Operations Instructions

Part Number 40VM900051

For Commercial Use Only

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SAFETY CONSIDERATIONS

Read and follow manufacturer instructions carefully. Follow all local electrical codes during installation. All wiring must conform to local and national electrical codes. Improper wiring or installation may damage thermostat.

Understand the signal words — DANGER, WARNING, and CAUTION. DANGER identifies the most serious hazards which will result in severe personal injury or death. WARNING signifies hazards that could result in personal injury or death. CAUTION is used to identify unsafe practices, which would result in minor personal injury or product and property damage.

Recognize safety information. This is the safety-alert symbol (⚠). When this symbol is displayed on the unit and in instructions or manuals, be alert to the potential for personal injury. Installing, starting up, and servicing equipment can be hazardous due to system pressure, electrical components, and equipment location.

GENERAL

The VRF (variable refrigerant flow) EMM is a central controller that integrates the central air conditioning system and the EMM network system of buildings by converting the Carrier X-NET protocol into the standard EMM protocol. The EMM is embedded with an EMM functional module and supports the EMM protocol. EMM is available for use with the VRF outdoor units/system listed below.

Table 1 —System Capacities

Unit	Sizes
38VMR Heat Recovery System	072,096,120,144, 168, 192, 216, 240, 264, 288, 312, 336
38VMH Heat Pump System	036, 048, 060, 072, 096, 120, 144, 168, 192, 216, 240, 264, 288, 312, 336, 360, 384, 408, 432

Table 2 —Specifications

Power Supply (field provided)	24VAC	
Power Consumption	15 W	
Dimensions	H	2-1/2
	W	9-7/8
	D	12-1/2
Net Weight	5 lbs	
Number of X-NET Bus Lines / Lon Bus Lines	1/1	
Max. Refrigerant System / IDUS Per Line	8/64	

INSTALLATION CONSIDERATIONS

EMM should be mounted:

- at a location that allows easy access
- on a section of wall without water or drainage pipes

EMM should **NOT** be mounted:

- near heat sources such as direct sunlight, heaters, dimmer switches, and other electrical devices

INSTALLATION

Use the installation methods below. Do not install the unit in any other orientation.

NOTE: Screws are not included. The contractor must purchase screws for installation.

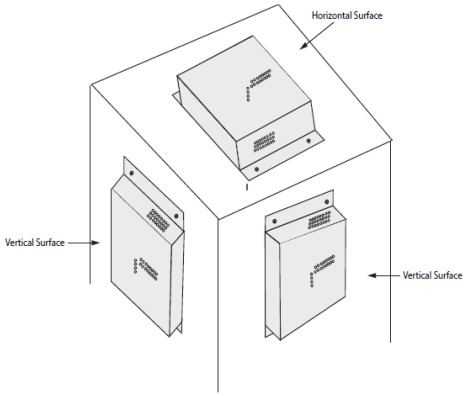


Fig. 1 —Installation Layout

BASIC CONFIGURATION

Installation Instructions —

1. Open the installation directory, which contains one folder and five files:

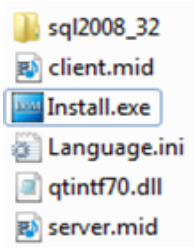


Fig. 2 —Installation Directory

2. Login with the Administrator account under WIN7. The above installation files cannot be saved on the system disk.

NOTE: Many computers have only one system disk, which is located overseas.

3. Set software startup permissions using one of the following two methods:

METHOD 1: — Right click on "Install.exe" and select "Run as administrator."

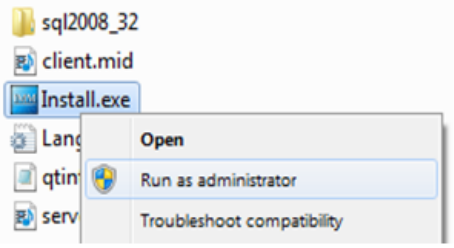


Fig. 3 —Method 1

METHOD 2: — This is the simplified installation procedure for the Database, EMM Server, and Client.

1. Right click on "Install.exe," select "Properties," and check "Run this program as an administrator" on the Compatibility tab.

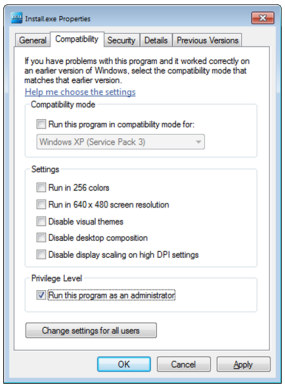


Fig. 4 —Method 2

2. Select the software to be installed on the main interface of the software.

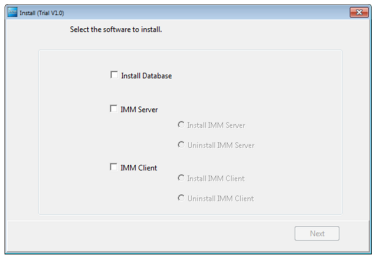


Fig. 5 —Software Selection

3. All are selected in the following example. Click "Next."

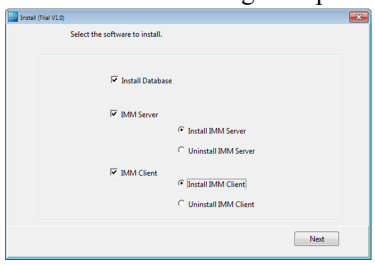


Fig. 6 —Selected Software

4. Click to select the corresponding installation path, which is drive C by default.

NOTE: The default installation path is "C:\Program Files(x86)\....." for the 64 bit system.

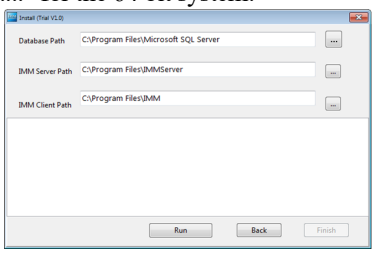


Fig. 7 —Installation Paths

The installation path cannot be modified in the database. Install the EMM Client and EMM Server in a non-system disk. In the following example, they are installed on drive F.

1. Click "Run."

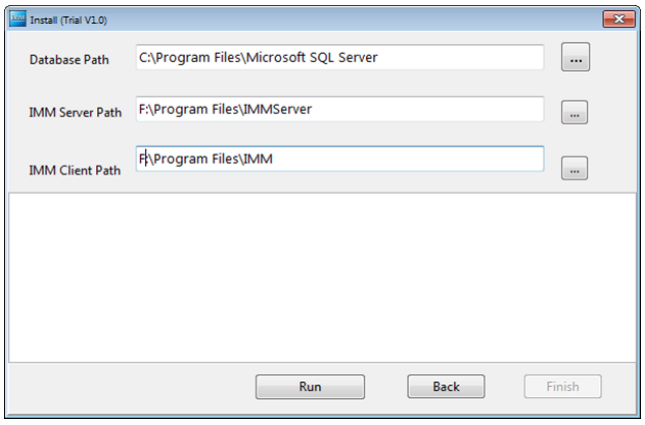


Fig. 8 —Install Software

2. An installation window is displayed when the database is installing. Wait until all the software is installed completely. When Database, EMM Client, and EMM Server are selected at the same time, the database is the last one to be installed.

The figures below shows the database installation window displayed during installation.

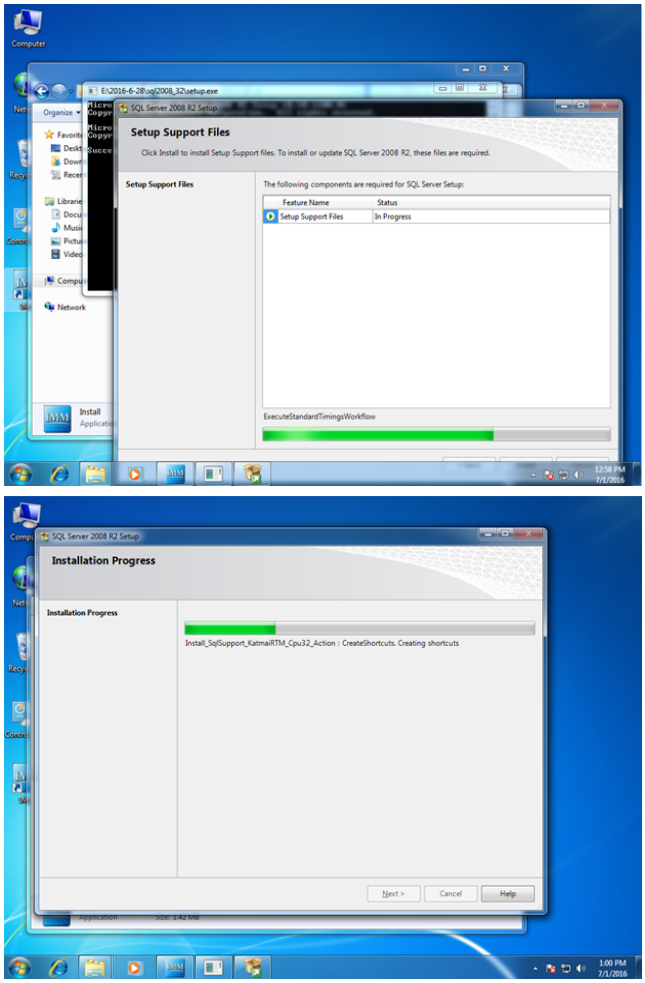


Fig. 9 —Database Installation Window

3. Do not click any options. Wait for the installation to complete and the following interface will be displayed.

The EMM Server is installed first.

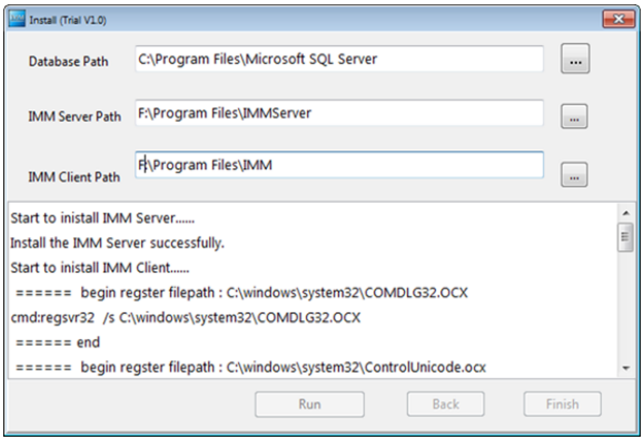


Fig. 10 —EMM Server Installation

The EMM Client is installed next.

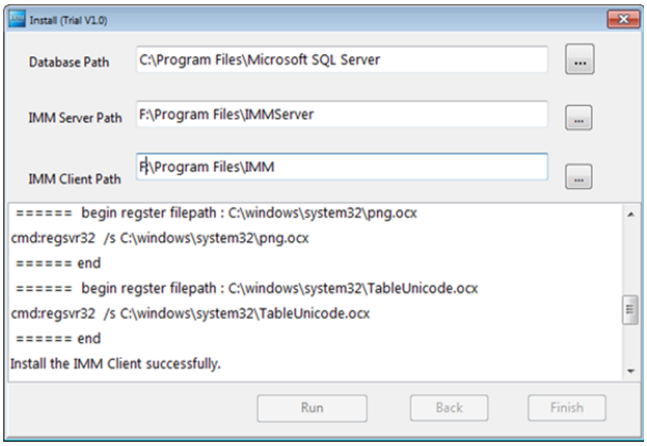


Fig. 11 —EMM Client Installation

The Database is installed last.

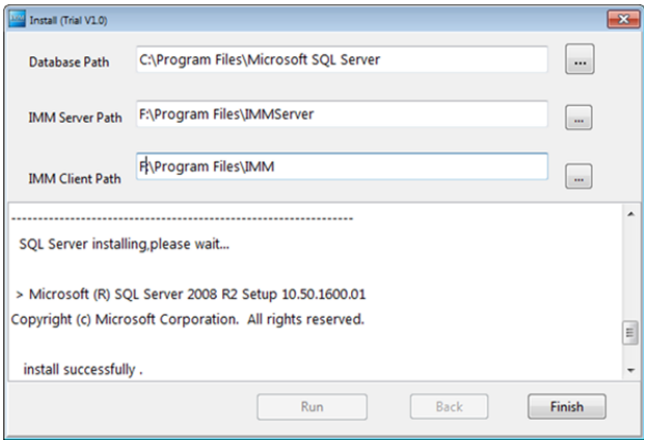


Fig. 12 —Database Installation

4. Click "Finish" to close the installation window.

Installing the dog driver — This procedure is the same as the previous procedure.

1. Run "MicroDogInstdrv.exe"

Fig. 13 —MicroDogInstdrv.exe

2. Click Install Driver.

Fig. 14 —Install Driver

3. After the above EMM software options are installed, enter the configuration:
   a. Open "IMMServerSet.exe" in the EMM Server installation directory.
   b. Fill in the IP address of the gateway.
   c. Create a database.

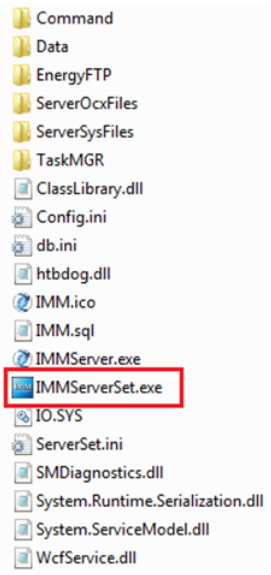


Fig. 15 —Create Database

   d. Fill in the Control IP (i.e., the IP address of the gateway)

All of the remaining fields will be automatically populated. Do not change any parameters.

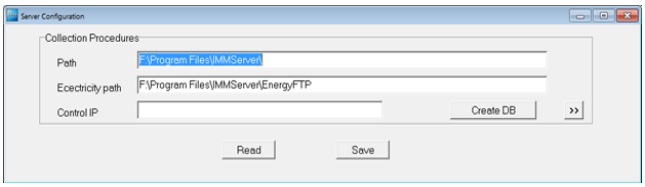


Fig. 16 —Control IP Address

   e. Fill in the gateway IP address (e.g. 192.168.100.40; 192.168.100.42)

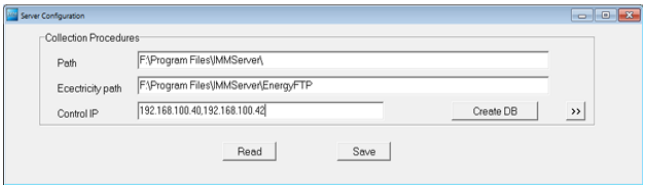


Fig. 17 —Gateway IP Address

   f. Click "Create DB" to create a database automatically.

The following prompt will be displayed after the database is successfully created.

Fig. 18 —Successfully Created

   g. Click "OK" to close this box and save the gateway IP address that has been populated.

The computer must be restarted after the above steps are complete. After the computer is restarted, the final configuration window is displayed. If you omit this configuration window, the EMM Server and EMM Energy will fail to start.

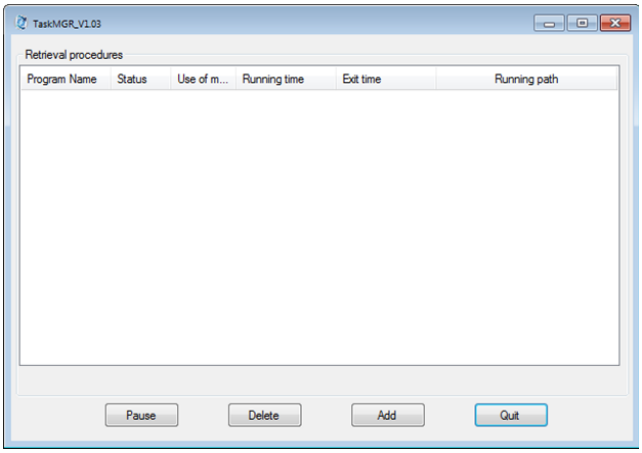


Fig. 19 —Final Configuration Window

h. Click "Add"

i. Click the blank part in the red area shown in the following figure

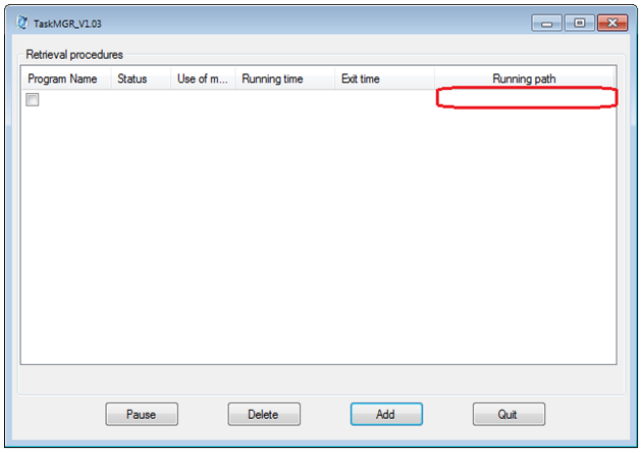


Fig. 20 —Running Path

j. Click the red area in the following figure, and specify EMM Server (in the EMM Server installation path: …\IMMServer\IMMServer.exe) j

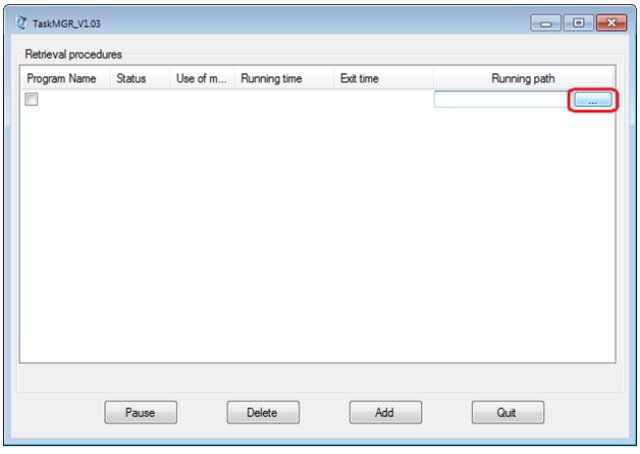


Fig. 21 —EMM Server Path

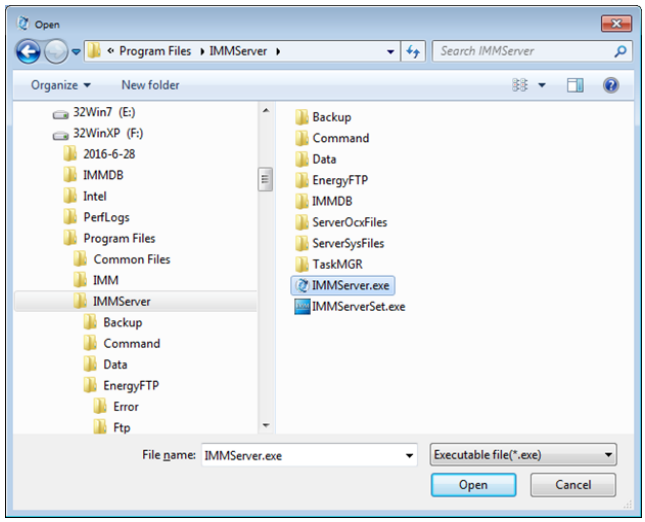


Fig. 22 —IMMServer.exe

k. Click "Add"

l. Click the blank part in the red area below to add IMMEnergy in the EMM Server installation path: …IMMServer\EnergyFTP\IMMServer.exe

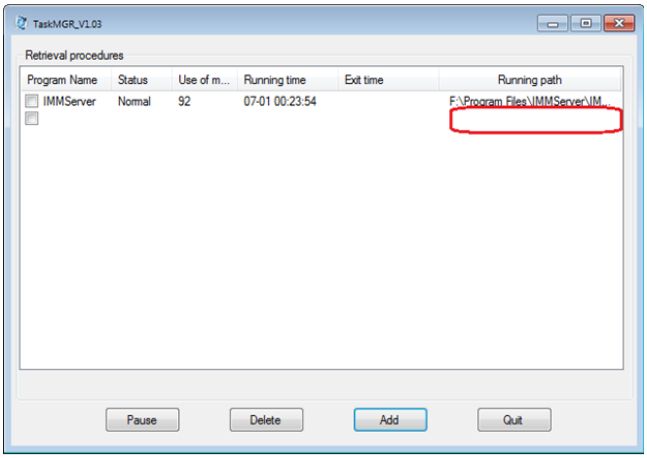


Fig. 23 —EMM Energy

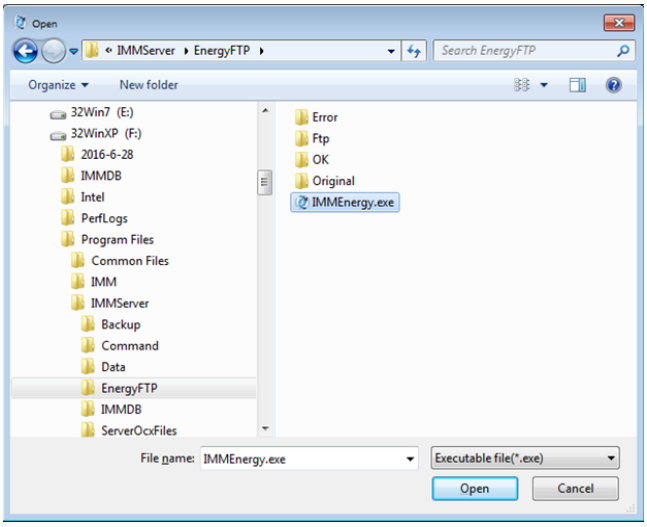


Fig. 24 —IMMEnergy.exe

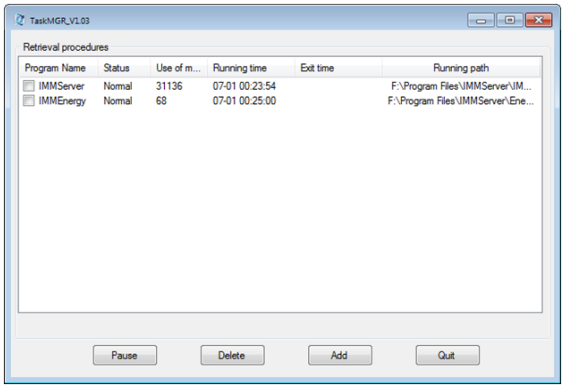


Fig. 25 —IMMServer and IMMEnergy Complete

m. Close the window.

The EMM is now ready to use.

PRECAUTIONS —

1. If the installation file is saved in the system disk, or if the Administrator permissions were not used for installation; the installation process will be incomplete and problems may occur during use.
2. The following OSs have been tested and are supported:
   - WIN7 Enterprise Edition, 64 bits (Chinese)
   - WIN7 Ultimate, 32 bits (Chinese/English)
   - WIN7 Ultimate, 64 bits (English)
   - WIN10 PRO, 64 bits (Chinese/English)
3. If the database already exists, the prompt "Database EMM exit" will be displayed when "Create DB" in "EMM ServerSet" is clicked.

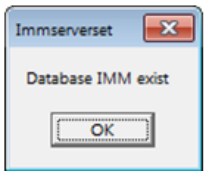


Fig. 26 —EMM Database exists

4. If "Uninstall EMM Server" and "Uninstall EMM Client" are selected on the installation interface, all of the data will be cleared. Back up the data manually or it will be deleted.

NOTE: The following data must be backed up:

In the IMMServer installation path:

- Backup folder
- IMMDB folder

In the IMMServer\EnergyFTP installation path:

- Error folder
- Ftp folder
- OK folder
- Original

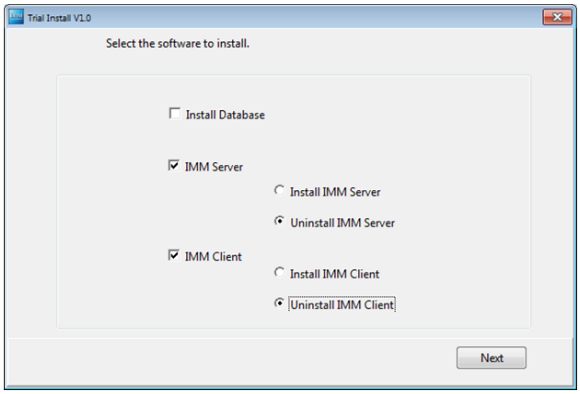


Fig. 27 —Clear Data

LOGIN

Fig. 28 —Login Interface

1. Once the software is running, click "Sure" to login to the software after the client connects to the database and server. Otherwise, an error prompt box will be displayed:

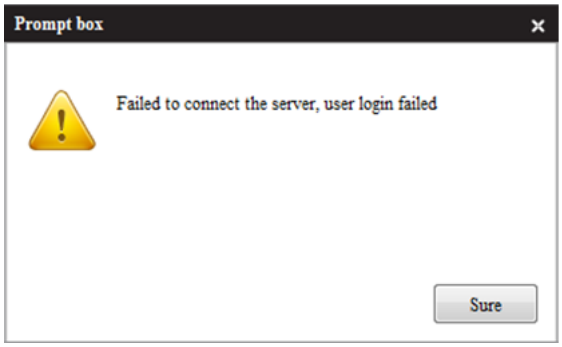


Fig. 29 —Server Connection Failed Prompt

An error prompt is also displayed if the password is empty:

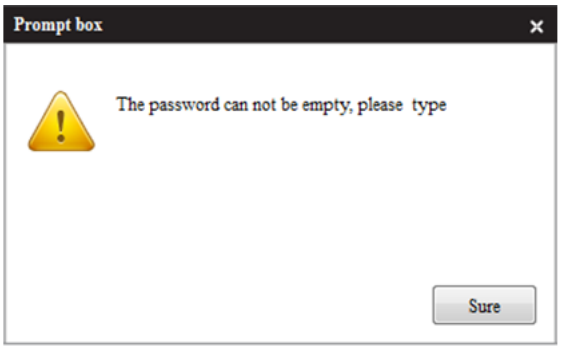


Fig. 30 —Password Empty Prompt

To see whether the database and server have connected successfully, check the lower left corner of the client.

Fig. 31 —Successful Server Connection

2. Click "Cancel" to display the system logging out progress bar and close the software:

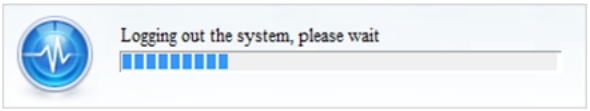


Fig. 32 —Logging Out Progress Bar

Login Permission — Double-click icon (3) in the upper left corner and icon (1) in the lower right corner in sequence. Double-click box (2) containing the password. Click in user name field to display the user name list.

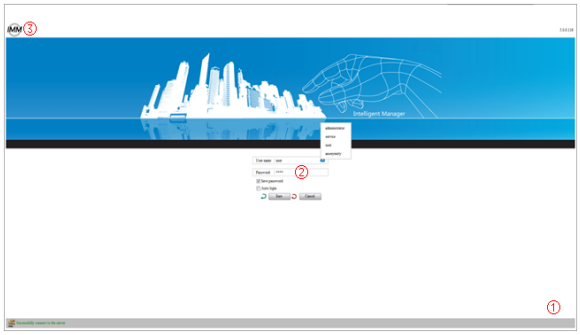


Fig. 33 —User Name List

- Users have ordinary permissions.

  Enter the password to login. Control can be implemented, but software parameters (such as device searches and electricity quantity report format) cannot be configured.
- Service is one level higher than user.

  The passwords for both User and Service can be changed. Debugging personnel can use the hidden advanced menu.
- Administrator is one level higher than Service.

  Permissions for Administrator are the same as the permissions for Service, except that an operator with Administrator permissions can change the password for Service, and factory personnel can use the function for equipment maintenance.

Software parameters are hidden in the "Advanced Menu." The "Advanced Menu" is only displayed when advanced permissions are used for login.

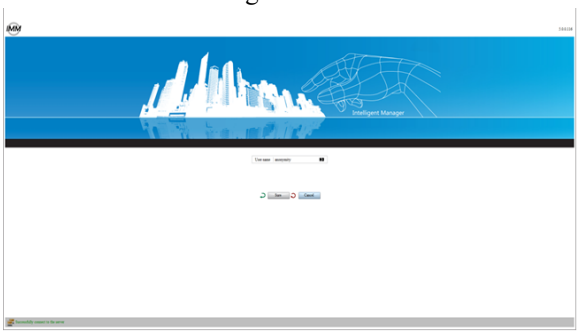


Fig. 34 —Advance Menu

Automatic login is valid for "user" permissions only. Automatic login to other advanced accounts is not permitted.

The password saving function is valid for "user" permissions. Passwords for advanced accounts will not be stored in system memory.

Hidden Configuration Interface —

1. Double-click the "Successfully connect to the server" position in the lower left corner to display the client-side configuration.

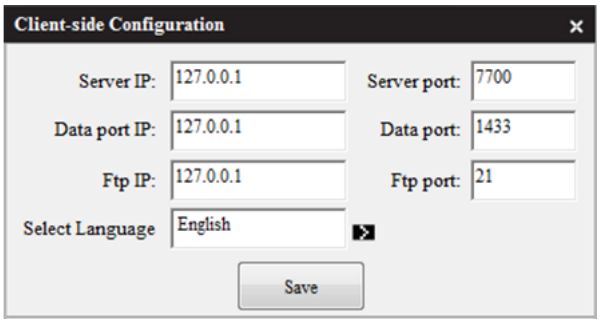


Fig. 35 —Client-Side Configuration

2. Press the middle mouse button in the blank space:

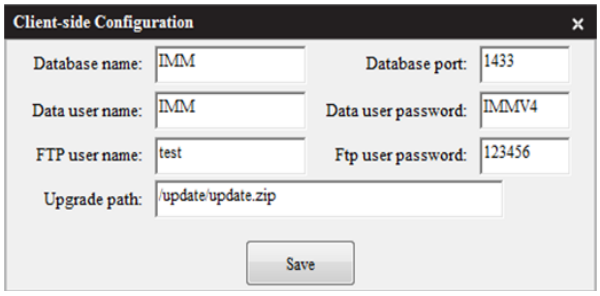
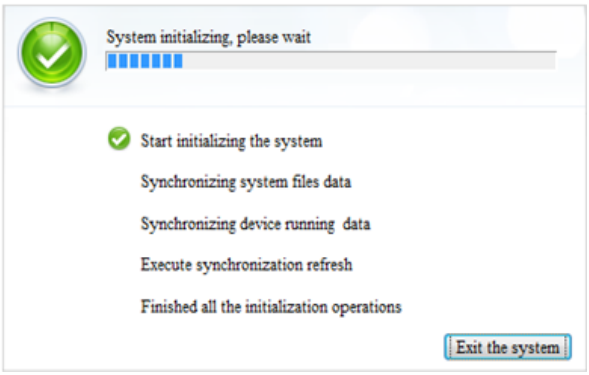


Fig. 36 —Client-Side Configuration

Login Software — Click "Sure" to login to the software. Service permissions are used for login.



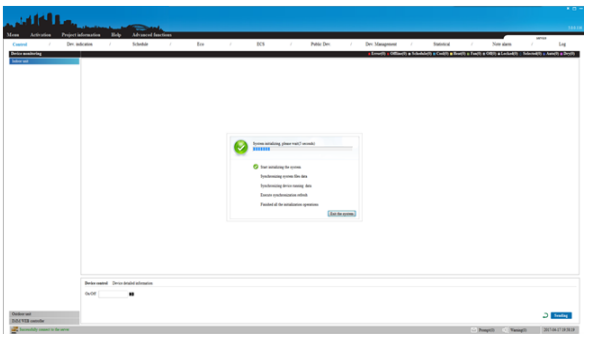


Fig. 37 —Initializing System

For the first login, no device exists on the interface after initialization is completed. The current logged in user name can be seen under the version number in the top right corner.

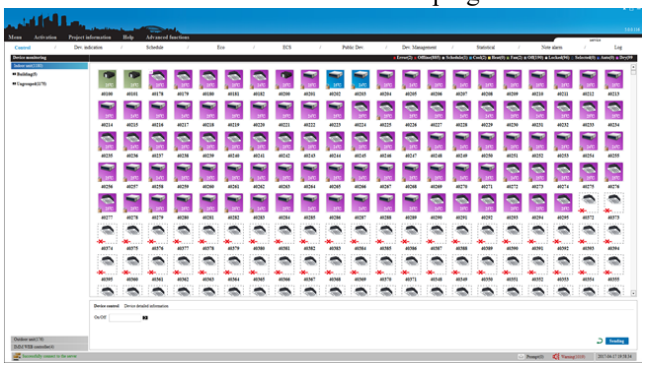


Fig. 38 —Current Logged In User Name

CLIENT FUNCTION INTERFACE

Menu Bar – Advanced Functions —

Once the software is started, advanced permissions are required to login and perform software configuration, such as device searches. Click "Advanced Functions" (under the advanced permissions for Service and Administrator) in the menu bar. There are four sub-menus under "Advanced Functions":

- Account Management
- Setting
- Device searching
- Refrigerant system

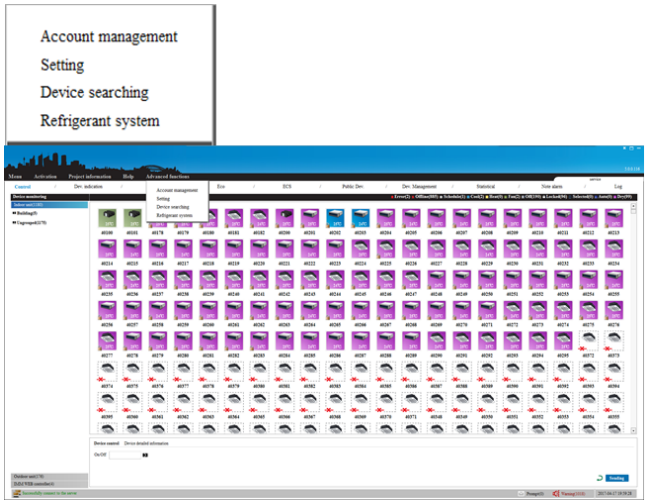


Fig. 39 —Advanced Functions

ACCOUNT MANAGEMENT —

After this sub-menu is clicked, the following interface displays three accounts: user, service, and administrator.

The service account can be used to change the passwords for Service and User. The Administrator account can be used to change the passwords for User, Service, and Administrator.

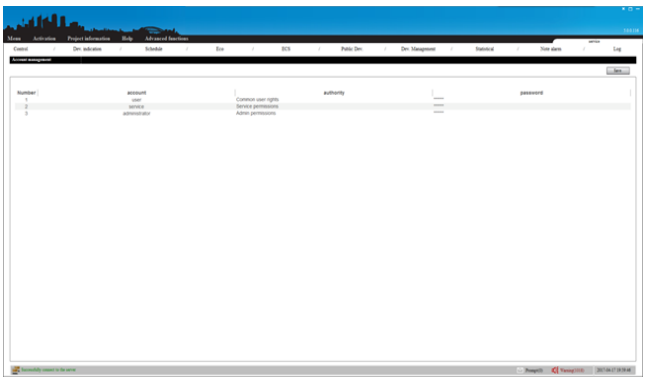


Fig. 40 —Service and User Accounts

SETTING — EMM parameters can be configured on this interface.

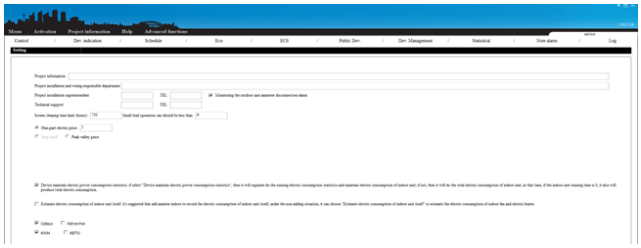


Fig. 41 —EMM Parameter Configuration

Project information

1. Fill in project information to facilitate maintenance.
2. Click "Save" to save the configuration.

   The window below indicates that saving is successful:

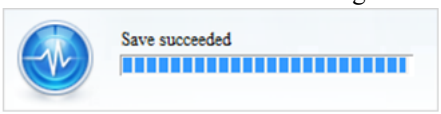


Fig. 42 —"Save Succeeded" Window

Monitoring ODU kWh meter disconnection alarm

When this option is checked and the ODU kWh meter is disconnected, the corresponding message will be displayed in the alarm information. Otherwise, it will not be displayed when the kWh meter is disconnected.

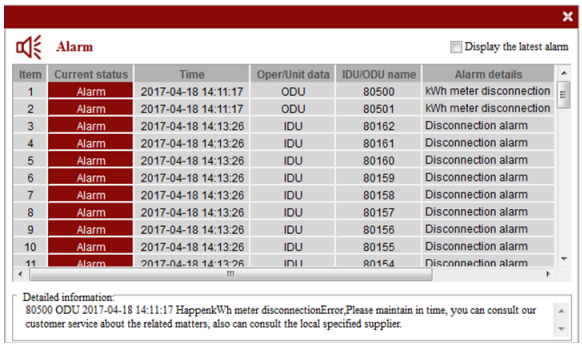


Fig. 43 —Alarm Information

Click "Save" to save the configuration. The window below indicates that saving is successful:

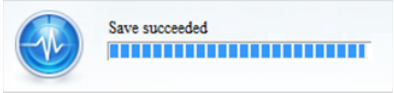


Fig. 44 —"Save Succeeded" Window

Filter cleaning time limit (hour)

The EMM system counts the IDU running time (the electricity quantity file uploaded through the gateway). When the IDU running time exceeds the value set here, the corresponding message will be displayed in the prompt information.

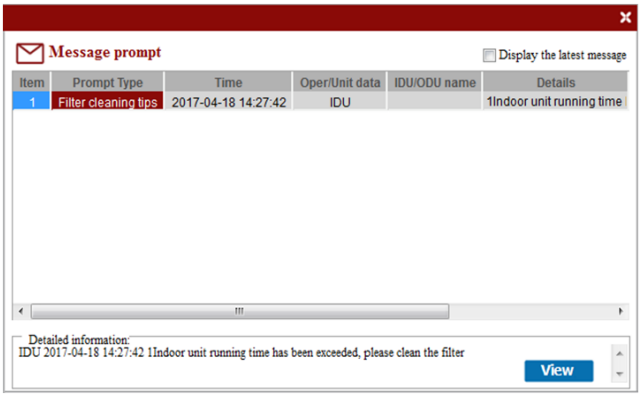


Fig. 45 —Filter Cleaning Time

1. Select the "Filter cleaning tips" line in the prompt information.
2. Click "View" in detailed information to display the loading progress bar.

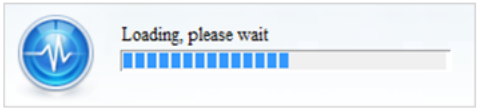


Fig. 46 —Loading Status Bar

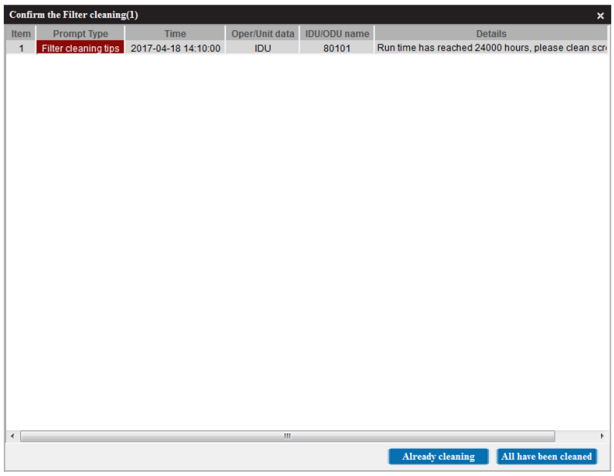


Fig. 47 —Filter Cleaning Screen

3. Select a line, and click "Delete" to delete the information about the corresponding IDU.

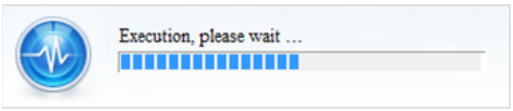


Fig. 48 —Executing Line Item Delete

NOTE: Only one line can be deleted even if multiple lines are selected.

To clear all records, click "All have been cleaned."

4. Fill in the value in the text box next to "Filter cleaning time limit (hour)."
5. Click "Save" to save the configuration.

If the content is invalid, the following prompt box will displayed.

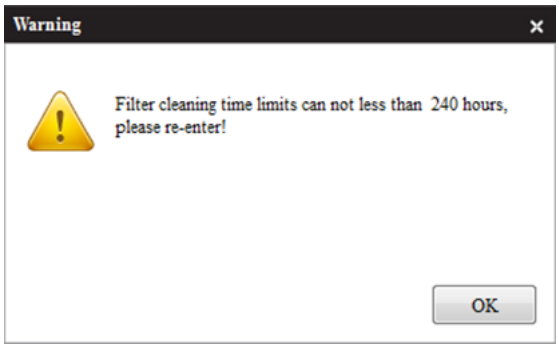


Fig. 49 —Invalid Content Error Screen

The window below indicates that saving is successful:

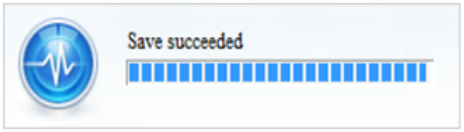


Fig. 50 —"Save Succeeded" Window

Electricity price mode

The electricity quantity value of the EMM system is obtained from the gateway (the electricity quantity file uploaded through the gateway).

Three electricity price modes can be set in the EMM system:

1. One-part electric price:

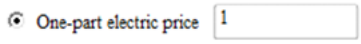


Fig. 51 —One-Part Electric Price

The EMM system counts the value in electricity quantity file.

a. Fill the value the text box next to "One-part electric price."

b. Click "Save" to save the configuration.

If the content is invalid, the following prompt box will displayed.

Fig. 52 —Invalid Content Error Screen

The window below indicates that saving is successful:

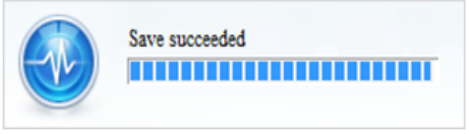


Fig. 53 —"Save Succeeded" Window

2. Step Tariff

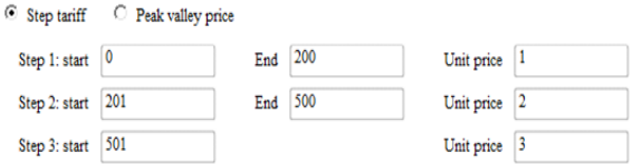


Fig. 54 —Step Tariff

Step tariff means charging in steps according to total electricity consumption. Using the figure above as an example:

- User A consumes 170 kWh
- User B consumes 480 kWh
- User C consumes 700 kWh

The electricity fee is as follows:

User A:

The electricity consumed, 170 kWh, falls into step 1, so the total fee is 170 x 1 = 170.

User B:

The electricity consumed, 480 kWh, crosses steps 1 and 2. The fee for step 1 is 200 x 1 = 200 and the fee for step 2 is (480 - 200) x 2 = 560, so the total fee is the sum of the fee for step 1 + step 2 is 200 + 560 = 760.

User C:

The electricity consumed, 700 kWh, crosses the steps 1, 2, and 3. The fee for step 1 is 200 x 1 = 200, the fee for step 2 is 300 x 2 = 600, and the fee for step 3 is (700 - 500) x 2 = 400, so the total fee is sum of the fee for step 1 + step 2 + step 3 is 200 + 600 + 400 = 1200.

a. Fill in the values in the corresponding text boxes.

b. Click "Save" to save the configuration.

If the content is invalid, the following prompt box will be displayed.

Fig. 55 —Invalid Content Error Screen

The window below indicates that saving is successful:

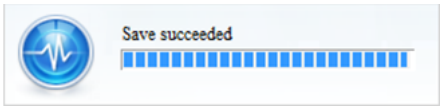


Fig. 56 —"Save Succeeded" Window

3. Peak Valley Price

a. Fill in the values in the corresponding text boxes.

b. Click "Save" to save the configuration.

c. If the content is invalid, the following prompt box will be displayed.

Fig. 57 —Invalid Content Error Screen

The window below indicates that saving is successful:

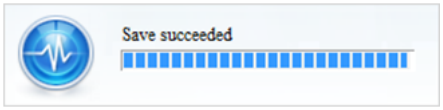


Fig. 58 —"Save Succeeded" Window

Counting the power consumption of equipment maintenance

Two terms and the content of the electricity quantity file are as follows:

1. Electricity quantity for running:

   The electricity consumed by the ODU in the period after the IDU starts.

   This part of electricity is allocated to the IDU according to the electricity division principle. This fee is called "electricity quantity for running."

2. Electricity quantity for maintenance:

   The electricity consumed in the period by the ODU (e.g. the electricity consumed by the crankshaft heating belt) when the IDU is not running. This fee is called "electricity quantity for maintenance."

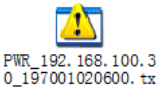


Fig. 59 —Content of Electricity Quantity File

The content is analyzed as follows:

The data used by the EMM is marked in green, and this part is used in the energy program.

HEARDER
start_time:197001020500
stop_time:197001020600 cold_system_num:4
ip:192.168.100.2

HEARDER is the start flag of electricity quantity file. The corresponding stop flag is not available.

The start time of electricity quantity file is start_time.

The stop time of electricity quantity file is stop_time.

The number of refrigerant systems in this gateway is cold_system_num.

The IP address of this gateway is ip.

SYSTEM_START
system_id:0
indoor_number:6
outdoor_number:2
meter_number:2

SYSTEM_START is the start flag of the refrigerant system corresponding to the end flag SYSTEM_END one by one.

The ID of the refrigerant system in the gateway is system_id.

The number of IDUs in this refrigerant system is indoor_number.

The number of ODUs in this refrigerant system is outdoor_number.

The number of kWh meters in this refrigerant system is meter_number.

INDOOR_INFO
indoor_info:0-0-0
work_time_T1:0
fan_time_T2:0 E_Heat_time_T3:0
X:0.000
Y:0.000
Z:0.000
C1:0
C2:0
Disconnect_T4:0

INDOOR_INFO means that IDU information is provided in this line.

indoor_info indicates the IDU's information port No.-system ID-IDU address (note: The number of the EMM system is different from the number here. The equipment ID in the EMM system is IP-System-Port-Network address, without "-").

work_time_T1 is the IDU running time (filter cleaning in the prompt information is implemented through this variable. The running time in energy consumption statistics is implemented through this variable).

The IDU fan running time is fan_time_T2.

The auxiliary heater running time of IDU is E_Heat_time_T3.

Electricity quantity for running allocated to IDU X (electricity quantity for running of IDU)

Electricity quantity for maintenance allocated to IDU Y (electricity quantity for standby mode of IDU)

Consumed electricity estimated for IDU Z (used when the configuration requires an estimate of the electricity consumed by the IDU)

C1 power-on count (used in energy consumption statistics)

C2 power-off count

Disconnect_T4 is the disconnection time.

OUTDOOR_INFO
outdoor_info:0-4-0
work_time_T4:0
energy_P1:0.000
energy_P2:0.000
anormal_P3:0.000
Disconnect_T5:0
Meter_T6:0
Discard_P4:0.000

OUTDOOR_INFO means that ODU data is in this line.

outdoor_info indicates the ODU number, similar to the IDU.

work_time_T4 is the ODU running time.

energy_P1: Total electricity quantity for running of the ODU (used for "ODU Energy Consumption" in the statistical report)

energy_P2: Total electricity quantity for operation of the ODU (used for "ODU Energy Consumption" in the statistical report)

anormal_P3: Abnormal electric energy of the ODU (used in the energy consumption statistics report; used for "ODU Energy Consumption" in the statistics report)

Disconnect_T5: ODU disconnection time

Meter_T6: ODU kWh meter disconnection time

Discard_P4: Discarded electric energy

METER_INFO
meter_info:0-4-0
W0:69532.690
W1:69532.690
W2:69532.690
W3:69532.690
W4:69532.690
W5:69532.690
W6:69532.690
W7:69532.690……..
W119:69532.690

METER_INFO means that the reading record of ODU kWh meter is in this line.

meter_info is corresponding to the ODU information and indicates the ODU to which this kWh meter belongs.

The first reading of kWh meter W0 (the value is used in "ODU kWh Meter Reading" in the statistics data, and only W0 of the electricity quantity file at 00:00 is used)

Other readings of kWh meters W1~W119

SYSTEM_END: End flag of the refrigerant system

When this option is selected, the data exported in energy consumption statistics is divided into the operating cost and maintenance cost columns. The maintenance cost is the corresponding cost of electricity quantity after the electricity quantities for maintenance of all the refrigerant systems throughout the EMM system are accumulated and distributed to all the IDUs. The electricity quantity for maintenance is not displayed in the table, but the maintenance cost is displayed.

Formula:

Electricity quantity for running:

Accumulated X of the corresponding IDUs

Electricity quantity for maintenance:

(Accumulated P2 of all the ODUs + Accumulated P3 of all the ODUs + Electricity quantity for public devices + Electricity quantity of idle devices)/Number of current IDUs

The electricity quantity for public devices and electricity quantity for idle devices refer to the electricity quantities for running and maintaining the devices.

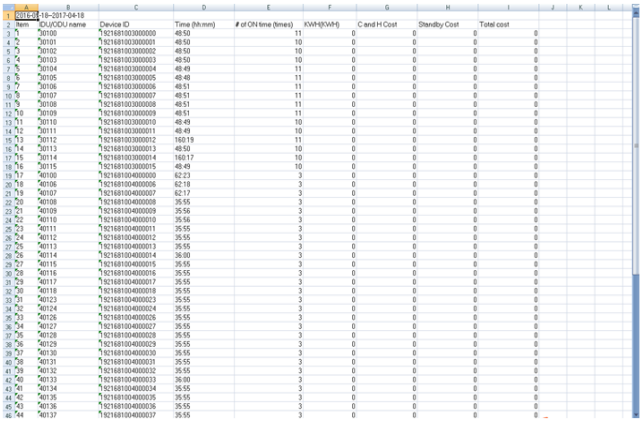


Fig. 60 —Electricity Quantity for Public Devices / Electricity Quantity for Idle Devices

When this option is not selected, the data exported in energy consumption statistics contains the electricity quantity for running and the corresponding cost only. In this case, the electricity quantity for running is actually the sum of the electricity quantity for running and the electricity quantity for operations. The maintenance cost is obtained by distributing the electricity quantity for operating each refrigerant system to the IDUs of this refrigerant system.

Formula:

Electricity quantity for running:

Accumulated X of the corresponding IDUs + Accumulated Y of the corresponding IDUs + (Accumulated P3 of all the ODUs + Electricity quantity of public devices + Electricity quantity for idle devices)/Number of the current IDUs

Estimating the electricity consumed by the IDU

When this option is selected, the X value and the corresponding Z value need to be added to the electricity quantity for running of IDUs in the exported report.

KWH and KBTU

The values are displayed in the final statistics only.

New function – IDU and ODU parameter configuration

Dry contact 4 judgment time, cooling fan step when the energy requirement is 0; heating fan step when the energy requirement is 0, dry contact 4-on temperature, dry contact 4-off temperature

For details, see the 0xC8 command of "X-NET Network Communication Protocol."

ODU output capacity limit

For details, see the 0xF2 function.

All the commands here are sent in groups.

DEVICE SEARCHING — Devices can be searched for on this interface.

NOTE: The gateways of specific IP addresses to be searched need to be configured through IMMServerSet.exe in the server folder.

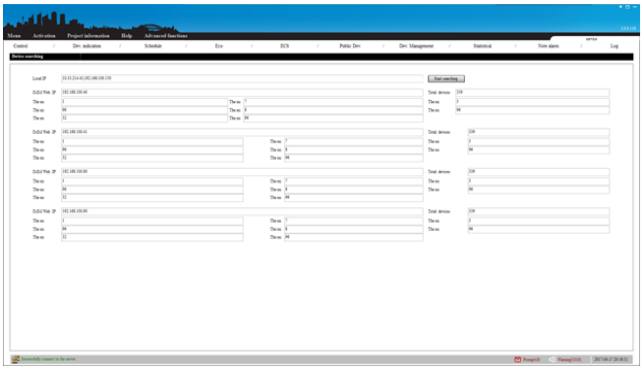


Fig. 61 —IMMServerSet.exe

Click "Start searching" to display the progress bar. The progress bar is used for indication only (not real progress). You cannot switch between interface during a search, so wait until the search has finished.

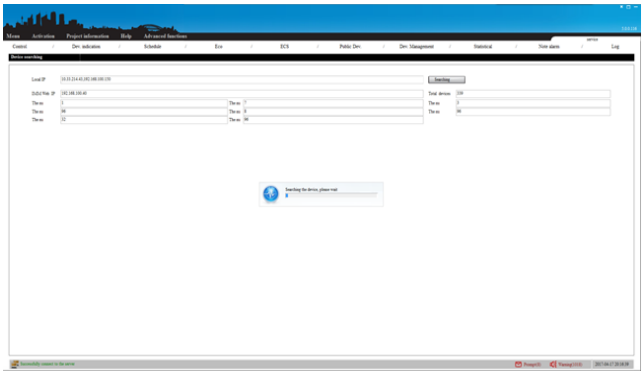
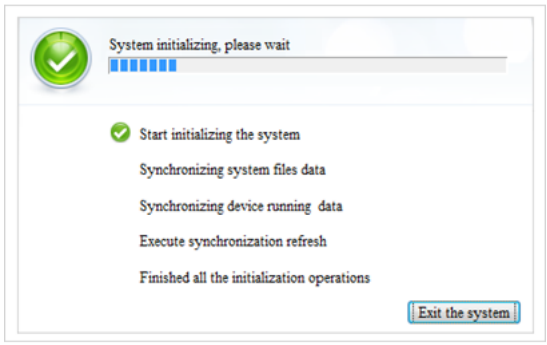


Fig. 62 —Search Progress Status Bar

The initialization window will be displayed after the search is complete.



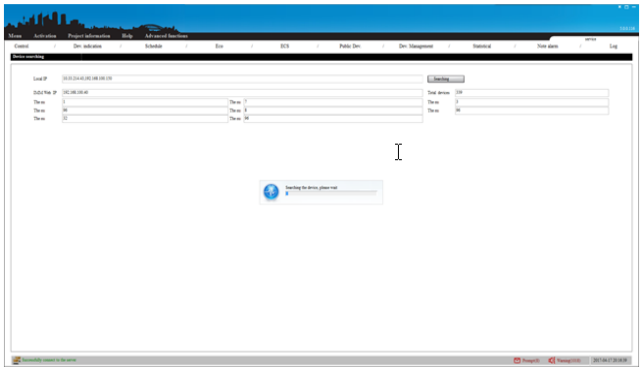


Fig. 63 —Initialization Window

NOTE: After the searching is completed, the server process needs to be terminated and restarted. Otherwise, the control command of client cannot be sent.

Menu Bar - Menu — The submenus in the Service and Administrator menus are a summary of the pagination menus.

The submenus in the User menu are a summary of the pagination menus.

MODIFY THE PASSWORD —

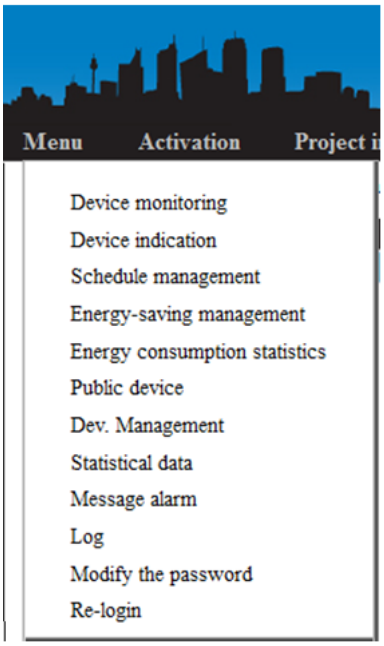


Fig. 64 —Submenus in User Window

Click "Modify the password" to display the corresponding window:

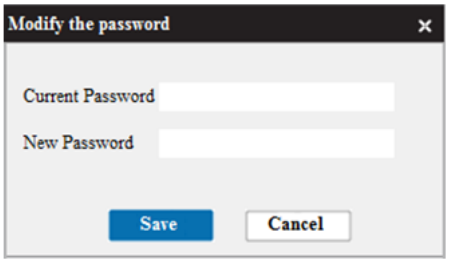


Fig. 65 —Modify the Password Window

The following functions are the same for the user, service, and administrator permissions. In this example, User is used for login.

DEVICE MONITORING —

Overview of Device Monitoring Interface

The IDU, ODU, and central controller statuses can be viewed, and basic control on IDUs can be implemented on the device monitoring interface.

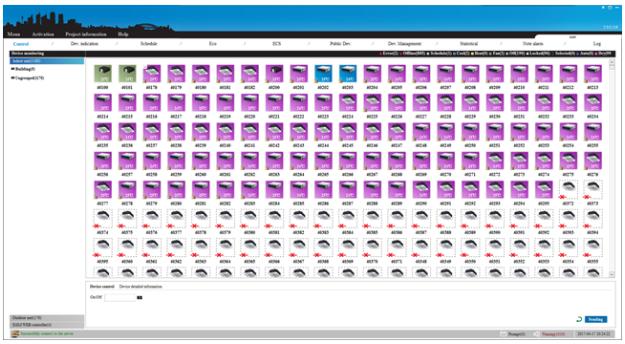


Fig. 66 —Device Monitoring Window

Area A:

Name of the current tabbed interface:

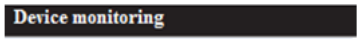
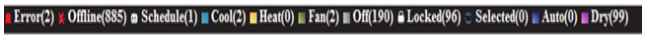


Fig. 67 —Current Tabbed Interface - Device Monitoring

Area B:

Fast classification and counting column: The number of devices in each status in the group is counted for the selected group. You can click each status to filter the devices in this status of the selected group. The value in "( )" next to each status is the statistical quantity of each status in the current group.



When "Dehumidify" is selected:

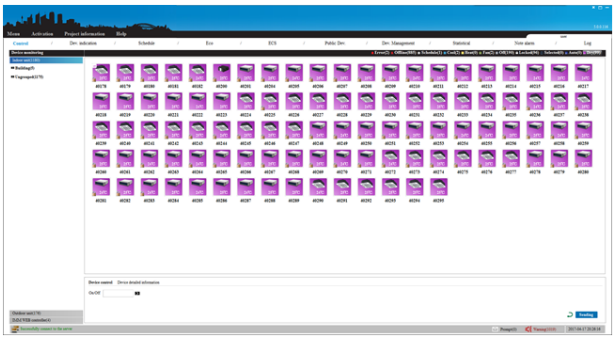


Fig. 68 —Dehumidify Selected

1. Right-click on the "Locked" status to filter out finer locked status classifications:

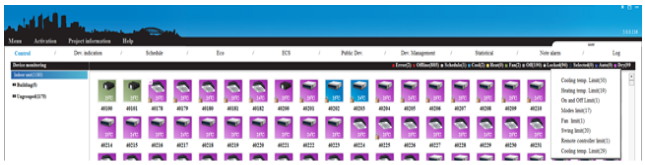


Fig. 69 —Finer Lock Status Classifications

2. Right-click on "Selected."
3. Select "All selected" to select all the corresponding devices in the current group.
4. Select "Cancel all selected" to cancel the selection of all the corresponding devices in the current group.

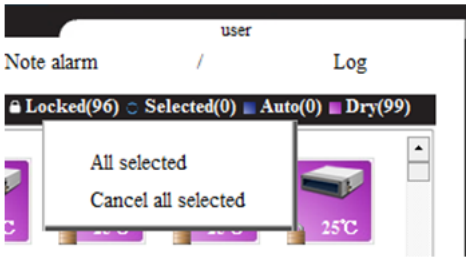


Fig. 70 —Cancel All Selected Option

Area C:

On the left, devices are classified into IDUs, ODUs, and EMM WEB controllers by category. The total quantity of devices of the corresponding group is contained in "( )" next to the name.

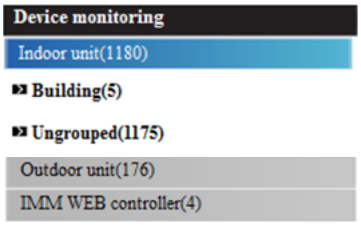


Fig. 71 —Quantity of Devices of Corresponding Group

Area D:

The upper part on the right displays the devices corresponding to the selected group. Click "Indoor unit"/ "Outdoor unit" to display all the IDUs/ODUs.

Fig. 72 —All IDUs and ODUs Displayed

The lower part on the right displays the device parameters and control parameters.

Fig. 73 —Device and Control Parameters

DETAILED DESCRIPTION OF THE DEVICE MONITORING FUNCTION

IDU — In the initial status, only Ungrouped is available in "Indoor unit" on the left. Groups can be added through "Dev. Management." To add groups, see the "Device Management" section.

All the IDUs are displayed on the right only when "Indoor unit" has been clicked.

IDENTIFYING IDU MODEL —

1. Double-click the existing name (not the picture) of the IDU to be renamed.

   The IDU name will change to white text in a red background.

2. To cancel the renaming operation, click the name of another IDU, or press the "Esc" key to change the IDU name to black text in a white background.

1. Enter the new IDU name in the editable status of the IDU name.
2. Press the "Enter" key for confirmation.

   A saving progress bar is displayed.

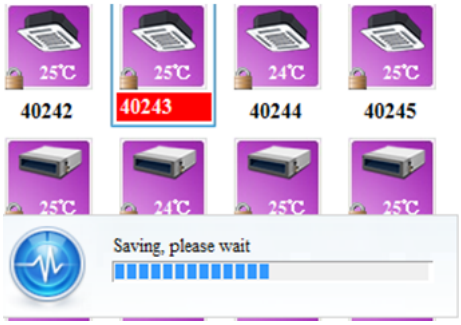


Fig. 74 —Saving Progress Bar

For an IDU name that has been successfully saved, only part of the name can be displayed on the interface. The width of each symbol is different, and the number of symbols that can be displayed is not fixed. The excess part will be hidden. When the cursor hovers on the IDU name, a bubble is displayed, showing the full name of IDU — "change name test."

Fig. 75 — Full Name of IDU

DEVICE CONTROL — Multiple IDUs can be selected on the "Control" page.

1. Click to select an IDU.
2. Click again to cancel the selection.

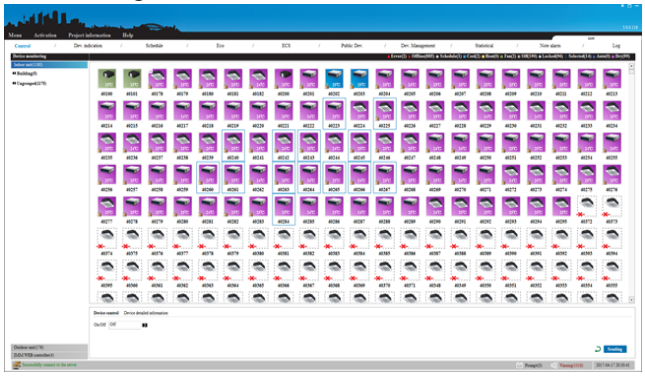


Fig. 76 —Selecting an IDU

3. You can press and hold the left mouse button and drag the mouse to select IDUs through a drag box.

   IDUs can be selected in the blank areas on two sides of the device window only. The blank areas on the two sides of area D are described in section "Overview of Device Monitoring Interface."

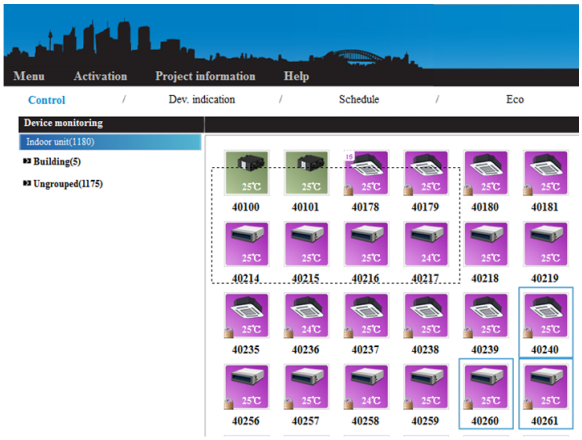


Fig. 77 —Device Monitoring

4. After selecting the devices to be controlled, select the command parameter to be sent.

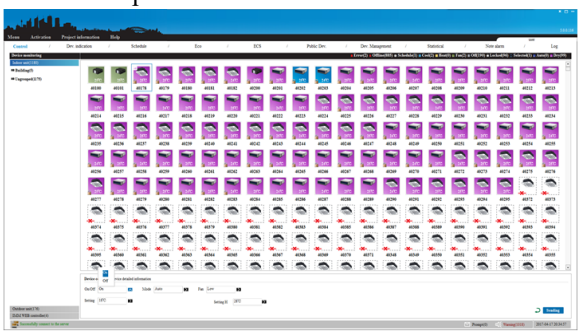


Fig. 78 —Command Parameter Selection

5. Click Sending to display a progress bar for sending a command. The command is sent very quickly, so the progress bar may disappear instantly.

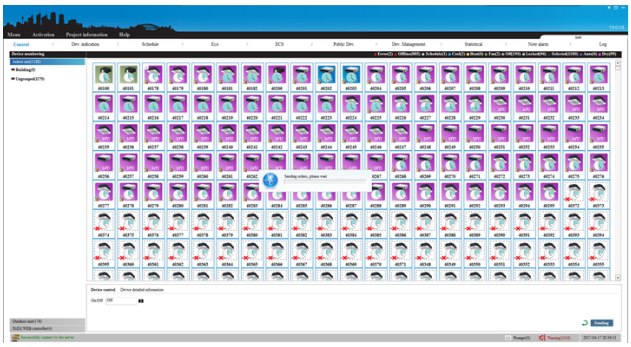


Fig. 79 —Sending a Command

A waiting icon appears on the IDU picture (waiting for the command reply).

6. Send the next command after the command is completed. Otherwise, sending more control commands may cause conflicts leading to command execution failure or preventing the command from being executed.

If command execution fails, the waiting icon disappears, and the description is displayed in the prompt information:

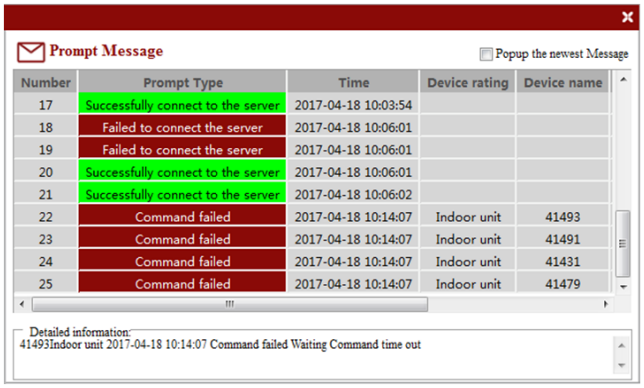


Fig. 80 —Successful and Failed Commands

The waiting icon also disappears if the command is successfully executed, but no message is displayed in the prompt information. It takes a certain amount of time from successfully executing a command to switching IDU status. Wait about 30 seconds for the IDU to refresh.

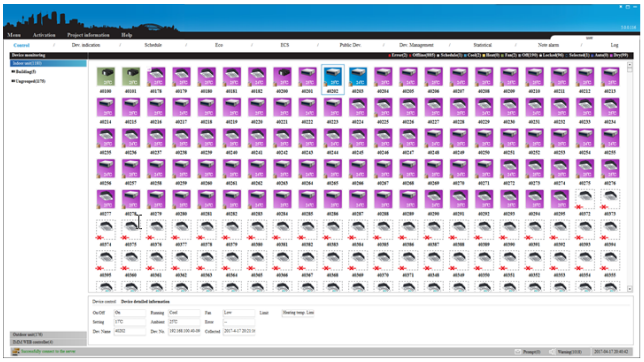


Fig. 81 —Device Detailed Information

Collected:

The time the IDU status was refreshed. The time will be earlier than the current computer time if the IDU has not changed for a long time.

Device No.:

The unique ID of the IDU in the EMM system: "IP-refrigerant system ID-Port No.-IDU network address".

Limit:

The energy saving attribute status of the IDU. The energy saving attributes are introduced in section "Energy Saving Management."

If there are more energy saving attributes in "Limit" for the IDU, a small floating box appears when the cursor hovers over the corresponding text box, displaying the detailed content.

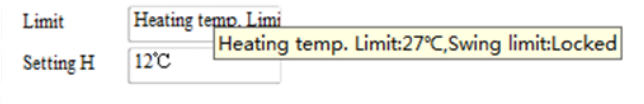
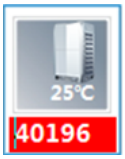


Fig. 82 —Additional Energy Saving Attributes

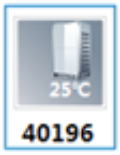
ODU —

RENAMING AN ODU —

1. Double-click the existing name (not the image) of the ODU to be renamed. The ODU name then changes to white text in a red background.



2. To cancel renaming the ODU, click the name of another ODU or press the "Esc" key to change the ODU name to black text in a white background.



3. Enter the new ODU name in the editable status of ODU name, and press the "Enter" key for confirmation. A saving progress bar will be displayed.

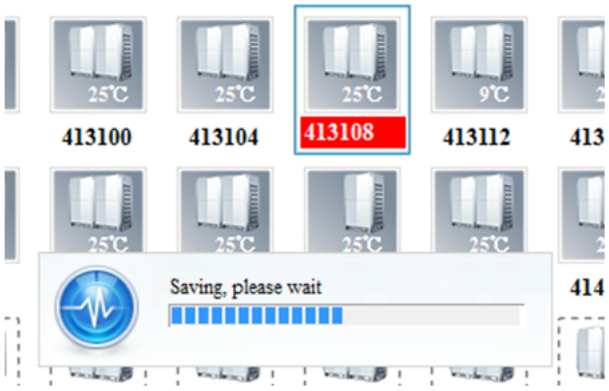


Fig. 83 —Renaming an ODU

4. Once the ODU name is successfully saved, only a part of the name may be displayed on the interface. The width of each symbol is different, and the number of symbols that can be displayed is not fixed. The excess part will be hidden. When the cursor hovers over the ODU name, a bubble will be displayed showing the full name of ODU — "change name test."

Fig. 84 —Change Name Test

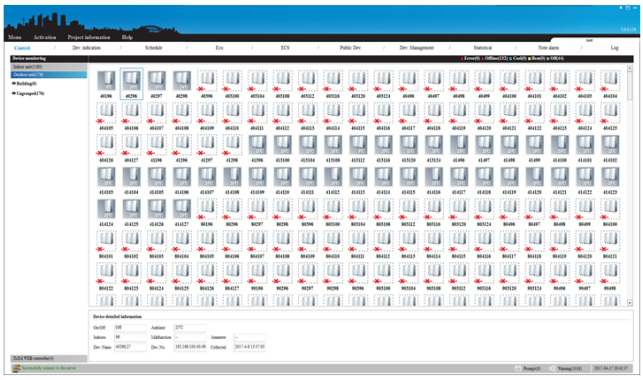


Fig. 85 —Device Information

Only "Ungrouped" is available in "Outdoor unit" on the left. Groups can be added through "Dev. Management." To add groups, see the "Device Management" section.

All the ODUs are displayed on the right only when "Outdoor unit" is clicked.

Table 3 —Shared group information of IDUs and ODUs

Display	ODU
Background	Different backgrounds are used to indicate the current mode statuses of devices: off (gray), cooling (blue), heating (orange), failed (red).
Ambient Temperature	The ambient temperature of the ODU is 25ºC, which is not displayed when the ODU is disconnected.
Name	The ODU can be renamed. The name is the last two digits of the last segment of IP address + port No. + IDU address, e.g., 42500 indicates the ODU with the gateway 42, port 5, and network address 00.

EMM WEB CONTROL —

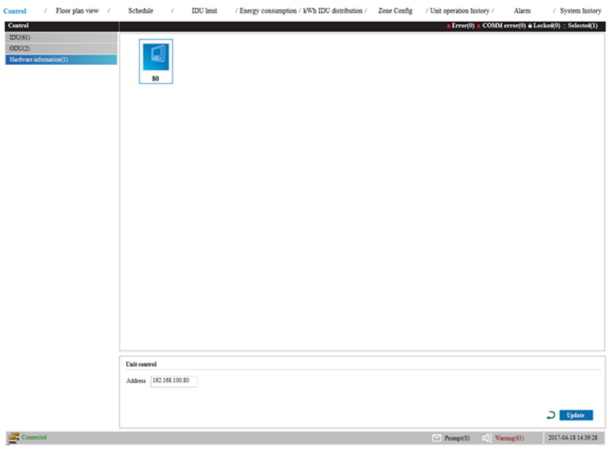


Fig. 86 —Web Control Screen

Device Guide —

The map path of the device guide is the "map" folder on the client installation path. Pictures in jpg format must be placed there before they are imported to the EMM client. The picture size cannot be too large because this may lead to slower display refreshing or a response failure. This parameter is not an absolute parameter that is related to the computer operating system and hardware configuration. If the software interface locks up after a map is imported, replace the map with a smaller floor plan.

The object of the device guide is group. Level-2 groups are supported in the EMM system.

- There are level-2 groups in level-1 groups
- There are IDUs/ODUs in level-2 groups
- Level-1 groups and level-2 groups can be mapped to maps

Since group creation is introduced in section "Device Management," it is assumed that the following groups have been created and IDUs/ODUs have been added.

Level-1 group: Building

Two level-2 groups exist under this level-1 group

Level-2 groups: 1st floor and 2nd floor

NOTE: Devices are displayed by group only on the device guide interface. IDUs and ODUs are displayed at the same time in the group. On other interfaces, devices are classified by IDUs and ODUs and displayed by groups in the IDU and ODU categories (namely, only IDUs or ODUs exist in a group).

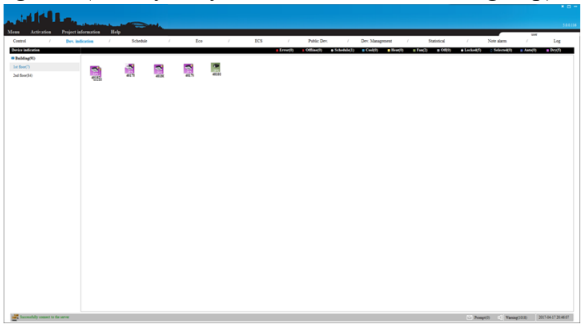


Fig. 87 —Device Guide Interface

Pictures have been saved in the map folder beforehand.

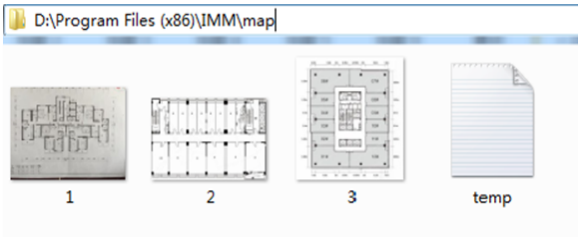


Fig. 88 —Map Folder

Configuring Corresponding Floor Plan of Group —

1. Right-click a group.
2. Select "Replace floor plan" to enter the floor plan configuration mode.

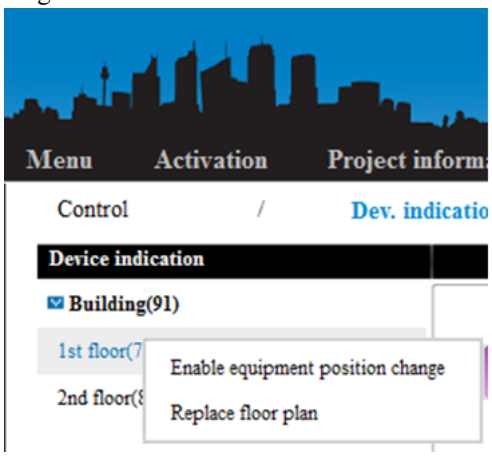


Fig. 89 —Replace Floor Plan Selection

3. Select the group for importing pictures on the left side of the interface (e.g. "1st floor"), and select the picture to be imported in the middle of the interface (e.g. "1.jpg").

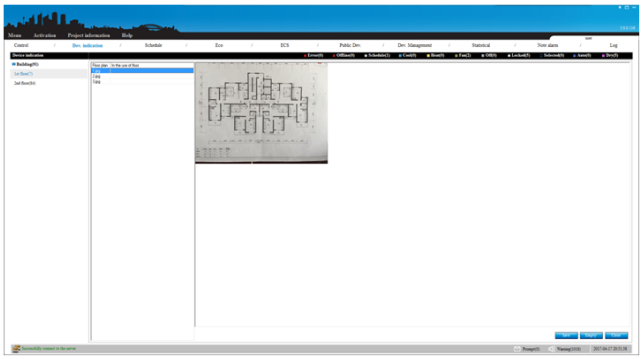


Fig. 90 —Select 1st Floor Picture

4. Click "Save" to display the saving progress bar.

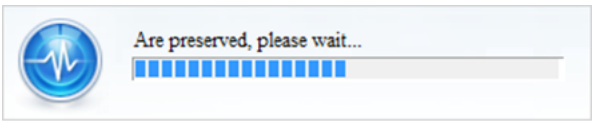


Fig. 91 —Saving Progress Bar

Use the same method to import "2.jpg" for "2nd floor" and import "3.jpg" for "Building."

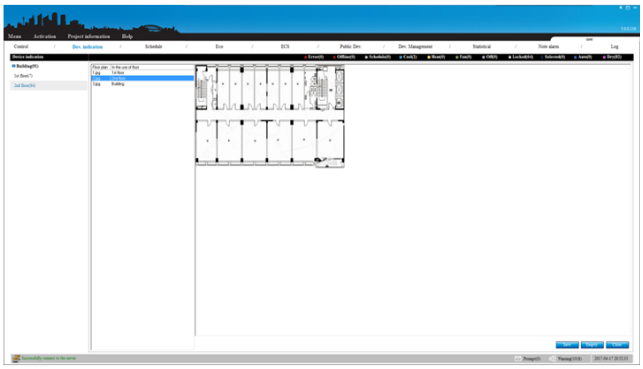


Fig. 92 —Select 2nd Floor Picture

5. To change the picture corresponding to a group:
   a. Select the group for changing a picture on the left side (e.g. "2nd floor").
   b. Select the picture to change in the middle of the interface (e.g. "3.jpg").
   c. Click "Save" directly.

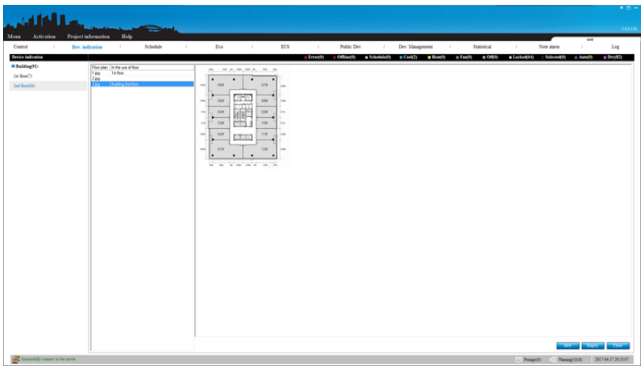


Fig. 93 —Select 3rd Floor Picture

NOTE: Clicking "Empty" clears the map information of the selected group. For example, "Building" is selected:

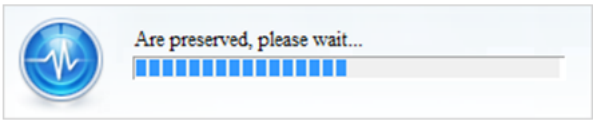


Fig. 94 —Saving Progress Bar

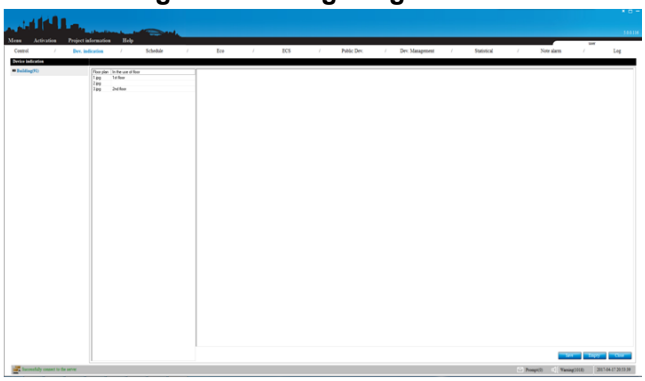


Fig. 95 —Clear Map Information

Clicking "Close" exits the floor plan configuration mode.

Configuring IDU/ODU Positions on a Floor Plan — IDU/ODU does not appear on the floor plan corresponding to a level-1 group. The IDU/ODU position on a floor plan can be configured in a level-2 group only.

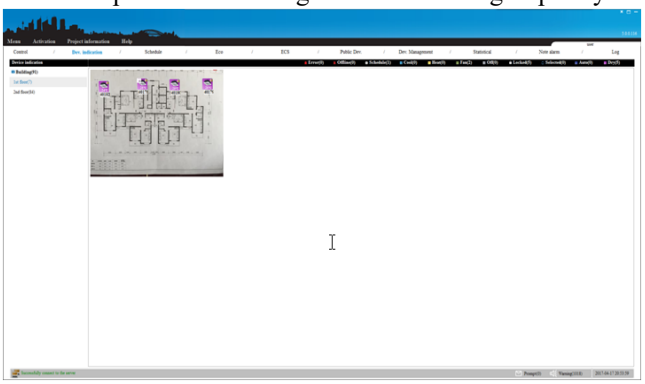


Fig. 96 —Configuring IDU/ODU Positions

6. Right-click on the group, and select "Enable equipment position change."

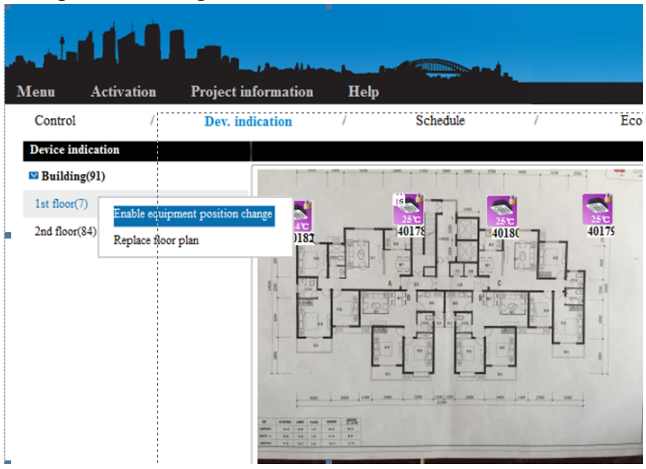


Fig. 97 —Enable Position Equipment Change

7. IDUs are stacked in a position in the initial status. Hold the left mouse button on the device name (not the picture), and drag the mouse to move the device.

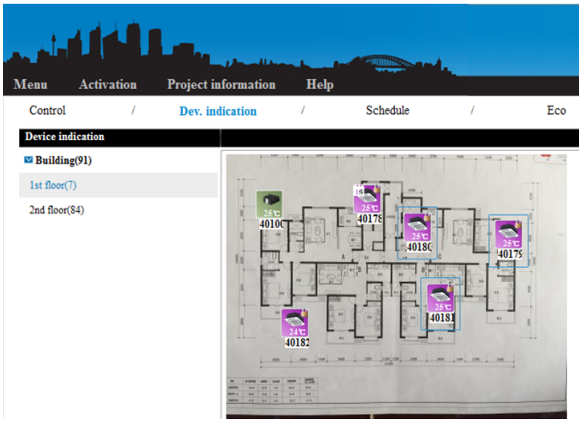


Fig. 98 —Move Device

8. If the resolution of the imported floor plan is large, the plan cannot be fully displayed in the software window. Hold the right mouse button in the blank area of the plan, and drag the mouse to move the plan.
9. Right-click the group, and select "Stop equipment position change." The device position cannot be moved. After stopping the equipment position change, you can hold the right mouse button to move the whole plan.

Querying and Controlling Device Status — The IDU and ODU status can be viewed and IDUs can be controlled (consistent with device monitoring) in the device guide.

1. Select the device to be controlled. A device can be selected by clicking the picture only (not the name).
2. Right-click to display the corresponding window.

If you right-click an ODU, the displayed window shows the detailed device information only (i.e. the detailed information about the right-clicked ODU).

Fig. 99 —ODU Detailed Device Information

If you right-click an IDU, the displayed window shows the device control information and detailed device information regardless of whether the selected devices include ODUs (i.e. the detailed information about the right-clicked IDU).

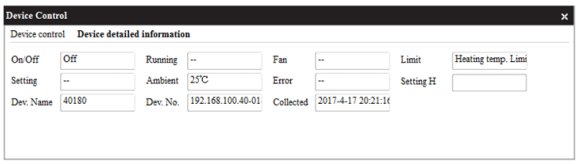


Fig. 100 —IDU Detailed Device Information

The control mode is consistent with device monitoring, so a detailed description is not provided here.

Select the relevant parameter, and click the "Sending" button. If the selected devices include ODUs, they will be filtered out automatically and the ODU control command will not be sent.

In the "Device detailed information" window, the displayed device can be switched by clicking and right-clicking. The difference is that clicking will de-select the originally selected device and it selects the unselected device. Right-clicking will not change the selected status of the IDU.

The detailed information of IDU 40180 is originally displayed.

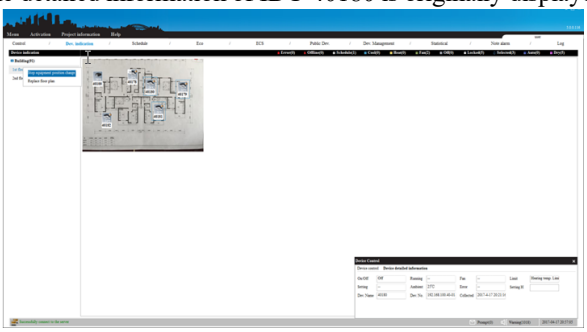


Fig. 101 —Device Detailed Information Window

Click 40100 to cancel its selected status. The detailed information of 40100 is displayed.

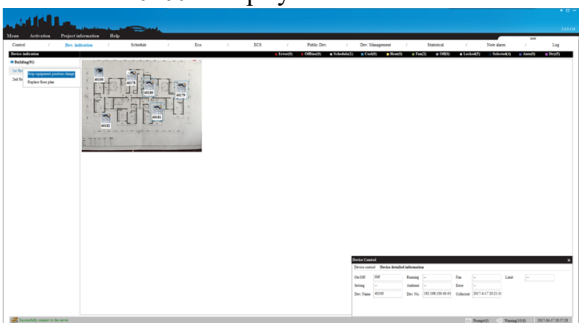


Fig. 102 —IDU 40100 Detailed Information

Right-click 40178. Its selected status will not change, and the detailed information of 40178 will be displayed.

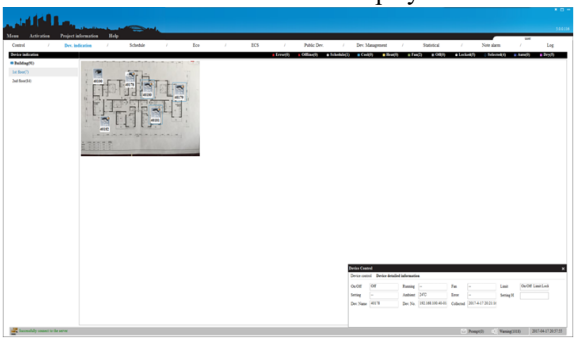


Fig. 103 —IDU 40178 Detailed Information

Schedule Management — A schedule can be added in schedule management:

- Four control commands of a specified time can be executed for a schedule
- Each schedule is provided with an independent date of execution

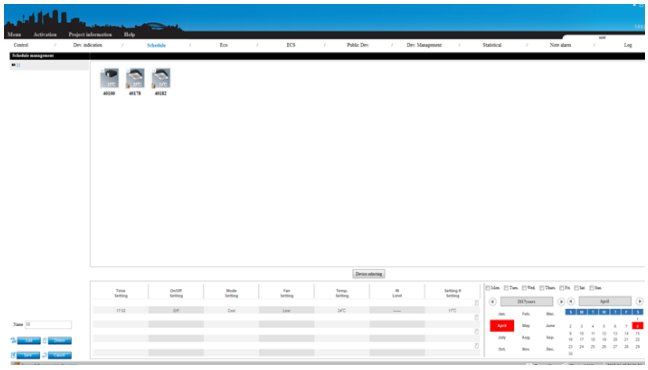


Fig. 104 —Schedule Management

ADDING A SCHEDULE —

1. Click the "Add" button. The cursor appears in the text box behind "Name." Enter a name (e.g. October Schedule).

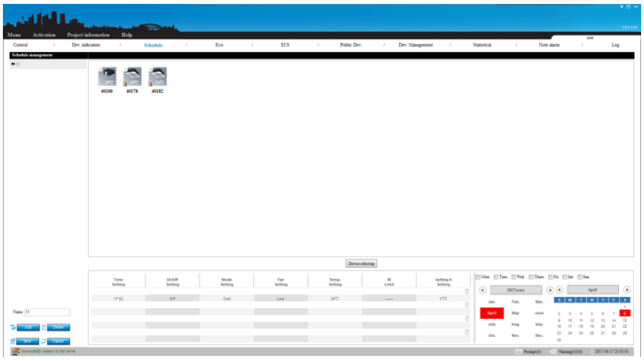


Fig. 105 —Add a Schedule

2. Click "Device selecting," and select the device for schedule execution in the displayed window.
   a. "Selected device" and "Non-selected device" are displayed on the left. Click "Non-selected device," and add the IDU to be selected.

      Selected device and non-selected device are consistent with the group information in device monitoring, and the quantity statistics are contained in "()" behind the group name. If the quantity for the 1st floor in a building under "Selected device" is 0, selected devices do not contain IDUs for this group.

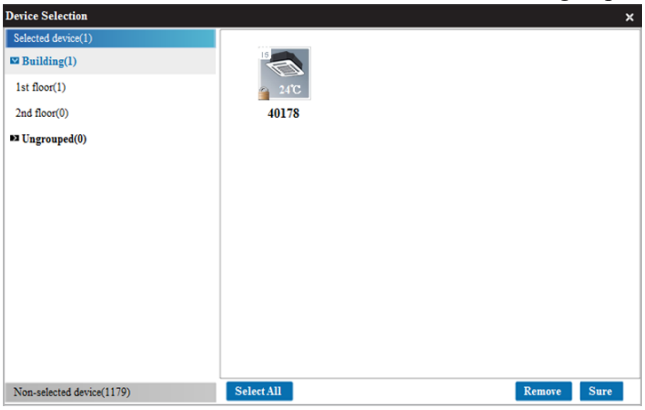


Fig. 106 —Device Selection

   b. Select an IDU (the same as the selection method in device monitoring), and click "Add." The corresponding selected device will be added to selected devices, and the corresponding statistics will also change.

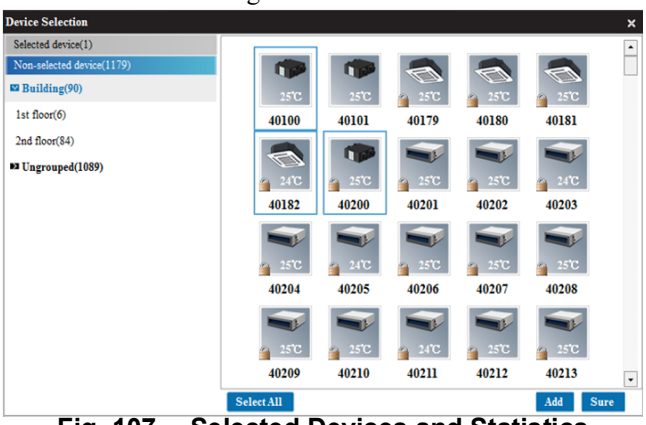


Fig. 107 —Selected Devices and Statistics

The four IDUs in the group of 1st floor in a building under "Non-selected device" have been transferred to the corresponding group of "Selected device." The corresponding statistical data of "Selected device" and "Non-selected device" will also change.

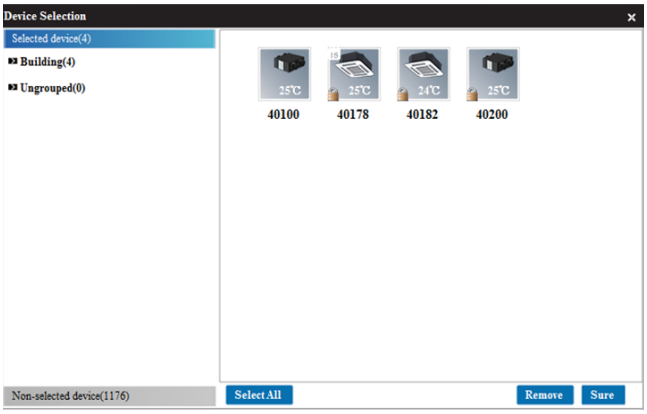


Fig. 108 —Four IDUs in First Floor Group

- Click "Sure" to confirm this change. "Sure" is not clicked in this example.
- Click "Selected device," and select the device for removing a schedule from the added devices.

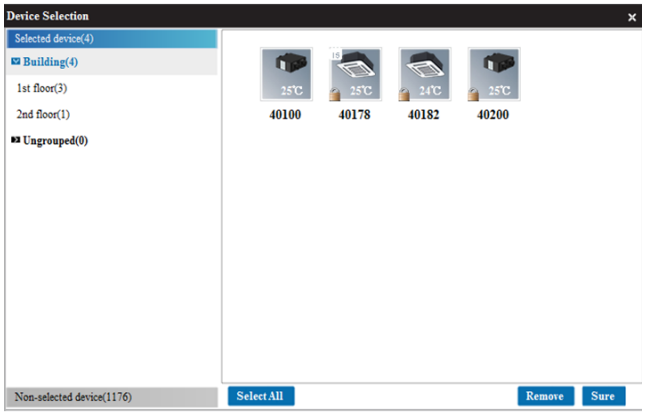


Fig. 109 —Removing Schedule from Added Devices

- Click "Remove" to move the selected device back to "Non-selected device" from "Selected device."

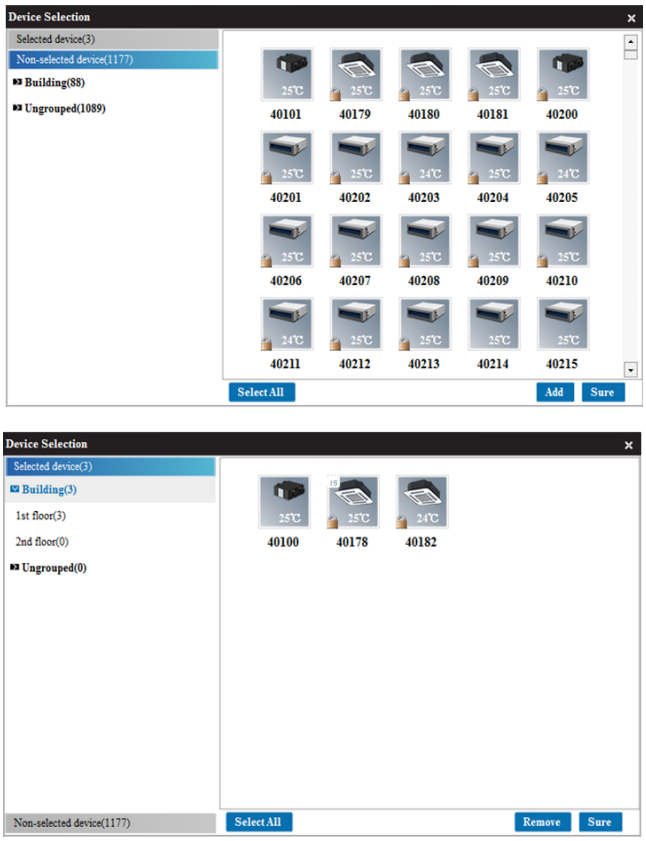


Fig. 110 —Move Devices from Selected Devices to Non-Selected Devices

Click "Sure" to confirm this modification, or click "X" in the upper right corner to exit the device selection interface and to cancel this modification.

3. Four control commands at a specified time can be executed for the added schedule.

The command is shown in the following figure:

"Execute the power-off command at 17:52"

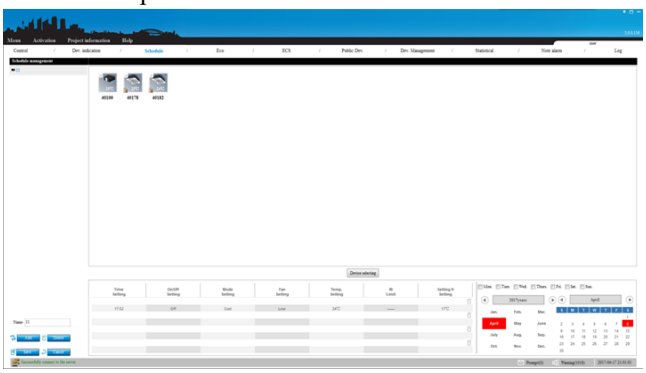


Fig. 111 —Control Commands Executed for Added Schedule

4. Select the time for execution:

   Click the month in the red box to display the corresponding month in the blue box. When any date is selected, the corresponding date and month will change to red. For example, select December 1 to December 3 or any day from Monday to Sunday. In this way, selecting a schedule will change to the weekly timing function.

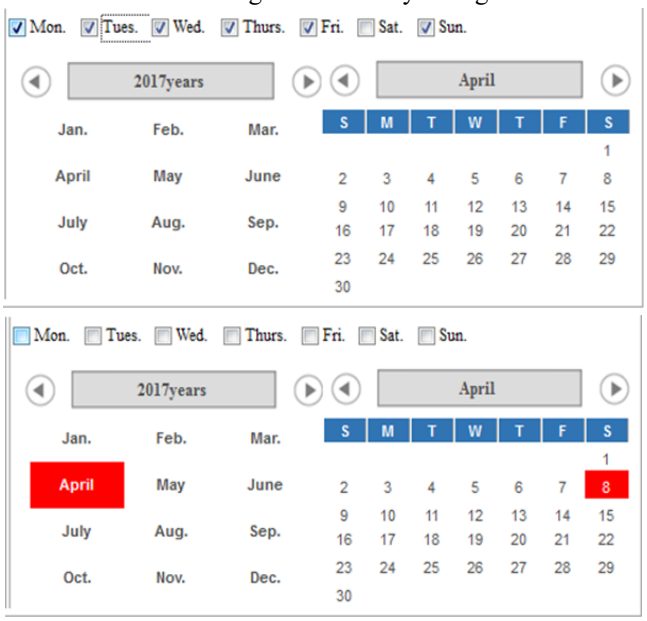
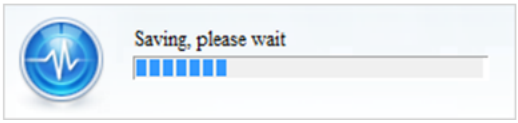
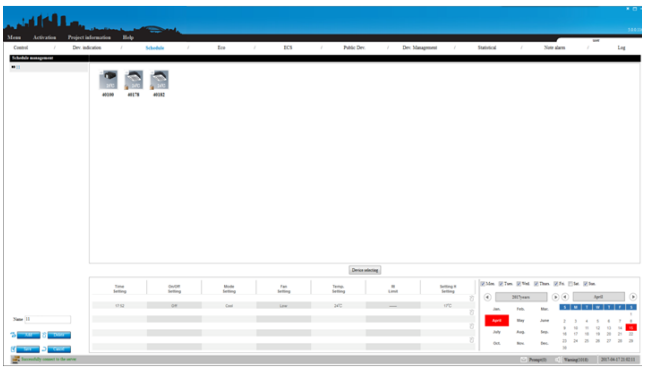


Fig. 112 —Change to Weekly Timing Function

5. Click "Save" to display the saving progress bar.





If some filled in parameters are incomplete, the corresponding prompt is displayed.

Time, air conditioner object, and control command are not selected:

Fig. 113 —Prompt if Missing Parameters

If a complete control command is not selected, (e.g. only "On" is selected, but other parameters are not):

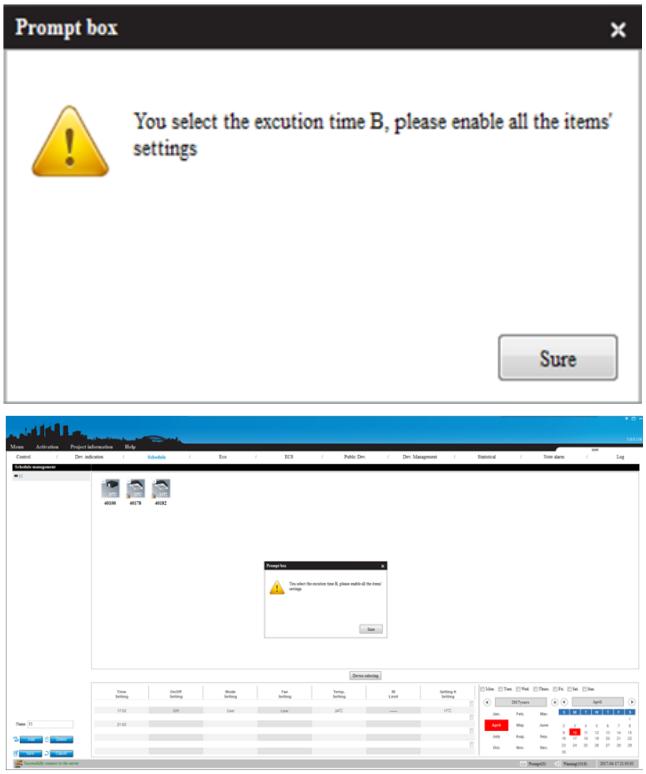


Fig. 114 —Prompt if Complete Control Command is not Selected

When an exiting schedule is modified or a schedule is created but not saved in schedule management and the interface is switched, the system will display a prompt. Click "Sure" to go to another window without saving the current modification. Select "Cancel" to stay in the original interface. Be sure to click "Save."

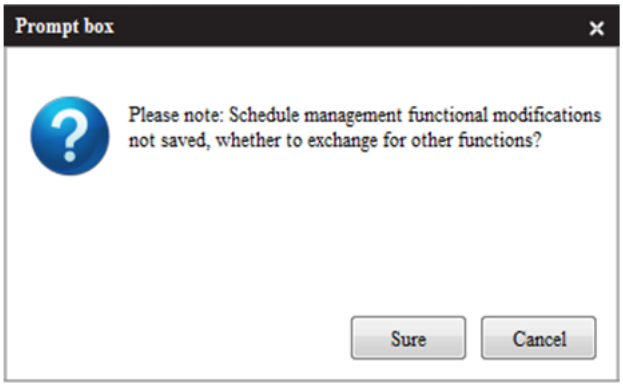


Fig. 115 —Prompt if Exiting without Saving

MODIFYING A SCHEDULE —

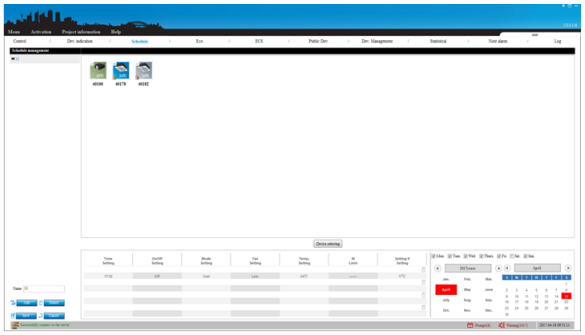


Fig. 116 —Modify Schedule

Change the execution date:

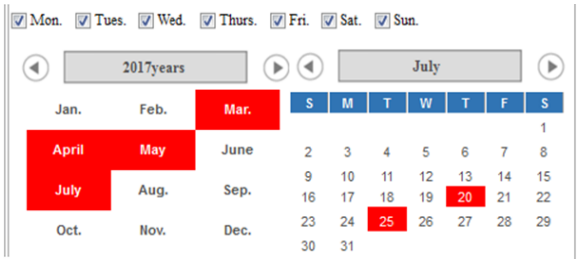


Fig. 117 —Change Execution Date

Modify the execution command of "October Schedule":

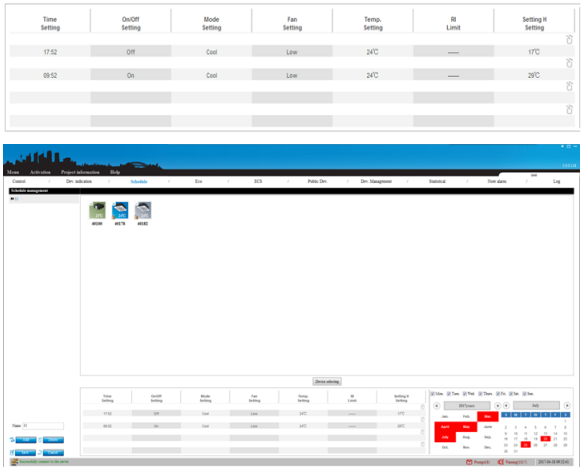
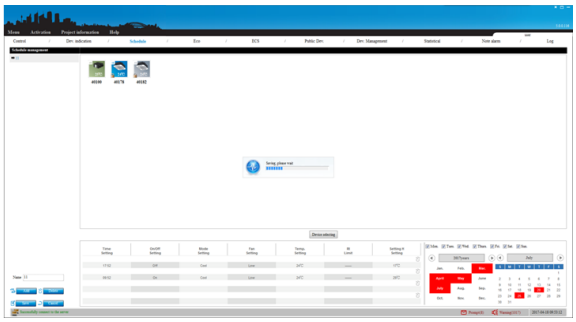


Fig. 118 —Modify Execution Command

Click "Save."



DELETING A SCHEDULE —

1. Select the schedule to be deleted.
2. Click "Delete."
3. Click "Sure" in the displayed prompt box.

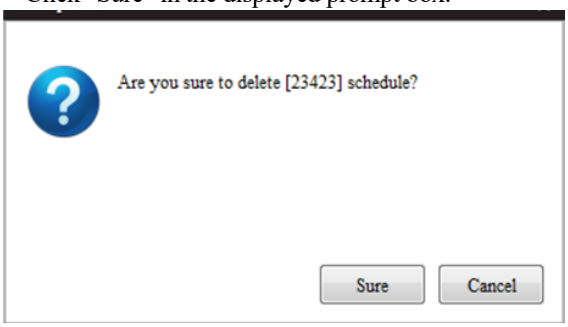


Fig. 119 —Verification to Delete Schedule

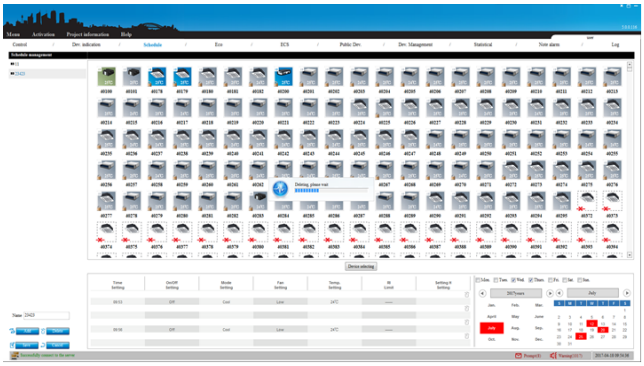


Fig. 120 —Schedule Deleted

ENERGY SAVING MANAGEMENT

A series of energy saving commands can be sent to IDUs on the energy saving management interface.

Cooling temp. Limit	Lock the minimum temperature of IDU cooling Unlocked 17℃ 18℃ 19℃ 20℃ 21℃ 22℃ 23℃ 24℃ 25℃ 26℃ 27℃ 28℃ 29℃ 30℃ Cooling temp. Limit Unlocked Setting On/Off Limit Unlock switc Setting Fan speed limit
Heating temp. Limit	Lock the maximum temperature of IDU heating Unlocked 12℃ 13℃ 14℃ 15℃ 16℃ 17℃ 18℃ 19℃ 20℃ 21℃ 22℃ 23℃ 24℃ 25℃ 26℃ 27℃ 28℃ 29℃ 30℃ Cooling temp. Limit Heating temp. Limit 27℃ Setting Modes limit Setting Swing limit
On/Off Limit	Locked On: The IDU does not respond to the power-off command; Locked Off: The IDU does not respond to the power-on command. Unlock switch Locked On Locked Off On/Off Limit Unlock switc Setting
Fan speed limit	Lock the IDU fan speed
	Unlocked High Medium Low Auto Fan speed limit Unlocked Setting
Modes Limit	Lock the IDU mode: cooling and heating; the IDU does not respond to the power-on command other than the locking mode. Unlocked Cool Heat Fan Dry Auto On/Off Limit Setting Modes limit Setting
Swing limit	Lock horizontal swing Fan speed limit Unlocked Locked Setting Swing limit Locked Setting
RI limit	Lock the remote controller function: The IDU does not respond to any control command of the remote controller. Unlocked Locked RI limit Unlocked Setting
Lock XYE end New function	Lock the XYE communication of IDU: The IDU does not respond to any control command of XYE end, e.g., a two-way wired controller. RI limit Unlocked Locked Setting WC Limit Unlocked Setting

Fig. 121 —Energy Saving Management Interface

Every energy saving attribute is corresponding to a "Setting" button. Only the corresponding energy saving attribute will be sent when the related "Setting" button is clicked.

Setting Energy Saving Attributes —

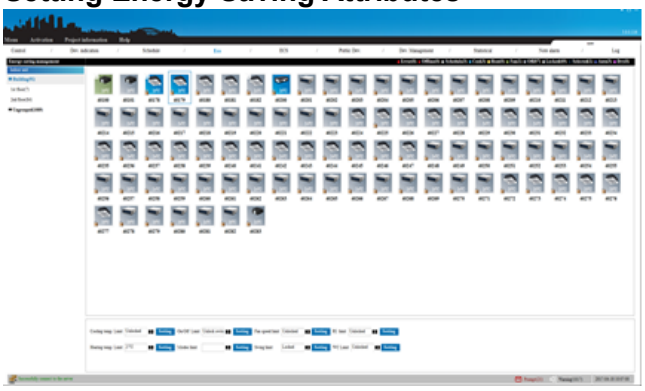


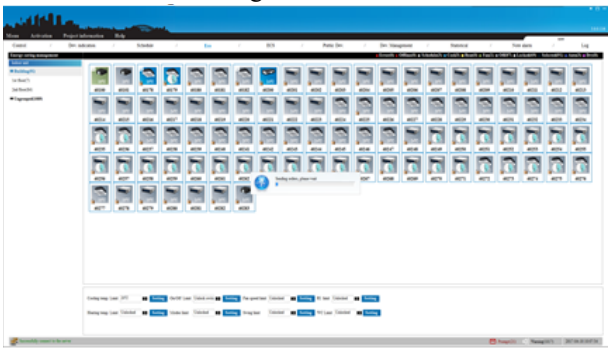
Fig. 122 —Setting Energy Saving Attributes

1. Select the IDU for sending a command. The operations are the same as those on the device monitoring interface.
2. Select the energy saving attribute to be sent.
3. Click the corresponding "Setting" button.

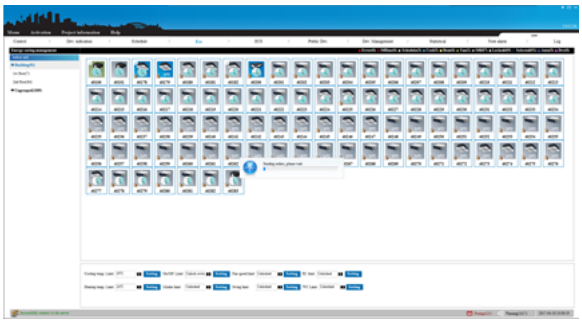
For example, to send the cooling temperature limit 20ºC, heating temperature limit 24ºC, and RI limit "Locked":

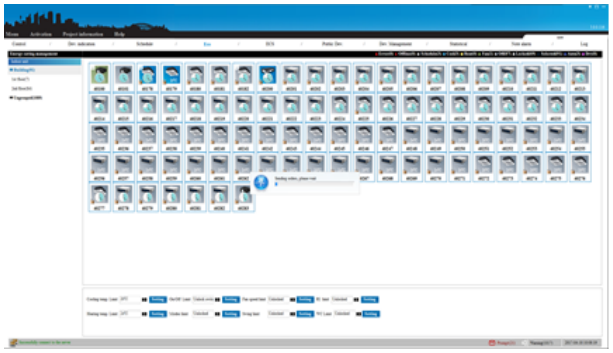
Select 20ºC behind "Cooling temp. Limit," and click "Setting."

4. Send the next command after the command is completed (the timing icon disappears). Otherwise, sending more control commands may cause conflicts, which may lead to command execution failure or it may prevent the command from being executed.

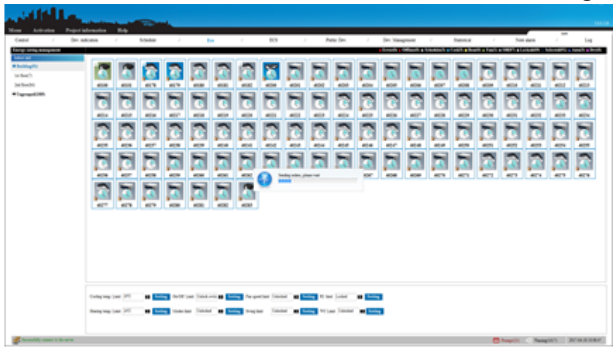


5. Select 24ºC behind "Heating temp. Limit" and click "Setting."





6. Select "Locked" behind "RI Limit," and click "Setting."



A prompt message is generated if command sending fails:

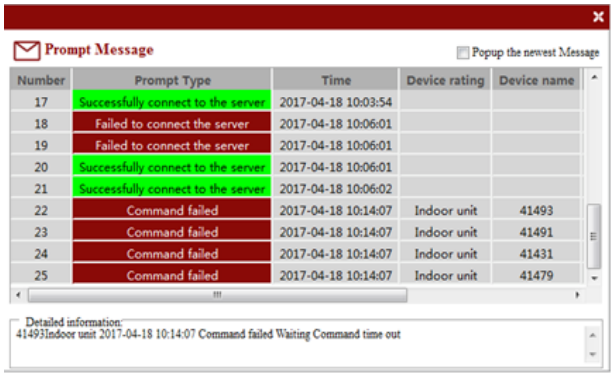


Fig. 123 —Prompt for Failed Command Sending

A prompt box is displayed if "Setting" is clicked without selecting a device.

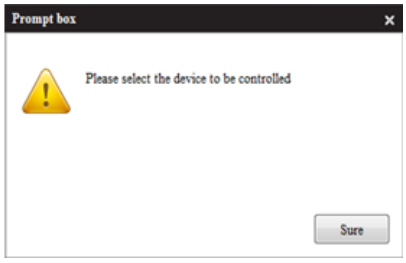


Fig. 124 —Prompt if Setting Clicked Without Selecting Device

VIEWING CURRENT ENERGY SAVING ATTRIBUTES OF DEVICE — View the energy saving attribute status in device monitoring.

The figure below shows the energy saving attribute status of 40178:

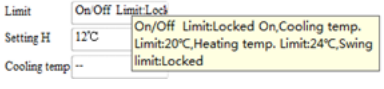


Fig. 125 —Energy Saving Attributes of 40178

The energy saving attribute status of 40285 is "——": 40285 does not have any energy saving attribute status.

Energy Consumption Statistics —

The initial interface is in the locked state.

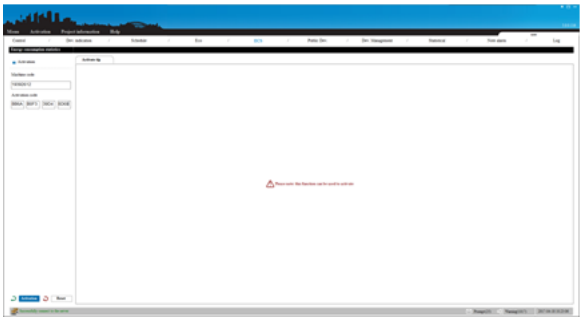


Fig. 126 —Energy Consumption Statistics Lock State

Each machine code is mapped to one activation code. In the actual project, the field debugging engineer sends this machine code to the R&D department. The R&D department will send the activation code corresponding to this machine code to the field. The same client does not need to be activated repeatedly. Different clients need to be activated once even if they are connected to the same server. When a client is connected to different servers, it needs to be activated each time the server is switched.

Enter the corresponding activation code. The following prompt is displayed after unlocking succeeds.

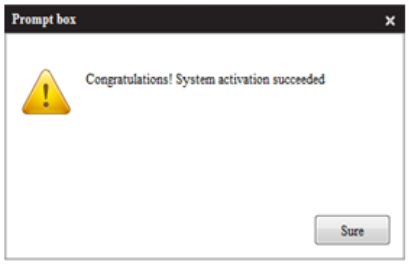
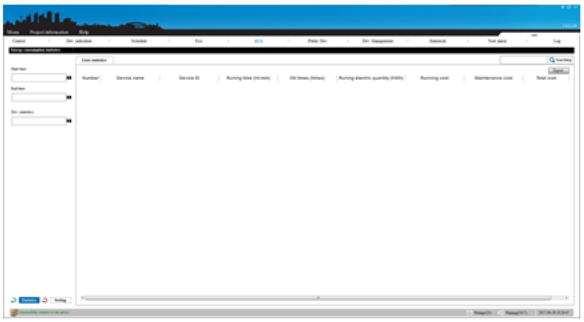


Fig. 127 —Successful Unlock



If the activation code is wrong, unlocking will fail and the system will stay at the locking interface.

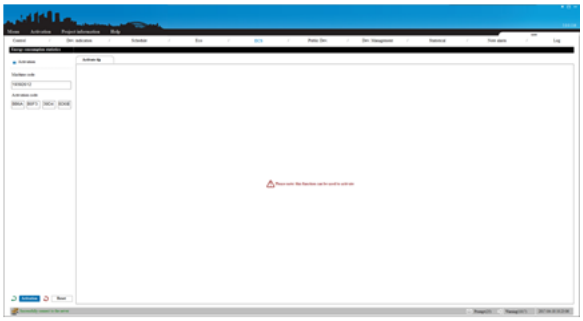


Fig. 128 —Locking Interface

After unlocking succeeds, select the time segment (July 1, 2015 to September 17, 2015) for exporting electricity data. The minimum statistical time unit is day.

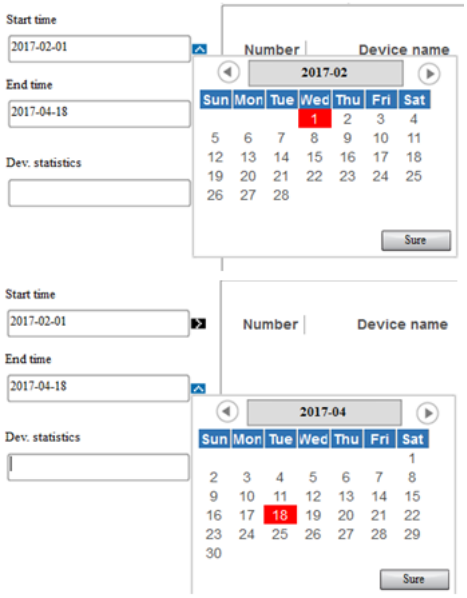


Fig. 129 —Time Segment Selection for Exporting Electrical Data

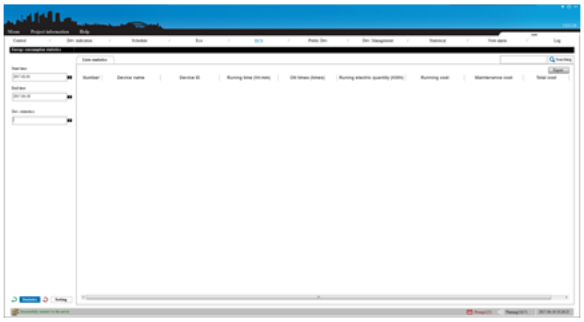


Fig. 130 —Blank Design Device - Counting All IDUs

When "Design device" is blank, it means counting all the IDUs.

1. Click the window under "Design device."
2. Select the specified IDU. The device selection operation on the displayed "Device Selection" window is the same as that described in section, "Adding a Schedule."

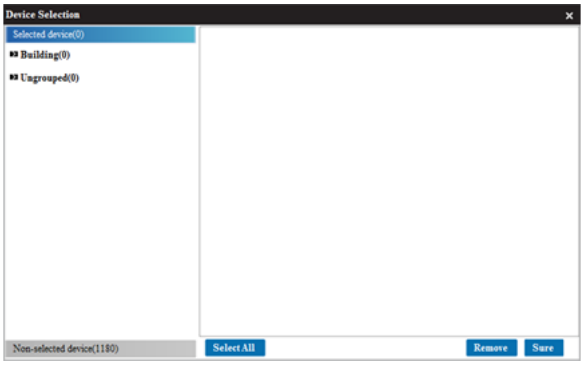


Fig. 131 —Device Selection Window

3. Select the device for exporting cost data.
4. Click "Sure" to return to the energy consumption statistics interface. The name of the selected device is displayed in "Dev. statistics."

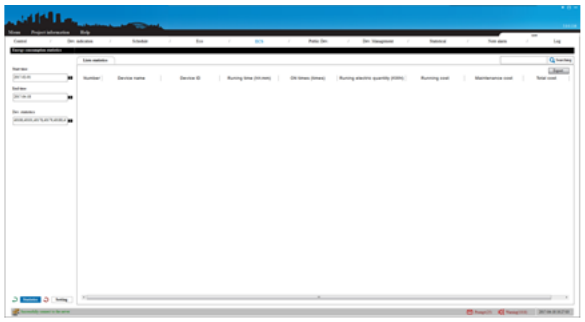
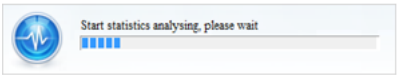
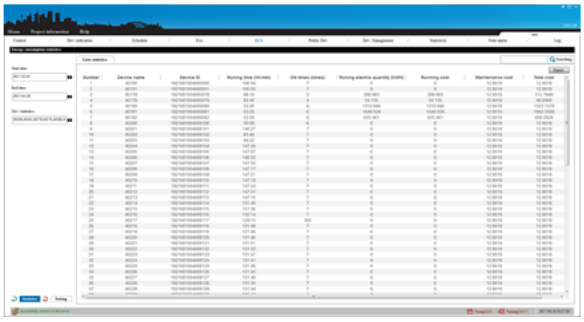


Fig. 132 —Dev. Statistics Window

5. Click "Statistics" to display the statistical progress bar.



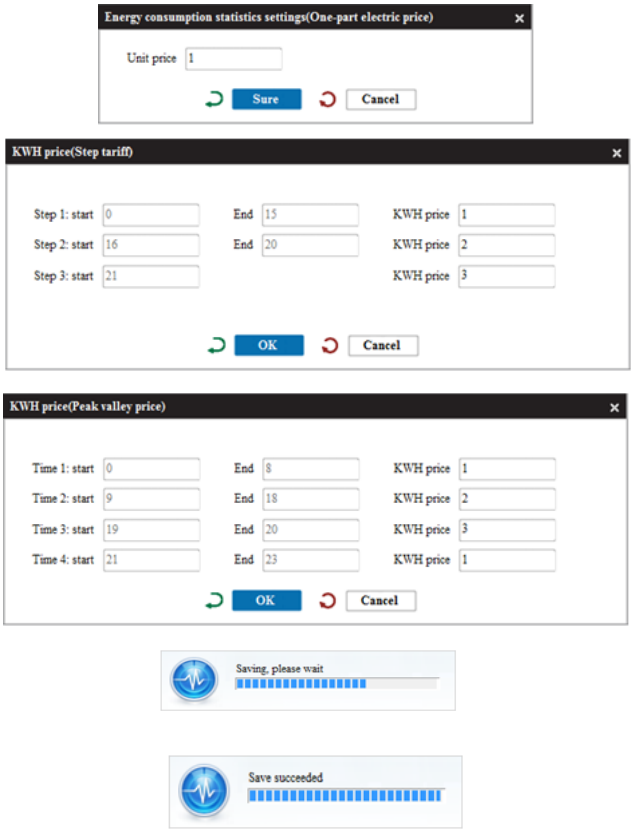


You can click "Setting" to set the electricity price. The displayed window varies with the electricity price mode.

NOTE: You can change the unit price only, but not the electricity price mode. The electricity price mode can be changed under the service and administrator accounts only.

6. After changing the unit price, click "Sure" or click "Cancel" to exit the unit price modification window.

NOTE: After the unit price is changed, click "Statistics" to get cost statistics again.



Public Device —

Fig. 133 —Three Use Attributes of IDUs

In the EMM system, IDUs are classified into three use attributes: Used devices, Public devices, and Idle devices.

When the energy consumption statistic report is exported, independent records are kept for used devices, and public devices and idle devices are not displayed in the report. The costs of public devices and idle devices are dependent on all the IDUs of this EMM system. The exported content varies with the configured report. For details, see the related content in section, “Setting.”

Generally, public devices refer to devices in the public area such as the corridor and elevator waiting hall. Idle devices refer to the devices in the enabled refrigerant system for which the customer does not bear costs (e.g. IDUs in a room that is not rented out). Public devices and idle devices are the same from a technical point of view and used for market use classification only.

CONFIGURING USED DEVICES, PUBLIC DEVICES, AND IDLE DEVICES —

1. Click "Used devices" in the left area.
2. Select some IDUs in the display area on the right, and click "As public device."
3. The selected IDUs will be configured as public devices.
4. Click "As idle device." The selected IDUs will be configured as idle devices.

All the IDUs are used devices by default in the EMM system.

In this example, 40235~40245 are configured as public devices, and 40255~40267 are configured as idle devices.

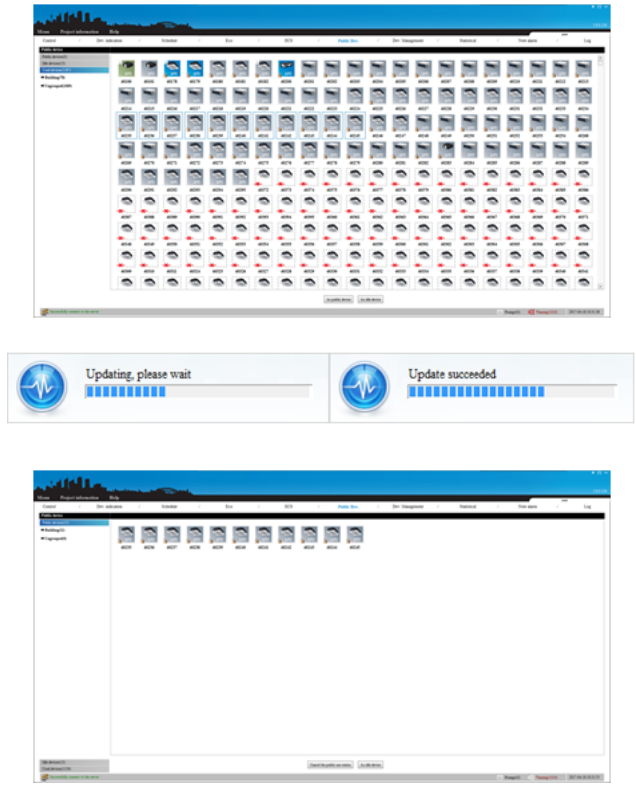


Fig. 134 —Corresponding Progress Bar

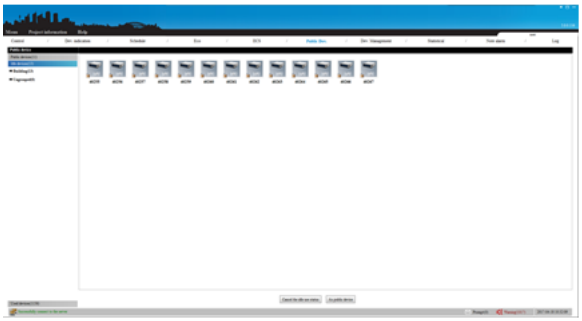


Fig. 135 —Configuring Used Devices, Public Devices, and Idle Devices

1. Click "Public devices" in the left area.
2. Select some IDUs in the display area on the right, and click "Cancel the public use status."

The selected IDUs will be configured as used devices.

3. Click "As idle device." The selected IDUs will be configured as idle devices.
4. Click "Idle devices" in the left area.
5. Select some IDUs in the display area on the right, and click "Cancel the idle use status." The selected IDUs will be configured as used devices.
6. Click "As public device." The selected IDUs will be configured as public devices.

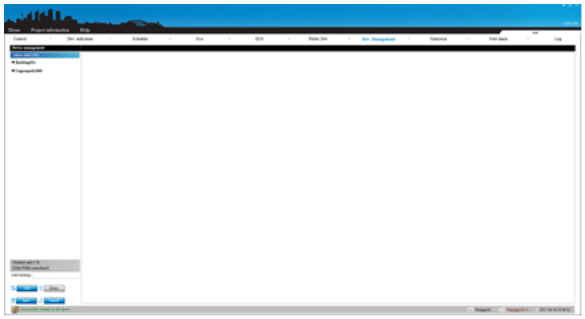
DEVICE MANAGEMENT

To manage IDUs throughout the building conveniently, IDUs are usually grouped by a certain rule in the practical sense (e.g. by floor and by user). The EMM system supports two levels of groups. Level-2 groups are defined under level-1 groups, and corresponding IDUs exist in level-2 groups.

The level-1 group "Building" and the two level-2 groups "1st floor" and "2nd floor" under it have been created beforehand in section, “Device Guide.” They are taken as an example below to describe the creation steps.

NOTE: The IDU and ODU group information is consistent if a group is created under an IDU, and the same group exists under the ODU.

The group information in device management will be synchronized to all the interfaces of the EMM system.



Creating a Group — The IDU and ODU have consistent device information. The level-1 and level-2 group adding operations under ODU are the same as those under IDU. Only the ODU is used as an example in the following group creation operations.

CREATING A LEVEL-1 GROUP —

1. Click "Indoor unit" on the left side.
2. Click "Add." The blinking cursor appears in the text box behind "Building name."
3. Enter the name of the level-1 group to be created (e.g. "Building").
4. Click "Save."

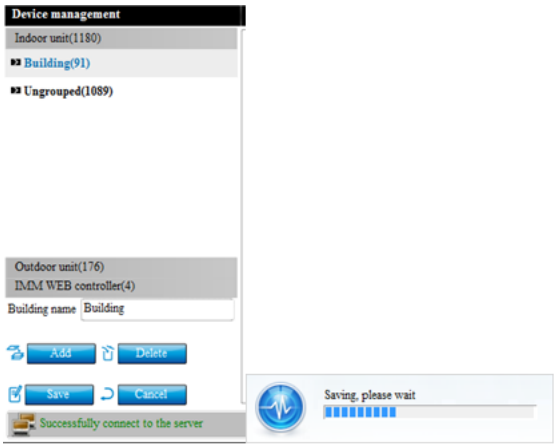


Fig. 136 —Saving Status Bar

CREATING A LEVEL-2 GROUP —

1. Click the level-1 group for creating a level-2 group (e.g. "Building").
2. Click "Add." The blinking cursor appears in the text box behind "Floor name."
3. Enter the name of the level-2 group to be created (e.g. "1st floor").
4. Click "Save."

Fig. 137 —Saving Status Bar

When you click the level-1 group for creating a level-2 group or select any level-2 group under the level-1 group and click "Add," a level-2 group will be created under this level-1 group:

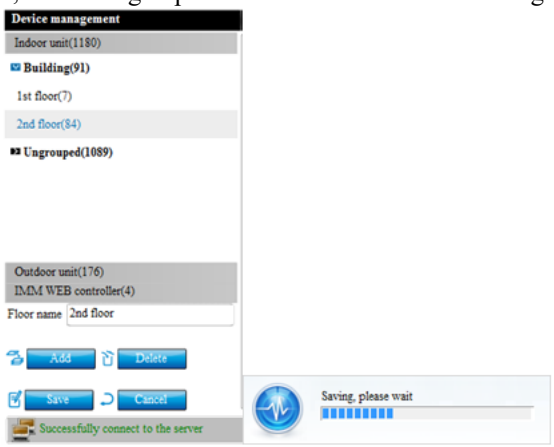


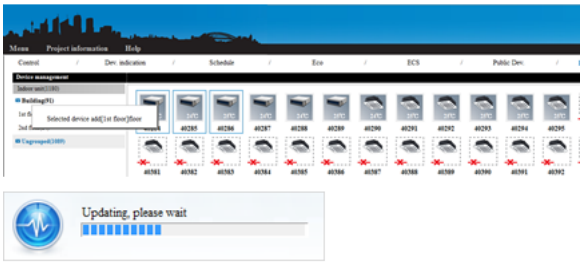
Fig. 138 —Saving Status Bar

Fig. 139 —Saving Status Bar

Adding and Removing IDUs/ODUs —

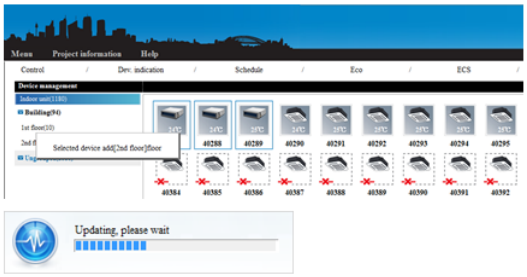
Devices are "Ungrouped" by default.

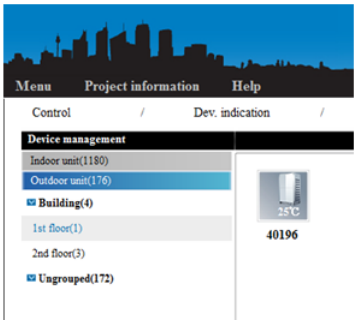
1. Expand the level-1 group for adding devices. Level-2 groups can be seen.
2. Click "Ungrouped" on the left.
3. Select the IDUs to be added to the group.
4. Right-click on the level-2 group, such as "1st floor."
5. Click "Selected device add *** floor" in the displayed menu.



6. Use the same method to add IDUs to "2nd floor."

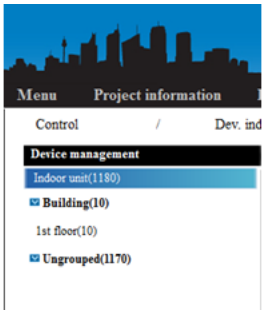
7. Click "Outdoor unit."
8. Expand "Building."
9. Click "Ungrouped."
10. Select ODUs.
11. Right-click on "1st floor."
12. Select "Selected device add *** floor."





DELETING A GROUP — A level-1 group can only be deleted after all the level-2 groups under it have been deleted. Otherwise, the following prompt is displayed.

1. Click the level-1 group and level-2 group to be deleted.
2. Click "Delete."
3. Select "Sure" in the displayed prompt.



NOTE: After a level-2 group is deleted, the devices in the level-2 group will return to "Ungrouped" automatically. After a group is deleted under IDU, the corresponding group under ODU will also be deleted since the group information is consistent under IDU and ODU.

MODIFYING AN IDU PICTURE — A picture can only be changed manually in the old version. The IDU model identification function is added to the new version, but this manual picture changing function is still reserved.

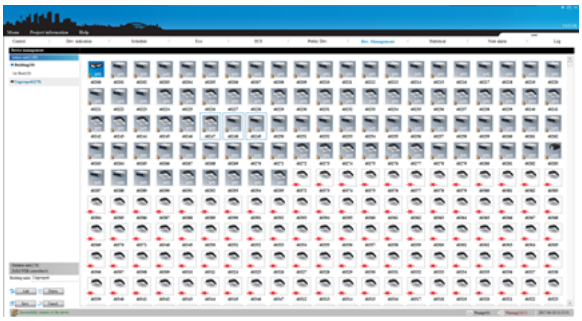
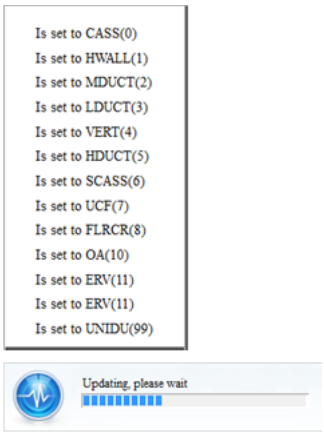
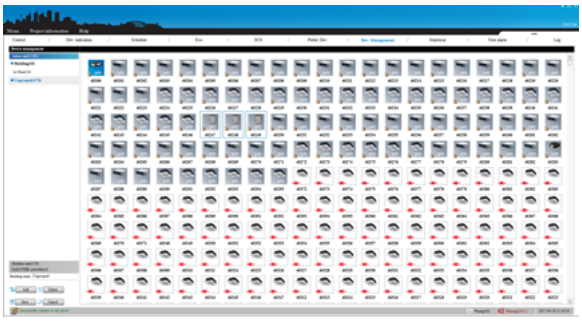


Fig. 140 —Modifying IDU Picture

1. Select the devices that need a picture changed. Click or frame-select the devices; refer to the related description in "Equipment Monitoring."
2. Right-click any selected device, and select the desired model in the displayed box (e.g. "Is set to HWALL (1)").





Statistical Data —

The following reports can be exported through the "Statistical data" interface:

- the running data of IDU/ODU/EMM WEB controller
- kWh meter reading and energy consumption of ODU

The minimum unit for export time is hour.

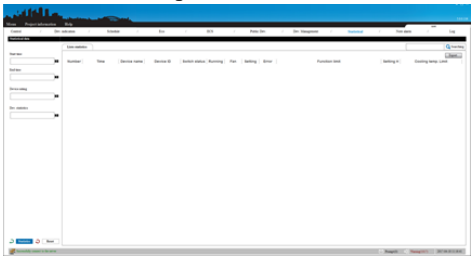


Fig. 141 —Statistical Data Interface

RUNNING DATA OF IDU/ODU/EMM WEB CONTROLLER — A data record is kept when the device status changes in the EMM system, and a data record is also kept forcibly at 00:00 every day.

Select the time segment for exporting data. A prompt will be displayed if the start time is later than the end time.

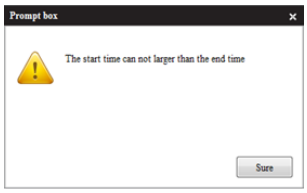


Fig. 142 —Error Prompt

1. Select time.
2. Select the device rating for exporting data: indoor unit, outdoor unit, or EMM WEB controller.

In this example, specific statistical devices can be selected for "Indoor unit" and "Outdoor unit," but only all of the EMM WEB controllers can be counted for EMM WEB controller. Devices cannot be selected.

When "Indoor unit" or "Outdoor unit" is selected for "Device rating" and "Dev. statistics" is empty, the data of all devices are counted by default. The indoor unit status is counted in the following example:

Fig. 143 —IDU Status

3. Select "Start time," "End time," and "Indoor unit" in the "Device rating" box.
4. Click the text box or the small black arrow under "Dev. statistics," and select the devices for counting.

The method is the same as described in section, “Schedule Management.”

5. Click "Sure" to complete device selection.
6. Click "Statistics" to display the progress bar.

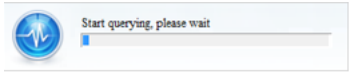


Fig. 144 —Query Status Bar

7. Click the header (except the "Number") of "Lists statistics" to implement sorting. If "Time" is clicked, the data will be sorted by time.
8. Enter the search keyword in the search text box in the upper right corner to filter data in the statistics report. For example, enter 42105. The search keyword takes effect for the entire statistics report, but not a column.

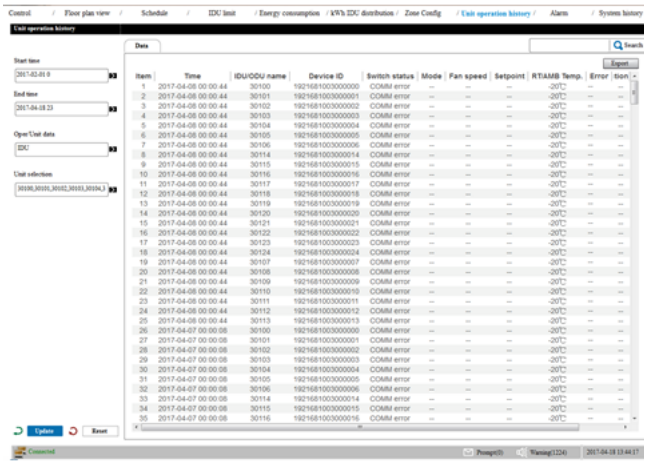


Fig. 145 —Keyword Search

9. Click "Export" to export the currently displayed statistics in a file format. The searched result is exported if you have performed searching. Three export formats are available: excel, txt, and csv.

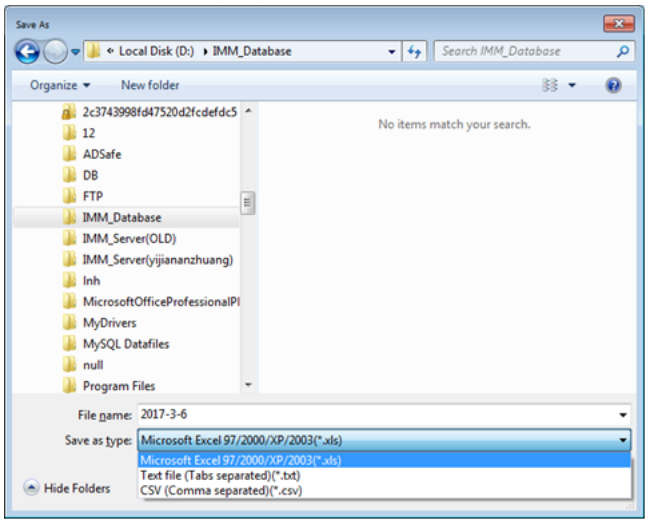
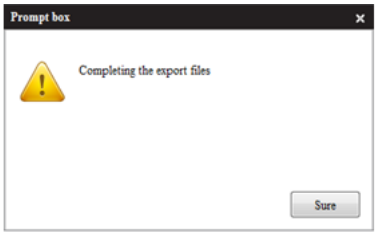


Fig. 146 —Export Currently Displayed Statistics

The prompt box will be displayed after the data is exported successfully:



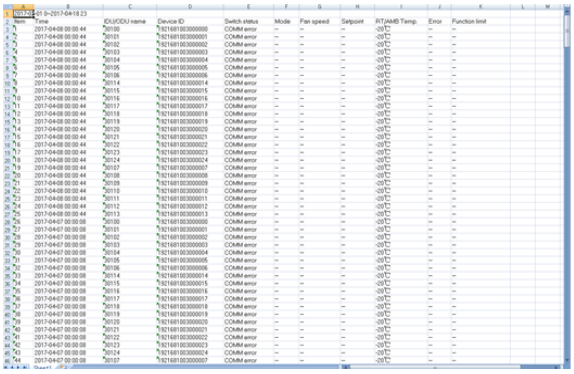
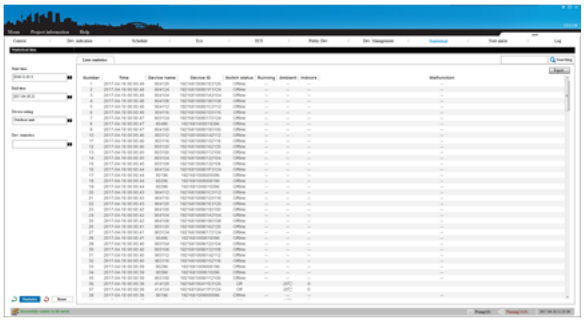
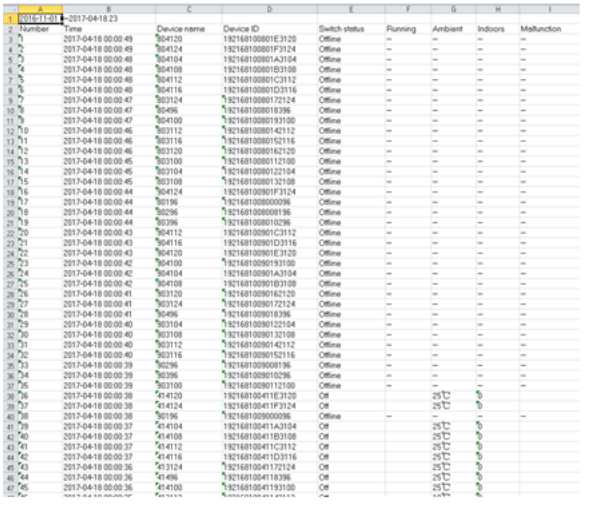
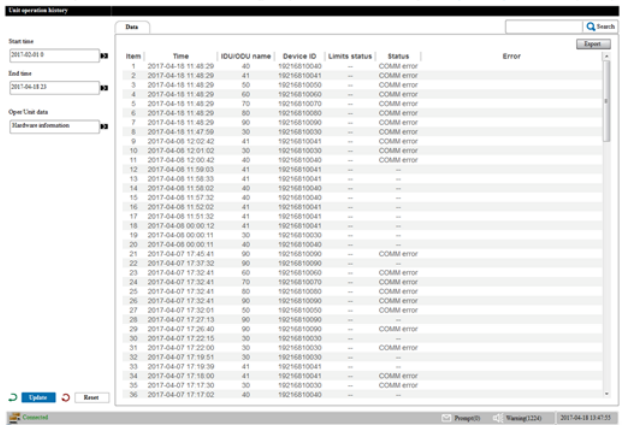


Fig. 147 —Successful Data Export

The interfaces below show the running record statistic tables of ODU and EMM WEB controller.







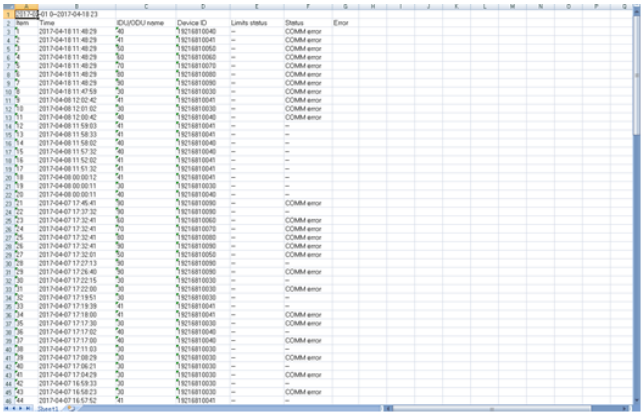


Fig. 148 —Running Record Statistic Tables of ODU and EMM WEB Controller

If there is no data in the selected time, the corresponding prompt will be displayed:

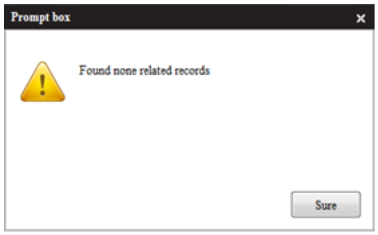


Fig. 149 —"Found Related Results" Prompt

ODU KWH METER READING — The EMM system records the current kWh meter reading of ODU at 00:00 every day. The reading data can be counted in this table.

Fig. 150 —kWh Meter Reading

The corresponding prompt will be displayed if no data is available:

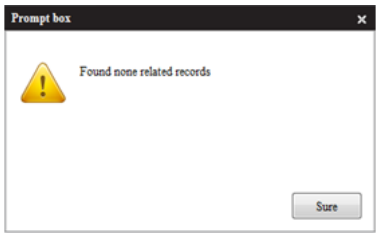
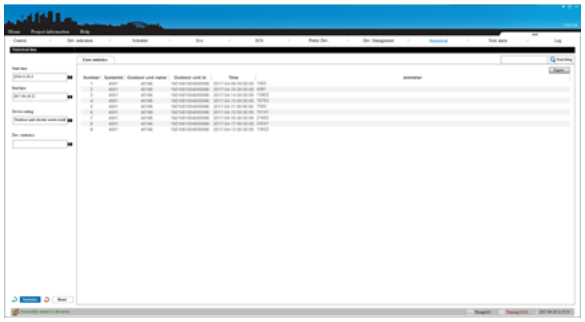


Fig. 151 —Prompt if No Data is Available



Click "Export" to export the currently displayed statistics in a file format. The searched result is exported if you have performed searching. Three export formats are available: excel, txt, and csv.

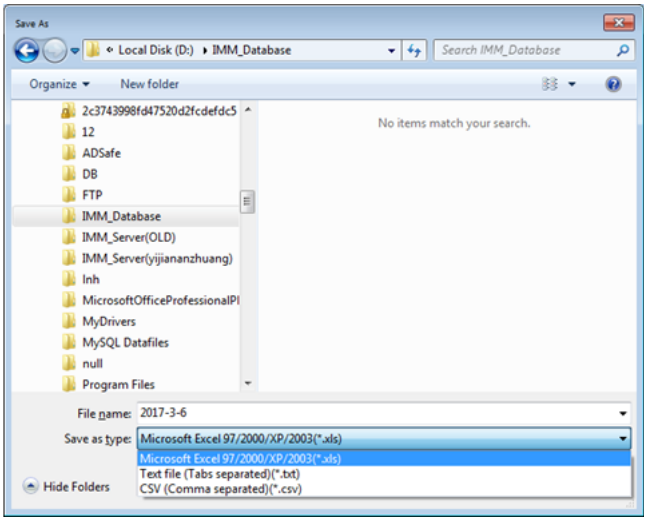


Fig. 152 —Export Currently Displayed Statistics

The following prompt will be displayed after the data is exported successfully:

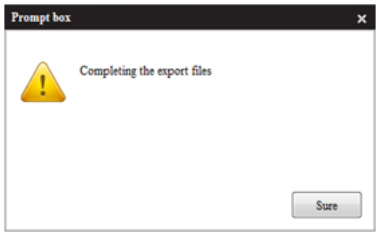


Fig. 153 —"Completing Export Files" Prompt

ODU ENERGY CONSUMPTION — The EMM system can summarize the consumed electricity of each ODU.

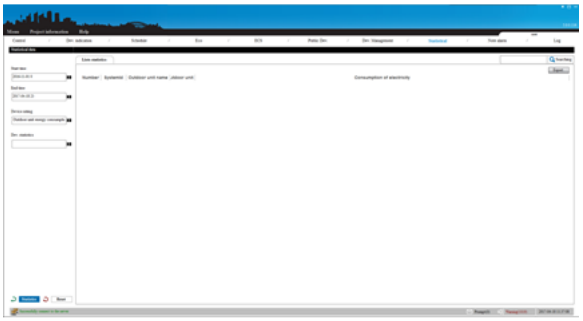
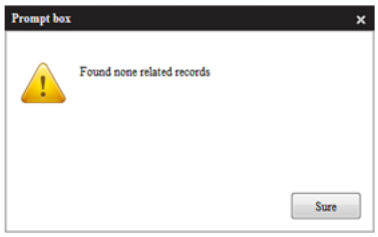
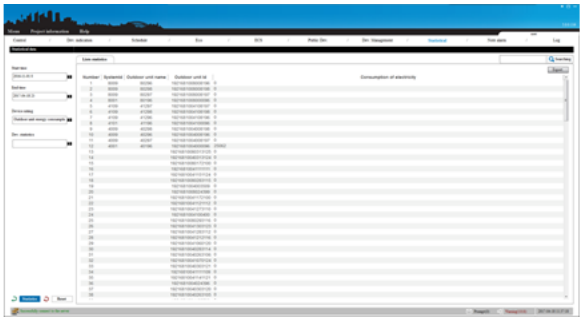


Fig. 154 —Summary of Consumed Electricity of Each ODU

The corresponding prompt will be displayed if no data is available:





Click "Export" to export the currently displayed statistics in a file format. The searched result is exported if you have performed searching. Three export formats are available: excel, txt, and csv.

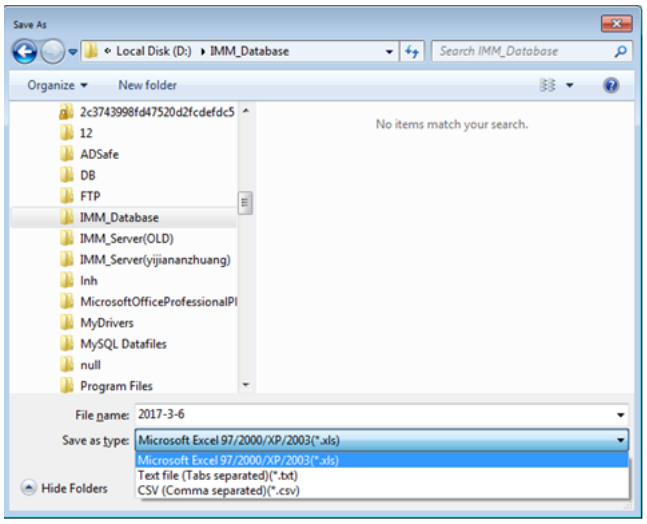


Fig. 155 —Export Currently Displayed Statistics

The following prompt will be displayed after the data is exported successfully:

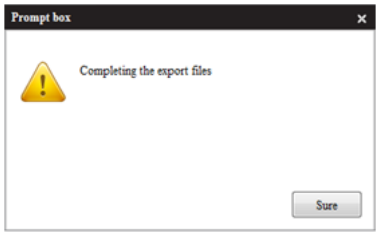
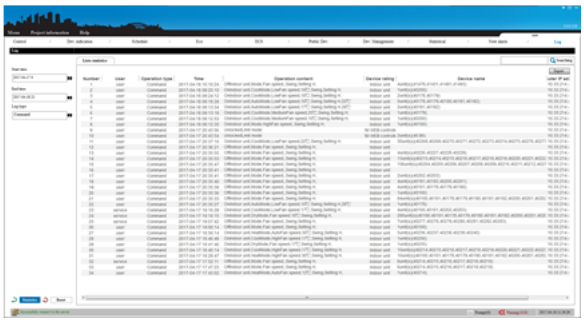


Fig. 156 —"Completing the Export Files" Prompt

Log — The operation records of the EMM system can be counted on the log interface:

- The general control command sent by the EMM system
- The schedule command executed by the EMM system
- The energy saving management sent by the EMM system
- The login record of the EMM system
- The small load running prompt record
- The short message alarm record (right-click alarm record)

1. Select the start time and end time.
2. Select "Command" as the log type. An underline appears under the selected type. More types can be selected.



3. Click "Export" to export the currently displayed statistics in a file format. The searched result is exported if you have performed searching. Three export formats are available: excel, txt, and csv.

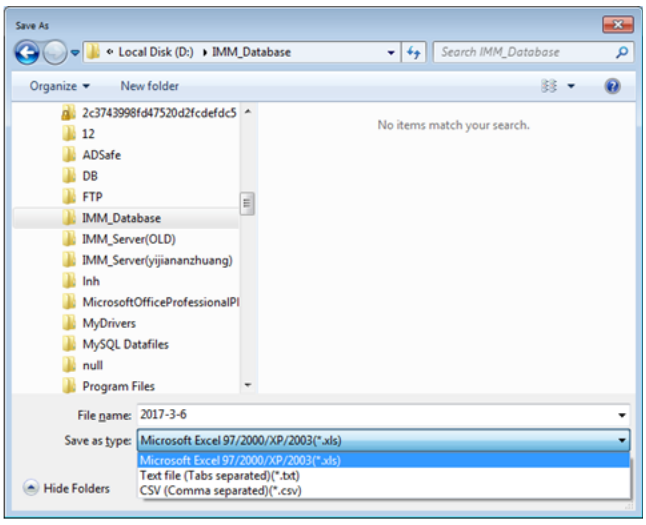


Fig. 157 —Export Currently Displayed Statistics

The following prompt will be displayed after the data is exported successfully:

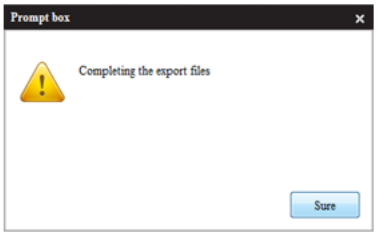


Fig. 158 —"Completing the Export Files" Prompt

The exported report content is as follows:

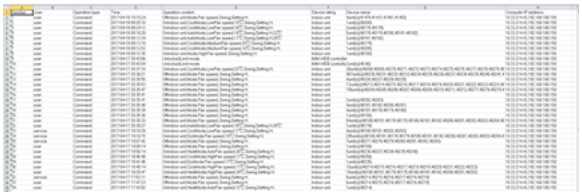
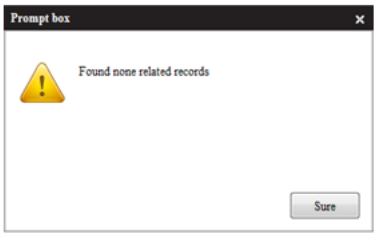


Fig. 159 —Export Report Content

The corresponding prompt will be displayed if no data is available:



PRECAUTIONS:

To export an Excel file through the EMM system, Excel must be installed on the computer.

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