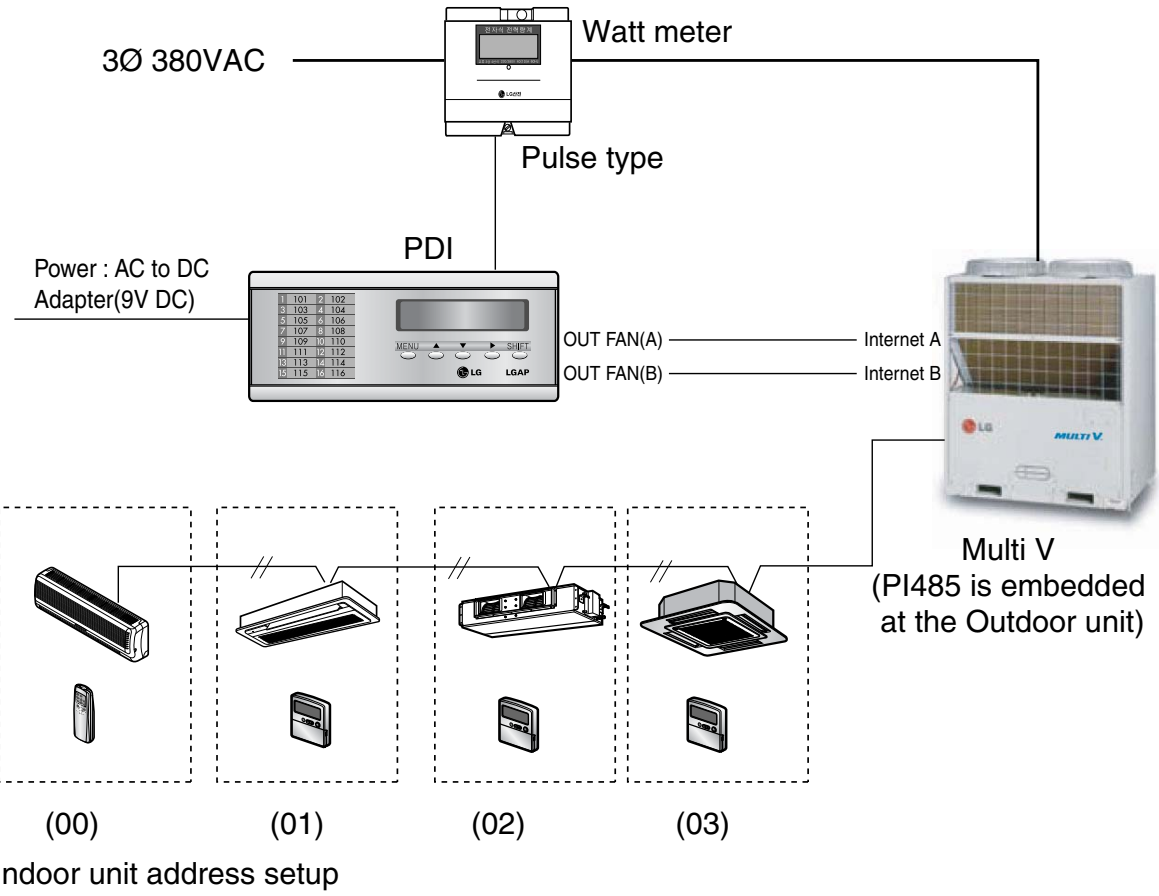
It's for power consumption of the multi type air-conditioner used for common power line

- Indicating power consumption of every indoor unit
- Accumulated Total Power Consumption
- Accumulated / Current Power Consumption of each indoor unit
- Data back-up even if power turns off (PDI Data is backed up every 1hour. So, max 1hour data loss may be occurring in power failure)
- Period Consumption(user after check distribution, can restart accumulate date)

■ Independent operation of PDI

- Connect the product as shown in the below connection diagram

(maximum 64 Indoor units are connectable)



Information : Power Consumption Indication of each Indoor Unit

1. If power source of indoor unit comes through the wattmeter connected to PDI :
   PDI is able to indicate power consumption of indoor unit too.
   (outdoor unit's consumption + Indoor unit's consumption).
2. If power source of indoor unit comes other sources :
   PDI is not able to indicate indoor unit's consumption.
   (outdoor unit's consumption only by the indoor unit)

■ Functions

- Accumulated Total Power Consumption
- Accumulated / Current Power Consumption of each indoor unit
- Period Consumption(user after check distribution, can restart accumulate date)
- MAX 64 Indoor Units

■ Spec.

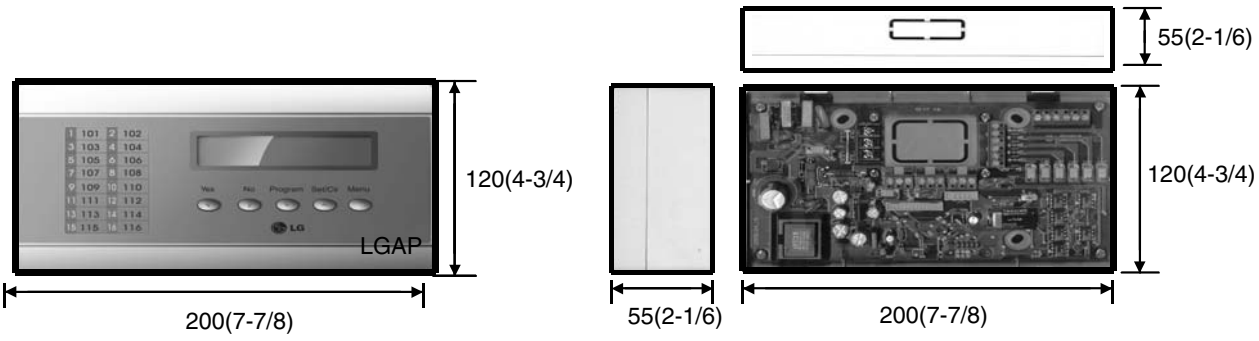
- Power Supply: DC 9V power adapter
- Dimension: W(200mm(7-7/8inch)) x L(120mm(4-3/4inch)) x H(55mm(2-1/6 inch))
- Connectable units: 1 outdoor unit per electric power distribution
- Operation range: -68~140°F

Count Method for Electric Power Distribution

■ Power consumption of each indoor unit =
Power consumption of outdoor unit x [Weighting power of each indoor unit / Weighting power of total indoor units]

■ Weighting power of each indoor unit =
Operation (On/Off) X [Capacity of indoor unit X EEV open rate X Fan step of indoor unit]

■ Dimension



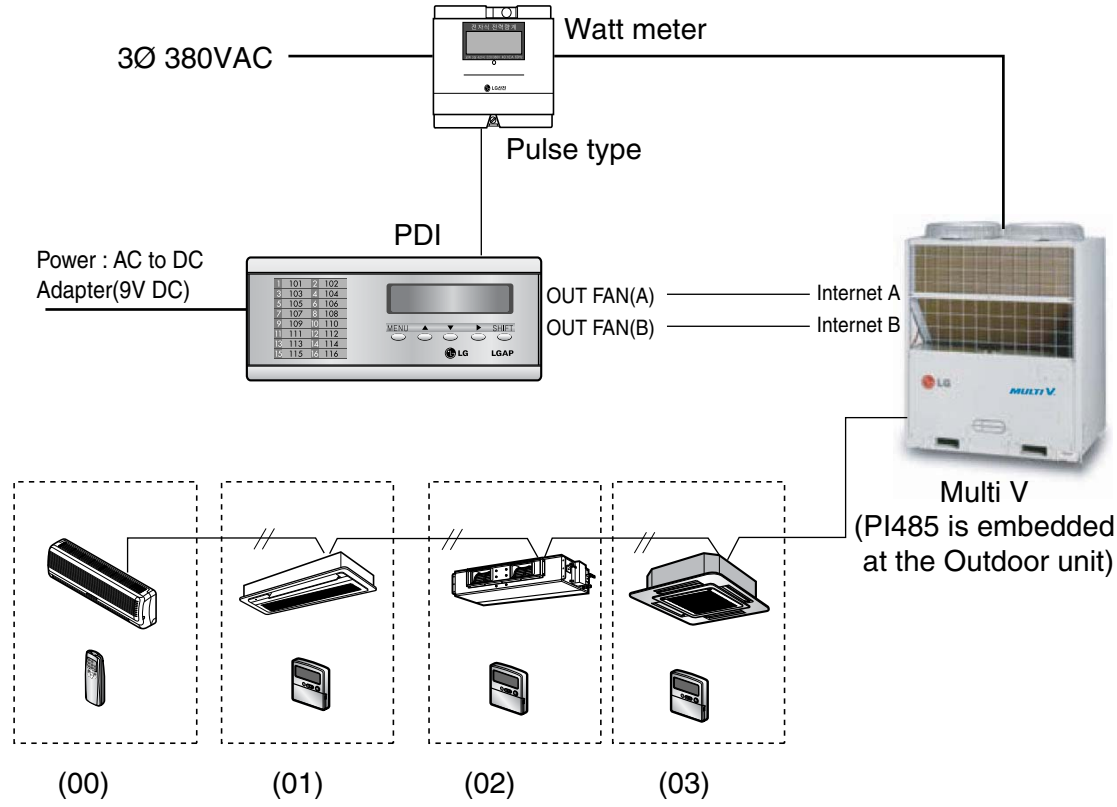
Unit:mm(inch)

■ System Structure

Independent operation of PDI

- Connect the product as shown in the below connection diagram

(maximum 64 Indoor units are connectable)

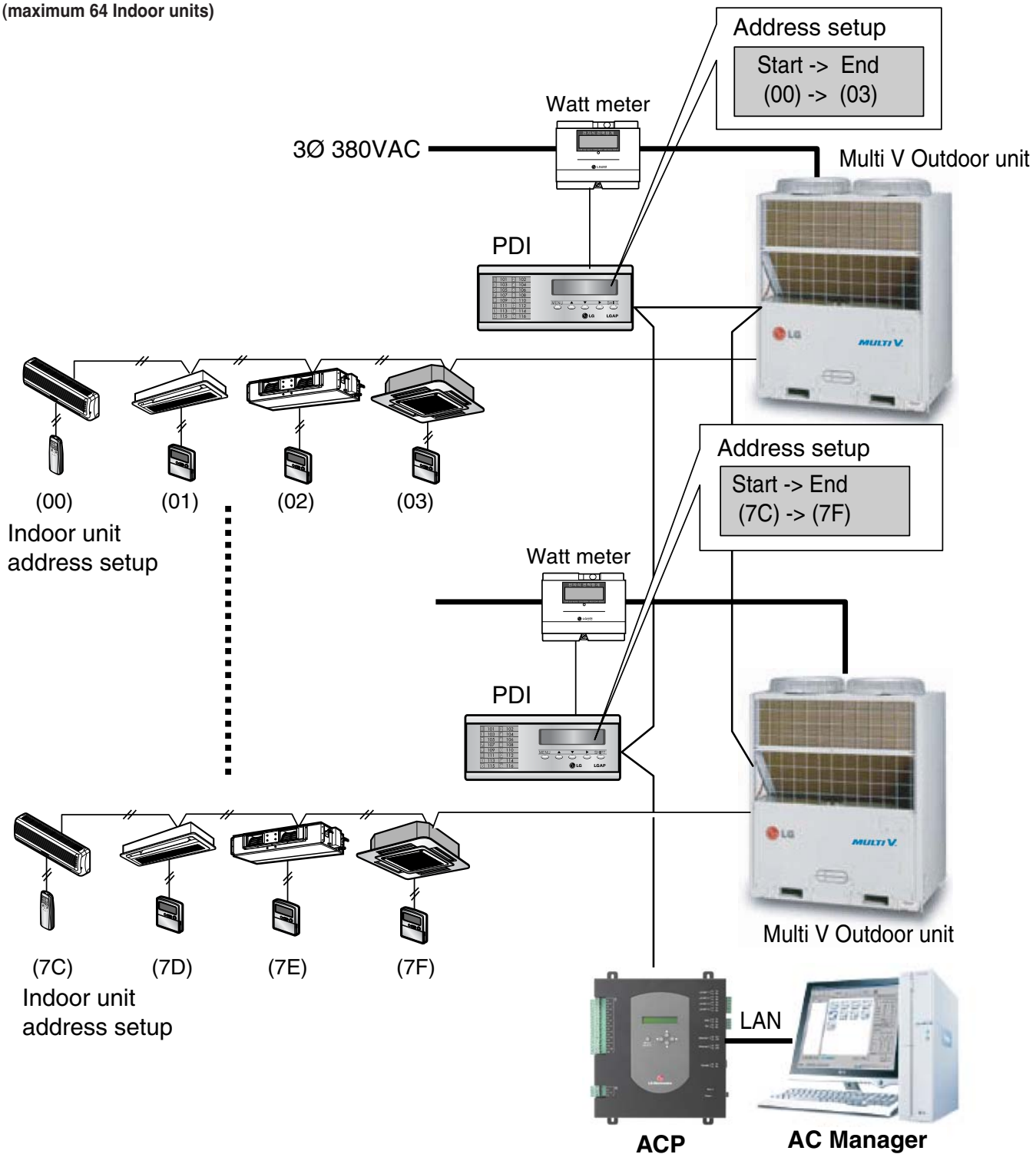


Indoor unit address setup

■ Operation with ACP/AC Manager

- Connect the product as shown in the below connection diagram.

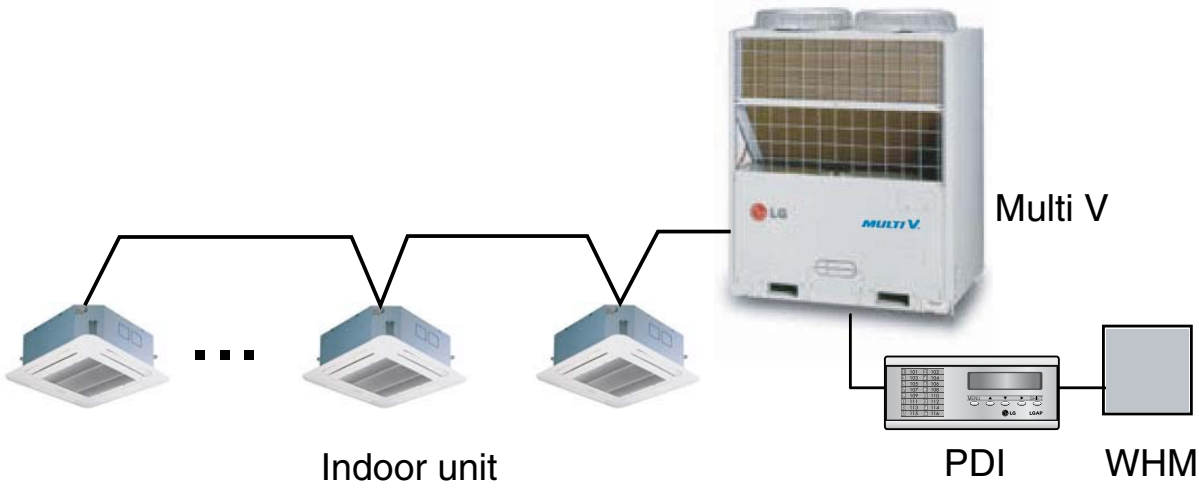
(maximum 64 Indoor units)

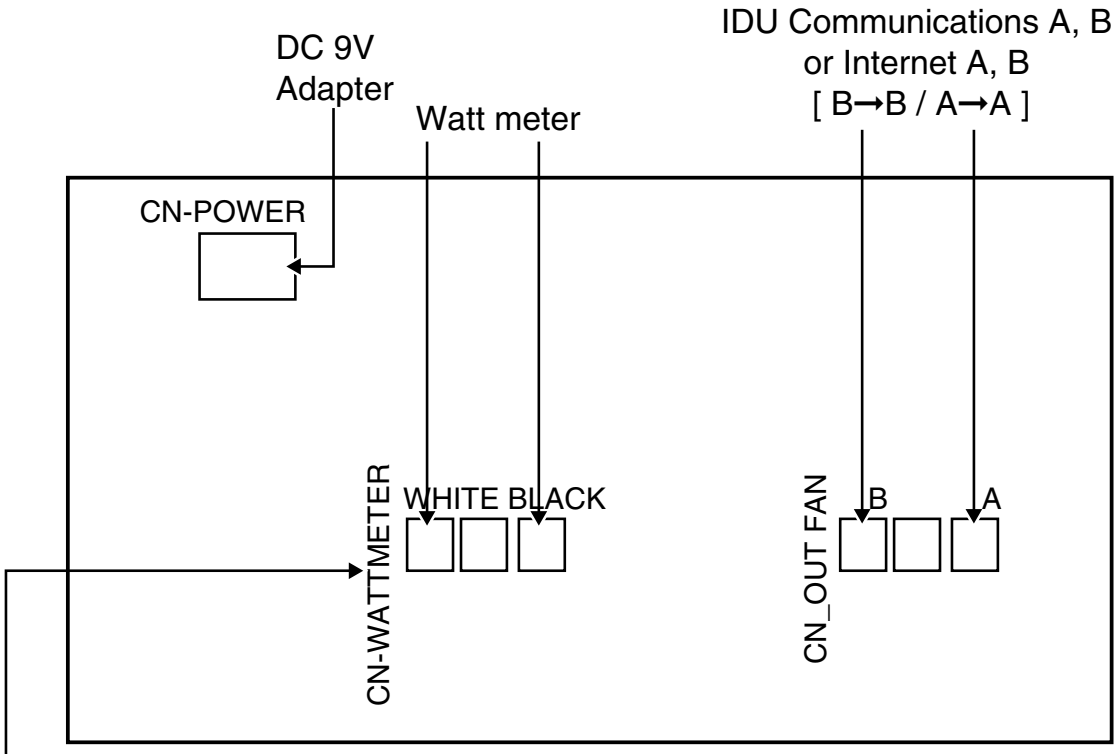


⚠CAUTION

When ACP power off, the PDI can not distribute the power consumption.

■ **Install the product as per the following wiring diagram**

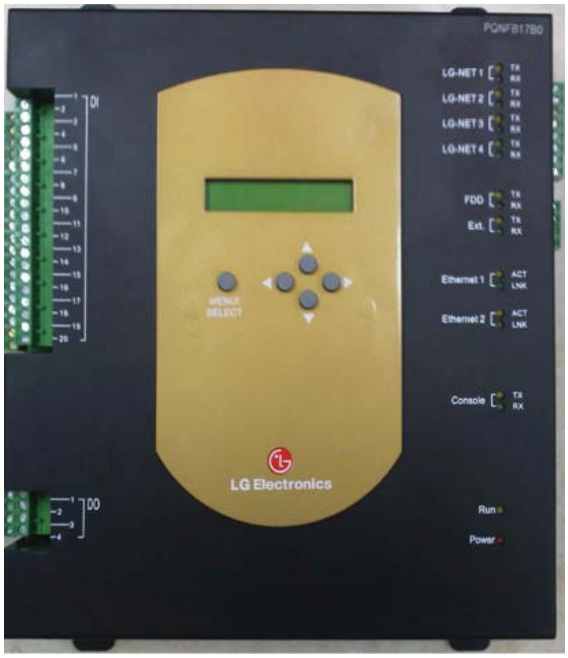


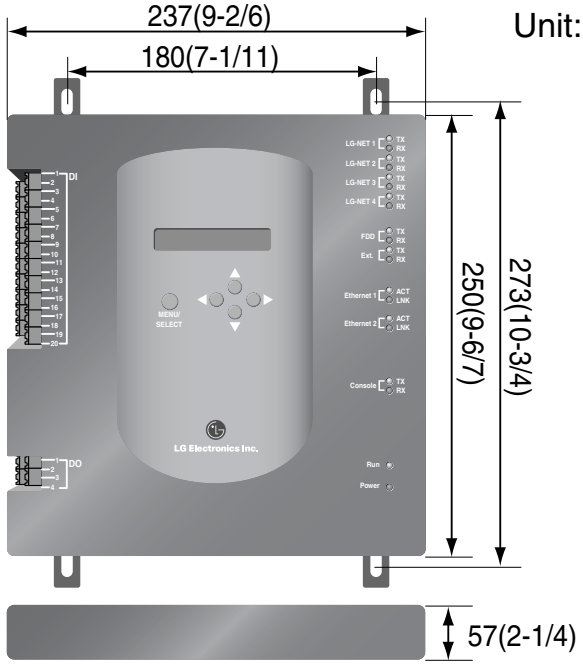


The color and polarity of the communications line can differ from what's indicated on the PCB depending on the manufacturer of watt meter. [Black -> (+), white -> (-)]

- Turn on the power after connecting the product.

3.5 BACnet Gateway(PQNFB17B0)





Unit:mm(inch)

Weight : 2750g(6.06lb)

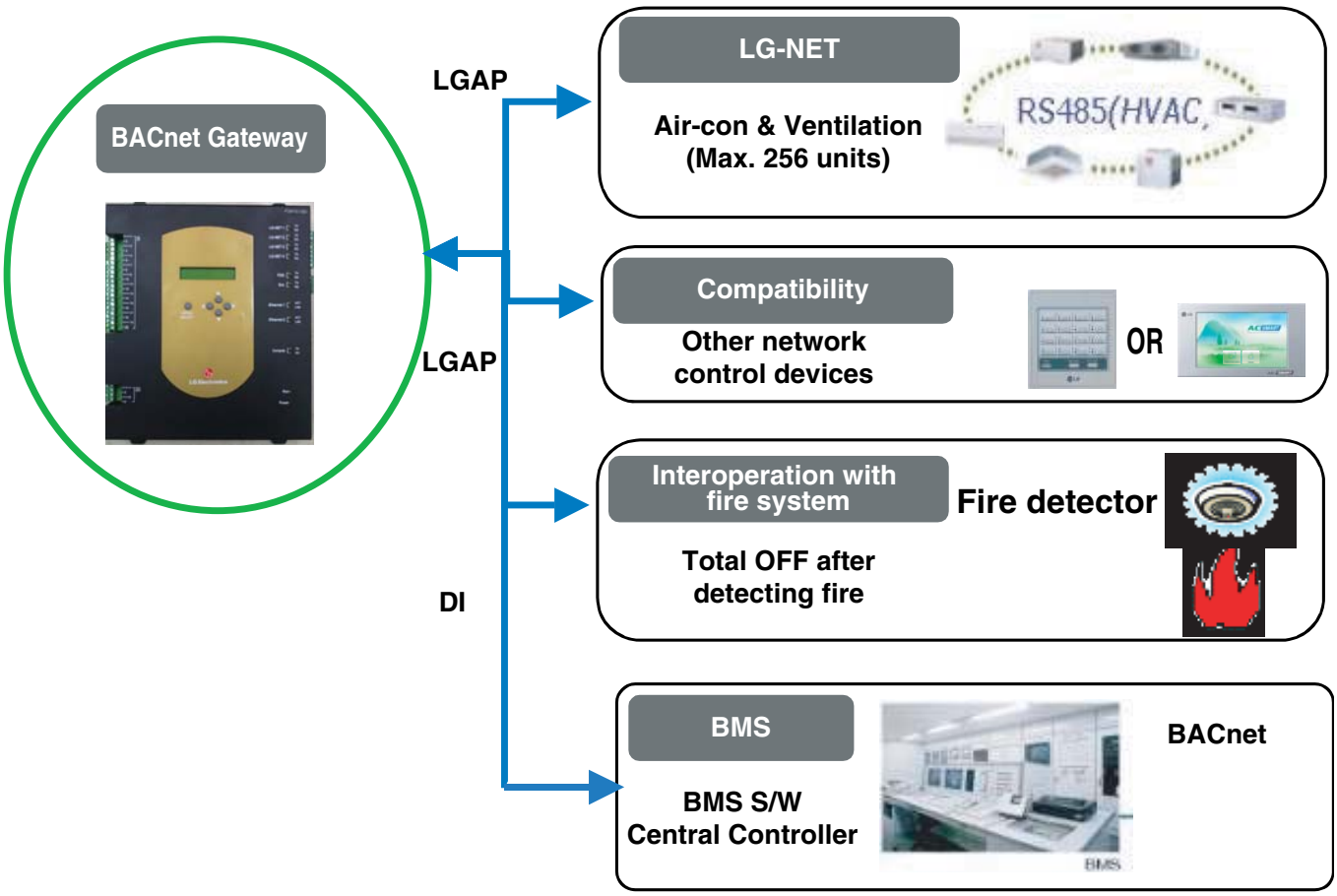
■ Description

The product specially designed for BMS market using the BAC net protocol.

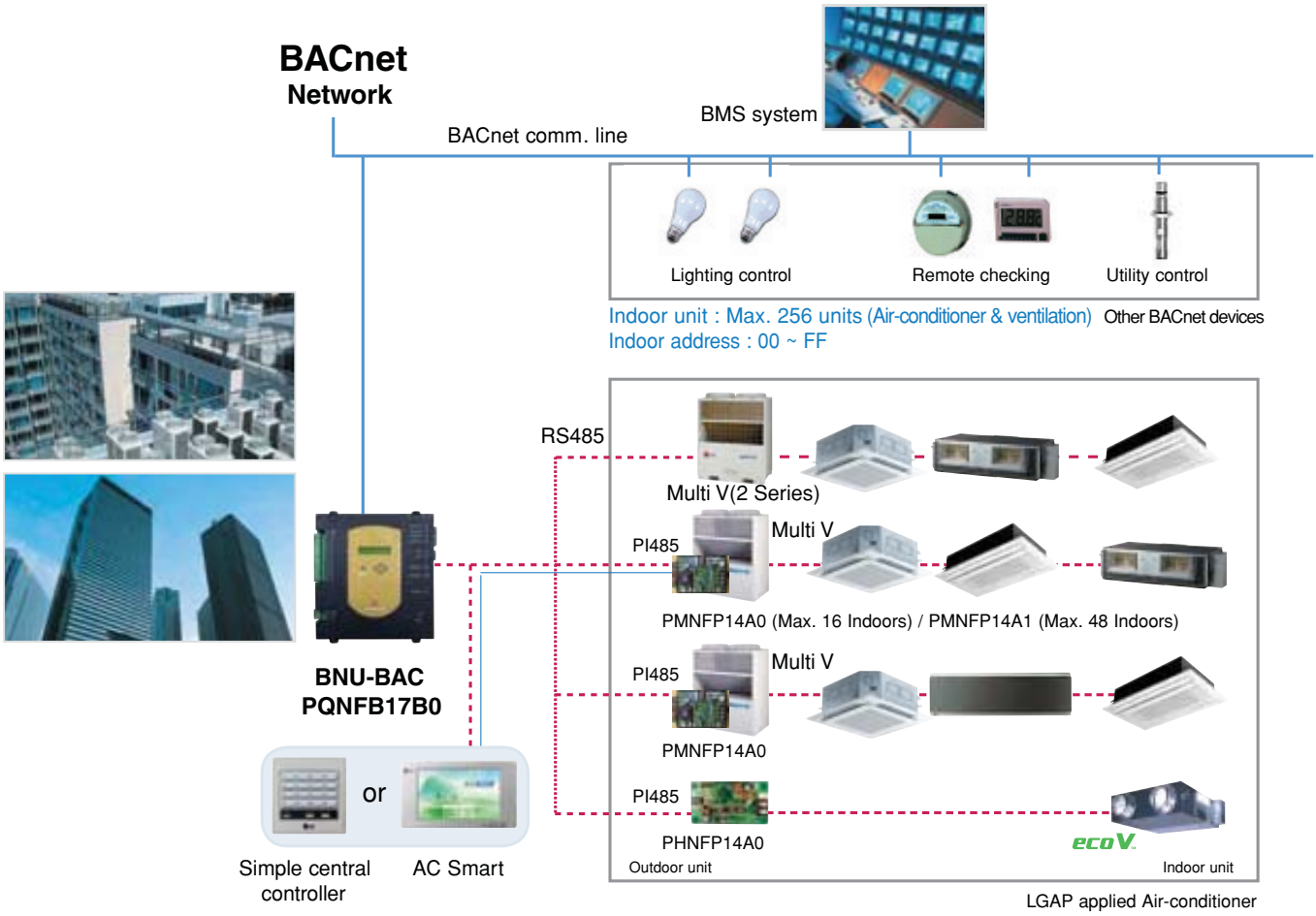
■ Features

1. Through embedded web control function in BACnet one can access the air-conditioner through internet.
2. It can control 256 indoor units.
3. It is compatible with Simple central controller or AC Smart.
4. External devices such as fire alarm, can be connected to gateway and their function can be interlinked with air-conditioner operation.
5. Compatible with Multi-V, Multi and single system.

3.5.1 System Architecture



3.5.2 External wiring diagram



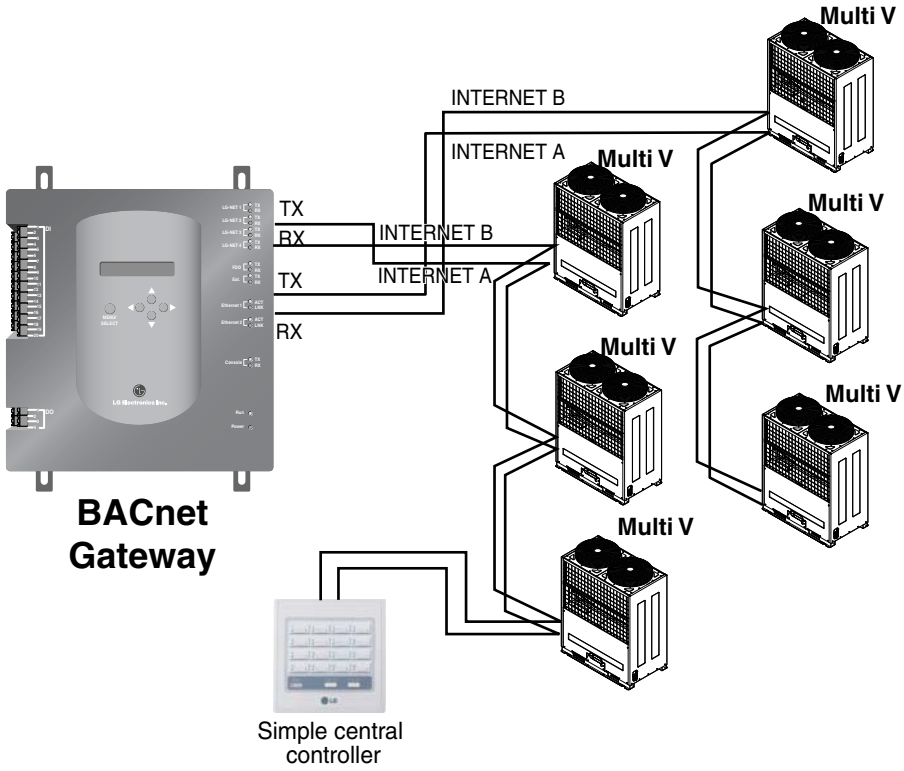
- When the address of the indoor unit of the air conditioner is duplicated with that of the ventilation unit, it will not operate normally.
- Maximum of 256 units of the indoor unit (Air conditioner+Ventilation) can be connected to the BNU-BAC.
- Ventilation products cannot be interfaced with the simple central controller.

■ Information : Connecting the RS485 of the BACnet Gateway

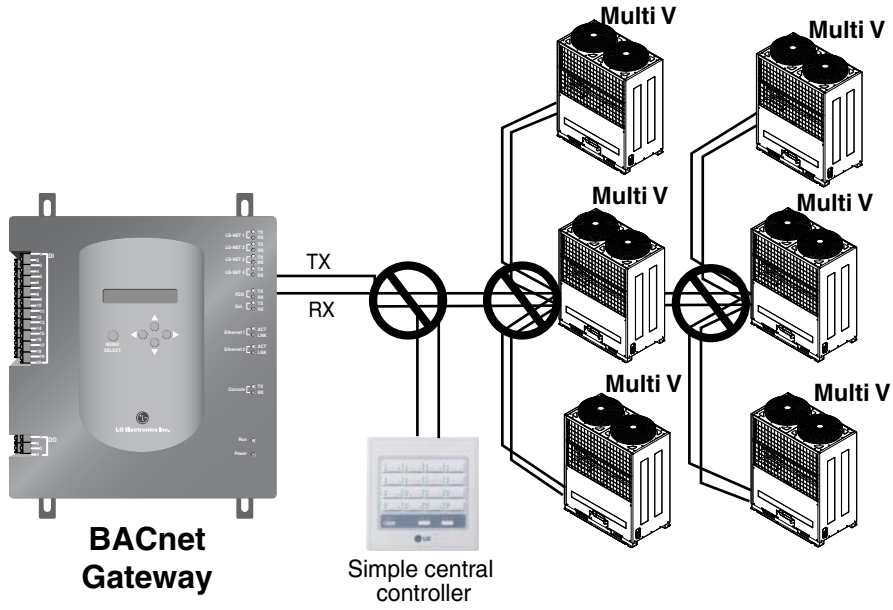
64 outdoor units at maximum can be connected to one port of the RS485 of the BACnet Gateway and 256 indoor units at maximum can be connected to one BACnet Gateway. When there are many outdoor units to connect, connect the outdoor units suitably from LG-NET1 to LG-NET4 with the BUS form.

Otherwise, the BACnet Gateway may cause the malfunction.

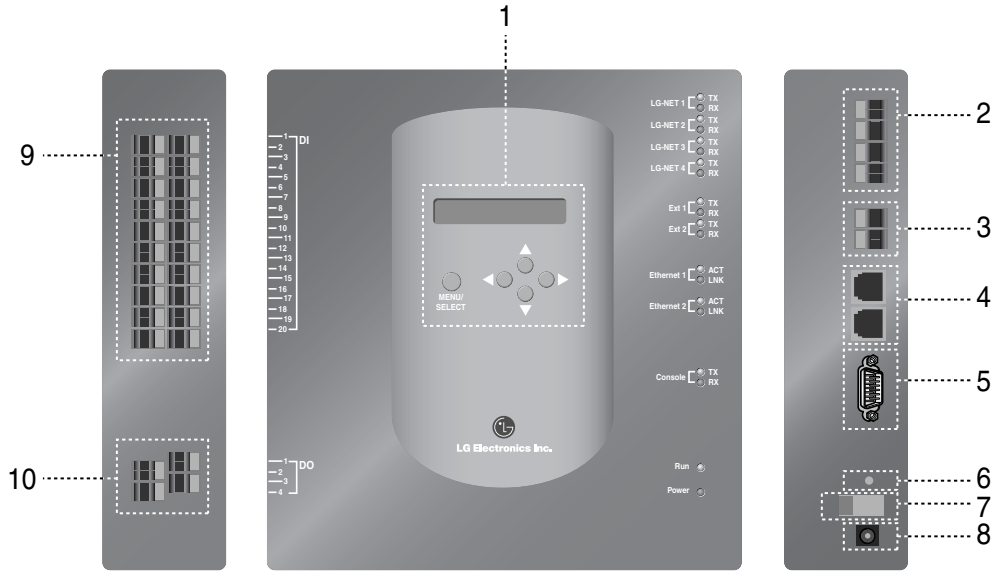
The following figure shows the example for separately connecting the LG-NET1 and the LG-NET2 with the BUS form



The following figure shows the example of the incorrect connection of the RS485 of the BACnet Gateway.



3.5.3 Name of each part



Left side **Front** **Right side**

1. Button & LCD for setting the network environment and displaying the display
2. RS485 communication port (4EA) for connecting the Air conditioner/Ventilator PI485
3. RS485 communication terminal (reserved) for the external extension
5. RS232 port : for updating the program
6. Reset switch : Software reset switch
7. Power On/Off switch
8. DC12V adaptor connection terminal
9. Terminals (20 ports) for connecting the external input signal - DC 0~24V input terminal
10. Terminals(4 port) for connecting the external ouput signal : port # 1 → fire interlocking , others → reserved

Note: It is possible to freely start or stop the indoor unit for corresponding to High or Low signal of each external input signal.

3.5.4 Installation order

(1) Installing the hardware

■ **Setting the indoor unit**

Set the unique address for all indoor units connected to the BACnet Gateway.

Two hexadecimal digits 00~FF can be set to the address. The address can be set by the wired or wireless remote controller.

■ **Connecting Outdoor units-BACnet Gateway**

Connect Each Outdoor units Internet A/B terminals to the RS485 port of the BACnet Gateway

■ **Connecting the BACnet Gateway to the Internet**

Connect the BACnet Gateway to the hub (Internet) or the PC via the LAN cable. And then, apply the power to the BACnet Gateway.

(2) Installing the software

■ **How to set the BACnet Gateway**

Set the BACnet Gateway by using the button and the LCD display.

■ **Network environment setup of the BACnet Gateway**

After getting the IP address of the BACnet Gateway assigned by the network administrator, set the network environment such as IP address and BACnet type of BACnet Gateway by using the button of the BACnet Gateway.

(3) Checking the installation

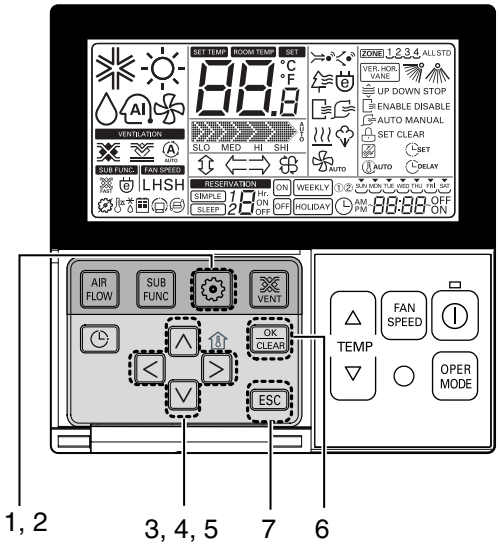
After installing the BACnet Gateway, it is possible to check the product communication status by using the Web controlling/monitoring feature.

3.5.5 Setting the indoor unit address

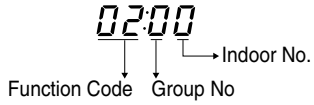
■ Setting the indoor unit address

• PQRCVSL0, PQRCVSL0QW

It's the function to use for connecting central control. Please refer to central controller manual for the details



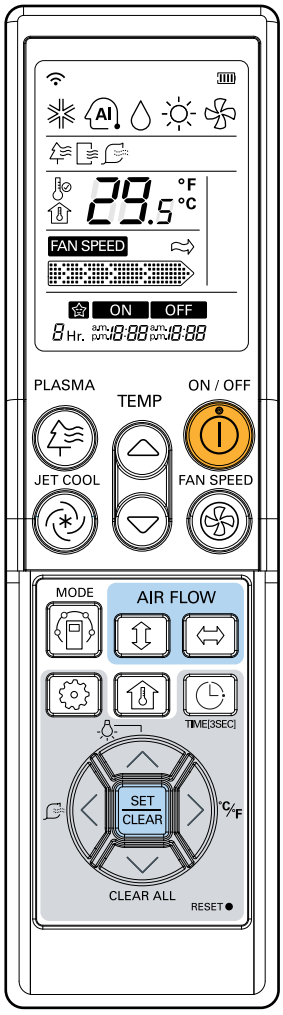
1. Press the Function Setting button for 4 seconds to enter the installer setting mode until timer segment displays "01:01".
2. Repeatedly pressing Function Setting button to select function code 02
   Ex) Setting Address as 'F5'



3. Set Group No. by pressing Up/Down button.(0~F)
4. Move to Indoor No. setting option by pressing Right button.
5. Set Indoor No. by pressing Up/Down button.
6. Press OK/CLEAR button to save.
7. Press ESC button to exit or system will automatically exit after 25 seconds

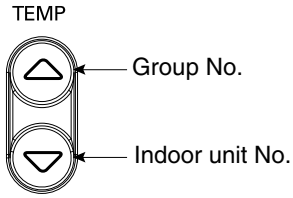
❉ When exiting without pressing set button, the manipulated value is not reflected.

When using the wireless remote controller



Address setting mode

1. While the MODE button pressed, press the Reset button .
2. By using the temperature adjustment button, set the indoor unit address.
   Setting range: 00~FF



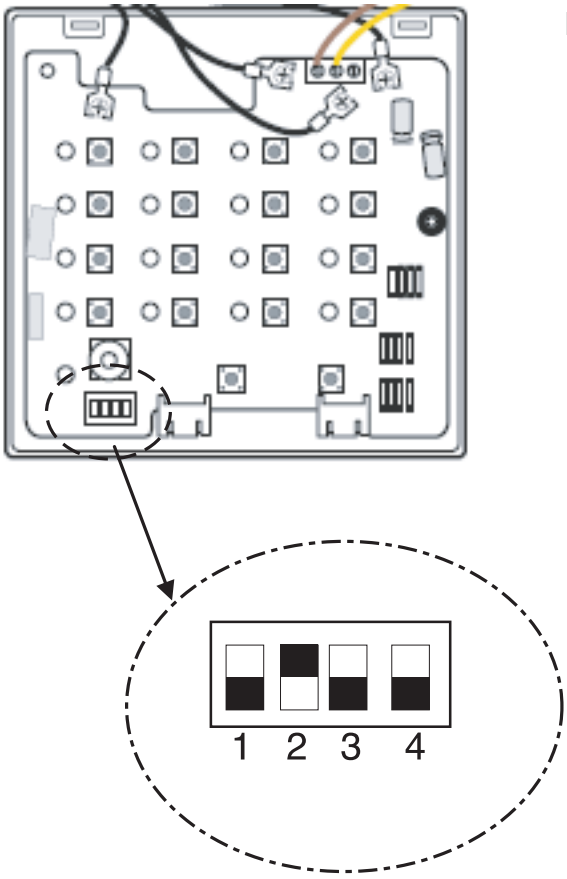
3. After setting the address, press the ON/OFF button toward the indoor unit 1 time.
4. The indoor unit will display the set address to complete the address setting. (The address display time and method can differ by the indoor unit type.)
5. Reset the remote controller to use the general operation mode.

Address check mode

1. With the PLASMA button pressed, press the Reset button.
2. Press the ON/OFF button toward the indoor unit 1 time, and the indoor unit will display the set address in the display window. (The address display time and method can differ by the indoor unit type.)
3. Reset the remote controller to use the general operation mode.

❉ The above function might not work for some remote controllers depending on the manufactured date of the wired/wireless remote controller.
It is not relevant for the consumer use and you can set the address with a remote controller that has the address setting functionality during the installation.

3.5.6 Setting the indoor unit address



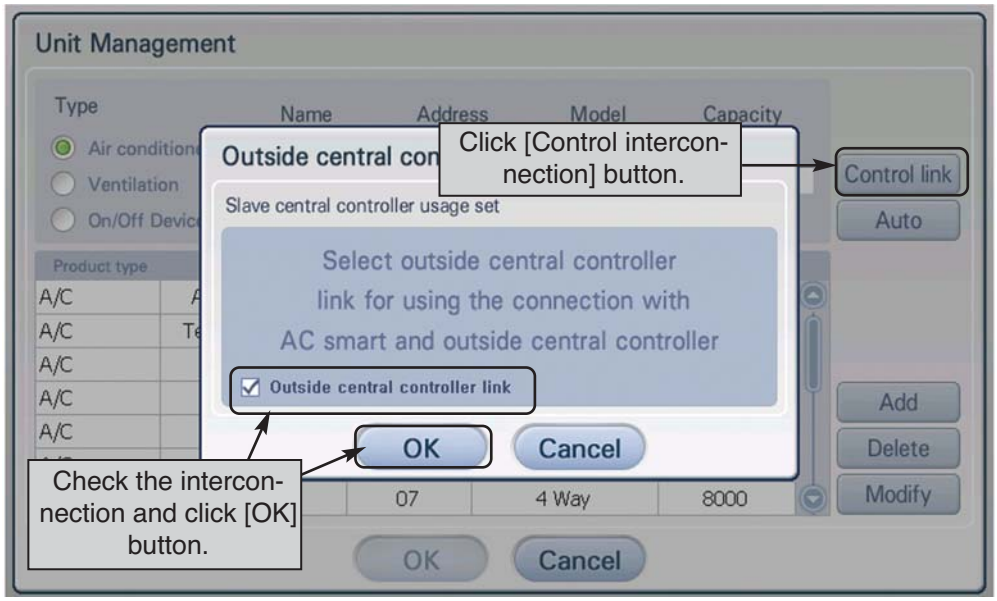
How to interface with simple central controller

- When interfacing with simple central controller, turn the DIP S/W No. 2 of the simple central controller ON.
- Set the rotary S/W to the group address of the indoor unit you would like to control.

3.5.7 Interfacing with AC Smart

The AC Smart offer the function controlling the unit by interconnecting with other central controllers.
In the case, the BACnet Gateway operates as master while the AC Smart operates as slave.
When BACnet gateway interfacing with AC Smart, AC Smart must be set as slave.

In order to set interfacing with AC Smart, press [Control link] button "Unit Management" screen.
And then check "Outside central controller link" at the bottom and press [OK] button.



3.5.8 Connecting Internet – BACnet Gateway

(4) Connecting Internet – BACnet Gateway

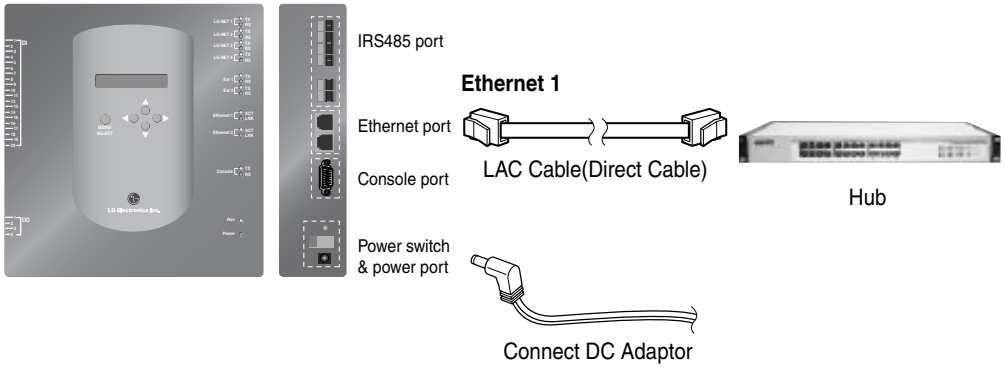
- In the case connecting a BACnet gateway to the internet which is already installed in the site, there should be a HUB which is already installed.
  In the case, being able to inter-work with the BMS system using the internet and connecting a BACnet gateway to the internet which is already installed in the site : Use the HUB

Note: Through the test operation of BACnet gateway, it can be judged whether the installation is properly done or not (instead of using the HUB, connecting the BACnet gateway with a cross cable)

- Be aware the type of the cable you're using (the Direct cable or the Cross cable)
- Prior to the Connecting, Check whether the cable works properly or not through the LAN tester.
- After applying the power to the DC adapter provided, Turn on the power switch.

■ In the case using HUB

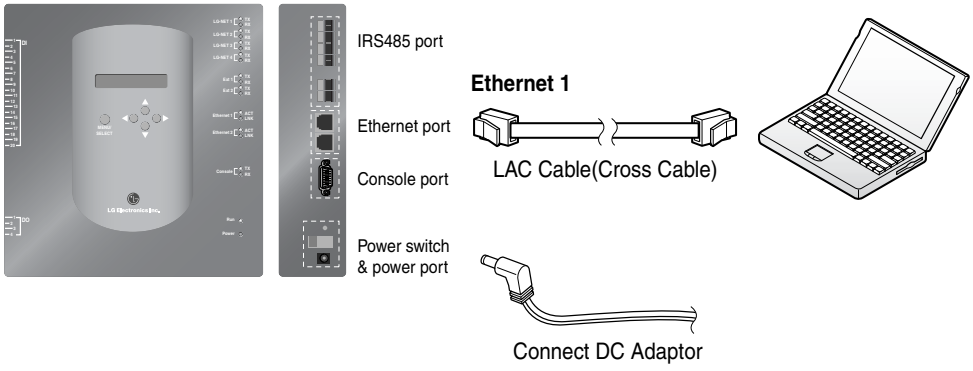
Use a LAN cable (Direct cable) and connect it to Ethenet1 of the BACnet gateway
(Ethernet2 is reserved in case)



■ In the case NOT using HUB

(to check the communication status using web control/monitoring function in the site)

Use a LAN cable (Cross cable) and connect it to Ethenet1 of the BACnet gateway
(Ethernet2 is reserved in case)



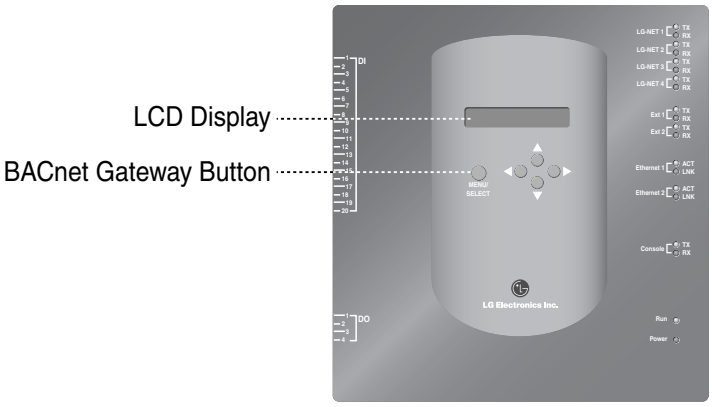
Note: If know Detail web control/monitoring function, refer web control/monitoring part

3.5.9 Software installation

(1) How to set the BACnet Gateway

The following information should be set to use the BACnet Gateway

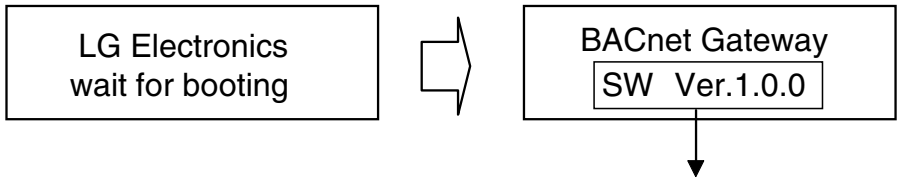
• BACnet Gateway network environment Setting IP address, Gateway address and Net mask address



■ **Setup Order**

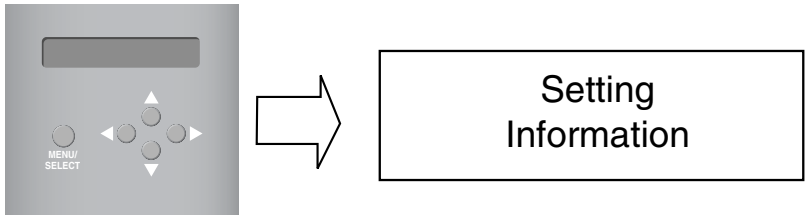
1. Turn on the BACnet Gateway.
   (The following screen will be displayed on the BACnet Gateway LCD screen about 5 seconds after the power is turned on.)

[LCD screen] **[Start-up screen]**



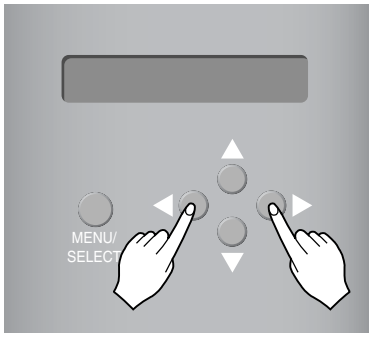
• S/W Ver. No. may be different according to the manufactured date.

2. Press “MENU/SELECT” button of the BACnet Gateway to enter the environment setup mode.



• Menu selection displayed on the screen.
When the "MENU/SELECT" button is pressed for the first time.
Select "Setting" mode to change setup. Select "Information" mode to confirm setup state.

3. After selection "Setting" mode using the up/down(▲, ▼) button, use the left/right(◀, ▶) button to select the desired function.



Enter the IP address

[MENU] →
Set IP address

Enter the Gateway address

← [MENU] →
Set GW address

Enter the Net mask

← [MENU] →
Set Netmask

Enter the Set BACnet Type

← [MENU] →
Set BACnet Type

4. Press the “MENU/SELECT” button at the desired function to enter into the setup window for the said mode.

Note: LG BACnet Gateway support two type Gateway depend on selection type "A" and type " B". Type "A" support multi device per one IP address and Type " B" support only one device per one IP address. After asking BMS engineer about multi device or one device per one IP address, select LG BACnet Gateway's "Set BACnet Type".

3.5.10 Network environment setup of the BACnet Gateway

• After getting the IP address of the BACnet Gateway assigned from the network administrator, use the button of the BACnet Gateway to set up the IP address and the network environment of the BACnet Gateway.

■ **Setup procedure**

• Set the IP address

• Enter the Gateway address

• Enter the net mask

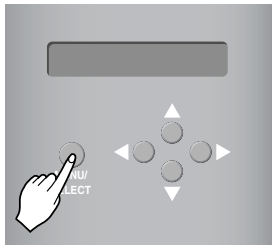
• Enter the Set BACnet Type

• Check the network environment setting

Note: If the above items are not entered, it is impossible to control the BACnet Gateway or it causes the communication error, so make sure that all of them are correctly entered.

1. Setting the IP address

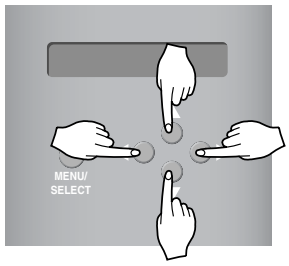
① First, press the “MENU/SELECT” button of the BACnet Gateway. When the following menu is displayed on the BACnet Gateway LCD screen, press the “MENU/SELECT” button again to enter the IP address.



[LCD screen]

[MENU] Set IP address	[Set IP address] 192.168.000.000

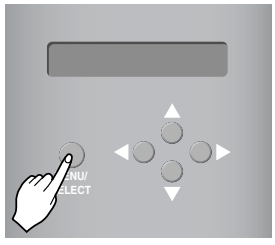
② Use the up/down/left/right button (▲,▼,◀,▶) to select the desired address.



[Example for setting the gateway address]

[Set IP address] 165.186.002.101

③ After entering the last address, press the “MENU/SELECT” button to set the entered address to the IP address. (When there is no “MENU/SELECT” button input for 5 seconds, the set value is ignored to return to the existing address.

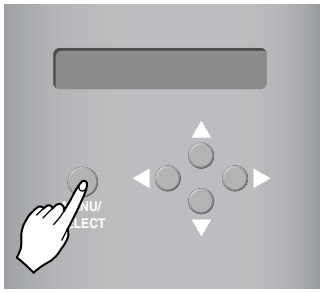


[LCD screen after completing the setup]

BACnet Gateway SW ver. 1.0.0

2. Setting the gateway address

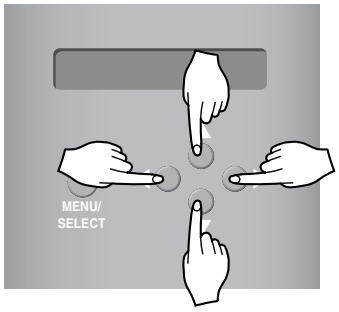
① Press the buttons by the following order. And then, when the following menu is displayed on the BACnet Gateway LCD screen, press the “MENU/SELECT” button to enter the gateway address.



[LCD screen]

[MENU] Set GW address	[Set GW address] 192.168.000.000

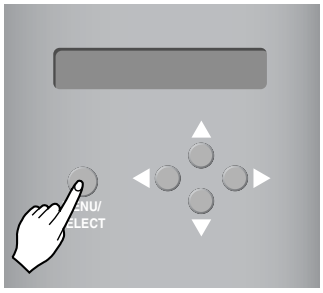
② Use the up/down/left/right button (▲,▼,◀,▶) to select the desired address.



[Example for setting the gateway address]

[Set GW address] 165.186.002.001

③ After entering the last address, press the “MENU/SELECT” button to set the entered address to the gateway address.
(When there is no “MENU/SELECT” button input for 5 seconds, the set value is ignored to return to the existing address.

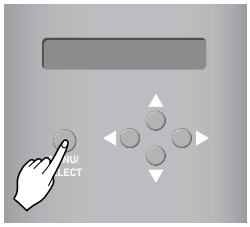


[LCD screen after completing the setup]

BACnet Gateway SW ver. 1.0.0

3.Setting the net mask address

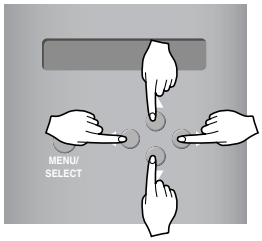
① Press the buttons by the following order. And then, when the following menu is displayed on the BACnet Gateway LCD screen, press the “MENU/SELECT” button to enter the net mask address.



[LCD screen]

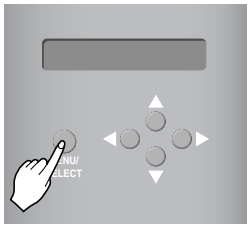
[MENU] Set Netmask	[Set Netmask] 192.168.000.000

② Use the up/down/left/right button (▲,▼,◀,▶) to select the desired address.



[Set Netmask] 255.255.255.000

③ After entering the last address, press the “MENU/SELECT” button to set the entered address to the net mask address. (When there is no “MENU/SELECT” button input for 5 seconds, the set value is ignored to return to the existing address.

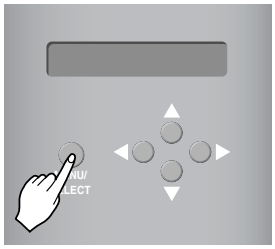


[LCD screen after completing the setup]

BACnet Gateway SW ver.1.0.0

4. Setting the Set BACnet Type

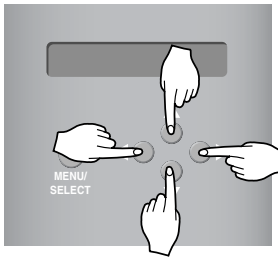
① Press the button by the following order. When the following menu is displayed on the BACnet Gateway LCD screen, press the "MENU/SELECT" button to enter the Set BACnet Type.



[MENU]
Set BACnet Type

[Set BACnet Type]
A ➔

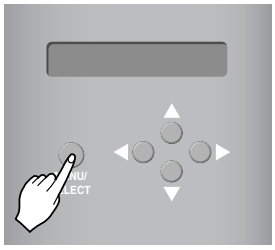
② Use the up/down/left/right button (▲,▼,◀,▶) to select the desired BACnet Type.



[Example for setting the gateway Set BACnet Type]

[Set BACnet Type]
A ➔ B

③ After selecting the BACnet Type, press the "MENU/SELECT" button to set the selected BACnet Type to the Set BACnet Type.

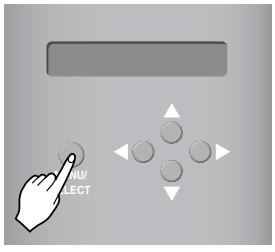


[LCD screen after completing the setup]

BACnet Gate way
SW ver.1.0.0

5. Checking the network environment setting

Press the buttons by the following order. And then, when the following menu is displayed on the BACnet Gateway LCD screen, press the “MENU/SELECT” button to check the set network information.
The other information is displayed on the screen every 3 seconds.
(Order to display the information : MAC address → IP address → Gateway address → Net mask address → Set BACnet Type)



[LCD screen]

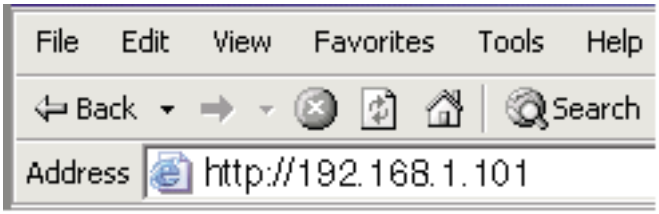
Setting
Information

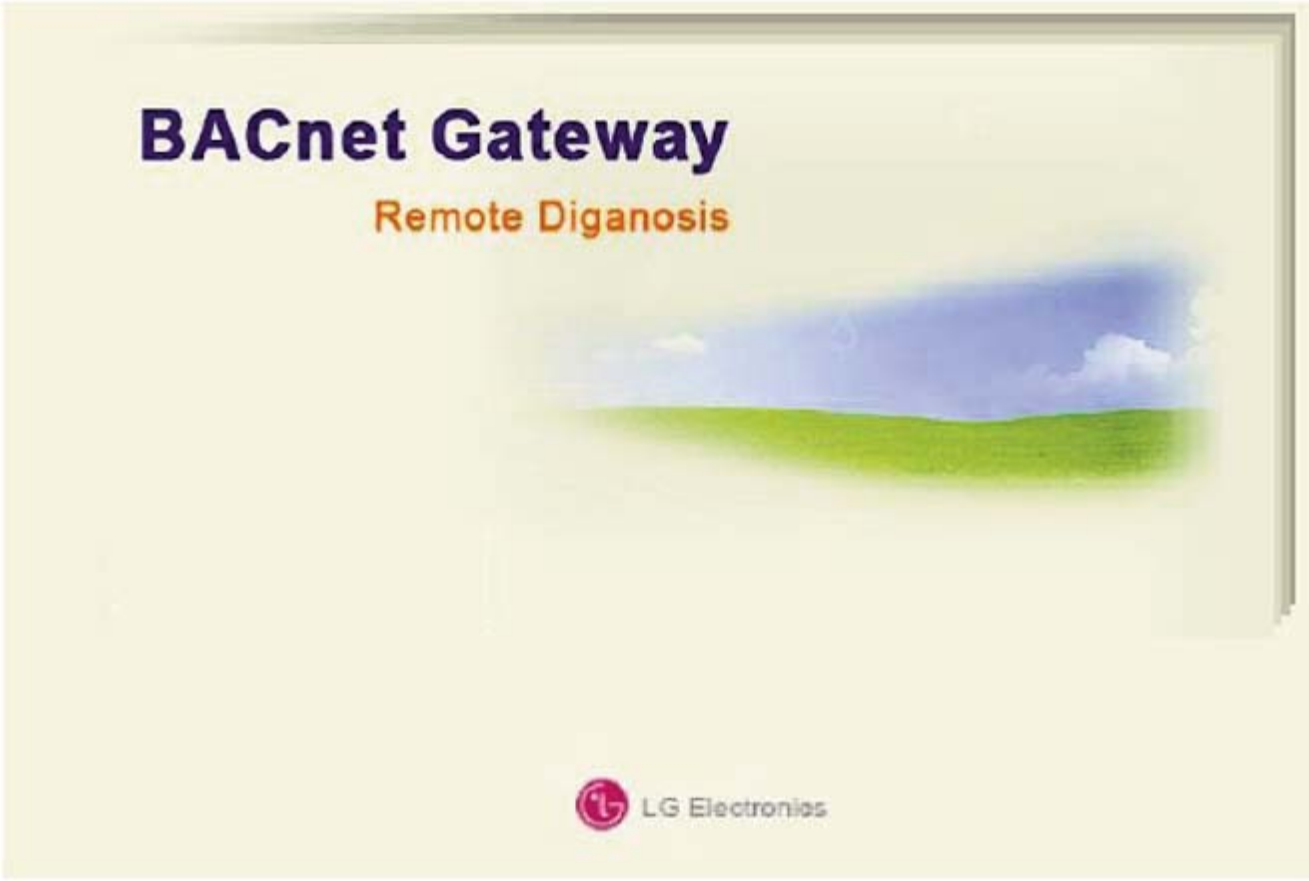
3.5.11 Web control and monitoring

The following procedure is BACnet Gateway test operation for remote control function.

■ **Connecting to BACnet Gateway server.**

In order to connect to the BACnet Gateway server connect the Ethernet1 (LAN port) in the Gateway to the PC Input the default IP address on the URL address box for connection.

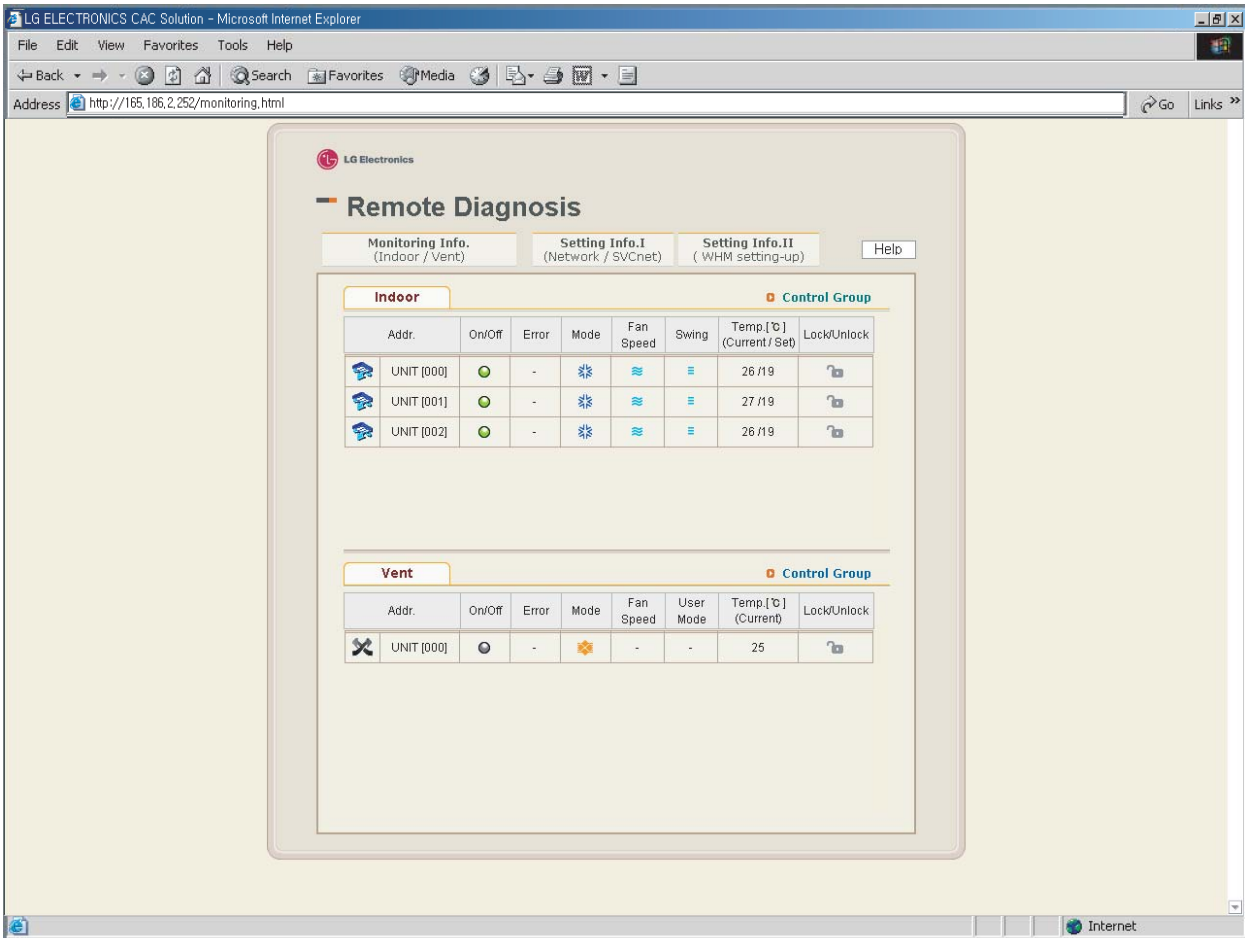




■ Confirmation of monitoring date function

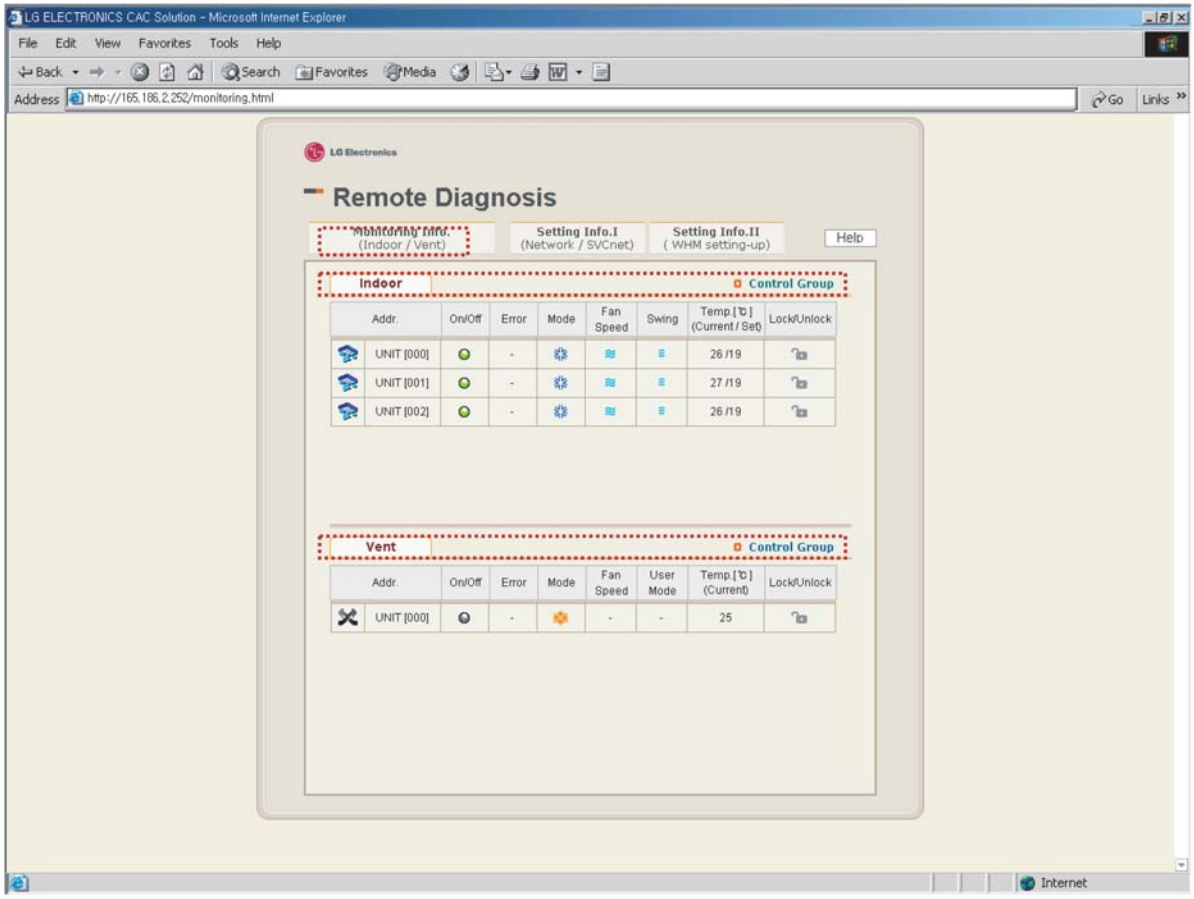
Click the image of the screen shown

As shown below, Remote Diagnosis page will appear and you can confirm the information of indoor unit/vent.



■ Confirmation of Control Function (Indoor)

Click the "Monitoring(Indoor/Vent)" button at the top Remote Diagnosis page, and you can confirm the data of Indoor/Vent in real-time.



■ Indoor Control

Click the Indoor's Control Group

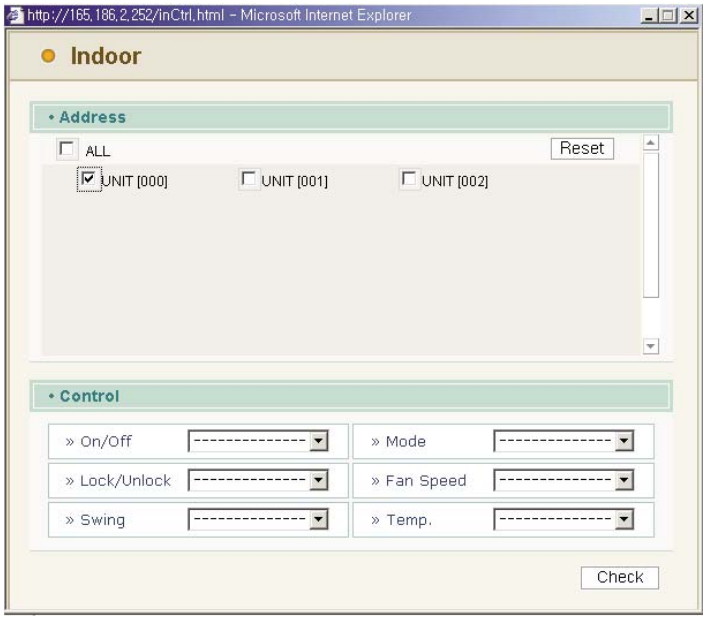
As shown above, if you click the Control Group button a new window will pop-up.

(In the pop-up page at the Address category, UNIT[---] means addresses of connected indoor units.)

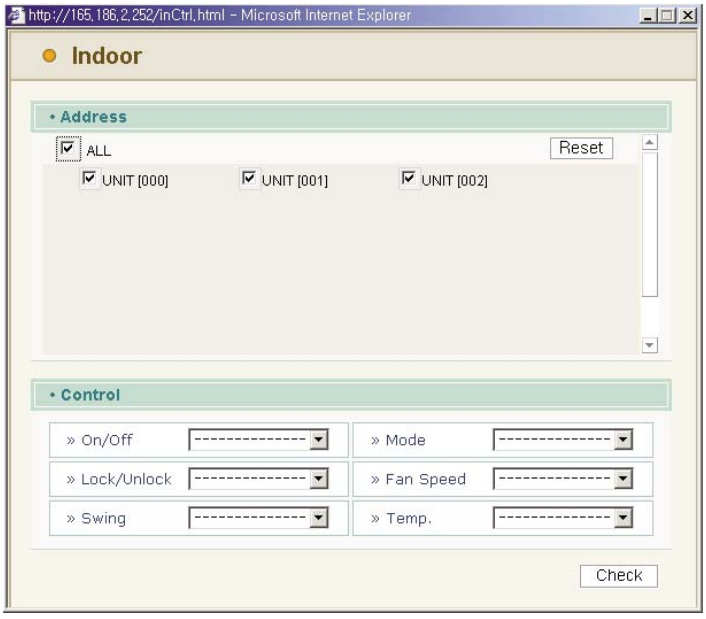
- Individual / Total Control

Check the unit which will be controlled for individual control or check ALL for total control.

(Click the Reset button to check the addresses again)



<Individual Control>



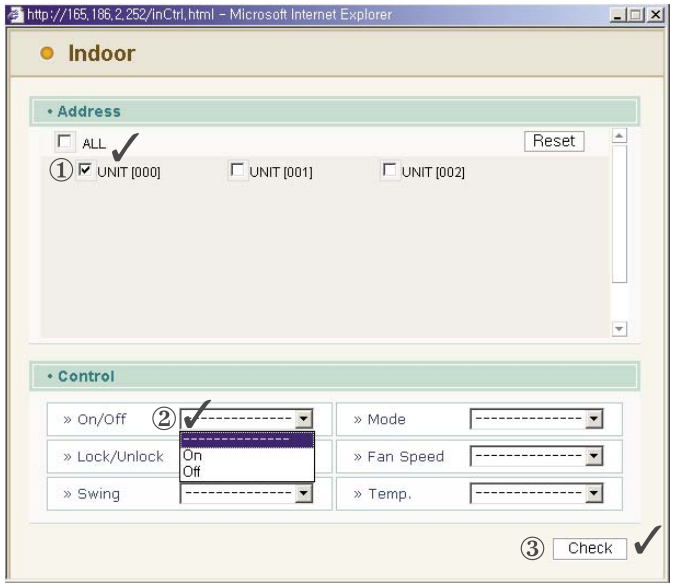
<Total Control>

- Control :On/Off

(1) Choose from the On/Off select box

(2) Click the Check button

(The modified status is confirmable by clicking on the "Monitoring(Indoor/Vent)" button top of Remote Diagnosis page.)



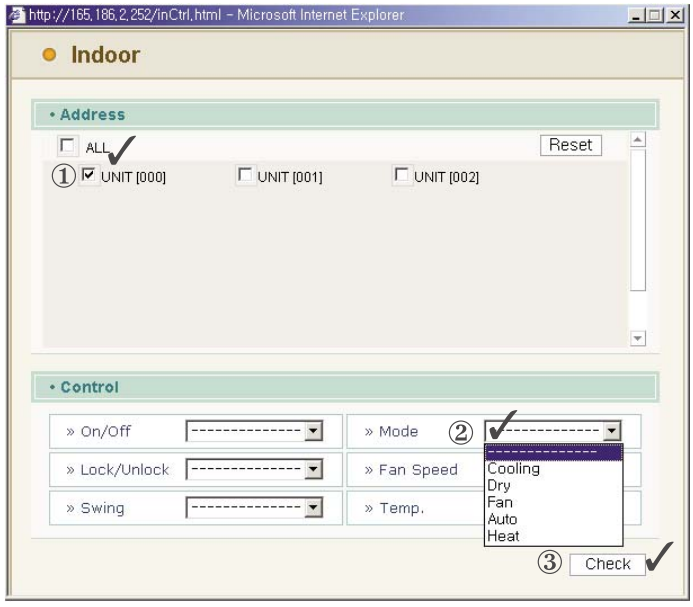
< On/Off Control >

- Control :Mode

(1) Choose from the Mode select box

(2) Click the Check button

(The modified status is confirmable by clicking on the "Monitoring(Indoor/Vent)" button top of Remote Diagnosis page.)



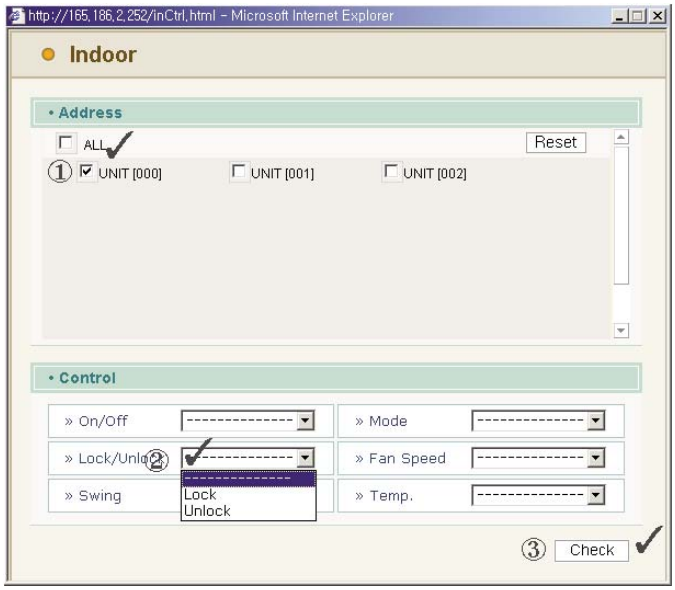
< Mode Control >

- Control : Lock/Unlock

(1) Choose from the Lock/Unlock select box

(2) Click the Check button

(The modified status is confirmable by clicking on the "Monitoring(Indoor/Vent)" button top of Remote Diagnosis page.)



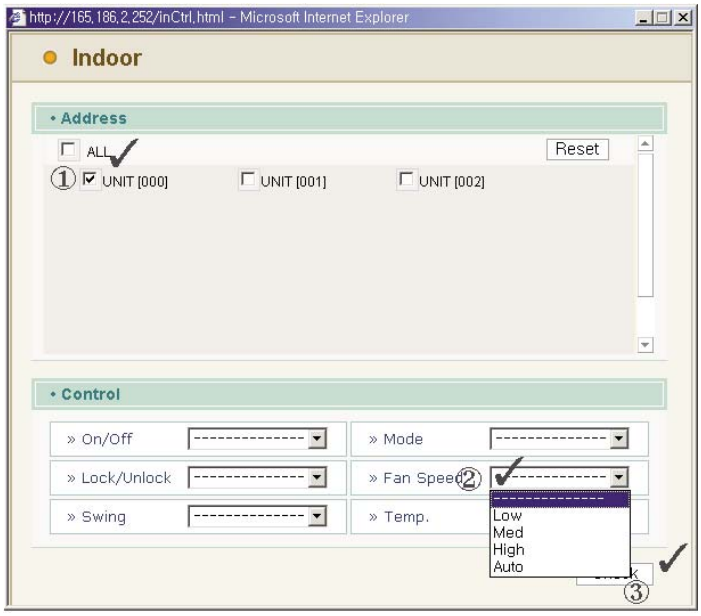
< Lock/Unlock Control>

- Control : Fan Speed

(1) Choose from the Fan Speed select box

(2) Click the Check button

(The modified status is confirmable by clicking on the "Monitoring(Indoor/Vent)" button top of Remote Diagnosis page.)



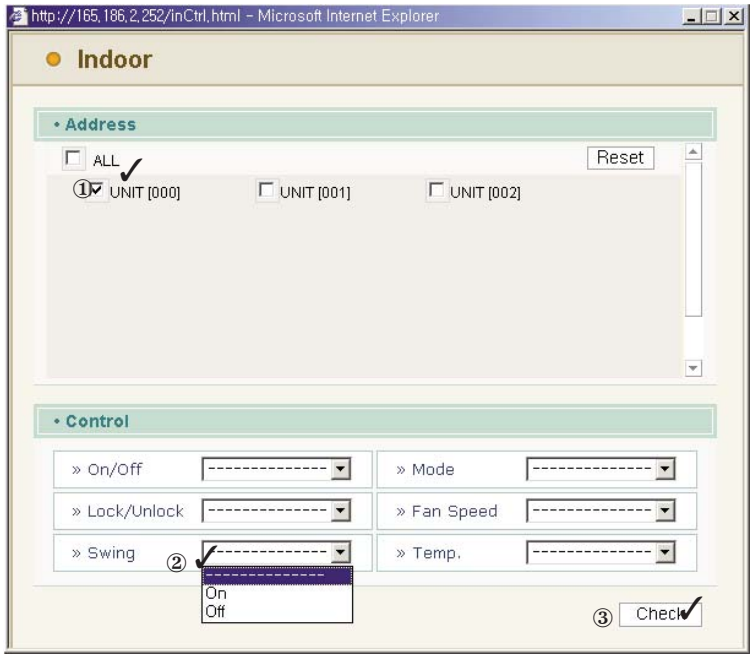
<Fan Speed Control>

- Control : Swing

(1) Choose from the Swing select box

(2) Click the Check button

(The modified status is confirmable by clicking on the "Monitoring(Indoor/Vent)" button top of Remote Diagnosis page.)



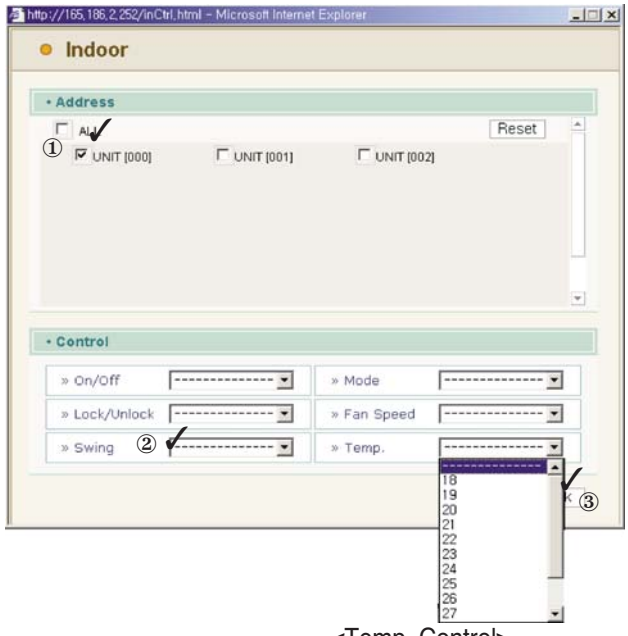
<Swing Control>

- Control:Temp.

(1) Choose from the Temp select box

(2) Click the Check button

(The modified status is confirmable by clicking on the "Monitoring(Indoor/Vent)" button top of Remote Diagnosis page.)



<Temp. Control>

■ Vent Control

Click the Indoor's Control Group

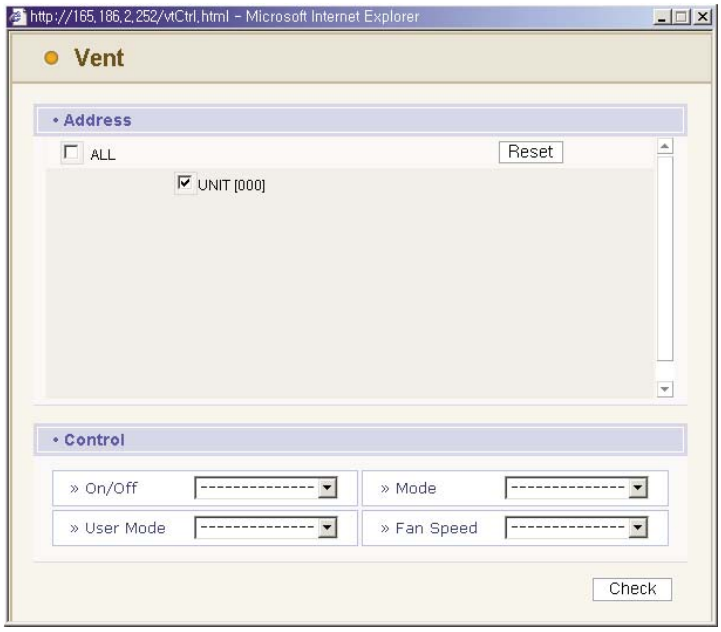
As shown below, if you click the Control Group button a new window will pop-up.

(In the pop-up page at the Address category, UNIT[---] means addresses of connected vents.)

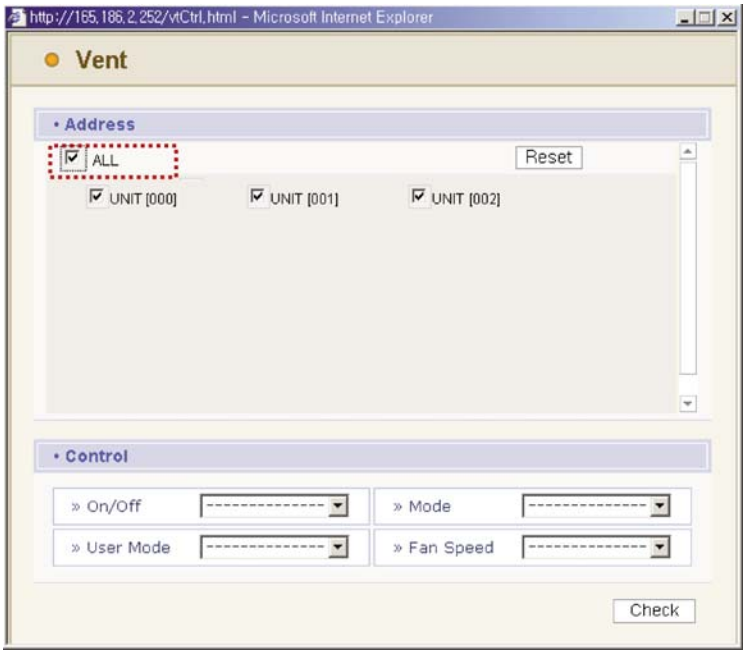
- Individual Control / Total Control

Check the unit which will be controlled for individual control or check ALL for total control.

(Click the Reset button to check the addresses again)



<Individual Control >



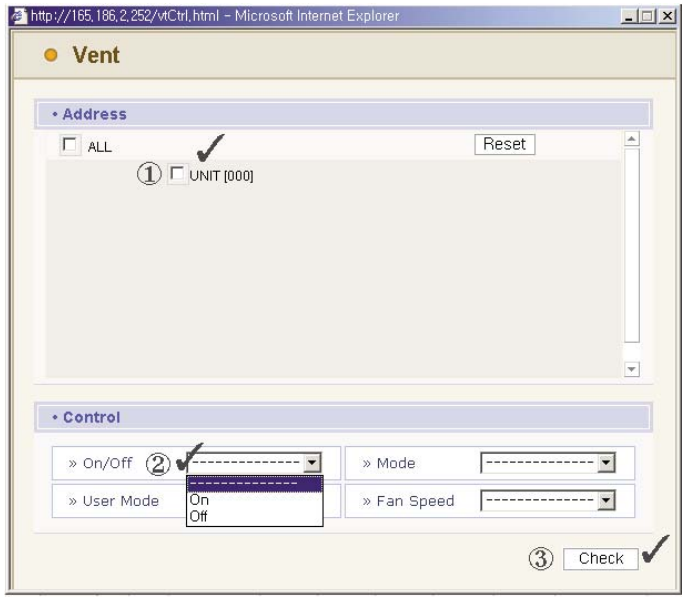
<Total Control>

- Control : On/Off

(1) Choose from the On/Off select box

(2) Click the Check button

(The modified status is confirmable by clicking on the "Monitoring(Indoor/Vent)" button top of Remote Diagnosis page.)



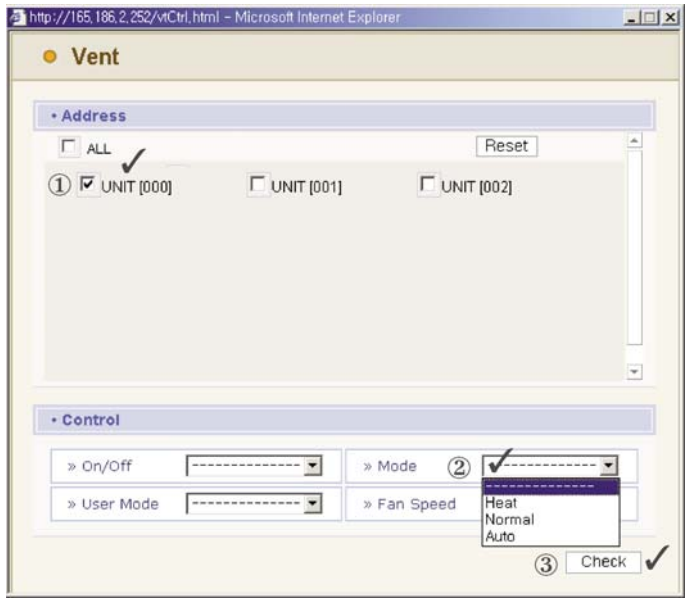
<On/Off Control>

- Control : Mode

(1) Choose from the Mode select box

(2) Click the Check button

(The modified status is confirmable by clicking on the "Monitoring(Indoor/Vent)" button top of Remote Diagnosis page.)



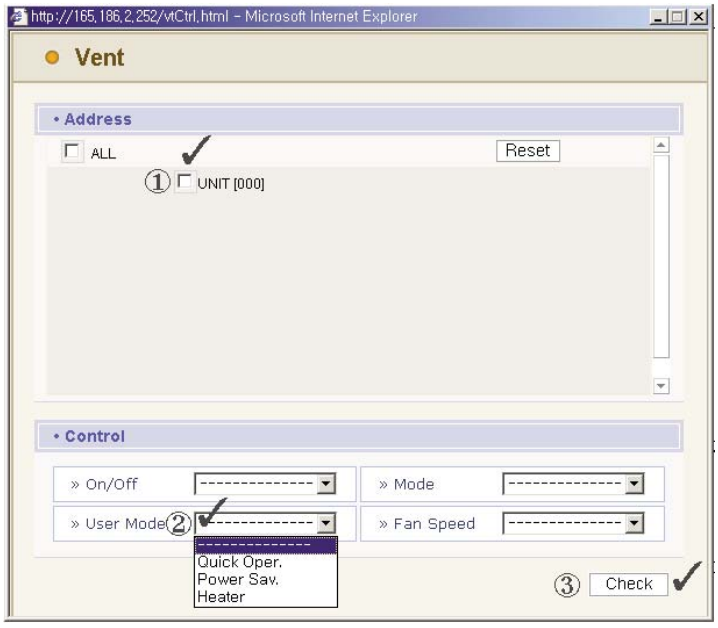
<Mode Control>

- Control : User Mode

(1) Choose from the User Mode select box

(2) Click the Check button

(The modified status is confirmable by clicking on the "Monitoring(Indoor/Vent)" button top of Remote Diagnosis page.)



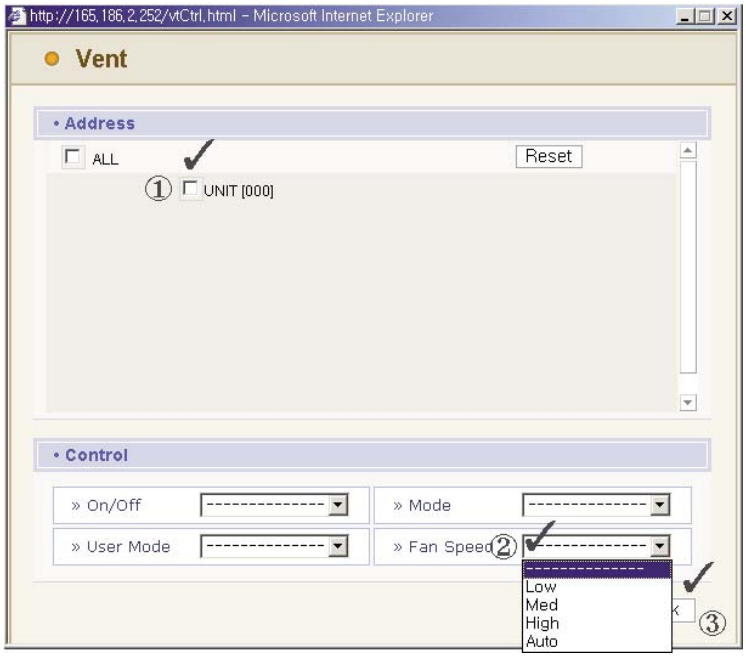
<User Mode Control>

- Control : Fan Speed

(1) Choose from the Fan Speed select box

(2) Click the Check button

(The modified status is confirmable by clicking on the "Monitoring(Indoor/Vent)" button top of Remote Diagnosis page.)

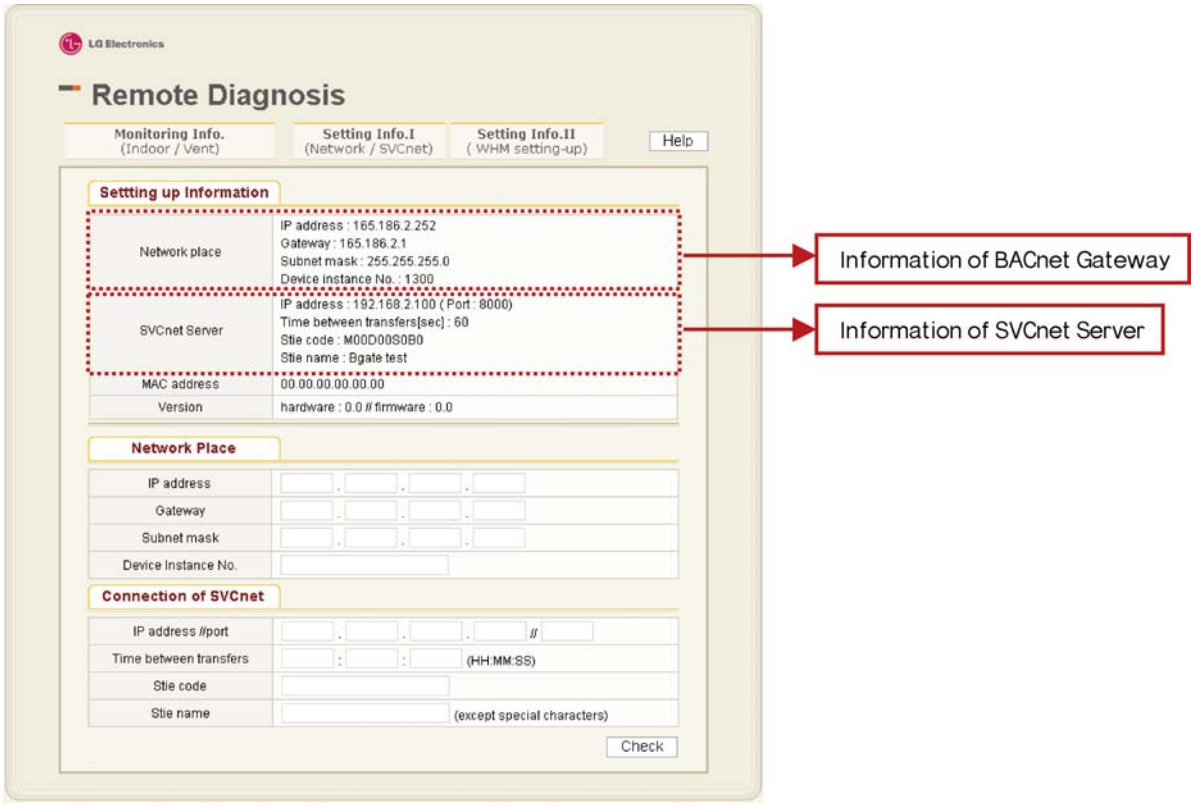


<Fan Speed Control>

■ Confirming and adjusting the System Setting Information

(1) Click the Setting Info.I (Network/RTMS),

(2) Confirm the Network and RTMS information
(When requested, Network/RTMS of setting up information will appear)



Note: Possible use SVCnet function when contract with LG.
contact to the LG System Air Conditioner supporting division.

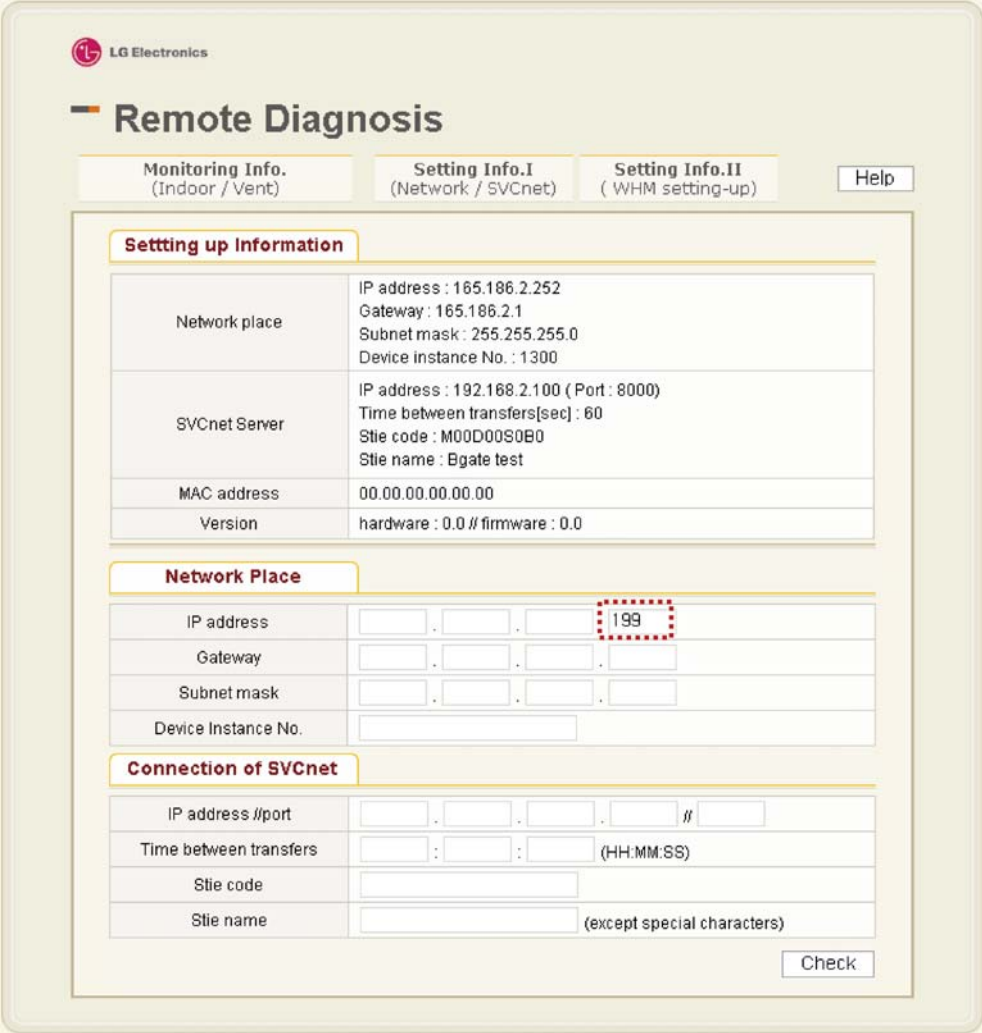
- Network/RTMS Setting

Click the corresponding input box to adjust the Network/RTMS setting

* To adjust the specified item, just change the corresponding item.

Ex) Changing IP Address: 192.168.3.197 ❯ 192.168.3.199

Input 199 in the corresponding item, and click the check button



3.5.12 Functional Specifications BACnet Gateway

The items to monitor and control A/C from BACnet communication as well as descriptions of each item are listed below.

Function		Description
Monitoring	ON/OFF (status)	Monitors ON/OFF status of each A/C.
	Operation Mode (status)	Monitors cooling, heating, and vent operation status.
	Lock (status)	Indicates whether LOCK function of the A/C is active.
	Fan speed (status)	Monitors Fan speed of the functioning A/C.
	Swing (status)	Monitors swing mode of the indoor units.
	User Mode (status)	Monitors the operation status of user mode (Quickoperation/Power saving /Heater) while vent is functioning.
	Room Temperature	Monitors the room temperature and indicates the actual room temperature.
	Filter Sign	Monitors the status of the filters for vent
	Alarm	Monitors whether the A/C are operating properly and if not, alarm is set off.
	Error Code	Indicates the respective code for the errors occurred from the A/C system or the network.
Operation, Setting and Monitoring	ON/OFF (setting)	Starts and stops the respective A/C and monitors control results.
	Operation Mode (setting)	Sets the operation mode (cooling, heating, vent or auto mode) and monitors the setting results.
	User Mode (setting)	Sets the additional operation mode in vent (quick fresh, energy efficiency, heating)
	Swing (setting)	Sets the air direction of the indoor unit.
	Fan Speed (setting)	Sets the airflow of the A/C
	Lock (setting)	Sets the lock of the A/C's control authority.
	Set Room Temperature	Sets room temperature of the respective A/C and monitors the setting results.
	Filter Sign Reset	Resets the ventilation's filter limit indication.

■ Monitoring and Controlling point of indoor and ventilator

Applicable monitoring and controlling point for the indoor and ventilator are listed below.
Object Name's XX is indoor's address number.

	Name	Object Name	Object Type	Indoor	Vent
1	ON/OFF (setting)	StartStopCommand_XX	Binary Output	O	O
2	ON/OFF (status)	StartStopStatus_XX	Binary Input	O	O
3	Lock (setting)	LockCommand_XX	Binary Value	O	O
4	Lock (status)	LockStatus_XX	Binary Input	O	O
5	Filter Sign	FilterSign_XX	Binary Input	X	O
6	Filter Sign reset	FilterSignReset_XX	Binary Value	X	O
7	Operation Mode (setting)	ModeCommand_XX	Multistate Output	O	O
8	Operation Mode (status)	ModeStatus_XX	Multistate Input	O	O
9	Swing (setting)	SwingCommand_XX	Binary Output	O	X
10	Swing (status)	SwingStatus_XX	Binary Input	O	X
11	Fan speed (setting)	FanSpeedCommand_XX	Analog Value	O	O
12	Fan speed (status)	FanSpeedStatus_XX	Analog Input	O	O
13	Set Room Temperature	SetRoomTemp_XX	Analog Value	O	X
14	Room Temperature	RoomTemp_XX	Analog Input	O	X
15	Alarm	Alarm_XX	Binary Input	O	O
16	Error Code	MalfunctionCode_XX	Multistate Input	O	O
17	User Mode(setting)	UserModeCommand_XX	Multistate Output	X	O
18	User Mode(status)	UserModeStatus_XX	Multistate Input	X	O

3.5.13 Appendix

■ Supported Object Type

Monitoring and controlling items of air conditioners supported are assigned with general object types specified by BACnet. Support status of each object type is shown in the table below.

(■ : Supported, ❑ : Unsupported)

Object Type		Supported	Description
Analog-Input	0	■	Room Temperature, Error Code
Analog-Output	1	❑	
Analog-Value	2	■	Set Room Temperature
Binary-Input	3	■	ON/OFF(Status), Lock(Status), Filter Sign Swing(Status), Alarm
Binary-Output	4	■	ON/OFF(Setting), Lock(Setting), Swing(Setting)
Binary-Value	5	■	Filter Sign Reset
Calendar	6	❑	
Command	7	❑	
Device	8	■	
Event-Enrollment	9	❑	
File	10	❑	
Group	11	❑	
Loop	12	❑	
Multistate-Output	13	■	Operation Mode(Setting), Fan Speed(Setting) User Mode(Setting)
Multistate-Input	14	■	Operation Mode(Status), Fan Speed(Status) User Mode(Status)
Notification-Class	15	❑	
Program	16	❑	
Schedule	17	❑	
Averagin	18	❑	
Multistate-Value	19	❑	
Trend-Log	20	❑	
Life-Safety-Point	21	❑	
Life-Safety-Zone	22	❑	

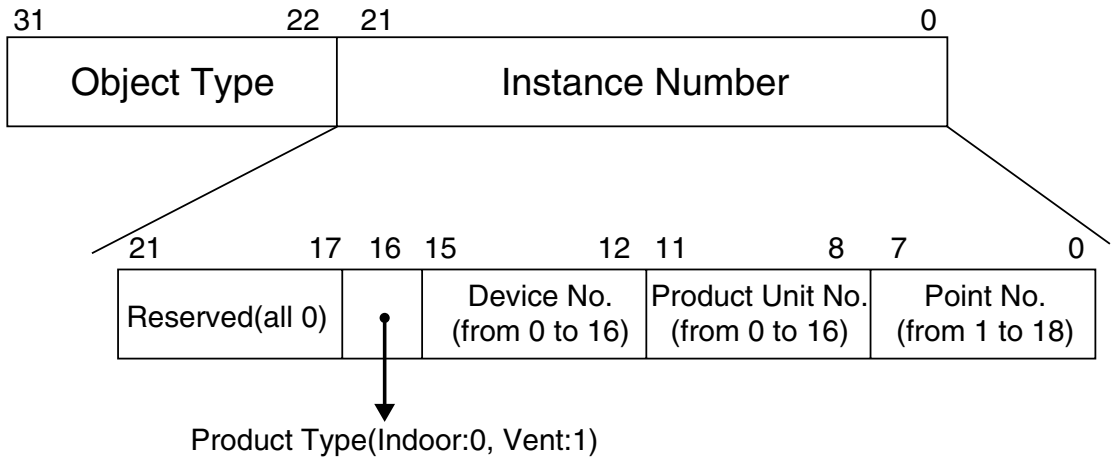
■ BACnet Point List

One indoor unit/vent has the following 18 objects.

Point No.	Product	Name	ObjectName (XXX : Unit address)	Object Type	Unit						
					Inactive	Active					
					Text-0	Text-1	Text-2	Text-3	Text-4	Text-5	
1	Indoor & Vent	ON/OFF (setting)	StartStopCommand_XXX	BO	Stop	Start			-		
2		ON/OFF (status)	StartStopStatus_ XXX	BI	Stop	Run			-		
3		Lock (setting)	LockCommand_ XXX	BO	Permit	Prohibit			-		
4		Lock (status)	LockStatus_XXX	BI	Permit	Prohibit			-		
5	Vent	Filter Sign	FilterSign_XXX	BI	Off	On			-		
6		Filter Sign reset	FilterSignReset_ XXX	BV	Reset(Off)	Void(On)			-		
7		Operation Mode (setting)	ModeCommand_XXX	MO		Heat Exchange	Auto	Normal	-		
8		Operation Mode (status)	ModeStatus_XXX	MI		Heat Exchange	Auto	Normal	-		
7	Indoor	Operation Mode (setting)	ModeCommand_XXX	MO		Cool	Dry	Fan	Auto	Heat	
8		Operation Mode (status)	ModeStatus_XXX	MI		Cool	Dry	Fan	Auto	Heat	
9		Swing (setting)	SwingCommand_XXX	BO	Stop	Run			-		
10		Swing (status)	SwingStatus_XXX	BI	Stop	Run			-		
11		Fan speed (setting)	FanSpeedCommand_XXX	MO		Low	Middle	High	Auto		
12		Fan speed (status)	FanSpeedStatus_XXX	MI		Low	Middle	High	Auto		
11	Vent	Fan speed (setting)	FanSpeedCommand_XXX	MO		Low	High	Super High	Auto		
12		Fan speed (status)	FanSpeedStatus_XXX	MI		Low	High	Super High	Auto		
13	Indoor	Set Room Temperature	SetRoomTemp_XXX	AV	°C(°F)				-		
14		Room Temperature	RoomTemp_XXX	AI	°C(°F)				-		
15	Indoor & Vent	Alarm	Alarm_XXX	BI	Normal	Abnormal			-		
16		Error Code	MalfunctionCode_XXX	AI	Reference LG original Error Code						
17	Vent	User Mode (setting)	UserModeCommand_XXX	MO			Quick operation	Energy saving	Heat		
18		User Mode (status)	UserModeStatus_XXX	MI			Quick operation	Energy saving	Heat		

Local Definition of Object ID - The instance number is a pair, this consists of the indoor unit No. and item.

Object ID



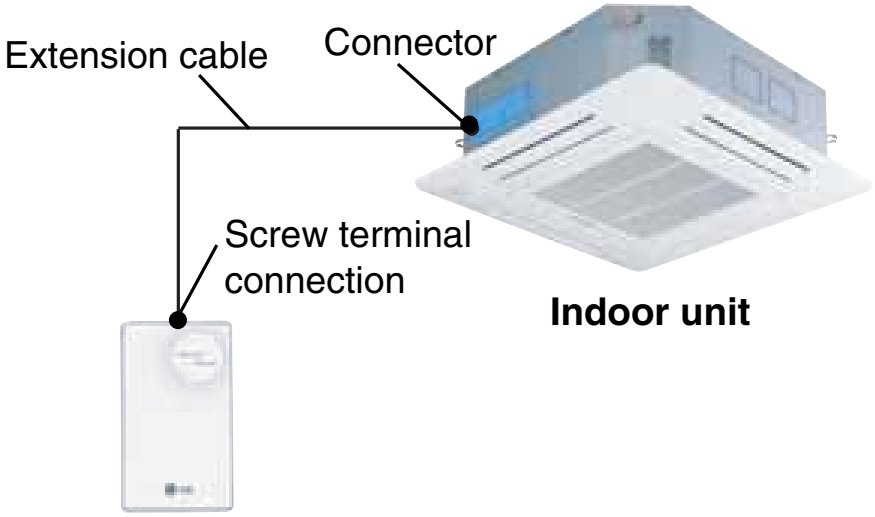
**Device : Group of Product units(16EA)

3.6 Remote Temperature Sensor(PQRSTA0)

■ Overview

Sensor for detecting the room temperature.

- It can help to detect the exact room temperature at the optimal position.
- Model applied to Cassette,Duct type
- Parts
  - Remote temperature sensor assembly
  - Cable 15m(49.2ft)



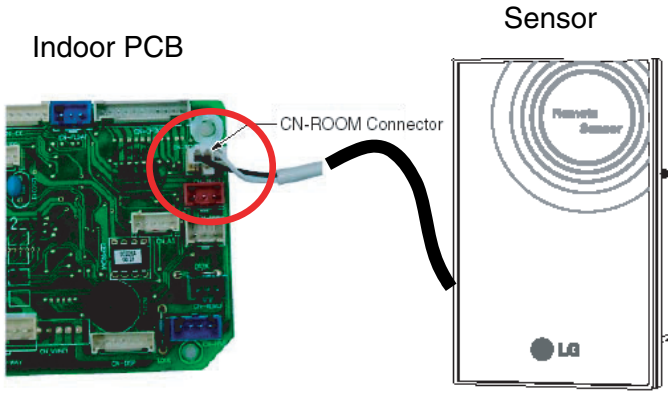
Unit:mm(inch)

Weight : 80g(0.18 lb)

■ Installation

Step 1

Insert the connector of the connection wire into the space for the connector in place of the room temperature sensor.



Wiring diagram of back side of Remote sensor

The Connection wire does not mater if you change the color of the wie because of non-polar.

Step 2

In the case of wired remote controller installed, set the

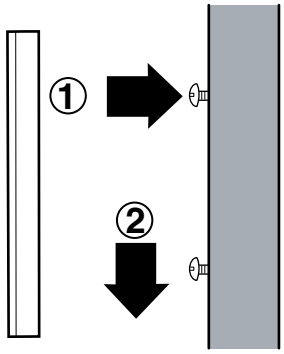
Temperature sensing mode at MAIN mode.

(* Note : Refer each wired remote controller's installation manual
How to change and set room temperature sensing mode)

Step 3

Intergrate the remote temperature sensor with the screws as the order of arrows.

Fixing the remote controller



⚠ CAUTION

1. **Choose the place where the average temperature can be measured for the place the indoor unit operates.**
2. **Avold direct sunlight**
3. **Choose the place where the cooling/heating devices do not affect the remote sensor.**
4. **Choose the place where the outlet of the cooling fan do not affect the remote sensor.**
5. **Choose the place where the remote sensor isn't affected when door is open.**

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P/No.: MFL42059205

LG Electronics

Air Conditioner
20 Yeouido-dong, Yeongdeungpo-gu,
Yeouido P.O.Box 335 Seoul,
150-721, Korea.
http://www.lgeaircon.com

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The air conditioners manufactured by LG have received ISO9001 certificate for quality assurance and ISO14001 certificate for environmental management system.