LG
Life's Good

ENGLISH

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 Lonworks (ACP Lonworks Gateway)

MODEL : PLNWKB000, PLNWKB100

P/NO : MFL67842102

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

- Lonworks Gateway (Following referred as ACP Lonworks)
  ACP Lonworks-Free Volt (PLNWKB000)
  ACP Lonworks-AC24V (PLNWKB100)

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 Lonworks.
  - If the installation place is not strong enough, the ACP Lonworks 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.
- Do not connetion 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.
- When doing service work or cleaning, please shut off the power to the equipment always.
  - It causes the deformation of the product or fire.

⚠ 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 LONWORKS FUNCTIONS AND SPECIFICATION

ACP Lonworks(ACP Lonworks Gateway) is the central controller that can manage up to 64 equipments in one space individually or as combined.

- In case of air conditioner indoor unit, up to 64 indoor units
- In case of AHU unit, up to 16 units
- In case of Chiller unit, up to 15 units

❊ It is required a separate ACP Lonworks for each other product type(air conditioner, AHU or Chiller). ACP Lonworks can't to connect air conditioner indoor unit, AHU unit or Chiller unit at the same time.

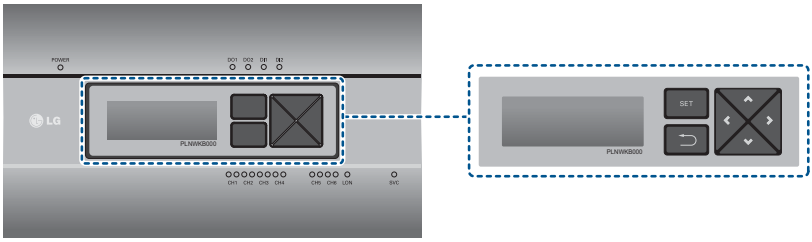
ACP Lonworks Functions

Major functions of the ACP Lonworks are as follows.

Environment setting function using the ACP Lonworks external buttons

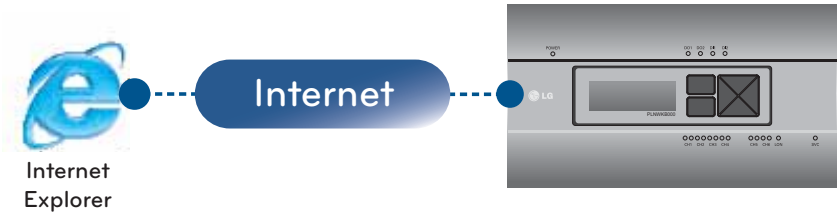
ACP Lonworks can use the external buttons installed outside of the ACP Lonworks to set the following functions.

- 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
- Set the module type



Embedded web server function

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





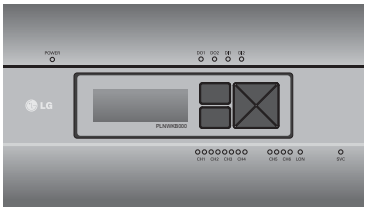
- Controlling of up to 64 air conditioner indoor units
- Monitoring of error and operation status
- Controlling the peak power / demand power
- System setting function

Devices that can interface with ACP Lonworks

Device	ACP Lonworks
AC Ez	O
AC Smart Premium	O
AC Manager Plus	O
Air Conditioner	O
Ventilation	O
AWHP	O
Fire Alarm	O
Chiller	O
AHU	O

ACP Lonworks Components

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



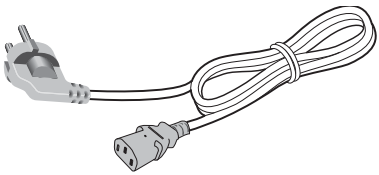
ACP Lonworks
(ACP Lonworks Gateway)



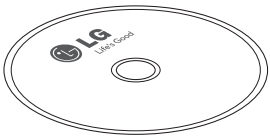
Quick Guide



Power Supply Adaptor
Input: 100~240V
50/60Hz 1.2A
Output: DC 12V
3.33A, 40W MAX



Power Cord
250V AC, 3A



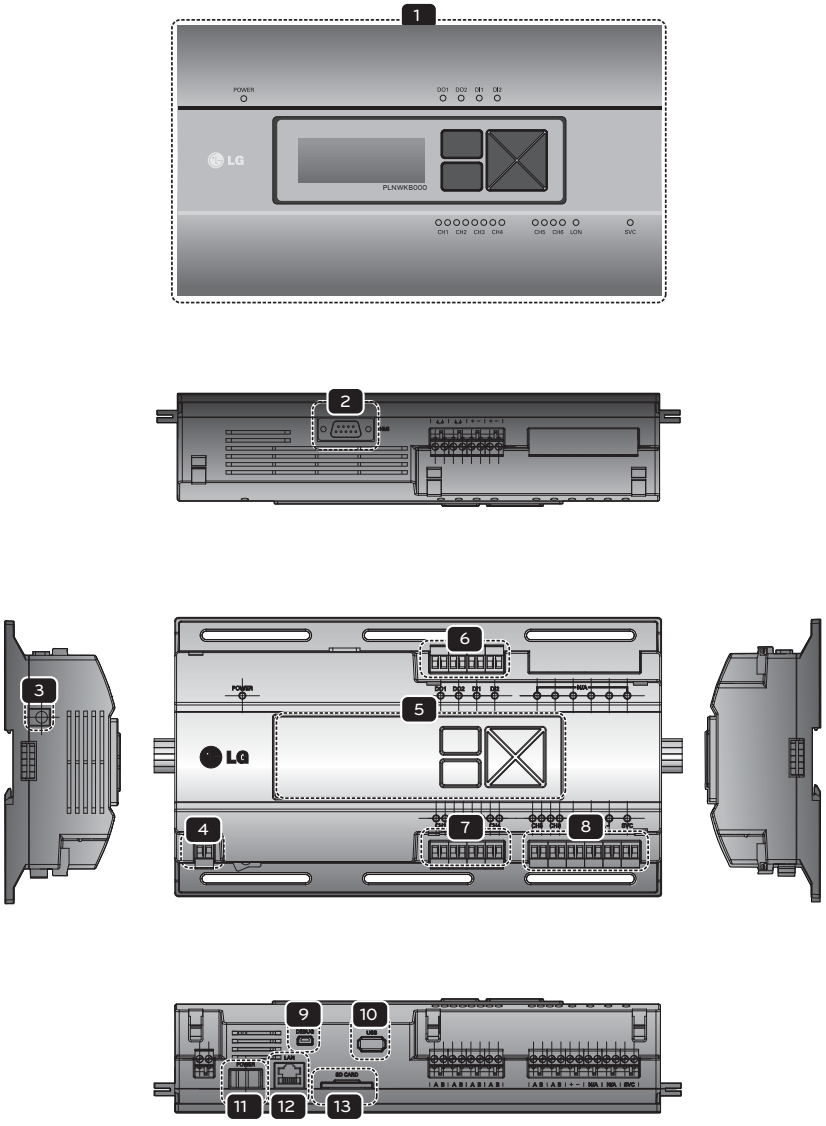
ACP Lonworks
User's Guide

NOTE

- May be different from the image that has been shown and items sold separately parts.
- Power Supply Adaptor and Power Cord are not included in PLNWKB100 (AC24V power use)

Names of each part of ACP Lonworks

ACP Lonworks is composed as follows.



NOTE

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

1 **Cover**
Front cover of the ACP Lonworks

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 PLNWKB100)

4 **Power port**
AC24V port for power connection (not supported by PLNWKB000)

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 (4EA)

8 **RS-485, LON communication ports and BMS connection button(SERVICE SWITCH)**
RS-485 communication ports(2EA) and LON comunication port(1EA)
BMS connection button(SERVICE SWITCH)

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 Lonworks

12 **Ethernet port**
Ethernet port to connect to internet and AC Manager

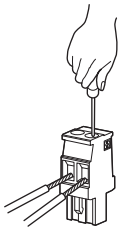
13 **SD card slot**
For RS-485 communication data backup.

⚠ 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 Lonworks Hardware Specification

ACP Lonworks hardware specification is as follows.

Category	Description
Boundary of usage temperature	0°C~40°C
CPU	i.MX515 – 32Bit 800MHz speed (Option:MPC5668G, 116MHz)
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 - Lon communication port 1EA - 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 Lonworks with ACCS

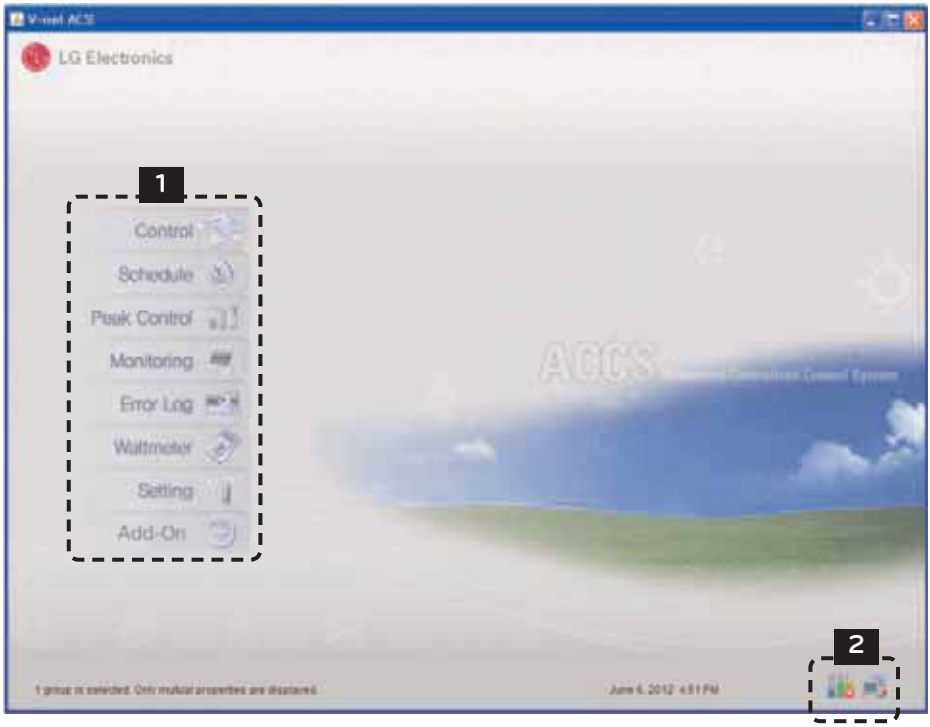
LG ACCS is a UI program of web server that can operate ACP Lonworks.

This chapter explains about the function and process to operate ACP Lonworks 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 Lonworks web server. The user can control the ACP Lonworks and the equipments using LG ACCS and monitor various status information.

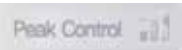
When you access LG ACCS, the following LG ACCS program is executed.



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 Lonworks has the following 9 menus.

Category	Description
	It can perform the functions of operation status change, lock all, lock temperature, etc. of the equipments connected to the ACP Lonworks.
	It can start or stop the equipments connected to the ACP Lonworks according to preset schedule.
	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.
	It can use AC Manager to use peak control function.
	It can monitor the operation status and error status of the equipments connected to the ACP Lonworks.
	It can review the error history occurred in the equipments connected to the ACP Lonworks.
	It can review the power usage used by the equipments connected to the ACP Lonworks.
	It can register, change, or delete the information of the equipments connected to the ACP Lonworks.
	It can see the cycle information, etc. of the outdoor unit connected to the ACP Lonworks. (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.

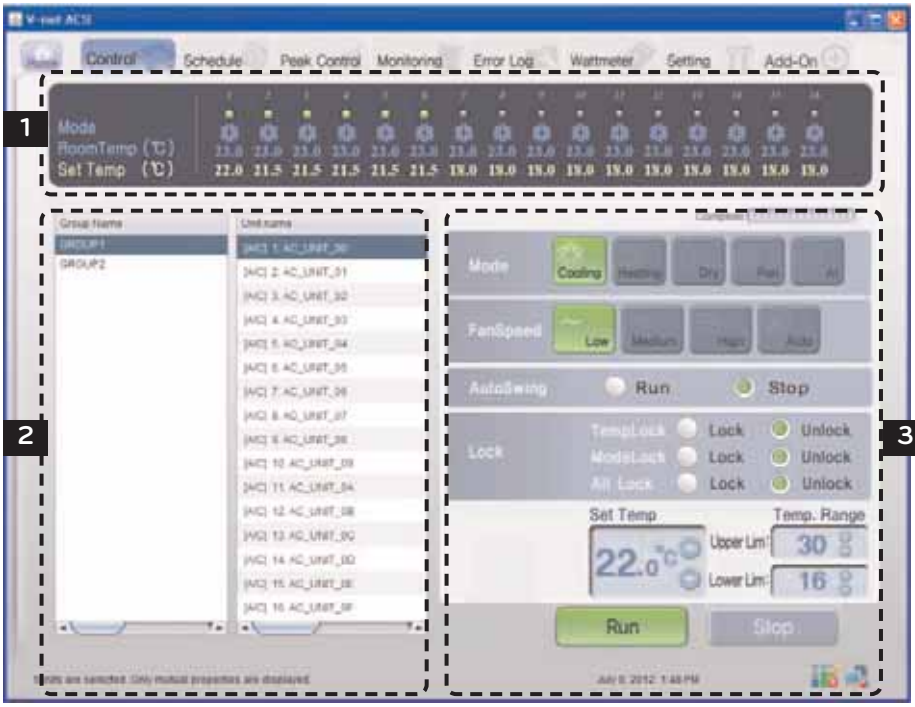
Controlling the Equipments

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

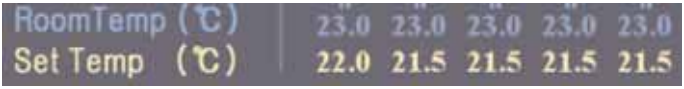


In Mode, when the air conditioner is currently in operation, the mode operation is displayed with an icon.

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.

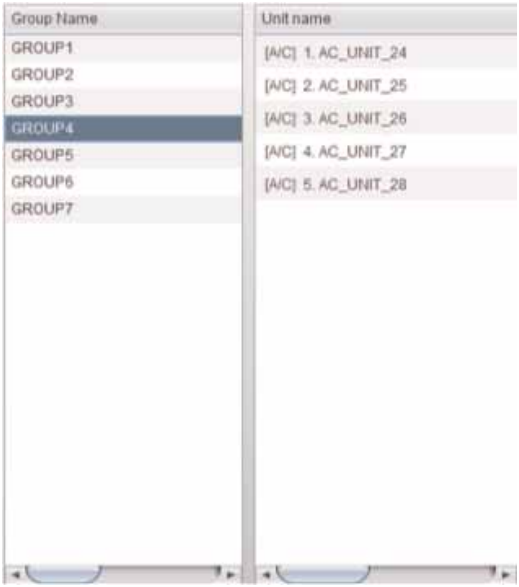
The desired set in the air conditioner is displayed in the Set Temp. The Set Temp is not displayed during wind only or dehumidification operation, or in an error state. For ventilation equipment, Set Temp or Room Temp is not displayed. But, the Set Temp is displayed when the direct cooling type ventilation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



In 'group', the list of air conditioner group set in the ACP Lonworks 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 Lonworks 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
	It operates the cooling operation. The cooling operation can set the desired temperature to 18°C ~ 30°C **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.
	**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.
	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.
	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.
	AI operation automatically maintains the indoor temperature at its optimal state according to the indoor temperature.

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.

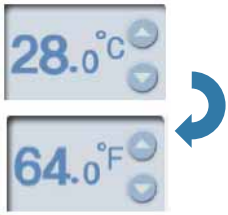
Icon	Description
	It executes the air direction operation of the air conditioner.
	It stops the air direction operation of the air conditioner.

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	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.)
	Auto	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.)
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.)

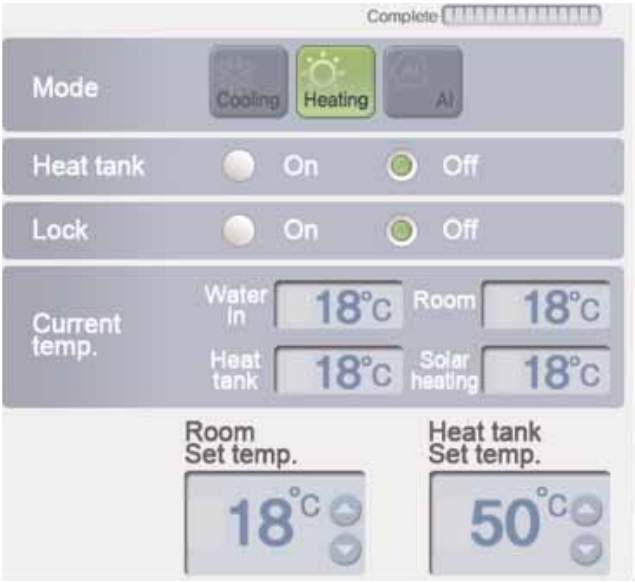
※ Humid can only be turned on when the operation mode of the direct cooling type ventilation is in heating mode.

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.)

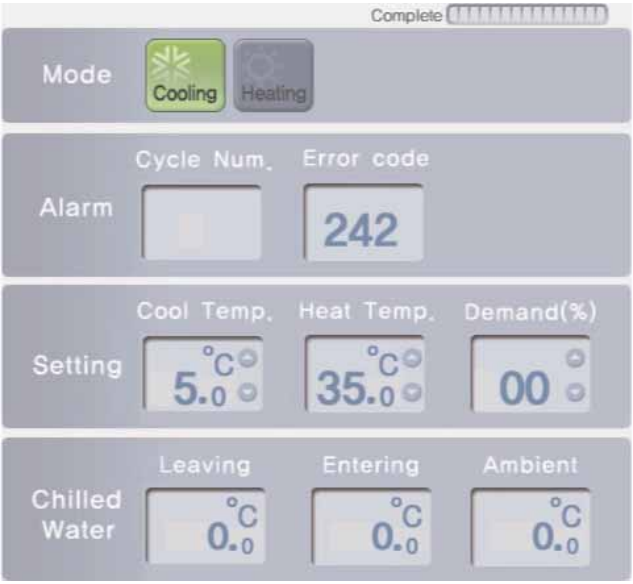
Set humidity: Set the desired humidity of AHU.
(Setting range is 40~60%.)

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 0~100%.)

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 Lonworks

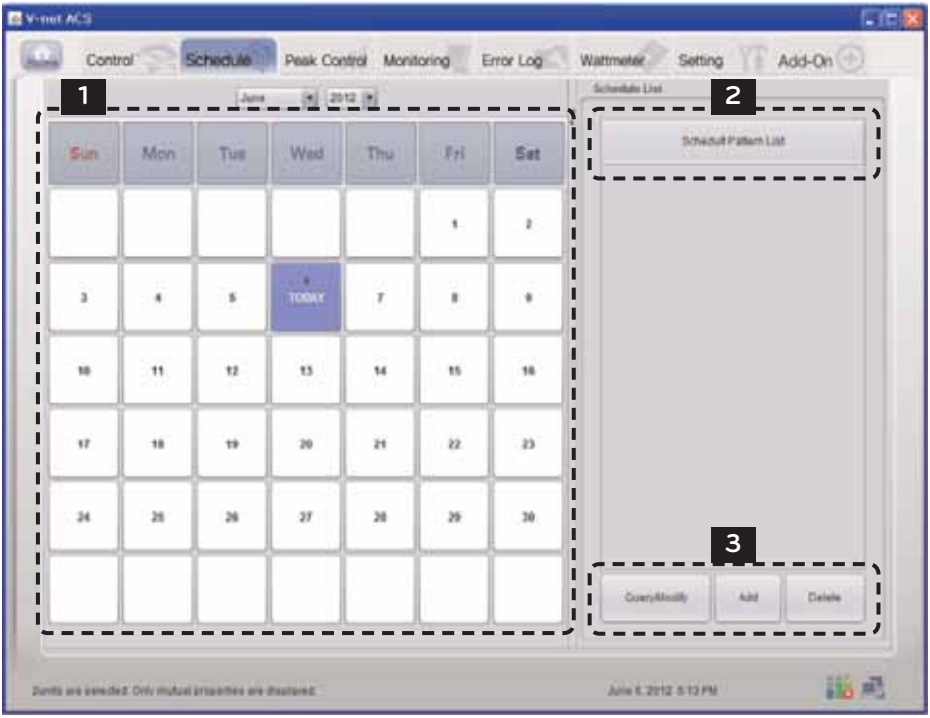
- When a user access ACP Lonworks through web browser, the time of PC and ACP Lonworks are automatically synchronized, and ACP Lonworks executes schedule function based on this time. Therefore, always maintain the time of PC to be the current time.

! 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.

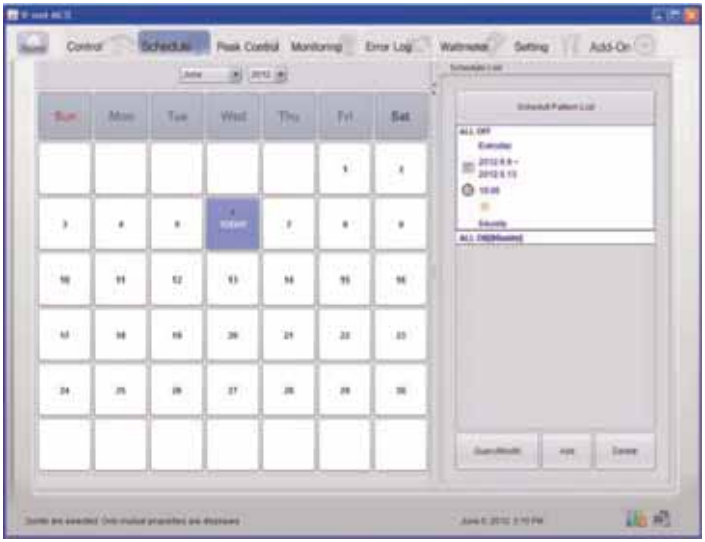


1 Calendar window
Basically, this month's calendar is displayed, and today is highlighted.

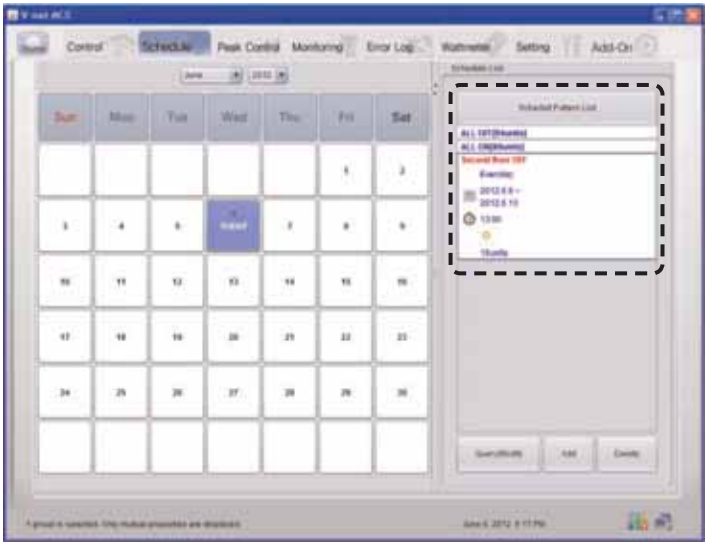
2 Schedule list

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.



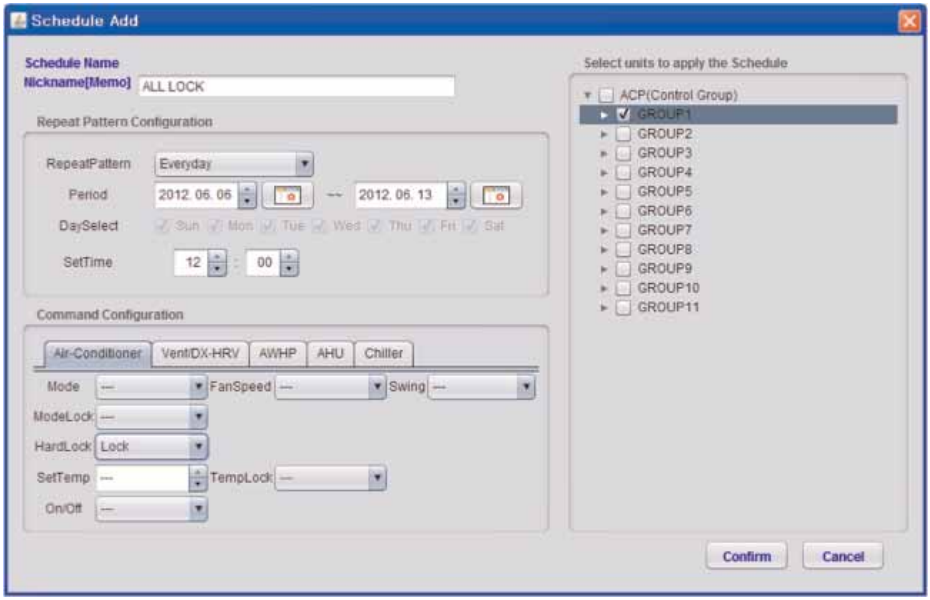
3 Command button

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.

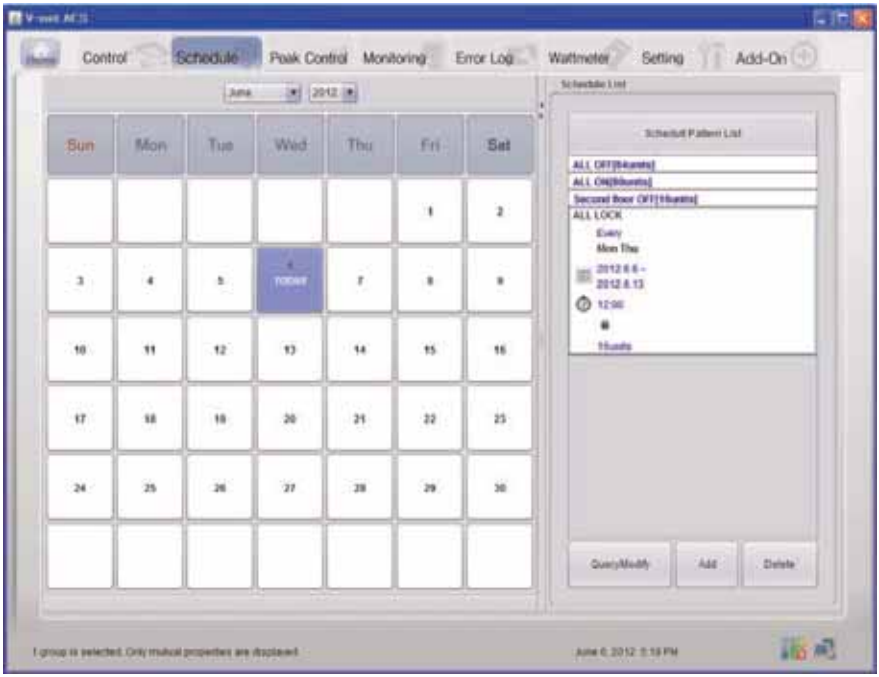
  Example) Schedule1: 2011. 1. 1 1PM Indoor No. 00, 01, & 02 Cooling mode
  Schedule2: 2011. 1. 1 1PM Indoor No. 00, 01, & 02 Heating mode
  Schedule3: 2011. 1. 1 1PM Indoor No. 00, 01, & 02 Automatic mode

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

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

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 62' peak group setting for the change of indoor unit priority and outdoor capacity control method of peak operation ratio control function.

CAUTION

When ACP Lonworks interfaces with AC Manager

- When the ACP Lonworks is interconnected with the AC Manager, set Demand as ACP Lonworks setting.
- The ACP Lonworks 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.

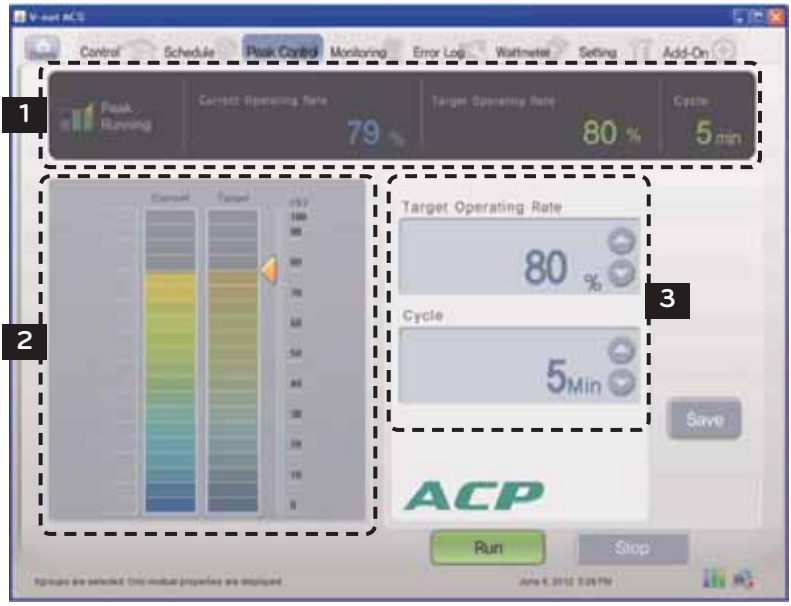
But, peak operation period setting minimized the inconvenience of the user.

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 Lonworks that does not interface AC Manager, and there is 'demand' menu instead, change the setting of the ACP Lonworks 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.

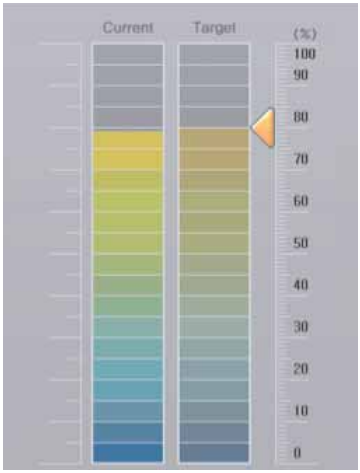
Cycle



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.

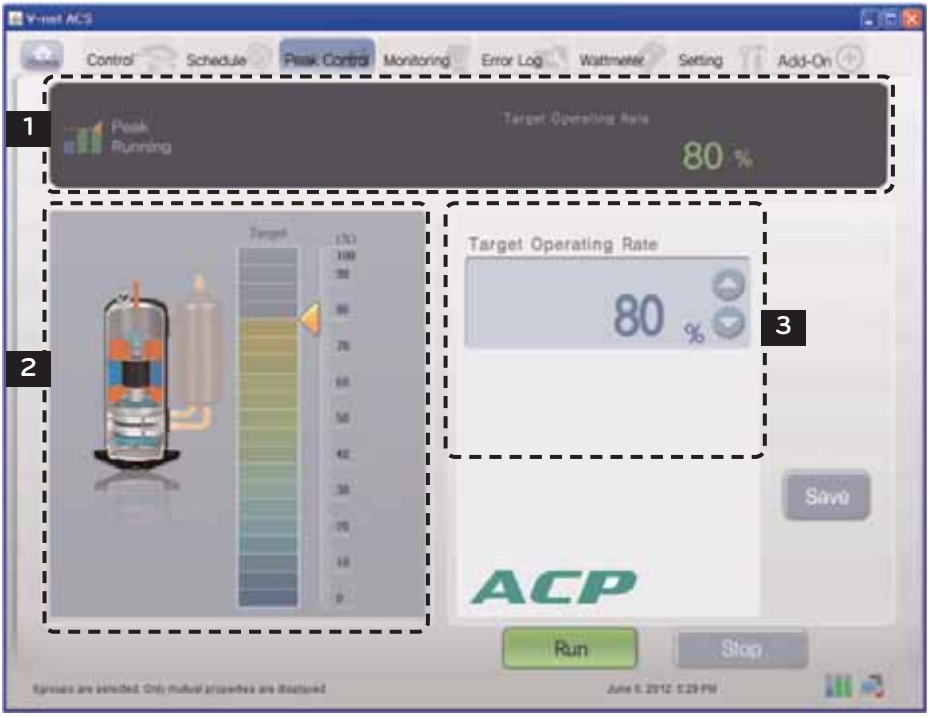
Outdoor unit capacity control method

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.

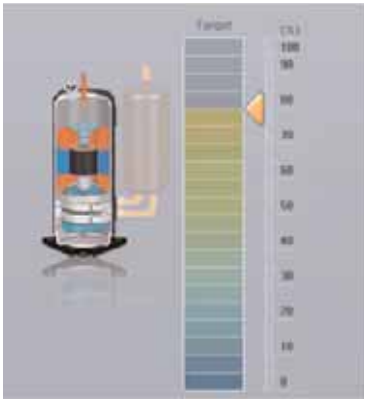
Operation status	Description
	Peak operation ratio control function is in operation.
	It is displayed when peak operation ratio control function is stopped.

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 Lonworks 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 Lonworks setting is set to use peak control function. To use demand power function, change the setting of the ACP Lonworks 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.

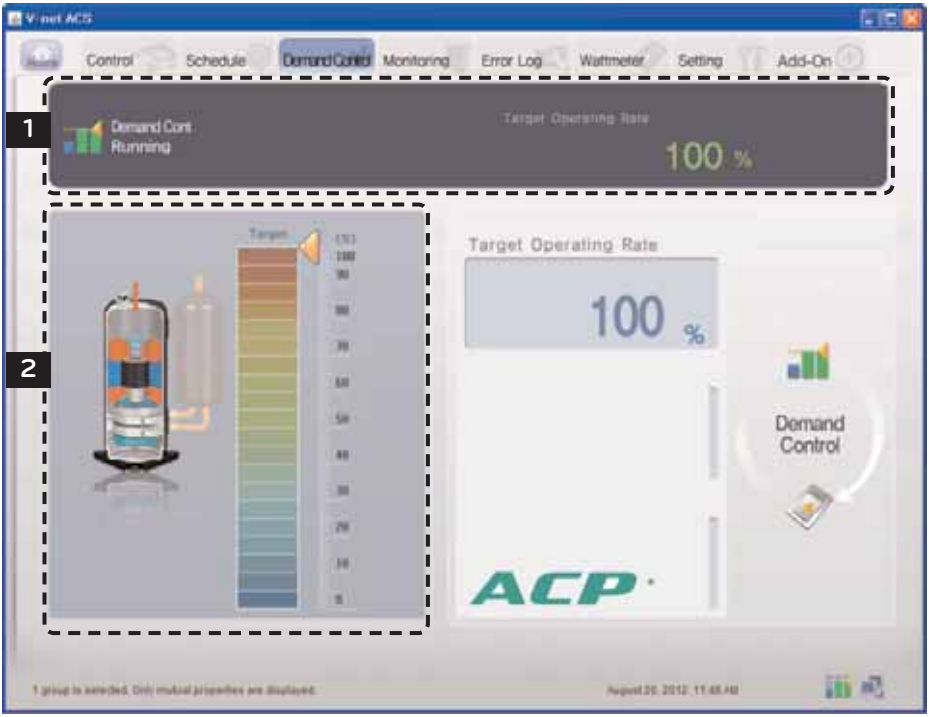
Outdoor unit capacity control method

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.

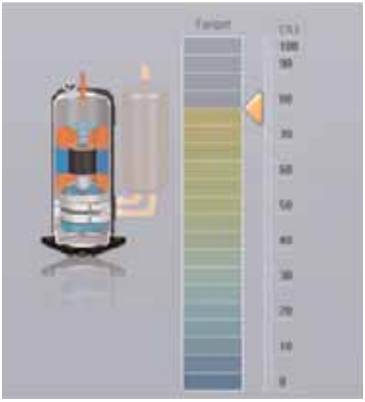
Operation status	Description
	Demand control function is in operation.
	It is displayed when demand control function is stopped.

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

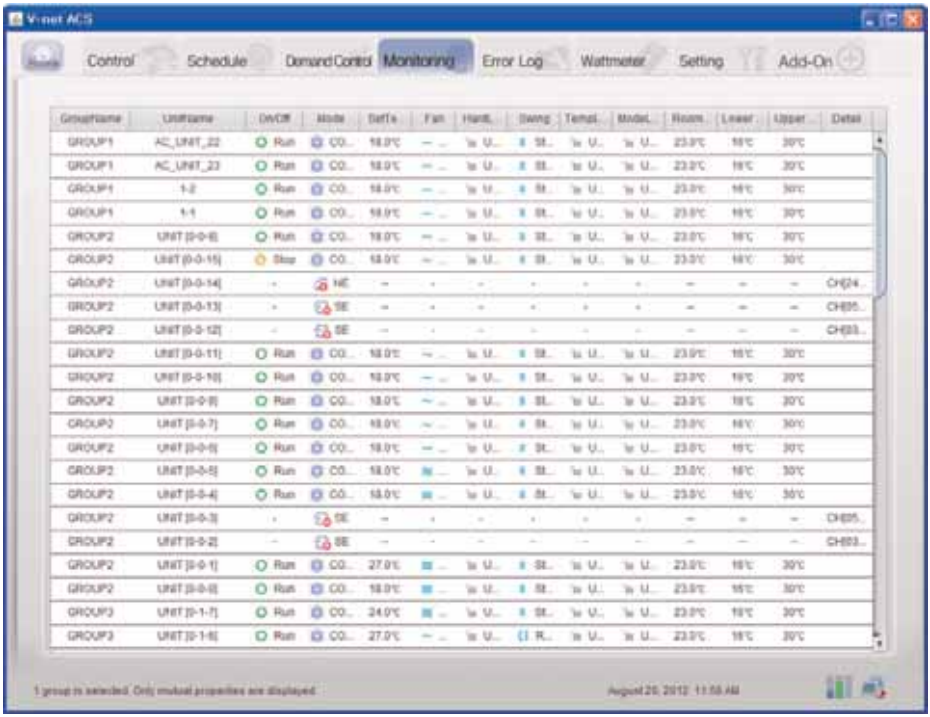
- Set the desired operation ratio to be above 70~80% in AC Manager. Otherwise, cooling or heating may not run well.

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.



⚠ 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

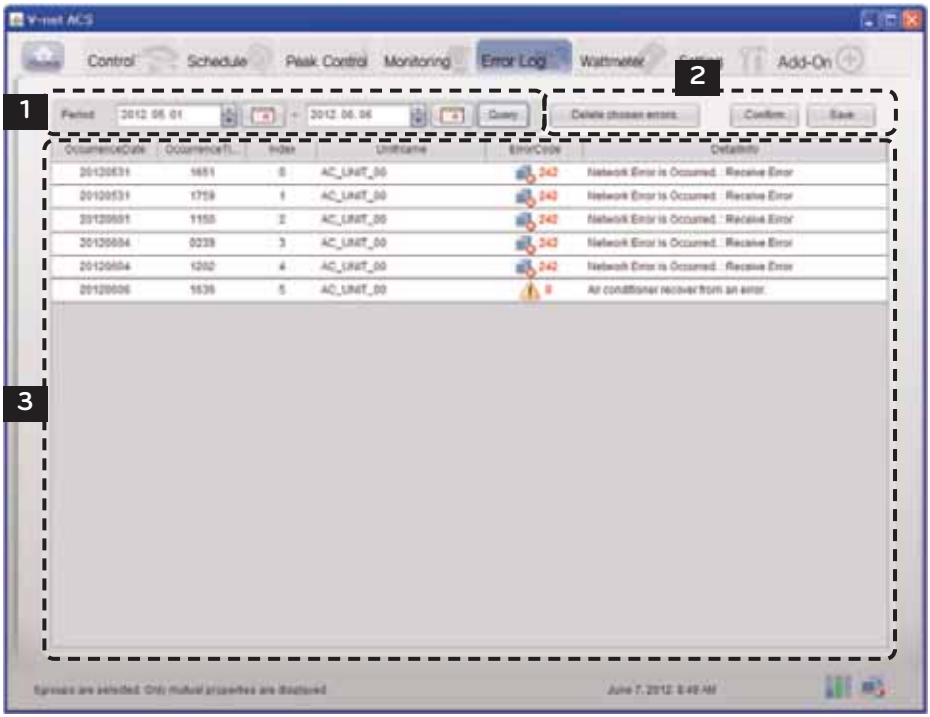
Reviewing the Error Log

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

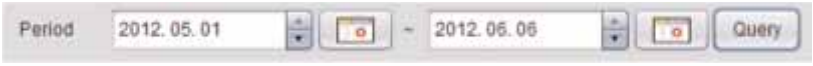
You can see this error history at ' Error Log' menu of the LG ACCS.

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.



1 Querying the Error Log





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



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 Lonworks.

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.



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

3 Error log list

OccurrenceDate	OccurrenceTi...	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.

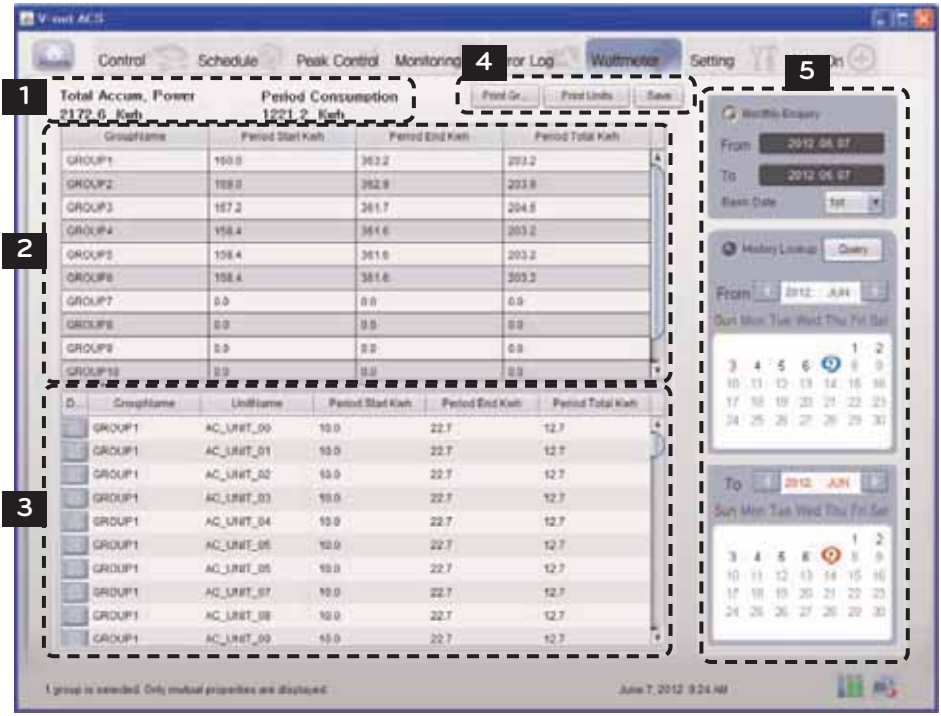
Item	Description	
Icon		History of the occurrence and normalization of an error
		Error occurred in the network
		Error occurred in the system(outdoor and indoor unit)
Occurrence Date	Date when the error was occurred	
Occurrence Time	Time when the error was occurred	
Unit Name	Name of the equipment with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



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

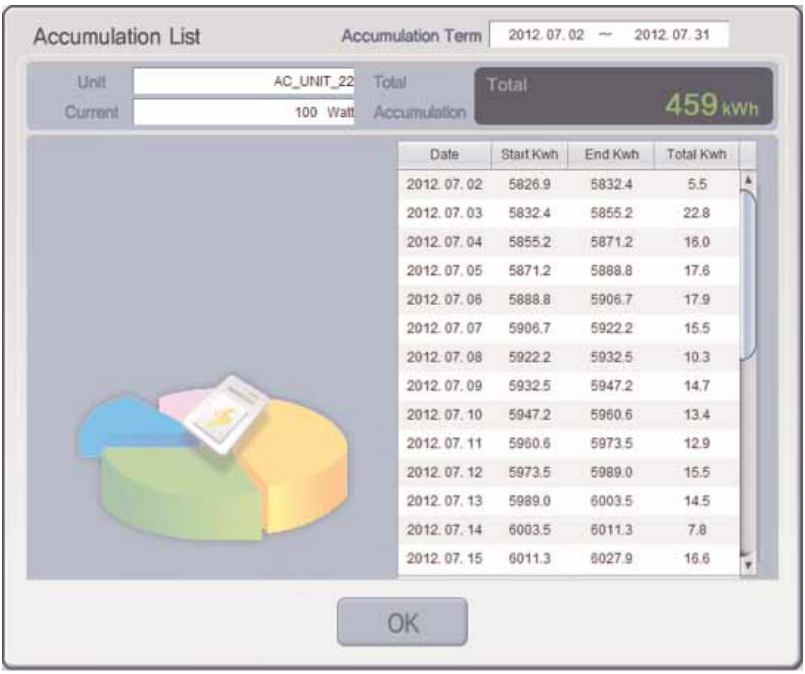
You can view the power consumption of each group. The power consumption during the certain period set by the user is displayed in groups.

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.

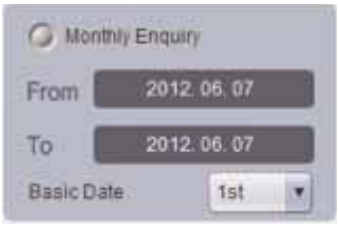
4 Printing and saving

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

History Lookup



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 Lonworks 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 Lonworks interfaces with AC Manager

- The ACP Lonworks 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 Lonworks, and the default value is saved in the ACP Lonworks.
  (In case of AC Manager Plus, ACP Lonworks group name can be set as set AC Manager Plus group name.)
  Therefore, to change the group name of the ACP Lonworks, first save the setting information in AC Manager, send the information, and access the ACP Lonworks to change the group name with the desired name.

CAUTION

System Setting

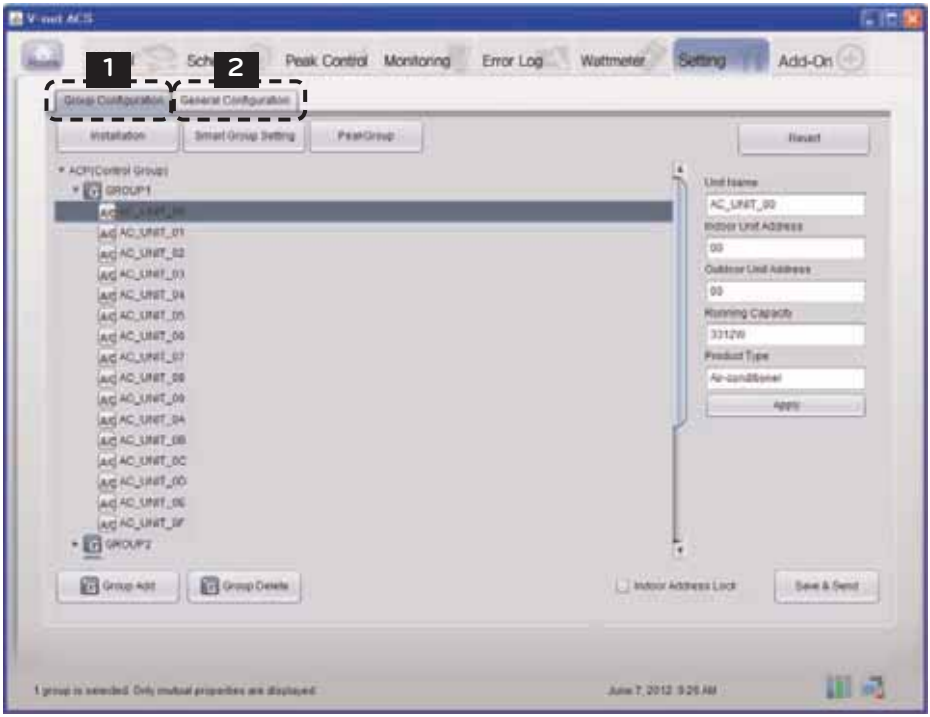
- 'Setting menu' is used for installing the product. Because the product should be installed by the professional engineer with knowledge on the air conditioner, the user should not operate this menu with his or her own discretion.

When ACP Lonworks interfaces with AC Manager

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

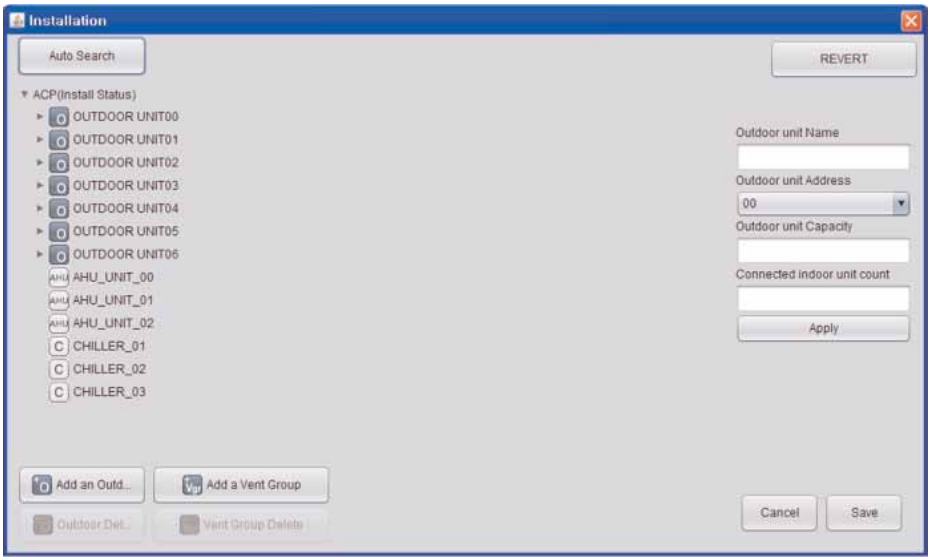
CAUTION

- 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



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



Changing outdoor unit information



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



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

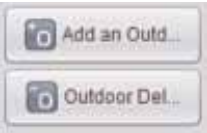
Outdoor unit and indoor unit capacity

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

Add/delete outdoor unit



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

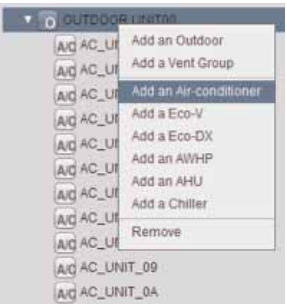
Add outdoor unit, and change outdoor unit information as necessary.

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.

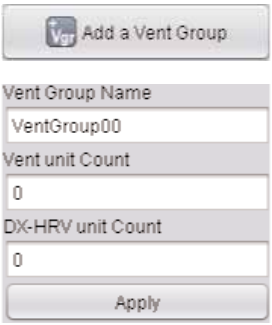
Add/delete indoor unit



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

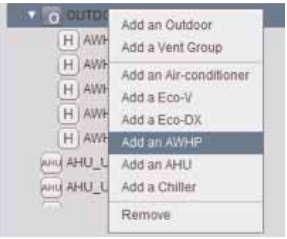


To add a ventilator or direct cooling type ventilator, you shall first add ventilator / direct cooling type ventilator group.

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.

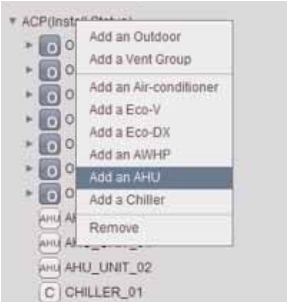
Or, as in the case of adding air conditioner, you can add the ventilator or direct cooling type ventilator product one by one through the popup menu. Ventilator or direct cooling type ventilator may be added under ventilator / direct cooling type ventilator group.

Add AWHP



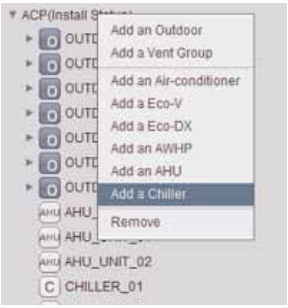
To add AWHP, right click, and add through the popup menu. When you press [Add an AWHP] button in the popup menu, AWHP will be added. AWHP may be added only under outdoor unit group.

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



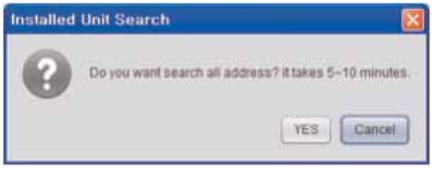
To add Chiller, right click, and add through the popup menu. When you press [Add a Chiller] button in the popup menu, Chiller will be added. Chiller is added independently without going under outdoor unit group or ventilator / direct cooling type group.

NOTE

- The sum of the connected equipments may not exceed 64.
  - In case of air conditioner indoor unit, up to 64 indoor units (air conditioner indoor unit, ventilator, direct cooling type ventilator and AWHP.)
  - In case of AHU unit, up to 16 units
  - In case of Chiller unit, up to 15 units

※ It is required a separate ACP Lonworks for each other product type. (ACP Lonworks can't to connect air conditioner indoor unit, AHU unit or Chiller unit at the same time.)

Auto search



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

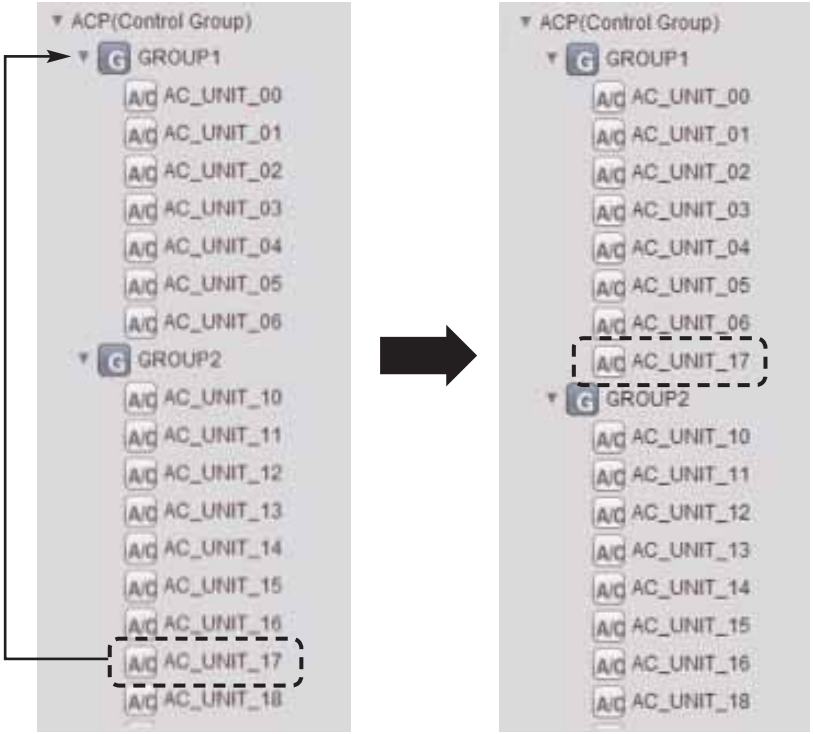
When you press automatic search button, it searches the indoor unit and ventilator products connected to the ACP Lonworks.

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.

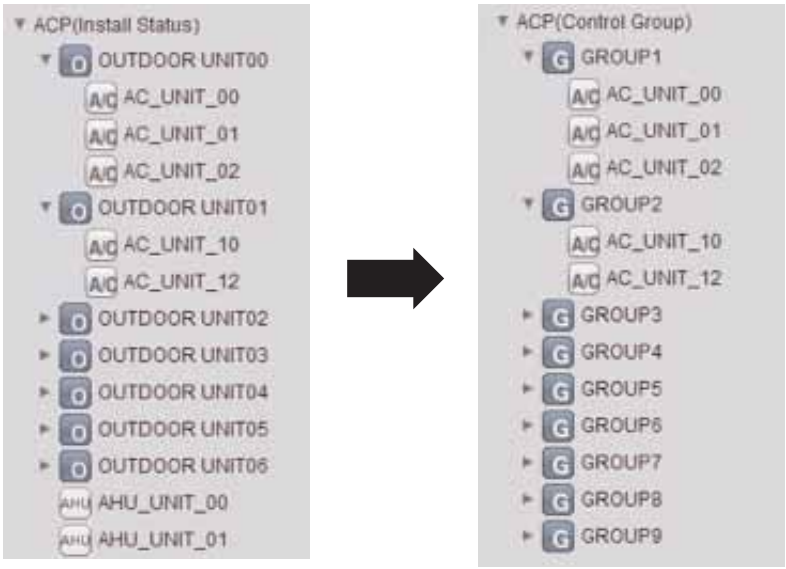


Smart Group Setting



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.



Installation status

Control Group

Recovery of previous information



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

Completing group setting

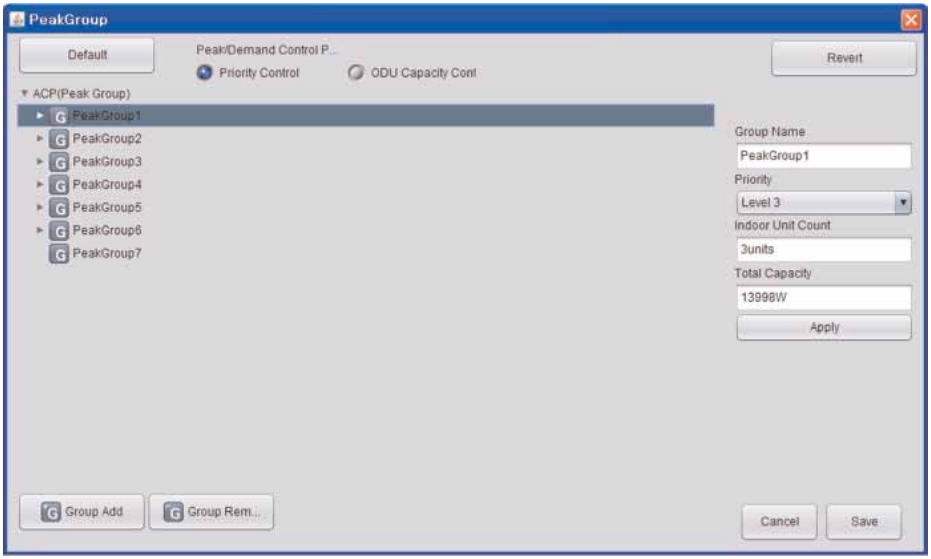
When the changes of the information in installation status are completed, you must press [save] button to save the edited information in the ACP Lonworks. If you press [cancel] button, the screen will be closed, and the changed information will not be saved.

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



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



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



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



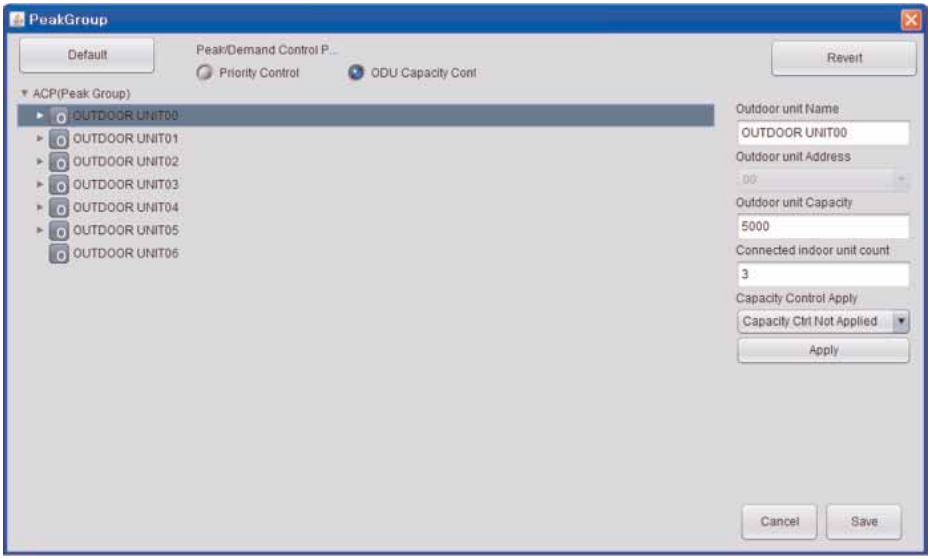
When you press [Revert] button, peak group information edited so far will be deleted, and it will bring back the peak group information saved in the ACP Lonworks at the last time.

Saving and cancel

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

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



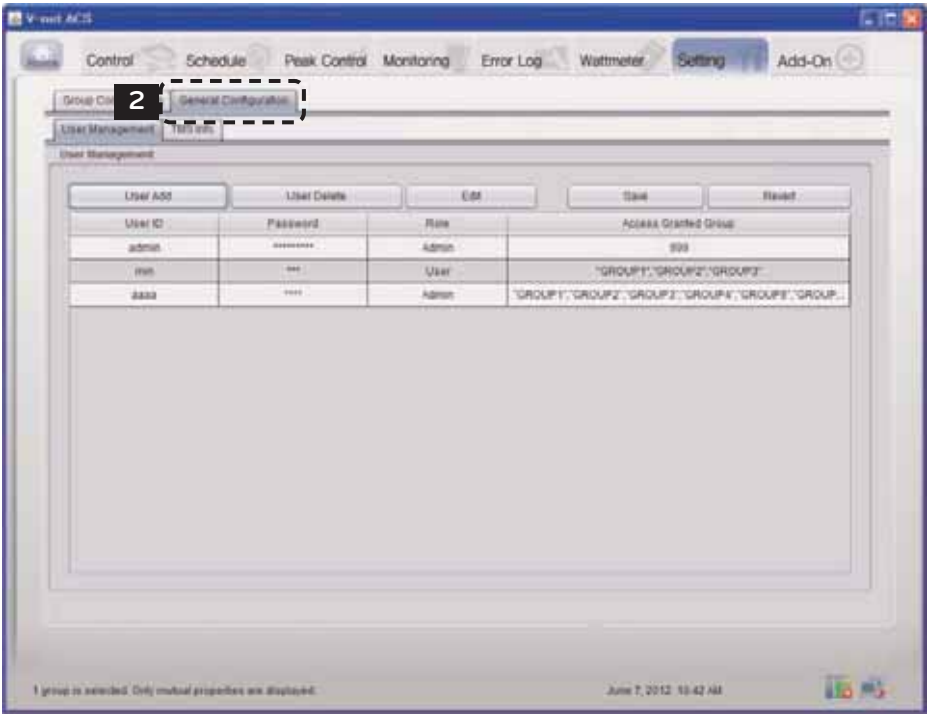
User may decide whether to apply capacity control by selecting the corresponding outdoor unit as in the figure.

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 Lonworks will be displayed again.

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

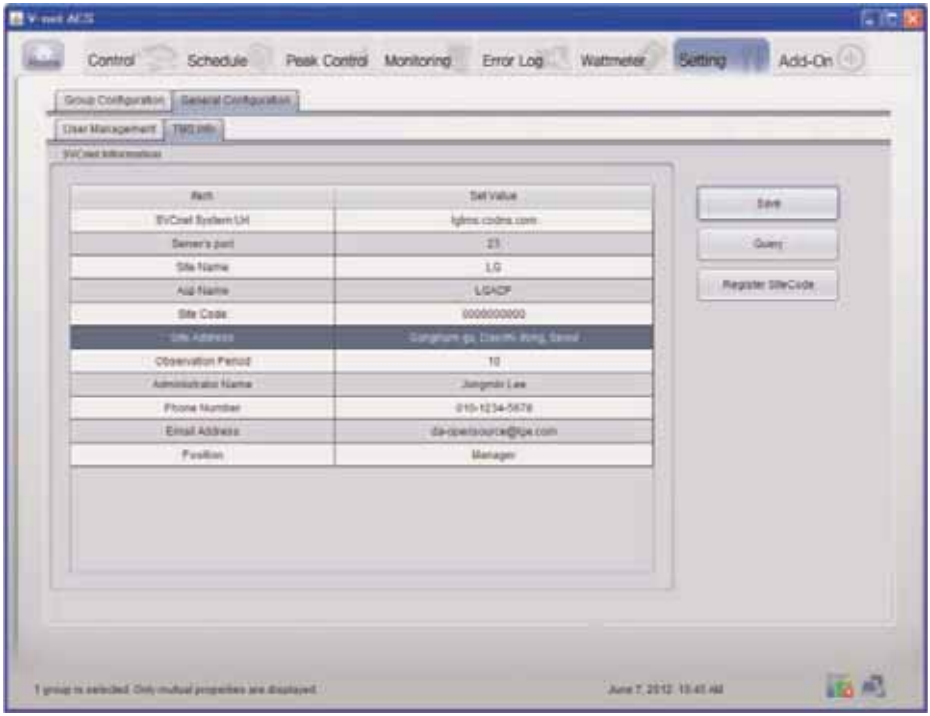
⚠ CAUTION

When a user is added

- Account may be added up to 256.
- ACCS, which is the control screen of the ACP Lonworks can be run up to 50 at the same time, and if more ACCS is run, proper control of the ACP Lonworks 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.



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 Lonworks Name	Input the name of the ACP Lonworks.
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.

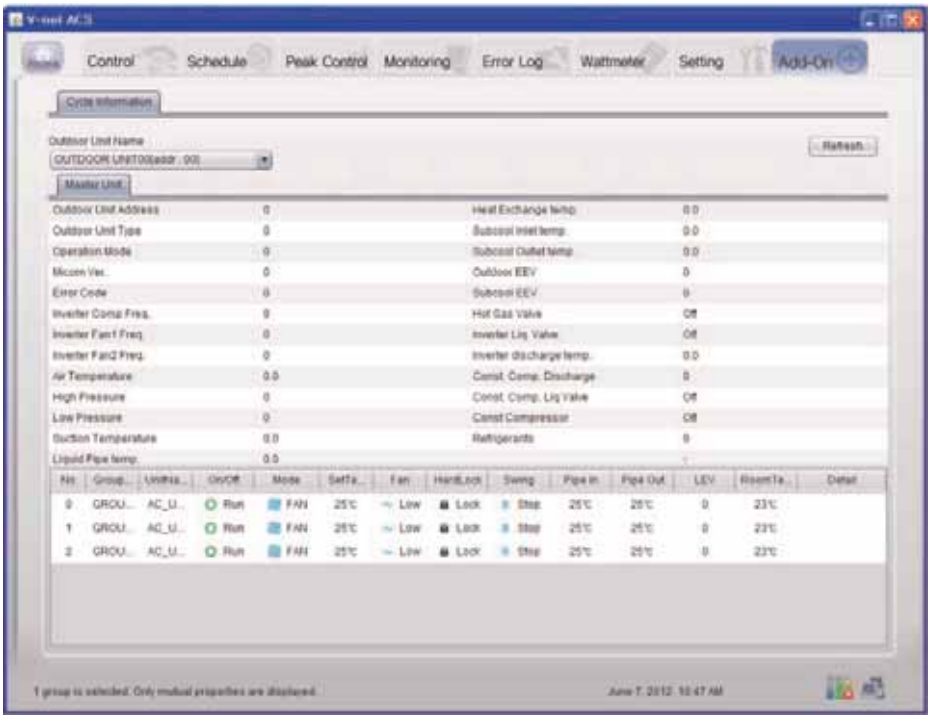
Additional functions

ACP Lonworks 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.



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 Lonworks

Installing ACP Lonworks

This chapter describes how to install the ACP Lonworks to use.
In order to use the ACP Lonworks, the installation should be performed by the following order.

STEP 1. Check the cautions during the ACP Lonworks installation
Before installing the ACP Lonworks, 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 Lonworks is installed.

STEP 3. Set the indoor unit address
Set the address of the ACP Lonworks 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 Lonworks and connect cables
Install the ACP Lonworks, and set network and other settings.

STEP 6. Set ACP Lonworks network address
Set the network address to be able to access the ACP Lonworks through internet.

STEP 7. Set ACP Lonworks functions
Set language, peak/demand, whether to use schedule, whether to use power display, etc.

STEP 8. Set ACP Lonworks module type
Set connected product type.

STEP 9. Set ACCS access environment
Set the access environment in LG ACCS, which is the operation program of the ACP Lonworks.

STEP 10. Input indoor unit and ventilator information
Set the access environment in LG ACCS, which is the operation program of the ACP Lonworks.

STEP 11. Verify and check ACP Lonworks installation
Verify and check whether the ACP Lonworks is properly installed.

⚠ CAUTION

Installing the ACP Lonworks

The ACP Lonworks 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 Lonworks installation

- The number of PI485 connected to one RS-485 communication line
  ACP Lonworks provides 6 RS-485 ports. (CH 1~6)
  - CH1~4 : ACP Lonworks provides 4 RS-485 ports for indoor unit connection. (Up to 64 indoor units)
  - CH5 : ACP Lonworks provides 1 RS-485 port for AHU unit connection. (Up to 16 AHU units)
  - CH6 : ACP Lonworks provides 1 RS-485 port for Chiller unit connection. (Up to 15 Chiller units)

  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 Lonworks
  One ACP can be connected up to 64 indoor units.
  To one RS-485 port, all of 64 indoor units, which is the maximum number that can be connected to the ACP Lonworks, 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 Lonworks
  IP address of the ACP Lonworks, 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

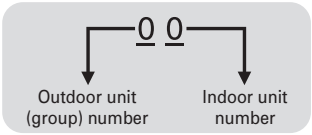
By considering the entire installation configuration connecting to one ACP Lonworks, set the address to each indoor unit not to be overlapped.
Address range that can be set to indoor units are determined as selected module type.

- Module 0 : 00~FF in hexadecimal can be set to the indoor unit address, but it can be connected up to 64 indoor units only.
- Module 1 : 00~0F in hexadecimal can be set to the AHU unit address, and it can be connected up to 16 AHU units.
- Module 2 : 01~0F in hexadecimal can be set to the Chiller unit address, and it can be connected up to 15 Chiller units.

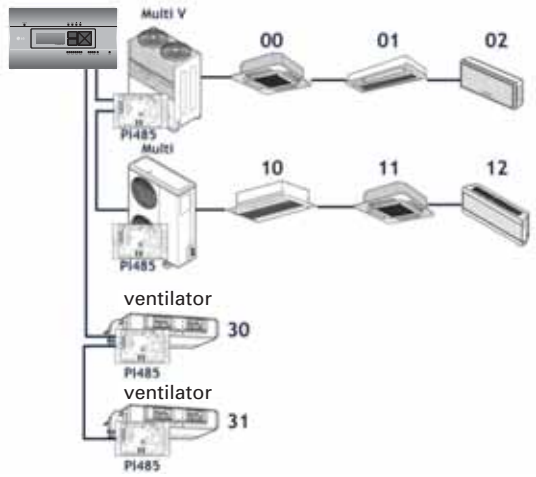
NOTE

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

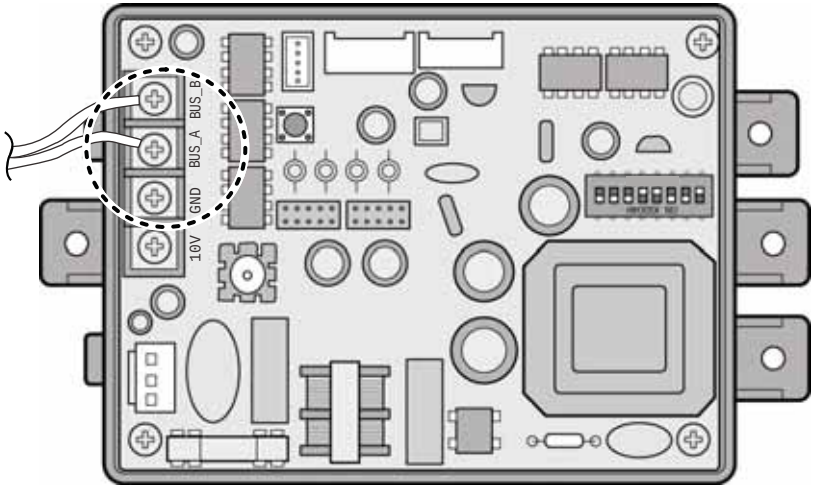
After setting the address of the indoor unit, install the PI485 and set the DIP switch.
And then, connect the RS485 cable for communication with the ACP.

NOTE

Installing the PI485

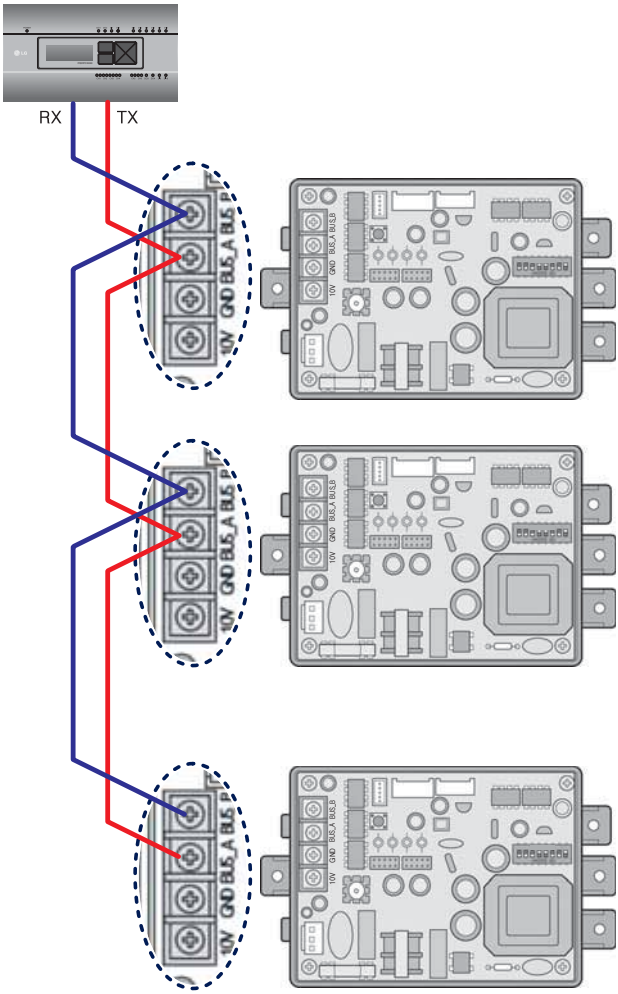
- Installing the PI485 depends on the outdoor unit.
- So, install the PI485 by referring to the PI485 manual or the installation technique information.

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.



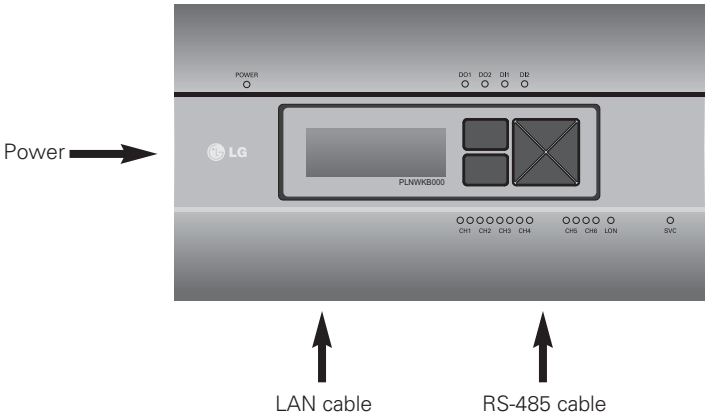
Installing ACP Lonworks and connecting cables

After setting PI485, the ACP Lonworks 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 Lonworks, the following 2 methods may be used.

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



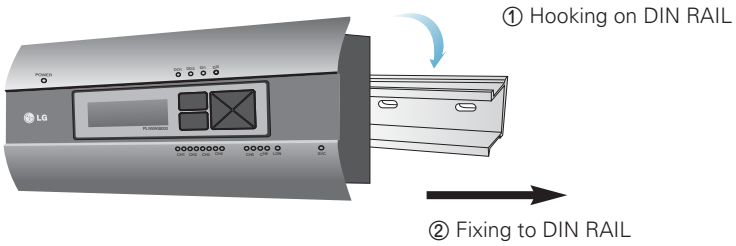
Installing the ACP Lonworks in DIN RAIL

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

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

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

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



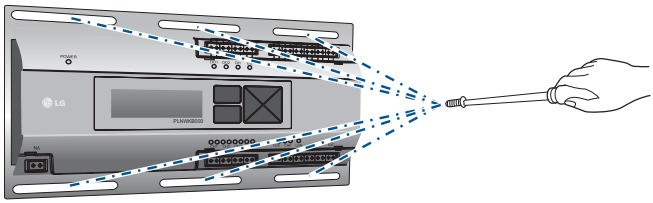
CAUTION

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

Fixing the ACP Lonworks to the wall

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

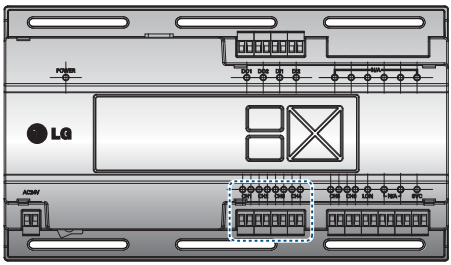
- Decide the space to install the ACP Lonworks.
  Before installing the ACP Lonworks, check if it is the adequate place to connect the ACP Lonworks with the power, RS-485, and LAN, LON cables.
- Fix to the wall using the driver. it can be fixed as in the following figure according to the location to install.



Connecting RS-485 cable to the ACP Lonworks

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

- First, among the connectors that can be connected to the ACP Lonworks , 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 Lonworks.
  There are 1~6 CH ports
  It must be plugged into one of 1~4 ports for air conditioner and ventilator indoor units.
  It must be plugged into one of 5 port for AHU units.
  It must be plugged into one of 6 port for Chiller units.



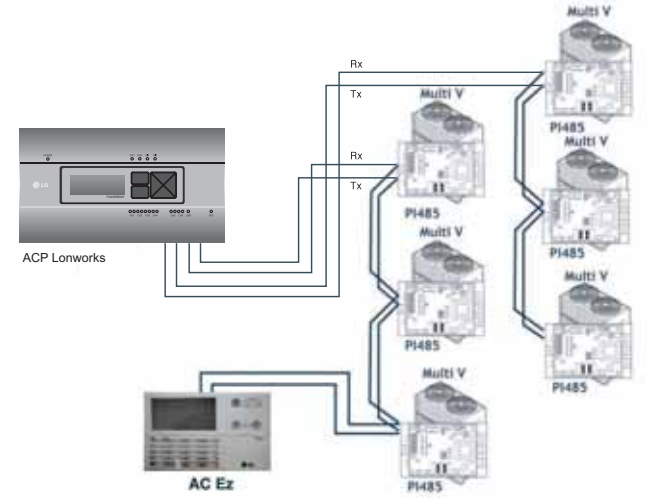
Information: Connecting RS-485 of the ACP Lonworks

Up to 16 outdoor units can be connected to one RS-485 port of the ACP Lonworks, and up to 64 indoor units(In case of AHU Unit, up to 16 AHU units/In case of Chiller units up to 15 chiller units) can be connected to one ACP Lonworks.

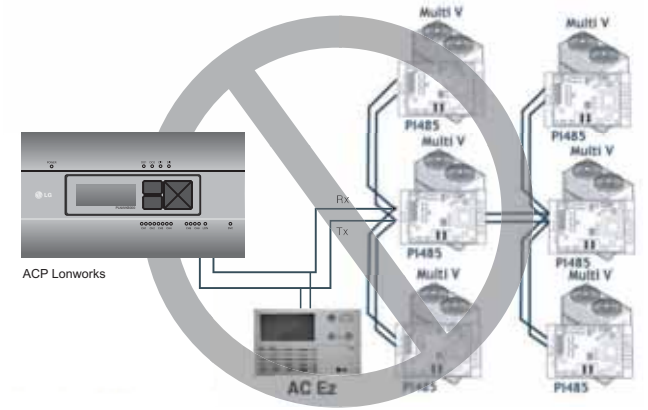
If there are many outdoor units to connect, the outdoor unit connections shall be appropriately connected to CH1 to CH4 in BUS format.

Otherwise, the ACP Lonworks 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 Lonworks.



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 Lonworks

After connecting the ACP Lonworks and RS-485 cable, Ethernet cable shall be connected to the ACP Lonworks .

ACP Lonworks may be connected to hub through Ethernet cable, or directly to AC Manager.

Connecting the ACP Lonworks and hub

It is the case of connecting the ACP Lonworks 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 Lonworks .

Connecting ACP Lonworks and PC

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

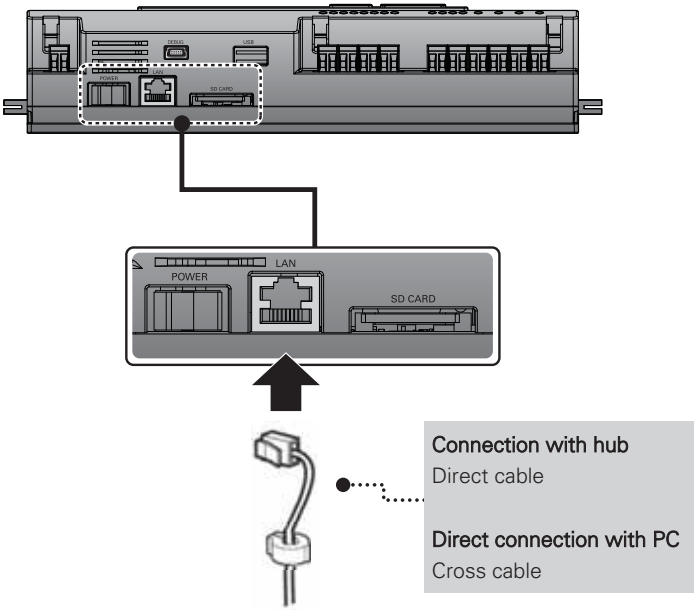
In such case, Ethernet cable shall be connected as a cross cable.

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

CAUTION

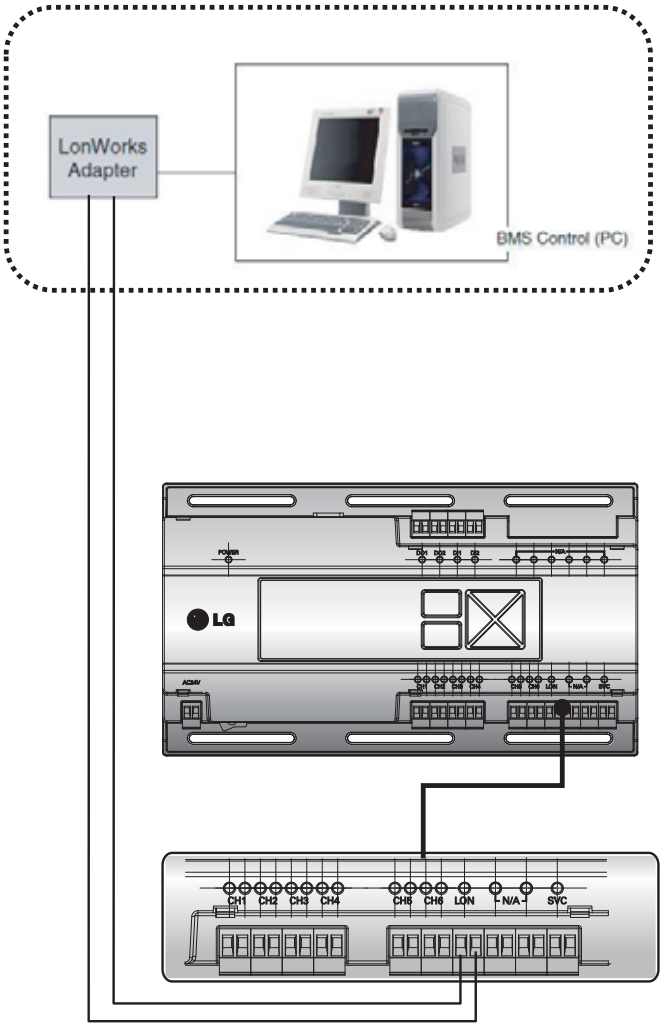
Ethernet cable types

- 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.



Connecting LON communication cable(TP/FT-10) of ACP Lonworks.

LON communication cable(TP/FT-10) should be connected LON port of ACP Lonworks.
ACP Lonworks can connect with BMS through LON communication cable(TP/FT-10).
There is non-polarity in TP/FT-10 communication cable conection.
Connect two line communication cable with BMS.



Setting the ACP Lonworks network address

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

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

CAUTION

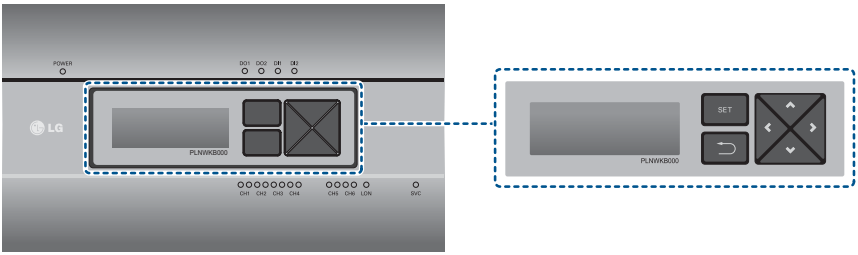
Setting the network environment information

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

Before configuring the ACP Lonworks environment

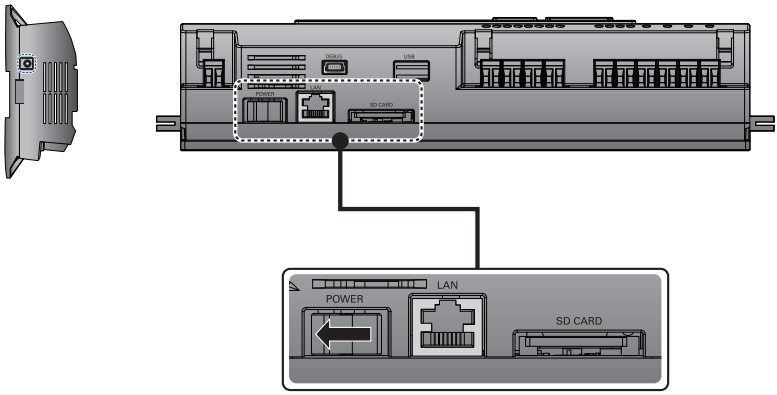
The network environment of the ACP Lonworks can be set by the LCD and the buttons at the front side of the ACP Lonworks.

The current ACP Lonworks 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 Lonworks

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



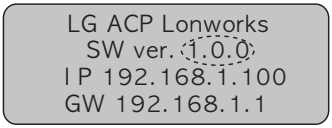
When the power switch is turned on, the ACP Lonworks booting screen is displayed on the LCD as shown at the following figure, and when booting is completed, the initial ACP Lonworks screen is displayed.



NOTE

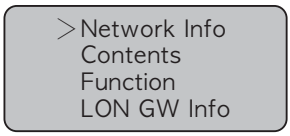
Software version

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



Entering into the environment setup mode

Press 'SET' button of the ACP Lonworks to enter into the environment setup mode of the ACP Lonworks. When the 'SET' button is pressed for the first time, the menu to set the IP address is displayed as shown below.



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 Lonworks.

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

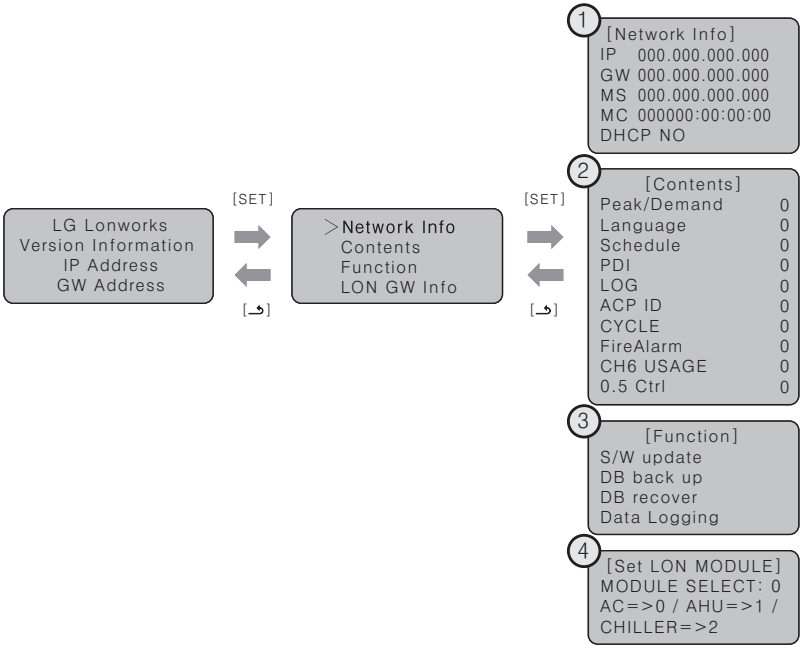
In [Contents] menu, you can set the functions of the ACP Lonworks and select language to use.

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

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

When you select [Function] and press "SET" button, it enters the No. 4 menu in the following figure.

In [LON GW Info] menu, you can set the module type of the ACP Lonworks as connected product.



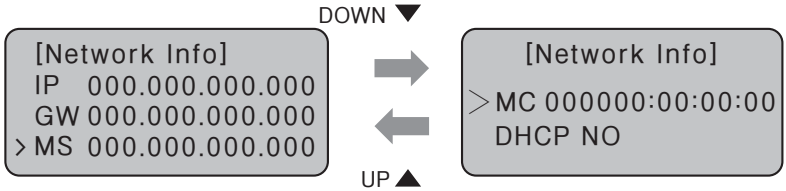
⚠ CAUTION

- [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 Lonworks.

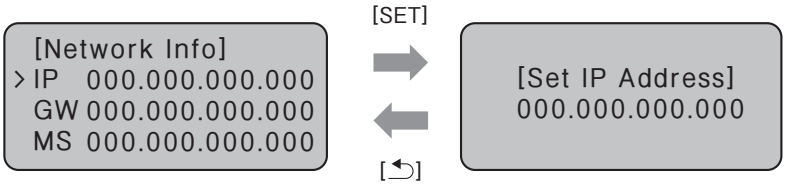
How to set network address

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.



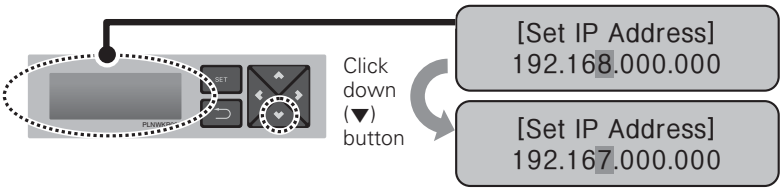
To change the network setting, locate the arrow on the corresponding setting position, and press “SET” button to enter the corresponding setting screen.



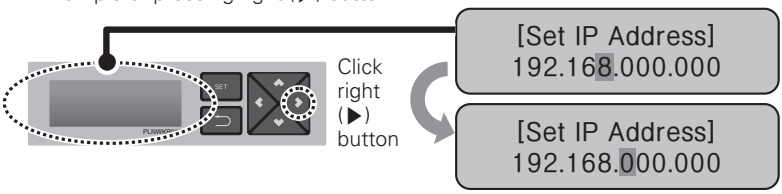
The network address consists of four 3-digit numbers. In case of setting the network address, the, name of the related address is displayed on the LCD of the ACP Lonworks, and press Up/Down/Left/Right (▲, ▼, ◀, ▶) button to set.

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.

Example of pressing down (▼) button



Example of pressing right (▶) button



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

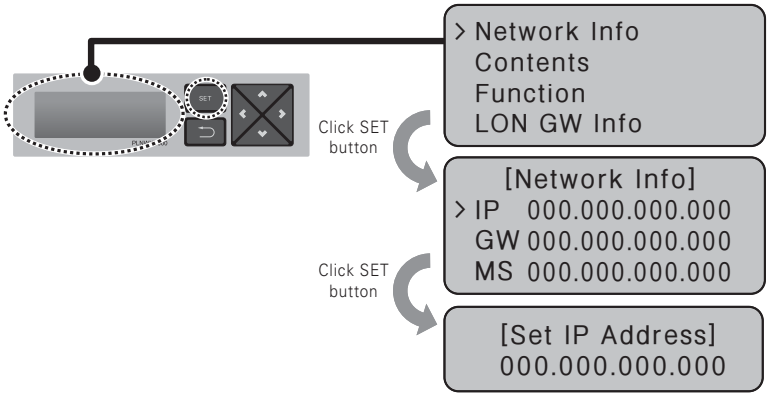
Assigning the network address

- Network address shall be assigned by the person in charge of the network of the corresponding site. (IP address, Gateway address, Net mask)
- ACP Lonworks 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.

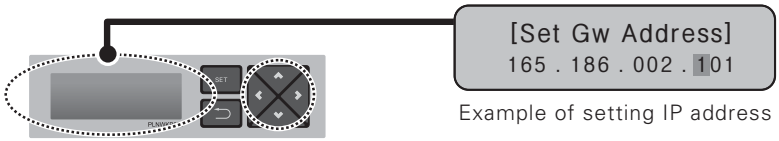
Setting IP address

For user to use the functions of the ACP Lonworks through the web, a unique IP address may be assigned to the ACP Lonworks 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 Lonworks. 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.



Example of setting IP address

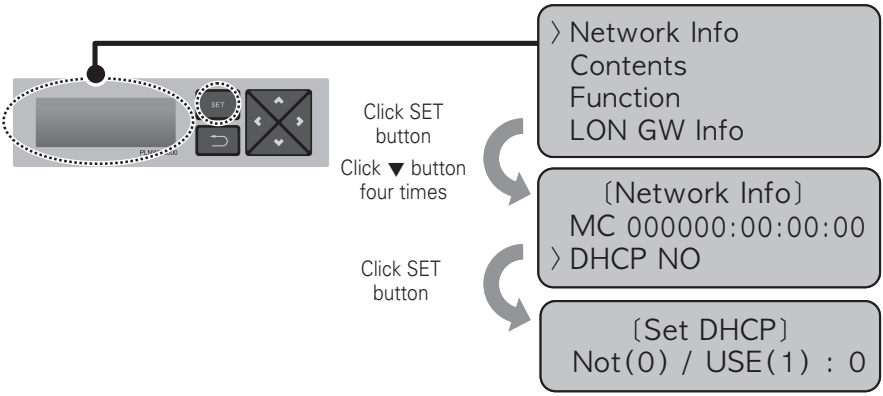
Using dynamic IP using DHCP

For user to use the functions of the ACP Lonworks through the web, a unique IP address may be assigned to the ACP Lonworks 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 Lonworks. 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.



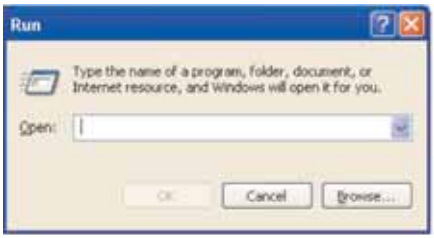
Example of setting to use DHCP function

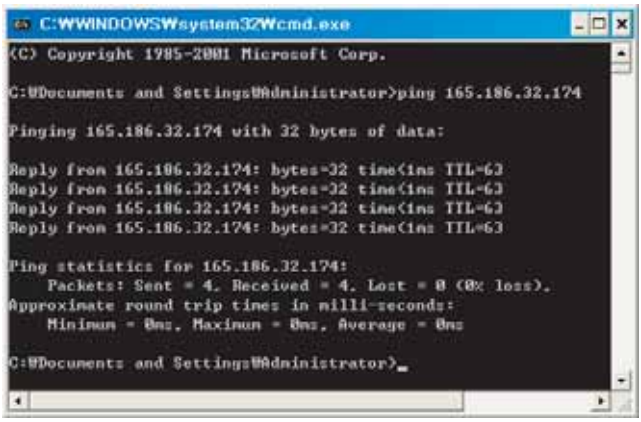
CAUTION

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

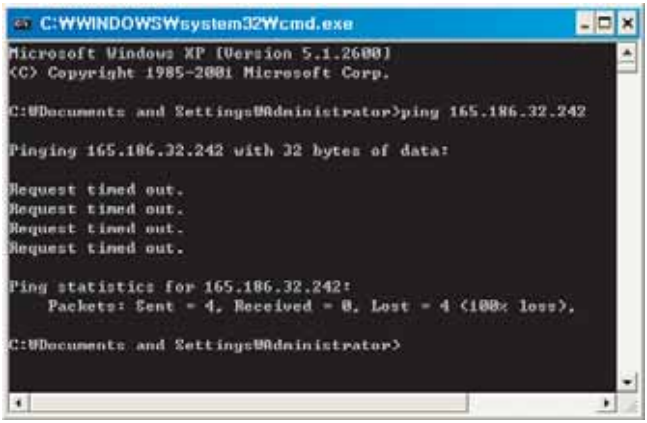
Checking ACP Lonworks access

It checks whether the ACP Lonworks network address setting is properly done.
You can check the possibility of accessing the ACP Lonworks through PING test.
You can open the following DOS window through Windows "Start", "Run", "cmd" input.
In DOS screen, input "ping <ACP Lonworks IP address>" as follows to run PING test.





When the network setting is properly done



When the network setting is not properly done

NOTE

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

- Check IP address of the ACP Lonworks and IP address of the PC.
  Ex) If IP address of the ACP Lonworks 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 Lonworks.
  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 Lonworks. Set as follows, and try again.

- Setting of the ACP Lonworks
  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 Lonworks are connected together in a hub or a switch hub, and you cannot access the ACP Lonworks.

- If it is right after changing the IP setting of the ACP Lonworks, reset the power of the ACP Lonworks.
- 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 Lonworks. 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 Lonworks 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 Lonworks. In such case, the IP address of the ACP Lonworks or the IP address of the corresponding host shall be changed.



How to check ARP table

Setting the functions of the ACP Lonworks

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

- 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)
- Setting whether to use air conditioner 0.5°C control function

Before setting the functions of the ACP Lonworks

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

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

	When only ACP Lonworks is used	When ACP Lonworks 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 Lonworks 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 Lonworks will be slower.

Selecting Peak or Demand

The ACP Lonworks offers the function to manage the power consumed by the connected air conditioner, by which the electric charges can be effectively saved. The ACP Lonworks 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 Lonworks.
- 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 Lonworks. And, if it is set by the menu of the ACP Lonworks, the UI screen is differently displayed when accessing the web screen to set the function. The ACP Lonworks should be set to the Demand function for the following cases:

- Interfacing with the AC Manager

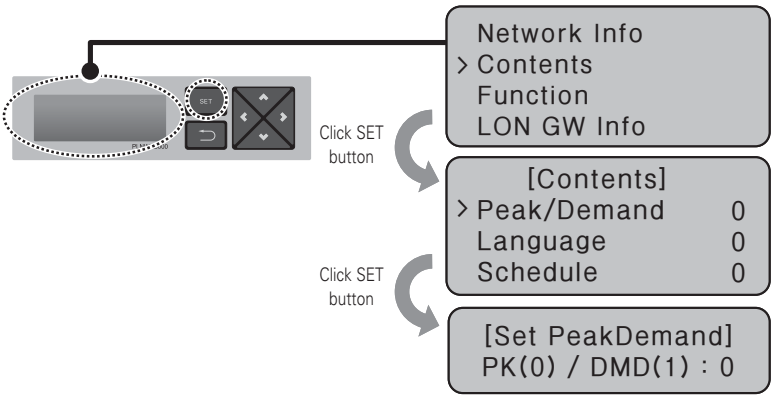
NOTE

Default value

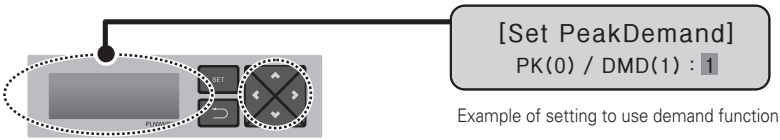
- The default value at factory ship-out is set to Peak.

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 Lonworks 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.



Example of setting to use demand function

Selecting ACCS display language

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

NOTE

How to use LG ACCS

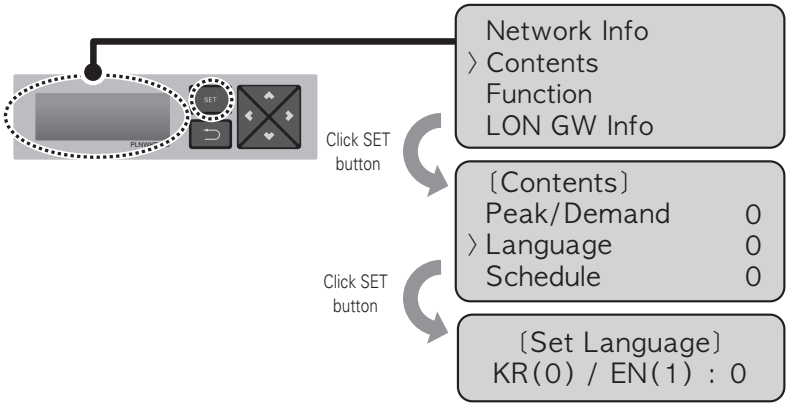
- For more information on how to use LG ACCS, see “page 12”.

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

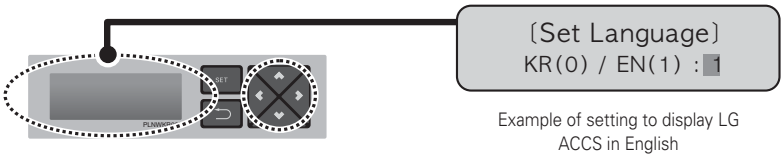


The LG ACCS is offered with the Korean version and the English version, which can be changed by the user's setting. Change the language setting of the LG ACCS as follows:

- When you press the 'SET' button of the ACP Lonworks, 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).



Example of setting to display LG ACCS in English

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

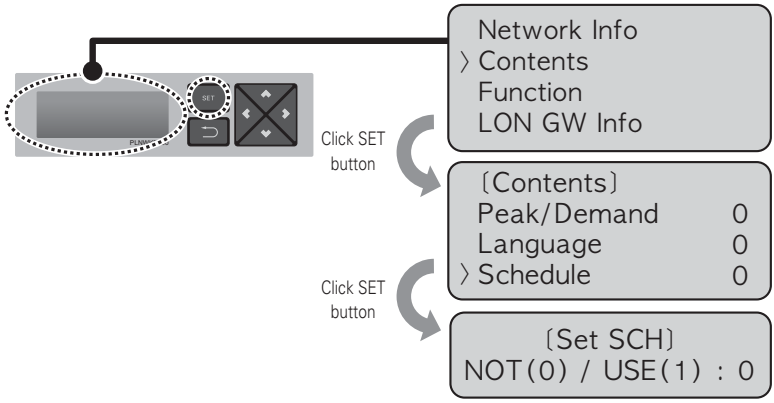
⚠ CAUTION

Deciding whether to use schedule function

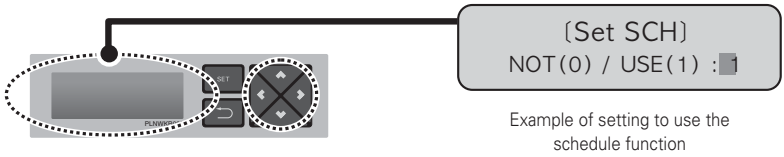
- When ACP Lonworks interfaces with AC Manager, AC Manager schedule function is used in the ACP Lonworks with priority, so the schedule function in the ACP Lonworks shall be set to not to be used.
  If ACP Lonworks is operated independently, the schedule function of the ACP Lonworks may be used.

Change whether to use schedule function as follows:

- When you press the 'SET' button of the ACP Lonworks, 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.



Example of setting 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 Lonworks, provides the power display interface function that can check and manage the power consumption of the air conditioner indoor unit connected to the ACP Lonworks.

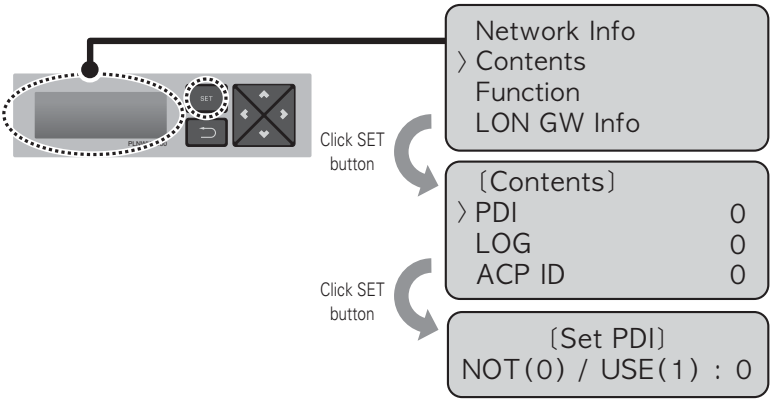
CAUTION

Power display interface

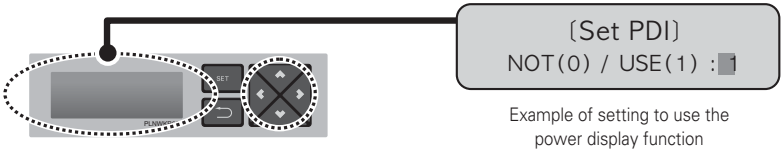
- To use the power display interface function, the power distribution indicator needs to be interfaced by being connected to PI485 which is connected to the ACP Lonworks
- Please refer to the corresponding product manual for installation and usage of the power distribution indicator and PI485.

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 Lonworks. Change whether to use the power display function as follows:

- When you press the 'SET' button of the ACP Lonworks, 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.



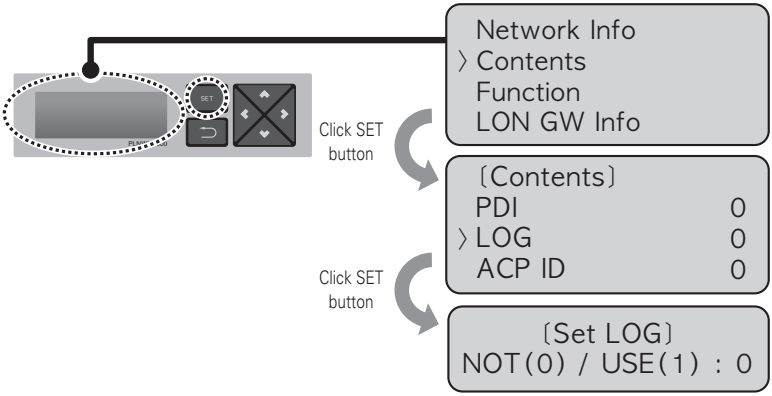
Example of setting to use the power display function

- 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.

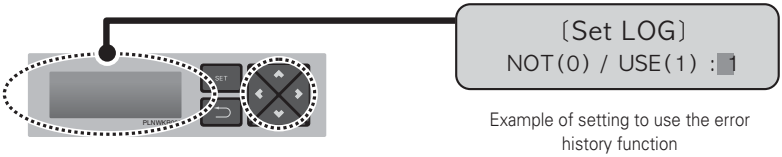
Setting whether to display error history

LG ACCS, which is the operation program of the ACP Lonworks, provides the error history function that can review several types of errors occurred in the air conditioner indoor units connected to the ACP Lonworks. 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 Lonworks. 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 Lonworks, 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.



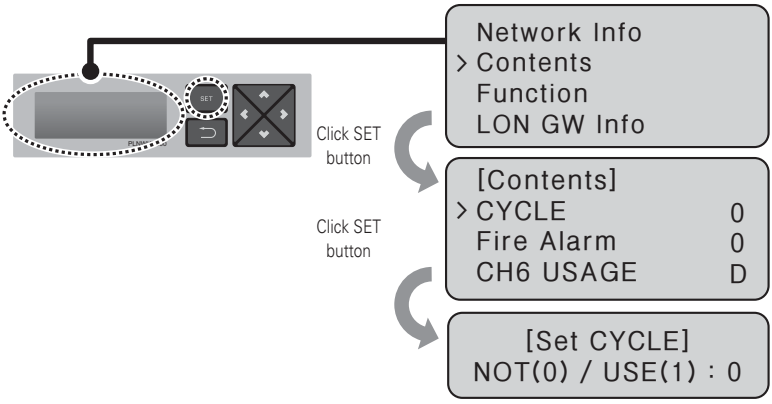
Example of setting to use the error history function

- 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 Lonworks, you can monitor the cycle information of the outdoor unit connected to the ACP Lonworks. 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 Lonworks, 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

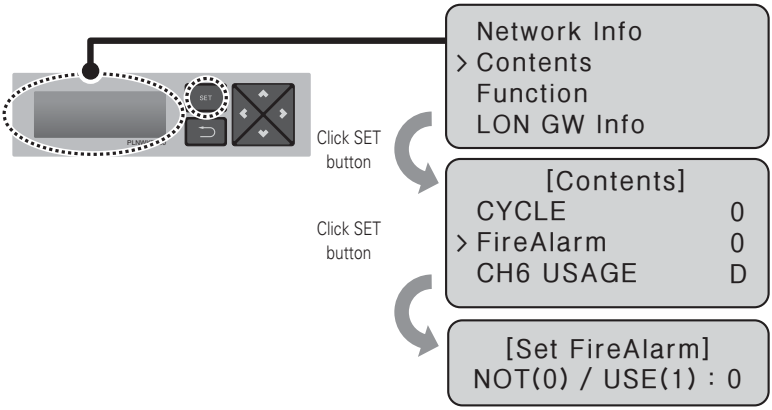
ACP Lonworks provides Fire Alarm function.

After connecting the fire sensor to ACP Lonworks 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 Lonworks DI1.
- Please refer to each fire sensor product manual for detail usage of fire sensors.

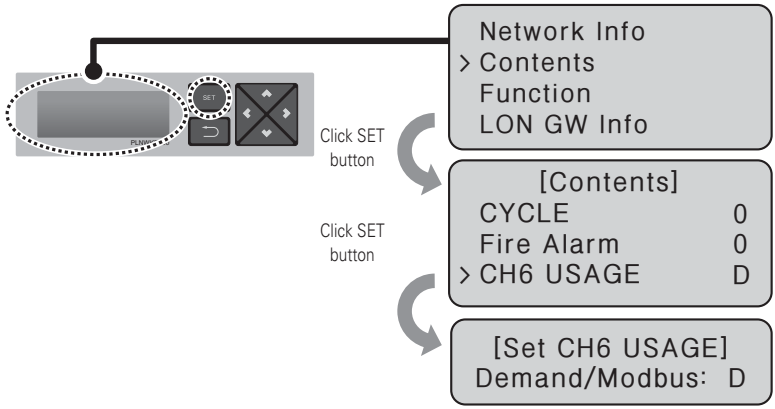


- When you press the 'SET' button of the ACP Lonworks, menu screen will be displayed. Use up and down (▲, ▼) buttons to select [Contents], and press “SET” button again. While [FireAlarm] is selected, if you press “SET” button, you can set whether to use the Fire Alarm.

Setting whether to use CH6 function

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

- When you press the 'SET' button of the ACP Lonworks, 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).

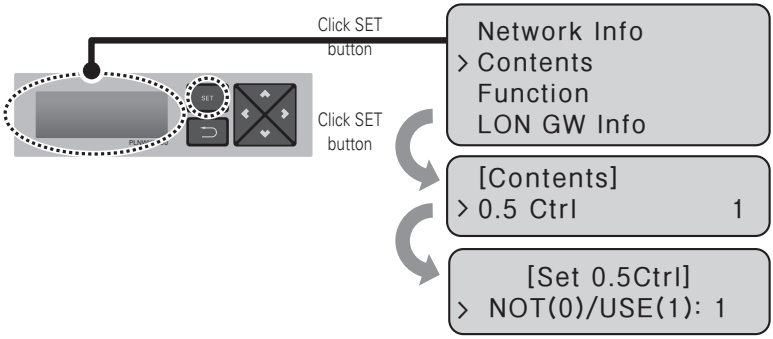


Setting whether to use air conditioner 0.5°C control function

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

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 Lonworks.

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

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

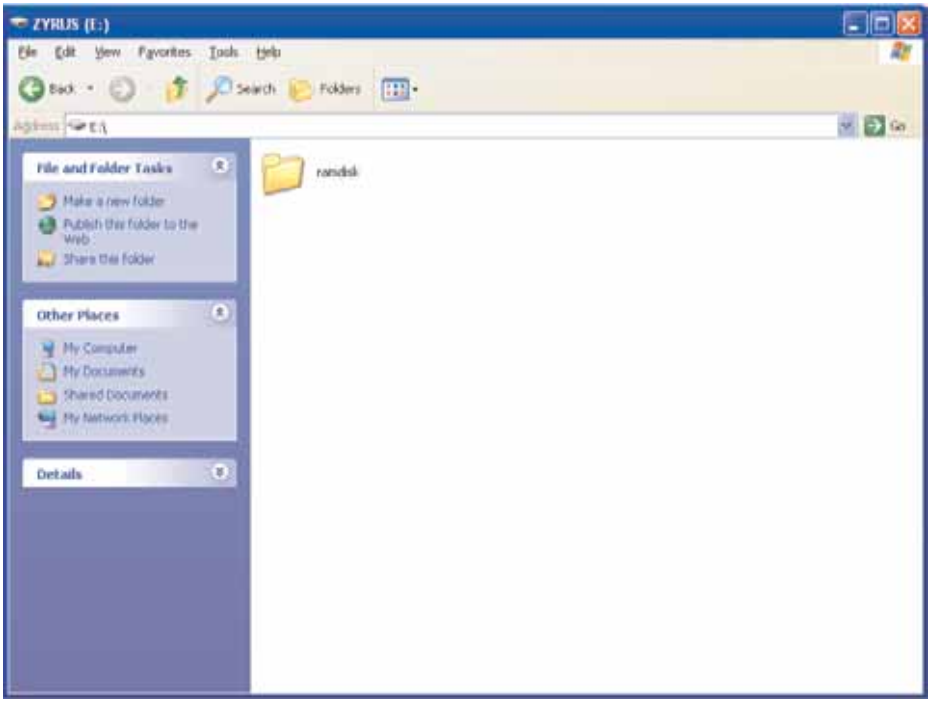
Software update

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

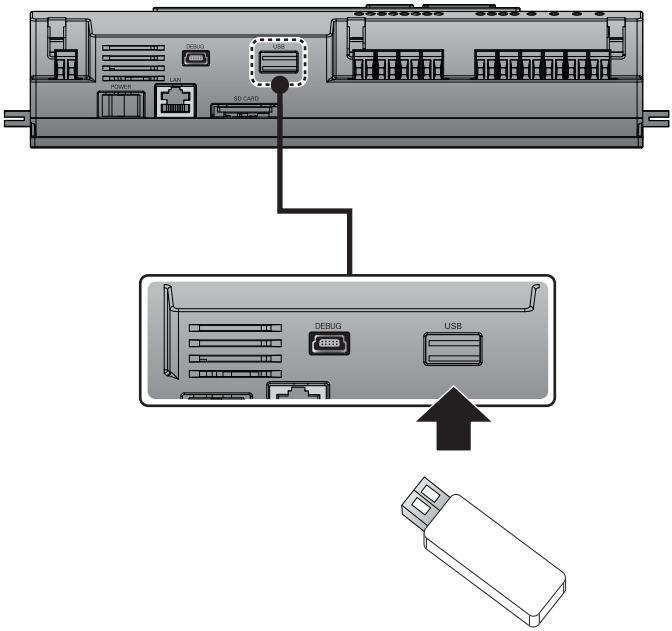
Software update can be done with USB memory.

Proceed in the following order.

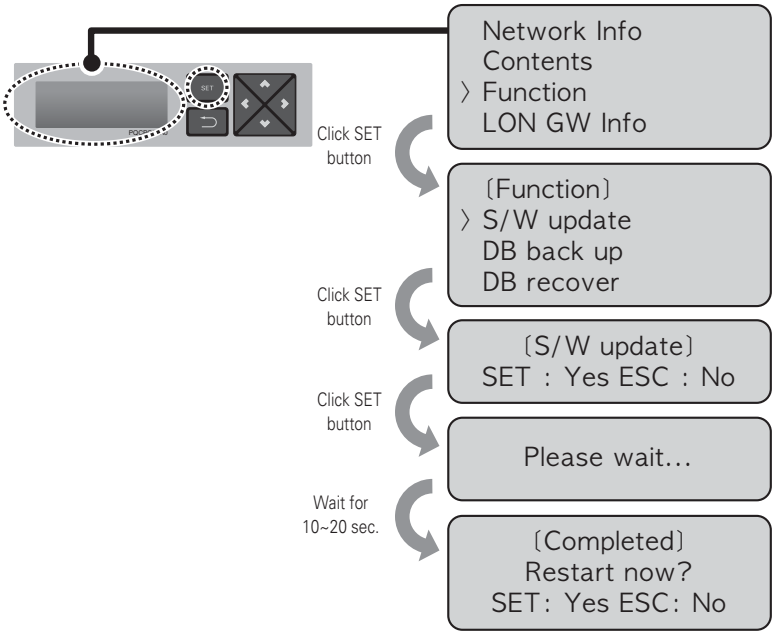
- Create “ramdisk” folder in USB memory.
- Put the S/W file to update in “ramdisk” folder.
  At this time, only one S/W file must be put. (New version software file can be downloaded from LG Electronics System Air Conditioner homepage.)




ramdisk
File Edit View Favorites Tools Help
Back Search Folders
E:\ramdisk
E: may be changed.
Go
File and Folder Tasks
Make a new folder
Publish this folder to the Web
Share this folder
Other Places
My Documents


DEBUG
USB
LAN
POWER
SD CARD

- Press “SET” button of the ACP Lonworks.
  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 Lonworks.
  Even when you do not immediately restart, update will be applied only after rebooting the ACP Lonworks in the future.



CAUTION

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

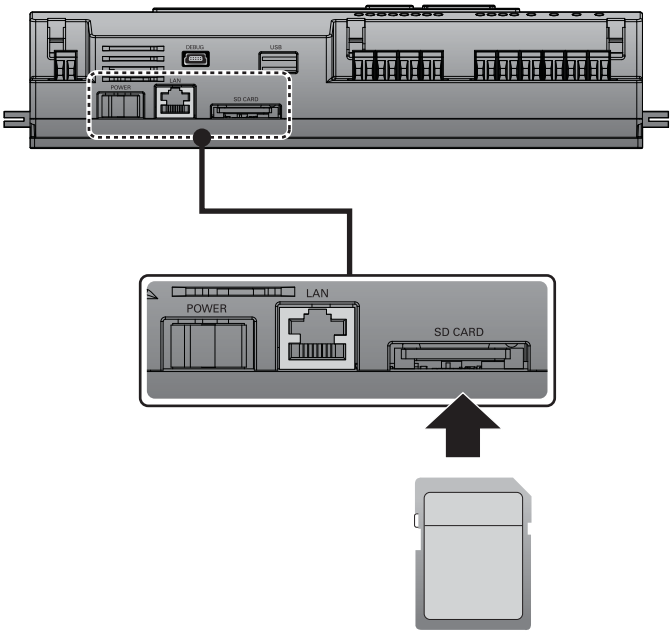
Data backup

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

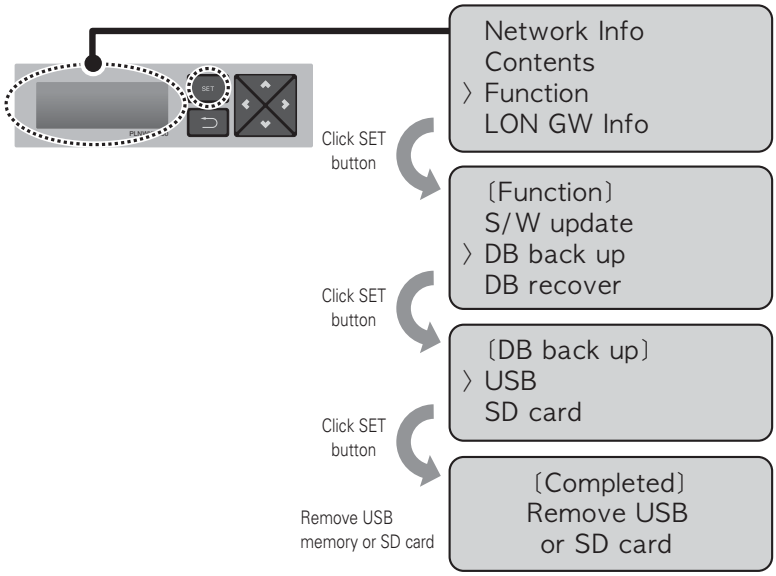
Data backup can be done with USB memory or SD card.

Proceed in the following order.

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



- Press “SET” button of the ACP Lonworks.
  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 Lonworks or removing USB memory or SD card may cause severe disorder of the ACP Lonworks.

Data recovery

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

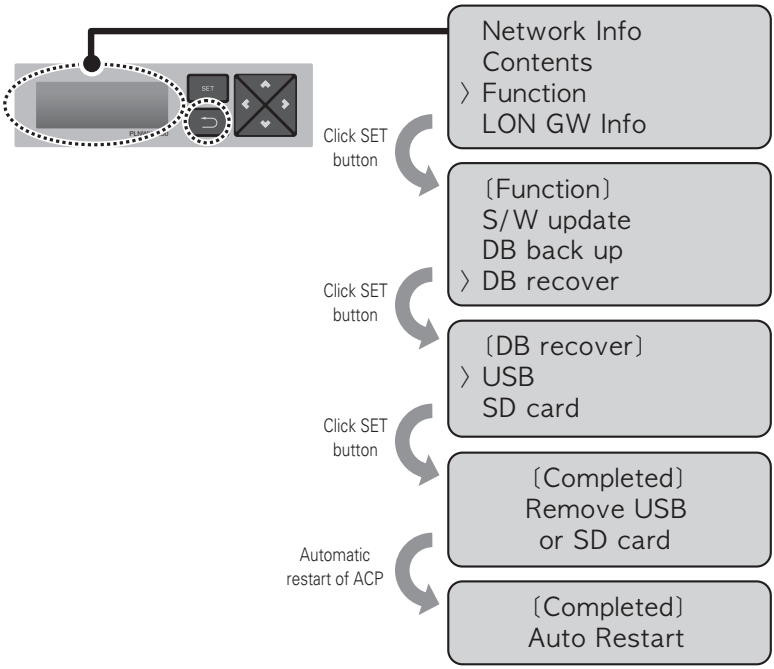
Data recovery can be done with USB memory or SD card.

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 Lonworks. (Refer to software update and data backup)
- Press “SET” button of the ACP Lonworks.
  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 Lonworks is automatically restarted for data recovery.



CAUTION

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

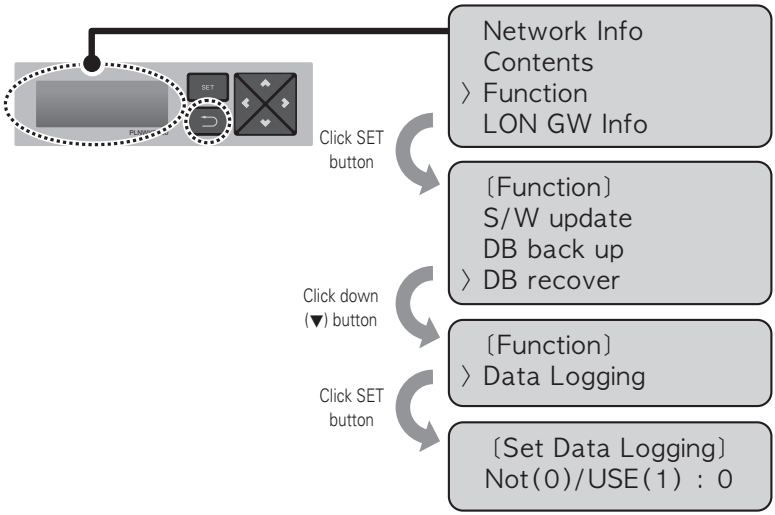
RS-485 data logging

If ACP Lonworks 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 Lonworks. (Refer to data backup)
- Press “SET” button of the ACP Lonworks.
  Select [Function] menu, and press “SET” button.
  Select [Data Logging] menu, and press “SET” button again.
  Select whether to set data logging.



Setting the module type of the ACP Lonworks

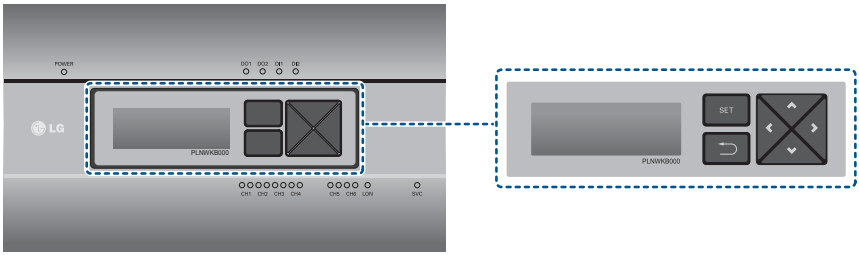
The following functions can be set module type by using the menu of the ACP Lonworks.

- Setting the module type

Before setting the module type of the ACP Lonworks

The module type setting of ACP Lonworks is set by using the LCD and button in front side of ACP Lonworks.

Module information and menu of ACP Lonworks is displayed in LCD, it can be set or changed the menu by pressing the SET, ⮌ , up, down, left, right (▲, ▼, ◀, ▶) button.



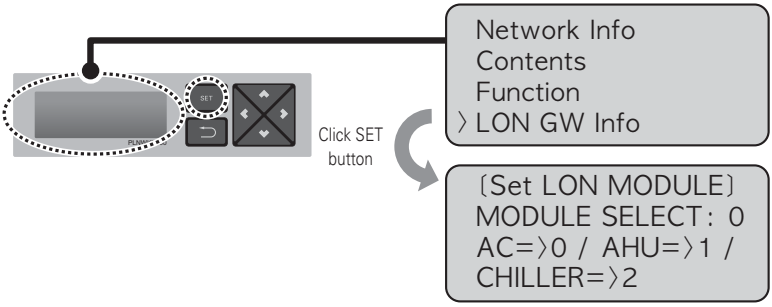
CAUTION

- It is required a separate ACP Lonworks for each other product type(air conditioner, AHU or Chiller).
  ACP Lonworks can't to connect airconditioner indoor unit, AHU unit or Chiller unit at the same time.

Display the module type setting information

Control/monitoring and BMS connecting functions of corresponding product is provided to ACP Lonworks by selecting product information.
Proceed in the following order to see the set module type information in ACP Lonworks.

- Press "SET" button of ACP Lonworks.
  Select [LON GW Info] menu by using up,down(▲, ▼) button, and press “SET” button.
- Select the module type by using up,down(▲, ▼) button , and press the "SET"button.



Select the module type as connected product type.

- Module 0 : For air conditioner and ventilator indoor unit connection
- Module 1 : For AHU unit connection
- Module 2 : For Chiller unit connection

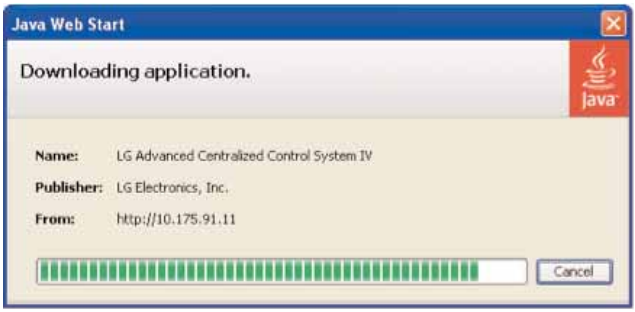
Accessing ACP Lonworks

User may control the functions of the ACP Lonworks using LG ACCS program of the ACP Lonworks in the computer connected to the ACP Lonworks through network. LG ACCS (Advanced Centralized Control System) is the ACP Lonworks function control program developed in Java language. When the user accesses the A0P using Internet Explorer, LG ACCS is automatically run.

- It runs Internet Explorer in the PC connected to the ACP Lonworks through internet or internal network. Input IP address set in the ACP Lonworks 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 7 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 Lonworks. Such information must be input to be able to control the air conditioners with the ACP Lonworks.

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

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

When ACP Lonworks is connected to AC Manager

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

⚠ 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 Lonworks is not connected to AC Manager

When ACP Lonworks 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 Lonworks.

Automatic search

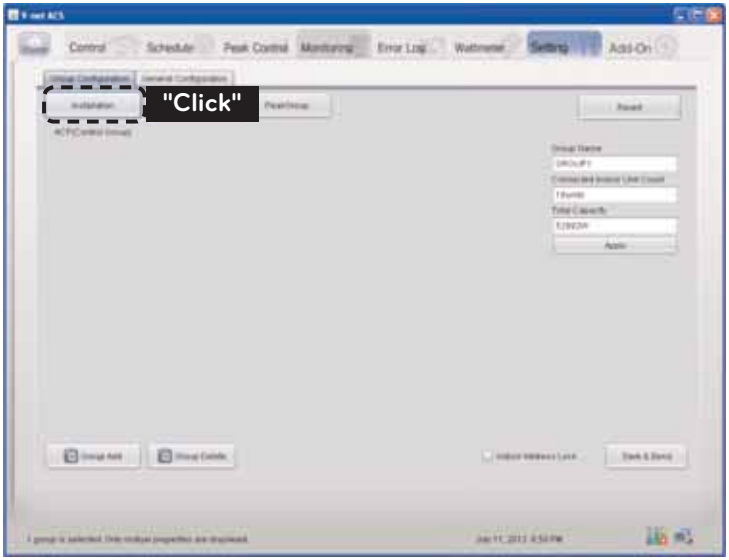
You can automatically search the address of the indoor unit.

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

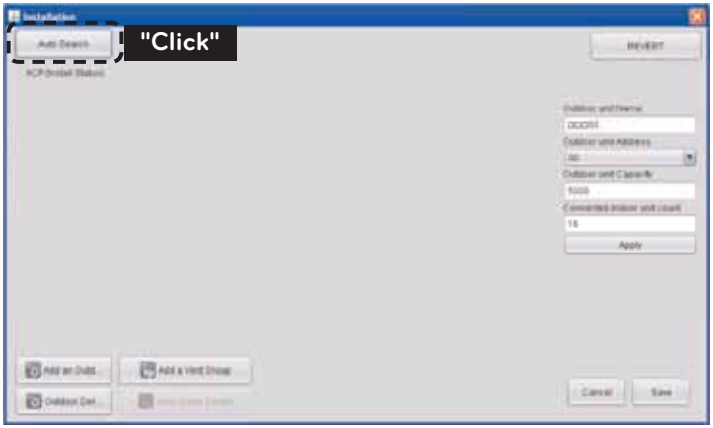
- Select 'system setting' menu.



- Click 'installation status' button.

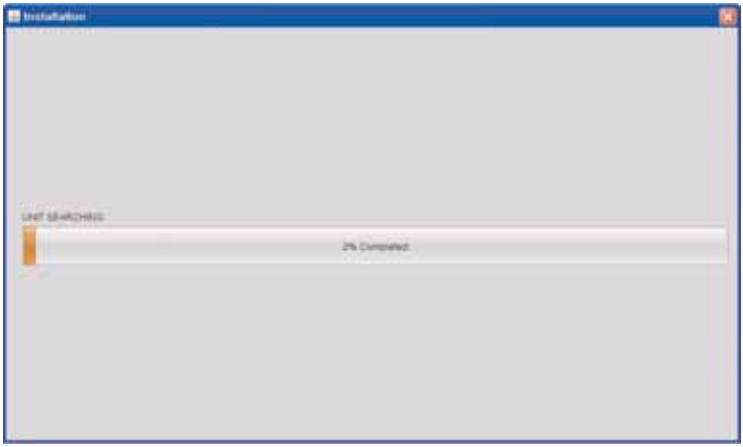


- Click 'automatic search' button.

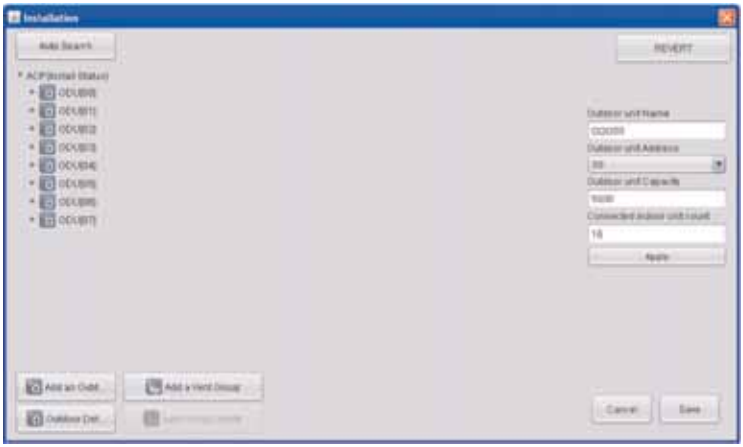


- When you click 'yes' button, the ACP Lonworks searches the address of the installed indoor units.





<Screen during the search>



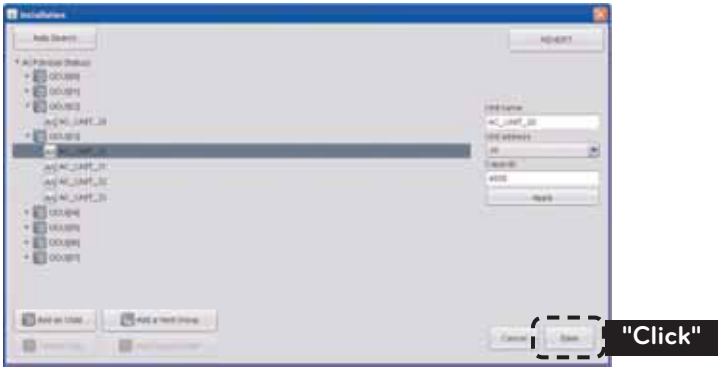
<Screen after completing the search>

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.

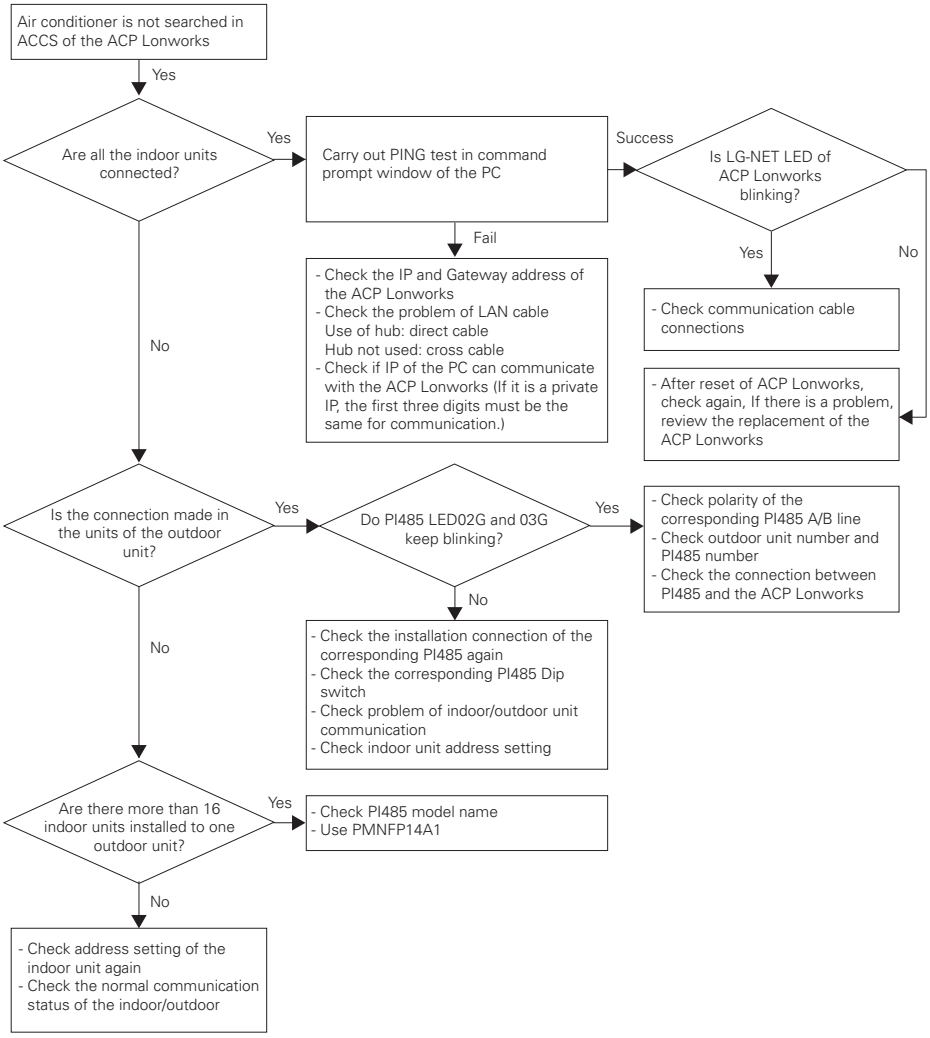
Verifying and checking the ACP Lonworks installation

After installing the ACP Lonworks, you can check the status of the ACP Lonworks according to the following flowchart.

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 Lonworks.

Check the ACP Lonworks status according to the following flowchart.

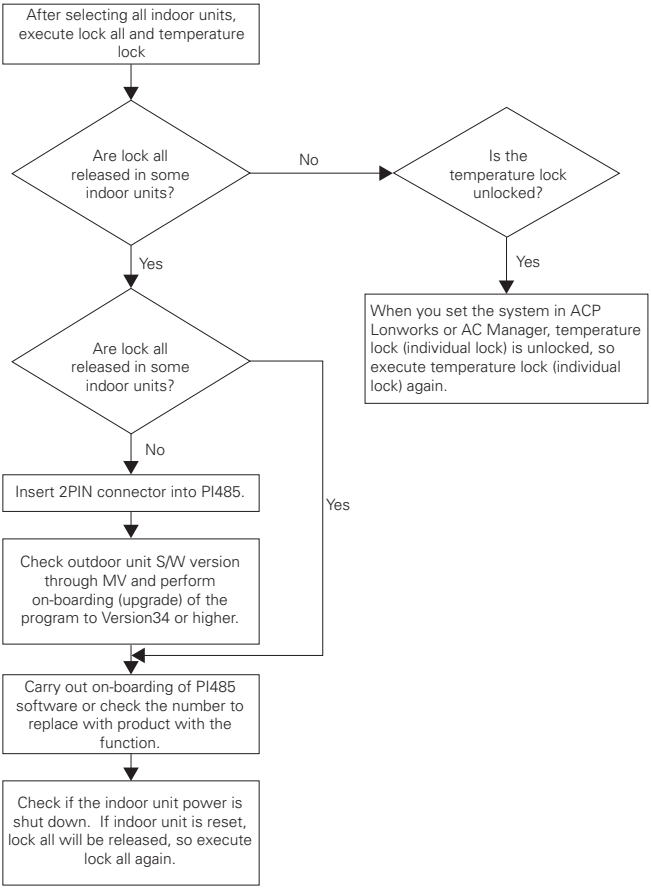


ACP Lonworks status monitoring after executing lock all and temperature lock

Run LG ACCS of the ACP Lonworks to select all indoor units, and execute lock all function.

Afterwards, execute temperature lock function again, and monitor the status of the ACP Lonworks.

Check the status of the ACP Lonworks according to the following flowchart.



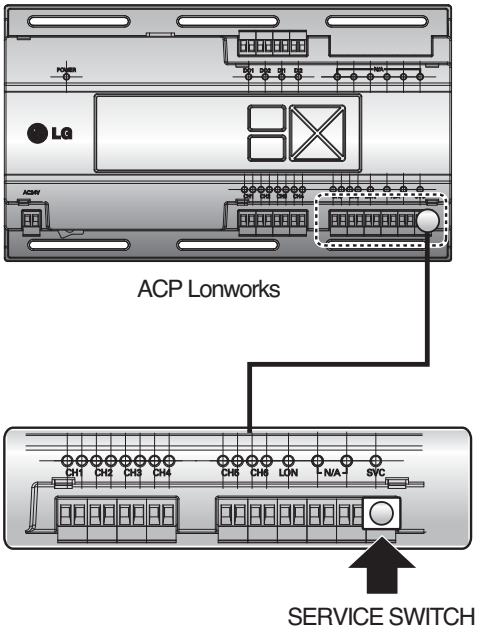
Connecting with Lonworks BMS

After connecting with Lonworks BMS(Lonworks Building Management System), press Service Switch of ACP Lonworks.

Then Service LED will be turned on and the Neuron ID will be sent to Lonworks BMS.

Check that Service LED is changed to normal condition(LED OFF) within 10 minutes.

If Service LED is change to normal condition, it is installed normally.



NOTES

Troubleshooting

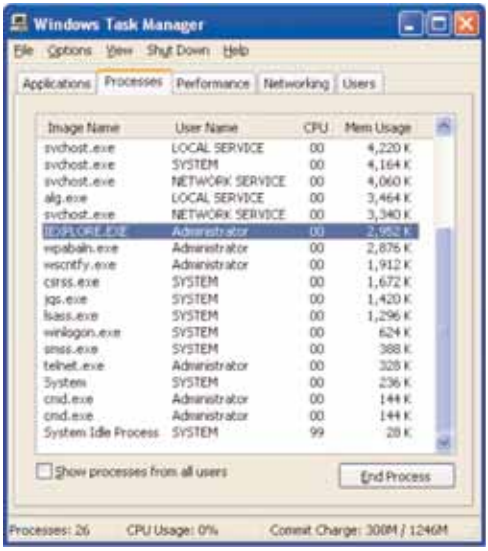
During the use of the ACP Lonworks, if unexpected problem occurs, please find the solution by studying the following list.

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 Lonworks

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

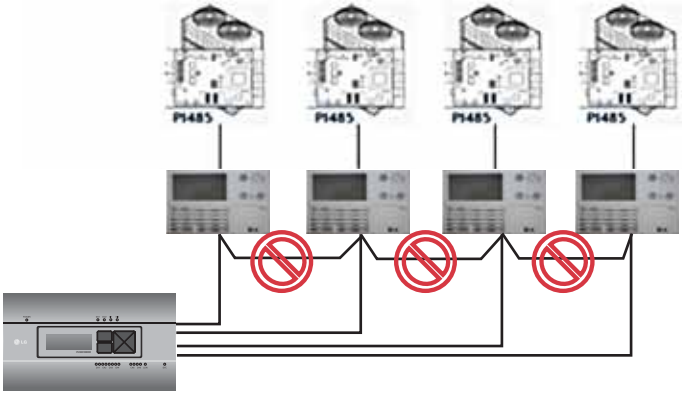
When the ventilation equipment is displayed as a network error state (code 242) as followed, in LG ACCS, which is the web server program of the ACP Lonworks, please check the following categories.

- 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 Lonworks 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.



ACP Lonworks

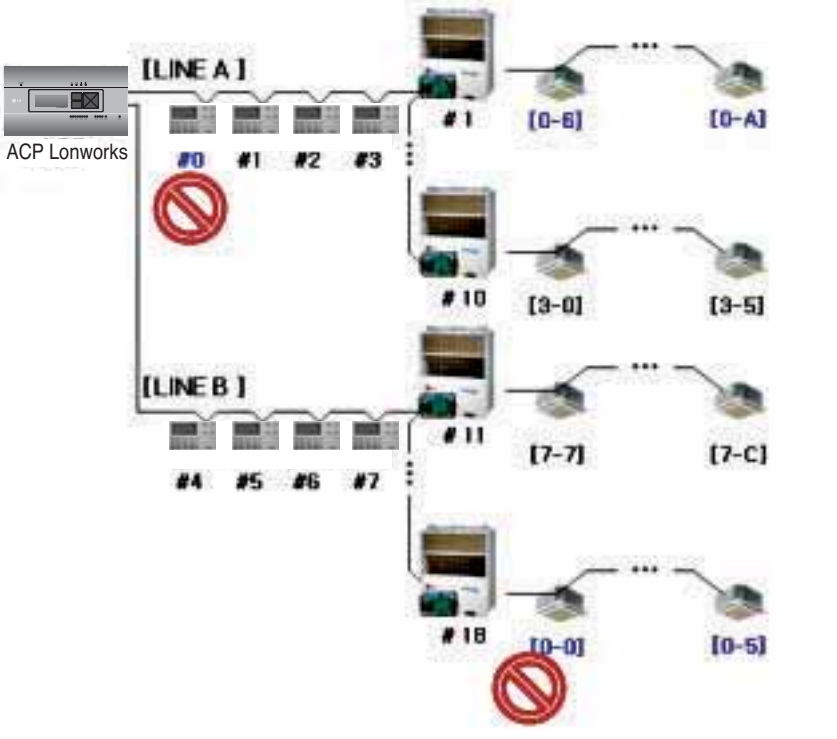
- Duplicate setting of the indoor unit address

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.

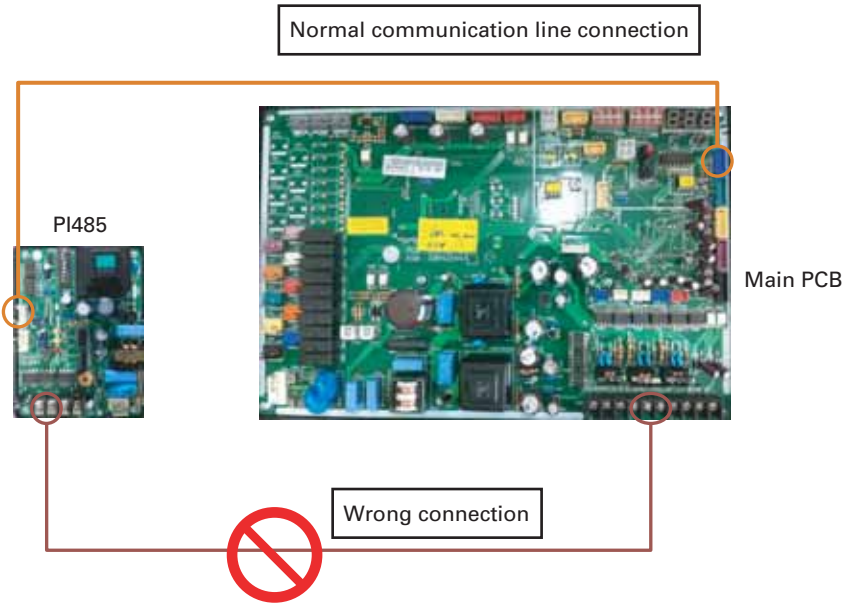
It is installed by interfacing AC Ez and the ACP Lonworks, but some indoor units are not recognized, or not properly performing the central control commands.

- It is the case of incorrect setting of AC Ez.
  Set all AC Ez to Slave mode.
- If the indoor unit to control with AC Ez is in another physical line as in the following figure, the AC Ez cannot recognize the corresponding indoor unit.
  Therefore, the connections need to be modified to have the AC Ez to be in the same RS-485 communication line 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 Lonworks, 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 Lonworks 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

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.

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.
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Function Block

■ Air conditioner Objects

① Standard Function Block

SNVT_switch	nviOnOff
SNVT_hvac_mode	nviHeatCool
SNVT_switch	nviLock
SNVT_temp_p	nviSetPoint
SNVT_switch	nviFanSpeedCmd
SNVT_switch	nviSwing_Heater
SNVT_switch	nviModlok
SNVT_switch	nviFanlok
SNVT_switch	nviTmplok_Humid
SNVT_temp_p	nviLow_HW_Tmp
SNVT_temp_p	nviUp_Tmp

SCC (8500)FB

Indoor unit Network Variables

SNVT_switch	nvoOnOff
SNVT_hvac_mode	nvoHeatCool
SNVT_switch	nvoLock
SNVT_temp_p	nvoSetPoint
SNVT_switch	nvoFanSpeed
SNVT_switch	nvoSwing_Heater
SNVT_switch	nvoModlok
SNVT_switch	nvoFanlok
SNVT_switch	nvoTmplok_Humid
SNVT_temp_p	nvoLow_HW_Tmp
SNVT_temp_p	nvoUp_Sol_Tmp
SNVT_count	nvoPType
SNVT_count	nvoPAddr
SNVT_temp_p	nvoSpaceTemp
SNVT_hvac_status	nvoUnitStatus
SNVT_count_f	nvoAccuPw

② General Function Block

SNVT_count	nviPeakSwTime
SNVT_lev_percent	nviPeakTgtRate
SNVT_Switch	nviTempUnit
SNVT_switch	nviAllTemplock
SNVT_switch	nviTotalOnOff
SNVT_temp_p	nviTotalTemp

SCC (8500)FB

Indoor unit Network Variables

SNVT_count	nvoPeakSwTime
SNVT_lev_percent	nvoPeakTgtRate
SNVT_Switch	nvoTempUnit
SNVT_lev_percent	nvoPeakCurRate
SNVT_count_f	nvoTotalAccuPw

Control	
On/Off	Operation Mode
Lock	Temperature
Fan Level	Fan Direction Auto
Mode Lock	Fan Level Lock
Temperature Lock	Temperature Lower Limit
Temperature Higher Limit	Peak Convert Cycle
Peak Setting	Temperature Unit
Total Temperature Lock	Total OnOff
Total Temperature	

Monitoring	
On/Off	Operation Mode
Lock	Temperature
Fan Level	Fan Direction Auto
Mode Lock	Fan Level Lock
Temperature Lock	Temperature Lower Limit
Temperature Higher Limit	Product Type
Product Address	Current Temperature
Error monitor	Power
Peak Convert Cycle	Peak Setting
Temperature Unit	Peak Current Operating Percent
Total Accumulate Power	

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

NOTE

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

■ ERV Objects

① Standard Function Block

SNVT_switch	nviOnOff
SNVT_hvac_mode	nviHeatCool
SNVT_switch	nviLock
SNVT_switch	nviFanSpeedCmd
SNVT_switch	nviSwing_Heater
SNVT_switch	nviFilt_Tmpsel
SNVT_count	nviUsrmod

SCC (8500)FB

ERV Network Variables

SNVT_switch	nvoOnOff
SNVT_hvac_mode	nvoHeatCool
SNVT_switch	nvoLock
SNVT_switch	nvoFanSpeed
SNVT_switch	nvoSwing_Heater
SNVT_switch	nvoFilt_Tmpsel
SNVT_count	nvoUsrmod
SNVT_count	nvoPType
SNVT_count	nvoPAddr
SNVT_hvac_status	nvoUnitStatus

② General Function Block

SCC (8500)FB

SNVT_Switch	nviTotalOnOff

ERV Network Variables

Control	
On/Off	Operation Mode
Lock	Fan Level
Heater	Filter
Additional Functionality	Total OnOff

Monitoring	
On/Off	Operation Mode
Lock	Fan Level
Heater	Filter
Additional Functionality	Product Type
Product Address	Error

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

NOTE

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

■ ERV DX Objects

① Standard Function Block

SNVT_switch	nviOnOff
SNVT_hvac_mode	nviHeatCool
SNVT_switch	nviLock
SNVT_temp_p	nviSetPoint
SNVT_switch	nviFanSpeedCmd
SNVT_switch	nviSwing_Heater
SNVT_switch	nviTmplok_Humid
SNVT_count	nviUsrmod
SNVT_switch	nviFilt_Tmpsel
SNVT_switch	nviIDUrun_HWEn
SNVT_hvac_mode	nviIDUmod

SCC (8500)FB

ERV DX Network Variables

SNVT_switch	nvoOnOff
SNVT_hvac_mode	nvoHeatCool
SNVT_switch	nvoLock
SNVT_temp_p	nvoSetPoint
SNVT_switch	nvoFanSpeed
SNVT_switch	nvoSwing_Heater
SNVT_switch	nvoTmplok_Humid
SNVT_count	nvoUsrmod
SNVT_switch	nvoFilt_Tmpsel
SNVT_switch	nvoIDUrun_HWEn
SNVT_hvac_mode	nvoIDUmod
SNVT_count	nvoPType
SNVT_count	nvoPAddr
SNVT_hvac_status	nvoUnitStatus
SNVT_switch	nvoMS_HWmod

② General Function Block

SNVT_Switch	nviTempUnit
SNVT_switch	nviTotalOnOff
SNVT_temp_p	nviTotalTemp

SCC (8500)FB

ERV DX Network Variables

SNVT_Switch	nvoTempUnit

Control	
On/Off	Operation Mode
Lock	Fan Level
Heater	Filter
Additional Functionality	Total OnOff

Monitoring	
On/Off	Operation Mode
Lock	Fan Level
Heater	Filter
Additional Functionality	Product Type
Product Address	Error

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

NOTE

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

■ AWHP Objects

① Standard Function Block

SNVT_switch	nviOnOff
SNVT_hvac_mode	nviHeatCool
SNVT_switch	nviLock
SNVT_temp_p	nviSetPoint
SNVT_temp_p	nviLow_HW_Tmp
SNVT_switch	nviIDUrun_HWEn

SCC (8500)FB

AWHP Network Variables

SNVT_switch	nvoOnOff
SNVT_hvac_mode	nvoHeatCool
SNVT_switch	nvoLock
SNVT_temp_p	nvoSetPoint
SNVT_temp_p	nvoLow_HW_Tmp
SNVT_temp_p	nvoUp_Sol_Tmp
SNVT_switch	nvoFilt_Tmpsel
SNVT_switch	nvoIDUrun_HWEn
SNVT_count	nvoPType
SNVT_count	nvoPAddr
SNVT_temp_p	nvoSpaceTemp
SNVT_hvac_status	nvoUnitStatus
SNVT_temp_p	nvoTankTmp
SNVT_temp_p	nvoInTmp
SNVT_temp_p	nvoOutTmp
SNVT_switch	nvoMS_HWmod

② General Function Block

SCC (8500)FB

SNVT_switch	nviTotalOnOff
SNVT_switch	nviTotalTemp

AWHP Network Variables

Control	
On/Off	Operation Mode
Lock	Temperature
Hot Water Supply Temperature	Hot Water Operation
Total OnOff	Total Temperature

Monitoring	
On/Off	Operation Mode
Lock	Temperature
Hot Water Supply Temperature	Solar Heat Source Temperature
Temperature Select	Hot Water Operation
Product Type	Product Address
Current Temperature	Error
Hot Water Tank Temperature	Pipe In Temperature
Pipe Out Temperature	Hot Water Only Mode

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

NOTE

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

■ AHU Objects

① Standard Function Block

SNVT_switch	nviOnOff
SNVT_hvac_mode	nviHeatCool
SNVT_switch	nviLock
SNVT_switch	nviSetRH
SNVT_switch	nviEconEnable
SNVT_switch	nviFireDetect
SNVT_temp_p	nviSetpoint
SNVT_lev_percent	nviSpaceRH
SNVT_lev_percent	nviOAD_C
SNVT_lev_percent	nviEAD_C
SNVT_lev_percent	nviMXD_C
SNVT_lev_percent	nviOAD_H
SNVT_lev_percent	nviEAD_H
SNVT_lev_percent	nviMXD_H
SNVT_lev_percent	nviOAD_F
SNVT_lev_percent	nviEAD_F
SNVT_lev_percent	nviMXD_F

SCC (8500)FB

AHU Network Variables

SNVT_switch	nvoOnOff
SNVT_hvac_mode	nvoHeatCool
SNVT_switch	nvoLock
SNVT_switch	nvoSetRH
SNVT_switch	nvoAutoVent
SNVT_switch	nvoFireDetect
SNVT_temp_p	nvoSetpoint
SNVT_lev_percent	nvoSpaceRH
SNVT_lev_percent	nvoOAD_C
SNVT_lev_percent	nvoEAD_C
SNVT_lev_percent	nvoMXD_C
SNVT_lev_percent	nvoOAD_H
SNVT_lev_percent	nvoEAD_H
SNVT_lev_percent	nvoMXD_H
SNVT_lev_percent	nvoOAD_F
SNVT_lev_percent	nvoEAD_F
SNVT_lev_percent	nvoMXD_F
SNVT_hvac_status	nvoUnitStatus
SNVT_temp_p	nvoSupplyTemp
SNVT_temp_p	nvoOutdoorTemp
SNVT_temp_p	nvoVentTemp
SNVT_temp_p	nvoMixTemp
SNVT_lev_percent	nvoSupplyRH
SNVT_lev_percent	nvoOutdoorRH
SNVT_lev_percent	nvoVentRH
SNVT_lev_percent	nvoMixRH
SNVT_switch	nvoFilter
SNVT_ppm	nvoSpaceCO2
SNVT_ppm	nvoSpaceVOC
SNVT_lev_percent	nvoOAD_P
SNVT_lev_percent	nvoEAD_P
SNVT_lev_percent	nvoMXD_P
SNVT_switch	nvoSupplyFAN
SNVT_switch	nvoVentFAN
SNVT_switch	nvoHeater
SNVT_switch	nvoHumid
SNVT_count	nvoProductType
SNVT_count	nvoProductAddr

② General Function Block

SCC (8500)FB

SNVT_switch	nviTotalOnOff
SNVT_temp_p	nviTotalTemp
SNVT_Switch	nviTempUnit

AHU Network Variables

SNVT_Switch	nvoTempUnit

Control	
On/Off	Operation Mode
Lock	Humidification
AutoVent	Fire Detect
Temperature	Humidity
Cool OA Damper	Cool EA Damper
Cool MIX Damper	Heat OA Damper
Heat EA Damper	Heat MIX Damper
Fan OA Damper	Fan EA Damper
Fan MIX Damper	Total OnOff
Total Temperature	Temperature Unit

Monitoring	
On/Off	Operation Mode
Lock	Humidification
AutoVent	Fire Detect
Temperature	Humidity
Cool OA Damper	Cool EA Damper
Cool MIX Damper	Heat OA Damper
Heat EA Damper	Heat MIX Damper
Fan OA Damper	Fan EA Damper
Fan MIX Damper	Error
Supply Temperature	Outer Temperature
Vent Temperature	Mixing Temperature
Supply Humidity	Outer Humidity
Vent Humidity	Mixing Humidity
Filter Clean	CO2 Concentration
VOC Concentration	Current OA Damper
Current EA Damper	Current MIX Damper
Supply FAN	Vent FAN
Heater	Humidification
Product Type	Product Address
Temperature Unit	

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

NOTE

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

■ Chiller Objects

① Standard Function Block

SNVT_switch	nviOnOff
SNVT_switch	nviAlarmRelease
SNVT_switch	nviCWFrostP
SNVT_switch	nviChillWFrostP
SNVT_lev_percent	nviDemandLimit
SNVT_temp_p	nviCoolwaterTemp
SNVT_temp_p	nviHotwaterTemp
SNVT_hvac_mode	nviHeatCool

SCC (8500)FB

Chiller Network Variables

SNVT_switch	nvoOnOff
SNVT_switch	nvoAlarmRelease
SNVT_switch	nvoCWFrostP
SNVT_switch	nvoCWFlowSW
SNVT_lev_percent	nvoDemandLimit
SNVT_temp_p	nvoCoolwaterTemp
SNVT_temp_p	nvoHotwaterTemp
SNVT_hvac_mode	nvoHeatCool
SNVT_switch	nvoChillWFlowSW
SNVT_switch	nvoCWFlowSW
SNVT_switch	nvoChillWPumpOut
SNVT_switch	nvoCWPumpOut
SNVT_switch	nvoChillWPumplock
SNVT_switch	nvoCWPumplock
SNVT_switch	nvoComp1_1
SNVT_switch	nvoComp1_2
SNVT_switch	nvoComp1_3
SNVT_switch	nvoComp2_1
SNVT_switch	nvoComp2_2
SNVT_switch	nvoComp2_3
SNVT_switch	nvoFourway1
SNVT_switch	nvoFourway2
SNVT_switch	nvoFourway3
SNVT_switch	nvoHotgas1
SNVT_switch	nvoHotgas2
SNVT_switch	nvoHotgas3
SNVT_switch	nvoOilReturn1
SNVT_switch	nvoOilReturn2
SNVT_switch	nvoOilReturn3
SNVT_count	nvoVersion
SNVT_temp_p	nvoChillWEnterT
SNVT_temp_p	nvoChillWLeaveT
SNVT_temp_p	nvoCWEnterT
SNVT_temp_p	nvoCWLeaveT
SNVT_temp_p	nvoOuterTemp
SNVT_press_f	nvoHighPress1
SNVT_press_f	nvoLowPress1
SNVT_amp_ac	nvoRunCurrent
SNVT_time_sec	nvoTimeToStart
SNVT_hvac_status	nvoErrCode
SNVT_switch	nvoErrProduct
SNVT_switch	nvoErrCycle
SNVT_time_hour	nvoAccuRunTimeH
SNVT_time_hour	nvoAccuRunTimeL
SNVT_freq_hz	nvoInvComp1
SNVT_freq_hz	nvoInvComp2
SNVT_freq_hz	nvoInvComp3
SNVT_temp_p	nvoInvCDTemp1
SNVT_temp_p	nvoInvCDTemp2
SNVT_temp_p	nvoInvCDTemp3

SCC (8500)FB

Chiller Network Variables

SNVT_temp_p	nvoCompSuctTemp1
SNVT_temp_p	nvoCompSuctTemp2
SNVT_temp_p	nvoCompSuctTemp3
SNVT_lev_percent	nvoEEVStatus1
SNVT_lev_percent	nvoEEVStatus2
SNVT_lev_percent	nvoEEVStatus3
SNVT_temp_p	nvoHexTemp1L
SNVT_temp_p	nvoHexTemp2L
SNVT_temp_p	nvoHexTemp3L
SNVT_temp_p	nvoLiquidTemp1
SNVT_temp_p	nvoLiquidTemp2
SNVT_temp_p	nvoLiquidTemp3
SNVT_temp_p	nvoStd1CDTemp1
SNVT_temp_p	nvoStd1CDTemp2
SNVT_temp_p	nvoStd1CDTemp3
SNVT_temp_p	nvoStd2CDTemp1
SNVT_temp_p	nvoStd2CDTemp2
SNVT_temp_p	nvoStd2CDTemp3
SNVT_press_f	nvoHighPress2
SNVT_press_f	nvoLowPress2
SNVT_press_f	nvoHighPress3
SNVT_press_f	nvoLowPress3
SNVT_temp_p	nvoHexTemp1R
SNVT_temp_p	nvoHexTemp2R
SNVT_temp_p	nvoHexTemp3R
SNVT_switch	nvoChillerGroup
SNVT_switch	nvoChillerType
SNVT_count	nvoProductType
SNVT_count	nvoProductAddr

② General Function Block

SCC (8500)FB

SNVT_switch	nviTotalOnOff
SNVT_temp_p	nviTotalCWtemp
SNVT_temp_p	nviTotalHWtemp

Chiller Network Variables

Control	
On/Off	Alarm Release
Cooling Water Frost Protection	Chilled Water Frost Protection
Demand limit Range	Cool Water Target Temperature
Operation Mode	Heat Water Target Temperature
Total OnOff	Total Cool Water Temperature
Total Heat Water Temperature	

Monitoring	
On/Off	Alarm Release
Cooling Water Frost Protection	Chilled Water Frost Protection
Demand limit Range	Cool Water Target Temperature
Operation Mode	Heat Water Target Temperature
Chilled Water flow switch	Cooling Water flow switch
Chilled Water Pump Output	Cooling Water Pump Output
Chilled Water Pump Interlock	Cooling Water Pump Interlock
2: STD Comp #1 (On/Off)	2: STD Comp #2 (On/Off)
4way coil monitor	Hot gas solenoid valve On/Off
Oil return Solenoid valve On/Off	Chiller MainPCB Version Number
Chilled Water Entering Temperature	Chilled Water Leaving Temperature
Cooling Water Entering Temperature	Cooling Water Leaving Temperature
Outer Temperature	Cycle High Pressure
Cycle Low Pressure	Cycle Total Running Current
Left to Start Time	Error Code
Error Product	Error Cycle
Accumulated Running Time display-Hour(High)	Accumulated Running Time display-Hour(Low)
Comp Running Status	Comp. Discharge Temperature
Comp. Suction Temperature	EEV Status Monitoring
HEX Temperature	Liquid Temperature
STD Comp Discharge	STD Comp Discharge
Product Group Information	Product Type Information
Product Type	Product Address

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

NOTE

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

Control/Monitoring Point list

■ Air conditioner control/monitoring Point

① Air conditioner NV List

Point #	Name	Object Type	Network Variable	Object Type	Unit				
1	On/Off (setting)	SNVT_switch	nviOnOff	input	0.0 0(OFF)	100.0 1(ON)			
2	On/Off (status)	SNVT_switch	nvoOnOff	output	0.0 0(OFF)	100.0 1(ON)			
3	Operation Mode (setting)	SNVT_hvac_mode	nviHeatCool	input	HVAC_AUTO(Auto)	HVAC_HEAT(Heating)	HVAC_COOL(Cooling)	HVAC_FAN_ONLY(Fan)	HVAC_DEHUMID(Dehumid)
4	Operation Mode (status)	SNVT_hvac_mode	nvoHeatCool	output	HVAC_AUTO(Auto)	HVAC_HEAT(Heating)	HVAC_COOL(Cooling)	HVAC_FAN_ONLY(Fan)	HVAC_DEHUMID(Dehumid)
5	Lock (setting)	SNVT_switch	nviLock	input	0.0 0(OFF)	100.0 1(ON)			
6	Lock (status)	SNVT_switch	nvoLock	output	0.0 0(OFF)	100.0 1(ON)			
7	Temperature (setting)	SNVT_temp_p	nviSetPoint	input	18~30				
8	Temperature (status)	SNVT_temp_p	nvoSetPoint	output	18~30				
9	Fan Level (setting)	SNVT_switch	nviFanSpeedCmd	input	0.0 0(Auto)	1.0 0(Low)	2.0 0(Med)	3.0 0(High)	
10	Fan Level (status)	SNVT_switch	nvoFanSpeed	output	0.0 0(Auto)	1.0 0(Low)	2.0 0(Med)	3.0 0(High)	
11	Fan Direction Auto (setting)	SNVT_switch	nviSwing_Heater	input	0.0 0(OFF)	100.0 1(ON)			
12	Fan Direction Auto (status)	SNVT_switch	nvoSwing_Heater	output	0.0 0(OFF)	100.0 1(ON)			
13	Mode Lock (setting)	SNVT_switch	nviModlok	input	0.0 0(OFF)	100.0 1(ON)			
14	Mode Lock (status)	SNVT_switch	nvoModlok	output	0.0 0(OFF)	100.0 1(ON)			
15	Fan Level Lock (setting)	SNVT_switch	nviFanlok	input	0.0 0(OFF)	100.0 1(ON)			
16	Fan Level Lock (status)	SNVT_switch	nvoFanlok	output	0.0 0(OFF)	100.0 1(ON)			
17	Temperature Lock (setting)	SNVT_switch	nviTmplok_Humid	input	0.0 0(OFF)	100.0 1(ON)			
18	Temperature Lock (status)	SNVT_switch	nvoTmplok_Humid	output	0.0 0(OFF)	100.0 1(ON)			
19	Temperature Lower Limit (setting)	SNVT_temp_p	nviLow_HW_Tmp	input	16~30				
20	Temperature Lower Limit (status)	SNVT_temp_p	nvoLow_HW_Tmp	output	16~30				
21	Temperature Higher Limit (setting)	SNVT_temp_p	nviUp_Tmp	input	18~30				
22	Temperature Higher Limit (status)	SNVT_temp_p	nvoUp_Sol_Tmp	output	18~30				
23	Product Type	SNVT_count	nvoPType	output	0				
24	Product Address	SNVT_count	nvoPAddr	output	0~255				
25	Current Temperature	SNVT_temp_p	nvoSpaceTemp	output	0~255				
26	Error	SNVT_hvac_status	nvoUnitStatus	output	mode(0/0/0/0/0/alarm				
27	Power	SNVT_count_f	nvoAccuPw	output	0~16777215				

No	Function	Object Type	Network Variable	Type	Value	
1	Peak Convert Cycle(Sec) (setting)	SNVT_count	nviPeakSwTime	input	300~900	
2	Peak Convert Cycle(Sec) (status)	SNVT_count	nvoPeakSwTime	output	300~900	
3	Peak Setting(%) (setting)	SNVT_lev_percent	nviPeakTgtRate	input	0~100	
4	Peak Setting(%) (status)	SNVT_lev_percent	nvoPeakTgtRate	output	0~100	
5	Temperature Unit (setting)	SNVT_switch	nviTempUnit	input	0.0 0( )	100.0 1( )
6	Temperature Unit (status)	SNVT_switch	nvoTempUnit	output	0.0 0( )	100.0 1( )
7	Total Temperature Lock	SNVT_switch	nviAllTemplock	input	0.0 0(OFF)	100.0 1(ON)
8	Total OnOff	SNVT_switch	nviTotalOnOff	input	0.0 0(OFF)	100.0 1(ON)
9	Total Temperature	SNVT_temp_p	nviTotalTemp	input	18~30	
10	Peak Current Operating Ratio(%)	SNVT_lev_percent	nvoPeakCurRate	output	0~100	
11	Total Accumulate Power(Kwh)	SNVT_count_f	nvoTotalAccuPw	output	0~16777215	

■ ERV control/monitoring Point

① ERV NV List

Point #	Name	Object Type	Network Variable	Object Type	Unit			
1	On/Off (setting)	SNVT_switch	nviOnOff	input	0.0 0(OFF)	100.0 1(ON)		
2	On/Off (status)	SNVT_switch	nvoOnOff	output	0.0 0(OFF)	100.0 1(ON)		
3	Operation Mode (setting)	SNVT_hvac_mode	nviHeatCool	input	HVAC_HEAT(Heating)	HVAC_FAN_ONLY(Fan)	HVAC_AUTO(Auto)	
4	Operation Mode (status)	SNVT_hvac_mode	nvoHeatCool	output	HVAC_HEAT(Heating)	HVAC_FAN_ONLY(Fan)	HVAC_AUTO(Auto)	
5	Lock (setting)	SNVT_switch	nviLock	input	0.0 0(OFF)	100.0 1(ON)		
6	Lock (status)	SNVT_switch	nvoLock	output	0.0 0(OFF)	100.0 1(ON)		
7	Fan Level (setting)	SNVT_switch	nviFanSpeedCmd	input	0.0 0(Auto)	1.0 0(Low)	3.0 0(High)	4.0 0(SuperHigh)
8	Fan Level (status)	SNVT_switch	nvoFanSpeed	output	0.0 0(Auto)	1.0 0(Low)	3.0 0(High)	4.0 0(SuperHigh)
9	Heater (setting)	SNVT_switch	nviSwing_Heater	input	0.0 0(OFF)	100.0 1(ON)		
10	Heater (status)	SNVT_switch	nvoSwing_Heater	output	0.0 0(OFF)	100.0 1(ON)		
11	Additional Functionality (setting)	SNVT_count	nviUsrmod	input	0(NONE)	1(QUICK)	2(POWER SAVE)	
12	Additional Functionality (status)	SNVT_count	nvoUsrmod	output	0(NONE)	1(QUICK)	2(POWER SAVE)	
13	Filter (setting)	SNVT_switch	nviFilt_Tmpsel	input	0.0 0(OFF)	100.0 1(ON)		
14	Filter (status)	SNVT_switch	nvoFilt_Tmpsel	output	0.0 0(OFF)	100.0 1(ON)		
15	Product Type	SNVT_count	nvoPType	output	1			
16	Product Address	SNVT_count	nvoPAddr	output	0~255			
17	Error	SNVT_hvac_status	nvoUnitStatus	output	mode/0/0/0/0/0/alarm			

② ERV NV List(General)

No	Function	Object Type	Network Variable	Type	Value	
1	Total OnOff	SNVT_switch	nviTotalOnOff	input	0.0 0(OFF)	100.0 1(ON)

Point #	Name	Object Type	Network Variable	Object Type	Unit			
1	On/Off (setting)	SNVT_switch	nviOnOff	input	0.0 0(OFF)	100.0 1(ON)		
2	On/Off (status)	SNVT_switch	nvoOnOff	output	0.0 0(OFF)	100.0 1(ON)		
3	Operation Mode (setting)	SNVT_hvac_mode	nviHeatCool	input	HVAC_HEAT(Heating)	HVAC_FAN_ONLY(Fan)	HVAC_AUTO(Auto)	
4	Operation Mode (status)	SNVT_hvac_mode	nvoHeatCool	output	HVAC_HEAT(Heating)	HVAC_FAN_ONLY(Fan)	HVAC_AUTO(Auto)	
5	Lock (setting)	SNVT_switch	nviLock	input	0.0 0(OFF)	100.0 1(ON)		
6	Lock (status)	SNVT_switch	nvoLock	output	0.0 0(OFF)	100.0 1(ON)		
7	Temperature (setting)	SNVT_temp_p	nviSetPoint	input	18~30			
8	Temperature (status)	SNVT_temp_p	nvoSetPoint	output	18~30			
9	Fan Level (setting)	SNVT_switch	nviFanSpeedCmd	input	0.0 0(Auto)	1.0 0(Low)	3.0 0(High)	4.0 0(PowerHigh)
10	Fan Level (status)	SNVT_switch	nvoFanSpeed	output	0.0 0(Auto)	1.0 0(Low)	3.0 0(High)	4.0 0(PowerHigh)
11	Heater (setting)	SNVT_switch	nviSwing_Heater	input	0.0 0(OFF)	100.0 1(ON)		
12	Heater (status)	SNVT_switch	nvoSwing_Heater	output	0.0 0(OFF)	100.0 1(ON)		
13	Humidification (setting)	SNVT_switch	nviTmplok_Humid	input	0.0 0(OFF)	100.0 1(ON)		
14	Humidification (status)	SNVT_switch	nvoTmplok_Humid	output	0.0 0(OFF)	100.0 1(ON)		
15	Additional Functionality (setting)	SNVT_count	nviUsrmod	input	0(NONE)	1(QUICK)	2(POWER SAVE)	
16	Additional Functionality (status)	SNVT_count	nvoUsrmod	output	0(NONE)	1(QUICK)	2(POWER SAVE)	
17	Filter (setting)	SNVT_switch	nviFilt_Tmpsel	input	0.0 0(OFF)	100.0 1(ON)		
18	Filter (status)	SNVT_switch	nvoFilt_Tmpsel	output	0.0 0(OFF)	100.0 1(ON)		
19	AC Operation (setting)	SNVT_switch	nviIDUrun_HWEn	input	0.0 0(OFF)	100.0 1(ON)		
20	AC Operation (status)	SNVT_switch	nvoIDUrun_HWEn	output	0.0 0(OFF)	100.0 1(ON)		
21	AC Mode (setting)	SNVT_hvac_mode	nviIDUmod	input	HVAC_COOL(Cooling)	HVAC_HEAT(Heating)	HVAC_AUTO(Auto)	
22	AC Mode (status)	SNVT_hvac_mode	nvoIDUmod	output	HVAC_COOL(Cooling)	HVAC_HEAT(Heating)	HVAC_AUTO(Auto)	
23	Product Type	SNVT_count	nvoPType	output	2			
24	Product Address	SNVT_count	nvoPAddr	output	0~255			
25	Error	SNVT_hvac_status	nvoUnitStatus	output	mode/0/0/0/0/0/alarm			
26	Master/Slave	SNVT_switch	nvoMS_HWmod	output	0.0 0(Slave)	100.0 1(Master)		

No	Function	Object Type	Network Variable	Type	Value	
1	Temperature Unit (setting)	SNVT_switch	nviTempUnit	input	0.0 0( )	100.0 1( )
2	Temperature Unit (status)	SNVT_switch	nvoTempUnit	output	0.0 0( )	100.0 1( )
3	Total OnOff	SNVT_switch	nviTotalOnOff	input	0.0 0(OFF)	100.0 1(ON)
4	Total Temperature	SNVT_temp_p	nviTotalTemp	input	18~30	

Point #	Name	Object Type	Network Variable	Object Type	Unit			
1	On/Off (setting)	SNVT_switch	nviOnOff	input	0.0 0(OFF)	100.0 1(ON)		
2	On/Off (status)	SNVT_switch	nvoOnOff	output	0.0 0(OFF)	100.0 1(ON)		
3	Operation Mode (setting)	SNVT_hvac_mode	nviHeatCool	input	HVAC_COOL(Cooling)	HVAC_HEAT(Heating)	HVAC_AUTO(Auto)	
4	Operation Mode (status)	SNVT_hvac_mode	nvoHeatCool	output	HVAC_COOL(Cooling)	HVAC_HEAT(Heating)	HVAC_AUTO(Auto)	
5	Lock (setting)	SNVT_switch	nviLock	input	0.0 0(OFF)	100.0 1(ON)		
6	Lock (status)	SNVT_switch	nvoLock	output	0.0 0(OFF)	100.0 1(ON)		
7	Temperature (setting)	SNVT_temp_p	nviSetPoint	input	18~30			
8	Temperature (status)	SNVT_temp_p	nvoSetPoint	output	18~30			
9	Hot Water Operation (setting)	SNVT_switch	nvilDUrun_HWEn	input	0.0 0(OFF)	100.0 1(ON)		
10	Hot Water Operation (status)	SNVT_switch	nvoIDUrun_HWEn	output	0.0 0(OFF)	100.0 1(ON)		
11	Hot Water Supply Temperature (setting)	SNVT_temp_p	nviLow_HW_Tmp	input	25~80			
12	Hot Water Supply Temperature (status)	SNVT_temp_p	nvoLow_HW_Tmp	output	25~80			
13	Temperature Select (status)	SNVT_switch	nvoFilt_Tmpsel	output	0.0 0(Air)	100.0 1(Water)		
14	Product Type	SNVT_count	nvoPType	output	3(AWHP)	4(Hydrokit)	7(Heat_Only_AWHP)	8(Cascade)
15	Product Address	SNVT_count	nvoPAddr	output	0~255			
16	Current Temperature	SNVT_temp_p	nvoSpaceTemp	output	0~255			
17	Error	SNVT_hvac_status	nvoUnitStatus	output	mode/0/0/0/0/0/alarm			
18	Hot Water Only Mode	SNVT_switch	nvoMS_HWmod	output	0.0 0(OFF)	100.0 1(ON)		
19	Hot Water Tank Temperature	SNVT_temp_p	nvoTankTmp	output	0~99			
20	Pipe In Temperature	SNVT_temp_p	nvoInTmp	output	0~99			
21	Pipe Out Temperature	SNVT_temp_p	nvoOutTmp	output	0~99			
22	Solar Heat Source Temperature	SNVT_temp_p	nvoUp_Sol_Tmp	output	0~99			

No	Function	Object Type	Network Variable	Type	Value	
1	Total OnOff	SNVT_switch	nviTotalOnOff	input	0.0 0(OFF)	100.0 1(ON)
2	Total Temperature	SNVT_temp_p	nviTotalTemp	input	18~30	

■ AHU control/monitoring Point

① AHU NV List

Point #	Name	Object Type	Network Variable	Object Type	Unit				
1	On/Off (setting)	SNVT_switch	nviOnOff	input	0.0 0(OFF)	100.0 1(ON)			
2	On/Off (status)	SNVT_switch	nvoOnOff	output	0.0 0(OFF)	100.0 1(ON)			
3	Operation Mode (setting)	SNVT_hvac_mode	nviHeatCool	input	HVAC_COOL(Cooling)	HVAC_HEAT(Heating)	HVAC_DEHUMID(Dehumid)	HVAC_FAN_ONLY(Fan)	HVAC_ECONOMY(Power Save)
4	Operation Mode (status)	SNVT_hvac_mode	nvoHeatCool	output	HVAC_COOL(Cooling)	HVAC_HEAT(Heating)	HVAC_DEHUMID(Dehumid)	HVAC_FAN_ONLY(Fan)	HVAC_ECONOMY(Power Save)
5	Lock (setting)	SNVT_switch	nviLock	input	0.0 0(OFF)	100.0 1(ON)			
6	Lock (status)	SNVT_switch	nvoLock	output	0.0 0(OFF)	100.0 1(ON)			
7	Humidification (setting)	SNVT_switch	nviSetRH	input	0.0 0(OFF)	100.0 1(ON)			
8	Humidification (status)	SNVT_switch	nvoSetRH	output	0.0 0(OFF)	100.0 1(ON)			
9	AutoVent (setting)	SNVT_switch	nviEconEnable	input	0.0 0(OFF)	100.0 1(ON)			
10	AutoVent (status)	SNVT_switch	nvoAutoVent	output	0.0 0(OFF)	100.0 1(ON)			
11	Fire Detect (setting)	SNVT_switch	nviFireDetect	input	0.0 0(OFF)	100.0 1(ON)			
12	Fire Detect (status)	SNVT_switch	nviFireDetect	output	0.0 0(OFF)	100.0 1(ON)			
13	Temperature (setting)	SNVT_temp_p	nviSetpoint	input	18~30				
14	Temperature (status)	SNVT_temp_p	nvoSetpoint	output	18~30				
15	Humidity (setting)	SNVT_lev_percent	nviSpaceRH	input	40~60				
16	Humidity (status)	SNVT_lev_percent	nvoSpaceRH	output	40~60				
17	Cool OA Damper (setting)	SNVT_lev_percent	nviOAD_C	input	0~90				
18	Cool OA Damper (status)	SNVT_lev_percent	nvoOAD_C	output	0~90				
19	Cool EA Damper (setting)	SNVT_lev_percent	nviEAD_C	input	0~90				
20	Cool EA Damper (status)	SNVT_lev_percent	nvoEAD_C	output	0~90				
21	Cool MIX Damper (setting)	SNVT_lev_percent	nviMXD_C	input	0~90				
22	Cool MIX Damper (status)	SNVT_lev_percent	nvoMXD_C	output	0~90				
23	Heat OA Damper (setting)	SNVT_lev_percent	nviOAD_H	input	0~90				
24	Heat OA Damper (status)	SNVT_lev_percent	nvoOAD_H	output	0~90				
25	Heat EA Damper (setting)	SNVT_lev_percent	nviEAD_H	input	0~90				
26	Heat EA Damper (status)	SNVT_lev_percent	nvoEAD_H	output	0~90				
27	Heat MIX Damper (setting)	SNVT_lev_percent	nviMXD_H	input	0~90				
28	Heat MIX Damper (status)	SNVT_lev_percent	nvoMXD_H	output	0~90				
29	Fan OA Damper (setting)	SNVT_lev_percent	nviOAD_F	input	0~90				
30	Fan OA Damper (status)	SNVT_lev_percent	nvoOAD_F	output	0~90				
31	Fan EA Damper (setting)	SNVT_lev_percent	nviEAD_F	input	0~90				
32	Fan EA Damper (status)	SNVT_lev_percent	nvoEAD_F	output	0~90				

Point #	Name	Object Type	Network Variable	Object Type	Unit				
33	Fan MIX Damper (setting)	SNVT_lev_percent	nviMXD_F	input	0~90				
34	Fan MIX Damper (status)	SNVT_lev_percent	nvoMXD_F	output	0~90				
35	Error	SNVT_hvac_status	nvoUnitStatus	output	mode/0/0/0/0/0/alarm				
36	Supply Temperature	SNVT_temp_p	nvoSupplyTemp	output	0~99				
37	Outer Temperature	SNVT_temp_p	nvoOutdoorTemp	output	0~99				
38	Vent Temperature	SNVT_temp_p	nvoVentTemp	output	0~99				
39	Mixing Temperature	SNVT_temp_p	nvoMixTemp	output	0~99				
40	Supply Humidity	SNVT_lev_percent	nvoSupplyRH	output	30~90				
41	Outer Humidity	SNVT_lev_percent	nvoOutdoorRH	output	30~90				
42	Vent Humidity	SNVT_lev_percent	nvoVentRH	output	30~90				
43	Mixing Humidity	SNVT_lev_percent	nvoMixRH	output	30~90				
44	Filter Clean	SNVT_switch	nvoFilter	output	0.0 0(OFF)	100.0 1(ON)			
45	CO2 Concentration	SNVT_ppm	nvoSpaceCO2	output	0~2550				
46	VOC Concentration	SNVT_ppm	nvoSpaceVOC	output	0~2550				
47	Current OA Damper	SNVT_lev_percent	nvoOAD_P	output	0~90				
48	Current EA Damper	SNVT_lev_percent	nvoEAD_P	output	0~90				
49	Current MIX Damper	SNVT_lev_percent	nvoMXD_P	output	0~90				
50	Supply FAN	SNVT_switch	nvoSupplyFAN	output	0.0 0(OFF)	100.0 1(ON)			
51	Vent FAN	SNVT_switch	nvoVentFAN	output	0.0 0(OFF)	100.0 1(ON)			
52	Heater	SNVT_switch	nvoHeater	output	0.0 0(OFF)	100.0 1(ON)			
53	Humidification	SNVT_switch	nvoHumid	output	0.0 0(OFF)	100.0 1(ON)			
54	Product Type	SNVT_count	nvoProductType	output	5				
55	Product Address	SNVT_count	nvoProductAddr	output	0~15				

No	Function	Object Type	Network Variable	Type	Value	
1	Total OnOff	SNVT_switch	nviTotalOnOff	input	0.0 0(OFF)	100.0 1(ON)
2	Total Temperature	SNVT_temp_p	nviTotalTemp	input	18~30	
3	Temperature Unit (setting)	SNVT_switch	nviTempUnit	input	0.0 0( )	100.0 1(°F)
4	Temperature Unit (status)	SNVT_switch	nvoTempUnit	output	0.0 0( )	100.0 1(°F)

Point #	Name	Object Type	Network Variable	Object Type	Unit	
1	On/Off	SNVT_switch	nviOnOff	input	0.0 0(OFF)	100.0 1(ON)
2	On/Off	SNVT_switch	nvoOnOff	output	0.0 0(OFF)	100.0 1(ON)
3	Alarm Release	SNVT_switch	nviAlarmRelease	input	0.0 0(OFF)	100.0 1(ON)
4	Cooling Water Frost Protection	SNVT_switch	nviCWFrostP	input	0.0 0(OFF)	100.0 1(ON)
5	Cooling Water Frost Protection	SNVT_switch	nvoCWFrostP	output	0.0 0(OFF)	100.0 1(ON)
6	Chilled Water Frost Protection	SNVT_switch	nviChillWFrostP	input	0.0 0(OFF)	100.0 1(ON)
7	Chilled Water Frost Protection	SNVT_switch	nvoChillWFrostP	output	0.0 0(OFF)	100.0 1(ON)
8	Chilled Water flow switch	SNVT_switch	nvoChillWFlowSW	output	0.0 0(OFF)	100.0 1(ON)
9	Cooling Water flow switch	SNVT_switch	nvoCWFlowSW	output	0.0 0(OFF)	100.0 1(ON)
10	Chilled Water Pump Output	SNVT_switch	nvoChillWPumpOut	output	0.0 0(OFF)	100.0 1(ON)
11	Cooling Water Pump Output	SNVT_switch	nvoCWPumpOut	output	0.0 0(OFF)	100.0 1(ON)
12	Chilled Water Pump Interlock	SNVT_switch	nvoChillWPumplock	output	0.0 0(OFF)	100.0 1(ON)
13	Cooling Water Pump Interlock	SNVT_switch	nvoCWPumplock	output	0.0 0(OFF)	100.0 1(ON)
14	Cycle #1: STD Comp #1 (On/Off)	SNVT_switch	nvoComp1_1	output	0.0 0(OFF)	100.0 1(ON)
15	Cycle #2: STD Comp #1 (On/Off)	SNVT_switch	nvoComp1_2	output	0.0 0(OFF)	100.0 1(ON)
16	Cycle #3: STD Comp #1 (On/Off)	SNVT_switch	nvoComp1_3	output	0.0 0(OFF)	100.0 1(ON)
17	Cycle #1: STD Comp #2 (On/Off)	SNVT_switch	nvoComp2_1	output	0.0 0(OFF)	100.0 1(ON)
18	Cycle #2: STD Comp #2 (On/Off)	SNVT_switch	nvoComp2_2	output	0.0 0(OFF)	100.0 1(ON)
19	Cycle #3: STD Comp #2 (On/Off)	SNVT_switch	nvoComp2_3	output	0.0 0(OFF)	100.0 1(ON)
20	4way coil	SNVT_switch	nvoFourway1	output	0.0 0(OFF)	100.0 1(ON)
21	4way coil	SNVT_switch	nvoFourway2	output	0.0 0(OFF)	100.0 1(ON)
22	4way coil	SNVT_switch	nvoFourway3	output	0.0 0(OFF)	100.0 1(ON)
23	Hotgas solenoid valve On/Off	SNVT_switch	nvoHotgas1	output	0.0 0(OFF)	100.0 1(ON)
24	Hotgas solenoid valve On/Off	SNVT_switch	nvoHotgas2	output	0.0 0(OFF)	100.0 1(ON)
25	Hotgas solenoid valve On/Off	SNVT_switch	nvoHotgas3	output	0.0 0(OFF)	100.0 1(ON)
26	Oil return Solenoid valve On/Off	SNVT_switch	nvoOilReturn1	output	0.0 0(OFF)	100.0 1(ON)
27	Oil return Solenoid valve On/Off	SNVT_switch	nvoOilReturn2	output	0.0 0(OFF)	100.0 1(ON)
28	Oil return Solenoid valve On/Off	SNVT_switch	nvoOilReturn3	output	0.0 0(OFF)	100.0 1(ON)
29	Chiller MainPCB Version Number	SNVT_count	nvoVersion	output		
30	Chilled Water Entering Temperature	SNVT_temp_p	nvoChillWEnterT	output	-32~90	
31	Chilled Water Leaving Temperature	SNVT_temp_p	nvoChillWLeaveT	output	-32~90	
32	Cooling Water Entering Temperature	SNVT_temp_p	nvoCWEnterT	output	-32~90	
33	Cooling Water Leaving Temperature	SNVT_temp_p	nvoCWLeaveT	output	-32~90	

Point #	Name	Object Type	Network Variable	Object Type	Unit	
34	Outer Temperature	SNVT_temp_p	nvoOuterTemp	output	-40~60	
35	Cycle #1 Cycle High Pressure	SNVT_press_f	nvoHighPress1	output	0~90	
36	Cycle #1 Cycle Low Pressure	SNVT_press_f	nvoLowPress1	output	0~90	
37	Cycle Total Running Current	SNVT_amp_ac	nvoRunCurrent	output	0~90	
38	Left to Start Time	SNVT_time_sec	nvoTimeToStart	output	0~1	
39	Error Code	SNVT_hvac_status	nvoErrCode	output	1~15: Common, 21~999: Outdoor Unit	
40	Error Product	SNVT_switch	nvoErrProduct	output	Product Information 1~3	
41	Error Cycle	SNVT_switch	nvoErrCycle	output	Cycle Information 1~4, Cycle has no error: 0	
42	Accumulated Running Time -Hour(High)	SNVT_time_hour	nvoAccuRunTimeH	output	0~9999	
43	Accumulated Running Time -Hour(Low)	SNVT_time_hour	nvoAccuRunTimeL	output	0~9999	
44	Cycle #1: Comp Running Status	SNVT_freq_hz	nvoInvComp1	output	1~3	
45	Cycle #2: Comp Running Status	SNVT_freq_hz	nvoInvComp2	output	1~3	
46	Cycle #3: Comp Running Status	SNVT_freq_hz	nvoInvComp3	output	1~3	
47	cycle#1 Comp. Discharge Temperature	SNVT_temp_p	nvoInvCDTemp1	output	0~100	
48	cycle#2 Comp. Discharge Temperature	SNVT_temp_p	nvoInvCDTemp2	output	0~100	
49	cycle#3 Comp. Discharge Temperature	SNVT_temp_p	nvoInvCDTemp3	output	0~100	
50	cycle#1 Comp. Suction Temperature	SNVT_temp_p	nvoCompSuctTemp1	output	0~100	
51	cycle#2 Comp. Suction Temperature	SNVT_temp_p	nvoCompSuctTemp2	output	0~100	
52	cycle#3 Comp. Suction Temperature	SNVT_temp_p	nvoCompSuctTemp3	output	0~100	
53	cycle#1 EEV Pulse	SNVT_lev_percent	nvoEEVStatus1	output	0~100	
54	cycle#2 EEV Pulse	SNVT_lev_percent	nvoEEVStatus2	output	0~100	
55	cycle#3 EEV Pulse	SNVT_lev_percent	nvoEEVStatus3	output	0~100	
56	cycle#1 HEX Temperature (Left)	SNVT_temp_p	nvoHexTemp1L	output	-42~95	
57	cycle#2 HEX Temperature (Left)	SNVT_temp_p	nvoHexTemp2L	output	-42~95	
58	cycle#3 HEX Temperature (Left)	SNVT_temp_p	nvoHexTemp3L	output	-42~95	
59	cycle#1 Liquid Temperature	SNVT_temp_p	nvoLiquidTemp1	output	-42~95	
60	cycle#2 Liquid Temperature	SNVT_temp_p	nvoLiquidTemp2	output	-42~95	
61	cycle#3 Liquid Temperature	SNVT_temp_p	nvoLiquidTemp3	output	-42~95	
62	cycle#1 STD#1 Comp Discharge	SNVT_temp_p	nvoStd1CDTemp1	output	0~100	
63	cycle#2 STD#1 Comp Discharge	SNVT_temp_p	nvoStd1CDTemp2	output	0~100	
64	cycle#3 STD#1 Comp Discharge	SNVT_temp_p	nvoStd1CDTemp3	output	0~100	
65	cycle#1 STD#2 Comp Discharge	SNVT_temp_p	nvoStd2CDTemp1	output	0~100	
66	cycle#2 STD#2 Comp Discharge	SNVT_temp_p	nvoStd2CDTemp2	output	0~100	

Point #	Name	Object Type	Network Variable	Object Type	Unit	
67	cycle#3 STD#2 Comp Discharge	SNVT_temp_p	nvoStd2CDTemp3	output	0~100	
68	Cycle #2 Cycle High Pressure	SNVT_press_f	nvoHighPress2	output	0~90	
69	Cycle #2 Cycle Low Pressure	SNVT_press_f	nvoLowPress2	output	0~90	
70	Cycle #3 Cycle High Pressure	SNVT_press_f	nvoHighPress3	output	0~90	
71	Cycle #3 Cycle Low Pressure	SNVT_press_f	nvoLowPress3	output	0~90	
72	cycle#1 HEX Temperature (Right)	SNVT_temp_p	nvoHexTemp1R	output	-42~95	
73	cycle#2 HEX Temperature (Right)	SNVT_temp_p	nvoHexTemp2R	output	-42~95	
74	cycle#3 HEX Temperature (Right)	SNVT_temp_p	nvoHexTemp3R	output	-42~95	
75	Product Group Information	SNVT_count	nvoChillerGroup	output	1	
76	Product Type Information	SNVT_count	nvoChillerType	output	Table 1	
77	Demand limit Range	SNVT_lev_percent	nviDemandLimit	input	0~100	
78	Demand limit Range	SNVT_lev_percent	nvoDemandLimit	output	0~100	
79	Cool Water Target Temperature	SNVT_temp_p	nviCoolwaterTemp	input	5~15	
80	Cool Water Target Temperature	SNVT_temp_p	nvoCoolwaterTemp	output	5~15	
81	Operation Mode	SNVT_hvac_mode	nviHeatCool	input	HVAC_COOL(Cooling)	HVAC_HEAT(Heating)
82	Operation Mode	SNVT_hvac_mode	nvoHeatCool	output	HVAC_COOL(Cooling)	HVAC_HEAT(Heating)
83	Heat Water Target Temperature	SNVT_temp_p	nviHotwaterTemp	input	40~55	
84	Heat Water Target Temperature	SNVT_temp_p	nvoHotwaterTemp	output	40~55	
85	Product Type	SNVT_count	nvoProductType	output	6	
86	Product Address	SNVT_count	nvoProductAddr	output	1-15	

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② Chiller NV List(Gerneral)

No	Function	Object Type	Network Variable	Type	Value	
1	Total OnOff	SNVT_switch	nviTotalONOff	input	0.0 0(OFF)	100.0 1(ON)
2	Total Cool Water Temperature	SNVT_temp_p	nviTotalCWtemp	input	5~15	
3	Total Heat Water Temperature	SNVT_temp_p	nviTotalHWtemp	input	40~55	

Network Variables

■ Air conditioner, ERV, ERV DX, AWHP input/output

1) On/Off (Air conditioner, ERV, ERV DX, AWHP)

Input	Function	On/Off input
	Using NV	network variable : SNVT_switch, nviOnOff
	Operation	On/Off control
Output	Function	On/Off display
	Using NV	network variable : SNVT_switch, nvoOnOff
	Operation	On/Off monitor

❊ Valid Range

NV	Field	Operation
SNVT_switch	value	not used (set in 0% usually)
	state	0 = OFF
		1 = ON

2) Operation Mode (Air conditioner, ERV, ERV DX, AWHP)

Input	Function	Operation Mode input
	Using NV	network variable : SNVT_hvac_mode, nviHeatCool
	Operation	Operation Mode control
Output	Function	Operation Mode display
	Using NV	network variable : SNVT_hvac_mode, nvoHeatCool
	Operation	Operation Mode monitor

❊ Valid Range

NV	Field	Operation
SNVT_hvac _mode	value	not used (set in 0% usually)
	state	HVAC_AUTO = Auto
		HVAC_HEAT = Heat
		HVAC_COOL = Cool
		HVAC_FAN_ONLY = FAN (Air conditioner, AWHP) = Normal (ERV, ERV DX)
		HVAC_DEHUMID = Dehumid

3) Lock (Air conditioner, ERV, ERV DX, AWHP)

Input	Function	Lock input
	Using NV	network variable : SNVT_switch, nviLock
	Operation	Lock control
Output	Function	Lock display
	Using NV	network variable : SNVT_switch, nvoLock
	Operation	Lock monitor

❋ Valid Range

NV	Field	Operation
SNVT_switch	value	not used (set in 0% usually)
	state	0 = OFF
		1 = ON

4) Temperature (Air conditioner, ERV DX, AWHP)

Input	Function	Temperature input
	Using NV	network variable : SNVT_temp_p, nviSetPoint
	Operation	Temperature control
Output	Function	Temperature display
	Using NV	network variable : SNVT_temp_p, nvoSetPoint
	Operation	Temperature monitor

❋ Valid Range

NV	Operation
SNVT_temp_p	Air conditioner, ERV DX, AWHP(Air) : 18 ~ 30 °C
	AWHP(Pipe Out) : 6 ~ 80°C

5) Fan Level (Air conditioner, ERV, ERV DX)

Input	Function	Fan Level input
	Using NV	network variable : SNVT_switch, nviFanSpeedCmd
	Operation	Fan Level control
Output	Function	Fan Level display
	Using NV	network variable : SNVT_switch, nvoFanSpeed
	Operation	Fan Level monitor

❋ Valid Range

NV	Field	Operation
SNVT_switch	value	0 = Auto
		1 = Low
		2 = Medium
		3 = High
		4 = SuperHigh
	state	not used (set in 0% usually)

6) Fan Direction Auto(Air Conditioner), Heater(ERV, ERV DX)

Input	Function	Fan Direction Auto(Air conditioner), Heater(ERV, ERV DX) input
	Using NV	network variable : SNVT_switch, nviSwing_Heater
	Operation	Fan Direction Auto(Air conditioner), Heater(ERV, ERV DX) control
Output	Function	Fan Direction Auto(Air conditioner), Heater(ERV, ERV DX) display
	Using NV	network variable : SNVT_switch, nvoSwing_Heater
	Operation	Fan Direction Auto(Air conditioner), Heater(ERV, ERV DX) monitor

❊ Valid Range

NV	Field	Operation
SNVT_switch	value	not used (set in 0% usually)
	state	0 = OFF
		1 = ON

7) Mode Lock(Air conditioner)

Input	Function	Mode Lock(Air conditioner) input
	Using NV	network variable : SNVT_switch, nviModlok
	Operation	Mode Lock(Air conditioner) control
Output	Function	Mode Lock(Air conditioner) display
	Using NV	network variable : SNVT_switch, nvoModlok
	Operation	Mode Lock(Air conditioner) monitor

❊ Valid Range

NV	Field	Operation
SNVT_switch	value	not used (set in 0% usually)
	state	0 = OFF
		1 = ON

8) Fan Level Lock(Air conditioner)

Input	Function	Fan Level Lock(Air conditioner) input
	Using NV	network variable : SNVT_switch, nviFanlok
	Operation	Fan Level Lock(Air conditioner) control
Output	Function	Fan Level Lock(Air conditioner) display
	Using NV	network variable : SNVT_switch, nvoFanlok
	Operation	Fan Level Lock(Air conditioner) monitor

❊ Valid Range

NV	Field	Operation
SNVT_switch	value	not used (set in 0% usually)
	state	0 = OFF
		1 = ON

9) Temperature Lock(Air conditioner), Humidification(ERV DX)

Input	Function	Temperature Lock(Air conditioner), Humidification(ERV DX) input
	Using NV	network variable : SNVT_switch, nviTmplok_Humid
	Operation	Temperature Lock(Air conditioner), Humidification(ERV DX) control
Output	Function	Temperature Lock(Air conditioner), Humidification(ERV DX) display
	Using NV	network variable : SNVT_switch, nvoTmplok_Humid
	Operation	Temperature Lock(Air conditioner), Humidification(ERV DX) monitor

❊ Valid Range

NV	Field	Operation
SNVT_switch	value	not used (set in 0% usually)
	state	0 = OFF
		1 = ON

10) Temperature Lower Limit(Air conditioner), Hot Water Supply Temperature(AWHP)

Input	Function	Temperature Lower Limit(Air conditioner), Hot Water Supply Temperature(AWHP) input
	Using NV	network variable : SNVT_temp_p, nviLow_HW_Tmp
	Operation	Temperature Lower Limit(Air conditioner), Hot Water Supply Temperature(AWHP) control
Output	Function	Temperature Lower Limit(Air conditioner), Hot Water Supply Temperature(AWHP) display
	Using NV	network variable : SNVT_temp_p, nvoLow_HW_Tmp
	Operation	Temperature Lower Limit(Air conditioner), Hot Water Supply Temperature(AWHP) monitor

❊ Valid Range

NV	Operation
SNVT_temp_p	Temperature Lower Limit : 16 ~ 30 °C
	Hot Water Supply Temperature : 30 ~ 80 °C

11) Temperature Higher Limit(Air conditioner), Solar Heat Source Temperature(AWHP)

Input	Function	Temperature Higher Limit(Air conditioner) input
	Using NV	network variable : SNVT_temp_p, nviUp_Tmp
	Operation	Temperature Higher Limit(Air conditioner) control
Output	Function	Temperature Higher Limit(Air conditioner), Solar Heat Source Temperature(AWHP) display
	Using NV	network variable : SNVT_temp_p, nvoUp_Sol_Tmp
	Operation	Temperature Higher Limit(Air conditioner), Solar Heat Source Temperature(AWHP) monitor

❊ Valid Range

NV	Operation
SNVT_switch	Temperature Higher Limit : 18 ~ 30 °C
	Heat Source Temperature : 0 ~ 255 °C

12) Filter(ERV, ERV DX), Temperature Select(AWHP)

Input	Function	Filter(ERV, ERV DX) input
	Using NV	network variable : SNVT_switch, nviFilt_Tmpsel
	Operation	Filter(ERV, ERV DX) control
Output	Function	Filter(ERV, ERV DX), Temperature Select(AWHP) display
	Using NV	network variable : SNVT_switch, nvoFilt_Tmpsel
	Operation	Filter(ERV, ERV DX), Temperature Select(AWHP) monitor

❋ Valid Range

NV	Field	Operation
SNVT_switch	value	not used (set in 0% usually)
	state	0 = OFF (ERV, ERV DX) Air(AWHP)
		1 = ON (ERV, ERV DX) Pipe Out(AWHP)

13) AC Operation(ERV DX), Hot Water Operation(AWHP)

Input	Function	AC Operation(ERV DX), Hot Water Operation(AWHP) input
	Using NV	network variable : SNVT_switch, nviIDUrun_HWEn
	Operation	AC Operation(ERV DX), Hot Water Operation(AWHP) control
Output	Function	AC Operation(ERV DX), Hot Water Operation(AWHP) display
	Using NV	network variable : SNVT_switch, nvoIDUrun_HWEn
	Operation	AC Operation(ERV DX), Hot Water Operation(AWHP) monitor

❋ Valid Range

NV	Field	Operation
SNVT_hvac _mode	value	not used (set in 0% usually)
	state	0 = OFF
		1 = ON

14) AC Mode(ERV DX)

Input	Function	AC Mode(ERV DX) input
	Using NV	network variable : SNVT_hvac_mode, nviIDUmod
	Operation	AC Mode(ERV DX) control
Output	Function	AC Mode(ERV DX) display
	Using NV	network variable : SNVT_hvac_mode, nvoIDUmod
	Operation	AC Mode(ERV DX) monitor

❋ Valid Range

NV	Field	Operation
SNVT_count	value	not used (set in 0% usually)
	state	HVAC_AUTO = Auto
		HVAC_HEAT = Heat
		HVAC_COOL = Cool

15) Additional Functionality(ERV, ERV DX)

Input	Function	Additional Functionality(ERV, ERV DX) input
	Using NV	network variable : SNVT_count, nviUsrmod
	Operation	Additional Functionality(ERV, ERV DX) control
Output	Function	Additional Functionality(ERV, ERV DX) display
	Using NV	network variable : SNVT_count, nvoUsrmod
	Operation	Additional Functionality(ERV, ERV DX) monitor

❇ Valid Range

NV	Field	Operation
SNVT_count	value	not used (set in 0% usually)
	state	0 = NONE
		1 = QUICK
		2 = POWER SAVE

■ Air conditioner, ERV, ERV DX, AWHP output

1) Product Type (Air conditioner, ERV, ERV DX, AWHP)

Output	Function	Product Type display
	Using NV	network variable : SNVT_count, nvoPType
	Operation	Product Type monitor

❋ Valid Range

NV	Operation
SNVT_count	0(AC), 1(Vent), 2(DXHRV), 3(SINGLE_AWHP), 4(HYDROKIT)
	7(Heat_Only_AWHP), 8(Cascade)

2) Product Address (Air conditioner, ERV, ERV DX, AWHP)

Output	Function	Product Address display
	Using NV	network variable : SNVT_count, nvoPAddr
	Operation	Product Address monitor

❋ Valid Range

NV	Operation
SNVT_count	0 ~ 255

3) Current Temperature (Air conditioner, AWHP)

Output	Function	Current Temperature display
	Using NV	network variable : SNVT_temp_p, nvoSpaceTemp
	Operation	Current Temperature monitor

❋ Valid Range

NV	Operation
SNVT_temp_p	0 ~ 255

4) Error (Air conditioner, ERV, ERV DX, AWHP)

Output	Function	Error display
	Using NV	network variable : SNVT_hvac_status, nvoUnitStatus
	Operation	Error monitor

❋ Valid Range

NV	Field	Operation
SNVT_hvac _status	Mode	Current Operating Mode
	In_alarm	Error Code

5) Power (Air conditioner)

Output	Function	Power display
	Using NV	network variable : SNVT_count_f, nvoAccuPw
	Operation	Power monitor

❋ Valid Range

NV	Operation
SNVT_count_f	0 ~ 16777215

6) Master/Slave(ERV DX), Hot Water Only Mode(AWHP)

Output	Function	Master/Slave(ERV DX), Hot Water Only Mode(AWHP) display
	Using NV	network variable : SNVT_switch, nvoMS_HWmod
	Operation	Master/Slave(ERV DX), Hot Water Only Mode(AWHP) monitor

❉ Valid Range

NV	Field	Operation
SNVT_switch	value	not used (set in 0% usually)
	state	0 = Slave(ERV DX), OFF(AWHP)
		1 = Master(ERV DX), ON(AWHP)

7) Hot Water Tank Temperature(AWHP)

Output	Function	Hot Water Tank Temperature(AWHP) display
	Using NV	network variable : SNVT_temp_p, nvoTankTmp
	Operation	Hot Water Tank Temperature(AWHP) monitor

❉ Valid Range

NV	Operation
SNVT_temp_p	0 ~ 255

8) Pipe In Temperature(AWHP)

Output	Function	Pipe In Temperature(AWHP) display
	Using NV	network variable : SNVT_temp_p, nvoInTmp
	Operation	Pipe In Temperature(AWHP) monitor

❉ Valid Range

NV	Operation
SNVT_temp_p	0 ~ 255

9) Pipe Out Temperature(AWHP)

Output	Function	Pipe Out Temperature(AWHP) display
	Using NV	network variable : SNVT_temp_p, nvoOutTmp
	Operation	Pipe Out Temperature(AWHP) monitor

❉ Valid Range

NV	Operation
SNVT_temp_p	0 ~ 255

■ Air conditioner, ERV, ERV DX, AWHP General input/output

1) Peak Convert Cycle (Air conditioner)

Input	Function	Peak Convert Cycle input
	Using NV	network variable : SNVT_count, nviPeakSwTime
	Operation	Peak Convert Cycle control
Output	Function	Peak Convert Cycle display
	Using NV	network variable : SNVT_count, nvoPeakSwTime
	Operation	Peak Convert Cycle monitor

❊ Valid Range

NV	Operation
SNVT_count	300~900 sec

2) Peak Setting (Air conditioner)

Input	Function	Peak Setting input
	Using NV	network variable : SNVT_lev_percent, nviPeakTgtRate
	Operation	Peak Setting contorl
Output	Function	Peak Setting display
	Using NV	network variable : SNVT_lev_percent, nvoPeakTgtRate
	Operation	Peak Setting monitor

❊ Valid Range

NV	Operation
SNVT_lev_percent	0 ~ 100 %

3) Temperature Unit (Air conditioner, ERV DX)

Input	Function	Temperature Unit input
	Using NV	network variable : SNVT_switch, nviTempUnit
	Operation	Temperature Unit control
Output	Function	Temperature Unit display
	Using NV	network variable : SNVT_switch, nvoTempUnit
	Operation	Temperature Unit monitor

❊ Valid Range

NV	Field	Operation
SNVT_switch	value	not used (set in 0% usually)
	state	0 = Celcius
		1 = Fahrenheit

4) Total Temperature Lock (Air conditioner)

Input	Function	Total Temperature Lock input
	Using NV	network variable : SNVT_switch, nviAllTemplock
	Operation	Total Temperature Lock control

❋ Valid Range

NV	Field	Operation
SNVT_switch	value	not used (set in 0% usually)
	state	0 = OFF
		1 = ON

5) Total OnOff (Air conditioner, ERV, ERV DX, AWHP)

Input	Function	Total OnOff input
	Using NV	network variable : SNVT_switch, nviTotalOnOff
	Operation	Total OnOff control

❋ Valid Range

NV	Field	Operation
SNVT_switch	value	not used (set in 0% usually)
	state	0 = Total Off
		1 = Total On

6) Total Temperature (Air conditioner, ERV DX, AWHP)

Input	Function	Total Temperature input
	Using NV	network variable : SNVT_temp_p, nviTotalTemp
	Operation	Total Temperature control

❋ Valid Range

NV	Operation
SNVT_temp_p	18 ~ 30 ºC

7) Peak Current Operating Percent (Air conditioner)

Input	Function	Peak Current Operating Percent display
	Using NV	network variable : SNVT_lev_percent, nvoPeakCurRate
	Operation	Peak Current Operating Percent monitor

❋ Valid Range

NV	Operation
SNVT_lev_percent	0 ~ 100 %

8) Total Accumulate Power (Air conditioner)

Input	Function	Total Accumulate Power display
	Using NV	network variable : SNVT_count_f, nvoTotalAccuPW
	Operation	Total Accumulate Power monitor

❋ Valid Range

NV	Operation
SNVT_count_f	0~16777215

■ AHU input/output

1) On/Off (AHU)

Input	Function	On/Off input
	Using NV	network variable : SNVT_switch, nviOnOff
	Operation	On/Off control
Output	Function	On/Off display
	Using NV	network variable : SNVT_switch, nvoOnOff
	Operation	On/Off monitor

❊ Valid Range

NV	Field	Operation
SNVT_switch	value	not used (set in 0% usually)
	state	0 = OFF
		1 = ON

2) Operation Mode (AHU)

Input	Function	Operation Mode input
	Using NV	network variable : SNVT_hvac_mode, nviHeatCool
	Operation	Operation Mode control
Output	Function	Operation Mode display
	Using NV	network variable : SNVT_hvac_mode, nvoHeatCool
	Operation	Operation Mode monitor

❊ Valid Range

NV	Field	Operation
SNVT_hvac_mode	value	not used (set in 0% usually)
	state	HVAC_COOL = Cool
		HVAC_HEAT = Heat
		HVAC_DEHUMID = Dehumid
		HVAC_FAN_ONLY = Fan
		HVAC_ECONOMY = Power Save

3) Lock (AHU)

Input	Function	Lock input
	Using NV	network variable : SNVT_switch, nviLock
	Operation	Lock control
Output	Function	Lock display
	Using NV	network variable : SNVT_switch, nvoLock
	Operation	Lock monitor

❊ Valid Range

NV	Field	Operation
SNVT_switch	value	not used (set in 0% usually)
	state	0 = OFF
		1 = ON

4) Humidification (AHU)

Input	Function	Humidification input
	Using NV	network variable : SNVT_switch, nviSetRH
	Operation	Humidification control
Output	Function	Humidification display
	Using NV	network variable : SNVT_switch, nvoSetRH
	Operation	Humidification monitor

❋ Valid Range

NV	Field	Operation
SNVT_switch	value	not used (set in 0% usually)
	state	0 = OFF
		1 = ON

5) AutoVent (AHU)

Input	Function	AutoVent input
	Using NV	network variable : SNVT_switch, nviEconEnable
	Operation	AutoVent control
Output	Function	AutoVent display
	Using NV	network variable : SNVT_switch, nvoAutoVent
	Operation	AutoVent monitor

❋ Valid Range

NV	Field	Operation
SNVT_switch	value	not used (set in 0% usually)
	state	0 = OFF
		1 = ON

6) Fire Detect (AHU)

Input	Function	Fire Detect input
	Using NV	network variable : SNVT_switch, nviFireDetect
	Operation	Fire Detect control
Output	Function	Fire Detect display
	Using NV	network variable : SNVT_switch, nvoFireDetect
	Operation	Fire Detect monitor

❋ Valid Range

NV	Field	Operation
SNVT_switch	value	not used (set in 0% usually)
	state	0 = OFF
		1 = ON

7) Temperature (AHU)

Input	Function	Temperature input
	Using NV	network variable : SNVT_temp_p, nviSetpoint
	Operation	Temperature control
Output	Function	Temperature display
	Using NV	network variable : SNVT_temp_p, nvoSetpoint
	Operation	Temperature monitor

❉ Valid Range

NV	Operation
SNVT_lev_percent	18 ~ 30 °C

8) Humidity (AHU)

Input	Function	Humidity input
	Using NV	network variable : SNVT_lev_percent, nviSpaceRH
	Operation	Humidity control
Output	Function	Humidity display
	Using NV	network variable : SNVT_lev_percent, nvoSpaceRH
	Operation	Humidity monitor

❉ Valid Range

NV	Operation
SNVT_lev_percent	40 ~ 60 %

9) Cool OA Damper (AHU)

Input	Function	Cool OA Damper input
	Using NV	network variable : SNVT_lev_percent, nviOAD_C
	Operation	Cool OA Damper control
Output	Function	Cool OA Damper display
	Using NV	network variable : SNVT_lev_percent, nvoOAD_C
	Operation	Cool OA Damper monitor

❉ Valid Range

NV	Operation
SNVT_lev_percent	0 ~ 90

10) Cool EA Damper (AHU)

Input	Function	Cool EA Damper input
	Using NV	network variable : SNVT_lev_percent, nviEAD_C
	Operation	Cool EA Damper control
Output	Function	Cool EA Damper display
	Using NV	network variable : SNVT_lev_percent, nvoEAD_C
	Operation	Cool EA Damper monitor

❉ Valid Range

NV	Operation
SNVT_lev_percent	0 ~ 90

11) Cool MIX Damper (AHU)

Input	Function	Cool MIX Damper input
	Using NV	network variable : SNVT_lev_percent, nviMXD_C
	Operation	Cool MIX Damper control
Output	Function	Cool MIX Damper display
	Using NV	network variable : SNVT_lev_percent, nvoMXD_C
	Operation	Cool MIX Damper monitor

❋ Valid Range

NV	Operation
SNVT_lev_percent	0 ~ 90

12) Heat OA Damper (AHU)

Input	Function	Heat OA Damper input
	Using NV	network variable : SNVT_lev_percent, nviOAD_H
	Operation	Heat OA Damper control
Output	Function	Heat OA Damper display
	Using NV	network variable : SNVT_lev_percent, nvoOAD_H
	Operation	Heat OA Damper monitor

❋ Valid Range

NV	Operation
SNVT_lev_percent	0 ~ 90

13) Heat EA Damper (AHU)

Input	Function	Heat EA Damper input
	Using NV	network variable : SNVT_lev_percent, nviEAD_H
	Operation	Heat EA Damper control
Output	Function	Heat EA Damper display
	Using NV	network variable : SNVT_lev_percent, nvoEAD_H
	Operation	Heat EA Damper monitor

❋ Valid Range

NV	Operation
SNVT_lev_percent	0 ~ 90

14) Heat MIX Damper (AHU)

Input	Function	Heat MIX Damper input
	Using NV	network variable : SNVT_lev_percent, nviMXD_H
	Operation	Heat MIX Damper control
Output	Function	Heat MIX Damper display
	Using NV	network variable : SNVT_lev_percent, nvoMXD_H
	Operation	Heat MIX Damper monitor

❋ Valid Range

NV	Operation
SNVT_lev_percent	0 ~ 90

15) Fan OA Damper

Input	Function	Fan OA Damper input
	Using NV	network variable : SNVT_lev_percent, nviOAD_F
	Operation	Fan OA Damper control
Output	Function	Fan OA Damper display
	Using NV	network variable : SNVT_lev_percent, nvoOAD_F
	Operation	Fan OA Damper monitor

✻ Valid Range

NV	Operation
SNVT_lev_percent	0 ~ 90

16) Fan EA Damper

Input	Function	Fan EA Damper input
	Using NV	network variable : SNVT_lev_percent, nviEAD_F
	Operation	Fan EA Damper control
Output	Function	Fan EA Damper display
	Using NV	network variable : SNVT_lev_percent, nvoEAD_F
	Operation	Fan EA Damper monitor

✻ Valid Range

NV	Operation
SNVT_lev_percent	0 ~ 90

17) Fan MIX Damper

Input	Function	Fan MIX Damper input
	Using NV	network variable : SNVT_lev_percent, nviMXD_F
	Operation	Fan MIX Damper control
Output	Function	Fan MIX Damper display
	Using NV	network variable : SNVT_lev_percent, nvoMXD_F
	Operation	Fan MIX Damper monitor

✻ Valid Range

NV	Operation
SNVT_lev_percent	0 ~ 90

■ AHU output

1) Error (AHU)

Output	Function	Error display
	Using NV	network variable : SNVT_hvac_status, nvoUnitStatus
	Operation	Error monitor

❋ Valid Range

NV	Field	Operation
SNVT_hvac_status	Mode	Current Operating Mode
	In_alarm	Error Code

2) Supply Temperature (AHU)

Output	Function	Supply Temperature display
	Using NV	network variable : SNVT_temp_p, nvoSupplyTemp
	Operation	Supply Temperature monitor

❋ Valid Range

NV	Operation
SNVT_temp_p	-99 ~ 99 °C

3) Outer Temperature (AHU)

Output	Function	Outer Temperature display
	Using NV	network variable : SNVT_temp_p, nvoOutdoorTemp
	Operation	Outer Temperature monitor

❋ Valid Range

NV	Operation
SNVT_temp_p	-99 ~ 99 °C

4) Vent Temperature (AHU)

Output	Function	Vent Temperature display
	Using NV	network variable : SNVT_temp_p, nvoVentTemp
	Operation	Vent Temperature monitor

❋ Valid Range

NV	Operation
SNVT_temp_p	-99 ~ 99 °C

5) Mixing Temperature (AHU)

Output	Function	Mixing Temperature display
	Using NV	network variable : SNVT_temp_p, nvoMixTemp
	Operation	Mixing Temperature monitor

❋ Valid Range

NV	Operation
SNVT_temp_p	-99 ~ 99 °C

6) Supply Humidity (AHU)

Output	Function	Supply Humidity display
	Using NV	network variable : SNVT_lev_percent, nvoSupplyRH
	Operation	Supply Humidity monitor

✻ Valid Range

NV	Operation
SNVT_lev_percent	30 ~ 90 %

7) Outer Humidity (AHU)

Output	Function	Outer Humidity display
	Using NV	network variable : SNVT_lev_percent, nvoOutdoorRH
	Operation	Outer Humidity monitor

✻ Valid Range

NV	Operation
SNVT_lev_percent	30 ~ 90 %

8) Vent Humidity (AHU)

Output	Function	Vent Humidity display
	Using NV	network variable : SNVT_lev_percent, nvoVentRH
	Operation	Vent Humidity monitor

✻ Valid Range

NV	Operation
SNVT_lev_percent	30 ~ 90 %

9) Mixing Humidity (AHU)

Output	Function	Mixing Humidity display
	Using NV	network variable : SNVT_lev_percent, nvoMixRH
	Operation	Mixing Humidity monitor

✻ Valid Range

NV	Operation
SNVT_lev_percent	30 ~ 90 %

10) Filter Clean (AHU)

Output	Function	Filter Clean display
	Using NV	network variable : SNVT_switch, nvoFilter
	Operation	Filter Clean monitor

✻ Valid Range

NV	Field	Operation
SNVT_switch	value	not used (set in 0% usually)
	state	0 = OFF
		1 = ON

11) CO2 Concentration (AHU)

Output	Function	CO2 Concentration display
	Using NV	network variable : SNVT_ppm, nvoSpaceCO2
	Operation	CO2 Concentration monitor

❊ Valid Range

NV	Operation
SNVT_ppm	0~2550 ppm

12) VOC Concentration (AHU)

Output	Function	VOC Concentration display
	Using NV	network variable : SNVT_ppm, nvoSpaceVOC
	Operation	VOC Concentration monitor

❊ Valid Range

NV	Operation
SNVT_ppm	0~2550 ppm

13) Current OA Damper (AHU)

Output	Function	Current OA Damper display
	Using NV	network variable : SNVT_lev_percent, nvoOAD_P
	Operation	Current OA Damper monitor

❊ Valid Range

NV	Operation
SNVT_lev_percent	0 ~ 90

14) Current EA Damper (AHU)

Output	Function	Current EA Damper display
	Using NV	network variable : SNVT_lev_percent, nvoEAD_P
	Operation	Current EA Damper monitor

❊ Valid Range

NV	Operation
SNVT_lev_percent	0 ~ 90

15) Current MIX Damper (AHU)

Output	Function	Current MIX Damper display
	Using NV	network variable : SNVT_lev_percent, nvoMXD_P
	Operation	Current MIX Damper monitor

❊ Valid Range

NV	Operation
SNVT_lev_percent	0 ~ 90

16) Supply FAN (AHU)

Output	Function	Supply FAN display
	Using NV	network variable : SNVT_switch, nvoSupplyFAN
	Operation	Supply FAN monitor

❋ Valid Range

NV	Field	Operation
SNVT_switch	value	not used (set in 0% usually)
	state	0 = OFF
		1 = ON

17) Vent FAN (AHU)

Output	Function	Vent FAN display
	Using NV	network variable : SNVT_switch, nvoVentFAN
	Operation	Vent FAN monitor

❋ Valid Range

NV	Field	Operation
SNVT_switch	value	not used (set in 0% usually)
	state	0 = OFF
		1 = ON

18) Heater (AHU)

Output	Function	Heater display
	Using NV	network variable : SNVT_switch, nvoHeater
	Operation	Heater monitor

❋ Valid Range

NV	Field	Operation
SNVT_switch	value	not used (set in 0% usually)
	state	0 = OFF
		1 = ON

19) Humidification (AHU)

Output	Function	Humidification display
	Using NV	network variable : SNVT_switch, nvoHumid
	Operation	Humidification monitor

❋ Valid Range

NV	Field	Operation
SNVT_switch	value	not used (set in 0% usually)
	state	0 = OFF
		1 = ON

20) Product Type (AHU)

Output	Function	Product Type display
	Using NV	network variable : SNVT_count, nvoProductType
	Operation	Product Type monitor

❉ Valid Range

NV	Operation
SNVT_count	5

21) Product Address (AHU)

Output	Function	Product Address display
	Using NV	network variable : SNVT_count, nvoProductAddr
	Operation	Product Address monitor

❉ Valid Range

NV	Operation
SNVT_count	0 ~ 255

■ AHU General input/output

1) Total OnOff (AHU)

Input	Function	Total OnOff input
	Using NV	network variable : SNVT_switch, nviTotalOnOff
	Operation	Total OnOff control

❊ Valid Range

NV	Field	Operation
SNVT_switch	value	not used (set in 0% usually)
	state	0 = Total Off
		1 = Total On

2) Total Temperature (AHU)

Input	Function	Total Temperature input
	Using NV	network variable : SNVT_switch, nviTotalTemp
	Operation	Total Temperature control

❊ Valid Range

NV	Operation
SNVT_temp_p	18 ~ 30 °C

3) Temperature Unit (AHU)

Input	Function	Temperature Unit input
	Using NV	network variable : SNVT_switch, nviTempUnit
	Operation	Temperature Unit control
Output	Function	Temperature Unit output
	Using NV	network variable : SNVT_switch, nvoTempUnit
	Operation	Temperature Unit monitor

❊ Valid Range

NV	Field	Operation
SNVT_switch	value	not used (set in 0% usually)
	state	0 = Celcius
		1 = Fahrenheit

■ Chiller input/output

1) On/Off (Chiller)

Input	Function	On/Off input
	Using NV	network variable : SNVT_switch, nviOnOff
	Operation	On/Off control
Output	Function	On/Off display
	Using NV	network variable : SNVT_switch, nvoOnOff
	Operation	On/Off monitor

❊ Valid Range

NV	Field	Operation
SNVT_switch	value	not used (set in 0% usually)
	state	0 = OFF
		1 = ON

2) Alarm Release (Chiller)

Input	Function	Alarm Release input
	Using NV	network variable : SNVT_switch, nviAlarmRelease
	Operation	Alarm Release control
Output	Function	Alarm Release display
	Using NV	network variable : SNVT_switch, nvoAlarmRelease
	Operation	Alarm Release monitor

❊ Valid Range

NV	Field	Operation
SNVT_switch	value	not used (set in 0% usually)
	state	0 = OFF
		1 = ON

3) Cooling Water Frost Protection (Chiller)

Input	Function	Cooling Water Frost Protection input
	Using NV	network variable : SNVT_switch, nviCWFrostP
	Operation	Cooling Water Frost Protection control
Output	Function	Cooling Water Frost Protection display
	Using NV	network variable : SNVT_switch, nvoCWFrostP
	Operation	Cooling Water Frost Protection monitor

❊ Valid Range

NV	Field	Operation
SNVT_switch	value	not used (set in 0% usually)
	state	0 = OFF
		1 = ON

4) Chilled Water Frost Protection (Chiller)

Input	Function	Chilled Water Frost Protection input
	Using NV	network variable : SNVT_switch, nviChillWFrostP
	Operation	Chilled Water Frost Protection control
Output	Function	Chilled Water Frost Protection display
	Using NV	network variable : SNVT_switch, nvoChillWFrostP
	Operation	Chilled Water Frost Protection monitor

❊ Valid Range

NV	Field	Operation
SNVT_switch	value	not used (set in 0% usually)
	state	0 = OFF
		1 = ON

5) Demand limit Range (Chiller)

Input	Function	Demand limit Range input
	Using NV	network variable : SNVT_lev_percent, nviDemandLimit
	Operation	Demand limit Range control
Output	Function	Demand limit Range display
	Using NV	network variable : SNVT_lev_percent, nvoDemandLimit
	Operation	Demand limit Range monitor

❊ Valid Range

NV	Operation
SNVT_lev_percent	0 ~ 100 %

6) Cool Water Target Temperature (Chiller)

Input	Function	Cool Water Target Temperature input
	Using NV	network variable : SNVT_temp_p, nviCoolwaterTemp
	Operation	Cool Water Target Temperature control
Output	Function	Cool Water Target Temperature display
	Using NV	network variable : SNVT_temp_p, nvoCoolwaterTemp
	Operation	Cool Water Target Temperature monitor

❊ Valid Range

NV	Operation
SNVT_lev_percent	5 ~ 15 °C

7) Operation Mode (Chiller)

Input	Function	Operation Mode input
	Using NV	network variable : SNVT_hvac_mode, nviHeatCool
	Operation	Operation Mode control
Output	Function	Operation Mode display
	Using NV	network variable : SNVT_hvac_mode, nvoHeatCool
	Operation	Operation Mode monitor

❊ Valid Range

NV	Field	Operation
SNVT_hvac_mode	value	not used (set in 0% usually)
	state	HVAC_COOL = Cool
		HVAC_HEAT = Heat

8) Heat Water Target Temperature (Chiller)

Input	Function	Heat Water Target Temperature input
	Using NV	network variable : SNVT_temp_p, nviHotwaterTemp
	Operation	Heat Water Target Temperature control
Output	Function	Heat Water Target Temperature display
	Using NV	network variable : SNVT_temp_p, nvoHotwaterTemp
	Operation	Heat Water Target Temperature monitor

❊ Valid Range

NV	Operation
SNVT_temp_p	40 ~ 55 °C

■ Chiller output

1) Chilled Water flow switch (Chiller)

Output	Function	Chilled Water flow switch display
	Using NV	network variable : SNVT_switch, nvoChillWFlowSW
	Operation	Chilled Water flow switch monitor

※ Valid Range

NV	Field	Operation
SNVT_switch	value	not used (set in 0% usually)
	state	0 = OFF
		1 = ON

2) Cooling Water flow switch (Chiller)

Output	Function	Cooling Water flow switch display
	Using NV	network variable : SNVT_switch, nvoCWFlowSW
	Operation	Cooling Water flow switch monitor

※ Valid Range

NV	Field	Operation
SNVT_switch	value	not used (set in 0% usually)
	state	0 = OFF
		1 = ON

3) Chilled Water Pump Output (Chiller)

Output	Function	Chilled Water Pump Output display
	Using NV	network variable : SNVT_switch, nvoChillWPumpOut
	Operation	Chilled Water Pump Output monitor

※ Valid Range

NV	Field	Operation
SNVT_switch	value	not used (set in 0% usually)
	state	0 = OFF
		1 = ON

4) Cooling Water Pump Output (Chiller)

Output	Function	Cooling Water Pump Output display
	Using NV	network variable : SNVT_switch, nvoCWPumpOut
	Operation	Cooling Water Pump Output monitor

※ Valid Range

NV	Field	Operation
SNVT_switch	value	not used (set in 0% usually)
	state	0 = OFF
		1 = ON

5) Chilled Water Pump Interlock (Chiller)

Output	Function	Chilled Water Pump Interlock display
	Using NV	network variable : SNVT_switch, nvoChillWPumplock
	Operation	Chilled Water Pump Interlock monitor

❋ Valid Range

NV	Field	Operation
SNVT_switch	value	not used (set in 0% usually)
	state	0 = OFF
		1 = ON

6) Cooling Water Pump Interlock (Chiller)

Output	Function	Cooling Water Pump Interlock display
	Using NV	network variable : SNVT_switch, nvoCWPumplock
	Operation	Cooling Water Pump Interlock monitor

❋ Valid Range

NV	Field	Operation
SNVT_switch	value	not used (set in 0% usually)
	state	0 = OFF
		1 = ON

7) STD Comp #1 (On/Off)

Output	Function	STD Comp #1 (On/Off) display
	Using NV	network variable : SNVT_switch, nvoComp1_1, nvoComp1_2, nvoComp1_3
	Operation	STD Comp #1 (On/Off) monitor

❋ Valid Range

NV	Field	Operation
SNVT_switch	value	not used (set in 0% usually)
	state	0 = OFF
		1 = ON

8) STD Comp #2 (On/Off)

Output	Function	STD Comp #2 (On/Off) display
	Using NV	network variable : SNVT_switch, nvoComp2_1, nvoComp2_2, nvoComp2_3
	Operation	STD Comp #2 (On/Off) monitor

❋ Valid Range

NV	Field	Operation
SNVT_switch	value	not used (set in 0% usually)
	state	0 = OFF
		1 = ON

9) 4way coil (Chiller)

Output	Function	4way coil display
	Using NV	network variable : SNVT_switch, nvoFourway1, nvoFourway2, nvoFourway3
	Operation	4way coil monitor

❋ Valid Range

NV	Field	Operation
SNVT_switch	value	not used (set in 0% usually)
	state	0 = OFF
		1 = ON

10) Hotgas solenoid valve On/Off (Chiller)

Output	Function	Hotgas solenoid valve On/Off display
	Using NV	network variable : SNVT_switch, nvoHotgas1, nvoHotgas2, nvoHotgas3
	Operation	Hotgas solenoid valve On/Off monitor

❋ Valid Range

NV	Field	Operation
SNVT_switch	value	not used (set in 0% usually)
	state	0 = OFF
		1 = ON

11) Oil return Solenoid valve On/Off (Chiller)

Output	Function	Oil return Solenoid valve On/Off display
	Using NV	network variable : SNVT_switch, nvoOilReturn1, nvoOilReturn2, nvoOilReturn3
	Operation	Oil return Solenoid valve On/Off monitor

❋ Valid Range

NV	Field	Operation
SNVT_switch	value	not used (set in 0% usually)
	state	0 = OFF
		1 = ON

12) Chiller MainPCB Version Number (Chiller)

Output	Function	Chiller MainPCB Version Number display
	Using NV	network variable : SNVT_count, nvoVersion
	Operation	Chiller MainPCB Version Number monitor

❋ Valid Range

NV	Operation
SNVT_count	(Year*15+Month)*50+Day, Year (2013 → 13)

13) Chilled Water Entering Temperature (Chiller)

Output	Function	Chilled Water Entering Temperature display
	Using NV	network variable : SNVT_temp_p, nvoChillWEnterT
	Operation	Chilled Water Entering Temperature monitor

❊ Valid Range

NV	Operation
SNVT_temp_p	-32 ~ 90 °C

14) Chilled Water Leaving Temperature (Chiller)

Output	Function	Chilled Water Leaving Temperature display
	Using NV	network variable : SNVT_temp_p, nvoChillWLeaveT
	Operation	Chilled Water Leaving Temperature monitor

❊ Valid Range

NV	Operation
SNVT_temp_p	-32 ~ 90 °C

15) Cooling Water Entering Temperature (Chiller)

Output	Function	Cooling Water Entering Temperature display
	Using NV	network variable : SNVT_temp_p, nvoCWEnterT
	Operation	Cooling Water Entering Temperature monitor

❊ Valid Range

NV	Operation
SNVT_temp_p	-32 ~ 90 °C

16) Cooling Water Leaving Temperature (Chiller)

Output	Function	Cooling Water Leaving Temperature display
	Using NV	network variable : SNVT_temp_p, nvoCWLeaveT
	Operation	Cooling Water Leaving Temperature monitor

❊ Valid Range

NV	Operation
SNVT_temp_p	-32 ~ 90 °C

17) Outer Temperature (Chiller)

Output	Function	Outer Temperature display
	Using NV	network variable : SNVT_temp_p, nvoOuterTemp
	Operation	Outer Temperature monitor

❊ Valid Range

NV	Operation
SNVT_temp_p	-40 ~ 60 °C

18) Cycle High Pressure (Chiller)

Output	Function	Cycle High Pressure display
	Using NV	network variable : SNVT_press_f, nvoHighPress1, nvoHighPress2, nvoHighPress3
	Operation	Cycle High Pressure monitor

❋ Valid Range

NV	Operation
SNVT_press_f	0 ~ 90 [Mpa]

19) Cycle Low Pressure (Chiller)

Output	Function	Cycle Low Pressure display
	Using NV	network variable : SNVT_press_f, nvoLowPress1, nvoLowPress2, nvoLowPress3
	Operation	Cycle Low Pressure monitor

❋ Valid Range

NV	Operation
SNVT_press_f	0 ~ 90 [Mpa]

20) Cycle Total Running Current (Chiller)

Output	Function	Cycle Total Running Current display
	Using NV	network variable : SNVT_amp_ac, nvoRunCurrent
	Operation	Cycle Total Running Current monitor

❋ Valid Range

NV	Operation
SNVT_amp_ac	0 ~ 90 [A]

21) Left to Start Time (Chiller)

Output	Function	Left to Start Time display
	Using NV	network variable : SNVT_time_sec, nvoTimeToStart
	Operation	Left to Start Time monitor

❋ Valid Range

NV	Operation
SNVT_time_sec	0 ~ 1

22) Error Code (Chiller)

Output	Function	Error Code display
	Using NV	network variable : SNVT_hvac_status, nvoErrCode
	Operation	Error Code monitor

❋ Valid Range

NV	Operation
SNVT_hvac_status	1~15: Common, 21~999: Outdoor Unit

23) Error Product (Chiller)

Output	Function	Error Product display
	Using NV	network variable : SNVT_switch, nvoErrProduct
	Operation	Error Product monitor

❉ Valid Range

NV	Operation
SNVT_switch	Product Information 1~3

24) Error Cycle (Chiller)

Output	Function	Error Cycle display
	Using NV	network variable : SNVT_switch, nvoErrCycle
	Operation	Error Cycle monitor

❉ Valid Range

NV	Operation
SNVT_switch	Cycle Information 1~4, Cycle has no error: 0

25) Accumulated Running Time display-Hour(High) (Chiller)

Output	Function	Accumulated Running Time display-Hour(High) display
	Using NV	network variable : SNVT_time_hour, nvoAccuRunTimeH
	Operation	Accumulated Running Time display-Hour(High) monitor

❉ Valid Range

NV	Operation
SNVT_time_hour	0 ~ 9999

26) Accumulated Running Time display-Hour(Low) (Chiller)

Output	Function	Accumulated Running Time display-Hour(Low) display
	Using NV	network variable : SNVT_time_hour, nvoAccuRunTimeL
	Operation	Accumulated Running Time display-Hour(Low) monitor

❉ Valid Range

NV	Operation
SNVT_time_hour	0 ~ 9999

27) Comp Running Status (Chiller)

Output	Function	Comp Running Status display
	Using NV	network variable : SNVT_freq_hz, nvoInvComp1, nvoInvComp2, nvoInvComp3
	Operation	Comp Running Status monitor

❉ Valid Range

NV	Operation
SNVT_freq_hz	1 ~ 3

28) Comp. Discharge Temperature (Chiller)

Output	Function	Comp. Discharge Temperature display
	Using NV	network variable : SNVT_temp_p, nvoInvCDTemp1, nvoInvCDTemp2, nvoInvCDTemp3
	Operation	Comp. Discharge Temperature monitor

※ Valid Range

NV	Operation
SNVT_temp_p	0 ~ 100 °C

29) Comp. Suction Temperature (Chiller)

Output	Function	Comp. Suction Temperature display
	Using NV	network variable : SNVT_temp_p, nvoCompSuctTemp1, nvoCompSuctTemp2, nvoCompSuctTemp3
	Operation	Comp. Suction Temperature monitor

※ Valid Range

NV	Operation
SNVT_temp_p	0 ~ 100 °C

30) EEV Status (Chiller)

Output	Function	EEV Pulse display
	Using NV	network variable : SNVT_lev_percent, nvoEEVStatus1, nvoEEVStatus2, nvoEEVStatus3
	Operation	EEV Status monitor

※ Valid Range

NV	Operation
SNVT_lev_percent	0 ~ 100

31) HEX Temperature (Chiller)

Output	Function	HEX Temperature display
	Using NV	network variable : SNVT_temp_p, nvoHexTemp1L, nvoHexTemp2L, nvoHexTemp3L, nvoHexTemp1R, nvoHexTemp2R, nvoHexTemp3R
	Operation	HEX Temperature monitor

※ Valid Range

NV	Operation
SNVT_temp_p	-42 ~ 95 °C

32) Liquid Temperature (Chiller)

Output	Function	Liquid Temperature display
	Using NV	network variable : SNVT_temp_p, nvoLiquidTemp1, nvoLiquidTemp2, nvoLiquidTemp3
	Operation	Liquid Temperature monitor

❋ Valid Range

NV	Operation
SNVT_temp_p	-42 ~ 95 °C

33) STD 1 Comp Discharge (Chiller)

Output	Function	STD Comp Discharge display
	Using NV	network variable : SNVT_temp_p, nvoStd1CDTemp1, nvoStd1CDTemp2, nvoStd1CDTemp3
	Operation	STD Comp Discharge monitor

❋ Valid Range

NV	Operation
SNVT_temp_p	0 ~ 100 °C

34) STD 2 Comp Discharge (Chiller)

Output	Function	STD Comp Discharge display
	Using NV	network variable : SNVT_temp_p, nvoStd2CDTemp1], nvoStd2CDTemp2, nvoStd2CDTemp3
	Operation	STD Comp Discharge monitor

❋ Valid Range

NV	Operation
SNVT_temp_p	0 ~ 100 °C

35) Product Group Information (Chiller)

Output	Function	Product Group Information display
	Using NV	network variable : SNVT_count, nvoChillerGroup
	Operation	Product Group Information monitor

❋ Valid Range

NV	Operation
SNVT_count	2

36) Product Type Information (Chiller)

Output	Function	Product Type Information display
	Using NV	network variable : SNVT_count, nvoChillerType
	Operation	Product Type Information monitor

❋ Valid Range

NV	Operation
SNVT_count	0 ~ 255

37) Product Type (Chiller)

Output	Function	Product Type display
	Using NV	network variable : SNVT_count, nvoProductType
	Operation	Product Type monitor

❊ Valid Range

NV	Operation
SNVT_count	6

38) Product Address (Chiller)

Output	Function	Product Address display
	Using NV	network variable : SNVT_count, nvoProductAddr
	Operation	Product Address monitor

❊ Valid Range

NV	Operation
SNVT_count	0 ~ 255

■ Chiller general input/output

1) Total OnOff (Chiller)

Output	Function	Total OnOff input
	Using NV	network variable : SNVT_temp_p, nviTotalOnOff
	Operation	Total OnOff control

❋ Valid Range

NV	Field	Operation
SNVT_switch	value	not used (set in 0% usually)
	state	0 = Total Off
		1 = Total On

2) Total Cool Water Temperature (Chiller)

Output	Function	Total Cool Water Temperature input
	Using NV	network variable : SNVT_temp_p, nviTotalCWTemp
	Operation	Total Cool Water Temperature control

❋ Valid Range

NV	Operation
SNVT_temp_p	5 ~ 15 °C

3) Total Heat Water Temperature (Chiller)

Output	Function	Total Heat Water Temperature input
	Using NV	network variable : SNVT_temp_p, nviTotalHWTemp
	Operation	Total Heat Water Temperature control

❋ Valid Range

NV	Operation
SNVT_temp_p	40 ~ 55 °C

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 pro-vide 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.


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