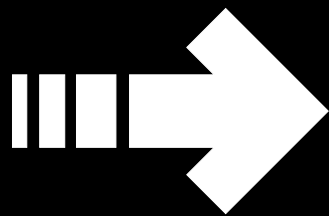# Third Generation Network System
Installation and operation manual
(Firebird database Edition)

Please keep this operation manual properly.
Read this operation manual carefully before using the unit.

***Third Generation
Network System
Installation Manual***

1. As with the fault report of indoor units, the fault report of outdoor units shows the fault and protection information generated by all the outdoor units during a certain period.
2. The report only outputs the fault and protection information generated by all the outdoor units during a maximum of 7 days.
3. This report is used to query the fault and protection information generated by all the outdoor units in the system during a certain period.

5.2.7 Printing/Outputting a Report as an Excel or Word File

Fig.5-7

1. To print the report, directly click to output it to the default printer.
2. To save the report as an Excel file, take turns to click (**Select All**), (**Paste**) and , and then save the file.
3. To save the report as a Word file, take turns to click (**Select All**), (**Paste**) and , and then save the file.

- Thank you for your confidence and choosing the Third Generation Network System.
- To ensure correct use of the product, please read this manual and the indoor unit operation manual carefully before using the unit.
- For convenience of future reference, keep this manual properly after reading it.
- For any question, contact the supplier.
- Make sure you have a *Customer Service Manual.*

5.Electricity Expense Distribution and Reports

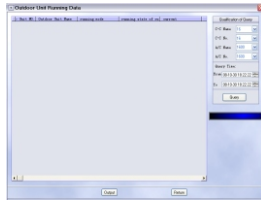### 5-2-4   Operating Data of Outdoor Unit

Fig.5-4

1. As with the operating data report of indoor unit, the operating data report of outdoor unit shows the operating data of an outdoor unit generated during a certain period.
2. The report only outputs the operating data generated by one outdoor unit during a maximum of 7 days.
3. This report is used for data analysis in order to identify the cause of a fault.

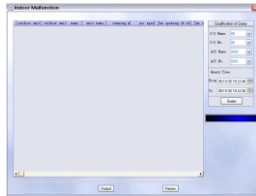### 5-2-5   Fault Report of Indoor Units

Fig.5-5

1. The fault report of indoor units shows the fault and protection information generated by all the indoor units during a certain period.
2. The report only outputs the fault and protection information generated by all the indoor units during a maximum of 7 days.
3. This report is used to query the fault and protection information generated by all the indoor units in the system during a certain period.

5-2-6   Fault Report of Outdoor Units

Fig.5-6

Content

5.Electricity Expense Distribution and Reports

a.   The statistics of electricity expense is conducted by group. You can print the electricity expense of one or all indoor units in the group.

b.   You can query and print the electricity expense incurred during any period.

c.   The electricity expense includes basic electricity expense and amortized electricity expense. The electricity expense incurred by each indoor unit during the specified period is indicated by the total electricity expense in the report.

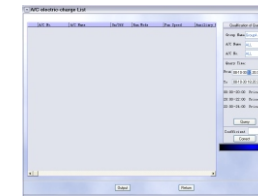### 5-2-2   Air-conditioning Electricity Expense Details

Fig.5-2

1. Similar to a phone bill, the electricity expense details list shows the electricity expense of indoor units in detail. As with the electricity expense statistics, you can also print the electricity expense details of one or all indoor units in the group.

2. You can output the details about the electricity expense incurred during any period.

3. Only the basic expense is outputted, and no amortized expense is counted.

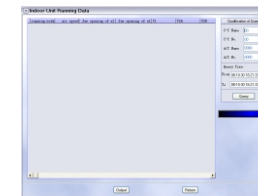### 5-2-3   Operating Data of Indoor Unit

Fig.5-3

1. The operating data report of indoor unit shows the operating data of an indoor unit generated during a certain period.

2. The report only outputs the operating data generated by one indoor unit during a maximum of 7 days.

3. This report is used for data analysis in order to identify the cause of a fault.

5. Electricity Expense Distribution and Reports

b.　When the system is running in cooling mode (basic electricity consumption)

Cooling indoor unit: Its electricity consumption includes the amortized electricity consumption of outdoor units and the electricity consumed by the indoor unit fan and the electric heater.

Air supply indoor unit: Its electricity consumption includes the electricity consumed by the indoor unit fan only.

Standby indoor unit: No electricity consumption is calculated.

c.　When the system is running in heating mode and no indoor unit is in collision (basic electricity consumption):

Heating indoor unit: Its electricity consumption includes the amortized electricity consumption of outdoor units and the electricity consumed by the indoor unit fan and the electric heater.

Standby indoor unit: No electricity consumption is calculated.

d.　When the system is running and an indoor unit is in collision (basic electricity consumption):

Heating indoor unit: Its electricity consumption includes the amortized electricity consumption of outdoor units and the electricity consumed by the indoor unit fan and the electric heater.

Cooling indoor unit (collision): Its electricity consumption includes the electricity consumed by the indoor unit fan only.

Air supply indoor unit (collision): Its electricity consumption includes the electricity consumed by the indoor unit fan only.

Standby indoor unit: No electricity consumption is calculated.

5-2　Reports

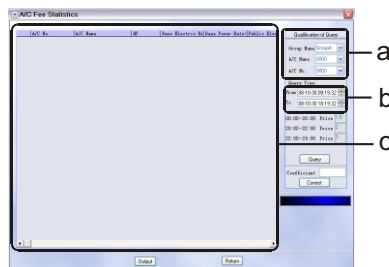### 5-2-1　Air-conditioning Electricity Expense Statistics

Fig.5-1

1 General Description of The System

1-1 Third Generation Network System

Intelligent network air-conditioning management system is upgraded and improved based on the original network management system. It integrates the previous network monitoring systems and the network power distribution system. The previous network monitoring system can be replaced by the third generation network system. During power distribution, the refrigerating system uses V3 and D3 outdoor units.

1-2 Available occasion

This network monitoring system is extremely suitable for monitoring the air conditioning systems in small and medium buildings in a centralized manner. It can manage up to 1,024 indoor units and up to 512 outdoor units.

1-3 Features

1)　The system introduces the concept of building. By assigning some properties to an air conditioner, the system enables the air conditioner to contact outdoor unit groups and allows for some expense features.

2)　The system introduces the concept of user hierarchy to ensure that the operations performed by users will not affect the correctness of the system data.

3)　The system keeps track of the operating data of indoor units and outdoor units to facilitate maintenance of the air conditioning system.

4)　The system provides LonWorks gateway interface to enable the external LonWorks to control the air conditioning system.

5)　The system can select whether to conduct power distribution by changing the properties of an indoor unit.

6)　The system can quickly prompt the fault information about the air conditioning system and provide elimination method.

7)　The system enables online diagnosis via Internet to ensure safe use of your air conditioning system.
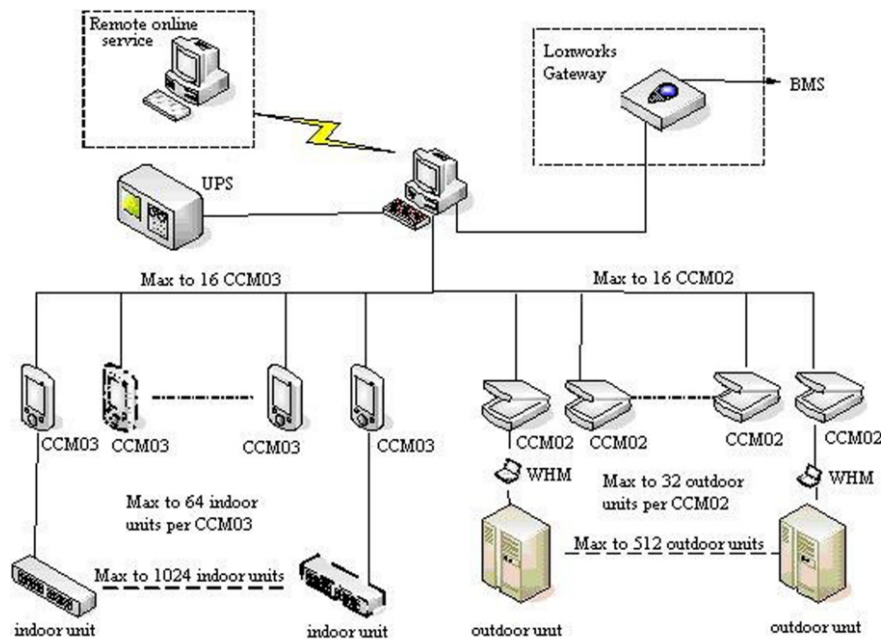
2 System Configuration

2-1 System diagram

Fig.2-1

1) The system can connect with 16 indoor central controllers and 16 outdoor central controllers simultaneously. Each indoor central controller can connect with 64 indoor units, and each outdoor central controller can connect with 32 outdoor units.

2) The communication lines of indoor central controller, outdoor central controller and computer are converged and then led into the computer through a serial port or USB port on the computer.

3) LonWorks gateway is connected via another serial port. The computer should have two serial ports; otherwise, one USB-RS232 converter is required.

4) Remote online service system transfers data from the monitoring computer to the remote units via Internet.

5.Electricity Expense Distribution and Reports

V.   Electricity Expense Distribution and Reports

5.1   Principles of Electricity Expense Distribution

1.   The system amortizes the expense of electricity consumption, including the electricity consumption of outdoor units, indoor unit fans, and electric heaters.

2.   All the indoor units in the refrigerating system participate in the amortization of the electricity consumption of the outdoor units in the refrigerating system. The outdoor units in a different system do not participate in such amortization.

3.   The electricity consumed by an indoor unit within a certain period includes two portions: basic electricity consumption and amortized electricity consumption.

a.   The basic electricity consumption includes the electricity consumed by the indoor unit for cooling, heating or air supply.

b.   The amortized electricity consumption includes the electricity consumed by the outdoor units when the system is in standby state and the electricity consumed by the outdoor units when the refrigerating system is running normally but the billing system is faulty (the administrator can log into the system to select whether to count this portion).

c.   Calculation of basic electricity consumption:

$Fa = FA*e$

Where FA indicates the total electricity consumed by the refrigerating system during a certain period, and e indicates the factor of proportionality based on the size of indoor units.

d.   Calculation of amortized electricity consumption

$Fa = FA*e$

Where FA indicates the total electricity amortized by the refrigerating system during a certain period, and e indicates the factor of proportionality based on the size of indoor units.

4.   Electricity expense distribution methods of a refrigerating system   in different scenarios:

a.   When all the indoor units in the system are in standby state (cooling, heating and air supply functions are not used), each indoor unit amortizes the electricity consumed by outdoor units according to its proportion of size. Such electricity consumption is amortized consumption.
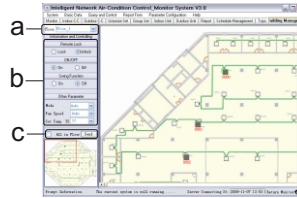
Fig.4-16

A. List of all the floors. The drop-down list includes all the set floors. After you select a floor from the drop-down list, the plan of the floor is displayed in the right part.

B. It is used to set an indoor unit. Select an indoor unit in the plan in the right part, and then set parameters such as remote control lock and operating mode in B.

C. After setting the parameters in B, click **Send** to complete the setting. To apply the settings to all the indoor units, select the **All indoor units on the floor** check box.

4-11 Command Sending Prompt Box
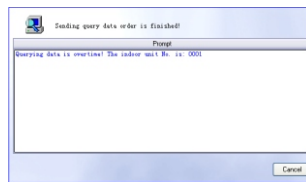
Fig.4-17

1. In the system, commands can be sent manually or according to the timer setting or defined group tasks. If all the manual commands are sent successfully, the sending box will close automatically; if any of manual commands fails to be sent, you need to close the sending box manually. If the automatic commands triggered by the system are sent successfully, the sending box will close automatically.

2. The type of the sent command will be displayed in the sending box, whether the sending succeeds or not.

3-1 Devices Required and Their Specifications

Fig.3-1

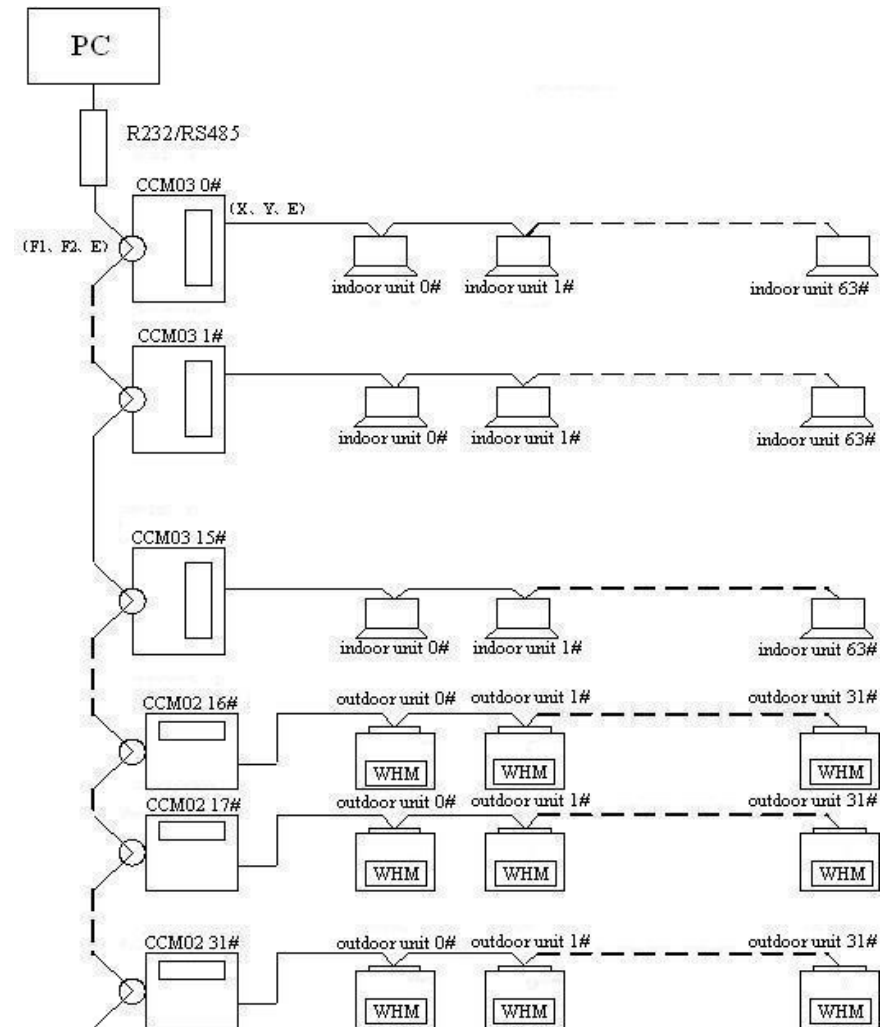# 3 System Structure

No		Equipment specification	Recommendation	Note
1	PC	CPU: 3.0G or more frequency. Hard disk: 40G or more. Memory: 2G or more Communication port: two or more R-232 ports, and three or more USB ports. Operation system: WIN2000 or WIN XP. Printer: Ordinary laser printer or ink jet printer is able to output A4 size paper.	Lenovo, DELL products	
2	Un-interrupted power supply (UPS)	Capacity: 200~250W/20min Voltage: As per the field requirement. Control signal: Power failure signal.	APC SU700 series	Optional Accessory, recommend to choose
3	Watt hour meter (WHM)	Function: Dynamically change the address of WHM as per the standard and display the reading of WHM as per the dynamic address of main board input.	Zhengtai DTS634 Zhitong DTS636	Reference to the supplier Instruction
4	3rd network system package	Attached Operation manual, soft-dog, Installing disk and 485-232 converter		Must purchase it from Air conditioner supplier.
5	Other	3-cord Shielded twisted-pair wire		Conform to Air conditioner supplier network air

Table 3-1

⚠ Note

I. Please keep your Softdog well. If the Softdog is lost, Commercial Air Conditioning Equipment will not provide another one.

II. The client needs to purchase the software environment (OS) required for the running of the network monitoring system. Commercial Air Conditioning Equipment Co., Ltd. only installs the network monitoring system and provides related technical support.

4. System Operation

4. To add a task, click **Add**, and then set parameters in b. The task settings are similar to the indoor unit settings, except that on/off setting is unavailable here. By default, each task is startup task. After selecting all the items, you can also set whether to run the task every week. If you select **Weekly** and the task is to be run on Tuesday, the task will run at the specified time on every Tuesday. If you select **Weekly**, the task will run at the specified time and be deleted after being executed. After completing the above settings, click **Save**. Then you can view the task in c.

5. To modify a task, select it in c, modify its parameters in b, and then click **Save**.

6. To delete a task, select it in c, and then click **Delete**.

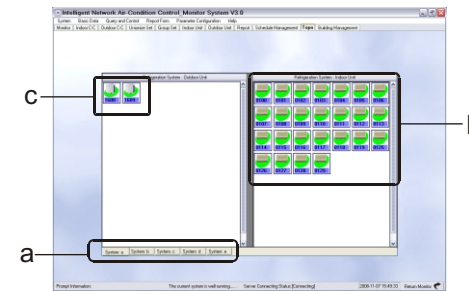## 4.9 Topology of Refrigerating Systems

Fig.4-15

A. List of all the floors. The drop-down list includes all the set floors. After you select a floor from the drop-down list, the plan of the floor is displayed in the right part.

B. It is used to set an indoor unit. Select an indoor unit in the plan in the right part, and then set parameters such as remote control lock and operating mode in B.

C. After setting the parameters in B, click **Send** to complete the setting. To apply the settings to all the indoor units, select the **All indoor units on the floor** check box.

4-10 Floor Management
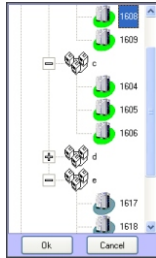
4. System Operation

Fig.4-13

1. b displays the status of the outdoor unit. If an item is not available to the outdoor unit, the corresponding box is blank. The information displayed is updated and synchronized with the information in the database.

2. C displays the status identifier of the outdoor unit. It identifiers the operating mode and fan status of the outdoor unit. Among the operating mode icons, indicates cooling, and indicates heating. indicates the high air flow of the outdoor fan, and indicates the low air flow.

4-8 Schedule Management Interface
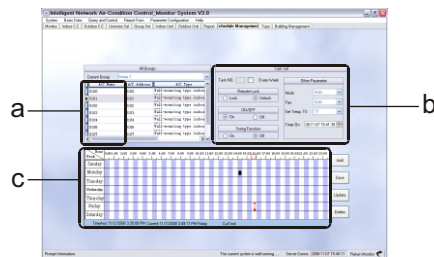
Fig.4-14

1. B is used to setting tasks. After you select a group in the current group selection box, a displays all the indoor units in the group, and c displays all the tasks set in the group.

2. Each task in the group are startup task; that is to say, the unit starts at the beginning of the task and shuts down at the end of the task.

3 System Structure

3-1-1 Indoor, outdoor centralized controller
A. Indoor centralized controller

1) The indoor central controller is used to query and control indoor units, transfer the status information of the indoor units to the computer, and transfer the control and query commands from the computer to the indoor units.

2) Overview of the indoor central controller
   (1) Overview
   a. Each indoor central controller can connect with 64 indoor units to form an air conditioning LAN, so as to control all the air conditioners within the LAN in a centralized manner. The indoor central controller sends control commands and status setting commands to the indoor units to provide control functions. The control signal of an indoor central controller can be transferred up to 1,200m.
   b. The indoor central controller can connect with the computer to perform operations such as centralized management and control, parameter setting, and status query on all the air conditioners within the network. It can also connect with a WAN via a computer or gateway to control the air conditioners remotely.
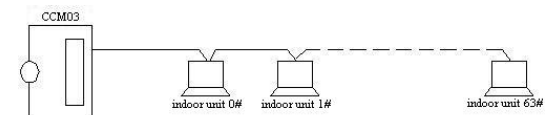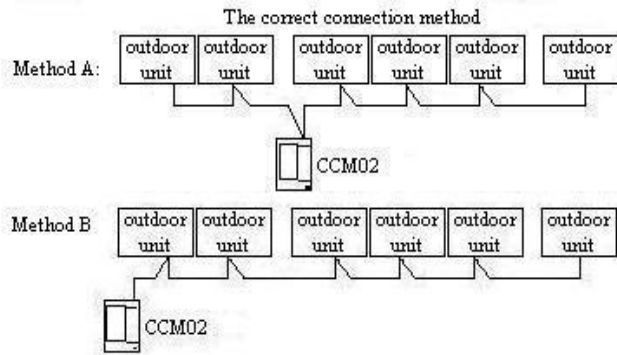
   (2)Wiring

Fig.3-2

⚠ Note

A matching resistance of 100Ω or 120Ω must be added to the nearest end and farthest end of the bus (X, Y).

B. Outdoor centralized controller

1) Overview of outdoor centralized controller
   (1) The controller enables centralized control over and data query of the outdoor units. Each controller can form a monitoring and controlling network with up to 32 outdoor units through a network interface module. Wired connection is used for communication and to enable centralized control over outdoor units in the network.

3 System Structure

(2) The indoor central controller can communicate with the computer through an RS485RS232 converter. Each computer can connect with 16 indoor central controllers and 16 outdoor central controllers. The computer can perform operations such as centralized control, management and status query on the indoor central controllers, outdoor central controllers, indoor units and outdoor units within the monitoring network.

(3) For the communication between outdoor central controller and outdoor unit and that between computer and outdoor central controller, the master raises questions and the slave answers them. In the monitoring network consisting of outdoor central controllers and outdoor units, the outdoor central controllers act as masters and the outdoor units act as slaves.

2) Wiring

Fig.3-3

⚠ **Note**

A matching resistance of 100Ω or 120Ω must be added to the nearest end and farthest end of the bus (K1, K2).

3-1-2 Active watt-hour meter
1)Function
WHM is used to measure the electricity consumption of each outdoor unit in the system and transfer the read data to the main control board of the outdoor unit.

4. System Operation

3. c is used to set the indoor unit. The setting is similar to the indoor unit setting on the indoor central controller interface, except that the setting is for the indoor unit selected in b, and no check box is available for selecting all the indoor units.

4. d displays the operating status of the indoor unit. If an item is not available to the indoor unit, the corresponding box is blank. If no timing information is available, ? 0: 0: 00? is displayed; if timing information is available, it is displayed in a format like ? ? . When the timed task is completed, the non-timing state is restored. In case of mode collision, the word ? collision? will be appended to the displayed mode and displayed in the field with mode collision. The information displayed is updated and synchronized with the information in the database.
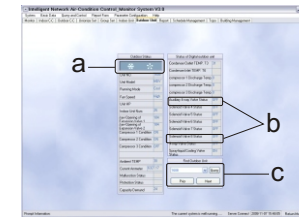
4-7   Interface of Outdoor Unit

Fig.4-12

1. Only query function is available to the outdoor unit, so the interface of outdoor unit only consists of an outdoor unit selection area, outdoor unit status display area, and indoor unit status identifier. The information displayed in the outdoor unit status display area is updated and synchronized with the information in the database. When you click **Query**, the latest status will be displayed.

2. a is used to select an outdoor unit. Click beside the outdoor unit drop-down list to view the tree consisting of outdoor central controllers, outdoor unit groups and outdoor units, as shown in Figure 2-9. Select an outdoor unit, and then click **OK**. Then the name of the outdoor unit appears in the drop-down list.

4. System Operation

becomes red after being selected), and then double-click it. Then the schedule management setting interface appears, showing the detailed settings of the task.
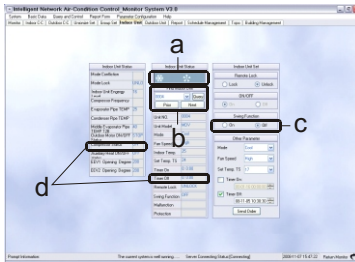
4-6 Interface of Indoor Unit

Fig.4-10

1.   A displays the status of the selected indoor unit. After you click **Query**, the status of the current indoor unit is displayed in a. In this display area, operating mode icon, timer icon, fan speed icon and lock icon are available. Among the operating mode icons, indicates cooling, and indicates heating. indicates that a timer is set. indicates that high air flow of the fan, and indicates the low air flow. indicates that the remote control or mode is locked.
2.   b is used to select an indoor unit. Click beside the indoor unit drop-down list to view the tree consisting of indoor units and controller, as shown in Figure 4-7. Select an indoor unit, and then click **OK**. Then the name of the indoor unit appears in the drop-down list. Click **Query** to display information about the indoor unit in d.
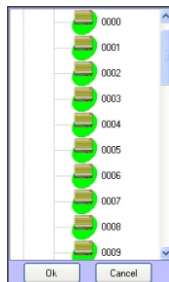
Fig.4-11

3 System Structure

2) Requirement
(1) The WHM shall be able to be read via an RS485 port. The communication of the WHM shall comply with *DL-T645-1997 Multi-function Watt-hour Meter Communication Protocol*.
(2)   The WHM shall comply with the relevant national technical standards and be verified by the competent power supply administrative department.
(3)   The WHM shall comply with the technical requirements for Grade 1 WHMs specified in *GB/T1725-2002 Grade 1 and Grade 2 Static AC Watt-hour Meters*.
(4)   Installation environment:
Specified operating temperature: -25℃~+55℃
Limiting operating temperature: -40℃~+70℃
Relative humidity: <85%
(5)   Wiring method of WHM: Refer to the wiring nameplate delivered with the WHM.

3-1-3 Softdog

Softdog is required during the installation and running of the system. Insert the Softdog into any USB port. Softdog is delivered with the network kit.

Fig.3-4

4-1 Installation and Setting
1.   Install and run Firebird (see 4.2.1. Installing Firebird).
2.   Install Firebird ODBC (see 4.2.2. Installing Firebird ODBC).
3.   Install network monitoring system (see 4.2.3. Installing the
      Network Monitoring System).
4.   Set Firebird ODBC (see 4.2.4. Setting Firebird ODBC).
5.   Install Softdog driver (see 4.2.5. Installing Softdog Driver).
6.   Set the computer according to the OS used (see 4.2.6. Setting the
      OS).

4-2 Installation

4-2-1Installing Firebird
1.   Run Firebird-2.0-Win32.exe in the installation CD. On the
interface as shown below, select **English**, and then click **OK**.

Fig.4-1
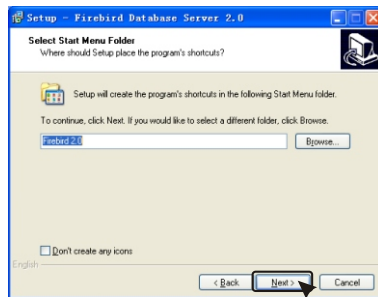
 2.   On the interface as shown below, click **Next.**

Fig.4-2

mode through the upper computer. To unlock the mode of all the indoor
       units, click **Unlock**, and then click **Send Unified Mode Lock
       Command**. If the command is sent successfully, the mode of all
       the indoor units can be changed.

4-5 Group Setting
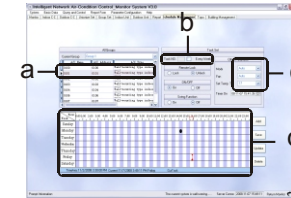
Fig.4-9

1.   a displays the relationship between indoor units and outdoor
       central controllers in the form of a tree. To add an indoor unit to
       the group selected in b, find the indoor unit on the tree, and then
       click double-click it. If the indoor unit is already added to the
       current group, a dialog box prompts accordingly. If the indoor
       unit is already added to a different group, a dialog box prompts
       accordingly and asks whether you want to move it to the current
       group. If you select **Yes**, the indoor unit is added to the current
       group.
2.   b includes the group name drop-down list, the group number
       drop-down list, and the indoor units under the selected group. If
       a group is selected, all the indoor units under the group are listed.
       To delete an indoor unit from the group, select the indoor unit and
       then double-click it.
3.   c is used to set the group, including items such as remote control,
       on/off and swing, mode, fan speed, temperature, and timer.
       Refer to such settings for the indoor units. After the settings are
       completed, click **Send Command** to send the settings to all the
       indoor units in the group.
4.   After a group is selected in b, the schedule management
       information related to the group is also displayed in the schedule
       management area. The schedule management information
       includes multiple tasks. Each task is startup task; that is to say,
       the unit starts at the beginning of the task and shuts down at the
       end of the task. Each task is indicated by an arrow. To view
       details about a task, select the arrow of the task (the arrow

4. System Operation

1.   Unified setting: It is used to set all the indoor units in the system, including mode setting, locking/locking, and mode locking/unlocking.
2.   a is used to set the indoor units.
      The remote control setting area is used to send locking command to all the indoor units so that they cannot receive signal from the remote control; by default, the remote control is unlocked.
      The on/off setting is used to send startup or shutdown command. When the shutdown command is sent, the settings of swing function, mode, fan speed and temperature are unavailable; when the startup command is sent, these settings are available.
      The swing options are: on and off. Off is selected.
      The operating mode options are: Cooling, Heating, Auto, Dehumidification, and Air supply.
      The fan speed options are: High air flow, Low air flow, and Auto.
      Temperature setting: The temperature ranges 17~30.
      After you click **Send Command**, the setting command is sent to all the indoor units in the system.
3.   b is used to set On Timer and Off Timer. If On Timer or Off Timer is selected, the on/off setting is unavailable. If On Timer is selected, after you click **Send Command**, all the settings and startup information are saved into the database. If Off Timer is selected, after you click **Send Command**, the shutdown information is saved into the database. Before the set time arrives, the timer information will be displayed in the information area when you query any indoor unit in the system. When the set time arrives, the settings will be sent to all the indoor units, and the timer information is displayed as deleted when you query any indoor unit in the system.
4.   c is used to lock or unlock the indoor central controllers. If **Lock** is selected, all the indoor central controllers will be locked and cannot be operated through mouse. To unlock the indoor central controllers, click **Unlock**, and then click **Send Unified Controller Lock Command**. After the command is sent successfully, all the indoor central controllers are unlocked.
5.   e is used to lock a mode. When the whole system needs to run in a specific mode, select cooling or heating mode, click **Lock**, and then click **Send Unified Mode Lock Command**. After the command is sent successfully, the operating mode of the indoor units cannot be changed by a remote controller or a controller, but you can still lock the indoor units or change their operating

3.   On the interface as shown below, click **I accept the agreement**, and then click **Next**.
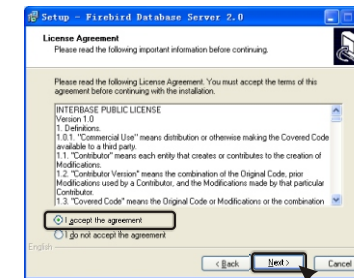
Fig.4-5

4.   On the interface as shown below, click **Next**.
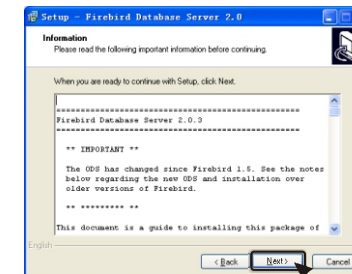
Fig.4-6

5.   On the interface as shown below, click **Browse**, select the destination folder, and then click **Next**.
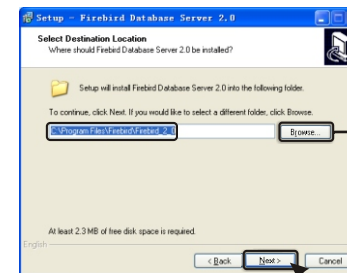
Fig.4-7   Fig.4-8
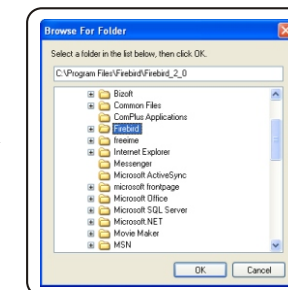
6.　On the interface as shown below, select the options as shown be low, and then click **Next**
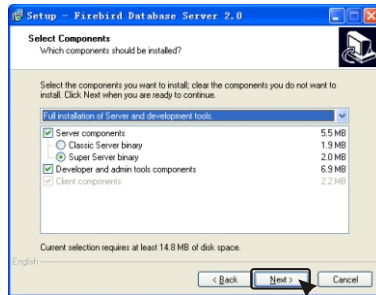
Fig.4-7

7.　On the interface as shown below, click **Next**.

Fig.4-8

8.　On the interface as shown below, select the options as shown below, and then click **Next**.
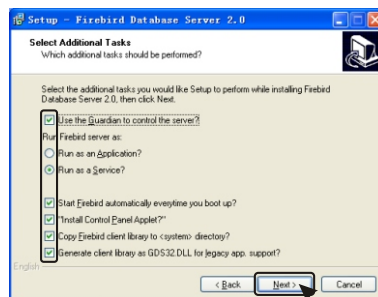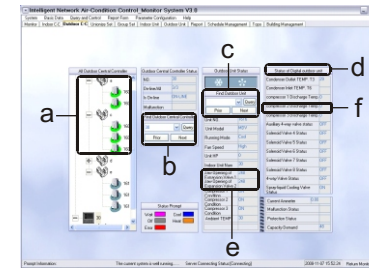

Fig.4-9

4-3　　Interface of Outdoor Central Controller

Fig.4-3

1.　**a** displays the relationship between outdoor central controllers, unit groups and outdoor units in the form of a tree. A unit group includes the outdoor units in the same refrigerating system.
2.　**b** is used to select an outdoor central controller. After an outdoor central controller is selected, the outdoor units displayed in C changes accordingly. Click **Query** to view information about the outdoor central controller. Click **Previous** or **Next** to view information about the previous or next outdoor central controller.
3.　c is used to select an outdoor unit under the selected outdoor central controller.
4.　d is used to display the type of an outdoor unit: digital unit, inverter, and water unit. If information about the selected outdoor unit is displayed, inverter is displayed by default.
5.　e is used to display information about all the indoor unit types.
6.　Outdoor central controller and outdoor units can be queried but cannot be controlled here.

4-4　Unified Setting
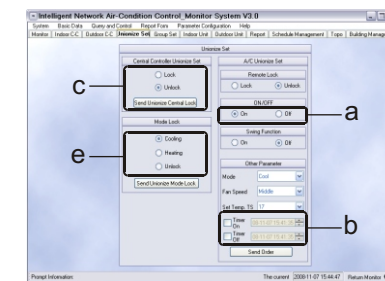
Fig.4-4

e is used to set the selected controller. Specifically, it can be used to lock or unlock the controller. After the locking command is set, the controller is locked, the locking icon is displayed, and the indoor units under the controller cannot be operated. After the unlocking command is sent to the locked controller, the locking icon disappears, and the indoor units under the controller can be operated.

Indoor unit setting area is used to set items such as remote control, on/off and swing, mode, fan speed, temperature, and timer.

If the **All indoor units** check box is not selected in f, the settings apply to the indoor unit selected in d.

If this check box is selected, the settings apply to all the indoor units selected under the controller selected in c.

Remote control setting: It is used to lock or unlock the remote control. By default, the remote control is unlocked. If the locking command is sent, the selected indoor unit will not receive signal from the remote control, but the settings made through the upper computer still apply. If the unlocking command is sent to the locked command, the indoor unit can receive signal from the remote control.

On/off setting: It is used to start or shut down the indoor unit. If On Timer or Off Timer is selected, this option is unavailable.

Mode setting: It is used to set the operating mode of the indoor unit. The operating mode options are: Cooling, Heating, Auto, Dehumidification, and Air supply. The fan speed options are: High air flow, Low air flow, and Auto.

Temperature setting: The temperature ranges 17~30.

On Timer/Off Timer: If the **On Timer** or **Off Timer** check box is not selected, the specific time for automatic startup or shutdown is unavailable. If either timer is selected, after you click **Send Command**, all the settings will not be immediately sent to the indoor unit; they will be saved into the database according to On Timer or Off Timer. If only On Timer is selected, all the settings in the indoor unit setting area except the on/off setting will be saved, including the specific time for automatic startup of the indoor unit. When the specific time for automatic startup of the indoor unit arrives, all the settings including the startup information will be sent to the indoor unit. If Off Timer is selected, the specific time for automatic shutdown of the indoor unit is saved; when the time arrives, the shutdown command is sent to the sent to indoor unit.

9. On the interface as shown below, click **Install**.
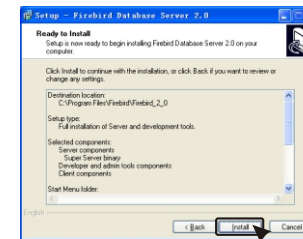
Fig.4-10

10. The progress indicator appears, as shown below.
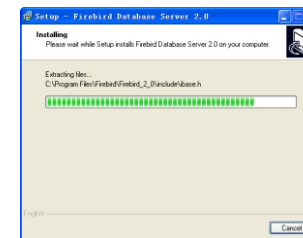
Fig.4-11

11. When the interface as shown below appears, click **Next**.
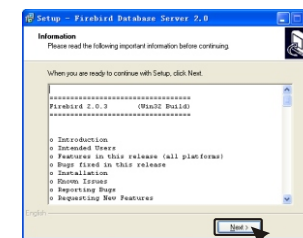
Fig.4-12

4．System Installation

12. On the interface as shown below, click **Finish**.

Fig.4-13

13. Open the Control Panel, and then double-click **Firebird 2.0**
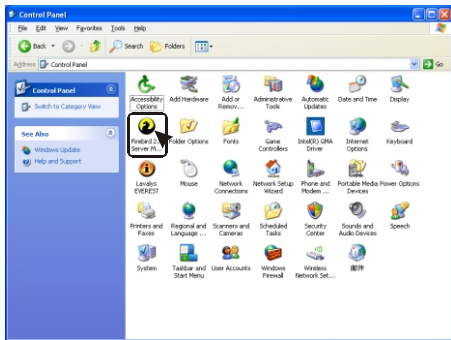
Fig.4-14

14. On the interface as shown below, click **Start**.

Fig.4-15

4. System Operation

IV. System Operations

4-1   Main Interface
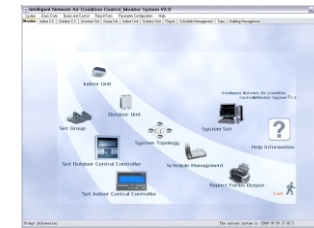
Fig 4-1

1. Each icon on the main interface represents one operation interface in the system.
2. To change logo, simply replace LargelLogo.BMP and Small Logo.BMP in C:\program files\NetAC Control FBD\image.
3. Click any icon on the main interface to enter the specific operation interface.

4-2 Interface of Indoor Central Controller
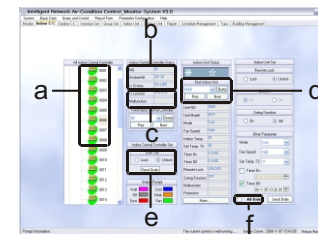
Fig 4-2

On the above interface, the system displays the relationship between indoor units and controllers in the form of a tree (as shown in a). Click a controller icon to display all the indoor units under it. Light green indicates that the indoor unit is online and running normally; grey indicates that the indoor unit is offline; sandy beige indicates that the indoor unit is online but faulty.

The controller status area (as shown in b) displays the number of the controller and the number of the indoor units under the controller.

c is used to select a controller; it works with d. The indoor unit names in d are the names of the indoor units under the controller selected in c.

d is used to select an indoor unit. It works with c.

3. System Building

3-8   New Floor Setting: Click Basic Data->New Floor.

Fig 3-8
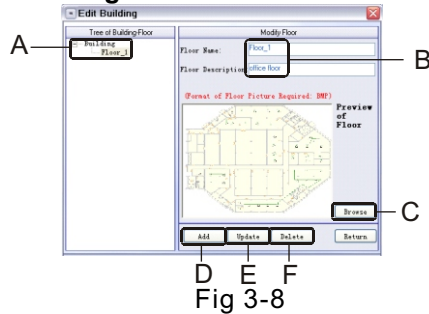
A.   Tree-like list of the floors.
B.   Parameters of the selected floor, including its name and description.
C.   Click **Browse** to set the folder for saving the floor plan images.
D.   To add a floor, click **Add** to add a new floor node in A, click the node, set its parameters in B and C, and then click **Update**.
E.   To modify a floor, click the floor node in A, and then modify its parameters in B and C, and then click **Update**.
F.   To delete a floor, click the floor node in A, and then click **Delete**.

3-9 Floor Air Conditioner Editing: Click Basic Data->Floor Air Conditioner Editing.

Fig 3-9
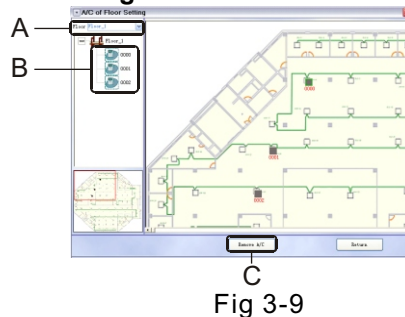
A.   List of all the floors. After a floor is selected, all the indoor units installed on the floor are displayed in B, and the plan image of the floor is displayed in the right pane.
B.   Tree-like list of all the indoor units installed on the floor. Click to select an indoor unit, move it to the appropriate position on the plan image in the right pane. Then the indoor unit is moved to the selected position.
C.   To remove an indoor unit, click it on the plan image in the right pane, and then click **Remove Unit**.

4．System Installation

15.   If the interface as shown below appears, it indicates that the Firebird database is running.

Fig.4-16

4-2-2 Installing Firebird ODBC
1.   Run Firebird_ODBC_2.0-Win32.exe in the installation CD. On the interface as shown below, click **Next**.

Fig.4-17

2.   On the interface as shown below, click **I accept the agreement**, and then click **Next**.

Fig.4-18

3.   On the interface as shown below, click **Next**.
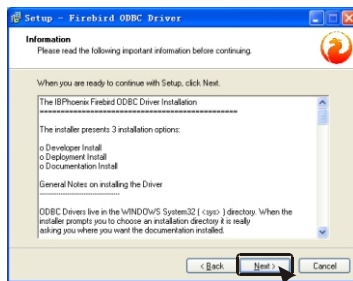
Fig.4-19

4.   On the interface as shown below, click **Browse**, select the destination folder, and then click **Next**.
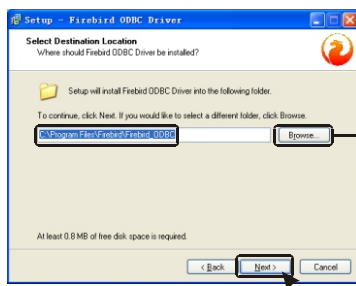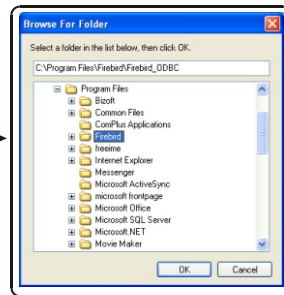
Fig.4-20   Fig.4-21

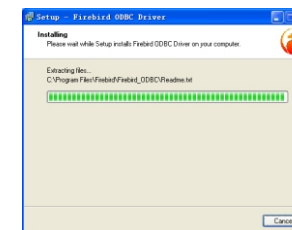5.   On the interface as shown below, select the options as shown below, and then click **Next**.
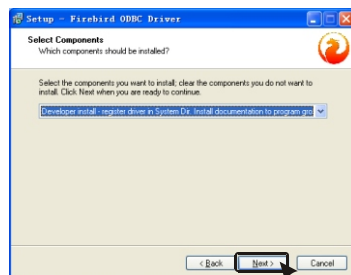
Fig.4-22

3-6   Group Parameter Setting: Click Basic Data->Group Parameter Setting.
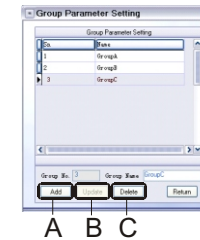
Fig 3-6

A.   On the group parameter setting interface, all the groups in the system are listed. To add a group, click **Add Group** to add one blank row, select it, enter a name for the group, and then click **Update Group**.

B.   To rename a group, click the group, enter a new name for it, and then click **Update Group**.

C.   To delete a group without units, select it, and then click **Delete Group**.

3-7 Air Conditioner Group Setting: Click Basic Data->Air
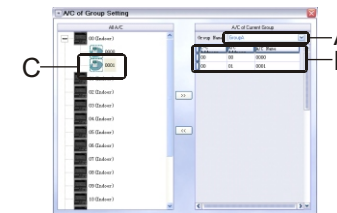
Fig 3-7

A.   List of all the groups. After a group is selected in A, all the indoor units under the group are displayed in B.

B.   List of all the indoor units under the selected group.

C.   Tree-like list of all the indoor units.

To add an indoor unit to the group, select it in C, and then click ⟩⟩. If the indoor unit is already added to the current group, a dialog box prompts accordingly. If the indoor unit is already added to a different group, a dialog box prompts accordingly and asks whether you want to move it to the current group. If you select **Yes**, the indoor unit is added to the current group; if you select **No**, the indoor unit is not moved. If the indoor unit is not ever added to any group, it is directly added to the current group.

To delete an indoor unit from the group, select it in B, and then click ⟨⟨.

3. System Building

B.   Set the parameters of indoor units: The address of an indoor unit is in the range of 0-63. Each indoor unit under a controller shall have a unique address. The unit name entered in the **Unit Group Name** box shall be that of an actual indoor unit group under the controller. Indoor unit horsepower is very important to the billing, and it shall be set to the horsepower of the actual indoor unit. The electric-heating power shall be set to that of the actual indoor unit. The selected floor shall be the actual floor where the indoor unit is installed.

C.   Additional parameters of indoor unit:

If the **Electricity consumption limit** check box is selected, the electricity consumption of the indoor unit is limited to the set value. When the limit is exceeded, the system will stop the indoor unit automatically.

If the **Residual electricity roll-down** check box is selected, the residual electricity of the current month, if any, will be added to the electricity consumption limit of the next month. If this check box needs to be selected, first select the **Electricity consumption limit** check box and set the limit.

If the **Public unit** check box is selected, the electricity consumption of this indoor unit will be allocated to other indoor units in the system.

If the **Enable environmental protection** check box is selected, the lowest refrigerating temperature and highest heating temperature of the indoor unit are respectively set to the minimum refrigerating temperature and maximum heating temperature set in the **eco-friendly temperature setting** (see Eco-friendly temperature setting).

If the **Measure electricity consumption of fan and electric heater** check box is selected, the system will add the electricity consumption of the fan and electric heater of the indoor unit to the total electricity consumption. By default, this check box is selected.

D.   Click **Add** to add one blank row in the list. Select the row, set parameters with reference to B and C, and then click **Update** to add an indoor unit.

E.   After selecting the address of an indoor central controller, select an indoor unit in the list, modify its parameters with reference to B and C, and then click **Update**.

To delete an indoor unit that does not exist, select it, and then click **Delete**.

4. System Installation

6.   On the interface as shown below, select the start menu folder, and then click **Next**.
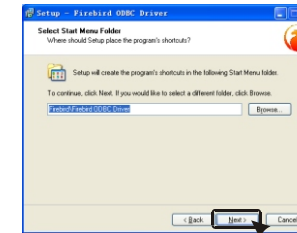
Fig.4-23

7.   On the interface as shown below, click **Install**.
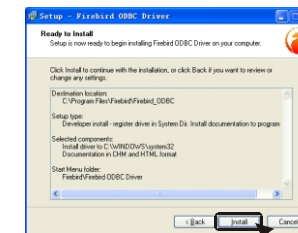
Fig.4-24

8.   The progress indicator appears, as shown below.

Fig.4-25

9.   When the interface as shown below appears, click **Next**.
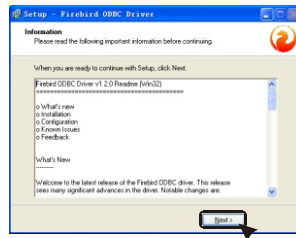
Fig.4-26

10. On the interface as shown below, click **Finish**.

Fig.4-27

4-2-3 Installing the Network Monitoring System
1)   Run SetupEx.exe in the installation CD to display the interface as shown below, and then click **Next**.
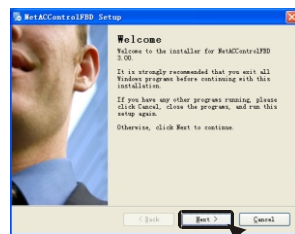
Fig.4-28

3-4   Outdoor Unit Setting: Click Basic Data->Outdoor Unit Setting.
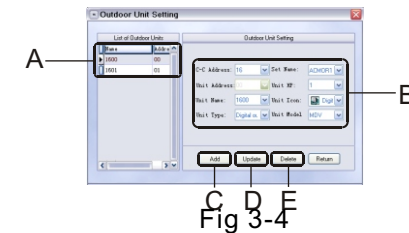
Fig 3-4

A.   List of outdoor units. After you select the address of an outdoor central controller, all the outdoor units under the controller are listed.
B.   Set the parameters of outdoor units: The address of an outdoor unit is in the range of 0-31. Each outdoor unit under a controller shall have a unique address. The name entered in the **Unit Group Name** box shall be that of an actual outdoor unit group under the controller. The outdoor units actually installed under the same unit group shall also be set into the same unit group here.
C.   Click **Add** to add one blank row in the list. Select the row, set parameters with reference to B and C, and then click **Update** to add an outdoor unit.
D.   After selecting the address of an outdoor central controller, select an outdoor unit in the list, modify its parameters with reference to B and C, and then click **Update**.
E.   To delete an outdoor unit that does not exist, select it, and then click **Delete**.

3-5   Indoor Unit Setting: Click Basic Data->Indoor Unit Setting.
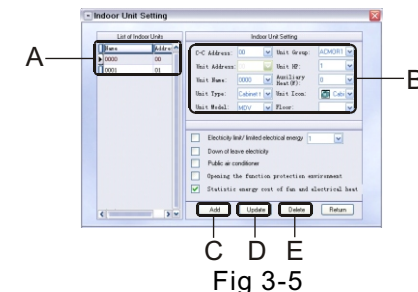
Fig 3-5

A.   To view indoor units under a controller, select the address of the controller. Then all the indoor units under the controller are listed.

3. System Building

3-2   Indoor central controller Setting: Click Basic Data->Controller Setting.
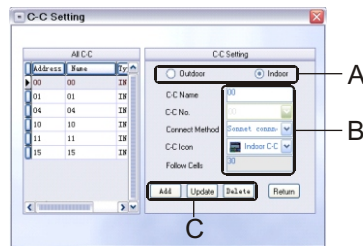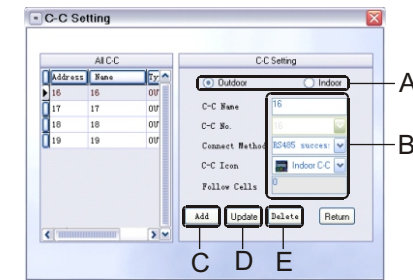

Fig 3-2

A. Click **Indoor** to set indoor central controller.
B. Set the parameters of the indoor central controller: Set the address of the indoor central controller in the range of 0015, and select the connection mode as needed: RS485 port or Ethernet.
C. For setting C, D and E, refer to Outdoor central controller Setting (see 3.1Outdoor central controller Setting: Click Basic Data->Controller Setting).

3-3 Unit Group Setting: Click Basic Data->Unit Group Setting.
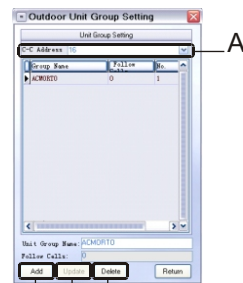
Fig 3-3

After setting the outdoor central controller, you can set unit groups under it.

A.   Select an outdoor central controller. All the units under the controller are listed.

B.   Add Unit Group: Click **Add Unit Group** to add one blank row in the list, select the row, enter the name of the unit group, and then click **Update Unit Group**.

C.   Update Unit Group: Select a unit group, enter the name of the unit group, and then click **Update Unit Group**.

D.   Delete Unit Group: To delete a unit group without outdoor unit, select it, and then click **Delete Unit**.

4. System Installation

2)   On the interface as shown below, click **I accept the agreement**, and then click **Next**.
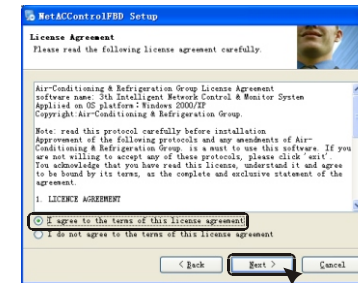
Fig.4-29

3)   On the interface as shown below, enter the name and organization, and then click **Next**.
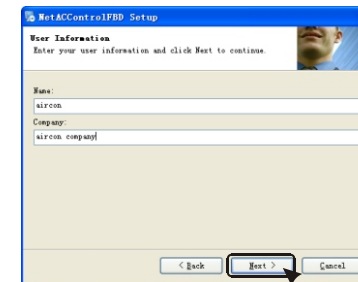
Fig.4-30

4)   On the interface as shown below, accept the default destination folder or click **Change** to select a different folder..
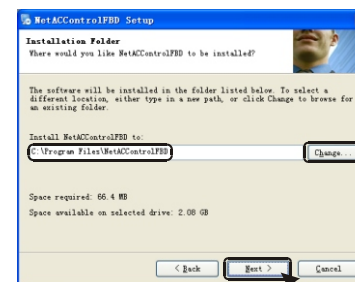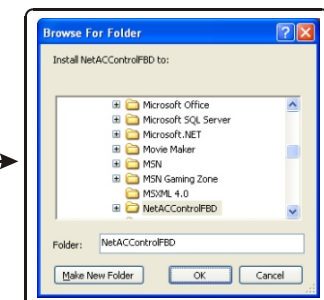
Fig.4-31   Fig.4-32

4．System Installation

5) Click **Next** to display the interface as shown below. Select the start menu folder, and then click **Making shortcut available to all users**, and then click **Next.**
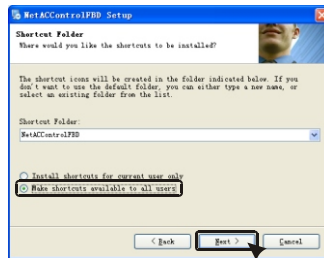
Fig.4-33

6) Click **Next** to display the interface as shown in Figure 4-42. Verify that the displayed information is correct, and then click **Next** to start the installation. The installation interface is as shown in Figure 4-43.
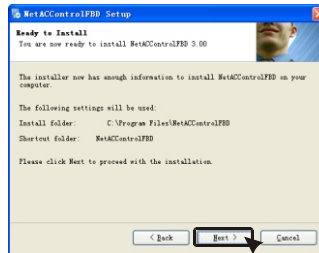
Fig.4-34
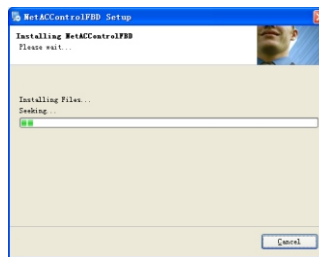
Fig.4-35

7) When the installation is completed, click **Finish**.

3. System Building

III. System Building
The procedure for building the system is as follows:
Setting indoor and outdoor central controllers.
Setting outdoor units. A unit refers to a collection of outdoor units under the outdoor central controller. Any outdoor unit is under a certain unit. The outdoor units under a unit are under the same controller, which is different from the concept of indoor unit group. Setting indoor units. After the indoor and outdoor central controllers, units and outdoor units are set, the system is built. The later operations are all performed on these components, including system auto-scan.
Follow the procedure below to build the system:

3.1 Outdoor central controller Setting: Click Basic Data->Controller Setting.

Fig 3-1

A. Click **Outdoor** to set outdoor central controller.
B. Set the parameters of the outdoor central controller: Set the address of the outdoor central controller in the range of 1631, and select the connection mode as needed: RS485 port or Ethernet.
C. **Add:** Click **Add** to add one blank row in A, select the row, set the name and icon of the controller, and then click **Update** to complete the operation.
D. **Update:** Select a controller in A, modify it, and then click **Update** to complete the operation.
E. **Delete:** Select a controller in A, and then click **Delete** to delete it. Before deleting a controller, ensure that no unit is available under it.

8   Ethernet controller port setting: Click Interface Set->AC TCP/IP Set.

This port setting is used for the communication between the software system and the Ethernet controllers. It involves IP port setting and auto-scan setting. The specific settings are as follows:

a.   Select the network card in the computer. In general, only one network card is installed in the computer. After the network card is selected, its IP address is displayed in the **Local Address** box.

b.   Enter ? 3001? as the port number.

c.   Set the auto-scan interval, measured in minutes. After **Auto Scan** is selected, the system will automatically scan the Ethernet controllers in the system at the set interval.

d.   Set the IP address range of the Ethernet controllers to be scanned, and enter ? 19780? as the port number.

e.   Click **Scan** to scan; on the interface as shown in Figure 2-20, click **Begin** to scan the Ethernet controllers. To stop the scan, click **Stop**. After the scan is completed, click **Close**.

f.   After the scan is completed, the online controllers are displayed in h. To modify a controller, select it, click **Modify**; on the interface as shown in Figure 2-21, modify its IP address, RS485 ID, etc. This function is used by professional technicians to commission the system, so the user is not recommended to use it.

g.   Click **Clear** to clear all the controllers in h.
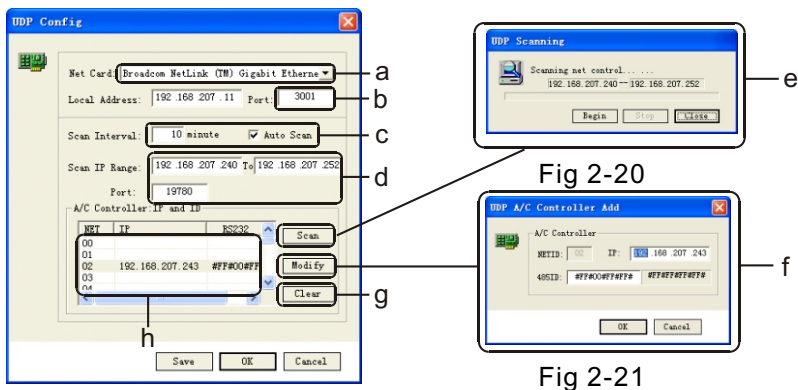
Fig 2-19

Fig 2-20

Fig 2-21

4-2-4 Setting Firebird ODBC

1.   Open the Control Panel, and the double-click **Administrative Tools**.
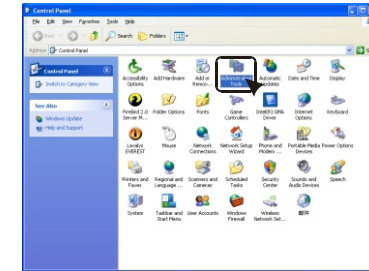
Fig.4-36

2.   Double-click **Data Sources (ODBC)** to display the **ODBC Data Source Administrative interface**, as shown below.
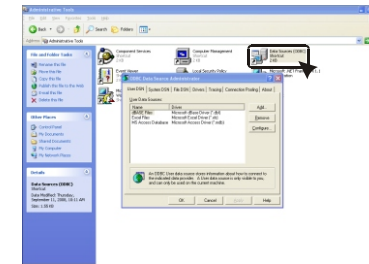
Fig.4-37

3.   Click the **System DSN** tab, and then click **Add**. On the interface that appears, select **Firdbird/Interbase(r) driver**, and then click **Finish**.
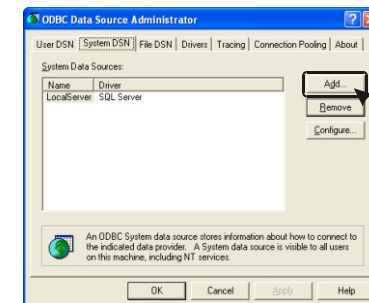
Fig.4-38
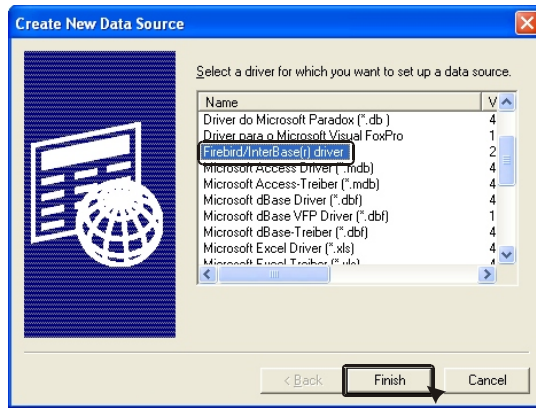
Fig.4-39

4. On the interface that appears, enter the parameters as shown below, and then click **OK**.

a: It indicates the folder where the system database file NETAC.GDB is located. By default, it is as shown below. If the user needs to move NETAC.GDB to a different folder, this folder also needs to be changed accordingly.
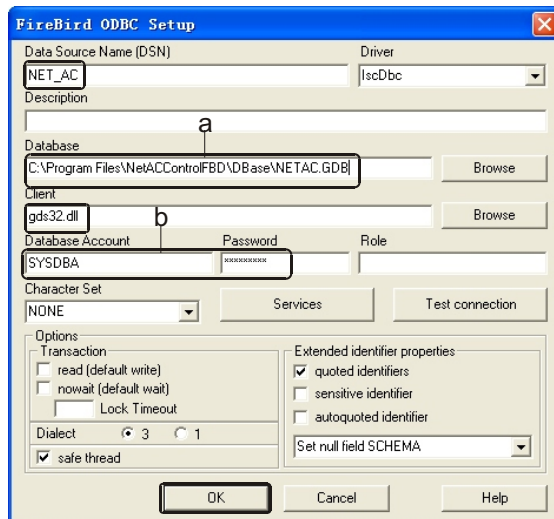
Fig.4-40

5. **Controller RS485 port setting: Click Interface Set->AC RS232 Set.**

Select the number of the serial port that is connected to the RS485 controller, and set BaudRate, DataBit, StopBit and Check as shown below.

Fig 2-16

6. **Floor gateway serial port setting: Click Interface Set->VCN RS232 Set.**

Select the number of the serial port that is connected to our floor gateway CCM07, and set BaudRate, DataBit, StopBit and Check as shown below.
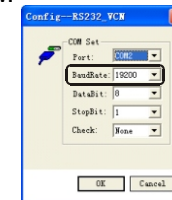
Fig 2-17

7. **Client port setting: Click Interface Set->Client TCP/IP Set.**

This port setting is used for the communication between the server and clients.

The specific settings are as follows:

a Select the network card in the computer. In general, only one network card is installed in the computer. After the network card is selected, its IP address is displayed in the **Local Address** box.

b Enter "1800" as the port number.
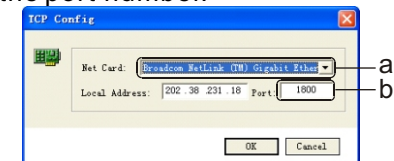
Fig 2-18

2. System Setting

3.   Database setting: Click Database->Database Set.

a.   **DSN:** Enter "NET_AC"

b.   **UID:** Enter "sysdba".

c.   **PWD:** Enter "masterkey".

d.   **Data File:** The path of the database file. By default, the database file NETAC.FDB is located in the "Dbase" folder in the installation directory of the monitoring system.
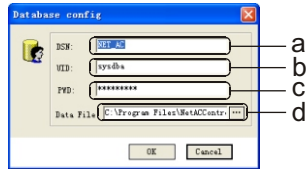
Fig 2-14

4.   Database file backup: Click Database->Database Backup.

This function can be used for automatic backup of database files. Three backup modes are available: Program Start, Program Exit, and Everyday. The Everyday mode is recommended. In this mode, the user can select the maximum number of backup files to be kept, which is in the range of 14. If the maximum number is exceeded, the system will automatically delete the earliest backup file.

a.   **Program Start:** Backs up database files when the program starts.

b.   **Program Exit:** Backs up database files when the program exits.

c.   **Everyday:** Backs up database files at the specified time every day.

d.   Select the maximum number of backup files to be kept, ranging 14.

e.   Select the destination folder of the backup files.
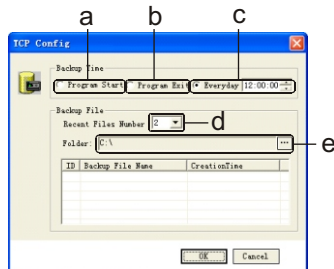
Fig 2-15

4．System Installation

5.   The interface as shown below appears, indicating that the ODBC setting is completed.
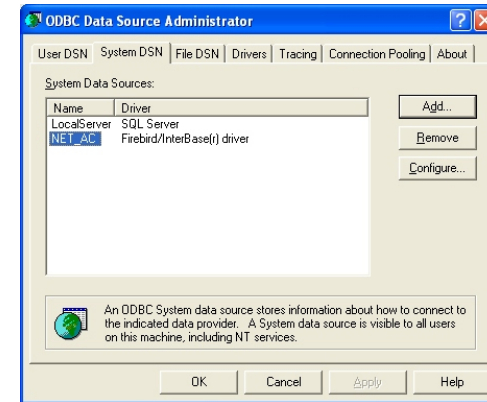
Fig.4-41

4-2-5. Installing Softdog Driver

1)   Run SoftdogInstdrv.exe in the installation CD to display the interface as shown below. Insert the Softdog into a USB port , and then click **Install**.

Fig.4-42

2) On the interface as shown below, click **Install the Software Automatically (Recommended)**, and then click **Next**.

Fig.4-43

3) The system automatically searches for the driver, as shown below.

Fig.4-44

4) On the interface as shown below, click **Finish**.

Fig.4-45

2.3 Server Parameter Setting
1.   Showing the server program
Double-click [icon] on the taskbar to display the server interface, as shown below. The server communicates with air conditioning system, collects relevant parameters of the air conditioning system and saves them into the database, and returns the processing result to the user.
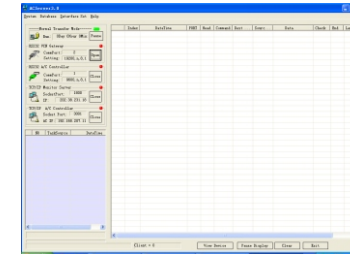
Fig 2-11

2.   Device self-test and initialization: Click System->Search Device.
On the interface as shown below, click **Begin** to start the self-test and initialization of the system. The system will load the data of
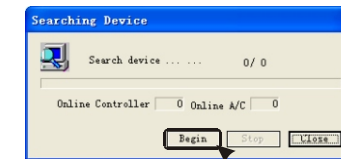
Fig 2-12
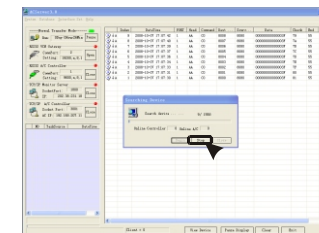
Fig 2-13

6   User management: Click Basic Data->User Management.

Fig 2-7
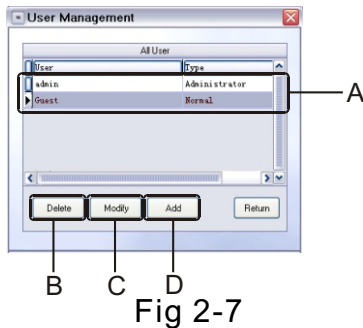
A.   User list.

B.   Delete User: Select a user in the user list, and then click **Delete User** to delete it.

C.   Modify User: Select a user in the user list, and then click **Modify User**. On the interface as shown below, enter the old password of the user, enter and confirm the new password, and then click **OK**. .
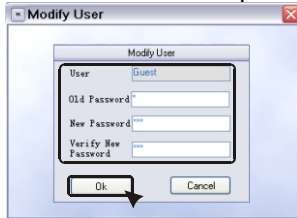
Fig 2-8

D.   Add User: Click **Add User**; on the interface as shown below, set user name and password, and then click **OK**.

7.   History data clearing setting: Click Basic Data->History
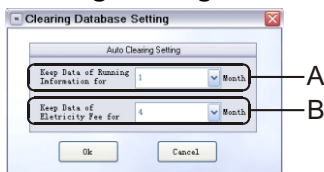
Fig 2-9

A.   Set the interval for saving operating data into the database. It ranges 13 months.

B.   Set the interval for saving electricity expense data into the database. It ranges 16 months.

4-2-6. Setting the OS

I.   Setting the auto restart function of Windows 2000

1.   Enabling auto restart

After the auto restart function is enabled, the computer will automatically restart after being powered on in case of power failure.

(1) Click **Start** ->**Setting/Control Panel**, and then double-click **System**.

(2) Click the **Advanced** tab, and then select the auto restart options.
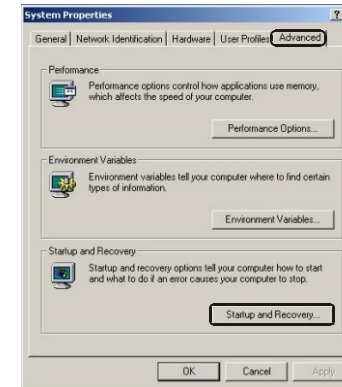
Fig.4-46

(3)Select the **Send an administrative alert** check box.
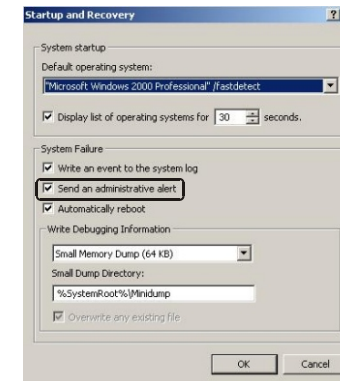
Fig.4-47

2. Auto login

After Windows 2000 starts, you need to press Ctrl-Alt-Del to log into it. Our intelligent management system needs to be started after all the programs (including the management system) are closed. Therefore, the auto restart function is required.

(1) Open the Control Panel, and then double-click **Users and Passwords**.

(2) Clear the **Users must enter a user name and password to use this computer** check box.

Fig.4-48

(3) Click the **Advanced** tab.

(4) Clear the **Press Ctrl-Alt-Delete to Log In** check box.

Fig.4-49

4   System icon setting: Click Basic Data->System Icon Setting.
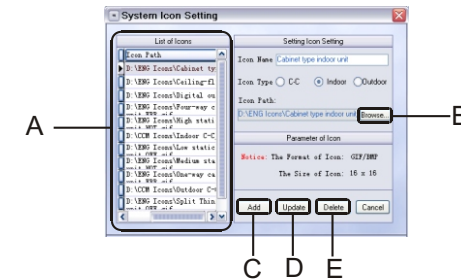
Fig 2-5

A.   List of icons of the controllers and air conditioners in the system;

B.   **Browse:** Click **Browse** to set or change the path of the icons.

C.   **Add:** Click **Add** to add one blank row in A, select the row, click **Browse** to set the path of the icon, and then click **Update** to complete the operation.

D.   **Update:** Select a path in A, and click **Browse** to change the path of the icon, and then click **Update** to complete the operation.

E.   **Delete:** Select a path in A, and then click **Delete** to delete it

5   **Fault description setting: Click Basic Data->Fault**
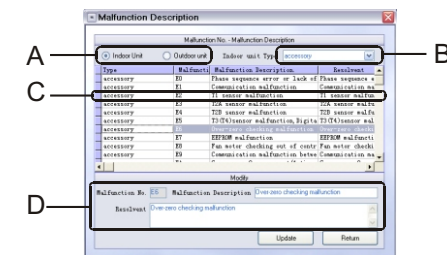
Fig 2-6

A.   Click **Indoor Unit** or **Outdoor Unit**.

B.   Select the type of air conditioner.

C.   List of the error codes. Click to select the desired fault code.

D.   Enter the description of the fault code and the corresponding

2. System Setting

2.   Database setting: Click Parameter Setting->Database Setting.
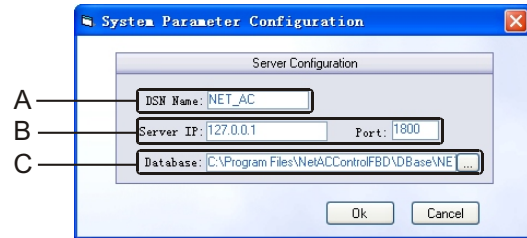
Fig 2-3

The settings hear are the same as the server settings on the login interface. The specific settings are as follows:

A.   DNS Name: Set the interface used by the monitoring system to connect the database. Enter ? NET_AC? here.

B.   Server IP Address and Port: Set the IP address and port of the background server. If the server runs on the local computer, enter 127.0.0.1 as the IP address and a value ranging 0-65525 as the port number. To avoid collision with other applications, a fairly large value is recommended. By default, the port number is 1800.

C.   Database: By default, the database file NETAC.FDB is located in the ? Dbase? folder in the installation directory of the monitoring system.

Note: The size of the database files will increase rapidly as the monitoring system runs continuously. If to much system drive space is occupied, the running of the OS will be affected. To avoid this, it is recommended to move database files to a different drive.

3.   Eco-friendly temperature setting: Click Basic Data-> Eco-friendly Temperature Setting.

Select the minimum cooling temperature and the
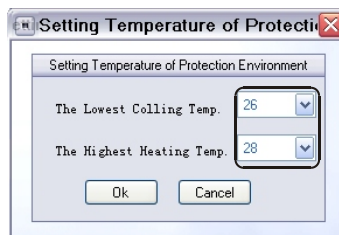
Fig 2-4

4. System Installation

3.   Auto restart

To enable our intelligent management system to automatically start after the startup of Windows 2000, do as follows:

(1) Open the following folder:

C:\documents and settings\all users\startmenu\programs\startup

(2) Right-click, and then select **New**->**Shortcut**.
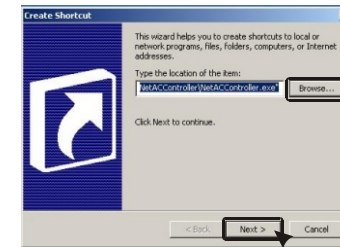
Table 4-50

(3) Click **Browse**, and then select the .exe file of our intelligent management system.

(4) Give a mnemonic name for each auto startup item, and then click **Finish**.
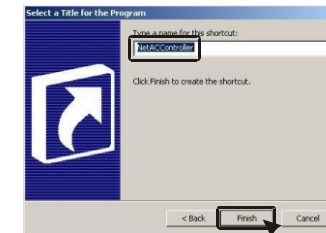
Fig.4-51

(5) Restart the computer, and then check whether our intelligent management system automatically starts.

II. Setting the auto restart function of Windows XP
1. Enabling auto restart
After the auto restart function is enabled, the computer will automatically restart after being aborted.
(1) Click **Start**->**Control Panel**, and then double-click **System**.
(2) Click the **Advanced** tab, and then click **Settings** in the Startup and Recovery area.
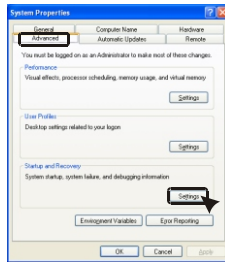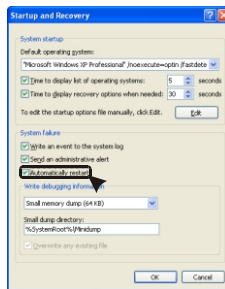

Fig.4-52

(3) Click **Automatic Restart**.

Fig.4-53

III. Auto Internet access
Auto Internet access is necessary to the computer that runs our intelligent management system.
Auto Internet access enables you to automatically access Internet without logging into Windows XP after the computer that runs the monitoring system is started.
After the auto Internet access function is enabled, you can do the following after Windows XP starts:
      Set the Welcome screen.
      Cancel the guest account.
      Set no more than two user accounts.
      Delete user passwords.

---

3. Classification of user authorities
    Users fall into three types: super administrator, common administrator and common user.
    A super administrator is authorized to operate all the interfaces, including communication diagnosis, communication status browsing, system building, air conditioner, controller, group query and control, indoor unit query, group schedule management, and so on.
    A common administrator is authorized to perform all the operations as a super administrator except communication diagnosis and communication status browsing, primarily involving system building and management.
    A common user is authorized to operate main interfaces, interface for unified setting, interface of indoor central controller and interface of air conditioner, and perform group operations, schedule management and report query.

2.2 System Parameter Setting

1. **Section-based electricity charging setting: Click Parameter Setting->System Parameter Setting.**
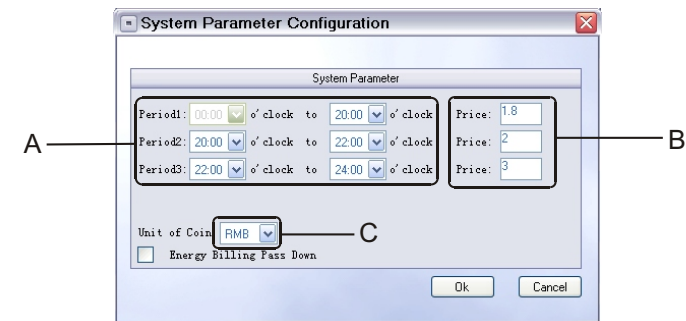
Figure 2-2

A. One day can be divided into 14 sections. The start time of the first section is 00:00; the end time of the adjacent section is the start time of the next section; the end time of the last section is 24:00.

2. System Setting

II. System Setting

2.1   Starting System and User Login

Click **Start**->**All Programs**->**NetACControlFBD**->**ACServer** to start the server. When ![icon] appears on the taskbar, it indicates that the server is running. Double-click ![icon] on the desktop, or click **Start**->**All Programs**->**NetACControlFBD**->**NetACControl** to display the login interface, as shown below.
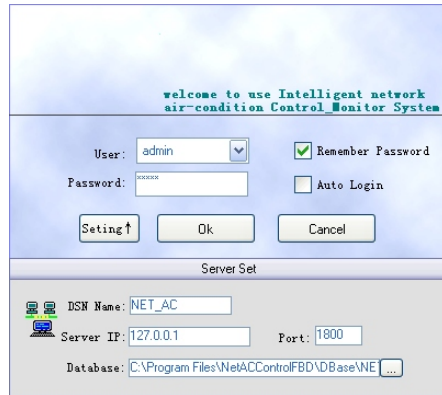

welcome to use Intelligent network
air-condition Control_Monitor System

User: admin ☑ Remember Password
Password: xxxx ☐ Auto Login

Seting↑   Ok   Cancel

Server Set

DSN Name: NET_AC

Server IP: 127.0.0.1   Port: 1800

Database: C:\Program Files\NetACControlFBD\DBase\NE [...]

Fig 2-1

1.   Select a user account from the drop-down list.

1)   If you select the **Save password** check box, you can log into the system by simply clicking **Login** each time.

2)   If you select the **Auto login** check box, you can log into the system by entering the user account and password each time.

2.   Click **Setting** to show the server setting interface, and then set the parameters as shown above.

   DNS Name: NET_AC
   Server IP Address: 127.0.0.1
   Port: 1800

4. System Installation

1.   Setting the Welcome screen

(1) Click **Start**->**Control Panel**, and then click **User Accounts**.

(2) Click **Change the way users log on or off**.
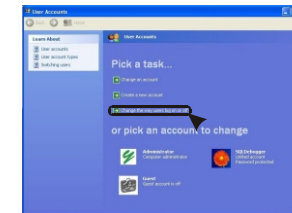
Fig.4-54

(3) Select the **Use the Welcome screen** check box.
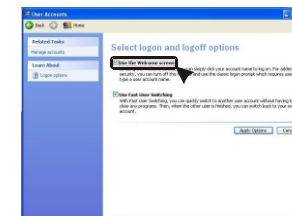
Fig.4-55

2.   Deleting user accounts and passwords in Windows XP

(1) Click **Start**->**Control Panel**, and then click **User Accounts.**

(2) Select the desired user account.

(3) Click **Remove my password**.
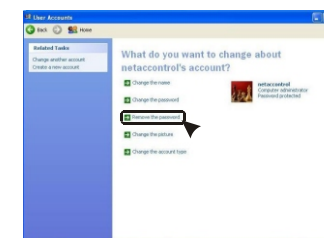
Fig.4-56

(4) Enter the current password, and then click **Remove**.
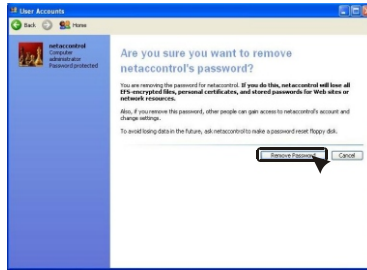
Fig.4-57

3.   Enabling auto start of our intelligent management system
(1) Open the following folder:
C:\documents and settings\all users\start menu\programs\startup.
(2) Right-click, and then select **New**->**Shortcut**.
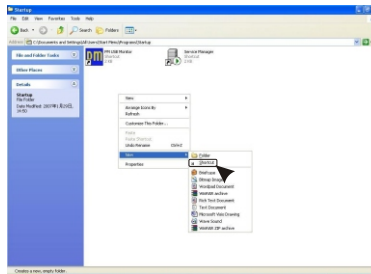
Fig.4-58

(3) Click **Browse**, and then select the .exe file of our intelligent management system.

Fig.4-59

I. System Overview

The system consists of foreground interface, background database and background communication components. Through the foreground interface, the user can operate the system and query data. The background communication components update air conditioner information and outdoor unit information, and sends the control and query signals from the user. The background database primarily stores air conditioner information and outdoor unit information; it also calculates the electricity expense of each indoor unit via some internal mechanisms.
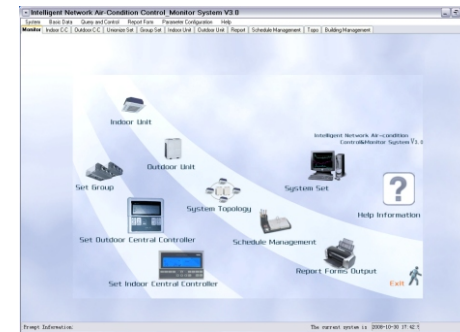
Fig.1-1

(4) Click **Next**. On the interface that appears, click **Finish**.
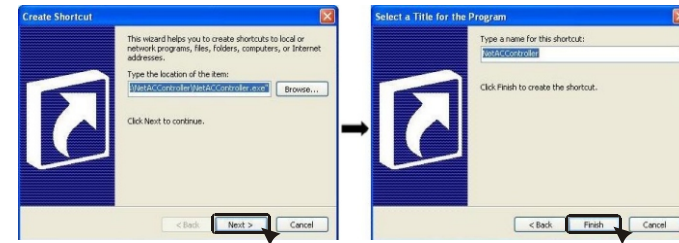
Fig.4-60

(5) Restart the computer, and then check whether our intelligent management system automatically starts.

5-1 System composition

1) System overview
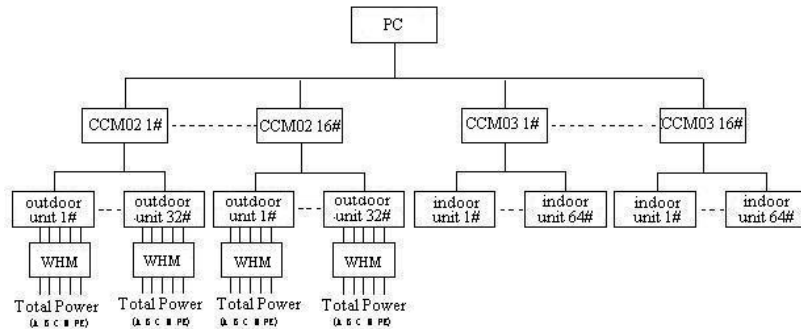
Fig.5-1

2) System connection
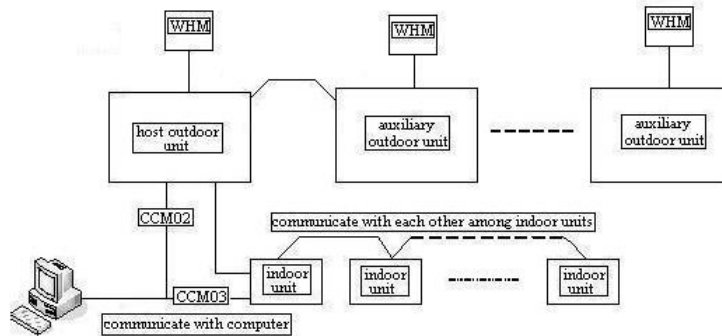
Fig.5-2

5-2 Group control

1) Concept of group. A group can be a control unit in the system and all the indoor units under a group can be controlled via system operation. Provisional control or the predefined group task control is feasible. In the meanwhile, the group can also be a unit of electricity bill settlement and all the electricity fees of all the indoor units under a group can be summarized.

2) When setting air conditioners for a group, it is recommend not to arbitrarily change air conditioners of the group as it involves the calculation of electricity fees. The system will record the electricity fee even for a small portion of time to the report sheet to avoid any doubts.

Content

6. Installing UPS (Optional)

6-1 Specifications

APC SU700 series is recommended.

Requirement	Performance
Capacity	200~250 Watt/20min
Voltage	220~240
Control signal	Power cut signal (From UPS) USP close signal (Deliver to UPS)

Table 6-1

6-2 Install UPS power supply

1)   According to the operating instructions delivered with APC SU700, connect the power cables and signal cables to the power supply and computer respectively.
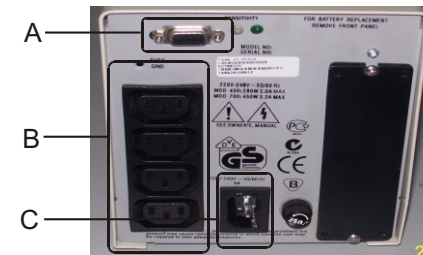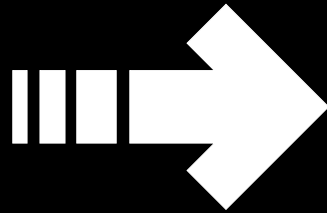

Fig.6-1

A: Signal cable between the UPS and the computer. Connect it to any serial port on the computer.
B: Power output port of the UPS.
C: Power input port of the UPS.

2)   Install the power management software of APC SU700.

Third generation Network System Operation Manual

- Thank you for your confidence and choosing the Third Generation Network System.
- To ensure correct use of the product, please read this manual and the indoor unit operation manual carefully before using the unit.
- For convenience of future reference, keep this manual properly after reading it.
- For any question, contact the supplier.
- Make sure you have a *Customer Service Manual*.