DAIKIN

intelligent Manager

ECO 21
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.

Table of Contents

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

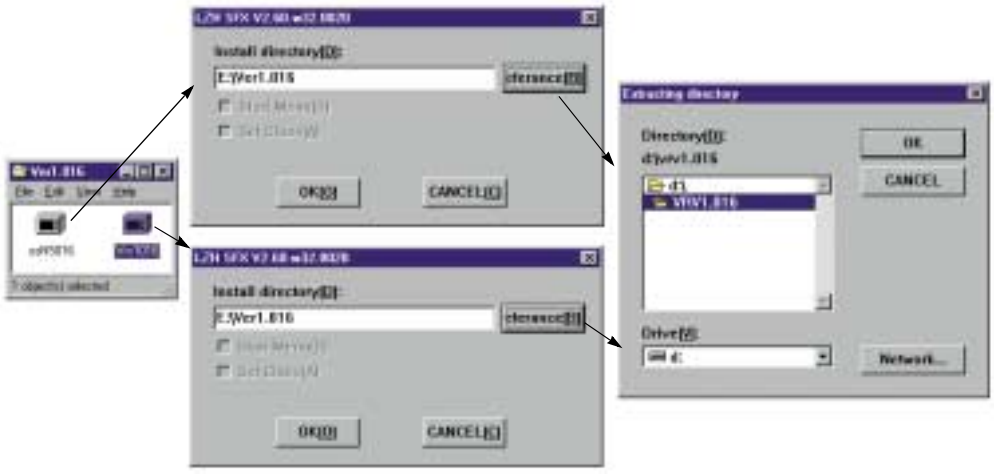
4.2.1 Installing the PC software

(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.

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(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

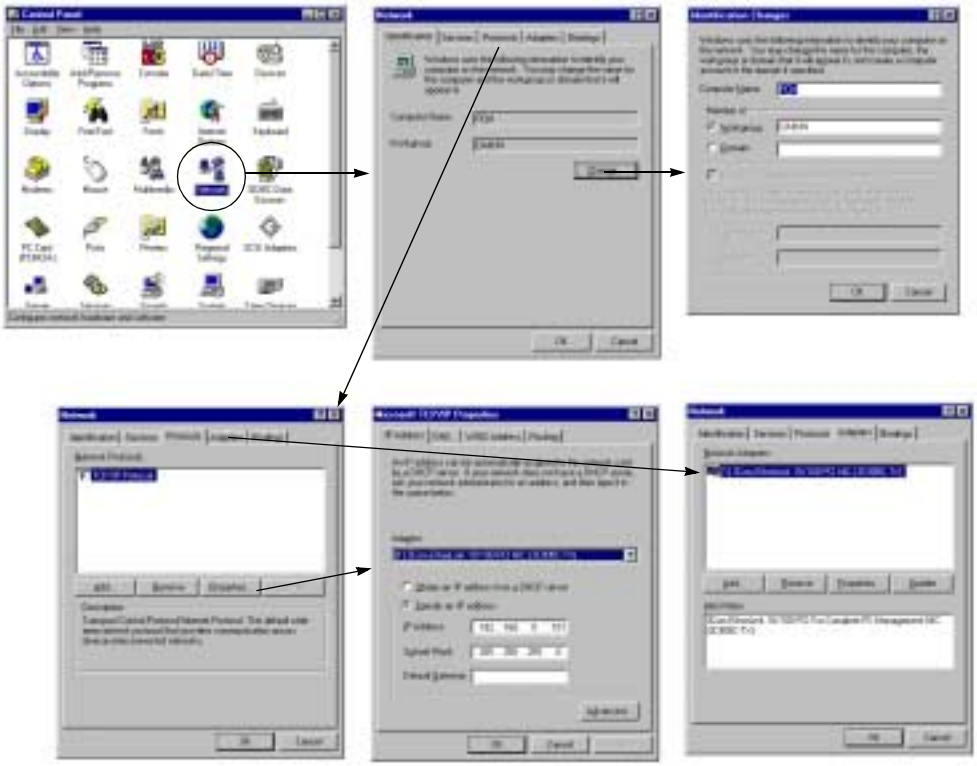
This installation should be performed on the monitoring PC.

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.

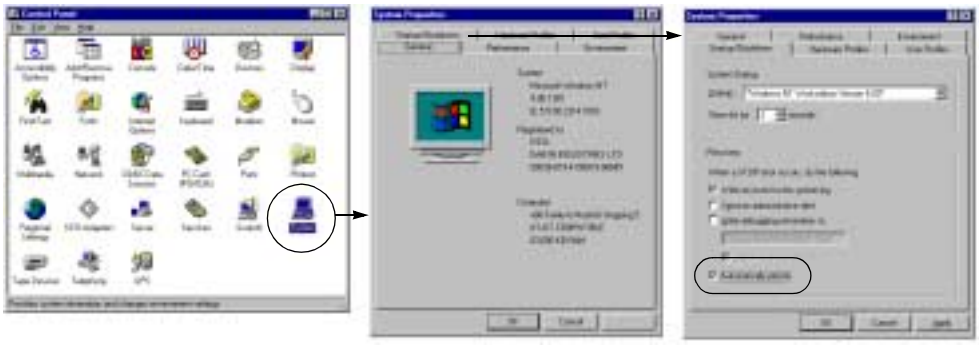
4.3.2 Automatic start in Windows 2000

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.

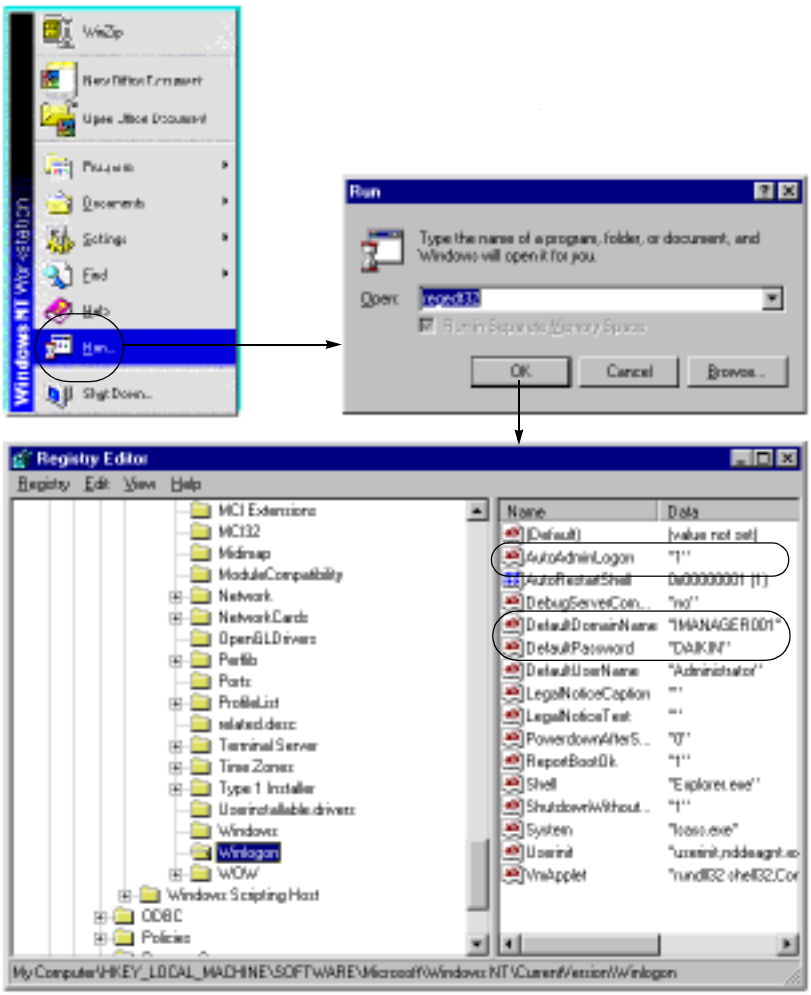
4.3.2.1 Automatic Reboot



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

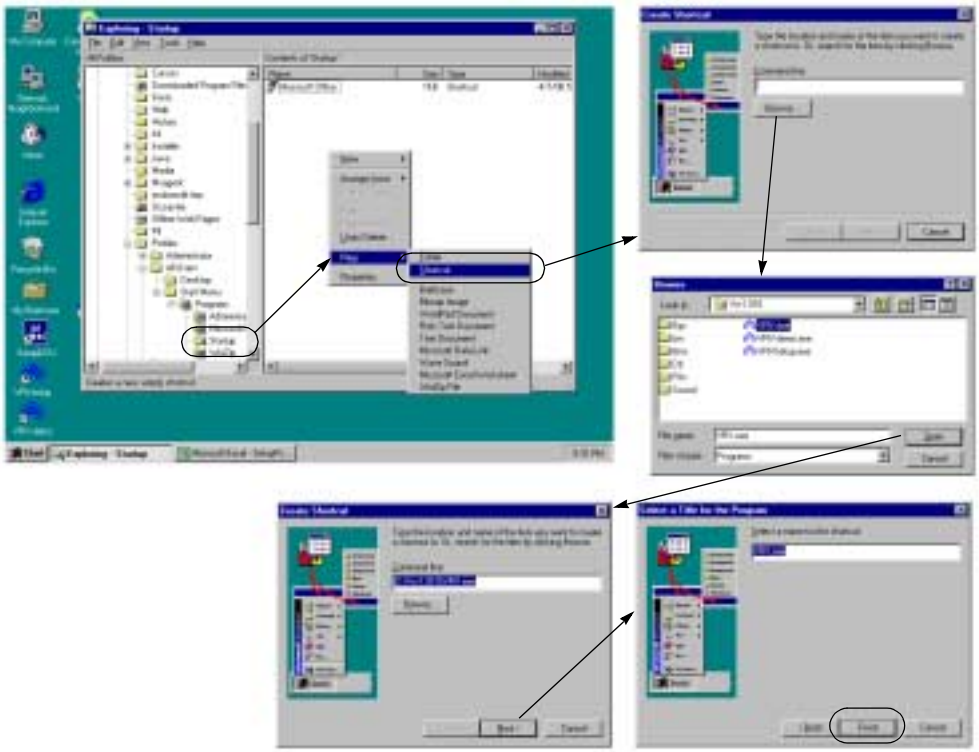


When Windows 2000 starts up, it requests logging on by pressing the **Ctrl-Alt-Del** keys. This means that any program (including intelligent Manager) cannot be started without human intervention on the keyboard. Nevertheless, intelligent Manager has to start up automatically after shutdown. Consequently,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

. . .

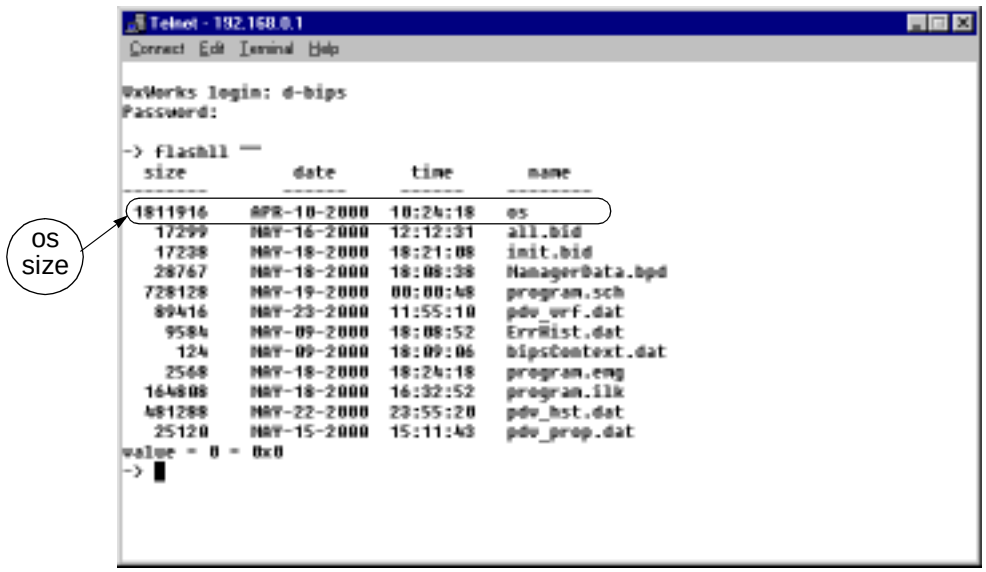
When the transmission completion message appears, terminate the ftp connection:

- (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),

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

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

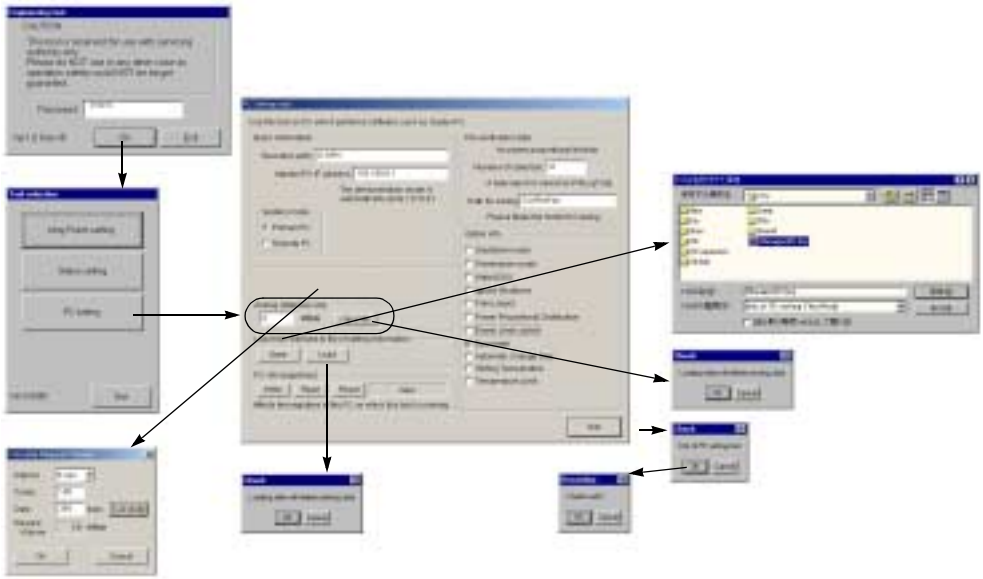
This part of the configuration procedure makes use of the ***VRVSetup.exe*** engineering tool, which is in the ***/Tools*** sub-folder of the installation folder.
It performs configuration of the data in the monitoring PC and the iPU. This data includes the intelligent Manager system configuration by 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 **5.4.2 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**).

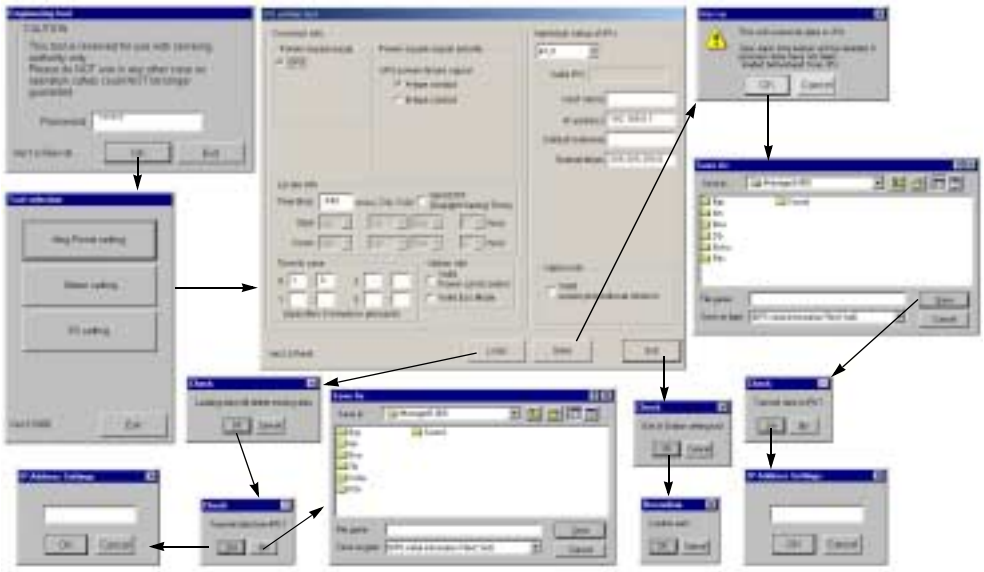
You can click the **Save to File** button to backup this data in a file.

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 5.4.2 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:

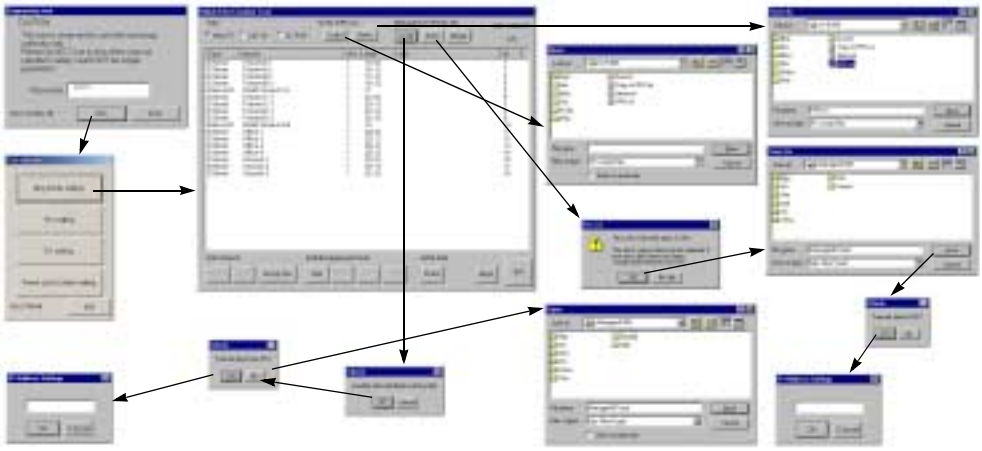
- Indoor Units (I/U): indoor unit (model supported by DIII-Net protocol),
- Outdoor Units (O/U): Outdoor unit (model supported by DIII-Net protocol),
- General Purpose Digital Input/Output points (D3Dio): DIII-Net adapter to exchange binary data (dry circuit closed or open) with external system,
- Internal 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)

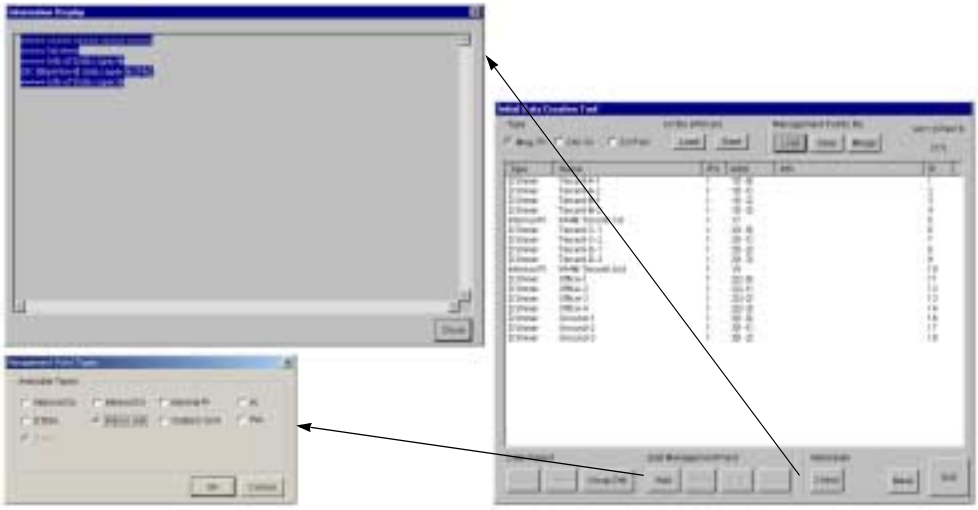
Note Repeat the above procedure for each iPU, switch it Off then On to update its internal settings.



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.

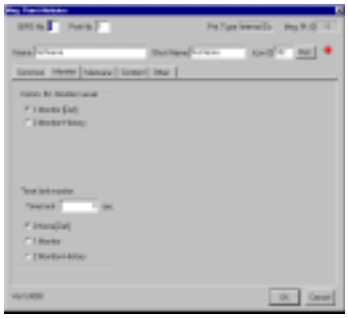
Point address: type the **iPU No**, **Port No** and **Address** (refer to the commissioning documentation for actual value),

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,

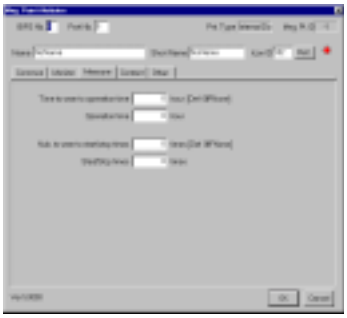
Enter the information needed in the fields of the tabulations **Common**, **Monitor**, **Indoor**, **Measure** and **Other** (see details for each type below),

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

---

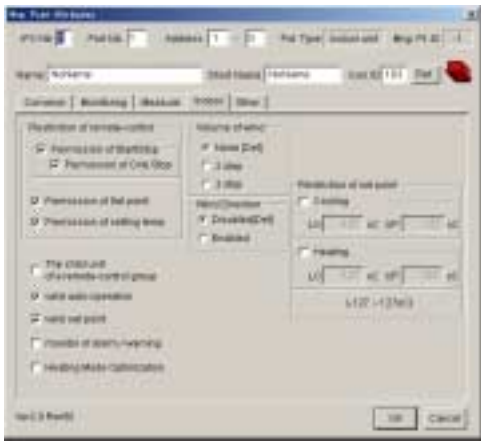
5.3.1.2 Modifying a management point

- 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

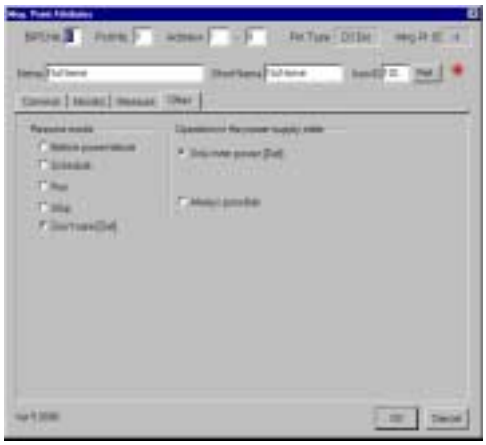


Click and input the tabs:

- 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,

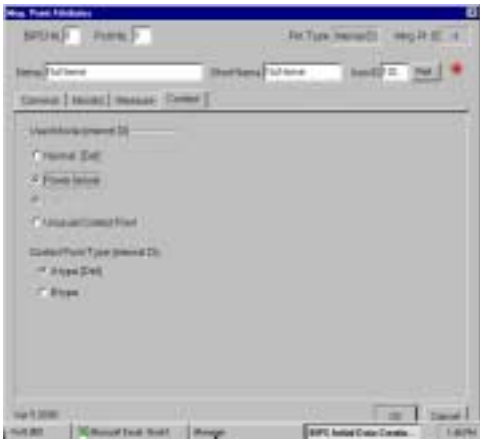
5.3.3 Configuring the General Purpose Digital Input/Output points

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.



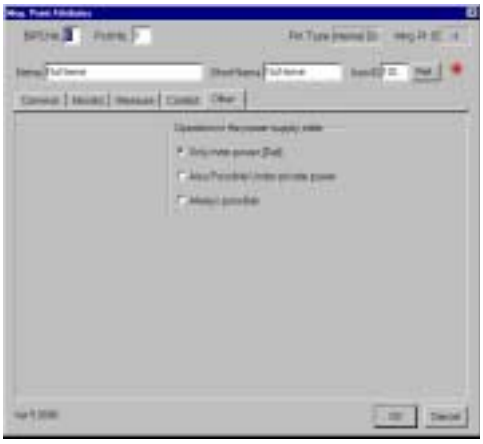
5.3.4 Configuring the Internal Digital Input points

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].

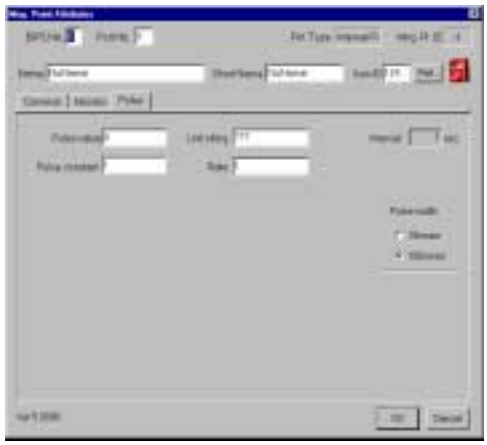


5.3.5 Configuring the Internal Digital Output points

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.



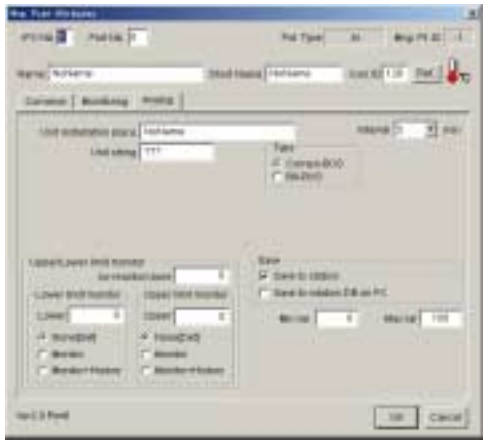
5.3.6 Configuring the Internal Pulse Input points



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)

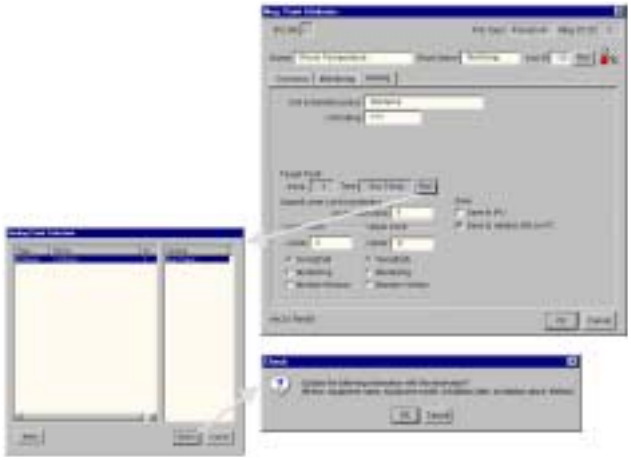


Click and input the tabs:

- 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

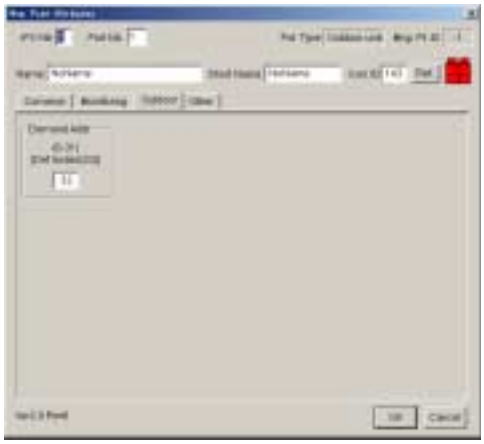
5.3.8 Configuring the Analogue Input points (Pai)

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

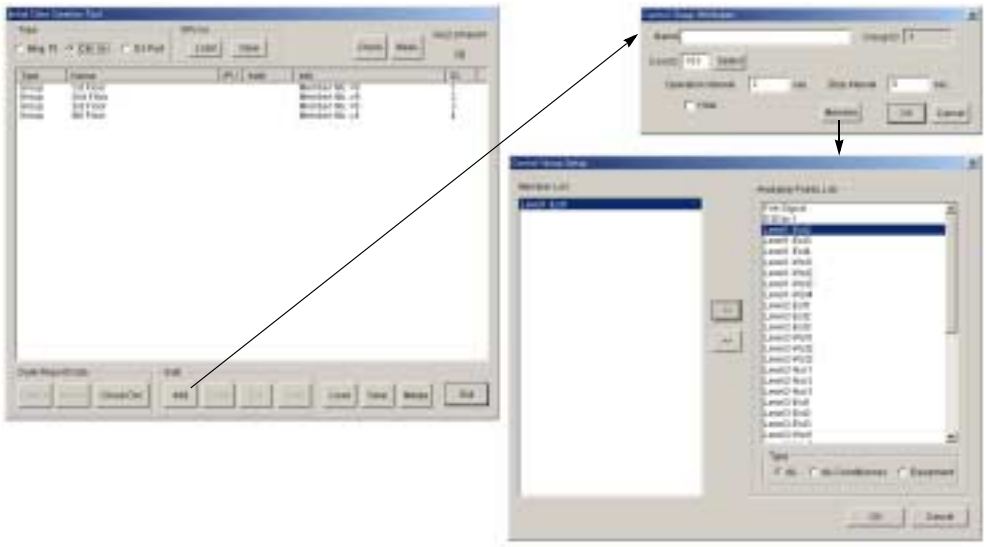
Click and input the tabs:
- Common: see above,
- Monitoring: see above,
- Outdoor Unit:
  - Demand address: address used by the **Eco Mode** function,



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

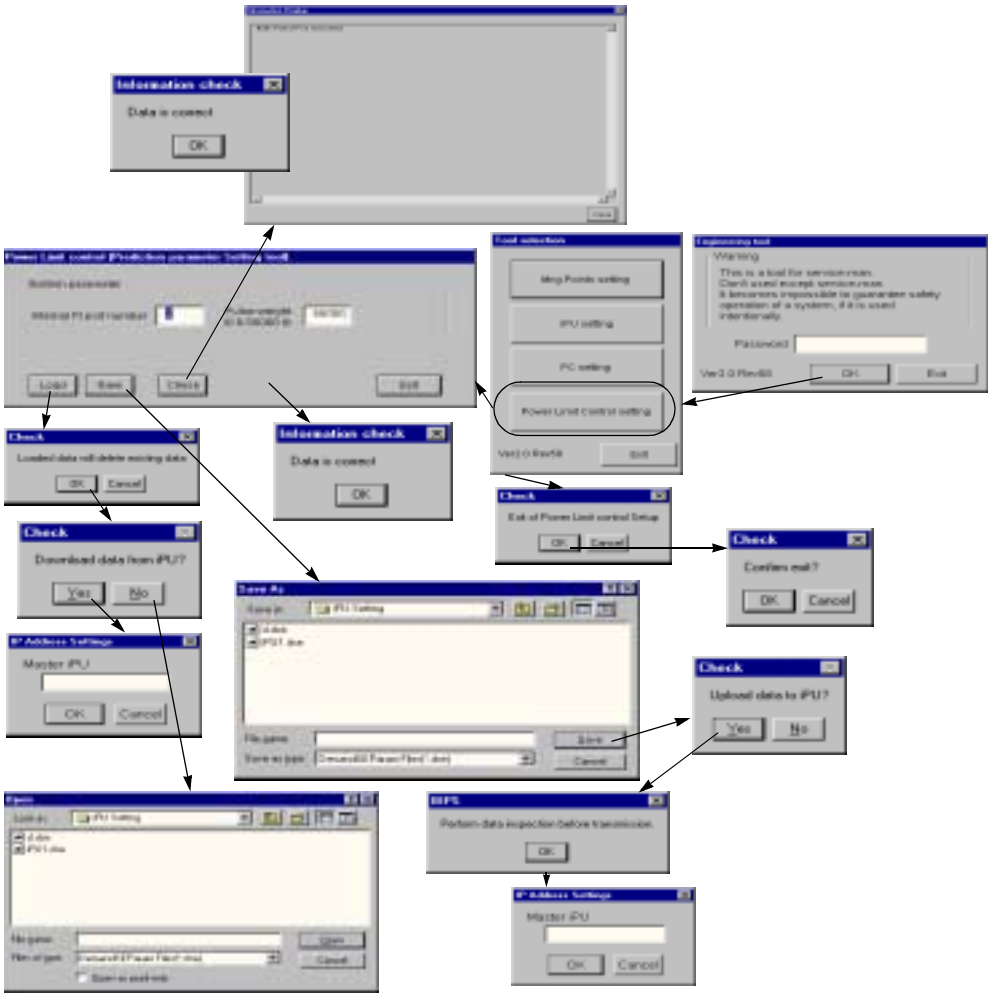
This procedure performs definition of the **Pulse Input** management point used to measure the power trend for the energy saving function (Power LimitControl).

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:

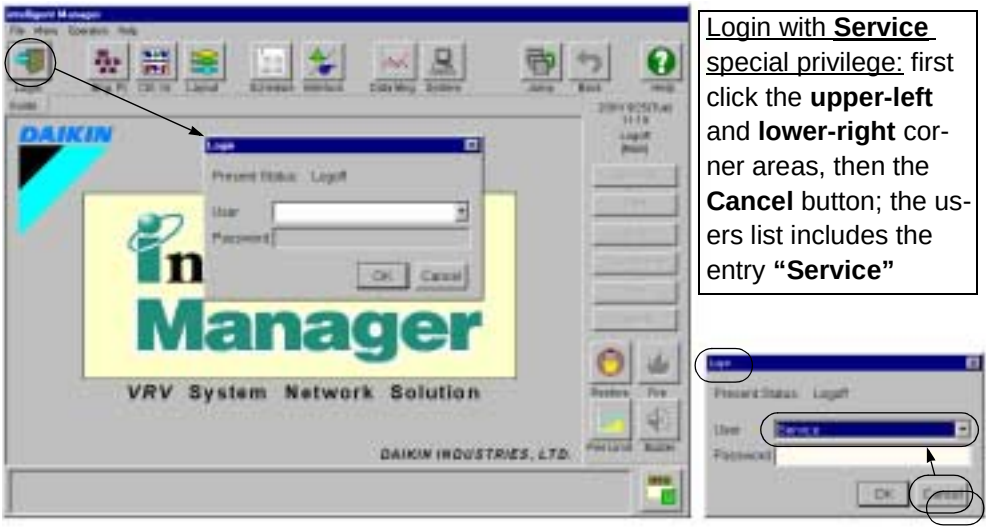
- the users: login, password needed to login in intelligent Manager , as well as users authority,
- the Management Groups: these groups will be used to organize the management points in a tree-like structure for easily understanding the site configuration and status,
- the Control Groups: these groups (which could have been configured previously with the engineering tool as explained in **5.4.10 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.



Login with **Service** special privilege: first click the **upper-left** and **lower-right** corner areas, then the **Cancel** button; the users list includes the entry **"Service"**

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

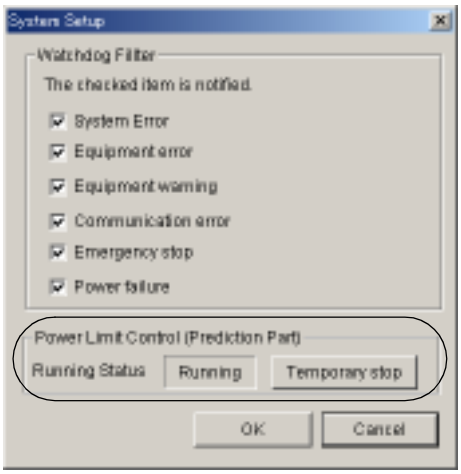
These functions change operation conditions of indoor and outdoor units in order to lower the power consumption.

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

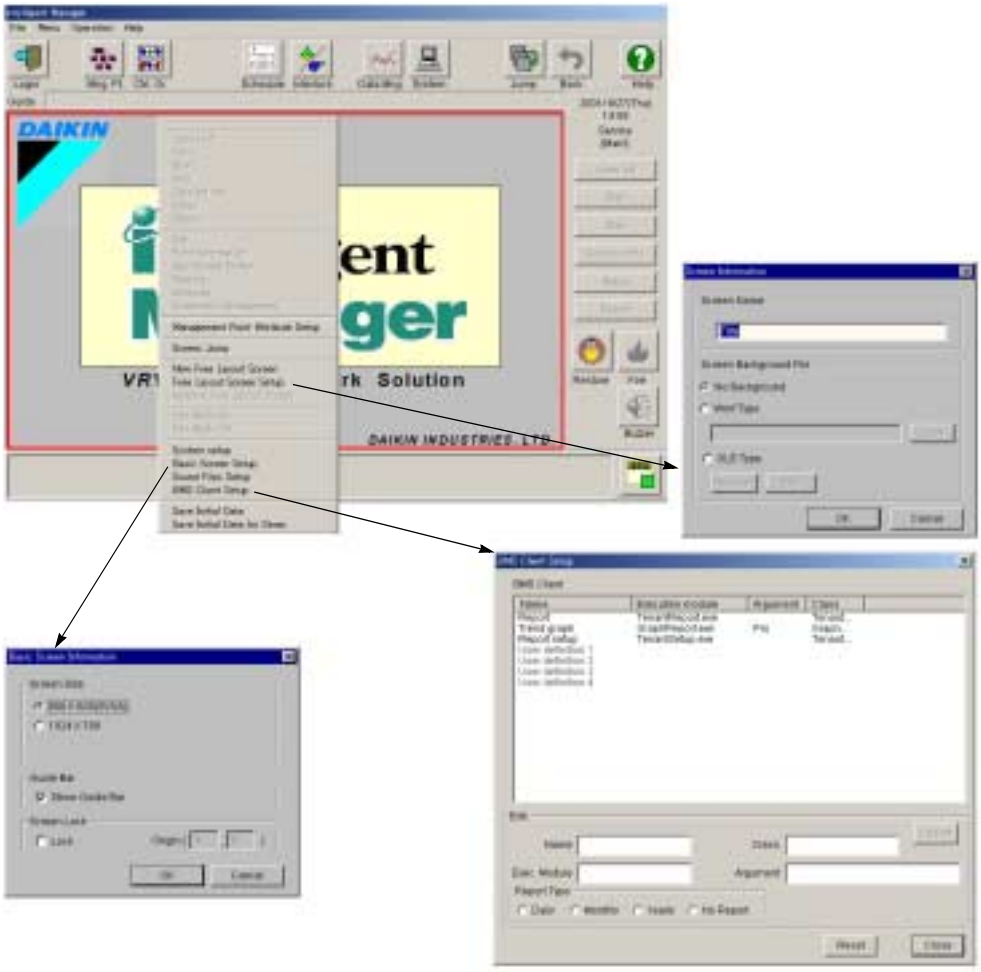
The users who operate the intelligent Manager system need to login and have customized profiles to access authorized actions. This procedure creates of these users and profiles.
Note Administrators only can perform this procedure. An administrator is an operator whose profile includes authorization to 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.

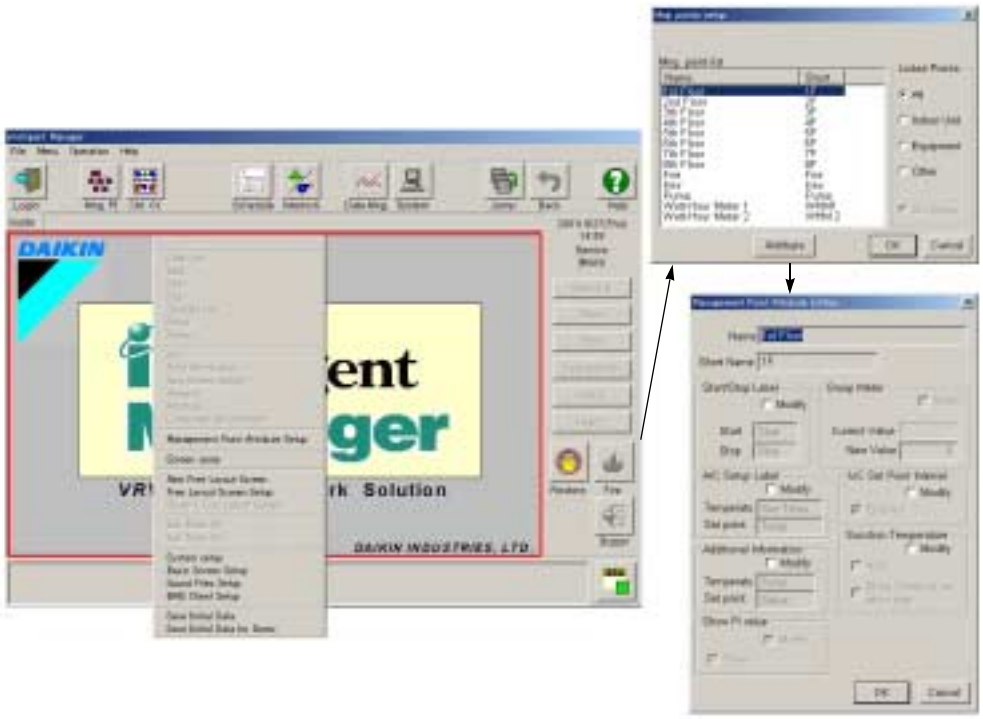


Important Some of the configuration parameters are saved in the **ini** file. Please refer to the section **6.5 Saving the configuration** below to save this file after customization has been performed.

6.4.1 Customizing Management Points Interface

When login in service mode (se 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.

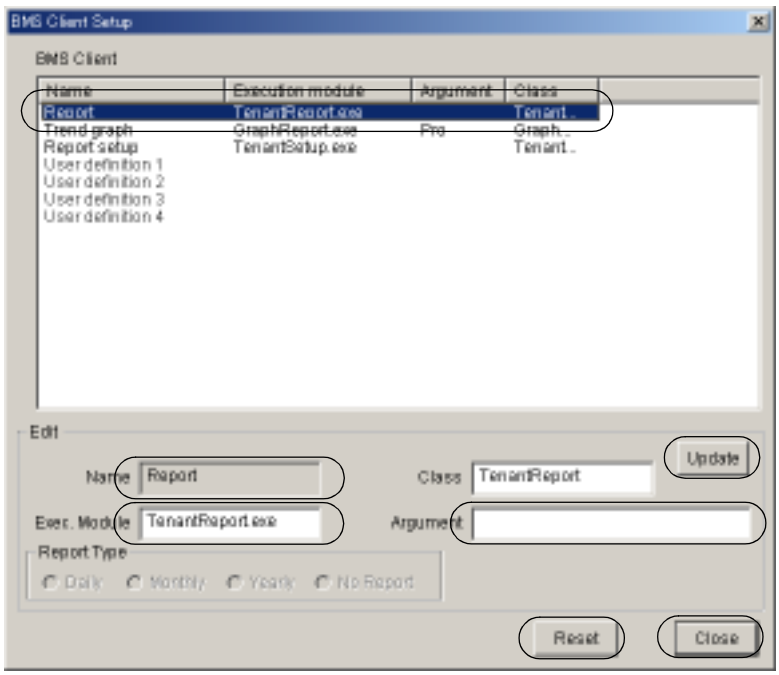


6.4.2 BMS Client Setup

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 **Tenant-Report.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 **6.5 Saving the configuration** 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.

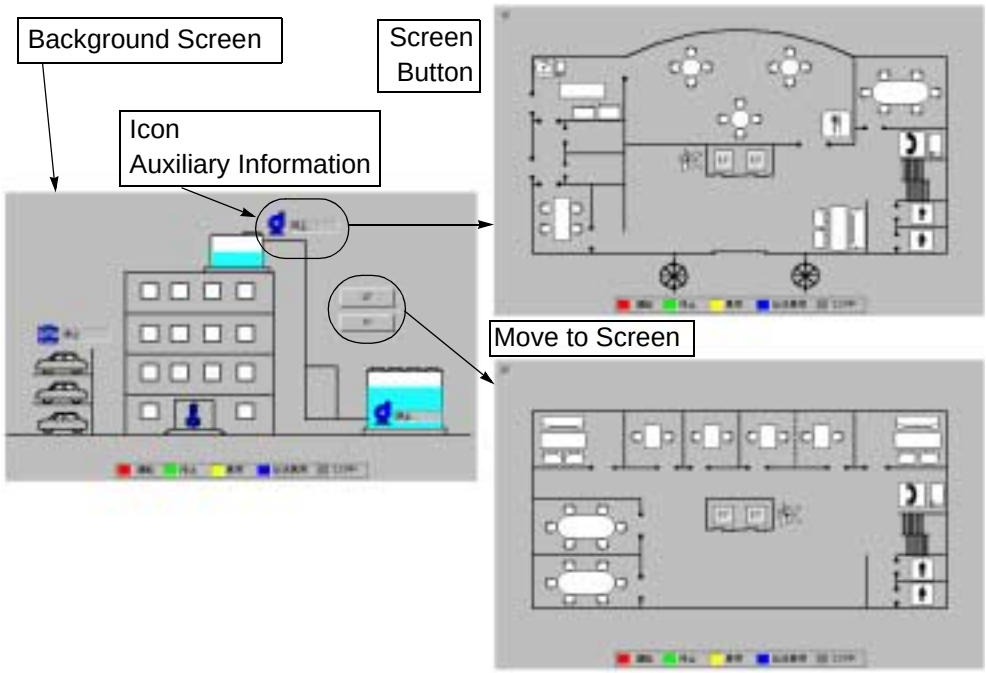
6.5.1.3 Auxiliary information

- 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.

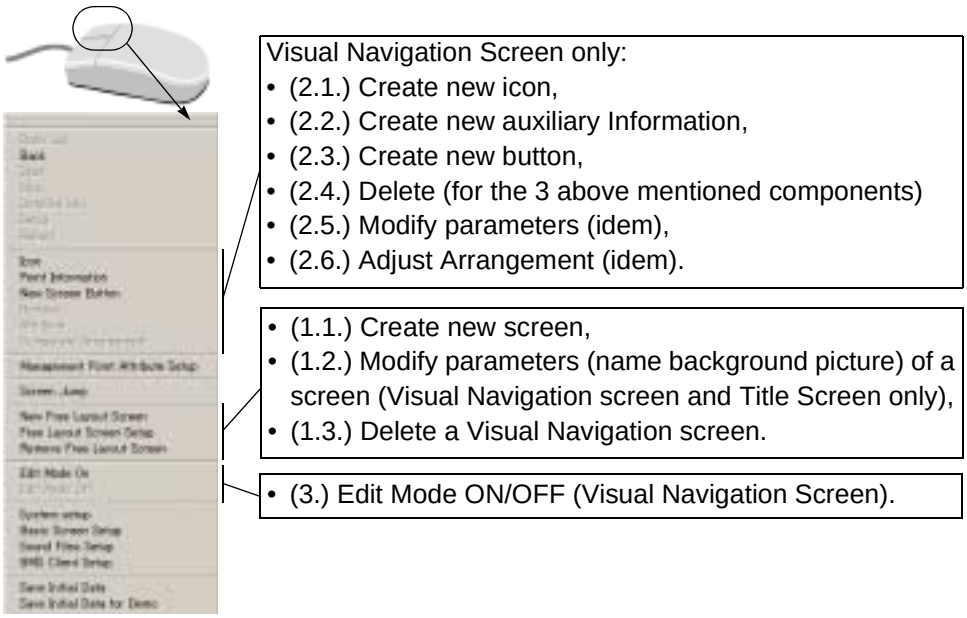


6.5.2 Operation

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

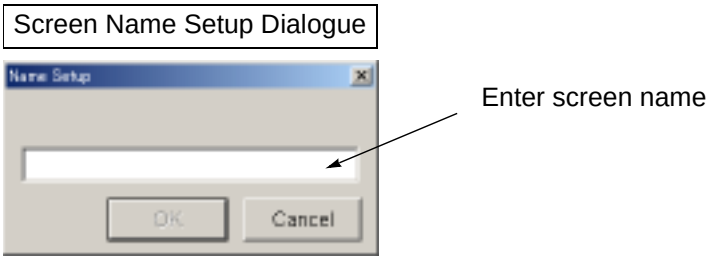
Login in Service mode (refer to Engineering manual for SE Login procedure).
Modify the attributes of the default Visual Navigation screen, then create new screens accessible from this one (see operation details below).

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.



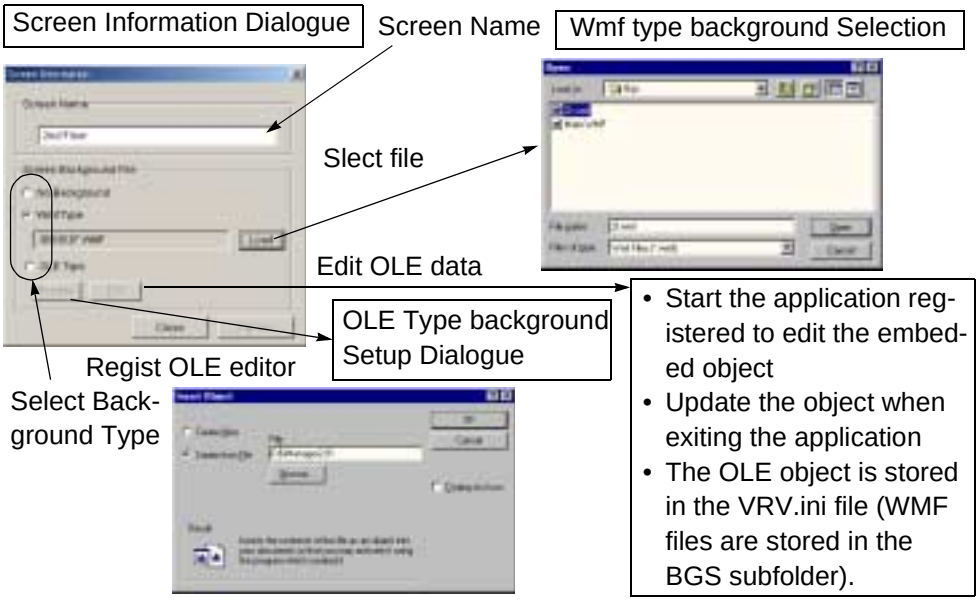
6.5.2.1 Creating a Visual Navigation screen

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



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.



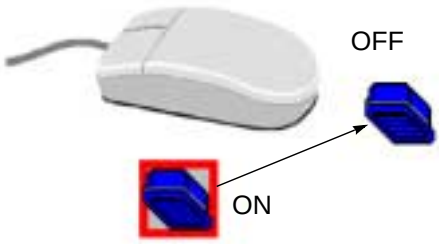
6.5.2.3 Modifying the contents of a Visual Navigation screen

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).



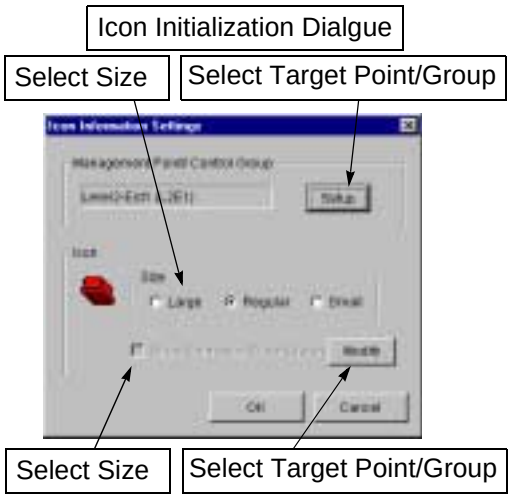
Then move the component with the mouse or with the arrow buttons (Shift key will mouse by 10 pixels).

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).

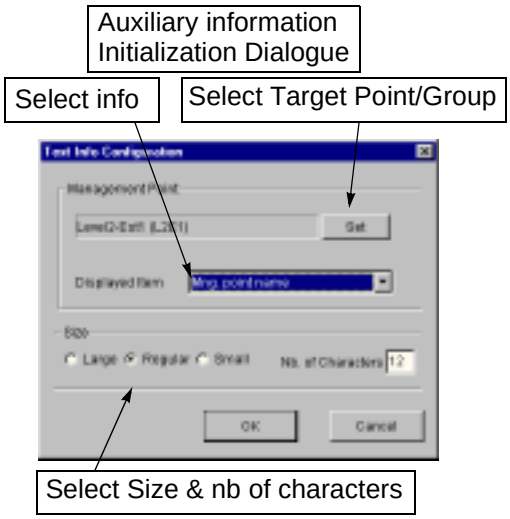
Selection of an animated icon is possible, but only in a Visual Navigation screen



6.5.2.3.3 Creating a new Auxiliary information

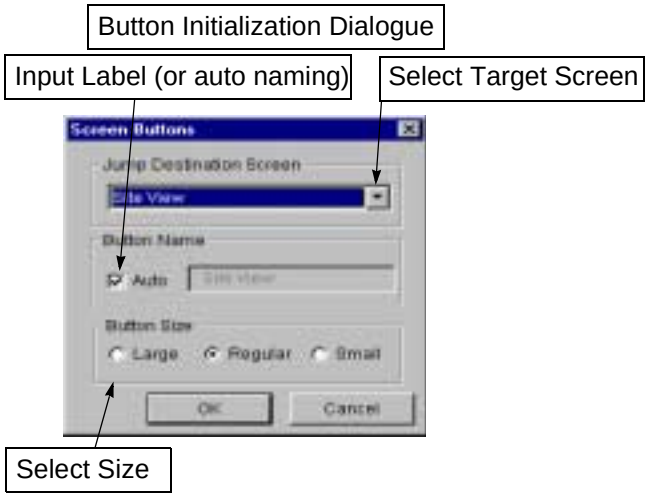
- Select the management point or control group designated by the info.
- Select which attribute of the selected point/group (the available list depends on the type of the point/group).

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

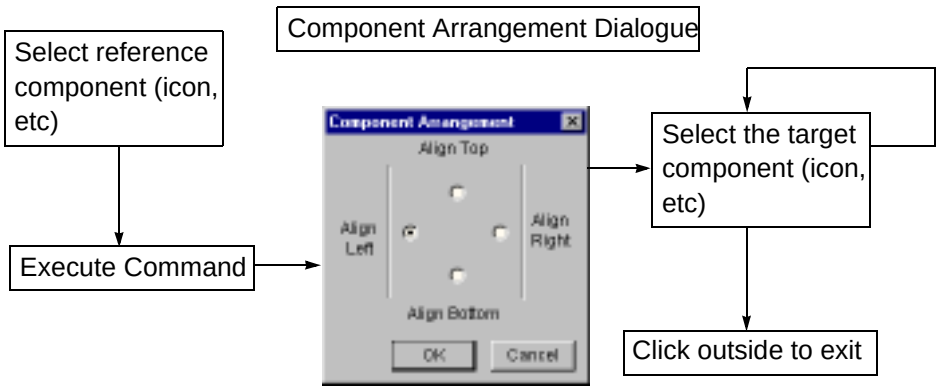
Select a component (icon, auxiliary information or button) and click the Delete entry in the pull down menu.
Perform cautiously, as Undo action is not available.

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.

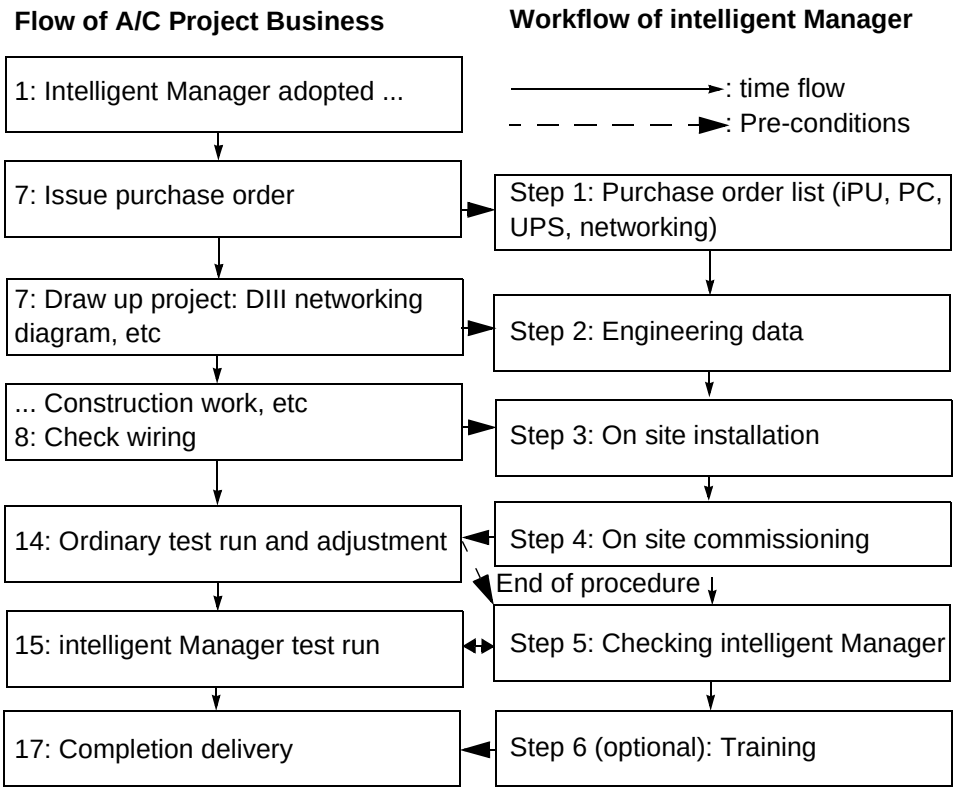
7.2 Loading

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

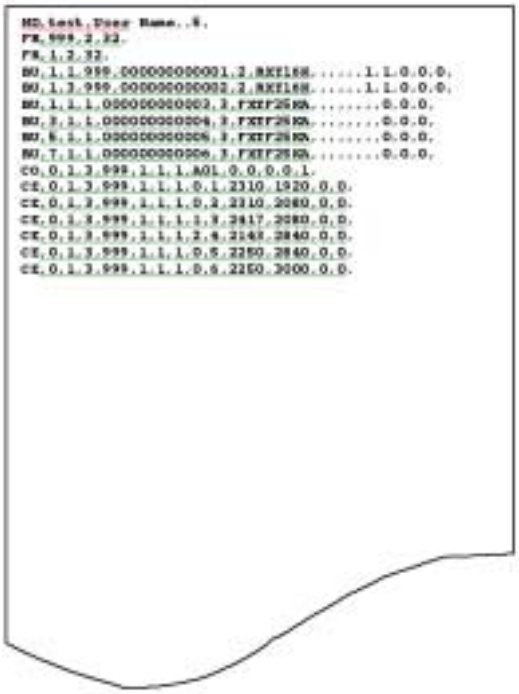
Required Features (recommendation)	
1 pulse / 1 kWh	
PWH-iPU connection cable	

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



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: . . . oC),
- (*) 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: . . . oC),
- 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 bellow

Automatic Changeover	
Activation State	Enabled / Disabled
Password	
Temp. Shift (oC)	
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 bellow

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

Notes - (*) insert lines if necessary

8.3.2.3.11 Temperature Limits

Fill a data sheet for each group as shown bellow

Temperature Limits	
Name	
Activation State	Enabled / Disabled
Min Temp. (oC	
Max Temp. (oC)	
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

---

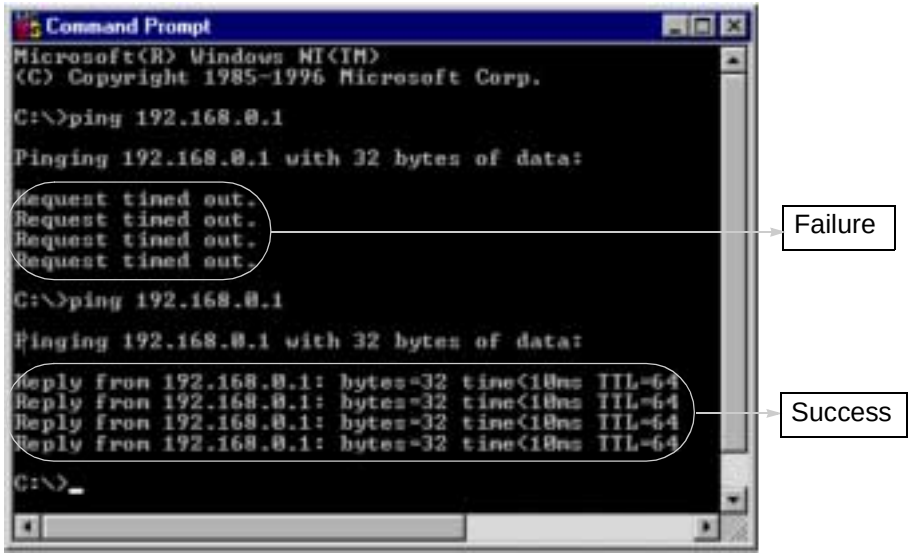
Appendix B:
Trouble shooting installation of the iPU Operating System

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).

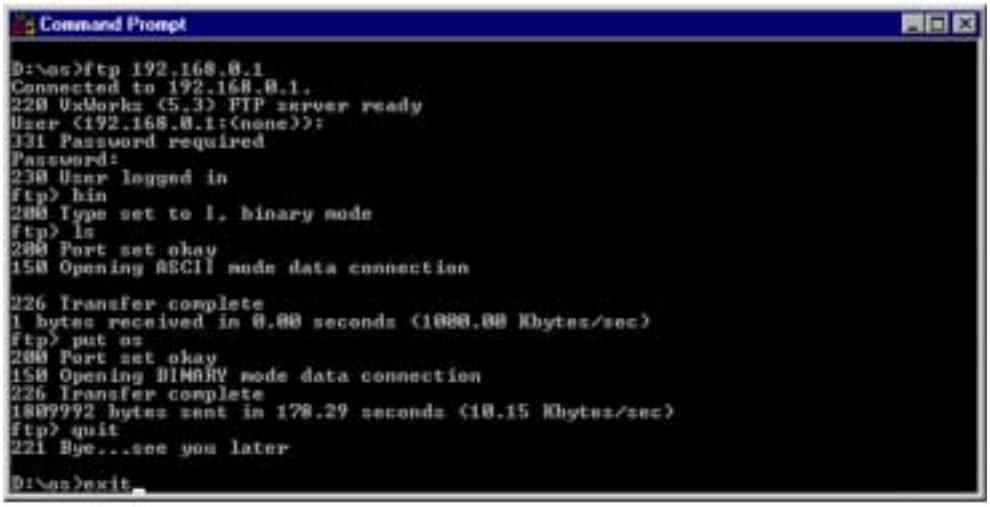
(2) Check that the iPU power is OFF, then put to connectors to close each of the jumpers JP5 and JP6. Please refer to iPU hardware document for jumpers location.

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).

---

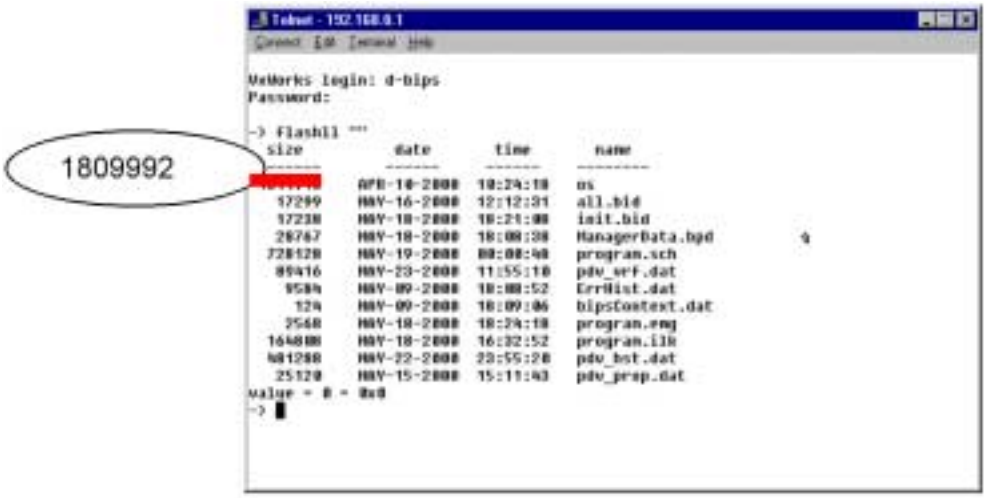
(7) Check the iPU OS by the following procedure:

- (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.

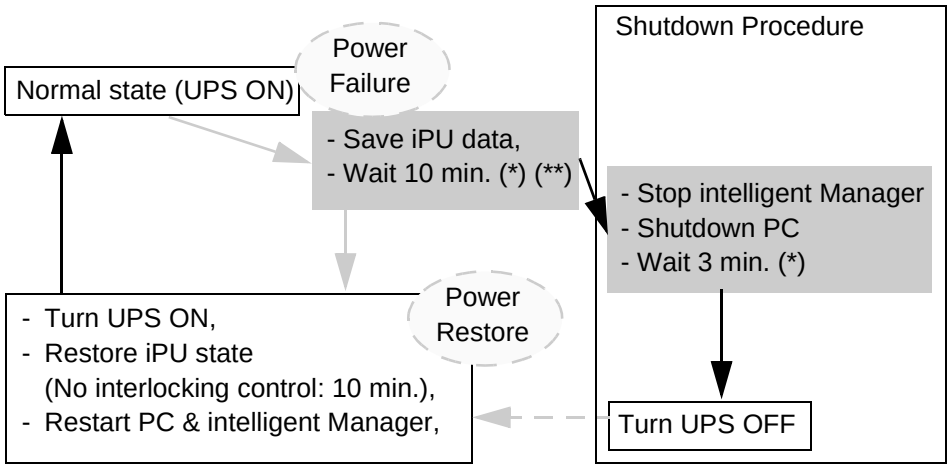
Warnings

- 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

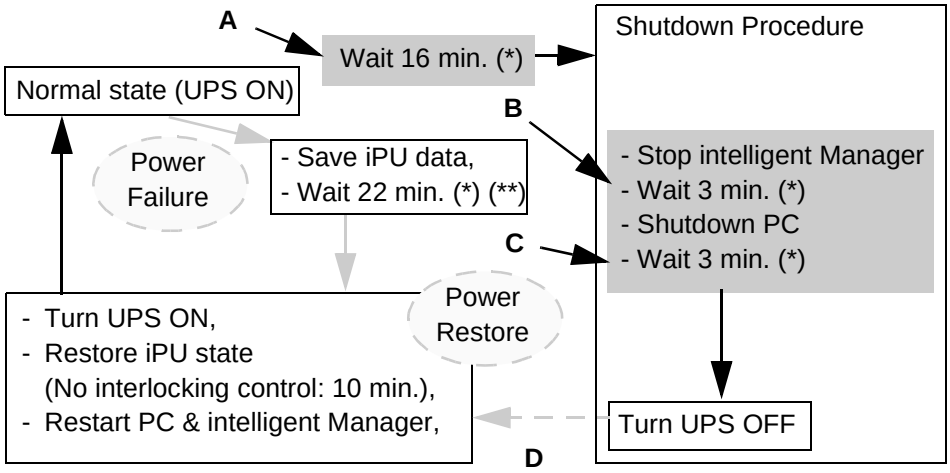
The different states of the intelligent Manager system are described in the diagram below:

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***

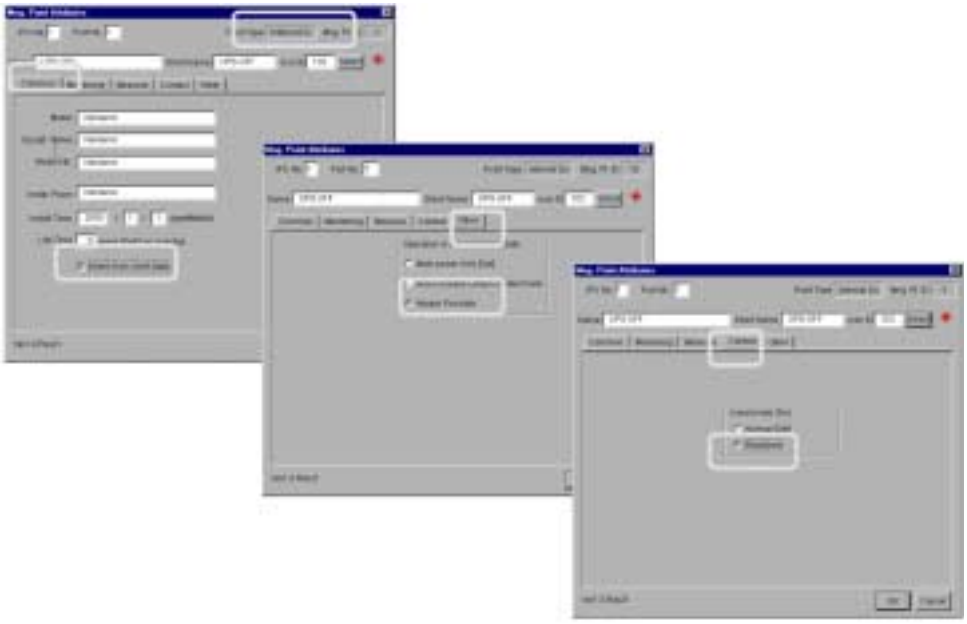
the internal Di-1 terminal. Furthermore, this management point is not visible on intelligent Manager screens.

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 **4.3.2.1 Automatic Start in Windows NT**: 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 NT service process and should never be exited by the user)
  - 3.1 Insert this control software in the Automatic Start-up of Windows NT (see procedure in the Engineering Manual 4.3.2 Automatic Start in Windows NT)

  - 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 NT 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.