

INSTALLATION/USER MANUAL

V-NET™ ACS

- Make sure to read the cautions for safety before installation and use, and use it correctly.
- It is intended to keep protect the safety of the installer and user and to prevent the property damage, etc.
- After reading the user manual, please keep it at a place where user can access any time.

TYPE : ACP

MODEL : PQCPC22A0, PQCPC22A1, PQCPC22N0, PQCPC22N1



P/NO : MFL67206316

www.lg.com

TIPS FOR SAVING ENERGY

Here are some tips that will help you minimize the power consumption when you use the air conditioner. You can use your air conditioner more efficiently by referring to the instructions below:

- Do not cool excessively indoors. This may be harmful for your health and may consume more electricity.
- Block sunlight with blinds or curtains while you are operating the air conditioner.
- Keep doors or windows closed tightly while you are operating the air conditioner.
- Adjust the direction of the air flow vertically or horizontally to circulate indoor air.
- Speed up the fan to cool or warm indoor air quickly, in a short period of time.
- Open windows regularly for ventilation as the indoor air quality may deteriorate if the air conditioner is used for many hours.
- Clean the air filter once every 2 weeks. Dust and impurities collected in the air filter may block the air flow or weaken the cooling / dehumidifying functions.

! NOTE

- The product images and descriptions included in this manual are stated based on ACP Premium-Free volt (Model Name: PQCPC22A0).
ACP Premium-Free volt (PQCPC22A0)
ACP Premium-24V (PQCPC22A1)
ACP Standard-Free volt (PQCPC22N0)
ACP Standard-24V (PQCPC22N1)

For your records

Staple your receipt to this page in case you need it to prove the date of purchase or for warranty purposes. Write the model number and the serial number here:

Model number : _____

Serial number : _____

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

Dealer's name : _____

Date of purchase : _____

IMPORTANT SAFETY INSTRUCTIONS

READ ALL INSTRUCTIONS BEFORE USING THE APPLIANCE.

Always comply with the following precautions to avoid dangerous situations and ensure peak performance of your product

WARNING

It can result in serious injury or death when the directions are ignored

CAUTION

It can result in minor injury or product damage when the directions are ignored

WARNING

- Installation or repairs made by unqualified persons can result in hazards to you and others.
- Installation **MUST** conform with local building codes or, in the absence of local codes, with the Nation Electrical Code NFPA 70/ANSI C1-1003 or current edition and Canadian Electrical Code Part1 CSA C.22.1.
- The information contained in the manual is intended for use by a qualified service technician familiar with safety procedures and equipped with the proper tools and test instruments.
- Failure to carefully read and follow all instructions in this manual can result in equipment malfunction, property damage, personal injury and/or death.

Installation

- Any question about the product installation should be asked to the service center or the professional installation agency.
 - It may cause fire, electric shock, explosion or injury.
- Consult the service center or the professional installation agency about reinstalling the installed product.
 - It may cause fire, electric shock, explosion or injury.
- Please use the standardized parts.
 - It may cause fire, electric shock, explosion, injury, or failure.
- Do not keep or use combustible gas or inflammable material near the product.
 - IT may cause fire or electric shock.
- Do not disassemble, repair or modify the product at random.
 - It may cause failure of the product.
- Do not install where raindrop can fall.
 - It may cause failure of the product.
- Do not install the product at wet place.
 - It may cause failure of the product.
- Provided product and adaptor shall only be installed and used inside a building.
 - It may cause fire or failure of the product.
 - *Do not install or use outside.
- Install stably in a place that can endure the weight of the ACP.
 - If the installation place is not strong enough, the ACP may fall and damaged.
- Make sure to enquire to the specialty store of the product purchase or service center for electric works.
 - It may cause fire or electric shock.
- Do not damage the power cord or bend it by force.
 - It may cause fire or electric shock.
- You need to use a safely insulated power supply which follows IEC61558-2-6 and NEC Class2
 - If you do not follow, It may cause fire, electric shock, explosion or injury.

4 SAFETY PRECAUTIONS

- Do not connect 220V power to 24V products
 - If you do not follow, it may cause fire, electric shock, explosion or injury.
- Do not connect power cord to the control signal connector.
 - It may cause fire or explosion.

Operation

- Do not change or extend the power cord with your own discretion.
 - It may cause fire or electric shock
- Do not place any heating device near the product.
 - It may cause fire.
- Do not use any heating device near the power cord.
 - It may cause fire or electric shock.
- Do not let water flow into the product.
 - It may cause electric shock or failure.
- Do not put heavy weight on the power cord.
 - It may cause fire or electric shock.
- Do not put heavy weight on the product.
 - It may cause the failure of the product.
- If the product is flooded, consult the service center or the professional installation agency.
 - It may cause fire or electric shock.
- Let the children or the old and the weak be controlled by the guardian to use.
 - It may cause accident or failure.
- Do not give any shock to the product.
 - Any shock to the product may cause failure.
- Grab the head of the plug of the power cord to pull when disconnecting the plug, and do not touch the plug with wet hands.
 - It may cause fire or to deform the product.
- Do not use the product in certain environments as follows.
 - If the product is used in a place with oil, steam, or sulfuric acid gas, performance may be degraded or product may be damaged.
- Do not press the switch or button with sharp objects.
 - It may cause electric shock or failure of the product.
- Please check the operation temperature.
 - If the product is used in an environment with the temperature exceeding the operation boundary, it may cause a severe damage.
Please check the usage temperature boundary in the manual. If there is no specified temperature, please use the product within the boundary of 0~40°C.
- Do not put a container, etc. with water on the product.
 - It may cause fire or electric shock.
- Do not touch the switch with wet hand.
 - It may cause electric shock or failure of the product.
- Please read installation and user manual for connection with PC or peripheral devices.
 - It may cause fire or failure of the product.
- If a warning window appears on PC, product stops, or it does not work, immediately stop the usage.
 - It may cause fire or failure of the product.

CAUTION

Operation

- Do not use strong detergent such as solvent, but a soft cloth.
 - It may cause fire or to deform the product.
- Please check the rated capacity of the power.
 - It may cause fire or failure of the product.

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ACP FUNCTIONS AND SPECIFICATION

ACP (Advanced Control Platform) is the central controller that can manage up to 256 equipments in one space individually or as combined. ACP can monitor or control the equipments installed in each room of the building from the places such as the management office of a building or the administration office of a school.

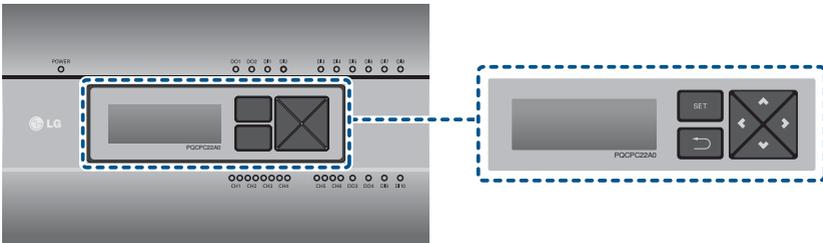
ACP Functions

Major functions of the ACP are as follows.

Environment setting function using the ACP external buttons

ACP can use the external buttons installed outside of the ACP to set the following functions.

- Set Network environment (IP address, Net mask, Gateway)
- Set the function to use between Peak/demand function
- Set the language to use in LG ACCS screen
- Set whether to use schedule function
- Set whether to use integrated power function
- Decide whether to use error history display function
- Decide whether to display outdoor freezing cycle related information
- SW upgrade function
- Data backup function
- Data recovery function
- RS-485 communication logging function
- Set CH6 for chiller interface (CH6 is not supported by PQCP22A0 or PQCP22N0.)

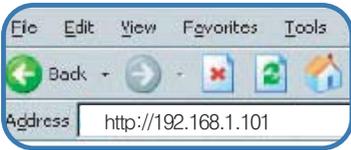
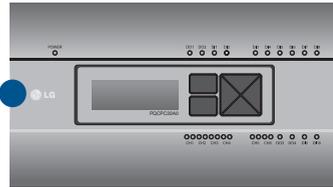


Embedded web server function

Without an installation of a separate PC program, when IP address of ACP is input in the address window using Internet Explorer, the central control program in ACP web server is automatically run, and the functions of various contents can be used.



Internet Explorer



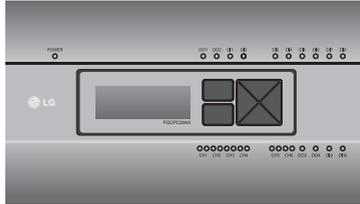
- Controlling of up to 256 air conditioner indoor units
- Monitoring of error and operation status
- Controlling the peak power / demand power
- System setting function

Devices that can interface with ACP

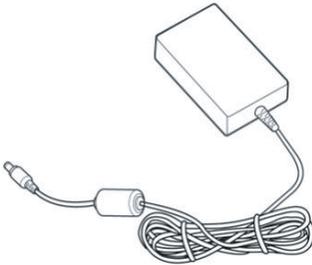
Device	Premium support	Standard support
AC Ez	O	O
Simple Central Controller	O	O
AC-Smart	O	O
AC Manager	O	O
Air Conditioner	O	O
Ventilation	O	O
AWHP	O	O
Fire Alarm	O	O
Chiller	O	X
AHU	O	X

ACP Components

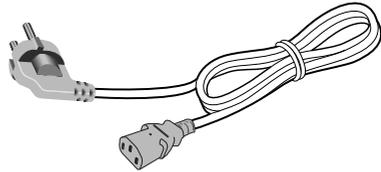
Inside the packaged box of the ACP, there are the components as in the following drawing. Open the packaged box of the ACP, and check if all of the corresponding components are included.



ACP
(Advanced Control Platform)



Power Supply Adaptor
Input: 100~240V
AC 50/60Hz 3.33A
Output: DC 12V
3.33A, 40W MAX



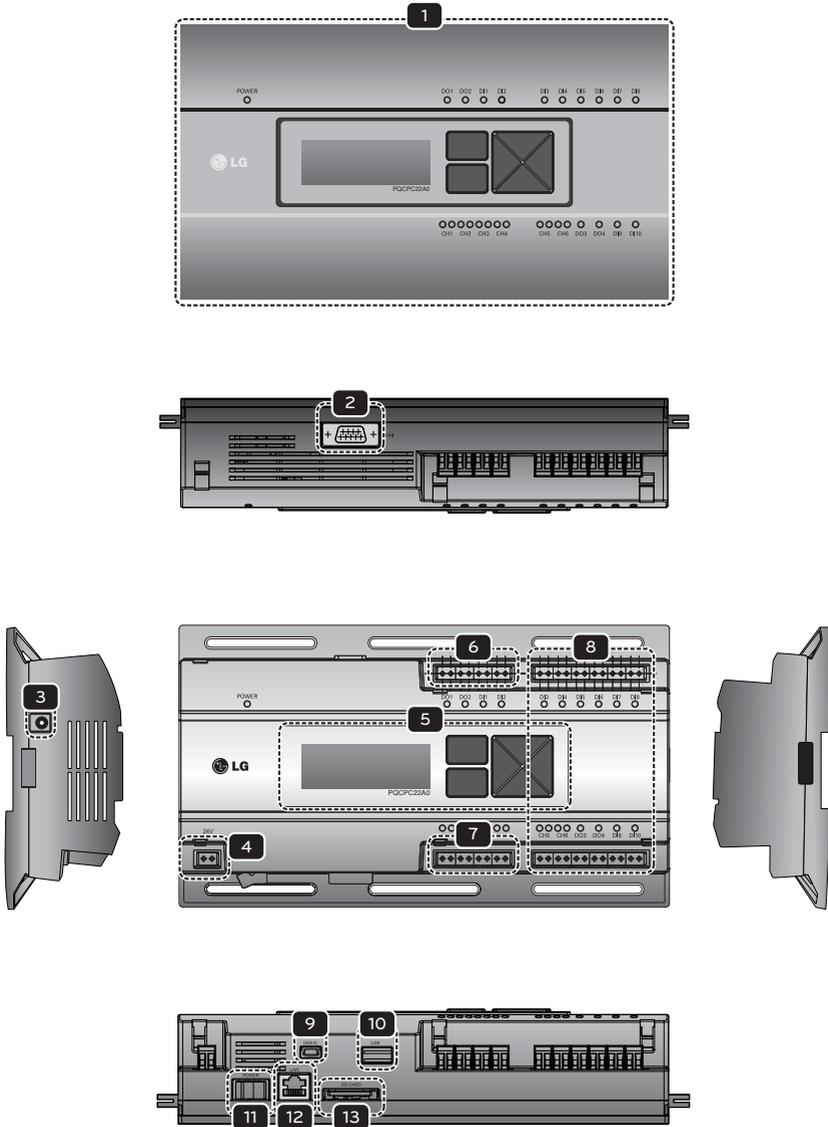
Power Cord

! NOTE

- Power Supply Adaptor and Power Cord are not included in PQPC22A1 or PQPC22N1.

Names of each part of ACP

ACP is composed as follows.



NOTE

- No. 3 and No. 4 may be different for each model.

10 ACP Functions and Specification

- 1 **Cover**
Front cover of the ACP
- 2 **RS-232 console port**
Reserved communication port
- 3 **Adaptor connection jack**
Jack for DC 12V to connect to the power supply adaptor (not supported by PQPC22A1 or PQPC22N1.)
- 4 **Power port**
AC24V port for power connection (not supported by PQPC22A0 or PQPC22N0)
- 5 **Buttons and LCD**
Buttons and LCD to set network environment and to display other information
- 6 **Basic external input/output signal connectors**
Connection ports to connect to external input/output signals (DI:2, DO:2)
- 7 **RS-485 communication port**
RS-485 communication ports to connect to air conditioner and ventilation equipment (4 in total)
- 8 **Optional input/output and RS-485 communication port (not supported in Standard.)**
Connection port to connect to external input/output signals and RS-485 communication port for external expansion. (8 DI's, 2 DO's, 2 RS-485 communication ports)
- 9 **Mini USB port**
USB to Serial port for software debugging
- 10 **USB port**
For software update and data backup
- 11 **Power switch**
Switch to turn on or off the power of the ACP
- 12 **Ethernet port**
Ethernet port to connect to internet and AC Manager
- 13 **SD card slot**
For RS-485 communication data backup.

 **CAUTION**

If four times the power connector for the connection, as shown by using the right connection, but please note that an electric shock.

Use the designated parts must be connected to a power source.

- ※ Connector manufacturers: PHOENIX CONTACT
PartNo: MVSTBR 2,5 / 2-ST-5, 08 2P 5.00MM



ACP Hardware Specification

ACP hardware specification is as follows.

Category	Description
Boundary of usage temperature	0°C~40°C
CPU	i.MX515 - 32Bit 800MHz speed
RAM	128MB DDR2 SDRAM * 2EA
ROM	4GB i-NAND Flash
Communication ports	- Ethernet 10 / 100 BASE-T - USB : USB Host (SW upgrade, data backup) mini USB Device (Debug) - RS-485 communication ports 6EA - SD card slot (RS-485 communication logging) - RS-232 Console Port (HMI)
External input/output ports	- DI, DO
LED	27EA (RS communication status, Ethernet communication status, power status, operation status)
LCD	20 ×4 Character-LCD (network environment setting and information display)

! NOTE

License policy

This product follows GPL (General Public License) for the use of Embedded Linux.

Operating ACP with ACCS

LG ACCS is a UI program of web server that can operate ACP.

This chapter explains about the function and process to operate ACP using LG ACCS.

Review the initial ACCS screen

LG ACCS (Advanced Centralized Control System) is a program that is automatically run when you access to ACP web server. The user can control the ACP and the equipments using LG ACCS and monitor various status information.

When you access LG ACCS, the following LG ACCS program is executed.



1 Menu selection button

You can select the corresponding menu from the menu selection button to perform the functions such as control and monitoring, etc.

ACP has the following 9 menus.

Category	Description
Control 	It can perform the functions of operation status change, lock all, lock temperature, etc. of the equipments connected to the ACP.
Schedule 	It can start or stop the equipments connected to the ACP according to pre-set schedule.
Peak Control 	It can set the operation ratio of the entire air conditioner to set the peak operation ratio to prevent the operation ratio of the air conditioner from exceeding the set value.
Demand Control 	It can use AC Manager to use peak control function.
Monitoring 	It can monitor the operation status and error status of the equipments connected to the ACP.
Error Log 	It can review the error history occurred in the equipments connected to the ACP.
Wattmeter 	It can review the power usage used by the equipments connected to the ACP.
Setting 	It can register, change, or delete the information of the equipments connected to the ACP.
Add-On 	It can see the cycle information, etc. of the outdoor unit connected to the ACP. (only if maintenance contract is made with a maintenance company) Or, you can use the additional functions developed in the future.

2 Peak operation ratio control, network status display window

The running status of peak operation ratio control mode and the air status of the network are displayed with the following icons.

Category	Icon	Description
Peak operation ratio		It is displayed when it is in peak operation ratio control mode.
		It is displayed when peak operation ratio control mode is turned off.
Network connection status		It is displayed when error occurs during network connection.
		It is displayed when it is properly connected to the network and operating.
		It is displayed when it is trying to connect to the network.

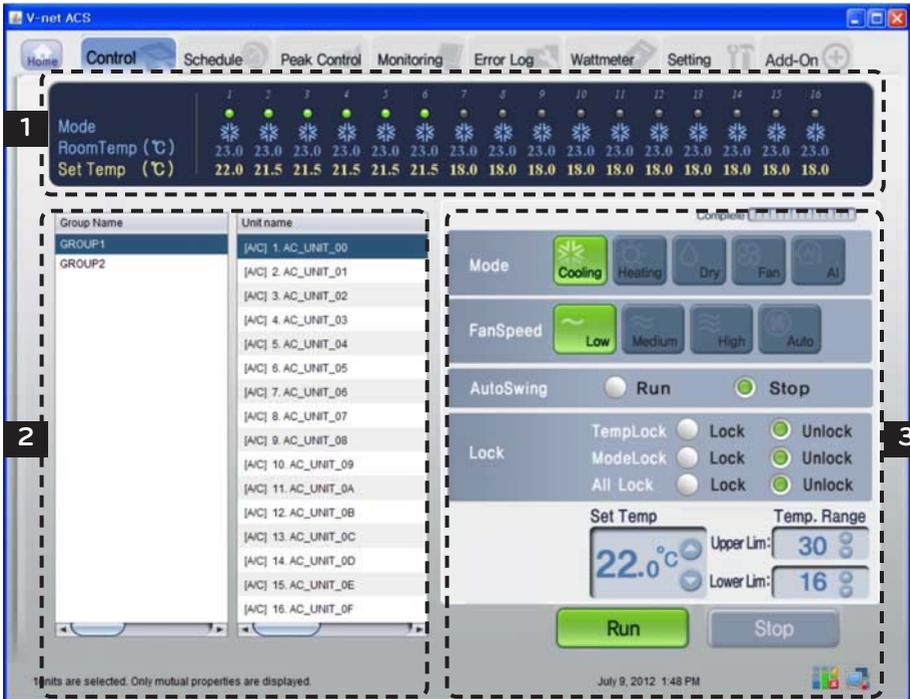
Controlling the Equipments

You can use LG ACCS to control the functions such as equipment grouping and selection, operation mode, air flow, air direction, lock, temperature adjustment and stop, etc. (Detail control menu is different for each equipment.)

LG ACCS control functions have the following advantages.

- With the central control type, you can manage all of the installed equipments using the computer screen.
- Operation and monitoring can be easily done.
- It can be integrated and managed through group setting.

Click 'Control Group Air Conditioner' menu at the top of LG ACCS to control the air conditioner. (This manual explains the air conditioner control as an example, and will explain only the unique features for other products.)



1 Air conditioner operation status window

In the air conditioner operation status window, operation status, operation mode, temperature of the space where the indoor unit is currently installed, and desired temperature of individual air conditioner are displayed.

Group name & Operation status lamp



At the top of the air conditioner operation status window, the name of the selected group and the status of individual air conditioner are displayed with the lamps.

The operation status of maximum of 16 air conditioners is displayed in one screen.

Lamp indicates the status of the air conditioner with the color of the lamp. The status of the air conditioner according to each color is as follows.

Lamp color	Status	Description
 (Green)	On	It indicates that the air conditioner is operating normally.
 (Gray)	Off	It indicates that the air conditioner is stopped.

Mode

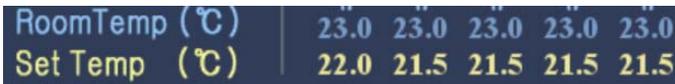


In Mode, when the air conditioner is currently in operation, the mode operation is displayed with an icon.

The operation modes displayed on the screen are as follows.

Type	Icon	Description
Normal Operation State		It is displayed when the air conditioner is currently in cooling operation.
		It is displayed when the air conditioner is currently in dehumidification operation.
		It is displayed when the air conditioner is currently in wind only operation.
		It is displayed when the air conditioner is currently in heating operation.
		It is displayed when the air conditioner is currently in peak operation ratio control state.
		It is displayed when the air conditioner is currently in A/I operation. A/I (Artificial Intelligence) operation is the automatic operation function for the air conditioner sets the operation mode and air flow by itself according to the indoor temperature.
Error State		It is displayed when an error occurred currently to the air conditioner.
		It is displayed when an error occurred currently due to the network.

Room Temp & Set Temp



In the Room Temp, the temperature of the space where the air conditioner is currently installed is displayed.

But, if the error indicator lamp is on, the number of the current temperature indicates the error code, not the temperature.

The desired set in the air conditioner is displayed in the Set Temp. The Set Temp is not displayed during wind only or dehumidification operation, or in an error state. For ventilation equipment, Set Temp or Room Temp is not displayed. But, the Set Temp is displayed when the direct cooling type ventilation is set as the master.

2 Air conditioner group and air conditioner selection window

In the air conditioner group and air conditioner selection window, the list of air conditioner groups and the air conditioners set in the system is displayed.

Also, you can select an air conditioner group or air conditioner for air conditioner control.

List of air conditioner groups and list of air conditioners

Group Name	Unit name
GROUP1	[A/C] 1. AC_UNIT_24
GROUP2	[A/C] 2. AC_UNIT_25
GROUP3	[A/C] 3. AC_UNIT_26
GROUP4	[A/C] 4. AC_UNIT_27
GROUP5	[A/C] 5. AC_UNIT_28
GROUP6	
GROUP7	

In 'group', the list of air conditioner group set in the ACP is displayed. If you select a particular air conditioner group, the list of the air conditioners that belong to the corresponding air conditioner group is displayed in 'air conditioner' on the right.

If you click the air conditioner group to select from the list, the corresponding group is selected, and if you click again, the selection of the corresponding group is cancelled. Also, if you click several groups, you can select several groups at the same time.

In 'air conditioner', the list of the air conditioners that belong to the particular air conditioner group in the ACP is displayed.

To select several air conditioners, drag with the mouse or select an air conditioner while pressing down ctrl key, or you can select using shift key.

3 Control & Monitoring Window

It displays the air conditioner control setting selected from the list of the air conditioner group and the air conditioner list to control.

Mode

The operation method of the air conditioner can be set at the mode. The modes to set are as follows:

Icon	Description
	<p>It operates the cooling operation. The cooling operation can set the desired temperature to 18°C ~ 30°C</p> <p>Note: Setting the set temp Because too much cooling is harmful for health, set the suitable desired temperature. About 5°C is better for the difference between the indoor temperature and the outdoor temperature. If the set temp is higher than the indoor temperature during the cooling operation, it does not operate the cooling operation, but the wind only operation.</p>
	<p>It drives the heating operation. The heating operation can set the desired temperature to 18°C ~ 30°C</p> <p>Note: Setting the set temp The excessive heating is harmful for the health, so set the suitable desired temperature. About 5°C is better for the difference between the indoor temperature and the outdoor temperature. If the set temp is lower than the indoor temperature during the heating operation, it does not operate the heating operation, but the ventilation.</p>
	<p>The dry eliminates moisture. It can effectively eliminate moisture during the rainy season or at the high humidity condition. When it is selected, the desired temperature cannot be set.</p>
	<p>It circulates the fresh air. The ventilation only may be used in Spring and Autumn. When it is selected, the desired temperature cannot be set.</p>
	<p>AI operation automatically maintains the indoor temperature at its optimal state according to the indoor temperature.</p>

Fan Speed

It controls the air flow. The types of air flow to set are as follows:

Air flow	Description
	It sets to ventilate with a small of air flow.
	It sets to ventilate at the medium level of air flow.
	It sets to ventilate at the high level of air flow.
	It sets to automatically ventilate at the suitable level of air flow for the environment with the indoor unit installed.
	It sets to ventilate with the maximum air flow. (It only appears when ventilation product is selected.)

Auto Swing

It sets the air direction of the current air conditioner to Up & down or Left & right.

Icon	Description
	It executes the air direction operation of the air conditioner.
	It stops the air direction operation of the air conditioner.

Lock

It sets the lock function of the air conditioner. When the lock function is set, the air conditioner cannot be controlled by the wireless or wired remote controller. Use the lock function not for the user individually, but to centrally control the air conditioner.

Type	Icon	Description
Temp Lock		Control not to set the temperature by using the wireless or wired remote controller.
		Set the Temp Lock.
		Deselect the set Temp Lock.
Mode lock		Control not to change the mode using the wireless or wired remote controller.
		Set the mode lock.
		Deselect the mode lock.
All Lock		Control not to set the entire function of the air conditioner by using the wireless or wired remote controller.
		Set the All Lock function for the entire air conditioner.
		Deselect the set All Lock function.

Set Temp



Set the desired indoor temperature of the air conditioner.

The desired temperature can be set by clicking ▲ button or ▼ button.

The desired temperature can be set for both the cooling and the heating with the range of 18°C~30°C.

Click (°C) symbol to switch to (°F) for displaying the temperature. The Set Temp can be set in Fahrenheit with the range of 64°F~86°F.

Temp. Range



Set the maximum/minimum temperature limit of the indoor where air conditioner is installed.

The maximum/minimum temperature can be set by clicking ▲ button or ▼ button.

The maximum temperature can be set with the range of 18°C~30°C, and the minimum temperature can be set with the range of 16°C~30°C.

Maximum temperature cannot be lower than the minimum temperature.

 CAUTION
Desired temperature & temperature limit

- The desired temperature is automatically changed when temperature limit range is changed to prevent going outside the temperature limit range.
- Since the desired temperature range is 18°C~30°C, even if the minimum temperature of temperature limit is 16°C, the desired temperature cannot go under 18°C.

Running & Stopping the operation

Click Run or Stop button to start or stop the air conditioner.

Button	Description
Run	Operate the air conditioner according to the set value.
Stop	Stop the operating air conditioner.

 NOTE
When a stopped indoor unit does not perform the central control command

- Some old model indoor units may not follow the central control command while it is not in operation.
- Therefore, you can order while it is in operation.
- For example, to change the set temperature and air direction of a stopped indoor unit, the set temperature and air direction of the corresponding indoor unit may not be changed. In such case, if you change the set temperature and air direction while the corresponding indoor unit is in operation, it will be reflected properly to the indoor unit.
- With the same principle, for some indoor units, when the indoor unit in cooling operation with set air direction is stopped, the air direction is stopped. And if the user starts the corresponding indoor unit without setting air direction, the Auto Swing still remains at stopped state.

Ventilation Control Screen and unique features



Unique features

Mode	Heat Exchange	Set both air intake and discharge to ventilate through electric heat exchanger. (It is used in Summer/Winter when there is a big difference of temperature and humidity between indoor and outdoor.)
	Normal	Measure the temperature of indoor and outdoor and automatically set the temperature to maintain the optimal state. (It automatically controls air intake and discharge to maintain uniform balance of the indoor air.)
	Auto	Set the discharged air to ventilate without going through electric heat exchanger. (It is used in Spring/Fall when there is a small difference of temperature and humidity between indoor and outdoor.)
Options	Power saving	Execute the power saving operation function. (Power saving operation operates by finding the most efficient state of the ventilation equipment to save power consumption.)
	Quick	Execute Quick ventilation function. (Rapid ventilation is the operation to prevent the contaminated air or humidity of one room from spreading to another room.)
	Heater	Execute heater function. (Heater function is the operation to supply warm air during Winter when the air outside is cold.)
	Humid	Execute Humid function. (Humidification function is the operation to increase humidity when the air is too dry.)

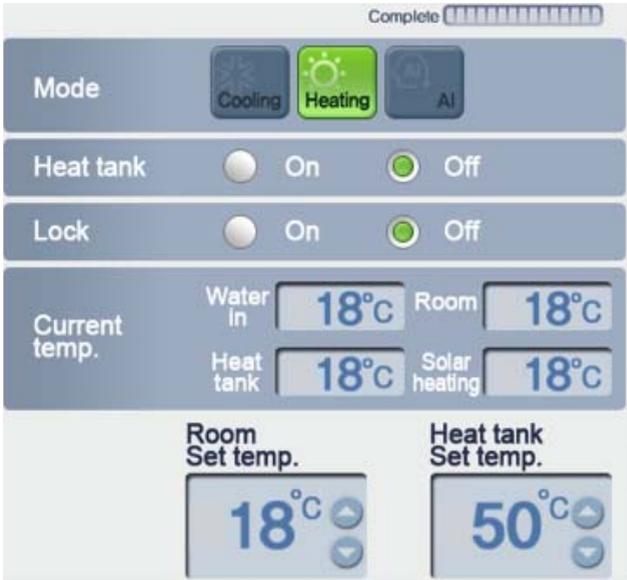
※ Humid can only be turned on when the operation mode of the direct cooling type ventilation is in heating mode.

! NOTE

Additional function

- Additional function may not be included in some products.

AWHP Control Screen and unique features



Unique features

Heat tank: Turn on/off the Heat tank function of AWHP.

Current temp: Display the current temperature of AWHP.

(It displays water in temperature, room temperature, heat tank supply temperature, and solar heating temperature.)

Room Set temp: Set the Room Set temp of AWHP.

(If operation mode is cooling, the setting range is 16~30°C, and if operation mode is heating, the setting range is 18~30°C.)

Heat tank Set temp: The temperature setting range may be different for each product.

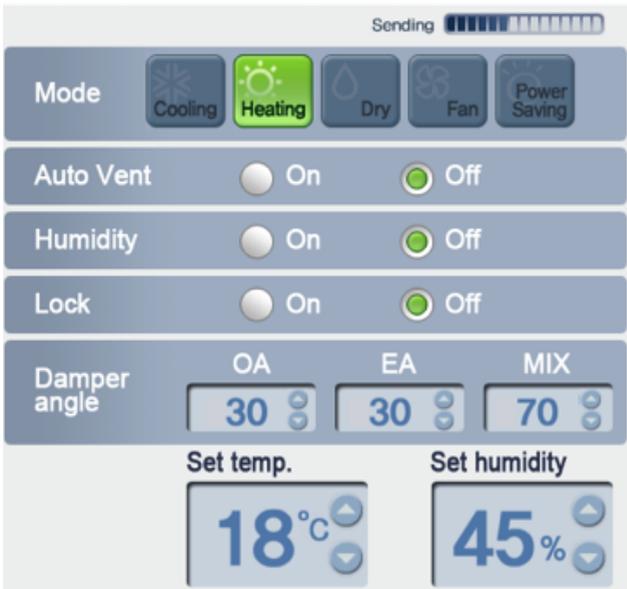
Please refer to the manual of each product.

! NOTE

Additional function

- Additional function may not be included in some products.

AHU Control Screen and unique features



Unique features

Mode power saving: Operate in power saving mode to save electricity usage.

Damper angle: Set the damper opening angle of each of OA, EA, and MIX of AHU.
(The setting range of OA, EA, and MIX is 0~90.)

Set temp: Set the desired temperature of AHU.
(Setting range is 18~30°C.)

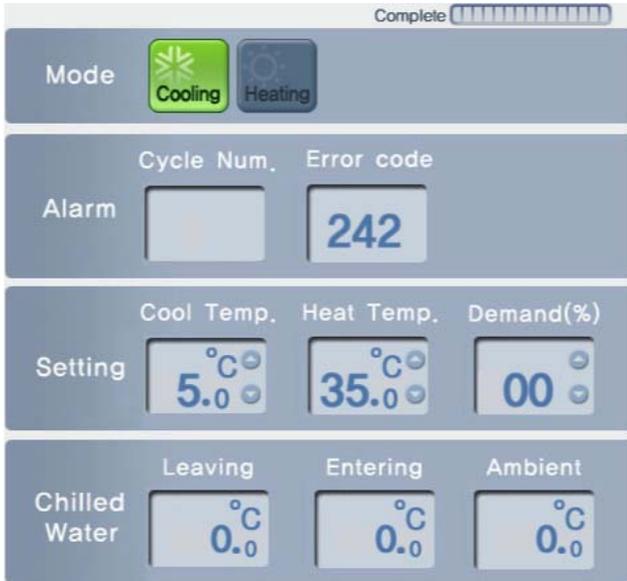
Set humidity: Set the desired humidity of AHU.
(Setting range is 40~60%.)

! NOTE

Additional function

- Additional function may not be included in some products.

Chiller Control Screen and unique features



Unique features

Alarm: Display cycle number and error number of the Chiller with error.

Setting: Set cooling temperature, heating temperature, and demand limit ratio of Chiller.
(Setting range of cooling temperature is 5~15°C, setting range of heating temperature is 40~55°C, and setting range of demand limit ratio is 0~140%.)

Setting: Set cooling temperature, heating temperature, and demand limit ratio of Chiller.
(If the operation mode is cooling, setting range is 16~30°C, and if the operation mode is heating, setting range is 18~30°C.)

Chilled Water: Display Leaving, Entering, and ambient of the Chiller.

! NOTE

Additional function

- Additional function may not be included in some products.

Setting the schedule

It is the function to perform the reserved operation at the specified time by specifying the operation of the air conditioner. For example, for the case of the school, the air conditioner automatically starts and stops at the specified time by setting the schedule to attending school and returning home.

The unnecessary operation and management cost of the air conditioner can be reduced by this schedule function, and it can effectively save the energy because it is used only when necessary. Schedule can be set by logging in as super user or manager.

CAUTION

Saving after the system setup

- When 'group setting completed' button is pressed in 'system setting' menu, all schedule information currently set will be initialized, so be careful.

Time of ACP

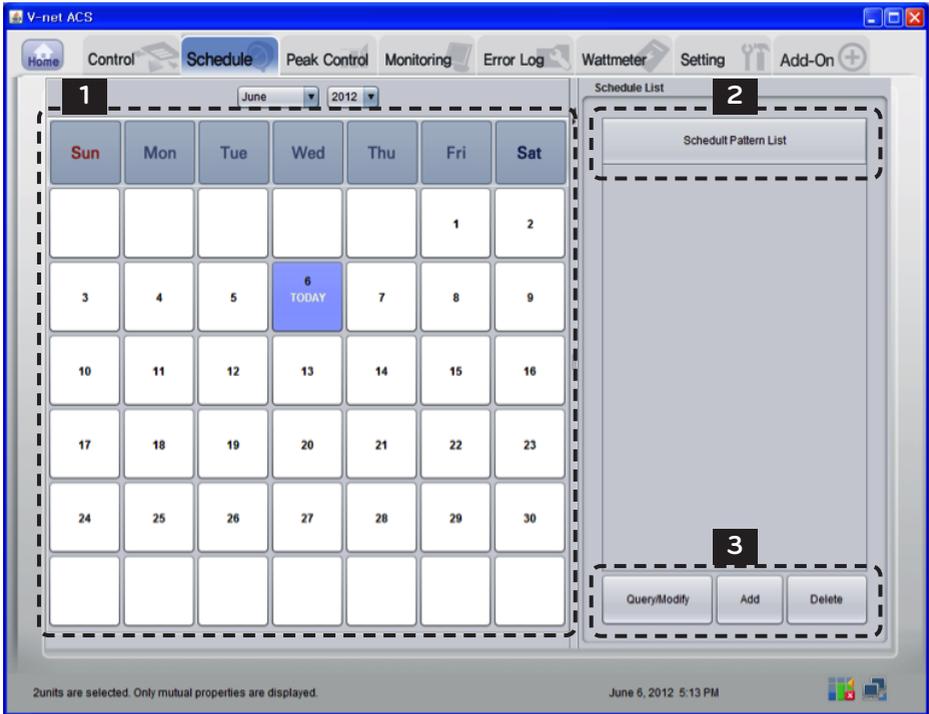
- When a user access ACP through web browser, the time of PC and ACP are automatically synchronized, and ACP executes schedule function based on this time. Therefore, always maintain the time of PC to be the current time.

NOTE

Schedule maintenance time

- When setting the schedule, 1~3 minute schedule setting is maintained for time the actual schedule is set.
- For example, when you set the schedule for the unit to be turned off at 5:00, the operation is turned off from 5:00 to 5:03. Therefore even when you try to operate the unit with the wired remote controller, it may be turned off.

To set the schedule, click 'Schedule' menu at the top of LG ACCS. When you click Schedule menu, the schedule setting screen appears as follows.



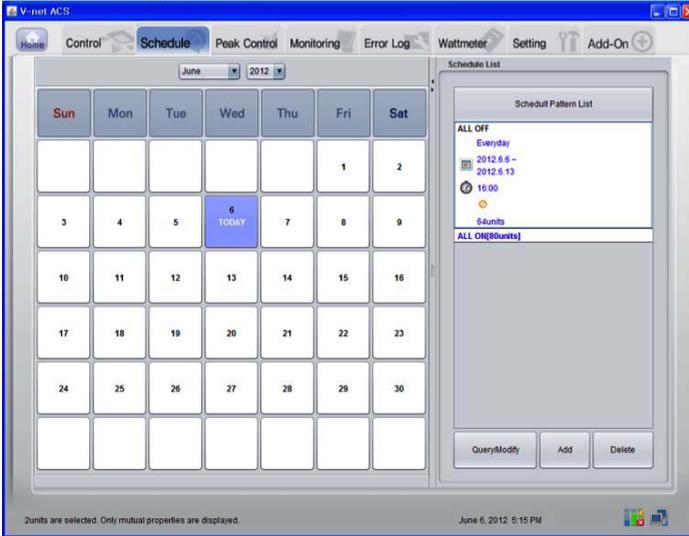
1 Calendar window

Basically, this month's calendar is displayed, and today is highlighted.

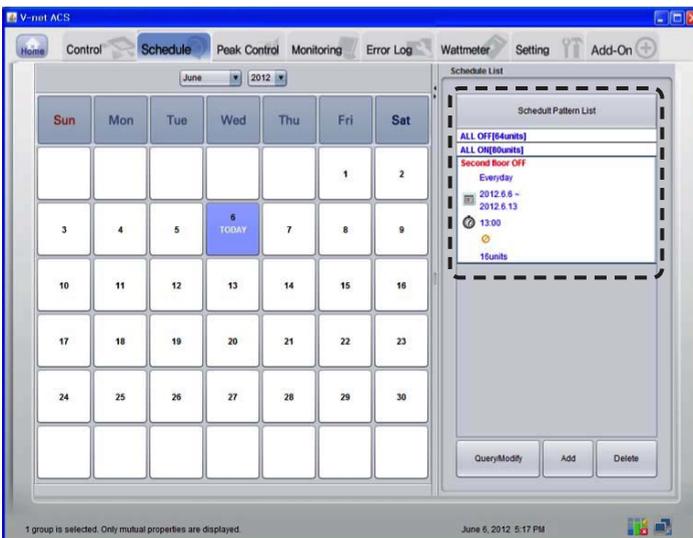
2 Schedule list

The entire list of the set schedule is displayed. If you select certain day from the calendar, the schedule activated on that day will be displayed in bold and blue letters.

If you select a schedule from the schedule list, the contents of the schedule are displayed as in the following screen.



If a schedule saved with different manager ID is selected, the schedule name is displayed in red as in the following screen.



3 Command button

Each button has the following meanings.

Button	Description
Query/Modify	Show the contents of the selected schedule and display a new window for edition
Add	Add a new schedule
Delete	Delete the selected schedule

Add

When add schedule button is pressed, the following screen appears.

CAUTION

- Please be aware that, if the schedule for the same equipment is registered with different control commands for the same time, schedule may not run properly.

Example) Schedule1: 2011. 1. 1 1PM Indoor No. 00, 01, & 02 Cooling mode

Schedule2: 2011. 1. 1 1PM Indoor No. 00, 01, & 02 Heating mode

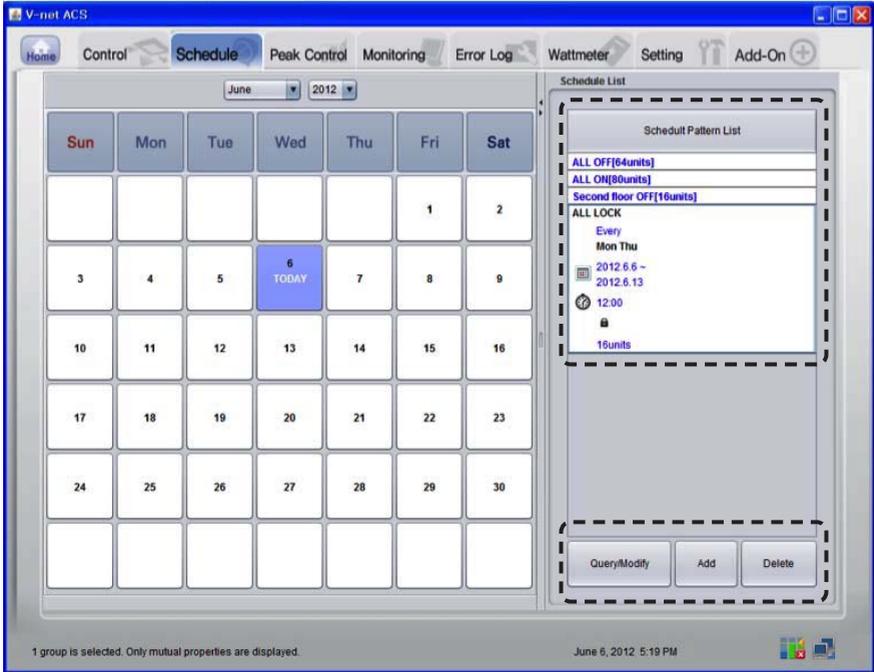
Schedule3: 2011. 1. 1 1PM Indoor No. 00, 01, & 02 Automatic mode

- As above, if 3 duplicate schedules are applied, any schedule can be applied to each of the equipment.

Button	Description
Schedule Name Nick-name[Memo]	You can take a memo or make name for easy to memorize the schedule.
Repeated pattern	<p>You can set the repeated pattern of the schedule.</p> <p>If you select 'day of week selection', you can set the schedule to operate only on the desired day of the week.</p> <p>If you select 'once', the schedule operates once on the selected day and time.</p> <p>If you select 'everyday', the schedule operates everyday during the selected period.</p> <p>If you select 'Mon.~Fri.', the schedule operates on Monday ~ Friday during the selected period.</p> <p>If you select 'Mon.~Sat.', the schedule operates on Monday ~ Saturday during the selected period.</p>
Period	You can set the schedule operation time in the units of 10 min. within 00:00 ~ 23:50.
Command Configuration	<p>It sets the control command.</p> <p>It sets the control command for each of the equipment.</p> <p>You can change only the desired attributes</p>
Select units to apply the Schedule	<p>It selects the equipment to apply the schedule.</p> <p>You can select a group or individual equipment.</p>

View/Change and Delete

1. Manager who is not a super user may only change or delete the schedules registered with his or her own account.
2. To view/change or delete a schedule, the schedule shall be first selected as in the following picture.
3. If you press view/change button, the previously added schedule information is displayed. It can be changed with the same method as adding schedule.
If you press delete button, the selected schedule will be deleted from the list.



NOTE

- There are schedule setting authorities as follows according to user class.

Button	Super User	Manager	User
Query/Modify	Can view or change all schedules	Can view all schedules Can change the schedule created with the corresponding ID	No authority
Add	Can add a schedule	Can add a schedule	No authority
Delete	Can delete all schedules	Can delete schedules created with the corresponding ID	No authority

Controlling the peak operation ratio

It maintains the consumed power to be kept lower than or equal to the target power by monitoring the power consumption of the air conditioner. Peak operation ratio control function can control with two methods according to the set peak operation rules to save energy.

The first is to stop or operate with wind only operation in turn to satisfy the peak operation ratio set by the user, and the second is to adjust the cooling/heating performance of the outdoor unit without stopping the indoor unit operation to satisfy the peak operation ratio.

Peak operation ratio control function has the following advantages:

- Centrally control all installed air conditioners by using the computer screen.
- Monitor and control the peak operation ratio for 24 hours a day.
- Easily perform controlling and monitoring.
- Set the peak control function operation ratio (%).
- Control the operation switching period (5~15 minutes) of the air conditioner.
- Set the peak group to give priorities of 5 stages for each group (Priorities have 5 stages of very low, low, normal, high, and very high, and the very low is the first controlled group.)

NOTE

Changing the operation type

- Please refer to 'page 69' peak group setting for the change of indoor unit priority and outdoor capacity control method of peak operation ratio control function.

CAUTION

When ACP interfaces with AC Manager

- When the ACP is interconnected with the AC Manager, set Demand as ACP setting.
- The ACP operates according to the demand setting of the AC Manager.

When cooling/heating is not running well

- Check the desired operation ratio setting of the peak power control.
- Cooling or heating may not run well according to the desired operation ratio.

Indoor unit priority control method

The air conditioner operated forcefully by indoor unit priority control method operates in wind only mode during the cooling operation, and stops during heating operation.

But, peak operation period setting minimized the inconvenience of the user.

Also, when the air conditioner is forcefully operated by this function, it uses the automatic control of central control method, so individual air conditioner cannot be controlled. But, if the current operation status uses the power less than the target operation ratio value, individual air conditioner can be controlled.

To control peak operation ratio, click 'Peak Control' menu at the top of LG ACCS.

When you click 'Peak Control' menu, the following control screen appears.

(When priority control method is selected in peak group setting screen)



NOTE

When there is no Peak Control menu

- If there is no 'Peak Control' menu in ACCS menu of the ACP that does not interface AC Manager, and there is 'demand' menu instead, change the setting of the ACP by referring to 'selecting peak or demand'.

CAUTION

When peak operation ratio control function is used

- If peak operation ratio control function is used, the function shall be used or set after the current information for 'Current Operating Rate' and 'Current' category are displayed on the screen. The display of the power information may be delayed according to the network environment.

1 Power consumption monitor

The peak control setting information and the operation information are displayed in the power consumption monitor.

- Function operation status
- Current operation Rate
- Target Operating Rate
- Cycle

Function operation status

The operation status of the current peak control is displayed in the function operation status. The types of the displayed operation status are as follows.

Operation status	Description
	Peak operation ratio control function is in operation.
	It is displayed when peak operation ratio control function is stopped.

Current power consumption and Current Operation Rate



“Current Operation Rate” displays at what % is the power consumption of the currently operated air conditioner compared to all air conditioners.

Desired power consumption and Target Operating Rate



“Target Operating Rate” displays at what % is the power consumption to be permitted by the user compared to all air conditioners.

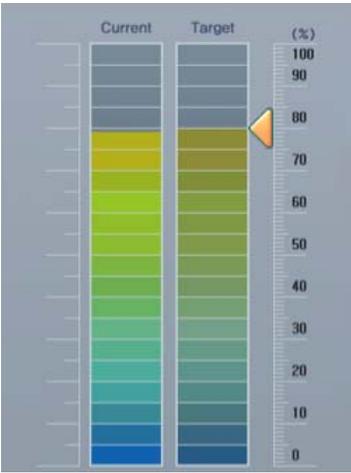
Cycle



It displays the period to stop the peak operation.

For example, if it is set to 5 min. period, the air conditioners operate at peak operation every 5 min. are converted to adjust all air conditioners to stop at the same time. Operation conversion period may be adjusted in the range of 5 min. ~ 15 min.

2 Current operation status and power control setting (graph type)



Current operation status is displayed in the left side of the peak operation control screen, and there is a graph that can set power control function. To change the peak operation ratio, you can drag  mark with mouse to set the desired operation ratio.

3 Power control setting

On the right side of the peak operation control screen, there is a setting category that can set the desired power consumption with the units of percentage (%).

When it exceeds the value set here, the air conditioner is operated in peak operation function periodically according to the peak operation rule.

Target Operating Rate: sets the desired power consumption to operate peak operation function in the units of percentage (%). (It can be set in the range of 0~100% of the maximum possible power consumption, and it can be adjusted in the units of 1 %.)

Cycle: sets the peak operation period (It can be set in the range of 5~15 min., and it can be adjusted in the units of 1 min.)

CAUTION

Peak setting

- Set the peak during peak operation state or run the peak operation after setting the peak.
- If peak operation is not run after setting the peak, the actual peak operation ratio will not be set.

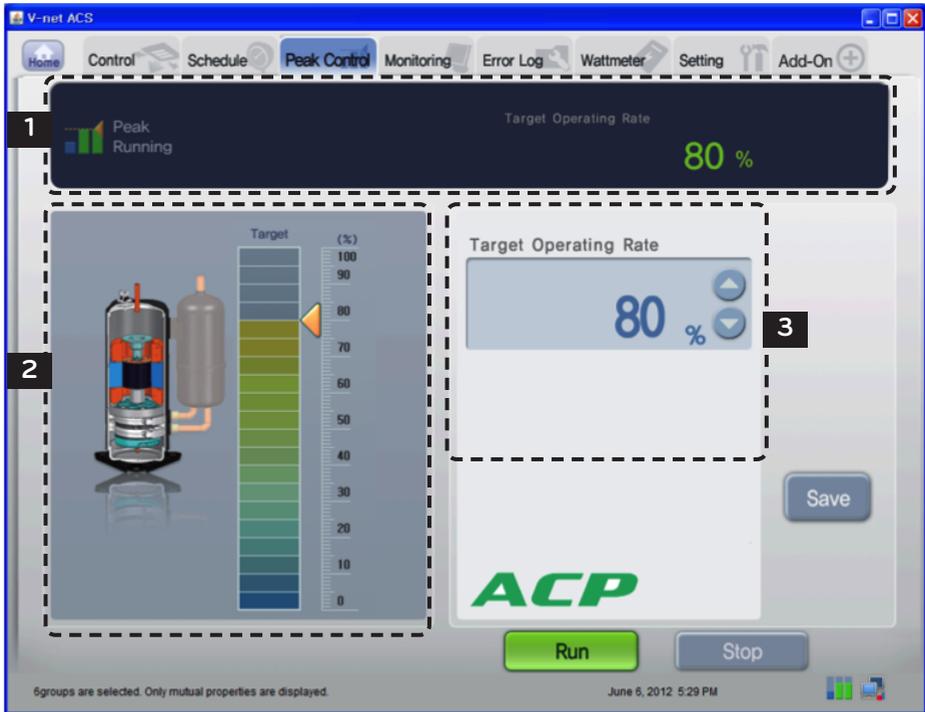
Outdoor unit capacity control method

Cooling/heating performance may be controlled by outdoor unit capacity control, and the cooling/heating performance for VIP room may be maintained by selecting outdoor units not to be applied in the peak group setting screen.

To control peak operation ratio, click 'Peak Control' menu at the top of LG ACCS.

When you click 'Peak Control' menu, the following control screen appears.

(When outdoor unit capacity control method is selected in peak group setting screen)



⚠ CAUTION

When cooling/heating is not running well

- Check the Target Operating Rate setting of peak power control.
- Cooling or heating may not run well because of the Target Operating Rate.
- If the wind from the air conditioner is not cool or warm, raise the Target Operating Rate or stop peak operation.

1 Operation status monitor

Peak control setting information and operation information are displayed in operation status monitor.

Function operation information

The current demand control operation status is displayed in the function operation status. The types of the displayed operation status are as follows.

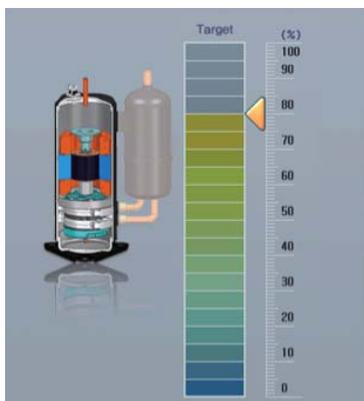
Operation status	Description
	Peak operation ratio control function is in operation.
	It is displayed when peak operation ratio control function is stopped.

Desired power consumption and Target Operating Rate



“Target Operating Rate” displays at what % is the power consumption to be permitted by the user compared to all air conditioners.

2 Operation ratio control setting (graph type)



There is a graph that can set the peak operation ratio control function.

To change the peak operation ratio, you can drag ◀ mark with mouse to set the Target Operating Rate.

The operation ratio of the outdoor capacity control method can be set to the following 9 stages.

9 stages of the operation ratio: 0, 40, 45, 50, 60, 70, 80, 90, 100%

3 Power control setting

On the right side of the peak operation control screen, there is a setting category that can set the desired power consumption with the units of percentage (%).

It controls the performance of the outdoor unit not to exceed the value set here.

Desired operation ratio: sets the desired power consumption to run the peak operation function in the units of percentage (%).

(9 stages of the operation ratio: 0, 40, 45, 50, 60, 70, 80, 90, 100%)

! CAUTION

Peak setting

- Set the peak during peak operation state or run the peak operation after setting the peak.
- If peak operation is not run after setting the peak, the actual peak operation ratio will not be set.

Controlling demand power

It maintains the consumed power to be kept lower than or equal to the target power by monitoring the power consumption of the air conditioner.

It can control to save the energy by using the AC Manager connected to the ACP to forcefully start or stop the air conditioner.

It has the following advantages:

- Precise management by controlling the automatic operation ratio of the air conditioner by AC Manager is possible.
- Monitor and control the peak power for 24 hours a day.
- Easy controlling and monitoring.

Indoor unit priority control method

The air conditioner forcefully operated by demand power control function operates in wind only mode during cooling operation, and stops during heating operation.

But, even if the air conditioner operation is changed by forced operation, it operates in a way that the user does not feel the change in terms of the effect of the cooling or heating.

While the air conditioner is forcefully operated by demand power control function, it uses the automatic control of the central control method, air conditioner cannot be operated individually.

But, if the current operation state uses the power under the target operation ratio setting value, air conditioner can be individually controlled.

To control demand power, click 'Demand' menu at the top of LG ACCS.

When you click 'Demand' menu, the following demand power control screen appears.



CAUTION

When there is no demand menu

- When there is no 'demand power' menu in ACCS menu, and instead, there is a 'Peak Control' menu, the ACP setting is set to use peak control function. To use demand power function, change the setting of the ACP by referring to 'selecting peak or demand'.

1 Power consumption monitor

The demand control setting information and the operation information are displayed in the power consumption monitor.

- Function operation status
- Current operation Rate
- Target Operating Rate
- Cycle

Function operation status

The operation status of the current demand control is displayed in the function operation status. The types of the displayed operation status are as follows.

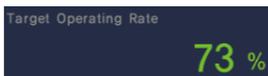
Operation status	Description
	Demand control function is in operation.
	It is displayed when demand control function is stopped.

Current power consumption and current operation rate



“Current operation rate” displays at what % is the power consumption of the currently operated air conditioner compared to all air conditioners.

Desired power consumption and Target Operating Rate



“Target Operating Rate” displays at what % is the power consumption to be permitted by the user compared to all air conditioners.

Cycle



It displays the period to stop the peak operation.

For example, if it is set to 5 min. period, the air conditioners operate at peak operation every 5 min. are converted to adjust all air conditioners to stop at the same time.

Outdoor unit capacity control method

Cooling/heating performance may be controlled by outdoor unit capacity control, and the cooling/heating performance for VIP room may be maintained by selecting outdoor units not to be applied in the peak group setting screen.

To control demand, click 'Demand' menu at the top of LG ACCS.

When you click 'demand' menu, the following control screen appears.

(When outdoor unit capacity control method is selected in peak group setting screen)

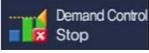


1 Operation status monitor

Demand control setting information and operation information are displayed in operation status monitor.

Function operation information

The current demand control operation status is displayed in the function operation status. The types of the displayed operation status are as follows.

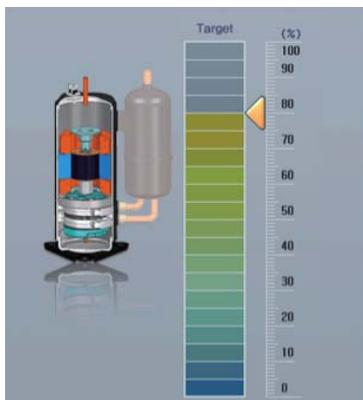
Operation status	Description
 Demand Control Running	Demand control function is in operation.
 Demand Control Stop	It is displayed when demand control function is stopped.

Desired power consumption and Target Operating Rate



“Target Operating Rate” displays at what % is the power consumption to be permitted by the user compared to all air conditioners.

2 Operation ratio control setting (graph type)



It displays the operation ratio controlled by the demand controller.

The operation ratio of the outdoor capacity control method is set to the following 9 stages.

9 stages of the operation ratio: 0, 40, 45, 50, 60, 70, 80, 90, 100%

CAUTION

Demand control setting

- Demand control is set by the AC Manager connected outside, so the categories such as desired operation ratio, operation conversion period, etc. may not be set in LG ACCS program.

When cooling/heating is not running well

- Set the desired operation ratio to be above 70~80% in AC Manager. Otherwise, cooling or heating may not run well.

Monitoring the equipment status

You can see the operation status and the error status of each of the equipment set in all air conditioner groups at the LG ACCS at a glance.

In order to view the status information of the equipment, click 'Monitoring' menu at the top of the LG ACCS.

When you click 'Monitoring' menu, the following monitoring screen is displayed.

The screenshot shows the 'Monitoring' tab selected in the V-net ACS software. The table below represents the data displayed on the screen.

GroupName	UnitName	On/Off	Mode	SetTe...	Fan	HardL...	Swing	TempL...	Model...	Room...	Lower ...	Upper ...	Detail
GROUP1	AC_UNIT_22	Run	CO...	18.0°C	...	...	...	...	...	23.0°C	16°C	30°C	
GROUP1	AC_UNIT_23	Run	CO...	18.0°C	...	...	...	...	...	23.0°C	16°C	30°C	
GROUP1	1-2	Run	CO...	18.0°C	...	...	...	...	...	23.0°C	16°C	30°C	
GROUP1	1-1	Run	CO...	18.0°C	...	...	...	...	...	23.0°C	16°C	30°C	
GROUP2	UNIT [0-0-8]	Run	CO...	18.0°C	...	...	...	...	...	23.0°C	16°C	30°C	
GROUP2	UNIT [0-0-15]	Stop	CO...	18.0°C	...	...	...	...	...	23.0°C	16°C	30°C	
GROUP2	UNIT [0-0-14]	-	NE	-	-	-	-	-	-	-	-	-	CH[24...
GROUP2	UNIT [0-0-13]	-	SE	-	-	-	-	-	-	-	-	-	CH[05...
GROUP2	UNIT [0-0-12]	-	SE	-	-	-	-	-	-	-	-	-	CH[03...
GROUP2	UNIT [0-0-11]	Run	CO...	18.0°C	...	...	...	...	...	23.0°C	16°C	30°C	
GROUP2	UNIT [0-0-10]	Run	CO...	18.0°C	...	...	...	...	...	23.0°C	16°C	30°C	
GROUP2	UNIT [0-0-9]	Run	CO...	18.0°C	...	...	...	...	...	23.0°C	16°C	30°C	
GROUP2	UNIT [0-0-7]	Run	CO...	18.0°C	...	...	...	...	...	23.0°C	16°C	30°C	
GROUP2	UNIT [0-0-6]	Run	CO...	18.0°C	...	...	...	...	...	23.0°C	16°C	30°C	
GROUP2	UNIT [0-0-5]	Run	CO...	18.0°C	...	...	...	...	...	23.0°C	16°C	30°C	
GROUP2	UNIT [0-0-4]	Run	CO...	18.0°C	...	...	...	...	...	23.0°C	16°C	30°C	
GROUP2	UNIT [0-0-3]	-	SE	-	-	-	-	-	-	-	-	-	CH[05...
GROUP2	UNIT [0-0-2]	-	SE	-	-	-	-	-	-	-	-	-	CH[03...
GROUP2	UNIT [0-0-1]	Run	CO...	27.0°C	...	...	...	...	...	23.0°C	16°C	30°C	
GROUP2	UNIT [0-0-0]	Run	CO...	18.0°C	...	...	...	...	...	23.0°C	16°C	30°C	
GROUP3	UNIT [0-1-7]	Run	CO...	24.0°C	...	...	...	...	...	23.0°C	16°C	30°C	
GROUP3	UNIT [0-1-6]	Run	CO...	27.0°C	...	...	...	...	...	23.0°C	16°C	30°C	

1 group is selected. Only mutual properties are displayed.

August 20, 2012 11:50 AM

CAUTION

Air conditioner communication error

- If communication errors occur in multiple air conditioners in the monitoring screen, demand control cannot be performed and may exceed the contract power.

The following information is displayed at the monitoring screen.

Item	Description
Name	Name of equipment currently registered at the system
Operation mode	Operation mode set in the equipment
Air flow	The strength of the air of the supported equipment
Air direction	Whether the air direction is set in the supported equipment
Lock all	Whether lock all function is set
Temperature lock	Whether temperature lock function is set
Mode lock	Whether mode lock function is set
Indoor temperature	Indoor temperature of the supported equipment
Desired temperature	Desired temperature of the supported equipment
Maximum temperature	Maximum temperature of the air conditioner. The range of the maximum temperature is 18~30°C.
Minimum temperature	Minimum temperature of the air conditioner. The range of the minimum temperature is 16~30°C.
Operation Stop	Operation status of the equipment
Remark	The error code is displayed if the error is occurred. - Network Error: NE - System Error: SE

Reviewing the Error Log

The LG ACCS saves and records the information of the error occurred from all equipments connected to the ACP.

You can see this error history at 'Error Log' menu of the LG ACCS.

In order to view the error history of the equipment, click the 'Error Log' menu at the top of the LG ACCS.

When you click 'Error Log' menu, the following error history screen is displayed.

The screenshot shows the V-net ACS Error Log interface. The menu bar includes Home, Control, Schedule, Peak Control, Monitoring, Error Log (selected), Wattmeter, Settings, and Add-On. The search area (labeled 1) shows a date range from 2012.05.01 to 2012.06.06 and a Query button. The table (labeled 2) displays the following data:

OccurrenceDate	OccurrenceTime	Index	UnitName	ErrorCode	DetailInfo
20120531	1651	0	AC_UNIT_00	242	Network Error is Occurred : Receive Error
20120531	1759	1	AC_UNIT_00	242	Network Error is Occurred : Receive Error
20120601	1150	2	AC_UNIT_00	242	Network Error is Occurred : Receive Error
20120604	0239	3	AC_UNIT_00	242	Network Error is Occurred : Receive Error
20120604	1202	4	AC_UNIT_00	242	Network Error is Occurred : Receive Error
20120606	1636	5	AC_UNIT_00	0	Air conditioner recover from an error.

The interface also shows a status bar at the bottom with the text "6 groups are selected. Only mutual properties are displayed." and the date and time "June 7, 2012 8:49 AM".

1 Querying the Error Log

Period 2012.05.01 ~ 2012.06.06 Query

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

You can set and query the information about the error occurred within the desired period.

The start date and the end date of the period to query can be set by pressing each calendar button  within the query period.

After setting the query period, when you click the [Query] button , the information about the error occurred within the period is displayed.

2 Saving and Printing

Delete chosen errors.

[Delete chosen errors] button is used to completely delete the error displayed in the error history list within the system.

Confirm

After selecting the error in the error history list and deleting it by pressing the button, when you press [confirm] button, the corresponding error will be completely deleted from ACP.

If you don't press [confirm] button after deleting an error by pressing [Delete chosen errors] button, it will be erased from the current screen, but it will show again in the future error query.

Save

When you press [Save] button, the queried error history can be saved as the file with the Excel format.

3 Error log list

OccurrenceDate	OccurrenceTL	Index	UnitName	ErrorCode	DetailInfo
20120820	1133	0	UNIT [0-0-2]	 3	System Error is Occurred : Error Code CH[03]
20120820	1134	1	UNIT [0-0-12]	 3	System Error is Occurred : Error Code CH[03]
20120820	1135	2	UNIT [0-0-13]	 5	System Error is Occurred : Error Code CH[05]
20120820	1136	3	UNIT [0-0-3]	 5	System Error is Occurred : Error Code CH[05]
20120820	1143	4	UNIT [0-0-14]	 242	Network Error is Occurred : Receive Error
20120820	1258	5	UNIT [0-0-12]	 0	Air conditioner recover from an error.

It displays the history list of the errors occurred within the query period.

The following information is displayed in the error history list.

Item	Description	
Icon		History of the occurrence and normalization of an error
		Error occurred in the network
		Error occurred in the system(outdoor and indoor unit)
Occurrence Date	Date when the error was occurred	
Occurrence Time	Time when the error was occurred	
Unit Name	Name of the equipment with error	
Error code	Code number of the occurred error	
Detail Info	Description of the occurred error	

Reviewing the power (power display interface)

The LG ACCS offers the power display interface function to check and manage the power of all indoor units of the air conditioners connected to the ACP. If this function is used, when the outdoor unit is shared in officetel, residential-commercial building, and school, it can be effectively controlled since the power consumption of each indoor unit is displayed.

Because the power display interface function remotely reads the power consumption without the separate inspection program, it can easily check the power consumption on which the billing can be done.

In order to use the power display interface function to check the power consumption, click 'Wattmeter' menu at the top of LG ACCS. When you click 'Wattmeter' menu, the following power screen appears.

The screenshot displays the 'Wattmeter' interface in the V-net ACS system. The interface includes a navigation bar at the top with options: Home, Control, Schedule, Peak Control, Monitoring, Error Log, Wattmeter (selected), and Setting. The main content area is divided into several sections:

- Summary Section (1):** Displays 'Total Accum. Power' as 2172.6 Kwh and 'Period Consumption' as 1221.2 Kwh. It includes buttons for 'Print Gr...', 'Print Units', and 'Save'.
- Group Summary Table (2):** A table with columns: GroupName, Period Start Kwh, Period End Kwh, and Period Total Kwh. It lists data for GROUP1 through GROUP10.
- Unit Summary Table (3):** A table with columns: D..., GroupName, UnitName, Period Start Kwh, Period End Kwh, and Period Total Kwh. It lists data for AC_UNIT_00 through AC_UNIT_09.
- Right Panel (5):** Contains a 'Monthly Enquiry' section with date pickers for 'From' and 'To' (both set to 2012.06.07) and a 'Basic Date' dropdown set to '1st'. Below it is a 'History Lookup' section with a 'Query' button and a calendar for '2012. JUN' showing dates from Sun to Sat.

At the bottom of the interface, a status bar indicates '1 group is selected. Only mutual properties are displayed.' and the date 'June 7, 2012 9:24 AM' is shown.

1 Power consumption monitor

At the top, the result of summing all the current accumulated power consumptions of the power distribution indicator connected to the air conditioners and the power consumed by the air conditioners during the query period at the right are displayed.

2 Power consumption list of each group

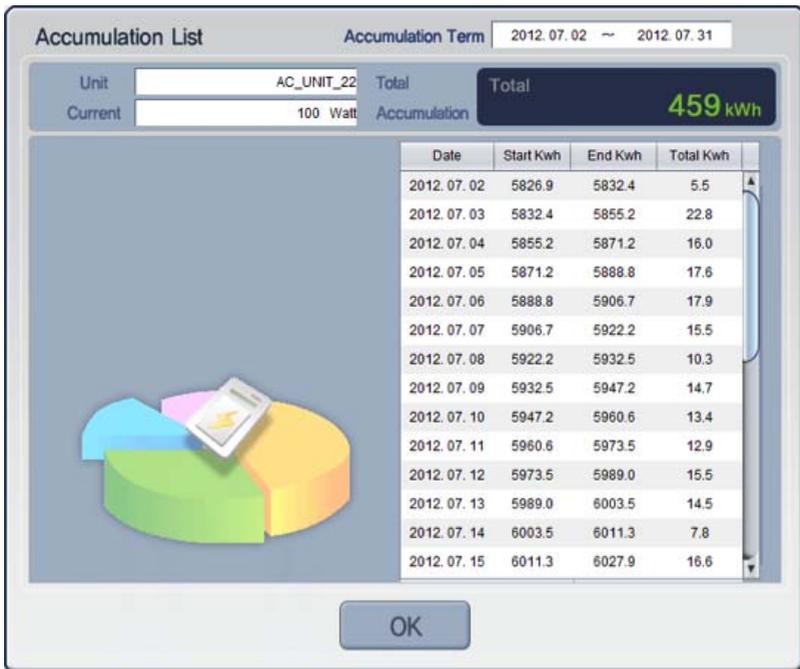
You can view the power consumption of each group. The power consumption during the certain period set by the user is displayed in groups.

3 Power consumption list for each indoor unit

You can view the power consumption of each indoor unit. The power consumption during the certain period set by the user is displayed for each indoor unit.

The detail meanings of each category are as follows.

Detail history of each air conditioner



When you click  Button, the following detail history for each individual air conditioner is displayed.

You can also view daily usages in addition to the accumulated usages of each individual air conditioner in individual air conditioner detail history.

4 Printing and saving

You can output the power of each group or each indoor unit displayed on the screen to a printer, or save as an Excel file.

5 Setting the power consumption query period

You can set the period for query of the power consumption in the right side of "Wattmeter" screen.

Monthly Enquiry

Monthly Enquiry

From 2012.06.07

To 2012.06.07

Basic Date 1st

Monthly Enquiry is the function to view the usage from the base date set by the user up to today.

History Lookup

History Lookup Query

From 2012. JUN

Sun Mon Tue Wed Thu Fri Sat

				1	2	
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

To 2012. JUN

Sun Mon Tue Wed Thu Fri Sat

				1	2	
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

History Lookup is the function for the user to select and view the period of up to 3 months from today.

If you click the query button, the power consumption during the set period is displayed on the screen.

Setting the system

For the following cases, the air conditioner or the ventilator should be registered at or deleted from the system by LG ACCS.

- Installing the ACP for the first time
- Adding a new air conditioner or ventilator
- Changing the existing air conditioner or ventilator information
- Deleting the existing air conditioner or ventilator

The air conditioner can be registered or deleted in 'Setting' menu of LG ACCS.

NOTE

Setting group name when the ACP interfaces with AC Manager

- The ACP and AC manager has different group management boundaries, so if group name is changed and saved in AC Manager, it is not reflected to the ACP, and the default value is saved in the ACP.
Therefore, to change the group name of the ACP, first save the setting information in AC Manager, send the information, and access the ACP to change the group name with the desired name.

CAUTION

System Setting

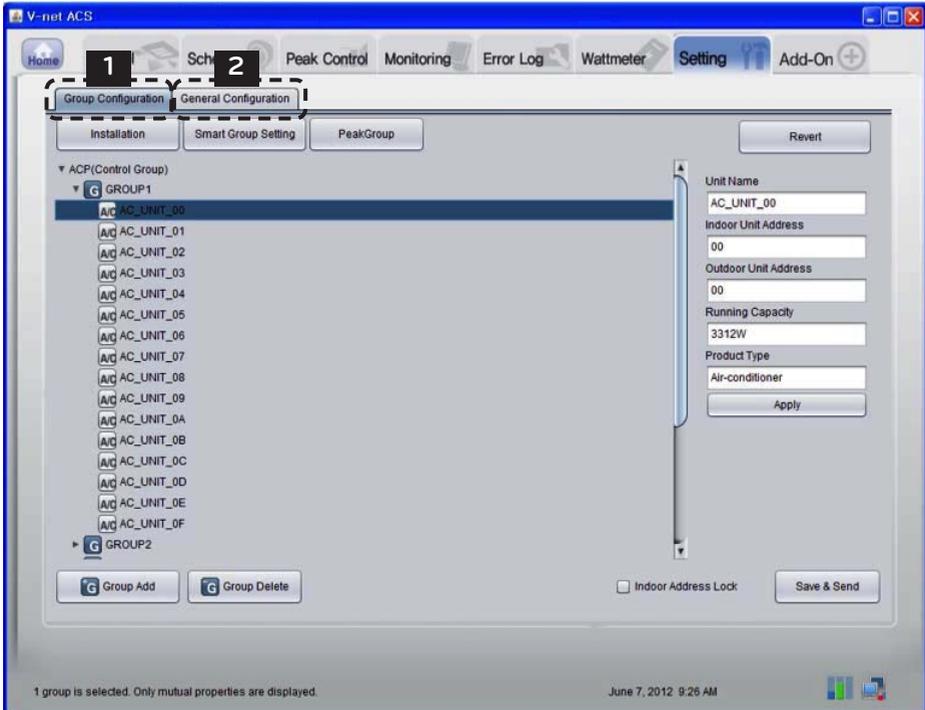
- 'Setting menu' is used for installing the product. Because the product should be installed by the professional engineer with knowledge on the air conditioner, the user should not operate this menu with his or her own discretion.

When ACP interfaces with AC Manager

- When the ACP interfaces with AC Manager, if the system is set by LG ACCS of the ACP, it may cause the malfunction of the air conditioner. To interface the ACP with AC Manager, set the system through the AC Manager.

In order to register, delete or modify the air conditioner at the system, click 'Setting' menu of the LG ACCS.

When you click 'Setting' menu, the following system setup screen is displayed.



1 Group Configuration

Locking indoor unit address

When indoor unit address lock is set, central control address cannot be changed from the indoor unit remote controller.

CAUTION

- Beware that the central control address cannot be changed from the remote controller when the address lock is set.
- Address lock function is limited to some indoor/outdoor units and remote controllers.

Installation

Installation

When indoor unit address lock is set, central control address cannot be changed from the indoor unit remote controller.



Changing outdoor unit information

Outdoor unit Name
OUTDOOR UNIT00

Outdoor unit Address
00

Outdoor unit Capacity
5000

Connected indoor unit count
16

Apply

You can change the name of the outdoor unit, central control address, outdoor unit capacity, and the number of the connected indoor units. After changing the information, you must press [Apply] button.

When you change the number of the connected indoor units, if you input a smaller number than the number of the indoor units already connected, the last input indoor unit is deleted first, and if you input a larger number than the number of the indoor units already connected, it will ask the first address of the indoor unit to be added, and it will add the indoor units by the number of the indoor units to be added by finding an empty address from the input address one by one.

Changing indoor unit information

Outdoor unit Name
OUTDOOR UNIT06

Outdoor unit Address
06

Outdoor unit Capacity
5000

Connected indoor unit count
5

Apply

You can change the name of the indoor unit, central control address, and indoor unit capacity. After changing the information, you must press [Apply] button.

CAUTION

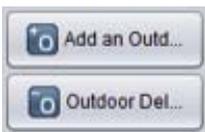
Outdoor unit and indoor unit capacity

- When peak/demand control function is used, the indoor unit capacity must be input in the units of Watt.
- The air conditioner power consumption can be controlled not to exceed the set value through this value.

Indoor unit power consumption marking method (unit: Watt)

- Power consumption of nth indoor unit =
$$\frac{(\text{Outdoor unit power consumption} + \text{Total power consumption of the indoor unit}) \times \text{power consumption of nth indoor unit}}{\text{Total power consumption of indoor unit}}$$

Add/delete outdoor unit



To add an indoor unit, press [Add an outdoor] button.

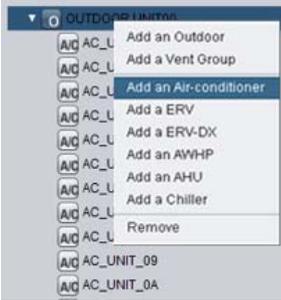
Add outdoor unit, and change outdoor unit information as necessary.

Input the number of the connected indoor units, and when [Apply] button is pressed, it will ask the first address of the indoor unit to be added, and it will add the indoor units by the number of the indoor units to be added by finding an empty address from the input address one by one.

When you select an outdoor unit and press [Outdoor delete] button, the corresponding outdoor unit will be deleted.

At this time, the indoor units connected to the selected outdoor unit will be deleted as well.

Add/delete indoor unit



When you add or delete indoor unit, you can do it by changing the number of the connected indoor units connected to the outdoor unit, but when you add or delete one by one, you can also do it by right click and popup menu.

When you press [Add an air-conditioner] button in the popup menu, air conditioner indoor unit will be added.

Add ventilator / direct cooling type ventilator

 Add a Vent Group

Vent Group Name	VentGroup00
Vent unit Count	0
DX-HRV unit Count	0
Apply	

To add a ventilator or direct cooling type ventilator, you shall first add ventilator / direct cooling type ventilator group.

After adding ventilator / direct cooling type ventilator group and input of the number of ventilator and direct cooling type ventilator products, press [apply the changes] button.

Or, as in the case of adding air conditioner, you can add the ventilator or direct cooling type ventilator product one by one through the popup menu. Ventilator or direct cooling type ventilator may be added under ventilator / direct cooling type ventilator group.

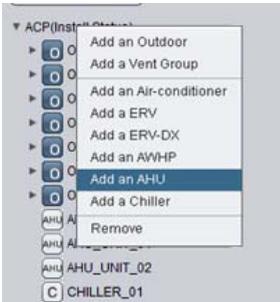
Add AWHP



To add AWHP, right click, and add through the popup menu.

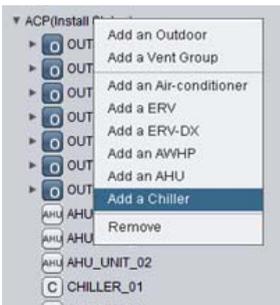
When you press [Add an AWHP] button in the popup menu, AWHP will be added. AWHP may be added only under outdoor unit group.

Add AHU



To add AHU, right click, and add through the popup menu. When you press [Add an AHU] button in the popup menu, AHU will be added. AHU is added independently without going under outdoor unit group or ventilator / direct cooling type group.

Add Chiller

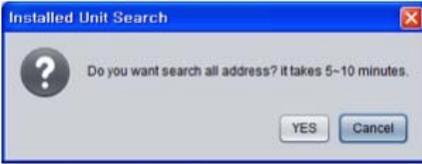


To add Chiller, right click, and add through the popup menu. When you press [Add a Chiller] button in the popup menu, Chiller will be added. Chiller is added independently without going under outdoor unit group or ventilator / direct cooling type group.

! NOTE

- The sum of the connected equipments may not exceed 256.
(Up to 256 air conditioner indoor units, 128 ventilators (including direct cooling type ventilators), 256 AWHP's, 16 AHU's, and 15 Chillers may be connected.)

Auto search



When you first register indoor unit / outdoor unit / ventilator, etc., it is convenient if you use the automatic search function.

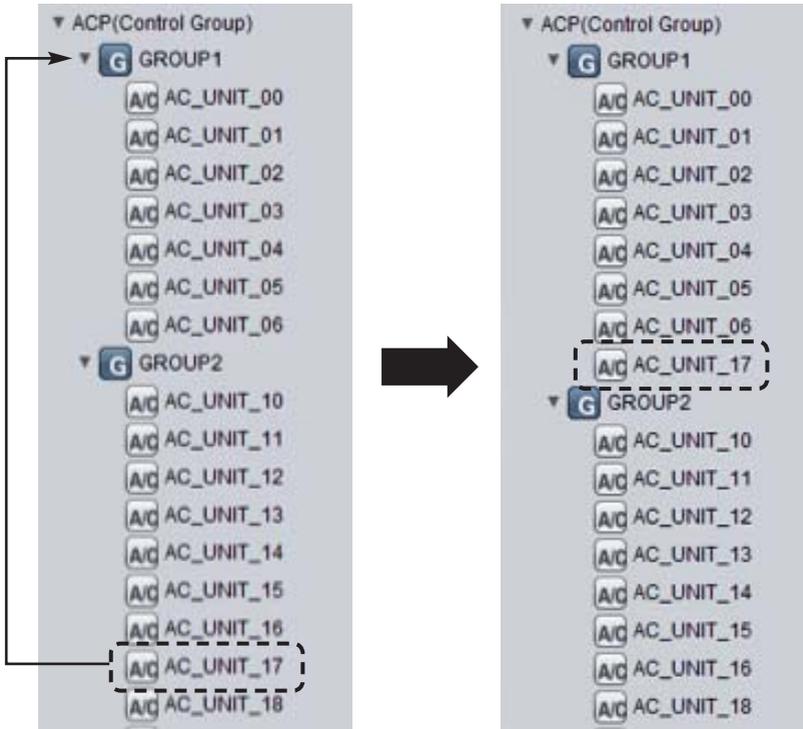
When you press automatic search button, it searches the indoor unit and ventilator products connected to the ACP.

It takes about 5~10 min. for automatic search.



Moving indoor unit

You can select indoor unit and move to another outdoor unit. When you move an indoor unit, click one indoor unit with the mouse, and drag it onto another outdoor unit.

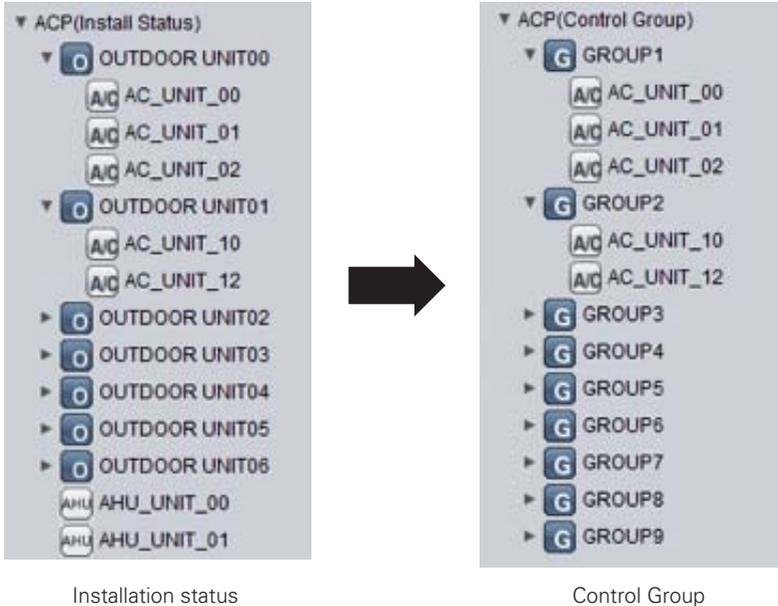


Smart Group Setting

Smart Group Setting

When you press [Smart Group Setting] button, the control group is automatically created based on the outdoor unit and ventilator group information input in the installation status.

Users may change the control group as they wish as necessary.



Recovery of previous information

Revert

If you press [Revert] button, the group information edited so far is deleted, and it brings back the group information saved in the ACP at the last time.

Completing group setting

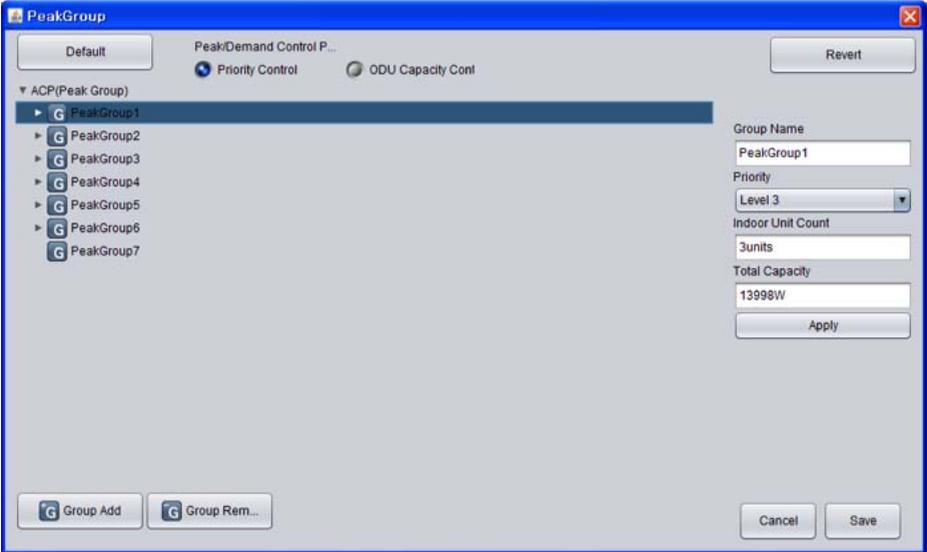
When the changes of the information in installation status are completed, you must press [save] button to save the edited information in the ACP. If you press [cancel] button, the screen will be closed, and the changed information will not be saved.

After changing the information of the installation status, you must change the information of the peak group and the group information as well.

Peak Group

PeakGroup

During the peak control, you can control with priority for each group. To set the peak group, press [Peak Group] button, and the following screen will appear.



In this screen, you can select peak operation method, and for priority control method, set peak group to set the priority of each group.

For outdoor capacity control method, you can set the outdoors that the peak control is not applied to.

Indoor unit priority control setting

Control method during Peak/demand operation

Peak/Demand Control P...

Priority Control

ODU Capacity Cont

You can select the control method during peak operation or demand operation.

When you select priority control method, peak mode operation will start from the indoor unit with lower priority when the current usage exceeds the target value.

When you select outdoor unit capacity control method, outdoor unit capacity is adjusted according to the set operation ratio.

NOTE

- It is set to 'priority control' method as a default.

When you press [Default] button, group is created based on the outdoor unit input in the installation status.

For peak control to operate effectively, it is best to create the group in the units of outdoor unit. It is recommended to use the default setting as it is, if possible.

You may create a group by combining several outdoor units, or make a separate group for cases such as VIP rooms with a higher priority for management.

Changing priority

Group Name	PeakGroup1
Priority	Level 3
Indoor Unit Count	3units
Total Capacity	13998W
Apply	

During the peak control, you can assign priority to each group.

Priorities have 5 stages of "Level 1", "Level 2", "Level 3", "Level 4", and "Level 5", and you can select the group with the mouse and change the priority on the right. (Level 5 is the top priority)

After the change, you must press [Apply] button.

Recover previous information

Revert

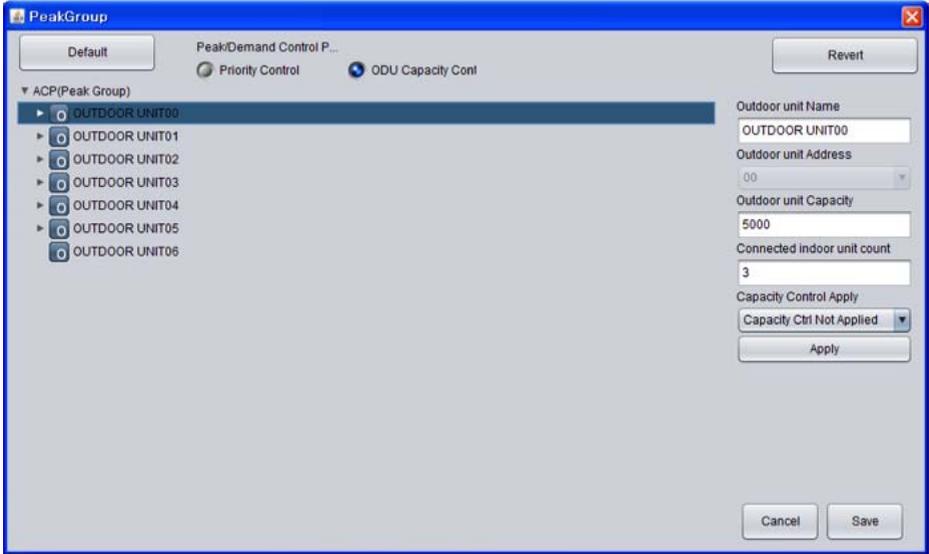
When you press [Revert] button, peak group information edited so far will be deleted, and it will bring back the peak group information saved in the ACP at the last time.

Saving and cancel

When the change of peak group is completed, you must press [save] button to save the edited information in the ACP.

If you press [cancel] button, the screen will be closed, and the changed contents will not be saved.

Outdoor unit capacity control setting



When you select outdoor unit capacity control, it will convert to the above screen.

The control is performed in the units of outdoor unit in outdoor unit capacity control method, so a separate group cannot be set.

However, considering various usages, you can set outdoor units that the capacity control is not applied to, for separate management of the cases such as VIP rooms.

Changing whether to apply

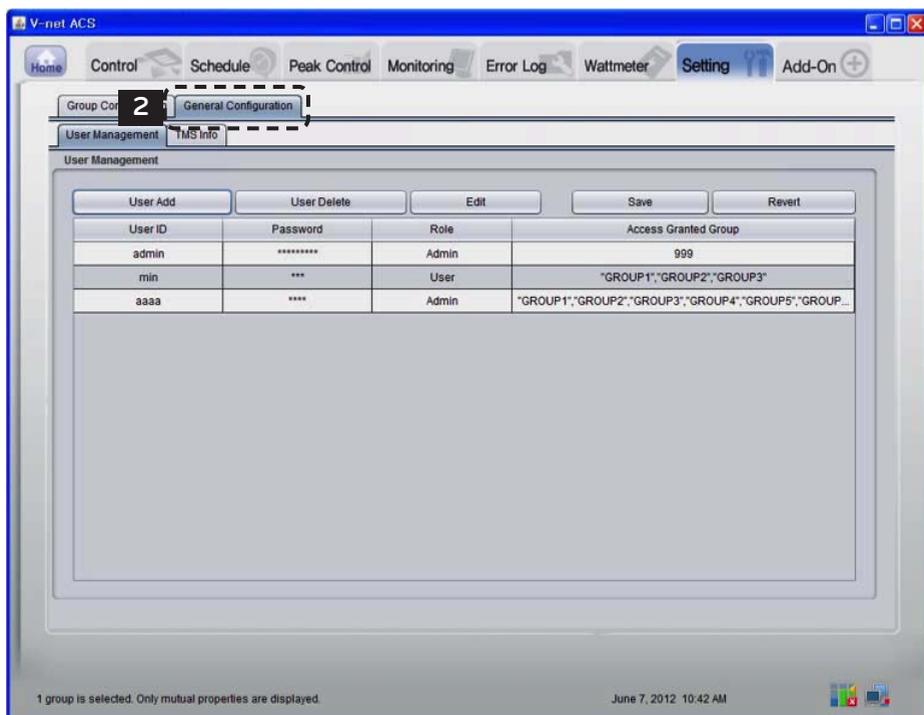
User may decide whether to apply capacity control by selecting the corresponding outdoor unit as in the figure.

After the change, you must press [Apply] button.

2 General Configuration

You can add user ID in addition to the installation information or group setting, or change other setting information.

When you enter the setting screen, the following screen appears.



User Management

You can input manager information in `User Management` menu. Manager information is the authority to log in to LG ACCS.

When you press [User Add] button, you can input new user, password, authority, and the group to control.

"User" and "manager" have authorities, "user" may use only control and monitoring functions, and "manager" may use installation status information, general setting, schedule, and all other functions.

When you select a user and press [User Delete] button, the selected user will be deleted.

When you select a user and press [Edit] button, you can change the authority of the user.

If you press [Revert] button, the edited contents will not be saved, but the contents currently saved in the ACP will be displayed again.

When you press [Save] button, the contents displayed on the screen will be saved in the ACP.

! CAUTION

When a user is added

- Account may be added up to 256.
- ACCS, which is the control screen of the ACP can be run up to 50 at the same time, and if more ACCS is run, proper control of the ACP may be impossible.
- If ACCS is run in overlap in one PC, ACCS may not be used properly according to the performance of the PC.

TMS interface information

It is the part to input the information to interface with TMS to for the maintenance company, with the maintenance contract between the site with air conditioner and the maintenance company, to periodically monitor the information of the site and to provide services related to various maintenances. TMS interface information input screen is as follows.

The screenshot shows the 'V-net ACS' application window. The 'Setting' menu is active, and the 'TMS Info' tab is selected under 'User Management'. The 'SVCNet Information' section contains a table with the following data:

Item	Set Value
SVCnet System Url	lgims.codns.com
Server's port	23
Site Name	LG
Acp Name	LGACP
Site Code	000000000
Site Address	Gangnam-gu, Daechi-dong, Seoul
Observation Period	10
Administrator Name	Jongmin Lee
Phone Number	010-1234-5678
Email Address	da-opensource@lge.com
Position	Manager

On the right side of the table, there are three buttons: 'Save', 'Query', and 'Register SiteCode'. At the bottom left, a status message reads '1 group is selected. Only mutual properties are displayed.' At the bottom right, the date and time are shown as 'June 7, 2012 10:45 AM'.

Item	Description
SVCnet System Url	Input internet address of TMS system.
Server's port	Input communication port number of TMS system. (select 1 from 21,23, and 80)
Site Name	Input the name of the site.
ACP Name	Input the name of the ACP.
Site Node	Site code is the unique code of each site. When you press [request site code] on the right, the request for site code registration is submitted online, and within about 1 min., when you press [Query] button, you can check the issued site code.
Site Address	Input the address of the site.
Observation Period	Input the monitoring period in the units of min. (minimum monitoring period is 10 min.)


CAUTION
Saving

- When the contents of the table are changed, you must press [save] button to save the changed information.

TMS interface information

- The information related to TMS interface must be handled by the installation technician equipped with the installation qualification. Even if you input the above information, you may not immediately be able to use TMS interface.
If you have relevant questions or requests, please contact the service center or installation specialty store acknowledged by LG.

Additional functions

ACP provides the function to display freezing cycle information of the outdoor unit as an additional function.

But, to see the freezing cycle of the outdoor unit, you must make a maintenance contract with a maintenance company, and a separate device may need to be installed.

When you select the additional functions, the following screen appears.

When you want to update the information, press [Refresh] button.

The screenshot shows the V-net ACS software interface. The main window is titled "V-net ACS" and has a menu bar with options: Home, Control, Schedule, Peak Control, Monitoring, Error Log, Wattmeter, Setting, and Add-On. The "Cycle Information" tab is selected. Below the menu, there is a dropdown menu for "Outdoor Unit Name" set to "OUTDOOR UNIT00(addr: 00)" and a "Refresh" button. A "Master Unit" section is also visible. The main area displays a list of parameters for the outdoor unit, such as Outdoor Unit Address, Outdoor Unit Type, Operation Mode, Micom Ver., Error Code, Inverter Comp Freq., Inverter Fan1 Freq., Inverter Fan2 Freq., Air Temperature, High Pressure, Low Pressure, Suction Temperature, and Liquid Pipe temp. At the bottom, there is a table with columns: No, Group..., UnitNo..., On/Off, Mode, SetTe..., Fan, HardLock, Swing, Pipe In, Pipe Out, LEV, RoomTe..., and Detail. The table contains three rows of data for units 0, 1, and 2.

No	Group...	UnitNo...	On/Off	Mode	SetTe...	Fan	HardLock	Swing	Pipe In	Pipe Out	LEV	RoomTe...	Detail
0	GROU...	AC_U...	Run	FAN	25°C	Low	Lock	Stop	25°C	25°C	0	23°C	
1	GROU...	AC_U...	Run	FAN	25°C	Low	Lock	Stop	25°C	25°C	0	23°C	
2	GROU...	AC_U...	Run	FAN	25°C	Low	Lock	Stop	25°C	25°C	0	23°C	

1 group is selected. Only mutual properties are displayed.

June 7, 2012 10:47 AM

CAUTION

Additional functions

- The cycle information query function of the additional functions can only be used after making a maintenance contract between the site and the maintenance company.

Installing ACP

Installing ACP

This chapter describes how to install the ACP to use.

In order to use the ACP, the installation should be performed by the following order.

STEP 1. Check the cautions during the ACP installation

Before installing the ACP, check the cautions.

STEP 2. Study the cable connections diagram of the entire system

Study the cable connection diagram of the site where the ACP is installed.

STEP 3. Set the indoor unit address

Set the address of the ACP not to be overlapped with the connecting indoor unit.

STEP 4. Set PI485 and connect cables

Set DIP switch of PI485 correctly, and connect RS-485 communication cable.

STEP 5. Install ACP and connect cables

Install the ACP, and set network and other settings.

STEP 6. Set ACP network address

Set the network address to be able to access the ACP through internet.

STEP 7. Set ACP functions

Set language, peak/demand, whether to use schedule, whether to use power display, etc.

STEP 8. Set ACCS access environment

Set the access environment in LG ACCS, which is the operation program of the ACP.

STEP 9. Input indoor unit and ventilator information

Set the access environment in LG ACCS, which is the operation program of the ACP.

STEP 10. Verify and check ACP installation

Verify and check whether the ACP is properly installed.



CAUTION

Installing the ACP

- The ACP installation work needs the professional technique. Therefore, the installation described in this chapter should be performed by the certified installation professional.
- Consult the service center or the professional installation agency certified by us about any question or request related to the installation.

Check points during the ACP installation

- The number of PI485 connected to one RS-485 communication line
ACP provides 4 RS-485 ports for indoor unit connection. (CH 1~4)
Up to 16 PI485 for outdoor unit can be connected to one RS-485 port, and up to 31 PI485 for SINGLE/ventilation can be connected.
- The number of the indoor units that can be connected to one ACP
One ACP can be connected up to 256 indoor units. To one RS-485 port, all of 256 indoor units, which is the maximum number that can be connected to the ACP, may be connected.
But, to improve the communication performance of RS-485, it is recommended to be divided and connected to 4 ports.
- RS-485 communication cable connection
There is a polarity in RS-485 communication cable connection, so be careful not to reverse the connection of the two cables.
Do not let the length of RS-485 communication cable exceed total of 1 Km.
RS-485 communication cable must be connected with BUS type.
- IP address of the ACP
IP address of the ACP, address of Gateway, and Net mask must be requested to the person in charge of the network of the corresponding site.



CAUTION

RS-485 Connection of the ventilation equipment

- To connect ventilation equipment, it is recommended to use the ports other than RS-485 communication ports which are connected to air conditioners.

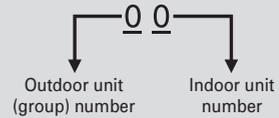
Setting the indoor unit address

By considering the entire installation configuration connecting to one ACP, set the address to each indoor unit not to be overlapped. 00~FF in hexadecimal can be set to the indoor unit address.

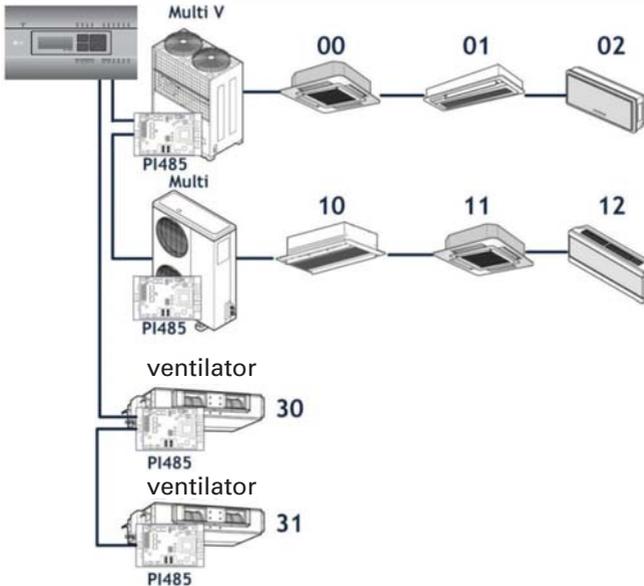
NOTE

Assigning indoor and outdoor unit number

- If the outdoor unit product is Multi V, it is recommended to assign the address by setting the first digit of the address as the number of the outdoor unit, and classifying the second digit as the number or the indoor unit, for easy composition and classification of the system.



The following example sets the address to the indoor unit.



When the ACP is interconnected with the AC Manager, the ventilator can be installed together and controlled.

The above figure shows the example that sets the addresses of 30 and 31 to the ventilators and connects to the ACP.

NOTE

How to set the central control address of the indoor unit

- The central control address setting method may be different for each indoor unit product or remote control type, so set the address by referring to the manual of the indoor unit product or wired remote controller.

Setting the PI485 and connecting the cable

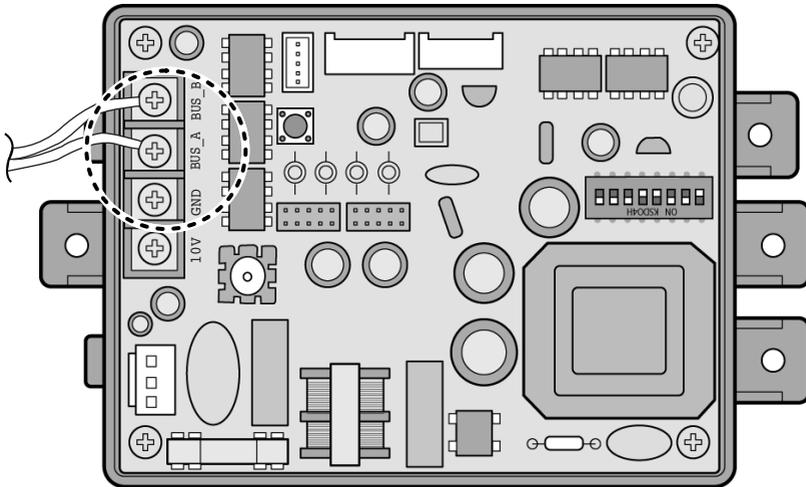
After setting the address of the indoor unit, install the PI485 and set the DIP switch. And then, connect the RS485 cable for communication with the ACP.

NOTE

Installing the PI485

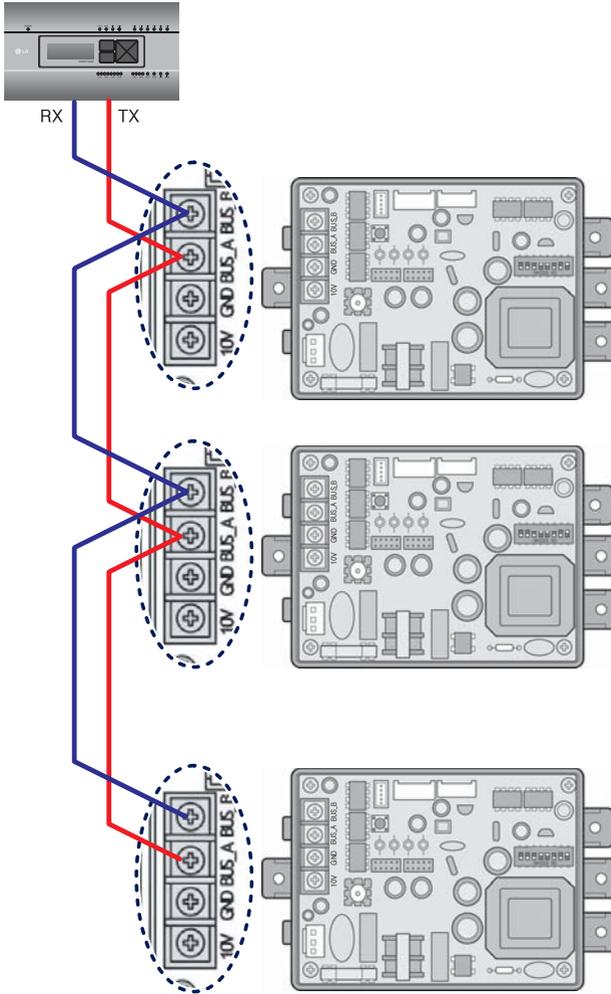
- Installing the PI485 depends on the outdoor unit.
- So, install the PI485 by referring to the PI485 manual or the installation technique information.

To connect PI485 and the ACP, two RS-485 cables need to be connected to BUS-A and BUS-B of PI485. Connect RS-485 cable by referring to the following figure.



If several PI485 are connected to each other to be connected to one ACP, connect each BUS-A and BUS-B of PI485 to be connected to BUS-A and BUS-B of another PI485.

The following figure is an example of connecting several PI485 with each other to connect to one ACP.



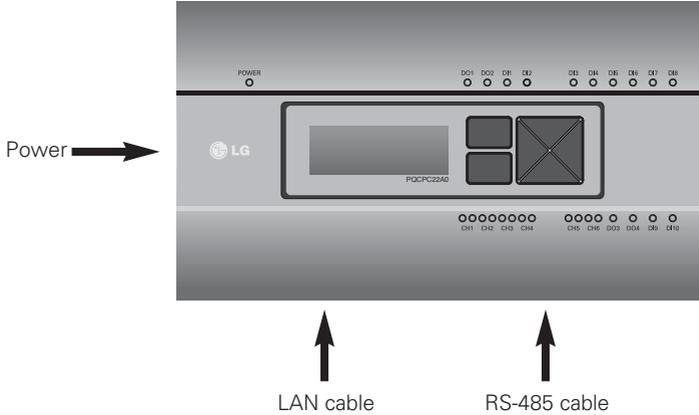
Installing ACP and connecting cables

After setting PI485, the ACP shall be installed in an adequate place, and RS-485 cable shall be connected for the communication with PI485.

And, Ethernet cable (LAN cable) shall be connected for the connection with internet or AC Manager.

To fix the ACP, the following 2 methods may be used.

Install in DIN RAIL or fix to the wall considering the environment of the site.



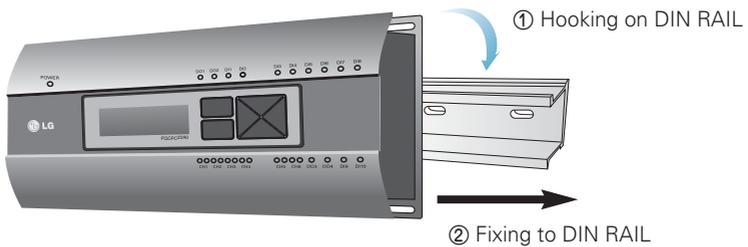
Installing the ACP in DIN RAIL

ACP can be installed in DIN RAIL with width 35mm and height 7.5mm.

Proceed as the follows to install the ACP in an adequate place.

The installation method of the ACP is explained here with the example of installing the ACP in DIN RAIL.

- Decide the space to install the ACP.
- Before installing the ACP, check if it is the adequate place to connect the ACP with the power, RS-485, and LAN cable.
- Install DIN RAIL.
- Hook the top part of the ACP on DIN RAIL.
- Push the main body of the ACP until you hear the sound of installation.
- Pull the ACP to check if it is fixed.



CAUTION

- After installing to DIN RAIL, do not fix to the wall using screws.
- ACP may be damaged.
- DIN Rail fixing Screw Spec: M3, screw head height 2.0 ~ 1.75mm, screw head diameter 7.0 ~ 5.5mm

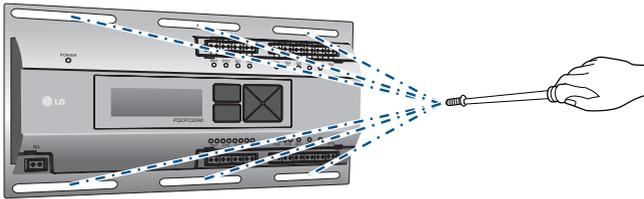
Fixing the ACP to the wall

ACP can be installed by fixing to the wall. To install the ACP in an adequate place, proceed according to the following explanation. It explains here on how to install the ACP with the example of installing the ACP on the wall.

- Decide the space to install the ACP.

Before installing the ACP, check if it is the adequate place to connect the ACP with the power, RS-485, and LAN cable.

- Fix to the wall using the driver. It can be fixed as in the following figure according to the location to install.



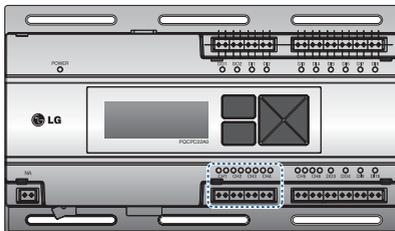
Connecting RS-485 cable to the ACP

After fixing the ACP in the installation place, RS-485 cable that was connected to PI485 shall be connected to the ACP. To connect RS-485 cable to the ACP, proceed as the following order.

- First, among the connectors that can be connected to the ACP, connect the end of RS-485 cable connected to BUS-A of PI485 to Tx part. Next, connect the end of RS-485 cable connected to BUS-B of PI485 to Rx part.
- RS-485 cable that was connected to PI485 shall be connected to CH port (RS-485 port) of the ACP.

Plug the connector connecting RS-485 cable into one of CH1 ~ CH4 ports.

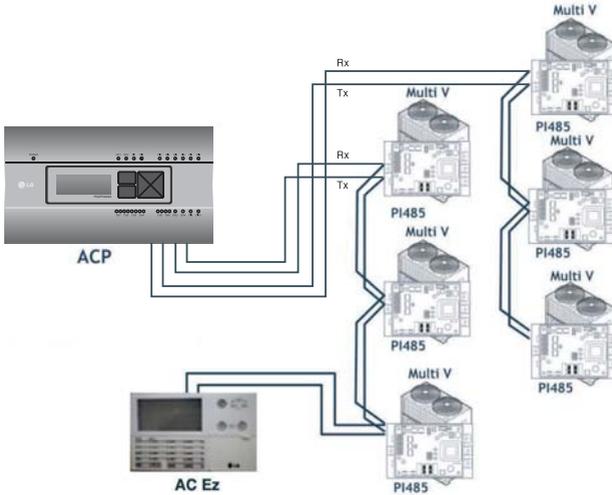
There are 1~6 CH ports, and it must be plugged into one of 1~4 ports for use.



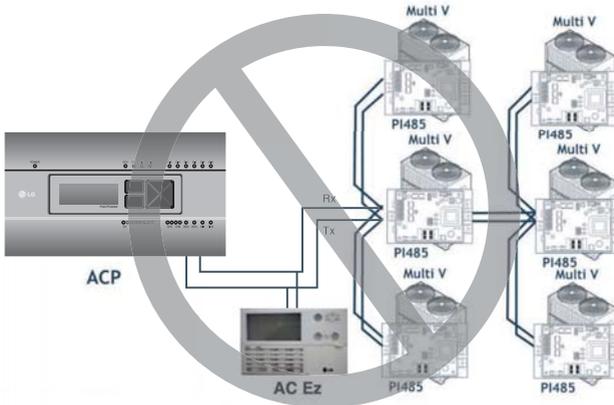
Information: Connecting RS-485 of the ACP

Up to 16 outdoor units can be connected to one RS-485 port of the ACP, and up to 256 indoor units can be connected to one ACP. If there are many outdoor units to connect, the outdoor unit connections shall be appropriately connected to CH1 to CH4 in BUS format. Otherwise, the ACP may malfunction.

The following is an example of dividing to CH1 and CH2 and connecting in BUS format.



The next shows the wrong example (STAR connection) of RS-485 connection of the ACP.

**CAUTION**

- If a different type of connection is made other than BUS format as in the figure, the product may malfunction. So be careful during the installation.

Connecting Ethernet cable (LAN cable) to the ACP

After connecting the ACP and RS-485 cable, Ethernet cable shall be connected to the ACP. ACP may be connected to hub through Ethernet cable, or directly to AC Manager.

Connecting the ACP and hub

It is the case of connecting the ACP to the basic internet network installed at the site, and it is generally connected to the hub.

In such case, Ethernet cable shall be connected as a direct cable.

Use Ethernet cable (direct cable) to connect to LAN port of the ACP.

Connecting ACP and PC

It is the case of installing AC Manager in a separate PC and connecting ACP and PC directly.

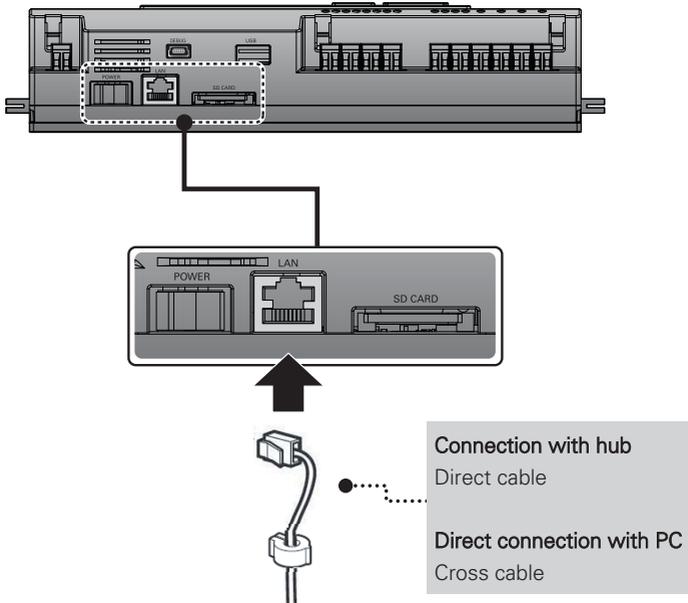
In such case, Ethernet cable shall be connected as a cross cable.

Use Ethernet cable (cross cable) to connect to LAN port of the ACP.

CAUTION

Ethernet cable types

- You must distinguish if the Ethernet cable to connect is a direct cable or a cross cable.
- Also, connect after checking the existence of problem in the cable using LAN tester.



Setting the ACP network address

After connecting the ACP to various devices via the cable, the network environment of the ACP should be set by driving the ACP. The following information should be set for using the ACP.

- IP address of the ACP
- Gateway address
- Net mask



CAUTION

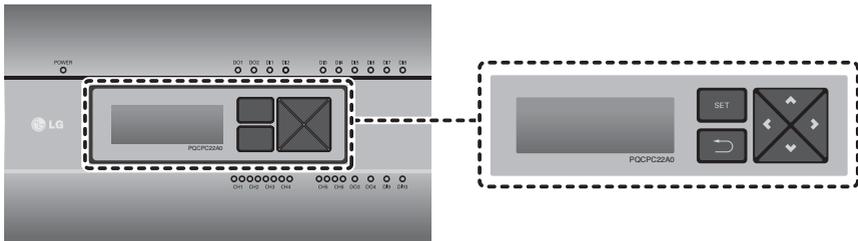
Setting the network environment information

- If the above information is not entered, the communication error may be occurred or it may be impossible to control by the ACP. So, be careful to correctly input.

Before configuring the ACP environment

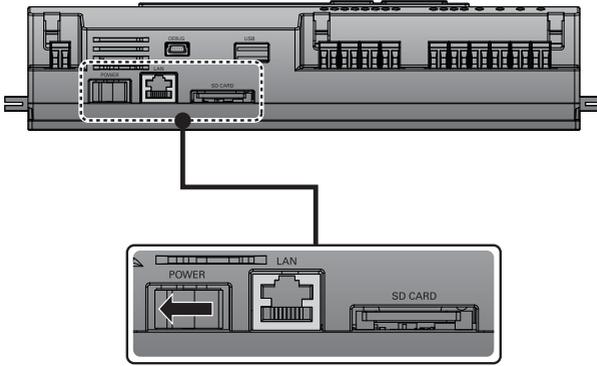
The network environment of the ACP can be set by the LCD and the buttons at the front side of the ACP.

The current ACP information and the menu are displayed on the LCD, and the menu can be changed and selected by pressing SET and (*) button and Up/Down/Left/Right (▲, ▼, ◀, ▶) buttons.

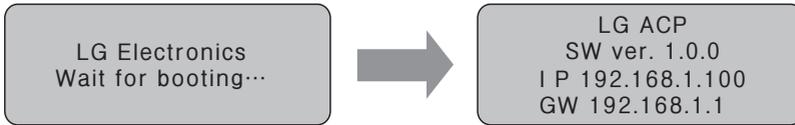


Turning on the ACP

Turn on the ACP to set the network environment of the ACP.



When the power switch is turned on, the ACP booting screen is displayed on the LCD as shown at the following figure, and when booting is completed, the initial ACP screen is displayed.



NOTE

Software version

- The software version of the current ACP is displayed at the initial ACP screen. Also, the software version may be different according to the manufacturing date of the ACP.

LG ACP
SW ver. 1.0.0
I P 192.168.1.100
GW 192.168.1.1

Entering into the environment setup mode

Press 'SET' button of the ACP to enter into the environment setup mode of the ACP.

When the 'SET' button is pressed for the first time, the menu to set the IP address is displayed as shown below.

> Network Info
Contents
Function

Press up/down(▲, ▼) button to place the arrow on the desired function.

When you select [Network Info] and press "SET" button, it enters the No. 1 menu in the following figure.

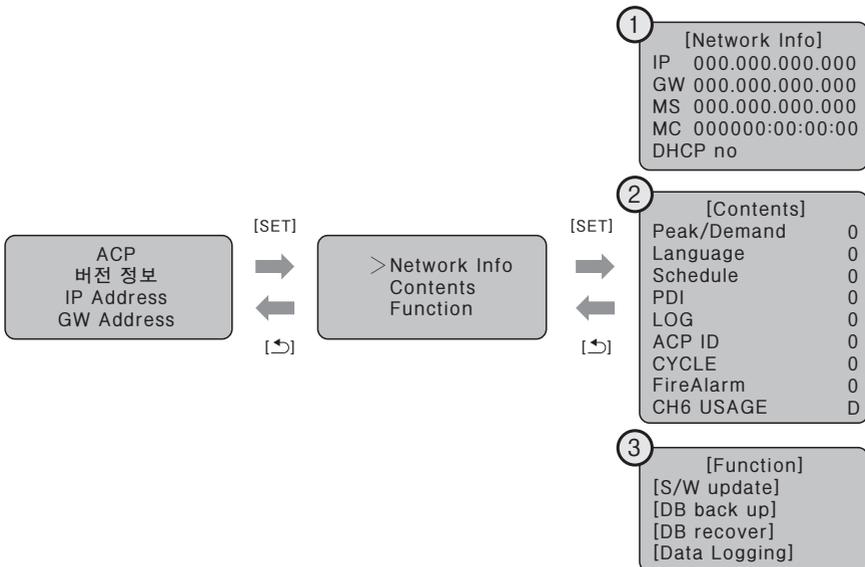
In [Network Info] menu, input the network information such as IP address of the ACP.

When you select [Contents] and press "SET" button, it enters the No. 2 menu in the following figure.

In [Contents] menu, you can set the functions of the ACP and select language to use.

When you select [Function] and press "SET" button, it enters the No. 3 menu in the following figure.

In [Function] menu, ACP software service function is supported.



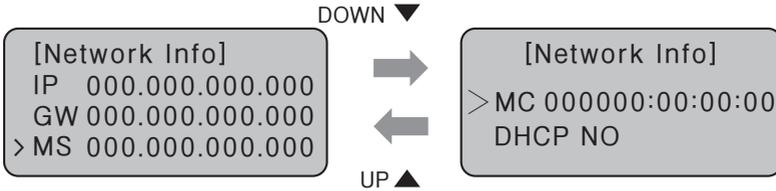
CAUTION

- [Function] menu is used by the system air conditioner service technician, so user shall never use this function.
If this function is incorrectly used, it may cause disorder of the ACP.
CH6 USAGE is not shown in [Contents] menu for Standard.

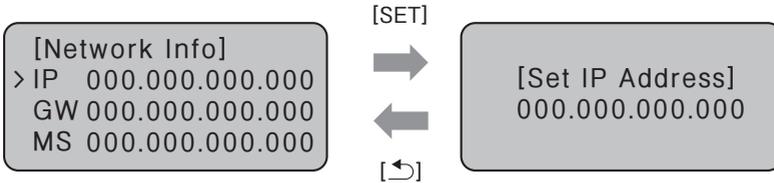
How to set network address

In [Network Info] menu, use the category to set using “up” and “down” (▲, ▼) buttons.

IP, Gateway, and Net mask settings are displayed in the initial screen of [Network Info] menu, and you can check MAC address and DHCP setting using “down” (▼) button.

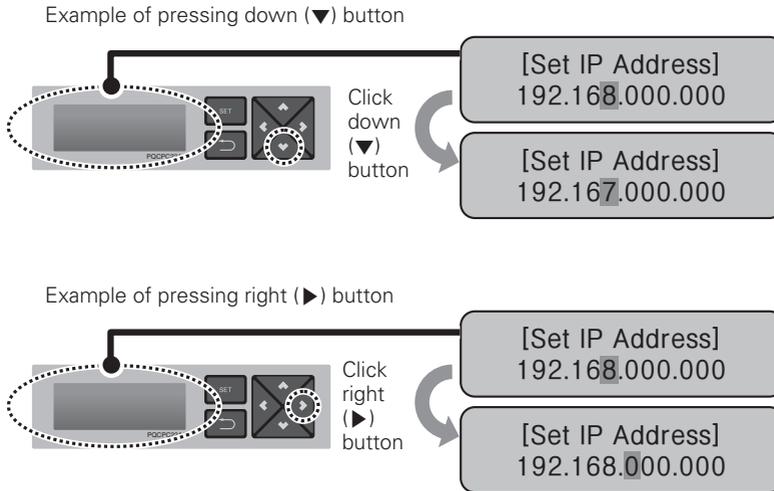


To change the network setting, locate the arrow on the corresponding setting position, and press “SET” button to enter the corresponding setting screen.



The network address consists of four 3-digit numbers. In case of setting the network address, the name of the related address is displayed on the LCD of the ACP, and press Up/Down/Left/Right (▲, ▼, ◀, ▶) button to set.

Press Up/Down (▲, ▼) button to increase/decrease the number of the digit where the cursor is on, and press Left/Right (◀, ▶) button to move the digit of the network address to the left or right.



⚠ CAUTION

Setting the network address

- The network address can be separated to 4 digits based on ., and each number shall be 255 or less.
- Number exceeding 255 may not be input.

! NOTE

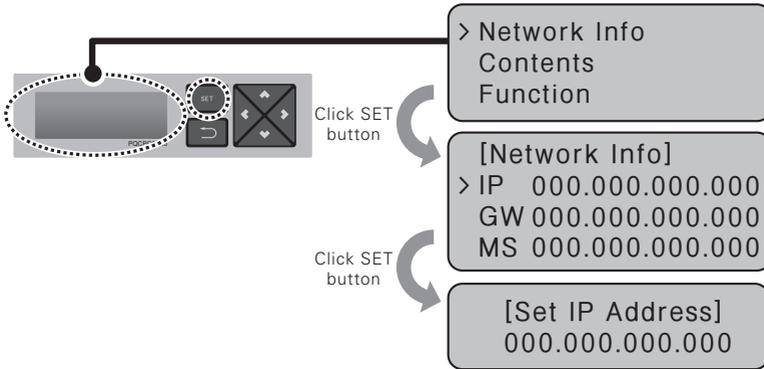
Assigning the network address

- Network address shall be assigned by the person in charge of the network of the corresponding site. (IP address, Gateway address, Net mask)
- ACP can use both fixed IP type and dynamic IP type, but fixed IP type is recommended, and if dynamic IP type is used, it may cause inconvenience of the customer.
- Please refer to “Using dynamic IP using DHCP” for details.
- If fixed IP type is used, network address (IP address, Gateway address, and Net mask) shall be assigned by the person in charge of the network of the corresponding site.

Setting IP address

For user to use the functions of the ACP through the web, a unique IP address may be assigned to the ACP or dynamic IP setting may be used. The next is how to set fixed IP address. Please proceed according to the order.

- Press "SET" button of the ACP. The following menu screen will be displayed.
If you press "SET" button again, [Network Info] setting screen will be displayed.
While IP is selected, pressing "SET" button will display the screen to input IP address.



- Use up, down, left, right (▲, ▼, ◀, ▶) buttons to input the desired IP address.



Using dynamic IP using DHCP

For user to use the functions of the ACP through the web, a unique IP address may be assigned to the ACP or dynamic IP setting may be used.

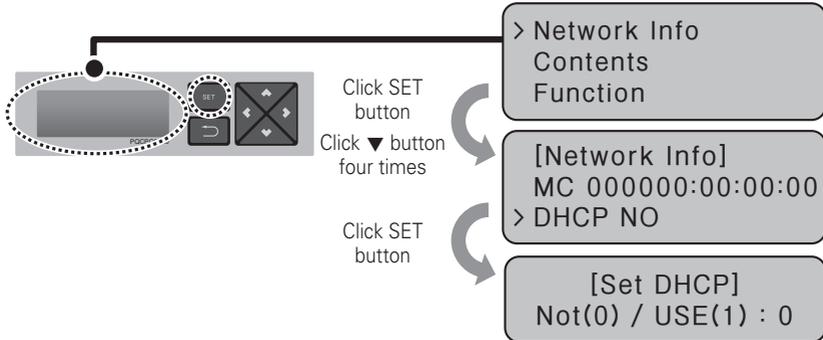
The next is how to set dynamic IP address.

Please proceed according to the order.

- Press "SET" button of the ACP. The following menu screen will be displayed.

If you press "SET" button again, [Network Info] setting screen will be displayed.

While DHCP is selected, if you press "SET" button, you can input whether to use DHCP function.



- Use up and down (▲, ▼) buttons to set whether to use DHCP function.

When you press up (▲) button, DHCP function is set to use, and if down (▼) button is pressed, DHCP is set for no-use.

- To use dynamic IP, set to use DHCP function.



! CAUTION

- If dynamic IP type is used, the IP in use is returned by DHCP server and may not be able to access the ACP.
In such case, you can check the newly set IP address in the front LCD of the ACP.
- If you input the ACP IP address in the web browser, you can run the ACP program again.

Checking ACP access

It checks whether the ACP network address setting is properly done.

You can check the possibility of accessing the ACP through PING test.

You can open the following DOS window through Windows "Start", "Run", "cmd" input.

In DOS screen, input "ping <ACP IP address>" as follows to run PING test.



```

C:\WINDOWS\system32\cmd.exe
(C) Copyright 1985-2001 Microsoft Corp.
C:\Documents and Settings\Administrator>ping 165.186.32.174

Pinging 165.186.32.174 with 32 bytes of data:

Reply from 165.186.32.174: bytes=32 time<1ms TTL=63

Ping statistics for 165.186.32.174:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\Documents and Settings\Administrator>_
  
```

When the network setting is properly done

```

C:\WINDOWS\system32\cmd.exe
Microsoft Windows XP [Version 5.1.26001
(C) Copyright 1985-2001 Microsoft Corp.
C:\Documents and Settings\Administrator>ping 165.186.32.242

Pinging 165.186.32.242 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 165.186.32.242:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\Documents and Settings\Administrator>
  
```

When the network setting is not properly done

! NOTE

When you connected the ACP and PC through a cross cable, but you cannot access the ACP

- Check IP address of the ACP and IP address of the PC.
 - Ex) If IP address of the ACP is 192.168.1.101 and Net mask is 255.255.255.0, check if the first three digits of the IP address of the PC is the same as the first three digits of the IP address of the ACP.
 - In such case, the IP address of the PC shall start with 192.168.1, and it shall be different from the IP address of the ACP. Set as follows, and try again.
- Setting of the ACP
 - IP address: 192.168.1.112
 - Gateway address: 192.168.1.1
 - Subnet Mask: 255.255.255.0
- Setting of the PC
 - IP address: 192.168.1.113
 - Gateway address: 192.168.1.1
 - Subnet Mask: 255.255.255.0
- Check the status of the Ethernet cable (LAN cable).

! NOTE

When PC and ACP are connected together in a hub or a switch hub, and you cannot access the ACP.

- If it is right after changing the IP setting of the ACP, reset the power of the ACP.
- If it is right after connecting LAN cable to the hub or switch, it may take time for the hub or the switch to recognize the ACP. In such case, it may help to turn off and turn on the power of the hub or the switch.
- Check the status of the Ethernet cable (LAN cable).
- Check ARP table of the PC to see if the IP address of the ACP correctly corresponds to the MAC address. If duplicate MAC addresses correspond to one IP address, or if different address from the MAC address of the PC is output, there may be a host with the same IP address as the IP address of the ACP. In such case, the IP address of the ACP or the IP address of the corresponding host shall be changed.

```

C:\WINDOWS\system32\cmd.exe
C:\Documents and Settings\Administrator>arp -a

Interface: 165.186.2.251 --- 0x2
Internet Address      Physical Address      Type
10.16.76.148          00-03-2e-05-08-b3    dynamic
165.186.2.129        00-13-c3-86-67-ff    dynamic
192.168.1.150         00-00-00-00-00-00    invalid
  
```

How to check ARP table

Setting the functions of the ACP

The following functions can be set by using the menu of the ACP:

- Select Peak or Demand
- Web screen language selection
- Schedule function
- Power display function
- Error history display function
- Outdoor unit cycle information display function
- Setting the attributes of CH6 (not supported in Standard)

Before setting the functions of the ACP

The function setting of the ACP should be changed depending on the case that only the ACP is used or the case that the ACP is interconnected with the external devices such as AC Manager, power distribution indicator, and Demand controller.

In general, the function of the ACP should be set and used as follows:

	When only ACP is used	When ACP interfaces with AC Manager
Peak or demand selection function	Set to peak function	Set to demand function
Schedule function	Set to use schedule function	Set to no-use of schedule function
Power display function	Set to use if it interfaces with power distribution indicator, and set to no-use if it does not interface..	

CAUTION

Setting to use the power display

- If the ACP and the power distribution indicator are not connected, the power display function should be set to no-use.
- If it is set to use, be careful since the control speed of the ACP will be slower.

Selecting Peak or Demand

The ACP offers the function to manage the power consumed by the connected air conditioner, by which the electric charges can be effectively saved. The ACP offers two functions to limit the maximum power consumption of the air conditioner as follows:

- Peak: The maximum power consumption of the air conditioner can be managed by setting the maximum usage operation ratio in the ACP.
- Demand: It is set when it interfaces with AC Manger.
When this function is set, the maximum usage operation ratio can be set in AC Manager to manage the maximum power consumption of the air conditioner.

One of these two methods can be selected and used in the ACP. And, if it is set by the menu of the ACP, the UI screen is differently displayed when accessing the web screen to set the function. The ACP should be set to the Demand function for the following cases:

- Interfacing with the AC Manager

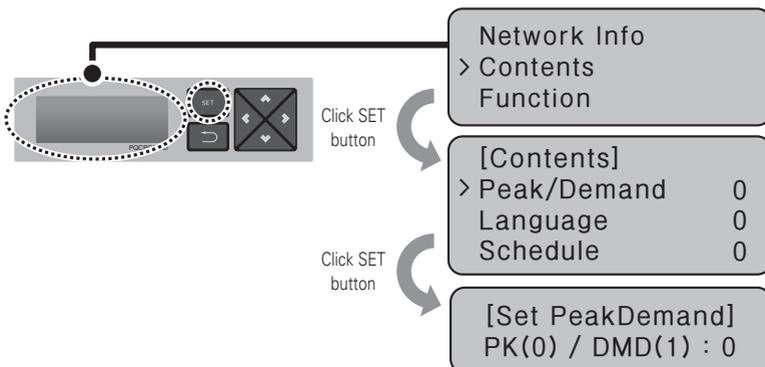
! NOTE

Default value

- The default value at factory ship-out is set to Peak.

Change the power control method as follows:

- When you press 'SET' button, menu screen will be displayed. Use up and down (▲, ▼) buttons of the ACP to select [Contents], and press "SET" button again. While [Peak/Demand] is selected, pressing "SET" button will display the screen to select peak or demand method.



- Use up and down (▲, ▼) buttons to set the desired power management method.
If you press up (▲) button, it is set to demand method, and if you press down (▼) button, it is set to peak method.



Selecting ACCS display language

The ACP offers the web server function. So, when the user accesses the ACP by using the Internet Explorer at the computer connecting to the ACP, the LG ACCS (Advanced Centralized Control System), the control program to use the functions of the ACP, is displayed.

NOTE

How to use LG ACCS

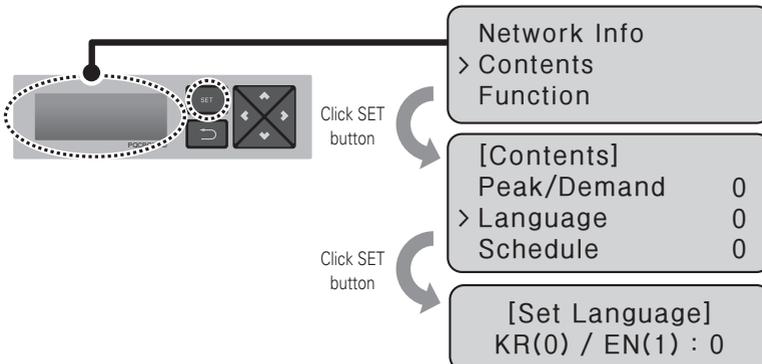
- For more information on how to use LG ACCS, see “page 12”.

The following figure is the initial screen of the LG ACCS program.

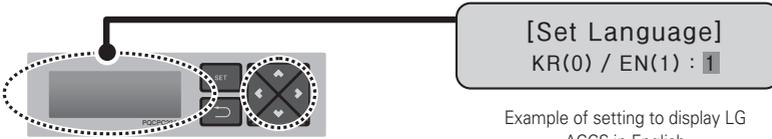


The LG ACCS is offered with the Korean version and the English version, which can be changed by the user's setting. Change the language setting of the LG ACCS as follows:

- When you press the 'SET' button of the ACP, menu screen will be displayed. Use up and down (▲, ▼) buttons to select [Contents], and press "SET" button again. While [Language] is selected, if you press "SET" button, it will display the screen to set the display language.



- Use up and down (▲, ▼) buttons to select the desired language.
If you press up (▲) button, the screen will be displayed in English (1), and if down (▼) button is pressed, the screen will be displayed in Korean (0).



- If you press "SET" button, the set display language will be applied to the system.
But if there is no "SET" button input for certain time (about 10 sec.), the set display language will not be applied to the system, it returns to the previous screen, and the previously set language will be used.

Setting whether to use schedule function

LG ACCS, which is the ACP operation program, provides the schedule function to automatically operate the air conditioner indoor unit connected to the ACP at certain time. Schedule setting function requires the decision whether to use schedule function in the ACP.

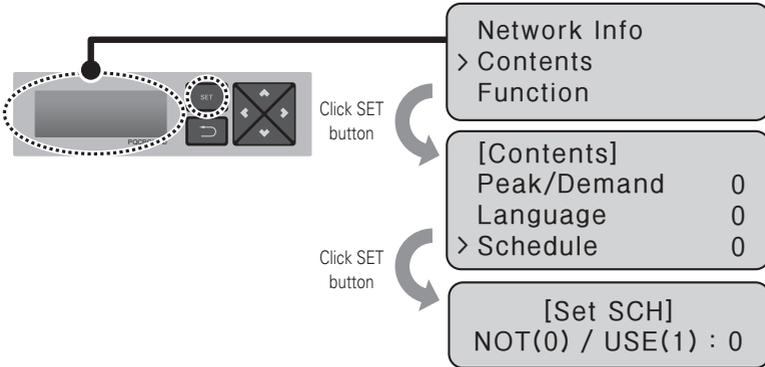
⚠ CAUTION

Deciding whether to use schedule function

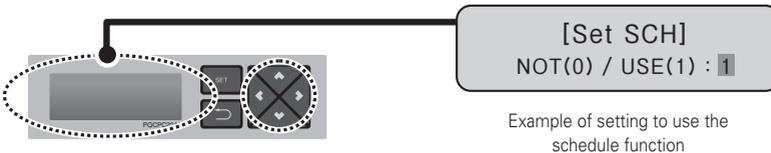
- When ACP interfaces with AC Manager, AC Manager schedule function is used in the ACP with priority, so the schedule function in the ACP shall be set to not to be used.
If ACP is operated independently, the schedule function of the ACP may be used.

Change whether to use schedule function as follows:

- When you press the 'SET' button of the ACP, menu screen will be displayed. Use up and down (▲, ▼) buttons to select [Contents], and press "SET" button again. While [Schedule] is selected, if you press "SET" button, it will display the screen to set whether to use schedule.



- Use up and down (▲, ▼) buttons to set whether to use schedule function. If you press up (▲) button, it will be set to use the schedule function, and if down (▼) button is pressed, it will be set to not to use the schedule function.



- If you press "SET" button, whether to use the schedule function will be applied to the system. But if there is no "SET" button input for certain time (about 10 sec.), the set display language will not be applied to the system, it returns to the previous screen, and the previously set method will be used.

Setting whether to use the power display function

LG ACCS, which is the operation program of the ACP, provides the power display interface function that can check and manage the power consumption of the air conditioner indoor unit connected to the ACP.

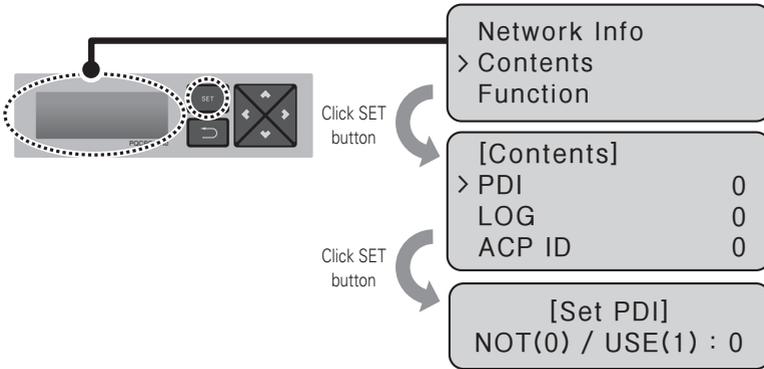
⚠ CAUTION

Power display interface

- To use the power display interface function, the power distribution indicator needs to be interfaced by being connected to PI485 which is connected to the ACP
- Please refer to the corresponding product manual for installation and usage of the power distribution indicator and PI485.

When the power distribution indicator is installed and if you want to use the power distribution indicator interface function, whether to use shall be set in the ACP. Change whether to use the power display function as follows:

- When you press the 'SET' button of the ACP, menu screen will be displayed. Use up and down (▲, ▼) buttons to select [Contents], and press "SET" button again. While [PDI] is selected, if you press "SET" button, it will display the screen to set whether to use the power display function.



- Use up and down (▲, ▼) buttons to set whether to use the schedule function. If you press up (▲) button, it will be set to use the schedule function, and if down (▼) button is pressed, it will be set to not to use the schedule function.



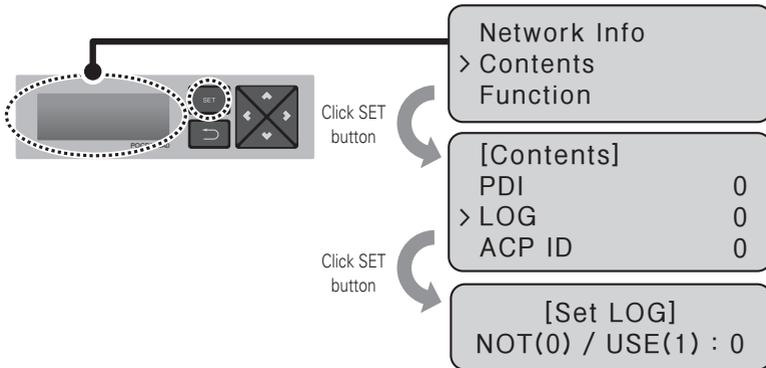
Example of setting to use the power display function

- If you press "SET" button, whether to use the power display function will be applied to the system.
But if there is no "SET" button input for certain time (about 10 sec.), the setting will not be applied to the system, it returns to the previous screen, and the previously set method will be used.

Setting whether to display error history

LG ACCS, which is the operation program of the ACP, provides the error history function that can review several types of errors occurred in the air conditioner indoor units connected to the ACP. User may select whether to display the error history through LG ACCS at his or her own convenience. To use the error history function, whether to use the function shall be set in the ACP. To set whether to use the error history function, please proceed as in the following order.

- When you press the 'SET' button of the ACP, menu screen will be displayed.
Use up and down (▲, ▼) buttons to select [Contents], and press "SET" button again. While [LOG] is selected, if you press "SET" button, it will display the screen to set whether to use the error history function.



- Use up and down (▲, ▼) buttons to set whether to use the error history function.
If you press up (▲) button, it will be set to use the error history function, and if down (▼) button is pressed, it will be set to not to use the error history function.



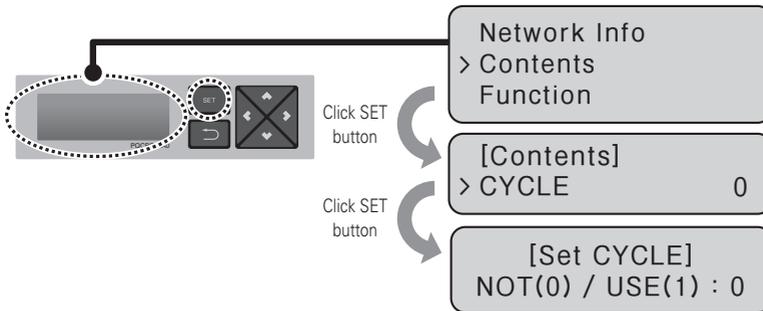
Example of setting to use the error history function

- If you press "SET" button, the set power management method will be applied to the system. But if there is no "SET" button input for certain time (about 10 sec.), the setting will not be applied to the system, it returns to the previous screen, and the previously set method will be used.

Setting whether to display cycle information

In LG ACCS, which is the operation program of the ACP, you can monitor the cycle information of the outdoor unit connected to the ACP. But, to see the freezing cycle of the outdoor unit, you must make a maintenance contract with a maintenance company in advance, and a separate device installation may be required.

- When you press the 'SET' button of the ACP, menu screen will be displayed. Use up and down (▲, ▼) buttons to select [Contents], and press "SET" button again. While [CYCLE] is selected, if you press "SET" button, you can set to view the outdoor unit cycle information.



NOTE

- To see the outdoor unit cycle information, you need to replace PI485 and set the outdoor number that can see the cycle information.

Setting whether to use FireAlarm function

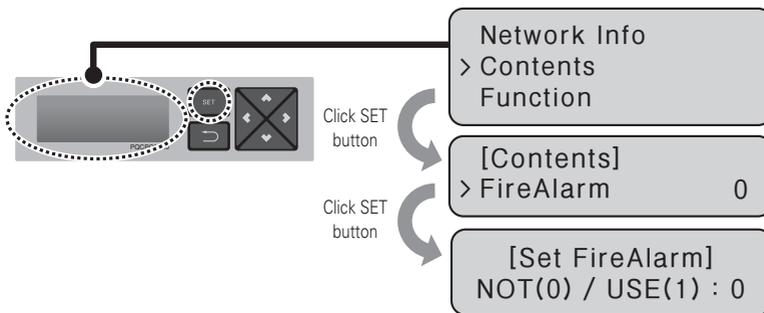
ACP provides Fire Alarm function.

After connecting the fire sensor to ACP DI1, if the fire sensor detects fire, it stops the operations of all connected equipments except the Chiller.

⚠ CAUTION

Fire Alarm interface

- To use the Fire Alarm function, fire sensor needs to be connected to ACP DI1.
- Please refer to each fire sensor product manual for detail usage of fire sensors.

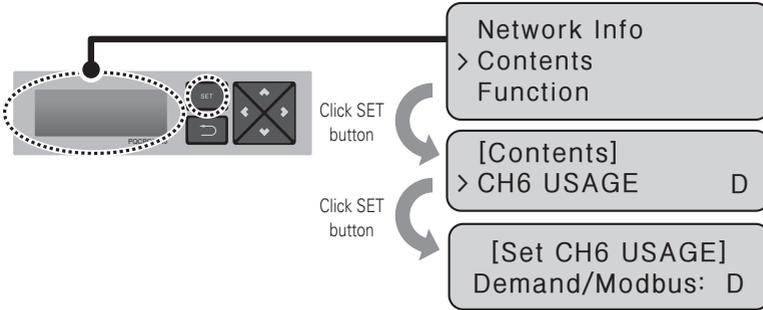


- When you press the 'SET' button of the ACP, menu screen will be displayed. Use up and down (▲, ▼) buttons to select [Contents], and press "SET" button again. While [FireAlarm] is selected, if you press "SET" button, you can set whether to use the Fire Alarm.

Setting whether to use CH6 function

To connect to the Chiller from the ACP, M (Chiller) shall be selected in CH6 USAGE. D (demand controller) setting is not used.

- When you press the 'SET' button of the ACP, menu screen will be displayed. Use up and down (▲, ▼) buttons to select [Contents], and press "SET" button again. While [CH6 USAGE] is selected, if you press "SET" button, you can select one from D (Demand) or M (Modbus).

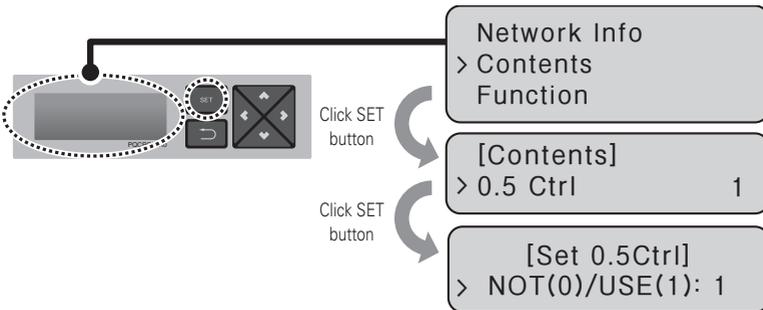


Setting whether to use air conditioner 0.5°C control function

You can control the desired temperature of the air conditioner in the units of 1°C or 0.5°C in the ACP.

It is set to control in the units of 1°C at the product ship-out, and if you want the control in the units of 0.5°C, change the setting as in the following order.

- Caution: 0.5°C control function usage is limited for some indoor/outdoor units or remote controllers.



Software service function

The following software service function can be run using the menu of the ACP.

This function shall only be used by the specialized service technician, and negligent use may cause failure of the ACP system.

- Software update
- Data backup
- Data recovery
- RS-485 data logging

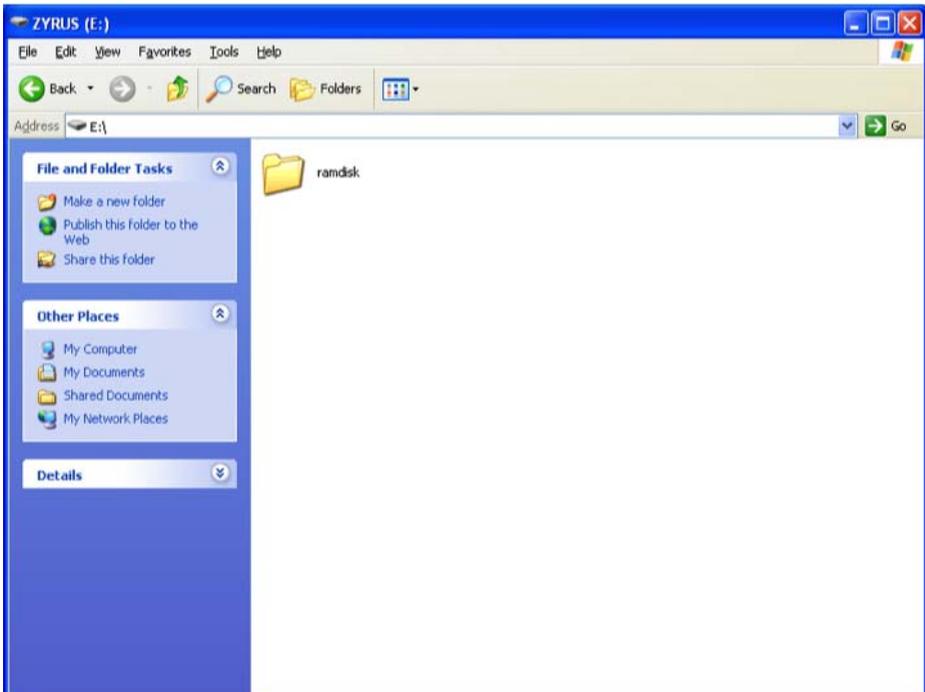
Software update

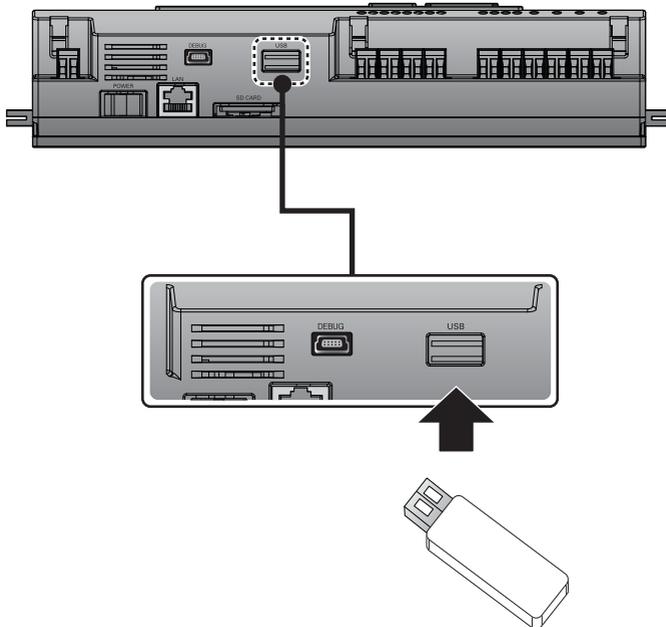
When it is necessary to update the ACP software, it must be carried out by the specialized service technician.

Software update can be done with USB memory.

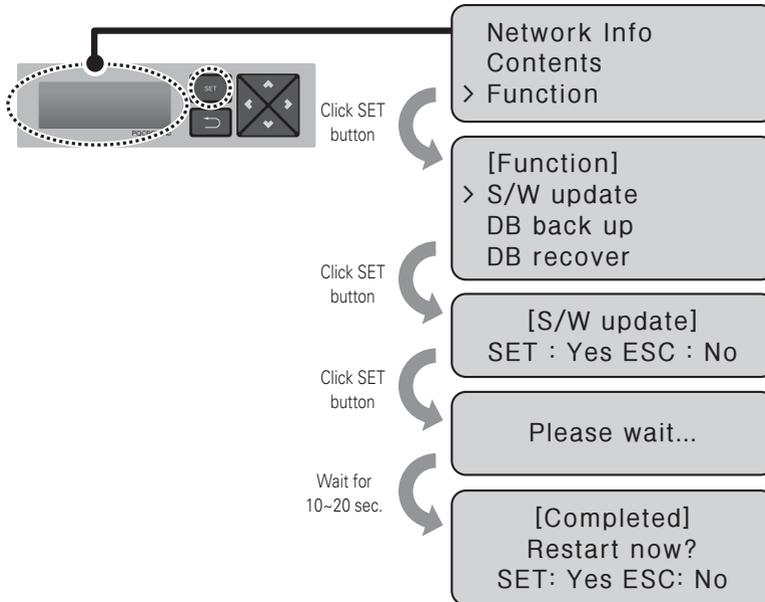
Proceed in the following order.

- Create "ramdisk" folder in USB memory.
- Put the S/W file to update in ramdisk folder.
At this time, only one S/W file must be put. (New version software file can be downloaded from LG Electronics System Air Conditioner homepage.)





- Press "SET" button of the ACP.
Select [Function] menu, and press "SET" button.
Select [S/W update] menu, and press "SET" button again.
To run the software update, press "SET" button again.
Wait while software is running.
After completing the update, press "SET" button to restart the ACP.
Even when you do not immediately restart, update will be applied only after rebooting the ACP in the future.



! CAUTION

- While software update is in progress and while "Please wait..." is displayed, turning off the power of the ACP or removing USB memory may cause severe disorder of the ACP.

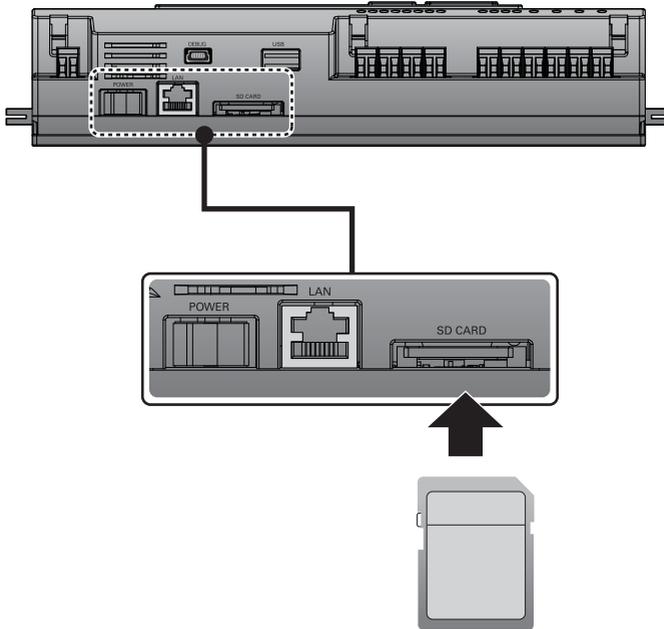
Data backup

If ACP data backup is necessary, it must be carried out by the specialized service technician.

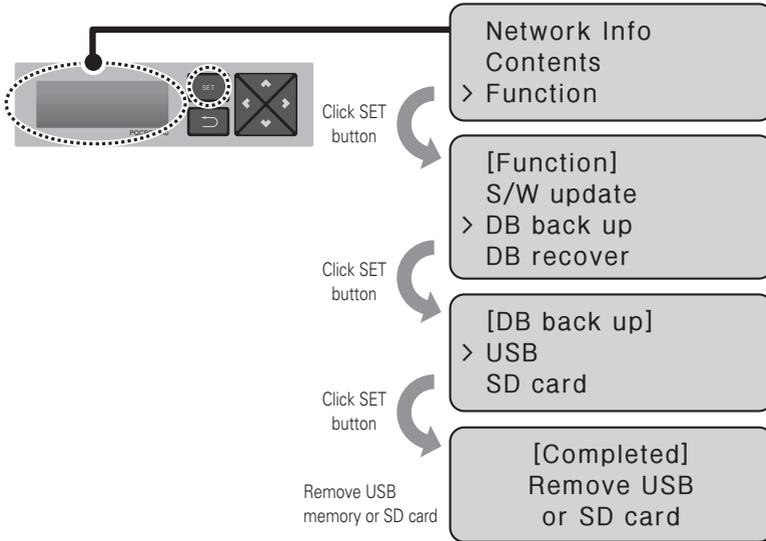
Data backup can be done with USB memory or SD card.

Proceed in the following order.

- Insert USB memory or SD card into the ACP.
(Refer to software update for USB memory insertion.)



- Press "SET" button of the ACP.
Select [Function] menu, and press "SET" button.
Select [DB back up] menu, and press "SET" button again.
Select [USB] or [SD card], and press "SET" button.
After completing backup, remove USB memory.



⚠ CAUTION

- Before data backup is completed, turning off the power of the ACP or removing USB memory or SD card may cause severe disorder of the ACP.

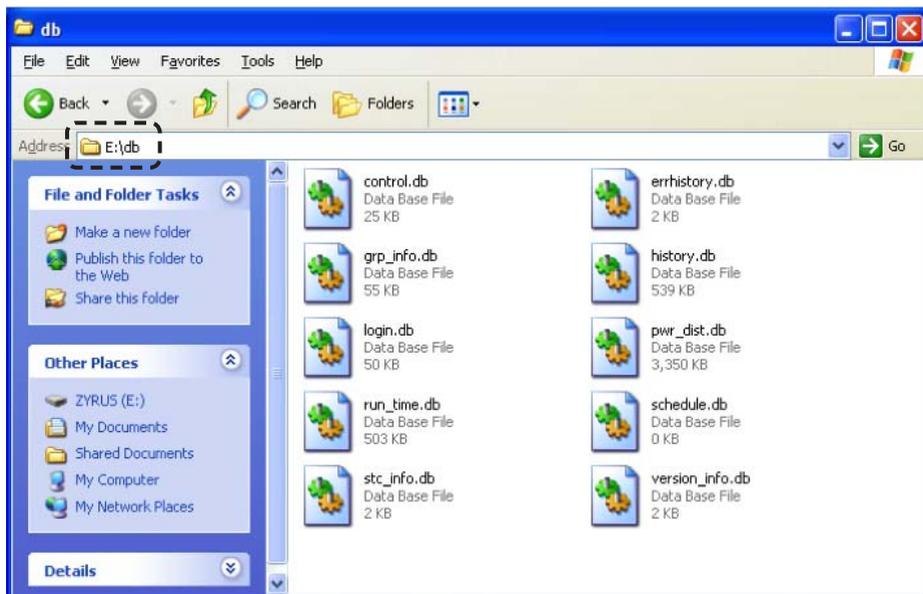
Data recovery

If ACP data recovery is necessary, it must be carried out by the specialized service technician.

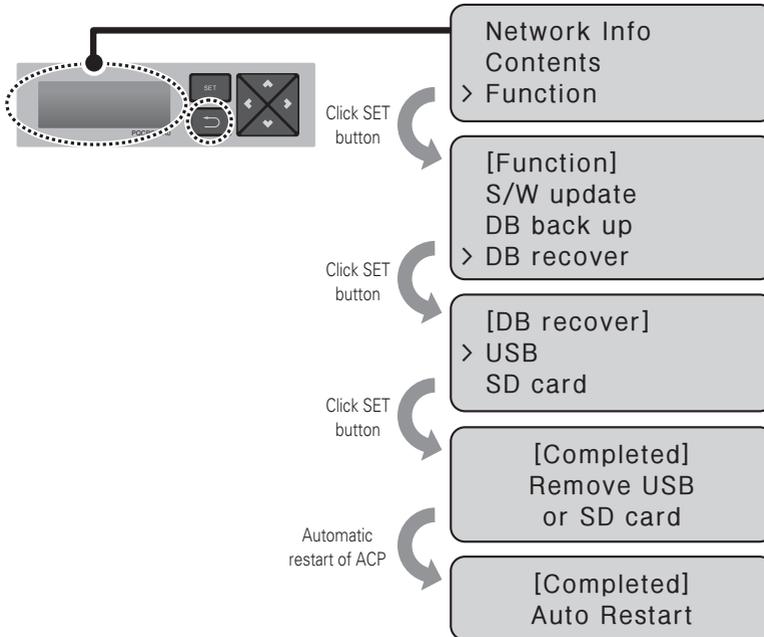
Data recovery can be done with USB memory or SD card.

Proceed in the following order.

- Save the database file to recover in USB memory or SD card.
Save the files in "db" folder as follows.



- Insert USB memory or SD card into the ACP. (Refer to software update and data backup)
- Press "SET" button of the ACP.
Select [Function] menu, and press "SET" button.
Select [DB recover] menu, and press "SET" button again.
Select [USB] or [SD card], and press "SET" button.
Remove USB memory after completing the data recovery.
ACP is automatically restarted for data recovery.



! CAUTION

- Before data recovery is completed, turning off the power of the ACP or removing USB memory or SD card may cause severe disorder of the ACP.

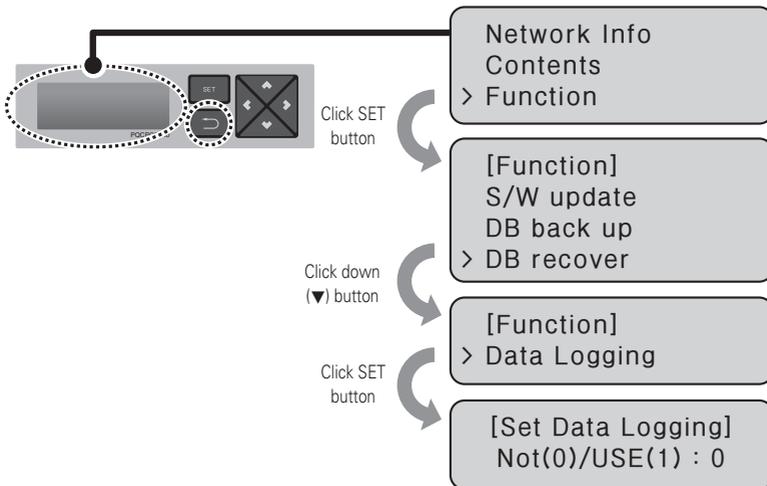
RS-485 data logging

If ACP RS-485 data logging is necessary, it must be carried out by the specialized service technician.

Data logging can be done with SD card.

Proceed in the following order.

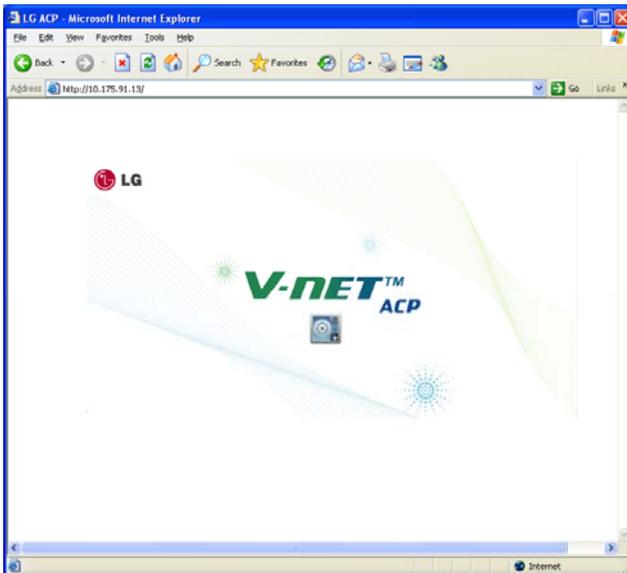
- Insert SD card into the ACP. (Refer to data backup)
- Press "SET" button of the ACP.
Select [Function] menu, and press "SET" button.
Select [Data Logging] menu, and press "SET" button again.
Select whether to set data logging.



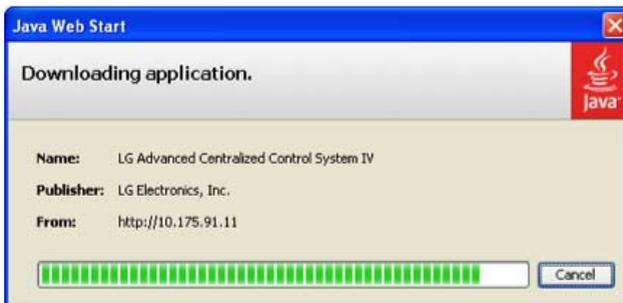
Accessing ACP

User may control the functions of the ACP using LG ACCS program of the ACP in the computer connected to the ACP through network. LG ACCS (Advanced Centralized Control System) is the ACP function control program developed in Java language. When the user accesses the ACP using Internet Explorer, LG ACCS is automatically run.

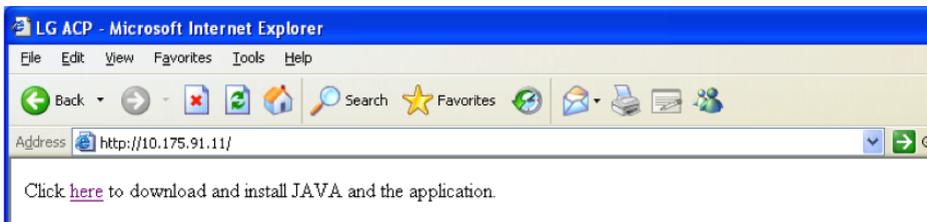
- It runs Internet Explorer in the PC connected to the ACP through internet or internal network. Input IP address set in the ACP in the address window, and press [Enter] key. When the address is input correctly, the following screen is displayed.



- At this time, when you click the icon, the following program is automatically installed.



- If the following page is displayed, install Java according to the figure.



- Click 'here'.



- Click 'Agree and Start Free Download'.

- Click 'Run'.



- Install by clicking 'Install'.



CAUTION

- It is recommended to install with 6-31 or later which is the current Java version. (Lower Version may not run properly.)

- When the program is installed, the following screen is displayed.
At this time, press Run. If you don't want to see this message again, check in "I always trust the contents of this poster".
- Click "Run" button.



- When the program installation is completed, the log in screen is displayed as follows.
If it is the first installation, it access as the super user.



- When the program is run properly, the following screen is displayed.



Input indoor/outdoor unit and ventilation equipment information

If you finished the installations of the above stages, now you need to input the information of the indoor/outdoor unit and ventilation equipment connected to the ACP. Such information must be input to be able to control the air conditioners with the ACP.

There are two methods to input the information of indoor/outdoor unit and ventilation equipment according to the situations.

- When ACP is connected to AC Manager, register information using AC Manager.
- If ACP is not connected to AC Manager, use LG ACCS program of the ACP to register the information.

When ACP is connected to AC Manager

If the ACP is connected by installing AC Manager in a certain PC, the information set in AC Manager is automatically input to the ACP. Therefore, air conditioner may be controlled without the input of indoor/outdoor unit and ventilation equipment information into the ACP.

CAUTION

When AC Manager is used

- When AC Manager is used, input the indoor/outdoor unit and ventilation equipment setting information in AC Manager.
- Please refer to AC Manager installation/user manual for detail usage of AC Manager.

When ACP is not connected to AC Manager

When ACP is not connected to AC Manager, you can input the information of the indoor unit and ventilation equipment using LG ACCS (Advanced Centralized Control System) program of the ACP.

Automatic search

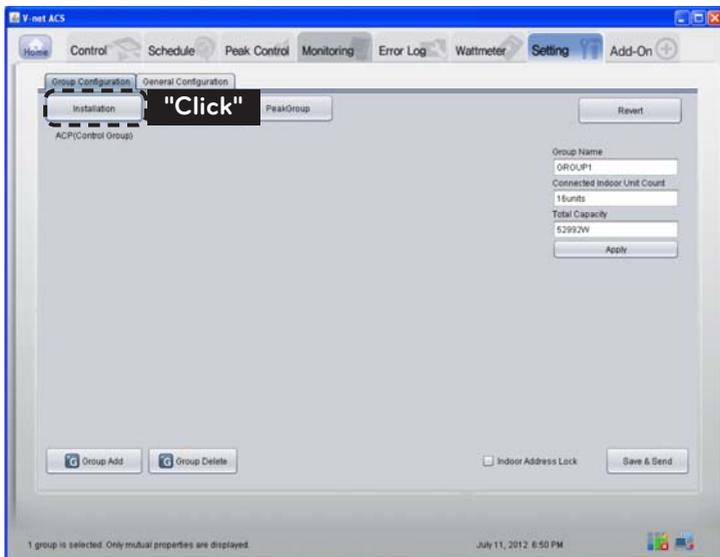
You can automatically search the address of the indoor unit.

To automatically search the indoor unit, proceed in the following order.

- Select 'system setting' menu.



- Click 'installation status' button.



- Click 'automatic search' button.



- When you click 'yes' button, the ACP searches the address of the installed indoor units.





<Screen during the search>



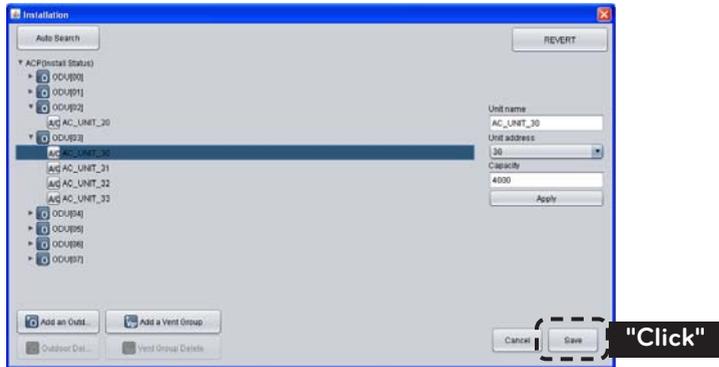
<Screen after completing the search>

! NOTE

Searching the installed indoor units

- When you press 'yes', it searches the indoor units with the hexadecimal address of 00~FF and the ventilators with the hexadecimal address of 00~FF.

- Click save button.

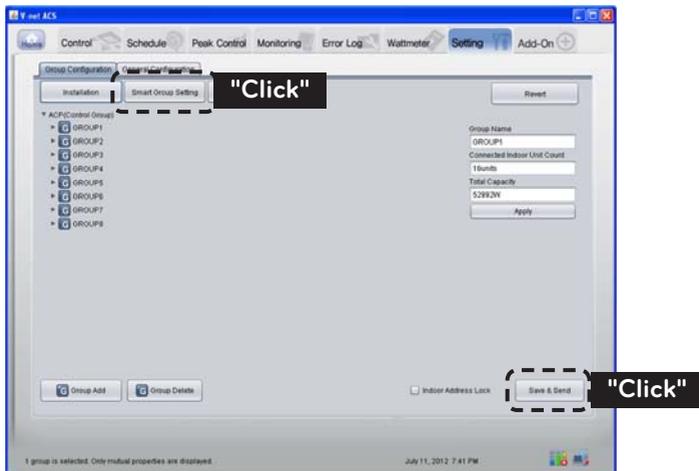


Group setting

When all of the information of the installed indoor units is displayed through automatic search, you need to set the groups.

Group is the combining of the indoor units with the common attributes for convenient control. For example, you can make the groups of 1st grade and 2nd grade, or 1st floor and 2nd floor.

- Click 'automatic creation of control group' button to automatically classify the groups based on the outdoor unit.



- If necessary, to move an indoor unit to another group, click the indoor unit with the mouse, and move the indoor unit to another group without removing the hand from the mouse. (You can select multiple indoor units by pressing Ctrl key of the keyboard.)

- To change the name of a group or indoor unit, change the name in the right side window, and click 'apply' button.

- When the group setting is completed, click 'group setting completed' button.

- When you wait for about 2 min., you can normally control the indoor unit/ventilator.

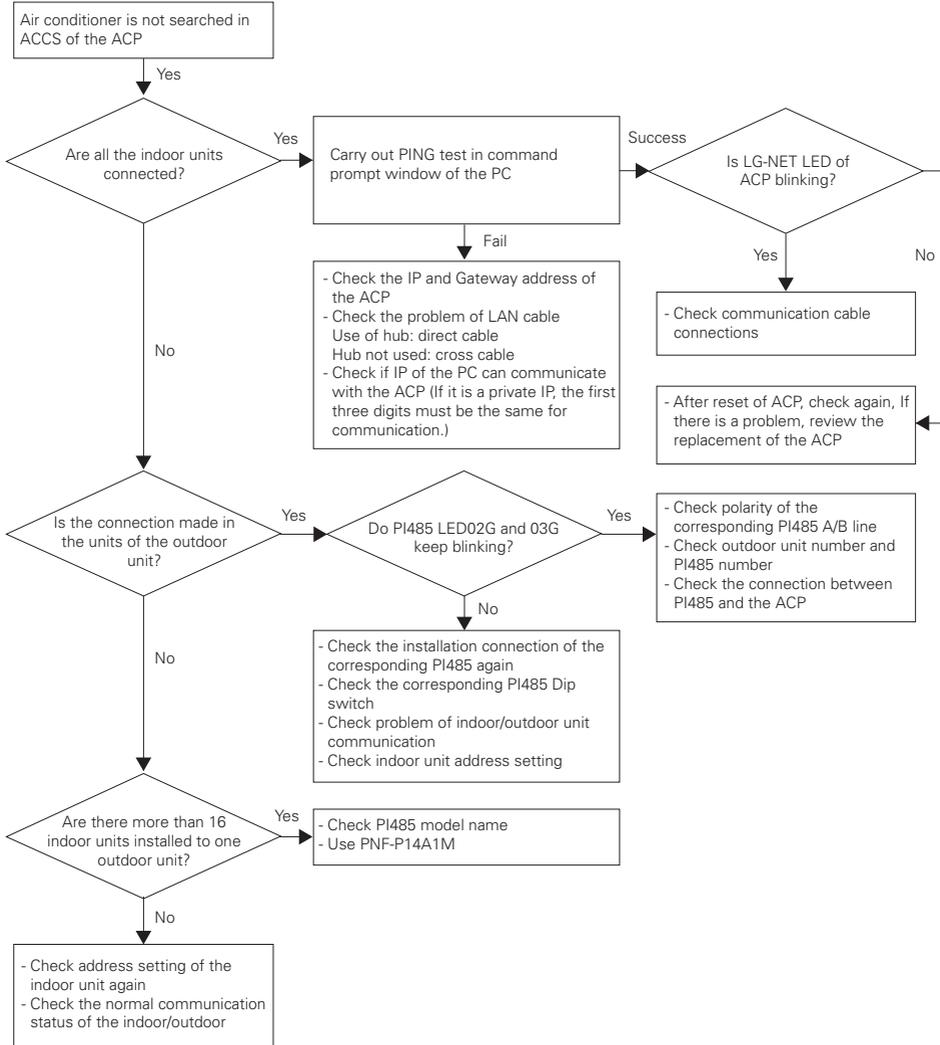
Verifying and checking the ACP installation

After installing the ACP, you can check the status of the ACP according to the following flow-chart.

Check the connection of indoor unit air conditioner

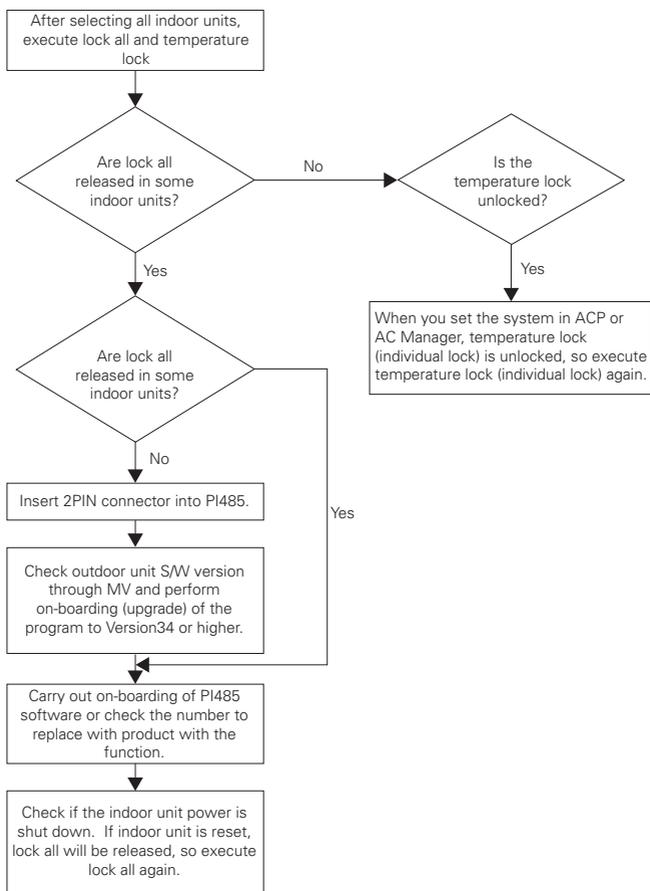
First, you need to check if the indoor unit air conditioner is connected by running LG ACCS of the ACP.

Check the ACP status according to the following flowchart.



ACP status monitoring after executing lock all and temperature lock

Run LG ACCS of the ACP to select all indoor units, and execute lock all function. Afterwards, execute temperature lock function again, and monitor the status of the ACP. Check the status of the ACP according to the following flowchart.



NOTES

Troubleshooting

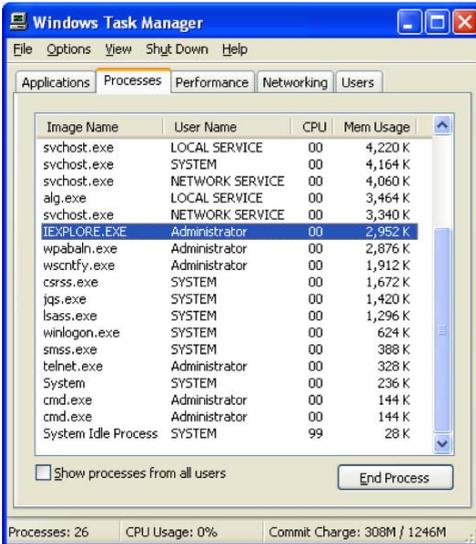
During the use of the ACP, if unexpected problem occurs, please find the solution by studying the following list. If there is no solution, please call 1544-7777 or 1588-7777, or access www.lgservice.co.kr to report the problem.

When Tx or Rx LED of CH1~4 port is not blinking during the product installation

When Tx or Rx LED of CH1~4 port is not blinking during the product installation, run it after setting the indoor and outdoor unit groups.

When GUI cannot be operated in LG ACCS, which is the operation program of the ACP

- When GUI cannot be operated in LG ACCS, which is the operation program of the ACP, close Explorer window, and run new Explorer to access again.
- Close all iexplorer.exe process in Task Manager, and access to the ACP again.



After running Task Manager, you can select 'Task Manager' in the popup menu window displayed by clicking the right button of the mouse on the menu bar of the window.

When the ventilation equipment is displayed as a network error state (code 242) in LG ACCS of the ACP

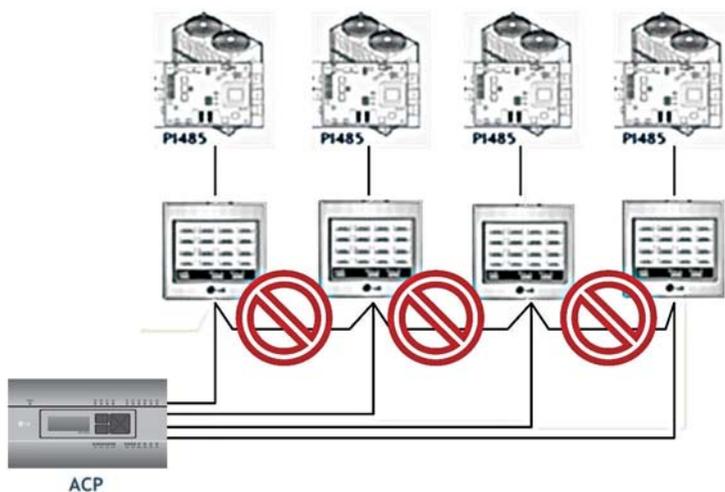
When the ventilation equipment is displayed as a network error state (code 242) as followed, in LG ACCS, which is the web server program of the ACP, please check the following categories.

- Check if the BUS-A and BUS-B of RS-485 cable are incorrectly connected.
- Check if there is a communication defect between the remote controller and the indoor unit.
- Check if the PI485 DIP switch is incorrectly set.
- Check if the indoor unit address for the central control is not set.

The CH242 (network error) keeps occurring and disappearing in the ACP controller.

- Case of incorrect connection of RS-485 communication line

If each communication line is connected altogether as in the following figure, the communication line must be separated.



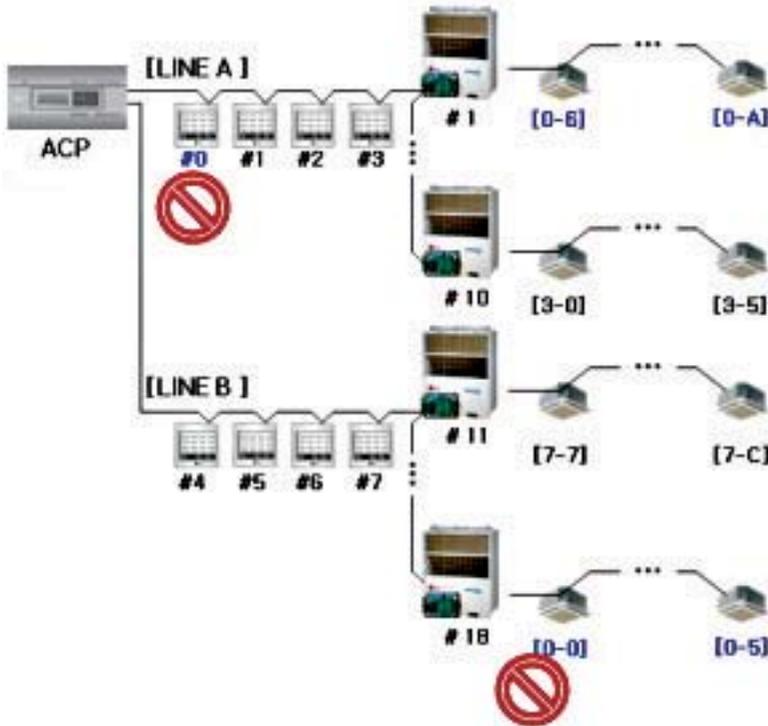
- Duplicate setting of the indoor unit address

It is the case of two or more indoor units are set with the same address. It may be the case of several indoor units having the default address 00 by not setting the central control address from the beginning for some indoor units.

In such case, assign unique address to each indoor unit not to have indoor unit with a duplicate address.

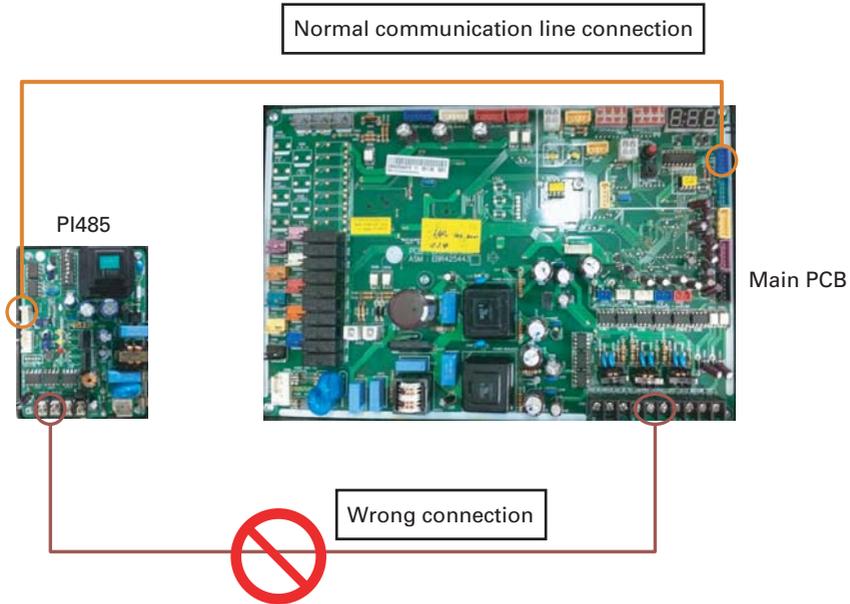
It is installed by interfacing 16 room central controller and the ACP, but some indoor units are not recognized, or not properly performing the central control commands

- It is the case of incorrect setting of the simple central controller (16 room central controller) DIP switch.
Set all simple central controllers to Slave mode, and reset the power.
- If the indoor unit to control with simple central controller is in another physical line as in the following figure, the simple central controller cannot recognize the corresponding indoor unit. Therefore, the connections need to be modified to have the simple central controller to be in the same RS-485 communication line with the indoor unit to control.



When the outdoor unit is Multi V Super II , and central control is not well performed with 16 room central controller or ACP, and the indoor units malfunction such as some indoor units automatically becoming locked state or automatically converting to cooling during heating operation

- PI485 and outdoor unit may not be doubly connected. Please refer to the following picture to check the connection status of the communication line.



When the image of LG ACCS is broken and you cannot see the screen such as the temperature well

- Close LG ACCS, and rerun.

※ Cautions

- If PC is used for a long period of time, or several application programs are used at the same time, PC performance may be degraded and may affect the ACP UI.
- When you use LG ACCS, it is recommended to close other application programs.
- It is recommended to use LG ACCS only during the control and monitoring. (Maximum of 3 hours of usage is recommended according to the PC environment.)

Guide to Open Source Software

The following GPL/LGPL execution file and libraries used for this product follows GPL/LGPL license contract.

GPL execution file

Linux kernel 2.6	fdisk	lrzsz
Sysvinit	Inetutils	e2fsprogs
Bash	net-tools	boa http server
busybox	stupid-ftpd	
tinylogin	traceroute	

LGPL library

glibc	linuxthreads	ncurses	zlib
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If you request source code to LG Electronics through the following e-mail, we will send them in CD-ROM with the payment necessary for medium and transportation.

da-opensource@lge.com

This suggestion is valid for 3 years after you received this product from LG Electronics. You can receive the original GPL/LGPL license from <http://www.systemaircon.com>.

Part of the software used for this product follows the following copyright.
Copyright ©1998-2002 Daniel Veillard. All Rights Reserved

Class A device**NOTE**

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

CAUTION

Changes or modifications not expressly approved by the manufacturer responsible for compliance could void the user's authority to operate the equipment.

**Disposal of your old appliance**

- 1 When this crossed-out wheeled bin symbol is attached to a product it means the product is covered by the European Directive 2002/96/EC.
- 2 All electrical and electronic products should be disposed of separately from the municipal waste stream via designated collection facilities appointed by the government or the local authorities.
- 3 The correct disposal of your old appliance will help prevent potential negative consequences for the environment and human health.
- 4 For more detailed information about disposal of your old appliance, please contact your city office, waste disposal service or the shop where you purchased the product.

