Si72-301

DAIKIN

SERVICE MANUAL

Intelligent Manager ECO21

DAIKIN INDUSTRIES, LTD.

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Part 1
Design Guide

ED72-022C

1. System Overview

1.1 Overview

■ **What is the intelligent Manager?**

intelligent Manager is an integrated building management system that uses our independent, high-speed multi-transmission method DIII-NET that is employed on VRV for buildings.

It has a centralized controller function that can perform high-speed centralized control of our VRV for buildings.

■ **Applicable Buildings**

This is a VRV intelligent Manager control system that is perfect for small and medium scale buildings.

Number of Management Items: Standard 256 indoor units. Expansion is possible up to a maximum of 1024 items.

- For medium and small scale individual air conditioning systems
- For existing buildings planning to update from a central air conditioning system to a decentralized air conditioning system

■ **Merits**

- Allows the configuration of simple systems that do not require an interface.
- Has control data application software that supports drawing up business management plans.
- Handles small to medium scale buildings.
- Can be easily operated with the ease of an office computer.

[AIR NET Service System] (Option)

“intelligent Manager” is equipped with the leading failure warning option, preventing A/C faults in advance.

(There are restrictions in applicable areas, so consult with us separately for details.)

1.2 Features

■ **Simple Equipment Configuration**

High priced interface equipment is unnecessary between the monitoring system and the air conditioning equipment.

Particularly, if directly connected with VRV for buildings that employ our DIII-NET, special instrumentation for sensors etc. are unnecessary. DIII-NET makes it possible to directly monitor abundant operating data.

■ **Low Installation Work, Less Wiring**

Wiring to VRV (with equipment that handles DIII-NET) for your building is extremely easy. You only need to connect to the DIII-NET terminal.

Monitoring and control are possible just by wiring (Daisy-chain method) 1 cable (non-polar, dual core) to each unit even for facility equipment.

■ **User-friendly System**

- Anyone can easily operate using a mouse on an ordinary use computer.
- Windows style display so that, anyone can easily manage and process data. This helps the efficient management of your building.

■ **AIR NET Air Conditioning Failure Prediction Function (Optional)**

Warns of air conditioner trouble in advance thereby keeping the occurrence of sudden stops to a minimum.

(As a general guide, AIR NET notifies you of the possibility of trouble that could occur within approximately 24 hours.)

This allows for the best operating condition of the equipment resulting in comfort and contributing to improved energy saving.

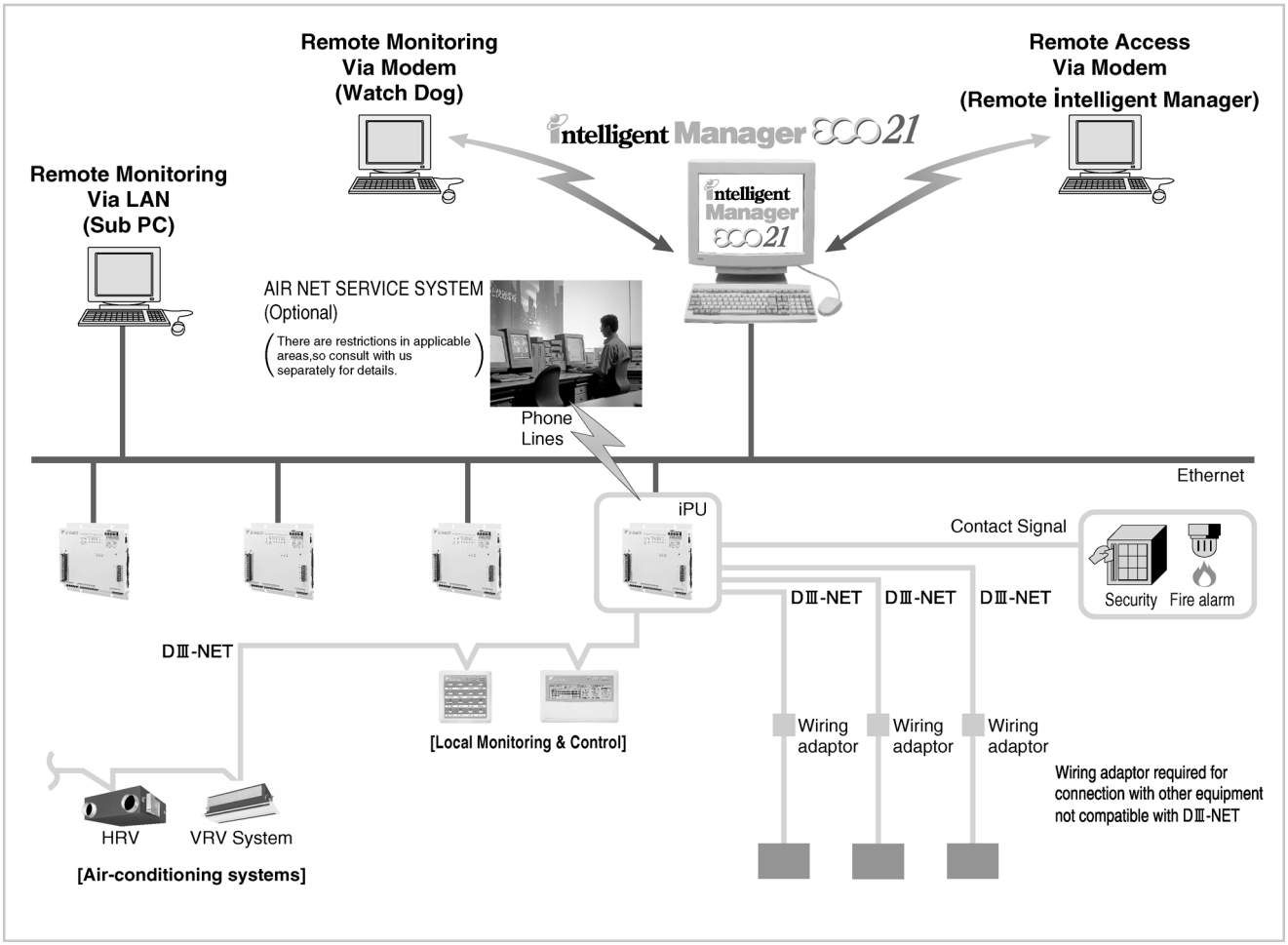
[Having a Separate Contract for the AIR NET Service System]

The AIR NET Service System uses the latest advancements in data processing and communication technology to monitor the condition of your air conditioning system.
Daikin’s unique On-Line Diagnostic System not only helps to prevent problems before they happen, it can also help you save energy and extend the operating life of your air conditioning system.
There are restrictions in applicable areas, so consult with us separately for details.

2. System Image

2.1 System Image

■ **An Overview of the intelligent Manager ECO21 System**



2.2 Series and Components

■ **The intelligent Manager ECO21 Series and its Components**

System name *1	IM-128	IM-192	IM-256	IM-512	IM-768	IM-1024
Max number indoor units	128	192	256	512	768	1024
Max number outdoor units	20	30	40	80	120	160
PC,UPS,etc.	Local Procurement					
Hardware model name *2	DAM602A52	DAM602A53	DAM602A51×1	DAM602A51×2	DAM602A51×3	DAM602A51×4
PPD (Power Proportional Distribution)	Yes *2					

*1 This includes hardware, software and field engineering work as a package.
*2 kWh meters to be locally supplied.

3. Functions

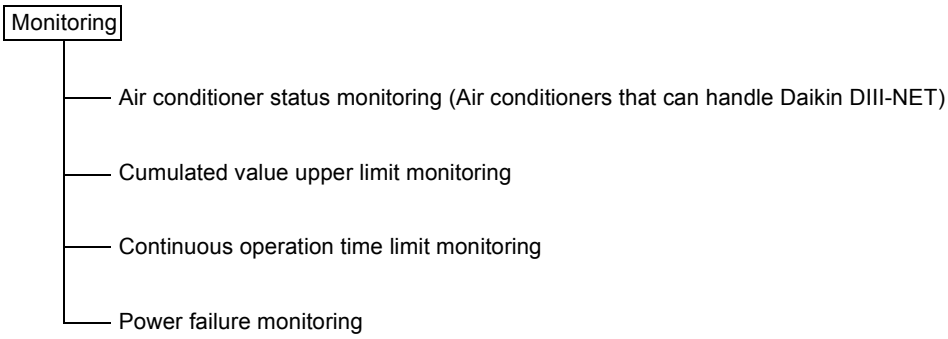
3.1 Local Functions

Item	Description
Monitoring	Operation status monitoring for a maximum of 1024 indoor units(160 outdoor units),when 4 iPUs are connected;* AIRNET:Air conditioner failure prediction (optional); Continuous operation time monitoring (per management point); Power failure monitoring
Control, Operation, and Settings	Login setting; Individual control; group switching/ setting of control group (100 groups); Schedule control (128 programs); Fire emergency stop control (32 programs); Power failure/ release control (selected from 5 power restoration modes); Air conditioner centralized control
Display	Management point name/icon/list display; Control group list display; Screen scroll function; Operation time display; Integrated switching number display; History display (malfunctions, alarms, control)
Measurements	Operation time integration; Switching number integration; Meter reading (through Pi port on iPU); Power proportional reading
Management	Operational history management; Generation of daily, monthly and yearly reports; VRV power proportional distribution
Data Storage/ Report	Print output; Data storage
Warning	Emergency signal input

* If exceeding the stated number of outdoor units, DIII-NET Expander Adapter <DTA109A51> allows easy system connection as long as restrictions are observed.

3.2 Basic Functions

3.2.1 Monitoring



(1) Air conditioner status monitoring (Air conditioners compatible with Daikin's DIII-NET)

Allows you to know the detailed operating status such as running/stopped status, temperature setting, operating mode, the occurrence and content of errors and filter sign for each air conditioner targeted for monitoring.

The occurrences and the contents of errors are displayed in the abnormalities history area. When an error occurs on an air conditioner targeted for monitoring, the management item icon flashes and the alarm is displayed in the history. You can set a buzzer notification of the occurrences of errors and have the printer automatically printout of the contents of errors.

Management points: 1 indoor unit = 1 item

The number of management items of equipment connected to DIII-NET, with the total number of air conditioners is 256 /(per 1 iPU unit)

When expanding to the maximum number: 1024 items/(when 4 iPUs are connected)

The number of management items can be fewer than those listed above depending on the number of outdoor unit in the air conditioning system.

* Refer to our D-BACS Design Guide for details regarding the method for connecting air conditioners to DIII-NET and the restrictions on the number of units.

(2) Cumulated Value Upper Limit Monitoring

Prints a warning with the daily report of the contents when the cumulated values of the operating time and the start/stop count exceed the set upper limit values.

The Result General standards for maintenance of the facility's equipment and replacement periods are clarified, therefore allowing for planned maintenance thereby enabling you to expect a reduction of overall maintenance costs.

(3) Continuous Operating Time Limit Monitoring

Displays a fault when a single continuous operating time for the facility equipment exceeds the set upper limit. You can set the buzzer to ring and/or the printer to automatically print when an error occurs.

You can set the time limit up to a range of 8 digits in one second intervals for each item to control.

The Result Prevents idling or burnout by issuing an abnormality when the operation of facilities exceed prescribed time or normal operation.

(4) Power Failure Monitoring

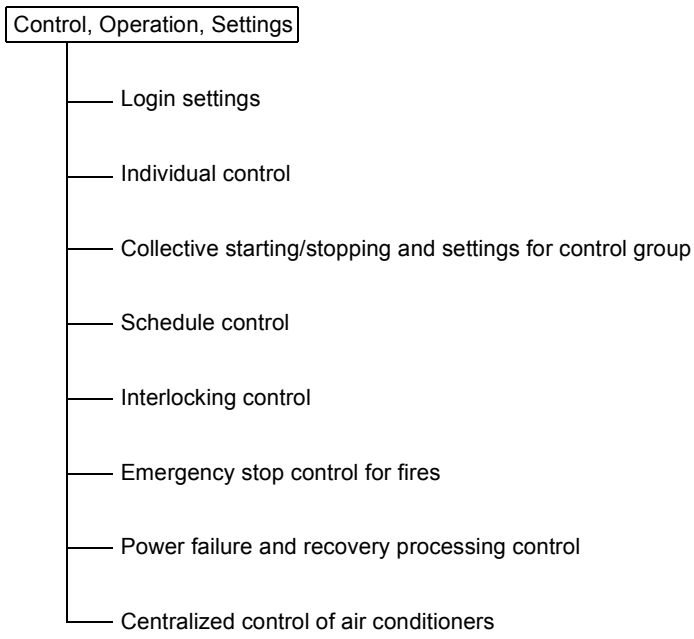
You can set the error display and/or buzzer ring for power failures.

Power failures are determined by the power failure signal from a UPS (uninterruptible power supply device.)

(A UPS is connected to the intelligent Manager monitoring system PC and the iPU.)

Operation data is automatically saved when there is a power failure. The system is automatically shutdown approximately 10 minutes later.

3.2.2 Control, Operation, Settings



(1) Login settings

Sets user operation authority to control the range of operation and view, consultation, read-change, read-only. When logging in, the users can operate the intelligent Manager within their allocated authority.

30 users can be registered and passwords can be set individually.

When unmanned, this is set to a log-off status. Settings can also be set for the log-off status.

It is possible to limit personnel who may operate intelligent Manager to prevent mis-operation or unauthorized handling.

The following shows authorization levels that can be set.

Authorization	When Authorized	When Not Authorized
Running/Stopping/Setting	Can perform run/stop/set operations	Cannot perform run/stop/set
Schedule Registration	Can inspect, register and edit schedules	Can only inspect schedule
Interlock Control Registration	Can inspect, register and edit link control	Can only inspect link operation
Emergency Stop Registration	Can inspect, register and edit emergency stop	Can only inspect emergency stop
Emergency Stop Canceling	Can cancel emergency stop	Cannot operate
Report Inspection	Can inspect reports (daily, monthly annual)	Cannot inspect
Report Registration	Can set reports (daily, monthly annual)	Cannot operate
History Operation	Can inspect and set history	Can only inspect history
System Settings	Can set system	Cannot operate
Subordinate Centralized Control Setting	Can set centralized control	Cannot operate
User Registration	Can register users and set authority	Cannot operate
Maintenance Mode	Can set maintenance mode	Cannot operate

(2) Individual Control

Allows manual, individual operation of starting and stopping of management items. Operations for starting and stopping, switching the operating mode, changing the temperature settings, switching enable/disable of individual remote controllers and for resetting of the filter sign are possible when using DIII-NET compatible air conditioners.

Items pressed later have priority with regard to management items defined by the schedule control and interlocking control.

(3) Collective starting/stopping and settings for control group

Registering a plurality of management items to a control group allows manual starting and stopping for all equipment. Operations for starting and stopping, switching the operating mode, changing the temperature settings, switching enable/disable of individual remote controllers and for resetting of the filter sign are possible when using DIII-NET air conditioners.

Items pressed later have priority with regard to management items defined by the schedule control and interlocking control.

Registers a maximum of 100 management items in one group and a maximum of 100 groups.

(4) Schedule control

Automatically performs starting and stopping of any control group and management items according to the set time schedule.

Creating and registering a year calendar and a week schedule will automatically create an execution schedule and the specified management items and control groups are controlled according to that execution schedule. Also, by editing the execution schedule, the schedule for the next coming week can be specially changed.

A maximum of 128 programs can be registered.

The year calendar, week schedule and execution schedule are in parity of 1 to 1, and schedule operations can be executed by combining each one.

Year Calendar	13 month calendar. Can set for regular days, holidays or special days for each day and allows creation of customized calendars for each tenant.
Week Schedule	Registers the times for performing control from the intelligent Manager for any control group or management item individually, for each day, holiday or special day of the week. Specify either of the instructions, run, stop, enable remote controller, disable remote controller, fan, cool, heat operation mode or set point. Registers up to 20 actions per day.
Execution Schedule	Daily schedule for the coming week. The actual schedule runs according to this. Automatically created based on year calendar and week schedule. With the execution schedule, you can change anytime to correspond to the remaining hours to run and other specially made schedules.

(5) Interlocking control

Automatically starts and stops equipment that has been set according to the change in operating status of specified equipment or the occurrence of abnormality. There are 2 types of input conditions that can be specified: “Start/Stop Status” and “Error”

Using interlock control allows for starting and stopping sequentially. This function is available with almost connected points, i.e. indoor units interlock, key controls remote controllers etc.

A maximum of 50 input condition management items and a maximum of 50 start/stop output management items can be set with 1 interlock program. A maximum of 100 interlock programs can be defined.

The application of a plurality of interlock programs for input and output with the same management items is possible.

Example of Interlocking Programs Indoor unit Link: Inputs signal from lighting equipment and turns OFF air conditioning of rooms where all lights have been turned OFF.

Key Control Link: Inputs signal from key control device and turns OFF lights and air conditioning of areas from which keys have been returned.

(6) Emergency stop control for fires

The system performs the necessary determined actions (rings buzzer, prints to printer, display fire sign, stops air conditioning equipment, etc.) to notify of fires and to prevent the spread of flames when a fire signal is input. These fire related actions take priority over normal actions.

Though similar to linked operations, a major difference is that the content of the output is limited to the stop instruction. The emergency stop takes priority with regard to control.

Registering the management items to be the target of an emergency stop can be done by specifying the management items to stop or by targeting all management items for a stop and then specifying the management items that are exceptions.

A maximum of 32 programs can be set.

The fire warning system controls smoke detectors and dampers according to fire prevention laws. Elevators, etc. are controlled by a dedicated control system.

Therefore, these facilities are not targeted for control by the emergency stop program.

(7) Power failure and recovery processing control

<Power Failure>

The system enters a power failure execution after the reception of a power failure signal.

Automatically saves all operating data and control data. The system automatically shuts down approximately 10 minutes later. Status monitoring of management items is possible during the power failure processing, but control is not possible.

<Recovery>

All facilities and power supplies are restarted when commercial power is recovered.

The following 5 controls can be set for the recovery mode.

1) Restore to status prior to power failure: Returns each management item to its start/stop status prior to the power failure.
2) Execute Scheduled run: Determines start/stop status (the status that should be for operation) of the time of the recovery according to the execution schedule and outputs a start/stop instruction.
3) Force Stop: The start/stop status is “stop”.
4) Force Operation: The start/stop status is “start”.
5) Recover Remote Controller: Returns the remote controller enable/disable to the status prior to power failure. No other instructions are output.

* **Other than 5) above, the operating mode and temperature setting output the value of the intelligent Manager setting. (Settings change when the power is restored if the equipment was running with a remote controller setting that differs to the intelligent Manager prior to the power failure.)**

Regardless of the power recovery mode, a link operation that was applied prior to the power failure will restart after power is restored (after approximately 10 minutes after power is restored).

(8) Centralized control of air conditioners

intelligent Manager allows for centralized operation of DIII-NET air conditioners.

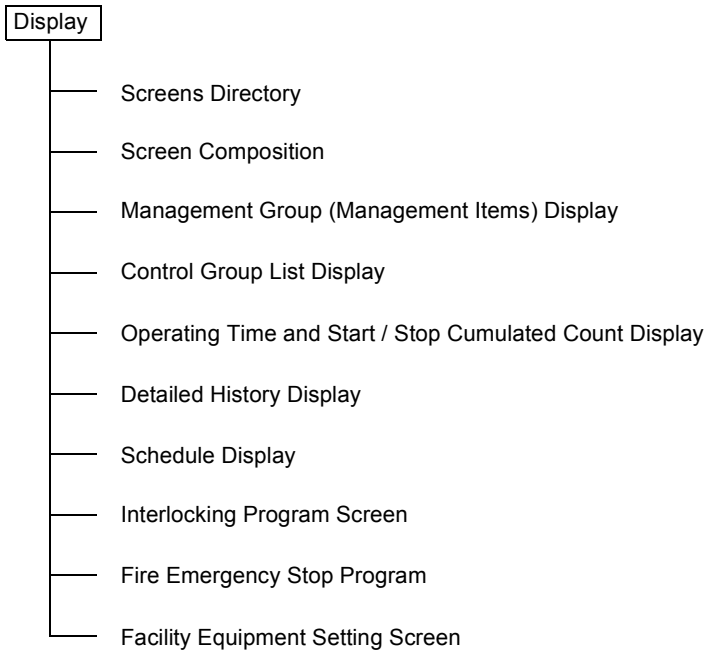
Performs detailed control by allowing operation of start/stop, switching of the operating mode, changing of the temperature setpoint, enable/disable remote controller* operations and resetting the filter sign.

* Enable/disable remote controller operations

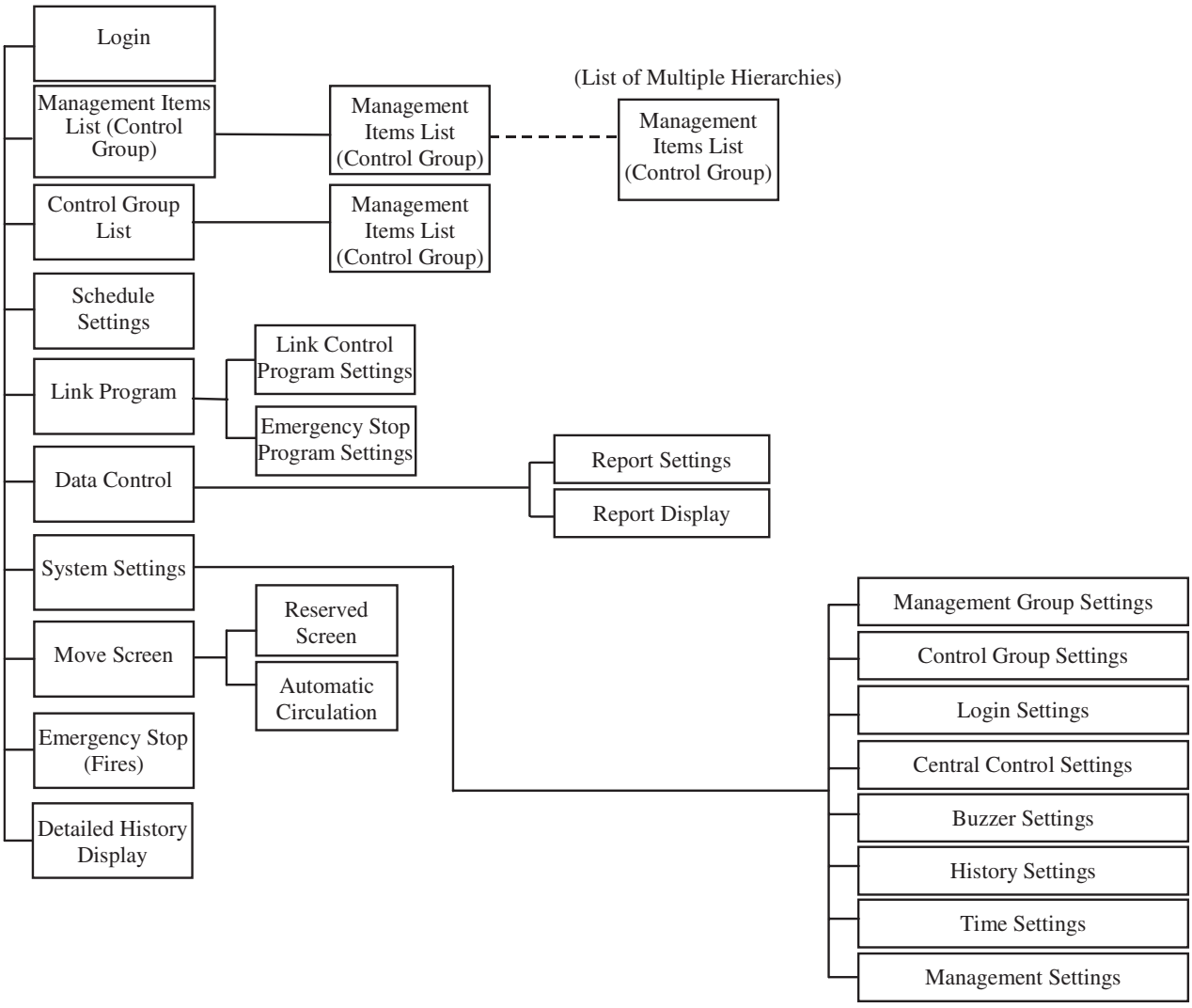
Limits operations from individual remote controllers on DIII-NET air conditioners and corresponds to various controls and operations.

[Start/Stop]:	3 settings possible: Disable remote controller/enable only remote controller stop/ enable remote controller
[Operating Mode]:	Select either enable/disable remote controller for this operation
[Temperature Adjustment]:	Select either enable/disable remote controller for this operation

3.2.3 Display



(1) Screens Directory

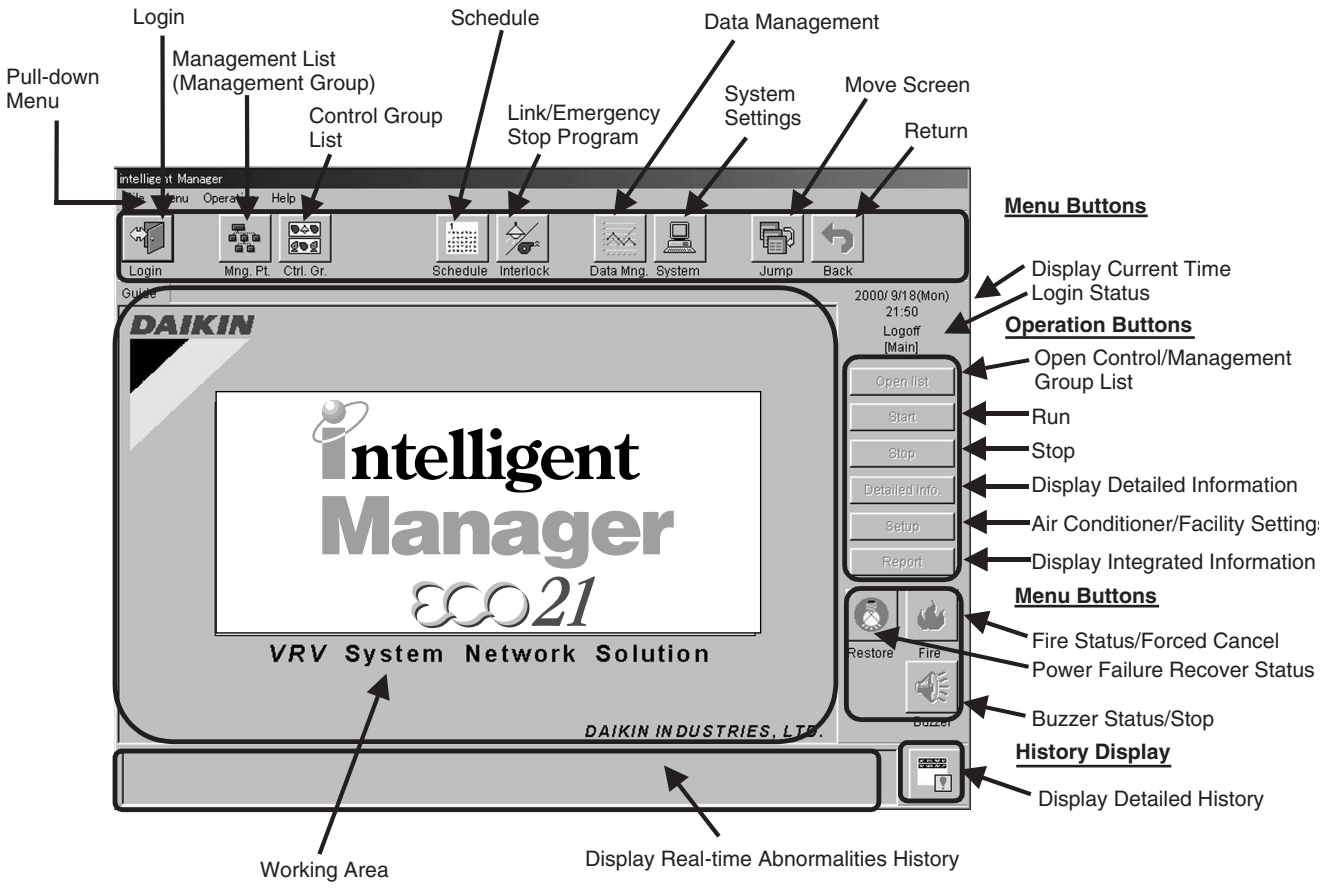


(2) Screen Composition

The screen is composed of menu buttons, operation buttons, error history real-time displays and working area.

- Menu buttons: Buttons that call up all functions. These are always operable on any menu screen.
- Operation buttons: Buttons for running and stopping the equipment, etc.
- Error history real-time display:
  Area displaying the error history in real-time
- Working area: Area displaying the functions called up by the menu buttons.

* The functions of the menu and operation buttons can also be executed from the pull-down menus.



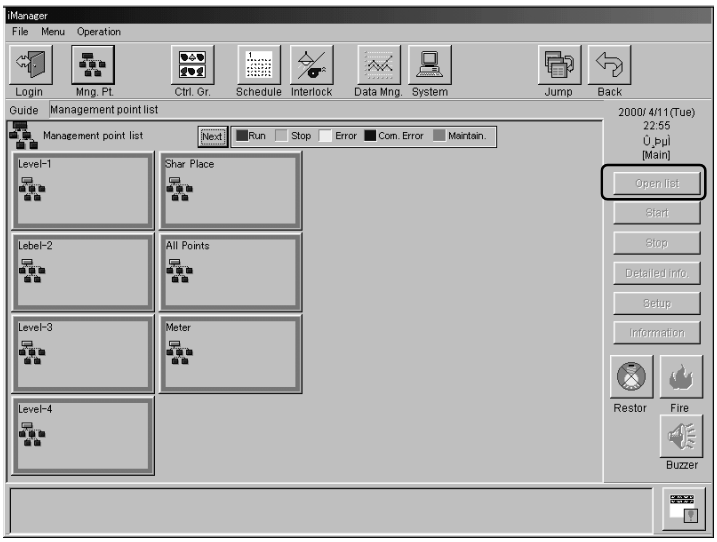
(3) Management Group (Management Items) Display

Management Group combines management items to make a group for easy management. (Controls for all of the equipment in a group are performed in control groups.)

Allows division of facilities targeted for monitoring into any group for the monitor screens.

Allows constructing multi-hierarchic configurations to any depth in the order of “Management Group List” → (“Management Group List” → ...) → “Management Item List.”

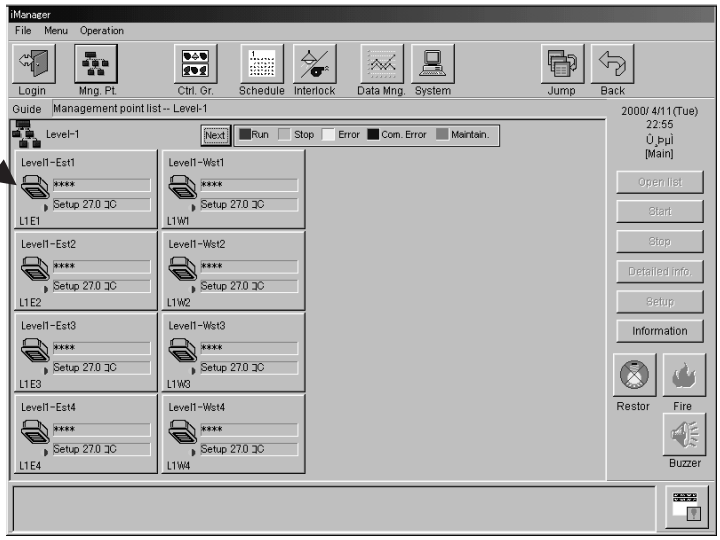
[Management Group List Screen]



Select the group and press “Open List” to shift to lower level management

[Management Item List Screen]

Color of Icon Lets You Know the Status



The color of the icon lets you know the status of the management item.

Red: Running, Green: Stopped, Green Flashing: Emergency Stopped, Yellow Flashing: Error, Blue: Communications error, Gray: Under maintenance.

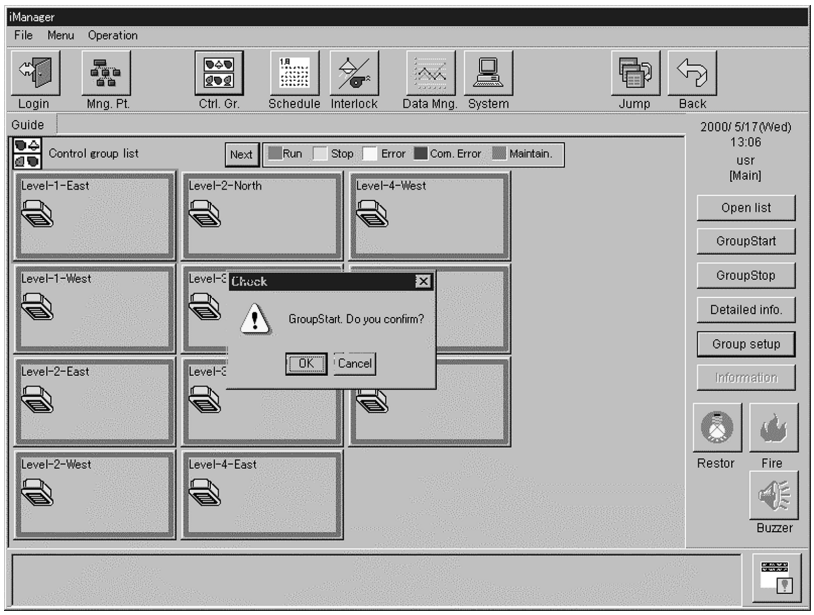
Also, the filter sign, cooling selection authorized, targeted for automatic control (link and schedule target) marks are also displayed.

(4) Control Group List Display

The Control Group binds the management items for batch control.

Select the control group and press the “Run All” or “Stop All” button to control the starting and stopping in control group units. A maximum of 100 management items can be registered in one group and a maximum of 100 groups can be registered.

Also, operations for switching the operating mode, changing temperature settings or enabling/disabling the remote controller are possible when the management items in the control group are DIII-NET compatible air conditioners.

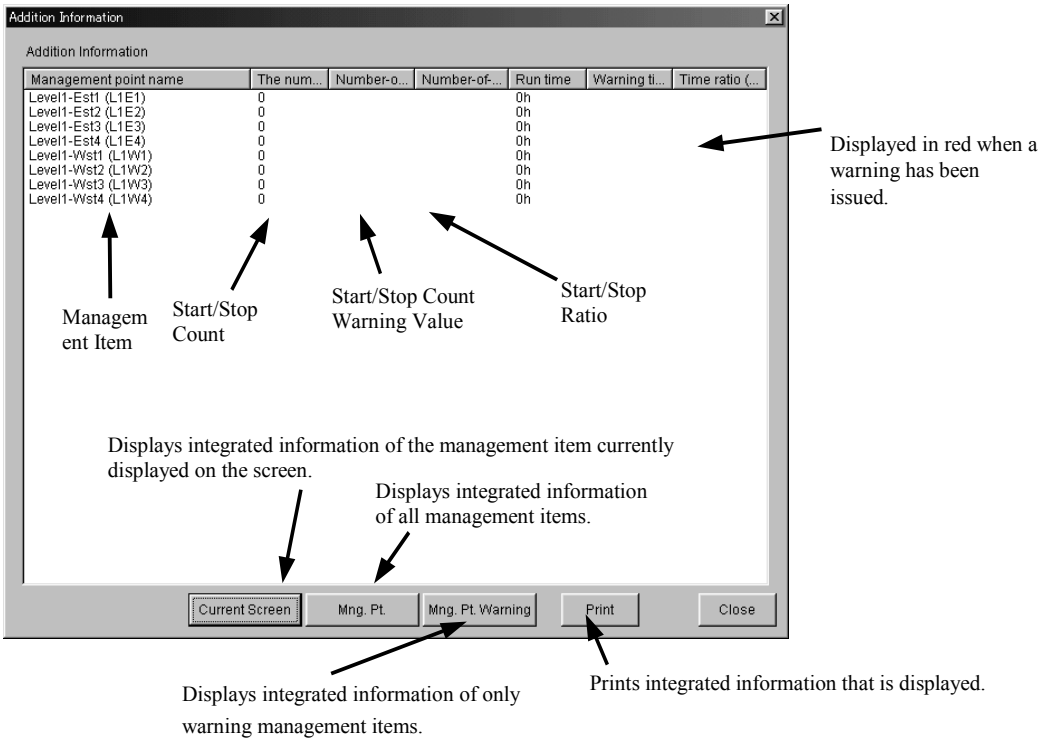


(5) Operating Time and Start/Stop Cumulated Count Display

The following data can be confirmed as the cumulated information display.

- Start/stop count
- Start/stop count upper limit value (warning value)
- Operating time cumulated
- Operating time upper limit value (warning value)

[Cumulated Information Display]



(6) Detailed History Display

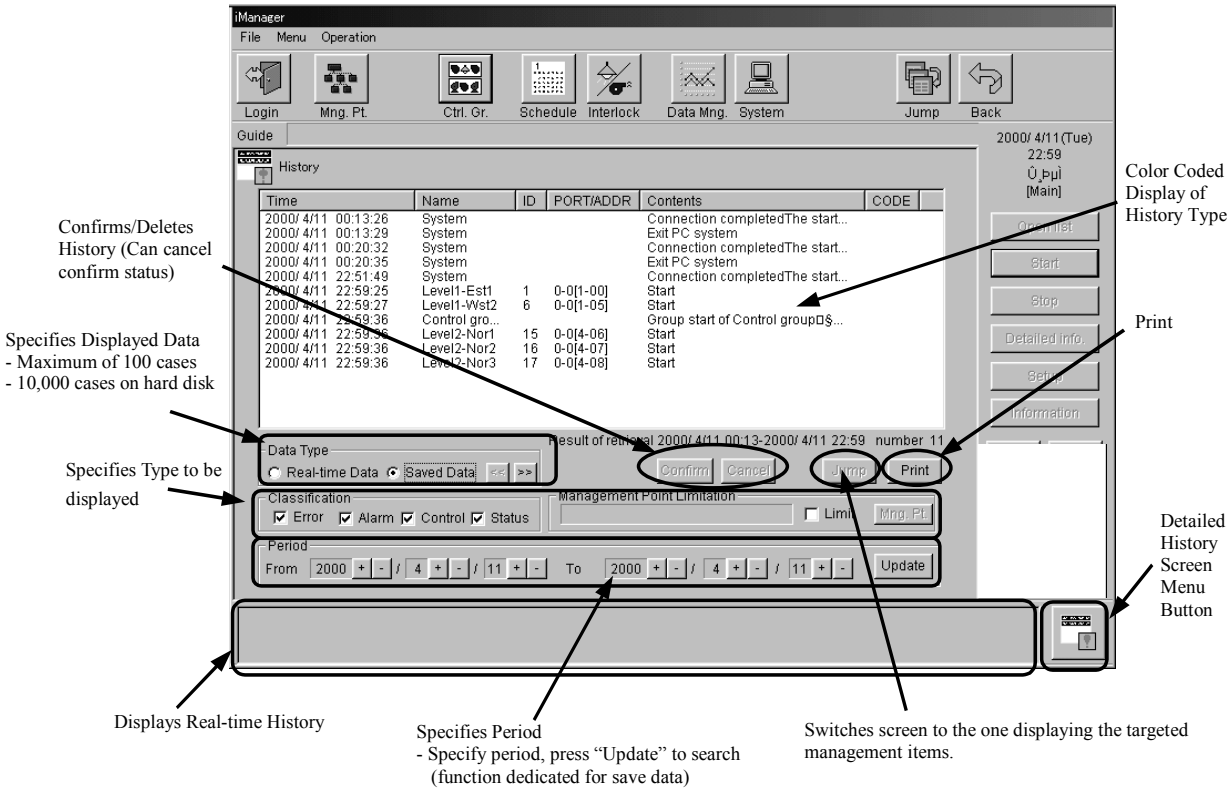
Allows management of history items such as starting the control of management error occurrence/recovery, status changes (run/stop etc.) and schedules.

You can select to display the information displayed on the Detailed Screen in real-time or to display data saved to a file on the hard disk.

* Data saved to a file is called saved data.

100 items of information can be displayed on the History Details Screen at a time if using real-time and you can search from 500,000 occurrences of saved data and display.

[History Details Screen]



Message display colors differ according to the type of history.

Error	Red (Purple)
Warning	Blue (Gray)
Cancel	Green
Other	Black

* The colors indicated in the parentheses are the colors of confirmed messages.

(7) Schedule Display

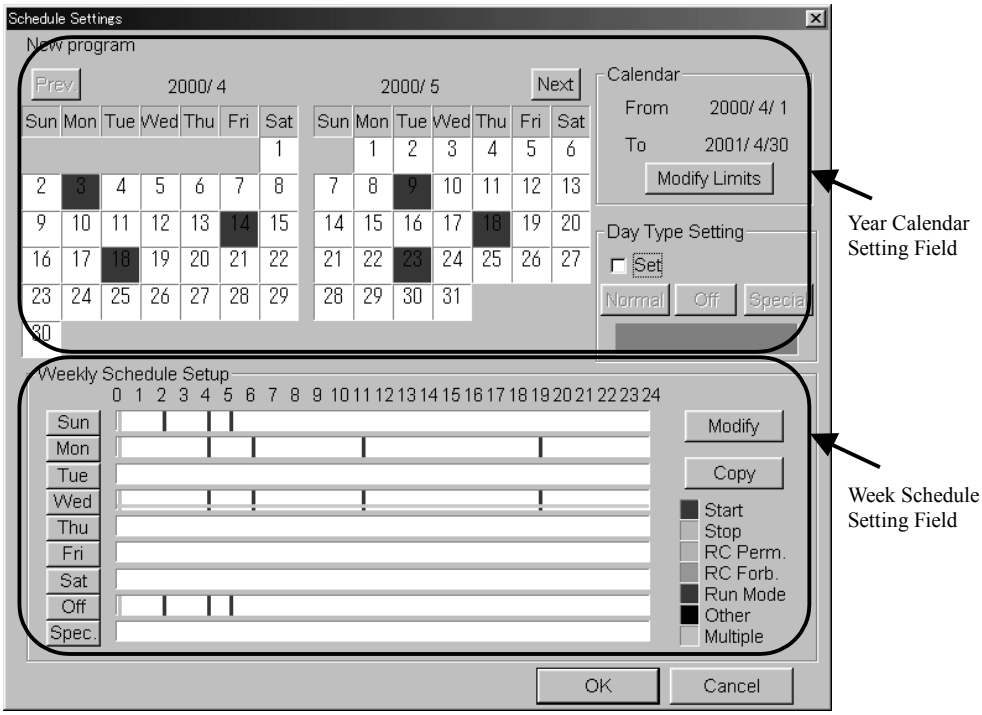
Automatically performs facility start/stop control, switching of the operating mode, setting of temperatures and enabling/disabling of the remote controller according to the preset time schedule.

Register 1 week's cycle schedule program and specify what operations to perform on each day. Also, you can specify holidays or special days throughout one year (13 months) and specify the method of operation for holidays or special days in the same way as the daily operating schedule when using the schedule program.

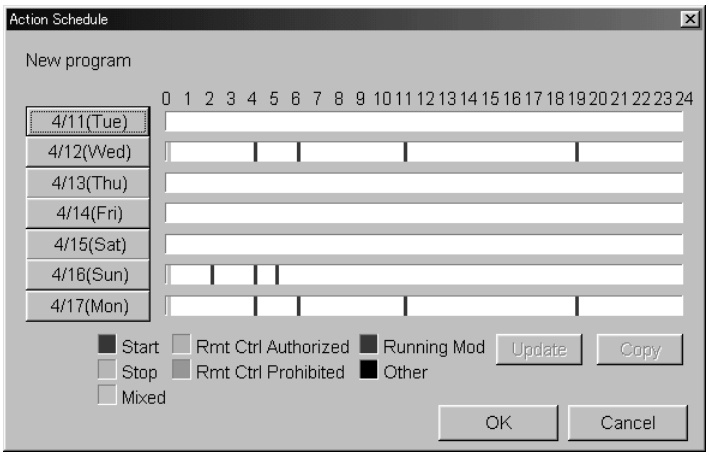
One system can register up to 128 schedule programs.

When the schedule operation is executed, those operations are recorded in the history.

[Schedule Setting Screen]



[Execution Schedule Screen]



You can view this screen if you need to confirm the actual schedule control. Also, special schedule changes within one week change on execution schedule screen.

(8) Interlocking Program Screen

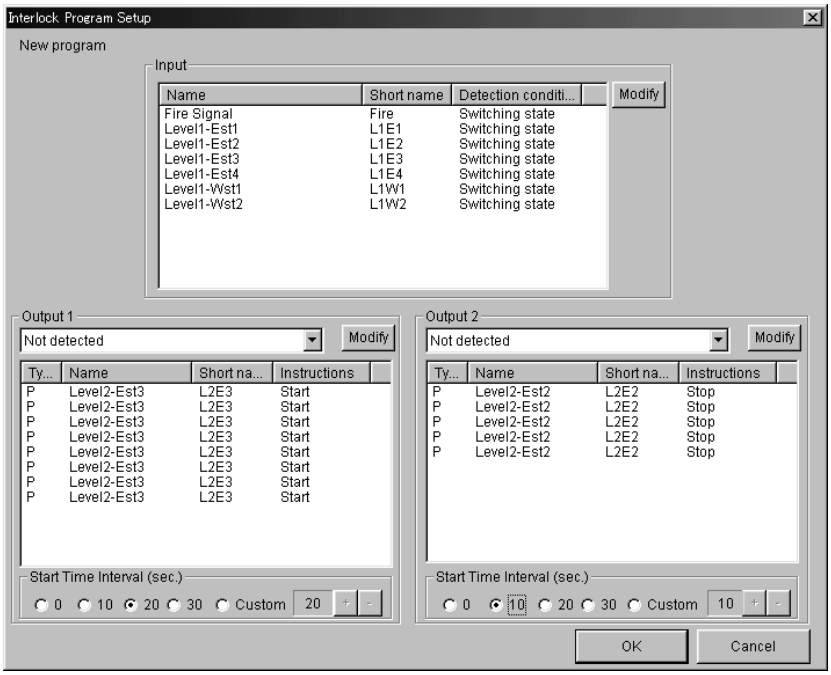
Automatically starts and stops equipment that was set, in response to changes in the operating status of the facilities or the occurrence of errors. 8 types of input conditions can be specified.

Using this enables the interlocking of starting and stopping of a plurality of facilities (operation in order etc.) indoor/ outdoor link, key management link and reporting.

1 link program can set a maximum of 50 input condition management items and a maximum of 50 start/stop output management items. A maximum of 100 link programs can be defined. A plurality of link

programs can be applied for input and output of the same management items.

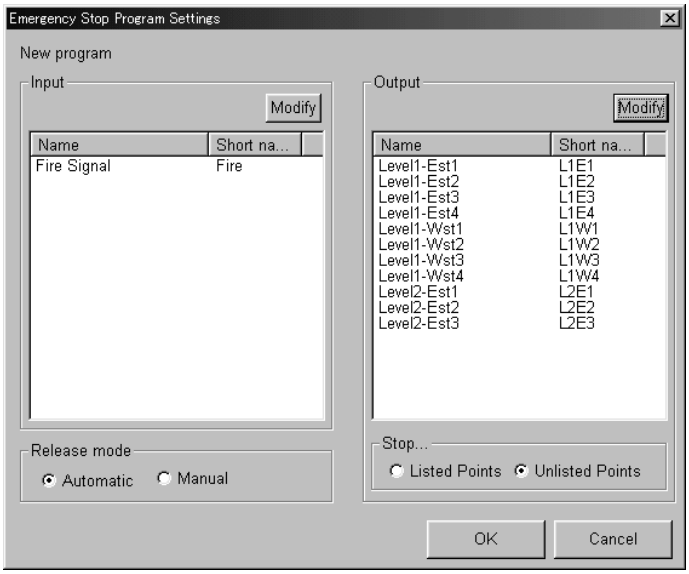
[Interlocking Program Screen]



The figure above is an example of a link program that is running air conditioners in common areas along with the air conditioners that are running for certain tenants.

(9) Fire Emergency Stop Program

[Emergency Stop Program Screen]

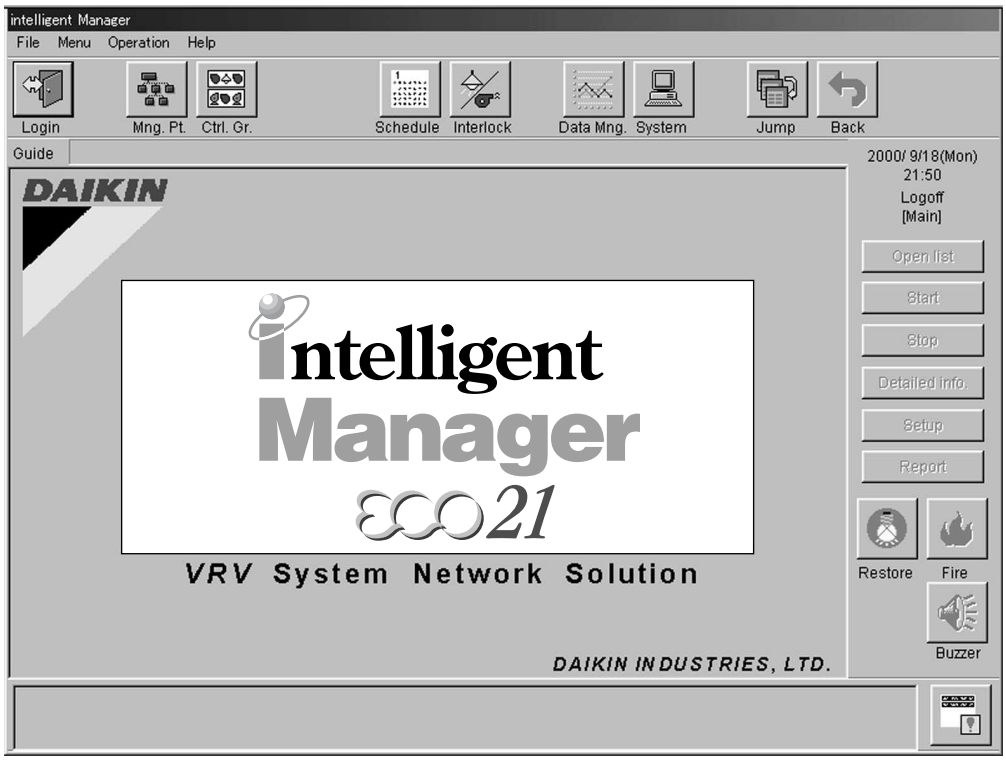


The registration of management items to be targeted for emergency stop can be performed using either method of specifying the management item to stop or of making all management items targets for stopping and then specifying the management item that is out of range.

(Facilities that are conformed to fire safety laws are exceptions.)

This example figure shows the specification of management items (not to stop when there is a fire) that are not targeted for emergency stops.

[Fire Occurrence Screen]

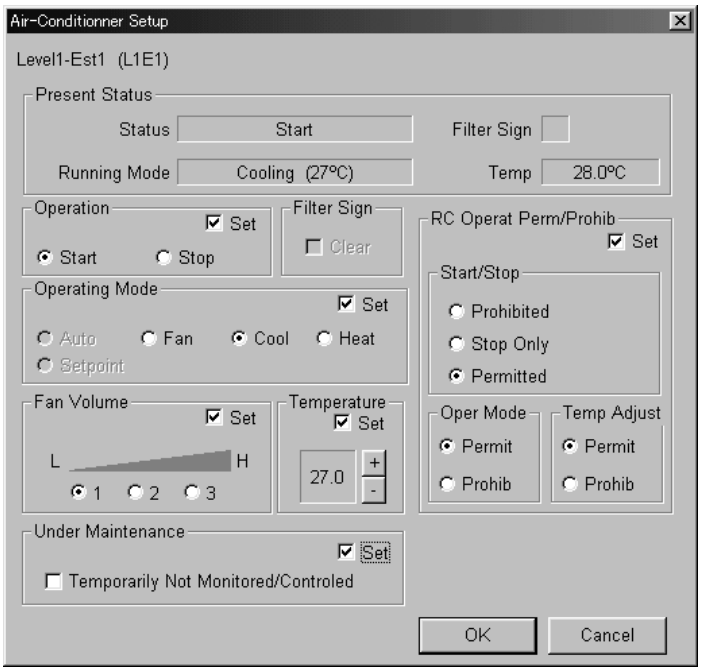


The fire icon on the bottom right-hand side of the screen will change to red when the emergency stop signal is input. (Normally, the report signal is input from the fire system.)

(intelligent Manager is not a fire prevention certified product.)

(10)Facility Equipment Setting Screen

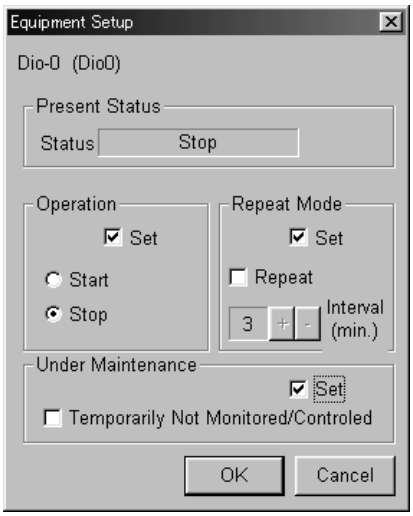
[DIII-NET Air Conditioner Setting Screen]



Each of the operations of start/stop, switching of operating mode, changing of temperature settings, switching of enable/disable of individual remote controllers, resetting of the filter sign, clearing of the failure warning and settings for being under maintenance are possible when using our DIII-NET compatible air conditioners.

Items pressed later have priority with regard to management items defined by the schedule control and link control.

[Setting Screen for Other Facility Equipment that can be Started and Stopped]



In addition to start/stop operation, supported by all facility equipment, our DIII-NET air conditioners, can be started and stopped with the repeat mode. In this case the outputs start and stop instructions in determined time intervals to make the starting and stopping states of the facility obey the intelligent Manager instructions, regardless of the local operation.

3.2.4 Measuring

- Measuring
  - Cumulated Running Time and Cumulated Start/Stop Count
  - Automatic Inspection of Meter

(1) Cumulated Running Time and Cumulated Start/Stop Count

Cumulated running time and cumulated start/stop count are possible on all facility equipment that should be monitored. This is a standard for equipment maintenance. Can set as data for calculating electrical costs according to the use of the equipment.

(2) Automatic Inspection of Meter

Automatically cumulates pulses of electrical power meters, water amount totals and gas meter. Data that is inspected is reflected in the tenant's monthly cost calculations (optional). (A measuring instrument with a pulse generator of a minimum of 100 ms pulse width is necessary.)

Number of management items:1 meter = 1 item

Meters can be connected to the Pi port on the main unit.

3.2.5 Management

- Management
  - Running History Management
  - Report Creation (Including the proportion of electric power)

(1) Running History Management

You can print the changes in the status of the equipment (start/stop).

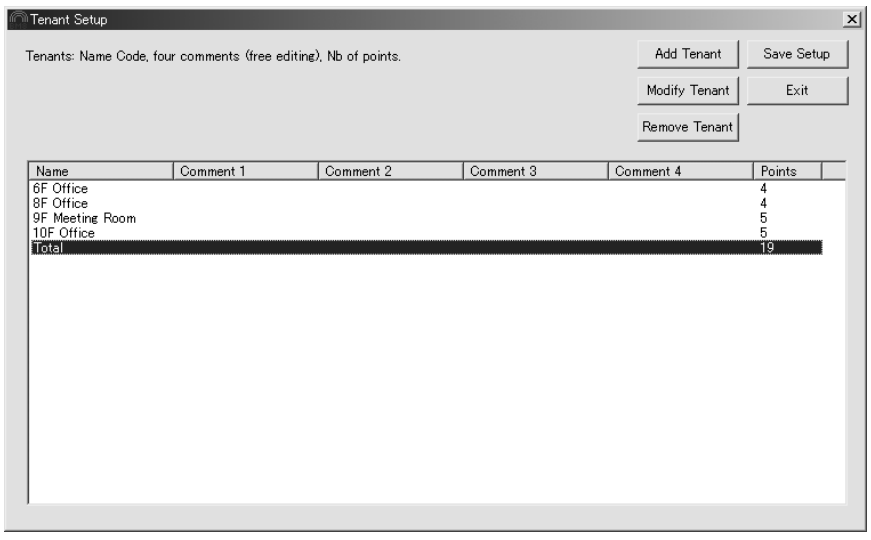
(See the section on Detailed History Display on page 13.)

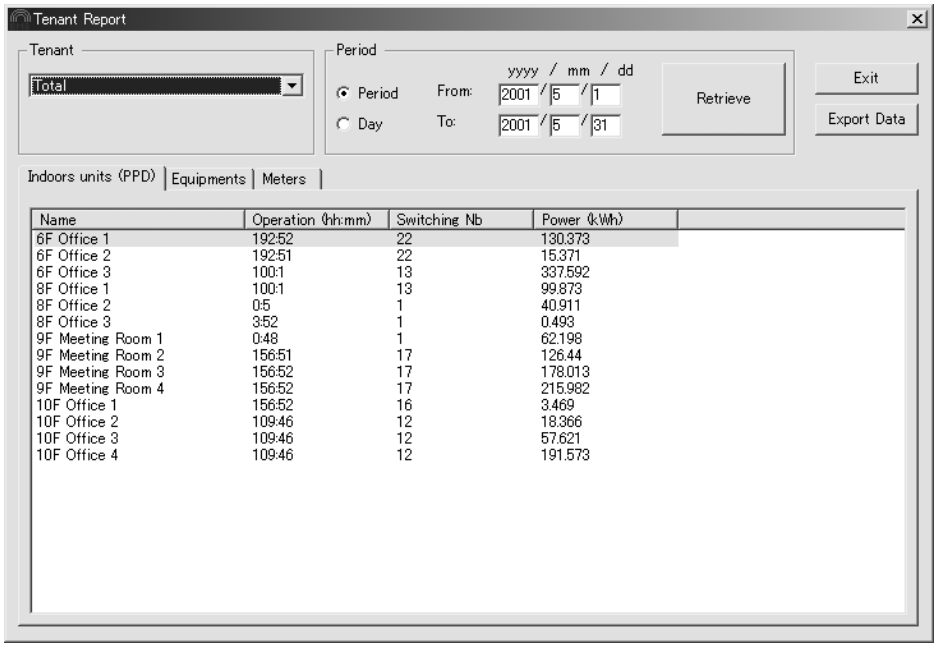
Stores up to 10,000 items of error history data of the equipment (occurrence of errors and recovery) in memory. Allows you to display and to print the error history for each specific management item and to display and to print the histories of all management items. Also, you can set the period targeted for display (or printing) for each and set whether to display or print the errors and recoveries.

(2) Report Creation

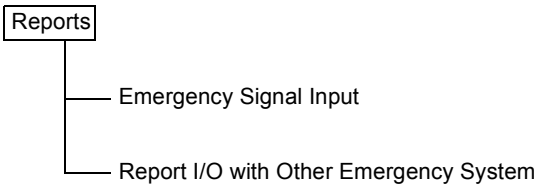
Accumulates and manages the data for integration (running time of equipment, start/stop count), meters (pulse integration by the Pi on the main unit) and the power consumption amount (in units of indoor equipment) by the proportion of electrical power of the VRV. It can also be searched and displayed using Excel software.

*Customers can freely change their department charges and accounting books (under their own responsibility).





3.2.6 Reports



(1) Emergency Signal Input

Allocates a dedicated input board for fire signal input. (Di on iPU main unit)

The emergency stop program using this as the input signal function has priority over other controls. (See Fire emergency stop control.)

(2) Report I/O with Other Emergency System

The application of link control enables key management control that uses the input of a signal from the key management device and the notification to warning devices in security companies when errors in the facilities are detected, such as filled head water tanks, elevator error signals and fire warning systems. It also controls the input and output of a variety of reports.

(However, the status of the proportion of the output of reports does not change for approximately 10 minutes after recovery from a power failure.)

3.2.7 Power Proportional Distribution

- Power Proportional Distribution
  - System Components
  - Power Proportional Distribution Function
  - Setting of the period with no electric energy distributing
  - Data Back-Up

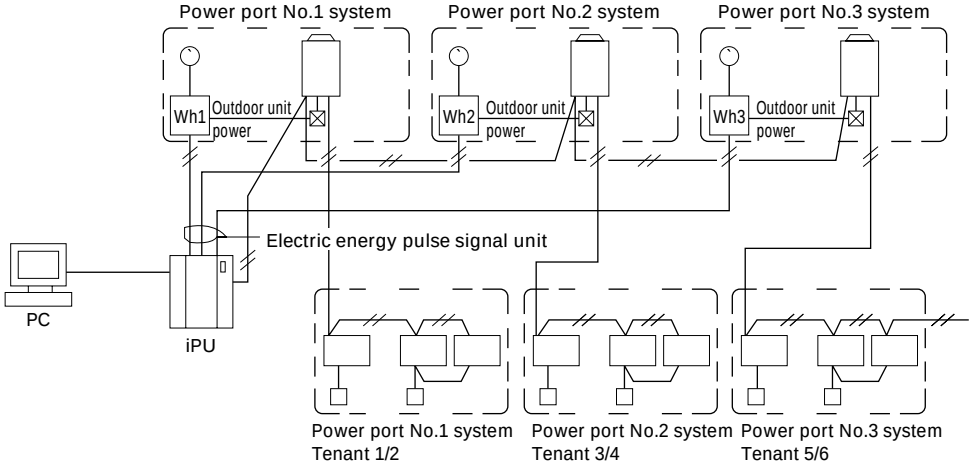
(1) System Components

◆ Option setting for use of many watthour meters (“Grouping of electric power port” to be specified) 18 units (Max.) of watt hour meter for one iPU (the 1st one) and 19 units (Max.) of that for each iPU among several iPUs (the 2nd or more one) can be connected. Therefore, when 4 units of iPU are used, 75 units (Max.) of watthour meter can be connected. (It is not recommended to install too many watthour meters.)

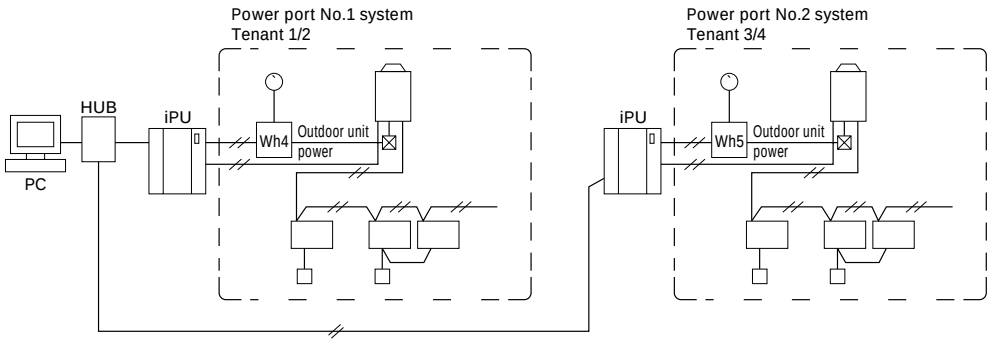
In this case, it is also allowed to specify the option of “Grouping of electric power port”.

Normally, it is not necessary to specify it. The system connection example is as shown below. For both Pattern 1 and Pattern 2, the calculation method, if specified, is the same.

Pattern 1 Three watthour meters to be connected to one iPU:



Pattern 2 Two watthour meters to be used with two units of iPU:



Item	Power port not specified (Normal)	Power port specified
Design precautions	Standard design without major conditions	Required to allow each of indoor/ outdoor units and watthour meter to correspond.
Test run date	Preparation of address table	Required to prepare the address table and enter the port No.
Relation between the indicated value of watthour meter and the total value of calculation results	The total value of calculation results of electric energy distribution is almost the same as the one of the indicated value of watthour meter. Because the calculation method has a treatment of counting fractions as one, it never becomes smaller than the indicated value of the watthour meter. (*)	
Relation between the distribution calculated value and the watthour meter indicated value	There is a case of no conformance between each watthour meter indicated value and the calculation result of corresponding air-conditioner.	Each watthour meter indicated value almost conforms to the calculation result of corresponding air-conditioner.

Note *-mark: If many watthour meters (more than two) are installed, it is required to make group setting every watthour meter. If the group setting is not made, the error may become large in the total of each calculation result of the indoor unit corresponding with each watthour meter, though the total of the indicated value of watthour meter almost conforms to the total of calculation result.

Pattern 3 SkyAir distribution of electric energy

Refer to Item 7 “Design precautions”.

(2) Power Proportional Distribution Function

Because the JIS calculation is not based on the Weighing Law, it cannot be used for any official business transaction.

(2-1) Power proportional distribution function

The power proportional distribution and determination method is as listed below.

① Power Proportional Distribution as a calculation standard	The power consumption of outdoor unit is counted in 1kWh unit. (To be inputted through integrating watthour meter with pulse oscillator) This value is a standard for determination, therefore, if the watthour meter has a wrong specification, the determined electric energy used is a wrong value.
② Calculation of operating load state every indoor unit (1 unit) (Load every indoor unit to be supposed)	Every 20 sec., the connected indoor unit operating state is received and collected as a communication data, and the tabulation (summing-up) for an hour shall be a "temporary load".
③ Calculation of distribution ratio	In order to determine the power consumption of some air-conditioner A, it is required to determine the temporary load ratio (distribution ratio) of air-conditioner A to the total temporary load of all the connected air-conditioners. However, the value to be determined here is a ratio and not the power consumption. Distribution ratio of indoor unit A t $\frac{\text{Temporary load of air-conditioner A}}{\text{Sum total of temporary load of all air- conditioners}}$
④ Electric energy used from distribution calculation of air-conditioner A	If the electric energy pulse [1kWh/pulse] inputted for an hour from the formal time is multiplied by the distribution ratio every indoor unit, the actual electric energy used can be determined. Electric energy used of air-conditioner A (Distribution calculation)tDistribution ratio of indoor unit AuNumber of pulses for 1 hour With this formula, the electric energy used for an hour of air-conditioner A can be calculated and determined. Then, if the same calculation is made for all the air-conditioners, the distribution value for an hour of each air-conditioner can be determined.
⑤ Determination of electric energy distribution value in 1-day unit	For 1-day used power distribution value, the calculation result every hour (1 hour) in r is summed up. For end of one day, 12:00 am (mid-night) is fixed. [Rate calculation] One day to be set in a menu is from 12:00 am to 11:59 pm.

The calculation result of the power proportional distribution function is made using the original method of Daikin and is not under law.
Collected data are saved in a daily report around midnight.

(2-2) Basic functions

- ◆ The system is that the rate of use every each indoor unit is calculated and determined from the electric energy used of the outdoor unit.
- ◆ For calculation, the power consumption of the outdoor unit is counted as a pulse signal, and this value is distributed depending on the load situation of the indoor unit. (Mentioned later)

Supplement:

Pattern 1: System of connecting three watthour meters to one iPU

If three watthour meters are connected with one iPU, the electric power port is to be specified individually.

Pattern 2: System of using some/many watthour meters with some/many units of iPU

By specifying of power ports, it is also allowed to collectively specify of some/many units.

Example: Of the four iPU, two units are group-specified with one watthour meter, and the remaining two units are group-specified with each unit individually.

Pattern 3: Combinations as above

As a combination system, some/many watthour meters can be connected to one iPU for use of some/many units. The precautions and the relation between the calculated value and the indicated value of watthour meter are the same as those in Pattern 1 and Pattern 2.

◆ Number of integrating watthour meter with pulse oscillator
As a standard system, one integrating watthour meter with pulse oscillator (abbreviated “Watthour meter” hereafter) is to be provided.
If more than 19 units are connected, the following method (two ways) are effective.

1) The mounting position of watthour meter is to be changed:	In most cases, if watthour meter mounting position is changed to the main body side (toward near cubicle) of the receiving equipment, the number of watthour meter can be set within 12 units. If the number of units is increased, these epuipment cost will be increased by more than hundreds of thousands yen.
2) The specification of watthour meter is to to be changed, together with use of pulse output:	In this case, because some/many watthour meters pulse synthesizer are used, the cost goes up. For this reason, it is basically not recommended. However, if more than 19 units are connected by all means, the pulse synthesizer should be used and the specification of watthour meter should also be different from the standard one. For more detail, you can consult with our Technical Sales Section.

(3) Setting of the period with no electric energy distributing

◆ For period of electric energy distributing, the usual (continuous) calculating system is normally adopted,but it is also allowed to set the time zone and days of the week in which no rate calculation is made.
For setting, specifying collectively is done, therefore, it is not possible to set the time zone every each tenant.

◆ Within the period of no electric energy distributing, the calculation result is 0 kWh. If the electric power is used with the outdoor unit in no-calculation time zone, the calculation result, by this electric energy rate, is less than the meter reading.

◆ As an example, the above is used in the following case:
In ordinary regular time, the flat rate (fixed rate) is collected from the tenants, and only in other time, the electric energy distributing is made as an overtime and holiday rate.

◆ The no-calculation period can be set by combining the following. (Tenants individual not allowed)
- Optional start to end time (1 min. unit)
- Optional day of the week (Unit of day of the week)

◆ Reversely, if the optional date (month/day) is specified, the rate can forcibly be calculated with 1-day unit.
Regardless of specifying of no-calculation period, the rate calculation is made. (Tenants individual not allowed)
- Optional date (month/day) with 1-day unit (1 year)

(4) Data Back-Up

The set data in the dues control unit is not deleted even if the electric power is turned off, because the data is stored in the non-volatile (flash) memory.

intelligent Manager ECO21

The increased efficiency in the operation of your air conditioning system gives you huge energy savings.

Even if an air conditioning system possesses an excellent energy efficient profile, this is meaningless unless its operation is appropriately managed. Precise operation management is the key to getting the most out of an energy efficient system. The intelligent Manager ECO21 is Daikin's energy-efficient air conditioning management system. It maximizes the performance and characteristics of air conditioning systems and further improves upon existing energy efficiency. What we have prepared for you is a highly sophisticated that only Daikin, the air conditioning specialist, could have made possible.

Functions and System

Monitoring
- Operation / Stopped
- Operation mode, filter sign, Set point, Fan speed, etc.
- Abnormality (Malfunction / Communication Error / etc.)
- AIR NET (optional)

Operation (individual / group)
- Start / Stop
- Setting (Operation mode / Fan speed / Remote Ctrl mode / Maintenance mode / Filter sign clear / Fan direction)
- Set Point etc.

Start
Stop

Indication
- Manage group (Cell display)
- Control group (Cell display)
- **Visual Navigation (Graphical display)**
- Table

Measurement
- Accurate operate time
- Number of switching times
- Consumption power
- Room temperature
- Outdoor temperature

Temp. 28.0 °C
Setup 27 °C

Data indication
- Table (Op.time, sw. times)
- **Graph (temperature)**

Printing
- History
- Statistics
- Setting info. (Schedule / Interlocking / User Info / Status table, etc.)

Automatic Controls
- Schedule
- Interlocking (standard / Emergency stopr)
- **Eco Mode**
- **Power Limit Control**
- **Auto change over**
- **Sliding temperature (External kit required)**
- **Temperature limit**
- Power Failure control

System Setting
- Basic Setup (Management Gr. Editing / Control Gr. Editing / User / History, Buzzer / Daylight saving time / Clock)

Remote Access
- **Remote connection**
- **WatchDOG**

Multiple Language
- English
- French
- Italian
- German
- Spanish
- Chinese

Other
- Security (30 users Max / Flexible access Authority)
- History (realtime data / saved data)
- Set point limitation
- **Multiple PC (accessible from different PC's)**
- OnLine Help
- Compatibility with Windows 2000

3.3 Upgrade (ECO21. ver2) Functions

3.3.1 Maximizing energy efficiency, while maintaining room comfort

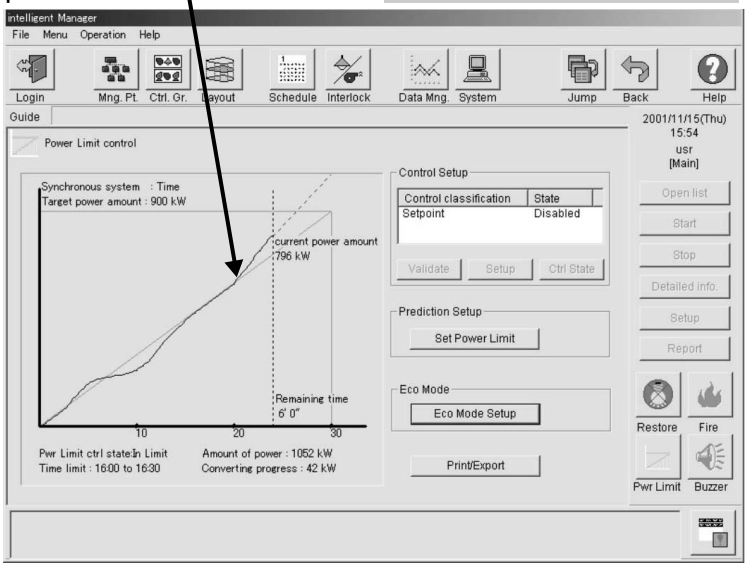
■ Power Limit Control

Enables systematic management of A/C power consumption.

Providing control via prediction of A/C operation in order to limit power consumption to the set targets. Accordingly, this enables users to systematically manage A/C consumption of electrical power, which until now has been an uncertain.

•Flexible group configuration
•Set Point,
•real time control
•30 minutes prediction time

• Power consumption prediction based control.
Provide more comfortable environment

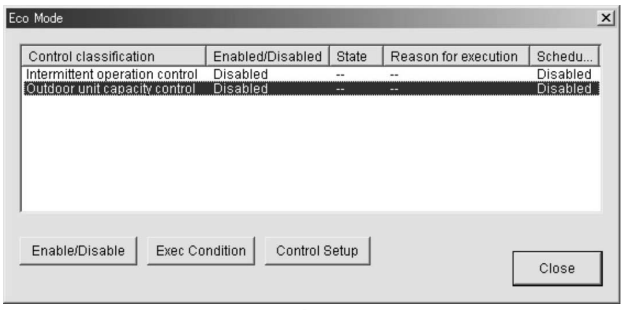


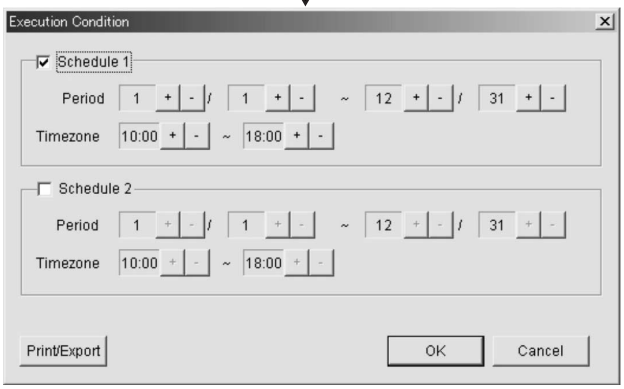
■ ECO Mode

Reduces power consumption by 10 to 20%, while maintaining room comfort.

Based on a predetermined schedule, the intelligent Manager ECO21 executes capacity control and intermittent operation of A/Cs so as not to increase the discomfort index.

•Flexible group configuration
•2 control types:
•Alternative stop control
•Outdoor unit capacity control



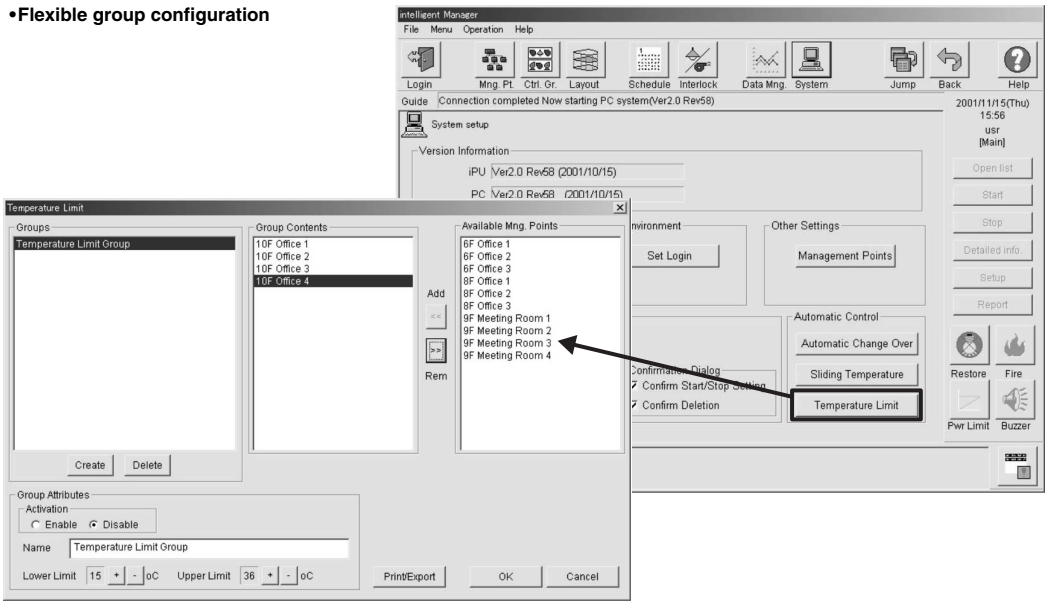


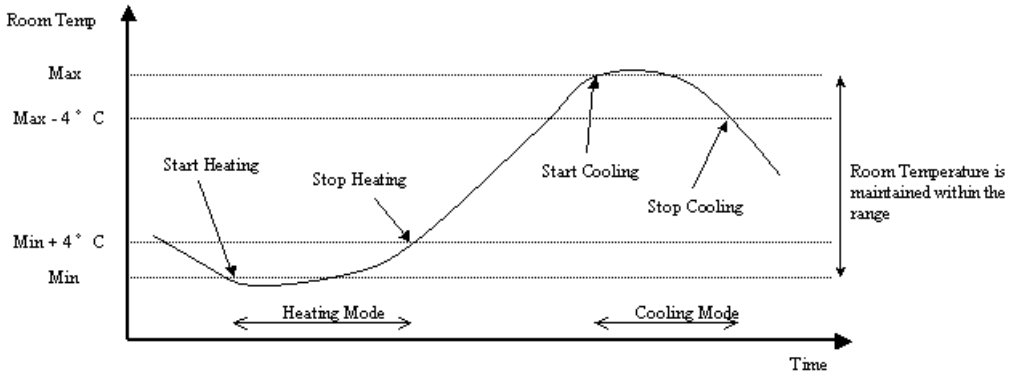
■ Temperature Limit

Provides the appropriate operation management by limiting the maximum and minimum temperatures.

intelligent Manager allows users to put limitations on the maximum and minimum room temperatures and ensures an appropriate room temperature via automatic control.

•Flexible group configuration





Room Temperature and Operation Mode

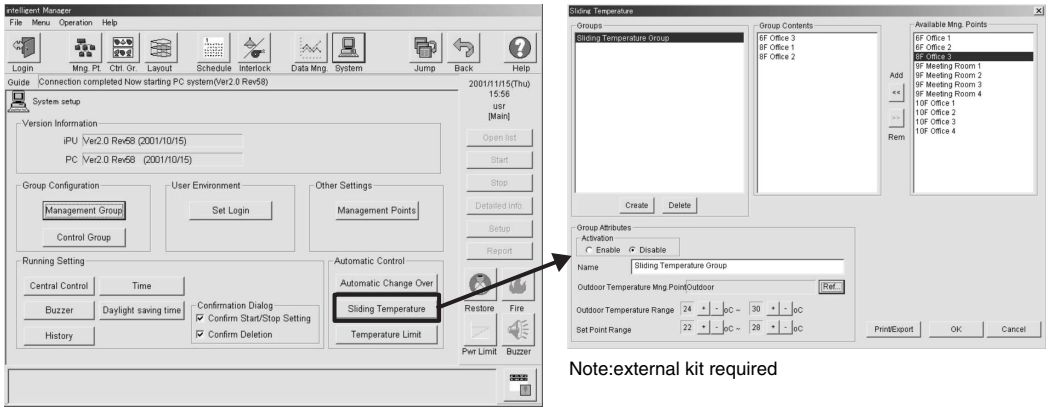
■ Sliding Temperature

The intelligent Manager ECO 21 eliminates overcooling via sensory comfort control.

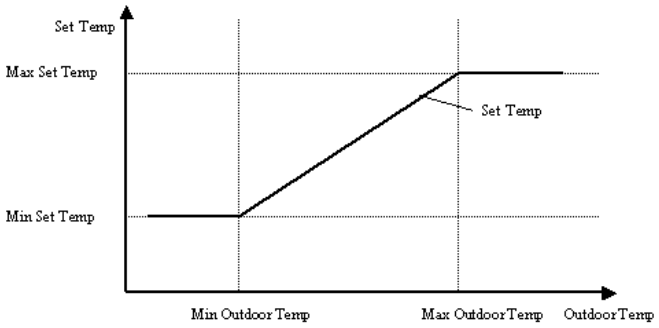
intelligent Manager outdoor temperature and automatically controls room temperature settings all in order to minimize drastic temperature differences with the outdoors.

Along with energy efficiency, intelligent Manager also can eliminate any uncomfortable cold shock around building entrances and the like.

•Flexible group configuration



Note:external kit required



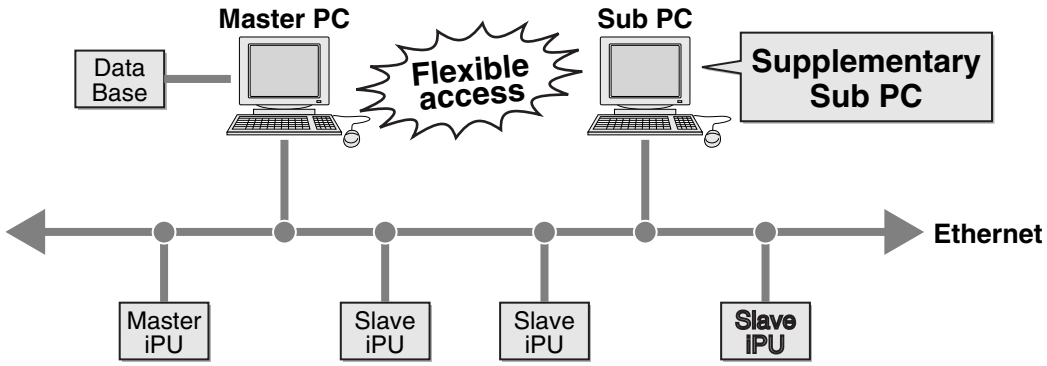
Relation between Outdoor Temperature and Set Temperature

3.3.2 Allowing flexible network configurations in response to specific needs

■ **Multi-PC**

The intelligent Manager can be connected to existing LANs, contributing to a reduction in costs.

Because air conditioners equipment and the intelligent Manager ECO 21 can be easily connected to existing LAN networks, users can reduce installation costs.



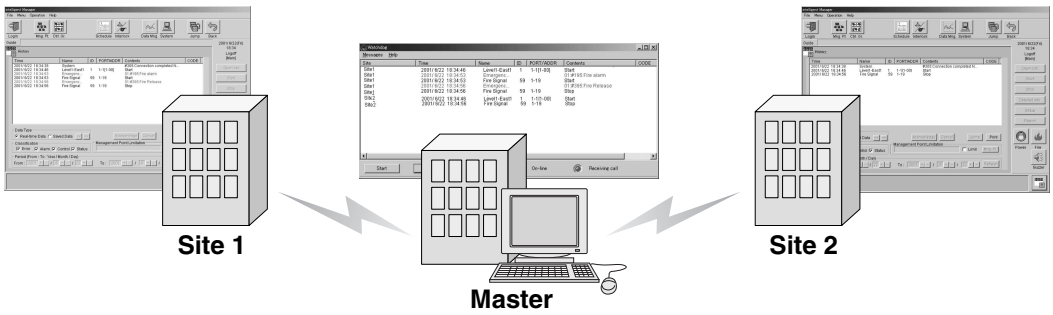
Maximum System Plan

■ **WatchDOG**

Large-scale maintenance systems can be run at low costs.

The system can receive error messages from air conditioners in more than one building or structure via public phone lines. This allows the user to configure an appropriate maintenance system over a broad area at the lowest of costs.

Watchdog (telephone remote monitoring):
- **Transmit Malfunctions, etc.**
  - **Configurable retry**
  - **Alternative phone Nr**
- **Remote monitoring :**
  - **Printer**
  - **File backup**
  - **Multi sites**

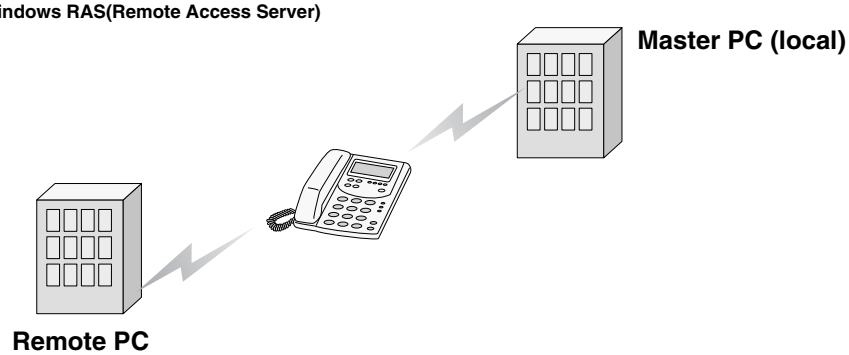


■ **Remote intelligent Manager**

Flexible management of air conditioners equipment from a multiple number of buildings.

It enables flexible monitoring and control of remote air conditioners equipment via public phone lines. Air conditioners equipment in more than one building can be managed from one location, making it easy to reduce system management costs and bring consistency to the system environment.

- **Remote Control & Monitoring, Data Management, etc.**
- **Based on Windows RAS(Remote Access Server)**



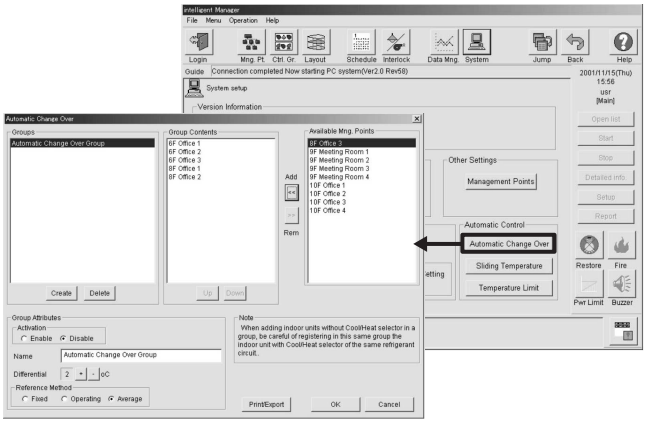
3.3.3 In addition, various functions provide the user with comfort and enhanced laborsaving management

■ **Automatic Changeover**

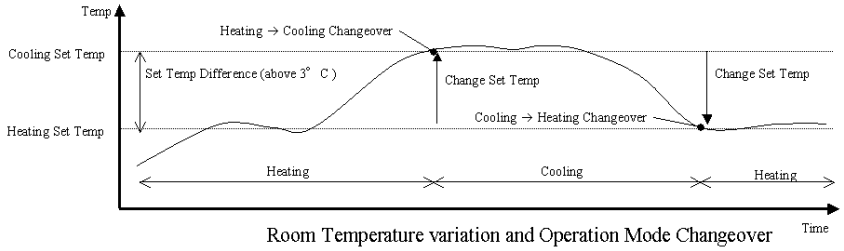
Increases comfort and saves on labor required in managing system operation.

The intelligent Manager ECO 21 measures room temperature and automatically changes over between cooling and heating modes depending on the set temperature. This provides comfort by enabling selection of the appropriate mode and takes the human factor out of changeovers.

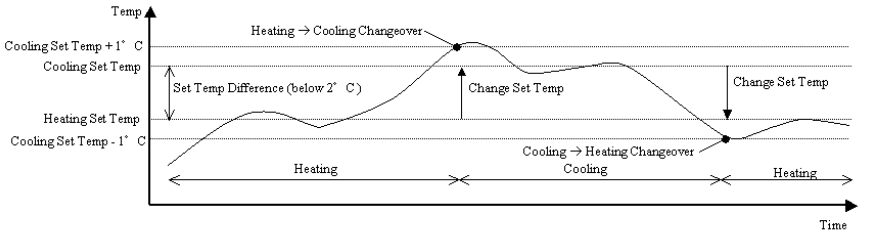
•Flexible group configuration
•3 selection methods



• **Fine grained temperature control**



Room Temperature variation and Operation Mode Changeover

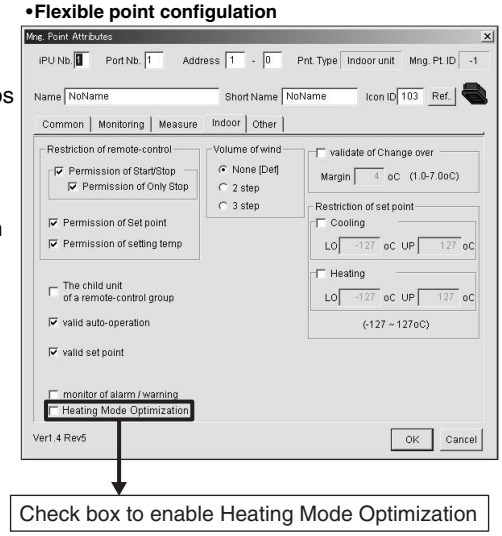


Room Temperature variation and Operation Mode Changeover

■ Heating Optimization

This eliminates the uncomfortable feeling when the room temperature is too high and increases overall system efficiency.
The intelligent Manager ECO21 completely stops the operation of room units to effectively eliminate the uncomfortable, continued rise in room temperature that occurs even when room temperature has reached the set temperature, which is a characteristics of heating operation in VRV systems.

•Flexible point configulation

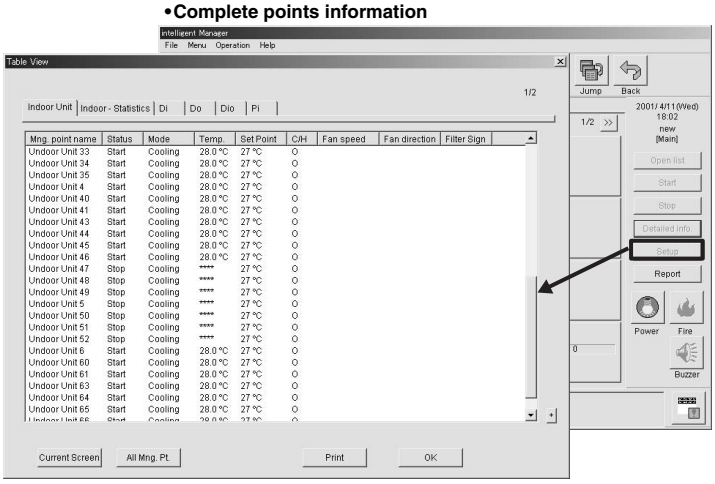


Check box to enable Heating Mode Optimization

■ Table Report

The operational status of a multiple number of air conditioners can be ascertained with just one look.
Users are able to ascertain any abnormalities or malfunctions pertaining to the operation status or setting of a multiple number of air conditioners via list displays. This enables the user to manage the system in an appropriate and expedient manner.

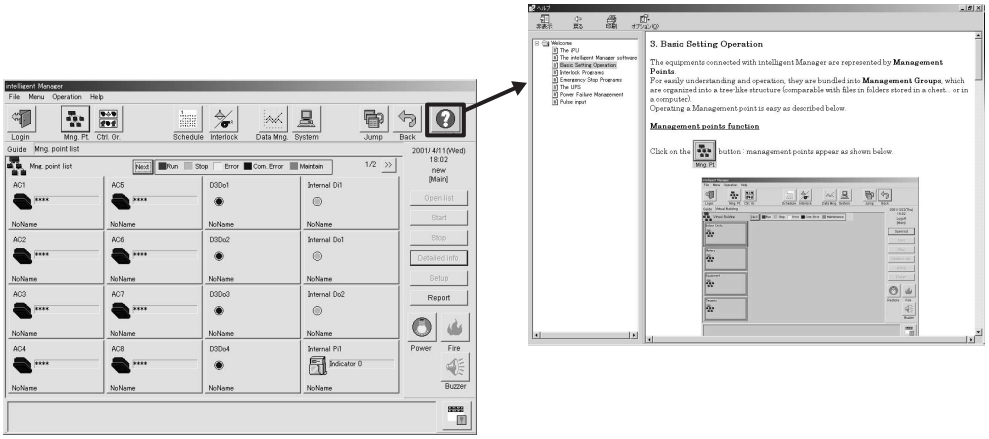
•Complete points information



■ Online Help

No need for manuals. Through the intelligent Manager ECO21 system you'll receive attentive support for all your needs.

The onboard help function provides aid when users do not understand operation procedures and when trouble shooting. It provides support for even beginners.



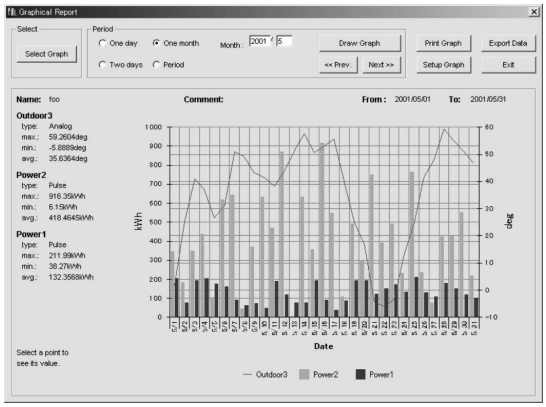
■ Graphical Report

Displays minute changes in easily understood terms via graphical expression.

The intelligent Manager ECO21 can provide graphical displays of all the operational and measurement data and coherently express changes and comparisons that would otherwise be difficult to grasp with mere tables. Depending on the particular purpose at hand, the Graphical Report can be switched back and forth between the Table Report.

- **Flexible configuration to display:**
- **Temperature**
  - **Analog Input**
- **Power Consumption**
  - **Pulse Meter**
- **Operation Time**
  - **Indoor units,**
  - **Digital Input,**
  - **Digital Output**

• Temperature and Power consumption can be shown in same graph

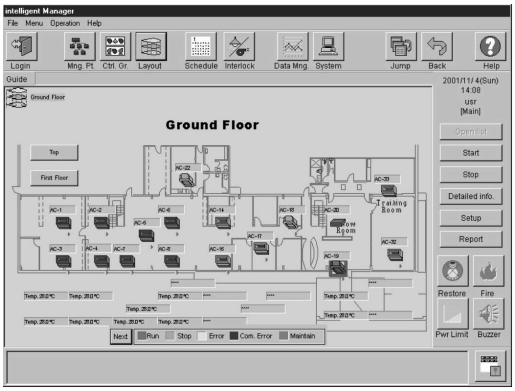


■ Visual Navigation

Facilitated management through displays of the layout (Optional)

One of the possible options is a flexible screen configuration system that increases the freedom users have by allowing to perform various tasks such as decisions concerning the location of individual air conditioners units with respect to the actual layout of the building.

- **Flexible components configuration (background & links)**
- **3 active types:**
  - **Icons**
  - **Buttons**
  - **Real time info**

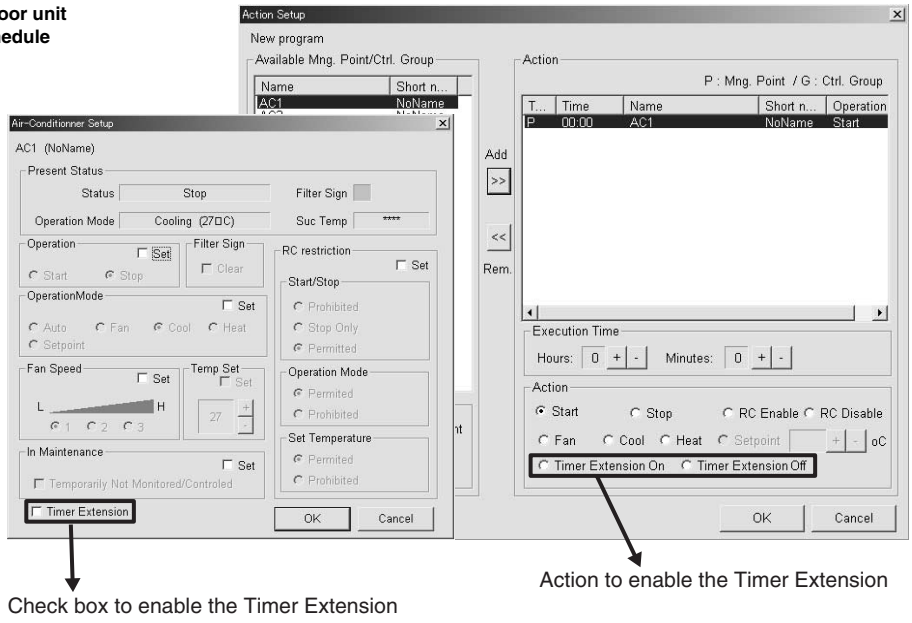


The system components (management points or control groups) are displayed (and dynamically refreshed) on a background image (plain or elevation view). That appears as:

- Attributes same information as cells of a management point (operation state, room temperature, etc.)
- Icons:same icon as in a cell of a management points or control group;in this case the same color states and actions as corresponding cell are supported (start, stop, detailed information, such as setup, etc.)
- Buttons:Navigation links to other free layout screens

■ Timer extension (action off after 2 hours)

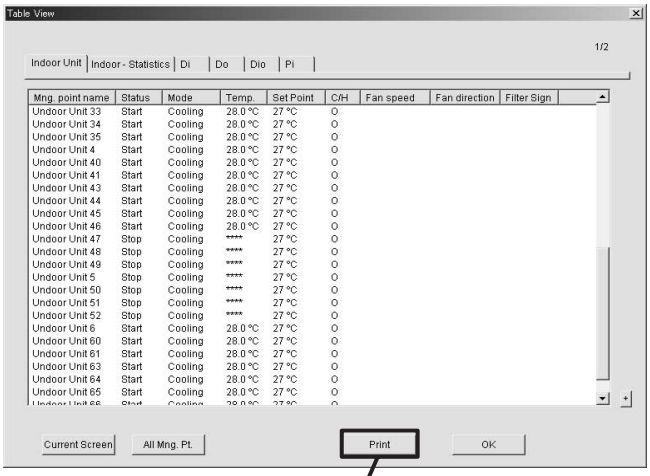
- **By indoor unit**
- **By schedule**



This function is beneficial for example in the event of forgetting to switch off the building A.C. when leaving in the evening. This has the potential to save energy.

■ Printout displays of main functions (printer & csv file)

- **For all main function**
  - **Printer**
  - **File (csv)**



■ Defrost status (display)

•Indication for each indoor unit

Cell

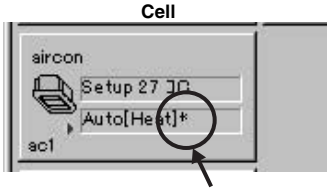
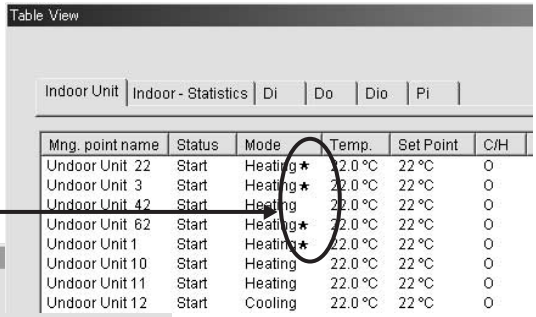
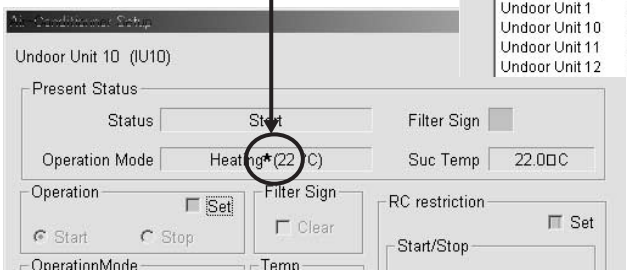


Table View

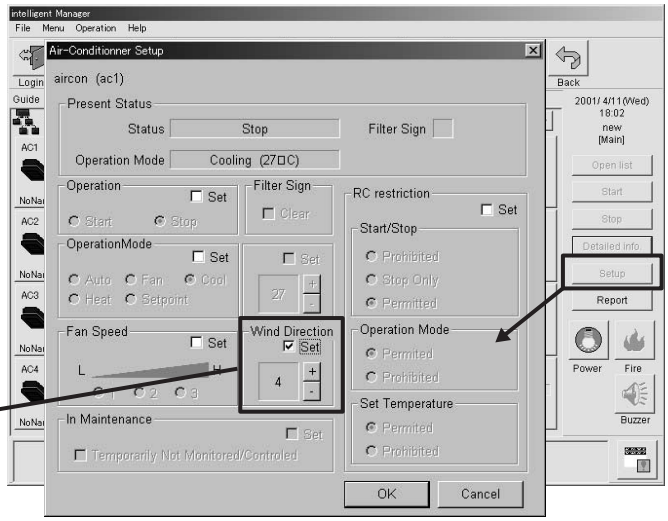


Defrost status is shown by "*"



■ Fan speed/direction monitor & control

•Setup for each indoor unit,
•Status in Table Report

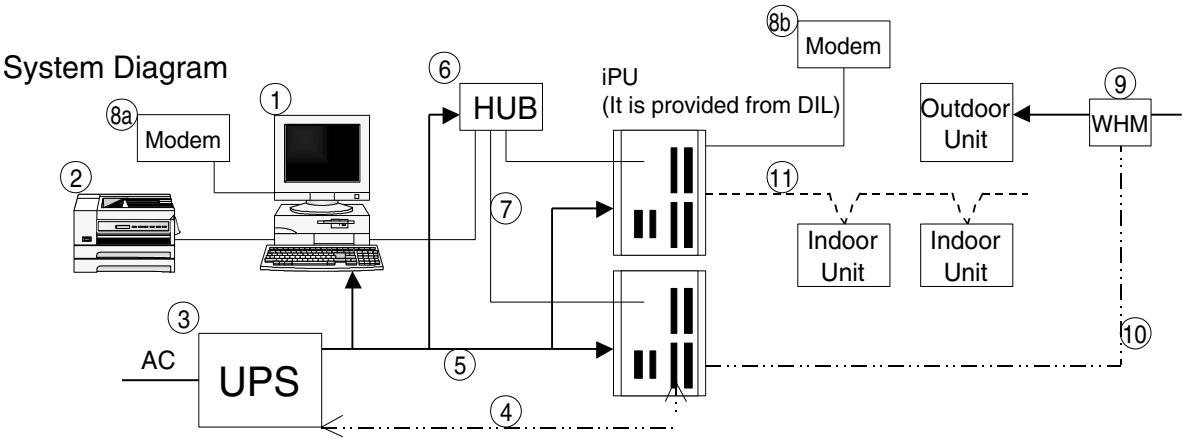


New Control
(directions & Swing)

4. System Architecture

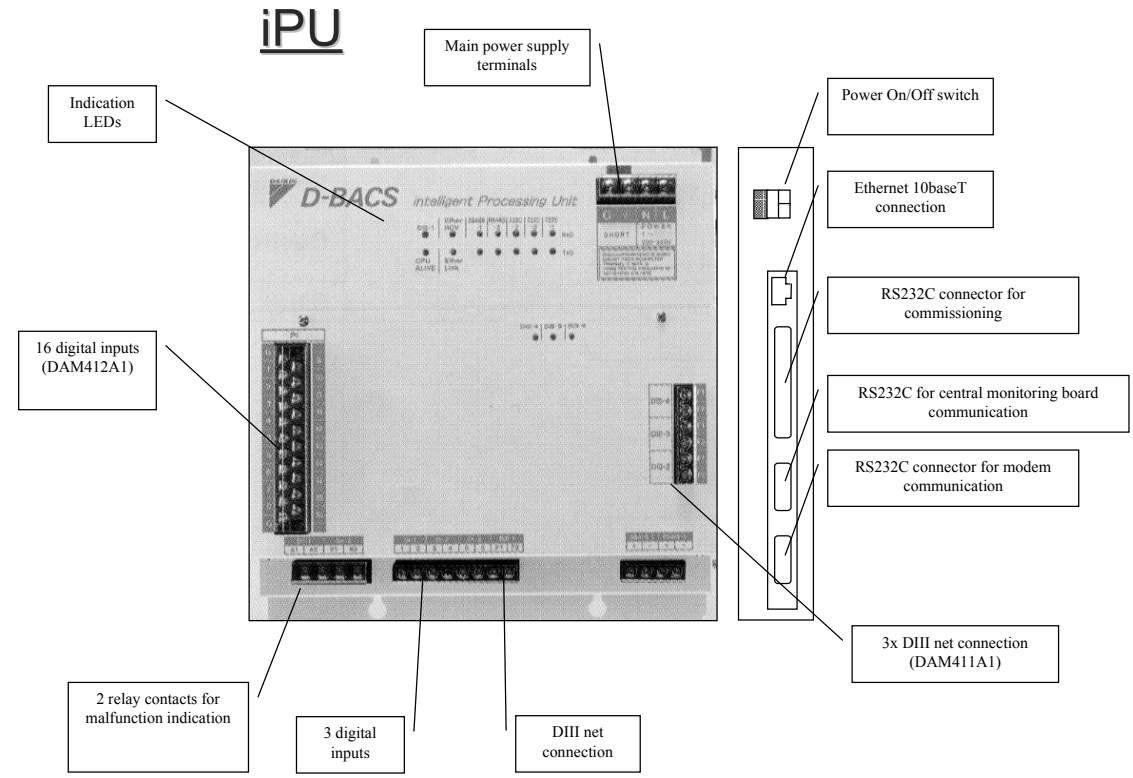
4.1 Requirement Spec. and the Recommendation of Other Equipment

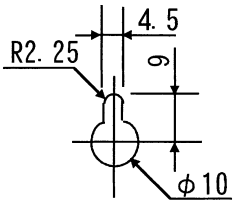
System Diagram



	Requirement Specifications	Recommendations	Remarks
PC ①	[Hardware] CPU : Pentium 300MHz minimum, 500MHz or above recommended Memory : 64MB or above HDD : 4GB minimum, 8GB or above Keybord/Mouse Network : 10Base/T SVGA (800×600) Monitor (15',17') Sound & Speaker [Software] Windows NT 4.0 (SP4) Windows 2000	We recommend makers such as IBM, Compaq or Dell, etc.	In the case of an alternative maker, correct operation should be checked before shipment.
②	[Other equip.] LBP (not indispensable.) - It must be supported by WindowsNT. - Require A4 size paper	We recommend makers such as HP, Canon, etc.	
UPS ③	Capacity : 200-250W / 20min Voltage : as required on the field	APC SU700, SU1000 Series + Relay I/O module(AP9610)	
④	Control Signals - Power failure signal (from UPS) - UPS shutdown signal (to UPS)		
⑤	AC power lines		
Network Equip. ⑥	Multi-port HUB (4 or more ports) 10Base/T cables (category 5)	We recommend makers such as 3com, etc.	Hub should be used even when one iPU is connected to PC.
⑦	A required distance and a number	The cable for networks is required.	
Modem ⑧a	33.6kbps communication speed and reception function are required.	We recommend makers such as 3com, etc.	Required for remote monitoring. However, we recommend it to be included as a standard.
⑧b	For Air-Net use		
WHM ⑨	1pulse / 1kWh output is required.	As specified in the D-BACS system design guide. • 1 pulse to 1kW or 10kW pulse width must be within 40-400m/sec. • Output relay must be mercury or electronic type only. • No voltage output.	Required for power-proportional-division.
⑩	WHM - iPU connection cable		
other ⑪	DIII-network cables	As specified in the D-BACS system design guide.	

<iPU External View>





Detailed View of Attachment Hole

(1) Electrical rating
1) Rated voltage: Single phase AC 200 to 240 V 50/60 Hz
2) Power consumption: Max. 20 W

(2) Conditions of Use
1) Power voltage variation: ±10% of rated value
2) Ambient temperature of use: -10 to 50°C
3) Ambient humidity of use: 0 to 98% (However, there must be no humidity.)
4) Storage temperature: -20 to 60°C

(3) Performance : Insulation resistance: Min. 50 MΩ at DC 500 V M

(4) Mass : 3.5 kg

(5) Painting color : light ivory

UPS

UPS (e.g.APC SU700, 1000 series)

Item		Requirement Specification
UPS	Capacity	200-250 W/20min.
	Voltage	As required on the field
	Control signals	Power failure signal (from UPS) UPS shut down signal (to UPS)
	Relay	I/0 module (AP9610)

http : //www.apcc.com/products/smart-ups/index.cfm

Smart-UPS 1000

Part Number: SU1000INET

Availability: Latin America , Eastern Europe : Middle East : Africa , Western Europe , Asia : Australia : South Pacific

230V Output / 230V Input**

Technical Specifications	Part Number	Availability*	Estimated Runtime (hrs:mins)
Smart-UPS 1000	SU1000INET	Latin America, Eastern Europe : Middle East : Africa, Western Europe, Asia : Australia : South Pacific	3:54

Product Overview

Description	APC Smart-UPS, 1000VA/670W, Input 230V/Output 230V
General Features	Hot Swap Batteries , Intelligent Battery Management , Overload Indicator , Replace Batt Indicator , SmartSlot , Software , Automatic Voltage Regulation (AVR) , User replacable batteries
Includes	User Manual , Smart UPS signalling RS-232 cable , CD with software
Documentation	User Manual

Technical Specifications

Output

Rated Power	1,000 VA
Output power capacity	670 Watts
Nominal output voltage	230 V
Output Voltage Note	Configurable for 220 : 230 or 240 nominal output voltage
Output Connections	(4)IEC 320 C13
Waveform type	Sinewave

"Smart-UPS" is registered trademark of APC.

Input

Nominal input voltage	230 V
Input frequency	50/60 Hz +/- 3 Hz (auto sensing)
Input Connection Type	IEC-320-C14 inlet
Input voltage range for main operations	174 - 286 V
Input voltage adjustable range for main operations	168 - 302 V

Batteries

Typical backup time at half load	20.1 minutes
Battery type	Maintenance-free sealed Lead-Acid battery with suspended electrolyte : leakproof
Typical recharge time	3 hour(s)
Replacement battery cartridge	(1) RBC6

Surge Protection and Filtering

Surge energy rating	320 Joules
Filtering	Full time multi-pole noise filtering : 0.3% IEEE surge let-through : zero clamping response time : meets UL 1449

Physical

Maximum height dimensions	8.50 inches (21.59 cm)
Maximum width dimensions	6.70 inches (17.02 cm)
Maximum depth dimensions	17.30 inches (43.94 cm)
Net weight	41.50 lbs (18.86 kg)
Shipping weight	46.00 lbs (20.91 kg)
Color	Beige

Environmental

Operating Temperature	0 - 40 °C (32 - 104°F)
Operating Relative Humidity	0 - 95%
Operating Elevation	0-10000 feet (0-3000 m)
Storage Temperature	-15 - 45 °C (5 - 113°F)
Storage Relative Humidity	0 - 95%
Storage Elevation	0-50000 feet (0-15000 m)
Audible noise at 1 meter from surface of unit	41 dBA
Online thermal dissipation	100 BTU/hr

4.2 Confirmation of Watthour Meter

For distribution of electric energy, the integrating watthour meter with pulse transmitter is required.

It is important to confirm that the specifications coincide with each other, and also to confirm with the division in charge (normally, electrical work division, not air-conditioning div.).

4.2.1 Specifications of watthour meter to be connected to intelligent Manager

a) To be an integrating watthour meter with pulse transmitter.

b) The output pulse unit (pulse weight) is to be 1 pulse to 1kWh (1Wh/pulse).

c) The pulse width is to be within 40 to 400 milli-sec.

d) The mercury relay is to be used for pulse output, and it to be no-voltage output.

e) If even any of the mechanical or electrical type conforms to the above “a)” to “d)”, it can be used.

If the specifications are not coincident, there is a possibility that the following imperfections are caused:

- If the output pulse unit is not 1kWh/pulse.
  It results a large difference between the reading (value) of watthour meter and the total value of distribution of electric energy.

  For the charge calculation, the number of pulse input is counted and the power consumption of the outdoor unit is monitored, therefore, for example, if the large value, 10kWh/pulse, is inputted, the electric energy calculated is the value of one tenth (1/10) times.
- If the pulse width is not within 40 to 400 milli-sec.
  If it is less than 40 milli-sec., the pulse input cannot be detected, and the result of calculation is smaller than the real value.

  In addition, if more than 400 milli-sec., more than 2 pulses is detected for 1-pulse input, and the result of calculation is large than the real value.
- If use of contact other than mercury relay

  If it is a general relay, the pulse may not accurately be detected due to relay chattering.

Confirm the following items for the construction process.

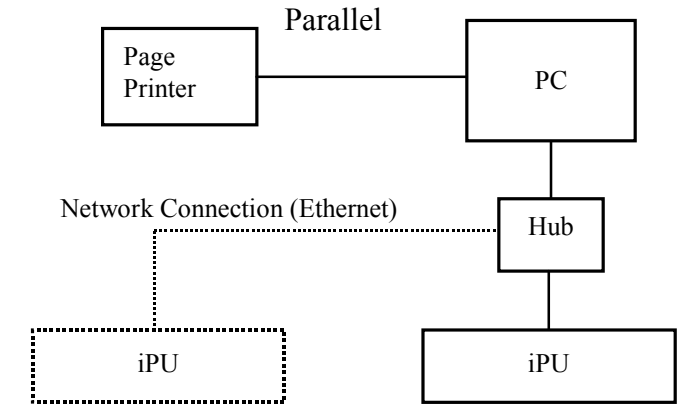
- Construction of pulse signal line is kept away from power cables

  For this pulse signal line, the voltage DC24V should be applied from the intelligent Manager side. It should be constructed separating from the power cables.
- Max. distance to be 200 m

  Confirm that the distance with the watthour meter~intelligent Manager is within 200 m.

5. Wiring Image

5.1 System Connection



(Up to 4 iPUs can be connected)

<Use of Printers>

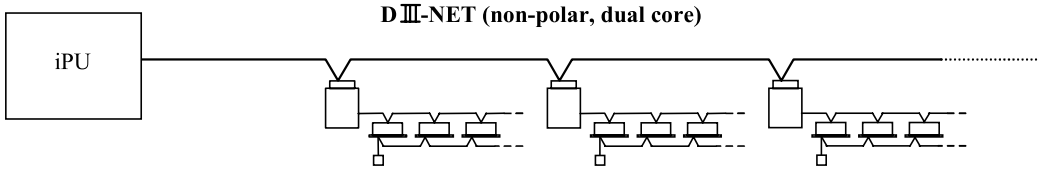
1. Standard Setting: With only the page printer: Parallel port connection
   - Printing of daily, monthly, annual reports and cost calculations: Automatically prints at the set time
   - Display of errors and changes of states etc.: Printer at error or at determined build up of data, or freely.

2. 2 Units of Page Printer and Line Printer (Optional)
   * Page printer: Network connection
   - Daily, monthly, annual reports: Automatically prints at the set time
   - Cost calculation

Connecting to iPU

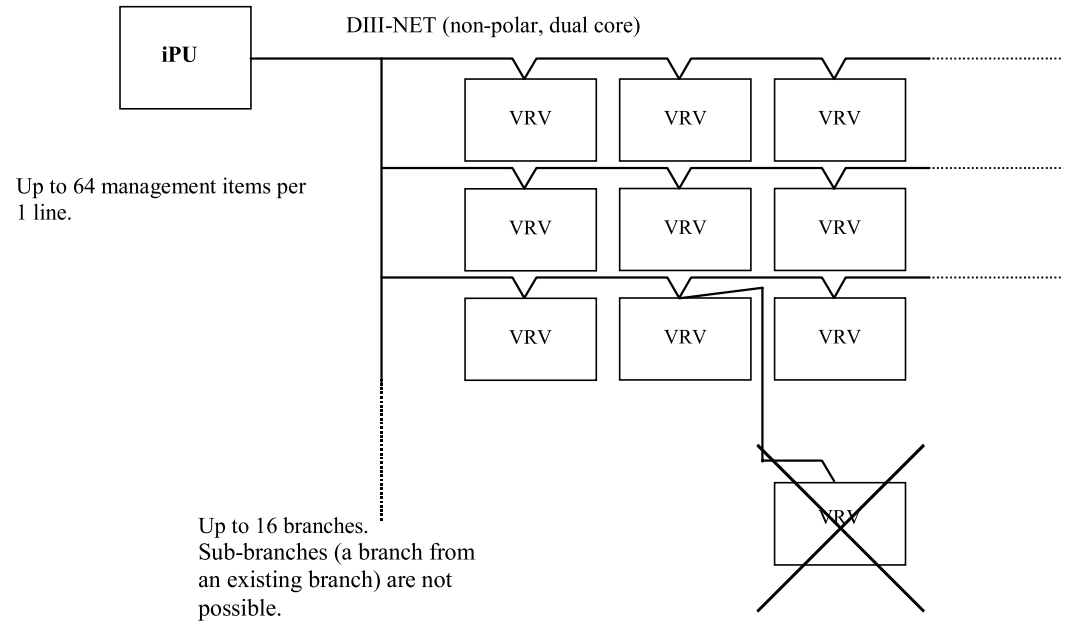
Wiring varies according to the equipment to be connected, as shown below.

* DIII-NET Compatible Air Conditioners

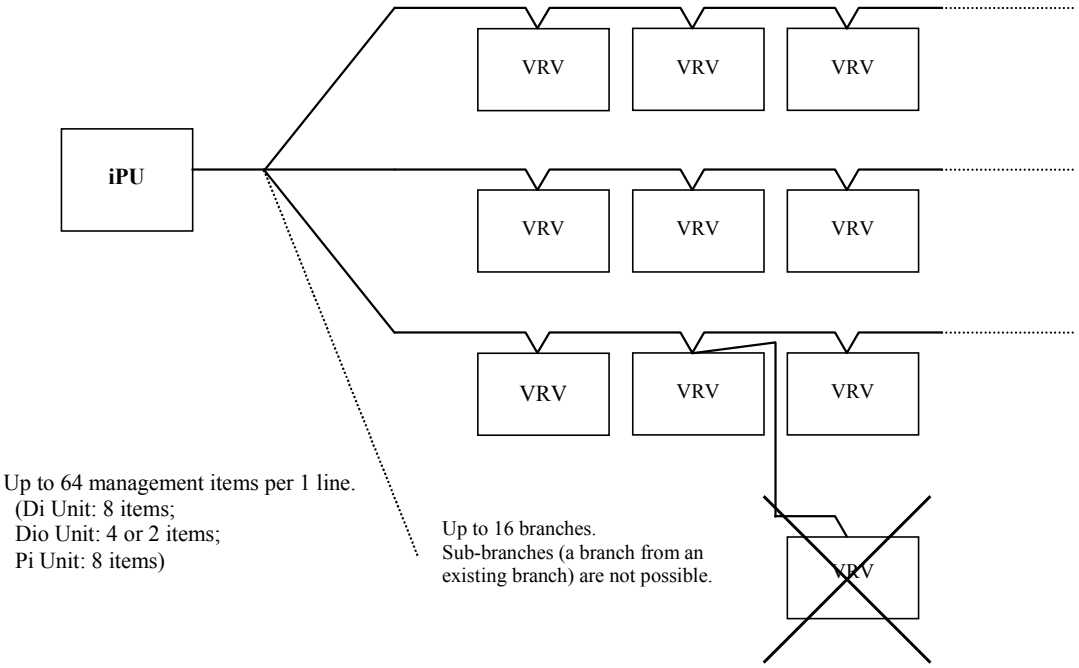


Per 1 DⅢ-NET line:
Up to 10 outdoor units
Up to 64 indoor units

(1) Bus Method

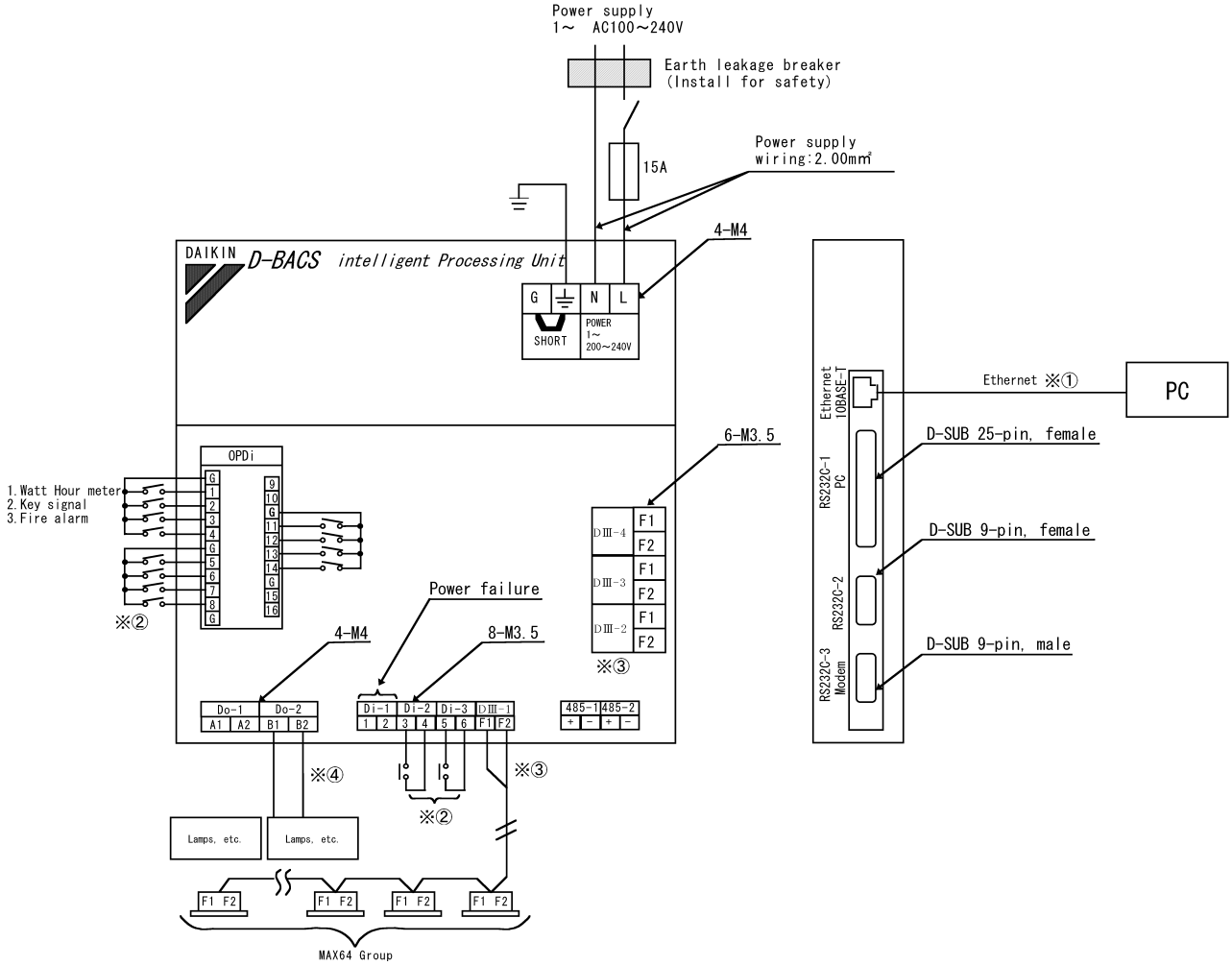


(2) Star Method

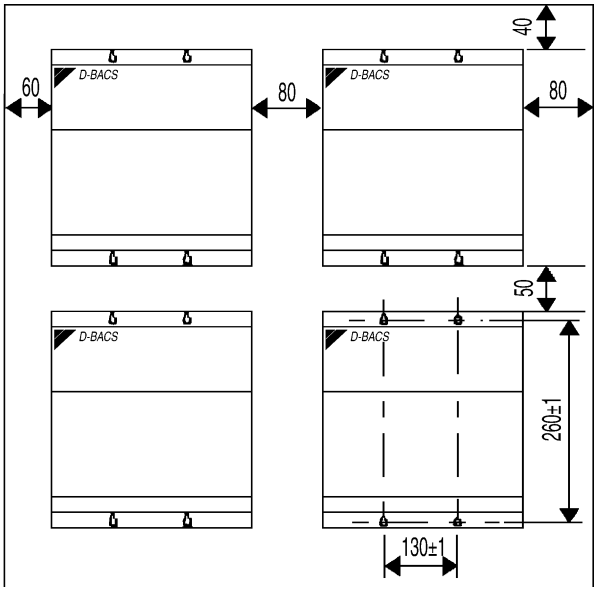


5.2 Wiring Diagram

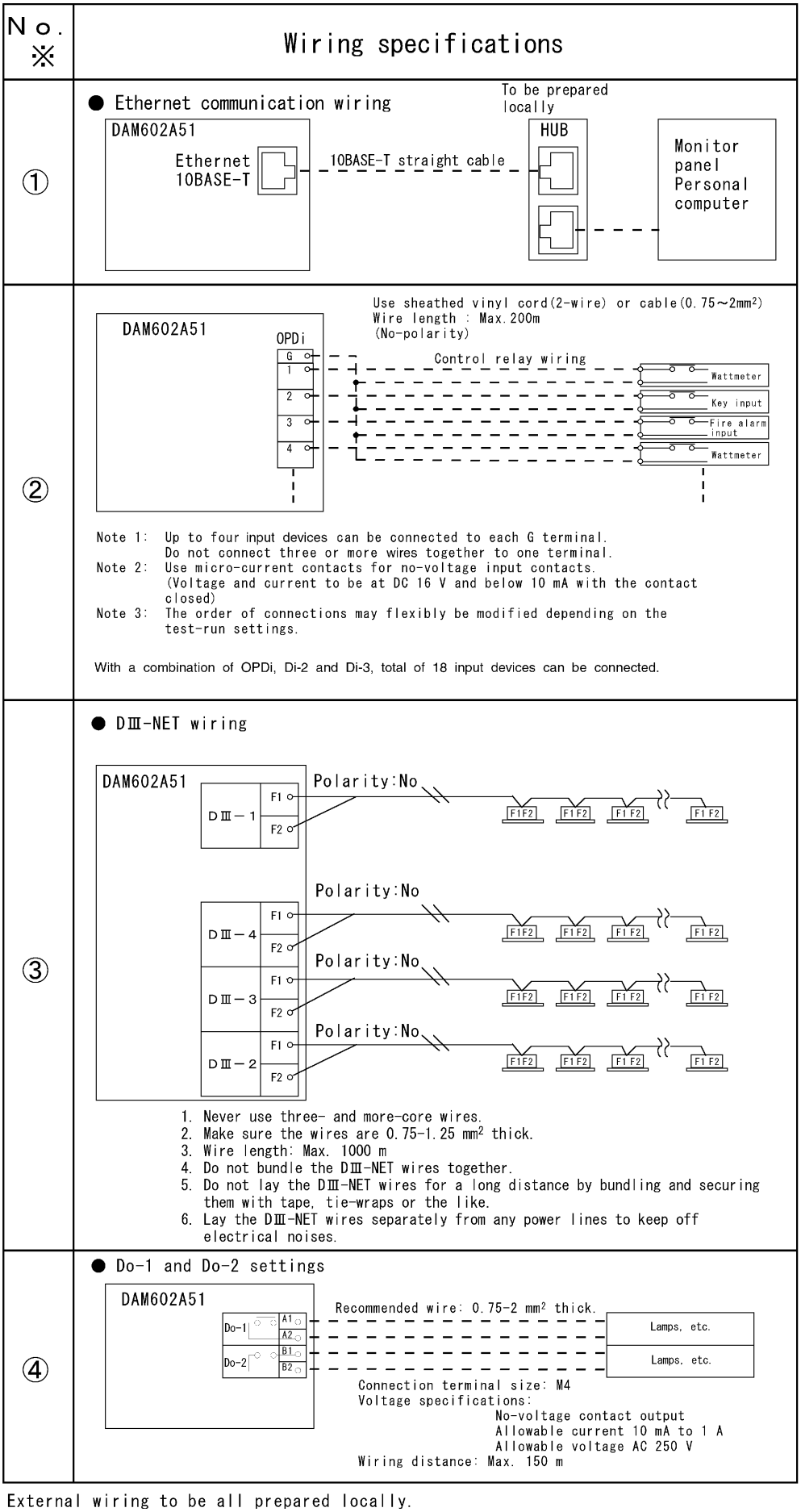
"intelligent Manager Electric Wiring Diagram



Required Installation Space



5.3 Wiring Specifications



External wiring to be all prepared locally.

6. Setting Up

6.1 Precautions for Setup

The intelligent Manager Monitor System PC and printer are used in the same way as general OA equipment. iPUs are set up within the system.

However, avoid setting up in the following locations.

- Locations that are exposed to direct sunlight, or that are subject to radiation from heat generating equipment such as a boiler.
- Locations with high humidity or where there could be contact with water.
- Locations that are corrosive or where inflammable gas is generated.

Ambient temperature and humidity conditions of location of setup

10 - 35°C 20 - 80% RH (intelligent Manager Monitor System PC, Printer, Display, UPS)

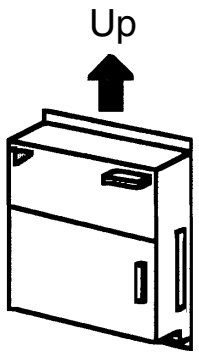
0 - 50°C - 95%RH (iPU)

Separate our air conditioning power (electrical) lines and the communications lines for control a minimum of 50 mm. In other cases, separate from the power lines to meet the following conditions.

Power Line Electrical Capacity		Distance of Separation of Power Lines and Communication Lines for Control	
		Daikin Air Conditioners	Other Equipment
Max. 220 V	Max. 10A	Min. 50 mm	Min. 300 mm
	Max. 50A		Min. 500 mm
	Max. 109A		Min. 1000 mm
	Exceeding 100A		Min. 1500 mm

6.2 Summary of Attachment

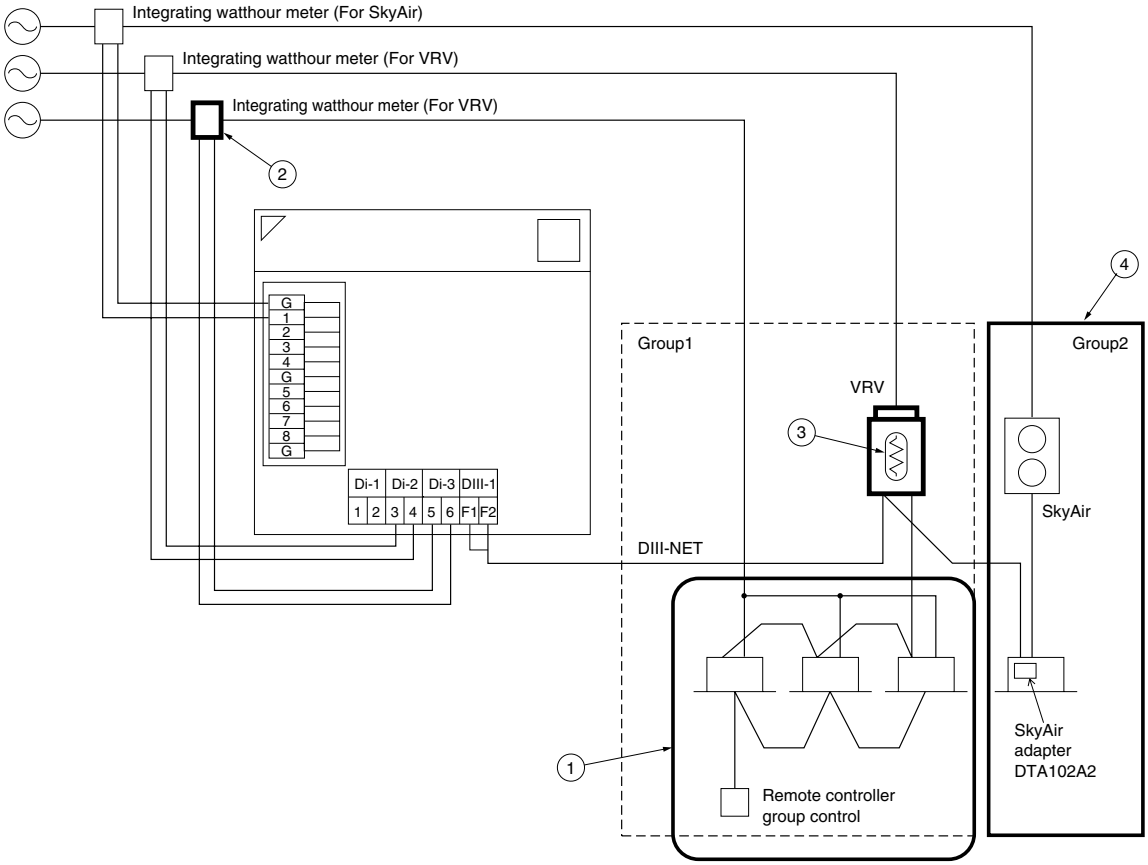
- **Always attach inside a locked electrical equipment box (or somewhere that cannot be opened without the use of a special tool) so that indoor equipment cannot be easily tampered.** The location should not allow the equipment to be subjected to the influence of electromagnetic waves or to be exposed to dust.
  Minimum depth dimension necessary for setup is 100 mm.
- The figure at right shows the minimum spacing between equipment when setting up consecutively and the wall.
- Attach as shown in the following figure.



Always attach in the vertical direction. Attaching horizontally will cause failures so do not attach in that direction.

7. Design Precautions

7.1 Rate Calculation



7.1.1 Remote controller group control ①

Also in the indoor unit (sub-unit) with remote controller group control, set the centralized address for correct electric energy distributing.

(The centralized address for sub-unit can be set in the site set mode “30” of the remote controller.

However, after setting with “30”, if set with “00”, the sub-unit address will be deleted.)

→ An imperfection in case collective distribution is done with main-unit running state without setting of centralized address at sub-unit

Even if the remote controller group control is done, each indoor unit has different thermostat state depending on its installation place.

Therefore, the distribution result will differ depending on the decision which indoor unit is to be as main unit.

7.1.2 In Case power consumption of indoor unit to be distributed ②

In distributing the power consumption of the indoor unit, it is necessary to connect the integrating watthour meter to the power system of the indoor unit and input its pulse output to intelligent Manager.

If such a wiring is connected, in making equipment setting in test run, set at “To make distribution calculation for indoor fan” with intelligent Manager calculation conditions.

7.1.3 Calculation of electric power (Crankcase heater/PC Board power consumption) at stopping ③

1. In the case of calculation for crank case heater and PC Board when not in operation.
   (1) The electric power consumed by crank case heater of the outdoor unit is divided by the capacity of each indoor unit.
   N.B. The calculation also includes the indoor units which are not in operation. (eg.vacant)
2. In the case of not calculating for crank case heater and PC Board when not in operation.
   (1) It is possible to exclude the power consumed by crank case heater and PC Board.
   Therefore the power won’t be added to each indoor unit.

7.1.4 Electric energy distributing of SkyAir ④

The SkyAir electric energy distributing cannot be included with the group of VRV system.

Therefore, it is necessary to separate the group for rate calculation by group setting.

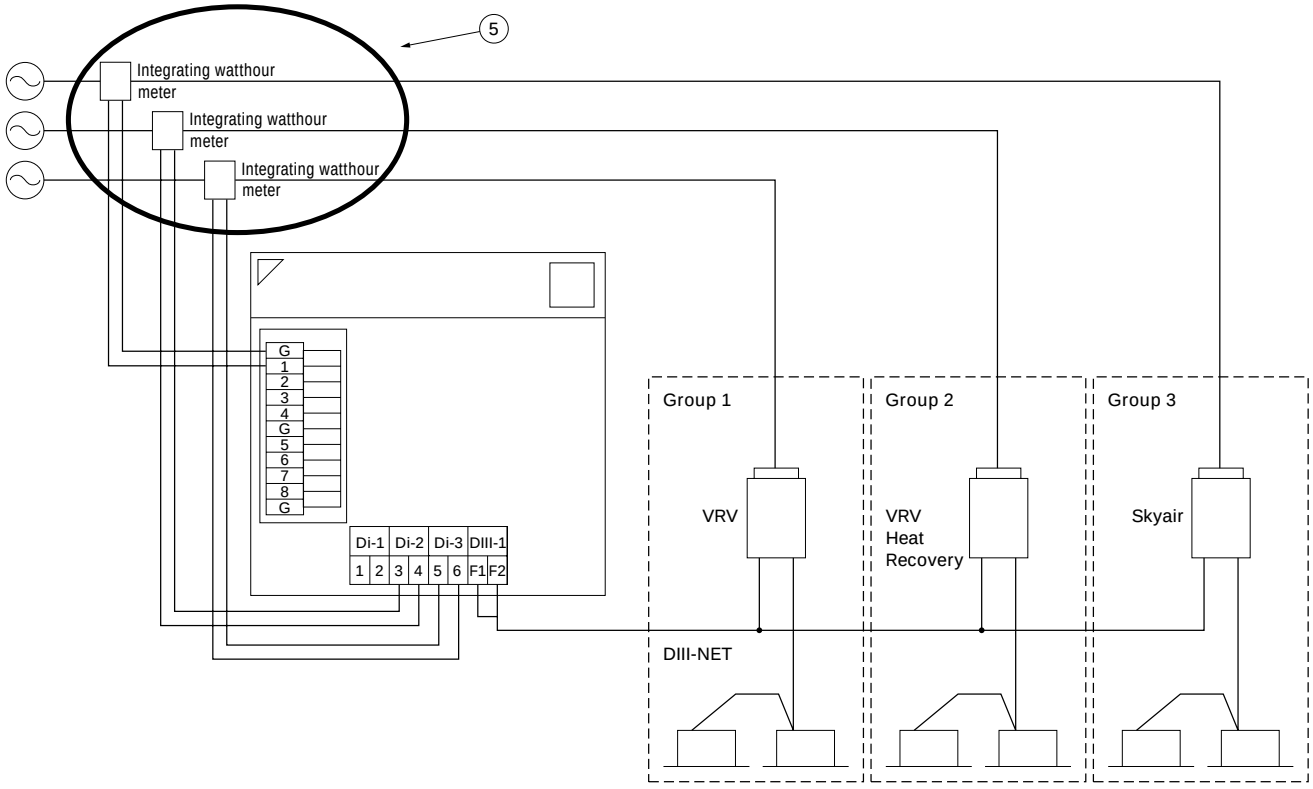
Further, the applicable model is also limited. Before applying, refer to “i-Station Test Run Manual: CB94A105A”.

7.1.5 Setting of electric power group ⑤

It is possible to distribute the electric energy with one kWh meter if all groups are of the same design and indoor/ outdoor units are of the same size as each other group respectively. (different A.C. systems cannot be from the same meter)

7.2 Setting of Each Electric Power Group

Although the iPU unit allows electric energy distributing with one integrating watthour meter, if some/many integrating watthour meters are connected as shown below, the electric energy distributing accuracy can be improved.



7.3 The Reason Why VRV Heat Recovery Must Not be Included

For Heat Recovery outdoor units, the watthour meter must be independently installed.

(1) For heat recovery, there is a case that the power consumption is less than VRV and VRV Plus.

(2) However, if different systems are put on the one meter, the electric power distribution would be calculated by constant counting, and the calculation result would then more than the actual value on all indoor units.

Therefore, it is necessary to install the watthour meter independently as shown in Fig. 2.

In addition, the power port No. in Address Table must be different from others. (To be set at test run)

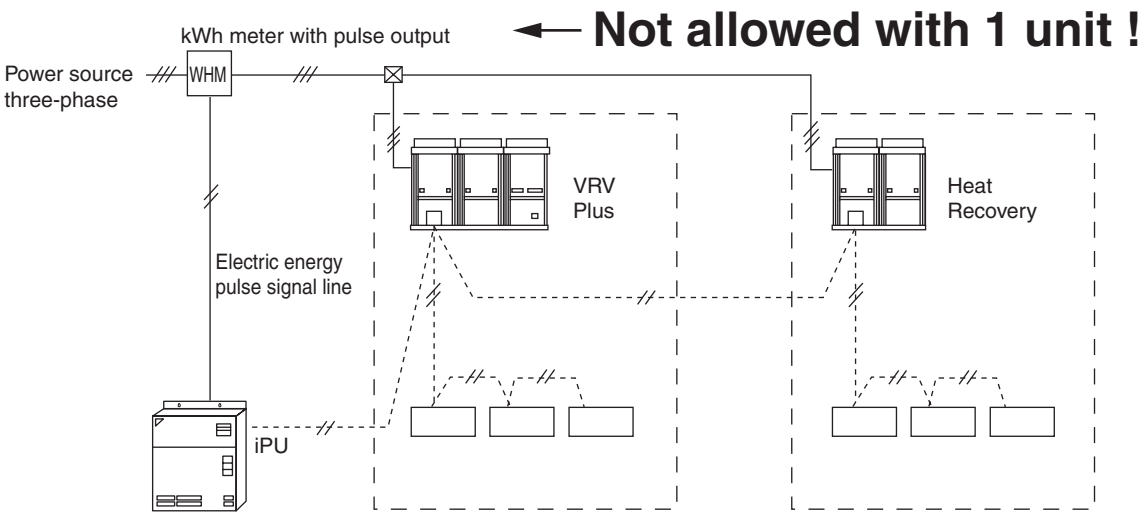


Fig.1 Not Recommended : Watthour meter is shared.

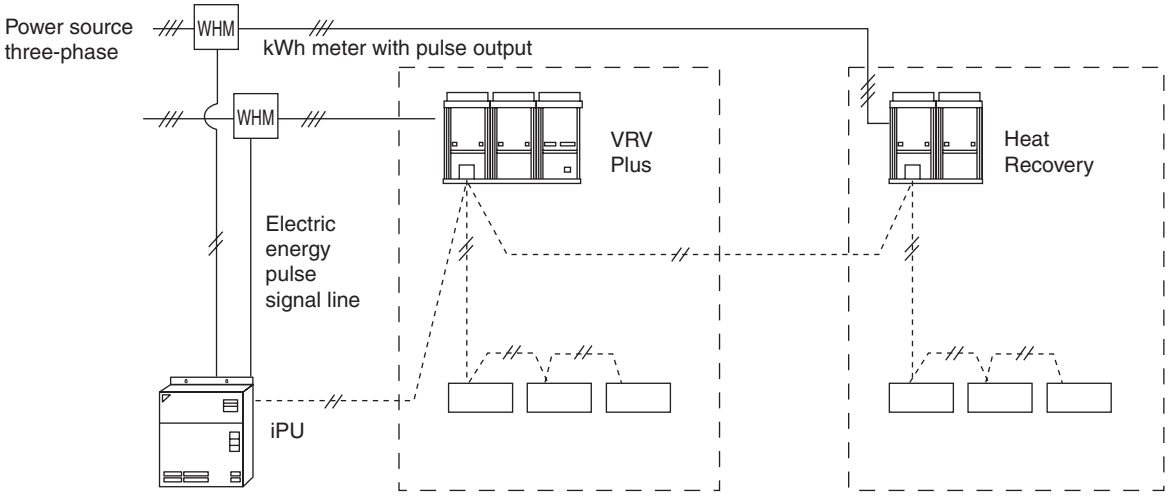
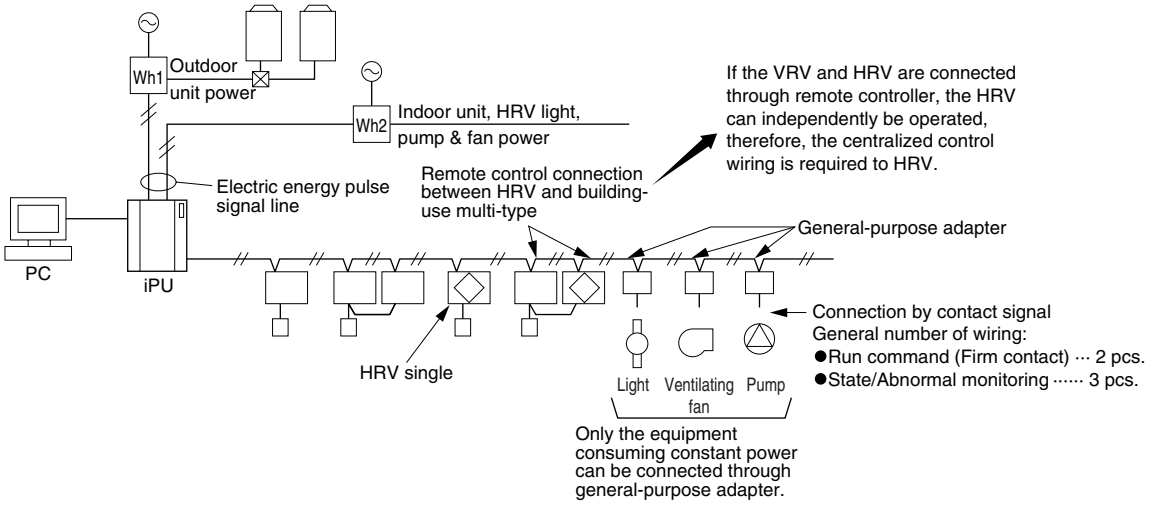


Fig.2 Recommended : Heat Recovery and other system watthour meter are separated.

8. Connection other than VRV

Though the models other than VRV are included in “Rate calculation applicable models”, the following system shows the example of connection of HRV Type FJ and general-purpose adapter.

8.1 System Example



8.2 Requirements

■ If HRV and general-purpose adapter are used, the power consumption of the indoor unit is to be distributed. Therefore, it is necessary to input the power consumption of the VRV, HRV, general-purpose adapter and constant power-consumption equipment (units) to be connected to the dues control unit. Concretely, using the watthour meter (with pulse output), the pulse signal is to be connected to the iPU.

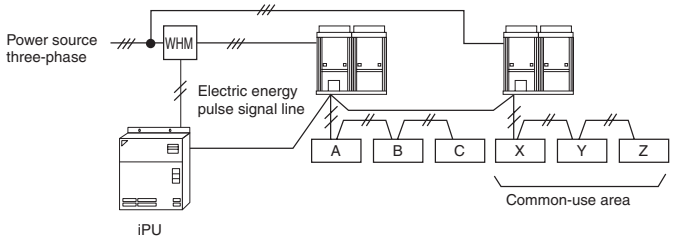
■ For HRV, the centralized control wiring is required without fail.

■ Only the type consuming constant power (light, etc.) can be connected to the general-purpose adapter. If the power consumption varies depending on the inverter, etc., such an equipment cannot be connected. (Distribution calculating error is increased.)

9. Conditions and Method to Exclude Calculation for Specified Indoor Unit

There is a case that a part of indoor units is desired to be excluded from calculation, such as corridor, hall, etc. Typically, there are two ways as below.

9.1 The Power Consumption of Common-use Area Can be Separated from Other Areas

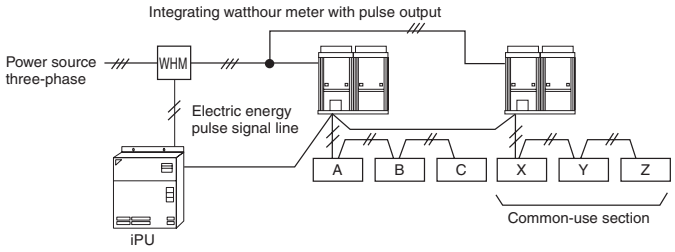


- Separating the system is required among the common-use area, outdoor units for office, etc. and the power source.
- Enter “No” in the column of electric energy distributing in Address Table.

* In calculating the common-use power independently, it is also possible to mount the watthour meter (with pulse output) for common-use area.

9.2 The Power Consumption of Common-use Area is Distributed to Other Area

(In this case, it cannot uniformly be distributed to other indoor units. The power consumption of the common-use section may be added to the specific indoor unit.)



- The power consumption of the common-use area is distributed to the indoor unit in the office, etc. The calculated value in the office, etc. is increased by the value distributed from the common-use area.
- The wiring work method for the common-use area is quite the same as that of the indoor unit in other offices, etc.
- Enter “No” in the column of electric energy distributing in Address Table.

Example: When the power consumption is A=B=C=10kW and X=Y=Z=5kW, the calculation result total is 45kW, and the calculated value of A, B and C is as follows:

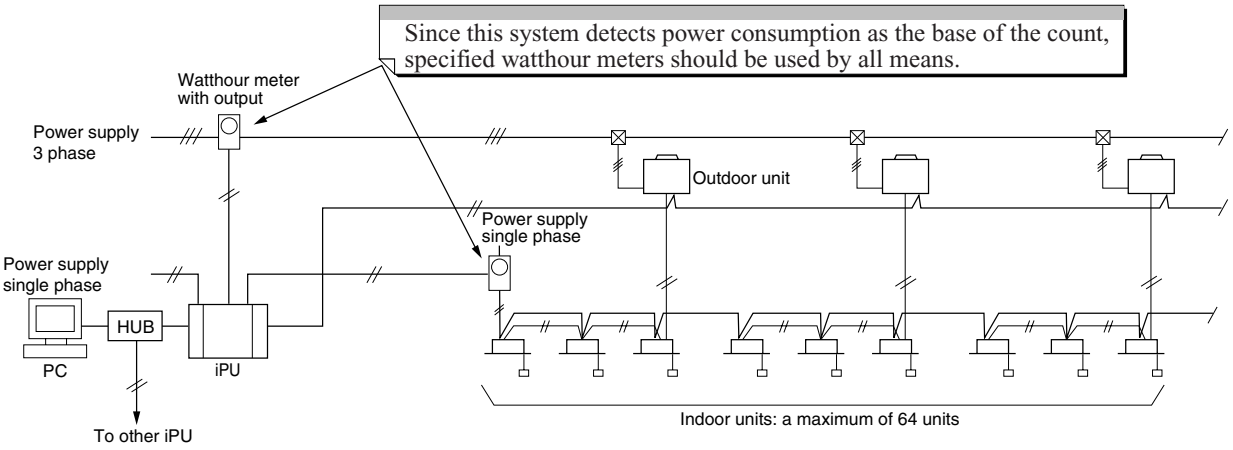
$$A=B=C=\frac{10}{10+10+10}\times 45=15\text{kW}$$

The common-use section is distributed and power consumption is more than the actual one.

10.Explanations of Power Proportional Distribution

10.1 What is the Power Proportional Distribution (PPD)

(System Ex. : Normal VRV)



■ Previously the general way for requesting the electricity charge at rental buildings was that a management staff read a watthour meter and billed the tenants by manual-account based on the operation time which were counted through time-counters.
However, this method takes a lot of time for the management staff. In addition, as airconditioning consumes much different electricity for either the operation of airconditioning (thermostat-on) or the operation of fan only (thermostat-off), it might cause to give unfair sense to the tenants inhabited in the spaces with different heat load, though "operation-time" itself is the same.
For instance, even if a certain higher preset temperature is applied in summer for energy saving, fee for airconditioning may equal to the fee without preset temperature so far as it is counted based on the operation time.

■ Electric energy distributing function of intelligent Manager carries out the proportional division computation in consideration of those thermostat-on and thermostat-off operations and saves time for building management staffs to read watthour meters, and also supplies tenants printed data useful for making the bills.
Namely, intelligent Processing Unit (iPU) is the product created by the concept to help the assignment of bill-issuing and offers users the reasonable price of the products.

■ Yet, since the iPU is constantly assuming each indoor unit's power consumption based on the data which is transferred from indoor units, it should be noticed that the iPU is not which complies with the Weight and Measure Act as shown in the catalogue.
The details of the cause to count error is described at chapter 2.

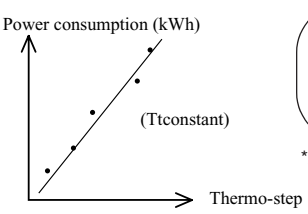
10.1.1 Count method (for a conventional VRV system)

1) The following proportional division calculation is carried out every one hour and assigns the power consumption of airconditioning system to each indoor unit.

Heat load depending on the operation conditions of airconditioner = power consumption of indoor unit's fan
+ power consumption of optional heater
+ the rated power consumption in cooling (*1) ×a
+ the rated power consumption in heating (*1) ×b

$$a = (a1+a2\times T)\times\frac{\text{Thermo-step (*2)}}{10}$$

$$b = (b1-b2\times T)\times\frac{\text{Thermo-step (*2)}}{10}$$



a1, a2:correction factor for cooling
b1, b2:correction factor for heating
T:indoor unit's suction air temperature

*1:The value which is registered at the test run, adapting the indoor unit's capacity

As shown in the left, heat load is calcuated from an equation of the first degree which approximates the correlation, among thermo-step, indoor unit's suction air temperature and power consumption, into the linear line under the standard conditions of the unit.

*2:"Thermo-step" signifies that an airconditioning capacity is expressed in a range of the values 0-5 mainly based on the opening grade of an electronic expansion valve in an indoor unit.

$$\text{Indoor units N's power consumption (kWh)} = \text{total pulse input from wattmeters} \times \frac{\text{Heat load by one hour calculated through the operating of airconditioner N}}{\text{total heat load by one hour caiculated through the operating conditions of all the airconditioners}}$$

2) Calculation of the proportional division value for a dairy power consumption

The proportional division value for a dairy power consumption is stored with factors of each indoor unit's number and a calendar date as a table shown below after adding the count result of hourly power consumption from 00:00 through 23:59. (with a graduation of 10 W)

Indoor unit No. / Date	001	002	003	004
April 1st	000150	000211	000741	004402
April 2nd	002004	005202	009205	005902
April 3rd	000313	001103	000086	008173

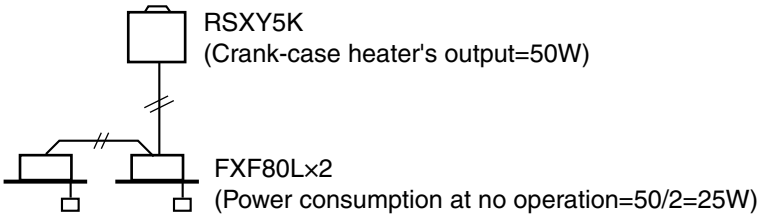
The set data in the dues control unit is not deleted even if the electric power is turned off, because the data is stored in the non-volatile (flash) memory.

3) Counting the electricity at the ceased condition of the unit

Even if an airconditioner is stopped or in the condition of thermostat -off (the condition that the compressors are stopped as the temperature in the space where all the indoor units are installed falls down to the preset temperature), the airconditioner consumes energy due to the energy consumption mainly by the crank-case heater in the outdoor unit.

When the iPU is used, the rated power consumption of the crank-case heater is divided by the number of indoor units in usual connection (for instance , two indoor units of 2.5 HP are connected to an outdoor unit of 5 HP etc.) and the value is registered at the test run, adapting each indoor unit's capacity.

(Example)



The iPU counts the indoor unit's operating conditions every 20 seconds.

Since the indoor units send ON/OFF data of the crank-case heater to iPU, it adds one(+1) to the power counter inside iPU at no operation of the airconditioner when the crank-case heater is ON.

When this counter reaches 180, it judges that the crank-case heater was on for one hour, and in case of the above mentioned indoor unit, the counter goes back to zero after 25 Wh is added to the counting result .

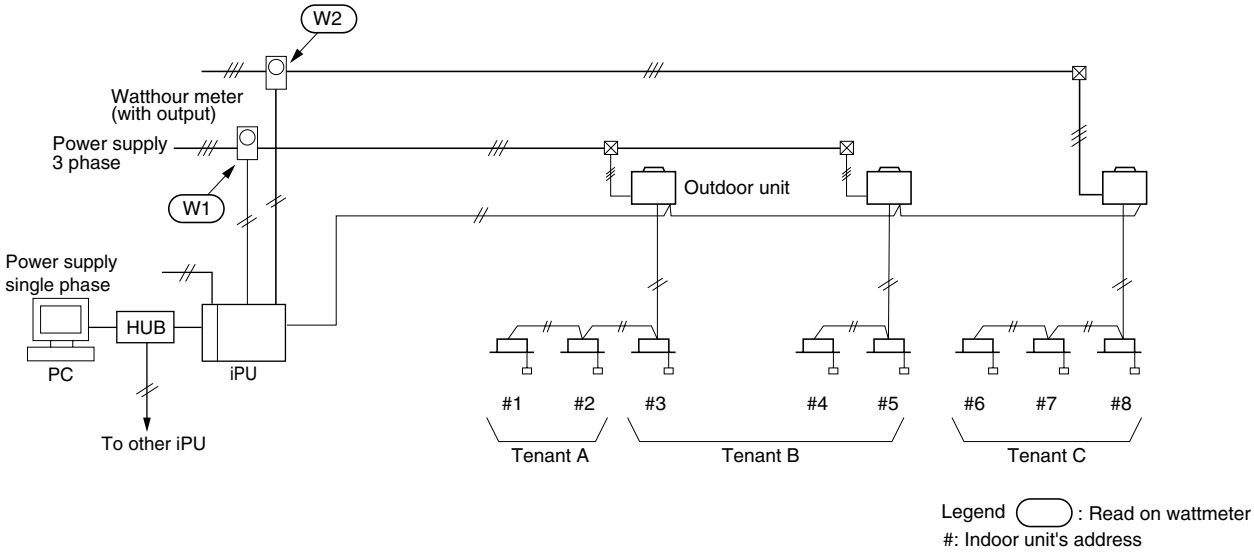
This calculation process is conducted separately from the proportional division computation mentioned on the section 10.1.1 of this document, and this input is got rid of from the pulse input of the watthour meter. Because of this procedure, the power consumption in the space where the airconditioner is not used at all is counted constantly every month.

(However, as this airconditioning system is a multi-system, in case that one outdoor unit is shared to another tenant, the count output can be seen in lower value rather than the crank-case heater's power consumption registered, because the crank-case heater doesn't actuate when another tenant operates the airconditioner.)

10.2 Count Accuracy

10.2.1 Cause of error

(System example)



<Case of arising error>

1 (W1) + (W2) ≠ Count conclusive total for indoor unit #1~#8 ⟹ Refer to the "REASON"

2 (W1) ≠ Count conclusive total for indoor unit #1~#5

(W2) ≠ Count conclusive total for indoor unit #6~#8 ⟹ Refer to the next page

1 (W1) ≠ (W2) ≠ Count conclusive total for indoor unit #1~#8* : The reason to get and the error size

■ **REASON**

iPU counts every one hour's power consumption.

Though fraction in case of computation occurs at this time, it is computed after leaving off a 1-W figure to avoid the risk for the owners. As a result, the error by the leaving-off occurs by 0.5W/ hour in average value of all indoor units.

(Calculation example)

(1) Count for errors in 8-day

Tenant A + B: 0.5 (Wh) × 8 days × 5 units = + 0.02 kWh

Tenant C: 0.5 (Wh) × 8 days × 3 units = + 0.012 kWh

total = + 0.032 kWh

(2) Assuming that the reads on watthour meters are as follows:

W1: read on watthour meter = 490 kWh

W2: read on watthour meter = 200 kWh

total = 690 kWh

(3) Finally it is concluded as total error = 0.032/690 × 100 = 0.0046%

2 (W1) ≠ Count conclusive total for indoor unit #1~#5 :

(W2) ≠ Count conclusive total for indoor unit #6~#8 :

iPU counts the power consumption as the following conditions (1)~(6) for the standards. So, the gap to be raised from these conditions may cause the error. Since these errors vary depending on the surrounded situations, the worst error value can't be drawn out from the computing.

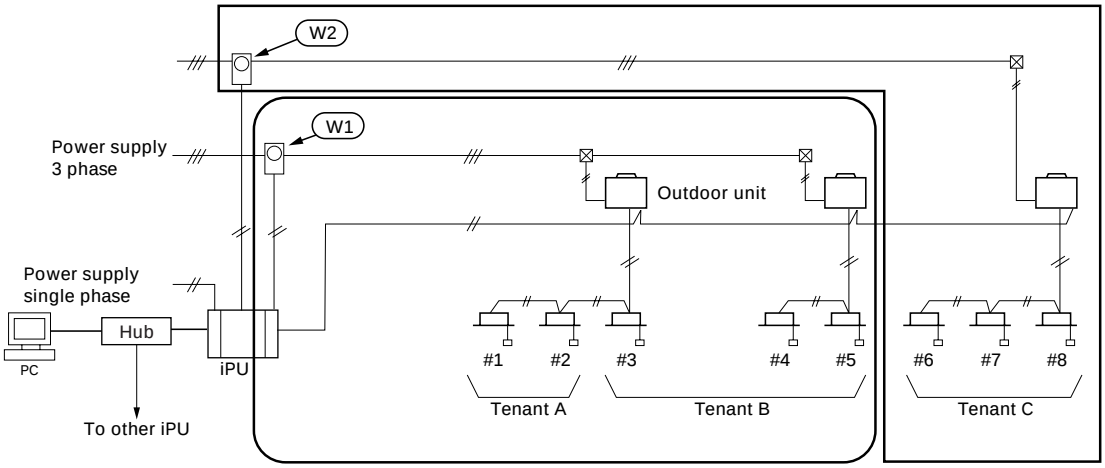
(1) Combination rate of indoor units connected to an outdoor unit	(100%)
(2) Outdoor temperature	(35°C)
(3) Indoor unit's suction air temperature	(19°C)
(4) Piping length	(5m)
(5) Level difference	(0m)
(6) Pipe diameter	(ϕ22.2)

10.2.2 The way to reduce errors

The error [1] can't be reduced, however this error is small and negligible, therefore so it can generally clear troubles if excusing the reason caused to tenants.

The way to reduce the error [2] will be described as follows.

As shown in the drawing below, when the relation between a wattmeter and indoor units are clear, "the setting to make grouping for power ports" should be carried out at the test run of intelligent Manager. (The actual site job will be conducted by persons of service dept responsible for the test run.)



The power input to iPU can be counted with the proportional division system based on every input of the wattmeter. On the above example, watts at W1 and watts at W2 are shared by indoor units #1~#5 and indoor units #6~#8, respectively. (Before the test run, it is necessary to enter the exact power port No. on the address table.)

The above setting results in the followings:

(W1) = Count conclusive total for indoor unit #1~#5

(W2) = Count conclusive total for indoor unit #6~#8

(Except for the error at [1]). However, since iPU watt input has just 18 ports, additional divisional counting is not possible.

CAUTION

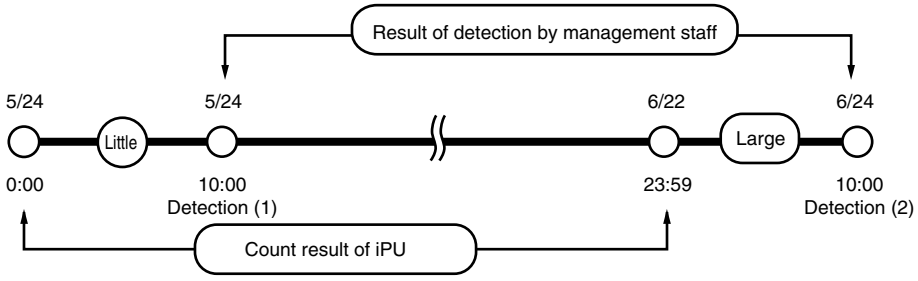
If management staff checks the watts in the procedure mentioned below, they would find the calculation to be incorrect due to an uncomplete cycle.

(Example)

(1) May/24th, read wattmeter and records the watts at 10:00 am

(2) June/24th, read wattmeter and records the watts at 10:00 am

(3) When the count in a period of May/24th to June/23rd is printed out, the total value doesn't meet the value detected mentioned above on (2) - (1).



iPU stores the information collected in a period of 0:00 am through 23:59 pm as one day information as shown above.

It results in the fact that there are ten hours gaps between on the first day of the counting and on the last day of the count in the above mentioned column of "Result of detection by management staff" and "Count result".

As shown in the figure above, this error increases in the season from the intermediate forwarding to the season in which airconditioning is highly required.

For more accuracy, it is neassary to compare with the value detected at 0:00 am.

10.2.3 Setting of power group in the power proportional distribution

■ **Points**

When plural watt-hour meters have been installed, carry out the setting of power group is essential.

■ **Models**

intelligent Touch Controller Power Proportional Distribution Card	DCS002A51
intelligent Manager ECO21	DAM602A51, 52, 53

■ **Reason**

· In the case of normal Power Proportional Distribution, power consumption by outdoor units as well as the system between outdoor and indoor units has not been taken into consideration. Instead, because the pulse input value from watt-hour meter is proportioned according to the ratio of each indoor unit's capacity, the total tolerance as a result of proportioning between the power consumption by each outdoor unit and the indoor unit within the same system becomes larger.
Therefore, if the power group has been set in a lump sum style when plural watt-hour meters are installed, the value on the watt-hour meters and the proportioned results of corresponding outdoor units are almost the same in their total, however, there is a large tolerance when the value of each watt-hour meter is compared with the proportioned results of corresponding outdoor unit.

· For Power Proportional Distribution, the power consumption is calculated by an assumption based on the standard condition described below as a model case.
Therefore, the tolerance will be caused depending on the actual installation condition/environmental condition/ operation condition.
[This is the content explained in D-BACS design guide.]

[Standard Condition]
(1) Outdoor unit is based on a model of 10HP. (Example: RSXYP10K)
(2) The indoor unit to be linked to outdoor unit has 100% capacity.
(3) Ambient temperature is 35 °C.
(4) Length of piping is 5m.
(5) Height difference is zero meter.
(6) Pipe diameter is ϕ22.2.
(7) In cases where an indoor unit is operated within the system of outdoor unit and all indoor units are operated.

■ **Remarks**

Reference data of actual example are shown below.

*Power group in a lump sum style (kWh)

DCU/Name Wattmeter	Watt-hour meter Electric energy	DCU Electric energy at each port	Tolerance (%)
DCU1-1	49	29.88	-39.0%
DCU1-2	168	88.36	-47.4%
DCU2-1	135	150.17	11.2%
DCU2-2	128	33.66	-73.7%
DCU3-1	34	40.94	20.4%
DCU3-2	117	72.92	-37.7%
DCU3-3	82	193.92	**136.5%**
DCU4-1	66	38.1	-42.3%
DCU4-2	89	307.05	**245.0%**
DCU4-3	159	76.82	-51.7%
Total	1027	1031.82	**0.5%**

*Group setting for each watt-hour meter (kWh)

DCU/Name Wattmeter	Watt-hour meter Electric energy	DCU Electric energy at each port	Tolerance (%)
DCU1-1	158	158.09	0.1%
DCU1-2	305	305.96	0.3%
DCU2-1	595	595.56	0.1%
DCU2-2	291	290.9	0.0%
DCU3-1	127	127.21	0.2%
DCU3-2	167	166.91	-0.1%
DCU3-3	139	139.43	**0.3%**
DCU4-1	116	116.74	0.6%
DCU4-2	257	256.98	**0.0%**
DCU4-3	680	681.01	0.1%
Total	2835	2838.79	**0.1%**

11. Outdoor Temperature Sensor DIII-Ai DAM101A51

11.1 Component parts

The components of the kit are as follows.
Before installing, be sure to check whether they are supplied.

Name	Quantity
Main unit	1
Installation Manual	1
External temperature sensor	1
Harness pressure terminal	2

Name	Quantity
Ferrite core (large)	1
Ferrite core (small)	1
Clamp material with snaps	2
Clamping material	3

Name	Quantity
Hole cover (large)	1
Hole cover (small)	1
Harness for multi-purpose sensor	1

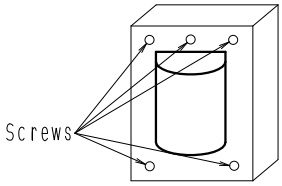
11.2 Attachment

Attachment location

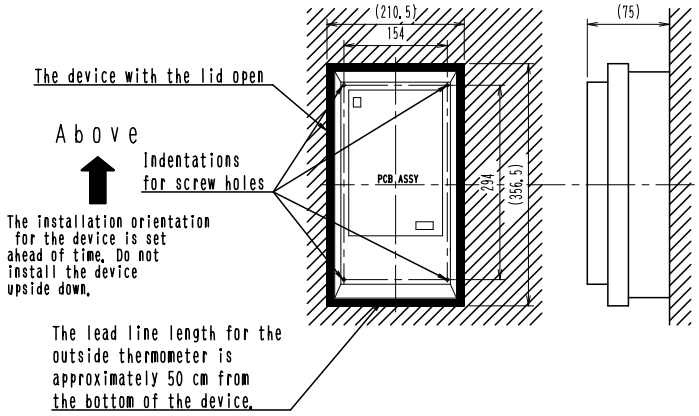
Install this device outside in a location out of direct sunlight and rain. The set height should have at least 30 cm between the floor and the device. The pull-out length of the outdoor thermometer from the bottom of the device is approximately 50 cm. The installation location for the device should be selected with the above in mind.

2－1. Installing the main unit.

First, remove the lid from the main unit. (5 screws) Do not lose the removed screws. You will need them when you close the lid after all work is done.



This device is mounted with 4 screws.
Open the four indentations for the screw holes with self tapping screws or drill them and secure them with the 4 screws.
(The recommended screw size is M4. Screws should be procured locally.)

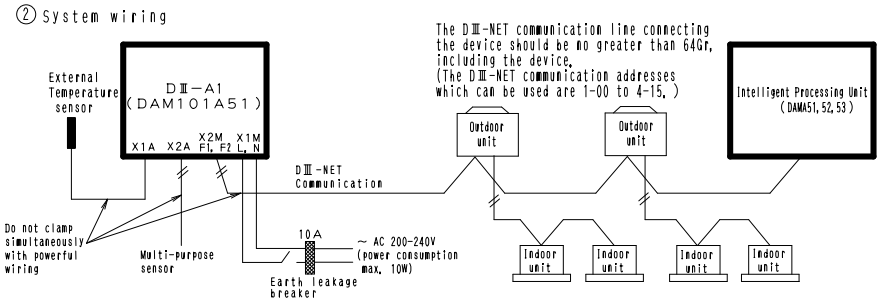


2－2. Wiring connections

① There are 4 types of wiring for the device.

Name	Specifications for electric wiring used	Remarks
Power wiring	1.25mm²	Power supply voltage: max. 200-240V (50/60Hz)
Communication wiring	Sheathed vinyl cord or cable 0.75～1.25mm² (balanced-type) --- max. length 1000m (up to total extension 2000m) (Total extension length 1500m when using shield wire)	No polarity
External temperature sensor	Use the included sensor	-
Multi-purpose sensor	When extending the included harness --- max 15m	DC 0-5V sensor can be connected (procured locally)

② System wiring



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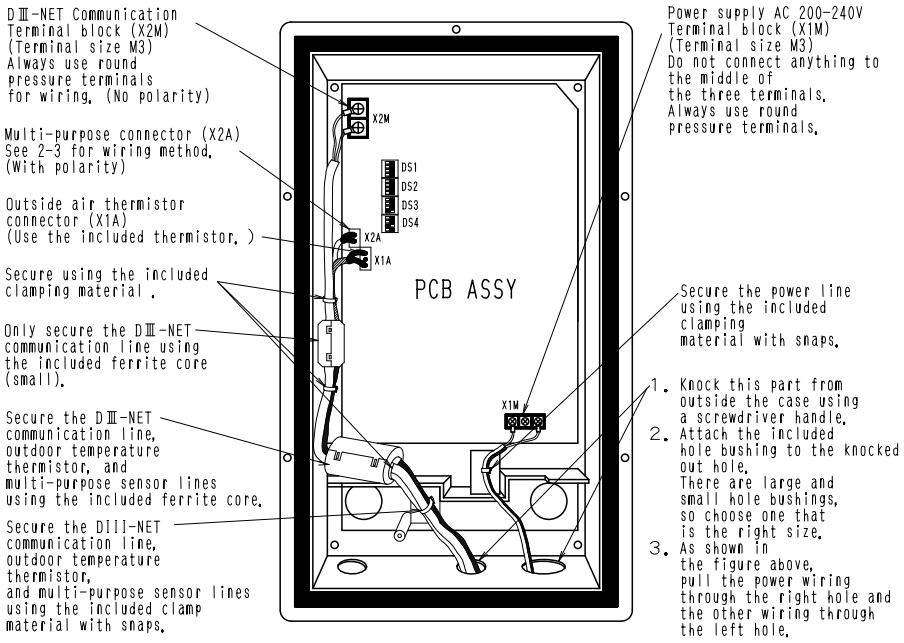
Connecting and clamping the wiring (Be sure not to force screws. This may break them.)

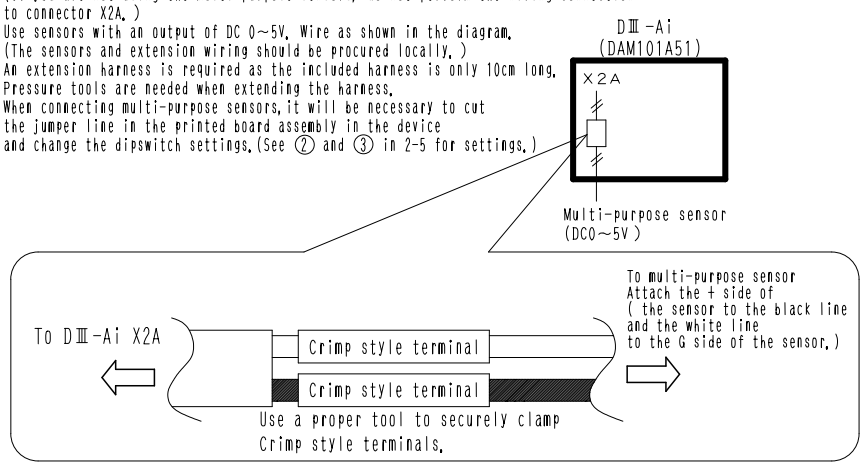
Names and functions of each part



2－3. How to connect the multi-purpose sensors and settings

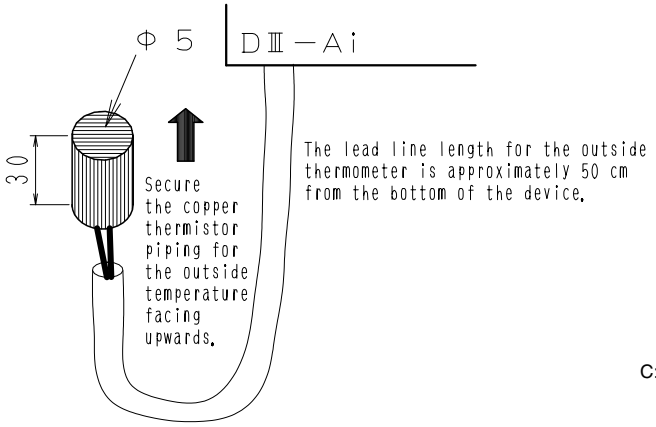
Other than the supplied outdoor temperature sensor, it is also possible to connect other brand multi-purpose sensors to the device.

This section describes the wiring when connecting the multi-purpose sensors. (If you are not using the multi-purpose sensors, do not perform the wiring connection to connector X2A.)
Use sensors with an output of DC 0～5V. Wire as shown in the diagram. (The sensors and extension wiring should be procured locally.)
An extension harness is required as the included harness is only 10cm long. Pressure tools are needed when extending the harness.
When connecting multi-purpose sensors, it will be necessary to cut the jumper line in the printed board assembly in the device and change the dipswitch settings. (See ② and ③ in 2-5 for settings.)



2－4. Attaching the outside temperature sensor

Securing the sensor
Always secure the sensor downwards as shown in the diagram. Install in a well-ventilated location where the unit will not be subject to direct rain or sunlight. (If the unit receives direct sunlight, it might detect a temperature higher than the actual temperature.)



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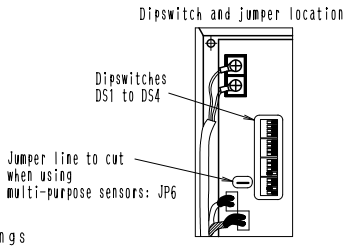
2－5. Setting the dipswitches and cutting the jumper line

Meaning of each dipswitch and jumper line

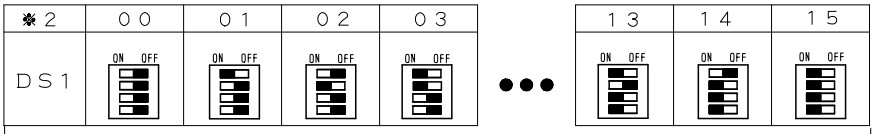
Number	Meaning
DS1	DⅢ-NET Communication address last digit
DS2	DⅢ-NET Communication address first digit
DS3	Enabling and disabling the sensor
DS4	Switching sensor uses
JP6	When using multi-purpose sensors, cut the main jumper line.



① DS1 and DS2 (DⅢ-NET communication address) settings

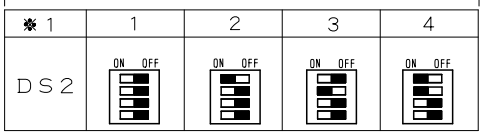
Setting DS1 and DS2" sets the DⅢ-NET communication address.
Set the DⅢ-NET communication address between 1-00 and 4-15.
Normally only one address is used per unit. The factory default is 1-00.
However, when using the settings below in ② to use multi-purpose sensors, two addresses are used per unit.
(For example, if the address is set to 2-10 using the DS1 and DS2 settings, 2-10 and 2-11 are thereby used and cannot be set on other AC units.
If the setting is for using the multi-purpose sensors, do not set DS1 and DS2 to 4-15. The multi-purpose sensor detection data cannot be properly monitored by I-Manager.)

Dipswitch settings for each address

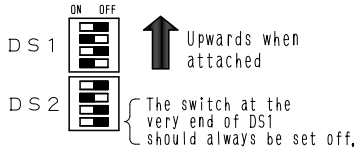


DⅢ－NET Address ※1 － ※2

Ex: 3－10

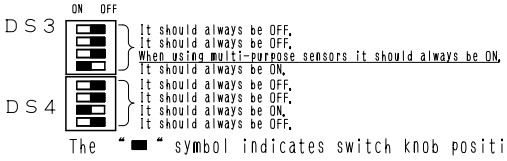


The "■" symbol indicates switch knob position.



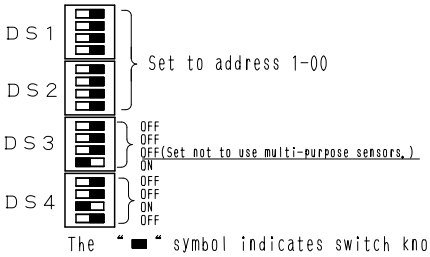
② DS3 and DS4 (sensor-related) settings

DS3 should only have its setting changed if locally-procured sensors are being used.
When using locally procured sensors, set the third switch from the front on.
(The factory default settings are for not using multi-purpose sensors.)
NB: When using multi-purpose sensors, cut the jumper line ③ at the same time as the settings are being done.
There is no need to change the factory default setting for DS4.



The "■" symbol indicates switch knob position.

The following settings should be done for the factory default DS1 to DS4 settings.



The "■" symbol indicates switch knob position.

③ Cutting JP6

When using multi-purpose sensors, cut jumper JP6 on the printed board using nippers, etc.
※: When using multi-purpose sensors, set DS3 at the same time as these settings are being done.
※: Be sure to get rid of line cuttings when cutting the jumper. Failing to remove them may cause the printed board to malfunction.

2－6. Once all settings are complete, Replace the removed cover in 2-1 using the screws.

C:1P108833-1-3

12.Questions & Answers

Q1. If the number of iPU exceeds four units (indoor unit exceeding 1024 units), what is a suitable solution?
A. At present a maximum of 4 iPU's can only be connected.

Q2. If only the iPU has a power interruption, what is the out come?
A. During the power interruption, the pulse signal cannot be counted, therefore, the calculation result is reduced. (However, the 60-day calculation result is not deleted semi-permanently.)

Q3. When is the replacement time of the back-up battery in iPU?
A. In this model, the battery needs no replacement.

Q4. How is the setting of centralized control address when the indoor unit is group-controlled?
A. In case of group, call the site set mode "30" of the remote controller, and set every each indoor unit. (The same way of setting is applied in case the rate calculation for indoor unit is made and also HRV is group-controlled.)

Q5. Is it possible to use the watthour meter with pulse output other than that specified by Daikin?
A. No, it is not. Other than the watthour meter with conformed specifications cannot be used.

Q6. If the watthour meter with 1 pulse/10kWh (pulse unit mistaken) is connected, is the calculated value right by allowing 10 times the distribution calculated value?
A. No, it is not right. (Though the total of distribution calculated value is 1/10 (one tenth), the distribution calculation, when the air-conditioner is stopped, is not 1/10, therefore, there is no coincidence.)

Q7. If the watthour meter for indoor unit is installed every each tenant, how is the indoor unit distribution specified?
A. If the electric power of the indoor unit is to be distributed, it is required to input the pulse to the iPU through the watthour meter with pulse output and specify the distribution "Yes".
If the indication is only desired with the watthour meter (every tenant), the watthour meter with pulse output as above is not needed, and the indoor unit distribution should be specified "No".
The ordinary iPU is to distribute the power consumption of the outdoor unit and optionally function for the power consumption of the indoor unit.

Q8. Is it possible to make a remote indication of Abnormal of iPU and air-conditioner?
A. Yes, it is. There is each independent no-voltage contact output terminal in iPU. Use this signal.

Q9. Is it possible to output the distribution calculated value to BMS?
A. No. These are two different protocol systems.

Q10. Is it possible to specify no distribution of the common-use section such as elevator, corridor, etc.?
A. Yes, it is. However, the power source of the outdoor unit should be divided.
It is necessary to write "No" electric energy distributing in Address Table (To be registered at test run based on this table).
If the outdoor unit of the common-use section is independent from the tenant, it is necessary to connect its power source without via the watthour meter.
If the outdoor unit power is common, the power consumption of the common-use section is distributed to all the tenants, and the tenant calculation result is higher than the actual.

Q11. What is "Electric power port"?
A. "Electric power port" means the connection terminal of the watthour meter. Normally, "port" means the inlet/outlet for signal, etc.

Q12. How do they compare A Central Remote Controller + ON/OFF controller + Schedule timer, B intelligent Manager and C BACnet gateway?

A. Difference among Centralized Controllers

		Central Remote Controller +ON/OFF controller +Schedule timer	intelligent Manager	BACnet Gateway
Command, State Monitoring	Start/Stop	Yes	Yes	Yes
	Operation Mode	Yes	Yes	Yes
	Set Point	Yes	Yes	Yes
	Rem. Ctlr Authority	Yes	Yes	Yes
	Room Temp. (suction)	No	Yes	Yes
	Equip Malfuncion Monitoring	Yes	Yes	Yes
Nb. of Mgt Groups		64	256-1024	256 per Gateway
Schedule Control		Weekly schedule only	Yes Annual schedule	Based on BMS
Power Proportional Division function		No	Yes	Only on RS 232C
Failure prediction (Airnet functions)		No	Yes	Yes
Connect to A/C Management Center		No	Yes	Yes
Purpose, Characteristics		A/C management of one DIII-NET line	A/Ccontrol & monitoring board for up to 4 DIII-net line	Idem (support for RS232C & BACnet)

Q13. Can iManager be connected to the BACnet?

A. No. BACnet is limited to the object list with is not enough for the mass data for the full control of VRV therefore iManager was developed.

Q14. Does iManager software have an expiry date?

A. No.

Q15. Can the history file be saved as a file?

A. Yes, but the data can only be viewed by iManager.

Q16. Can iManager be connected iController?

A. Yes, it is techically possible. However, due to cost issues this is not feasible.

Q17. What is the maximum distance for the cable between the HUB and the iPU?

A. 150 meters.

Q18. Can the iPU be directly connected to the PC?

A. Yes (with the use of a crossover connector), however we strongly recommend the use of a HUB for in the case of testing with a separate computer.

Q19. Is iManager compatible with a central controller?

A. Yes.

Q20. Does the iManager master computer need to be dedicated computer?

A. Yes.

Q21. What is the maximum distance for the cable between the iPU and the kWh meter?

A. 200 meters.

Q22. Can we connect a second HUB to the iManager system for a longer connection?

A. Yes, but the power of HUB must be supplied by a UPS.

Q23. Do I need to connect kWh meter to every outdoor unit?

A. No, although this will depend on the system design.

Q24. What is the accuracy of the Power Proportional Division?

A. That will depend on the system configuration, although you should be able to be close to 97%.

Q25. Can I connect one kWh meter to the whole installation?

A. Yes, provided that all the groups are of identical size and configuration.

Q26. Is iManager display operation real time?
A. Yes.

Q27. What is the maximum length of cable from the iPU and the modem?
A. Serial connection (a few meters). It is recommended to use the serial cable provided with the Modem.

Q28. If the D-III expander cared is used, can this data still be monitored by AIR NET?
A. No. The Units under control on the D-III expander card cannot be monitored by AIR NET as this same data line is used for AIR NET.

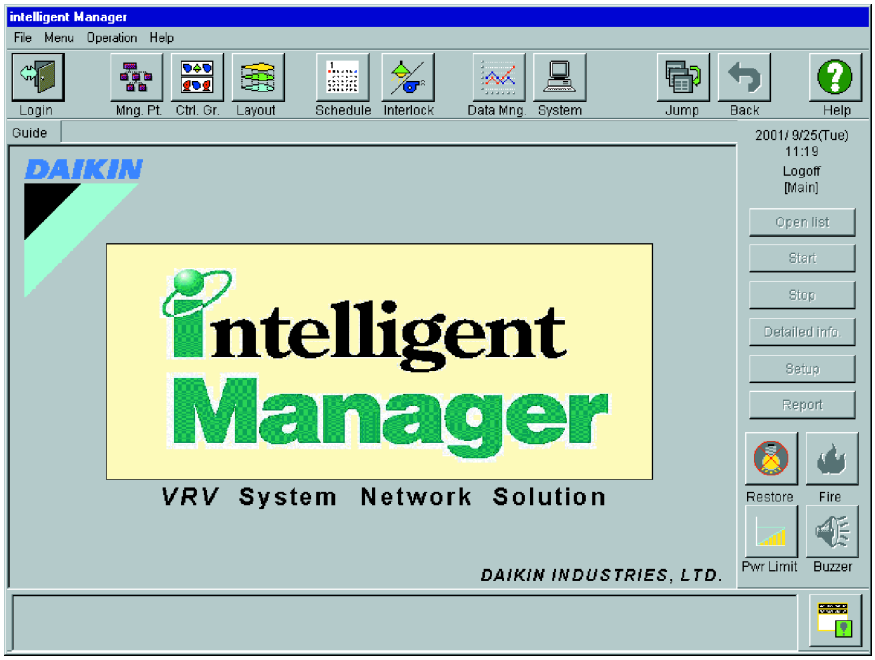
Part 2
i-Manager ECO21 Engineering Manual

Model names and specifications or the like are subject to change without prior notice for further improvement, so be sure to confirm the following catalogues and engineering data.

1. Introducing intelligent Manager

1.1 About the Present Manual

This manual describes the engineering procedure of the DAIKIN air conditioning monitoring and control system **intelligent Manager**.



1.2 The Composition of the intelligent Manager System

The intelligent Manager system is composed of:

- software:
  - intelligent Manager main application (usually called intelligent Manager),
  - intelligent Manager-Database-Server,
  - intelligent Manager-Demo-Server (installation only for simulation),
  - intelligent Manager-Remote (separate option, on remote PC only)
  - intelligent Manager-Watchdog (separate option, on remote PC only),

- hardware:
  - the iPU (except for the intelligent Manager Demo),
  - the monitoring PC (usually called the PC),
  - the installation PC (usually the monitoring PC can be used),
  - the modem (for the separate options intelligent Manager-Remote and intelligent Manager-Watchdog).

Note A virus detection software can be installed if desired. However, we take no liability for any loss etc. resulting from the use of this software.

1.3 The Engineering Procedure

Engineering comprises two procedures:

- Installing intelligent Manager :
  - Wiring Networks (D3Net, Ethernet) and UPS,
  - Installing the PC software,
  - Installing intelligent Manager software,
  - Setting up PC (OS, printers and modem if any, auto-logon, utilities),
  - Setting up iPU (loading OS)
- Configuring intelligent Manager : makes use of specific tool software as well as the intelligent Manager application
  - Step 1 (with the intelligent Manager engineering tool): Setting initial data of the iPU and of the PC, registering the management points,
  - Step 2 (with the intelligent Manager application): setting the management and control groups, the automatic control programs and the graphic user interface options.

2. Requirements

2.1 General Requirements

The PC in which the intelligent Manager is to be installed must fulfil the following requirements:

- Standard CD-ROM drive,
- At least 14" monitor,
- Keyboard and mouse,
- Sound device (if the buzzers are used).

2.2 Specific Requirements for the intelligent Manager (Main Application)

The main application requires the following:

- Processor: minimum 400 MHz Intel Pentium or later,
- Operating system: Microsoft Windows 2000 (or NT 4.0 with service pack 4 and above) including Microsoft Internet Explorer (4.0 service pack 2 and above),
- Minimum free space on the hard disk (for the program and the database files): 1 Gbyte is recommended,
- RAM: at least 64 Mb, however 128 is recommended,
- Network connection: a 10Base-T connector and an Ethernet adapter.

Note The actual space required on the hard disk and in memory depends on the configuration.

2.3 Specific Requirements for the intelligent Manager-Demo

The simulation application requires the following:

- Processor: same as above,
- Operating system: Microsoft Windows 2000 (or NT 4.0 service pack 4 and above); however, Windows ME and Windows 98 can be used without official support,
- Minimum free space on the hard disk: as above,
- RAM: as above,
- Network connection: none; however, a local loop-back is needed.

3. Wiring

3.1 Wiring the iPU Connections

The indoor units and other equipment of the buildings communicate with the iPU via the DIII-NET lines, Internal Pulse Input points, Internal Digital Input points and Internal Digital Output points. **Please refer to their respective documentation for detailed wiring instructions**.

Important When using the Power Proportional Distribution (separate optional function), some wiring constraints must be respected. Please refer to the separate manual Configuring the Power proportional distribution for intelligent Manager system for details.

3.1.1 Wiring the DIII-NET Ports

DIII-net port support data exchange of the DIII-net line.

3.1.2 Wiring the Outdoor Unit points (Outdoor Unit)

Outdoor units exchange data with the iPU over the DIII-NET lines.

3.1.3 Wiring the Indoor Unit points (Indoor Unit)

Indoor units exchange data with the iPU over the DIII-NET lines.

3.1.4 Wiring the General Purpose Internal Digital Input/Output points (D3Dio)

General Purpose Digital Input/Output points exchange digital data with the iPU over the DIII-NET lines.

3.1.5 Wiring the Pseudo Analogue Input points (PAi)

Pseudo Analogue Input points simulate analogue data (Ai) of indoor unit points (suction temperature, room temperature) in the iPU.

3.1.6 Wiring the Analogue Input points (Ai)

Analogue Input points receive analogue data of external temperature kit in the iPU.

3.1.7 Wiring the Internal Pulse input points (Pi)

Internal Pi points collect the pulse from each meter, and send data to the iPU.

3.1.8 Wiring the Internal Digital Input points (Di)

Internal Di points receive digital data in the iPU.

3.1.9 Wiring the Internal Digital Output points (Do)

Internal Do points send digital data from the iPU.

3.2 Wiring the Ethernet Network

Connect each iPU (1 master and up to 3 sub iPUs) as well as the PC to the hub by using 10Base-T connection cables.

Caution Do not use the hub uplink (hub to hub connector).

Important Check that the Ethernet connection LED on each iPU is ON. Check that the Ethernet connection LED on each PC is ON. Check that all the connected LEDs of the hub are ON. If all these conditions are not met, check the wiring.

3.3 Wiring the UPS

The Un-interruptible Power Supply device provides power to the monitoring PC or to the iPU for a limited time when the normal power supply fails and until the intelligent Manager programs followed by the PC itself shutdown safely and smoothly.

Please refer to the **Appendix C Power Failure Management** for details.

4. Installing the intelligent Manager system

4.1 Contents of the CD-ROM

The intelligent Manager resource CD-ROM contains the following folders and files:

- File **iManagerEnglish.exe**: installation application that will copy the folders and files to the PC,
- File **osN.exe**: installation application that will copy the iPU os file to the PC,

4.2 Installing the Software

4.2.1 Installing the PC software

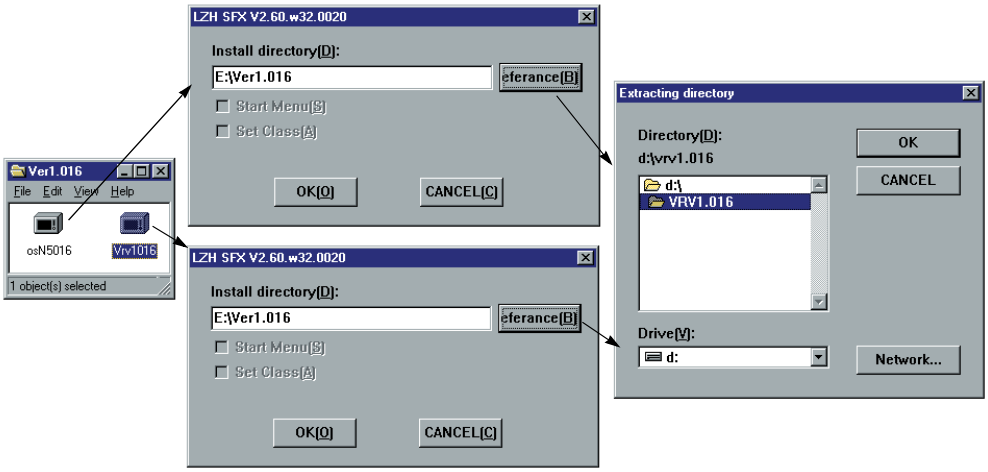
(1) Install Microsoft Windows 2000 (or else Windows NT with service pack 5) and convert the drive format into NTFS (one or two partitions),

(2) Install the MS Internet Explorer application (needed because includes some software components used for network communication purpose)

Important On delivery, the intelligent Manager system has no password set up. However, a password is required for the auto-logon. Please create a password if necessary (default value in the present manual is daikin).

4.2.2 Installing the intelligent Manager software

4.2.2.1 Installing the common intelligent Manager software



Important the name of the installation folder should not contain special characters (#, etc) neither spaces (use underscore'_' instead) as this would prevent some functions to operate correctly.

(1) Insert the resource CD-ROM in the PC; in MS Windows Explorer, double-click the file iManagerEnglish.exe.

(2) Type the target folder name (ex: D:\intelligentManager)

The files and sub-folders of intelligent Manager are extracted and copied to this directory. Create a folder and entries in the Start Menu. Please refer the Appendix A for detailed installation procedure.

(3) Double-click the file osN.exe in MS Windows Explorer.

(4) Type the target folder name (ex: D:\intelligentManager)

The file of the iPU operating system is extracted and copied in this directory. It will be used later for installing the iPU.

4.2.2.2 Installing intelligent Manager (Main) specific

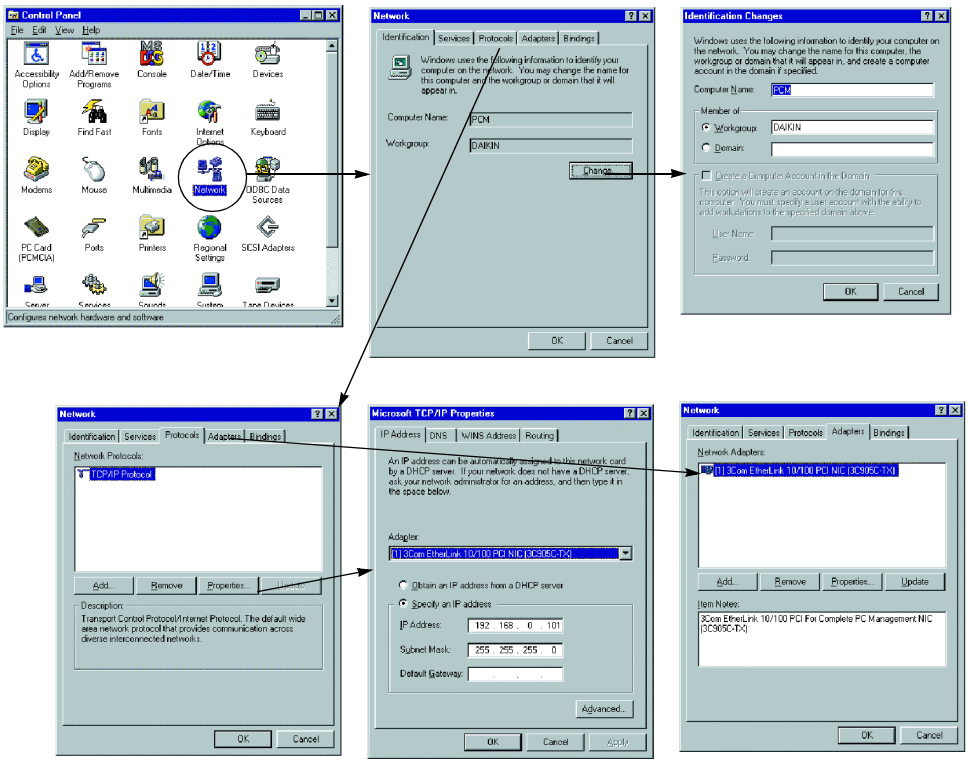
This installation should be performed on the monitoring PC.

4.2.2.3 Installing intelligent Manager-Demo specific

This installation should not be performed on the monitoring PC, but on a separate PC.

4.3 Setting up the PC Operating System

4.3.1 Setting up the network on the PC



Note The setup procedure of Windows 2000 is applicable with Windows NT.

Click the PC **start** button, point to **Settings / Control Panel** and then double-click the **Network** icon.

PC	Name	Workgroup	P address	Sub-net mask
Master	PCM	DAIKIN	192.168.0.101	255.255.255.0

(1) Setting up the **Identification**:

- Click the **Change** button and input as in the table above:
  - the **Computer Name**: ***PCM***
  - the **Work Group**: ***DAIKIN***
- Click the **OK** button.

(2) Setting up the protocol

Note The **Default Gateway** is empty.

- Click the tabulation Protocols, select TCP/IP Protocol entry and click the Properties button,
- Select the option Specify an IP address and input as in the table above.

(3) Click the **OK** button and restart the computer.

4.3.2 Automatic start in Windows 2000

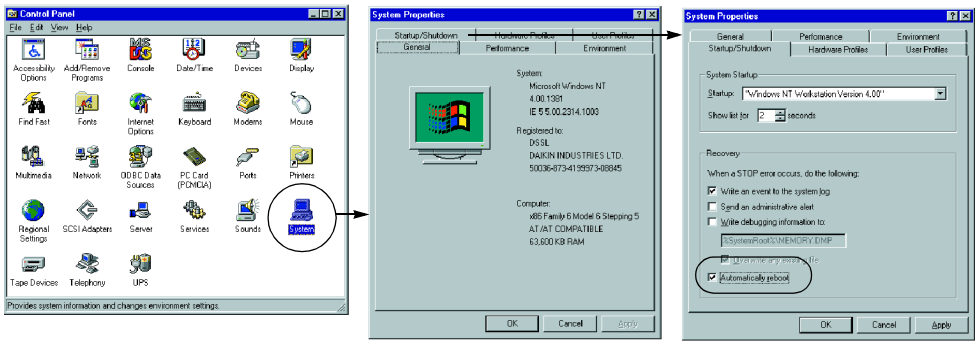
The intelligent Manager system is designed to run continuously. However, in case of trouble (power failure, etc.), it has integrated features to stop and restart in a safely and smoothly. To do so, Microsoft Windows 2000 system settings are needed to perform the following steps:

- Automatic Reboot,
- Automatic Logon,
- Automatic Start-up.

Note Please refer to the Windows 2000 documentation manual for detailed setting procedure.

Important To perform this procedure, user must have Windows 2000 administrator privilege.

4.3.2.1 Automatic Reboot



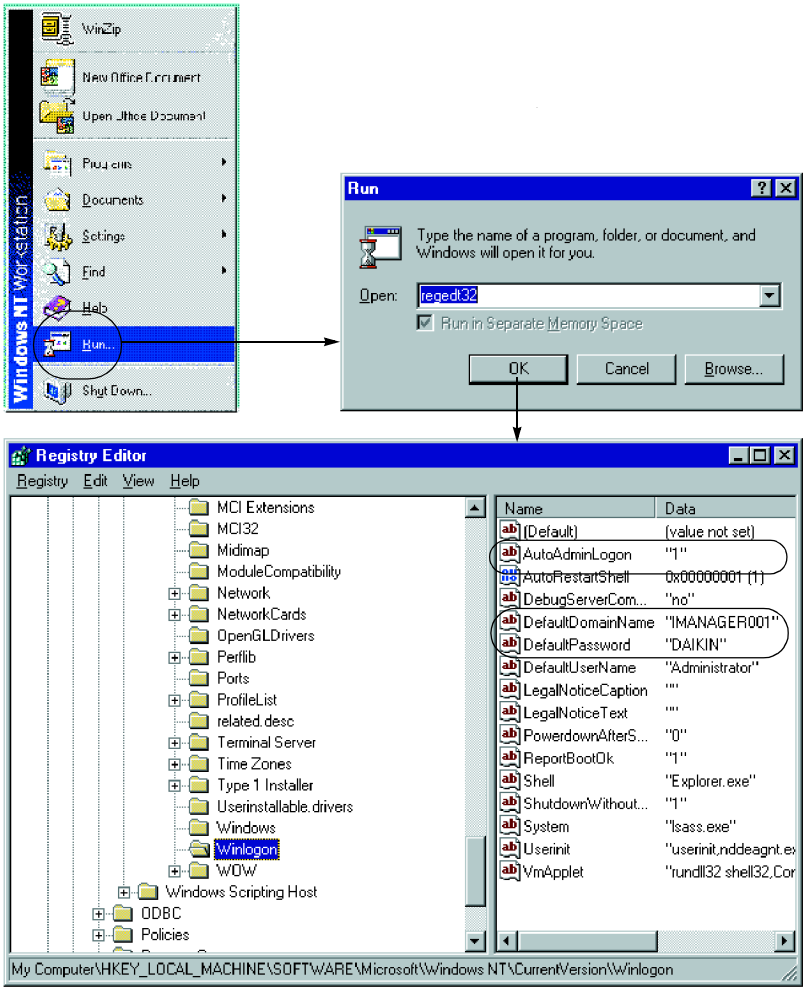
The automatic reboot function has to be activated to ensure that the PC will start up automatically after a power failure:

(1) Click the PC **Start** button, point to **Settings / Control Panel** and double-click the **System** application,

(2) Select the **Startup/Shutdown** tab and make sure that the **Automatic Reboot** check box is enabled.

Note Please be sure to set up the BIOS as well (press F2 key at start time to enter setup) in order to ensure that the computer will reboot at the time of power restoration. The actual field to set up depends on the BIOS. It should be something like: "AC Power Recovery".

4.3.2.2 Automatic logon



When Windows 2000 starts up, it requests logging on by pressing the **Ctrl-Alt-Del** keys. This means that any program (including intelligent Manager) cannot be started without human intervention on the keyboard. Nevertheless, intelligent Manager has to start up automatically after shutdown. Consequently, the automatic logon function must be activated.

Start the **C:\Winnt\regedit.exe** application (Windows 2000 registries editor)

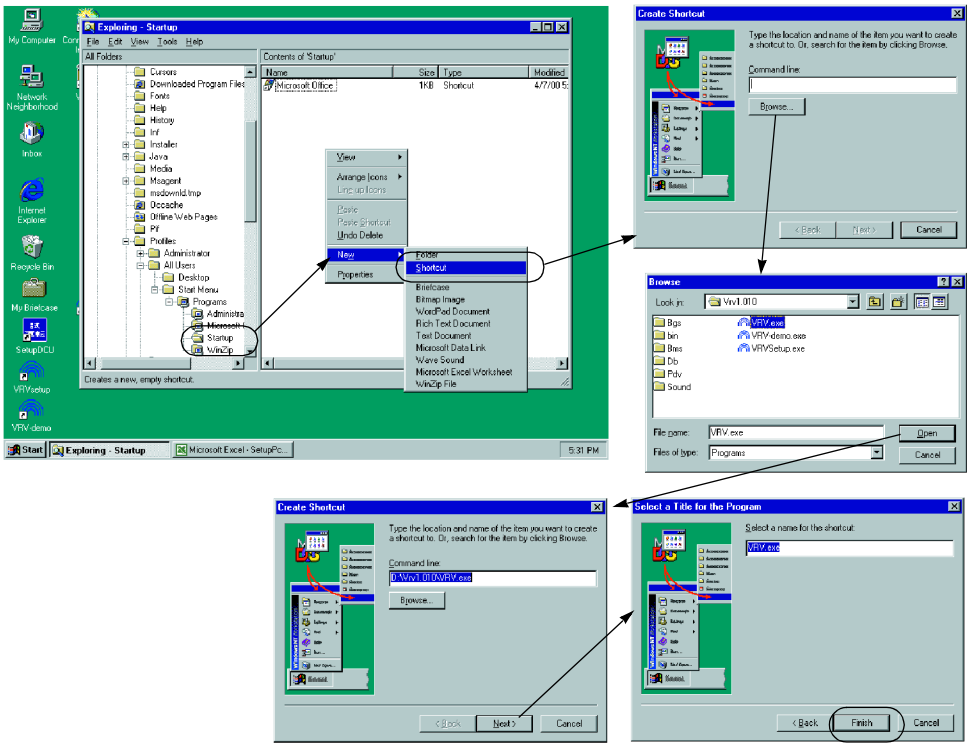
Open the **HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows NT\Current Version\WinLogon** key.

Add two String values (**REG_SZ** type):

Name	Value
AutoAdminLogon	**"1"**
DefaultPassword	The administrator login password: **"DAIKIN"** (on delivery time)

Caution If the value of the **DefaultPassword** is not identical to the password set for the administrator, the automatic logon will not perform.

4.3.2.3 Automatic start-up



To ensure that the intelligent Manager programs start up automatically when the computer starts up, a shortcut to the main application of intelligent Manager **(VRV.exe)** has to be created and stored in the StartUp menu:

(1) With Windows Explorer, open the folder **C:\Winnt\Profiles\All Users\StartMenu\Programs\Startup**,

(2) Click the mouse right button and select the entry **New Shortcut**,

(3) Using the **Browse** button, select in the folder of the intelligent Manager the main application **(VRV.exe)** and click the **OK** button,

(4) Click the **Next>** button,

(5) Click the **Finish** button,

Check that the shortcut to intelligent Manager has been added.

4.4 Setting up the iPU Operating System

Important Perform the installation of sub iPUs first. Connect only one iPU to the hub at a time during OS installation.

Note At this stage of the engineering procedure, the IP address of all iPUs should be 192.168.0.1; the change to sub-iPU address is to be performed later when configuring the data of each iPU.

Open a MS/Dos Command Prompt Window (Windows Start/Command Prompt), then use the Dos "cd" command and open the folder when the os file has been extracted. Then:

- (1) load the os file into the iPU
- (1-A) **-> ftp 192.168.0.1**
- (1-B) **ftp -> user name:imanager** <Enter>
- (1-C) **ftp -> password:daikinindustries** <Enter>
- (1-D) **ftp -> bin**
- (1-E) **ftp -> put os**

. . .

When the transmission completion message

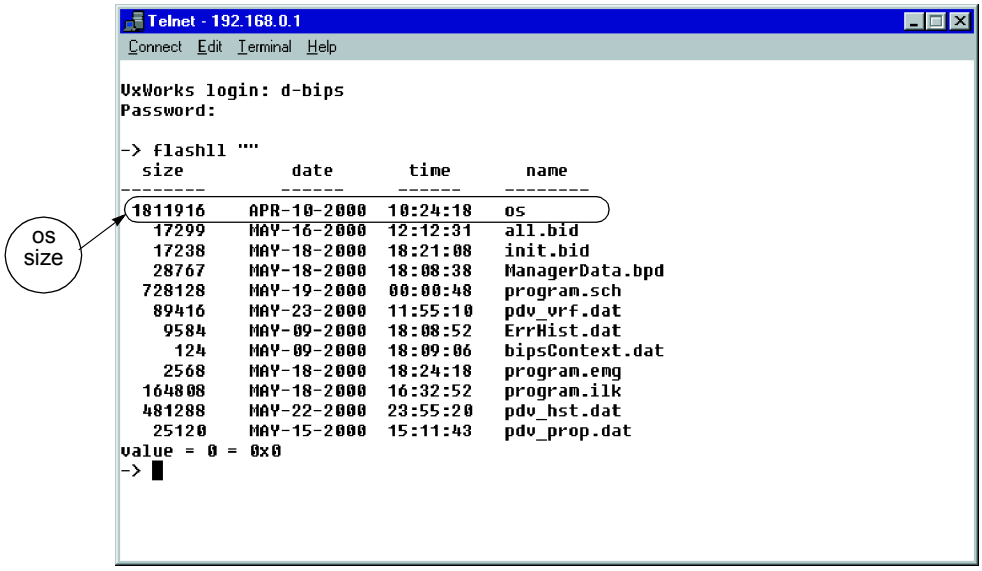
appears, terminate the ftp connection:

Do not forget this ***bin*** order, as this would make the iPU un-operational. In such case, see Troubleshouting procedure in Appendix B.

- (1-F) **ftp -> quit**
  Then, to display the actual size of the os file (refer to the actual value of your version)
- (1-G) **> dir** (to be compared with the transmitted size in step 1-E), and close the window:
- (1-H) **> exit**
- (2) Check the iPU OS by the following procedure:
- (2-A) Reconnect by **Telnet (Host:** IP address of the iPU, **Login name:** imanager, **Password:** daikinindustries),

Note The default IP address of the iPU is 192.168.0.1 and can be modified when configuring the iPU.

- (2-B) type -> flashll "" and check the transmission time and the size of the os file: this size should be the same value as the one previously displayed in step 1-G (1811916 bytes in the example, however refer to the actual value of your version)



- (2-C) Close the connection (Click Connect / Disconnect) and exit Telnet.
- (3) Swith the iPU Off, and then On again (this is to save the os file in the iPU memory).

End of the iPU OS installation procedure.

Note Repeat the above procedure for each iPU.

5. Configuring the intelligent Manager System, Step 1: the VRV-Setup Tool

This part of the configuration procedure makes use of the ***VRVSetup.exe*** engineering tool, which is in the ***/Tools*** sub-folder of the installation folder.

It performs configuration of the data in the monitoring PC and the iPU. This data includes the intelligent Manager system configuration by using Management points.

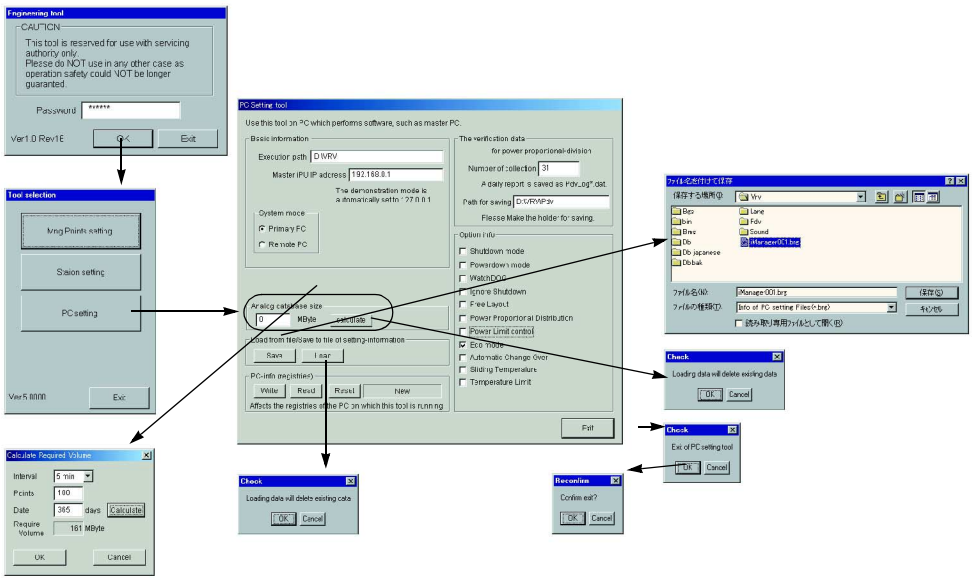
These points will be organized into management groups and control groups in the step 2 of the configuration. They will be used by the operator to perform monitoring and control of the system.

Note If a configuration has already been performed, it is possible to reuse it. Refer to **8. Loading a Configuration** below for detailed explanation. It is then possible to modify the loaded configuration.

5.1 Configuring the PC Data

Start the VRV-Setup tool and login. Then click the PC Setting button to display the setting screen.

Note The password of the setup tool is provided on delivery and cannot be changed.



Important In the Registries frame, first click the Read button and confirm to load the current settings from the PC.

You can click the **Load from File** button and specify the path to a initialization file (extension **.brg**) or/and input as follows when necessary:

- Type the **Execution Path** (if left blank, the current directory of the executable module is used, else ***BackSlash*** should be use as folder separator in path): location folder of the binary files of intelligent Manager VRV.exe and VRV-Demo.exe,

- Type the **Master iPU IP Address:** should be 192.168.0.1, except for the demo mode (127.0.0.1)
- Select the **PC Master/Remote** option: should be **Master (Remote** only for PC running the separate option intelligent Manager-Remote over telephone line or sub-PC over Local Area Network),
- Reserve the size for the rotation database of analogue data:
  - Enter the maximum database size (in Mbytes),

or

  - Click the **Calculate** button of the **Analogue Database Size** frame;
  - Select the storage **Time Period** (in days),
  - Type the number of **Management Points** to store,
  - Click the **Calculate** button,
  - Click the **Ok** button to make the database size limitation effective, or the **Cancel** button to abort,
- Type the daily report **Cumulation Period** and **Saving Path**,
- Check the **Shutdown** Mode : shut down Windows NT when exiting intelligent Manager,
- Check the **Turn Off** Mode : shut down the computer and turn it off when exiting intelligent Manager (option available depending on the BIOS of the PC) ,
- Check the **Watchdog** if the intelligent Manager-Watchdog will be activated (separate option),
- Check the **Ignore Auto-Shutdown** if an intelligent UPS is activated (for details, see Appendix C Power Failure Management),
- Check the **Visual Navigation** if the Visual Navigation function is activated (site layout based operation, for configuration details, see the section **6.5 Configuring the Visual Navigation**),
- Check the **Power Proportional Distribution** if the PPD function is activated (for configuration details, see the section **5.3.2 Configuring the Indoor Unit points**),
- Check the **Power Limit Control** if the control of power consumption function is activated (for configuration details, see the sections **5.3 Configuring the Power Limit function** and **6.2.8.1 Power Limit Control**),
- Check the **Eco Mode** if the Eco Mode function is activated (for configuration details, see the section **6.2.8.2 Eco Mode**),
- Check the **Automatic Changeover** if the Automatic Changeover function is activated (for configuration details, see the section **6.2.5 Automatic Change Over**),
- Check the **Sliding Temperature** if the Sliding Temperature function is activated (for configuration details, see the section **6.2.6 Sliding Temperature**),
- Check the **Temperature Limit** if the Temperature Limit function is activated (for configuration details, see the section **6.2.7 Min / Max Temperature**).

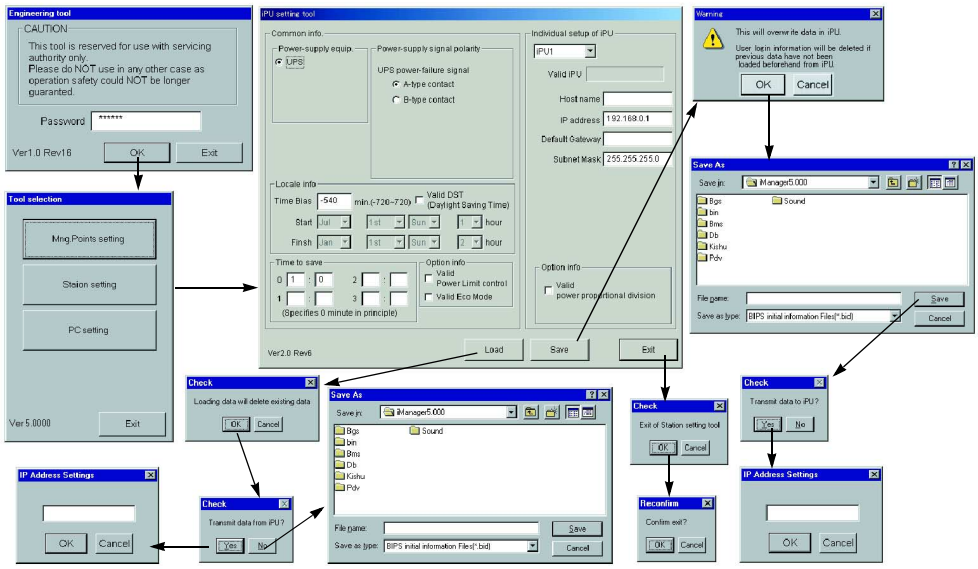
You can click the **Save to File** button to backup this data in a file.

Important In the **Registries** frame, click the **Write** button and confirm to validate change.

Click the **Exit** button and confirm (double step confirmation procedure).

5.2 Configuring the iPU Data

Start the VRV-Setup tool and login. Then click the iPU Setting button to display the setting screen.



You can click the Load button and specify the path to an initialization file (extension **.bid**) or/and input as follows when necessary:

- Select the **iPU** from the dropdown list, the **Valid iPU** field appears,
- Type the **Host Name**: free name for FTP,
- Type the IP address: as in the following table,

IPU	IP address	Sub-net mask
Master	192.168.0.1	255.255.255.0
Sub1	192.168.0.2	255.255.255.0
Sub2	192.168.0.3	255.255.255.0
Sub3	192.168.0.4	255.255.255.0

- Type the **Sub-net Mask**: idem,
- Type the **Default Gateway**: IP address of the connectable PC (or else blank),
- Check the **Power Proportional Distribution** box if this function is activated (for configuration details, see the sections **5.1 Configuring the PC data and 5.3.2 Configuring the Indoor Unit points**),
- Check the **Power Limit Control** box if this function is activated (for configuration details, see the section **6.2.8.1 Power Limit Control**),
- Check the **Eco Mode** box if this function is activated (for configuration details, see the section **6.2.8.2 Eco Mode**),
- Check the **DST** box if Daylight Saving Time is effective in the country, and in accordance with the current local regulations:
- Type the **Time-BIAS**,
- Select for **Start** and **Finish** the **Month, Day** and **Hour**,
- Enter the Periodical Backup times: hour and minutes (up to 4 backups every day; default value is 0: midnight only).

Click the **Save** button and confirm to backup this data in an initialization file (extension **.bid**), then confirm to transmit them to the iPU.

Caution In case of updating an existing configuration, always load data from iPU before editing and saving (else, user configuration data will be lost).

Important Perform configuration of sub-iPU first. Connect only one iPU at a time during iPU configuration.

Note Repeat the above procedure for each iPU, switch it Off then On to update its internal settings.

5.3 Configuring the Management Points

Caution In case of updating an existing configuration, always load data from iPU before editing and saving (else, some cumulated data will be lost: Ai Trend, Running Time, ON/OFF Count, etc).

Note To configure the Management Points, at least Master iPU must be connected.

5.3.1 Fundamentals

This procedure performs definition of the management points supported by the intelligent Manager system.
The types of points are:

- Indoor Units (I/U): indoor unit (model supported by DIII-Net protocol),
- Outdoor Units (O/U): Outdoor unit (model supported by DIII-Net protocol),
- General Purpose Digital Input/Output points (D3Dio): DIII-Net adapter to exchange binary data (dry circuit closed or open) with external system,
- Internal Digital Input points (Di): iPU terminal to receive binary data (dry circuit closed or open) from external system,
- Internal Digital Output points (Do): iPU terminal to send binary data (dry circuit closed or open) to external system,,
- Internal Pulse Input points (Pi): iPU terminal (same as Di) to receive measurement from external meter (power meter, etc),
- Analogue Input points (Ai): sensor sending analogue values to the iPU via an external sequencer (connection to iPU is RS232C),
- Pseudo Analogue Input (PAi): analogue information from Indoor Unit points.

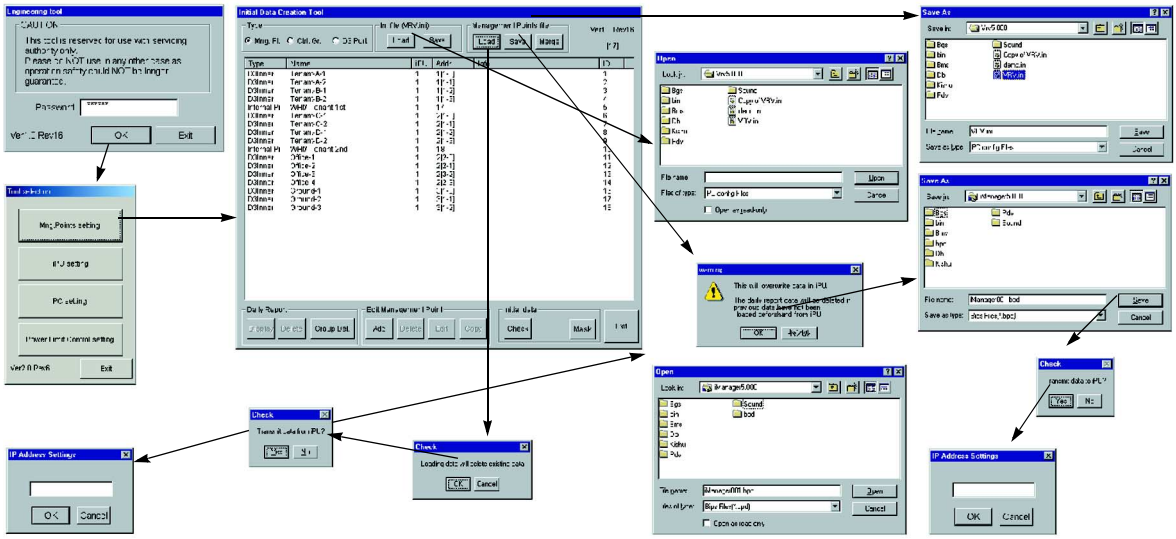
Note Support of the DIII-net Analogue Input point (D3Ai) is under planning.

Important The initialization file should already be in the execution folder (set in the PC settings above) and its name VRV.ini. However, in case of intelligent Manager-Demo, the name should be demo.ini.

Note You can also import an existing configuration of management points: click in the Management Points File frame the Load button and specify the path to a management points file (extension .bpd).

Loading/Saving points list can be done in MS Excel csv format (however, this format does not support loading of Management/Control groups, neither D3 ports configuration)

Note Repeat the above procedure for each iPU, switch it Off then On to update its internal settings.



The points data displayed in this tool are stored in the iPU file (extension bpd, that can be loaded and saved on the iPU, but as well saved on the PC hard disk for backup).

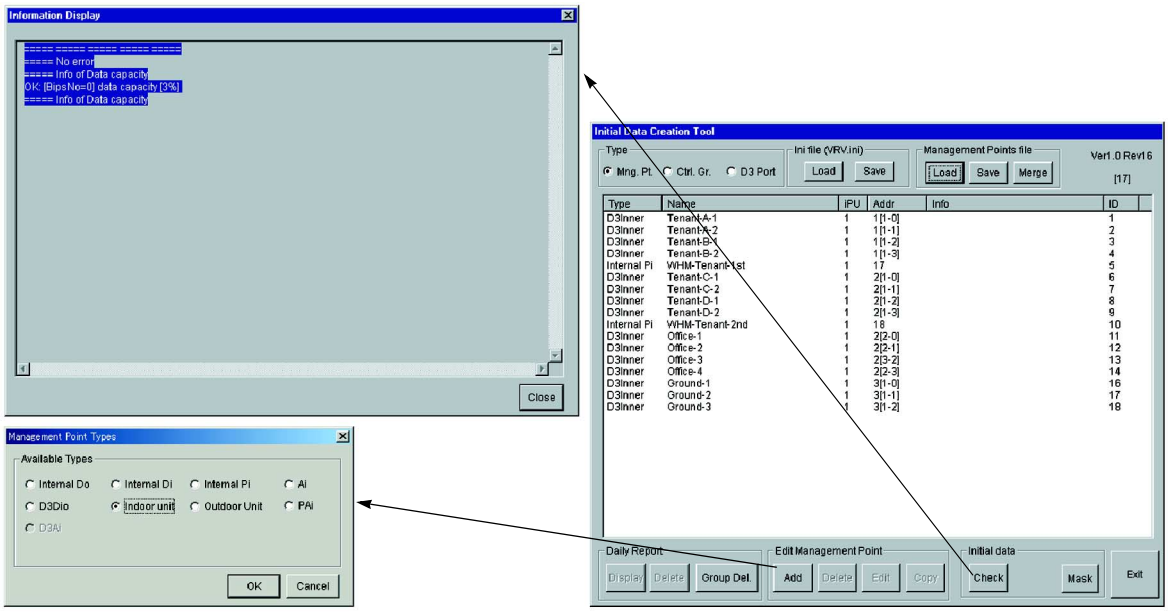
As well, complementary data (not displayed) are loaded and saved in the initialization file (extension ini, that can be loaded and saved on the PC hard disk only).

Therefore, when proceeding this step, both files must be loaded and saved.

Start the VRV-Setup tool and login, then click the **Management Points Setting** button; the setting screen displays.

Note When performing configuration with no iPU connected (office pre-configuration or demonstration version), always update the initialization file by loading it before and saving it after the bpd file: in the **Initialization File** frame, click the **Load** and **Save** buttons and select a file (VRV.ini or Demo.ini).

5.3.1.1 Creating a management point



Create the new point:

Click the **Add** button and select the Type of the new point,

or

Select an existing point in the list and click the **Copy** button, then select the new point from the list and click the **Edit** button,

Proceed as explained from step (1)

Proceed configuration as follows for each management point as required:

(1) When the Management point Attributes appears, enter as follows:

Note In the description below, some attributes can be arbitrarily entered or selected, as they do not infer on the monitoring and control (names, etc). These attributes are marked with an asterisk *. Constraints and usage of other data are described case by case.

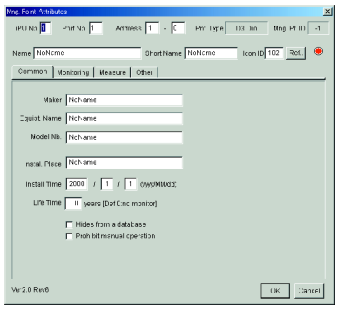
Point address: type the **iPU No**, **Port No** and **Address** (refer to the commissioning documentation for actual value),

Point Identifier: type the **name*** (must be unique within intelligent Manager points) and **short name*** (unique recommended but not required),

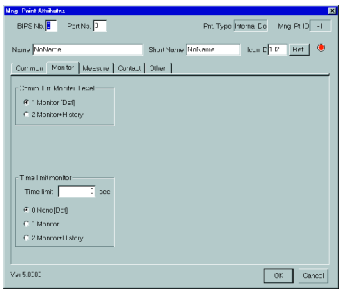
Point layout: type the **Icon ID*** or click the **Refer** button to select it,

Enter the information needed in the fields of the tabulations **Common**, **Monitor**, **Indoor**, **Measure** and **Other** (see details for each type below),

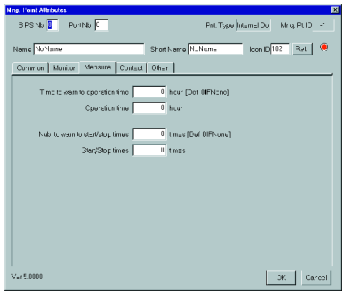
Click successively the tabulations and enter the relevant data (see detailed explanations in paragraphs below):



- Common (all types):
  - Maker*: who manufactured,
  - Equipment Name*: designation,
  - Model No*: or serial No,
  - Installation place and Time*: actual location on the site,
  - Life Time: How many years before replacement (if not 0, a warning will be recorded in History when the life limit is reached),
- Hide from Database: User cannot see in data management screens,
- Prohibit Manual operation: User cannot Start/Stop this point (available only for output points: Indoor Units, D3Dio, Do).



- Monitoring (all types):
  - Communication Error Monitoring Level (display only or recorded in History): D3-net (or iManager iPU) issued an error code,
  - Equipment Error Monitoring Level (idem): the equipment issued an error code,
  - Time Limit Monitoring (idem): how many seconds after an action should the errors be monitored,



- Measure (for : I/U, D3-Dio, Di, Do):
  - Operation Time Warning (not monitored if 0): how many hours before recording a warning,
  - Operation Time: adjust the current value,
  - Nb of Start/Stop Warning (not monitored if 0): how many times On/Off before recording a warning,
  - Nb of Start/Stop: adjust the current value,
- Other (for : I/U, O/U, D3-Dio, Di, Do): see below,
- Indoor (for I/U only): see below,

- Click the **OK** button to update the information of the currently selected management point and close the screen.
- Click the **Check** button to validate the modifications; if the result message indicates an error, verify the commissioning data and modify the attributes of the management points.

(2) When all the points attributes have been entered:

- in the **Initialization File** frame, click the **Save** button and specify the path to a initialization file (extension .ini),
- in the **Management Points File** frame, click the **Save** button and specify the path to a configuration file (extension **.bpd**); the **Transmit data to the iPU confirmation** box displays:
  - to have the information downloaded, to the iPU, click the Yes button, then confirm and then input the IP address of the iPU; when the transmission completion message appears, click the OK button.

or

- to have the information only stored on the PC (for example in the case of the intelligent Manager-Demo), Click the No button.

(3) Click the Exit button and confirm (double step confirmation procedure).

Note Repeat the above procedure for each iPU, switch it Off then On to update its internal settings

5.3.1.2 Modifying a management point

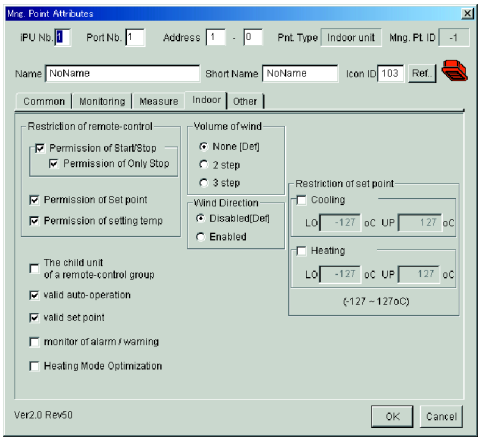
- Select the management point from the list and click the **Edit** button,
- Proceed as explained from step (1)

5.3.1.3 Deleting a management point

- Select the management point from the list and click the **Edit** button,
- Click the **Delete** button; the confirmation message box appears,
- Click the **Yes** button.

5.3.2 Configuring the Indoor Unit points

Click and input the tabs:

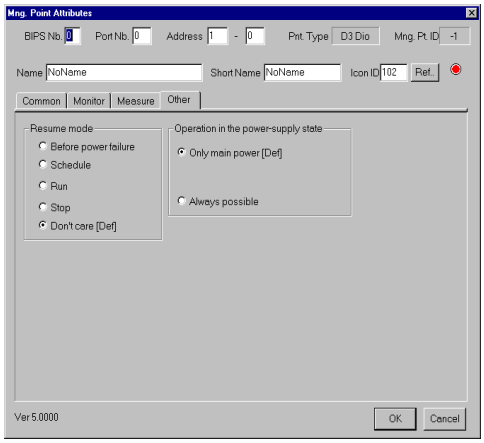


- Common: see above,
- Monitoring: see above,
- Measure: see above,
- Indoor:
  - Restriction of Remote Control: can user Start/Stop, Stop only, change the Set Temperature, or the Operation Mode,
  - Volume of wind: possible value (refer to model),
  - Wind Direction: possible value (refer to model),
  - Restriction of set point: Min/Max Set Temperatures allowed for operation,
  - Check boxes for:
    - Child Units: if this is slave in a Remote Control group,
    - Validate Auto-Operation: operator can select **Automatic** Operation Mode (change automatically according to Set Temperature; refer to model),
    - Validate Set Point: operator can change Set Temperature,
    - Monitor of Alarm / Warning: Error codes of DIII-net alarms and warning are displayed,
    - Heating Mode Optimization: when set point is reached in heating mode, indoor unit is switched off,

5.3.3 Configuring the General Purpose Digital Input/Output points

Click and input the tabs:

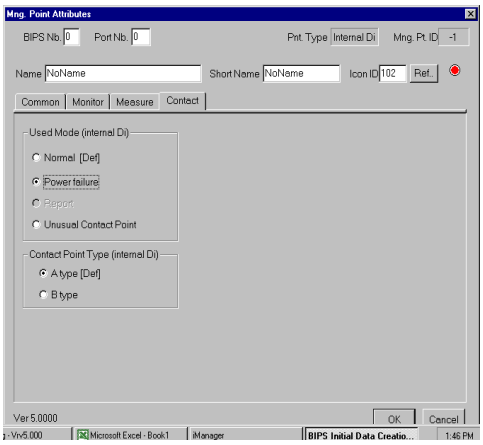
- Common: see above,
- Monitoring: see above,
- Measure: see above,
- Other:
  - Resume Mode: when power is restored after failure, which action for this equipment: Restore state as before; If any schedule, reactivate accordingly; Start; Stop; do nothing,
  - Operation in the power - supply state: should this equipment run under UPS or not.



5.3.4 Configuring the Internal Digital Input points

Click and input the tabs:

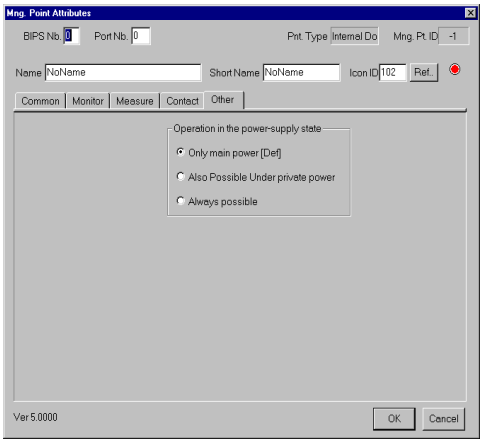
- Common: see above,
- Monitoring: see above,
- Measure: see above,
- Contact:
  - Used Mode: always use **Normal**[],
  - Contact Point Type (circuit/state option):
    A type is: [On = closed], [Off = open],
    B type is: [Off = closed], [On = open].



5.3.5 Configuring the Internal Digital Output points

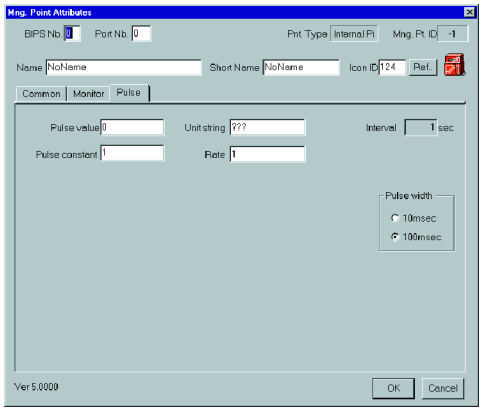
Click and input the tabs:

- Common: see above,
- Monitoring: see above,
- Measure: see above,
- Contact:
  - Used Mode: see above,
- Other:
  - Operation in the power - supply state: see above.



5.3.6 Configuring the Internal Pulse Input points

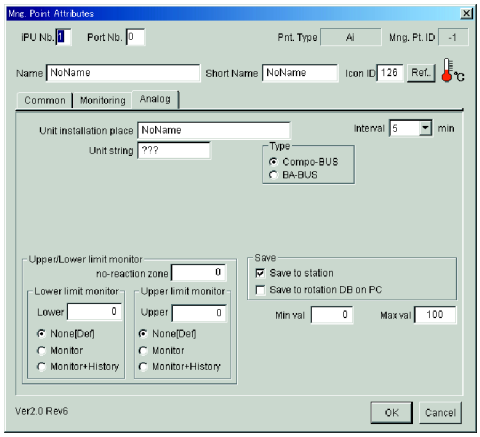
Click and input the tabs:



- Common: see above (note that Pi are created with the default option **Hiden from Database**; uncheck it to have it visible in **Tenant Report** function),
- Monitoring: see above,
- Pulse:
  - Pluse Value: adjust from the meter ,
  - Unit String* (kWh, etc),
  - Pulse Constant and Rate: according to meter specifications; Value = Value x Constant / Rate; [1, 1] or [1, 10] is recommended
  - Backup Interval (fixed to 1 minute),
  - Pluse Width: to meter specifications; duration of the signal for one pulse.

5.3.7 Configuring the Analogue Input points (Ai)

Click and input the tabs:

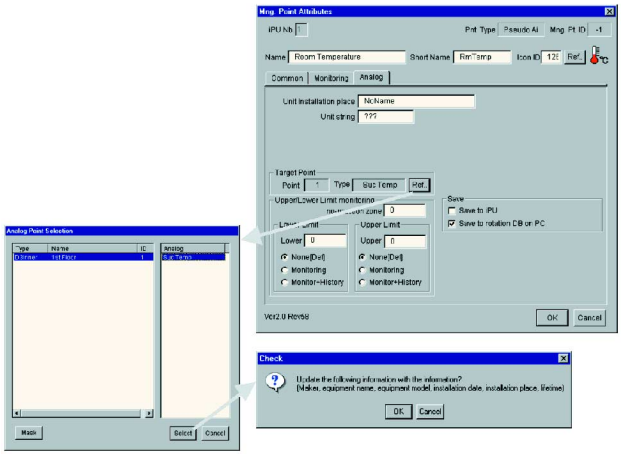


- Common: see above,
- Monitoring: see above,
- Analogue:
  - Installation Place: location of the sensor,
  - Unit String* (°C, etc),
  - Bus Type (see documentation of sensor device),
  - Upper/Lower Limit Monitoring:
    - Value overflow is reported (in history or not),
    - Value in reaction zone,
  - Save:
    - Save in iPU only
    - Save in rotation database
      (newest value overwrites oldest), else data are saved in AC database

5.3.8 Configuring the Analogue Input points (Pai)

Click and input the tabs:

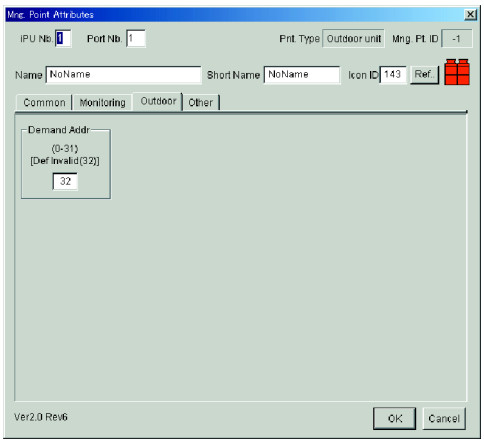
- Common: see above,
- Monitoring: see above,
- Analogue: same as Ai, except:
  - Target Point:
- Select the point from which taking the value,



5.3.9 Configuring the Outdoor Unit points

Click and input the tabs:

- Common: see above,
- Monitoring: see above,
- Outdoor Unit:
  - Demand address: address used by the **Eco Mode** function,



5.3.10 Configuring Control Groups

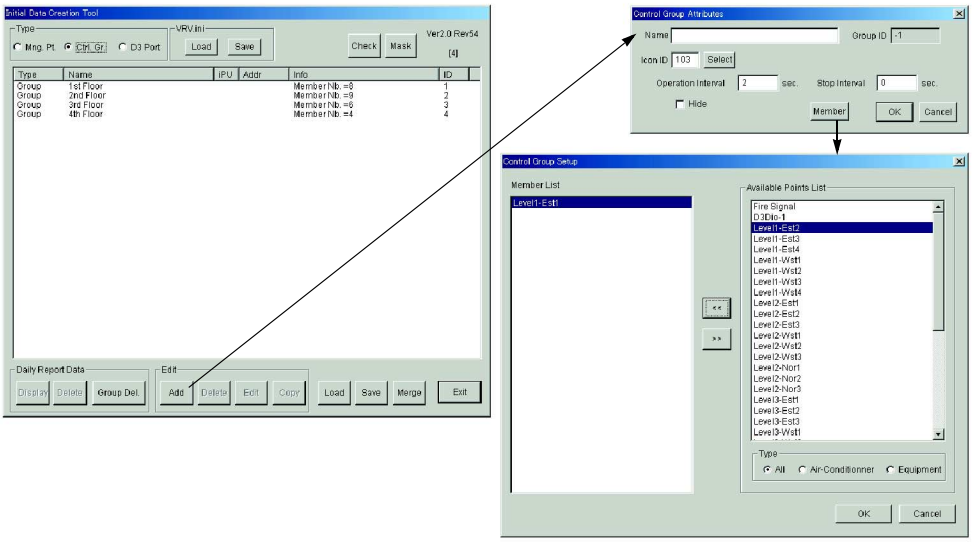
Select the option **Control Group** and click the **Add** button.

Then enter the **Group Name**, select the **Icon ID**, and the **Start** and **Stop Interval** fields (seconds between start of each member of the group; idem for stop).

Click the **Members** button to display the dialogue for selecting the management points of the group.

Check the **Hide** box if you don't want this group to be seen by users.

Note this configuration can be performed and amended later in the System screen of intelligent Manager.

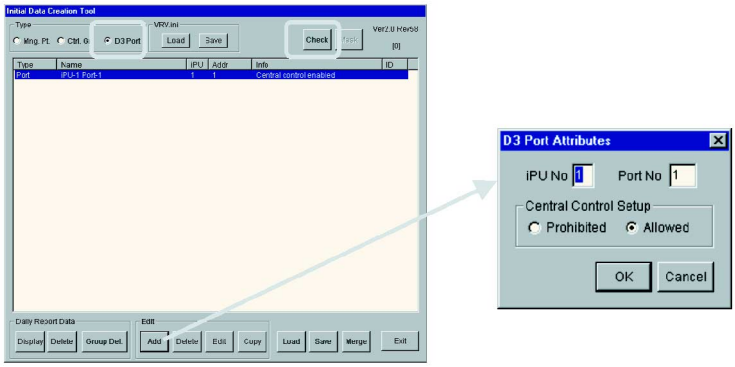


5.3.11 Configuring D3 Ports

Select the option **D3 Ports** and click the **Add** button.

Then enter the **iPU Number** (1 to 4) and the **D3 Port Number** (1 to 4), then select the **Central Control** option to authorized or prohibit use of central controller.

Click the **Check** button to verify the validity of points configuration.



5.4 Configuring Energy Saving

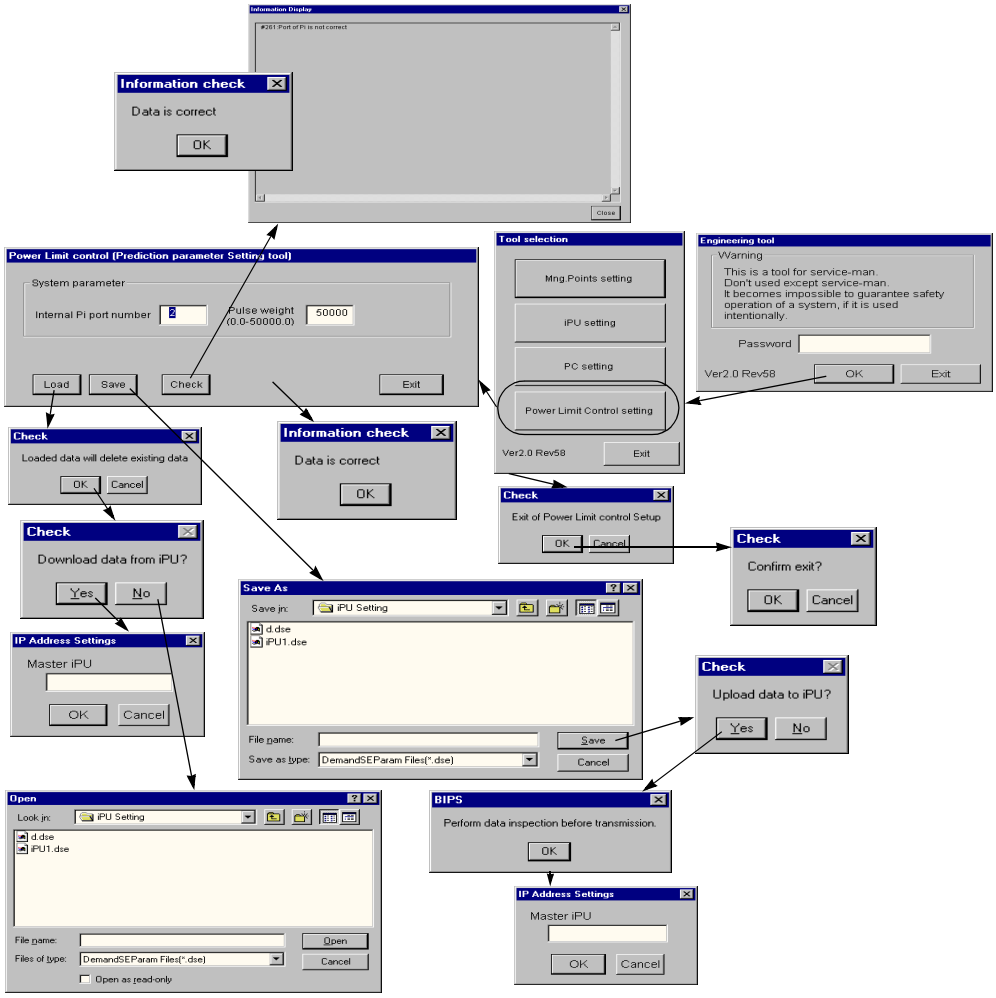
This procedure performs definition of the **Pulse Input** management point used to measure the power trend for the energy saving function (Power LimitControl).

Start the VRV-Setup tool and login. Then click the **Power Limit Control Setting** button to display the setting screen.

Enter the **port No** of the Pulse Input point used to measure the power consumption, and the **pulse weight** (weight of an pulse in kWh).

After inputting these data, click the **Check** button to verify their validity and then the **Save** button to transfer them to the iPU.

Note You can also import an existing configuration of PPD parameters settings: click the **Load** button and specify the path to a management points file (extension **.dse**).



6. Configuring the intelligent Manager System, Step 2: the intelligent Manager Application

This part of the configuration procedure makes use of the intelligent Manager main application.

Therefore, detailed operation procedure for some of these configuration steps is explained intelligent Manager Operation Manual.

The detailed procedures explanations in the present Engineering Manual are those requiring Service login (as explained in **6.1Login in intelligent Manager** below), because operator should not know about this special login.

It configuration procedures are:

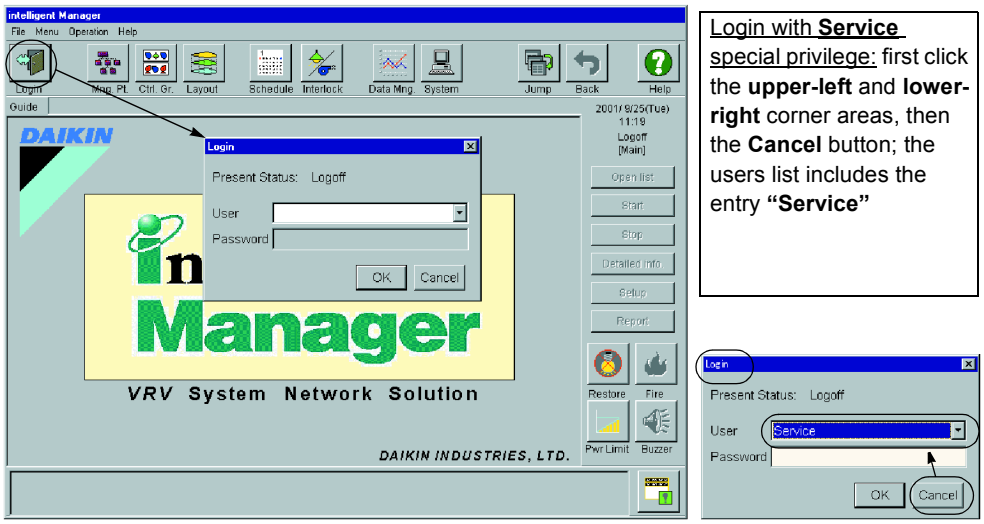
- the users: login, password needed to login in intelligent Manager , as well as users authority,
- the Management Groups: these groups will be used to organize the management points in a tree-like structure for easily understanding the site configuration and status,
- the Control Groups: these groups (which could have been configured previously with the engineering tool as explained in **5.3.10 Configuring Control Groups** above) will be used to configure the automatic control programs:
  - Scheduling: calendar based automatic control,
  - Interlocking: automatic control triggered by change of input conditions,
  - Emergency stop programs: specific type of interlocking for automatically shut down the system (partly or totally) on notification by specific alarm signal (fire breakout and power shutdown),
- the graphic user interface: perform customization of the working environment.
- Energy saving:
  - Power Limit: reducing energy consumption below a target power trend,
  - Eco Mode: reducing energy consumption on a time based operation limitation,
- Automatic Changeover: switching operation mode according to room temperature,
- Sliding Temperature: avoid cold chock by changing cooling set temperature depending on outdoor temperature,
- Temperature Limit: automatically starting indoor units (in cooling or heating mode) in order to keep room temperature within a preset interval,
- BMS client setup (when Service Login only): stand-alone application can be launched from within intelligent Manager (tenant data management, etc)
- Graphical environment (when Service Login only):
  - Background setup: the default background image of the working area,
  - Visual Navigation setup: background screens and active components allowing visual navigation and operation of the system.

6.1 Login in intelligent Manager

This procedure can be performed by anyone who owns a user name and its password:

- Start intelligent Manager,
- Click the Login button; the Login screen displays,
- Select an user name and enter the corresponding password.

Note The operation available for this user has been set up by an administrator user beforehand.



6.2 Configuring the intelligent Manager Organization

This procedure performs definition of the groups for managing and controlling the points manually as well as automatically (with the Interlocking and Scheduling functions).

6.2.1 Fundamentals

The management groups are organized a in tree-like structure (like the folders in Windows). Their role is to make managing and monitoring of the intelligent Manager system more user friendly by use of group display.

Note A management group can be constituted of other management groups as well as management points.

The control groups are constituted by only management points. Their role is to make control of the intelligent Manager system more user-friendly via collective actions:

- Start,
- Stop,
- Detailed Information,
- Setup.

All groups lists can be open to make management, monitoring and control on individual points.

The actual number and composition of groups is a function of each intelligent Manager system.

However, the recommended groups are as follows:

(1)Management groups:

- one group for each building constituted of:
- one group for each floor constituted of:
- one group for each room constituted of:

- the indoor units, Internal Digital Input points and Internal Digital Output points of this room,
- one group for the common areas constituted of:
- the indoor units of these common areas
- one group for each tenant constituted of:
- the indoor units, Internal Digital Input points and Internal Digital Output points of this tenant,
- one group for the Internal Pulse Input points

(2) Control groups:

- one for each building constituted of all indoor units of this building,
- one for each building constituted of Internal Digital Input points of this building,
- one for each building constituted of Internal Pulse points of this building,
- one for each room constituted of all indoor units, Internal Digital Input points and Internal Digital Output points of this room,
- one for each tenant constituted of all indoor units, Internal Digital Input points and Internal Digital Output points of this tenant.

Note Only system engineers can perform this procedure. A system engineer is an operator whose profile includes authorization to access the System Setup screen.

To perform groups configuration:

- Login in intelligent Manager under system engineer user,
- Click the **System** menu button; the **System Setup** screen appears,
- Click the **Management Group** button; the **Management Groups Configuration** screen appears,
- Configure the management groups as explained below, then click the Close button,
- Click the **Control Group** button; the **Control Groups Configuration** screen displays,
- Configure the control groups, then click the **Close** button.
- Click the **Management Points** button; the **Management Points Setup** screen displays,
- Configure the Management Points Attributes, then click the **Close** button.

Please see operation manual for details of operation.

Note When login in Service mode, more Management Points Attributes can be customized. See below for details.

6.2.2 Configuring the Scheduling Programs

A scheduling program is a function for automatically controlling the equipment of the intelligent Manager system according to a calendar. Up to 128 scheduling programs can be configured.

Please see operation manual for details of operation.

6.2.3 Configuring the Interlocking Programs

An interlocking program is a function for automatically controlling the equipment of the intelligent Manager system when a specified input condition occurs. Up to 100 interlocking programs can be configured.

Please see operation manual for details of operation.

6.2.4 Configuring the Emergency Stop programs

An emergency stop program is a special kind of interlocking program to stop the equipment of the intelligent Manager system safely on reception of a specific signal type. Up to 8 emergency stop programs can be configured.

Please see operation manual for details of operation.

6.2.5 Automatic Change Over

Serves to configure the function that change the operation mode of a group of indoor units according to the room temperature as shown on the figure below.

Note In order to be available, this function must be activated in the PC Setting dialogue (see section **5.1 Configuring the PC data** for details).

Please see operation manual for details of operation.

6.2.6 Sliding Temperature

Serves to configure the function that change the Cooling Set Temperature of a group of indoor units according to the outdoor temperature as shown on the figure below.

Note In order to be available, this function must be activated in the PC Setting dialogue (see section **5.1 Configuring the PC data** for details).

Note This function requires a separate sensor for the outdoor temperature.

Please see operation manual for details of operation.

6.2.7 Min / Max Temperature

Serves to configure the function that starts automatically (and individually) the indoor units in heating mode (when the temperature is too low) or in cooling mode (when the temperature is too high) as shown on the figure below.

Note In order to be available, this function must be activated in the PC Setting dialogue (see section **5.1 Configuring the PC data** for details).

Please see operation manual for details of operation.

6.2.8 Energy saving functions

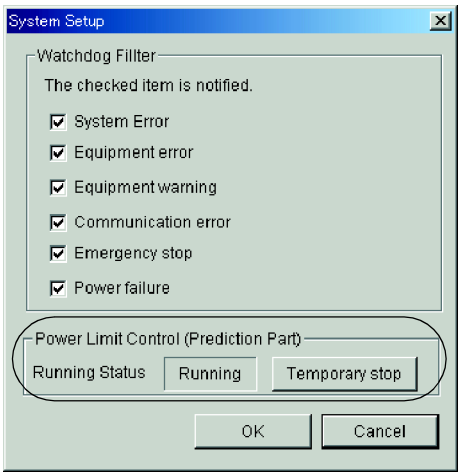
These functions change operation conditions of indoor and outdoor units in order to lower the power consumption.

Note In order to be available, these functions must be activated in the PC Setting dialogue (see section **5.1 Configuring the PC data** for details).

6.2.8.1 Power Limit Control

This optimizes power consumption based on a target power by changing settings of indoor units (set temperature and Start/Stop).

The function can be temporarily deactivated from the System Setup menu as shown below (accessible only from the mouse right button click when logged in as **Service** as explained in **6.1 Login in intelligent Manager**).



Please see operation manual for details of operation.

6.2.8.2 Eco Mode

This switches indoor units Off and On intermittently, and modifies the capacity of outdoor units.

Please see operation manual for details of operation.

6.3 Configuring the Users

The users who operate the intelligent Manager system need to login and have customized profiles to access authorized actions. This procedure creates of these users and profiles.

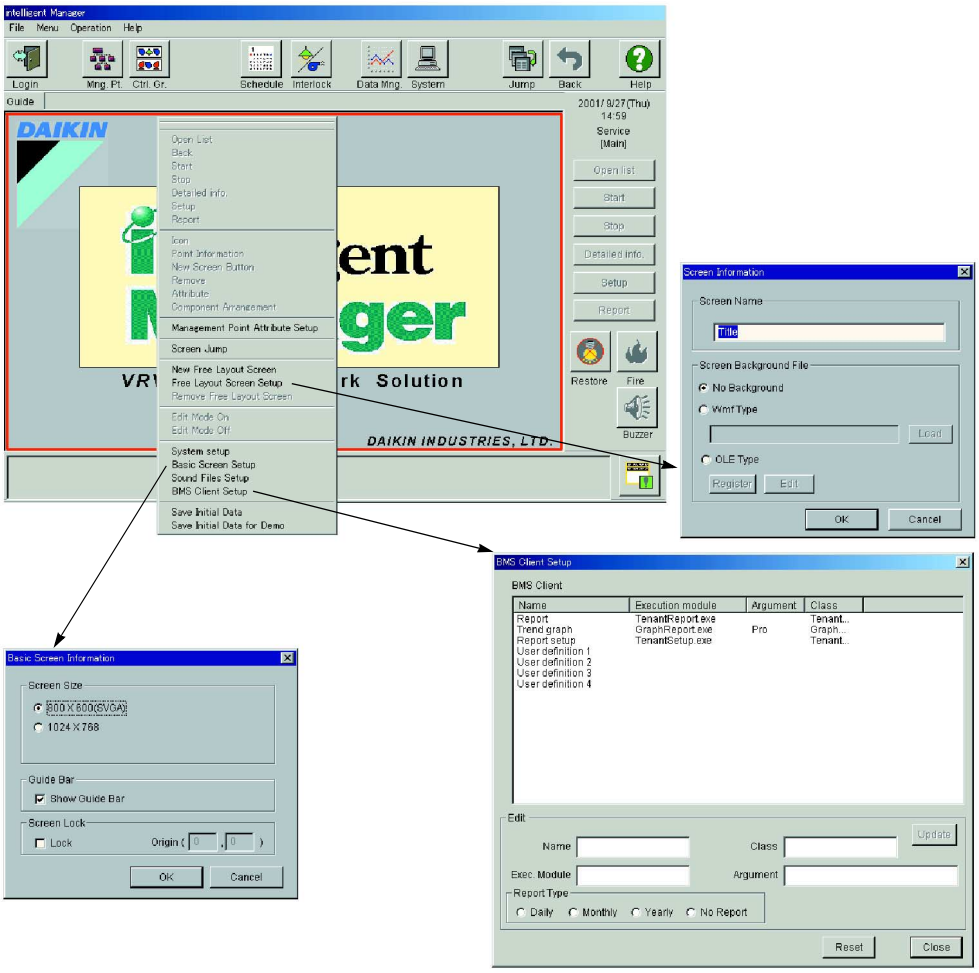
Note Administrators only can perform this procedure. An administrator is an operator whose profile includes authorization to Regist Users.

Please see operation manual for details of operation.

6.4 Customizing the Graphic User Interface

This part of the configuration process performs setting for customizable buttons and screens.

First login in intelligent Manager with the special privilege of the user "**Service**" (refer to the section **Login in intelligent Manager** of this document for procedure), then Right-click in the title screen; the popup menu appears.

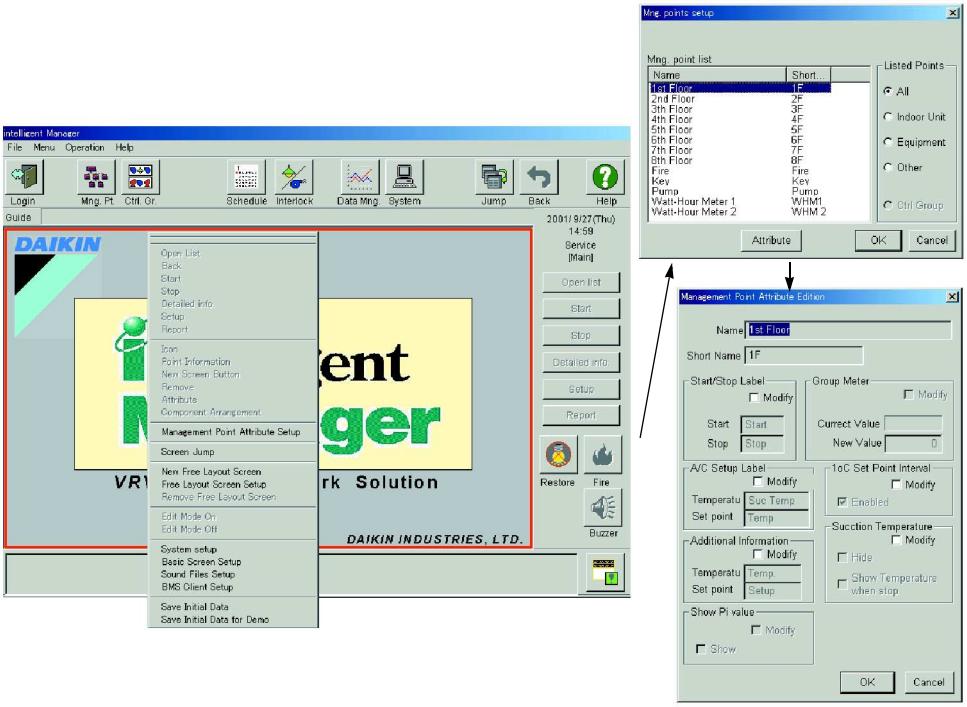


Important Some of the configuration parameters are saved in the **ini** file. Please refer to the section **7.1 Saving** below to save this file after customization has been performed.

6.4.1 Customizing Management Points Interface

When login in service mode (see procedure above), it is possible to customize the labels of action buttons of each management point individually.

- Right-click in the title screen; the popup menu displays,
- Select the **Management Point Attribute Setup**; the configuration dialogue is displayed,
- Select a Management Point in the list and click the **Attributes** button: the **Attributes Setup** dialogue displays,
- Select the Check boxes and edit the labels and options,
- Click the **ok** button.

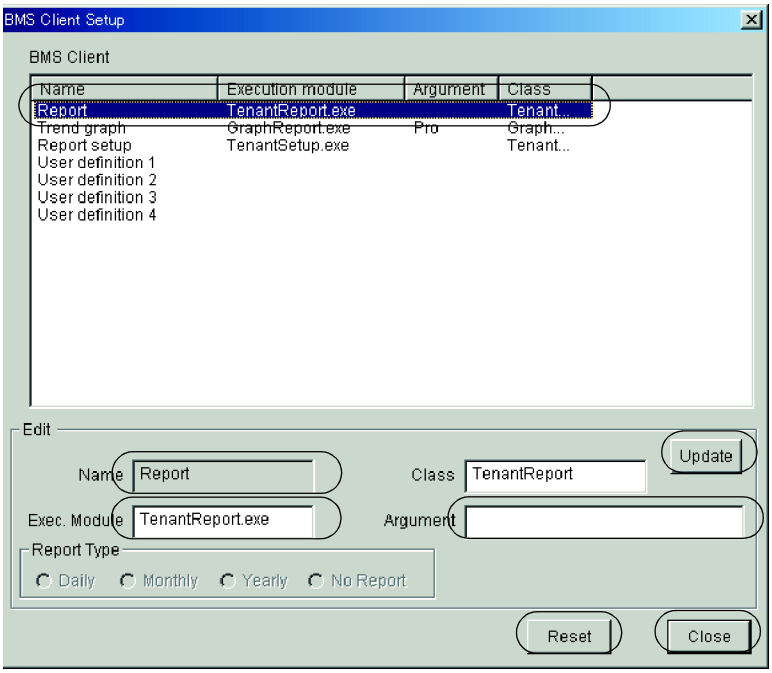


6.4.2 BMS Client Setup

This function enables selecting which application will be launched to be used as a Building Management application.

To modify BMS Client Setup:

- Login in intelligent Manager as **Service** (System Engineer),
- In the working area right click the mouse button to display the system engineer pop-up menu,
- Select the **BMS Client Setup** entry,



Note On delivery, intelligent Manager is provided with the **TenantSetup.exe** and **TenantReport.exe** modules. They provide functions to associate management points of intelligent Manager with arbitrary created tenants, as well as retrieving the operational data of the management points of a configured tenant.
Moreover, the **GraphReport.exe** module provides graphical perusing of the operational data of management points (Analogue values, Operation times, etc)

Please refer to the Operation Manual for details.

Important The modules **TenantSetup.exe**, **TenantReport.exe** and **GraphReport.exe** require specific Microsoft module (**.ocx** files). Please refer the **Appendix A** for detailed installation procedure.

6.4.3 Setting up the Jump buttons and Automatic circulation sequence

These procedures set the screens accessible by direct jump or automatically displayed by the Automatic circulation sequence.

For this operation, refer to the User Manual.

6.4.4 Setting the basic screen properties

This procedure set the properties of the main window of intelligent Manager.

- Select the entry **Setup Title Screen**; the **Basic Screen Information** dialogue box appears,
- Select the window size option (refer to the PC screen resolution for pixel information),
- to display the guide messages constantly during operation, check the **Show Guide Bar** box,
- to fix the position of the window on the screen, check the **Lock Window** box and enter the position of its **Origin** in pixels (from the top left corner of the screen).

6.4.5 Associating a background picture

This procedure sets the picture that remains associated with the title screen of intelligent Manager .

- (1) Select the entry **Setup Title Screen**; the **Screen Information** dialogue box appears,
- (2) Enter the **Title** of the screen that will display in the Screen Jump list (see below),
- (3) Select the **Screen Background File** option:
- (3.1) No Background: the title screen is empty (however, on delivery, a default screen is displayed),
- (3.2) WMF file:
- (3.2.1) Click the **Load** button to select a file (Windows Metafile) to be displayed as title screen; the Windows **File Open** dialogue box appears,
- (3.2.2) Browse and select a file, then click the **OK** button; the Windows **File Open** dialogue box closes and the confirmation dialogue box appears,
- (3.2.3) Click the **OK** button to confirm; the confirmation dialogue box closes,
- (3.3) OLE:
- (3.3.1) Click the **Register** button; the confirmation dialogue box appears,
- (3.3.2) Click the **OK** button to confirm; the confirmation dialogue box closes and the **OLE Object Registration** dialogue box appears,

- (3.3.3) Click the **OK** button to confirm; the confirmation dialogue box closes,
- (3.3.4) Select the object registration Option **From File** (the option **New Object** is not recommended), then click the **Browse** button; the Windows **Refer** dialogue box appears,
- (3.3.5) Browse and select a file, then click the **OK** button; the Windows File Open dialogue box closes,
- (3.3.6) Click the **OK** button; the **OLE Object Registration** dialogue box closes,
- (4) click the **Close** button; the **Screen Information** dialogue box closes.
- The new title screen is now displayed.

Important Select an appropriate OLE object file.

6.5 Configuring the Visual Navigation

6.5.1 Fundamentals

This section describes the procedure to configure the function that Visual Navigation function.

This procedure is reserved for the SE (System Engineer logged in **Service Mode**) and is not intended for end users.

Note In order to be available, this function must be activated in the PC Setting dialogue (see section **5.1 Configuring the PC data** for details).

Important Some of the configuration parameters are saved in the **ini** file. Please refer to the section **7.1 Saving** below to save this file after customization has been performed.

Caution Always keep the size of the **ini** file below **2 Mb**. Otherwise intelligent Manager operation could be affected.

6.5.1.1 Background screen file

- Becomes the background of the Visual Navigation.
- Format is WMF (Windows Meta File).
- A general purpose software such as Visio is required for creation of the drawings.
- The background size is a rectangle with a ration 1 X 1.5 horizontal.
- The Visual Navigation screen components consist of icons, buttons and auxiliary information arranged on this background.

6.5.1.2 Icons

- Icons display the status of management points and control groups.
- Automatic arrangement of icons is carried out in cells (please refer to PC instructions about icon display status).
- The icon assigned to a management point can be selected arbitrarily.

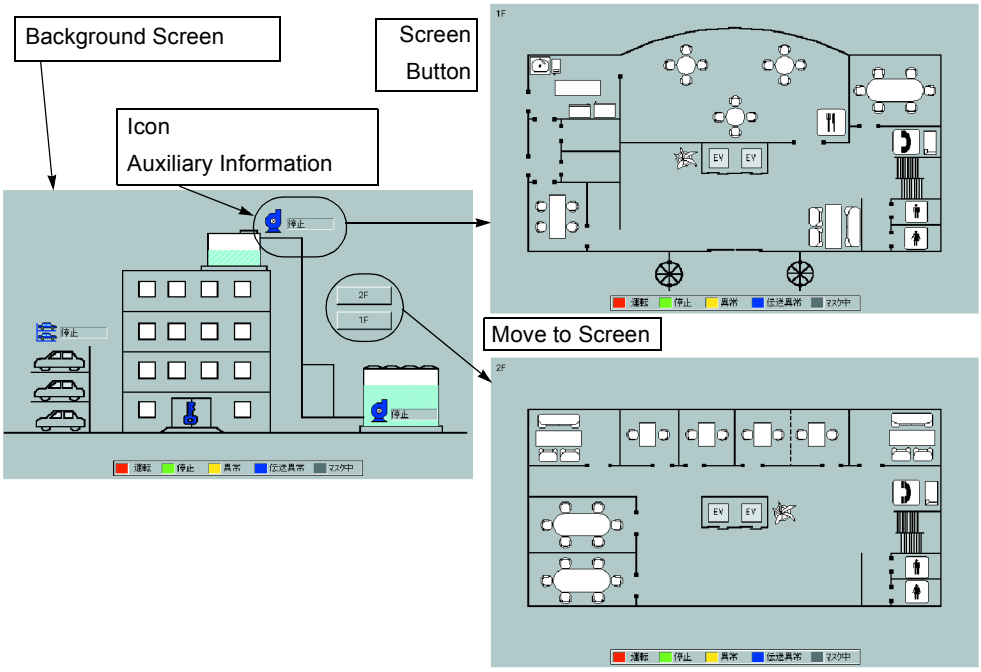
6.5.1.3 Auxiliary information

- Display supplementary information about management points.
- The information displayed can be different depending on the type of management point.
- The information displayed is automatically refreshed when the value changes, such as current pulse count of Pi, etc.

6.5.1.4 Screen buttons

- When there are more than one screen layers, the buttons ensure relation between these layers (navigation).
- When clicking a button, the screen assigned to this button is displayed.
- It is assumed that each screen displays one floor of the building. However, the actual structure is left to the appreciation according to the needs of the users.

Note using an icon other than the default one for cells can lead to confusion. Therefore please use default icons whenever possible.



6.5.2 Operation

First ensure that the Visual Navigation options are enabled in the VRVSetup tool as shown bellow.

Login in Service mode (refer to Engineering manual for SE Login procedure).

Modify the attributes of the default Visual Navigation screen, then create new screens accessible from this one (see operation details below).

To access the layout setting dialogues, click the mouse right button and select the function from the pull-down menu.

If the function is not available, then the entry is grayed out.

Visual Navigation Screen only:

- (2.1.) Create new icon,
- (2.2.) Create new auxiliary Information,
- (2.3.) Create new button,
- (2.4.) Delete (for the 3 above mentioned components)
- (2.5.) Modify parameters (idem),
- (2.6.) Adjust Arrangement (idem).

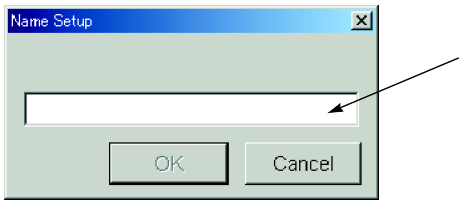
- (1.1.) Create new screen,
- (1.2.) Modify parameters (name background picture) of a screen (Visual Navigation screen and Title Screen only),
- (1.3.) Delete a Visual Navigation screen.

- (3.) Edit Mode ON/OFF (Visual Navigation Screen).

6.5.2.1 *Creating a Visual Navigation screen*

Select the entry (1.1.) in the pull-down menu, and enter the name of the screen.

Screen Name Setup Dialogue



6.5.2.2 *Modifying the attributes of a Visual Navigation screen*

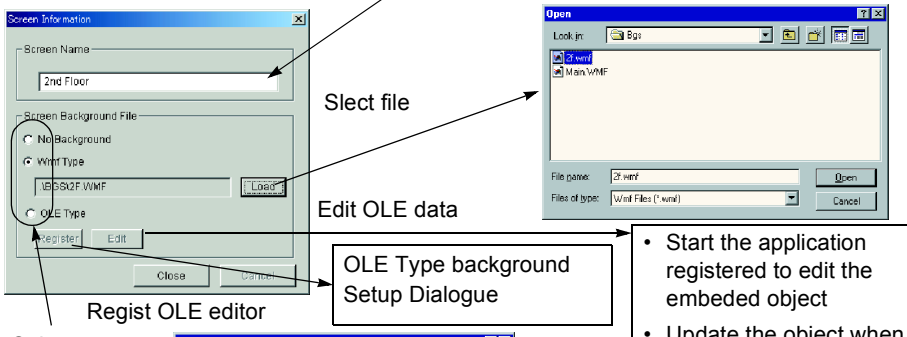
Select the entry (1.2.) in the pull-down menu and select a screen.

Please refer to section **6.4.5 Associating a background picture** for operation details.

Screen Information Dialogue

Screen Name

WMF type background Selection



Slect file

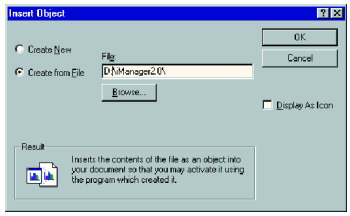
Edit OLE data

OLE Type background Setup Dialogue

- Start the application registered to edit the embeded object
- Update the object when exiting the application
- The OLE object is stored in the VRV.ini file (WMF files are stored in the BGS subfolder).

Regist OLE editor

Select Background Type



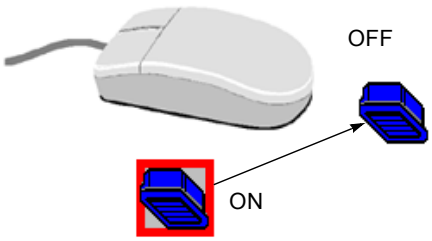
6.5.2.3 Modifying the contents of a Visual Navigation screen

6.5.2.3.1 Moving components in a screen:

Select the component (one of the 3 types explained above), right-click mouse and select the **Edit Mode** Entry (3.).

Edit Mode is:

- On: component can be moved (then, is not enabled),
- Off: component is enabled (cannot be moved).



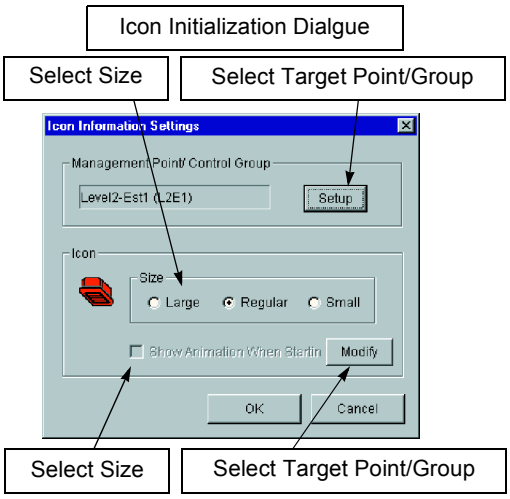
Then move the component with the mouse or with the arrow buttons (Shift key will mouse by 10 pixels).

Note Attributes of a selected item are set in the component setup dialogue. Therefore, copy of parts is easy.

6.5.2.3.2 Creating a new icon

- Select the management point or control group designated by the icon.
- Select a size between 3 options: Small / Regular / Large.
- Select the icon (arbitrary symbol is allowed).

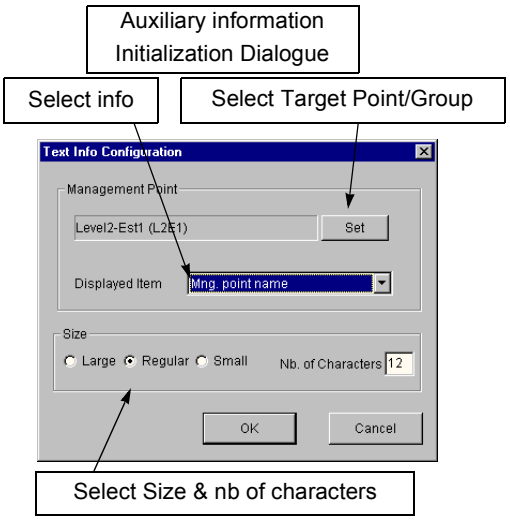
Selection of an animated icon is possible, but only in a Visual Navigation screen



6.5.2.3.3 Creating a new Auxiliary information

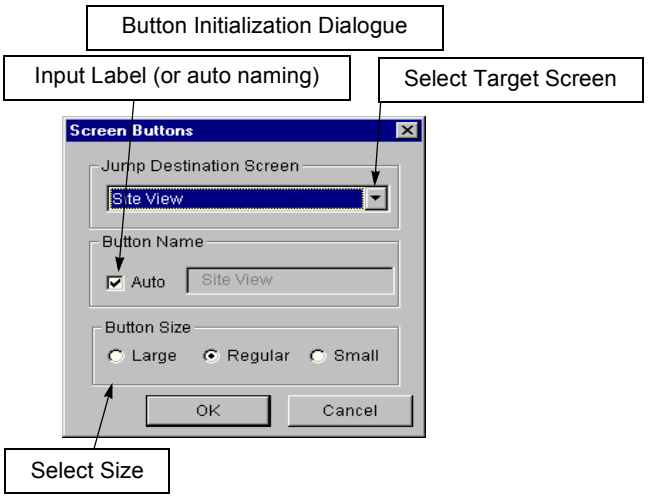
- Select the management point or control group designated by the info.
- Select which attribute of the selected point/group (the available list depends on the type of the point/group).

Select the number of characters and their size between 3 options: Small / Regular / Large.



6.5.2.3.4 Creating a screen button

- Select the Jump screen designated by the button,
- Input the label of the button (arbitrary input allowed), or select the option that displays automatically the Jump screen name.
- Select a size between 3 options: Small / Regular / Large.



6.5.2.3.5 Deleting a component

Select a component (icon, auxiliary information or button) and click the Delete entry in the pull down menu.

Perform cautiously, as Undo action is not available.

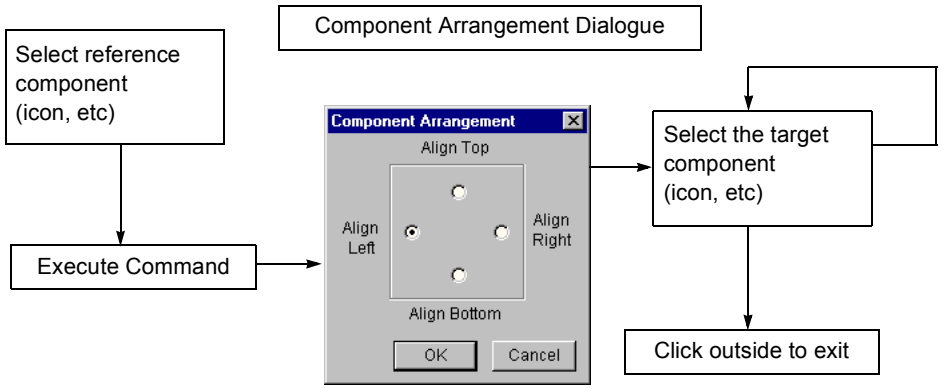
6.5.2.3.6 Modifying a component

Select a component (icon, auxiliary information or button) and click the Modify entry in the pull down menu.

The same dialogue as creation is used. However, the designated point/group (for icons and auxiliary information) or screen (for button) cannot be changed.

6.5.2.3.7 Adjusting components arrangement

- Select a reference component (icon, etc), then select the alignment option and the components to be arranged.



6.6 Saving the Configuration

After the configuration is completed, save it for backup and possible reuse:

- Right-click in the title screen; the popup menu displays,
- Select the **Save Initial Data**; the configuration is saved in the **VRV.ini** file,

and/or

- Select the **Save Initial Data For Demo**; the configuration is saved in the **Demo.ini** file,

6.7 Checking the Configuration

This procedure checks that all the management points and control programs defined in the configuration operate correctly.

Caution Before performing any action on any equipment, secure authorization from the person in charge.

Important Two people are necessary for this procedure:

- the PC operator, implicitly referenced below: performs the operation on the intelligent Manager interface,
- equipment inspector, referenced below as the **E-I**: he will check on the site if the operation performed on the intelligent Manager interface has actually been reflected in the targeted equipment.

They need a way to communicate (telephone, etc.).

Note If trouble occurs during initialization, refer to the Appendix D Trouble Shooting intelligent Manager initialization.

Login in intelligent Manager under system engineer user.

For each operation to be checked:

- Perform the operation, then notify E-I,
- Wait for report from the E-I,
- Fill in the checkup form.

6.7.1 Checking the management points

This procedure checks each management point. The actual checking criteria depending on the type of the points is explained below.

(1) Click the **Management Groups** menu button,

(2) For each management group:

- Click the **icon** of the management group; the border color becomes purple,
- Click the **Open List** button of the action menu,
- For each management point of this Management group:
  - Perform the checkup of this point type as explained below,
  - Perform recursively the checkup of the sub groups of this management group from step (2).

Important For this procedure, all management points should be first stopped: their icon color is green. If their color is gray, yellow or blue, then please refer to the Appendix D Trouble Shooting intelligent Manager initialization.

6.7.1.1 Checking an Indoor Unit point

- Click the **icon** of the indoor unit: the border color turns purple,
- Click the **Start** button of the action menu, then check that the color turns **red** after a few seconds,
- Wait for confirmation from the E-I that the indoor-unit has started,
- Click the **Stop** button of the action menu, then check that the color turns **green** after a few seconds,
- Wait for confirmation from the E-I that the indoor-unit has stopped.

Note Depending on the requirements of the project, other actions and parameters can be checked: setpoint, operation mode, etc.

6.7.1.2 Checking a Digital Input point

- E-I turns On equipment connected to the digital input point (or else performs similar operation),
- Check that the color turns **red** after a few seconds, then notify E-I,
- E-I turns Off equipment connected to the digital input point (or else performs similar operation),
- Check that the color turns **green** after a few seconds.

6.7.1.3 Checking a Digital Output point

- Click the **icon** of the digital output point: the border color turns purple,
- Click the **Start** button of the action menu, then check that the color turns **red** after a few seconds,
- Wait for confirmation from the E-I that the digital output point has started,
- Click the **Stop** button of the action menu, then check that the color turns **green** after a few seconds,
- Wait for confirmation from the E-I that the digital output point has stopped.

6.7.1.4 Checking a Pulse Input point

- E-I reads out the current value of the pulse input point,
- Check that the value displayed on the screen is the same, then notify E-I.

Note Depending on the requirements of the project, other parameters can be checked: Current Value, Multiplier, Unit Abbreviation and Rate, Backup Interval, and Signal period.

6.7.2 Checking the Control Groups

This procedure checks each control group.

Important This procedure can be performed only when the checking of all management points of the groups has been successfully performed.

Important For this procedure, all management points should be first stopped: their icon color is green. If their color is gray, yellow or blue, then please refer to the Appendix D Trouble Shooting intelligent Manager initialization.

(1) Click the **Control Groups** menu button,

(2) For each control group:

- Click the **icon** of the control group; the border color turns purple,
- Click the **Collective Start** button of the action menu, then check that the color turns red after a few seconds (depending on the number of points in this group, the delay may be longer),
- Click the **Open List** button of the action menu; the management points screen of the control group appears,
- For each management point of this control group:
- Check that the color of the icon is **red**,
- Wait for confirmation from the E-I that the point checkup is performed on his side,
- Click the **Back** menu button; the groups screen displays,
- Click the **Collective Stop** button of the action menu, then check that the color turns **green** after a few seconds (depending on the number of points in this group, the interval may be longer),
- Click the **Open List** button of the action menu; the management points screen of the control group displays,
- For each management point of this control group:
  - Check that the color of the icon is **green**,
- Wait for confirmation from the E-I that the point checkup is performed on his side,
- Click the **Back** menu button; the groups screen displays.

Note As well as the color of the icon, supplementary checkup of the points of this group can be performed depending on the criteria explained above in **Checking the Management Points**.

6.7.3 Checking the Scheduling programs

This procedure checks each scheduling program.

Important The schedule execution is a calendar-based program. Therefore, checkup of actual operation cannot be performed. Instead, the schedule programs parameters are checked.

- Click the **Scheduling** menu button; the Scheduling Setup screen appears,
- Perform as in Configuring a Scheduling Program / Modifying a Scheduling Program,

- In the **Edit** frame, click the **Execute Schedule** button: the **Action Schedule** dialogue box of the coming week appears,
- For each day of the week:
  - Click the **button of the day**, then click the **Update** button; the **Action Setup** dialogue box appears,
  - Check that the management points and control groups, as well as their associated actions, are correct and modify them if necessary,
  - Click the **Ok** button; the **Action Setup** dialogue box closes,
  - Click the **Ok** button: the **Action Schedule** dialogue box of the coming week closes.

6.7.4 Checking the Interlocking programs

This procedure checks each interlocking program.

Important This procedure can be performed only when the checking of all management points and control groups of the interlocking programs has been successfully performed. Therefore, double-check of the state of equipment by the E-I is no longer required.

- Login in intelligent Manager under system engineer user,
- For each interlocking program, perform check for condition 1, and then condition 2 as follows:
  - Check in the **Control Group** screens that:
    - the input management points and control groups of the program do not fulfil the condition,
    - the output management points and control groups of the program are not in the output state,
  - Change the state of the input management points and control groups of the program to fulfil the condition (this change can be performed either by operating intelligent Manager, or by having the E-I operate the relevant equipment),
  - Check in the **Control Group** screens that:
    - the input management points and control groups of the program fulfil the condition,
    - the output management points and control groups of the program are in the output state.

6.7.5 Checking the Emergency Stop programs

This procedure checks each emergency stop program.

The basic emergency input signals are the **fire alarm** and the **power failure**: see explanation of specific checking procedures for these programs below.

Important This procedure can be performed only when the checking of all management points and control groups of the emergency stop programs has been successfully performed. Therefore, double-check of the state of equipment by the E-I is no longer required.

---

(1) Login in intelligent Manager under system engineer user,

(2) For each emergency stop program, perform checkup as follows:

- (2.1) Check in the **Control Group** screens that:
  - All the input management points of the program are stopped,
  - the output management points and control groups of the program are not in the output condition (in the example: unlisted points should be in started state),
- (2.2) For each of the input management points of the program:
  - (2.2.1) Switch it ON (see operation explanation below),

- (2.2.2) Check that the program performs correctly: the output management points and control groups of the program are in the output condition (in the example: unlisted points are stopped),
- (2.2.3) Switch it OFF (see operation explanation below),
- (2.2.4) in the **Control Group** screens, for each management point and control group of the program :
  - check that they are in the output condition (in the example: unlisted are stopped),

or

  - Check that they resumed according to the option selected in the **Resume Mode** of the tabulation **Other** in its **Attributes** dialogue window (currently only for management points of type **Indoor Unit** and **General Purpose Digital Input/Output**).

6.7.5.1 Checking the Power Failure/Restore procedure

This procedure performs checkup for alarm of both power failure and restore.

To check the power failure procedure:

- Unplug UPS power supply,
- Check that the monitoring PC buzzer sounds (if applicable),
- Check that a **Power Failure Alarm** displays in the intelligent Manager **History** screen of the monitoring PC,
- After a few minutes (usually about 10 minutes), check that Windows NT on the monitoring PC shuts down and that the **Restart** button is displayed on the screen,
- After another few minutes, check that the UPS turns OFF and that the iPU stops.

To check the power restore procedure:

- Plug back the UPS power supply,
- Check that the UPS, the iPU, and the monitoring PC turn ON,
- Check that the monitoring PC automatically logs in and that the intelligent Manager software restarts,
- Check that a **Power Restore Alarm** is displayed in the intelligent Manager **History** screen of the monitoring PC,
- Check on the management points that power restore procedure performs as explained above in (2.2.4).

6.7.5.2 Checking the Fire Breakout/Clearance Alarm procedure

This procedure performs checkup for alarm of both fire breakout and clearance.

To check the fire breakout procedure:

- Switch the fire alarm signal ON: the switch must be operated manually (in order to double-check the wiring),
- Check that the monitoring PC buzzer sounds,
- Check that a **Fire Breakout Alarm** displays in the intelligent Manager **History** screen of the monitoring PC,
- Check that equipment stop as explained in (2.2.2).

To check the fire clearance procedure:

- Switch the fire alarm signal OFF,
- Check that a **Fire Clearance Alarm** displays in the intelligent Manager **History** screen of the monitoring PC,
- Check on the management points that fire clearance procedure performs as explained above in (2.2.4).

7. Saving and Loading a Configuration

Caution This operation will overwrite the currently loaded configuration.
DO NOT LOAD A CONFIGURATION WITHOUT SAVING THE CURRENT CONFIGURATION BEFOREHAND!!!

7.1 Saving

7.1.1 Saving Initial Data

After the configuration is completed, save it for backup and possible reuse:

- When logged in intelligent Manager in **Service Mode**, right-click in the working area, the popup menu displays,
- Select the **Save Initial Data**; the configuration is saved in the VRV.ini file.

7.1.2 Saving Initial Data for Demo

After the configuration is completed, you can as well save it for demonstration purpose

- When logged in intelligent Manager as system engineer, right-click in the working area, the popup menu displays,
- Select the **Save Initial Data for Demo**; the configuration is saved in the demo.ini file.

7.2 Loading

Perform as explained **Configuring the intelligent Manager System: Step 1**.

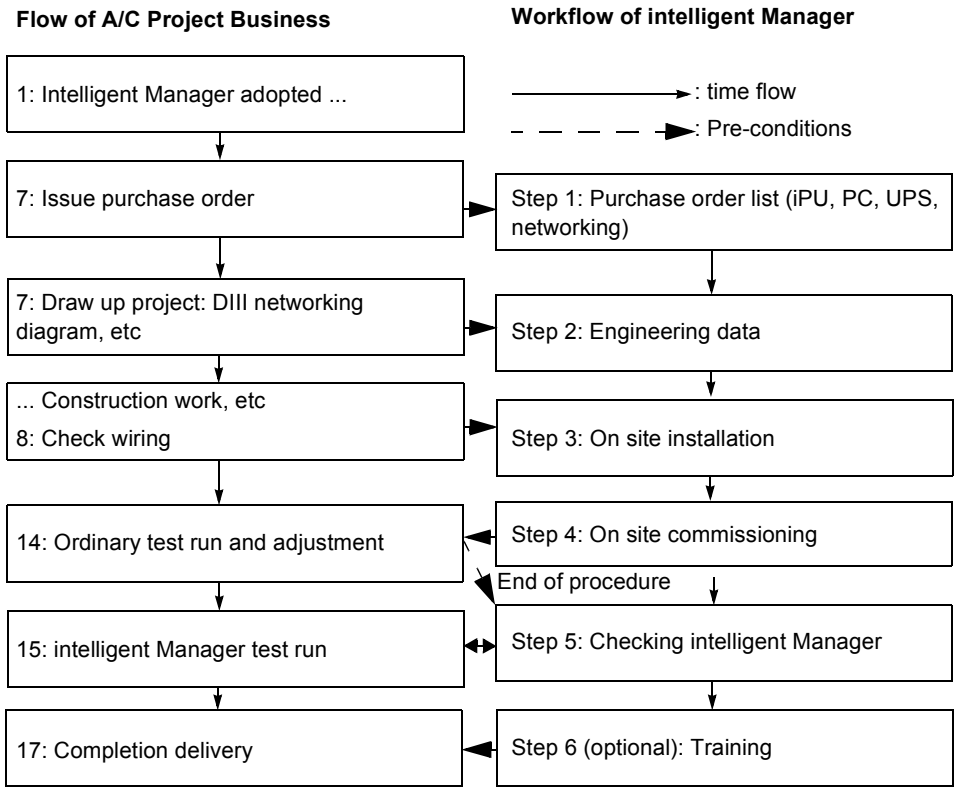
8. Workflow Overview

8.1 Introduction

This manual explains the workflow for a project using intelligent Manager on a site.

The aim is to give a global vision of the successive steps starting with the purchase decision and finishing with the actual operation of the intelligent Manager system.

Description of the necessary information are briefly enumerated. As well, templates of checklists are provided.



The detailed procedure for some steps has been described in specific documentation of intelligent Manager, in which case they will not be fully covered in the present document. Please refer to the indicated manuals for details whenever required.

8.2 Main Procedure Steps

8.2.1 Step 1: Purchase order list

Preparation of the list of equipment to be purchased for intelligent Manager system.

8.2.1.1 Pre-conditions:

- **Order-Received Project Control Sheet:** Number of indoor/outdoor units (for number of iPUs, capacity of UPS and wiring equipment)

8.2.1.2 Procedure and Result

Purchase Order checklist (see template in Appendix 3.1): description of the requested equipment.

- iPUs configuration:

  - Nb of iPUs
  - Wiring:
    - Power cable,
    - Ethernet networking cable,
- Power backup environment:
  - UPS,
  - Wiring,
  - Control software
- Personal Computer environment:
  - Ethernet networking (Hub, cables),
  - PC specifications,
  - OS: MS Win NT 4.0 Sp4 (or later) or Win 2000 (Sp1 or later recommended),
  - Intelligent Manager software.

8.2.2 Step 2: Engineering data

Preparation of the data files that will be used during intelligent Manager installation and configuration.

This step is performed under the responsibility of DIL. Please refer to the intelligent Manager Engineering Manual for details.

8.2.2.1 Pre-conditions

See templates of checklist in section **8.3 Templates**.

- **List of connected machines,**

or/and

- **Address Table,**
- **Power Proportional Distribution Groups**: for Power Proportional Distribution option only.

8.2.2.2 Procedure and Result

Proceed as explained in the Engineering Manual of intelligent Manager. The items marked (*) are created tentatively and can be modified on request of the customer during the "Step 4: On site configuration". However, in order to save time and prevent mistakes, it is recommended to have them completed as much as possible during the present step.

- Intelligent Manager Configuration Data Sheets:
  - Management points,
  - Management groups (*),
  - Control groups (*),
  - Scheduling programs (*),
  - Interlocking programs (*),
  - Emergency Stop programs (*),
  - User environment (login, access limitations, etc) (*),
  - Power Proportional Distribution configuration,

8.2.3 Step 3: On site installation

8.2.3.1 Pre-conditions

- **Purchase order checklist** (see template in **8.3 Templates**): Equipment ordered in Step 1:

8.2.3.2 Procedure and Result

- Wiring:
  - the UPS,
  - the PC,
  - the iPUs,
  - the Ethernet network.

Proceed as explained in the Engineering Manual of intelligent Manager.

- Installing and configuring the PC environment:
  - the PC OS,
  - the UPS control software,
  - the intelligent Manager Software.
  - installing the iPUs OS,

Proceed as explained in the Engineering Manual of intelligent Manager.

8.2.4 Step 4: On site configuration

8.2.4.1 Pre-conditions

- Data files issued from Step 2: Engineering Data

8.2.4.2 Procedure and Result

- Loading the configuration

Proceed as explained in the Engineering Manual of intelligent Manager.

8.2.5 Step 5: Checking intelligent Manager

8.2.5.1 Pre-conditions

- Commissioned intelligent Manager system

8.2.5.2 Procedure and Result

- Testing the configuration:
  - Basic control and monitoring: Management points and control groups,
  - Automatic control programs: Scheduling, Interlocking, Emergency Stop,
  - Power failure control,
  - Power proportional distribution engineering,

Proceed as explained in the Engineering Manual of intelligent Manager.

8.2.6 Step 6: Training

8.2.6.1 Input

- intelligent Manager demonstration version with demonstration script,
- intelligent Manager Operation Manual.

8.2.6.2 Procedure and Result

- First perform the demonstration of intelligent Manager to make user familiar with intelligent Manager basic functions,
- Then perform similar operation using the site installation.

8.3 Templates

This section contains samples of the templates used in the steps of the intelligent Manager Workflow

8.3.1 Purchase order checklist

Check in the right hand side column when the requirements are fulfilled.

The PC in which the intelligent Manager is to be installed must fulfill the following requirements:

Required Features (recommendation)	
Voltage: as required on the field	
Monitor (At least 14")	
CD-ROM drive (Standard)	
Keyboard and mouse	
Sound device (if the buzzers are used)	
Processor: minimum 400 MHz Intel Pentium or later	
BIOS with auto-reboot capability	
Operating system: Microsoft Windows NT 4.0 (service pack 4 and above) including Microsoft Internet Explorer (4.0 service pack 2 and above), or Microsoft Windows 2000 (Service Pack 1 or later recommended)	
Minimum free space on the hard disk (for the program and the database files): 1 Gbyte is recommended	
RAM: at least 64 Mb (however 128 is recommended)	
Network connection: a 10Base-T connector and an Ethernet adapter	
Optional: Windows NT compatible LBP Printer (A4 size paper):	
Intelligent Manager software	

Note for the PC, we recommend reliable makers (such as IBM, COMPAQ or Dell)

The networking equipment must fulfil the following requirements:

Required Features (recommendation)	
Multi-port hub (4 or more ports, voltage as required on the field)	
10Base/T cables (category 5) for: - PC-hub, - Hub-iPU for each iPU	

Note we recommend reliable makers (3Com, etc)

The UPS must meet the following requirements

Required Features (recommendation)	
Capacity 200/250W/30 min + 50W for each additional iPU	
Voltage: as required on the field	
I/O connector (for connection with master iPU)	
Cables to connect the I/O connector to the master iPU: - Di: Power failure signal from UPS - Do: UPS shutdown signal from iPU	
Control software	

Note we recommend reliable maker (APC with PowerChute control software)

For each iPU

Required Features (recommendation)	
Power cable	
DIII networking cable	

Note Required Ethernet networking cables are listed in networking equipment.

The Watt Hour Meter (if Power Proportional Distribution optional function is used) must meet the following requirements

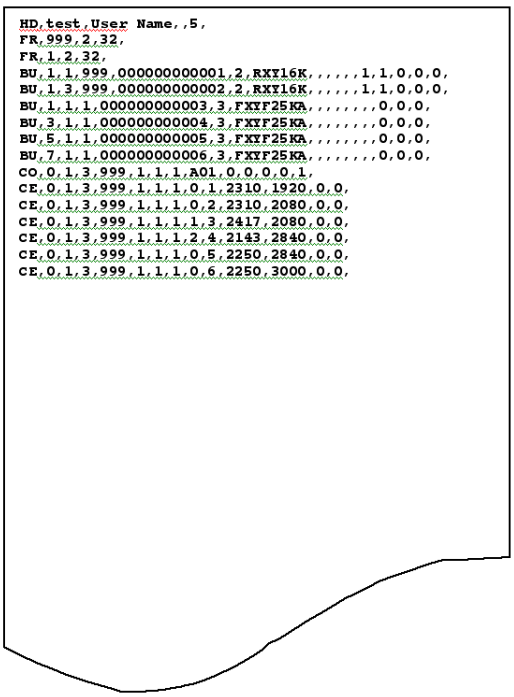
Required Features (recommendation)	
1 pulse / 1 kWh	
PWH-iPU connection cable	

Note one WHM is required for each power group (as explained in the Proportional Distribution Engineering Manual)

8.3.2 Engineering data

8.3.2.1 List of connected machines

The precise layout of this file has to be checked with the VRV Selection Program



```
HD,test,User Name,,5,
FR,999,2,32,
FR,1,2,32,
BU,1,1,999,000000000001,2,RXYI6K,,,,,1,1,0,0,0,
BU,1,3,999,000000000002,2,RXYI6K,,,,,1,1,0,0,0,
BU,1,1,1,000000000003,3,FXYF25KA,,,,,,,,0,0,0,
BU,3,1,1,000000000004,3,FXYF25KA,,,,,,,,0,0,0,
BU,5,1,1,000000000005,3,FXYF25KA,,,,,,,,0,0,0,
BU,7,1,1,000000000006,3,FXYF25KA,,,,,,,,0,0,0,
CO,0,1,3,999,1,1,1,A01,0,0,0,0,1,
CE,0,1,3,999,1,1,1,0,1,2310,1920,0,0,
CE,0,1,3,999,1,1,1,0,2,2310,2080,0,0,
CE,0,1,3,999,1,1,1,1,3,2417,2080,0,0,
CE,0,1,3,999,1,1,1,2,4,2143,2840,0,0,
CE,0,1,3,999,1,1,1,0,5,2250,2840,0,0,
CE,0,1,3,999,1,1,1,0,6,2250,3000,0,0,
```

8.3.2.2 Power Proportional Distribution Groups

Fill the data sheet for each power proportional distribution group.

Power Proportional Distribution Group	
Name	
Type	Standard / Ice Storage
Constant Power	Yes / No
Pi ports (*)	
Address	Name
Indoor Units (*)	
Address	Name

Notes
- Type: only "Standard" is supported yet,
- Constant Power: is proportional distribution carried out on outdoor unit power?
- The configuration of exclusion will be carried out in Step 4
- (*) insert lines if necessary

8.3.2.3 intelligent Manager Configuration Data Sheets

Fill the data sheets as shown bellow.

8.3.2.3.1 Management Points

Fill the data sheet in csv format as shown bellow. The order of the lines and fields in lines must be respected.

Internal Do(*)									
Name	Short name	Maker name	Equip. name	Equip. model	Installa-tion place	iPU No: 1..4	Port type (2)	Port No	Address
							2		
							2		
Internal Di(*)									
Name	Short name	Maker name	Equip. name	Equip. model	Installa-tion place	iPU No: 1..4	Port type (1)	Port No	Address
Power Failure	Power Failure					1	1		
							1		
							1		
Internal Pi(*)									
Name	Short name	Maker name	Equip. name	Equip. model	Installa-tion place	iPU No: 1..4	Port type (1)	Port No	Address
							1		
							1		
							1		
							1		

							1		
							1		
Internal Pi(*)									
Name	Short name	Maker name	Equip. name	Equip. model	Installa-tion place	iPU No	Port type (4)	Port No	Address
							4		
							4		
							4		
							4		
							4		
							4		
							4		
							4		
							4		
							4		

Notes

- Name: must be unique amongst all points,
- Short Name: can be dupplicated (however not recommended),
- Maker Name, Equipment Name: free,
- Equipment Model: serial No can be used instead,
- Installation Place: free,
- iPU: 1..4.
- Port Type: 1=DiPi/2=Do/3=AiAo/4=D3/5=Lighting equipment/6=Outdoor unit/0=Other,
- Port No: 1..4,
- Address: 0..63.
- (*) insert lines if necessary

8.3.2.3.2 Management Groups

Fill a data sheet for each group as shown bellow

Management Group	
Name	
Child of Group	
Cell size	Large / Regular / Small
Cell Arrangement	Automatic / . . . X . . .
Member Points (Name)(*)	

Notes
- the points must be listed in the same order as in the group
- (*) insert lines if necessary

8.3.2.3.3 Control Groups

Fill a data sheet for each group as shown bellow

Control Group	
Name	
Start Interval	0 /10 /20 /30 / custom (. . . sec)
Stop Interval	0 /10 /20 /30 / custom (. . . sec)
Cell size	Large / Regular / Small
Cell Arrangement	Automatic / . . . X . . .
Member Points (Name)(*)	

Notes
- the points must be listed in the same order as in the group
- (*) insert lines if necessary

8.3.2.3.4 Scheduling programs

As this programs can be easily modified by the customer, a complete description is not required. However, the template data sheet is provided as a reference.

Fill one data sheet for each program

Base Calender	
Name	
Calendar limits (YYYY/MM)	From . . . . / . . To . . . . / . .
Days Off (YYYY/MM/DD)	
Special Days (YYYY/MM/DD)	

Base Calender	
Name	
Calendar limits (YYYY/MM)	From . . . . / . . To . . . . / . .
Days Off (YYYY/MM/DD)	
Special Days (YYYY/MM/DD)	

Scheduling Program				
Name				
Yearly Calendar (description or name of base calendar)				
Calendar limits (YYYY/MM)	From . . . . / . . To . . . . / . .			
Days Off (YYYY/MM/DD)				
Special Days (YYYY/MM/DD)				
Weekly Events(*)				
Day	Target Name	Target Type	Action Time	Action Type

Notes

- Yearly Calendar limits: first and last month of schedule operation,
- Days Off & Special: list all dates (free explanation also possible; ex: every Sunday is Off, etc),
- Day: Sun / Mon / Tue / Wed / Thu / Fri / Sat / Off / Special,
- Target Type (because same name could stand for a Management Point or for a Control Group): **M**anagement Point / **C**ontrol Group,
- Action Time: format is HH/MM,
- Action Type: Start / Stop / RC Enable / RC Disable / Fan / Cool / Heat / Set Point (indicate temperature value: . . . °C),
- (*) insert lines if necessary.

8.3.2.3.5 Interlocking programs

As this programs can be easily modified by the customer, a complete description is not required. However, the template data sheet is provided as a reference.

Fill one data sheet for each program

Interlocking Program			
Name			
Input items(*)			
Input Name		Input Type	Detection Type
Output 1			
Detection Condition	None / All Turned On / At least one turned On / All Turned Off / At least one turned Off		
Start Interval	0 /10 /20 /30 / custom (. . . sec)		
Output 1 events(*)			
Output Name		Output Type	Action Type
Output 2			
Detection Condition	None / All Turned On / At least one turned On / All Turned Off / At least one turned Off		
Start Interval	0 /10 /20 /30 / custom (. . . sec)		

Output 2 events(*)		
Output Name	Output Type	Action Type

Notes

- Input Detection Type: **S**witch / **E**quipment Error,
- Input & Output Type (because same name could stand for a Management Point or for a Control Group): **M**anagement Point / **C**ontrol Group,
- Action Time: format is HH/MM,
- Action Type: Start / Stop / RC Enable / RC Disable / Fan / Cool / Heat / Set Point (indicate temperature value: . . . °C),
- Output detection condition: select one only
- Start Interval: select one only (indicate value in seconds if custom)
- (*) add/remove lines if necessary.

8.3.2.3.6 Emergency Stop programs

As these programs can be easily modified by the customer, a complete description is not required. However, the template data sheet is provided as a reference.

Fill one data sheet for each program

Emergency Stop Program		
Name		
Input items(*)		
Input Name	Input Type	Release Mode
Output		
Selected Output	Listed points / Unlisted Points	
Output events(*)		
Output Name	Output Type	

Notes

- Release Mode: **A**utomatic / **M**anual,
- Input & Output Type (because same name could stand for a Management Point or for a Control Group): **M**anagement Point / **C**ontrol Group,
- Selected output: select one only,
- (*) add/remove lines if necessary.

8.3.2.3.7 User environment

Fill one data sheet for each user

User environment	
Name	
Password	
Remarks	
Authority (select authorized items)	Start-Stop-Setup / Register Schedule / Register Interlocking / Register Emergency Stop / Operate History / Setup System / Setup Central Control / Register Users / Inspection Mode
Screen Access Restriction	All screens can be opened / Registered Screens Only
Screen Names(*)	

Notes

- Name: must be unique,
- Password: 6 characters minimum recommended,
- Remarks: free,
- Authority: select all authorized items,
- Screen access restriction: select one only,
- Screen names (only in the case of "Registered Screens Only" selected above): list all screen names,
- (*) insert lines if necessary.

8.3.2.3.8 Power Proportional Distribution exclusion

Fill the data sheet with the exclusion parameters.

Power Proportional Distribution Exclusion		
Non Exclusion days (YYYY/MM/DD)		
Weekly Exclusion		
Day	Exclusion type (if any)	Exclusion Interval
Sunday		
Monday		
Tuesday		
Wednesday		
Thursday		
Friday		
Saturday		

Notes

- NON Exclusion Days (exception dates from weekly exclusion pattern): list all dates when exclusion is not carried out (free explanation also possible; ex: first Sunday of each month, etc),
- Day: Sun / Mon / Tue / Wed / Thu / Fri / Sat / Off / Special,
- Exclusion Type: All Day / Inside Interval / Outside Interval,
- Exclusion Interval (in function of Exclusion type):
  - "All Day" (exclusion of complete day): interval not filled,
  - "Inside Interval" (exclusion only within bounds): exclusion from HH/MM to HH/MM,
  - "Outside Interval" (exclusion all day except within bounds): exclusion EXCEPT from HH/MM to HH/MM.

8.3.2.3.9 Automatic Changeover

Fill a data sheet for each group as shown below

Automatic Changeover	
Activation State	Enabled / Disabled
Password	
Temp. Shift (°C)	
Reference Method	Fixed / Running / Average
Member Points (Name)(*)	

Notes

- the points must be listed in the same order as in the group
- (*) insert lines if necessary

8.3.2.3.10 Sliding Temperature

Fill a data sheet for each group as shown below

Sliding Temperature	
Name	
Activation State	Enabled / Disabled
Reference Ai (name)	
Outdoor Temp. (Min / Max: °C)	
Indoor Temp. (Min / Max: °C)	
Member Points (Name)(*)	

Notes - (*) insert lines if necessary

8.3.2.3.11 Temperature Limits

Fill a data sheet for each group as shown below

Temperature Limits	
Name	
Activation State	Enabled / Disabled
Min Temp. (°C)	
Max Temp. (°C)	
Member Points (Name)(*)	

Notes - (*) insert lines if necessary

8.3.2.3.12 Eco Mode (Indoor Units Intermittent Operation Control)

Eco Mode (indoor units intermittent operation)	
Execution Conditions	
Calendar 1	
Activation State	Enabled / Disabled
Period	From . . . . / . .
Time Zone	From . . . . : . .
Calendar 2	
Activation State	Enabled / Disabled
Period	From . . . . / . .
Time Zone	From . . . . : . .
Control Setup	
Control Level (%)	10 / 20 / 30 / 40
Group A	
Activation State	Enabled / Disabled
Member Points (Name)(*)	
Group B	
Activation State	Enabled / Disabled
Member Points (Name)(*)	
Group C	
Activation State	Enabled / Disabled
Member Points (Name)(*)	

Notes - (*) insert lines if necessary

8.3.2.3.13 Eco Mode (Outdoor Units Capacity Control)

Eco Mode (outdour units Capacity)	
Execution Conditions	
Calendar 1	
Activation State	Enabled / Disabled
Period	From . . . . / . .
Time Zone	From . . . . : . .
Calendar 2	
Activation State	Enabled / Disabled
Period	From . . . . / . .
Time Zone	From . . . . : . .
Control Setup	
Group A	
Activation State	Enabled / Disabled
Member Points (Name)(*)	
Group B	
Activation State	Enabled / Disabled
Member Points (Name)(*)	
Group C	
Activation State	Enabled / Disabled
Member Points (Name)(*)	

Notes - (*) insert lines if necessary

8.3.2.3.14 Power Limit Control (Power Limit Setup)

Power Limit Setup	
Summer Period (MM//DD)	From . . . . / . . To . . . . / . .
Peak Time	
Summer (kW)	
Other season (kW)	
Time Zone (hh:mm)	From . . . . : . . To . . . . : . .
Night Time	

Summer (kW)	
Other season (kW)	
Time Zone (hh:mm)	From . . . . : . . To . . . . : . .
Sub Off Peak Time Time	
Summer (kW)	
Other season (kW)	
Time Zone (hh:mm)	From . . . . : . . To . . . . : . .
Off Peak Time	
Summer (kW)	
Other season (kW)	
Time Zone (hh:mm)	From . . . . : . . To . . . . : . .

8.3.2.3.15 Power Limit Control (Indoor Units Set temperature Control)

Power Limit Control (indoor units Set Temperature)	
Activation State	Enabled / Disabled

Fill a data sheet for each group (A to H) as shown bellow

Group Setup (indoor units Set Temperature)	
Rank	A / B / C / D/ E / F / G / H
Name	
Member Points (Name)(*)	

Notes - (*) insert lines if necessary

Appendix A: Installing the PC

Installing Microsoft Windows (NT 4.0 or 2000)

Perform installation of the OS as described in the Microsoft installation manual.

Important For Windows NT 4.0, if the installed version does not contain the service pack 5, then install it separately. As well, the Internet Explorer Service Pack 2 should be installed.

The OS options for optimum efficiency of the intelligent Manager are as follow:

- hard disk: use NTFS format and create partitions :
- C:\ (2047 Mb),
- D:\ (remaining disk space),
- OS administrator name and password: as it will be used for intelligent Manager,
- Screen properties: 800x600 pixels.

Installing Microsoft Additional Modules

Perform installation of the OS as described in the Microsoft installation manual.

when using the **Report** and Report **Setup** of PPD Data Management and **Graph** (Graphical Report) modules, the intelligent Manager must be running, as data is retrieved from the intelligent Manager-Database-Server. If the client doesn't connect to the database, then copy the files **ComDlg32.OCX**, **MsChrt20.OCX**, **MsComCtl.OCX** and **MsWinSck.OCX** from the intelligent Manager **\bin** folder to:

- the **C:\…\System32** folder for Windows NT 4.0 and Windows 2000,

- the **C:\…\System** folder for Windows 98

End of installation.

Important when starting the **Report**,Report **Setup** of PPD Data Management or **Graph** (Graphical Report) modules, if Windows displays an error message box "modules not found", perform as explain below:
- click the **Start** button (bottom left on the PC screen),

- selct the **Run** entry and type **regsvr32.exe *<filename.ocx>***

- repeat this with the name of each **ocx** module distributed with intelligent Manager

Appendix B:
Trouble shooting installation of the iPU Operating System

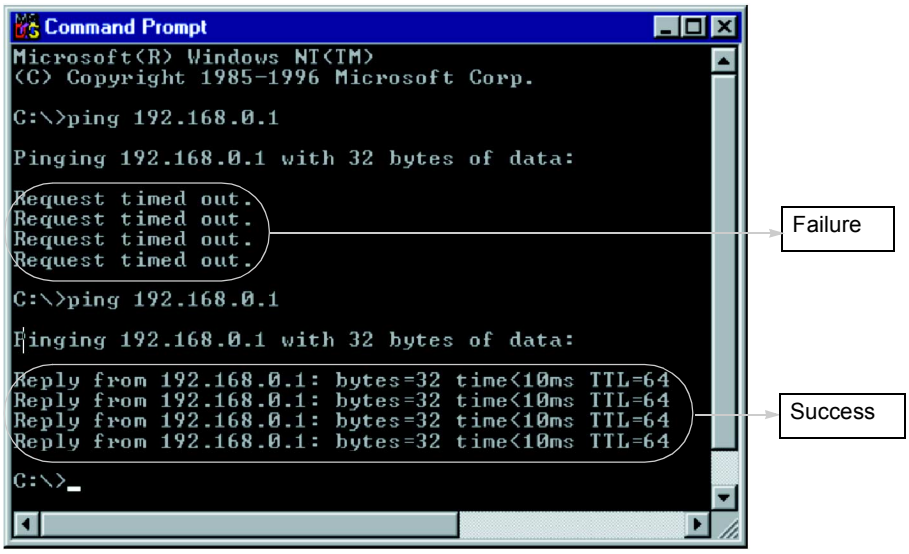
In case of problems of communication between the PC and the iPU, please check as explained below and reload the operating system file if necessary:

first using the **FTP connection**, and if this failed, then check using the Serial connection.

1. FTP Connection:

- step 1: Check the IP addresses of the PC and iPU,
- step 2: check the connection cables between the PC, Hub and iPU,
- step 3: check the communication between the PC and iPU:
- on the PC, open a **Command Prompt** window,
- Type **ping <IP address of iPU>** as shown in the figure below: if an error message displays (ex: "Request timed out"), check the network settings on the PC,
- Step 4: Check the **iPU settings** in the setup program **(VRVSetup.exe)**,10

Important It is necessary to save the initialization data and transfer them in the iPU before starting the intelligent Manager application.



If the ftp connection succed, then load the os file as explained in the installation section.

If it failed, then proceed to…

2. Serial Connection:

- step 1: check that the serial cable complies with the specifications below,
- step 2: check that the iPU power is ON, and that the jumpers JP5 & JP6 are connected,

Important Perform the check of sub iPUs first. Connect only one iPU to the hub at a time during OS installation.

Note A serial and ftp port communication tool is needed for this procedure. The standard accessories of Wintows NT **Hyperterminal** (for the serial communication) and **Telnet** (for the ftp communication) can be used. In this case, the **communication speed** should be set to *9600* bauds and the **Flow Control** option is *None*. As an alternative, the freeware **Teraterm** is an other possible tool for serial and ftp communication (but must be installed separately).

(1) Connect the installation PC to the iPU

- (1-A) Connect the iPU serial connector (D-sub 25 pins) to the installation PC (D-sub 9 pins) with a RS232C serial cable (cable specifications: D-sub 9 pins female, D-sub 25 pins male, crossed type).
- (1-B) Connect the monitoring PC and the iPU to the hub with Ethernet cables.

Important Do not use the Uplink connector of the hub (if there is no hub, use a crossed type Ethernet cable to connect the monitoring-installation PC to the iPU).

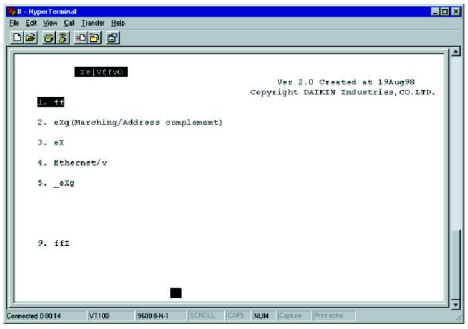
(2) Check that the iPU power is OFF, then put to connectors to close each of the jumpers JP5 and JP6. Please refer to iPU hardware document for jumpers location.

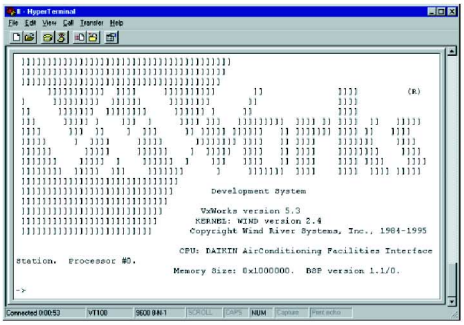
Note This will clear the flash memory of the iPU.

(3) Switch the iPU power ON and Start **Hyperterminal** on the installation PC to connect it to the iPU (select the **COM1** option).

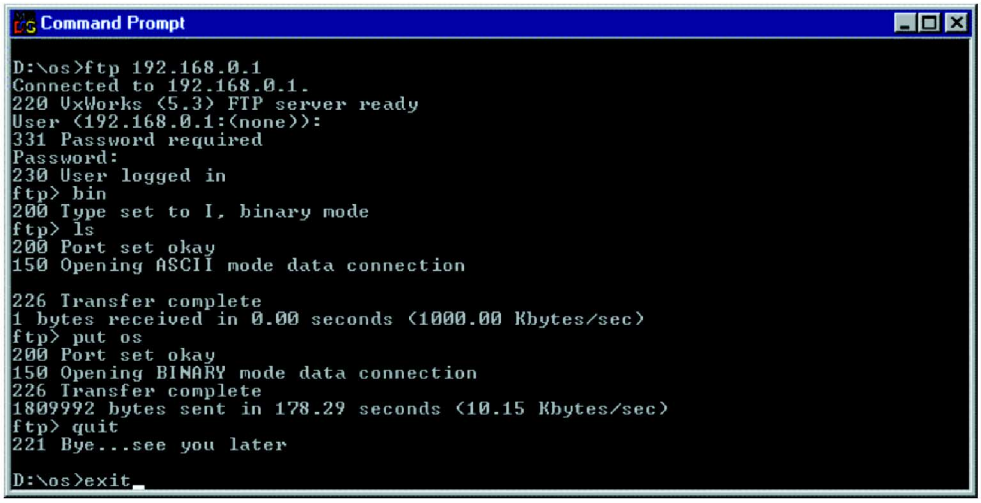
(4) Push the **<Enter>** key twice to display the self-test procedure of the iPU. Type **9** on the installation PC to stop it.

Note PC-iPU Connections from step (1) to step (4) are made by RS232.





(5) Click the PC **start** button, point to **Programs / Command Prompt**. Go to the location of the OS soft (on the source CD-ROM, or else a floppy disk or folder) on the installation PC and perform the following steps to send the OS to the iPU:



- (5-A) > ftp 192.168.0.1

Note 192.168.0.2…4 for sub iPUs

- (5-B) **ftp -> user name**:<Enter> (none)
- (5-C) **ftp -> password:**<Enter> (none)
- (5-D) **ftp -> bin**
- (5-E) **ftp -> put os**

. . .

When the transmission completion message

appears, terminate the ftp connection:

- (5-F) **ftp -> quit**

and close the window:

- (5-G) **> exit**

(6) Disconnect and Exit from the **Hyperterminal**, switch the iPU power OFF, then disconnect the jumpers JP5 and JP6, and then switch the iPU power back ON.

Caution After the os file transfer is completed, do NOT switch the iPU ON with the jumpers JP5 and JP6 connected as this would clear the flash memory (then, the ftp connection does not work). If this happens, reload the iPU OS: follow the procedure from step (1).

---

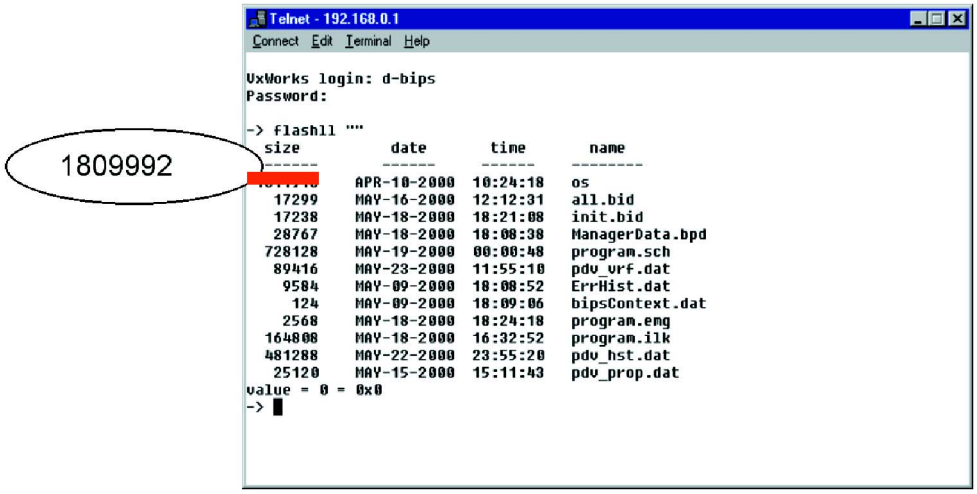
(7) Check the iPU OS by the following procedure:

- (7-A) disconnect the RS232 cable
- (7-B) Reconnect by **Telnet (Host:** IP address of the iPU, **Login name:** *d-bips*, **Password:** *madeinelb*),

---

Note The default IP address of the iPU is 192.168.0.1 and will be modified when configuring the iPU.

• (7-C) type **-> flashll ""** and check the transmission
time and the size of the **os** file
(it should be the same value as on the installation PC)



• (7-D) Close the connection (Click **Connect / Disconnect**) and exit **Telnet.**

End of the procedure.

Note Repeat the above procedure for each iPU.

Appendix C: Power Failure Management

Fundamentals

The intelligent Manager is designed for continuous operation. Therefore, automatic shutdown is carried out in the case of power failure, and automatic restart is carried out when the power is restored.

When the iManager detects a signal of power failure, the data of the iPU are locally saved in the memory (state of management points, etc). When the power is restored, the data are read out from the memory so that the system can be restarted in its previous state. During this time period, the interlocking automatic control function of the intelligent Manager system is deactivated.

Failure/Restore Detection

The iManager system is equipped with an un-interruptible power supply (UPS) which power failure output signal is connected on the internal Di #1 of the master iPU.

As well, in order to preserve the UPS battery, an optional shutdown input signal is connected to the internal Do #1 or #2 of the master iPU. If this option is not present, the iPU will automatically resume operation within 30 minutes from the power failure breakout. However, in the case of a software controlled UPS, this internal Do should not be connected.

There are two types of wiring:

- one common big UPS for the iPUs and the PC (recommended),
- several separate small UPS for the iPU and the PC

Caution The master iPU and the network hub should always be connected to the same UPS.

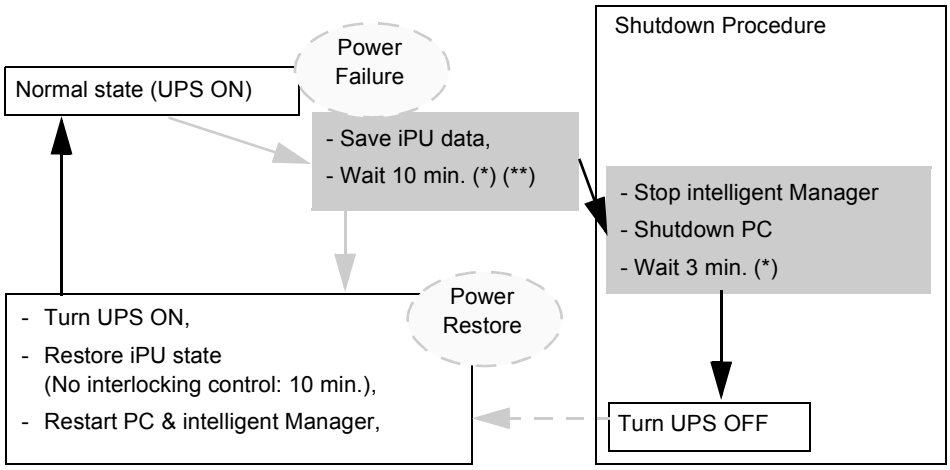
Warnings

- Multiple UPS (or UPS with limited functions):
  In the case when the PC is connected to separate UPS, be careful of the following restriction. Some UPS control software cannot restart automatically on reception of a power restore input signal. Therefore, in the case of a non-intelligent UPS, even if the power is restored within the 10 minutes period, the monitoring PC will shutdown and has to be restarted manually. Therefore, the intelligent Manager completes the shutdown procedure and does NOT restart automatically.
- No UPS:
  As the intelligent Manager system provides an automatic periodical backup function from the iPU to the PC, it can be used without UPS. However, in the case of a power failure, the data since the latest backup until the power restore are lost. These data are:
- Equipment running time,
- Equipment switchover accumulation,
- Power proportional distribution for billing (separate optional function).
  Therefore, the use of UPS is strongly recommended, especially regarding collection of data for billing.

Shutdown/Resume Procedure

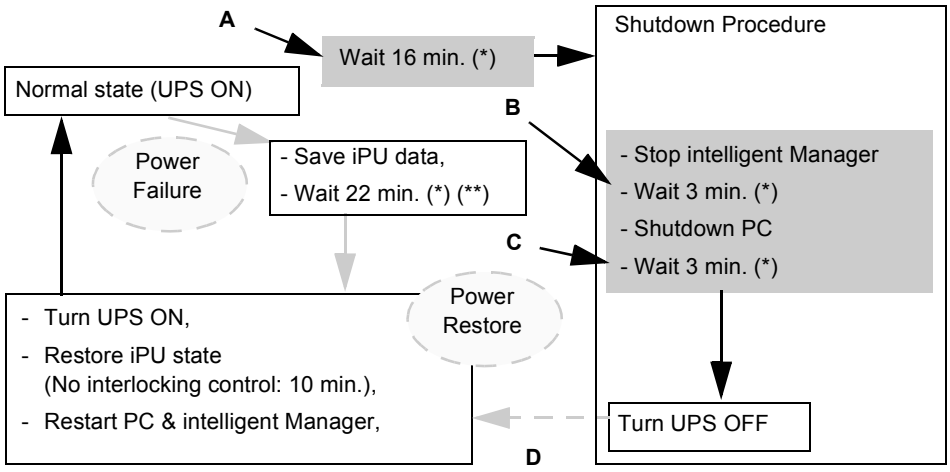
The different states of the intelligent Manager system are described in the diagram below:

Case 1: non-intelligent UPS:



Controlled by the iPU: (*) These parameters are fixed in intelligent Manager (**) The checkbox Ignore Auto Shutdown in the option frame of the PC setting tool must be OFF

Case 2: intelligent UPS (software controlled):



UPS Controlled by Soft: (*) These parameters are configurable (figure shows needed values A to D)

(**) The checkbox Ignore Auto Shutdown in the option frame of the PC setting tool must be ON

UPS Wiring and Configuration Procedure

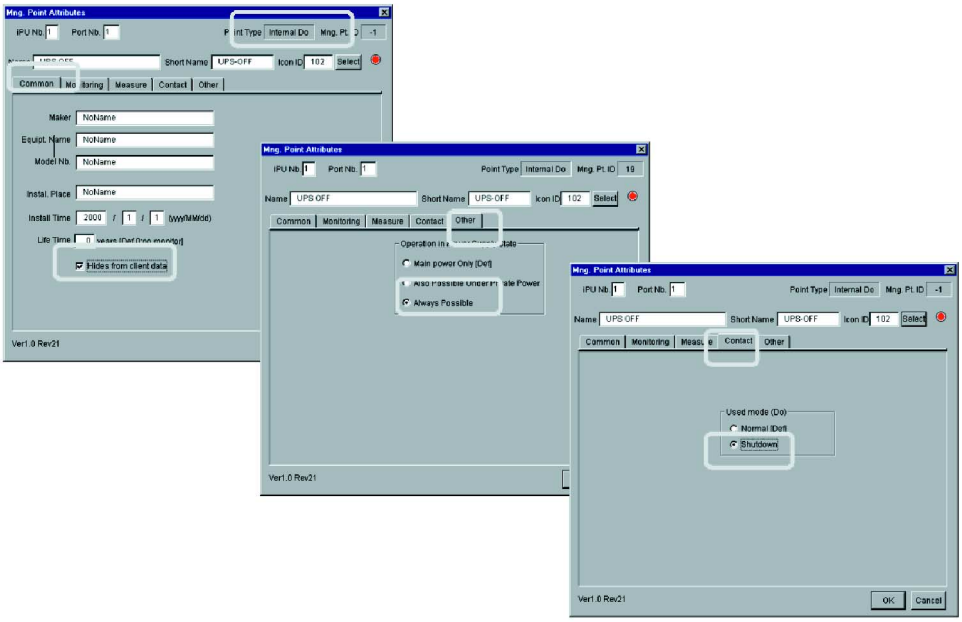
Caution The internal Di-1 of the iPU is dedicated to UPS operation (Power Failure signal output from UPS). Therefore ***no management point should be created manually for the internal Di-1 terminal***. Furthermore, this management point is not visible on intelligent Manager screens.

Note In the case of intelligent Manager shutting down due to a power failure, the Windows NT will be shut down as well as the PC (if available in the BIOS) whatever the settings done in **5.1 Configuring the PC** for the check boxes **Shutdown Mode and Power Down Mode**.

Case 1: Non-intelligent UPS

- 1. Intelligent Manager system configuration:
  - 1.1 Start the VRV setup tool / PC Settings: in the **option** frame, ***uncheck*** the checkbox **Ignore Auto Shutdown** (the checkboxes **Shutdown Mode** and **Powerdown Mode** state are free)
  - 1.2 Start the VRV setup tool / iPU Settings: in the **Power-Supply Signal Polarity** frame, select the option **A-Type-contact** or **B-Type-contact** of **UPS Power Failure Signal** corresponding with the UPS specifications (refer to the UPS documentation for details)
- 2. Connect Di-1 to UPS output terminal (see in UPS documentation which terminal corresponds to "Power Failure" or "On battery" signal),
- 3. Start the VRV Setup Tool / Management Points Setting,
- 4. Create a Do management point (on internal Do-1 or Do-2),
- 5. Set its following parameters (see illustration bellow):
  - 5.1 **Common / Hide from Client Data** checked to hide it from the client database (for Tenant data management),
  - 5.2 **Other / Operation in Power Supply Mode / Always Possible**,
  - 5.3 **Contact / User Mode / Shutdown** (with this option, this management point is not visible on intelligent Manager screens),
- 6. Test power failure:
  - 6.1 Unplug the UPS power supply,
  - 6.2 Check on the main screen of intelligent Manager that that the layout of the Power State icon changes to **Power Failure** and that the alarm displays in the real time display area,
  - 6.3 Wait for the auto shutdown timeout (please see the elapsed time in the relevant figure above, + about 0 to 2 minutes needed by the iPU for initial backup before starting shutdown timer),
  - 6.4 Check that intelligent Manager shuts down,
  - 6.5 Check that Windows NT shuts down
  - 6.6 Check that the PC switches OFF (if available in the BIOS of the PC),
- 7. Test UPS shutdown:
  - 7.1 Wait for 3 minutes more,
  - 7.2 Check that the iPU internal Do switches ON,
  - 7.3 Check that the UPS shuts down,
- 8. Test power resume:
  - 8.1 Plug the UPS back,
  - 8.2 Check that the UPS starts again,
  - 8.3 Depending on the settings done in **4.3.2 Automatic Start in Windows 2000**: Check that Windows NT and intelligent Manager restart automatically,
- 9. End of test procedure.

Important In this case 1, the PC will restart only if the UPS is able to perform accordingly when the power has resumed (by hardware terminals). Please check these characteristics in the UPS documentation.

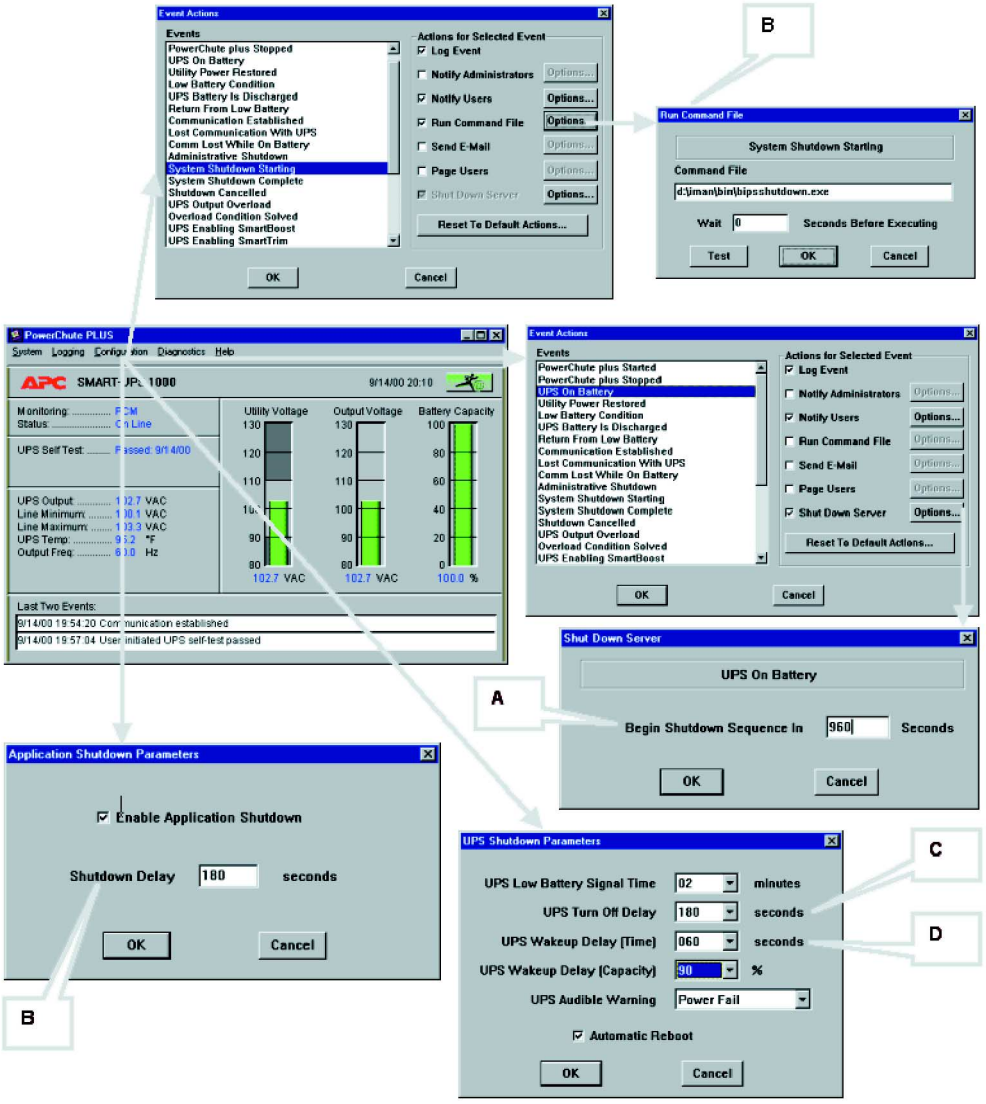


Settings of internal Do for instructing non-intelligent UPS to shut down.

Depending on the UPS functions, terminals of other signals (low battery, overload, etc) could be connected to internal Di management points of the iPU to inform about the state of the UPS. In this case, management points should be created accordingly.

Case 2: intelligent UPS (software controlled)

- First perform configuration as illustrated bellow (recommended model: UPS made by ***APC*** with the ***PowerChute*** control software). The values of steps A to D are compulsory.



- 1. Intelligent Manager system configuration:
  - 1.1 Start the VRV setup tool / PC Settings: in the **option** frame, ***check*** the checkbox **Ignore Auto Shutdown** (the checkboxes **Shutdown Mode** and **Powerdown Mode** state are free)
  - 1.2 Start the VRV setup tool / iPU Settings: in the **Power-Supply Signal Polarity** frame, select the option **A-Type-contact** or **B-Type-contact** of **UPS Power Failure Signal** corresponding with the UPS specifications (refer to the UPS documentation for details)
- 2. Connect Di-1 to UPS output terminal (see in UPS documentation which terminal corresponds to "Power Failure" or "On battery" signal),
- 3. Install and Setup UPS control software and reboot the PC (this software will run as a Windoows service process and should never be exited by the user)
  - 3.1 Insert this control software in the Automatic Start-up of Windows 2000 (see procedure in the Engineering Manual 4.3.2 Automatic Start in Windows 2000)

  - 3.2 Configure the parameters as shown in the figure above
  - 3.3 Register the **BipsShutdown.exe** module to be carried out when the UPS control software starts the shutdown procedure
- 4. Test power failure: same as above "6. Test power failure" (however, no special time is needed by the iPU for initial backup before starting shutdown timer; furthermore 3 minutes are elapsed between intelligent Manager shutdown and Windows 2000 shutdown)
- 5. Test UPS shutdown: same as above "7. Test UPS shutdown", but without internal Do
- 6. Test power resume: same as above "8. Test power resume",
- 7. End of test procedure.

Part 3
Power Proportional Distribution (Commissioning Manual)

Model names and specifications or the like are subject to change without prior notice for further improvement, so be sure to confirm the following catalogues and engineering data.

1. Configuring the Power Proportional Distribution

1.1 Overview

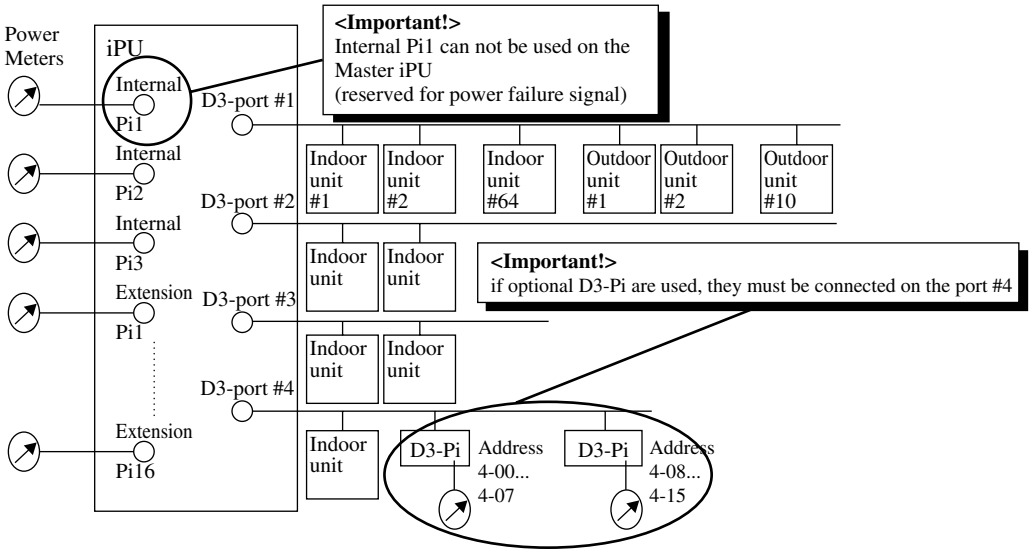
Note In this chapter, the term distribution stands for power proportional distribution.

This function distributes the power used by outdoor units between the connected indoor units and equipment.

The power consumption of the outdoor units is measured on Pulse Input management points.

The relative power consumption of the indoor units is calculated from their operation time and mode, level-headed with model related coefficients.

The figure bellow illustrates the wiring capacity and constraints for the distribution function:



Although most of the distribution configuration is carried out by using the dedicated engineering tool, some configuration steps are performed during the configuration of the intelligent Manager system:

- in Step 1 for intelligent Manager system and management point attributes: this step should have been already performed in Step 1,
- in Step 2 for distribution scheduling: for operational execution, the days and hours where distribution is performed must be set up; this step can be performed later when configuring the intelligent Manager application in Step 2.

1.2 Setting up the iPU Connections

Setting up the Pulse input units (Pi)

To set the measurement of the pulse input in accordance with the intelligent Manager software computation function, the following steps must be performed:

- Set the pulse constant,
- Set the pulse meter initial value.

1.3 Configuring the Distribution:

The remainder of this chapter reviews the settings required for the distribution. Please refer to the related documentation for detailed explanation.

1.3.1 Setting up the intelligent Manager system

When setting up the intelligent Manager system in Step 1, some attributes must have specific values:

- Power supply,
  - Check the **UPS** box,
- iPU Option Info,
  - check the **Power Proportional Distribution** box,
- calculation result backup frequency,
  - in the **Time to Save frame**, enter time at which backup time is perform (up to four times a day; default value is midnight),
- iPU attributes and DIII-Net ports,
  - See wiring diagram a the beginning of the chapter,

1.3.2 Registering the management points

When registering the management points in Step 1, some attributes must have specific values:

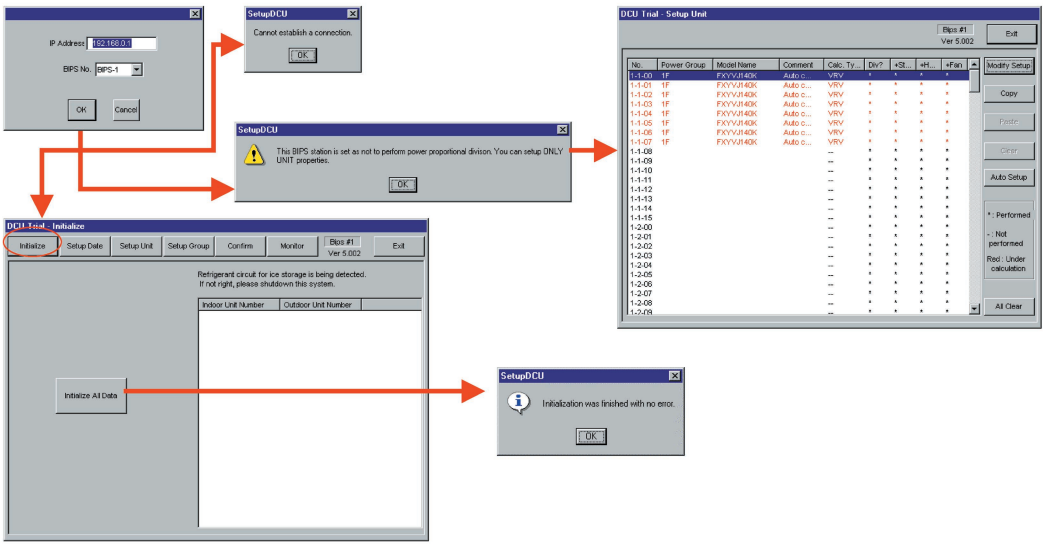
- Indoor units:
  - Check the **Power Proportional Distribution** box,
- Internal Pulse Input:
  - Value Multiplier: must be set to **1**,
  - Unit Rate: must be set to **1** or **10**,
  - Signal Length: must be set to **100ms**.

1.3.3 Using the distribution engineering tool

Note Repeat the following procedure for each iPU

The procedure below performs steps for configuring of the distribution environment, executing the distribution calculation and checking the result.

1.3.3.1 Starting and connecting the engineering tool



Use Microsoft Windows Explorer to access the bin\ folder of intelligent Manager and double-click on the SetupDCU.exe module to start the engineering tool. Then perform as follows:

- Enter the IP address of the master iPU,
- Select which iPU you want to configure (iPU 1= master, iPU 2-4= sub-iPUs),
- Click the Ok button; the main screen displays with the top menu,
- Perform the distribution engineering stages as explained below by clicking the top menu buttons.

Caution Always connect to the master iPU. Never connect directly to a sub-iPU.

1.3.3.2 Initializing the engineering data

Click the **Initialize Data** button of the top menu. The **Data Initialization** screen displays.

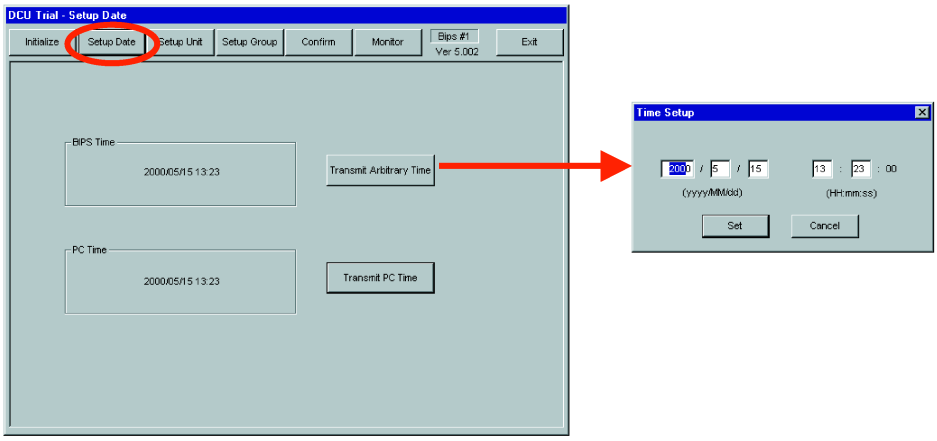
This procedure automatically scans the installed indoor and outdoor units and recognizes their addresses.

When engineering the system for the first time, click the **Initialize All Data** button.

Caution Clicking the Initialize All Data button will reset all the previously created distribution configuration data. This button should be used precociously.

Note The list on the right side of the window is intended only for ice-storage equipment. Normal A/C equipment is not to be displayed in this list.

1.3.3.3 Adjusting the iPU time



Click the **SetupTime** button of the top menu. The **Setup Time** screen displays.

This procedure adjusts the iPU time either from the PC time, or from an arbitrary entered time:

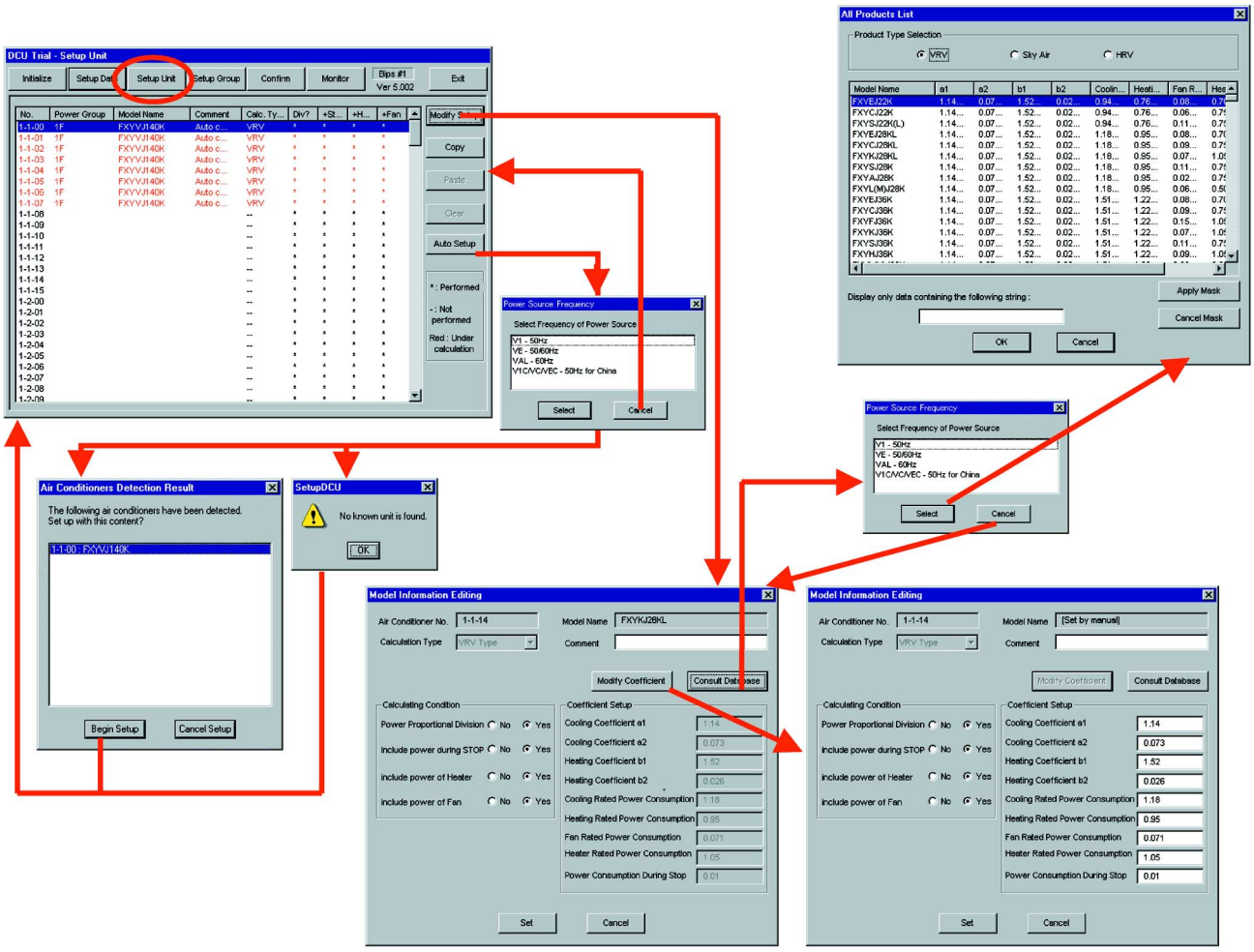
* Click the Transfer PC Time button

or

- Click the Transfer Arbitrary Time button; the Time Setup dialogue displays,
  - Enter the date and time,
  - Click the OK button; the **Time Setup** dialogue closes,
- End of time procedure.

Important A substantial modification of the time in the iPU may affect the stability of the automatic control functions: schedule, etc.

1.3.3.4 Setting up the units



Click the **Setup Units** button of the top menu. The **Units Setup** screen displays.

This procedure automatically browses the model knowledge data base (provided with intelligent Manager) to set the distribution coefficients of the detected units according to their model. Moreover, manual setup is possible for tuning or for units which model is not in the database.

Important As the power frequency must be selected before setting up the units (either automatically or manually), a dialogue box displays for this purpose. Please refer to the actual site conditions to select the relevant value.

Caution The power frequency cannot be changed after selection. In case of wrong selection, exit completely from the engineering tool and restart.

1.3.3.4.1 Setting up Automatically

- Click the **Automatic Setup** button; the engineering tool browses the data base and displays the result of the search in the **Detection Result** dialogue box,
- Click the **Begin Setup**; the tool affects the data base coefficients to the detected units,

Note As the coefficients can not be overwritten, click beforehand the Clear button to reset them if necessary.

1.3.3.4.2 Setting up Manually

If some units models were not detected, they can be set up individually:

- Select the unit from the list,
- Click the **Modify Setup** button; the Manual Setup dialogue displays,
- Enter the coefficients of the unit;
  - If coefficients of an existing model are to be reused:
    - Click the Browse Database button; the All Products List dialogue displays,
    - Select a model,
    - Click the Ok button; the product list closes and the coefficients are displayed in their fields
  - Click the **Setup Coefficients** button; the unit name is automatically replaced by the **Manual Input** label,
  - Enter or modify the coefficients of this unit,
- Select the options for distribution when:
  - operating,
  - Idling (see note below),
  - Heating mode,
  - Fan only mode,
- Select the calculation method option (please refer to the relevant technical documentation when necessary):
  - VRV (normal),
  - HRV (Heat Reclaim Ventilation)
  - General Purpose Adapter,
- End of manual setup procedure.

Caution Entering invalid coefficients may affect the reliability of the distribution calculation..

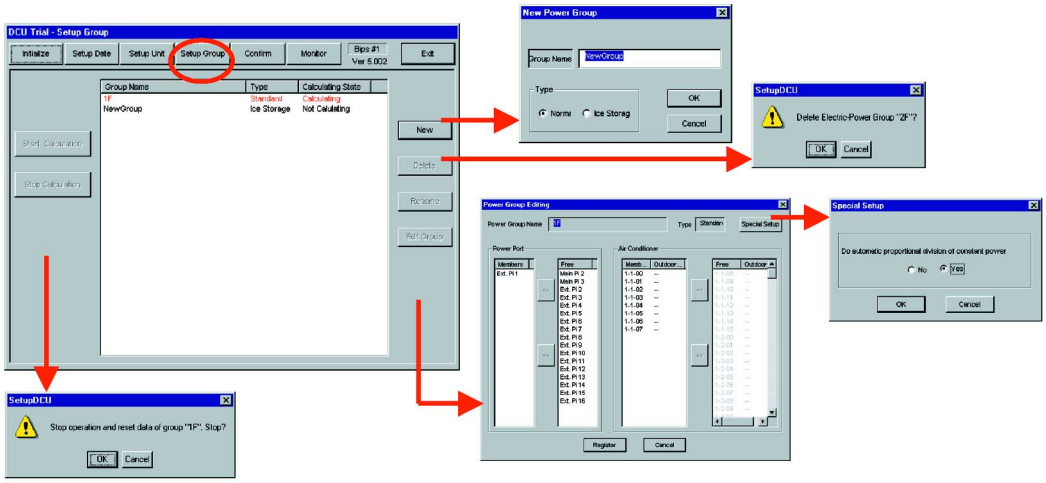
Note If the **Idling** option is checked, the power consumed during **Stop** state is append to the calculation result. But if not checked, it is stored individually as "power during **Stop** state".

1.3.3.5 Setting up the power groups

This procedure performs configuration of groups of units related to the same distribution power source.

Click the **Setup Groups** button of the top menu. The **Groups Setup** screen displays.

Important Only the points connected to the targeted iPU can be registered in its power groups.



- If necessary, create a group:
  - Click the **Create Group** button; the **Group Name Setup** dialogue displays,
  - Select the type of group (intelligent Manager makes use only of the Normal type and does not support ice-storage type), enter the name of the group, then click the **Ok** button; the dialogue closes,
- Select a group from the list, then click the **Edit Group** button; the **Power Group Edition** dialogue displays,
  - Select ports from the **Available** and **Registered** Power Ports list and click the << and >> buttons to add and remove them in this group,
  - Select units from the **Available** and **Registered** Indoor Units list and click the << and >> buttons to add and remove them in this group (unconnected units are grayed out and can not be selected),
  - Select the **Special Setup** option, whether or not to perform automatic power distribution for equipment with constant consumption type (HRV, General Purpose Adapter):
    - Click the **Special Setup** button, the **Special Setup** dialogue displays,
    - Select the **Yes** or **No** option,
  - Click the **Register** button; the **Power Group Edition** dialogue closes,
- End of group configuration.

Note Availability of power groups is as follows: internal=1-3, extension=1-16. Moreover, with the additional DIII board, 16 pi points are available (a/c address is 4-00 to 4-15 of DIII-port #3)

1.3.3.6 Calculating the power groups data

Click the Start / and Stop calculation buttons

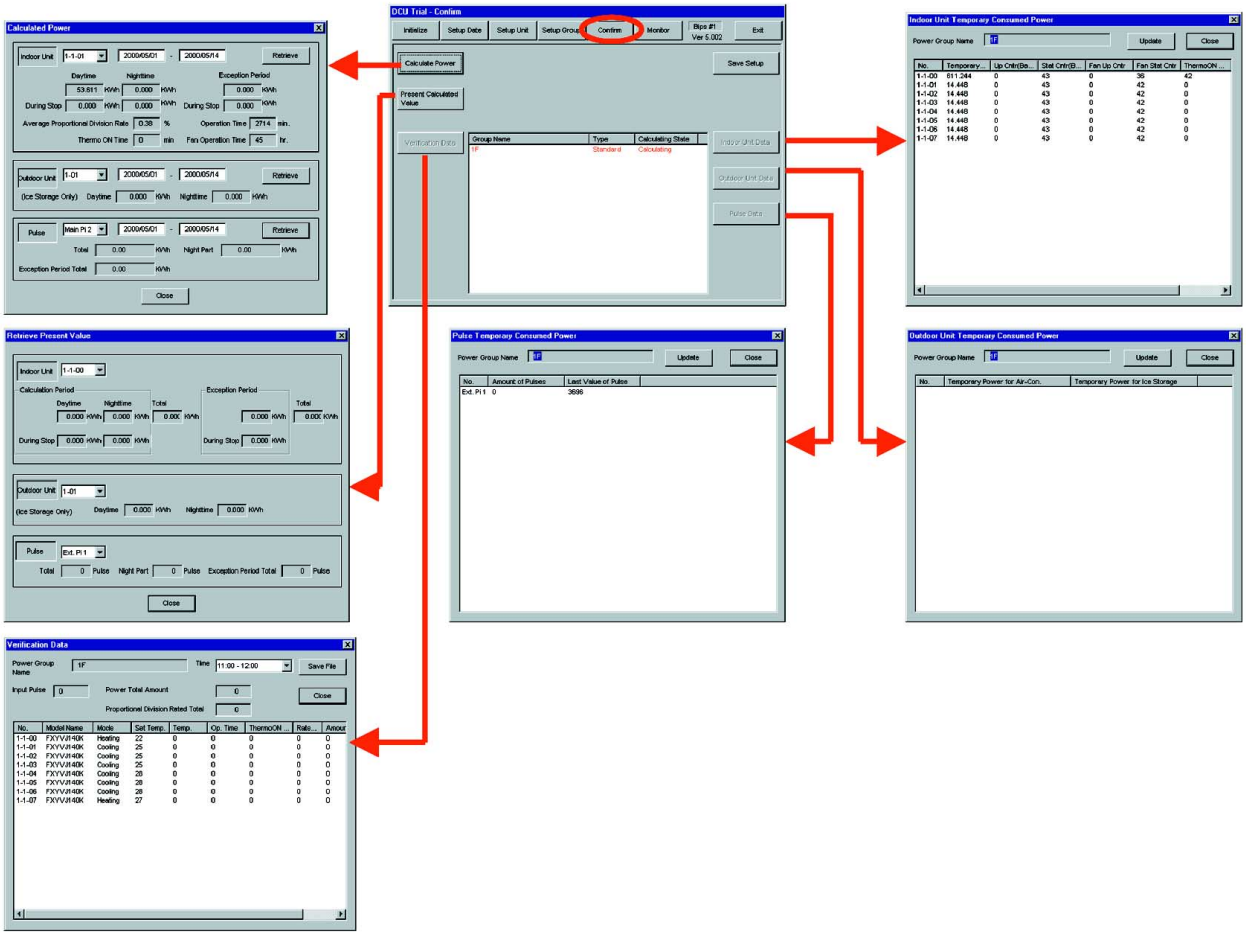
Caution When stopping the calculation of a power group, the calculated data of the last day will be cleared when starting the next calculation.

Note The groups under calculation are displayed in red color.

1.3.3.7 Checking the calculation result

This procedure allows inspection of the calculation result of a power group items.

Click the **Confirm** button of the top menu.



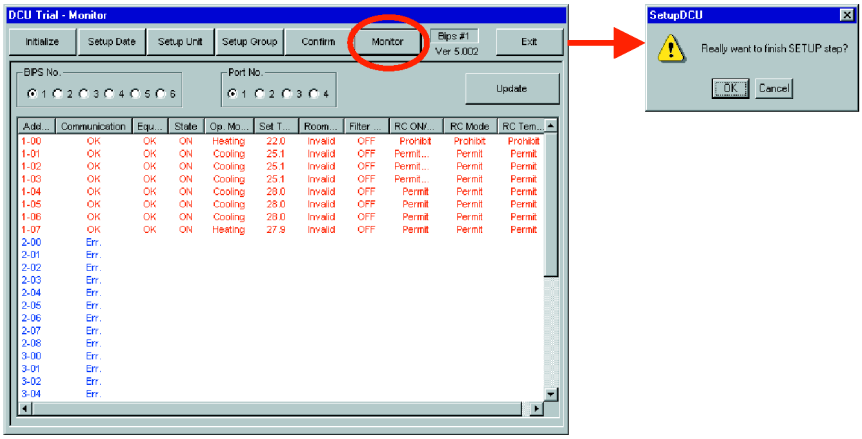
This procedure performs configuration of groups of units related to the same distribution power source.

Click the **Setup Groups** button of the top menu. The **Groups Setup** screen displays.

Note The **Total** of Indoor Unit in **Present Calculated Value** is the total amount of power consumed since the start of calculation.

Note The values of **Indoor Unit Data, Outdoor Unit Data** and **Pulse Data** are internal information intended for developers only. Therefore, they should be used only to confirm result increasing.

1.3.3.8 Other trial functions



1.3.3.8.1 Monitoring air-conditioners

1.3.3.8.2 Adjusting Pulse Input Measurement

1.3.4 Configuring the distribution schedule

When setting up the system options of intelligent Manager application in Step 3, some attributes of the scheduling for operational distribution exclusion must have specific values:

- In the calendar: the special days when distribution is performed (no exclusion at all during each of these days),
- for every day of the week : distribution exclusion option and period.

Caution If an exclusion schedule is set, the amount of consumed power is not equal to the amount of input pulse. This is because indoor units consume power during distribution exclusion periods.

2. Notes

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(2) Any part of this document may be changed in the future without prior notice.

(3) Every effort has been made to ensure the accuracy of this document. However please do not hesitate to contact us in the case of any missing, erroneous or unclear information.

(4) We take no liability for any loss etc. resulting from customer misuse of our products, failure to comply with the instructions contained in this manual, repairs or modifications carried out by a third party other than Daikin etc.

Part 4
Watchdog & Remote Engineering Manual

Model names and specifications or the like are subject to change without prior notice for further improvement, so be sure to confirm the following catalogues and engineering data.

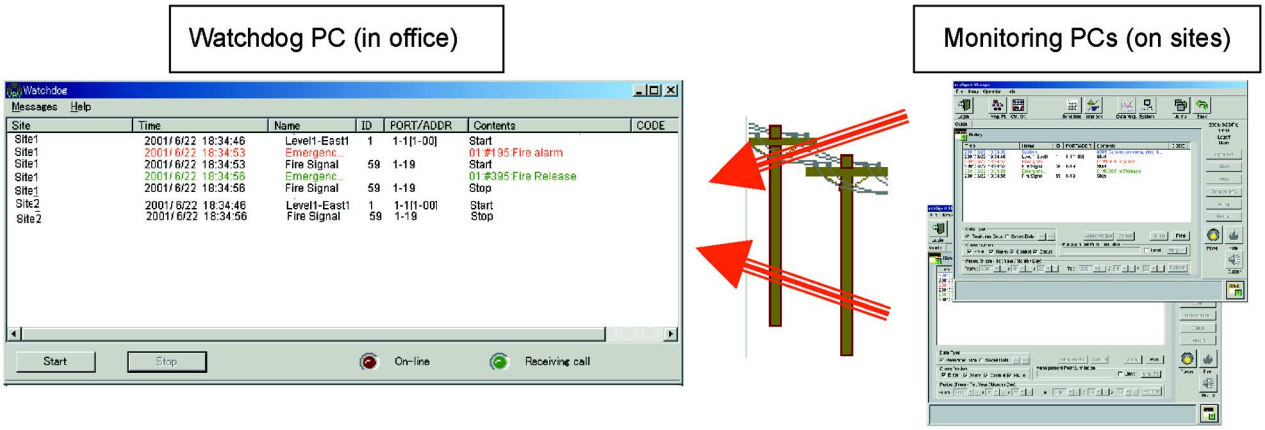
1. Introducing intelligent Manager Remote Options

This manual explains how to install and configure the application on a remote computer to access intelligent Manager on site (referred below as the Monitoring PC) form a PC in office (referred below as the **Watchdog PC** or the **Remote PC**) by use of telephony facilities (Modem).

Note This manual comes as a complementary document of the **intelligent Manager Engineering Manual**. Please refer to it for further details about intelligent Manager installation and configuration

1.1 intelligent Manager-Watchdog

To receive on a remote computer (the Watchdog) alarms from one or more intelligent Manager sites (mirroring of the History function) ,



The intelligent Manager on sites (monitoring PCs) periodically call the Watchdog (remote PC) and send the alarms.

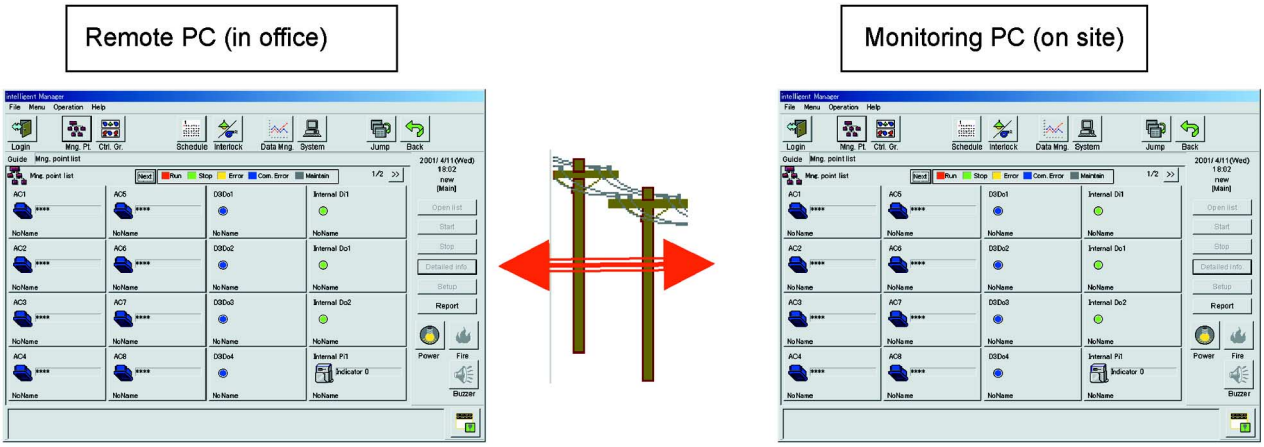
Filtering of alarms sent is configurable on each site).

Please refer to the intelligent Manager Watchdog Operation Manual for details of Watchdog functions on the remote PC.

1.2 intelligent Manager-Remote

To operate the intelligent Manager system (monitoring PC) from a remote computer. The operation is similar with the sub-PC, but the network communication is achieved by using the RAS (Remote Access Service of Windows).

Several sub-PCs can be configured, however only one can connect to the master PC at a time.



Operation on the sub-PC is identical as on the master PC except the functions of the System menu, which are not available on the remote PC.

Therefore refer to the intelligent Manager Operation Manual for details of functions.

2. Requirements

2.1 Specific Requirements for the intelligent Manager-Watchdog

The PC for the remote watchdog application requires the following:

- PC and system requirements: same as in Engineering Manual, however network connection is NOT required (no network connection used between the monitoring PC and the Watchdog),
- A serial port (COM),
- TAPI device: Modem with a minimum speed of 33600 bauds.

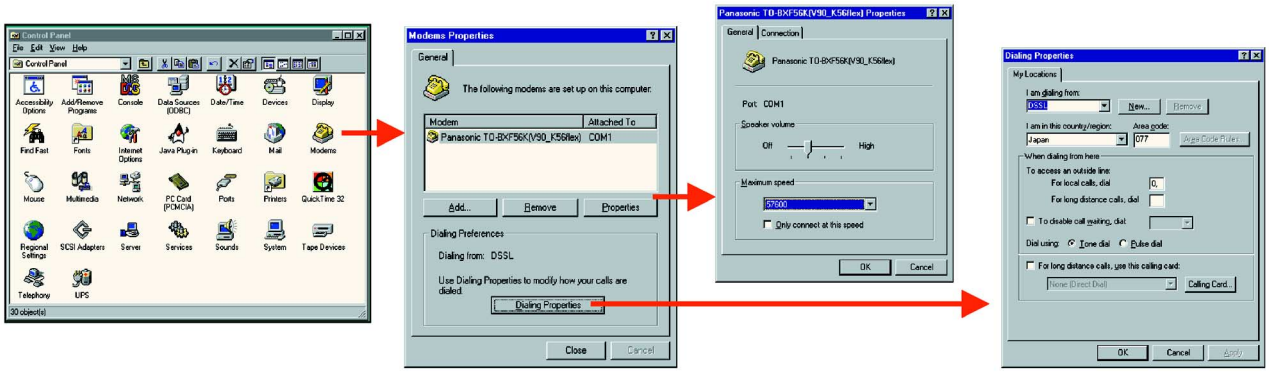
2.2 Specific Requirements for the intelligent Manager-Remote

The PC for the remote access application requires the following:

- PC and system requirements: same as in Engineering Manual, however network connection is NOT required (network connection between the monitoring PC and the remote PC is emulated over a telephone line),
- A serial port (COM),
- TAPI device: Modem with a minimum speed of 33600 bauds.

3. Installing and Configuring the TAPI Device

This step is common to the monitoring and the remote PCs (for both intelligent Manager-Watchdog and intelligent Manager-Remote).



- Click the **Start** button and select **Settings / Control Panel**; double-click on the icon **Modem**; the modem configuration menu displays,
- Configure the modem attributes as illustrated above,
- Test the communication by using both standard communication accessories of Windows NT (ex. **Hyperterminal** and/or **Phone Dialer**),
- Perform configuration of intelligent Manager application that makes use of the modem.

Note For detailed information for installation, configuration and troubleshooting of the telephony facilities, refer to the documentation of the device constructor and Microsoft Windows telephony facility.

4. Intelligent Manager Watchdog

This configuration is performed in 2 steps:

- Step 1, on the monitoring PC: configuring the intelligent Manager-WatchdogNotifier that will periodically call a specified intelligent Manager-Watchdog and send him predetermined history records,
- Step 2, on the Watchdog PC: configuring the intelligent Manager-Watchdog that will receive history records from one or more intelligent Manager-WatchdogNotifier instances.

Note A Watchdog PC can watch several sites (i.e. being called by several intelligent Manager-WatchdogNotifier instances). However, an intelligent Manager-WatchdogNotifier instance can call only one intelligent Manager-Watchdog.

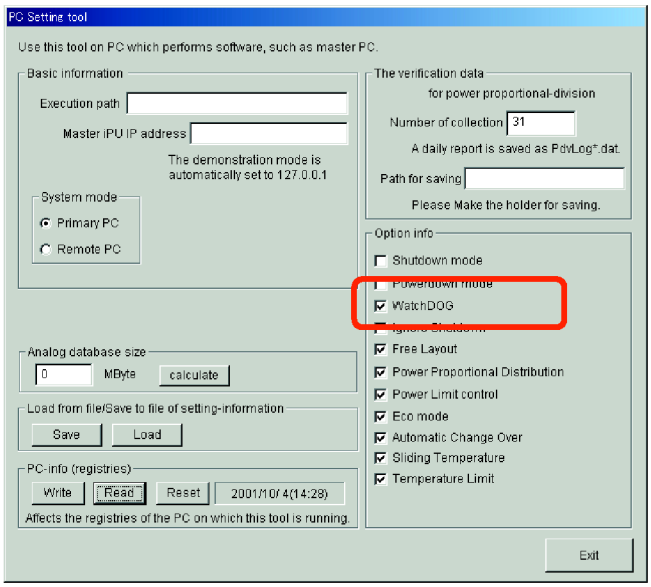
4.1 Configuring the Monitoring PC

4.1.1 Configuring the TAPI device

See detailed procedure above.

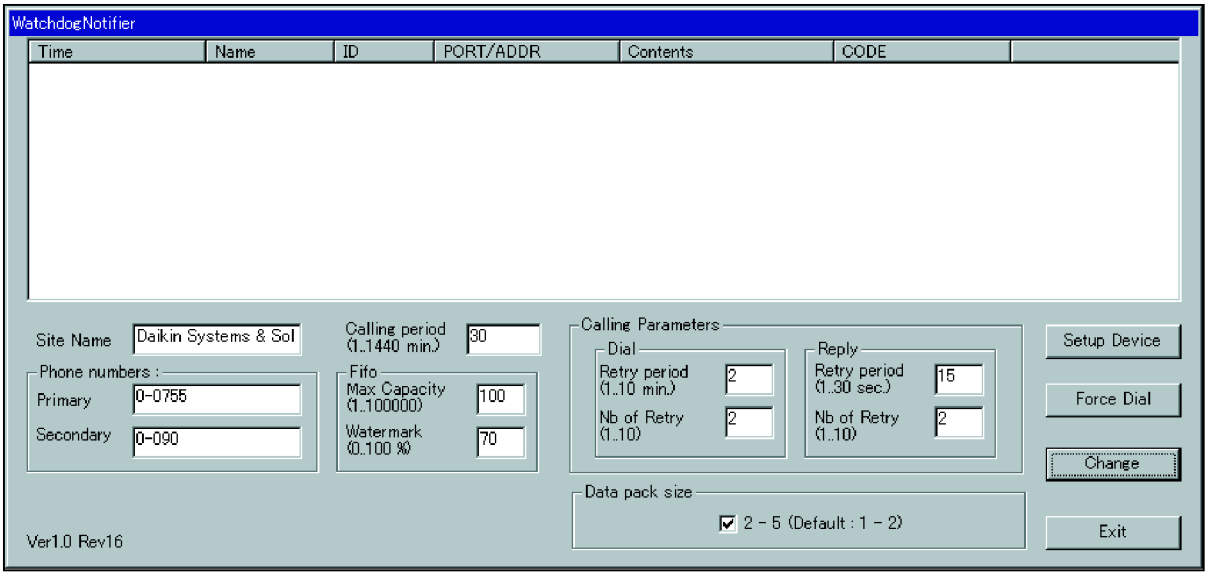
4.1.2 Enabling the Watchdog function

- Start the intelligent Manager configuration tool (VRV-Setup),
- Open the **PC setting** screen,
- Click the **Read** button,
- check the **Watchdog** box,
- click the **Write** button,
- Exit.



4.1.3 Configuring the intelligent Manager-WatchdogNotifier

Start the intelligent Manager-WatchdogNotifier (WatchdogNotifier.exe in the /bin directory) and perform as explained below.

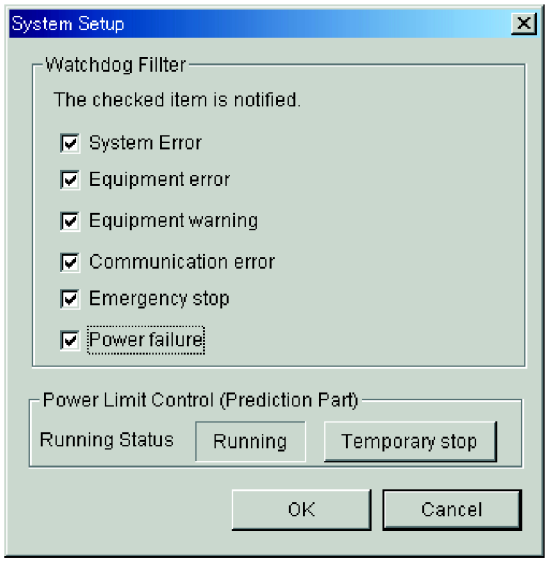


Important In order to configure the intelligent Manager-WatchdogNotifier, it must be running in **Engineering mode**: start **WDSetup.exe before** starting the main intelligent Manager application.

- In the configuration screen of the intelligent Manager-WatchdogNotifier tool:
  - Type the **Site Name**: name displayed on the Watchdog screen to identify the origin of the alarm,
  - Type the **Primary and Secondary Phone Numbers**: number called (alternatively) to send the history records to the Watchdog,
  - tune the telephony options:
    - type the **Calling Period**: time between two calls to the watchdog,
    - type the **Dialing Period and Retry**: time between two attempts to dial the watchdog and maximum number of further attempts (if all fail, then will call later),
    - type the **Replying Period and Retry**: time between two checks that the watchdog picked up the phone and maximum number of further attempts (if all fail, then will retry dialing),
    - select the data pack options:
      - **1-2 records** per packet (possible on all lines),
      - **2-5 records** per packet (possible on higher speed lines: 59600 bauds and above),
- End of procedure.

4.1.4 Configuring the alarms filter

- Start the intelligent Manager,
- Login in Service mode (please refer to intelligent Manager Engineering Manual for details),
- Open the service popup menu (click the mouse right button in the working area),
- Select the **System Setup** entry,
- Check the types of alarms to be sent as shown below,
- Close the filter dialogue.



4.2 Configuring the Watchdog PC

This procedure should be performed on the remote PC of Watchdog only.

4.2.1 Installing the intelligent Manager-Watchdog application

The intelligent Manager-Watchdog software is a separate executable module. Insert the resource CD-ROM in the remote PC; in MS Windows Explorer, copy the file (Watchdog.exe) in the target folder.

4.2.2 Configuring the TAPI device

See detailed procedure above.

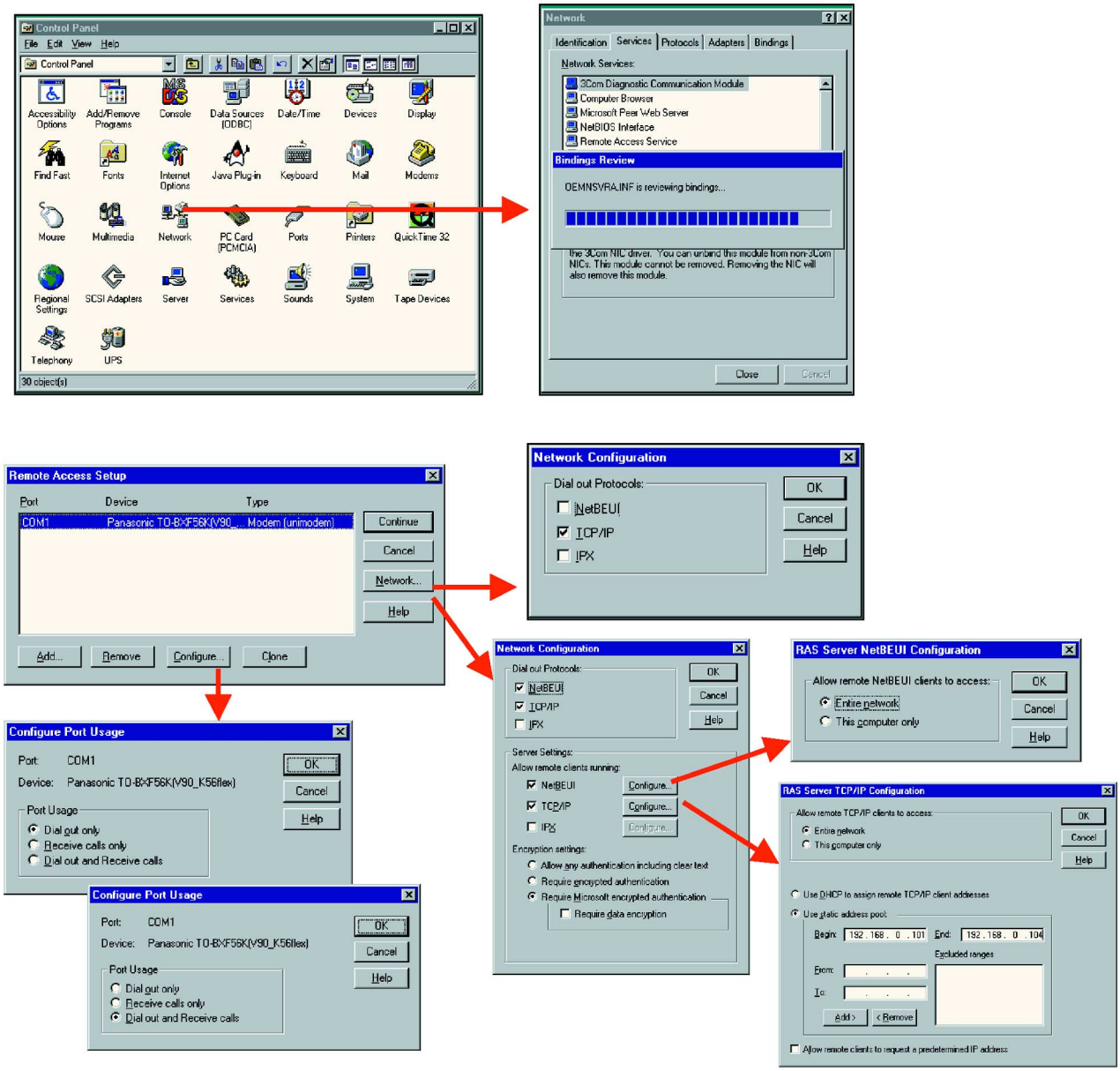
5. Configuring intelligent Manager-Remote

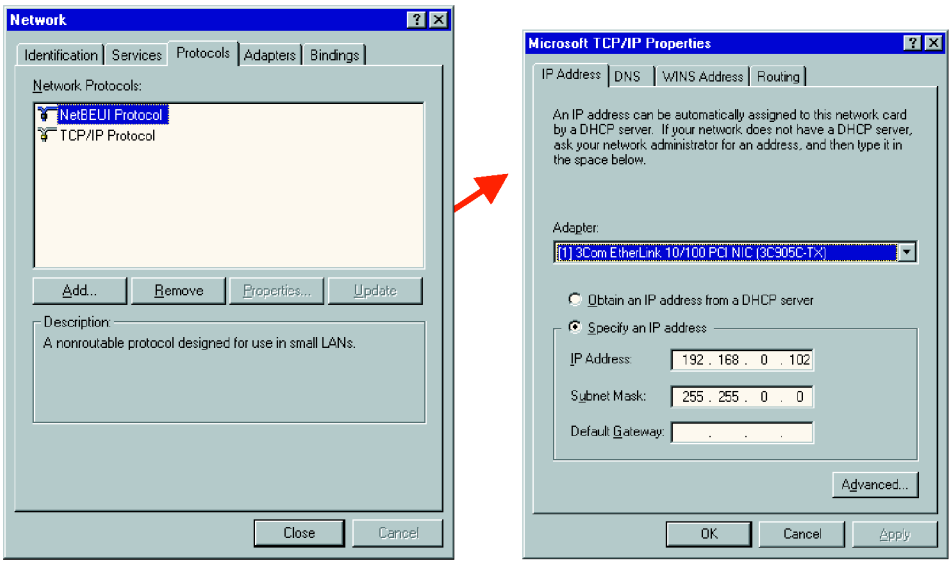
This configuration is performed in 2 steps:

- Step 1, on the monitoring PC: configuring the Remote Access Server facility and the user access permission of Windows (NT or 2000), so that intelligent Manager can accept requests from the intelligent Manager-Remote client and perform related operations,
- Step 2, on the remote PC: configuring the intelligent Manager-Remote client and the Remote Access Client facility of Windows NT, so that intelligent Manager-Remote will send requests to the intelligent Manager server.

5.1 Configuring the Remote Access Facility

This procedure is performed both in step 1 (on the monitoring PC) and in the Step 2 (on the remote PC). Therefore it is described only once, with differences indicated when necessary.





- Click the **Start** button and select **Settings / Control Panel**; double-click on the icon **Network**; the **Network** dialogue appears,
- Select the **Services** tabulation and select the **Remote Access Service** entry (if it is not installed, refer to the Windows NT documentation to perform installation), then click the **Properties** button; the **Remote Access Setup** dialogue appears,
  - Click the **Configure** button; the **Configure Port Usage** dialogue appears,
    - In the **Port Usage**, select:
      - On the monitoring PC:
        - If the intelligent Manager-Watchdog is used: **Dial out and receive calls** option,
        - If the intelligent Manager-Watchdog is not used: **Receive Call Only** option,
      - On the remote PC: **Dial Out Only** option,
    - then click the **Ok** button,
  - Click the **Network** button; the **Network Configuration** dialogue appears,
    If **Dial Out Only** option had been selected above, then
    - Check the **NetBUI** box (only if this protocol is installed on the PC: listed in the **Protocols** tabulation),
    - Check the **TCP/IP** box (this protocol is needed for intelligent Manager),
    - Click the **Ok** button; the **Network Configuration** dialogue disappears,

Else configure the dial out options as explained below:

- NetBUI:
  - * Check the **NetBUI** box (only if this protocol is installed on the PC: listed in the **Protocols** tabulation),
  - * click the **Configure** button; the **NetBUI Server TCP/IP Configuration** dialogue of the protocol displays,
  - * Select the **Entire Network** access option,
- TCP/IP:
  - Check the **TCP/IP** box (this protocol is needed for intelligent Manager),

- click the **Configure** button; the **RAS Server TCP/IP Configuration** dialogue of the protocol displays,
  - Select the **Entire Network** access option,
  - Select the **Use Static Address Pool** option,
    - Enter in the **Begin** and **End** IP addresses, the lowest and highest addresses of the remote PCs,
    - Add/remove **Excluded Ranges** in order to allow access only to the relevant PCs; for each excluded range:
      - Enter in the **From** and **To** IP addresses, the lowest and highest addresses of the range to be excluded, then click the **Add** button

      or
      - Select an range from the list, then click the **Remove** button,
  - Select the **Encryption Settings** option (default should be **Allow any authentication including clear text**),
  - Click the **Ok** button; the dialogue disapears
- Click the **Continue** button; the **Remote Access Setup** dialogue disappears,

End of configuration.

5.2 Configuring the Monitoring PC

5.2.1 Configuring the TAPI device

See detailed procedure above.

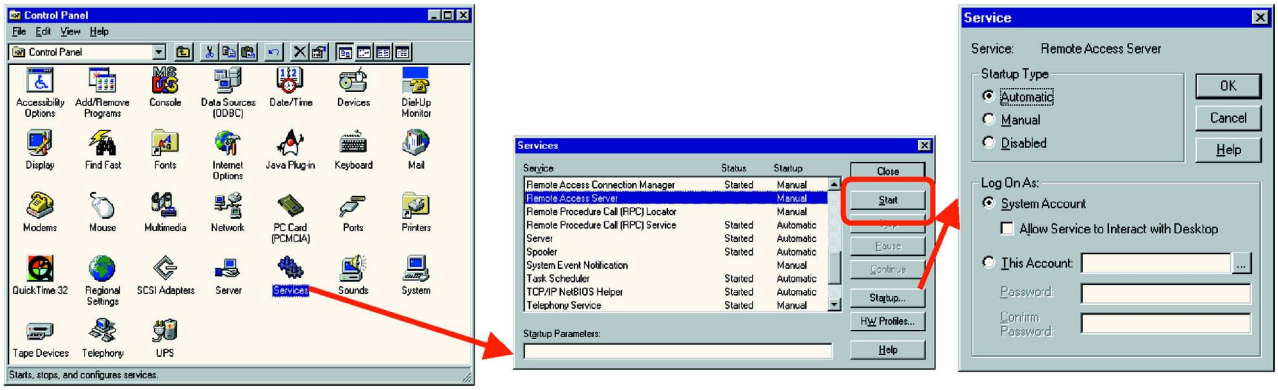
5.2.2 Configuring the Remote Access Service

See detailed procedure above.

5.2.3 Configuring the user access permission

- Click the **Start** button and select **Programs / Administrator Tools / User Manager**; the **User Manager** application appears,
- In the user list, for each user that will be used when login from a intelligent Manager-Remote instance:
  - Double-click the user (create it first if necessary); the **User Properties** dialogue appears,
  - Click the **Dialin** button; the **Dialin Information** dialogue appears,
    - Select the **No Callback** option,
    - Click the **Ok** button; the **Dialin Information** dialogue disappears,
  - Click the **Ok** button; the **User Properties** dialogue disappears.

5.2.4 Starting the Remote Access Server



- Starting the Remote Access Server automatically:
  - Click the **Start** button and select **Settings / Control Panel**; double-click on the icon **Services**; the **Services** dialogue appears,
    - In the services list, select the **Remote Access Server** entry; then click the **Startup** button; the **Startup Profile** dialogue appears,
    - select the **Automatic Start** option, the click the **Ok** button; the **startup Profile** dialogue disapears,
    - Click the Start button if you wish to start the service immediately

or

- Starting the Remote Access Server manually:

  - Click the **Start** button and select **Programs / Administrator Tools / Remote Access Admin**; the **Remote Access Admin** application appears,
    - Select the **Server / Start Remote Access Service** entry; the **Start Remote Access Service** dialogue appears,
    - Enter the **Server Name** (the current value should be correct), then click the **Ok** button,
- End of procedure.

5.3 Configuring the Remote PC

5.3.1 Configuring the Remote Access Service

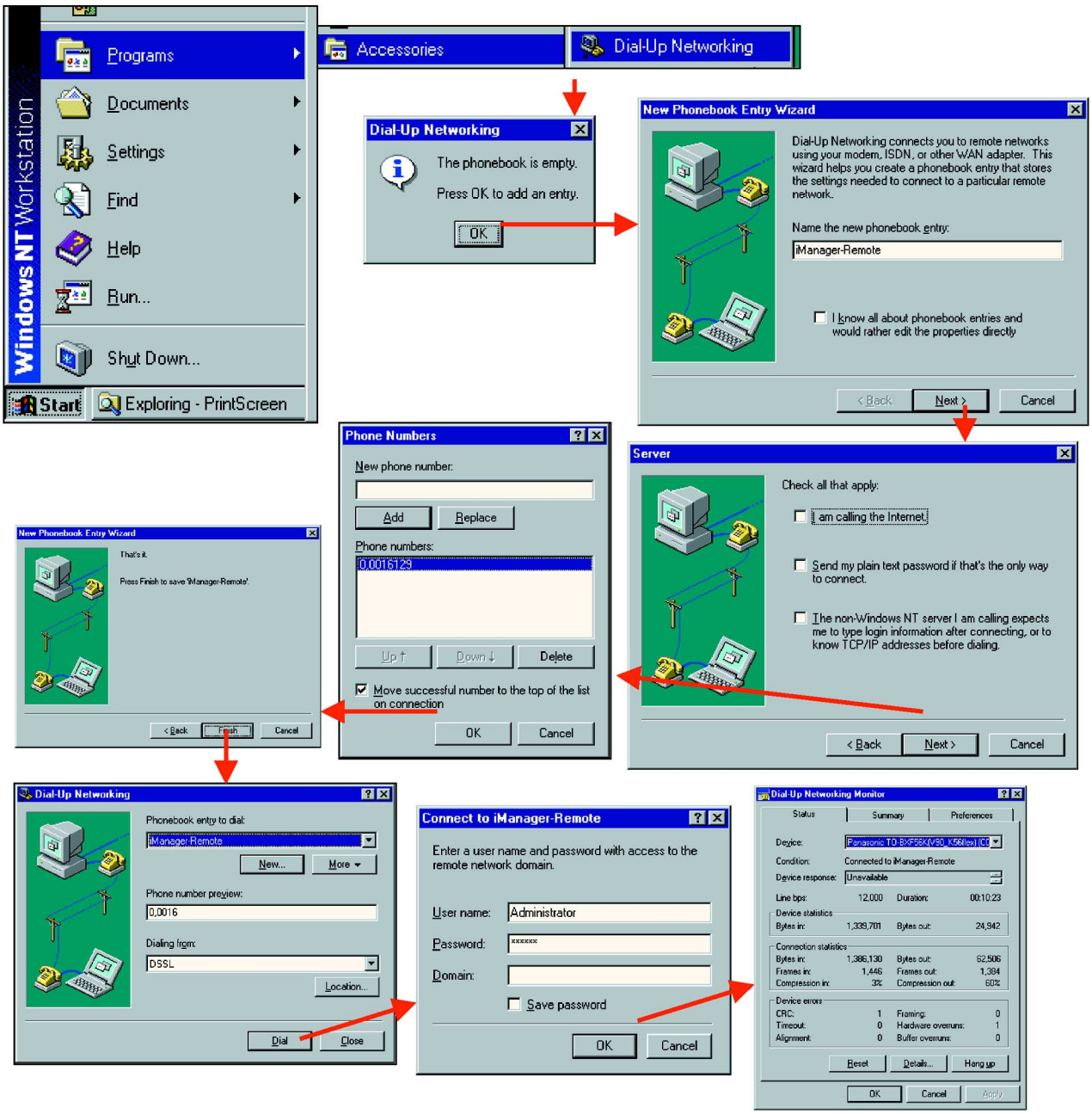
See detailed procedure above.

5.3.2 Installing the intelligent Manager-Remote software

Install similarly as with the main intelligent Manager software as **sub-PC** (refer to the Engineering Manual for details):

- Configuring the remote PC data: perform as explained in 5.1 Configuring the PC data,
  - In the **System Mode**, select the **Remote PC** option,

5.3.3 Testing the connection:



- On the PC screen, double-click the **My Computer** icon, then double-click the **Dial-up Networking** icon; the **Dial-up Networking** dialogue displays,
- Create a new phonebook entry to dial: click the **New** button, then follow the **New Phonebook Entry Wizard**,

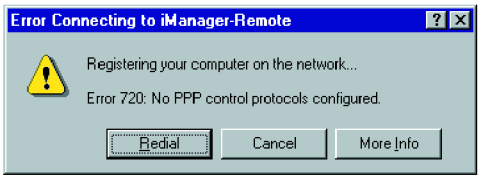
or

- Select an existing phonebook entry to dial,

- Click the Dial button; the **Connect to...** dialogue appears,
  - Enter the **User Name** and **Password** as they have been set up in the User Admin of the monitoring PC, then click the **Ok** button,
  - Wait for the connection to be made (then the **Remote Access Service Monitoring** window displays),
- Start the intelligent Manager on the remote PC,
- End of procedure

Note: error messages can appear on dialing time. Please differentiate installation error (case 1) from normal use error (case 2)

Case 1: installation error



Case 1: communication error

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Part 5
i-Manager ECO 21 Operation Manual

Model names and specifications or the like are subject to change without prior notice for further improvement, so be sure to confirm the following catalogues and engineering data.

1. Before use

1.1 The Features of intelligent Manager

Most operations are possible by a mere click of the left mouse button!

Although intelligent Manager may be operated via keyboard input of characters or numerals onto a set-up screen, all usual monitoring and control can be carried out using only the mouse.

All operations – indicated on the screen by clicking a button, partially displaying a management point list, displaying a pull-down menu, selecting one icon or a single item from a detailed menu – may be carried out by moving the mouse pointer to the appropriate place and single-clicking the left mouse button.

If intelligent Manager is started up from a desktop computer screen, some operations may need to be accessed by a double-click (two clicks in quick succession).

Hereafter throughout this document, buttons displayed on the screen will be depicted enclosed within a rectangle, ex: **Start**.

1.2 Important Notes

Please ensure that the PC software is always started up and that the energy-saving mode has not been enabled.

If the energy-saving mode has been set up, information generated may not be recorded in in intelligent Manager.

Do not install other application software.

intelligent Manager software is designed exclusively for monitoring. Please be aware that, as the installation of other OA software may cause interference, we would be unable in such a case to guarantee correct functioning.

Switchover to UPS (Uninterruptible Power Supply) and Automatic Shutdown in the case of power failure.

If the system has switched over to UPS and usual power supply has not been restored after a predetermined duration, intelligent Manager automatically shuts down. However, if other application software is started up, the PC power supply may be cut off before the correct shutdown procedure has been carried out, resulting in operational data not being properly saved.

Use ‘small font’ size.

intelligent Manager requires that a ‘small font’ be used. (To set up and check: click the right mouse button in the background of Windows > select properties > display details > font size > select ‘small font’).

1.3 Functional Outline of intelligent Manager

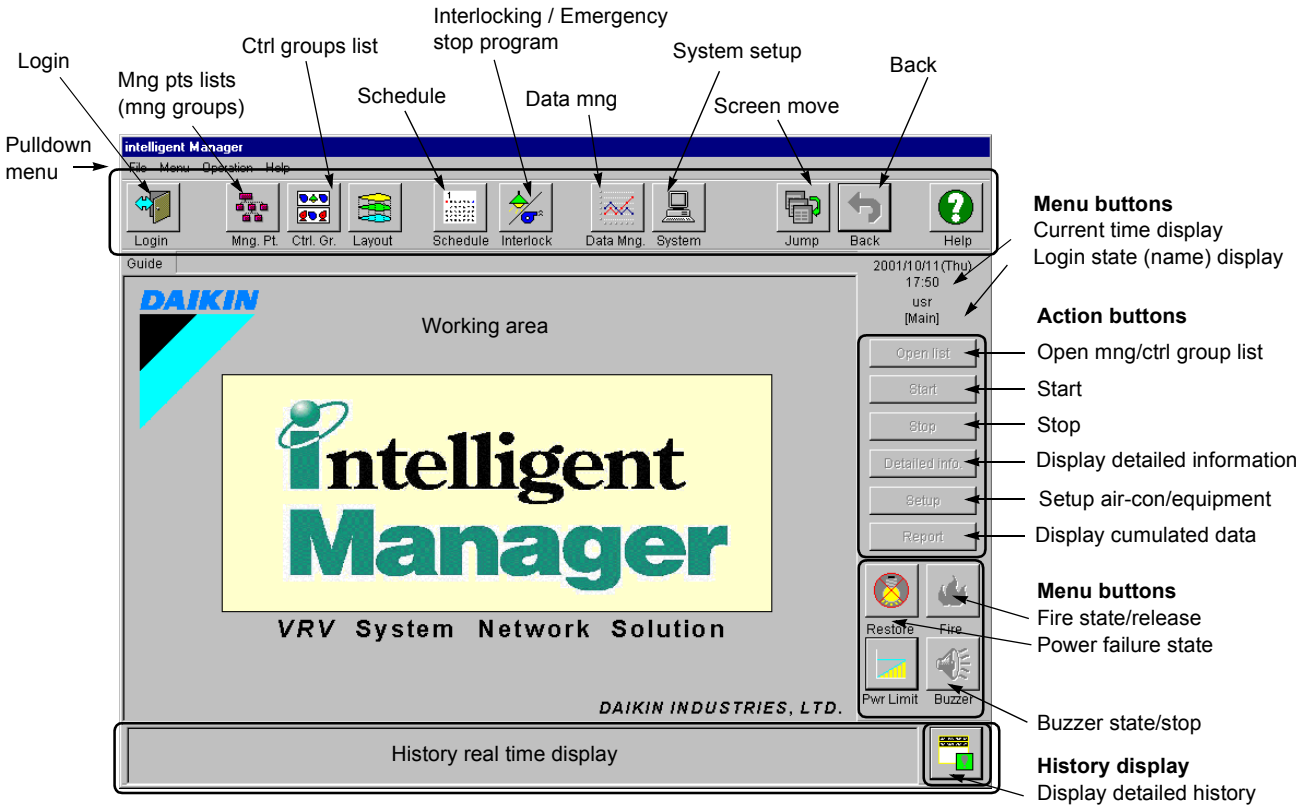
Note Depending on the organization of your system, some functions may be inaccessible.

Type	Name	Outline
Monitoring	- Management Point State Monitoring	- Monitors state of management points (operation mode, abnormalities).
	- Continuous Operation Time Limit Monitoring	- Monitors any time in excess of the management point continuous operation time setup.
	- Analog Maximum/Minimum Limit Monitoring	- Monitors any excess of the pre-determined maximum/minimum measured values of analog management points.
Display	- Management Point State Display	- Displays information related to management points.
	- Control Group Display	- Displays each control group.
	- History Display	- Displays the history of malfunctions detected in the system, warnings, conditions, start/stop operations.
Operation	- Individual Start/Stop	- Starts/stops each management point individually.
	- Control Group Collective Start/Stop	- Collects more than one management point together (control group) and performs collectively starts and stops a control group.
	- Operation Mode Setup	- Sets up air-conditioner operation mode (fan, cooling, heating).
	- Temperature Setup	- Sets up temperature of air-conditioner.
	- Remote Control Operation Setup	- Sets up air-conditioner action mode via remote control instructions.
	- Reset Filter Sign	- Resets air-conditioner filter sign.
	- Centralized Control Setup	- Sets up permission/prohibition of user operation via centralized control equipment.
Control	- Schedule Control	- Carries out control of management points in accordance with a setup schedule/.
	- Interlocking Control	- Interlocks operation state, error state etc of a given management point to control other management points and groups.
	- (In case of fire etc.) Emergency Stop Control	- When the emergency signal is received, carries out (emergency stop) control for emergency alert and to prevent spread of fire etc.
	- Power failure release control	- Carries out management point control in accordance with the state and setup before power failure when power is restored.
Measuring	- Automatic Meter Reading	- Deals with cumulative pulse values of electric power, water, gas meters etc.
	- Operation Time & Cumulative Number of Start/Stop	- Cumulates equipment operation time, number of Start/Stop to facilitate maintenance.
	- Analog Measuring (projected)	- Measures, displays and monitors temperature, humidity, pressure, voltage, amperage etc.
Client Data Management	- Simple Tenant Management	- Links management points with tenants.
	- Collected Measurement Data	- Retrieves itemized data of tenant-linked management points.

Type	Name	Outline
Misc.	- Screen Movement	- Enables reservation for movement between screens at will.
	- Password Setup	- Carries out password setup/confirmation to confirm operation authority.
	- Support Function for Creation of Management Groups	- Enables creation/deletion of management groups and registration/modification of management points within a management group.
	- Support Function for Creation of Control Groups	- Enables creation/deletion of control groups and registration/modification of management points within a control group.

2. Basic Screen and Screen Directory

2.1 Basic Screen Layout



This consists of: menu buttons, action buttons, the message window and the working area.

Menu buttons: buttons used to call up various functions. They are operational at all times and in any screen menu.

Action buttons: buttons used to govern operations such as ‘start’ and ‘stop’.

Message window: the window in which history abnormalities are displayed in real time.

Working area: the area in which the functions called up by the menu buttons are displayed.

The pull-down menu may be used to execute the functions of menu buttons and action buttons.

Action Buttons

An action button is enabled only when it can be operated according to a selected management point, control group or management group. When it is not operational, it is displayed in light gray, thereby indicating the operation’s disabled state (gray-out).

An action button can be clicked, but not operated without operation authority (a warning will appear).

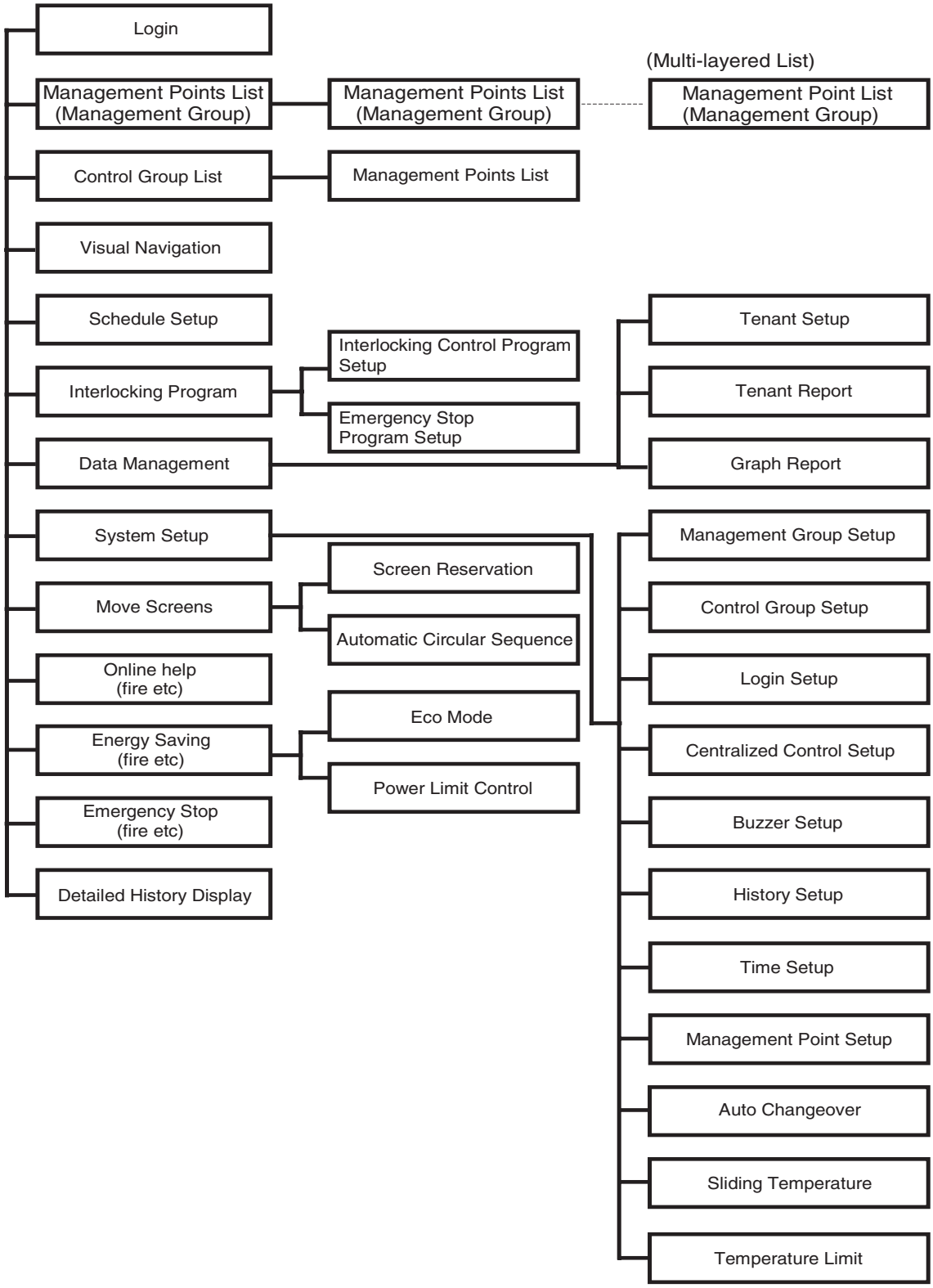
When an action button is clicked and an operation applied to an air-conditioner or equipment (start, stop, setup), a confirmation dialog appears to prevent incorrect operation (this dialogue display can be deactivated by initial setup).

If the **Back** button is clicked, it will revert to the screen displayed immediately beforehand.

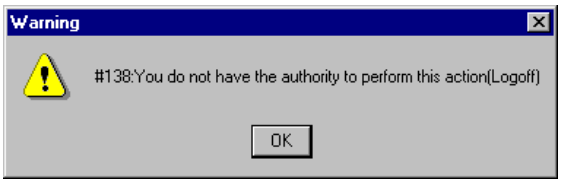
2.2 Screen Directory

In a dialog, when **OK** and **Cancel** buttons exist, the operation may be cancelled. However, when an operation within a dialog may not be cancelled a warning appears to this effect. If the operation is pursued, the **Cancel** button is grayed out and cancellation is no longer an option.

If buttons such as **Open list** or **Detail** are selected from a functional menu screen, the screen will appear as in the structure shown below.


Login
Management Points List (Management Group)
Management Points List (Management Group)
(Multi-layered List)
Management Point List (Management Group)
Control Group List
Management Points List
Visual Navigation
Schedule Setup
Interlocking Program
Interlocking Control Program Setup
Emergency Stop Program Setup
Data Management
Tenant Setup
Tenant Report
Graph Report
System Setup
Move Screens
Screen Reservation
Automatic Circular Sequence
Online help (fire etc)
Energy Saving (fire etc)
Eco Mode
Power Limit Control
Emergency Stop (fire etc)
Detailed History Display
Management Group Setup
Control Group Setup
Login Setup
Centralized Control Setup
Buzzer Setup
History Setup
Time Setup
Management Point Setup
Auto Changeover
Sliding Temperature
Temperature Limit

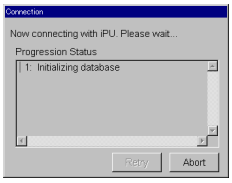
Note Depending on the organization of your system (user login and function access restriction), some functions shown in the figure below may be inaccessible. Those buttons with functions that cannot be used are either grayed out or will display the warning below.



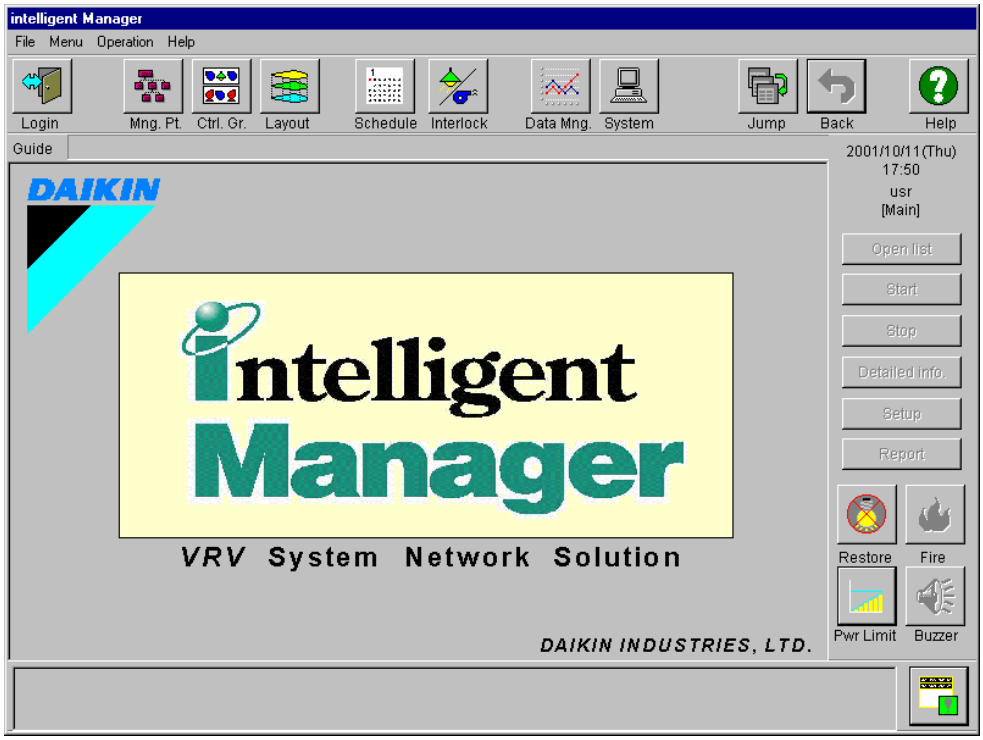
3. Starting and Stopping Operation of intelligent Manager

3.1 Starting Operation

intelligent Manager starts up automatically when the PC power supply is turned on, as shown below.

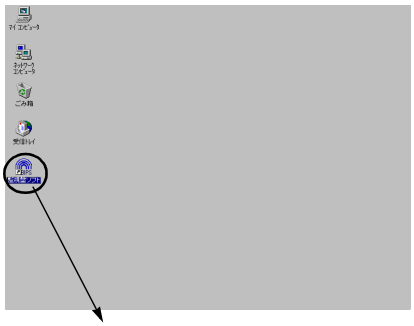


During the booting procedure, a progression status window appears. The booting time is function of the configuration (number of automatic control programs, etc) and can last from a few seconds up to more than one minute.

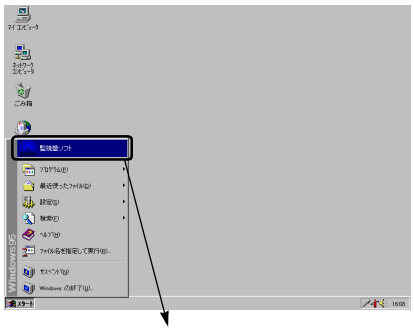


(Screen immediately after start up)

In the case of manual start up, double-click on the ‘intelligent Manager’ icon of the desktop or select ‘intelligent Manager’ from the Start Menu.



Double-click on the icon



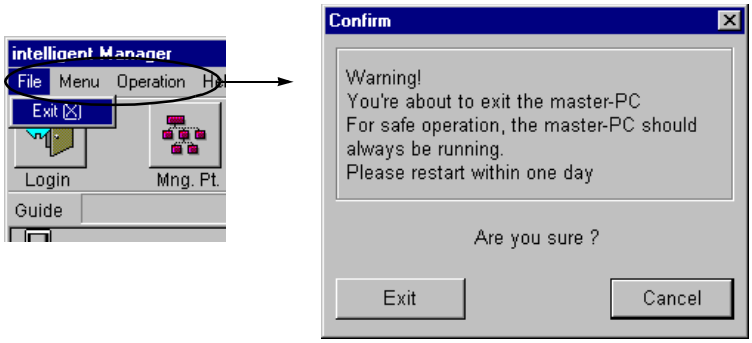
Select ‘intelligent Manager

3.2 Stopping Operation (up to Power Supply OFF)

Turning off the PC power supply must be done in two stages: exiting intelligent Manager and exiting Windows.

To exit intelligent Manager

Select **Exit intelligent Manager** from the File Menu.



A dialog box will be displayed as shown above.

Click on the **Exit** button to exit intelligent Manager.

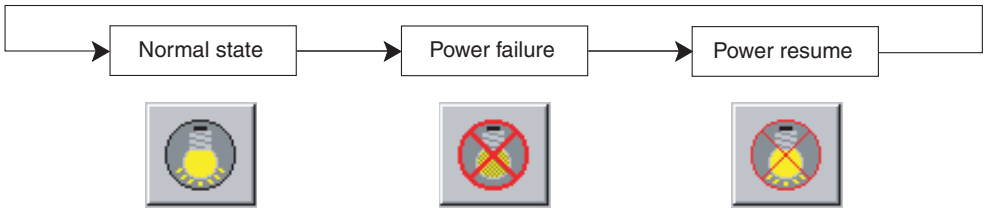
As the system is intended to operate constantly, if exited it should be restarted within one day.

Windows NT can then be exited.

3.3 Power Failure Management: Automatic Stop/Restart

The intelligent Manager is designed for continuous operation. Therefore, automatic shutdown is carried out in the case of power failure lasting more than about 10 minutes. As well, automatic restart can be carried out when the power has been restored.

When the iManager detects a signal of power failure, the state of the power indicator changes as shown below:



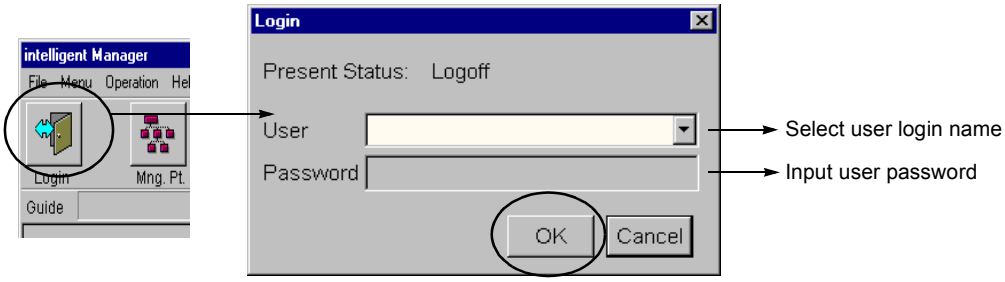
When the power failure occurs, the data of the Station are saved locally (operation state of management points, etc). When the power is restored, the data are read out from the memory so that the system can be restarted in its previous state. During this time period (about 10 minutes), automatic control functions of the intelligent Manager system are deactivated (scheduling, interlocking and emergency stop programs).

4. Logging in/Logging out

intelligent Manager may be operated in accordance with the range of authority selected by the user when logging in. (If login is not carried out, functions are confined to monitoring). For details on login setup, please refer to **5.10.3 Configuring user Login** (p. 245).

4.1 Logging in

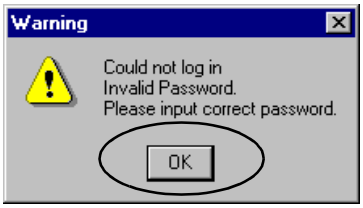
Login is carried out according to user classification settings.



Click on the **Login/out** menu button to display the login dialog box.

Select a login name and enter password

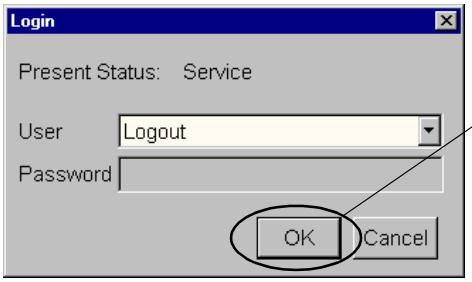
Click on **OK** button to log in.



(if the password is incorrect, a message box is displayed).

4.2 Logging Out

Logs out from login status.



While logged in, click on **Logout** button of the menu button. A dialog box will appear as shown in the above figure.

Click on **OK** button to log out.

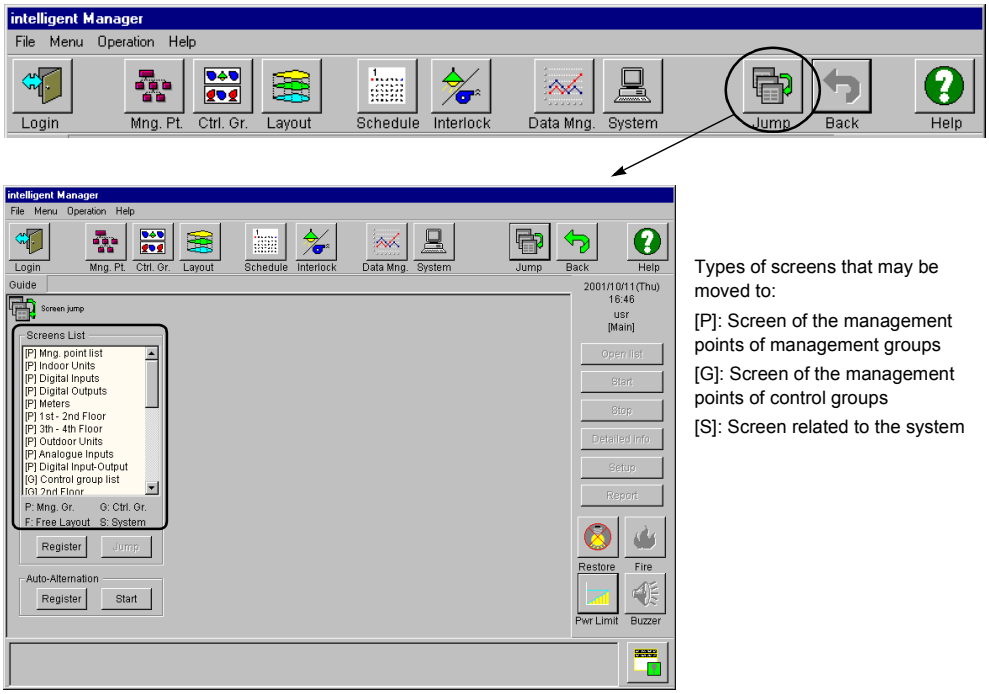
5. Operation Details

5.1 Moving Between Screens

It is possible to move between screens at will and there are two ways of doing so: 'simple movement' and ' movement by the reservation button'.

Moreover, if the automatic circular sequence function is used, multiple registered screens will be displayed and automatically switched over at a predetermined frequency.

Click the **Jump** button.



Types of screens that may be moved to:

[P]: Screen of the management points of management groups

[G]: Screen of the management points of control groups

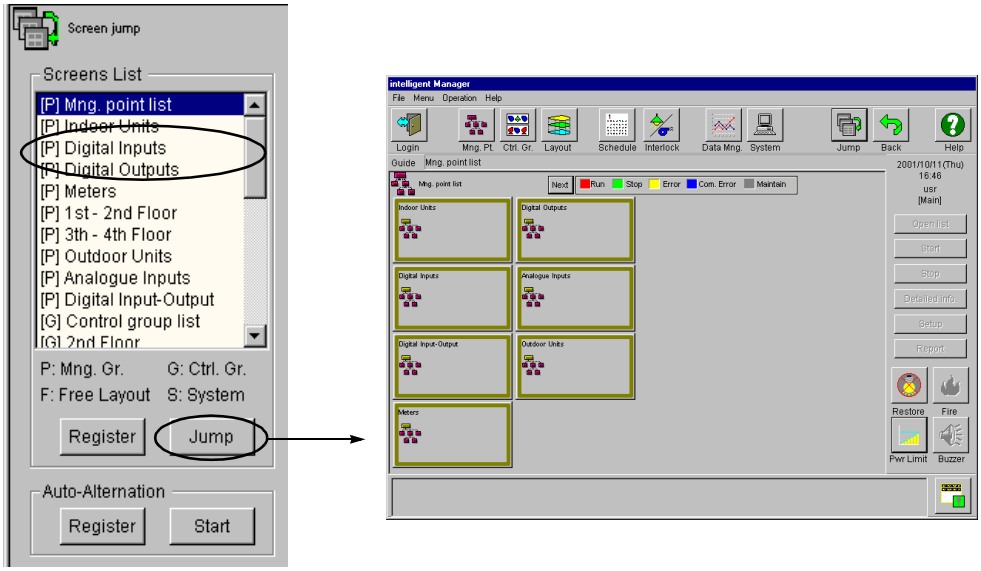
[S]: Screen related to the system

5.1.1 Simple Movement

A list of the screens that may be moved to is displayed.

Select the screen to be moved to from the screen list and click on **Jump** button to move to this screen.

Screens to be moved to.



5.1.2 Movement by Reservation Button

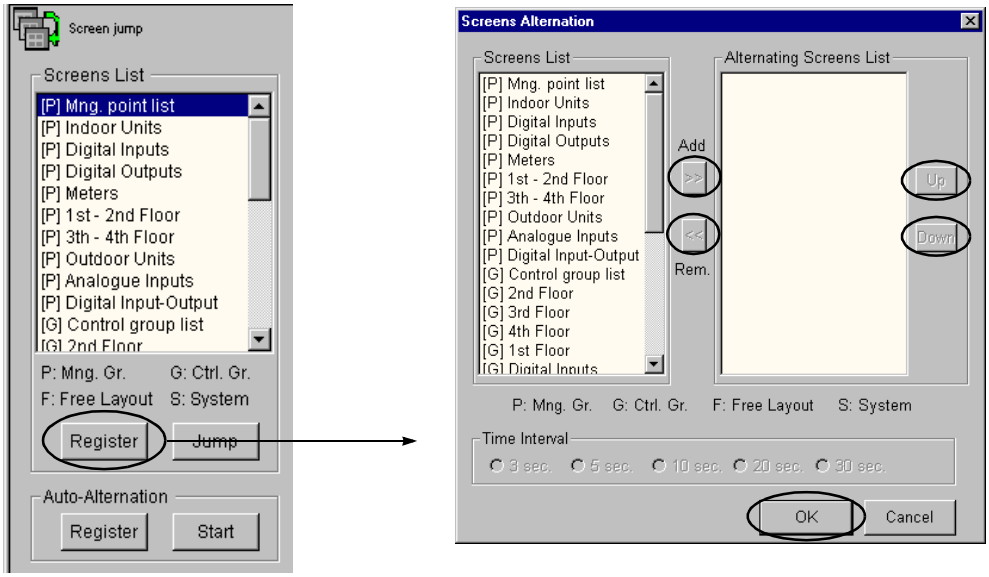
Click the **Register** button to display the following dialog box.

Select the screen to be reserved from the screen list and click the **Add >>** button to register it in the list of reserved screens. To remove from the registered area, click the **Remove <<** button.

Select the order of the buttons: select the button screen from the reserved screen list and click the **Up** button to move the button to the top.

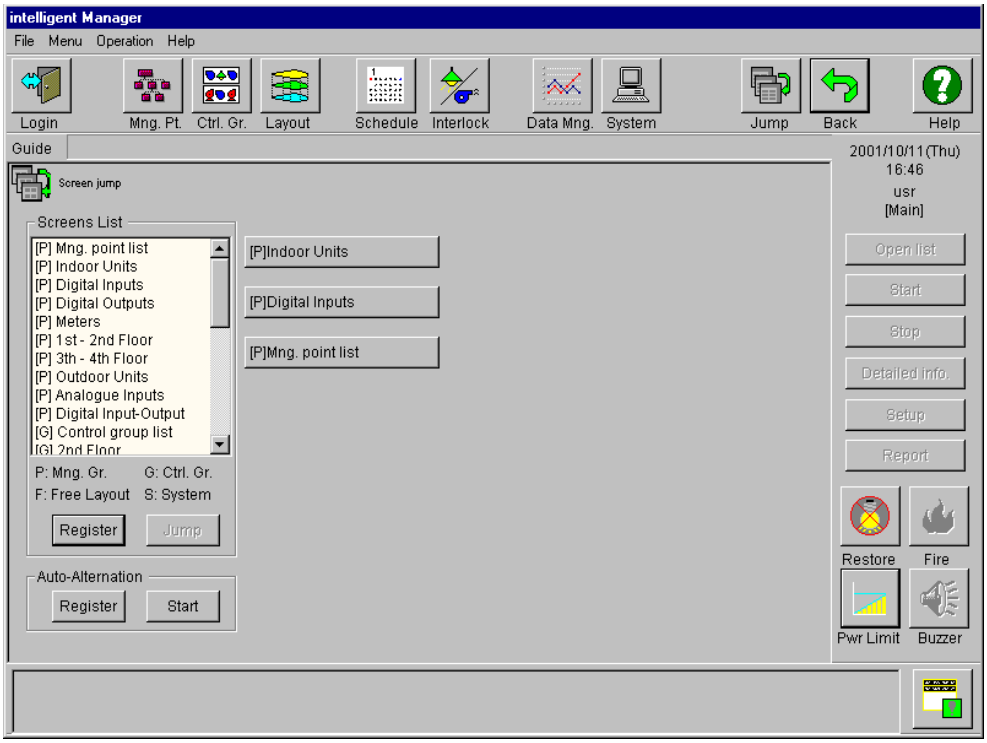
To move the button to the bottom, click the **Down** button.

Finally click the **OK** button.



The buttons are generated.

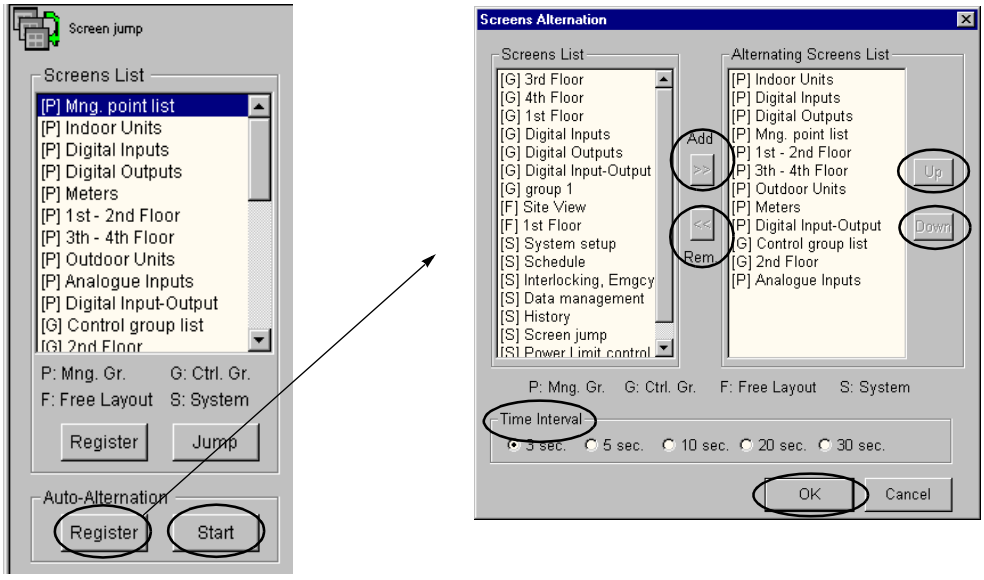
Click the respective button to jump to the corresponding screen.



5.1.3 Automatic Circular Sequence

Pre-registered multiple screens may be displayed and made to switch over at a pre-determined frequency.

Click the **Register** button to display the following dialog.

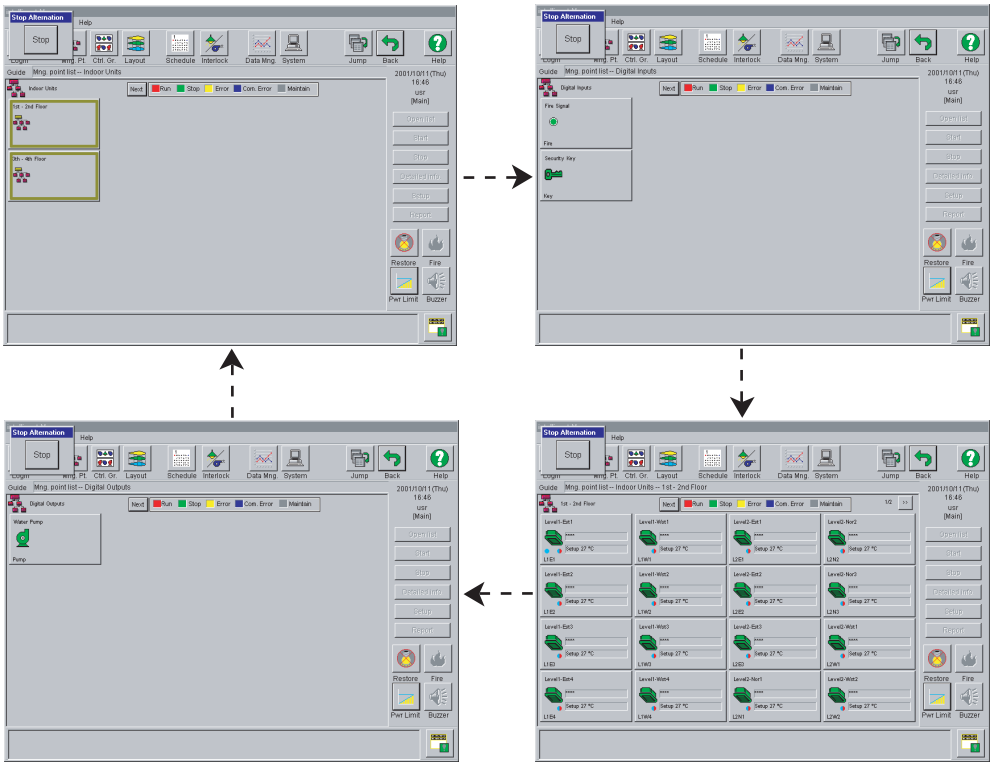


Select the screen to be reserved from the screen list and click the **Add >>** button to register it in the list of reserved screens. To remove from the registered area, click the **Remove <<** button.

Select the screen **Switchover Time Interval** from the radio buttons.

Finally click the **OK** button.

Click the **Start** button to activate the automatic circulation of screens in their registered sequence.

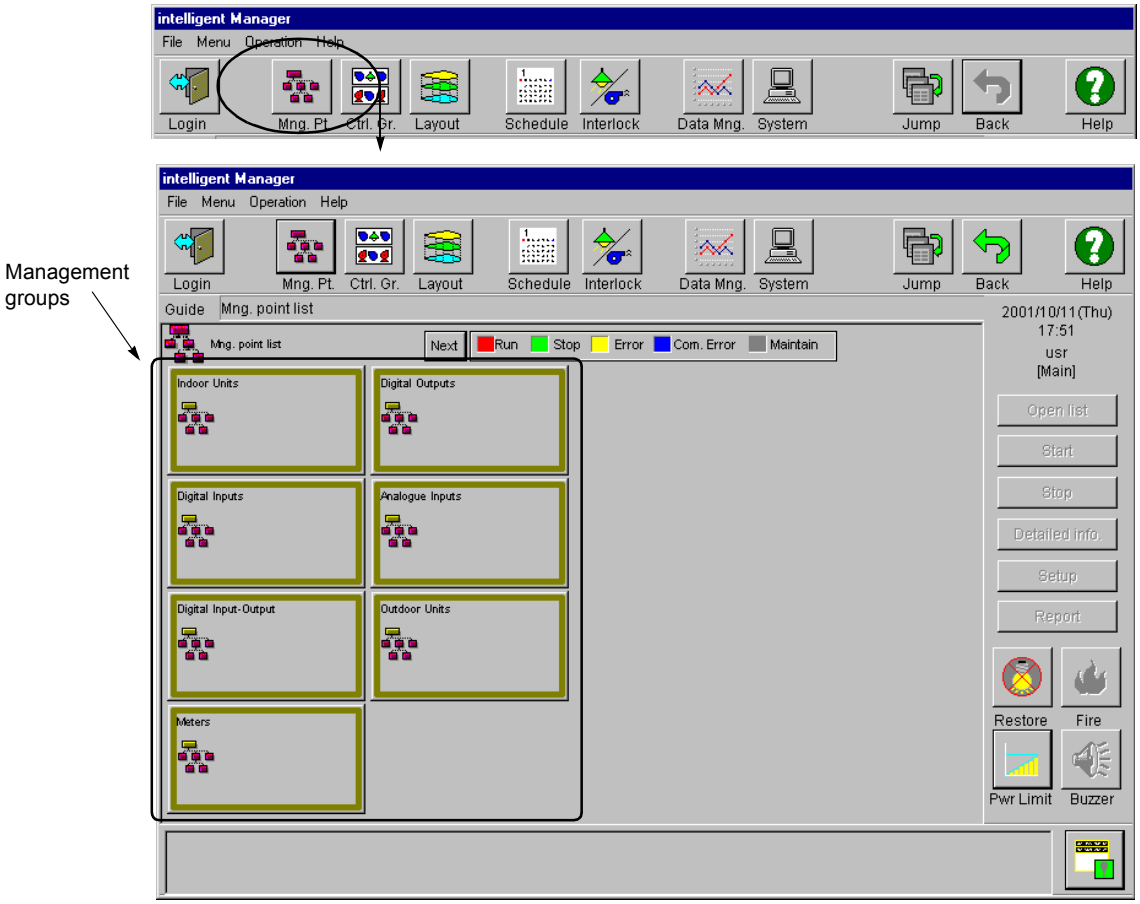


Click the **Stop** button to stop the automatic circular sequence.

5.2 Displaying Management Groups

- A management group is a group of management points collected together for ease of management.
- A management group is able to collect together both management groups and management points, thereby making it possible to constitute multi-layered management groups.
- A single management point may belong to more than one management group.
- You are able to create new management groups at will and modify them. Please refer to **5.10.1 Configuring Management Groups** (p. 238).
- A management group is only able to manage collective layers of management points and cannot be used for individual monitoring and operating.

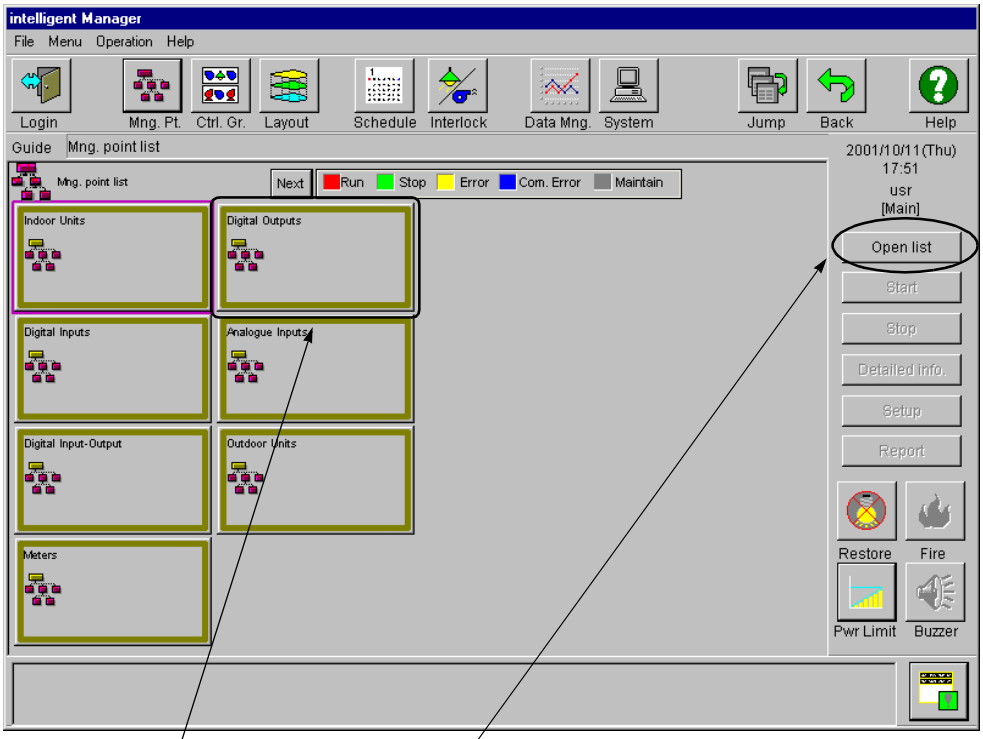
Click the **Management Points** button from the menu buttons.



5.2.1 State Monitoring List

The state of management points (Start/Stop, Malfunction) may be understood from the list displayed.

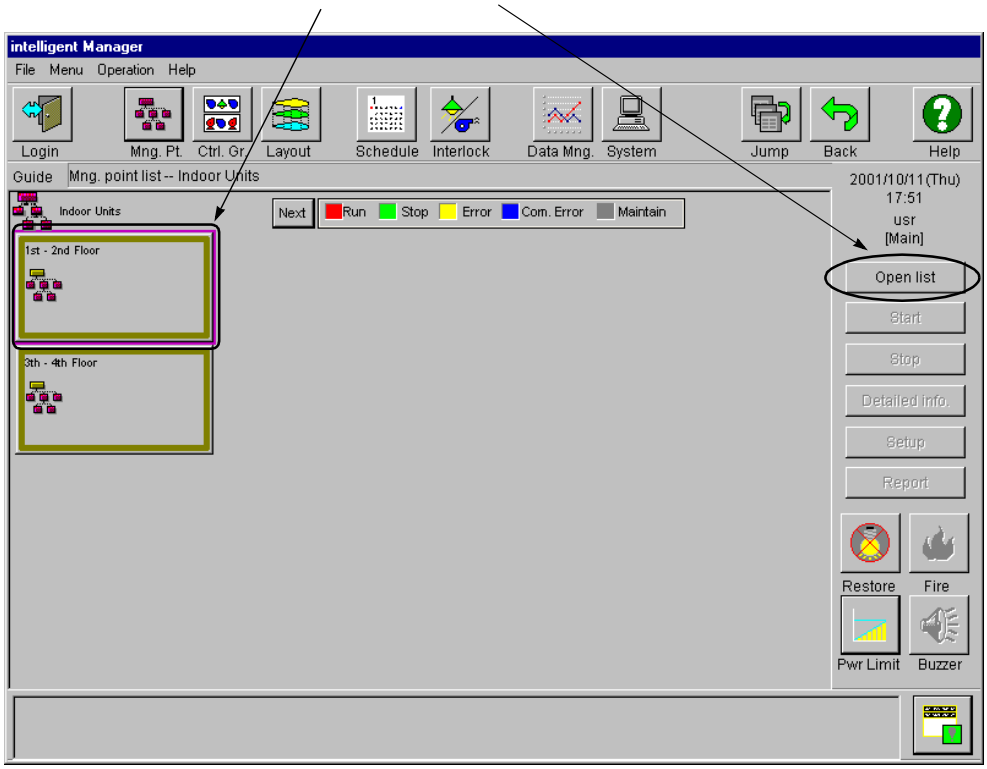
As the monitoring of equipment is not displayed in the group, to access it click the button corresponding to the group to be checked.



Click the group button to enable the **Open list** button. Then click the **Open list** button to display the list within the group.

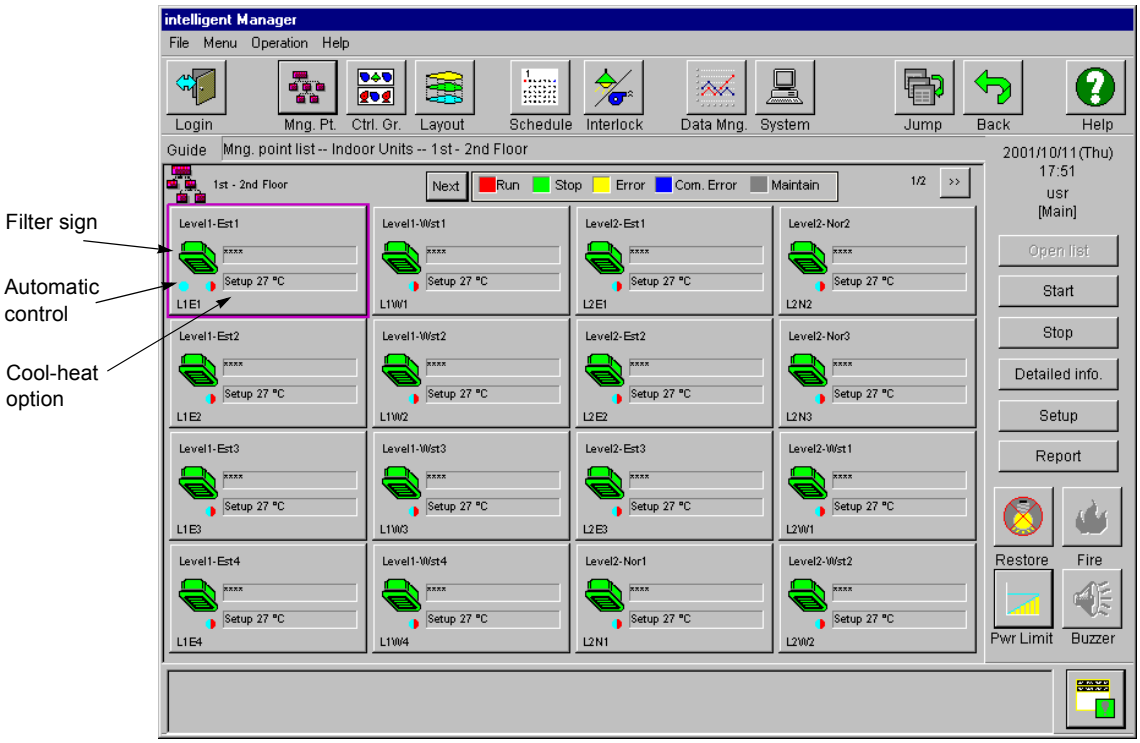
The management groups will appear listed as shown in the above screen.

Click once more on the sub-group and **Open list** buttons.



The management groups and management points will appear listed as displayed in the above screen. This shows how both management points and management groups can be collected within a management group. Henceforth the list within a management group may be displayed and opened in the same way.

The points of the group list are displayed.



The state of a management point is shown by the color of its icon.

Red: Running

Green: Stop

Green blinking: Emergency stop

Yellow blinking: Malfunction

Blue: Communication error

Gray: Under maintenance

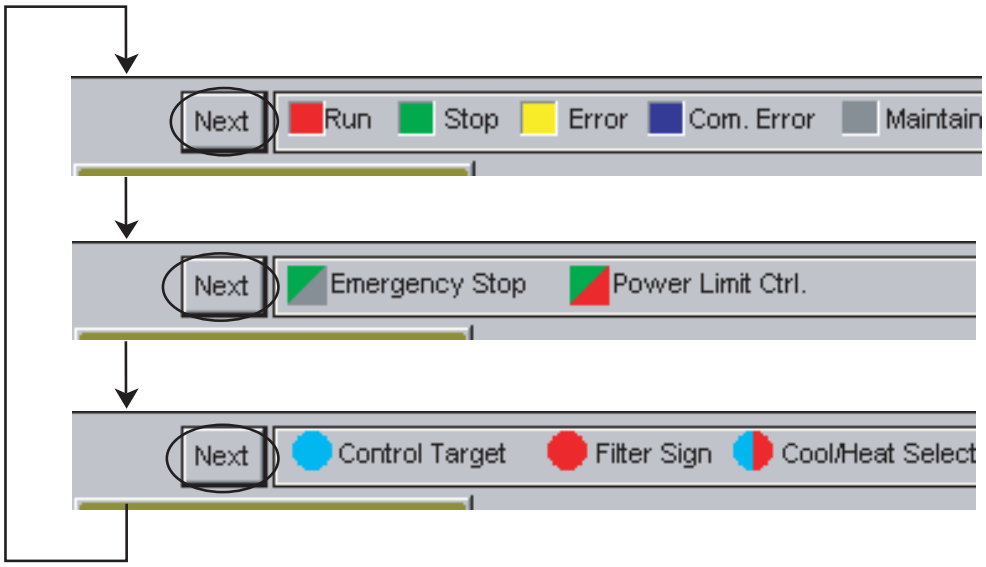
The marks for the filter sign, cooling/heating options and automatic control (interlocking and scheduling) are also displayed.

Note An asterisk (*) after the operation mode indicates that the system is in defrost state.

State Monitoring (legend)

The state of a management point is shown by the color of its icon.

Legend



Click the **Next** button to display the legend corresponding to the upper and lower parts of the icon respectively.

Main Icon Color

Red: Running

Green: Stop

Yellow blinking: Malfunction

Blue: Communication error

Gray: Under maintenance

Green blinking: Emergency stop

The marker to the lower right of the main icon

Blue/red: Management point with cooling/heating option

Red: Filter sign

Blue: Under automatic control (Management points connected with Interlocking and Scheduling)>

Changes in Icon State

Changes in icon state - Start/Stop/Malfunction - are displayed as follows:

Equipment Malfunction: Indicates abnormal state of air-conditioner or equipment

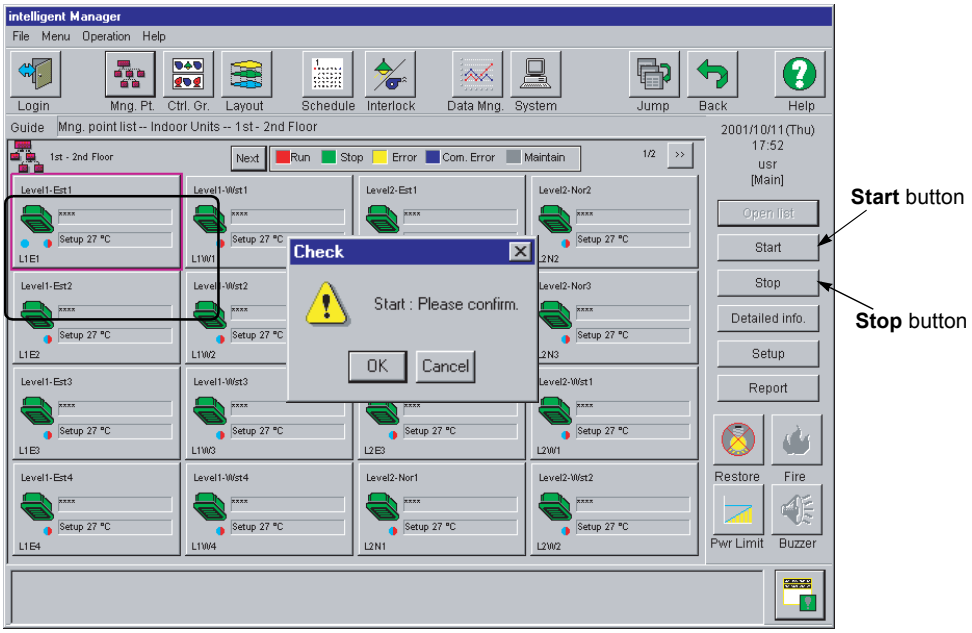
Monitoring Error:	Inconsistency error
	Abnormal Start/Stop failure
	Abnormal Maximum/Minimum limits
	Abnormal duration of continuous operation
Communication error:	Abnormal communication state of DIII-Net
	Abnormal communication state of Sequencer
Under maintenance:	Indicates that equipment is under maintenance
Emergency stop:	Indicates control state of emergency stop

The icons indicating the control group display the representative states of management points belonging to the control group in descending order of priority.

Priority: Stop < Running < Communication Error < Equipment Malfunction (Monitoring Error) < Under maintenance

5.2.2 Start/Stop Operation

Start/Stop operation can be performed only on management points for which there is a Start/Stop/Setting authority. Please refer to **5.10.3 Configuring user Login** (p. 245).



First select the management point to be started up.

Then click on the cell of a management point.

If the management point has Start/Stop capability, the **Start** and **Stop** buttons will be enabled.

Click the **Start** button to display the confirmation dialog box.

Click **OK** to start the operation or **Cancel** to cancel.

Similarly, if the **Stop** button is clicked, the confirmation dialog box will be displayed.

Click **OK** to stop the operation and **Cancel** to cancel.

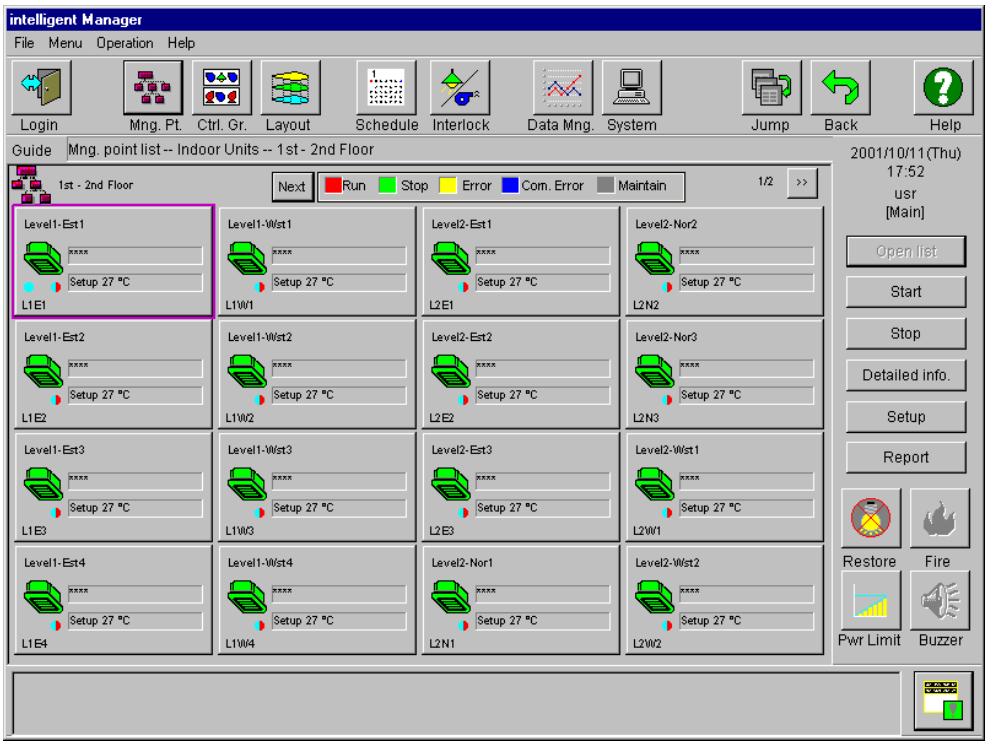
If a management point without startup capability is selected, the **Start** and **Stop** buttons will gray out (that is, clicking has no effect on them), and Start/Stop operation cannot be performed.

5.2.3 Displaying detailed Information

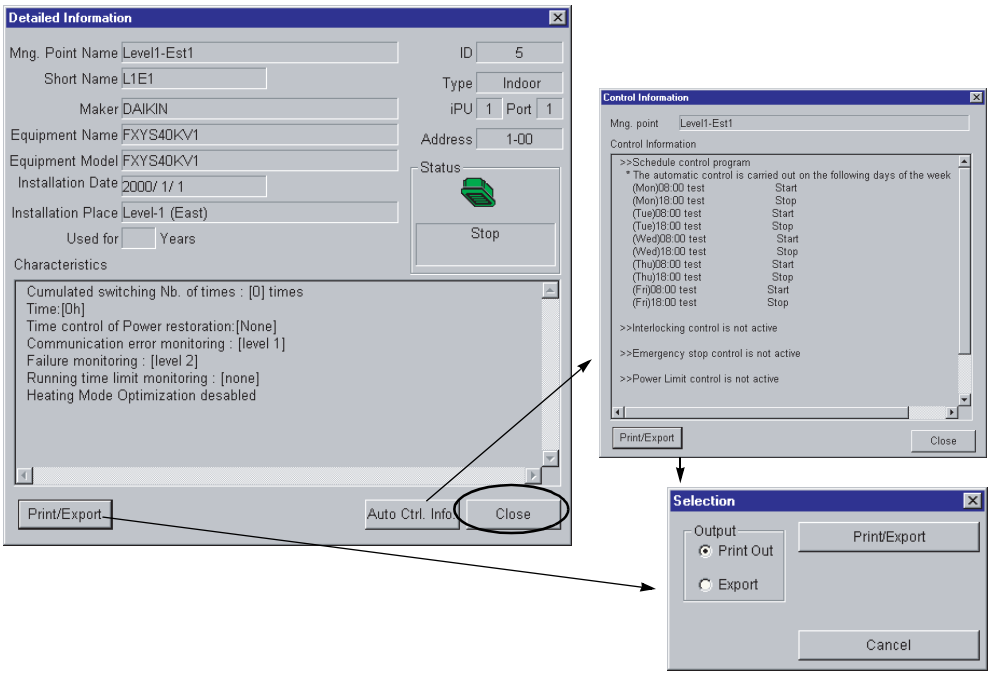
This displays detailed information on management points.

To check detailed information, click on the management point you wish to check, followed by a click on **Detailed Information**.

In the example below, click on the cell of a management point, followed by a click on the **Detailed Info** button.



The detailed information dialog box will appear.



Click on the **Print/Export** button to print the detailed information on the system printer or to save them in a CSV (comma separated) format file.

Click on the **Auto Ctrl. Info** button to display the dialogue with information of this management point related with automatic control programs (schedules, interlocking). Click on the **Print/EXport** button of this dialogue to print the automatic control information on the system printer or to save them in a CSV (comma separated) format file.

To close the dialog box, click on the **Close** button.

5.2.4 Setting up equipment

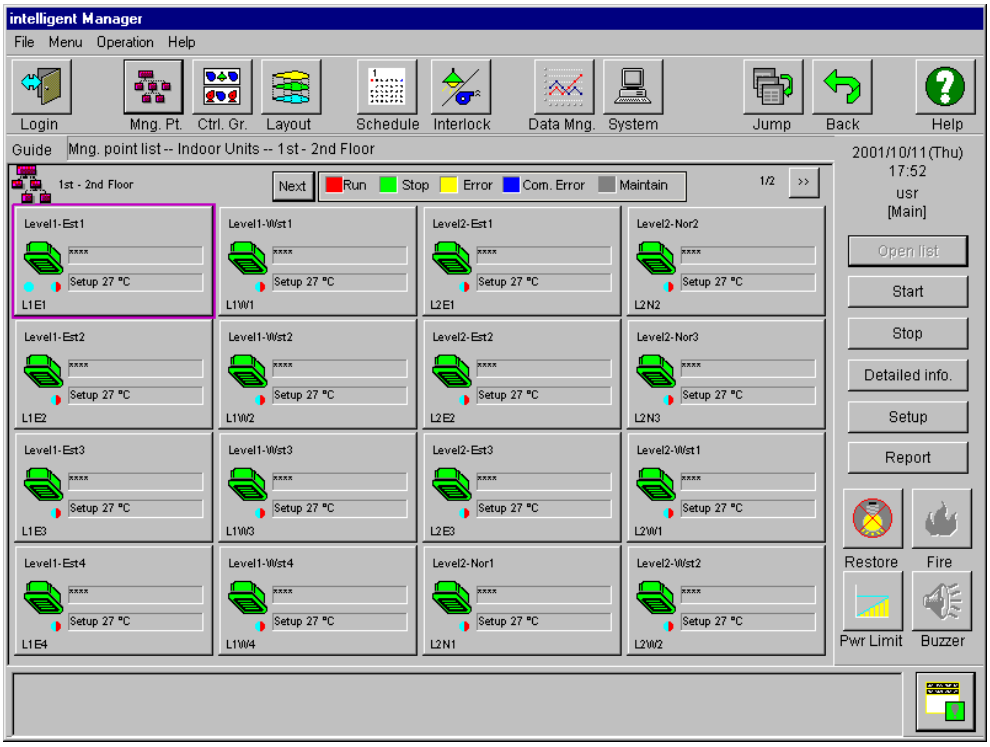
Various setups can be performed only on management points for which there is a Start/Stop/Setup authority. Refer to **5.10.3 Configuring user Login** (p. 245).

First select the management point whose setup you wish to modify. (The Level3-Shared1 in the figure below).

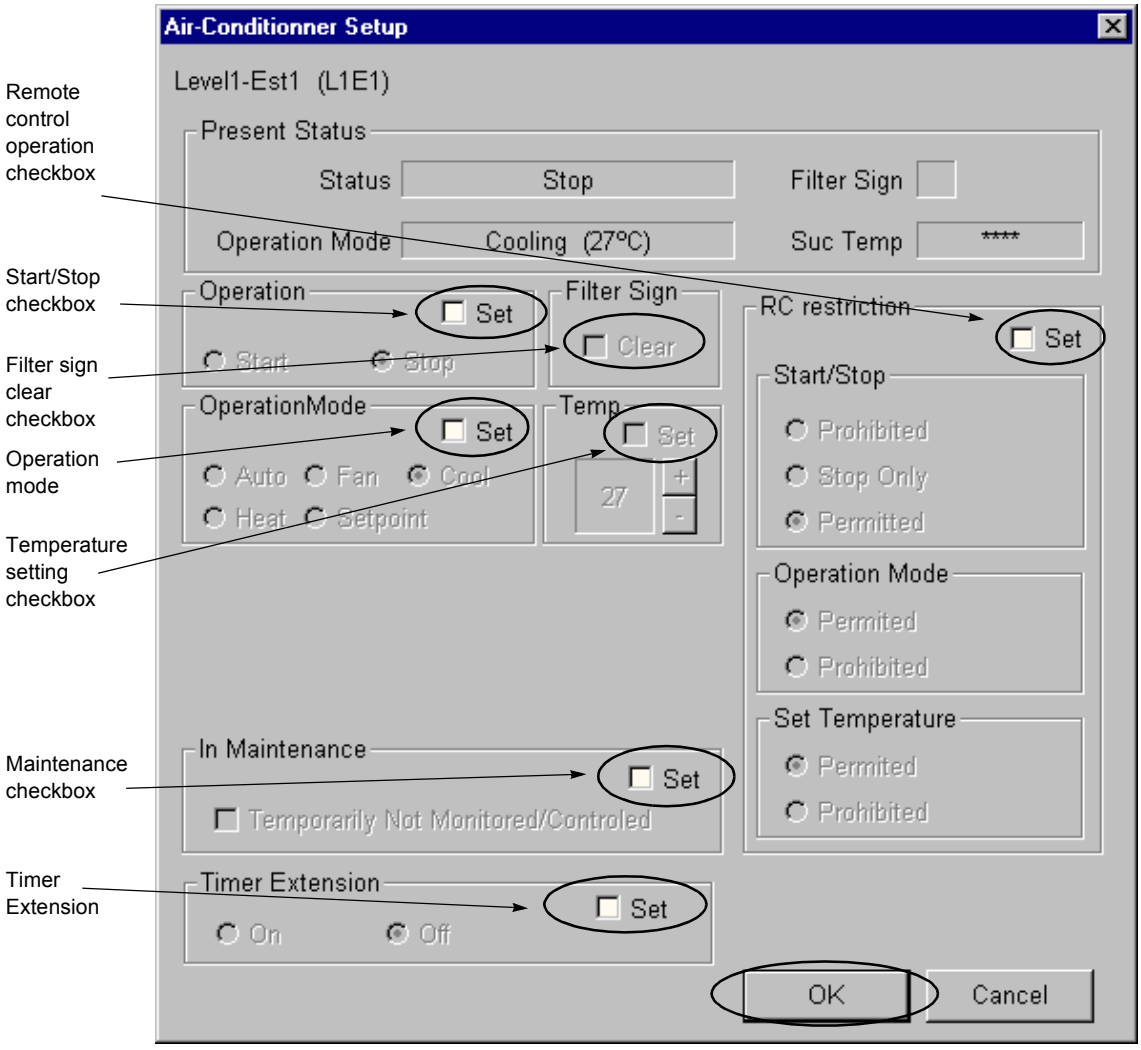
Click on the **Setup** button to display the setup dialog box.

The items that may be set up will vary according to the management points.

5.2.4.1 In the case of Daikin Air-conditioner (DIII Air-conditioner)



An air-conditioner setup dialog box is displayed.



Note An asterisk (*) after the operation mode indicates that the system is in defrost state.

The following setup is then possible.

The items that may be set up will vary according to air-conditioner compatibility.

- *Start/Stop*

If the **Setup** check box has been checked, **Start** and **Stop** will be enabled and can therefore be selected. The same setup can be performed as in P182 [5-2-2. Start/Stop Operation].

- *Operation Mode Setup*

Check the **Setup** check box to enable the modes to be set up. Select the desired Operation Mode.

- *Fan Speed and Direction Setup*

Check the **Setup** check box to enable the fan speed and direction options. Select the desired intensity and direction of airflow.

- *Timer Extension*

Check the **Timer Extension** check box to display the setup items of 2 hours limitation control operation (this indoor unit will be stopped automatically 2 hours after start). Select Timer Ex-tension On / Off.

- *Clear Filter Sign*

If the filter sign appears, the **Clear** check box will be automatically enabled. Check this box to clear the filter.

- *Temperature Setup*

For temperature setup, the **Setup** check box is enabled only when the Operation mode check box has been checked and the temperature setup mode has been enabled.

In this case, if the check box has been checked, temperature setup and the **+** and **-** buttons are enabled.

Click these buttons to modify the temperature setup.

The possible setup range is limited by the operation mode.

- *Remote-control Operation*

Check the **Setup** check box to display the setup items of remote-control operation. Select Permission/Prohibition for each of these items.

- *Under maintenance*

Check the **Setup** check box to enable the **Temporarily Out of Monitoring/Control** check box. By checking this check box, the management point in question is set up/released from under maintenance.

- *When the management point is under maintenance*

All monitoring and control pertaining to a management point under maintenance are disabled.

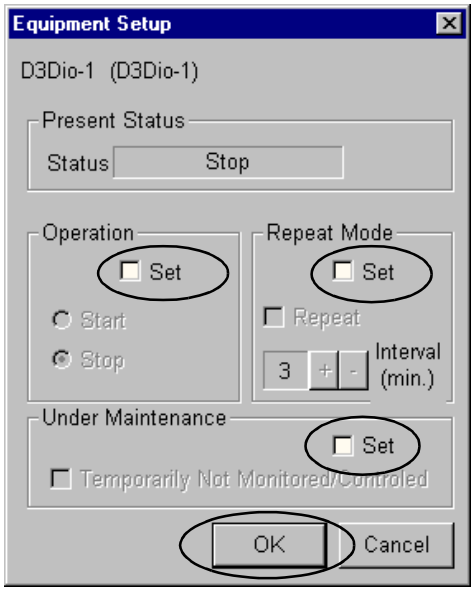
Under maintenance appears on the monitoring screen.

Only the Setup/Release of the check mode remains in the history. (Changes of state while under maintenance etc are not recorded).

Click the **OK** button to display a confirmation dialog box once all setups have been modified.

Click **OK** to carry out modifications to the setup or **Cancel** to cancel.

5.2.4.2 For equipment with Start/Stop capability



The following setups are possible in this case.

- *Start/Stop*

Check the **Setup** check box to enable **Start** and **Stop**. They can then be selected.

- *Repeat Mode*

Check the 'Setup' check box to enable the **Repeat** checkbox. When the **Repeat** check box is checked, the time interval and **+** and **-** buttons are enabled.

The repeated time interval can then be altered by means of these buttons.

Start/Stop instructions are given within a fixed interval (specific value) so that the Start/Stop state of the equipment can be executed as indicated, regardless of manual operation etc.

- *Under maintenance*

Check the **Setup** check box to enable the **Temporarily out of Monitoring/Control** checkbox. When this box is checked, the setup changes to 'under maintenance'.

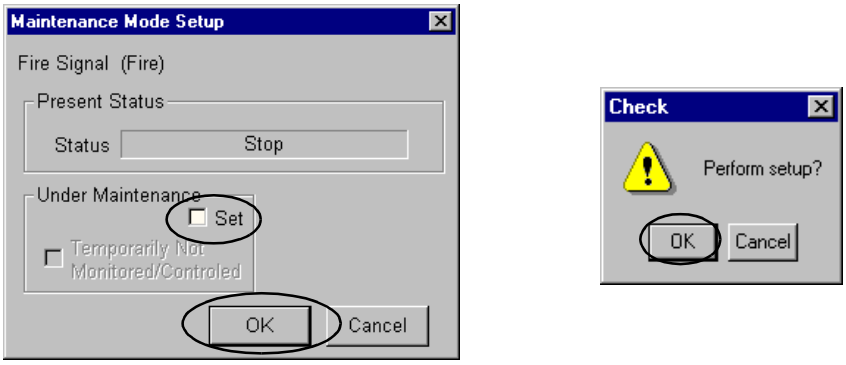
Click the **OK** button to display a confirmation dialog box once all setups have been modified.

Click **OK** to carry out modifications to the setup or **Cancel** to cancel.

5.2.4.3 For other equipment

When setting up, check the **Setup** checkbox to display the items, which may be set up.

In this case setup is only possible when **under maintenance**.



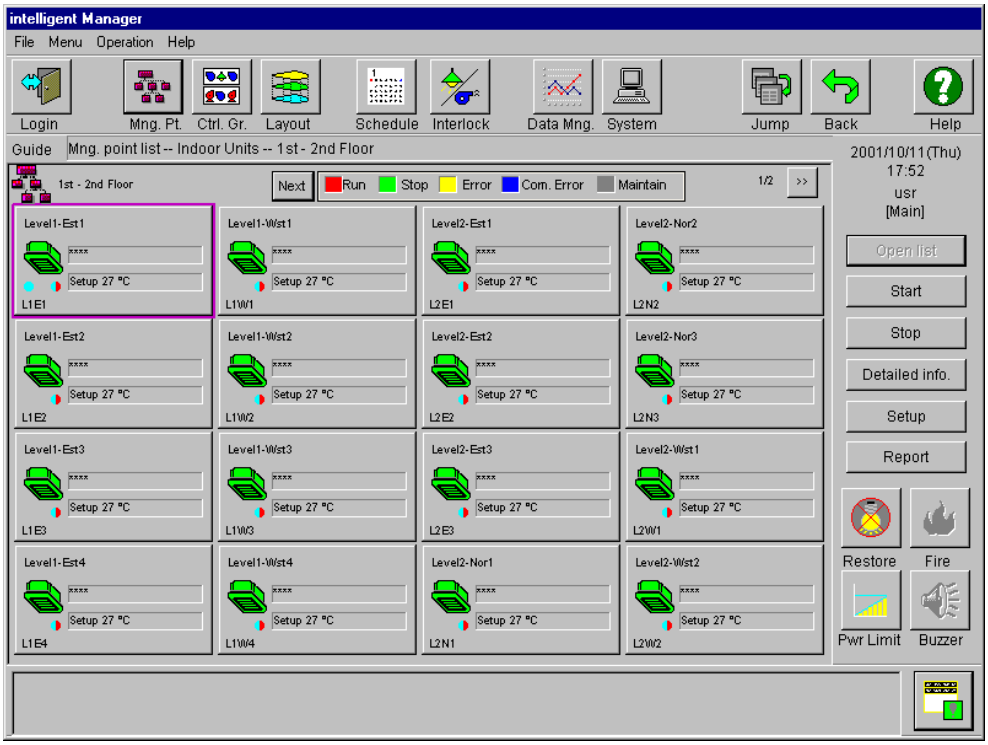
Under maintenance

Check the **Setup** check box to enable the **Temporarily out of Monitoring/Control** checkbox. When this box is checked, the setup changes to **under maintenance**.

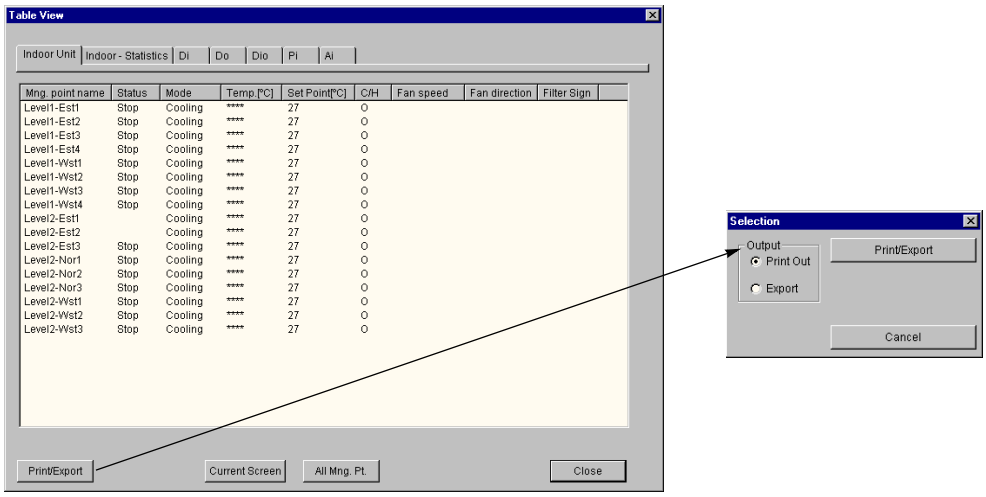
5.2.5 Table view Function

This gives a list of statistical information about the management points on display.

Click the **Report** button.



The Table View dialog box is displayed.



Click on the **Print/Export** button to print the detailed information on the system printer or to save them in a CSV (comma separated) format file.

The following data for each management point may be checked via this function:

- Current state (operation, set temperature, etc)

And as well (except for Ai and Pi):

- Total cumulative number of Start/Stop
- Maximum cumulative number of Start/Stop (warning value)
- Cumulative running time
- Maximum cumulative running time (warning value)

Note An asterisk (*) after the operation mode indicates that the system is in defrost state.

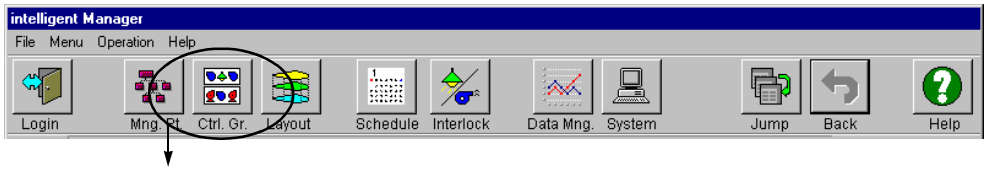
5.3 Displaying Control Groups

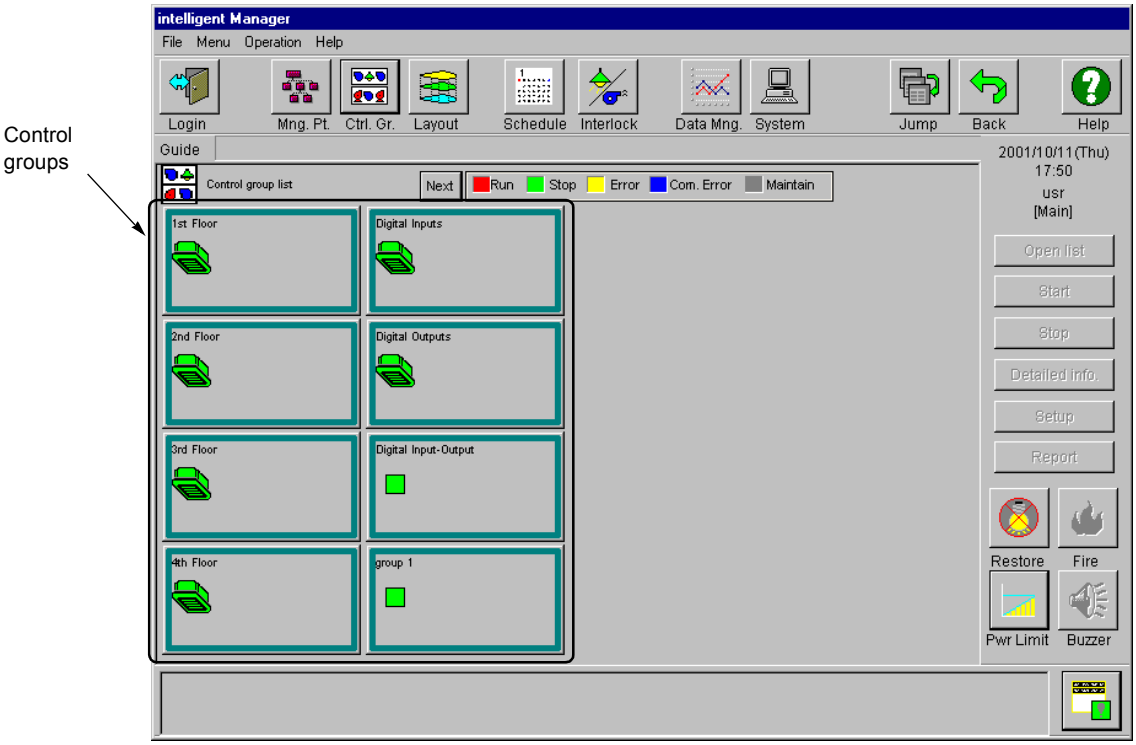
- A control group is a group of management points brought together for collective control.
- In a control group list, control and state display of control group units are carried out. Control and state display of individual management point units is possible in a lower layer screen.

  As the operation method is identical to that of management point lists, please refer to **5.2 Displaying Management Groups** (p. 177).
- A management point may belong to more than one control group.

  This supposes that a given management point will take the appropriate form when belonging both to a normal control group and to the control group used in the case of emergency stop.

Click the **Ctrl. Gr.** button from the menu buttons.





5.3.1 Monitoring Control Groups

It is possible to monitor the states and malfunctions of the collective control groups.

Moreover, control and state display of management point units is possible in a lower layer screen.

As the operation method is identical to that of management point lists, please refer to **5.2 Displaying Management Groups** (p. 177).

Color of Control Group Icons

Priority	Color	Description
1	yellow blinking	Abnormality detected in one or more of the management points within the control group
2	blue	Abnormal communication detected in one of more of the management points within the control group
3	red	No abnormality detected in the management points within the control group and at least one management point is operational
4	green	No abnormality detected in the management points within the control group and they have been stopped

Order of priority is 1>2>3>4.

Note The attributes displayed with a control group (room temperature, etc) are these of the top management point of the groups list.

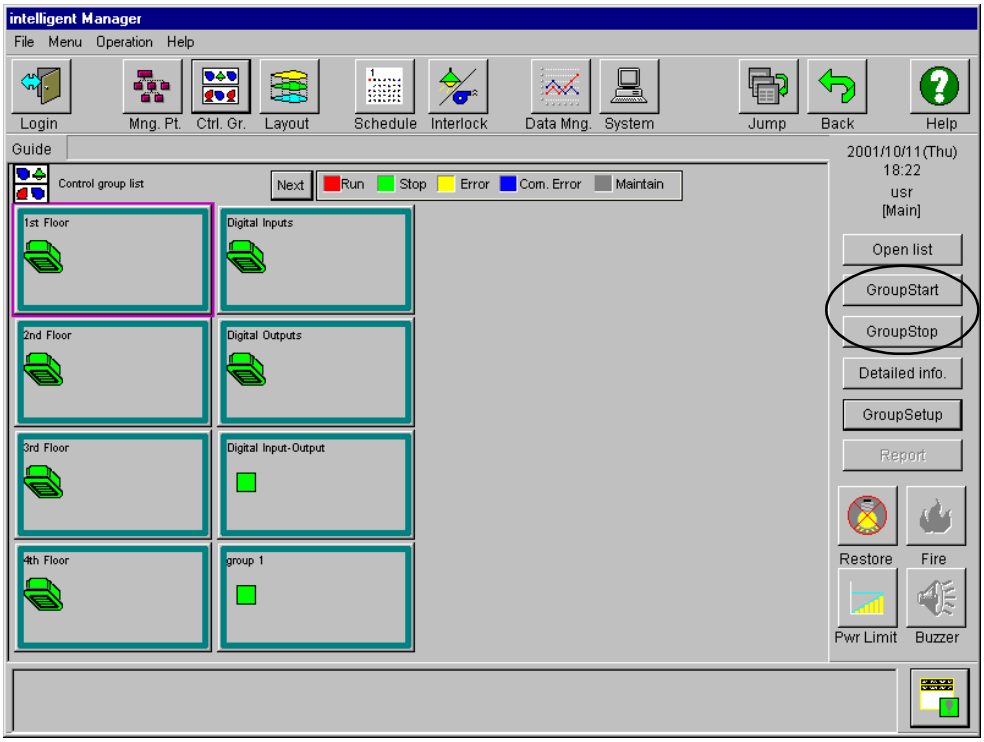
5.3.2 Collectively Controlling with Control Groups

[Group Start/Group Stop]

Collective Start / Collective Stop operation can be performed only on control groups which contain management points for which there is a Start/Stop/Setting authority. Please refer to **5.10.3 Configuring user Login** (p. 245).

Furthermore Start and Stop of individual management point are possible in a lower layer screen.

As the operation method is identical to that of management point lists, please refer to **5.3 Displaying Control Groups** (p. 190).



First select the control group to be started up.

Click the button.

If the control group contains a management point with Start/Stop capability, the **GroupStart** and **GroupStop** buttons operation will be enabled.

Similarly, if the **GroupStop** button is clicked, the confirmation dialog box will be displayed.

Click **OK** to stop the operation and **Cancel** to cancel.

Click the **GroupStart** button to display the confirmation dialog box.

Click **OK** to start the operation or **Cancel** to cancel.

[Group Setup]

By carrying out a collective setup of a control group, more than one management points may be set up simultaneously.

Furthermore setup of management point units is possible in a lower layer screen.

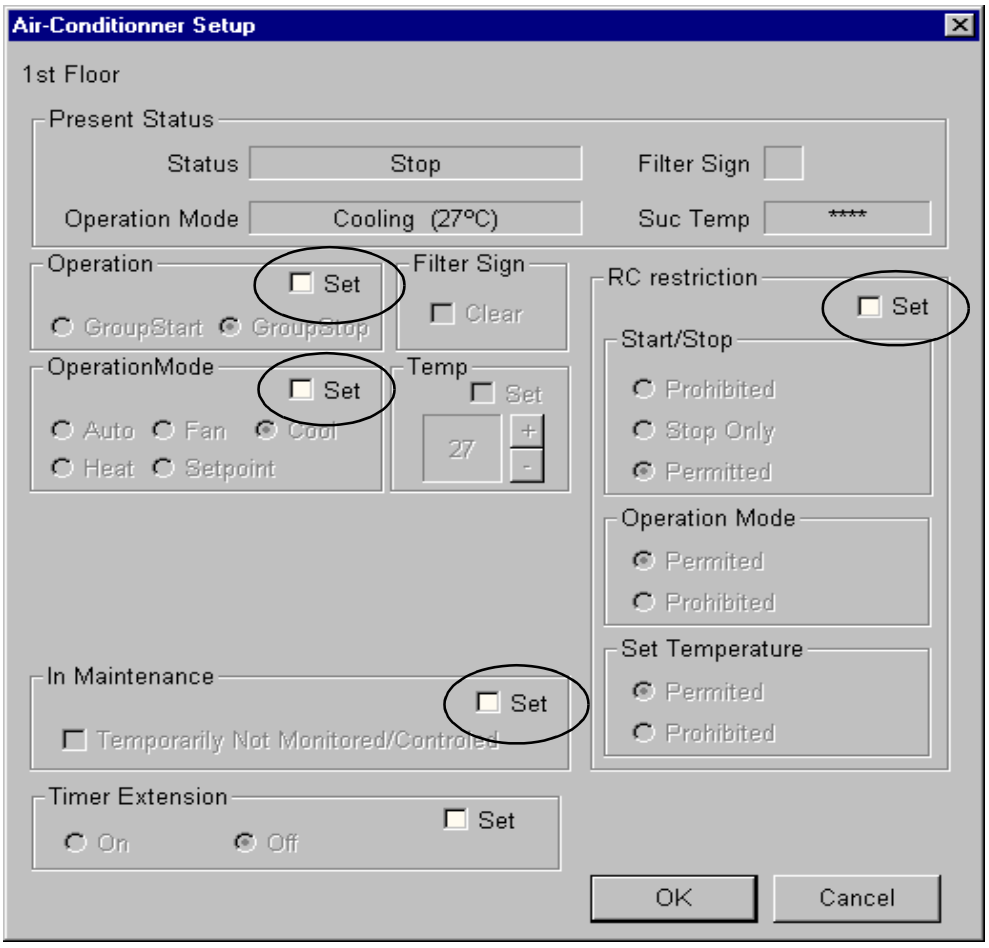
As the operation method is identical to that of management point lists, please refer to **5.3 Displaying Control Groups** (p. 190).

First select the control group whose setup is to be modified.

Click on the **GroupSetup** button to display the setup dialog box.

The items that may be set up will vary according to the management points belonging to the control group.

If the management points in the control group belong to only one type of equipment (Daikin DIII Air-conditioner, equipment with Start/Stop capability or other equipment), the respective dialog box will be displayed in each case and setup is possible.



If there are two or more types of management points belonging to a control group, the other equipment setup dialog box will be displayed and setup will be possible only within a common range.

Therefore, in the case of Daikin DIII Air-conditioner and equipment with Start/Stop capability, it is necessary to carry out individual setups, using the management point list of the lower layer screen.

Please refer to **5.2 Displaying Management Groups** (p. 177) for details of individual screen setup.

5.4 Malfunction Display and History Management

If the monitored equipment malfunctions, details of the content will be displayed in the **[Malfunction history real-time display area]** at the bottom of the screen. At the same time, in accordance with system settings, an alarm buzzer will sound.

After the equipment malfunction has been confirmed/ dealt with, the **[Detailed history screen]** is able to color-code and manage whether the confirmed malfunction has been acknowledged.

The 20 most recent cases of malfunction messages are displayed in the **[Malfunction history real-time display area]** and the100 most recent cases of malfunction and change in Equipment State (such as Start/Stop) are displayed in the **[Detailed history screen]**.

Moreover, a direct switchover function makes it possible to jump to the **[Management point list screen]** on which the management point responsible for generating the error is displayed.

In addition to the above real-time data, data of the malfunctions and changes in state from over approximately the past one-year period can be saved separately in a file on the hard disk. This saved data may also be consulted on the **[Detailed history screen]**.

5.4.1 Displaying Malfunction Messages

If a malfunction or breakdown forecast is generated in the monitoring equipment, details of the content will be displayed in the **[Malfunction history real-time display area]** at the bottom of the screen. At the same time, if the alarm buzzer has been set to ON (set up on the system setup screen), an alarm buzzer will sound.

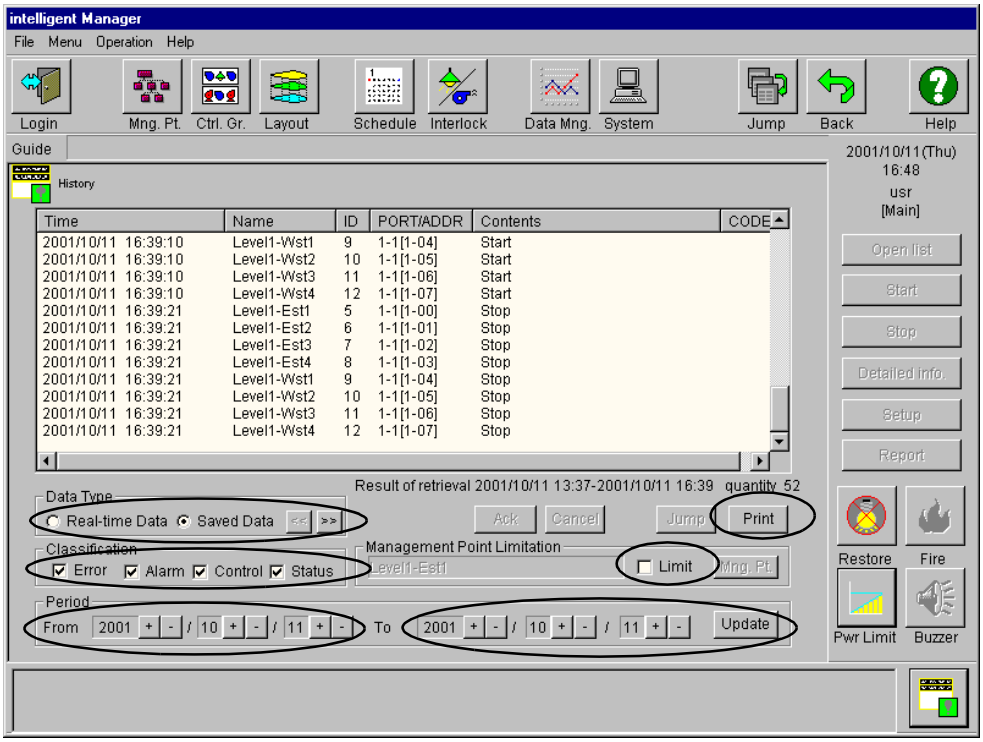
Above is an example extracted of the main screen. However, **[Malfunction history real-time display area]** can appear on any screen and if a malfunction or breakdown forecast is generated, details of the content will be displayed in this area.

5.4.2 Detailed History Screen

In addition to malfunction of management points, changes in state (such as Start/Stop) brought about by automatic control (scheduling etc) may be managed on the detailed history screen.

Information displayed on the detailed history screen may be either real-time data or information saved in a file on the hard disk.

[Detailed History Screen (saved data)]

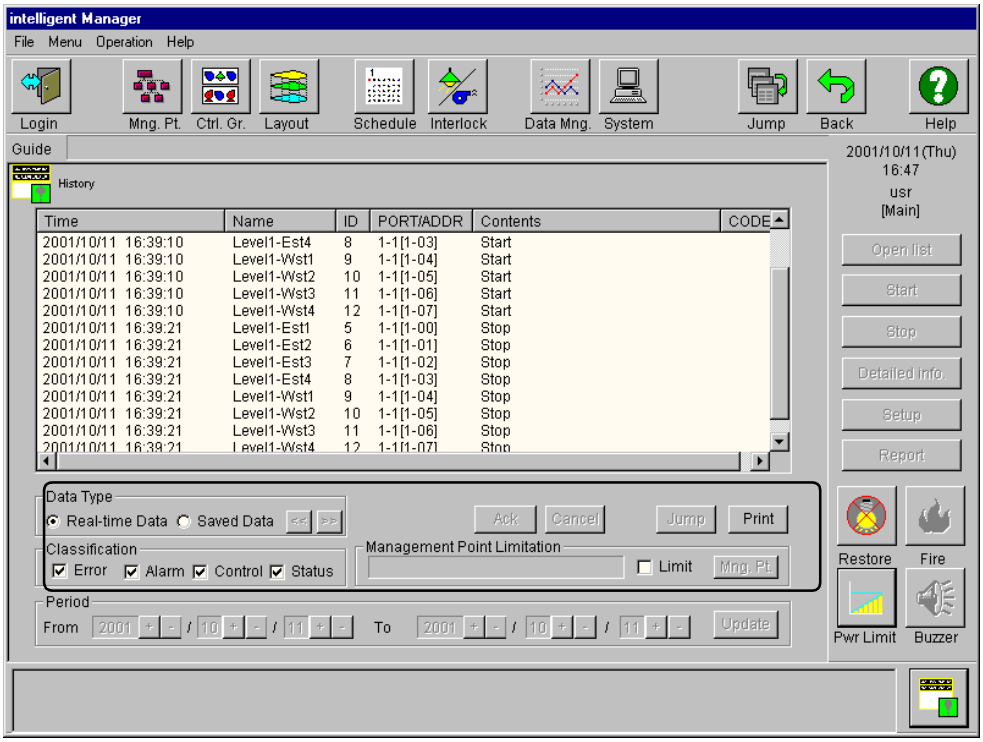


By means of the detailed history screen, it is possible to search and display selections from100 items of real-time data and approximately 500,000 items of saved data.

It is possible to restrict the types of error and management points displayed in both real-time and saved data. Moreover, fixed term searches can be made in the case of saved data. 100 items of search results can be displayed on the screen at any one time and the search can be continued using Next **>>** and Previous **<<**.

Various setups are possible according to the type of data in the content of the history display. Please refer to **5.10.7 Configuring History options** (p. 254).

[Detailed History Screen (real time data)]



The color of the message display varies according to the type of history.

The color of a message that has been confirmed is indicated in brackets ().

Malfunction	Red (purple)
Warning	Blue (gray)
Release	Green
Other	Black

5.5 Emergency Stop Interlocking Control (in case of fire)

When an Emergency Stop signal is received, the state of the fire icon will change.

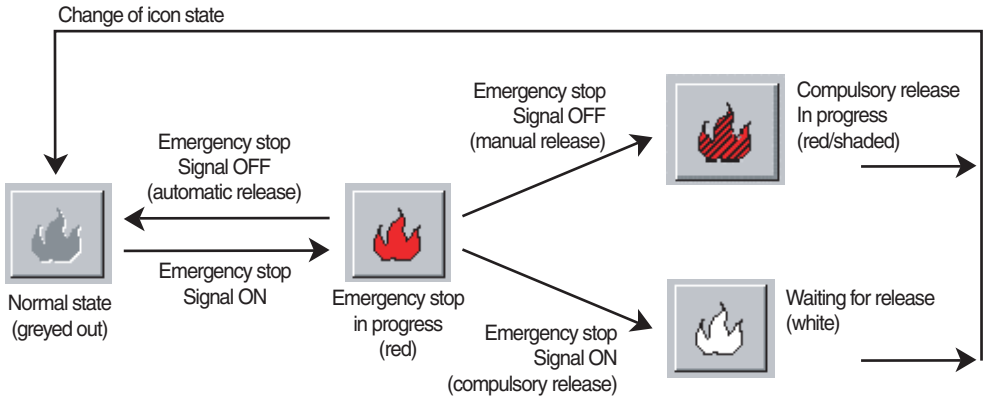
During an emergency, clicking on the fire icon will display the dialog for carrying out forced release.

[Forced Release]

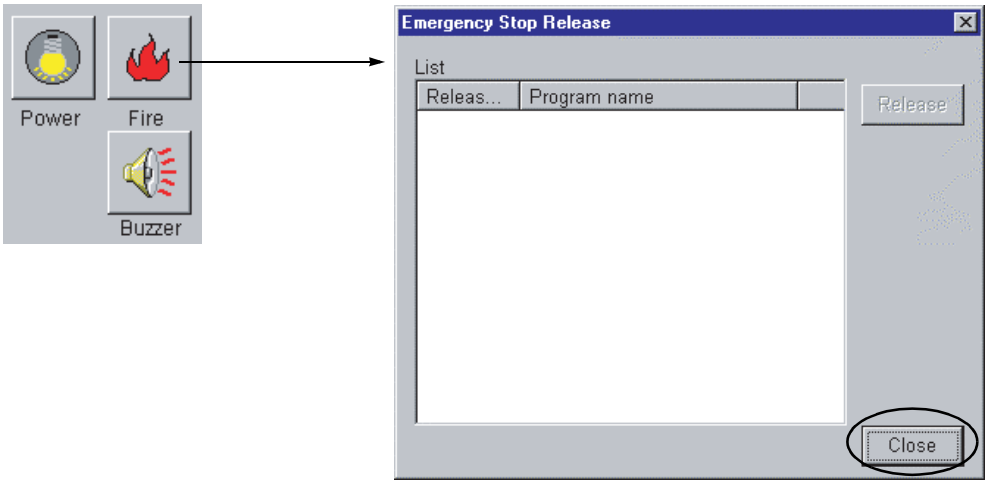
If the Emergency Stop signal turns out to be a false alarm (such as test run or under maintenance), a forced release function can be used.

If the Emergency Stop program is specified from the monitoring software and the [forced release] performed manually, the Emergency Stop program will be canceled irrespective of the release mode (automatic/manual) setup.

In the case of a program monitoring multiple input, even if a separate monitoring signal appears after forced release has been carried out, the emergency stop will not be started up.
(If all signals have not been turned off following the forced release, the emergency stop will not be restarted up).
Operation authority is required to carry out release (forced/manual) operations.
Please refer to **5.10.3 Configuring user Login** (p. 245).



To execute release, select activated Emergency Stop program and click **Release** button.



5.6 Graphical Report

5.6.1 Introduction

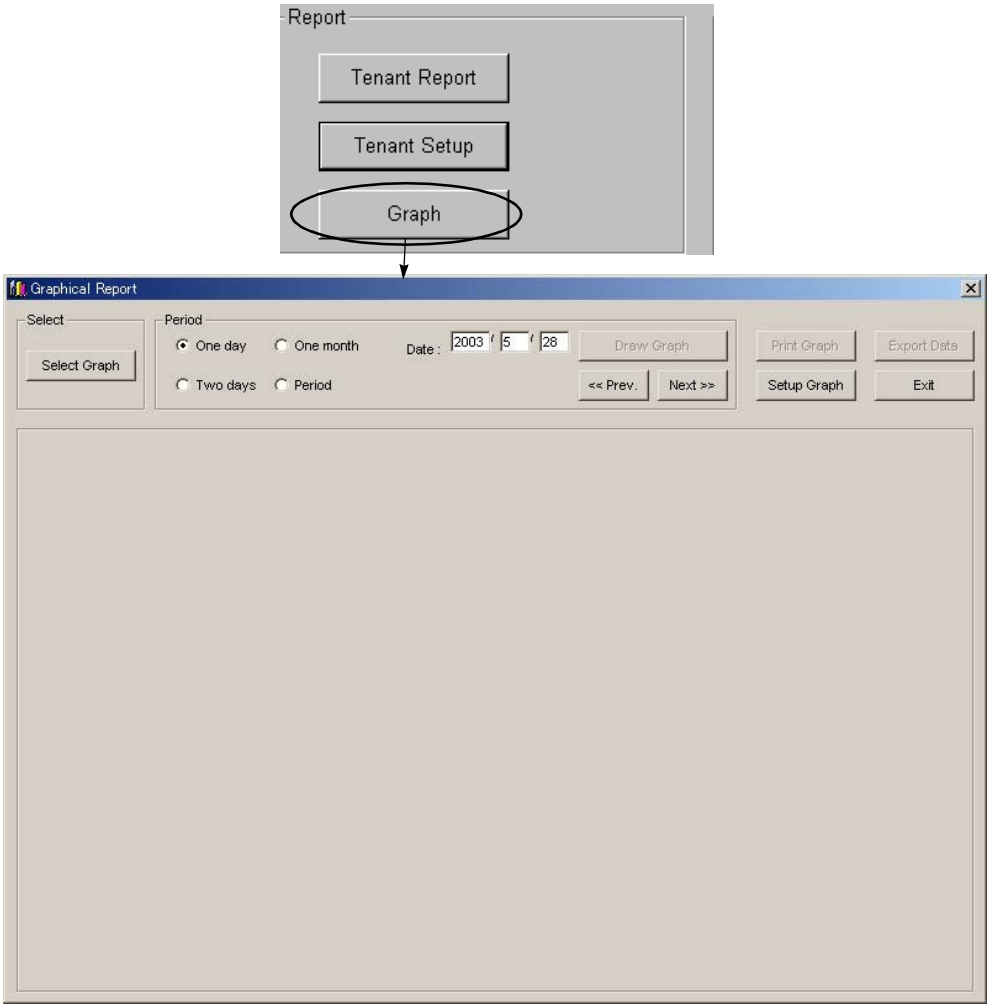
The purpose of the Graphical Report function is to visualize graphically the daily evolution of pulse value and equipment or indoor unit running time. The graphical Report function makes also possible the graphical visualization of trend and daily value of analog management points.

In addition the function also makes possible printing of graphics and export of graphics data under the CSV format for further processing.

5.6.2 Starting the Graph function

Click on the **Data Mng.** button of the intelligent Manager software to display the **Data Management** screen. In this screen's Option frame click on the **Graph** button to launch the Graphical Report function.

The Graphical Report function's main screen is as shown below.

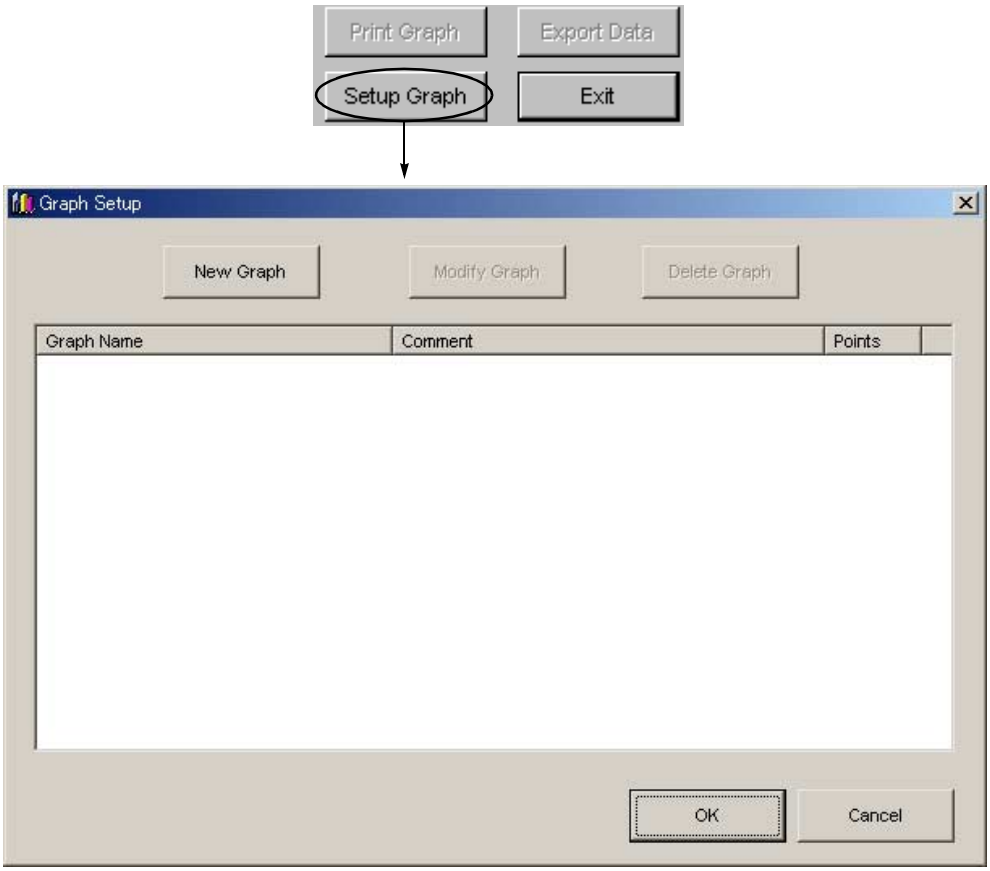


5.6.3 Setting up "Graphs"

When using the function for the first time, it is necessary to setup "Graphs".

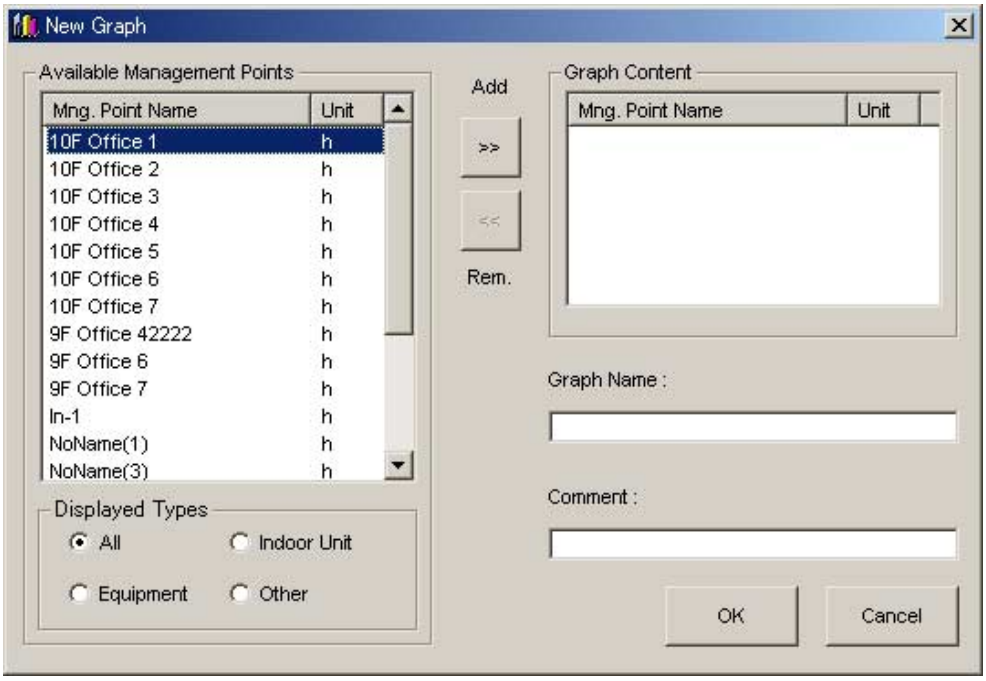
- A "Graph" is a bundle of management points whose values will be displayed on the same graphic.
- A single management point may belong to more than one "Graph".
- The number of management points in a "Graph" is limited to 4.
- The number of different types of point (i.e. with different units) in a "Graph" is limited to 2.
- The number of "Graphs" is limited to 500.

To set up "Graphs", click on the **Setup Graph** button. The Graph Setup dialog displays, as shown below.



5.6.3.1 Creating a new "Graph"

To create a new graph, click on the **New Graph** button. The **New Graph** dialog displays as shown below.

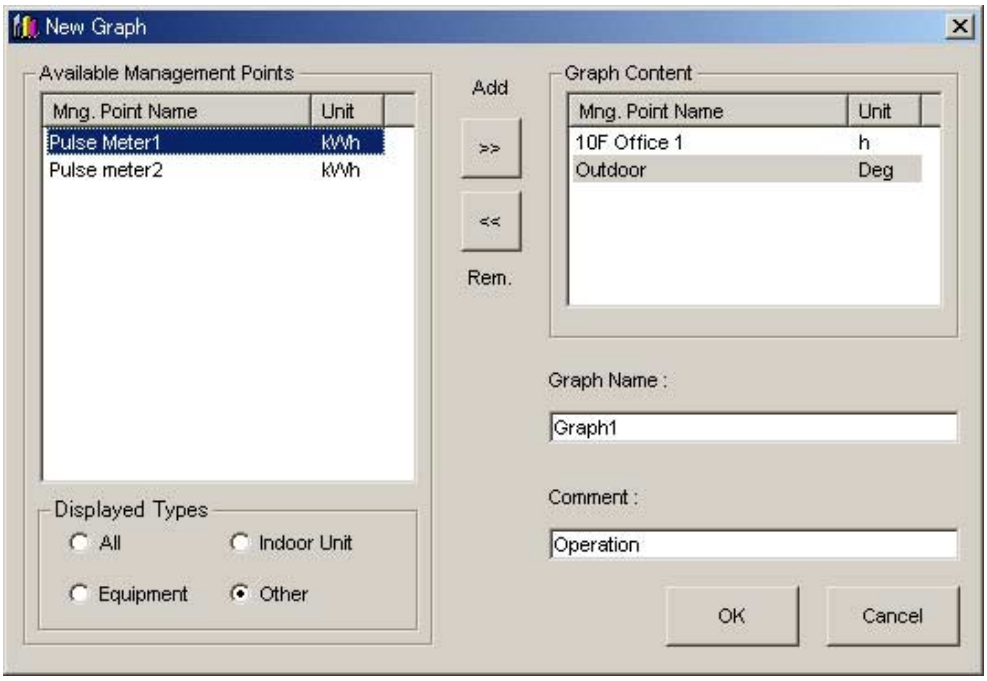


Input the graph name in the **Graph Name** text box. Also input an optional comment in the **Comment** text box.

Note Both Graph Name and Comment are limited to 32 characters.

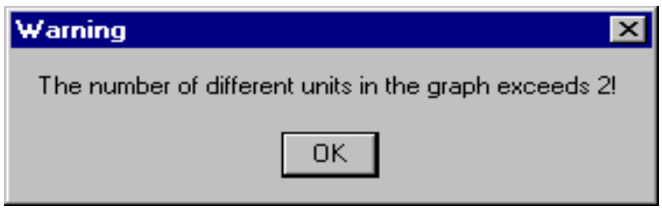
The management points belonging to a Graph are selected from the list of available management points and added by clicking the **Add >>** button.

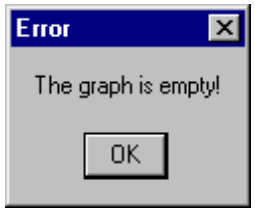
To remove a management point from the Graph, select the management point to be removed from the Graph content list and click the **Rem. <<** button.



Use the option button to modify the type of the points displayed in the list of available management points. **Equipment** includes Di, Do and Dio management points. **Other** includes Ai, Ao and Pi management points.

If the there is no management point, or if limit of number of management points, different types of point (i.e. different units) is exceeded, a warning message displays as shown below.

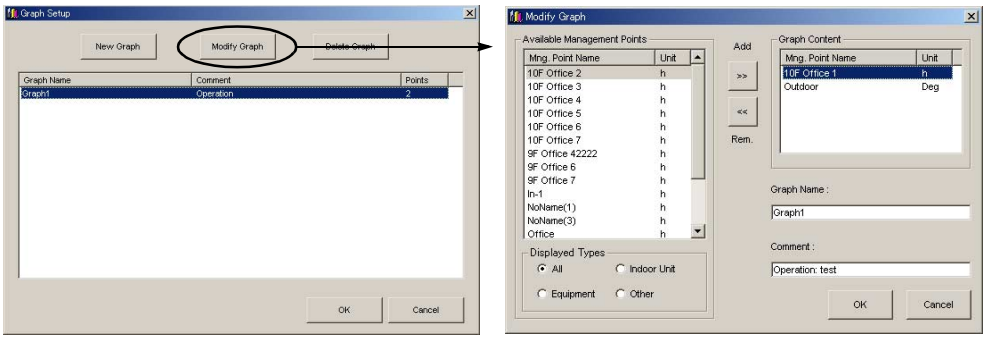




Click the **OK** button to save the new graph as shown in the figure below, or click the **Cancel** button to exit the dialog without saving the new graph settings

5.6.3.2 Modifying a graph

To modify a graph, first select it in the list, and then click on the **Modify Graph** button.

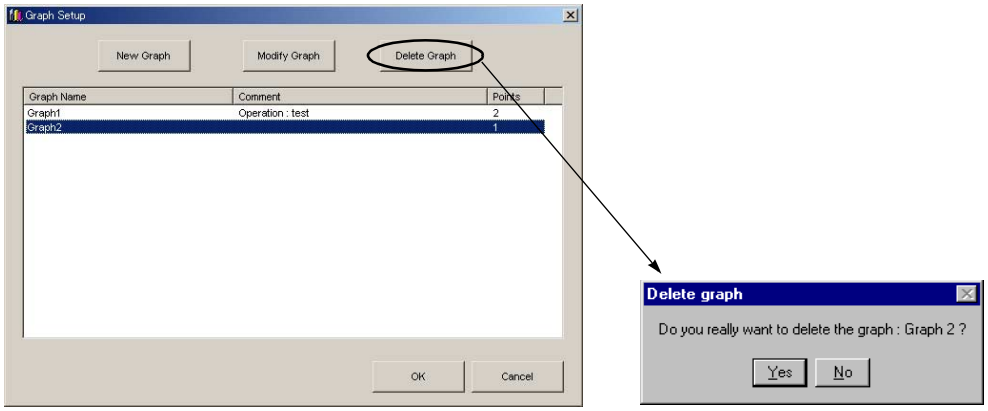


Perform as explained in **5.6.3.1 Creating a new "Graph"** (p. 200) to modify the selected graph parameters.

After modifying parameters, click the **OK** button to save the graph new parameters, or click the **Cancel** button to leave the parameters unchanged.

5.6.3.3 Deleting a graph

To delete a graph, first select it in the list, and then click the **Delete Graph** button. A confirmation dialog displays as shown below. Click **Yes** to confirm the deletion or **No** to cancel it.



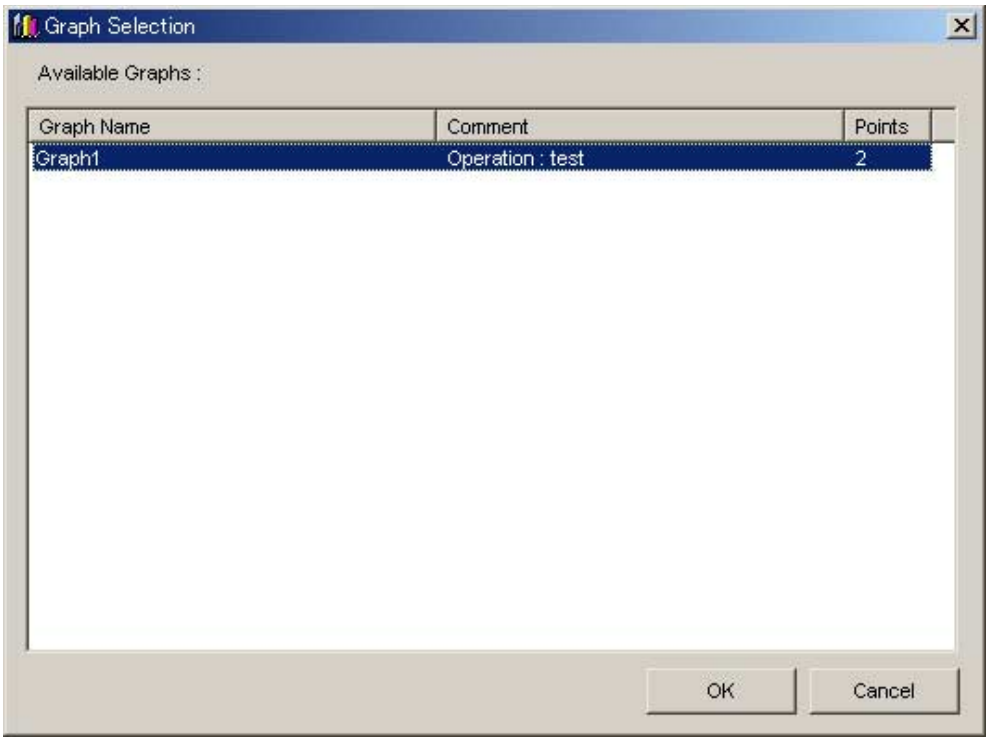
5.6.3.4 Exiting Graph Setup tool

Click on the **OK** button to save the modifications of the Graphs by updating the Graphs setting file. Click the **Cancel** button if you which to cancel the modifications and leave the Graphs setting unchanged.

5.6.4 Drawing a graph

5.6.4.1 Selecting a graph

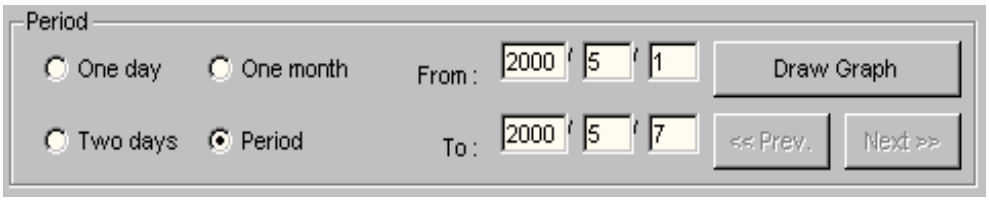
Select the graph to be drawn. Click on the **Select Graph** button to display the list of available graphs as shown below.



Select a graph in the list and click the **OK** button to update current selection. To exit the dialog without updating the current selection, click on the **Cancel** button.

5.6.4.2 Selecting a period

Select the period for which the data have to be displayed. This can be a **One Day** period, a **Two Days** period, a **One Month** period or a free **Period**. Use the option button to select the period type as shown below.



Input the date or month, the starting date, or the start and end dates according to the period type in the corresponding fields (YYYY/MM/DD).

Use the **<< Prev.** and **Next >>** buttons to remove or add one day to the date or starting date, in the case the period is a one day or a two days period.

Use the **<< Prev.** and **Next >>** buttons to remove or add one month to the month in the case the period is a one month period.

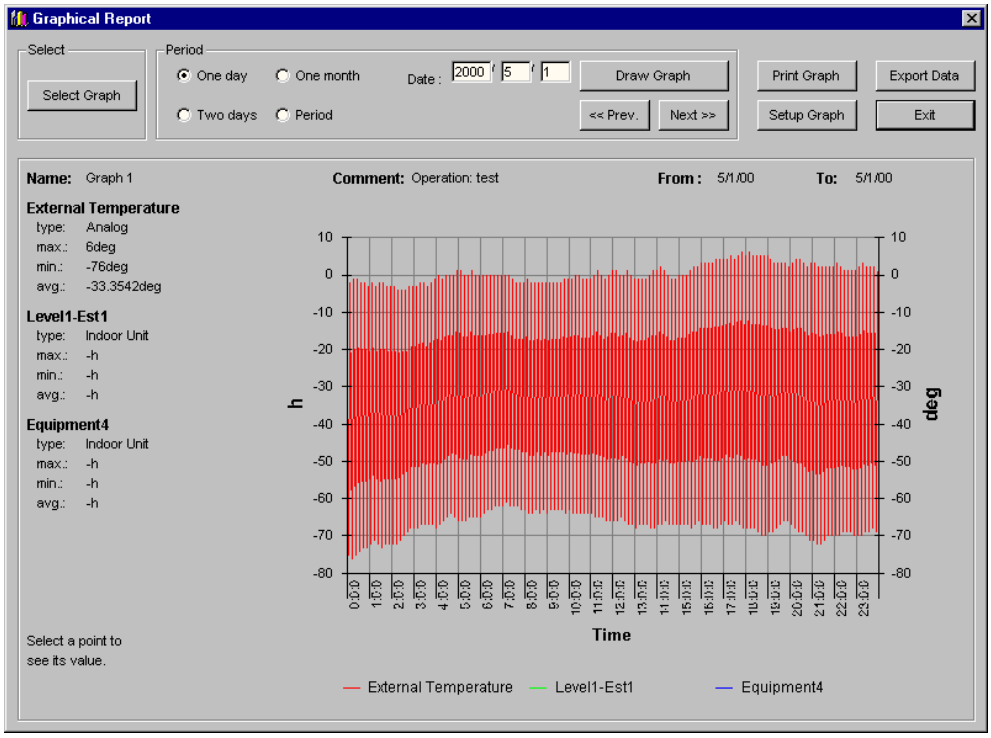
Note

- A One Day period is a 24 hours period starting at midnight of the inputted date.
- A Two Days period is a 48 hours period starting at midnight of the inputted date.
- A One Month period is a period starting at midnight of the first day of the inputted month and ending at 23.59 of the last day of the inputted month.
- A Period is a period starting at midnight of the inputted start date and ending at 23.59 of the inputted end date.

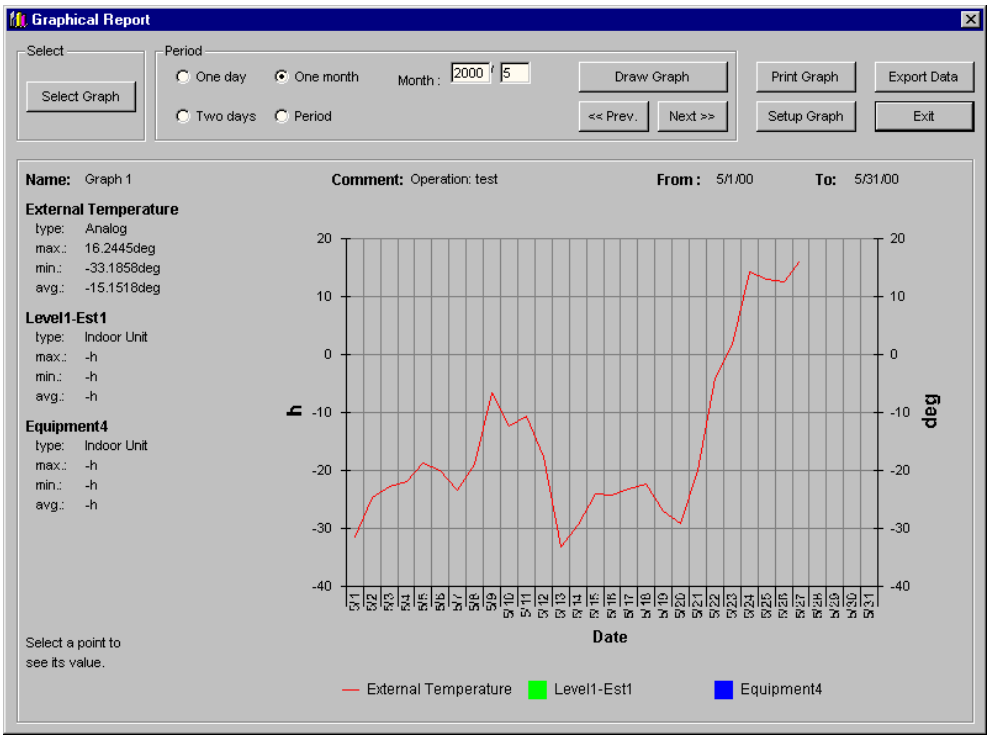
5.6.4.3 Drawing the graph

To draw the graph, click on the **Draw Graph** button.

Analog management point and indoor units - one-day period



Indoor units - one-month period



The top part of the graphic frame displays the Name and comment of the Graph as well as the data, start date and end date, depending on the period type.

The left part of the graphic frame displays information about each management point in the graph: its name, its maximum and minimum value over the period as well as its average value over the period.

In the case of a pulse management point, a equipment or a indoor unit, if the period type is a one day period only the value for the day is displayed, as the maximum, minimum and average are all equal.

Note

- If no data could be retrieved for the period or if all data for the period are invalid, a "-" is displayed instead of the value.
- After modification of the period type or range, or after modification of the current selection, click the **Draw Graph** button to update the display graphic.

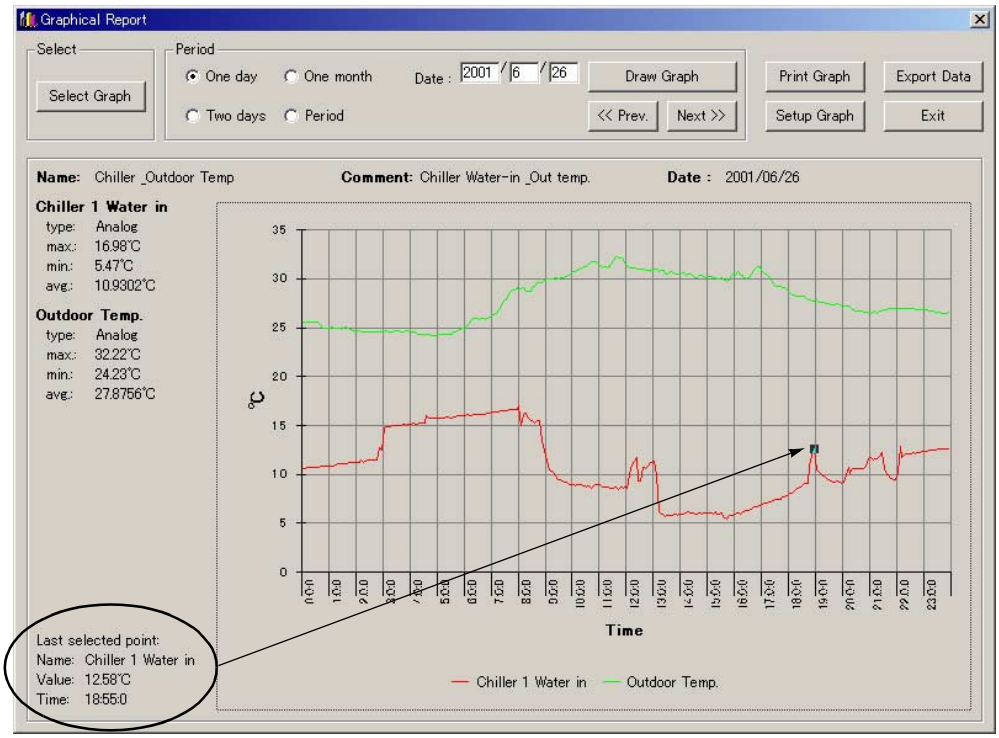
- X Axis scale is:
  - 1 mark & 1 label / hour in case of a one day or two day period.
  - 1 mark & 1 label / day in case of a one month period or free period more than 2 days and less or equal to 31 days.
  - 1 mark & 1 label / 2 days in case of a free period of more than 31 days and less or equal to 61 days.
  - 1 mark & 1 label / 4 days in case of a free period of more than 61 days and less or equal to 122 days.
  - 1 mark & 1 label / 7 days in other cases.

- Analog values are displayed using lines for every type of period.
- Pulse, equipment and indoor units are displayed using bars for period of longer than 2 days and lines for period shorter or equal to 2 days.
- Displayed values (See table below):
  - For analog points, trend value is displayed for period less or equal to 2 days.
  - For period longer than 2 days, daily average value is displayed.
  - For other type of management points daily value is displayed for every type of period.

	1 day	**2 days**	**1 month**	**period > 2 days**
Analog	Trend value	Trend value	Daily value	Daily value
Pulse	Daily value	Daily value	Daily value	Daily value
Equipment/Indoor Unit	Daily value	Daily value	Daily value	Daily value

5.6.4.4 Displaying a point value

To display the exact value of a point at a given time, click on the point of the curve you want to know the exact value as shown below.



5.6.5 Printing a graph

To print a graph, click on the **Print Graph** button. The graphic will be printed on the system printer.

5.6.6 Exporting a graph data

To export a graph data in the CSV file format (which can be opened with text editor or Microsoft Excel for example), click on the **Export Data** button. The following dialog displays. Choose the folder, input the file name and click the **Save** button.

The CSV file contains information about the Graph (Name, Comment), the period (From, To). It also contains information about every member management point (Point Name, Point ID, Point Type, Unit).

Note

Point Type:
1 = Equipment (Di, Do, Dio)
2 = Pulse (Pi)
3 = Analog (Ai)
4 = Indoor Unit

Maximum, Minimum and Average value over the period are also displayed for every management point as well a data (Date/Time, Value and Validity).

5.7 Managing Data

Caution

This function of determining individual electrical power consumption is an ESTIMATION based on individual indoor units distribution load ratio and operating hours. It is not based on legal regulations from any governing body (such as "JIS" Japanese Law of Weighing calculation) and cannot stand up in a court of law. Collected data are saved in a daily report around midnight.

5.7.1 The Building Management applications

This function supports Building Management Business.

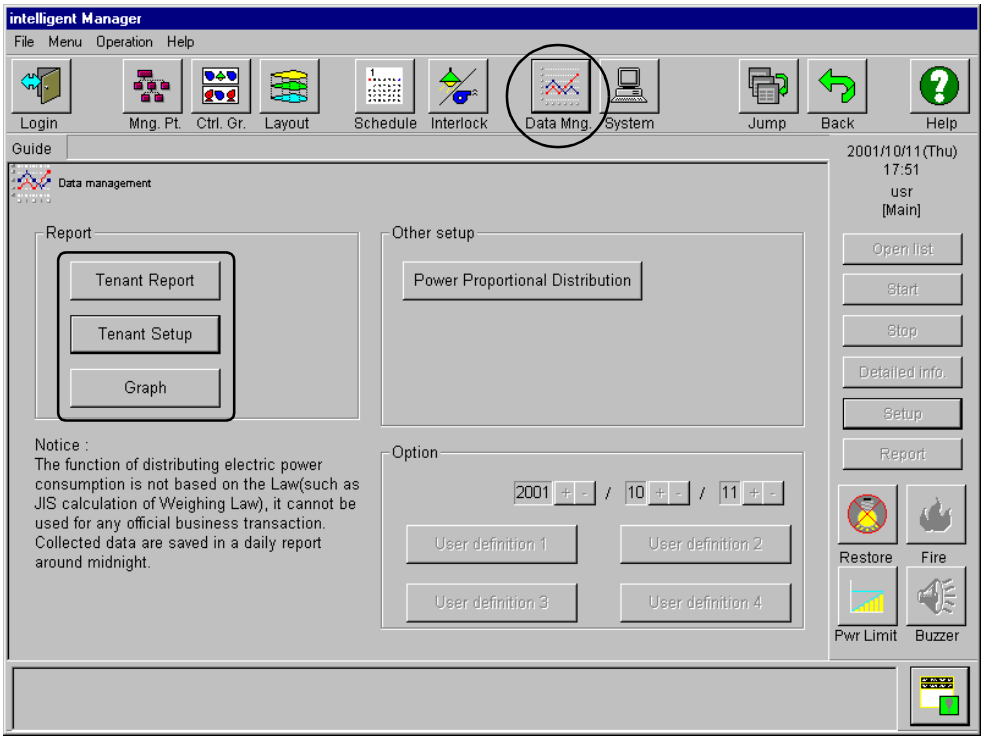
External applications can be launched from the customizable buttons of this screen. When ship-ping, intelligent Manager is provided with an application for retrieving operational data from the intelligent Manager database. This application called intelligent Manager **Tenant Report Management** has two modules that are launched by the buttons **Tenant Setup** and **Tenant Report** as described in the two next sections.

Note

The customization of the buttons (label as well as launched module) should have been performed beforehand by the installer (System Engineer) and is not explained in the current document.

Click the **Data Mng.** button from the menu buttons.

The Data Management menu screen will be displayed.



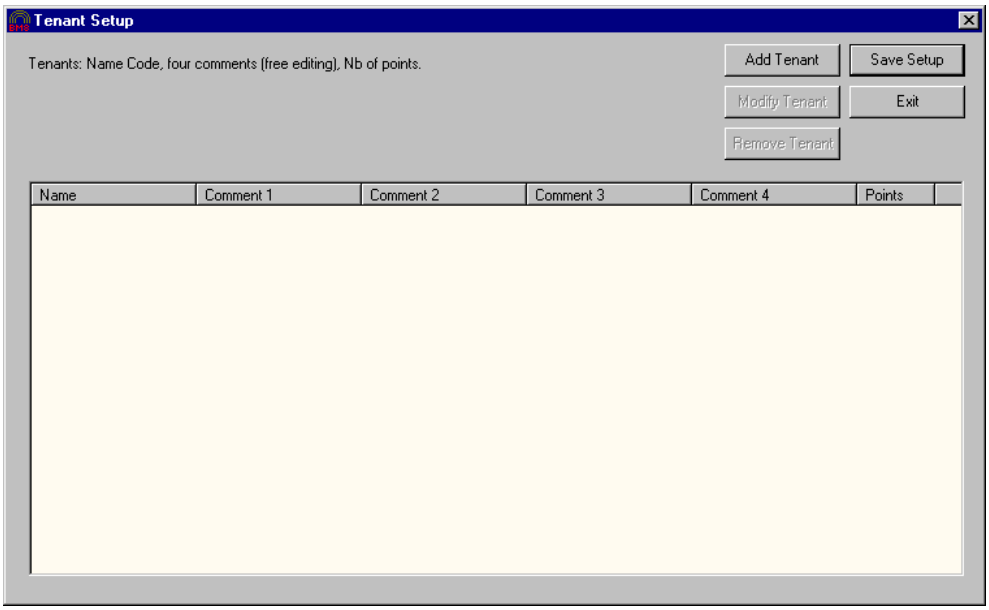
The reports are created in two steps, each with one of the modules of the application:

- **Step1:** configure the tenants (this step can be performed once and then be reused)
  - Create the tenants
  - Associate to each tenant management points which data will be included in his report
- **Step 2:** retrieve the report data (this step can be performed on a regular basis on demand)
  - For each tenant, select the report limit dates and retrieve the operational data from the intelligent Manager database

The two modules of the **Tenant report Management** execute under Microsoft Excel. Therefore the figures below are from this environment.

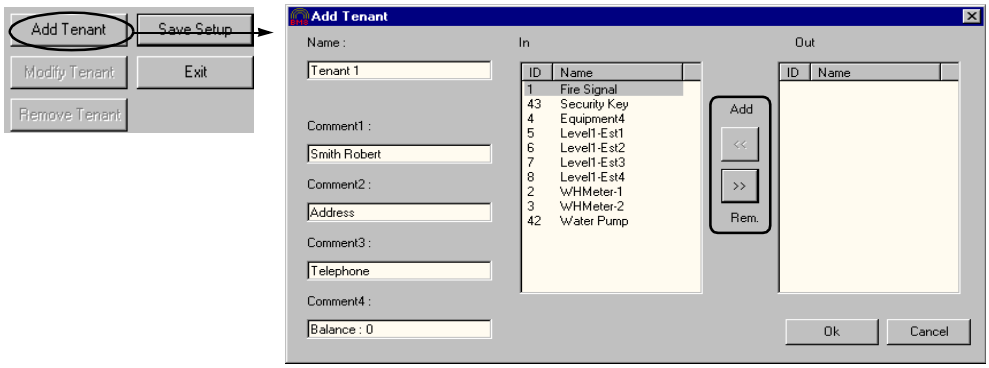
5.7.2 Configuring the tenants

Click the **Tenant Setup** button to launch the tenant configuration module. The tenants with their information and management points' configuration setup are stored within the intelligent Manager database. Therefore, it is important to click the **Save Setup** button before exiting with the **Exit** button.



5.7.2.1 Creating a Tenant

(1) Click the **Add Tenant** button that will display the tenant configuration dialogue.



(2) Enter the personal information of the tenant: its **name** (name duplication is not allowed) and its **comments** (up to 4 arbitrary values),

(3) Select the points of this tenant from the **Out** list and click the **<<** button to add them to his In list, click the **>>** button to remove them (a management point can belong to more than one tenant),

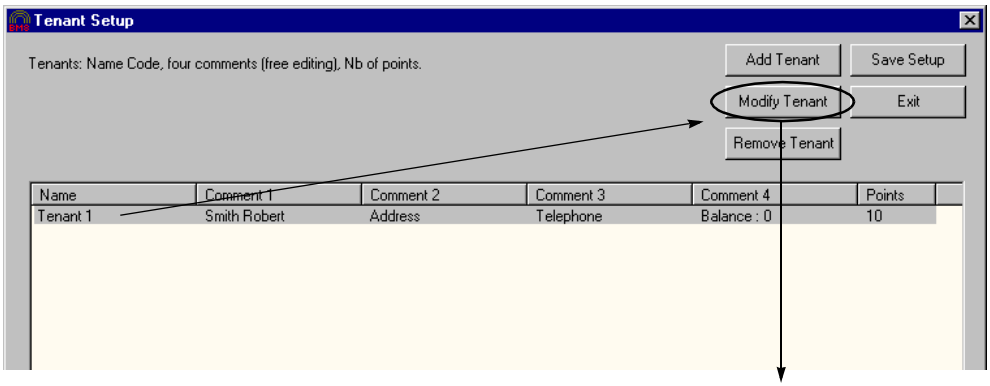
(4) Click the **OK** button to validate this tenant.

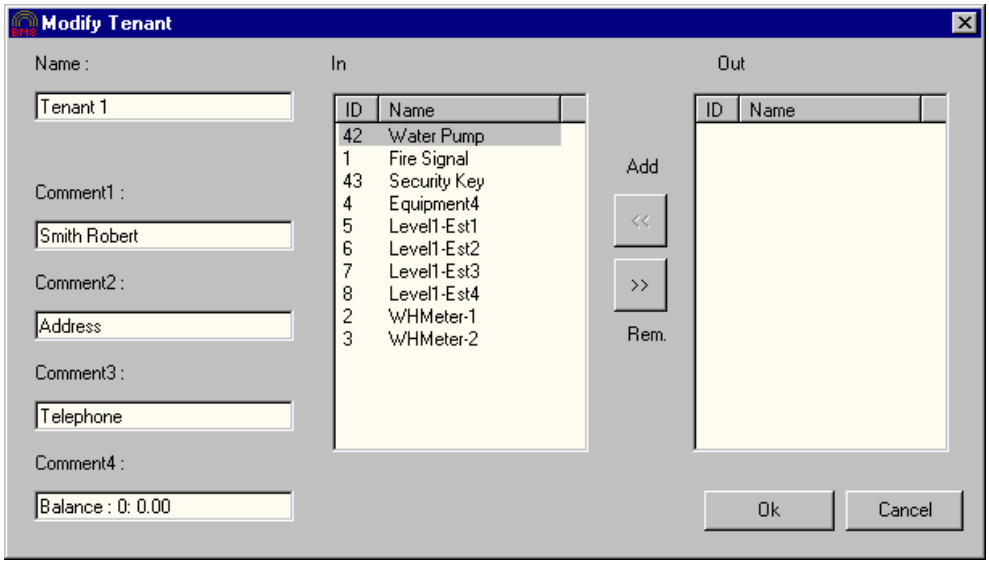
The tenant with its personal information as well as the number of associated management points is displayed in a list as shown in the figure below.

5.7.2.2 Modifying a tenant

It is possible to modify at any time both the personal information of a tenant (including its name) as well as his management points configuration.

(1) First select an existing tenant from the displayed tenants list, then click the **Modify** button (if no tenant has been selected, an error message is displayed);

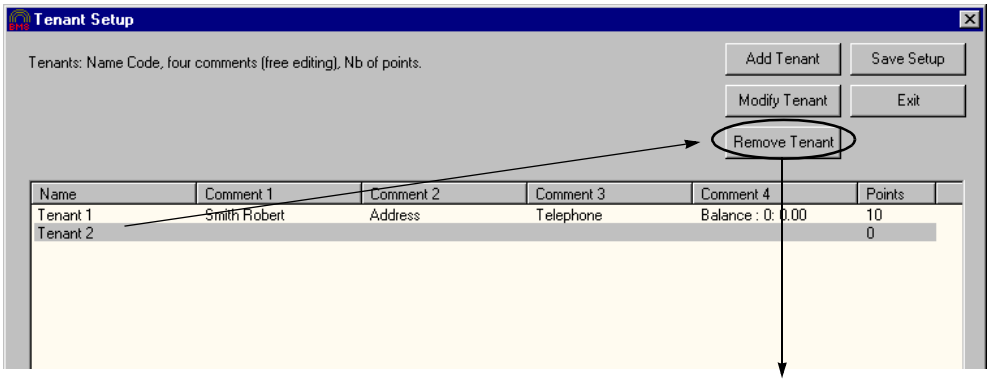




(2) Perform as above from (2) to (4).

5.7.2.3 Removing a tenant

It is possible to delete a tenant from the list. Its personal information as well as management points configuration will be removed from the configuration file.



(1) Select a tenant as above in (1);

(2) Click the **Remove Tenant** button;

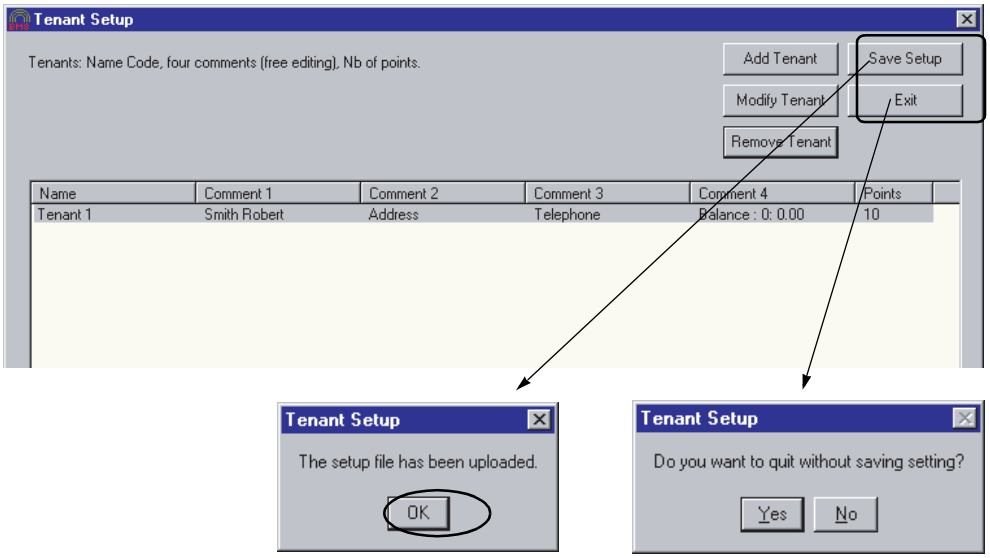
(3) Confirm in the warning message box to validate the deletion.

5.7.2.4 *Exiting the report setup application*

The configuration file is stored within the intelligent Manager database. Click the **Save Setup** button as shown in the figure below to update it. Then, the operation buttons are deactivated until transfer completion is notified. Click the **OK** button to acknowledge the backup completion.

After the configuration has been saved, click the **Exit** button. A confirmation box appears warning if the configuration has not been saved.

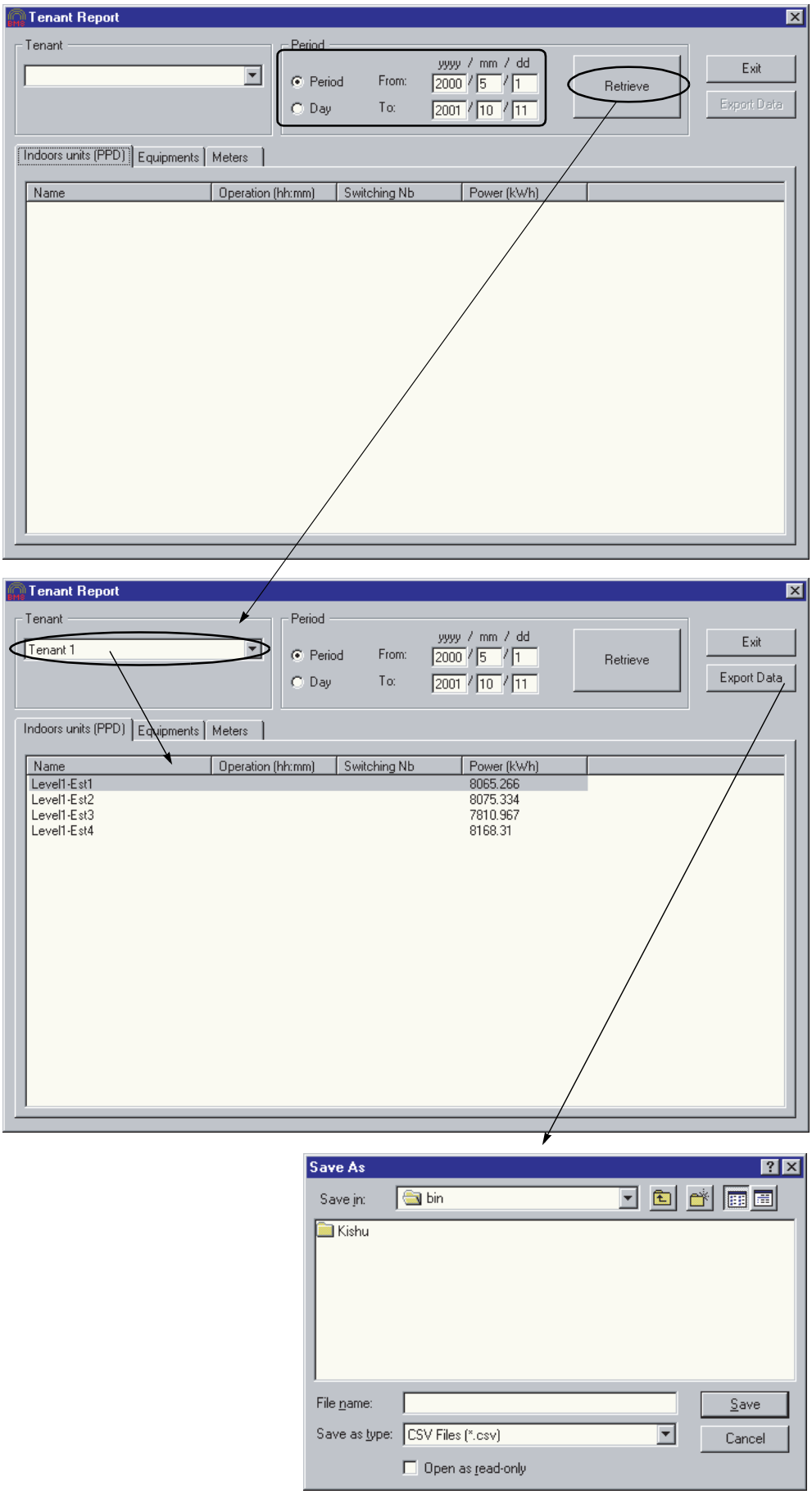
Click the **Yes** button to exit, or the else click the **No** button to return to the tenant setting application.



5.7.2.5 *Creating a report*

This module extracts from the intelligent Manager database the operational data for the management points of the tenant, making use of the previously set up configuration.

Click the **Report** button to launch under **Tenant Report** module.



For each tenant and each period, perform as follows:

(1) Select a report type from the option and enter the appropriate period:

- **Daily:** the date of the data to be retrieved;
- **Period:** the date of the first and last day of the data to be retrieved (and cumulated).

(2) Click the **Retrieve** button, then the list of tenants displays;

(3) Select the **Tenant** from the drop-down list;

(4) **Export** the data in csv format, then making use of a worksheet editor, manipulate the re-trieved data at will (select/copy/paste, save in an other worksheet, etc).

After retrieving the data of each tenant for the period, click the **Exit** button to close the application

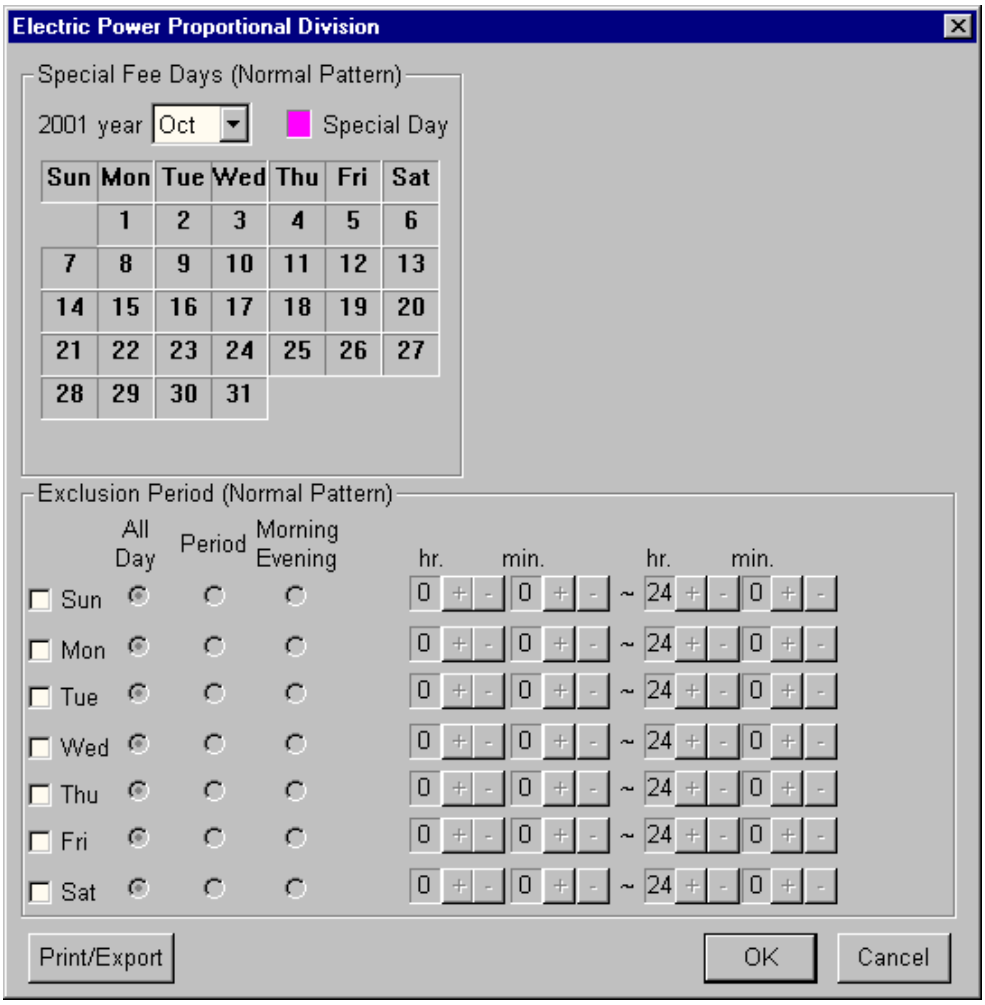
5.7.3 Setup of Power Proportional Distribution

If this optional function is present in your configuration, the power used by the outdoor units can be divided between the indoor units and equipment as initially configured in the engineering procedure. By using this dialogue, it is possible to determine when this proportional division should be performed or not.

- Exclusion time zones (time zones in which power division is not calculated proportionally) may be set up on any day of the week.
- Regardless of exclusion time zone setup, special days may be set up on the calendar (in this case the whole day is calculated, regardless of normal setup).

Click the **Power Proportional Division Setup** button.

The screen will appear as shown below.



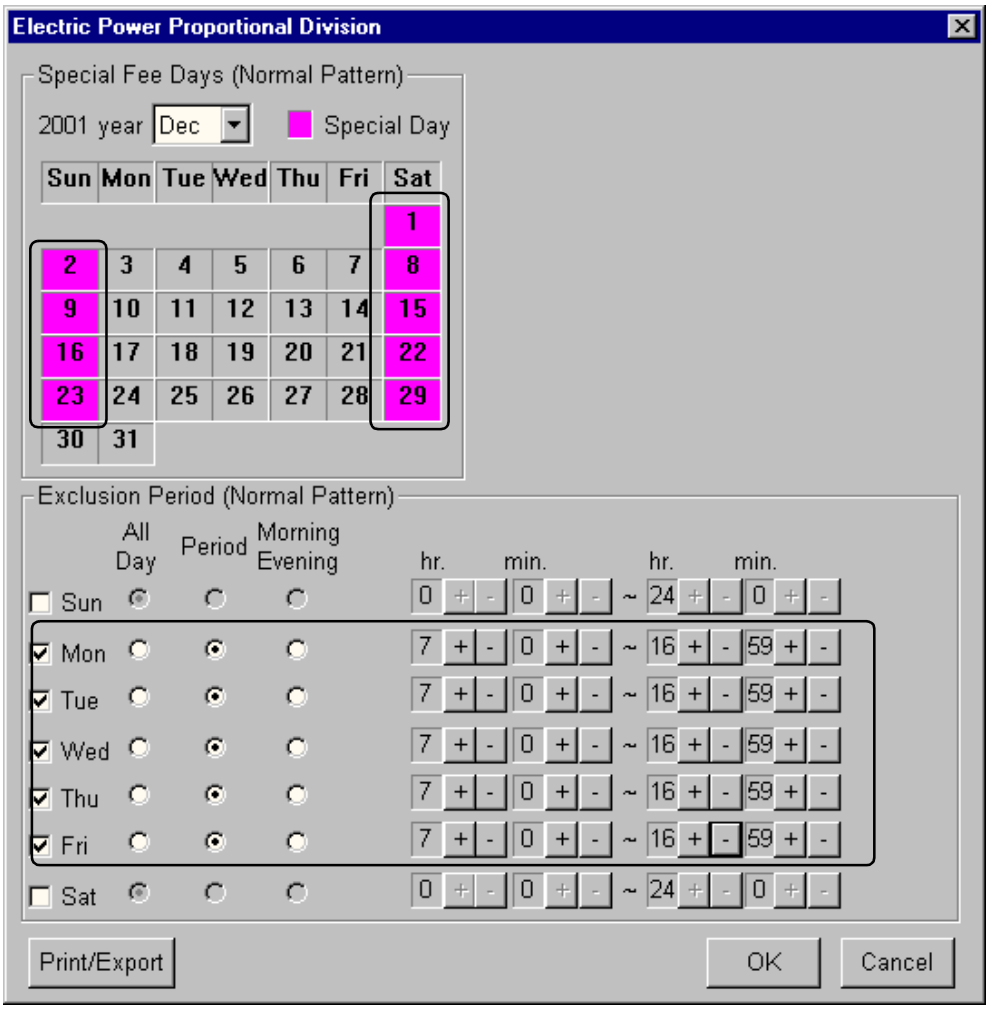
Exclusion Time Zones (usual format)

Check the Exclusion Time setup day check box. Use the radio buttons to select the day, time zone option (whole day, within the time zone, or outside of the time zone) and set the time zone if necessary with the **+ -** buttons.

Special Day Setting (usual format)

Calendar can be set up with special days for which the exclusion time zone setup does not apply. Click on a date to set it up as a special day to be displayed in red. Clicking again cancels the setup.

Example of setup screen.



Click the **OK** button to validate the setup content. Clicking the **Cancel** button invalidates the setup content.

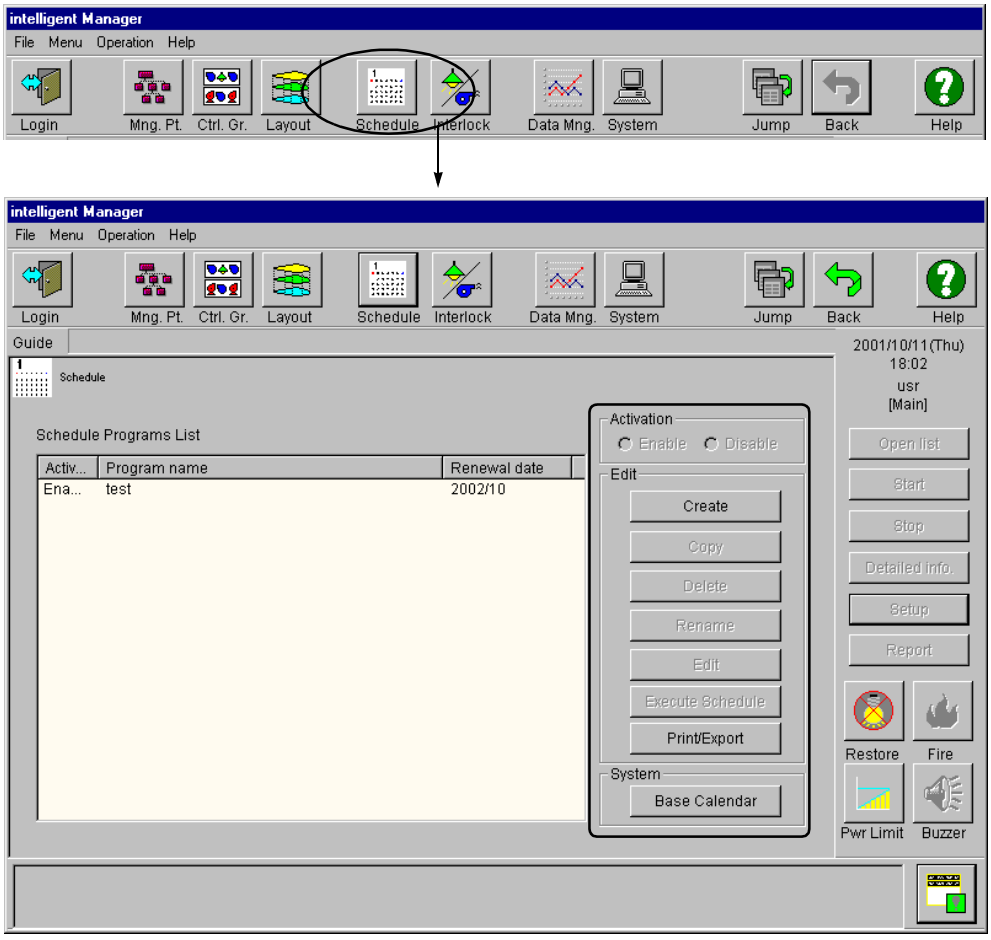
Important This dialogue set up the period when the power is NOT proportionally divided. Therefore, unchecked boxes as well as the special days of the calendar mean that the division is carried out all day.

5.8 Setting the Schedule

- Time schedules may be defined in advance so that control of the equipment (Start/Stop, operation mode switchover as well as temperature setup) and permission/prohibition of remote controller can be carried out automatically.
- Schedule programs are registered in weekly blocks and the type of operation to be performed on every day of the week is specified.
  Moreover, holidays and special days over a one-year period (13 months) may be specified within the schedule program in the Yearly block (these can be shared between programs by using Base Calendars). Operation method during special days and holidays may also be specified in the same way as the operational schedule of any day of the week.

- Up to 128 schedule programs may be registered. Please be careful that a higher number of schedule programs make start up procedure of the intelligent Manager system last longer.
- The appropriate authority is required to set up a schedule program.
- Please refer to **5.10.3 Configuring user Login** (p. 245). Without this authority, consultation only is possible.
- When a scheduled operation is carried out, it is reported and saved in the history record.

Click the **Schedule** button from the menu buttons.



5.8.1 Schedule fundamentals

A schedule **Program** is a set of time stamped actions.

These Actions are grouped in a **Weekly Schedule** organized in daily patterns (**Sunday to Saturday**, **Day Off** and **Special Day**).

These weekly schedules are repeated in a **Yearly Schedule**. The yearly calendars can be shared between programs, using the **Base Calendar** facility

As well, schedules and programs management is facilitated by editing functions (Copy, etc).

5.8.2 Managing Base Calendars

A base calendar may be given the name of your choice. The name can be a row of up to 32 characters

Up to 6 base calendars can be created.

Click on the **Base Calendar** button to display the dialogue shown below.

Create a Base Calendar and set the limits, and the types of the days as shown below.

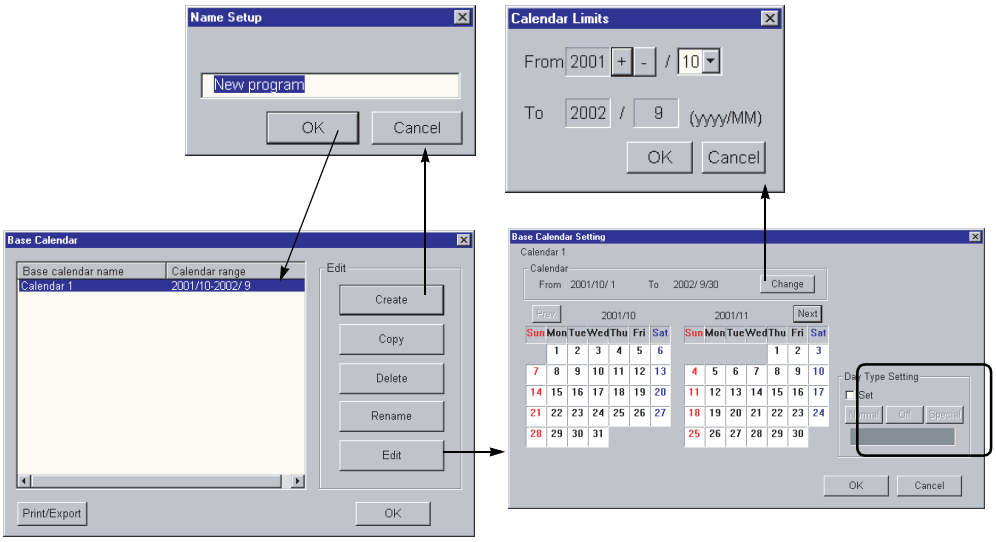
First decide on the range to be setup in the annual calendar.

Click the **Change** button to display the calendar setup range dialog box.

Use the **+ -** buttons to modify the range of the annual calendar and click the **OK** button to apply the desired modification.

When the range is modified, the overlapping portion before modification will be carried forward. Other months will have initial state formats.

(Initial state: Only Sundays are set up as holidays).

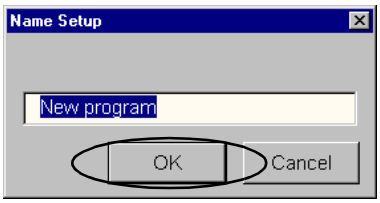


5.8.3 Creating a Schedule Program

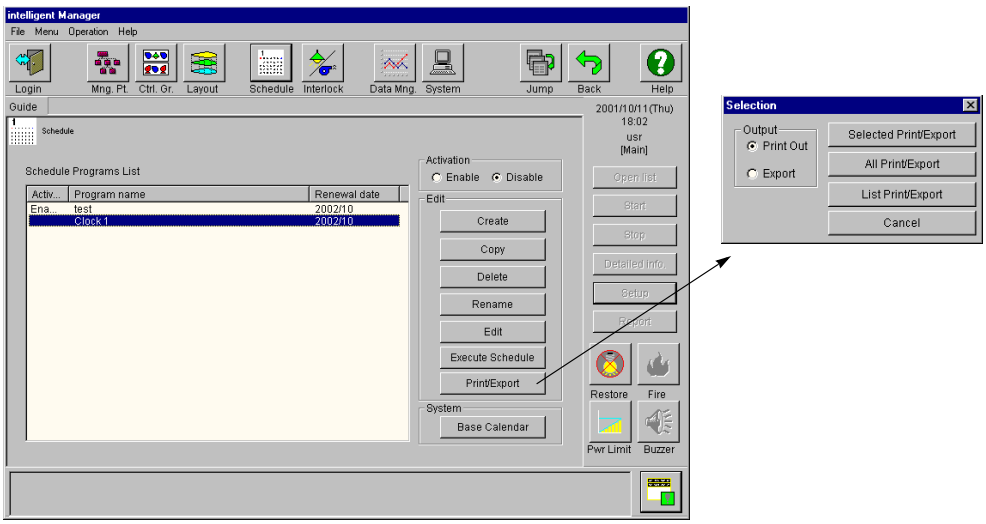
A schedule program may be given the name of your choice. The name can be a row of up to 32 characters and must not overlap with other schedule programs.

Click the **Create** button to create a new schedule program.

The name setup dialog box is displayed as shown below.



Enter the schedule name to be created onto the name setup screen. Check the contents entered for errors and then click the **OK** button.



The schedule program list in the above figure shows the previously entered schedule.

Select the desired schedule to be set up on the annual calendar from the schedule list using the mouse.

Schedules (either one schedule, all schedules, or the list only) can be printed out (to the system printer) or exported into CSV (comma separated) format files.

5.8.4 Annual Calendar

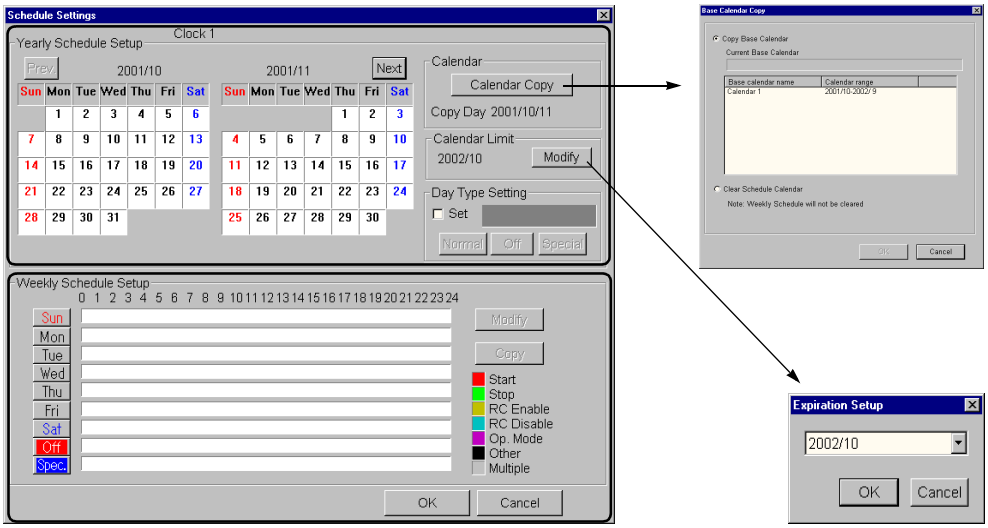
The annual calendar is a calendar divided into 13 months (from the first day of the starting month to the last day of the same month the following year). It can be customized with any days of your choice - such as holidays or special days.

The annual calendar requires periodical update. If it is not updated, a daily reminder that the calendar will run out after one month will appear during the final month before the calendar expires.

Furthermore, on the day following the final day of the calendar, the fact that the calendar has run out will be reported as an error.

To define the annual calendar, it is possible to copy it from a base calendar: click the **Calender Copy** button and select a Base Calendar from the list (see above for Base Calendar management). Then, adjust if necessary the annual calendar by modifying its limits and the days as shown below.

The **Modify Limits** button will be enabled. Click this button to carry out the setup on the annual calendar.

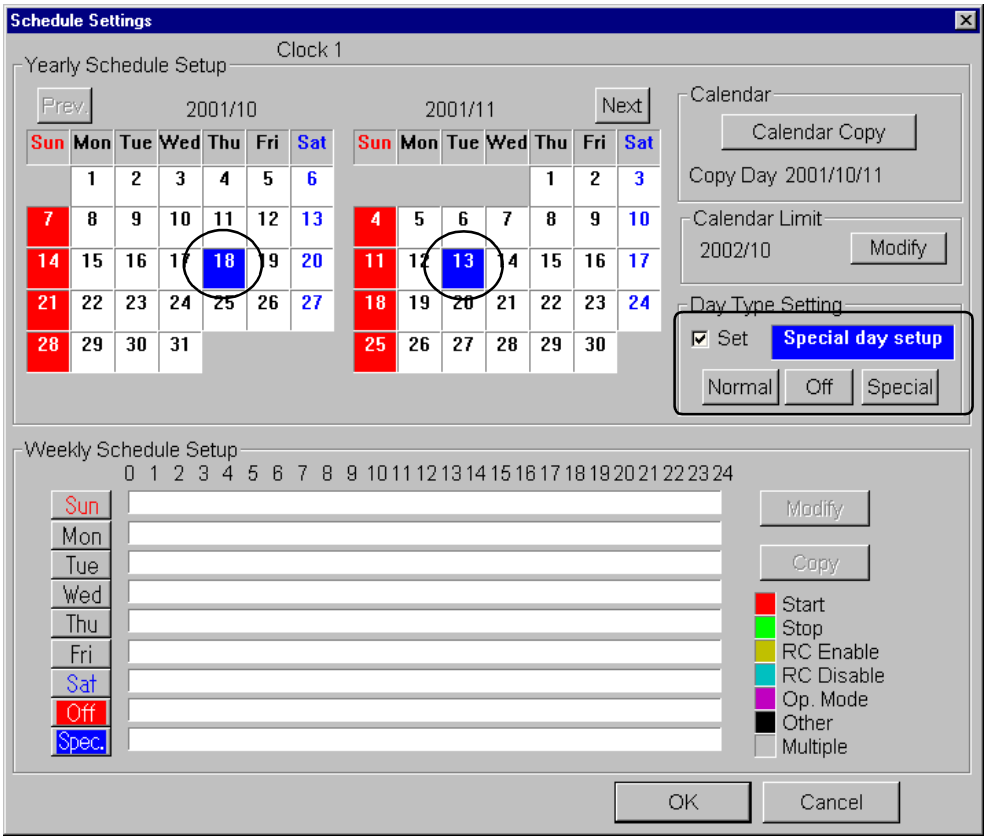


When the **Modify Limits** button is clicked, the dialog box will be displayed as above. In the screen of the above figure, the annual calendar setup is shown at the top and the weekly schedule setup below.

A 13-month setup is possible for the calendar (from the first day of the starting month to the last day of the same month the following year). (In the case of the above figure this is from 1 December 1998 to 31 December 1999).

By clicking the previous month **Prev** and the next month **Next** buttons, the month before or after the month on current display will be shown.

Next individual day types (weekday/holiday/special day) can be set up.



Setting up day types

In the initial state, Sundays only are set up as holidays.

Check the **Setup** checkbox to enable the select day type (weekday/holiday/special day) buttons.

Click the selection buttons to modify the type of day to be set up. The selected day type will then be displayed in the place indicated by * and its color will change. White is used for weekdays, red for holidays and blue for special days.

In the above figure, Holidays have been set and special days are being selected.

Click the cell containing the date to be set up to carry out the setup.

In the case of the above figure, some days have been set up as holidays. As well, some days are being set up as special days.

When the setup of the month on current display is completed, click the next month **Next** button to display the following month.

When the following month is displayed, set up the day type. This should be done for each of the 13 months.

5.8.5 Weekly Schedule

The weekly schedule indicating the type of operations to be performed during one day is specified in nine day area units: each day of the week, holidays and special days.

- *Selection to undergo control*

The management point or control group to undergo schedule control is selected.

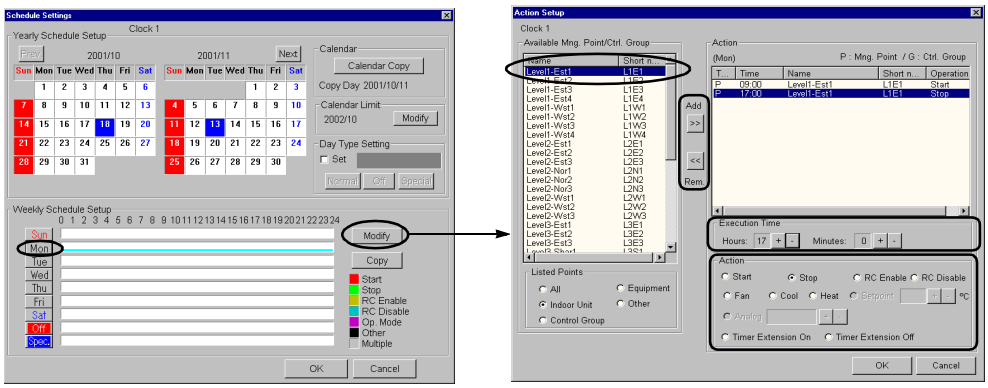
- *Time of Execution*

The time at which an action is executed is set up.

- *Action*

Any of the following: [Start/Stop], [Operation Mode - Temperature Setup] {Remote Control permitted/ prohibited} {Timer Extension} may be displayed as instructions. Please refer to **5.2.4 Setting up equipment** (p. 184) for detailed explanation of these actions.

Click the button corresponding to the day on which the schedule is to be set up (ex: **Monday**) and then click the **Modify** button as shown below.



From the available management point or control group, click on the management point or control group to undergo schedule control. (In the above figure, this is "Tenant Air-conditioner 1").

Click the **Add >>** button to display the action.

Click on the added management point or control group.

Select the action to be set up and set up the execution time using the **+ -** buttons.

Repeat this operation to set up the schedule for Monday.

When the schedule is completed, click the **OK** button.

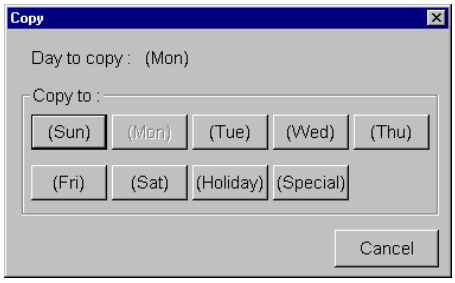
Click the **Cancel** button to cancel the setup.

The schedule content is shown above. The schedule for Monday has been set up.

Repeat the same operation to set up other days.

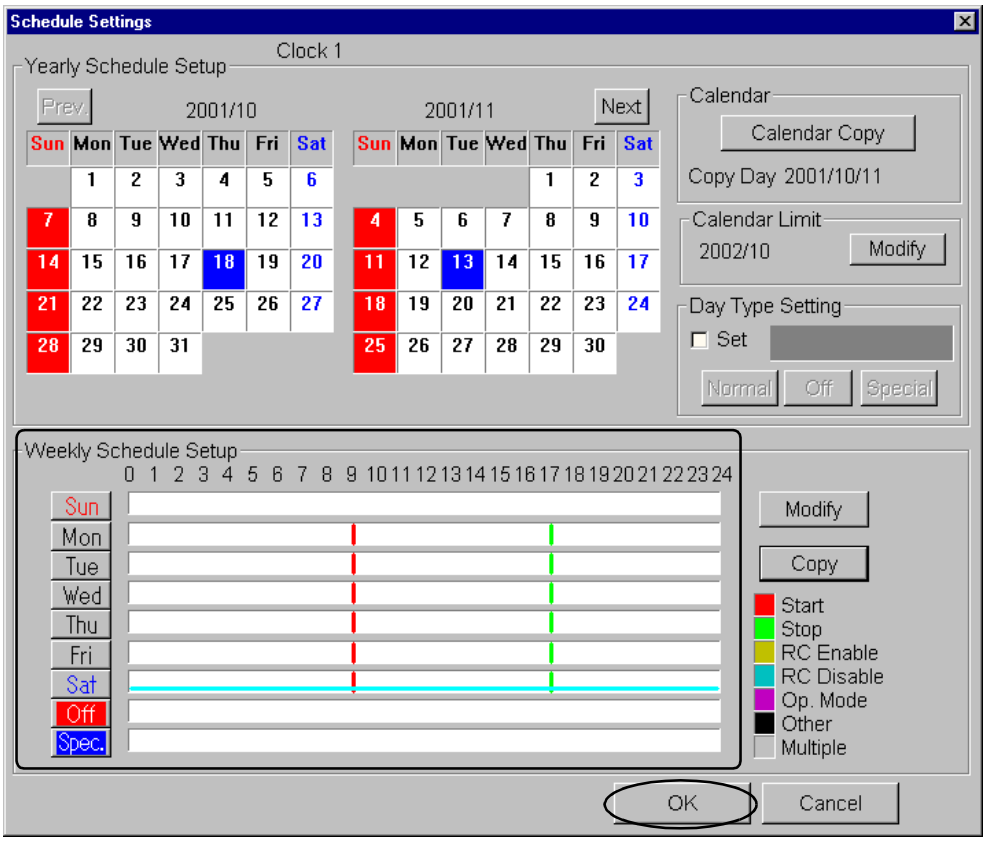
To set up the same schedule on other days of the week, click on the day to be copied, followed by a click on the **Copy** button. A dialog box will appear. Click on the day to be copied to.

For example, click the **Tuesday** button.



Tuesday has been set up with the same schedule as Monday.

Repeat the same operation to copy the schedule to other days of the week.

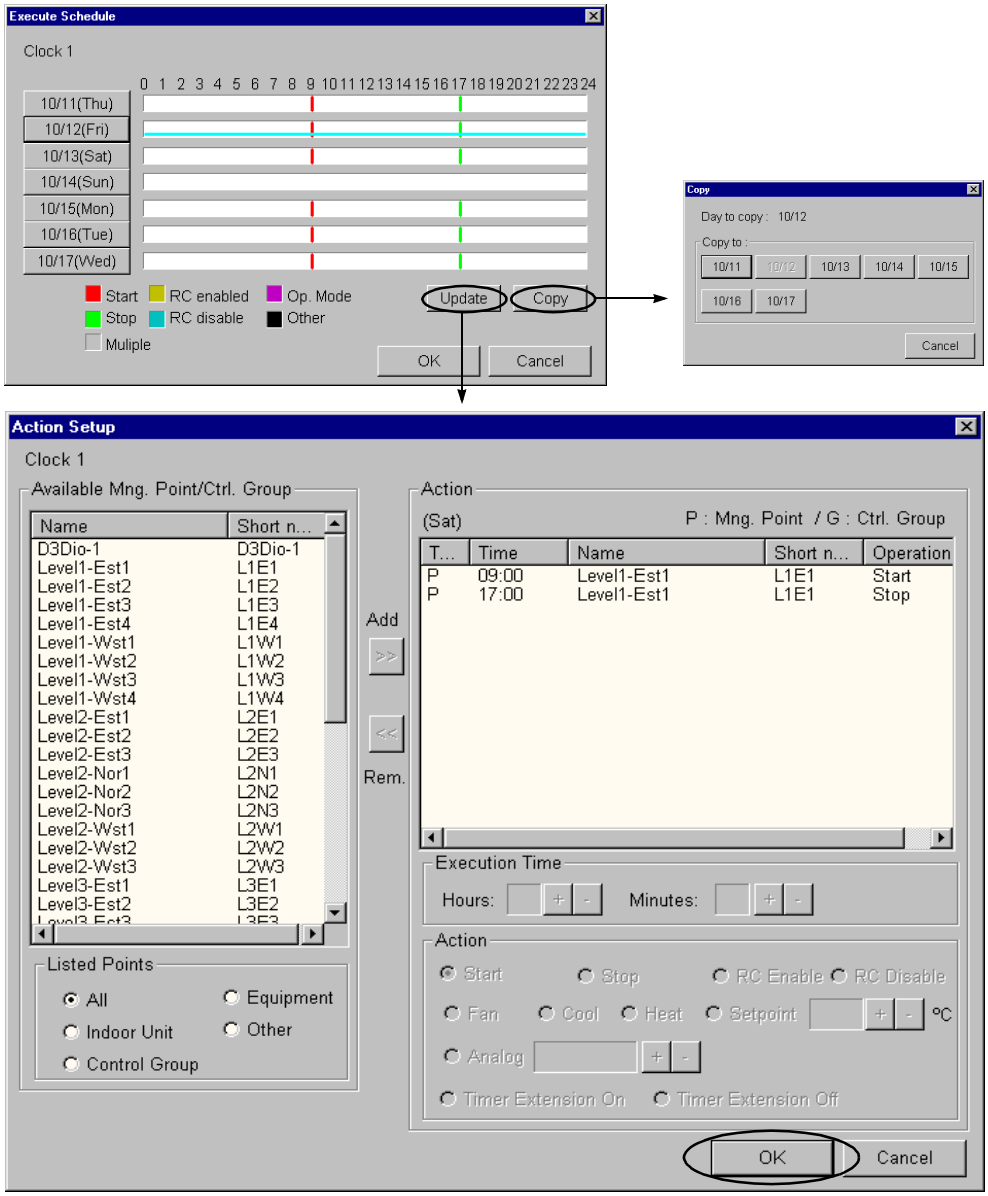


Click the **OK** button to record the setup content on completion of a schedule setup.

5.8.6 Executing Schedule

Actual schedule control may be checked from the dialog box as shown below. Furthermore, for temporary schedule changes at less than one week's notice, modifications may be carried out via the Executing Schedule dialog box.

Click the **Execute Schedule** button to display this dialog box.



By executing schedule, based on the annual calendar and weekly schedule, the coming week's period is generated automatically. Actual schedule control is conducted according to this executing schedule.

Temporary schedule changes at less than one week's notice for the coming one-week period may be made by the execution schedule.

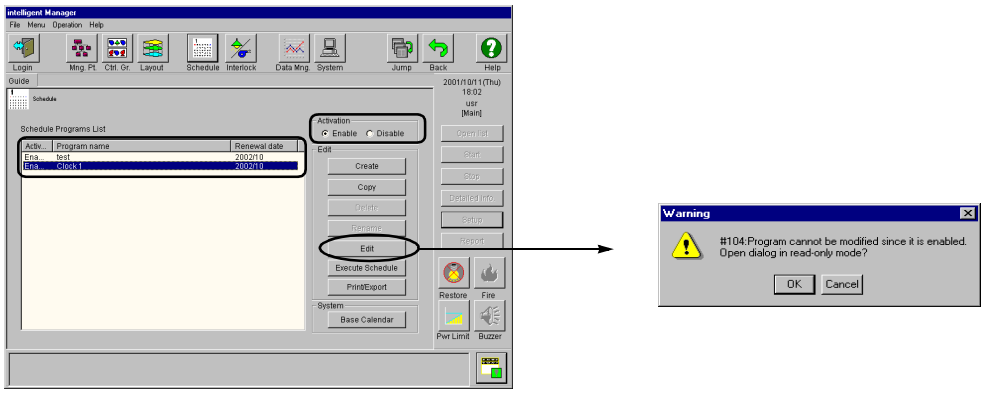
Click on the day whose schedule is to be modified and use the **Update** and **Copy** buttons to modify it.

5.8.7 Enable/Disable Instructions

Once the set-up of the annual calendar and weekly schedule has been completed, the created schedule must be enabled via the schedule setup dialog box.

Furthermore, if the contents of the schedule program need to be modified, the schedule in question must first be disabled.

Schedule programs may be enabled and disabled individually. When disabled, a program will not execute.

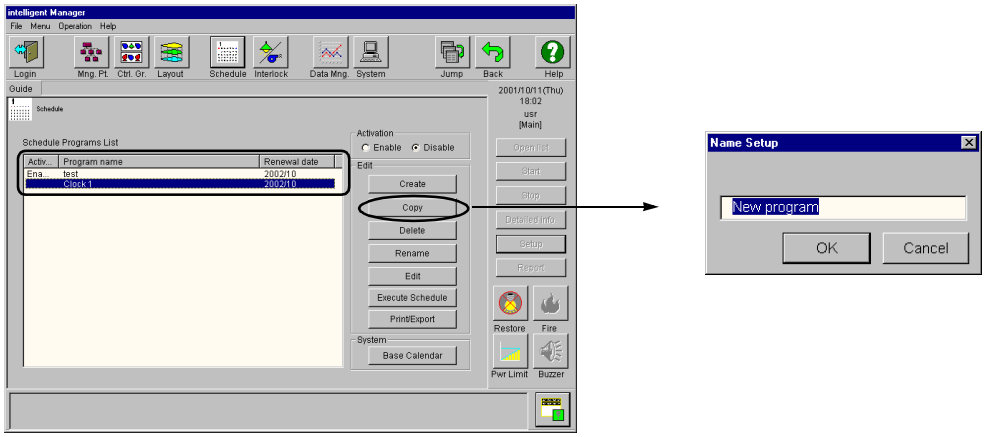


Click on the schedule program name to turn it over and it will switch over from enabled to disabled.

If the schedule program is enabled, the valid mark will be displayed before its name. If it is disabled, the mark will disappear.

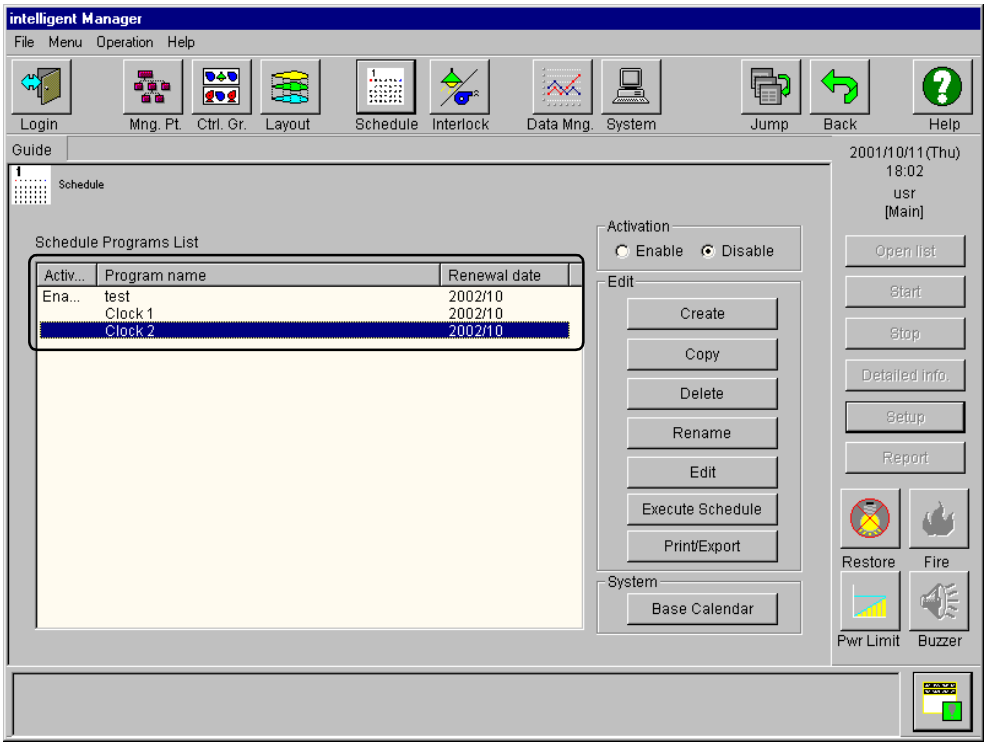
5.8.8 Copying a schedule

An existing schedule may be copied in the following way.



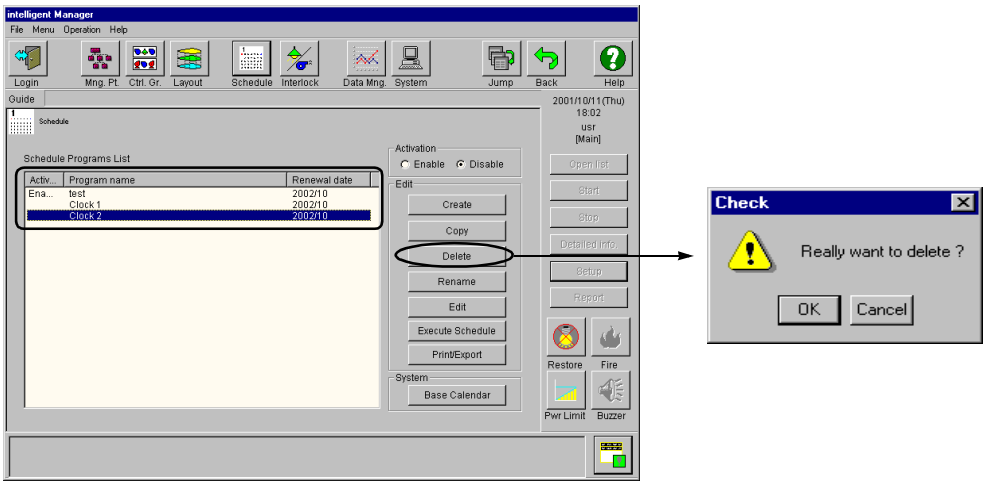
Select the name of the schedule to be copied and click the **Copy** button.

The name setup dialog box will then appear. Enter the new schedule program name and click the **OK** button.



5.8.9 Deleting a Schedule

An existing schedule may be deleted in the following way.

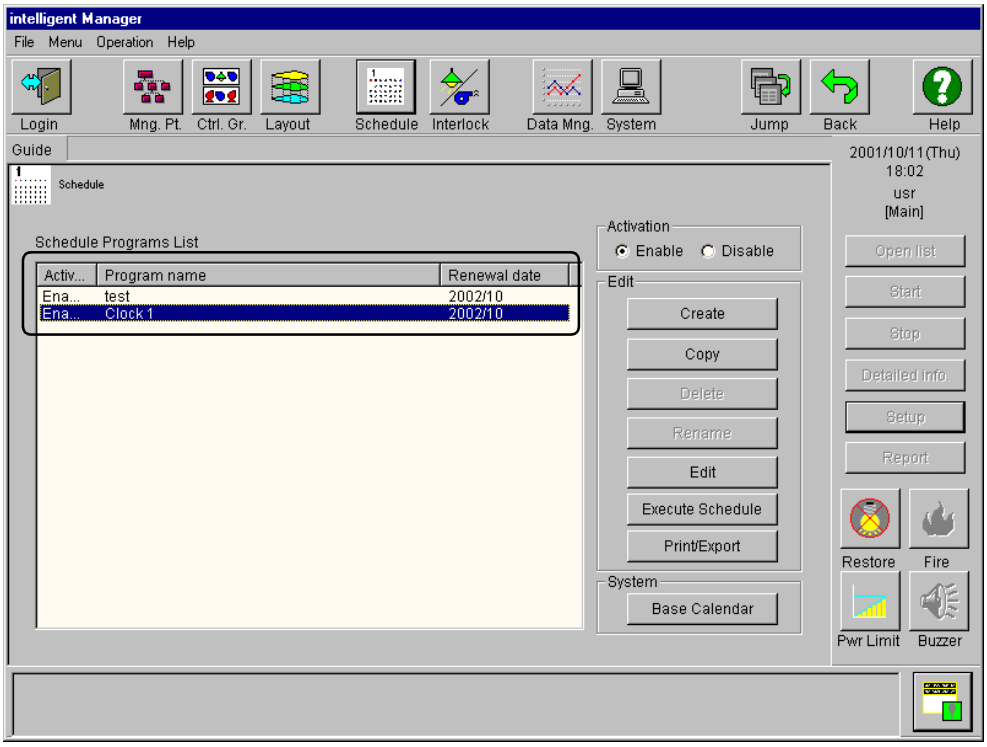


Select the schedule to be deleted and click the **Delete** button.

A confirmation dialog box will then appear.

Click the **OK** button to delete the schedule.

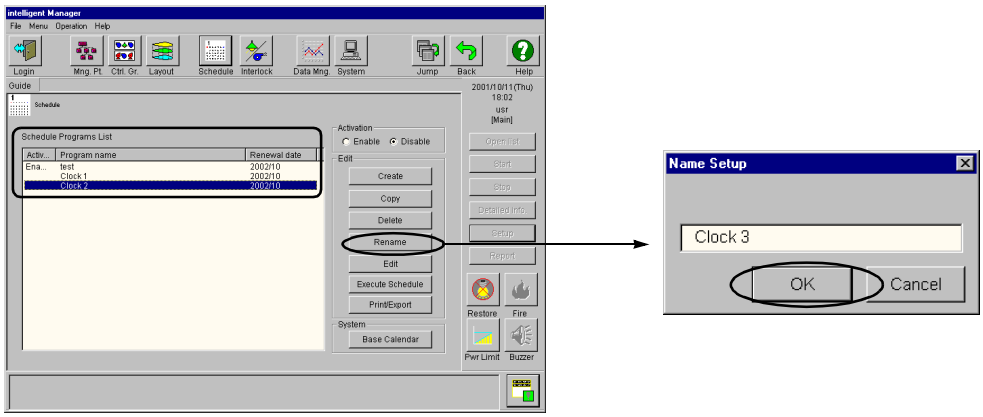
A schedule cannot be deleted when it is "enabled". First disable the schedule.



The schedule has been deleted.

5.8.10 Renaming a Schedule

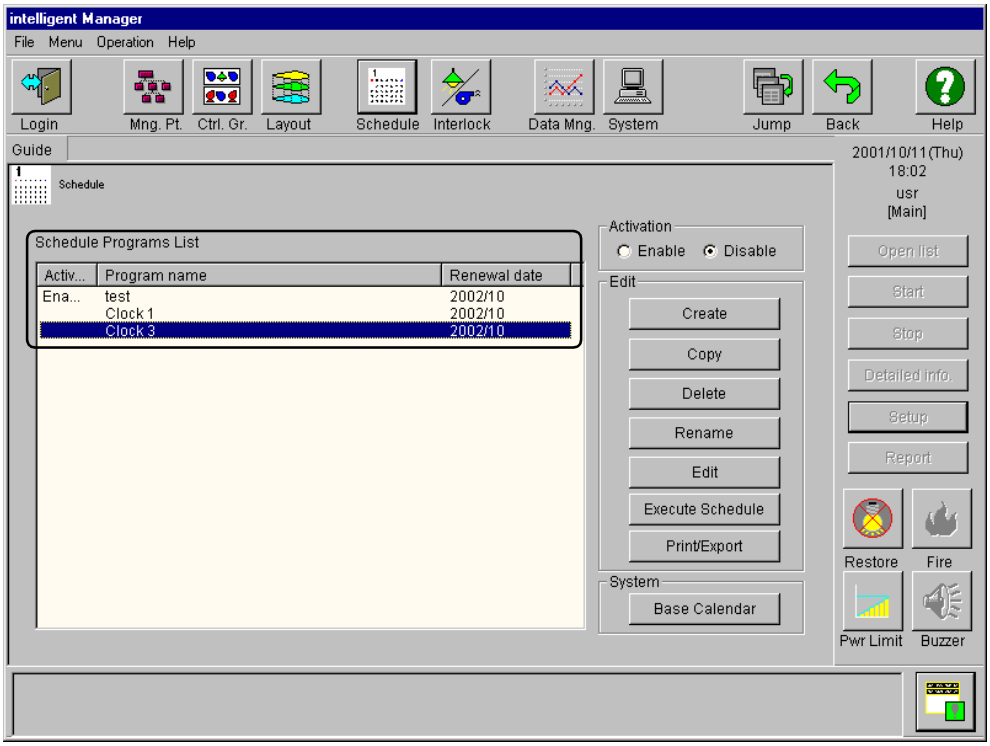
A schedule may be renamed in the following way.



Select the schedule to be renamed and click the **Rename** button.

The name setup dialog box will then appear. Enter the new name and click the **OK** button.

A schedule cannot be renamed when it is "enabled". First disable the schedule.

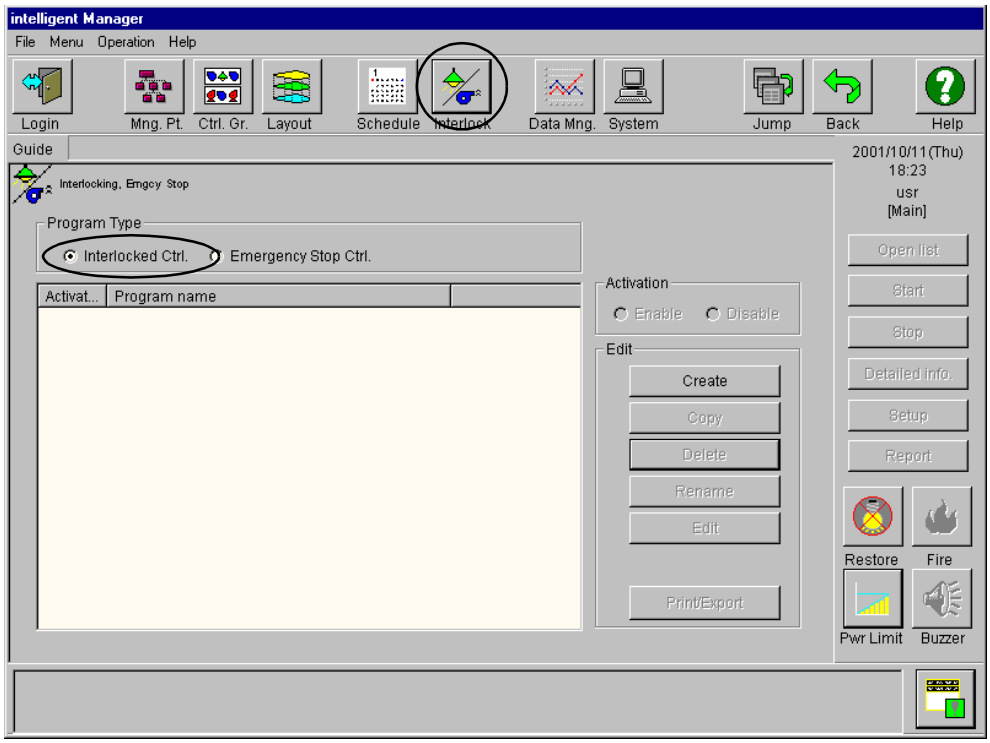


The schedule has been renamed.

5.9 Interlocking Function

- The interlocking function enables the cooperative action of the management points in accordance with the input conditions and output instructions defined by the interlocking program.
  When monitoring changes of state in the management points, if a change in setup state is detected in the input conditions, relevant output instructions (Start/Stop) are conveyed to the output management points.
- By means of the interlocking function, Start/Stop etc. forwarded to more than one piece of equipment - for interlocking when entering and exiting rooms, key management interlocking etc. - may be carried out.
- When interlocking control is executed, that operation is reported and registered in the history.

- The emergency stop may be set up along with the interlocking program.
- Up to 100 interlocking programs may be registered.



Click the **Interlocking** button from the menu buttons.

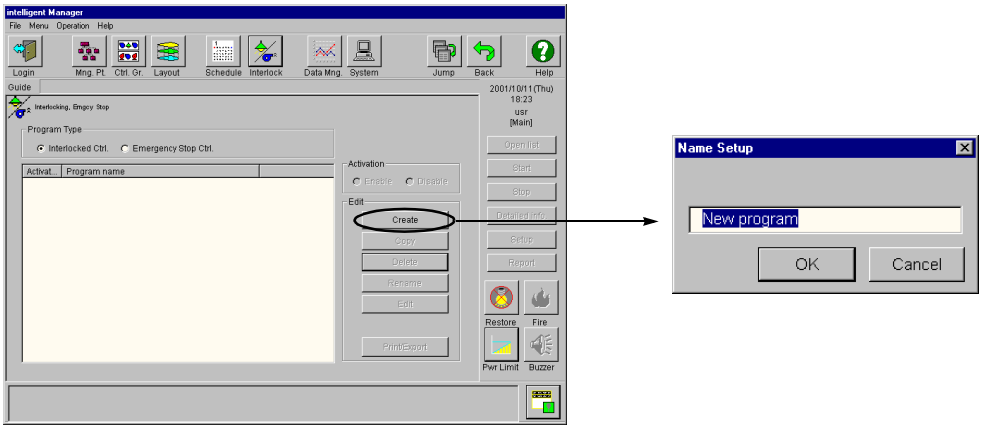
The interlocking menu screen will appear.

5.9.1 Setting up an Interlocking Program

For every interlocking program, up to 50 input management points to be monitored and a maximum of 50 output items (management points or control groups) may be registered.

Select the interlocking program from the interlocking menu at the top of the screen.

Click the **Create** button to newly register the program.



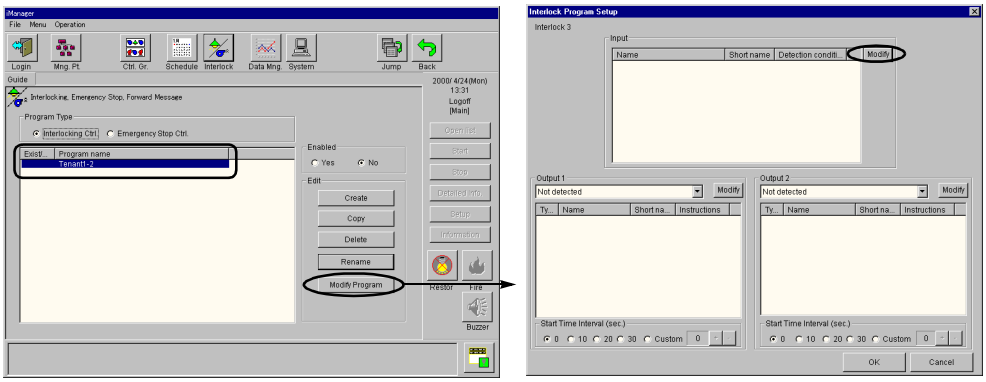
The name setup screen will appear. Enter the name and click the **OK** button. To cancel the name setup, click the **Cancel** button.

The newly registered program name is displayed on the screen.

Next set up the contents by clicking on the program name (click the scroll bar if necessary). The operation options button will be enabled on the right-hand side.

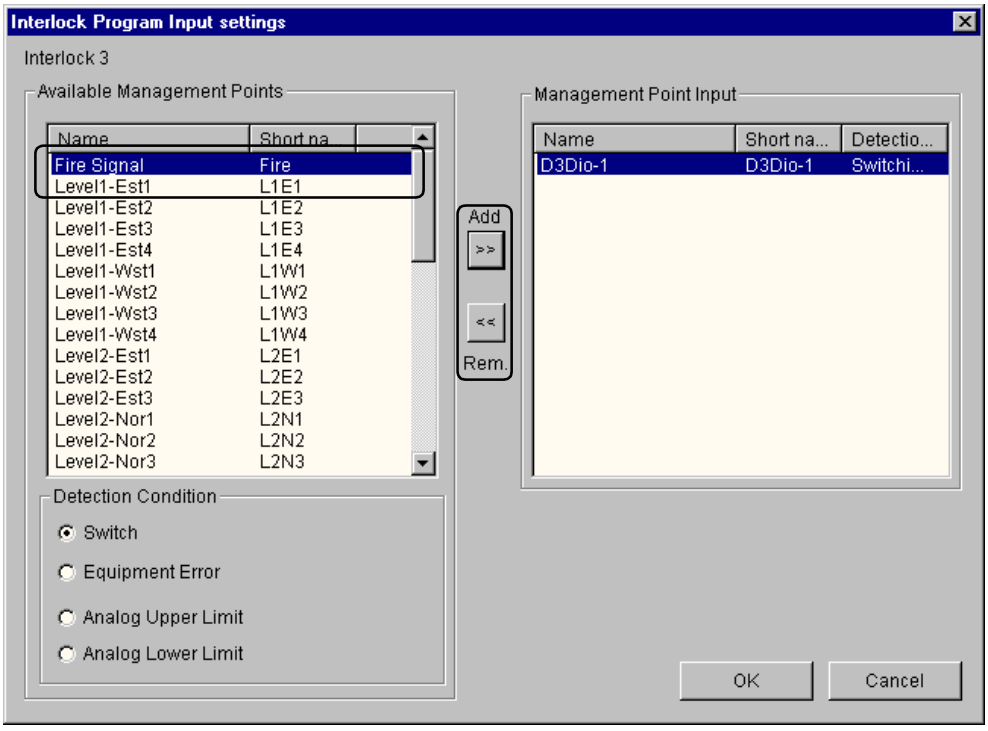
Click the **Modify Program** button to display the interlocking program setup screen.

An interlocking program name or contents registered previously can also be modified via the same procedure. However the program to be modified should be disabled. (Refer to next page for details of enabling/disabling switchover).



Click the **Modify** button in the Input frame.

First select the detection condition.



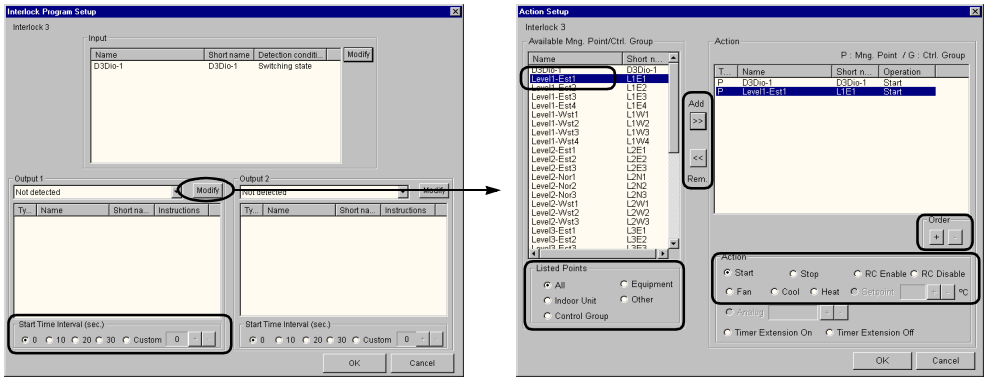
Select a management point/control group. (Click the scroll bar if necessary). When satisfactory, click the **Add >>** button. A list of the input management points registered will appear on the right.

Input management points can be removed by selecting the points to be removed from the list on the right-hand side (click the scroll bar if necessary) and clicking the **Remove <<** button.

If the setup is satisfactory, click the **OK** button. The interlocking program setup is cancelled by clicking the **Cancel** button.

The previous interlocking program setup screen (see below) will be restored.

Output is then registered. Click the **Modify** button in the Output1 frame.



Select a management point/control group. (Click the scroll bar if necessary).

When satisfactory, click the **Add >>** button. A list of the output management points registered will appear on the right.

Select the output action from the bottom right action buttons.

It is also possible to modify only the action of previously registered output management points.

Click on the output management point name to be modified to enable action switchover.

Input management points can be removed by selecting the points to be removed from the list on the right-hand side (click the scroll bar if necessary) and clicking the **Remove <<** button.

Use the **+** and **-** buttons to modify the order of the output management point display.

If everything is satisfactory, click the **OK** button. Clicking the **Cancel** button cancels the registration and the interlocking program setup screen is restored.

Next set up the output action. Select the condition from the drop-down list.

If "Not Detected" is selected, interlocking control cannot be carried out on the management point groups registered in Output1.

Sequential start time may be set up for multiple registrations of management points.

A similar procedure is used to register Output2.

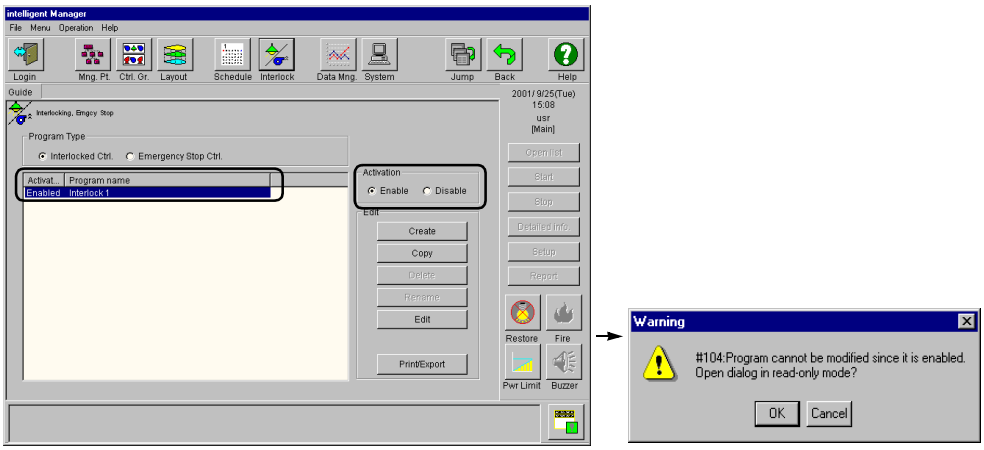
If everything is satisfactory, click the **OK** button. Clicking the **Cancel** button cancels the interlocking program setup.

The interlocking/emergency program setup screen is restored.

Newly registered contents and modified contents are not saved if the operation is cancelled.

When "activated", the registered interlocking program executes.

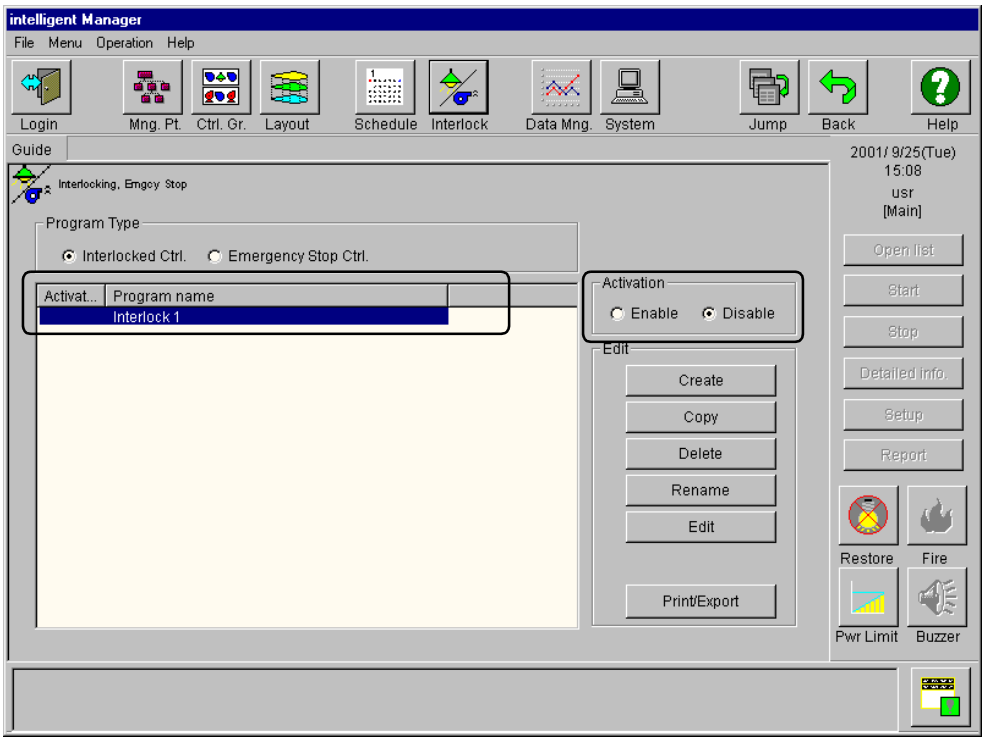
To execute the program, click on the program name displayed in the interlocking/emergency program screen (click the scroll bar if necessary). Then select the "Yes" option in the Activate frame.



When modifying the content of a previously set up program, the program must be deactivated to allow modifications to take place.

Click on the program name and the **Copy Delete Rename** buttons to copy, delete and modify name respectively.

Set to "Disable" in the Activate frame when deleting or modifying names.



Enter the correct name and click the **OK** button. Cancel by clicking the **Cancel** button.

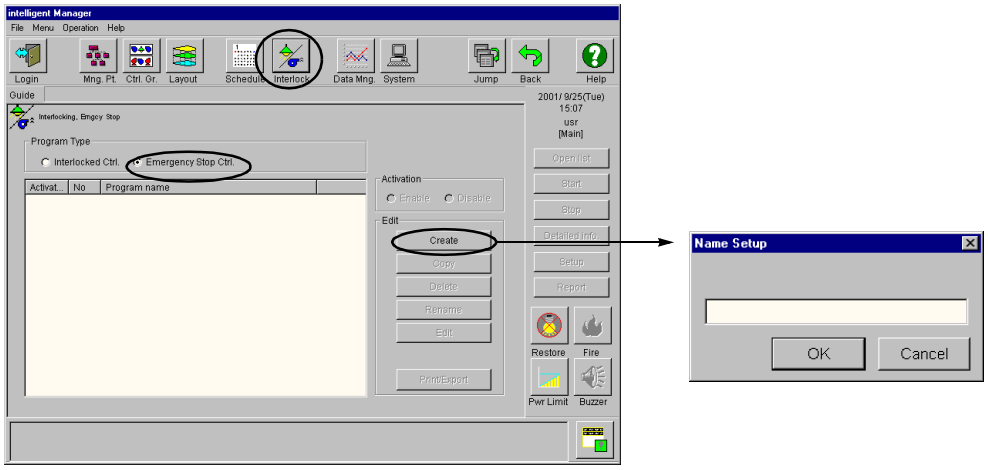
5.9.2 Setting up Emergency Stop Programs

Up to 32 Emergency Stop Programs may be registered.

Up to 6 input management points for monitoring and any number of output management points may be registered for every Emergency Stop Program.

The only output action of the Emergency Stop Program is to stop action.

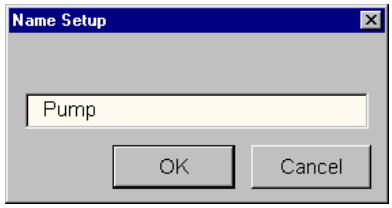
Operation authority is required to edit the Emergency Stop Program.
The Emergency Stop Program may not be edited during an emergency stop.



Select the Emergency Stop Program from the interlocking menu at the top of the screen.

Click the **Create** button to newly register the program.

The name setup screen will appear. Enter the name and click the **OK** button. To cancel the name setup, click the **Cancel** button.

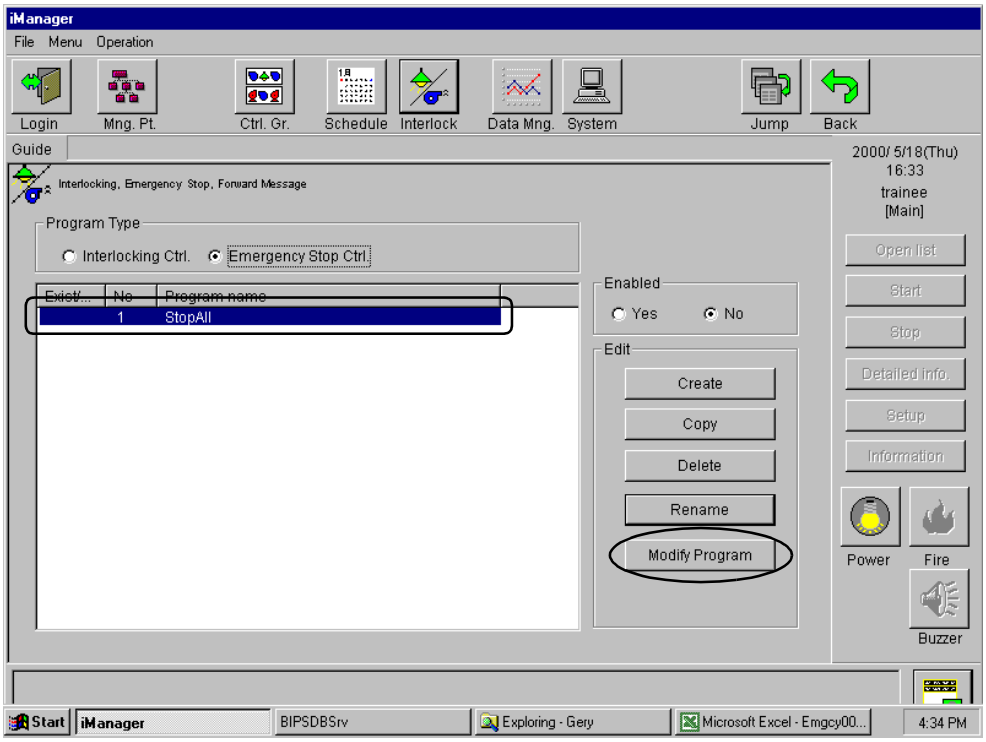


The newly registered program name is displayed on the screen.

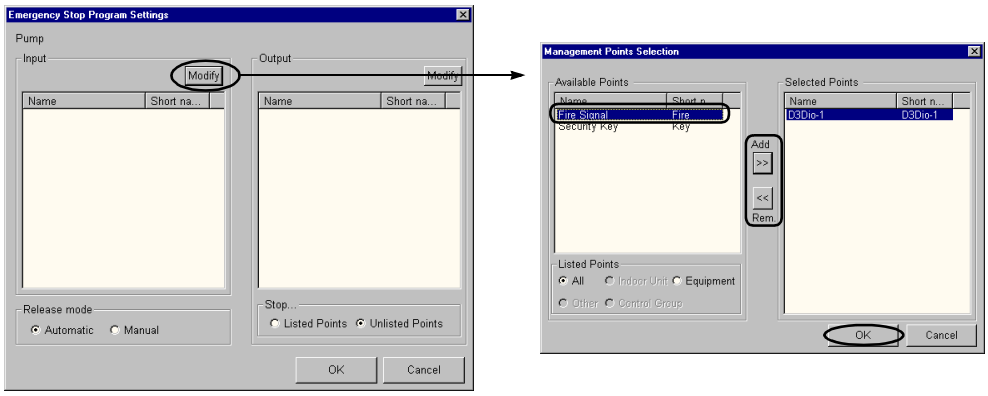
Next set up the contents by clicking on the program name - click the scroll bar if necessary - to enable the operation buttons on the right-hand side.

Click the **Modify Program** button to display the Emergency Stop Program setup screen.

An interlocking program name or contents registered previously can also be modified via the same procedure. However the program to be modified should be disabled. (Refer to next page for details of enabling/disabling switchover).



Click the **Modify** button in the Input frame to display the following management point selection screen.



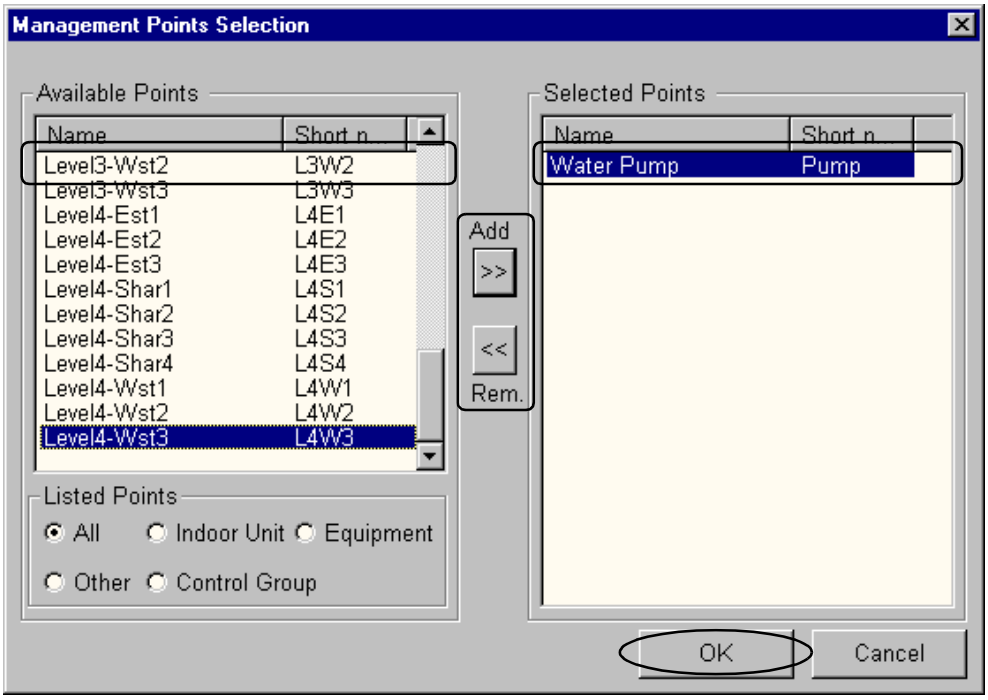
First select the detection condition.

Select a management point/control group. (Click the scroll bar if necessary). When satisfactory, click the **Add >>** button. A list of the input management points registered will appear on the right.

Input management points can be removed by selecting the points to be removed from the list on the right-hand side (click to roll down) and clicking the **Remove <<** button.

The previous interlocking program setup screen (see below) will be restored.

Output is then registered. Click the **Modify** button in the Output frame.



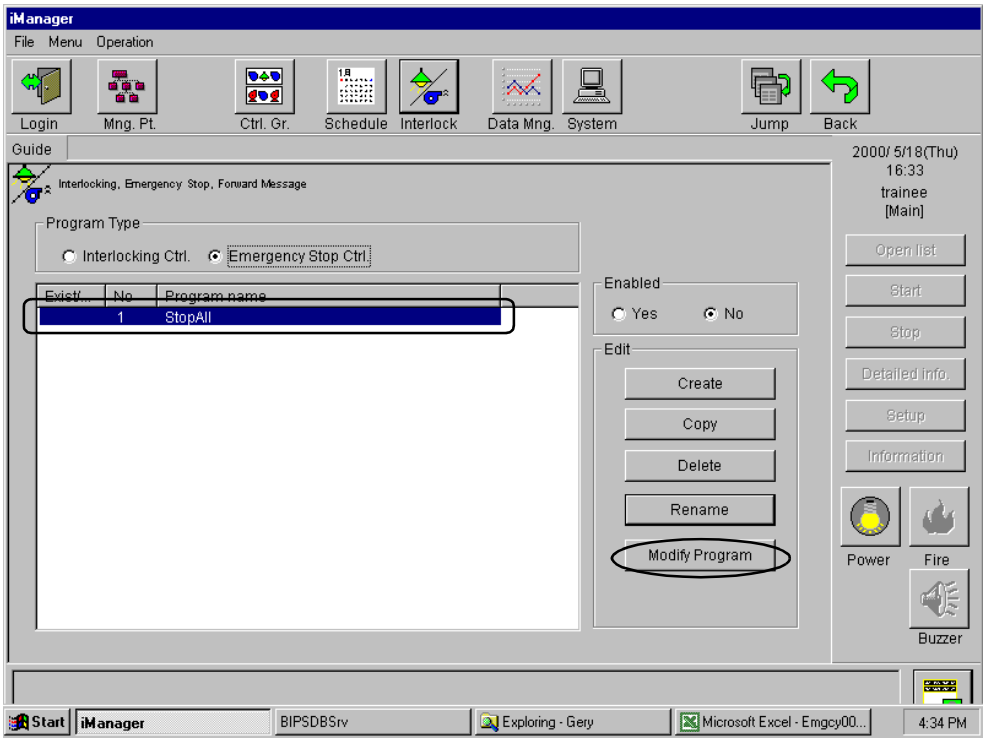
Select a management point from the available list. (Click the scroll bar if necessary).

When satisfactory, click the **Add >>** button. A list of the input management points registered will appear on the right.

Input management points can be removed by selecting the points to be removed from the list on the right-hand side (click the scroll bar if necessary) and clicking the **Remove <<** button.

If the setup is satisfactory, click the **OK** button. The interlocking program setup is cancelled by clicking the **Cancel** button.

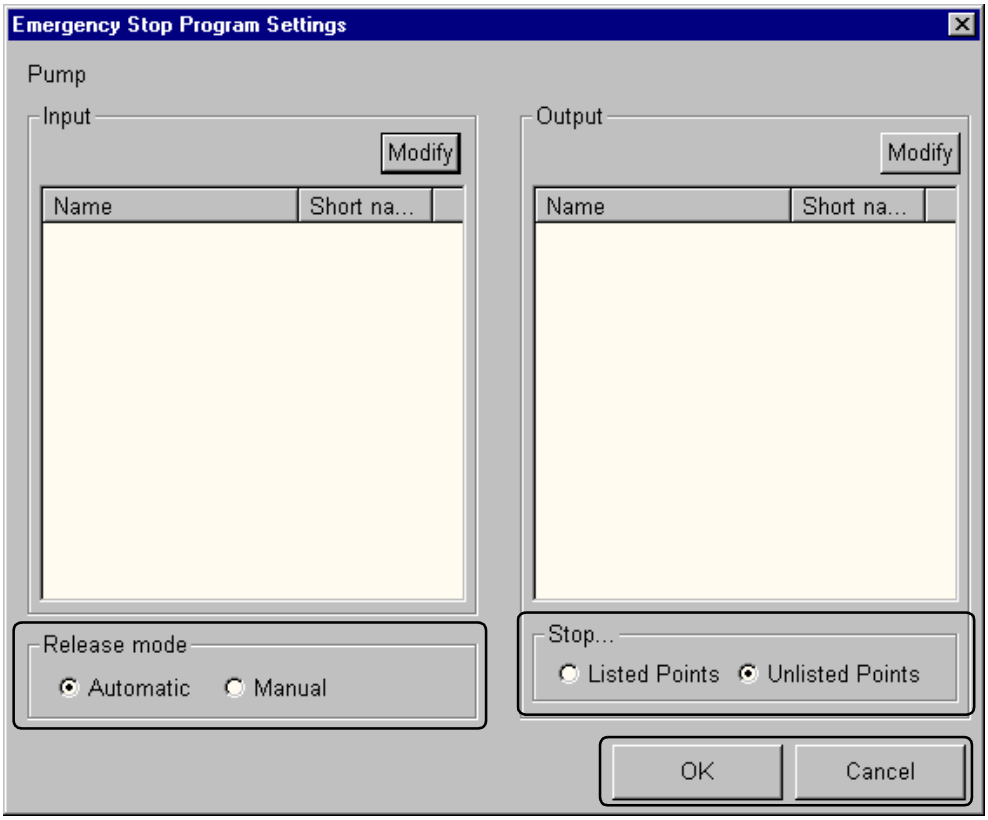
The previous Emergency Stop Program setup screen (see below) will be restored.



Setting up the Release Mode

Automatically: emergency stop signals are automatically released when they are switched off.

Manually: once all emergency stop signals have been switched off, the specified program may be released manually.



Set up the specified Output Emergency Stop method

Depending on the Emergency Stop option selected, all listed output points or all output points other than those listed are stopped.

Listed points: specifies all the output management points to be stopped.

Unlisted points: all output management points other than those listed are to be stopped.

If the setup is satisfactory, click the **OK** button.

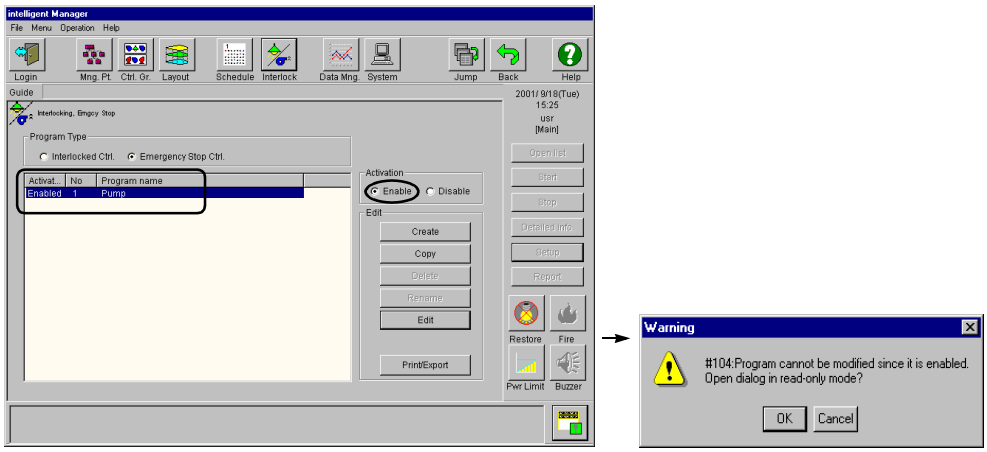
The Emergency Stop program setup is cancelled by clicking the **Cancel** button.

The previous Interlocking/Emergency Stop Program setup screen will be restored.

When "activated", the registered Emergency Stop program executes.

To execute the program, click on the program name displayed in the interlocking/emergency program screen (click the scroll bar if necessary). Then select the "Yes" option in the Activate frame.

When modifying the content of a previously set up program, the program must be deactivated to allow modifications to take place.
The program may not be deactivated during an emergency stop. Therefore the emergency stop must be released before deactivating the program.



Click on the program name and the **Copy Delete Rename** buttons to copy, delete and modify name respectively.

Set to "No" in the Activate frame when deleting or modifying names.

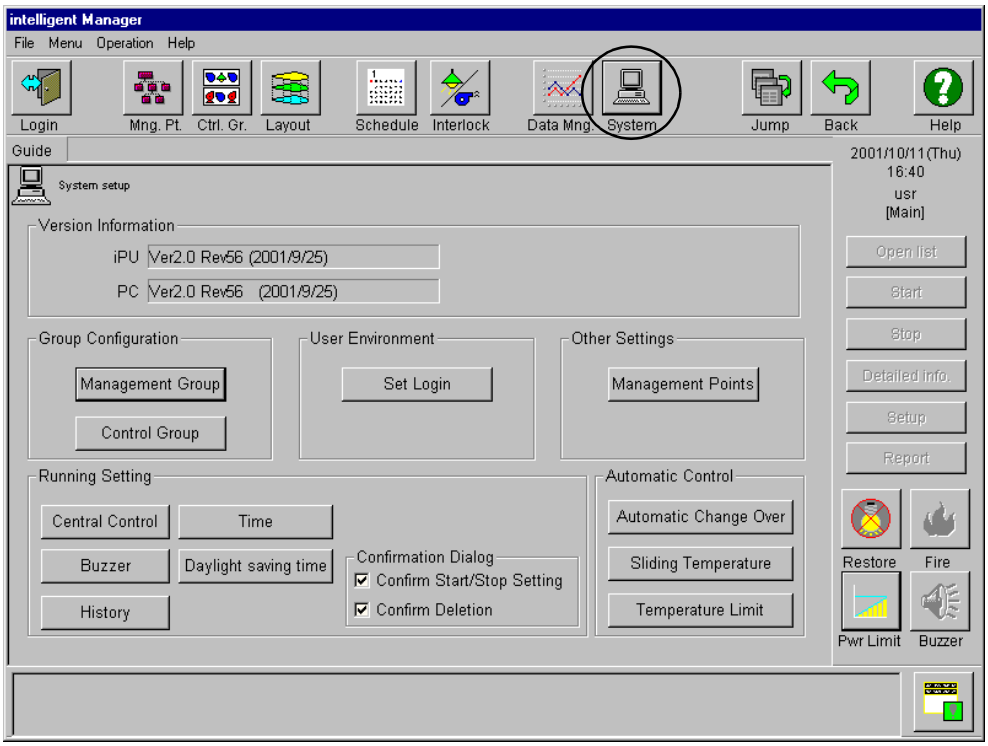
Enter the correct name and click the **OK** button. Cancel by clicking the **Cancel** button.

5.10 System Options

In order to meet the requirements of every user in the best possible way, various setup functions are available.
These are known as the system setup.
To carry out a system setup, the appropriate authority - such as "system setup authority" - is required.
The system setup has the following setup functions.

- Points Management:
  - Management group setup;
  - Control group setup;
  - Management point attribute setup.
- User environment:
  - Login setup;
  - Confirmation dialog setup;
  - Buzzer setup;
  - History setup.
- System Time:
  - Time (clock) setup;
  - Daylight saving Time setup.
- Automatic control:
  - Centralized control setup;
  - Automatic Change Over;
  - Sliding Temperature;
  - Temperature Limit.

Click the **System** menu button. The system shown below will be displayed.



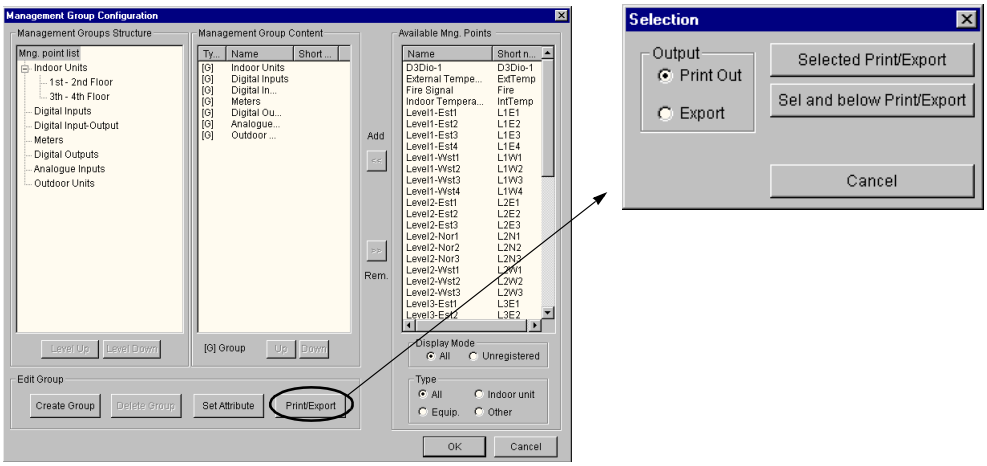
Click the button of the item to be setup to display the setup dialog.

5.10.1 Configuring Management Groups

- Management groups can be named at will.
- Icons indicating a management group is automatically assigned a group icon. (No modification possible).
- The layered structure of the management groups is automatically displayed in the management group list .
- Management group operation authority is required to operate a management group.
- Management Groups can be printed out either (on the default printer) or exported into CSV (comma separated) format files.

* As cell size and arrangement are similar to those of a control group, refer to **5.10.2 Configuring Control Groups** (p. 242).

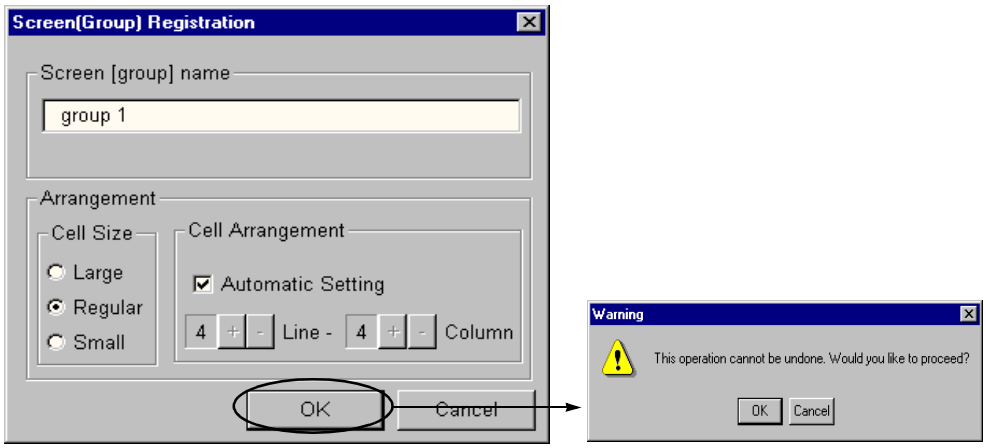
Operational Procedure



Select the management group to which the group to be created will belong.

Click on the **Print/Export** button to print on the system printer or export to a text file either the currently selected group or all the groups.

Enter the group name and click the **OK** button.



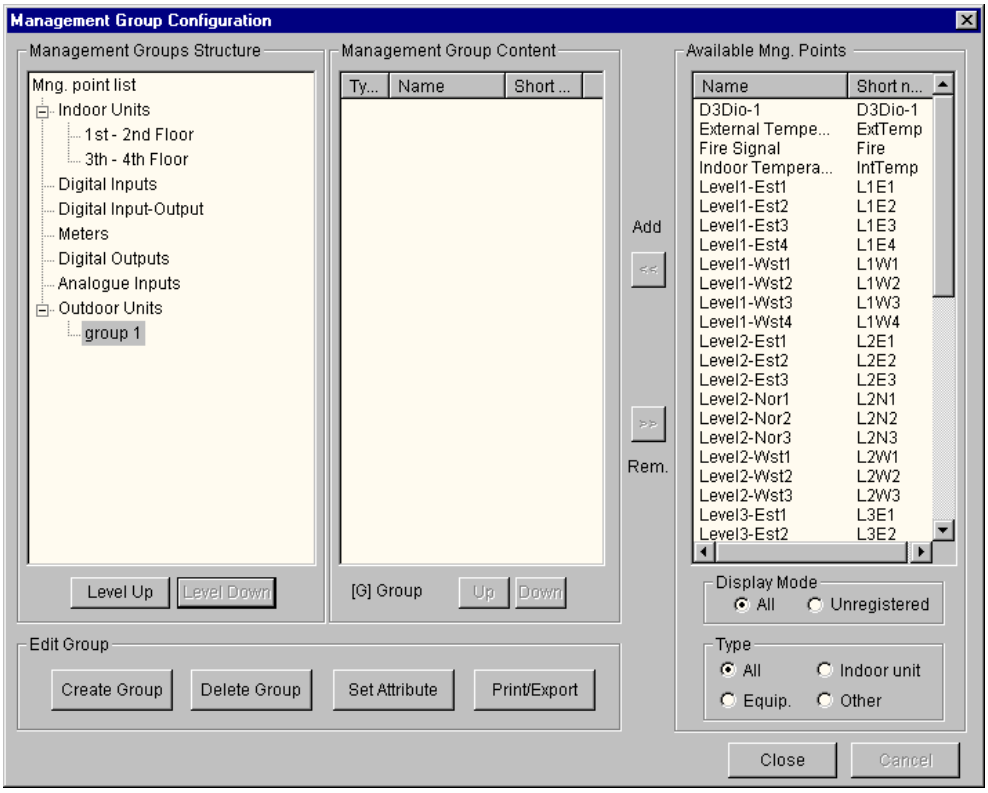
A warning box will appear at the time of the first operation.

Click the **OK** button to proceed with the operation or the **Cancel** button to cancel it.

The new group will then be displayed in the management group structure.

The level of this group in the tree structure can be modified by clicking the **Level Up** and **Level Down** buttons.

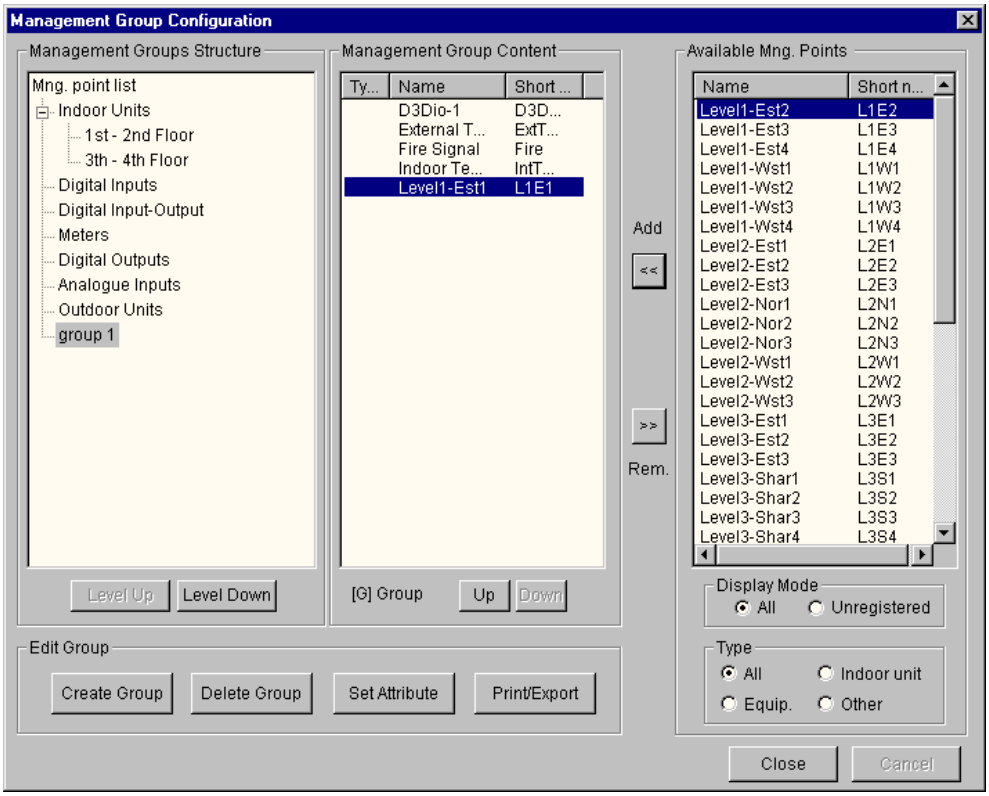
As well, the position in the sub-tree can be modified by clicking the **Up** and **Down** buttons.



The management points belonging to this group are selected from the list of available management points and added by clicking the **Add <<** button.

To remove a management point, select the management point to be removed from the management group content list and click the **Remove >>** button.

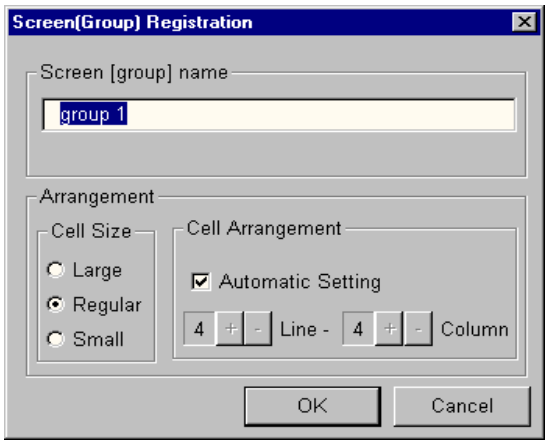
When a management point is registered, it will be displayed as in the screen below.



When all registrations have been completed, click the **Close** button.

Additionally, if a management point group needs to be deleted, select the management point group to be deleted and click the **Delete Group** button.

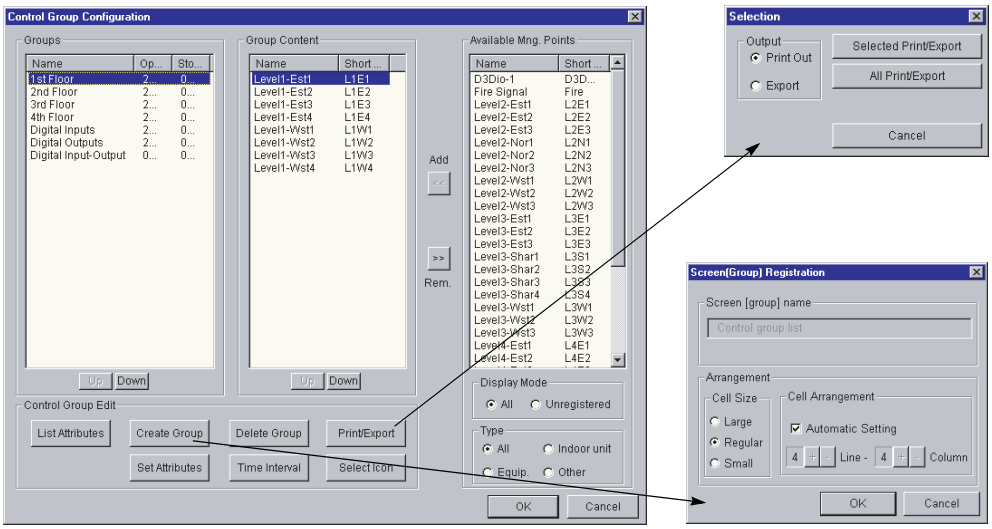
If a management point group needs to be renamed, select the management point group to be modified and click the **Set Attributes** button. A group registration dialog box will appear, thereby allowing name and arrangement specification to be modified.



5.10.2 Configuring Control Groups

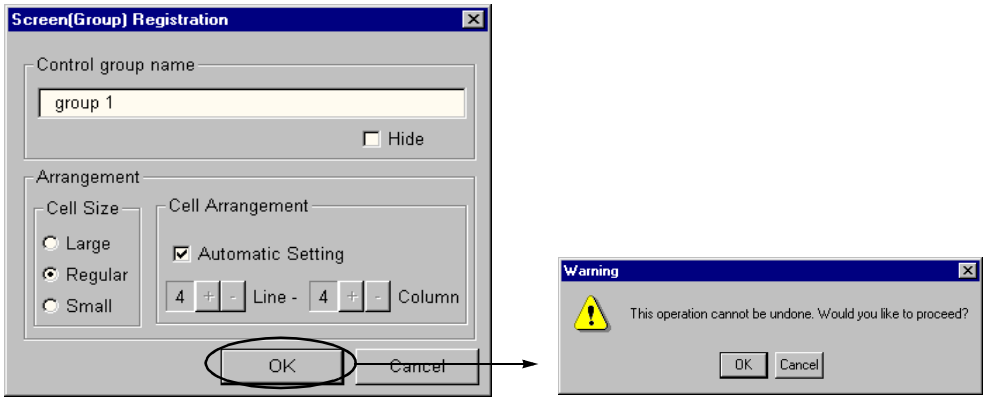
- Control groups can be named at will.
- Icons indicating a control group can be setup at will as representative icons.
- The control groups created by the control group operation are automatically displayed in the control group list.
- Control group operation authority is required to operate a control group.
- The order of the registered management points, the sequential startup time interval at the time of collective start and the sequential stop time interval at the time of collective stop (0, 10, 20, 30 or any number of seconds from 0-180) can be specified in a control group. A sequential startup (stop) time interval is the time elapsed between instructions.
  * This assumes that if collective running time is started up sequentially, the peak electric electrical power load required at startup will be reduced.
- Both management points with Start/Stop capability and management points for monitoring only can be set up as control group members.
- If an instruction - such as collective startup - is issued to a control group while it is being edited (registration/deletion of management points or modifications of the time interval), the modification will come into effect for subsequent instructions only.
- Control Groups can be printed out either (on the default printer) or exported into CSV (comma separated) format files.

Operational Procedure



Default attributes of new groups can be preset as shown above.

Click on the **Create Group** button to display the group screen registration dialog box.

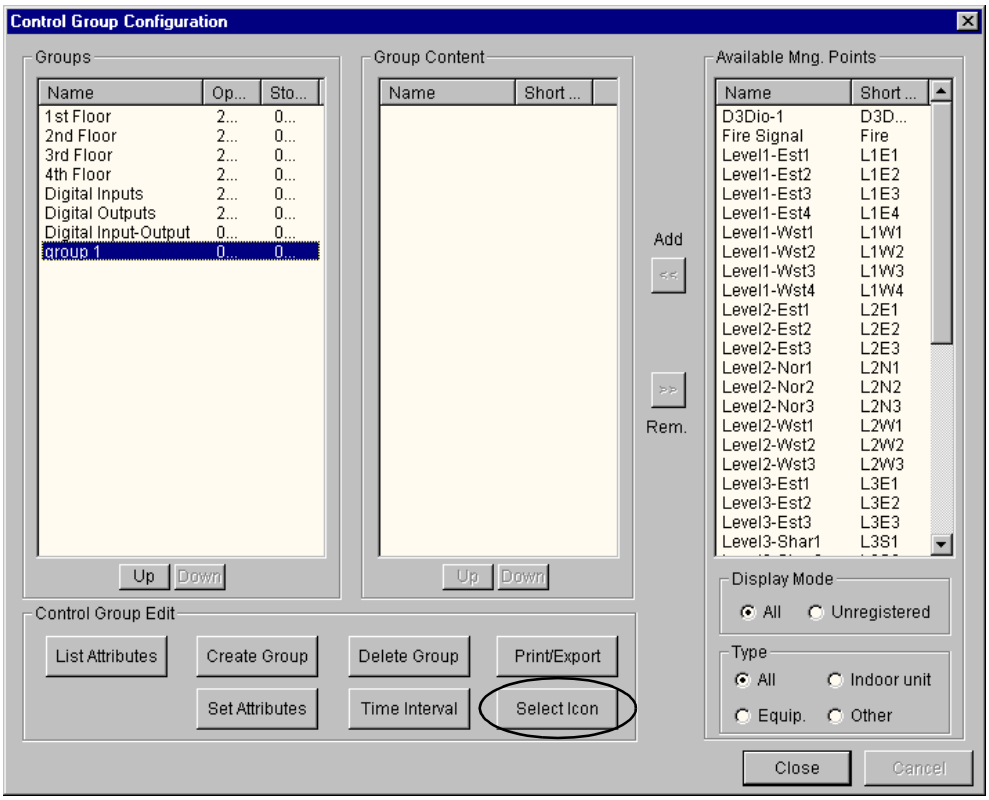


Enter the group name and click the **OK** button.

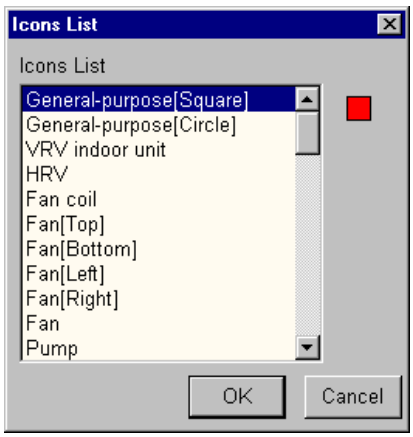
A warning box will appear at the time of the first operation.

Click the **OK** button to proceed with the operation or the **Cancel** button to cancel it.

The control group will then be displayed in the control group structure.

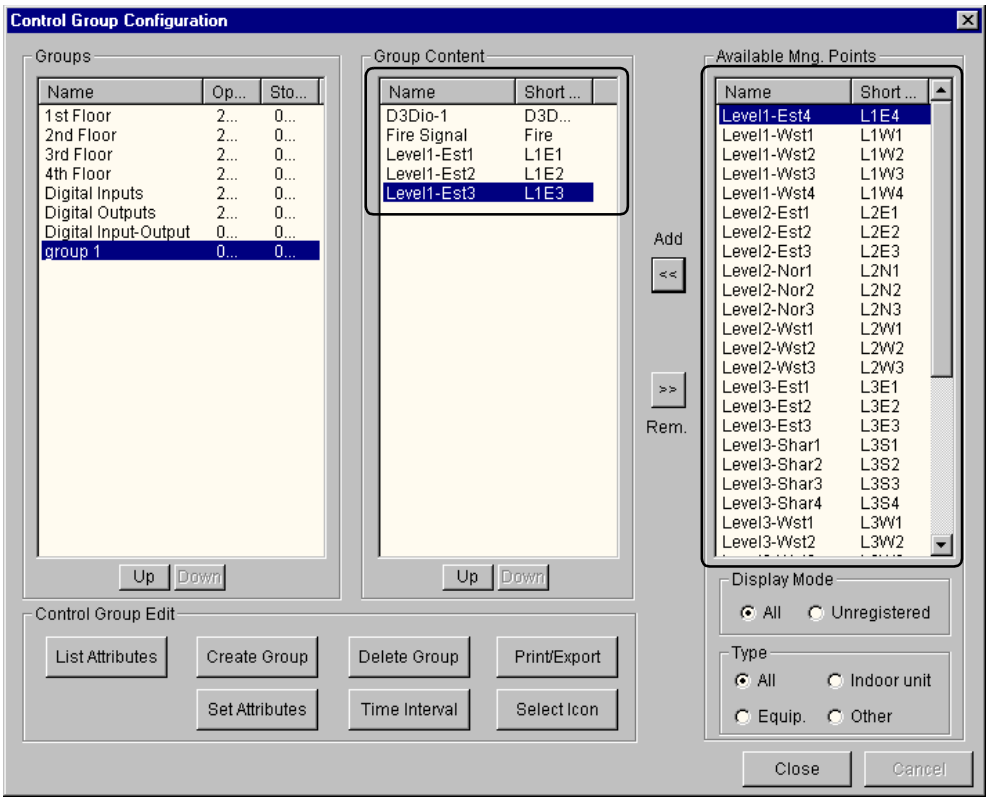


Select the group from the control group structure and click the **Select Icon** button to select the icon.



The management points belonging to this group are selected from the list of available management points and added by clicking the **Add <<** button.

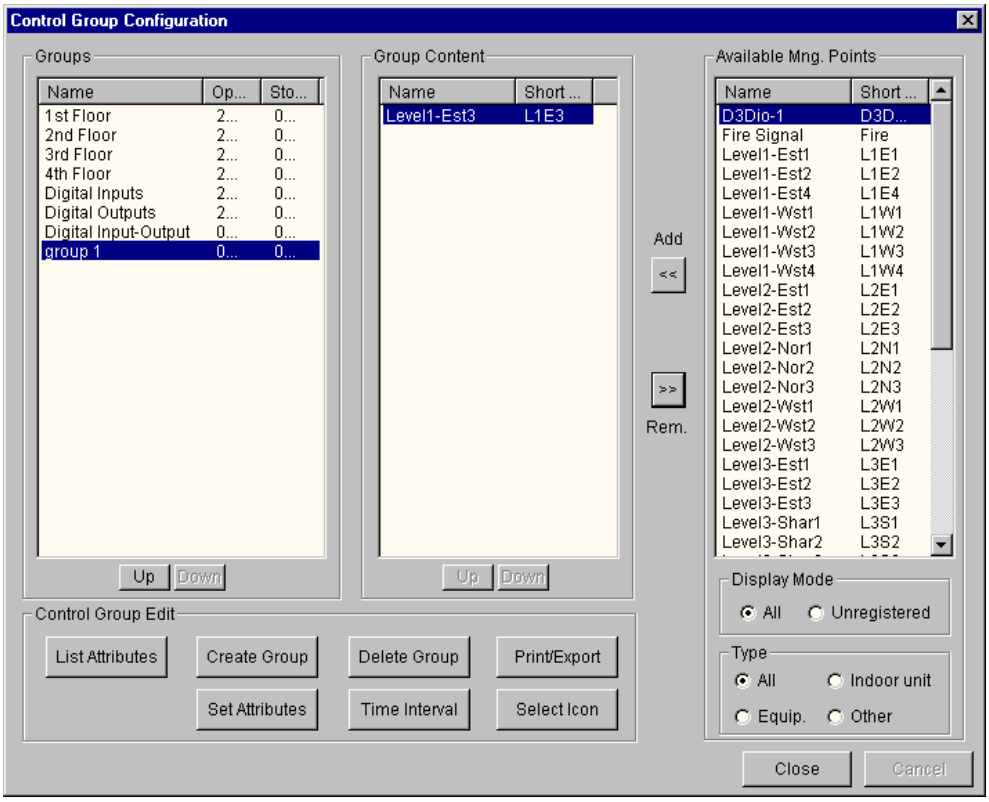
To remove a management point, select the management point to be removed from the management group content list and click the **Remove >>** button.



When a management point is registered, it will be displayed as in the screen above.

Sequential Start/Stop intervals may be set up for Start and Stop.

Select the group to be set up and click the **Time Interval** button to display a dialog box. Then set the sequential Start/ Stop intervals.



When all registrations have been completed, click the **Close** button.

Additionally, if a control group needs to be deleted, select the control group to be deleted and click the **Delete Group** button.

If a control group needs to be renamed, select the control group to be modified and click the **Set Attributes** button. A group registration dialog box will appear, thereby allowing name and arrangement specification to be modified.

5.10.3 Configuring user Login

5.10.3.1 Fundamentals

A user's execution authority may be set up in order to restrict the range of operation and consultation.

Note Administrators only can perform this procedure. An administrator is an operator whose profile includes authorization to Regist Users.

User Management

- By logging in, a user may operate within the range of authority granted to him.
- A single user may not log in simultaneously from more than one connected monitoring PC.
- The items for which authority can be set up are shown as follows.

Authority	If authority is granted	If authority is not granted
Start/Stop Setup	Start/Stop/Setup operation is possible	Start/Stop/Setup operation is not possible
Schedule Registration	Consultation and registration/editing of schedule is possible	Schedule consultation only is possible
Interlocking Control Registration	Consultation and registration/editing of interlocking control is possible	Interlocking control consultation only is possible
Emergency Stop Registration	Consultation and registration/editing of emergency stop is possible	Emergency stop consultation only is possible
Emergency Stop Release	Forced release of emergency stop is possible	Operation cannot be performed
History Operation	Consultation and setup of history is possible	History consultation only is possible
System Setup	System setup is possible	Operation cannot be performed
Centralized Control Setup	Centralized control setup is possible	Operation cannot be performed
User Registration	User registration and authority may be set up	Operation cannot be performed
Under Maintenance Mode	Under maintenance mode may be set up	Operation cannot be performed
Register Power Limit	Consultation and editing of Power Limit parameters is possible	Power Limit consultation only is possible
Register Eco Mode	Consultation and editing of Eco Mode parameters is possible	Eco Mode con-sultation only is possible

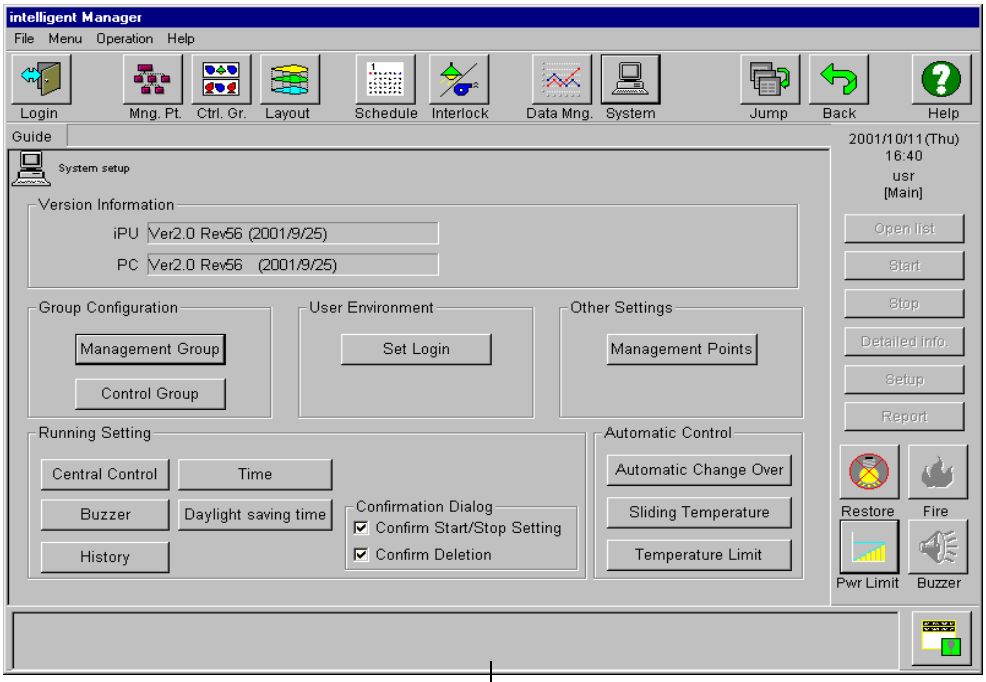
Screen Authority

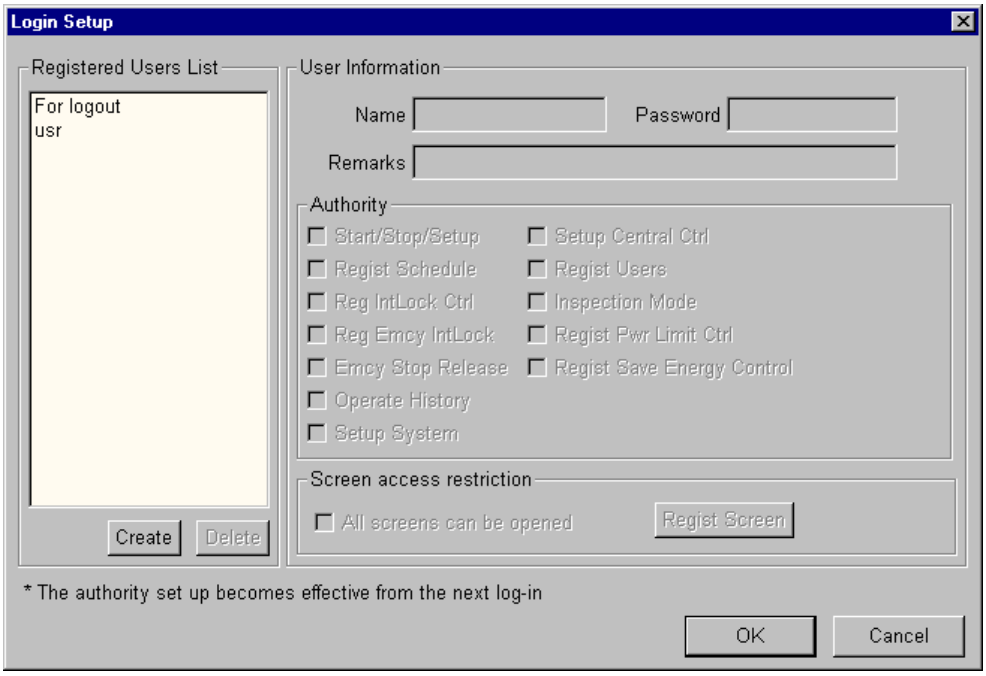
It is possible to set up an authority able to open all screens or an authority able to open only those screens as specified in the screen registration.

Even if a screen may be opened, if the operation authority for that screen has not been granted, the authority takes precedence and operation will not be possible.

Operational Procedure

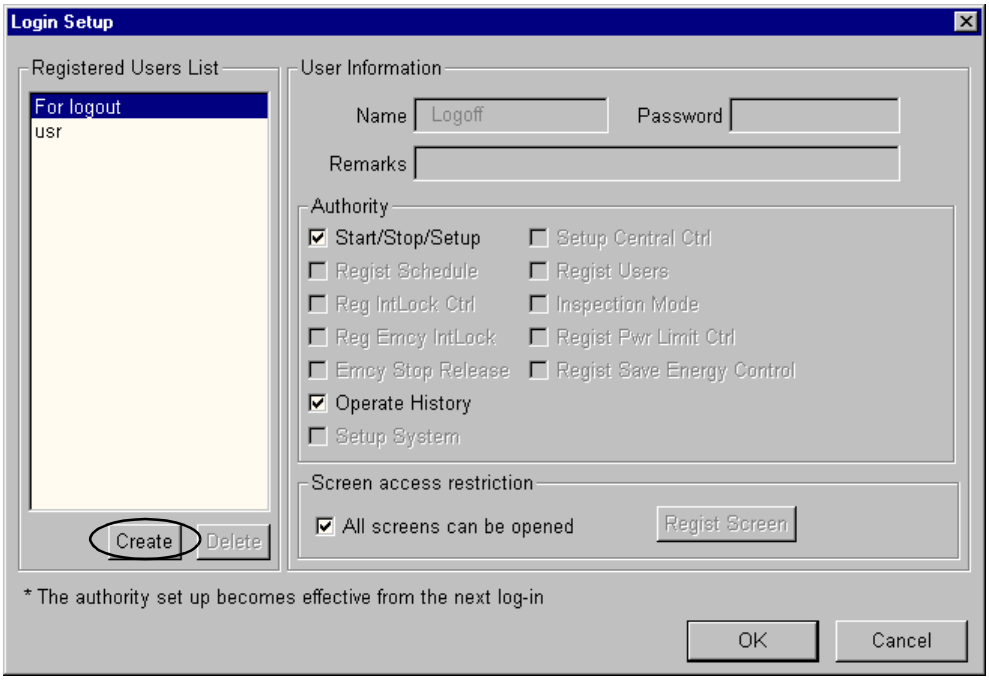
- Start intelligent Manager , then login as an administrator user,
- Click the **System** menu button; the **System Setup** screen displays,
- Click the **Set Login** button; the **Login Setup** screen displays,
- The list of users already registered is displayed as in the figure below,
- Perform as explained hereafter.

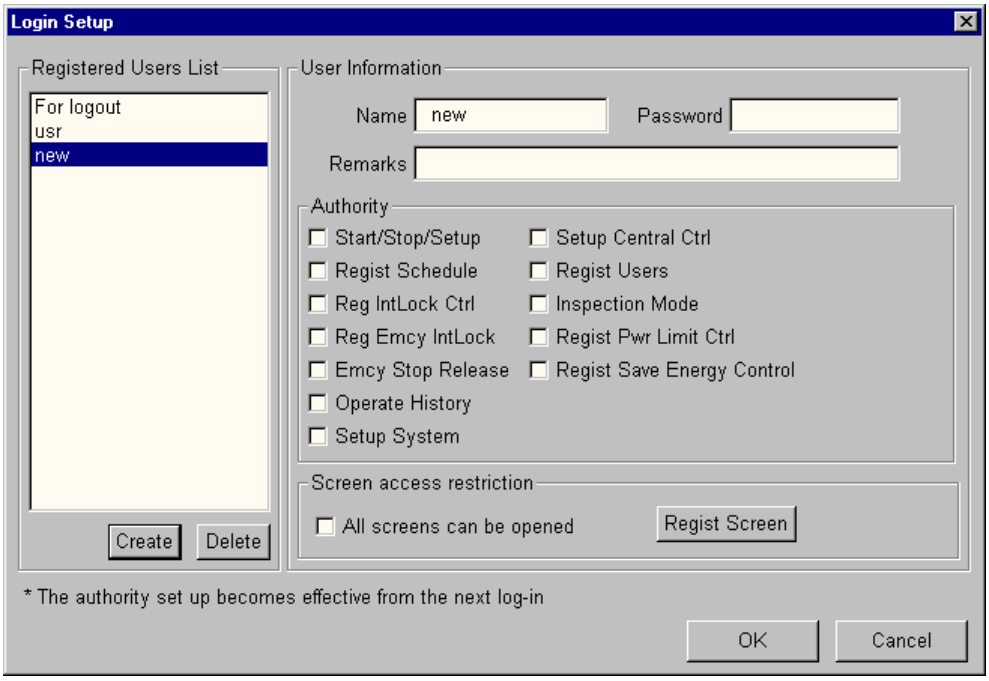




5.10.3.2 Creating a user

Click on the **Create** button to register a new user.

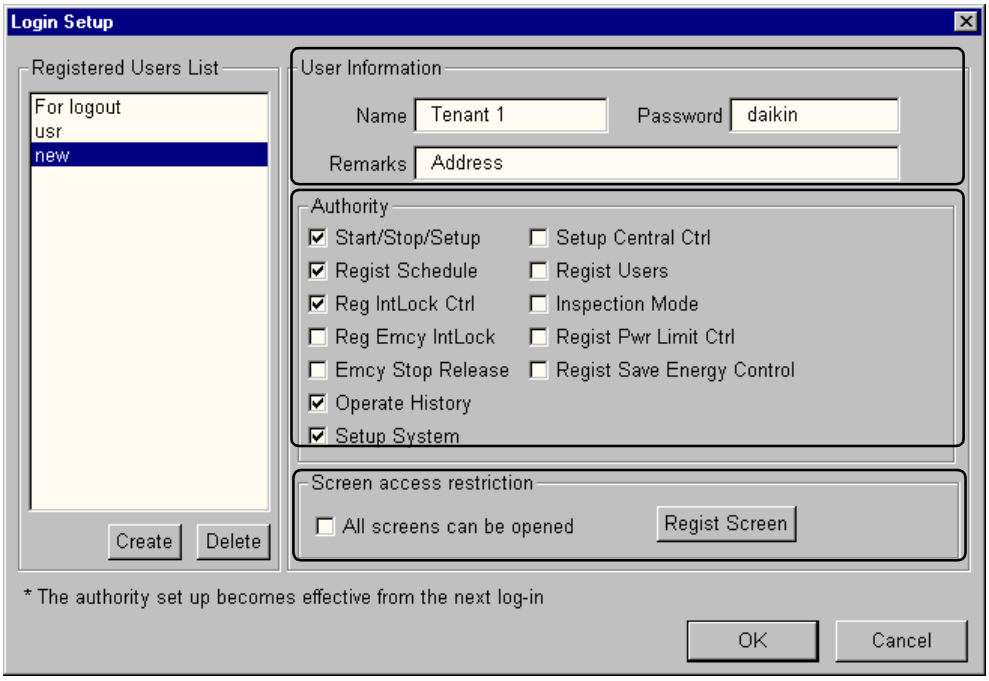




Once a new user has been registered, the user name, password, remarks, authority and screen restrictions may be set up.

Enter the user name and password.

Check the check boxes to indicate those items for which authority setup will be granted.

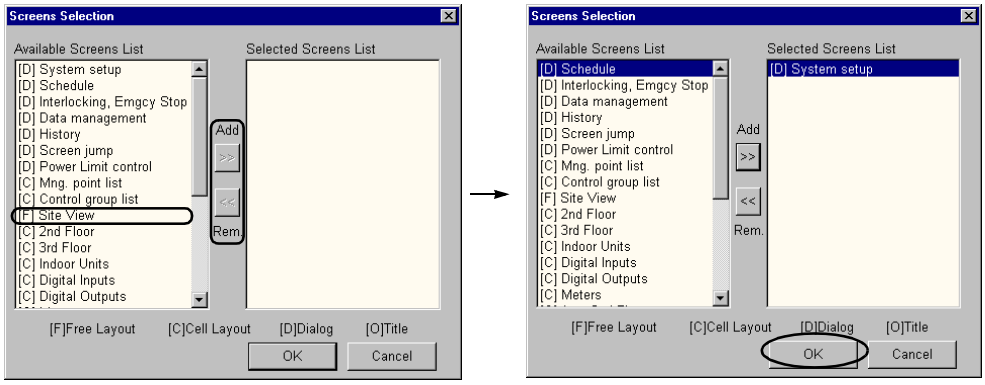


If the user is to be granted the authority to open all screens, check the appropriate checkbox.

If the screens that may be opened are to be restricted, click the **Regist Screen** button to display the screen selection dialog box.

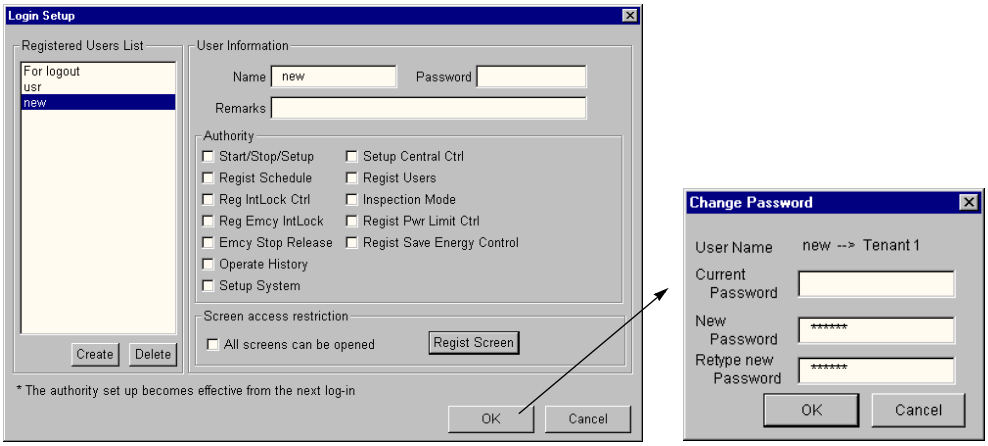
The screens that may be opened are selected from the list of available screens and added by clicking the **Add >>** button.

To remove a screen, select the screen to be removed from the screen selection list and click the **Remove <<** button.



Click the **OK** button when selection is completed.

When all registrations have been completed, click the **OK** button.



If the **Set Login** button from the **System Setup** menu is clicked again, the user will be seen to have been added as shown in the above figure.

(1) Click the **Create** button; the fields for input enable.

(2) Input the profile of the user:

- Name: as used for Login,
- Password: idem,
- Remarks: freely describes the profile of the user,
- Authority: check the boxes for the operation which this user can perform,
- Screen Access:
- Check the **All Screens** box

or

- Click the **Regist Screen** button; the **Screen Selection** screen appears, then:
- Select the screens which you want the user to have access to from the left side list and click the **Add** button,
- Select the screens which you want the user NOT to have access to from the right side list and click the **Remove** button,
- Click the **OK** button; the Screen Selection screen closes,
- Click the **OK** button will display the **Password** confirmation screen:
- Enter the **Current** password and the **New** password (twice),
- Click the **OK** button to confirm.

5.10.3.3 Modifying a user

(1) Select a user from the list; the fields for input enable.

(2) Perform input as above step (2).

5.10.3.4 Deleting a user

(1) Select a user from the list; the confirmation dialogue box appears.

(2) Click the **Yes** button.

Click the **OK** button; the **Login Setup** screen closes. The modifications are immediately effective.

5.10.4 Editing Management Points

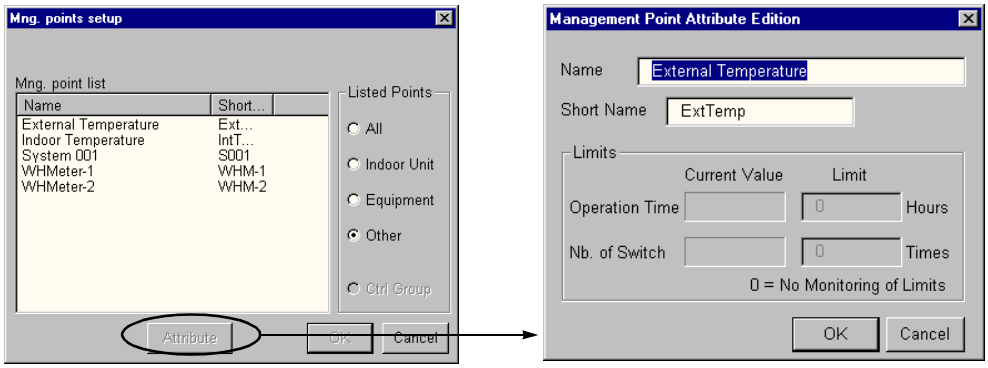
It is possible to modify the following information contained within a management point.

- Name of management point.
- Short name of management point.
- Setup of maximum values of operation time and number of Start/Stop.

System setup authority is required for operation.

Operational Procedure

Select the management point whose information needs to be modified and click the **Attribute** to group to display the management point attribute modification dialog box.



Modify the name, short name and maximum values as required. Click **OK** to return to the management point setup dialog box.

If the cumulative maximum value is set to 0, it may not be possible to monitor maximum values.

When all modifications have been completed, click the **OK** button of the dialogue box for the management point setup.

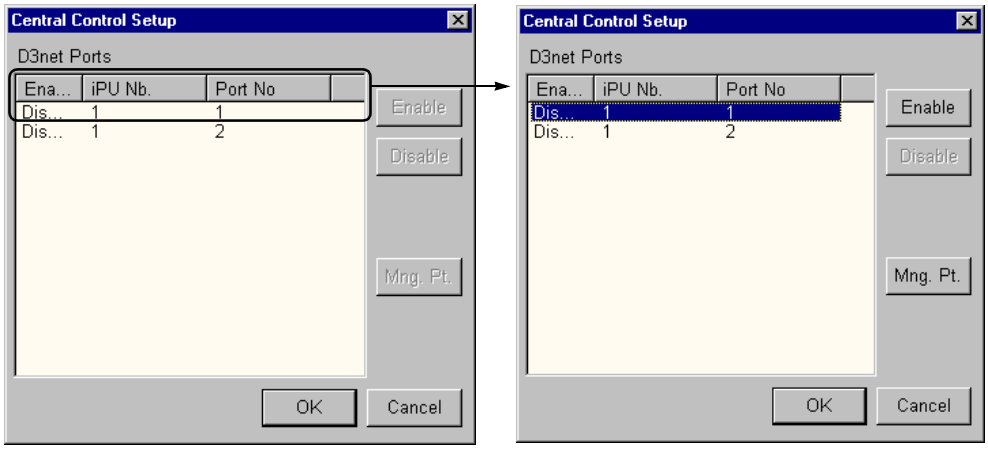
5.10.5 Setting up Central control

It is possible to set centralized control for permission/prohibition for every DIIInet port.

Central control permission/prohibition is used to indicate whether or not permission is to be granted for an operation from a connected Daikin centralized control unit (for example: remote controller etc.).

System setup authority is required to operate it.

Operational Procedure

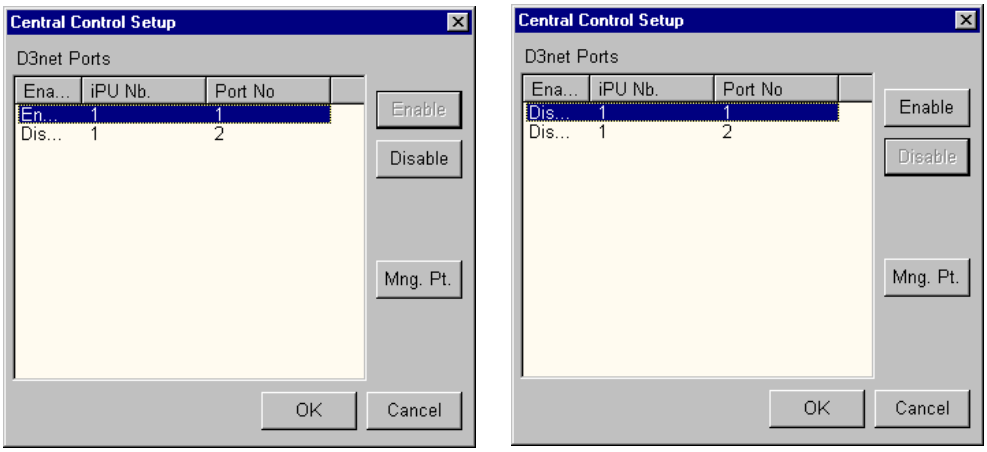


The state of permission or prohibition of the Station numbers and Port numbers connected to the main system is displayed.

Permission/prohibition is used to define whether or not permission is to be granted for an operation from a connected Daikin centralized control unit.

If permission is granted for the Start/Stop operation, priority will be given to other Daikin central control units. If permission is denied, operation will only be possible from intelligent Manager.

Select the line of the Station and port number to be modified.

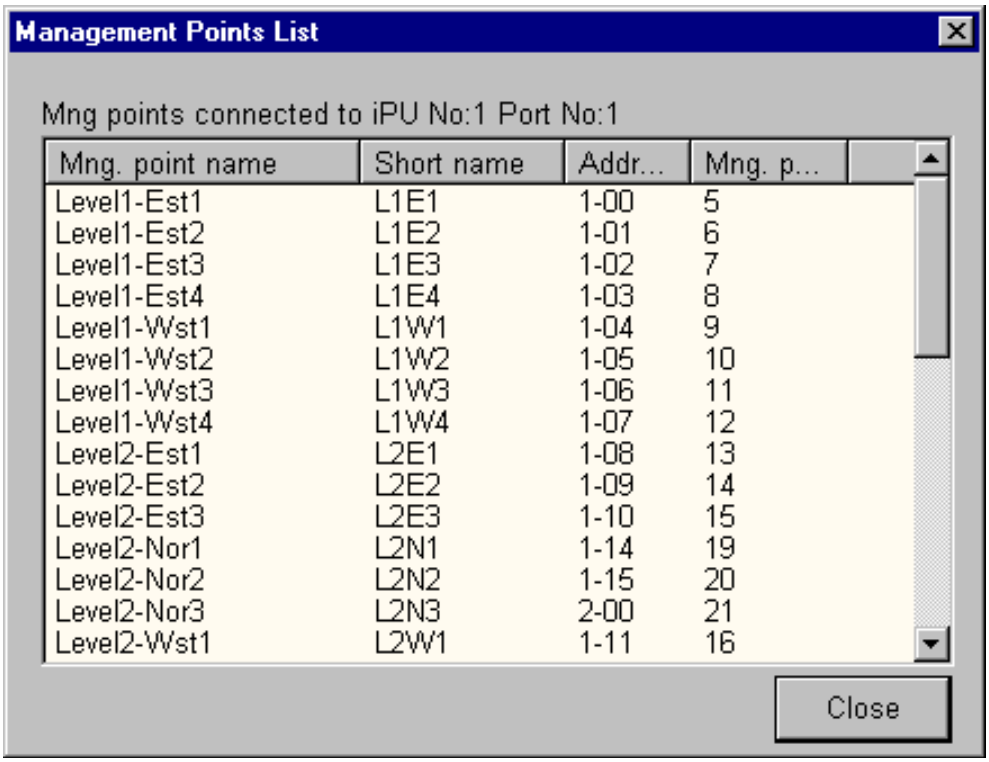


The selected line is displayed in reverse field and the button showing the reverse of the current state is displayed.(If permission has been granted for the current state, the **Disable** button will be enabled and vice-versa the **Enable** button will be enabled if permission has been denied).

In the screen above click the **Enable** button.

The state of Port 1 has been modified to prohibition.

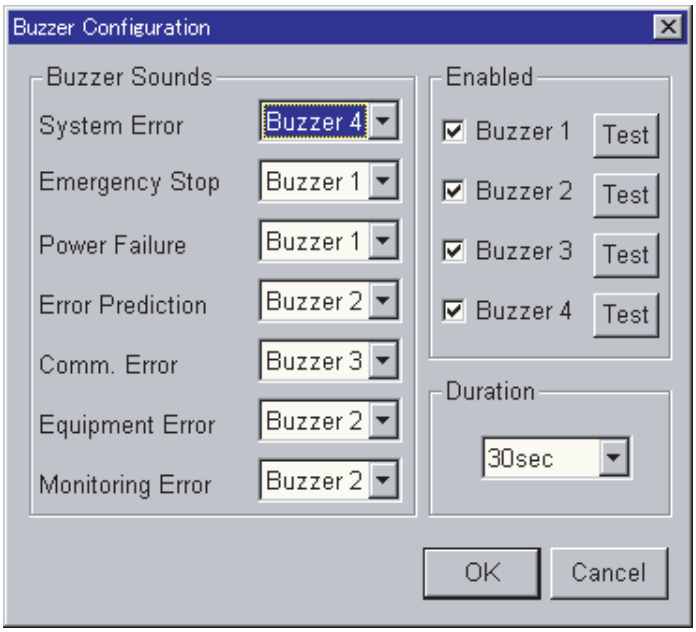
To display the management points, select the Port number to be displayed and click the **Management Points** button to display a dialog box.



5.10.6 Configuring the Buzzers

- Buzzers may be assigned as required to various types of alarm.
- Four types of sound are available for the alarm buzzer.
- It is possible to disable any particular buzzer.
- The duration of the buzzer sounding may be specified.
- The icon changes in accordance with the state of the buzzer.

- When the buzzer sounds, any screen saver in current operation is simultaneously stopped.
- System setup authority is required for the buzzer setup.



Buzzer Off

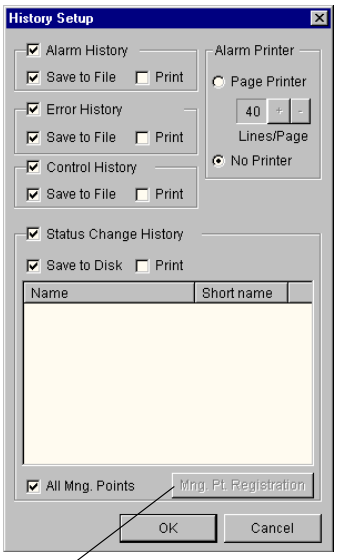
Buzzer On
(can be turned
Off if clicked)

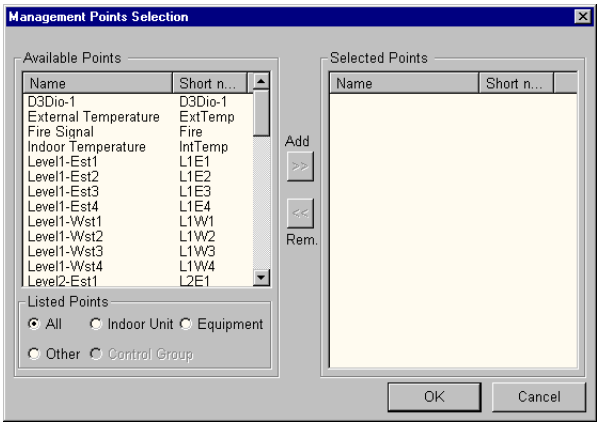
5.10.7 Configuring History options

The following history setups are possible, depending on data type:

- Display - Yes/No,
- Print by alarm printer - Yes/No,
- Save as File - Yes/No,

Keep history of a limited selection of Management points (default setting is all points)





5.10.8 Adjusting the Time

- The Station clock is set to the PC (personal computer) time.
- The PC clock may be set to the Station time.
- System setup authority is required to set the PC clock.
- Time modifications should be avoided between 23:30 and 2:30 as the Station is engaged in data management.

Modifying Station time

When time is put forward, scheduled operations for the intervening period are skipped.

When time is put back, control that has already been executed is repeated and the data collected before the modification is updated and managed.

When time is to be modified, the Station time setup is performed once the programs of running control etc. have been deactivated.

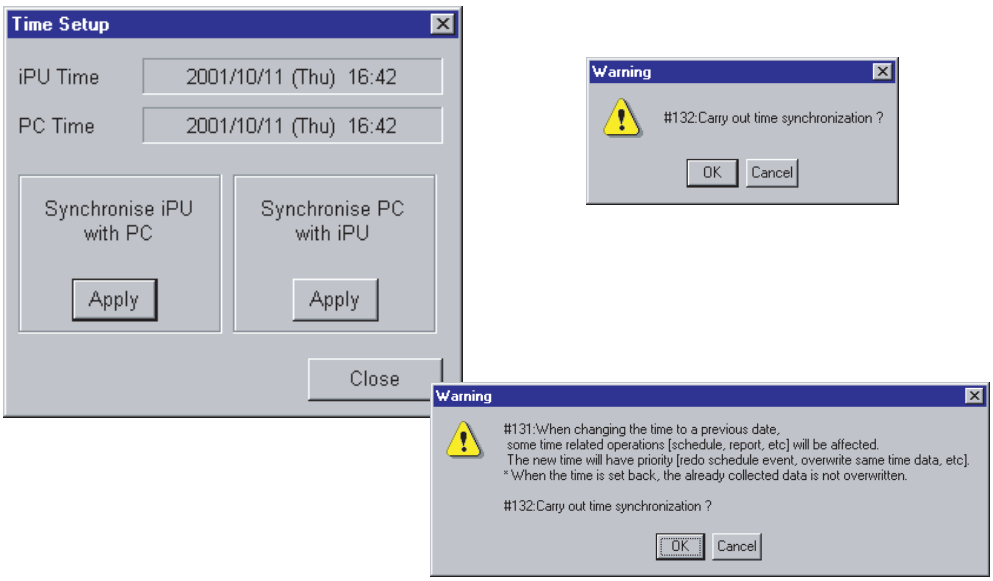
Data management setup (in particular billing-related matters) should be completed before time modifications are made.

Major time modifications should be avoided. (This can lead to inaccuracies in billing management data, daily report data etc).

To ensure accurate monitoring, time should be correctly adjusted on a monthly basis (particularly in the case of billing management).

Operational Procedure

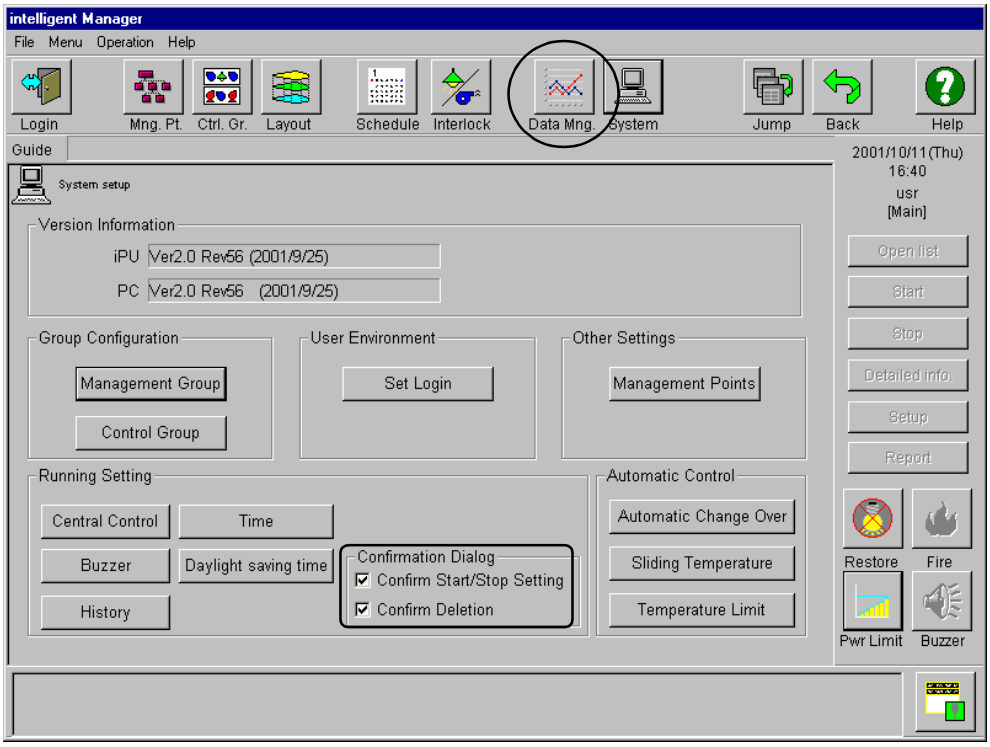
Click the **Setup** button to select method of time setup.



5.10.9 Enabling Confirmation Dialog

Serves to confirm the execution or cancellation of an operation (Start, Stop, Setup).

Operational Procedure

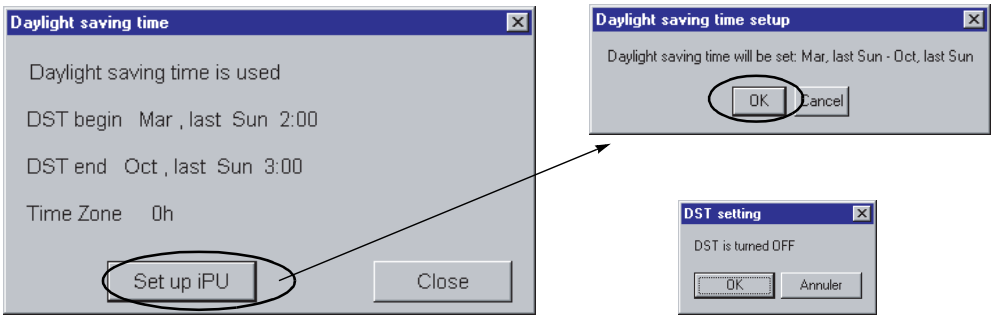


Check the appropriate "Confirmation dialog - yes/no" checkbox to make use of the confirmation dialog as required. Check the checkbox to enable the dialog - leave the checkbox blank to disable the dialog.

5.10.10Setting up the Daylight saving time

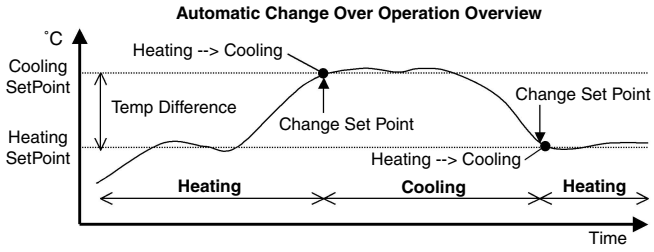
Serves to configure the date and time for the shift when daylight saving time is used (summer time).

Operational Procedure

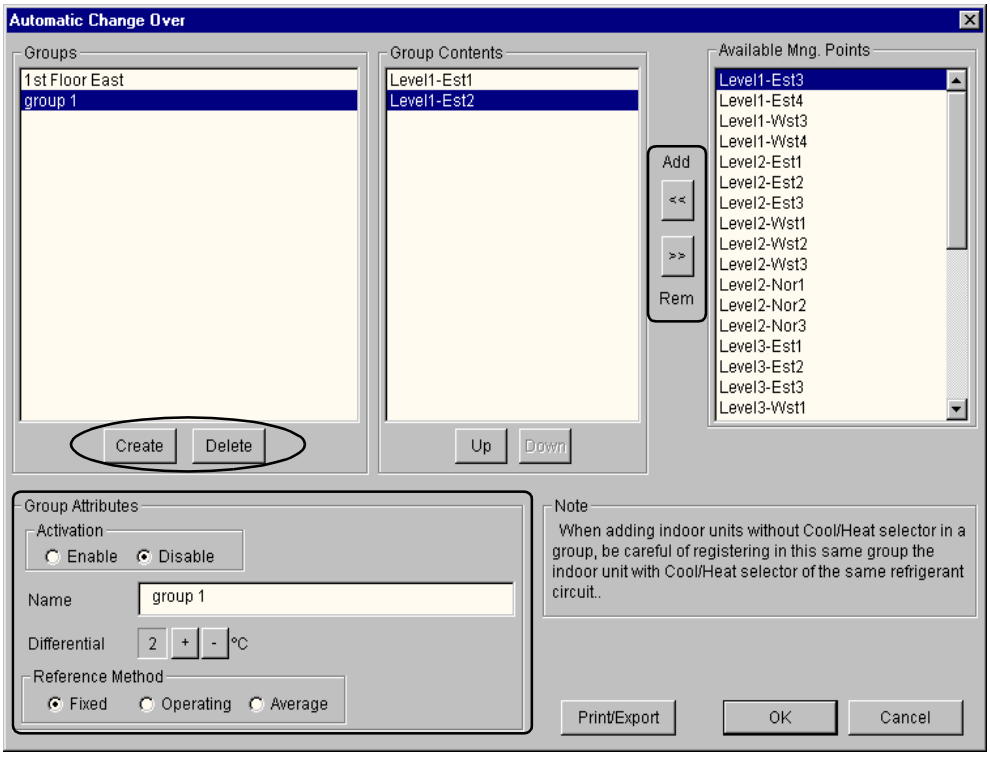


5.10.11Automatic Change Over

Serves to configure the function that change the operation mode of a group of indoor units ac-cording to the room temperature as shown on the figure below.



Operational Procedure



- Create the group;
- Enter the group name;
- Add/Remove indoor unit members of the group (with the referential one at first);
- Select the selection method between:
  - Fixed (the first indoor unit of the group);
  - Running (the first indoor unit in operation of the group);
  - Average (average value of all indoor units of the group).
- Enter the Differential temperature (between Cooling and Heating Set Point);
- Enable the group.

Click on the **Print/Export** button to print all groups settings on the system printer or to save them in a CSV (comma separated) format file.

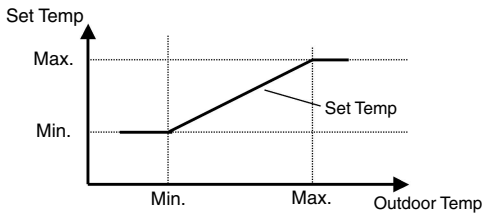
Note Up to 64 groups can be created for this function, each group registering up to 16 management points.

Important In order to ensure a correct operation always register in a same group the "slave" in-door units (i.e. without Cool/Heat Selector) with the "master" indoor unit (i.e. with Cool/Heat Selector) of the same refrigeration circuit. Always register the "slave" indoor units after the "master" indoor units, because the selection method (Operating) is performed in order of the group list.

5.10.12Sliding Temperature

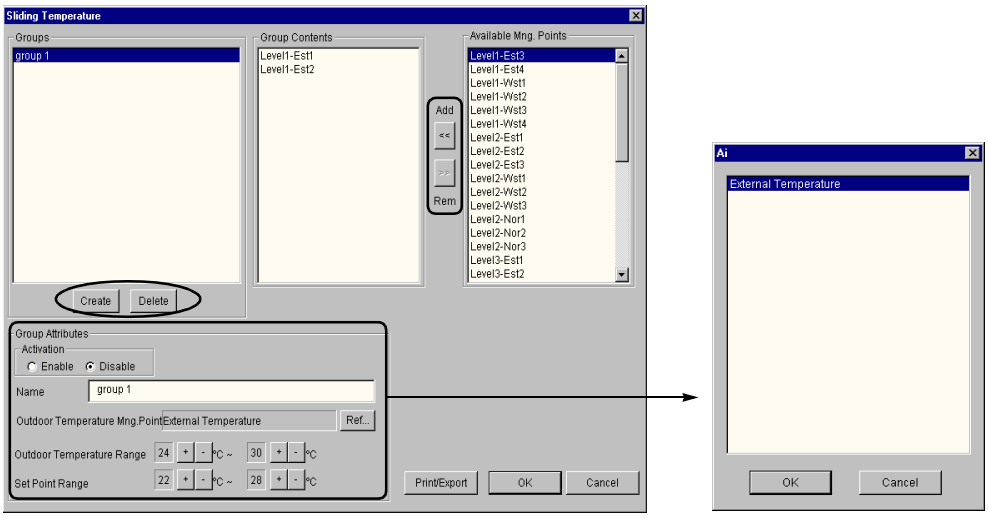
Serves to configure the function that change the Cooling Set Temperature of a group of indoor units according to the outdoor temperature as shown on the figure below.

Sliding Temperature Operation Overview



Note This function requires a separate sensor for the outdoor temperature.

Operational Procedure



- Create the group;
- Enter the group name;
- Add/Remove indoor unit members of the group;
- Select the outdoor temperature management point (Ai);
- Select the min and max for:
  - Outdoor temperature;

- Set Temperature;

• Enable the group.

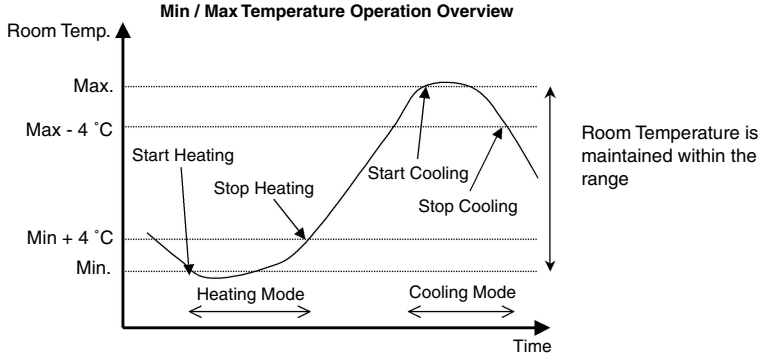
Click on the **Print/Export** button to print all groups settings on the system printer or to save them in a CSV (comma separated) format file.

Note Up to 8 groups can be created for this function, each group registering up to 128 management points.

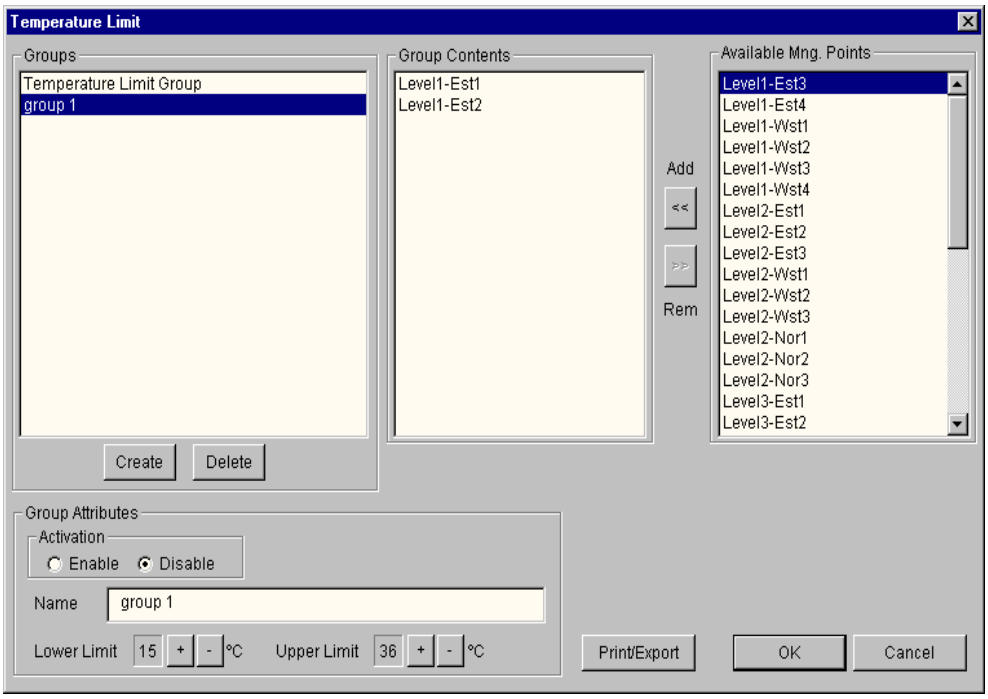
5.10.13Min / Max Temperature

Serves to configure the function that starts automatically (and individually) the indoor units in heating mode (when the temperature is too low) or in cooling mode (when the temperature is too high) as shown on the figure below.

Min / Max Temperature Operation Overview



Operational Procedure



• Create the group,

• Enter the group name,

• Add/Remove indoor unit members of the group,

- Select the min and max Room temperature,
- Enable the group.

Click on the **Print/Export** button to print all groups settings on the system printer or to save them in a CSV (comma separated) format file.

Note Up to 8 groups can be created for this function, each group registering up to 128 management points.

Important In order to ensure a correct operation always register in a same group the "slave" in-door units (i.e. without Cool/Heat Selector) with the "master" indoor unit (i.e. with Cool/Heat Selector) of the same refrigeration circuit. Always register the "slave" indoor units after the "master" indoor units, because the selection method (Operating) is performed in order of the group list.

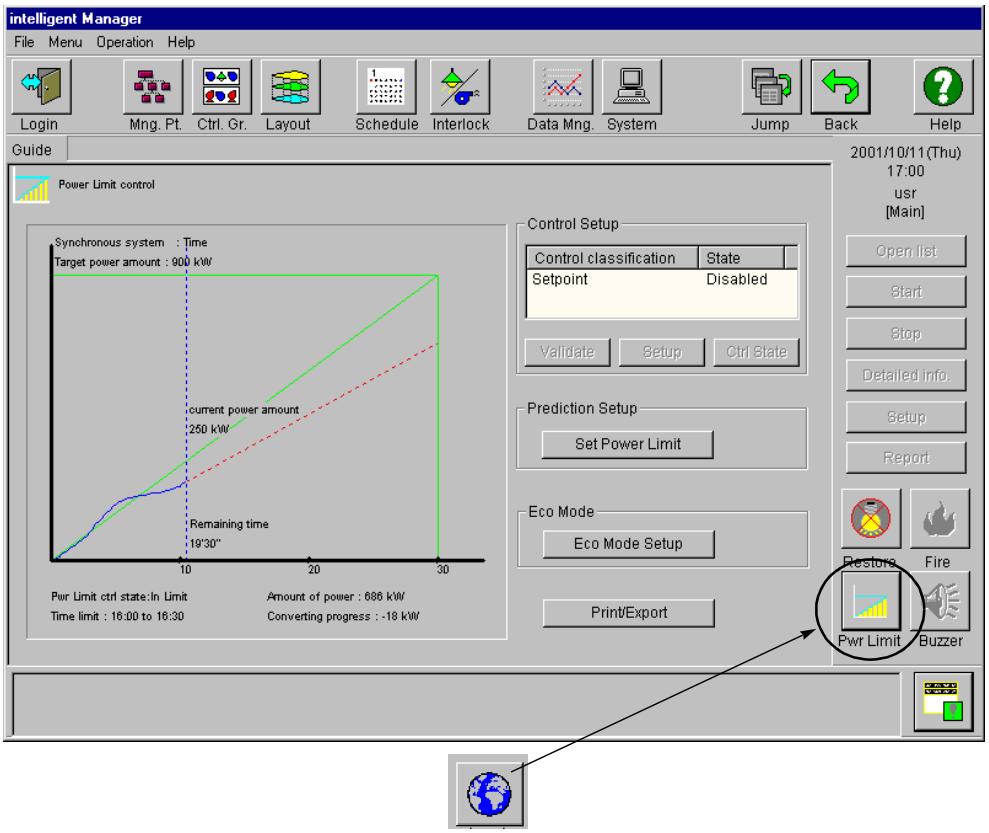
5.11 Energy Saving Functions

These functions automatically control the indoor and outdoor units to lower power consumption.

There are 2 possible controls methods:

- Power Limit Control (recommended for high-demand season, i.e. summer): optimizes the power consumption trend and adjust set temperature of indoor units to remain below the target consumption;

- Eco mode: calendar based, stops indoor units intermittently or lowers capacity of outdoor units to lower the power consumption.



Note When only the **Eco Mode** is activated (as setup during initial engineering), the button icon is changed as shown above.

5.11.1 Power Limit Control

This limits based on target power measured on a pulse meter.

The setup is carried out in two steps:

- Set the power limit;
- Configure the control classifications:
  - Set temperature of indoor units;

5.11.1.1 Setting the power limit

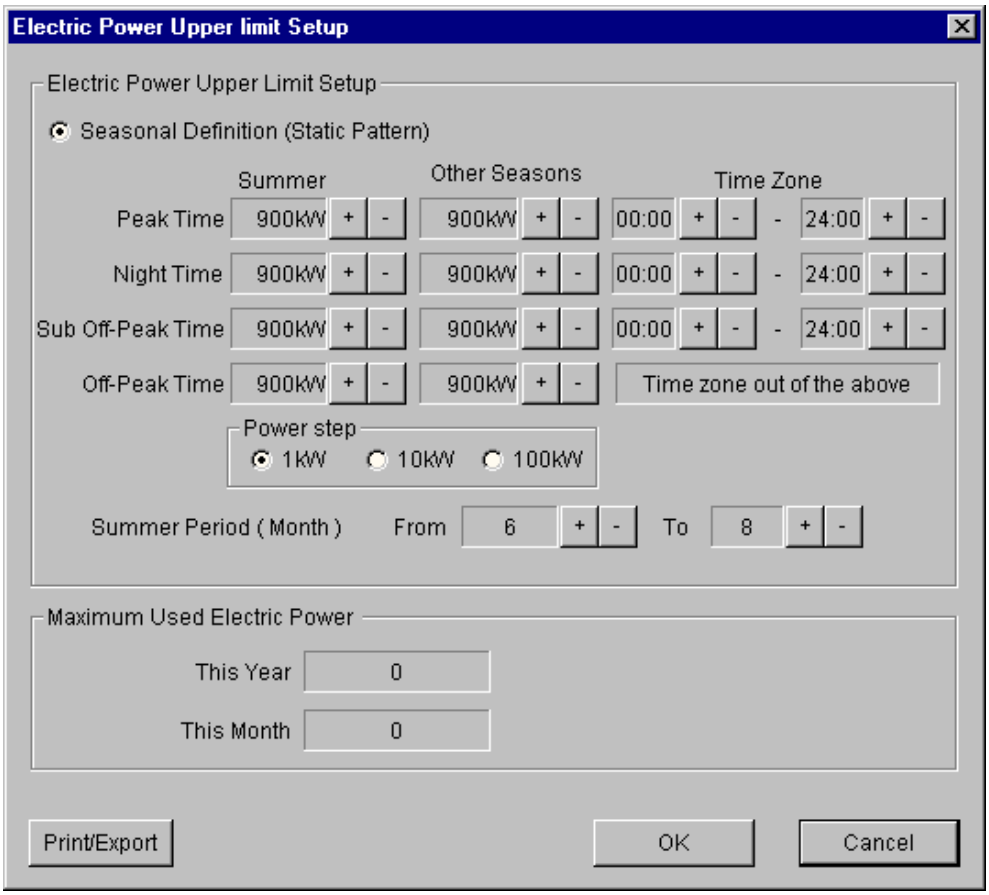
This procedure set up the calendar of the power limit values (measured on the pulse input management point configured by the system engineer beforehand) as shown below.

The value can differ for the summer period and for other seasons in order to provide specific control for higher demand.

As well, it can change daily according to up to 4 time zones. The time zones can overlap, but the current time is evaluated in priority from top (Peak Time) to down (Off-Peak Time).

According to the level of power consumption, increment/decrement of power value can be of 1, 10 or 100 kWh.

The maximum value of past year and month are displayed as shown below (see as well Power Graph section for display of actual data).



Operational procedure:

- Click the **Set Power Limit** button;
- Select the **Power Step**: 1 kW (small demand), 10 (medium demand), or 100 kW (large demand);
- Enter the limits of the **Summer Period** (from beginning of first to end of last month);
- Enter for each necessary time interval:
  - **Power Values** (for summer and other seasons);
  - daily **Time Zone**;
  - click on the **Print/Export** button to print all power limit data on the system printer or to save them in a CSV (comma separated) format file;
- Click the **OK** button.

5.11.1.2 Setting the control parameters

This procedure set up the control groups, priorities and actions (set temperature of indoor units according to power demand: raise in cooling mode, lower in heating mode).

8 control groups are composed of indoor units are available and 8 levels of action are already configured in intelligent Manager:

- Level 1, 2: shift set temperature by 2 degrees,
- Level 3, 4: shift set temperature by 4 degrees,
- Level 5, 6: shift set temperature by 6 degrees,
- Level 7, 8: stop the indoor units (Thermostat Off).

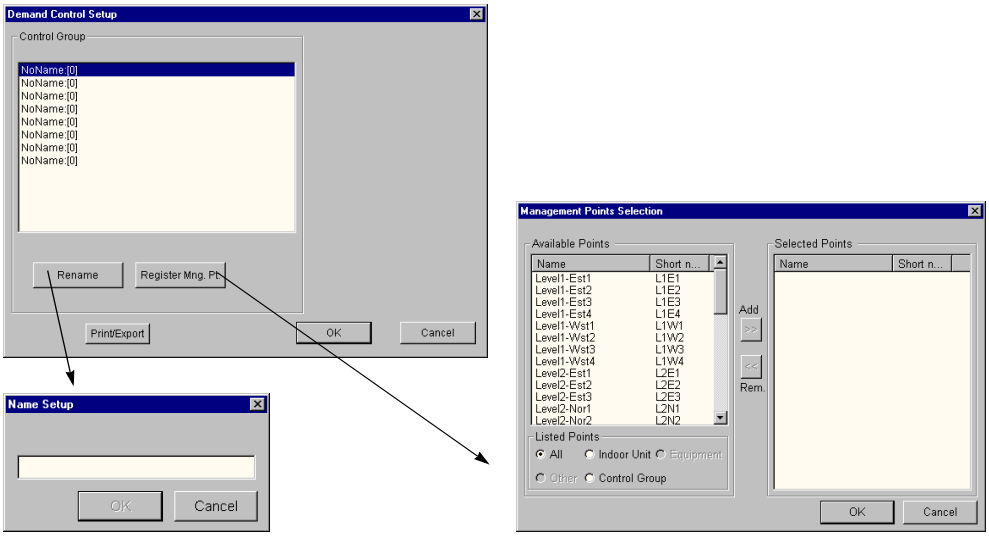
Levels correspond to the power consumption trend compared with the target power consumption.

When the trend is aiming above the target, the level is incremented and action of this level is taken for each group

Operational procedure

Click the **Validate** button to activate/deactivate the control;

- Initially, click the **Setup** button and perform settings of groups as explained below (control must be deactivated);
- At any time, Click the **Control State** button to check the adjustment on groups as explained bellow.



Setting up the control parameters

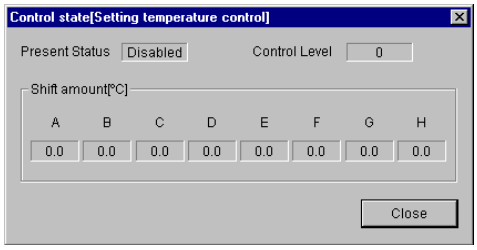
Order of groups cannot be changed, however you can **Rename** the groups.

Proceed setup as explained below for each group:

- Register the indoor units (a same indoor unit cannot belong to more than one group):
  - click the **Register Mng. Pt** button:
  - select an indoor unit;
  - click the **>>** and **<<** buttons;
  - click the **OK** button to validate, or the **Cancel** button to abort;
- Click on the **Print/Export** button to print setting data on the system printer or to save them in a CSV (comma separated) format file;
- Click the **OK** button to validate, or the **Cancel** button to abort.

Controlling the execution state

The control level of power limit, the status of the classification, and the temperature shift of each group is indicated.



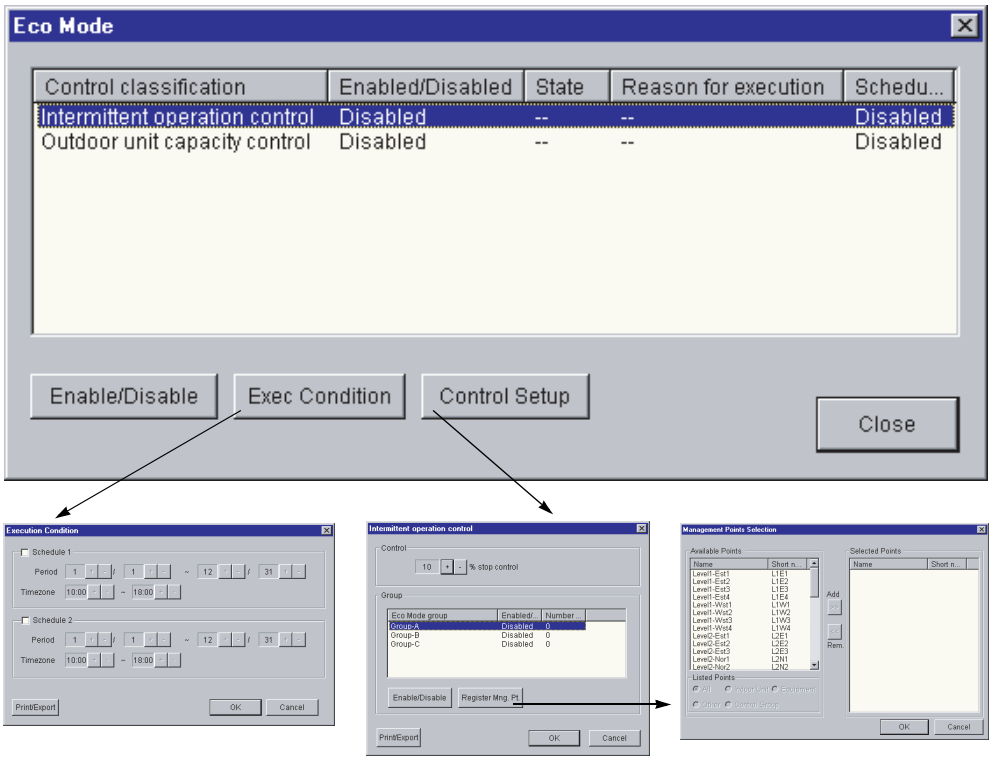
5.11.2 Setting up Eco Mode

Click the **Eco Mode Setup** button and select one of the two control classifications as shown below

5.11.2.1 Setting up Intermittent operation control

This intermittently switches Off and On registered indoor units based on a calendar as shown below.

3 groups of indoor units can be defined, to be stopped for a ratio of 10 to 40% evenly within a 30 minutes cyclical interval during the calendar based seasons.



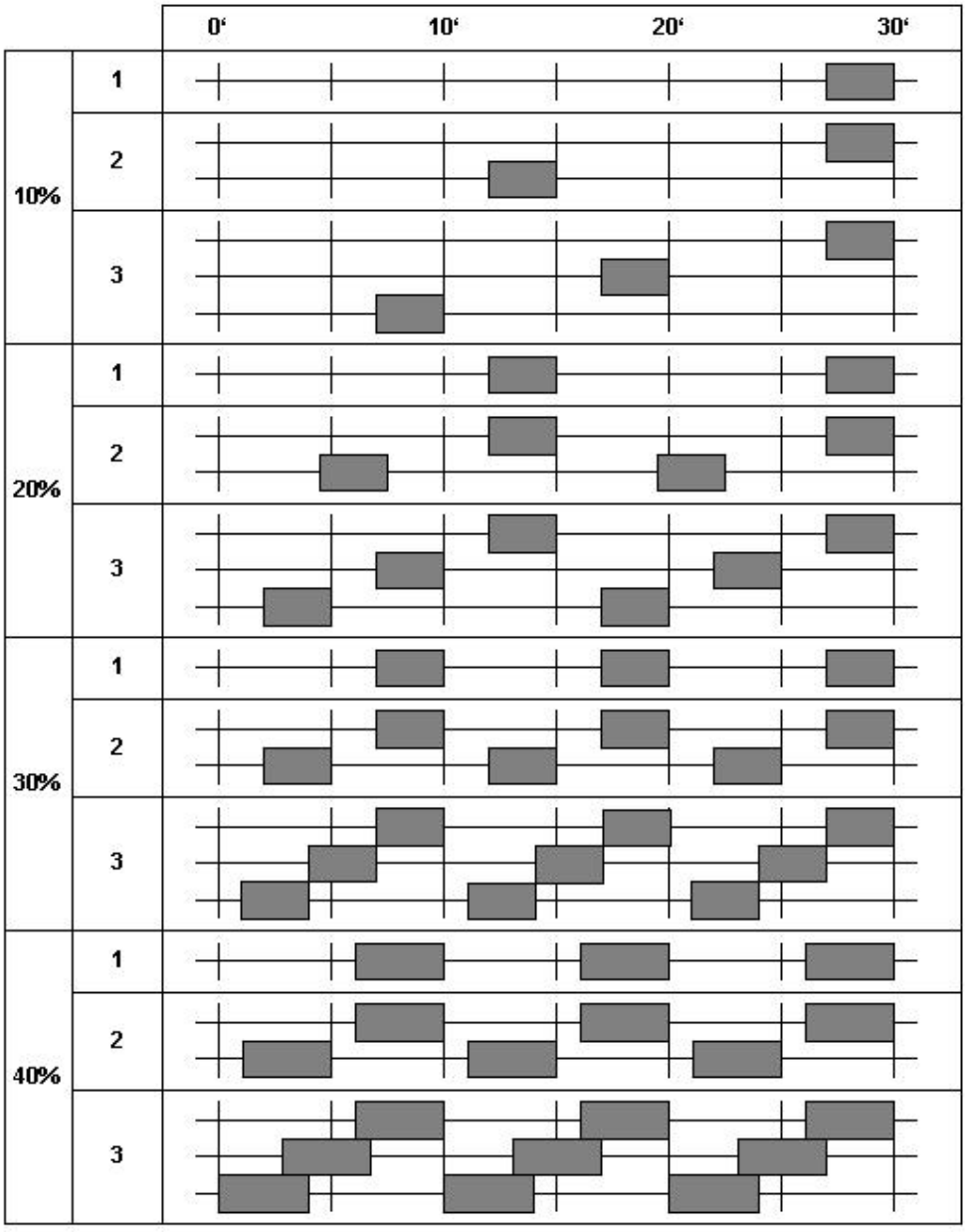
Operational Procedure:

- **Execution conditions**: Setup the calendars (2 seasons available with daily activation period) and check their box to **Enable** them, then click the **OK** button;
  - click on the **Print/Export** button to print all calendars settings on the system printer or to save them in a CSV (comma separated) format file;

- Control setup:
  - select the interruption rate **Control** (10%, 20%, 30% or 40%): see example of interruption patterns below;
  - select each of the 3 available groups and **Register management points** of indoor units to be stopped (a same indoor unit cannot belong to more than one group);
  - **Enable** the groups;
  - click on the **Print/Export** button to print all groups settings on the system printer or to save them in a CSV (comma separated) format file;
  - click the **OK** button;
- **Enable** the selected control classification;
- Click the **Close** button.

Note For a better result, do not register (i.e. stop at the same time) all indoor units of a same refrigeration circuit.

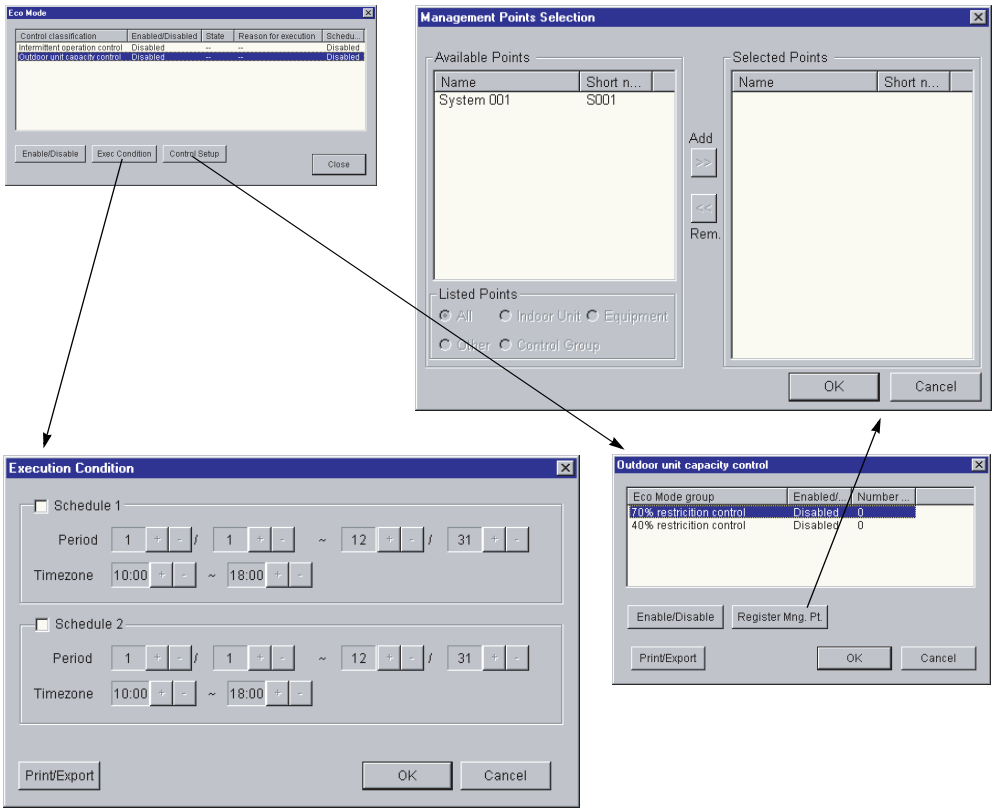
Examples of interruption patterns (grayed out) within 30 minutes (from 0' to 30') for rates of 10% to 40% in case of 1, 2, or 3 activated groups (approximate timing):



5.11.2.2 Setting up outdoor unit capacity control

This intermittently lowers capacity of registered outdoor units based on a calendar as shown below.

2 groups of outdoor units can be defined, for the capacity to be lowered for a ratio of 40 or 70% within the daily interval during the calendar based seasons.



Operational Procedure:

- **Execution conditions**: Setup the calendars (2 seasons available with daily activation period) and check their box to **Enable** them, then click the **OK** button;
  - Click on the **Print/Export** button to print all calendars settings on the system printer or to save them in a CSV (comma separated) format file;
- **Control setup:**
  - select each of the 2 available groups and **Register management points** of outdoor units which capacity will be lowered;
  - **Enable** the groups;
  - click on the **Print/Export** button to print all groups settings on the system printer or to save them in a CSV (comma separated) format file;
  - click the **OK** button;
- **Enable** the selected control classification;
- Click the **Close** button.

5.12 Visual Navigation

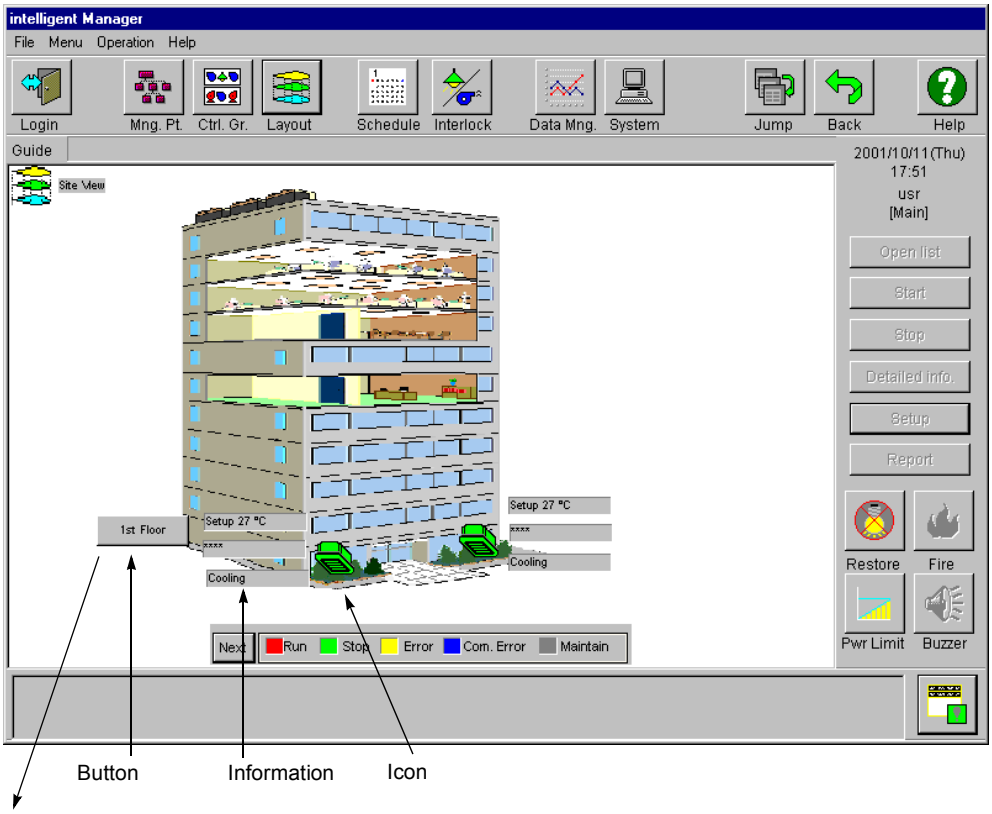
This function allows visual navigation through the site equipment.

5.12.1 Fundamentals

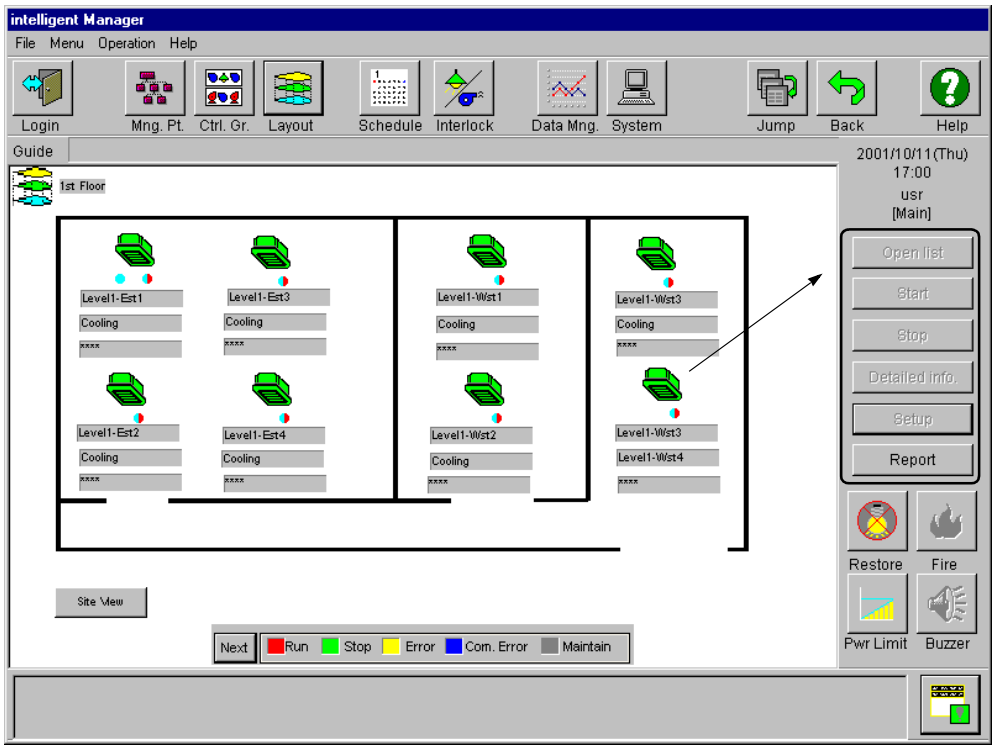
The system components (management points or control groups) are displayed (and dynamically refreshed) on a background image (plan or elevation view). They appear as :

- Attributes: same information as cells of a management point (operation state, room tempera-ture, etc)
- Icons: same icon as in cell of a management point or control group; in this case, the same color states and actions as corresponding cell are supported (start, stop, detailed information, setup, etc)
- Buttons: navigation links to other Visual Navigation screen.

Main Screen



1st Floor Screen



5.12.2 State Monitoring

This is performed by the icons and attributes.

Attributes can be of a management point only (see **5.2.1 State Monitoring List** (p. 178) and **5.2.5 Table view Function** (p. 189) for details).

Icons can be of a management point or control group.

As in management points and control groups, the colors are explained in the legend (see **5.2.1 State Monitoring List** (p. 178) and **5.3.1 Monitoring Control Groups** (p. 191) for details).

5.12.3 Controlling points and groups

This is performed by the icons only.

Click on an icon to select it, then operation is can be performed with the action buttons, pull-down menu or popup-menu as in management points and control groups (see **5.2.2 Start/Stop Operation** (p. 182) to **5.2.4 Setting up equipment** (p. 184) and **5.3.2 Collectively Controlling with Control Groups** (p. 192) for details)

6. Database Maintenance

This section explains which action should be taken when the size of the intelligent Manager database becomes excessive.

The capacity of the intelligent Manager database is limited only by the available space on the hard disk of the computer.

When this limit becomes close (less than 10 Megabytes), intelligent Manager issues a warning in the History screen.

The procedure consists in deleting the oldest items from the database by making use of the ezDBMaintenance tool as described below.

Warning Always backup the current database (on a separate hard-disk, on CD-Rom, etc) before performing any maintenance operation.

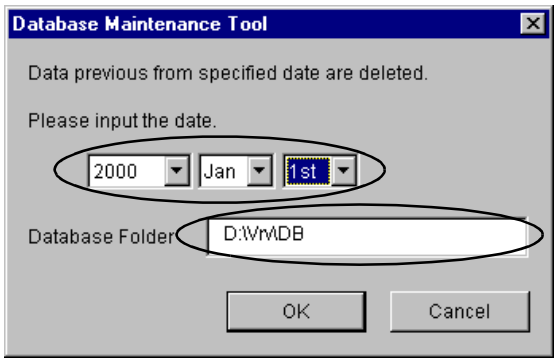
Step 1: exit from intelligent Manager.

See details of this operation in the section 3. Starting and Stopping operation of intelligent Manager.

Step 2: backup the database.

This operation can be performed either by using an external device (CD writer, serial connection to another PC, etc) and will not be discussed in details in the present document. Please refer to your support engineer for advice.

Step 3: start the ezDBMaintenance.exe module (located in the same folder as intelligent Manager VRV.exe module) as shown below.



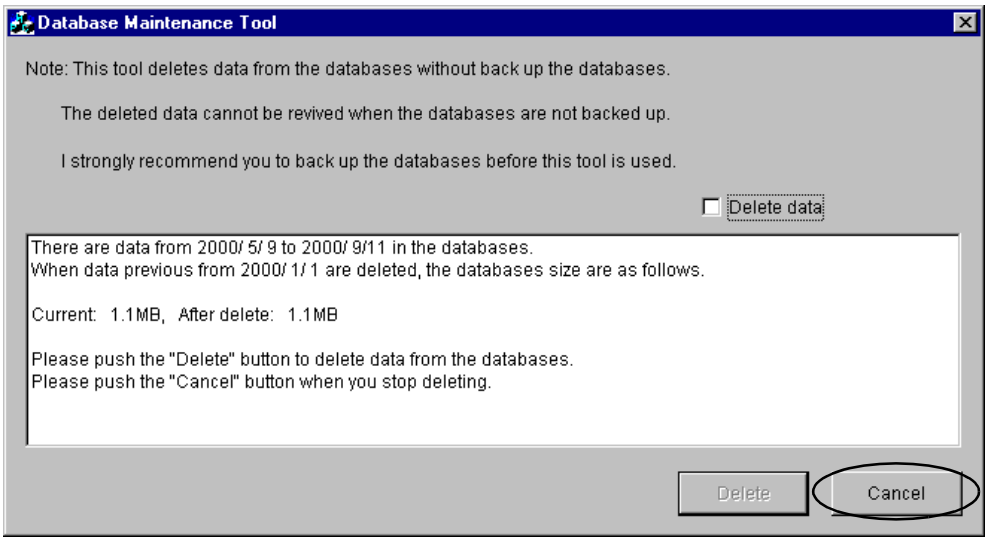
Step 4: input the parameters as shown above:

- Database Folder: the path of database folder (absolute path is recommended);
- Date: all the items until the day BEFORE this date will be deleted.

Then click the **OK** button. The confirmation dialogue displays as shown below.

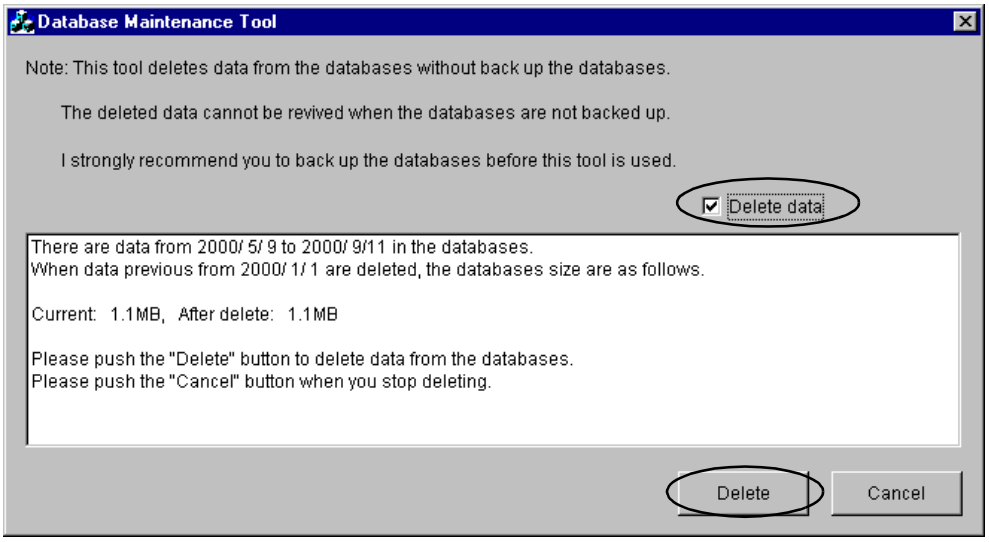
Step 5: carefully check the date and size of both deleted and remaining data.

- To change the parameters, click the **Cancel** button. The previous dialogue displays again as shown above.

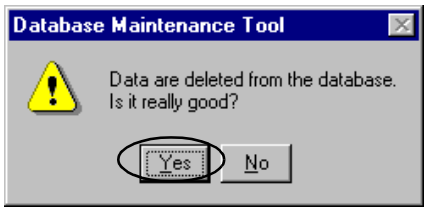


If the parameters are correct, then go ahead for data deletion:

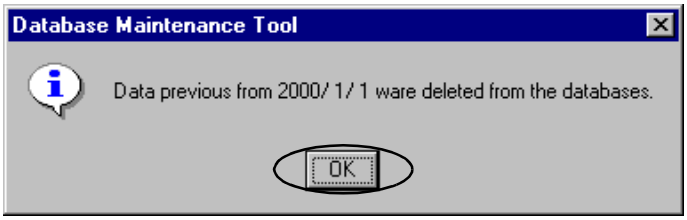
- check the Delete Data box; the **Delete** button is now enabled as shown below;



- click the **Delete** button; the confirmation dialogue displays as shown below.



Step 6: click the **Yes** button; the result message displays as below.



Step 7: Click the **OK** button.

End of procedure.

7. Troubleshooting

What to be careful of and what to do when operations cannot be performed

Depending on the type of problem - related to Windows NT (or Windows 2000) or the internal working of the system - the present system might display an error message window of total operation inability.

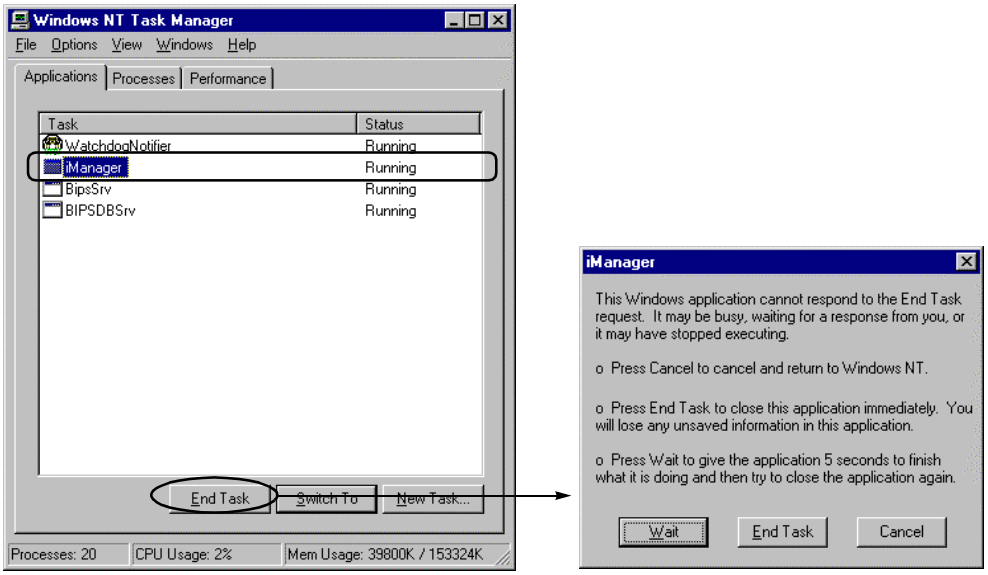
Warning If this happens, part of the data, cumulative values etc. may be lost
Furthermore once intelligent Manager has been shut down, the error message display area is cleared.

If the following troubleshooting strategies have been carried out and problems persist after the system has been restarted, please contact the Daikin service counter.

Forcing Windows NT shutdown

While holding down simultaneously the Ctrl and Alt keys on the keyboard, press the Delete key (Ctrl+Alt+Del).

Click the **Task Manager (T)** button on the Windows NT security screen to display the screen shown below.



Select the intelligent Manager icon and click the **End Task (E)** button.

Warning End only intelligent Manager.
If other programs are ended, the computer should be restarted.

All inquiries about after sales service etc. should be addressed to Daikin.

Notes

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Part 6
Watchdog & Remote Operation Manual

Model names and specifications or the like are subject to change without prior notice for further improvement, so be sure to confirm the following catalogues and engineering data.

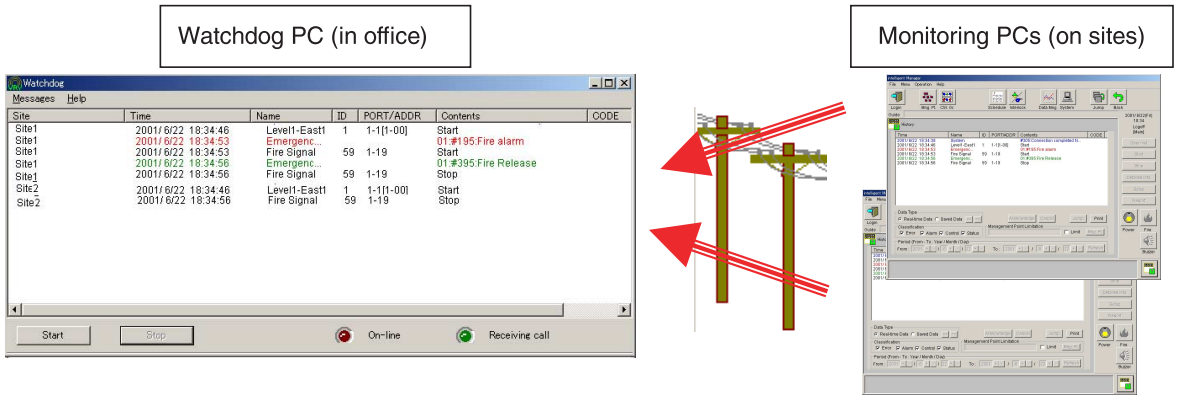
1. Intelligent Manager Watchdog

1.1 Introducing Intelligent Manager Watchdog

This manual explains how to operate the intelligent Manager **Watchdog** application.

This application runs on a PC in office (referred below as the **Watchdog PC**) to receive mirroring of the items of History (reffered below as records) from one or more intelligent Manager sites (referred below as the **Monitoring PCs**) by use of telephony facilities (referred below as **Modem**).

Note This manual comes as a complementary document of the **intelligent Manager Operation Manual**. Please refer to it for further details about intelligent Manager operation



The intelligent Manager on sites (monitoring PCs) periodically call the Watchdog (PC in office) and send the records.

Filtering of records sent is configurable on each site.

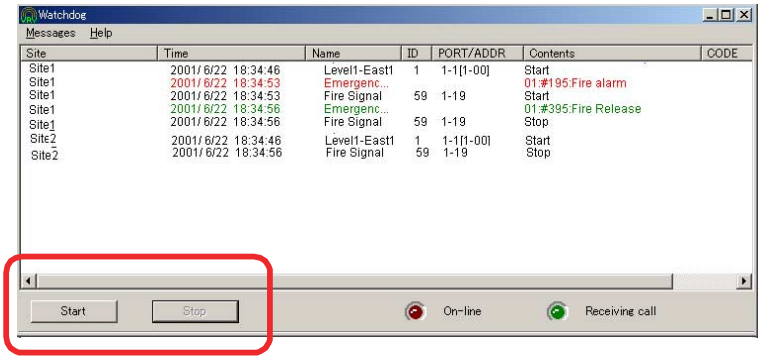
Note Watchdog is a stand-alone application. Except the installation of a modem on the PC in office, no setup is needed. However, the setup of intelligent Manager on sites to send the records must have been performed beforehand on the monitoring PCs and is not covered in the present manual. Please refer to the **intelligent Manager Remote Options Engineering manual** for installation on site and in the office and to the **intelligent Manager Operation Manual** for configuration on sites.

1.2 Starting and Stopping the Watchdog

1.2.1 Starting the application

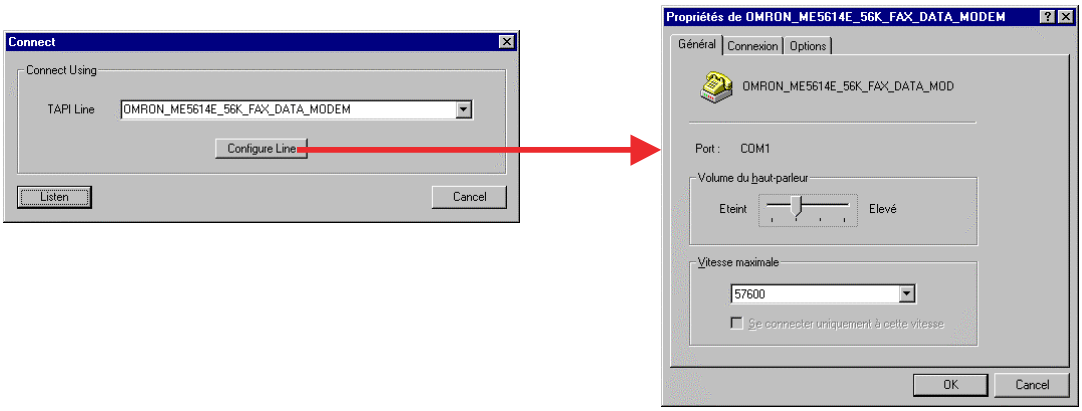
Locate and double click the **Watchdog.exe** file.

At the beginning the start button is enabled and the stop button is disabled (grayed out) since no line is open. The **Online diode** is dark red and the **Receiving Call** diode is dark green as shown below.



1.2.2 Starting Listening

Click the **Start** button.,the available Modems are listed in the **Connection** dialog as shown below.



Select a Modem from the **TAPI line** list.

It is possible to modify the Modem attributes by clicking the **Configure Line** button (refer to the Modem documentation for details about Modem settings).

Click the **Listen** button for listening and the application waits for incoming call. The **Online** diode is now light red.

Listening is the normal operation state of the Watchdog.

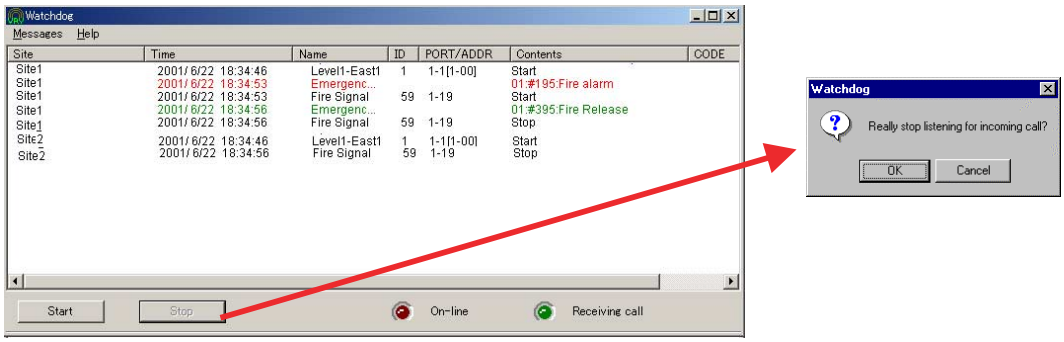
When receiving records from a site, the **Receiving Call** diode changes to light green. At this time, some operations are not available (see details in next sections).

Records are stored in the local database and displayed at the same time on the screen. Latest records are always displayed at the bottom of the list of the main screen.

Note A timeout will hang up if the call is not completed within a few minutes, in order to avoid communication from one site to block the line.

1.2.3 Stopping Listening

Click the **Stop** button and confirm as shown below. The **Online** diode is now dark red.

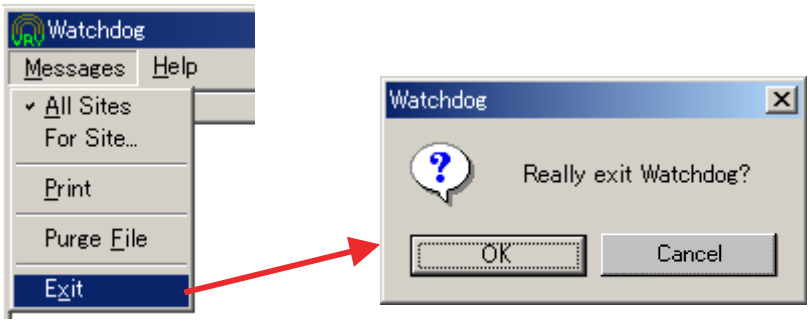


This operation should be used only for exiting the Watchdog, or performing offline operations (see details below).

If stopping listening when receiving a call, a confirmation message is displayed. If user confirms, the call is hang up and all the data may not be received.

1.2.4 Exiting the Watchdog

Select from the top menu the **Messages / Exit** entry and confirm as shown below.



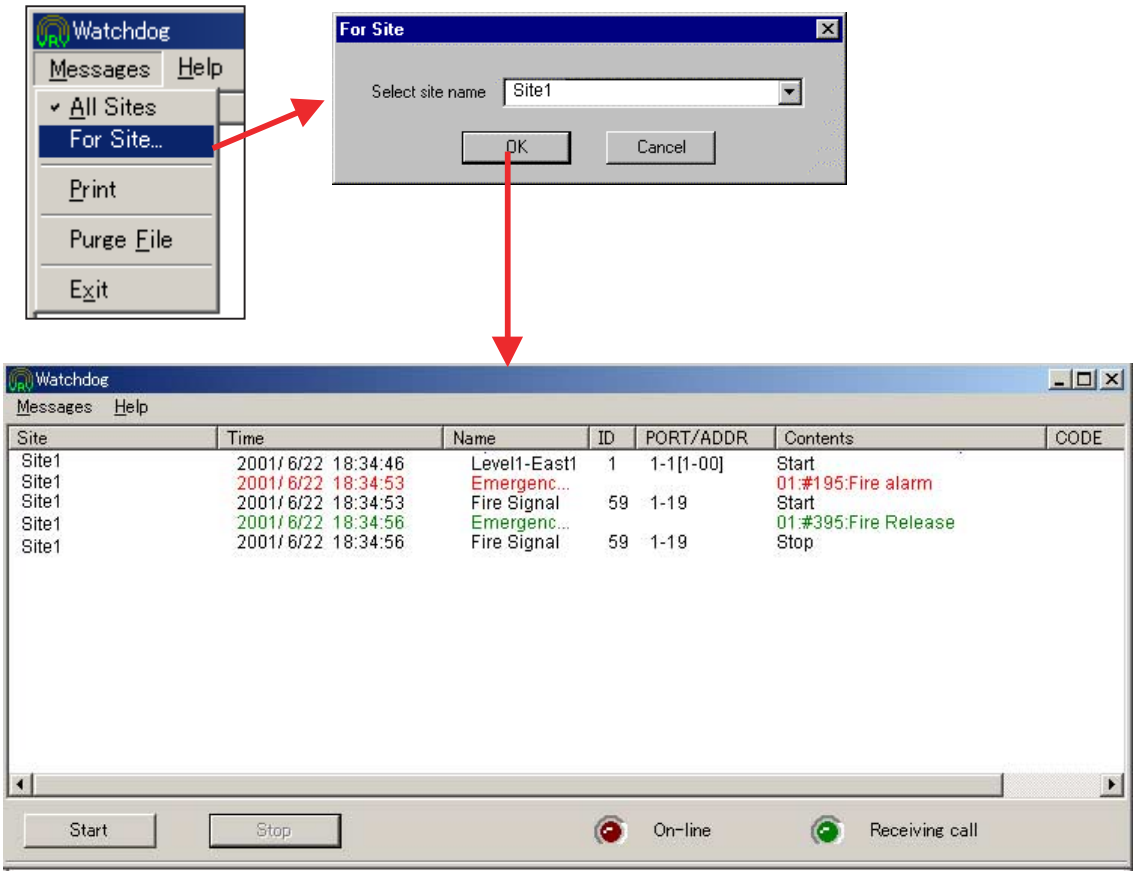
Exiting is disabled when listening.

1.3 Perusing Records

1.3.1 Filtering sites

By default records displayed on the screen are those received from all the sites.

To view only the records from a given site, select from the top menu the **Messages / For Site** entry and select a site in the list of the **For Site** dialogue.



This function is disabled when receiving a call.

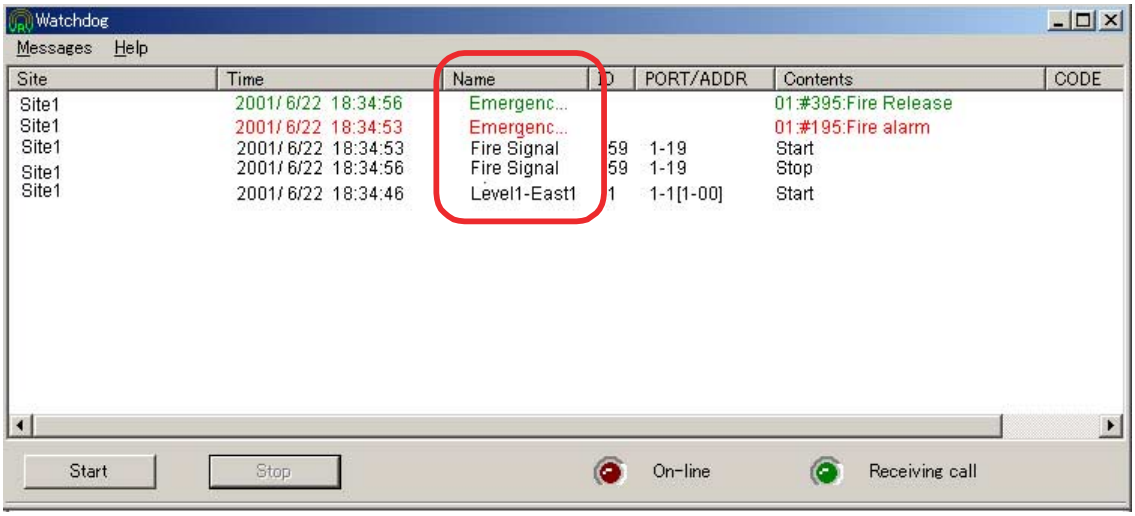
When records are received, only those of the selected site are displayed on the screen. Other records are only logged in the local database and will be displayed the next time the **All Sites** option is selected.

To view the records from all sites, select from the top menu the **Messages / All Sites** entry.

1.3.2 Sorting records

Click on the top label of a column as shown below to sort the records in the ascending order by date (default), name, error code, site, etc.

This operation can be performed even when the Watchdog is listening. However, when a new record is received, it is always added at the bottom of the list for easy identification (no dynamic resorting).



1.3.3 Maintaining the local database

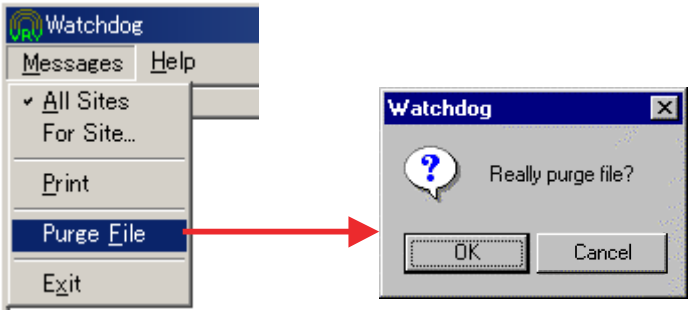
1.3.3.1 Clearing the local database

To maintain performance of the Watchdog, it is recommended to periodically reset the content of the local database. Once or twice a year is recommended in case of normal use. However, in the case of voluminous recording, a more frequent purge is required (ex: monthly).

Select from the top menu the **Messages / Purge File** entry and confirm as shown below.

This renames the database file as **YYYYMMDDHHmmssWatchdog.csv** (where YYYYMMDDHHmmss indicates the time stamp when the purge action was performed). and creates a new one.

This function is disabled when receiving a call.



If the database was empty, an error is displayed as shown below.

1.3.3.2 Viewing previously cleared records

It is possible to peruse a previously cleared database by renaming the database file as **watchdog.csv** and starting the watchdog. Always make a copy of the current **watchdog.csv** database file beforehand.

However, always perform this offline (do not start listening) as new records would be mixed with old ones.

1.4 Troubleshooting

When records have not been received from sites:

- check the configuration on the site PC:
  - is the Modem correctly installed and configured?
  - is the phone number to the Watchdog PC correct?
  - are the retry parameters sufficient for the load on the line?
- Check the condition on the Watchdog PC:
  - is the modem properly installed and configured on the Watchdog PC?
  - hasn't the line been overused (the received records): too many records sent from sites at the same time combined with insufficient retry on sites configurations of sending can lead to records being dropped out.

2. intelligent Manager Remote

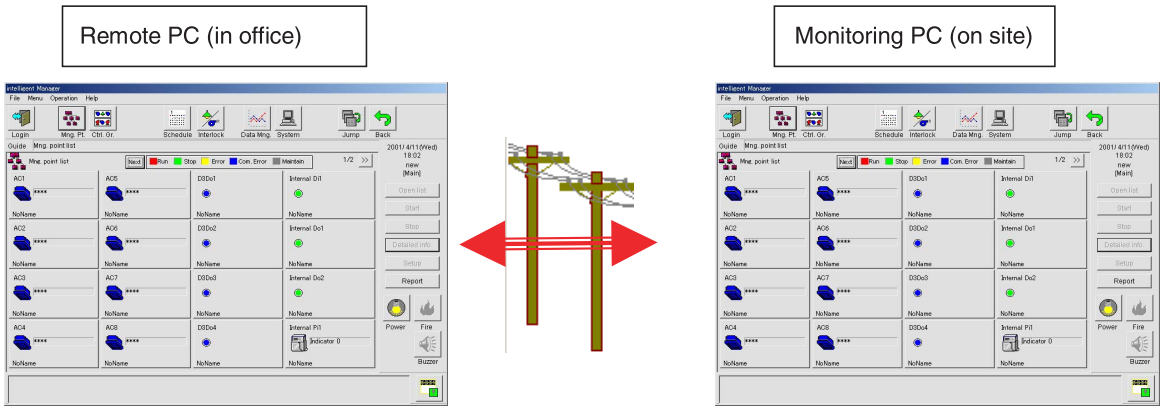
2.1 Introducing intelligent Manager Remote

This manual explains how to operate the intelligent Manager **Remote** application.

This application runs on a PC in office (referred below as the **Remote PC**) to operate intelligent Manager on a site (referred below as the **Monitoring PC**) by use of telephony facilities (referred below as **Modem**).

The operation is similar with the sub-PC, but the network communication is achieved by using the RAS (Remote Access Service of Windows).

Several sub-PCs can be configured, however only one can connect to the master PC at a time.



Operation on the sub-PC is identical as on the master PC except the functions of the System menu, which are not available on the remote PC.

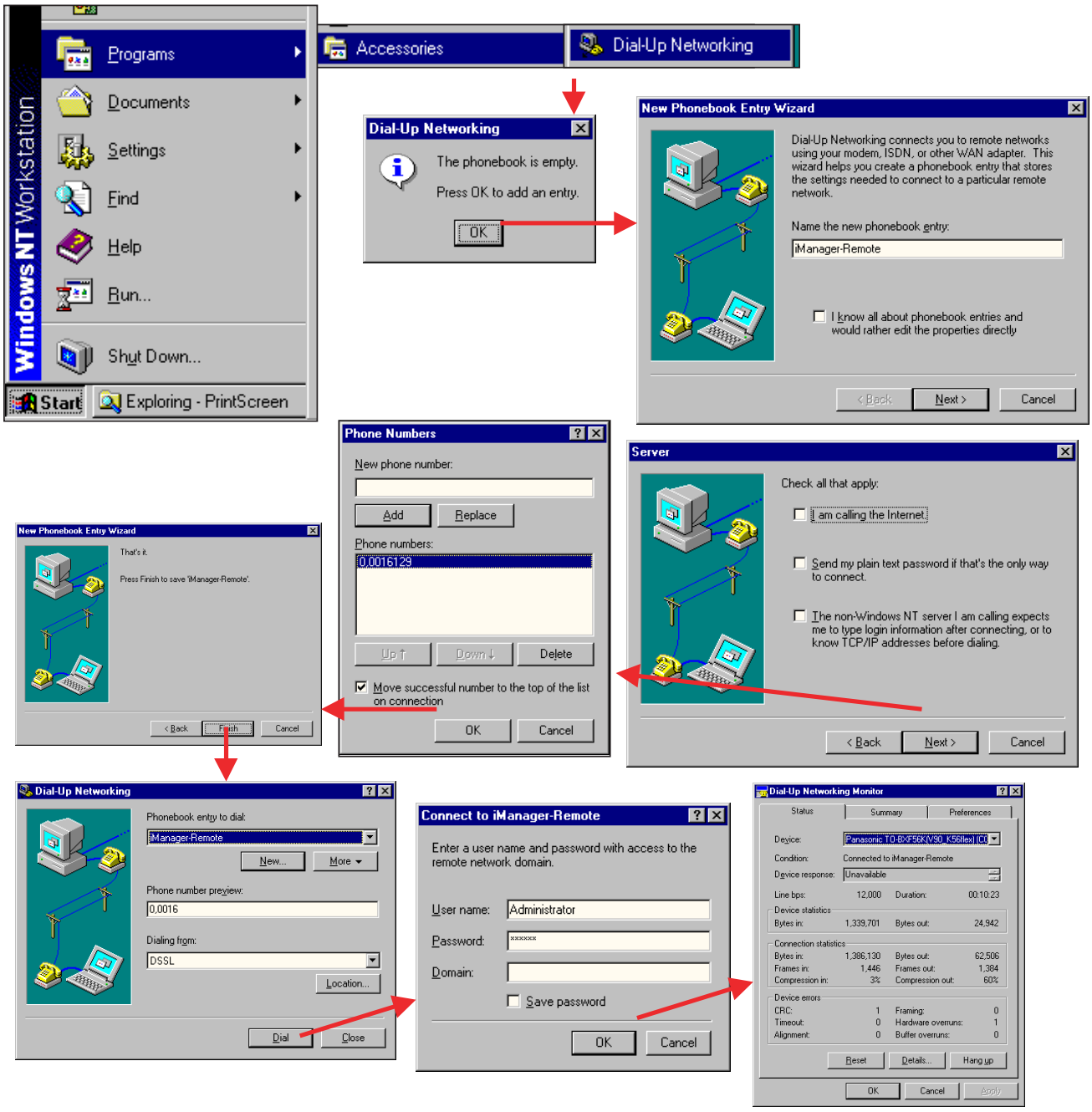
Therefore refer to the intelligent Manager Operation Manual for details of functions.

Note installation of the intelligent Manager Remote, the installation of a modem on the PC in office and the setup of intelligent Manager on sites to support RAS Service must have been performed beforehand on the monitoring PCs and are not covered in the present manual. Please refer to the **intelligent Manager Engineering manual** and the **intelligent Manager Remote Options Engineering manual** for installation on site and in the office.

2.2 Starting and Stopping the intelligent Manager Remote

The RAS connection must be established manually before starting the intelligent Manager Remote and stopped after.

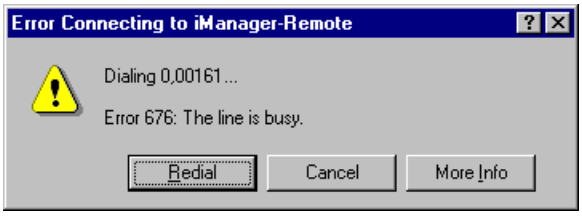
2.2.1 Starting the RAS connection



- On the PC screen, double-click the **My Computer** icon, then double-click the **Dial-up Networking** icon; the **Dial-up Networking** dialogue displays,

- Select an existing phonebook entry to dial (or Create a new phonebook entry to dial if not created already click the **New** button, then follow the **New Phonebook Entry Wizard**),
- Click the Dial button; the **Connect to**... dialogue appears,
  - Enter the **User Name** and **Password** as they have been set up in the User Admin of the monitoring PC, then click the **Ok** button,
  - Wait for the connection to be made (then the **Remote Access Service Monitoring** window displays),
- End of procedure

Note an error message can appear on dialing time when the line is engaged as shown below.



Important Always make sure to the site that the RAS Service is running on the site PC before making a connection on the office PC

2.2.2 Operating the intelligent Manager application

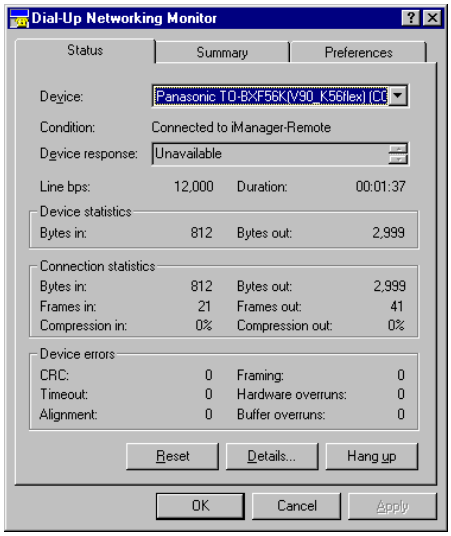
After the RAS connection has been performed, start the intelligent Manager Remote application.

Refer to the intelligent Manager Operation Manual for details.

Exit the intelligent Manager application before closing the RAS connection.

2.2.3 Closing the RAS connection

Click the **Hang Up** button and confirm as shown below.



2.3 Troubleshooting

When connection is impossible

- check the configuration on the site PC:
  - is the Modem correctly installed and configured?
  - is the RAS service correctly configured?
- Check the condition on the Office PC:
  - is the modem properly installed and configured,
  - are the login parameters correct?

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Part 7
Troubleshooting

1. Before Installation

Network Solution FAQ

Preparation

What is the minumum equipment necessary to introduce iManager?
At least the following.
- iPU
- Windows 2000 PC
- Network cable (10BaseT) and HUB
- UPS (APC Smart-UPS1000 or 700) + Relay I/O module (AP9610)

If you intend to use PPD function then you need following kWh meter.
- MERLIN GERIN CEr tri

Can I use Windows 98/Me for the iManager system?
No. iManager system supports only Windows NT (SP4 or later) and Windows 2000.

I have a Windows XP PC . Does iManager support Windows XP?
No.
Windows XP is not supported yet.

Please use Windows 2000.

Is a UPS necessary if I don't need PPD?
We highly recommend a UPS because if the power is disconnected while iManager is running this can cause the PC to crash.

Can I use an existing UPS instead of buying one?
For automatic reboot and recovery of previous system setting, the specified UPS is required.

Pre Engineering

Mode 01 is displayed on remote controller when I try to set D3 address from remote controller.
Please confirm the followings.
- Is the indoor unit connected to D3 net?
- Is the D3 net connected to CRC, iPU or other centralized controller?
- Does the centralized contoller have power?

Should I set D3 address to the slave unit on a remote controller group?
If you are not using PPD function, then you don’t need to set D3 address to the slave unit.

PC Setup

I could not find network icon in the control panel when I tried to set the network of the PC.
Network setup dialog can be shown by the following process.
- Click the right button on the “My Network Places” icon and select “properties” from the menu.
- Double click the “Local Area Connection” in the displayed window.
- Click “Properties” button in the “Local Area Connection Status” dialog then a network setup dialog is displayed.

I cannot find ‘Automatically reboot’ checkbox when I open the ‘System properties’ dialog for automatic reboot setting.
Please open the ‘System properties’, select ‘Advanced’ tab and push ‘Startup and

Recovery...' button.

Then you can see the Automatically reboot "checkbox in it."

I could not find 'DefaultPassword' in 'HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows NT\Current Version\WinLogin' though I tried to set automatic login.
DefaultPassword' does not exist if you don't make it.

Please create the "DefaultPassword" key.

C:\Winnt\Profile was not found though I tried to make the short cut of VRV.exe.
Please make a short cut from the 'Start' menu.

Select 'Start' menu, 'Settings', 'Taskbar and Start Menu...', select 'Advanced' tab in 'Taskbar and Start Menu Properties'.

And then, you can make short cut of VRV.exe and add to 'Start Menu' it with 'Add' button in 'Customize Start menu'.

Software Install

I cannot make a connection between PC and iPU with ftp command 'ftp 192.168.0.1'.
Please confirm the following items.

Hardware
- Is the PC connected to the iPU with network cable via HUB?
- Is the power supplied to HUB?
- Is the iPU turned on?

Network settings
- Is the IP address of the PC set to 192.168.0.101.
- Did you previously change the IP address of the iPU?

If you changed the IP address then please use the previous address.

I cannot login to iPU with ftp.
Please confirm the user name and password in the Engineering Manual (4.4 Setting up the iPU Operating System (p. 71)).

The size of the 'os' file was different in PC and iPU when I finished sending the 'os' file from PC to iPU.
Please do the following operations again.
- Connect to iPU with ftp, and login.
- Type 'bin' and press return key.
- Type 'put os' and press return key.
- When the ftp prompt comes back on the screen, then type 'dir' and press return key.
- Compare the 'os' file sizes in PC with iPU.

Commissioning

VRVSetup won't start up (Warning message displays).
The VRV.dll file is missed from the same folder of VRVSetup.exe.

Please install iManager again.

A warning message comes up when VRVSetup starts.
Is it OK even if I select the 'OK' button?
No. Please select 'Cancel' button and install iManager again.

I tried to save the iPU settings to the iPU by iPU Setting Tool but it failed.
Please confirm the following items.
- Is the iPU turned on?
- Is the power supplied to HUB?
- Is the PC and the iPU connected with the network cable via HUB?

I tried to save the Point list to the iPU by Mng.Point Tool but it failed.
Please confirm the following items.
- Is the iPU turned on?
- Is the power supplied to the HUB?
- Is the PC and the iPU connected with the network cable via the HUB?

iManager does not start (Warning message displays).
Please confirm whether there is VRV.dll in the bin folder.

If the VRV.dll is not in the bin folder, copy VRV.dll from the Tools folder to the bin folder.

If there is VRV.dll in the bin folder, please confirm the ‘Execution path’ in PC Setting Tool is set to the folder where exists VRV.exe.

The warning message come up when iManager starts.
Is it OK even if I select the ‘OK’ button?
No. Please select ‘Cancel’ button and confirm the following items.

First, please confirm the ‘Execution path’ in PC Setting Tool is set to the folder where the VRV.exe is located.

If the ‘Execution path’ is correct, then copy VRV.dll from the Tools folder to the bin folder.

iManager starts but it cannot connect to iPU.
Please confirm the following items.
- Is the iPU turned on?
- Is the power supplied to HUB?
- Are the PC and the iPU connected with the network cable via HUB?

I cannot login to iManager.
The user is not registered in the initial state.

First, please login with service.

After service login, please register the new user from the system screen.

Please refer how to login with service in the Engineering Manual (6.1 Login in intelligentManager (p. 86)).

Automatic login does not work when the PC starts.
Please confirm ‘Automatic Login’ settings in Engineering Manual (4.3.2.2 Automatic Log on (p. 70)).

Moreover, please confirm the password of Administrator is ‘DAIKIN’.

iManager does not start automatically when the PC starts.
Please confirm the short cut of VRV.exe is registered in the ‘Startup’ in the ‘Start’ menu.

The icon of the indoor unit is not displayed on the Management Group screen.
Did you make a management group and add management points to the group?

The icon is not displayed on the management group screen if you don't set the management group.

The management point was not displayed in the list when I tried to add the management points to the management group.
Please confirm the following items.
- Did you make management points and send it to the iPU by Mng.Point Tool?
- Did you restart the iPU after you sent the management point data to the iPU?

The icon of the indoor unit is blue on the iManager screen.
Please check the following items.
- Is the D3 net connected to the iPU?
- Is the indoor unit connected to the D3 net?
- Does the indoor unit have power?
- Is the indoor unit D3 address set?
- Is the D3 address the same between the indoor unit and the management point?
- Can the indoor unit start or stop by CRC?

"System cannot be started (Cannot load DLL)" message appears.
DLL file missing or setup tool path not correct.

All users logged in - cannot log in.
Log in as service and create a new user.

"Warining included in check - Management points have been changed" displays on iManager.
This error will pop up every time if the points list has been modified in the iPU. This is not an error, just a notice.

UPS Di cable. How to connect this the UPS and add the point?
Please connect a 2 core wire from Di1 on master iPU and the other end to "COM1" and "NO1" on the Relay I/O module on the UPS (creating of this point is not necessary).

Operation

I tried to start an indoor unit from iManager but I could not, because the 'Start' button is grayedout.
The indoor unit is set to slave unit of the remote controller group.

An indoor unit which is a slave unit of remote controller group cannot operate.

The icon of the indoor unit is red but the indoor unit does not start.
Maybe the D3 address is different between the indoor unit and the management point of the indoor unit.

Assign the same D3 address both indoor unit and the management point.

I changed the attribute of a management point with Mng.Point Tool but it is not changed when I see on the iManager.
Did you restart the iPU after you sent the management points data which is modified the attribute by Mng.Point Tool?

CRC displayed error code 'MA' when the iPU was connected to D3 net.
Error code 'MA' is displayed when two or more centralized controllers are connected to one D3 net.

Please remove the 'connector for setting master control' from either iPU or CRC.

I can start/stop an indoor unit from iManager, but I cannot start/stop from remote controller.
In the case of ‘Start/Stop’ of the ‘Remote conttoller restriction’ is set to ‘prohibited’, the indoor unit cannot be started/stopped from the remote controller.

Please confirm the setup dialog of the management point.

The setpoint cannot be changed from remote controller.
In the case of ‘Set Temperature’ of the ‘Remote controller restriction’ is set to ‘prohibited’, the set point of the indoor unit cannot be changed from the remote controller.

Please confirm the setup dialog of the management point.

After I set the set point of the indoor unit, it is soon changed automatically to another set point.
In the following case, set point setting is limited.
- The set point restriction is set for the indoor unit.
- The indoor unit is controlled by Sliding Temperature or other automatic control.

Data Management

I cannot see any data by TenantReport.
Did you create the tenants and add the related management points to tenant by TenantSetup?

Otherwise you cannot see any data by TenantReport.

I made a tenant and added management points to the tenant, but I cannot see data on TenantReport.
Is the database of iManager included some data?

Please confirm the data in the database by DBConv.exe.

Until 1:00 AM in the following day when iManager was initially installed, no data is stored in the database.

Please check the data after 1:00 AM the following day.

PPD

kWh meter value does not increase on iManager screen, although the kWh meter value of the actual kWh meter has increased.
Please confirm the following items.
- The pulse signal port of kWh and Pi port of the iPU are connected?
- Are the Pi port number of the iPU and the port number of management point the same?
- Is the pulse width of the management point set to 10 msec?

2. After Installation

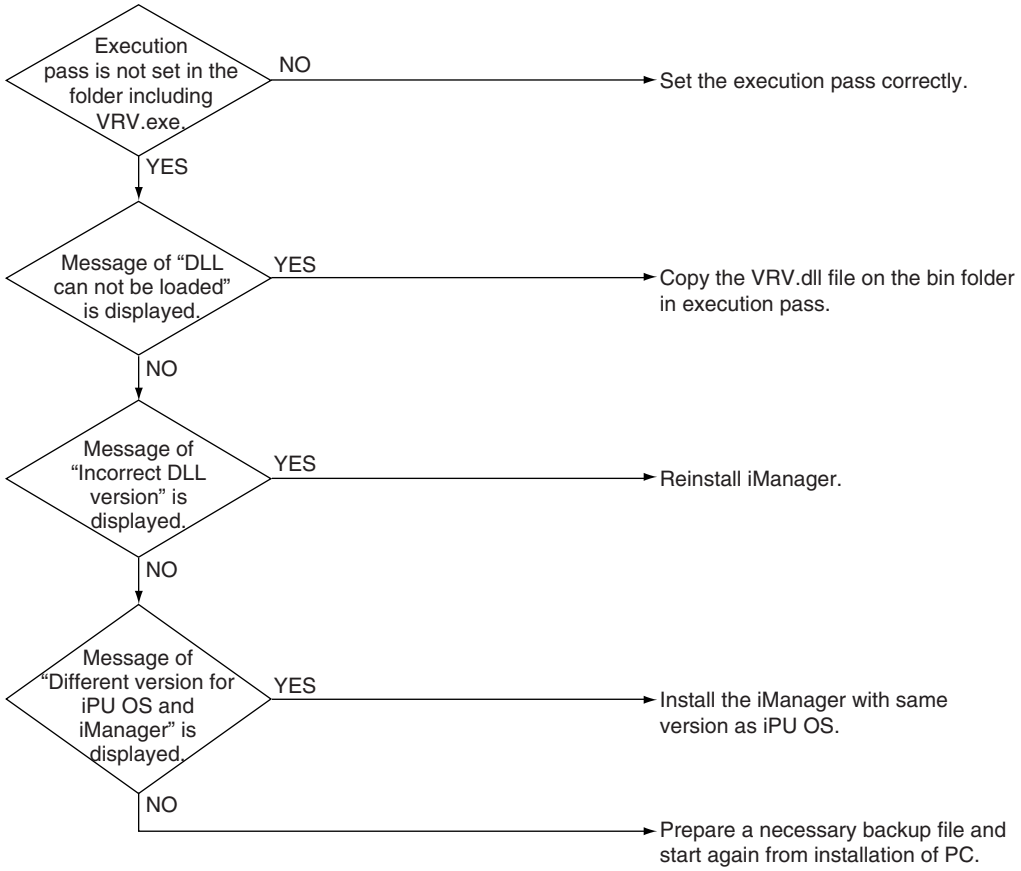
2.1 iManager Can Not be Started

Supposed Causes

- Incorrect setting for PC.

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



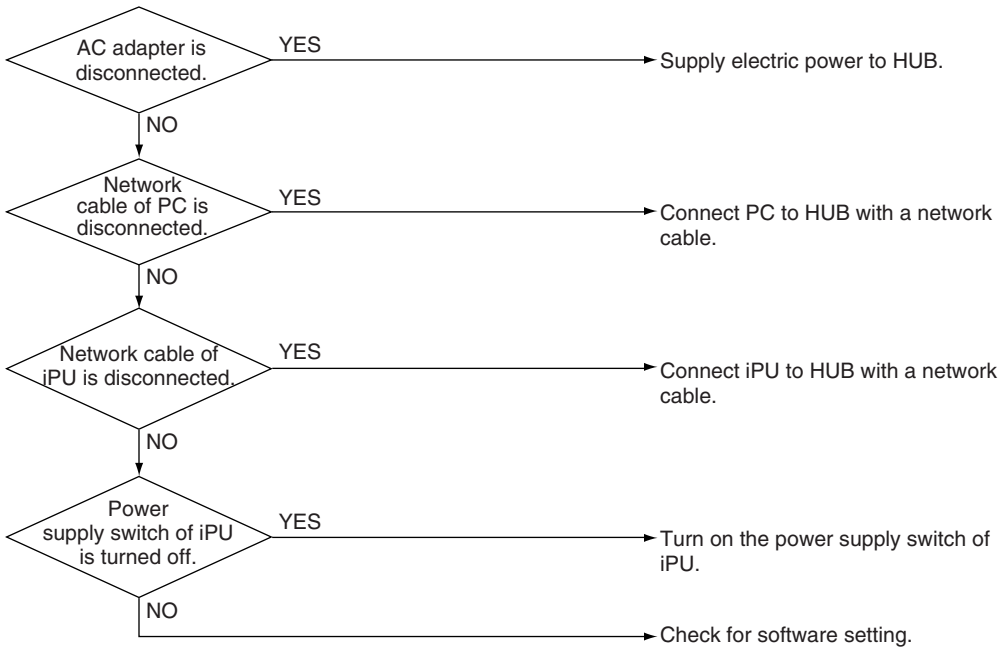
2.2 Can Not be Connected to iPU (Hardware)

Supposed Causes

- Power for HUB is disconnected.
- Network cable is not connected.
- Power for iPU is disconnected.

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



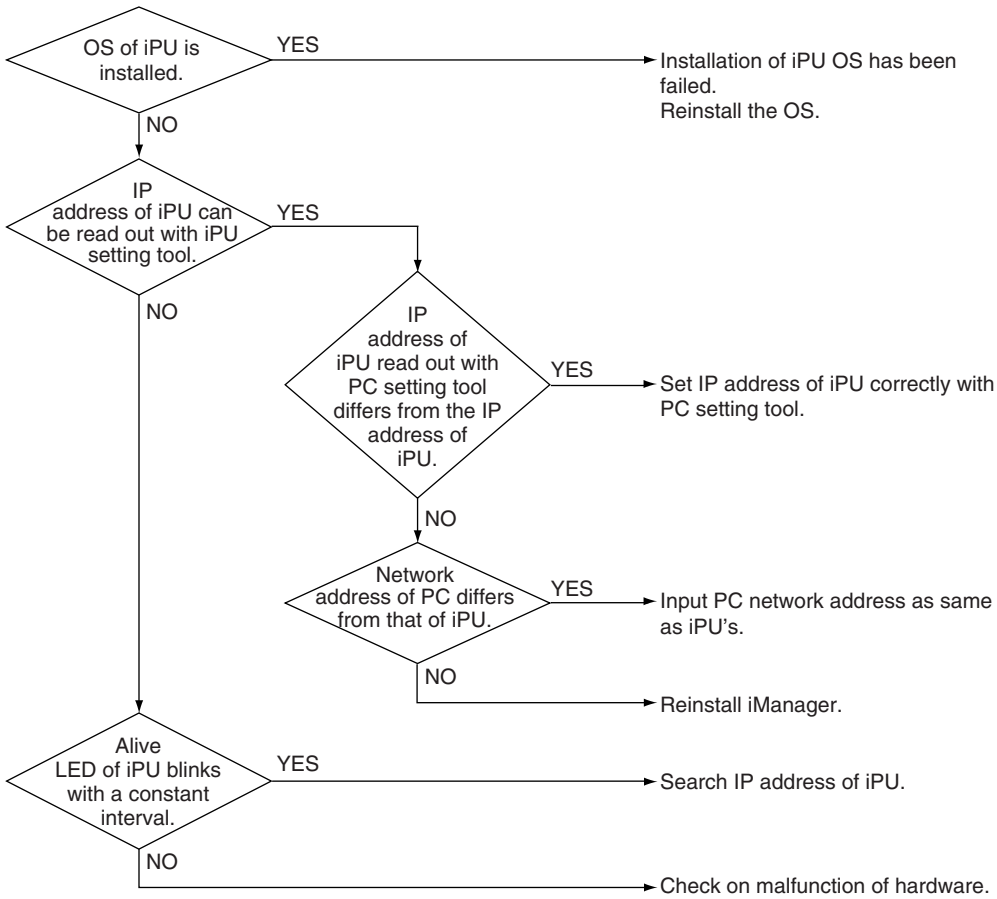
2.3 Can Not be Connected to iPU (Software Setting)

Supposed Causes

- Incorrect setting for IP address of iPU.
- Incorrect setting for IP address of PC.
- Incorrect updating of iPU OS.

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



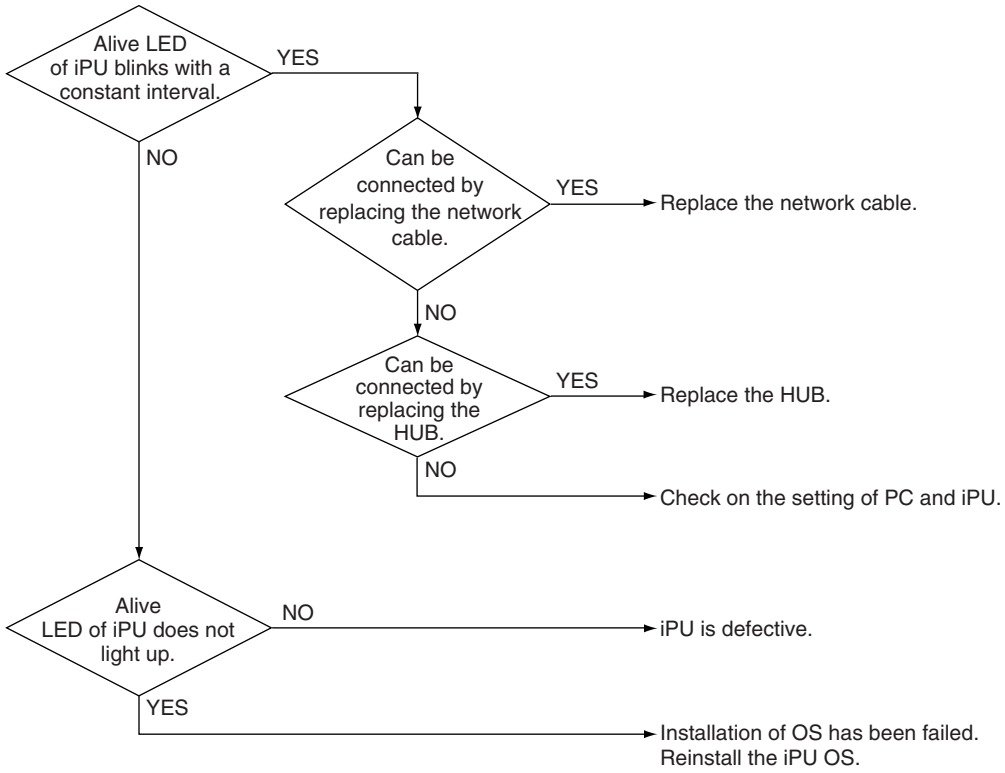
2.4 Can Not be Connected to iPU (Hardware Malfunction)

Supposed Causes

- Disconnection of network cable.
- Defective HUB.
- Defective iPU.

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



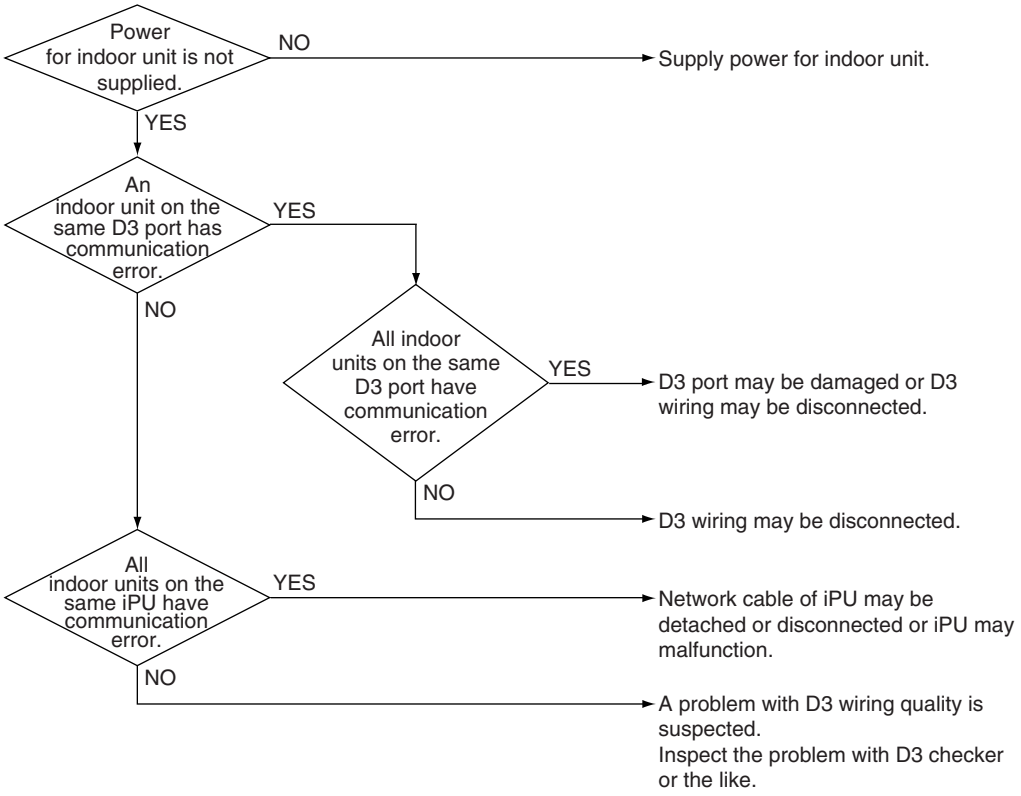
2.5 Some of the Air Conditioners Have Communication Error

Supposed Causes

- Power for indoor unit is not supplied.
- Disconnection of D3 wiring.
- Disconnection of network cable of iPU.
- Faulty D3 port.

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



2.6 CPU Alive LED is Turned off or Lighting up

Trouble contents

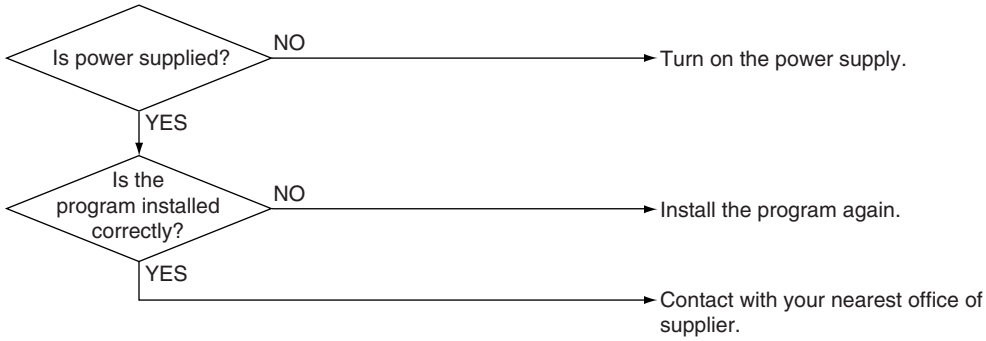
CPU Alive LED is turned off or lighting up.
(It will be blinking in normal condition.)

Supposed Causes

- Power is not supplied.
- Program is not installed correctly.

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



2.7 Ether Link LED is off

Trouble contents

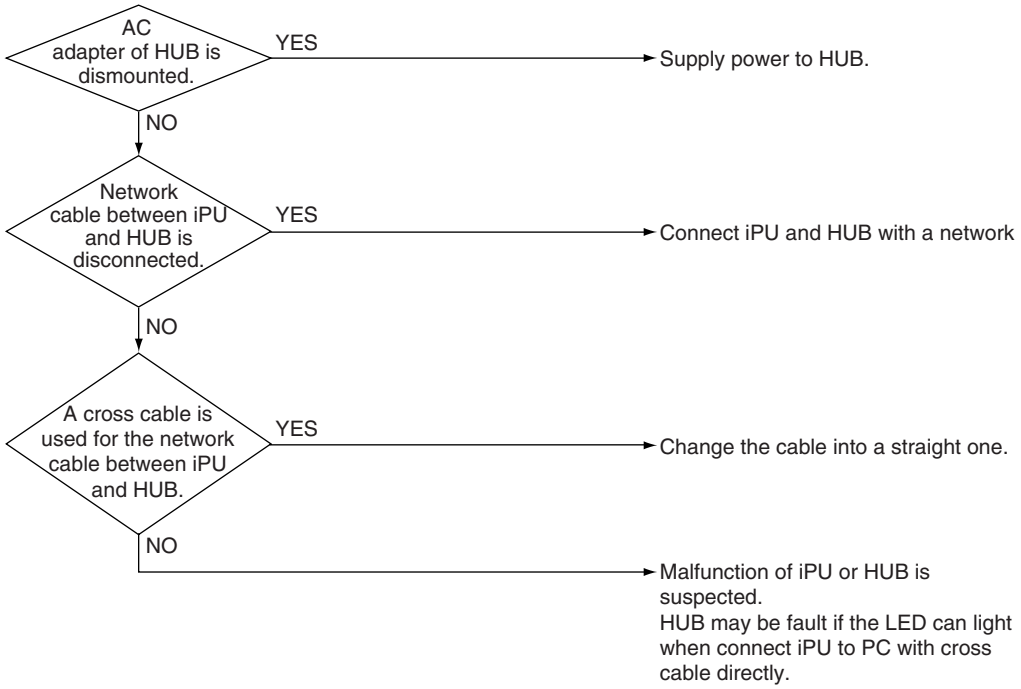
Ether link LED is off.
(It will light in normal condition.)

Supposed Causes

- Power supply for HUB is turned off.
- Communication cable between iPU and HUB is disconnected.
- Specification of the communication cable between iPU and HUB is incorrect.

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



2.8 Ether RCV LED Does Not Light

Trouble contents

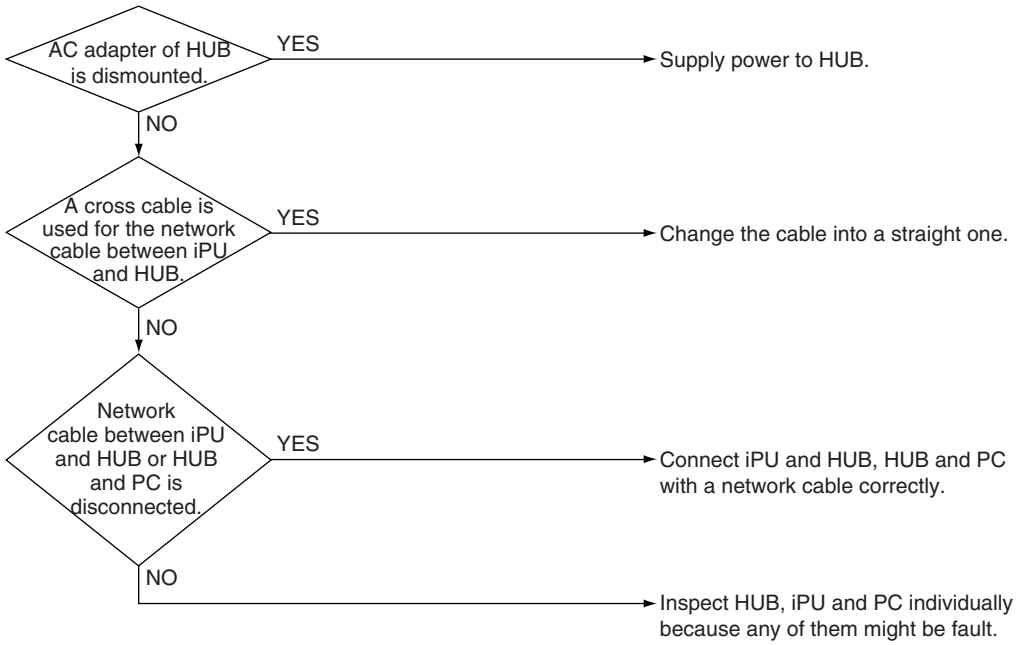
Ether RCV LED does not light.
(It will blink with an interval of several tens of seconds.)

Supposed Causes

- Power supply for HUB is turned off.
- Specification of the communication cable between iPU and HUB is incorrect. (If the trouble have been generated due to above two reasons, the ether link LED is also turned off.)
- Any one of the communication cable between iPU and HUB or HUB and PC is disconnected.

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



2.9 RS485-1 TxD,RxD, RS485-2 TxD,RxD LEDs are off

Trouble contents

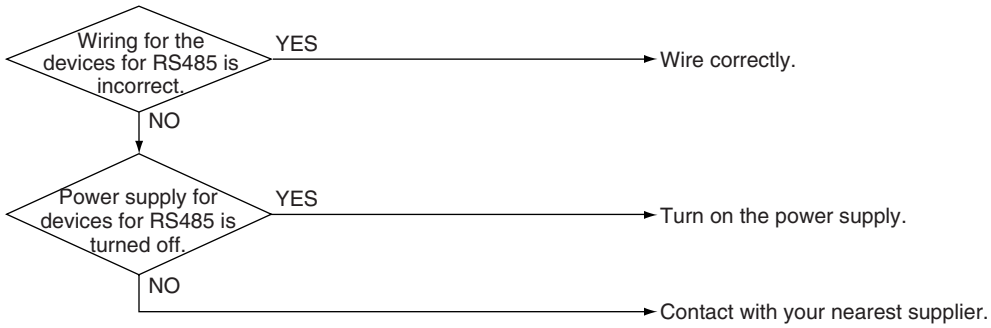
RS485-1 TxD,RxD, RS485-2 TxD,RxD LEDs are off.
(In the normal condition, they will blink when the devices for RS485 are connected, while they will be turned off if the devices are not connected.)
(There are two RS485 communication ports. LEDs mentioned above are for sending and receiving.)

Supposed Causes

- Wiring to devices for RS485 is not correct.
- Power supply to devices for RS485 is not turned on.

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



2.10 RS232C-2 TxD and RxD LED is off or Lights up

Trouble contents

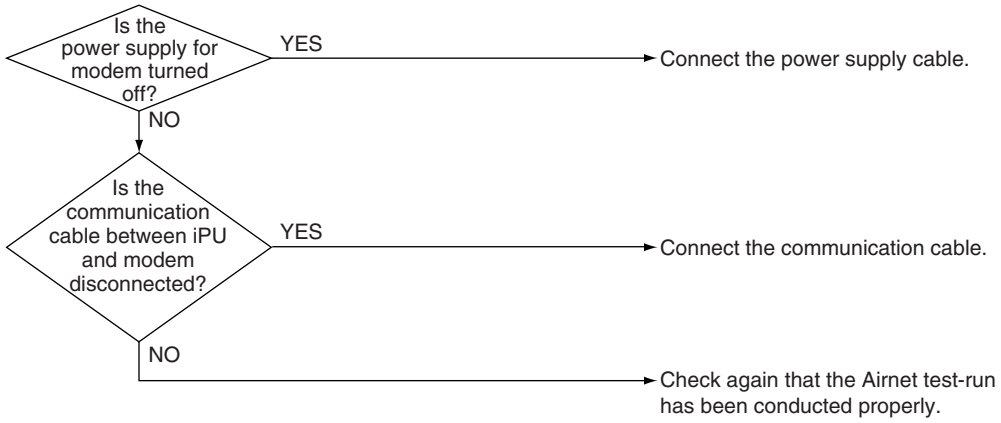
RS232C-2 TxD and RxD LED is off or lights up.
(The LED blinks with a certain interval when the device is connected with modem for Airnet and communicates normally.)
(Although the LED is connected with modem, since it does not perform communication Continuously, it may sometimes be off .)
*: Lighting /off of the LEDs of RS232C-1 and 3 are regardless of the operation of this device because the LEDs are not used.

Supposed Causes

- Power supply for modem is turned off.
- Communication cable between iPU and modem is disconnected.

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



2.11 LEDs of DIII-1,2,3 and 4 is off or Lights

Trouble contents

LEDs of DIII-1,2,3 and 4 is off or lights.
(When the device is communicating with air conditioner, the LED is blinling.)

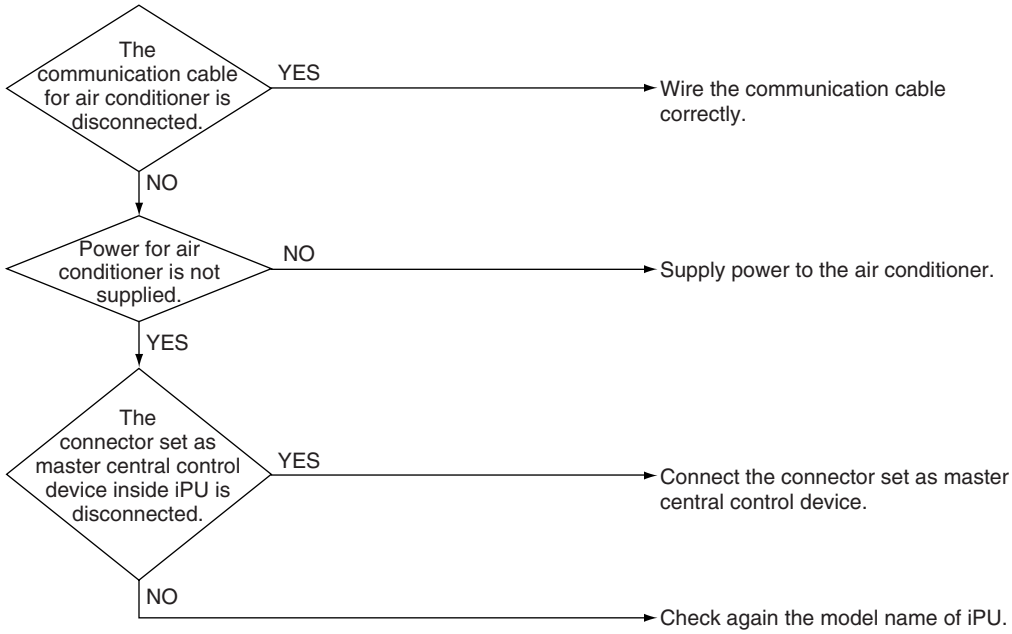
- When iPU model name is DAM602A52, LED of DIII-3 and 4 is continuously off.
- When iPU model name is DAM602A53, LED of DIII-4 is continuously off.

Supposed Causes

- The communication cable for air conditioner connected to the communication port corresponding to DIII-NET is disconnected.
- Power for air conditioner connected to the communication port corresponding to DIII-NET is not supplied.

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



2.12 Can Not be Connected to iPU (Software Setting)

Trouble contents

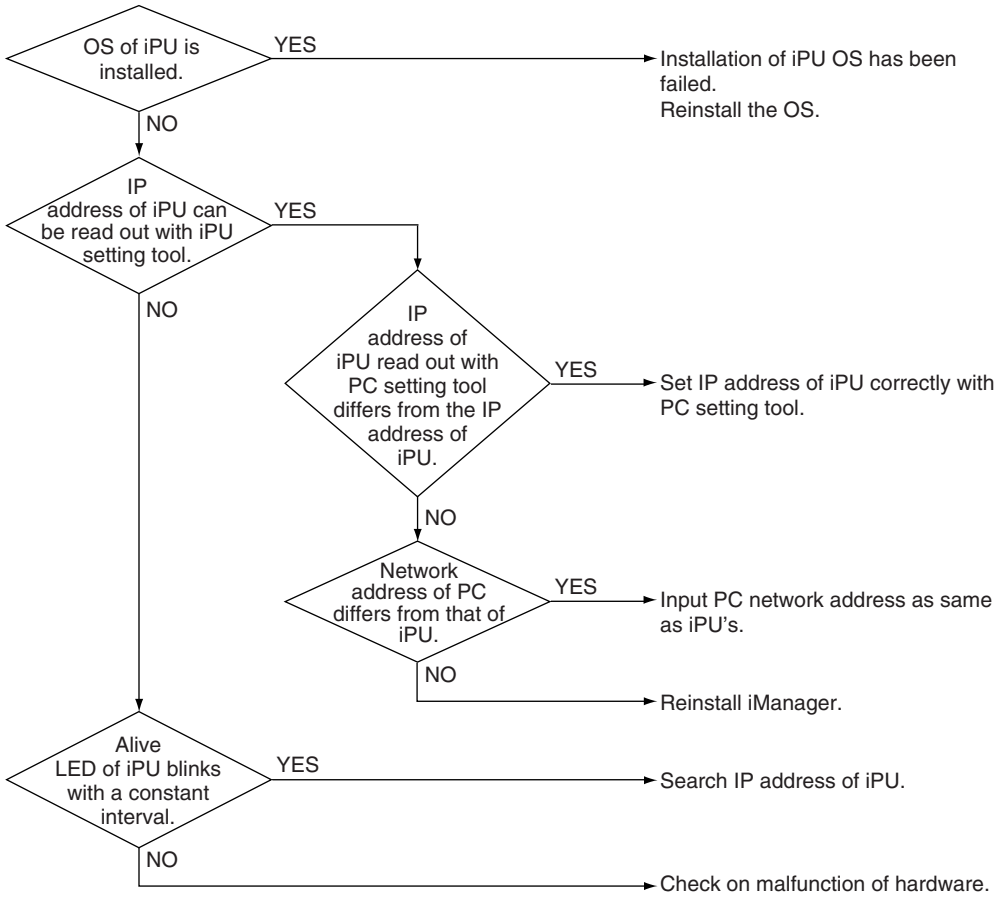
Can not be connected to iPU. (Software setting)

Supposed Causes

- Incorrect setting for IP address of iPU.
- Incorrect setting for IP address of PC.
- Incorrect updating of iPU OS.

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



2.13 Can Not be Connected to iPU (Hardware Malfunction)

Trouble contents

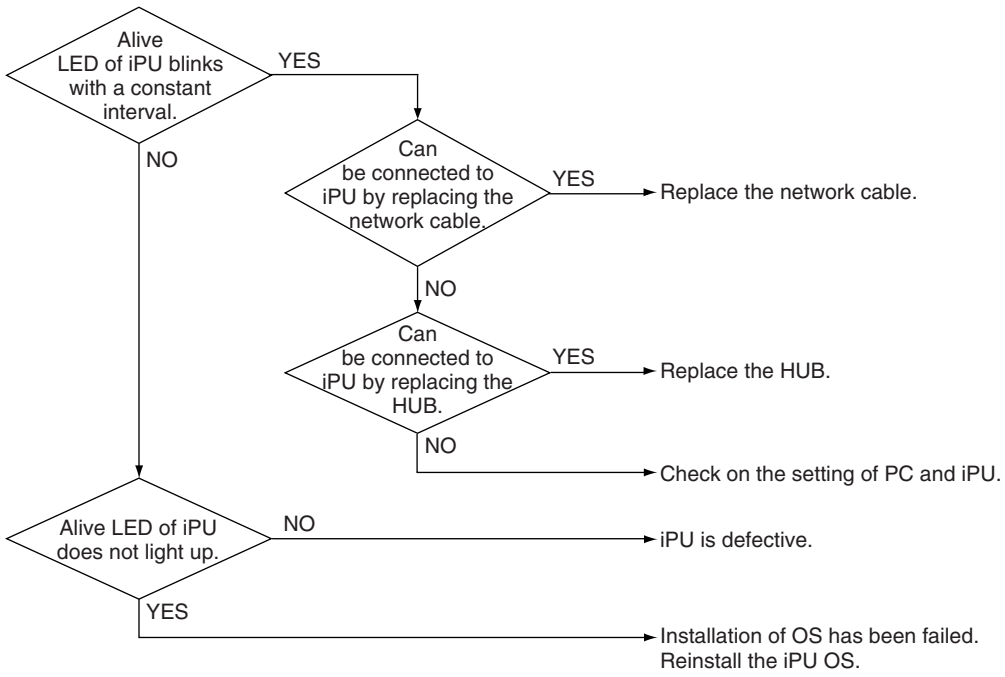
Can not be connected to iPU. (Hardware malfunction)

Supposed Causes

- Disconnection of network cable.
- Defective HUB
- Defective iPU

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



2.14 Some of the Air Conditioners Have Communication Error

Trouble contents

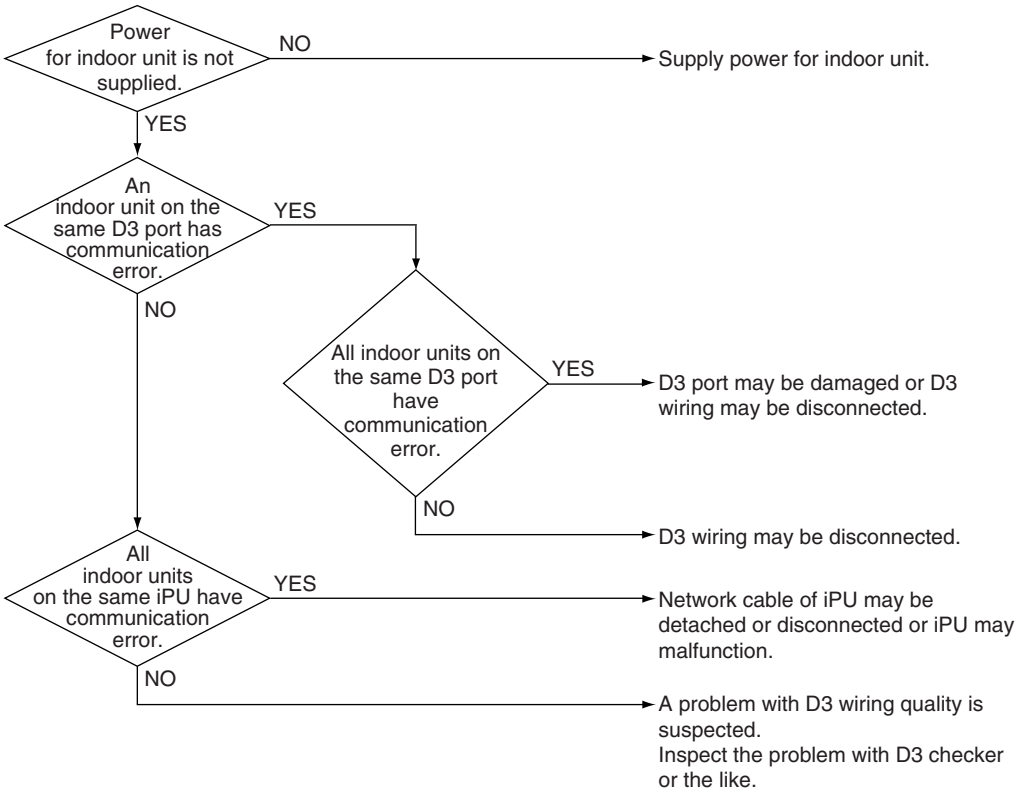
Some of the air conditioners have communication error.

Supposed Causes

- Power for indoor unit is not supplied.
- Disconnection of D3 wiring.
- Disconnection of network cable of iPU.
- Faulty D3 port.

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



2.15 An “Communication Error” is Displayed on the Screen of i-Manager PC

Trouble contents

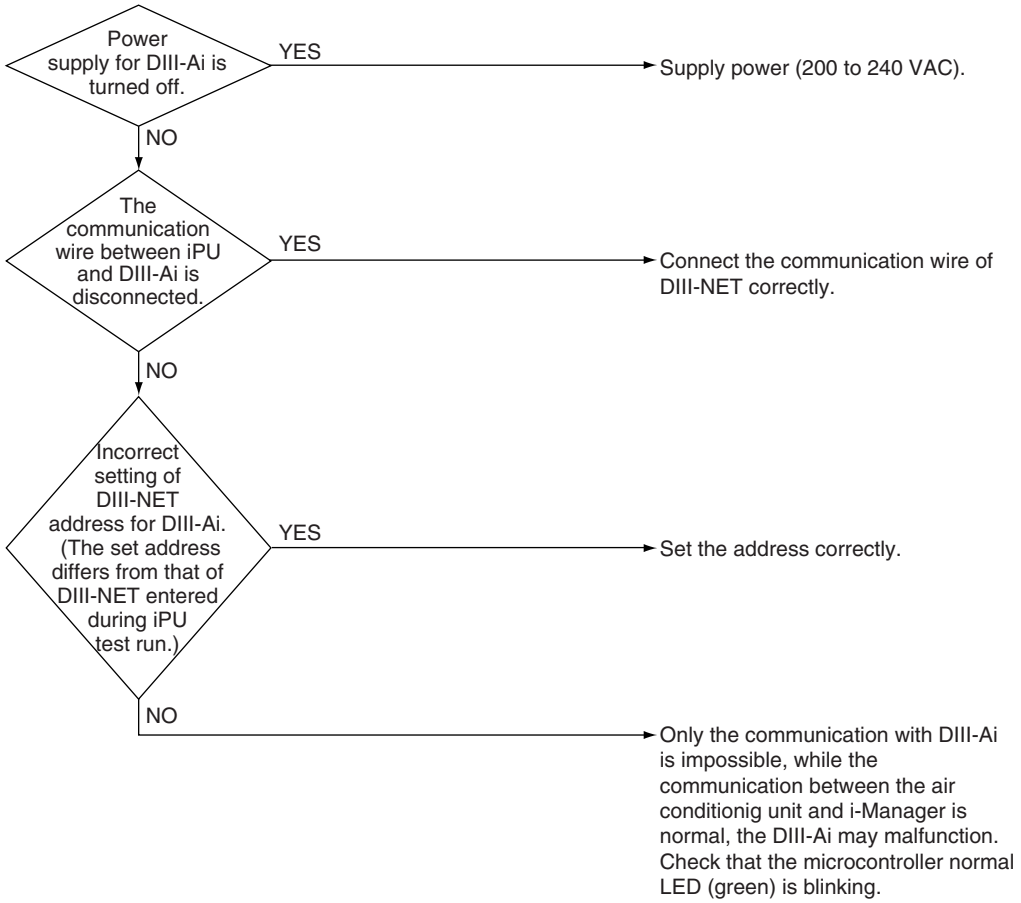
Despite the test run of DIII-Ai has been conducted in the i-Manager test run, an “communication error” is displayed on the screen of i-Mager PC.

Supposed Causes

- Power supply for DIII-Ai is turned off.
- The communication wire between iPU and DIII-Ai is disconnected.
- Incorrect setting of DIII-NET address for DIII-Ai.

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



2.16 The Temperature Detected by DIII-Ai in i-Manager Test Run Can Not be Monitored Properly

Trouble contents

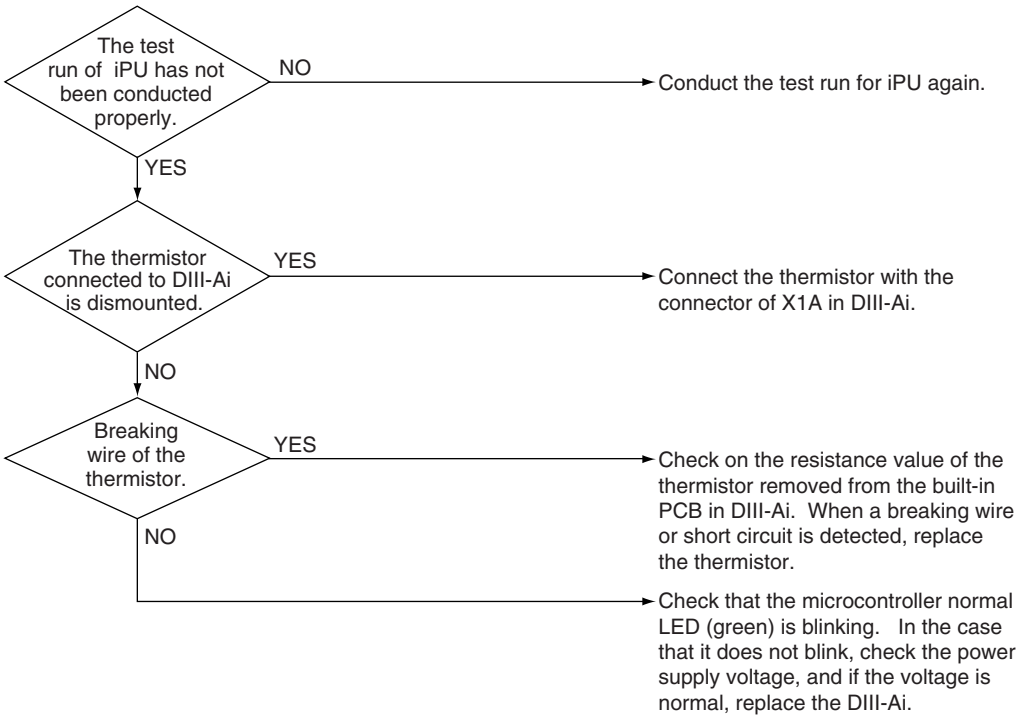
The temperature detected by DIII-Ai in i-Manager test run can not be monitored properly. (Refer to the previous page for the case of communication error.)
*: The tolerance of outdoor air temperature detected by DIII-Ai is as follows.
Outdoor air temperature of -20ºC to +40ºC ; ±2ºC
Outdoor air temperature of 40ºC or higher ; ±3ºC

Supposed Causes

- The test run of iPU has not been conducted properly.
- The thermistor connected to DIII-Ai is dismounted.
- Breaking wire of the thermistor

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



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Printed in Japan 04/2003 AK