**Movicon**
MONITORING, VISION & CONTROL

# Supervision and Control from Windows® CE to Windows® XP.

# User Manual

## Version 9.1 – Ed. January 2003

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INDUSTRIAL AUTOMATION SOFTWARE

**progea**

# Summary

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# 1. Introduction

*Movicon User Guide Contents*

The User Guide contains all the necessary information for the operator for using Movicon 9.1.

The chapters in this User Guide describe the projects, the resources, the objects, and the logical and graphic programming techniques used to allow for optimal use of system resources in the development of a project.

Descriptions are also given for using a program, using the data and recipe settings, using objects and everything that concerns a system resource.

This manual also contains the description of the standard techniques for using dialog boxes in Windows environment, techniques already described in detail in the Microsoft Windows User Manual to which reference must be made if one is familiar with the operating system.

*The application project that the operator uses cannot be described in this manual, the contents of which are of a generic nature. Therefore the operator who requires more information must consult the operating specifications or other similar descriptions prepared by the manufacturer of the plant or application developer.*

*Any updates, corrections and additions to the existing manual can be found in the "Readme.txt" file located on the installation disks and automatically installed in the Movicon "Doc" installation directory.*

# 1.1. Preface

All the information provided in the Movicon documentation is based on the assumption that:

- All the illustrations in this manual refer to the 9.1 version with Windows 2000 platform. Unless otherwise specified, Movicon's features refer to version 2000.
- Windows98, Window ME, Windows NT, Windows 2000 and Windows XP refer to the trademarks of Microsoft Inc.
- Crystal Report refers to the product registered by Seagate, version 8.0. or previous.
- Movicon refers to the supervision system developed by Progea Srl and protected by international Copyright laws, version 9.1 or later.
- For any other trademark or product quoted please refer to its owner.
- Windows is installed in the system. For information on installation refer to the relevant chapters in the Microsoft Windows "Introduction Guide".
- A mouse has been installed. If a mouse is not available, check the keyboard equivalents.
- All the information contained in this manual is subject to change without advance notification due to system updating.

# 1.2. Keyboard and Mouse Conventions

The keyboard conventions and combinations appear in this format:

| | |
|---|---|
| KEY1 + KEY2 | A (+) sign between the names of the keys indicates that they must be pressed simultaneously. |
| KEY1 , KEY2 | A (,) sign between the names of the keys indicates that they must be pressed in sequence. For example ALT,F means you must press and release ALT, then press and release F. |

**Important**: *The keys and key combinations in this manual are to be considered valid provided they are not being used in the project by the Movicon Accelerators, i.e. the plant's keyboard commands. If used in the project, plant command keys have precedence over system keys.*
*For further information refer to the "Accelerators" chapter in this programming manual.*

When using the Mouse, the following conventions are used:

| | |
|---|---|
| CLICK | Press and release the left mouse button while pointing to a menu or an object. |
| DOUBLE-CLICK | Quickly press the left mouse button twice. |
| DRAG | Press the left mouse button while pointing to the required object; hold the button down while moving the mouse pointer to the required position, then release the button. |

# 1.3. Introduction to the Supervision System

**Movicon©** (Monitoring, Vision, and control) is a software package designed for the creation of  a man-machine interface (**MMI)**, a Supervisory, Control and Data Acquisition station (**SCADA)** based on a Personal Computer (henceforth referred to as PC) or on a RISC platform (henceforth referred to as Workstation).

The Movicon drivers allow for communication with the process Movicon has to interact with. The process management devices, such as PLC, temperature controllers, smart cards, PC, etc., can all be connected to the system in which Movicon is installed (including multitasking) via serial ports, modems, communication networks, etc.

The purpose of a Movicon project is to supervise the production processes using animated screen pages called *synoptic windows*, or allow process commands or set-points to be set using screen pages called *dialog boxes*, as well as a wide range of other functions which permit complete control of the process in a simple, reliable manner.

Movicon 2000 is available for the following operating systems:

☑ MICROSOFT WINDOWS 98
☑ MICROSOFT WINDOWS Me
☑ MICROSOFT WINDOWS NT 4.0 or later
☑ MICROSOFT WINDOWS 2000
☑ MICROSOFT WINDOWS XP
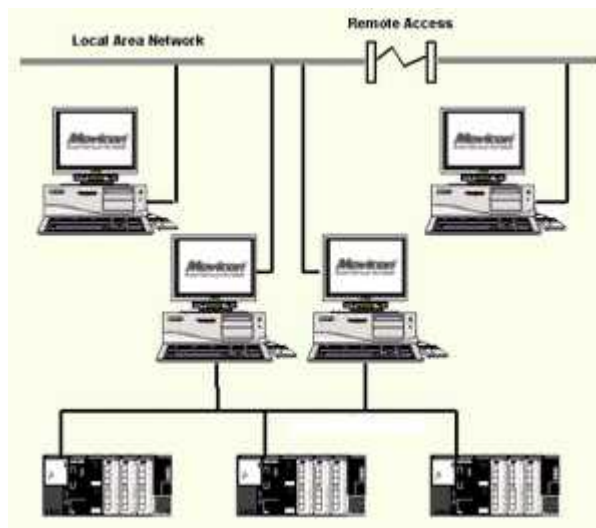


Example of configuration of Scada systems connected in a network or serially to various management devices.

# 1.4. Hardware Requirement

**Movicon©** (Monitoring, Vision, Control) is a software package that must be installed on a Personal Computer IBM AT 100% compliant with all the peripherals Windows compliant. The table below lists the minimal requirements:

| Hardware | Minimal | Advised |
|---|---|---|
|  |  |  |
| CPU | Pentium 350 | PentiumIII 500 |
| RAM | 64 Mb | 128 Mb |
| Hard Disk | 15 Mb | 60 Mb |
| Video | VGA | SVGA |
| Mouse | Yes | Yes |
| CD-ROM | -- | Yes |

# 1.5. Technical Support

The customer must fill in the Movicon *Customer registration form* and send it back to receive customer technical support, updates of the development system or parts of it considered important (download from the website reserved for registered users) and the guarantee covering the software package, from the date of delivery as laid down in the contract or purchase license.

For all information on technical support contact Progea or the dealer where this product was purchased. For further information on the product or technical support, call Progea (the company that developed the product) on the numbers given on the registration form, in the telephone service contract or on the website; be sure to quote the serial number of the product you have purchased.

▸**Phone Support**

Registering the product, you will have the right to receive free phone support by a technician of Progea. You will find all the needed information about the telephone numbers and the free schedules on the Support Card present in the package. You can subscribe to the **Support Contract**, for extended schedules for the support and to access to the FTP site allowing to download freely updates, new drivers, symbols, examples and other utilities.

▸**World Wide Web**

Visit our site for the support and services that Progea can offer, at the address www.progea.com. You can browse through the BugBase OnLine, Knowledgebase, FAQ, download the last Build available, see the list of our worldwide offices and our local Solution Providers. You can fill in a Form in order to send us your suggestions.

▸**E-mail**

To obtain rapid easy technical information by e-mail, 24 hours a day, 7 days a week, send your technical questions to the address *support@progea.com* or your commercial requests to *sales@progea.com*.

*Note: For more efficient Technical Support, first read the "Problem Report Template" in the 'Problem.txt' file on the installation disk. The instructions in the "Problem Report Template" allow you to give the technical support personnel useful information for identifying the problem.*

# 2. System installation and configuration

*Movicon has a simple guided installation, according to Windows standard. System startup and application projects may require a user license.*

This chapter explains the startup, installation and configuration procedure for Movicon for correct use by the system.
The Microsoft Windows installation already envisages an operating system configuration to adapt to the station hardware. Nevertheless, it would be useful to follow the instructions given below for further optimization.

## 2.1. Installing Movicon

The Movicon installation procedure on the hardware station is very simple. To proceed with the installation from the CD-ROM, follow the instructions given below:

1) Switch on the computer and run Windows.
2) Insert the CD-ROM in the drive
3) Wait for the CD Autoplay or select the Run command from the Window's Start Menu Bar and digit **D:\Setup.exe** in the edit box.

This will run the Movicon setup program. Select the language, then the "install Movicon 9.1" or "Install Movicon CE" item from the setup mask. This will start the Movicon installation procedure.

## 2.1.1. Installation of Movicon 9.1

By starting the installation procedure, the setup will verify any previous installations. In case a previous installation is detected, the type of operation to be performed will be requested. Otherwise, the actual installation will be started with a request for custom installation.
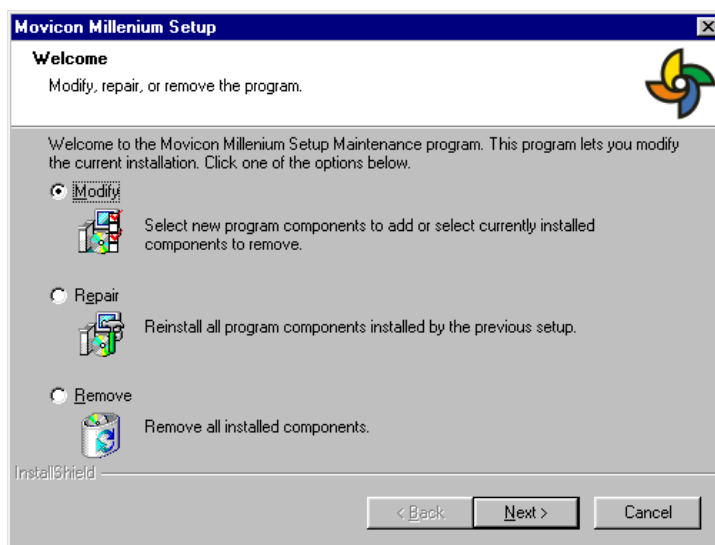


In case of previous installation, select

**Modify**:   It allows to add or remove previously installed program parts or components

**Repair**:   It re-installs the software by performing the eventual upgrading.

**Remove**:   It removes program.

At the end of installation, a group of icons will be created named Movicon, which can be accessed by means of the Start button of the Windows application bar. The Movicon Group will contain, in the form of an icon, the file Movicon.exe, utilities connected to it and text files with further information and upgrades.
During the installation, which will take a few minutes, type in the directory name where the necessary Movicon files are to be organized. If you do not desire to change the name or path, just confirm Movicon default directory, which will be created with the path: "`Programmi\Progea\Mov91`".
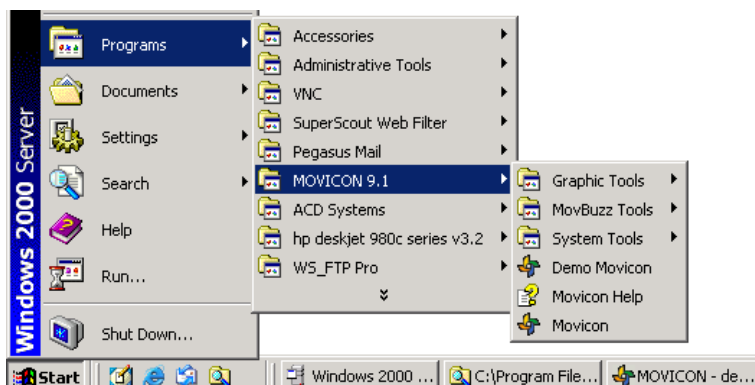


*Example of start menu*

SYSTEM  INSTALLATION

## 2.1.2 Installation of Movicon CE

The Movicon CE installation procedure consists of two phases:

1.  Installation of "Movicon CE Installation Utility" on PC, which will conventionally be referred to as Desktop.
2.  Installation of the MovCE RunTime module on device (Pocket PC, Handle PC), which will conventionally be referred to as target.

The installation described in point 1) is the same as that described in the previous paragraph (2.1.1 Installation of Movicon 9.1) except for the fact that the default directories where the Movicon files are copied will be referred to as "Programs/Progea MovCE". The "Programs/Progea/MovCE" directory will contain the files necessary for installation of the RunTime MovCE module on the "target" device on which Windows CE runs. Each of these files is specific for a certain processor. Therefore, depending on the processor resident on the "target" device, the file concerned must be installed during point 2).
For example: if the target is a HPC2000, the processor an "X86"and the operating system is Windows CE installed in English, the installation file to be selected will be "MovCEEng.HPC2K_X86.CAB".

Note: MovCE and WinCE must have the same installation language.

The MovCE RunTime module installation on the target, i.e. execution of point 2) may be in two ways as described below, depending on whether the Active Sync" program is present on the "target".

### Installation by means of Active Sync on the RunTime MovCE module
For this type of installation, a link must have been established between the "target" and "desktop" (See Chapter 2.3 Communication by means of Active Sync). When installation from the "Movicon CE Installation Utility" is complete an Active Sync communication link is automatically created in the Windows startup menu.
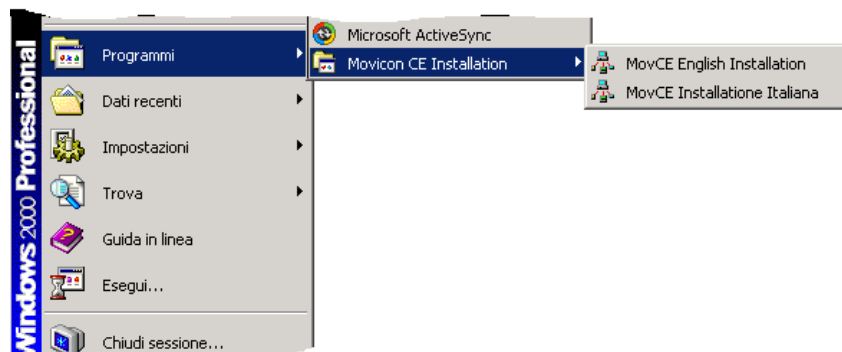


On making the "MovCE English Installation" link (or "MovCE Installatione Italiana" if the language required is Italian) Active Sync will automatically recognize the processor on board the "target" and then the RunTime MoviconCE module will be installed on the "target".

The entire operation is automatic, but the operator is given the possibility of deciding where the package is to be installed. In HPC2000 devices **it is advisable to avoid using the default folder** as, it is not buffered and therefore its contents may be lost when the device is switched off.

### Manual installation of the RunTime MovCE module

If the manufacturer has not implemented Active Sync on the "target" device, follow the procedure described below to install the MovCE RunTime module on "target":

1. Establish a connection between "target" and "desktop". The connection may be a network or serial connection (See Chapter 2.3 Communication by means of Active Sync).
2. Determine the type of processor on board the "target".
3. Select on the "desktop" from the Movicon CE installation directory "Programs/Progea/MovCE" the file with the .CAB extension specific for that processor and copy it on "target".
4. From the "target" open a Dos session and enter the command:

\>WCELOAD NomeFile.CAB

Installation of the MovCE RunTime module will thus begin. When it ends, the .CAB file will be automatically deleted.

> *HPC2000devices have not backupped all the RAM memory, but only some folders. Informations that are written into volatily memory will be loose after a reboot. Due to this it's strongly recommended to execute the command "RegSave" after Movicon CE installation, otherwise the runtime module could be executed not correctly.*

# 2.2. Disinstalling Movicon

In compliance with Microsoft standards, Movicon allows a simple dis-installation of the system to remove all its files from the PC.

To remove Movicon, simply activate the icon for the **installation/removal** of the programs in Windows **Control Panel**.

Select Movicon from among the programs listed and registered, then double click to activate the install/remove program.

Movicon will startup the setup procedure described in the previous paragraph. From the selection menu, select **Remove**.

On confirming the procedure, the remove procedures will remove all Movicon files.
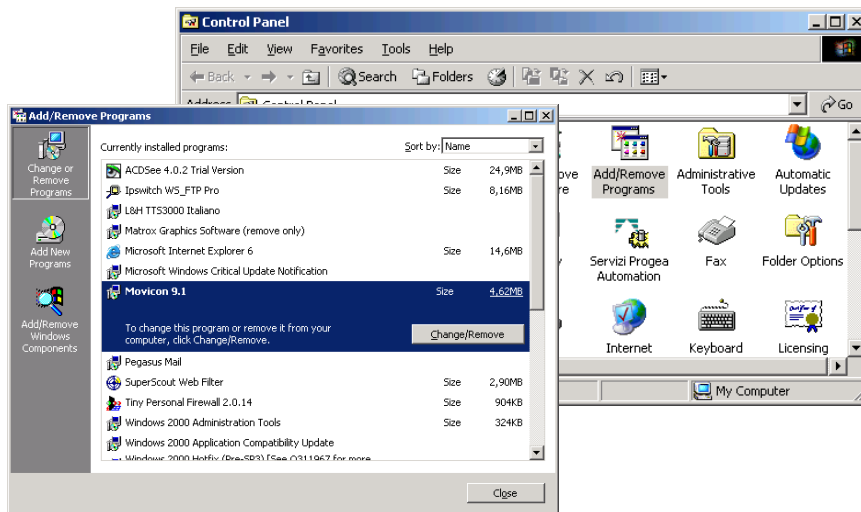


Add/Remove of applications from Windows Control Panel

## 2.2.1. Uninstalling Movicon CE

Like Windows 98/2000/NT, WinCE must also on the Control Panel the Install/Remove icon for applications by means of which it is possible to remove MovCE. However, as the WinCE installation is customized by the manufacturer, sometimes it is not possible to remove applications from the Control Panel. In this case, a device must contain (in the Windows directory) a file for removal operations, "unload.exe". To remove MovCE using this command, o a DOS window and key in the following command:

        \>unload Progea Automation MovCE

MovCE will thus be uninstalled.

# 2.3. Communicating with MsActive Sync

Installation of the Movicon package for Windows CE requires the desktop and target to be in communication with one another. The connection is brought about by Microsoft software Active Sync (at least version 3.5) and may be of three types:

1. Serial or infrared communication on COM port.
2. Communication on USB port.
3. Network (Ethernet) and Remote Access Service (RAS).

As soon as communication is established between desktop and target, Active Sync requests if a **partnership** is to be defined.



The partnership is necessary if the data are to be shared and kept synchronized between the desktop and target. Usually the use of partnership is frequent in PocketPC devices but is rarely used in HPC2000, where it is not successful because of lack of suitable modules in the target.
The HPC2000 devices are generally designed for industrial purposes. They are available in different types and sizes: some have different communication ports between serials 232 and 485, Ethernet, infrared and USB ports.
On the other hand, PocketPC, the common palmtop devices, are meant for the public as they are user friendly, and allow rapid sharing of data with the desktop like: phone directories, internet addresses, files and others.

SYSTEM INSTALLATION

### 2.3.1. Installing MsActive Sync

Active Sync is a free Microsoft software package for handling communication between Desktop and Target devices with a Windows CE. If Active Sync is not installed on the PC Desktop it can be done from the Movicon CD by launching the file in the folder "MSActiveSync". Installation is easy and guided.

### 2.3.2. Serial communication by means of MsActive Sync

Serial communication is functional in all Windows CE devices and all that is required is a free serial on the PC, a standard serial cable and Active Sync installed on Desktop. The communication speed can be brought up to a baud rate of 115200. To establish serial communication, proceed as follows:

1.  Install Active Sync on Desktop. Then select the COM port to be used. Active Sync will remain active awaiting the signal on the serial. **ATTENTION: although no communication is activated Active Sync will keep the serial engaged**. To free the serial disable the serial connection option, which can be accessed from the "File-Connections setting.." menu.
2.  On the Target device, open the control panel and access the "Communication" settings.
3.  In the "PC Connection" properties, enable the selection "Allow connection with Desktop computer when device is connected".
4.  In the "PC Connection" properties check to censure that the connection used is correct. New connections can be created by accessing the "Remote Networking" folder from Programs/Communication.
5.  Close the Communication settings window by pressing Ok. Close the control panel.
6.  Connect the Desktop and Target devices using a standard serial cable.
7.  Launch "repllog" selecting Run from the Windows CE Start menu accessible from the task bar.
8.  Communication is activated automatically.
9.  On the Desktop Active Sync a window appears requesting if a "Partnership" is to be activated. It is not necessary to activate a partnership for Movicon functions.
10. The serial communication is now active.

By means of this type of connection, it is possible to transfer files between Desktop and Target. Explore resources from Desktop will display the "**Mobil Device**" which can be accessed for reading/writing files.  Apart from this, it is also possible to export a Movicon project directly on Target without "copy and paste" operations. After creating the Movicon 9.1 project execute a "**Export project for WinCE**" from the **file** menu to be able to compile the project in MovCE format. If connection between Desktop and Target has already been activated by Active Sync, Movicon will directly export the project compiled on Target, maintaining the same path of the original .prj file. If, however there is no communication with Target Movicon will compile the project for MovCE and save it in the same directory as the Original project. The project compiled for MovCE will have the same name added to "_CE" (for example. Original project: "Progetto1.prj; project compiled: "Progetto1_CE.prj). In this case, it will be the programmer's responsibility to manually copy the file on target.

### 2.3.3. Communication on USB port

Communication on the USB port is usually always available in PocketPC because it is the simplest type of communication possible. Just connect the cable to the PC USB port and wait for communication to be established automatically.

### 2.3.4. Network communication

Network communication assumes that both PCs, Desktop and Target have network cards and are configured suitably. The use of this system allows rapid transfer of files as compared with serial communication, which has a maximum baud rate of 115200. Network communication can only be established after creating a partnership therefore it is presumed that communication has already been established via serial or USB port.

### 2.3.5. Exporting a project on Windows CE

Connection between Desktop and Target by means of Active Sync allows file transfer between the two devices or export of projects created with Movicon. Explore resources from Desktop displays the "**Mobil Device**" which can be accessed for reading/writing files.  Apart from this, it is also possible to  export a Movicon project directly on Target without "copy and paste" operations. After creating the Movicon 9.1 project execute a "**Export project for WinCE**" from the **file** menu to be able to compile the project in MovCE format. If connection between Desktop and Target has already been activated by Active Sync, Movicon will directly export the project compiled on Target, maintaining the same path of the original .prj file. If, however there is no communication with Target Movicon will compile the project for MovCE and save it in the same directory as the Original project. The project compiled for MovCE will have the same name added to "_CE" (for example. Original project: "Progetto1.prj; project compiled: "Progetto1_CE.prj). In this case, it will be the programmer's responsibility to manually copy the file on target.

> **Presently it is not possible to trace the original project from the project compiled for MovCE, or make modifications to it; therefore it is advisable to keep a copy of the original project.**

# 2.4. Running Movicon

The simplest way to run Movicon is to run the Movicon.EXE file from Windows.
To run Movicon.EXE without parameters means to enter in the Movicon Environment in programming mode, with the automatic opening of a new project or of the previously opened project. Using the correct syntax to add program parameters as described below allows you to 'use' powerful options.
Syntax for the run parameters:

```
Movicon /[Parameters] <file project> .
```

The optional parameters on the command line can be preceded by both the "/" character or the "-" character.
The optional parameters (also more than one at a time) are described below:

| | |
|---|---|
| /G | Enables the personalization |
| /R | Runs a project directly at the Movicon startup |
| /X | Runs the Maximize work area command (Ctrl+Shift+F5) |
| /N | Does not open a project by default |
| /S | Does not show the Movicon splash window |
| /? | Shows run parameters at startup |

Other options available, reserved only for expert developers are as follows:

| | |
|---|---|
| /E | The "Exit from Movicon" command  also causes exit from Windows |
| /Tn | Set a pause time before actually executing the Movicon startup. This function can be useful when networking architecture are presents. In some case it may be necessary to wait for a few seconds before starting the server, so the client can be started up. Consider <n> as a number from 1 up to 99 |
| /A | Shows  the project if defined as NT service. |
| /On | Allows use of another communication socket port. This function is useful when the network port used as default by Movicon, |

is engaged for another application.
Consider <n> as offset to be added to Movicon standard 2001 port.

To give an example, here is the description of a command line to run Movicon in Programming mode without opening a new project file:

```
C:\Program Files\Progea\Mov91\Movicon.exe /N
```

If you wish to Run Movicon and, at the same time, to Run a previously developed project, use the **/R** parameter.
Here is the description of a command line for the automatic startup of the *Trial.PRJ* project file:

```
C:\Program Files\Progea\MovMe\Movicon.exe /R C:\Documents\trial.prj
```

*Notice : if not specified, the path used is the default path of the system.*
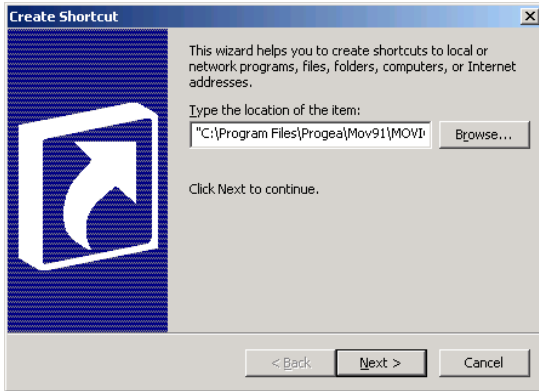


To add or modify the command options or Movicon work directory in Windows, proceed as follows:
If Windows 98 or Windows NT/2000 is used, press the right mouse button in the Windows Desktop workspace and select **New - Connection**. In the settings box shown below, enter the command line to startup Movicon.
For further information regarding use of connection icon properties, consult the Windows user manual.

The Figure shows the connection settings window.

**Suggestions:** *Before proceeding with programming, create a directory and subdirectory for orderly arrangement of objects constituting the synoptic and connected logic files. This is obviously not compulsory, but will help reading of the system. For example, it is advisable to have a separate directory for the Movicon system (proposed by default during installation) under which there is a subdirectory for projects and symbols library. For better organization and file search, create a subdirectory for each project.*

Starting up Movicon without command options involves entering the system in programming mode with opening of a new project file.

### Tips on running Movicon:

*Running Movicon by pressing the CTRL key determines the reset of all the Movicon Registries information in the operating system. Use this function when you have to reset your system.*
*Running a project using the /R option on the line command determines the disabling of all the debugging functions.*
**If you need to enable the Debugger even if the project is started with the /R option, press the CTRL key during the startup.**

## 2.4.1. Start the Runtime module only

Typical Movicon installation provides for the availability of runtime executive module only for project start and execution.
The runtime module is installed under the same Movicon directory and is named as MOVRUNTIME.EXE.
The benefits of using this module consist in a lower space usage on module occupied disk, which executes only programs with no editing options.

Consequently, the runtime module is to be used by a project start function, using the option on /R control line determining the chosen project start, as shown in the previous paragraph.

> ⚠️ **The use of runtime MOVRUNTIME.EXE module replacing the MOVICON.EXE is recommended for all events when disk space is low (ex. DiskOnChip or Flashdisk). The setup allows installing RUNTIME module only, reducing occupied space to a few MB.**

## 2.4.2. Start a project from Windows NT/2000/XP

The usage of Windows NT/2000 OS requires a few necessary particulars in case a project is to be automatically started with PC startup. In fact Windows NT/2000 obliges the user to execute **Log On** procedure before executing any operation, to satisfy compulsory criteria.

In case the project is to be started with no OS Log On procedures, use Movicon **Windows NT Support Services.**

The support to services is warranted using settings to be accessed by the Movicon icon on the Windows **Control Panel.** These procedures are described in a separate chapter of this manual.

## 2.4.3. RunTime module startup on Windows CE

Installation of Movicon CE involves availability of only the runtime execution module for startup and execution of projects.

The runtime module is installed in the target in the default folder of the application, or if otherwise specified during installation, in another folder. The Movicon CE runtime is identified by file "MovCE.exe" and simple double click on the file allows its execution and selection of the project to be executed.

The runtime module for Windows CE also needs a license, like the Movicon program for desktop; in this case, the license can be of the software type only. When the program starts up, if the software license has not yet been introduced, a window appears in which, given a Site Code, the corresponding Site Key can be entered to release it.

If the release code is not inserted, the project can be executed in demo mode, whereby a warning message appears at fixed intervals.

A project can be executed in automatic with connection to file MovCe.exe and, subsequently, indicating the path, name and extension of the project .prj.

> ⚠️ *The HPC2000 devices do not have all the memory buffered, only some folders are buffered. The volatile information stored is therefore lost after a restart.* **Therefore, it is advisable to  activate the  "RegSave" command after entering the software release code or it will be lost.**

## 2.4.4. Exit from Movicon

To exit from the Movicon environment and return to the operating system press the **EXIT** command form the **F**ile menu, or the ALT+F4 keys; Movicon will ask to confirm or to cancel the operation through a dialog window.

A running project may have some functions preset to exit from the system when requested.

# 2.5. System Protection

Every Movicon package is supplied with its license against unauthorized use of the hardware and software. Two types of protection have been implemented and the final user can choose the one most suitable.

    **1)  "SoftKey" Key Code**
    **2)  Hardware Keys**

Although both possibilities are available in the Movicon version for Win98/NT/200, the product is supplied by default with the LPT hardware, unless otherwise requested at the time of the order. In the compact Movicon version for Windows CE, in view of the reduced size of these devices, and the impossibility of adding hardware components, it is only possible to introduce the softkey option.
Considerations: the use of dongle allows the client to use a "floating" license easily transportable from one PC to another, and independent of problems to the hard disk. The softkey option, being a software license, has the advantage of eliminating a hardware component and possible risk of loss, theft or damage.
In both cases all the products purchased with their possible options have a specific serial number.
To display the serial number or the options enabled for the corresponding Movicon package, select the "**CHECK OPTIONS HARDWARE KEY**" command from the **File** menu. The Table shown below will be displayed from which all information can be obtained regarding the license.



      *If Movicon does not detect the presence of the Hardware or Softkey at the startup, it will be run in Trial Mode.*

# 2.6. Dongle (Hardware Key)

The hardware package includes a dongle that must be of the LPT or USB type. The LPT type is provided for connection to the LPT parallel port of the PC. If more than one LTP port is present on the PC, Movicon will search in sequence for the dongle on the parallel ports starting from LPT1. If a printer is found to be connected to this port, disconnect the printer, insert the dongle and reconnect the printer on the same protection dongle, which will thus act as the connector.

The USB type dongle, however, is provided for connection to a USB (Universal Serial Bus) port. In this case, because of the type of USB connection, the dongle can be installed in any USB port of the PC and can be connected and disconnected with the PC switched on.

If a softkey option is not installed (described further on in this chapter), the protection dongle is absolutely necessary for system operation, it enables the options and contains a progressive serial number attributed by the manufacturer. To display the serial number and options enabled on operation of your Movicon package, select **CHECK OPTIONS HARDWARE KEY**" command from the **File** menu.

## USB key installation

If the USB type dongle is installed, the operating system will request the product driver installed the first time. Unless otherwise specified, the driver to be used is <skeyusb.inf> and it is located in the Movicon installation subdirectory <smartkey\usb>

## LPT key installation

The LPT dongle is normally compatible with parallel ports of all PCs according to the existing standards. If the dongle were not visible, a program PARAL.EXE is available, which is a utility that allows to set parallel ports in DOS. The scope of this utility is to set the protocol on the parallel to ensure correct visibility of the SmartKey Dongle independently of the BIOS settings.

The utility, which has an instruction file readme.txt, is present in the Movicon installation subdirectory <smartkey\paral>.

## 2.6.1. The Network Dongle

Movicon allows you to use a single hardware key to enable multi-users license for the users connected in network, as specified in the sale conditions.

The network dongle is related to a maximum number of users, where this "floating" number is programmed in the key depending on the type of license purchased.

> The network dongle must be installed on a station server with Win NT/2000 operating system, while the client workstations can be NT or Win 98, or 2000 stations.
> **The Client PC setting is different according to the Operating System:**
> **- with Windows NT/2000/XP needs to add the Environment Variable**
> **- with Windows 9x needs to modify the autoexec.bat**

## Installation on Ethernet network

In case of installation on Ethernet network a high security extremely fast algorithmic protection mechanism called ANP (Algorithmic Network Protection) is activated, which protects Movicon with any type of protocol and server.

ANP has the following characteristics:

- **Universality** : ANP is independent from the network used
- **Key installation** :The key can be installed on any pc or server connected with the network, irrespective of whether Movicon is installed or not.

To continue with installation, locate the personal computer on which the key will be installed.

The PC chosen will be called 'KeyServer'. A special task wil be run on the latter to manage the protection depending on the operating system installed.

**Steps to follow for the installation:**
☑ Locate a hard disk shared by all the client connected in network (where Movicon is running), for example N:.

&#9745;  On the hard disk located, create a directory of work for the ASKEYSRV.EXE program (present in the KeysrvAnp subdirectory of Movicon). The choice of the directory name depends on the operator, for example 'N:\ANP'. Always indicate the complete path to allow a correct execution of ANP.

&#9745;  Install the ASKEYSRV service correctly.

&#9745;  Configure all the PC stations so that the Smartkey installed can be shared.

## Installation of ASKEYSRV service on server

Installation of the service involves the procedure described below:

1) Correct working of the service requires loading and startup of the KEYP.SYS. device

2) Execution of the ASKEYADD.EXE command for installation, configuration and startup of server.

3) To obtain the user statistics of the SmartKey updated in real-time, start up the SKEYMON utility.

During normal operation as well as during error, the service inserts various messages in the system log reserved for applications. Use the Event Viewer utility available in the menu of Windows NT <Programs/Administrative Tools/Event Viewer> for its display.

The ASKEYRM utility will also uninstall the service by de-recording operations.

## Configuration of the ASKEYSRV service with the TCP-IP-ANP protocol

The ASKEYADD utility configures the network protocols supported by the  SmartKey server.
Accepts the following parameters:

-a:<DIRECTORY> Specify the absolute path of the directory shared for temporary ANP files. The path specified must have a local directory on the server, for example: C:\ANP. Every directory can support a single service. In other words, if two services are installed in the network, these must have two separate directories.

-p:<PORT>       Specify the TCPIP protocol port

-t:<TIMEOUT>   Specify the time-out for the ANP protocol. If not specified, the default value used is 30 seconds. The value 0 disables the timeout.

-c            Cancel the current configuration.

It is necessary to locate the temporary file-sharing directory directly on the WorkStation on which the service is installed. A remote directory cannot be used.

The configuration is saved in the Windows register in path:
"HKEY_LOCAL_MACHINE\System\CurrentControlSet\Services\SmartKey Multilan Service"

**Examples:**

Configuration of TCPIP protocol on port 4000 with timeout of 60 seconds:  ASKEYADD -p:4000 -t:60

Configuration of ANP protocol in directory C:\ANP with timeout of 90 seconds: ASKEYADD -a:C:\ANP -t:90:

## Configuration of Client PC for sharing the key

The Smartkey key automatically locates the type of network or, to reduce the research time, allows you to use an environment parameter(settable with the SET command of DOS) called TYPENET:
TYPENET = Identifies the type of network (Novell or not) :

```
SET TYPENET = <protocol>
```

MESSNET = Defines the message to visualize during the research of the key: the default message is     "Waiting server..."

If you do not want to visualize any message, set the parameter with the NOMESSAGE. value

| Setting of the Parameters | Situation |
|---|---|
| TYPENET = NOVELL MESSNET = ..... | When the application is related to: A key installed locally A key installed on the Server of a Novell Netware network |
| TYPENET = ANP MESSNET = .... DIRNET = Path | When the application is related to: A key installed locally A key installed on the Server of a non Novell network |
| TYPENET = AUTO MESSNET = .... DIRNET = Path | When you wish to have an automatic management of the situation (local* key, Novell network, non Novell network). This is quite an interesting mode, even if the time to search and recognize the key is more important. * At the startup, Movicon searches for the key locally; if it cannot find it, the research continues on the network using the parameter |

## Example

Command to execute during the PC startup, for example using Autoexec.bat:

```
SET TYPENET=ANP
SET MESSNET = Enabling on..
SET DIRNET=\\Server\server_1\anp
```

In this case Movicon will search for the dongle locally and then on the network. Searching for the dongle on a non Novell Server, the folder `\\Server\server_1\anp` will be used.

During the searching operations, the message "Enabling on …" will appear.

## 2.6.2. General information about the protection key:

Some recommendations and precautions are given by the manufacturer of the Smartkey key - EUTRON that **must be followed in order to avoid key troubles or faulty functioning**:

- ✓ Plug and unplug the key between the PC and the printer only when both of them are switched off.
- ✓ Do not plug the key inside the serial connector because the negative voltage can modify the contents of the key or even destroy it.
- ✓ Protect the key against electrostatic discharge. Avoid touching the key connector pins to avoid injecting parasite electrostatic charges.
- ✓ Be sure that the PC and the printer are grounded, as required by the law.
- ✓ Avoid exposures to high temperature or sudden rise of temperature.
- ✓ Even if the key is properly installed, external events like faults in the PC communication circuits, electrostatic discharges of the calculator can cause operating faults of the key.

# 2.7. The SoftKey Code

If not specifically requested at the time of purchase, the Movicon protection can be obtained by requesting the Softkey. To use the Softkey, proceed as follows:

Install the Movicon software on the corresponding PC.

Make a note of the **Site Code** (the system code related to the PC ) by means of the commands described below and communicate the same to Progea.

Progea will release the Site key - or Softkey - which enables Movicon with the purchased options.

The paragraph below explains the procedure for management of the Softkey code.

## 2.7.1. Softkey Request

The Softkey must be requested from Progea only after the installation of Movicon because, to perform this operation, Progea (the sales office) must have the Site Code, which is the PC code. The **Site Code** can be read as described above.
To find it :
1) Select the command **Verify Hardware Key Options** from the **File** menu.
2) Press the **SoftKey** button.
3) You can find the number of the **Site Code** under the **Authorization** feature. This personal  number is different <u>for each software installation</u>.
4) Call the Progea Sales office to ask for the **Site Key** number.

The **Site Key** number is linked to the local **Site Code**. Progea cannot communicate the Site key without getting the local Site Code from you.

If the license has been purchased, the SoftKey will be communicated within 24 hours after the communication of the Site Code.

## 2.7.2. Insert the softkey

When you have received the SoftKey from Progea sales office, insert it in the edit box named **Site Key** in the corresponding window.
To access this window follow these steps:
1) Select the **Verify Hardware Key Options** command from the **File** menu.
2) Press the **SoftKey** button.
3) From the box provided in the **Authorization** group, insert the softkey you received in the **Site Key** edit box.
4) Confirm the operation by pressing OK.

The Softkey is registered in the system and will be activated at the next restart of Movicon; Movicon behaves as if the hardware key were present, with the difference that, instead of a hardware key, you have a software one.

**Warning**: Remember that a re-installation of the software on the same PC or another PC will generate a new **Site Code**, which means new Softkey codes will have to be requested from Progea again!

**Norton Utilities Speed Disk**: Unfortunately, the defrag program of the speed disk of Symantec's Norton Utilities moves the system files by default.

This means that Speed Disk will also move the coded Movicon files connected with the license, causing a loss of the license. To solve this problem, open Speed Disk and select the File|Option|Customize|Unamovable Files command, specifying not to

remove the files with *.ENT, *.KEY and *.RST extensions. Save this configuration of Speed Disk with the File|Options|Customization|Save command, to use Speed Disk in the future without problems for your license.

## 2.7.3. Manual introduction for the Softkey

To introduce manually or to use Movicon softkey in Windows NT, first install and configure the "**CrypKey NT Server**". After having installed  Movicon and restarted the PC, select by Resource Management in e CD-Rom, the "Mov2000" directory, enter the CrypKeyNT" directory and launch "Setup.exe" from here.
During the installation procedure, the installation directory will be required. The directory where Movicon has been installed is to be specified (typically, the "C:\programmi\progea\MovMe\" directory)

*The utility  "Crypkey Server for NT" allows Movicon to access to  Windows NT system services to be able to process the  SiteCode and from here the  Sitekey.*

In case more Movicon systems are installed (For instance Italian and English) on a same PC, specify all relevant installation directories.
Eliminate or add installation directories by launching from Start menu Programs the item "CrypKey Server for NT". All directories configured at the time will be listed on CripKey mask. Such directories can be eliminated by "Remove" button or new directories can be added by "Add" button. After having pressed the "Add" button once, just scroll PC directories until the "Movicon.exe" file is selected. At this time, the path where Movicon has been installed is shown in the Cripkey Server box; just close this service using the "Close" button to enable it.

## 2.7.4. Softkey Transfer

It may be necessary to re-install the software or to transfer the license to another pc. Remove the license first by transferring the softkey on Floppy disk and inserting the other copy of Movicon.
NOTE: before carrying out the following operations, make sure the "Cripkey Server for NT" program is installed on both machines.
By defining the two computers as:
> -PC Source: the PC containing the Movicon license
> -PC Destination: the PC to which license must be transferred
the operations may be described as follows.
   1) Insert an empty floppy disk in the destination pc where you plan to transfer the license by means of the "**Register Transfer**" command in the "**Site Key Generator License Authorization**" window. This window can be accessed by means of the "Softkey" in the "Protection key options" opened from the "**Verify HW Key Options**" of the "File" menu.
   2) Insert the floppy disk in the source pc and press the "Transfer Out" button in the "**Site Key Generator License Authorization**".
   3) Insert the floppy disk, now containing the license, on the Destination PC and press the "**Transfer In**" button in the "Site Key Generator License Authorization" window.
   4) The license is now transferred to the Destination PC. To put it back again, repeat the above operations

These are the operations for the license transfer:
- REGISTER TRANSFER
- TRANSFER OUT
- TRANSFER IN

# 2.8. Support to WinNT4, Win200 and WinXP Services

It is well known that the Windows NT/2000/XP operating system does not allow any operations if the **Log On** operation is not validated. The Log On operation must be executed as requested by the operating system by pressing the CTRL+ALT+CANC keys and by inserting the user with his corresponding password. This means that the supervision system of a plant would require the presence of an operator at each start-up of the computer, in order to allow the launch of Movicon (even if the launch is automatic).
The applications that support **Windows NT/2000/XP** services, like Movicon, can be executed without executing the Log On operation. This means that the supervision could directly play its role at the start of the computer even if the operator is not present, by passing the Log On procedure.



You can access to the Movicon' 2000 /XP Services clicking on the related icon in the Windows Control Panel.
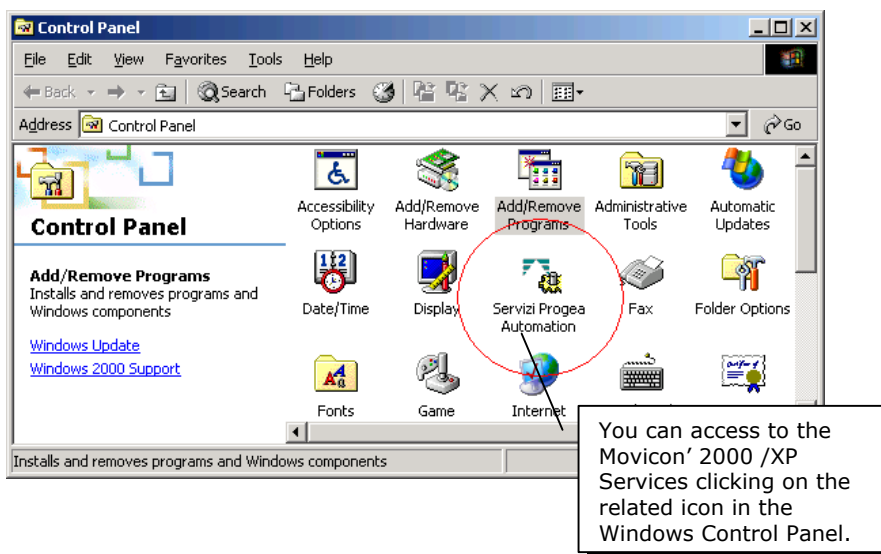
The installation of Movicon under Windows NT in fact requires the installation of a particular application, Movserv.exe in the Control Panel. This can be done by activating the Control Panel by selecting the **Settings** command from the **Start** menu.
Double click on the **Automation Progea Services** icon; a window will allow you to set the Movicon service by means of which it is possible to indicate the project to be activated as *Service*.
By using the corresponding commands as described in the next paragraph you can perform the required configuration.
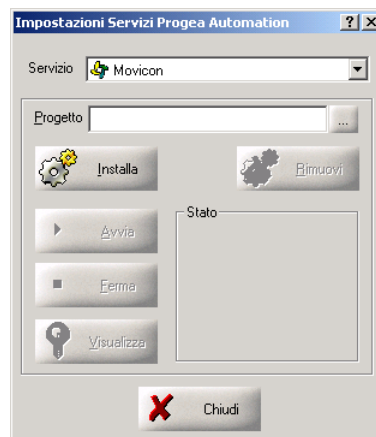


## 2.8.1. Declaring a Movicon project as service.

To declare a Movicon project as Windows NT/2000 service, double-click on the **Progea Automation Services** icon in the **Control Panel** of the operating system.
Select the Movicon service from the drop-down list in the settings window, then define the project to be launched as service using the <…> buttons and execute using the **Install** command.
The installation of a project as service can be removed (if not in runtime) by selecting the **Remove** command.

After the project is installed, it is possible to execute the **Start** command in order to activate the service. The declared project will be run automatically without the Log On procedure directly on operating system startup.
The **Stop** command disables the service, while the **Display** command displays the Movicon project.

## 2.8.2. Displaying a project declared as service at the startup.

At the start-up of the Win NT/2000 operating system, if a project was installed as service, it is run, but not necessarily displayed on the screen. The operating system will display the Log On window.
After log on by the operator, to display the Movicon project running as service, insert a command line in the **Start, Automatic Run** menu of the OSP applications bar. The command line must be according to the instructions given earlier in this chapter, making sure to put the option **/a** instead of startup **/R.**

**Example** of command line in the Automatic start group for the display of Movicon if installed as service:

```
C:\Program Files\Progea\Mov91\Movicon.exe /a C:\Temp\Test.prj
```

If the command line does not allow display of the Movicon project running as service, check in the Movicon service to see if the Windows option is active to allow the service to interact with the desktop and thereby be displayed by the system. This option is activated by default when a project is installed as service by means of the **Progea Automation Services icon** in the control panel; however, the steps to check and modify the settings are given below:

1) From the control panel, access the Windows NT/2000 services by means of the **Administration Tools** system icon, **Services**.
2) A window containing all the services present and installed will appear; select the Movicon service and display the **Properties**.
3) From the window displayed, select the option **Consent to service to interact with desktop** in the **Connection** tab.
4) Confirm and close the window.

## 2.8.3. Setting safety policies in a Windows NT/2000/XP system

The protection system of Windows NT 4.0, 2000 and XP makes it possible to configure the user groups for which access is limited by criteria established by the Administrator. If the computer on which the project is to be executed forms part of a network with Windows NT/2000/XP type domain, setting of the limitations of each user can be configured in the domain PC, by means of utility tools like **ActiveDirectory** (NT5 OS platform) or the **System Policy Editor** (NT4 OS platform). Otherwise the OS on each machine offers the most limited possibilities and the configuration can be done by setting the **Local Protection Criteria** from the **Control Panel, Administration Tools.**
In both cases, it is necessary to define a new set of users to which the security policies will be applied. For example, users who use the supervision only for plant control only need browse through the pages provided by the supervisor; while users responsible for administration of the machine can also decide to install applications, delete files or carry out other administrative operations.
In Windows NT a set of users is indicated by the name of *Group* and limitations can be set on this group or operations can be allowed by means of **ActiveDirectory** or **System Policy Editor** (computer belonging to Windows NT5 domain) or with the **Local Protection Criteria** (computer not belonging to a domain). Refer to the Microsoft documentation for a detailed description of rights and limitations that can be assigned by means of these two tools, although it simply means identifying for each operation, the users or group of users that have the right to execute it.
All the security configurations to be set will only have any meaning if the Movicon application is run as a Windows NT service. The user who logs on will be assigned all the policies configured earlier, by the operating system. A project started up as service is launched even before the user logs on, and then the operator can check to see if the correct command line has been entered for automatic running of Windows. For more information about Movicon startup as a service, consult the beginning of this charter.

## 2.8.4. Further limitations on a Local Computer

In the previous chapter, we have specified that on each machine, the OS allows limited possibility of configuring safety policies as compared with a computer belonging to a domain. Further limitations are possible by acting on the configuration files, created fro each Windows NT user who has logged on at least once. It is also possible to configure authorization for access on each folder or files on disk.

The configuration of limitations of access on each folder or files on disk is very easy (as shown in the figure alongside), by means of Windows explore resources it is sufficient to display the properties and configure authorizations in the Safeties tab.
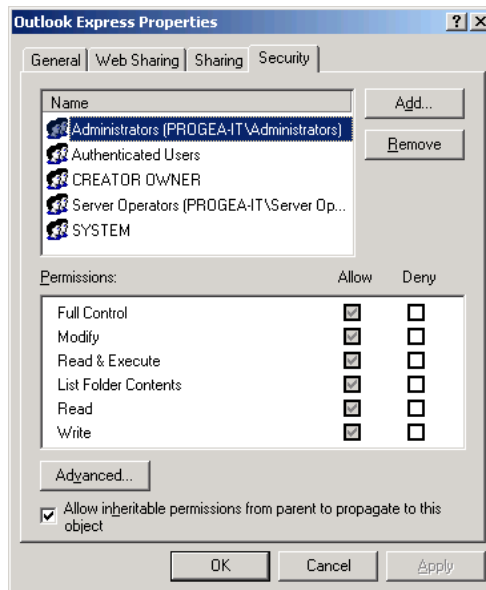
*Authorizations can be set on folders or files on disk only if the disk is partitioned with the   Windows NT file system, NTFS.*

We have already indicated that other limitations can be defined by modifying configuration files of each user. The file is created at the time of first Log On by the machine user, therefore it must be checked before proceeding with the operations described below.

The "**Documents and Settings**" folder of the disk in which the OS is installed contains a folder for each user that has logged in at least once and each folder contains a hidden file "**NTUSER.DAT**". The files can be modified using the **RegEdt32** program that can be activated by means of **Run** under the Windows **Start** menu.

This tool makes it possible to load the information contained in the file NTUSER.DAT using the **Load hive**, command, and after the modifications have been made, give the **Unload hive** command to make them active.

The keys to be added or modified for user rights are in two different paths:

- **HKEY_USERS\NTUSER\Software\Microsoft\Windows\CurrentVersi on\Policies\Explorer**
- **HKEY_USERS\NTUSER\Software\Microsoft\Windows\CurrentVersi on\Policies\System**

To keep the manual compact, we have avoided listing all the keys in the two paths; consult the Microsoft documentation for the complete list, or use the Progea online tools like the Knowledgebase.

*Important: Incorrect use of the editor of the Windows configuration register can cause serious problems, and require re-installation of the operating system.*

## 2.8.5. Auto LogOn Utility

Movicon installs a utility, which avoids the Log On procedure, available for users requesting any security precaution with WinNT. In this case, to set AutoLogOn, launch the **Autolog** utility listed in the **Movicon** folder, **System Tools** in the **Programs** list under **Start** of the OS application bar.

The AutoLogOn utility must be activated with an Administrator  and a valid password (not null) so that it functions correctly. The use of this utility will not allow management of any OS safety, as is otherwise the case by launching the project as service.
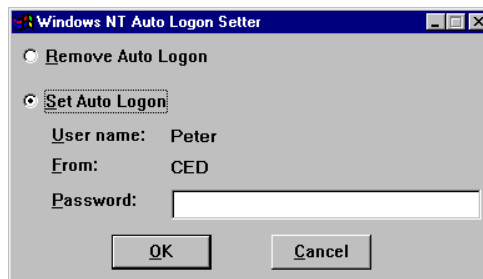
# 3. The Menu commands in Runtime mode

*If made available by the developers, the Bar Menu during runtime mode allows various operating possibilities.*

The Bar menu of Movicon proposes to the operator - under the title bar - a set of commands to interact with the system. The commands proposed are different, depending on whether Movicon is in Run mode or in Programming mode. The Bar Menu of Movicon is visible unless it has been intentionally hidden for the following reasons:

1) *Displaying of the whole screen (CTRL+SHIFT+F5)*
2) *The default menu was replaced by a custom menu.*

During the programming of a project, a set of commands is available from the main menu.

The techniques for selecting them with the keyboard or with the mouse are described in the previous chapters.

This chapter contains a description of the consequences of these commands on the system.

The main commands of the bar menu can be executed quickly by using the main tool bar described in the next chapter.

The features of the bar menu can be different according to the active resource and the active mode (programming or running mode). This chapter describes the commands of the possible features in the menu. Some of them are not available or different, depending on the active resource.

*Menu controls have been preset in order that they display more used items only. Used menu can be seen only after enabling the proper enabling arrow, which will make the full menu visible in all its items.*

*The Movicon bar menu is active even if not displayed. Even if the* **Full Screen** *command from the* **View** *menu is selected, when you click with the mouse on the upper border of the working area, the popup menu of the corresponding feature appears.*

### 3.1.1. Pop-up Menu

Based on a Windows environment consolidated habit, Movicon conceals less used items for an easier and intuitive selection of list items.
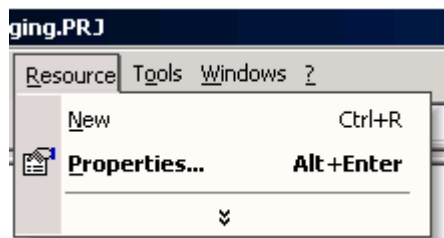
To display all menu items, just act on scroll arrows under the list of items and menu less used items will be displayed as well.

## 3.1.2. Docking Menus

Movicon offers the possibility in project settings to enable or disable the function of "Docking Menus".

These menus allow the operator to drag menu bar on working area position preferred. If you do not want to use this function (which will be valid for all menu bars) just disable it from project settings, after consulting the programmer.
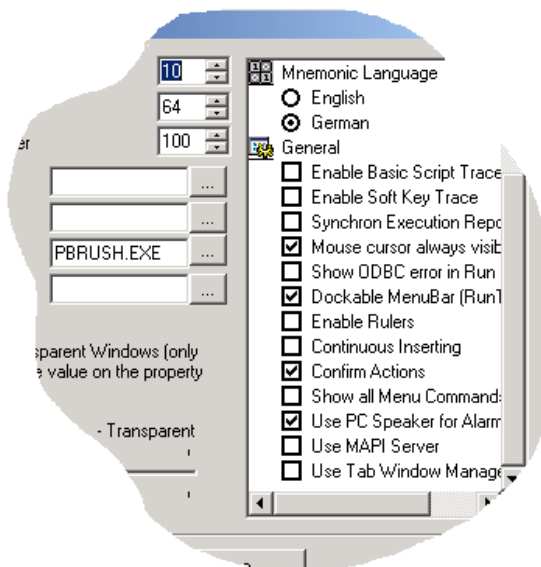


Particular of project General settings box.

To position a docking menu where required, drag it with the mouse or double click on the menu. To reposition a menu, double click on title bar of menu.
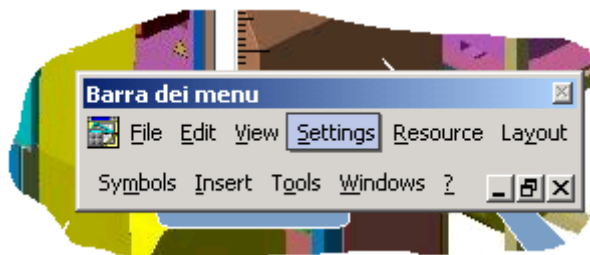


Example of docking menu in a synoptic.

# 3.2. File Menu

The commands of the menu File are related to the general use of the project. This window shows the features of the menu File in Run mode. During processing of the project, not all items available in programming will be available to the operator, as indicated in the User Manual.
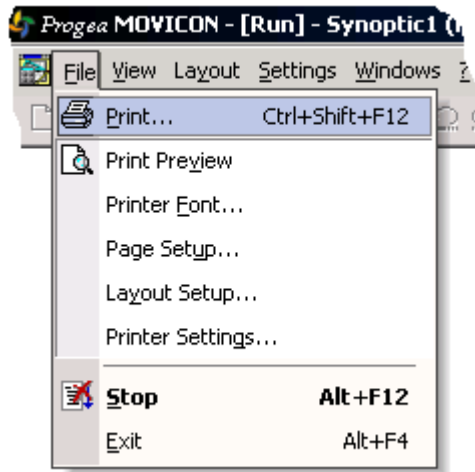


If selected, the Features which are followed by …, open a dialog box, which sets the corresponding commands.
To allow a fast opening, you can visualize the name of the last project (or of the last 4 projects) run. Selecting and activating the name of the project displayed in the menu items (if present) will activate the project's **Open** command.

### 3.2.1. Print

The Print command sends the contents of the active window or document to the printer. This command opens a dialog window allowing you to set the printing. For more information about these options, refer to the "Printing of programs" chapter.
If you want to print a document different from the current one, first you need to select it.
This command can be selected with the [Ctrl+Uppercase+F12] keys

### 3.2.2. Print Preview

The print preview command allows you to see the document in preview as it will appear in print. This command provides access to a display area in which some control buttons are available, and the mouse pointer, near the print preview, will automatically assume the form of the symbol indicating the zoom. For a more detailed description of print preview, refer to Charter "Programs printing".

### 3.2.3. Page Setup

This command allows you to edit the header and footer for printing. For a more detailed description of the page setup, refer to the "Printing techniques" chapter.

### 3.2.4. Page Layout Setup

This command allows you to edit the size and borders of the page you want to print. For a more detailed description of the page setup, refer to the "Printing techniques" chapter.

### 3.2.5. Printer Settings

This command opens a dialog box allowing you to specify all the printer settings. For a more detailed description of the page setup, refer to the "Printing techniques" chapter.

### 3.2.6. Project Stop

The display of this control item is determined by the operative status in which the system is. If Movicon is under a project processing stage (Run), this item will state Stop. The Stop control setting will allow to stop project processing and access to its programming. Otherwise, the setting of Run control to be executed from programming status, will allow project processing to start. This control can also be performed by a control preset by the programmer in the project.
The icon alongside represents the project Run/Stop control from the Toolbar.
This control can also be performed using the [Alt+F12] keys.

**This control is available only if project has been started from Programming mode. If Movicon is directly started by Run project (/R option) this control is not available.**

### 3.2.7. Project Run

The setting of Run control, to be executed form programming status, will allow project processing to start.
The icon alongside represents the project Run/Stop control from the Toolbar.
Note: The processing status of running project is pointed out by the writing (Run) located on the bar or working area heading.
This control can also be performed using the [Alt+F12] keys.

### 3.2.8. Exit

This command allows you to exit from Movicon system and to return to Microsoft Windows™ operating system. If password management is active, this command requires a level 4 password.
This command will open a dialog box asking you to confirm or cancel the operation.
This command can also be selected with the ALT+F4 keys.
A project may require the system exit command by means of a special function or a command defined by the programmer.

# 3.3. Edit Menu

The controls of the Edit menu are related to the use of certain project resources. Consequently, available controls will be always depend on the selected resource.
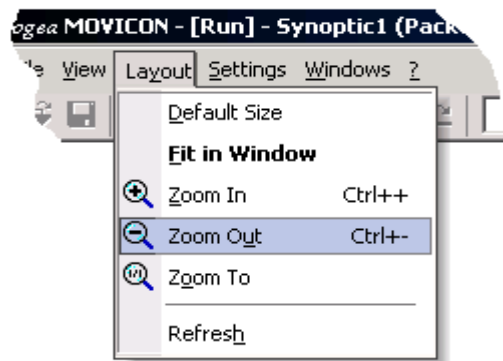


### 3.3.1. Copy

Based on standard editing methods, the Copy control allows to copy in Notebook the text or elements selected currently. This function will be available only if it activates a Movicon resource enabling data copying or export.
Elements copied in Notebook can be later pasted in other project parts or in other Windows applications.
The Copy control, which can be executed also by keyboard with CTRL+C, will not be available until the text or object elements are selected.

### 3.3.2. Paste

Based on standard editing methods, the Paste control allows to paste a previously copied content in Windows Notebook under resource preset to receive copied texts or objects. This function will be available only if it activates a Movicon resource enabling data import. Elements copied in Notebook can be later pasted in other project parts or in other Windows applications.
The Paste control, which can be executed also from the keyboard with CTRL+V, will not be available until the text or object elements are selected.

### 3.3.3. Find

If available as a consequence of opening a preset resource, the Find control allows to specify a character or a string of text to be searched within selected resource.
Depending on the standards, it will be possible to specify if text to be searched has to match the uppercase or lowercase. In addition the direction can be specified within resource by search Up or Down as compared to cursor position. The Next button starts a new search, whereas the Cancel button cancels the search. The Find control can be accessed from the keyboard with ALT+F3, or, if available, from the Main Toolbar, through the Find edit box, shown in the figure alongside.
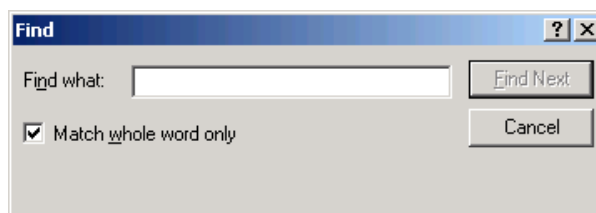
### 3.3.4. Find Next

After having eventually started a search with Find control, you can search for the next specified text using the Find Next control, which can be done also using the key F3.

### 3.3.5. Select All

The Select All control allows simultaneous selection of the entire contents of the enabled resource, if possible.

### 3.3.6. Upgrade

The Upgrade control, available when appropriated resource allows it, forces the refreshing of info or data contained in the selected resource box.

# 3.4. View Menu

The Menu View commands enable or disable the display of the main displays available in the working area.
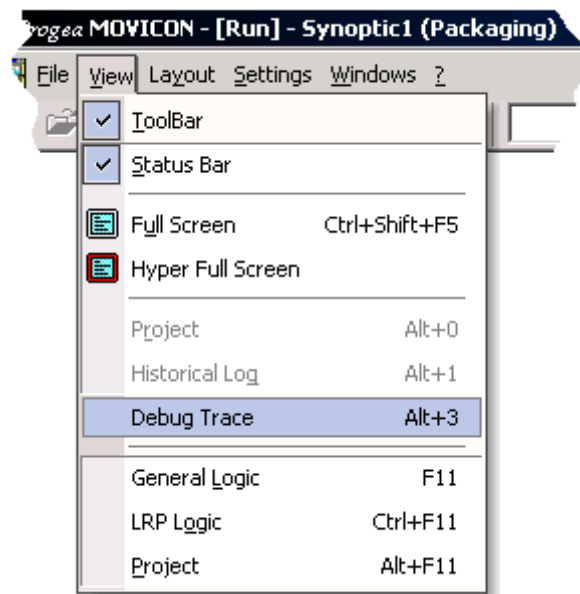


### 3.4.1. ToolBar

This command allows you to display or hide the Movicon Main toolbar. In Run mode, the main system commands can be executed from the tool bar.
   *If the mouse is not active, the toolbars will not appear automatically.*
The Toolbars are described in the next chapter.

### 3.4.2. Status Bar

This command enables or disables the display of Movicon status in the lower part of the workspace area. As well as showing the operating and system messages of Movicon, the status bar also gives information about the commands selected from the menu or from the tool bar.
The tick to the left of the item indicates that the command is active.
For a more detailed description of the status bar, refer to the corresponding chapter in this manual.

### 3.4.3. Full Screen

This command displays the Movicon working area full screen, hiding the title bar, the menu bar and the status bar.
To return to standard display, press the CTRL+CAPS+F5 keys, or, if the main tool bar is present, the corresponding button.

*Note: The menu bar will be fully concealed only in case the menu is not declared as "Docking" on project settings. otherwise, it cannot be fully concealed by "Full Screen" control.*

### 3.4.4. Hyper Full Screen

This command allows you to visualize the full screen, hiding the title bar, the menu bar, the status bar and any other Movicon system's window.  The hyper Full Screen command can be cancelled using the ESC key or (if the menu has been docked) the relative icon kept visible as shown in the picture.

### 3.4.5. Zoom

Programmers using the mouse might want to zoom out parts of the working area.
This command enables the zoom function of Movicon. The zoom window can be resized by dragging its borders or moved anywhere in the working area. It has a zoom out of the area pointed by the mouse.  The Title Bar contains the coordinates of the mouse pointer.
The scrolling bar on the right side of the window allows you to increase or decrease the zoom factor. To disable the zoom window, select the corresponding command on the bar menu, use the control menu of the zoom window or press the ALT+F4 keys.
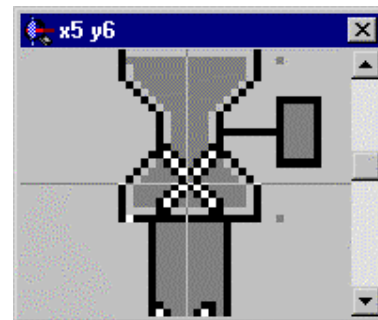
*The Zoom tool is available to the operator in runtime if the F 23.0 standard flag is enabled in the general logic.*
*The Page Zoom, for vectorial symbols, is available from Layout Menu.*

### 3.4.6. Historical Log

This command displays the default Historical Log window of the project.
The role of the default Historical Log is to record all the events and alarms generated by the project in ASCII format.
The default Historical Log will be displayed in a window in Docking View and can be closed with the standard Windows commands, with the corresponding command from the Windows menu or with any change of page.
For a more detailed description of the Historical Log, refer to the corresponding chapter in this manual.

The Historic log can however be displayed as set by the programmer in the project.

### 3.4.7. Debug Trace

The Debug Trace control allows to display Debug Trace system box. This box, subdivided into a number of schedules, shows the list of events recorded by the system, either in programming mode or in runtime mode.

The Debug Trace is a system resource not to be confused with Historical Log, the tool for archiving project events, but it is a debug resource to be used together with project behavior analysis.
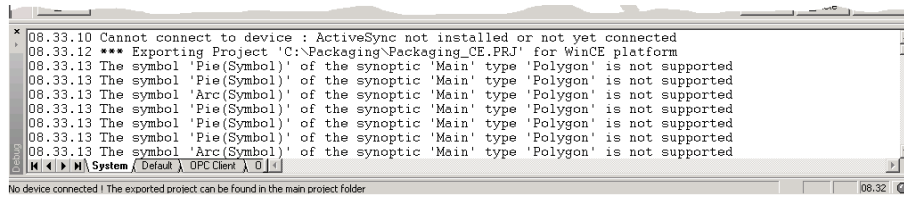


The Debug box is subdivided into the following boxes:

**System**: Archive directory of system logged events
**Default**: Archive directory of events to be used by logic executions, to be defined in programming.
**OPC Client**: Archive directory of events to be recorded by interface for OPC Client connections.
**OPC Server**: Archive directory of events recorded by interface for OPC Server connections.

## 3.4.8. Project

The Project control will enable display of the application project box. The project box contains details useful for the applications project debug. It is available only if the project has been started in Run by Programming mode.
As these debug tools are for the programmer, refer to the relevant chapter in the programming manual.

## 3.4.9. General Logic, Synoptic Logic, Project

This command displays the Debug window of the project (in Run mode) and is available only if the project was started from Programming mode. Since these commands are specific for the programmer, we advise you to refer to the corresponding chapter of the programmer guide for more details.

# 3.5. Layout Menu

The commands of the Layout menu refer to the use and the management of the vectorial drawings contained in the synoptics and their windows.
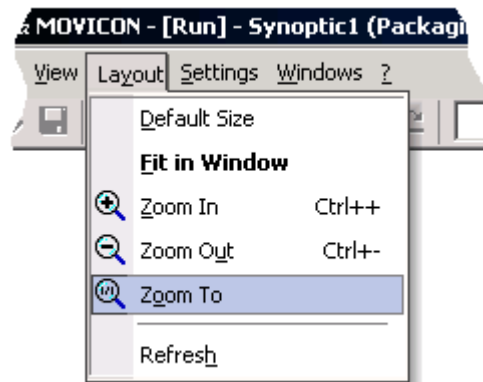


## 3.5.1. Default Size

This command applies the size set in the properties window of the corresponding synoptic to the synoptic window, whatever was the size of the window at the opening of the screen page.

## 3.5.2. Fit in window

This command changes the size of the synoptic window to fit with the external container.

The vectorial drawing contained in synoptic will be adopted, depending on the dimensions defined in synoptic box properties suited to the new set dimension.

## 3.5.3. Zoom In, Zoom Out, Zoom To

These resizing commands can be applied to objects or symbols, but not to the background Bitmap.
The **Zoom in** and **Zoom Out** functions enlarge or shrink the drawing displayed.
The **Zoom To** function allows you to select an area of the synoptic you wish to zoom.
To select the zoom area, click on the first corner, drag the selection with the mouse and release the mouse button when you cover the desired area.

## 3.5.4. Refresh

The Refresh command regenerates the design.

# 3.6. Settings Menu

The commands of the menu Settings refer to the use and the management of the User's Password and DDE managements.
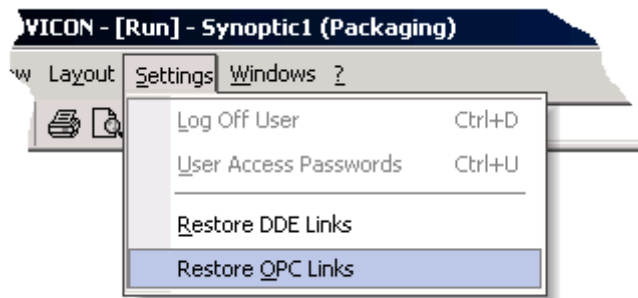


## 3.6.1. Log Off User

This command is available only if the Passwords Management is enabled, and allows to log off the active user.
Please refer to the Password chapter for more information.

## 3.6.2. Edit User Access Passwords

This command is available only if the Passwords Management is enabled, and allows access to the User's List. Using this command you can insert or delete the users from the list. This commands requires the "System" password level.

## 3.6.3. Restore DDE Links

This command allows to restore the DDE Links when the communication between the two applications fails. Before activating this command make sure that the other application linked by DDE is running again.

# 3.7.  Windows Menu

The commands of the menu Windows refer to the use and the management of the windows and of the icons of the Movicon Resources inside the working area.
The items followed by the "▸" symbol indicate that, if selected, the command will open another pop-up menu.
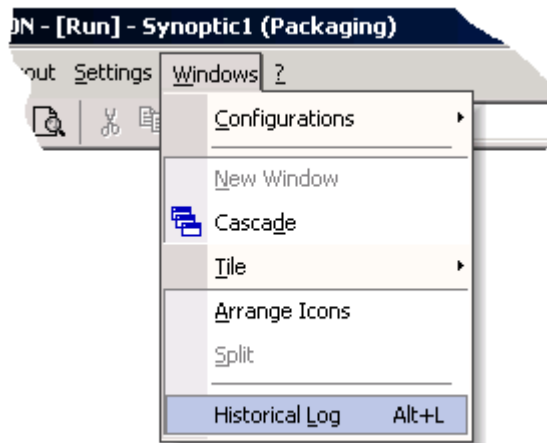
### 3.7.1. Synoptics Configurations

This command refers to the configuration of the synoptic windows, allowing you to open or save a specific configuration. For further information about the synoptic configuration, refer to the "Use of the synoptic configurations" chapter in this Manual.

*This command can be enabled or disabled by the programmer by using the standard Flags of Movicon during the execution of the project (Run).*

### 3.7.2. Cascade

This command arranges all the windows in the working area, resizing them to a default size and superimposing them from the left upper corner to the right lower corner. It is now impossible to return to previous dimensions, except by using the configuration windows menu.

### 3.7.3. Tile

This command refers to the position of the windows in the working area of Movicon. This command opens another menu, which allows you to choose the following features.
The **Horizontally** feature allows you to arrange horizontally, from left to right, all the windows in the working area with the maximum vertical dimension.
The **Vertically** feature allows you to arrange vertically, from top to bottom, all the windows in the working area with the maximum horizontal dimension.
It is now impossible to return to the previous dimensions, except by using the configuration windows menu.

### 3.7.4. Arrange icons

This command arranges all the icons of the windows in the working area horizontally.

### 3.7.5. Close all

This command closes all the windows of the resources currently active in the working area of the project.

### 3.7.6. Other windows

Displays the available windows related to the project. To open the corresponding window, you can select the desired name.

### 3.7.7. Historical Log

This command displays the default Historical Log. The default Historical Log records all the events or alarms chronologically generated by the project in ASCII format files.
The Default Historical Log will be displayed in a window in Docking View mode and can be closed using the same command, using the Windows Standards or any command to change the page. For a more detailed description of the Historical Log, refer to the corresponding chapter in this manual.

The Historical Log can however be displayed as set by the programmer in the project.

# 3.8. Help Menu

The Help menu is marked with the sign "?", the last command item on the menu bar.
By means of Help, the user can access the system details and online guide, provided it is available.
.
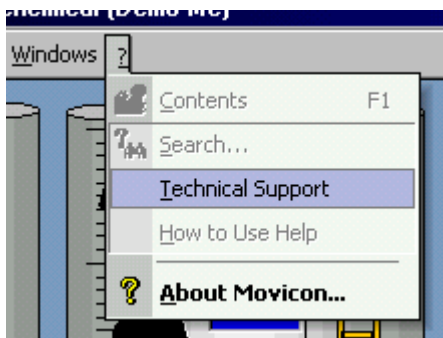


*T*he On Line Guide can only be accessed if the project programmer has made controls available, by means of the online guide enabling controls in runtime to be set by System Flag "Flag Standard 15.7"

### 3.8.1. Index

If the design engineer makes this control available, it will activate the main index of the Movicon OnLine Guide.

### 3.8.2. Search Subject

If the design engineer makes this control available, it will enable the search of the selection box of a specific topic within the Movicon On Line Guide.

### 3.8.3. Customer Technical Support

If this control is available, it will enable the page of detail concerning the methods of use of the Progea Customer Care Service.

*If this item is not available and after-sales service is required, contact the plant or application project suppliers. If these are not available, contact the Progea After-Sales Service, which will assess your requirements and direct you to the nearest Authorized Center.*
*The Progea After Sales service addresses can be found at the site:*
**Http://www.progea.com**
*Or verify the Web addresses on the box accessible from "Info About …" box described below.*

### 3.8.4. Info About …

This is the only control always enabled on the Help menu. By means of "Info about…" control, you can access the Movicon system details used, which will be helpful for the After-Sales Service required.
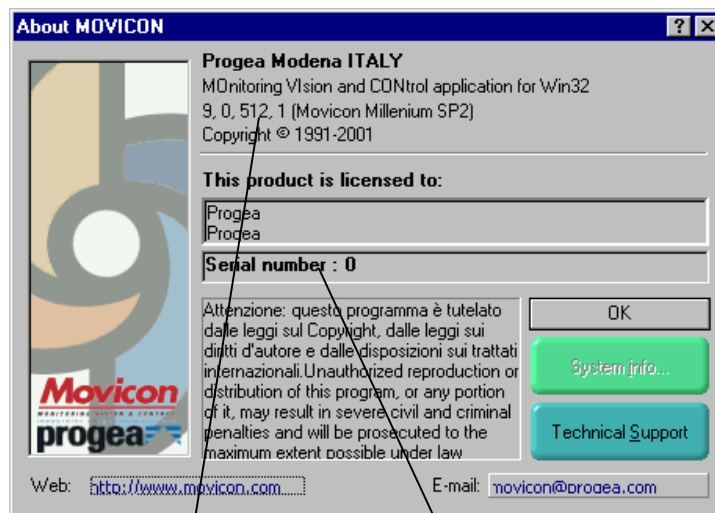


Product Name and release number

Serial Number of the License

In addition, the Info box also shows the Progea Web addresses and e-mail addresses so that the user can use them in case of need or for info on the latest versions of Movicon or new products. Two buttons are also available: one for accessing the pages of After-Sales Service (provided that guide is available) and the other (not available in runtime) for accessing Windows info, by using the **MSI** (Microsoft System Information) system utility.

*The MSI utility can be accessed also by Windows system applications (Accessories, System Utilities), and is very useful in case details related to used hardware, installed OS and other system details are necessary. However, this tool is to be used by skilled staff only.*
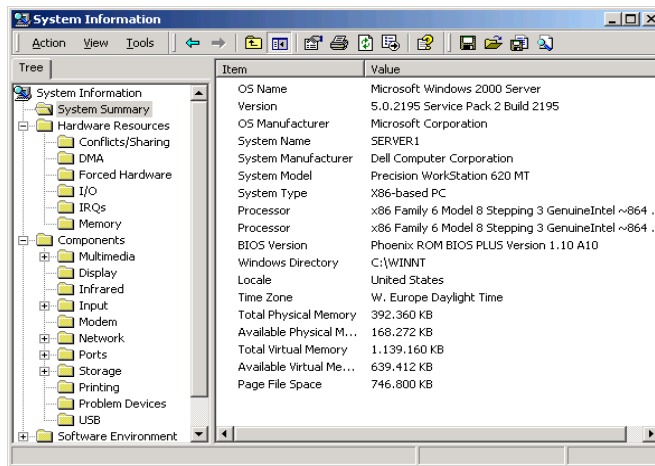
*Example of  Microsoft MSI box for OS and hardware details*

# 3.9. Customized Menu

Movicon, from Programming mode, allows complete customization of Menu and Tool Bar usage. To access the Menu customization, just enable the **Customize** control by double clicking the mouse on the toolbars.
From the customization box, different setting schedules will be available, which can be enabled by clicking on the Tab of every schedule.

## 3.9.1. Menu Control Customization

From the Control schedule it is possible to display the complete list of menu controls either available in programming and in  runtime.
The controls and their order cannot be changed.
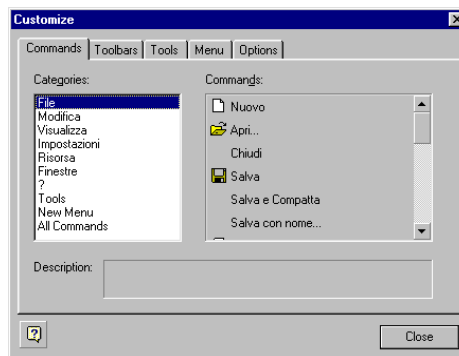


## 3.9.2. Customizing Toolbar

From the Toolbar schedule it is possible to display the entire list of Movicon Toolbars, enabling their displaying using the selection button alongside.
The default positions of all toolbars can be reset by Reset controls.
New toolbars can be added, but not controls.
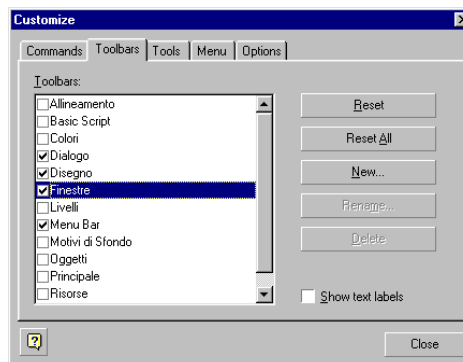
### 3.9.3. Customizing Menu Tool controls

From the Tool schedule, it is possible to customize the controls available from the Tools control menu, containing the launch of utility applications.
The Tools menu control can be customized by adding new items or changing the existing ones. Every menu item contains a control line ("Command") with relevant topics, which will be executed by a menu command.
From bar tools on upper border of the schedule, it is possible to add or eliminate items from the Tools menu.
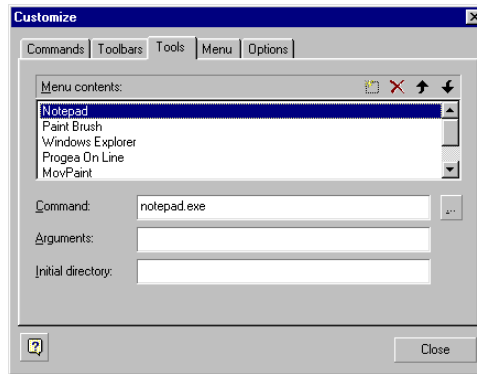
### 3.9.4. Customizing Menu Use

From the Menu schedule it is possible to customize the system menu display. The Project Menu selection is not presently active.
The "Menu Animations" control allows to define the possible type of animation to be used each time a menu is opened.
The "Menu Shadows" box allows to enable or disable the shadow under the menu when it is open.
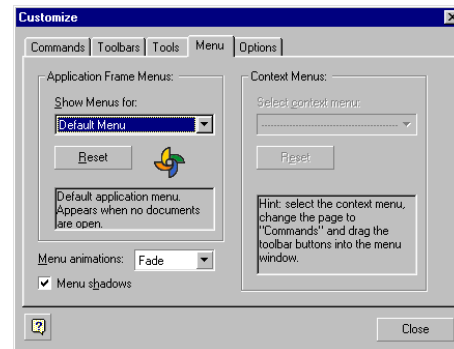
### 3.9.5. Option Customize

Last schedule, Options, allows further customization of the Movicon menus used. Selection boxes can be used to set the required style in menu display.
The Large Icon box allows to enlarge icon dimensions of the Toolbars.
The "Look 2000" box allows to use Windows 2000 style in bars and menus.
The "Show ScreenTips" box allows to enable ToolTip (suggestions) when mouse is stopped on toolbar icons.
The "Menu Show recently.." control allows to define in menu usage the management of menu controls used, by defining immediate display of menus most commonly used or the most recent ones.
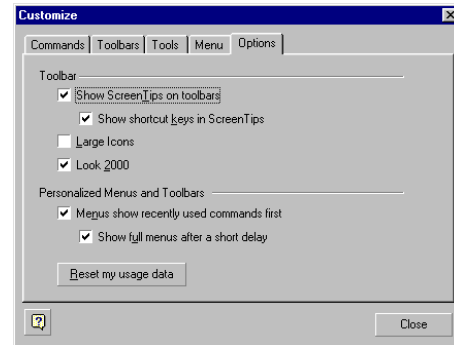
The menu style and look can be set in programming by the Project **System Settings.**

# 4. The Movicon Toolbars

*Movicon has a set of toolbars which speed up activation of commands from the Menu.*

Movicon allows you to execute the main commands in a fast way by selecting them from toolbars containing a set of buttons with graphic identifier.
The Toolbars can be hidden or displayed by selecting or deselecting them in the **View** menu or in the pop-up menu associated with the mouse right button.
The Toolbars can be hidden at the start-up of Movicon by using the **/T** parameter on the command string to start Movicon. Otherwise, Movicon will display all the Tool bars maintaining the position and the dimensions of the last use.

*Toolbars are not available by default in Runtime. To enable runtime toolbars, just enable the Windows Log "EnableBarsMenu". This operation requires a password level 4 (System).*

To perform this, launch Regedit from Windows Execute, then set value "1" in "EnableBarsMenu" key located at:

"HKEY_CURRENT_USER"
        "Software"
                "Progea Automation"
                        "Movicon Millennium"
                                "General"



Example of Movicon Tool Bar

To display the function of a command belonging to a Tool Bar, leave the mouse pointer on the corresponding button for a while: a "pop-up" text will appear (unless intentionally deactivated by the programmer) indicating the related command.

*On main toolbar there is a button marked by the ▼ symbol. This button can be used to access customization of menus as described in the previous chapter.*

# 4.1. Main Toolbar

The main commands of Movicon can also be directly selected on the main tool bar using the mouse. It may also not be displayed. To display it, select the **View – Tool Bar - Main** command. The following table describes the buttons of the Movicon main tool bar.

| | | |
|---|---|---|
| | **New File** | File Menu, opens a new project file. |
| | **Open File** | File Menu, opens an existing project. |
| | **Save File** | File Menu, saves the active project file. |
| | **Print** | File Menu, Print<br>prints the text of the active document. |
| | **Print Preview** | File Menu, Print Preview<br>Displays the print preview of the document to be printed. |
| | **Cut** | Edit Menu, cuts and puts in the clipboard. |
| | **Copy** | Edit Menu, copies in the clipboard. |
| | **Paste** | Edit Menu, pastes from the clipboard. |
| | **Cancel** | Edit Menu, cancels the last editing operation. |
| | **Restore** | Edit Menu, restores the last editing operation. |
| | **Open Configuration** | Windows-Configurations-Open Menu.<br>Opens a previously saved configuration window. |
| | **Save Configuration** | Windows-Configuration-Save Menu.<br>Saves the current configuration of the windows inside the working area. |
| | **Full Screen** | View, Full Screen Menu.<br>Hides the menu and title bar. |
| | **Hyper Screen** | View, Hyper Screen.<br>Maximize the project's window. |
| | **Run-Stop** | File Menu, executes Run/Stop for the active project. |
| | **Guide** | Displays and Activates the Movicon guide. |
| | **Sensitive Help** | If you click with the mouse button on an object of the synoptic, the guide will be automatically positioned on the corresponding subject. |

# 4.2. Resource Toolbar

The commands of the Movicon Resource menu can also be directly selected on the resource tool bar. If you want to display it select the **View – Tool Bar - Resource** command. The following table describes the buttons on the Movicon resource tool bar. For details, refer to the menu commands.

| | | |
|---|---|---|
| | **New Accelerator** | Resource Menu, New Accelerator.<br>Inserts a new accelerator resource in the project. |
| | **New Dialog Window** | Resource Menu, New Dialog Window. Inserts a new Dialog Window in the project. |
| | **New Menu** | Resource Menu, New Menu. Inserts a new menu resource in the project. |
| | **New Synoptic Window** | Resource Menu, New Synoptic Window. Inserts a new Synoptic Window resource in the project. |
| | **New Basic Script** | Resource Menu, New Basic Script. Inserts a new basic script resource in the project. |
| | **Properties** | Resource Menu, Properties. Show the properties window of the selected resource. |

# 4.3. Windows Toolbar

The commands of Windows Menu can also be directly selected on the Windows tool bar. To display it, select the **View – Tool Bar - Windows** command. The following table describes the buttons on the toolbar. For details, refer to the chapter on menu commands.

| | | |
|---|---|---|
| | **Cascade** | Windows Menu, Cascade.<br>Superimposes the windows in the working area. |
| | **Tile horizontally** | Windows Menu, Tile horizontally.<br>Arranges the windows in the working area horizontally. |
| | **Tile vertically** | Windows Menu, Tile vertically.<br>Arranges the windows in the working area vertically. |
| | **New Windows** | Arranges a new window for the active document (under preparation). |
| | **Project window** | Displays or hides the project window. |
| | **Historical Log** | Displays or hides the default historical Log window. |
| | **Cross-reference list** | Displays or hides the cross-reference list window. |
| | **Symbols Explorer** | Displays or hides the symbols explorer window. |
| | **Debug Trace** | Displays or hides the Debug Trace window. |

# 4.4. Alignment Toolbar

The commands for the programmer regarding object alignment (within a preselected area) of aMovicon window can be activated, apart from the Layout, also using the alignment toolbars with the mouse. The toolbar may not be displayed. To display it, select the **Display-Toolbar-Alignments** command**.**
The tool bar remains inactive until an area containing objects or controls is selected. To select a window area, click with the mouse left button on the synoptic and hold it dragging it to the end of the area; the selected area will appear in a dashed rectangle. If the selected area contains some objects or controls, the alignment tool bar will be enabled, making its commands available.

| | | |
|---|---|---|
| | **Test Dialog Box** | Displays the Dialog Box in preview. (Available only from the Dialog Window resource) |
| | **Align right** | Aligns all selected controls on the right of the main control. |
| | **Align left** | Aligns all selected controls to the left of the main control. |
| | **Align Top** | Aligns all selected controls above the main control. |
| | **Align Bottom** | Aligns all selected controls under the main control. |
| | **Align in center vertically** | Aligns vertically all selected controls in the center of the window. |
| | **Align in center horizontally** | Aligns horizontally all selected controls in the center of the window. |
| | **Set Width** | Sets the width of the main control for all selected controls. |
| | **Set Height** | Sets the height of the main control for all selected controls. |
| | **Set width and Height** | Sets the size of the main control for all selected controls. |
| | **Display Grid** | Displays or hides the Grid. |
| | **Align to the Grid** | Aligns an object to the Grid (even if the grid is not displayed). |

# 4.5. The status bar

The status bar on the lower border of the working area gives the main information regarding the operating status of Movicon.
You can enable or disable it by selecting the **Status Bar** command from the **View** menu.
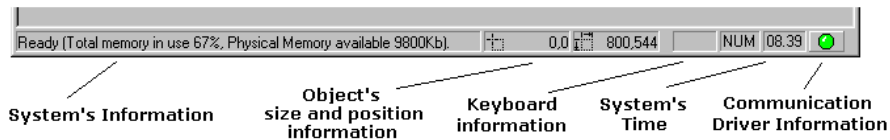


The main status information is relevant to the status of the communication driver, the system and the command being executed.

> The Led icon on the right of the bar shows the status of the communication driver. A green led indicates that the communication is working properly. A red led indicates that the communication is not working properly or that it is interrupted. An exact description of the problem will be recorded in the historical log.

The text in the bar indicates the operating status of Movicon or a description of the executed command.

> The operating status of Movicon could be, for example, the last alarm or message that occurred in the project.

Note: the status bar, as described in the chapter about the menu of Movicon, can also display the texts describing the commands of the customized menus.

# 4.6. The Windows Bar

The Windows Bar is also displayed in project runtime if the USA item *"Tab Windows Manager in RUN"* is active in the general Movicon settings.



The windows toolbar displays as many icons as there are synoptic windows open; by double-clicking on the icon one of the synoptics can be brought to the foreground. However, in developing, the windows toolbar helps to move from one resource window to another rapidly.

# 4.7. Windows Task bar

When Movicon is started, the corresponding icon always appears on the right of the task bar.



Example of Task Bar of Windows.

When you click with the mouse on the icon in runtime, the command associated in the general settings is executed, as described in the "Movicon Settings" chapter in this manual. In Programming mode, the icon is sensitive to the mouse right button and opens a pop-up menu with the main operative commands (Run, …).

# 5. Movicon Project

*This chapter briefly describes the operating concept of "a Movicon project".*

This chapter describes the use of a Movicon project. The methods for opening a new project, an existing one, saving, execution in Runtime and simultaneous management of a number of projects are described here, The Movicon project is a file, (with PRJ. extension) by default, which contains the actual application.

> *The project contains the synoptics, the resources, the objects and the logics that the Movicon.exe system will execute to supervise and control the plant.*

This chapter describes the operations related to the use of the Movicon project. For details consult the Programming Manual.

## 5.1. The project window

The project window allows you to display, insert or modify resources, objects or logics belonging to the project.
The project windows display the resources inserted in a tree structure.
The project window has certain characteristic features to facilitate the programmer's task.
On the upper border of the window a set of Tabs allows you to display the resources arranged according to type.
You can select the **"Docking View"** command from the project window, keeping it visible on the left of the workspace, or it can be accessed from the **Windows** tool bar.
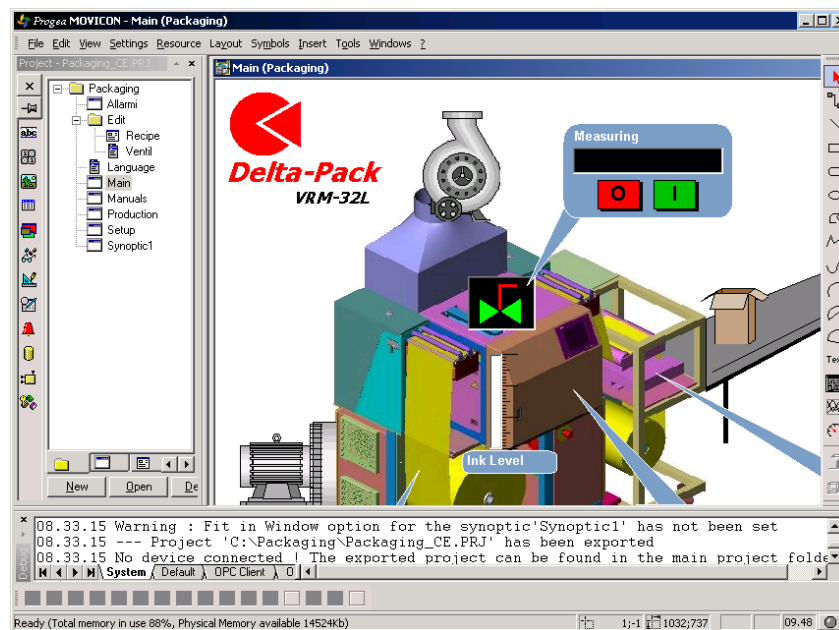


Tree structure of a project displayed in "docking view" and detail for resource schedule selection.

### 5.1.1. Docking view of the project window

Movicon allows you to "dock" the project window. If you dock the window, it will always be present on the left side of the working area in foreground, even when the other windows are selected. If the docking view is disabled, the window will be represented in the working area like all the other windows and will be displayed in foreground when it's selected. A window can be selected selecting its name in the menu **Windows**.
*The command for the docking of the project window can be selected with the mouse right button.*

# 5.2. Open a new project

When starting, Movicon is set to be in programming mode and set to open by default a new Project.  It is thus possible to start programming and to save the project at the end by giving it a name of your choice.
However, should you need to open a new project, select the command **New** from the **File** menu, or click on the corresponding button as indicated on the bar menu or press the keys CTRL+N.
The opening of a new project always involves the choice of project type to be implemented : **Small Business Project** (small-, medium-sized projects). It

requires the default marking of all resources as Internal resources. **Enterprise Project** instead marks them as External resources.

The working area displays the project box with the tree-structured feature of resources, as previously shown and stated. This box allows to proceed with programming of project resources as shown in the following paragraphs. The box title bar of a new project will state the transient default name "Project …" followed by a progressive number, based on number of open projects, also previous ones.
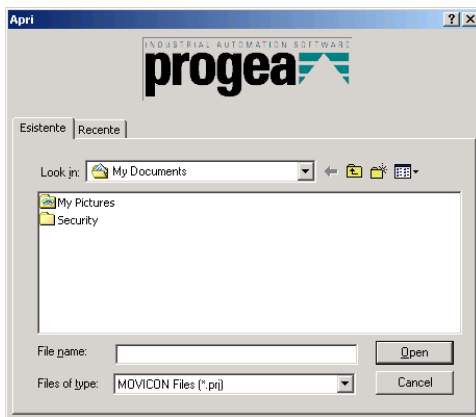
# 5.3. Opening an existing project

To open an existing Project, select the command **Open** from the **File** Menu, or press the corresponding key, or press the keys CTRL+O.
The above command brings-up a standard dialog box which allows you to select the file name you wish to open or select it directly from the available drives and directories, according to Windows standards.
Setting or selecting displays the existing project by means of a dialog window similar to that described in the previous paragraph. From this window you can enter the new resources or modify existing ones as described in the forthcoming chapters. The title bar of the window shows the selected project name.

# 5.4. Saving a project

The command that allows saving an active project on disk becomes available from the menu or toolbar after the first modification to the project. To save your project select the command **Save** from the **File** menu and press the corresponding key available on the main tool bar, or press the CRTL+S keys.
To save the project under a name different from the current name use the command **Save As** from the **File** menu. This command will activate a standard dialog box that will allow you to define the path and the name you wish. The window will be similar to that shown in the previous paragraph.
If you want to save a *New project*, the command **Save As** will be automatically activated.

By making adjustments/amendments to the project both the command **Save** and **Save As** will be activated automatically or in the event you wish to exit or Run the project.

# 5.5. Project Files

All the data and information regarding a Movicon project are filed with the extension .PRJ.  Every time Movicon has to save the project, it always creates a backup copy of the previous file containing the last version of the project. The backup copy will have the same name as the one of the project but with the extension .BAK. Should you for any reason misplace or loose the original project's file, you can use the backup copy (and rename the extension from .BAK to .PRJ).
To the project, the system also associates other files depending on the configuration used. The files will be created in the project directory.
The Table below contains the explanation:

| File Extension | Descriptions |
|---|---|
| .PRJ | Project File. |
| .BAK | Backup copy of the project File. |
| .CRF | Cross Reference File. |
| .DVI | Communication Driver File. |
| .WSP | Workspace File (contains the position of the windows in the workspace area). |
| .TSW | Trend Files (contains the settings of the Vectorial Trends). |
| .FLG, .OUT .IN | File containing the value of frozen data when exiting the program, value that will also be retained when the system restarts. |
| .FBK .OBK .IBK | File containing a backup of frozen memory areas. When one such file is damaged, use the backup file to correct the error. |

## 5.5.1. Working Folders of a Project

If the project uses some external files like Log, Data Logger, symbols, etc., the programmer can specify the desired working folder for each external file. Unless otherwise specified in the form **Working Folders** of the menu **Settings**, the working folder will be the project folder, or each file must specify the complete path.

*For more information, refer to the **Settings** chapter in the programming manual.*

# 5.6. Starting and Stopping a project

In programming mode the logic and the communication Drivers are not running. Conversely, in running mode the logic and communications drivers are active, but it is not possible to edit or modify the project.

If you intend to switch from programming to running mode (or the other way round), select the **Run** command (or **Stop**) from the **File** menu, or press the corresponding key from the main tool bar or press the keys ALT+F12.

*As a rule a project can always be run directly from the command line of the Start bar menu (See the chapter on System Installation and Configuration). For instance, to run the Movicon Project called TEST.PRJ automatically, the command line will be:*

**<Movicon.exe /R C:\TEST.PRJ>**

If you run a project which has been modified, the system will first ask you to save the last update if not already done and then compile the project. If the compilation ends without any errors the system runs the project.

When in running mode, to stop the project and return to programming mode, press the same command Stop which was previously displayed as Run from the File menu, which appeared before. On using this command (or the quick selection from toolbar or keyboard), the system will set itself in project programming mode.

**Note: If the password option is activated, access to the programming mode will be allowed via a password level 10 (Developer Level).**
**It is important to remember this when you are about to activate the password option.**

# 5.7. Project Statistics

Movicon can associate information with each project, allowing you to identify the project (the author, the project number, etc.).

This information will be stored together with the project and will help type identification. As well as the information edited by the author, the system displays statistical information related to the project, like the date of the last printing, the date of the last modifications, the last save, etc. You can display this information by selecting the **Properties** command from the **File** menu.

*Note: the properties of a project (when Movicon is closed) are available from the explorer, by clicking with the mouse right button on the project file and selecting the **Properties** feature.*
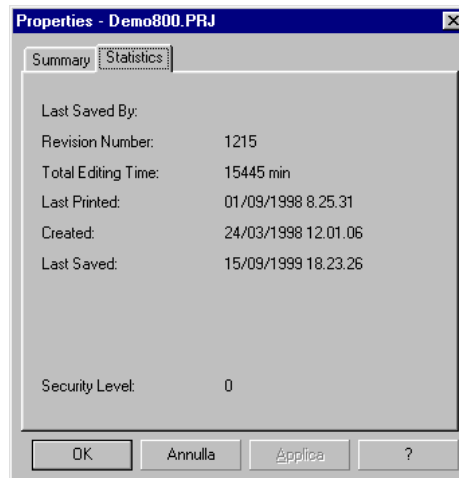
# 6. Working Area and Operativity

*This chapter briefly describes the operativity of the system and the components of the working area.*

The Movicon working area contains the projects  and system resources using the windows technique according to the Windows standards. The window with the working area can be maximized by hiding automatically the title bar and the menu bar or with the corresponding commands. To return to the original configuration simply press the CTRL+MAIUSC+F5 keys.
At the start-up of the project, Movicon might display the icon of the resources contained in the project. This means that no *Synoptic configuration* has been defined, as explained later in this section.
The working area can be maximized, resized or minimized to an icon.
unless otherwise specified through parameters, at start-up Movicon opens the last project saved in Programming mode (or it finds a *New project*).
Each project displays the resources of the project in a tree structure in its window.
*For more information about resources and projects, refer to the programmer's manual.*

> ⚠️ *Usually, Movicon is configured by the programmer in order to display at start-up the "Main" synoptic configuration.*

Starting Movicon without parameters in the command line will open the last project saved or a new project, as shown in the figure below.
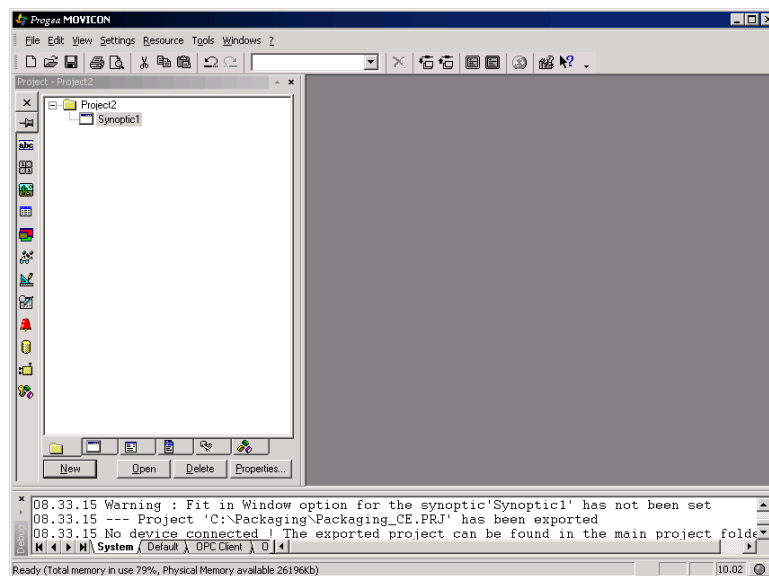


> ⚠️ *The Run or Stop commands in the File menu allow you to switch from Programming mode into running mode or vice versa.*

# 6.1. Components of a window

The components of a window are tools allowing you to work with the window, with the application or with the drawings inside the window. All the windows have some common elements, like the title bar and the control menu. The dialog windows can be different, depending on whether they are dialog windows of the system, of the project, or of the properties. To simplify all the types of dialog, the windows will be simply named Dialog Window. The main window of Movicon contains the menu Bar, as well as all the secondary windows (if present).

*The main bar menu of Movicon can be customized by the programmer in order to correspond to the application.*

A secondary window can have its own title bar, except if the settings disable it or if it is maximized. In fact, if maximized, the window shares the title bar of the main window.
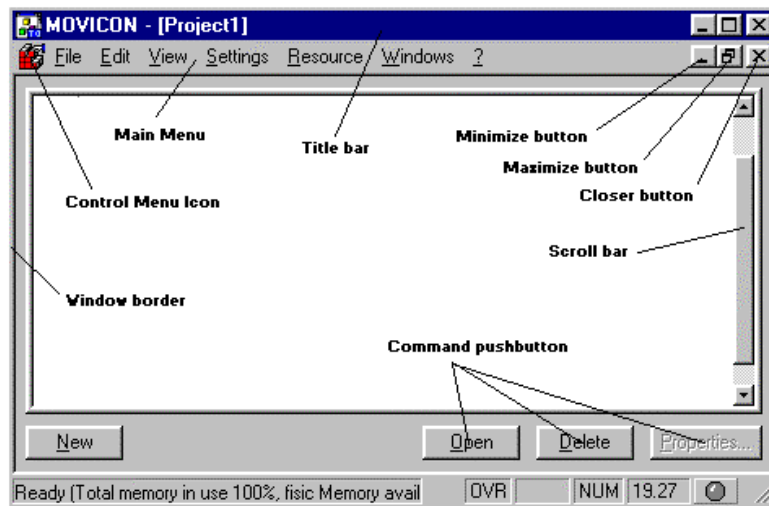


The elements of a window.

## 6.1.1. Control menu Icon

The control menu icon is in the upper left corner of each window. The control menu is particularly useful when you work without the mouse. The commands of the control menu allow you to resize, move, zoom in, zoom out or close the window. To open the control menu, click with the mouse on the corresponding icon or press the ALT key.

By double clicking on the icon of the control menu, the window will be closed or reduced to an icon.

## 6.1.2. Title Bar

The *Title Bar* displays the name of the window or of the Movicon project.
- To save video space, it is sometimes useful not to display the title bar.
- The title bar can be displayed or hidden by selecting the corresponding command from the **View** menu or by pressing the CTRL+MAIUSC+F5 keys.
- The display of the title bar of a synoptic window is set by the project programmer.

If more than one window is opened, the title bar of the active one is different from the other ones in color or intensity. The active window is the window in which you are working. To activate a window, simply click on it or press the CTRL+TAB keys.

### 6.1.3. Menu Bar

The *Menu Bar* lists the available menus, each menu containing a set of commands or operations to perform. The features of the different menu change with the type of window.

The menu of a project can be customized by the programmer and the system commands can be replaced by the operating commands of the project.

### 6.1.4. Scrolling Bars

With the *Scrolling Bars*, you can display windows, which have a size greater than the screen.

They can also be used to display the elements of a list which do not fit in the predefined area.

Note: when the contents of a window are wholly displayed, the scrolling bars are not visible or they are grey.

Tip: Movicon allows rapid scrolling of images of a synoptic by pressing the right mouse button and dragging the image to the required point.

### 6.1.5. Maximize Button

Using the mouse, you can click on the *Maximize Button* to maximize the active window or on the *Minimize Button* to reduce the window to an icon.

After pressing the Maximize Button, the Maximize button is replaced by the *Back Button,* which allows you to restore the previous dimensions of the window. You can do the same by selecting the **RESTORE** command from the control menu.

### 6.1.6. Border of a window

The *border of a window* is the outer margin of the window. You can increase or decrease the border of a window by clicking on it and dragging it with the mouse.

*For the synoptic window, this option is only given to the programmer.*

# 6.2. Use of the windows

The opportunity to work with more projects or resources together determines the opening of more windows at the same time. This chapter briefly explains how to move, resize or scroll the contents of a window. Since these commands belong to the Windows Standard, we advise you to refer to the Windows User Guide for more details.

### 6.2.1. Moving a window

You can move a window (synoptic, dialog, etc.) to another place of the screen by dragging the title bar of the window to the desired position. The profile of the window will follow the mouse pointer to indicate the position.

Using the keyboard, select the desired window (press CTRL+TAB to switch from one window to another); press ALT, Dash (-) to open the control menu, select the **MOVE** command from the control menu (the pointer has the shape of 4 arrows joined together); use the arrow keys on the keyboard to move to the desired position and finally press ENTER.

### 6.2.2. Resizing a window

Sometimes it can be useful to resize the displayed windows, as long as this operation was enabled by the programmer. Using the mouse you can resize a

window by dragging the borders or the corners of the window. Using the keyboard, select the desired window (press CTRL+TAB to switch from one window to another); press ALT , Dash (-) to open the control menu, select the **RESIZE** command from the control menu (The pointer will have the shape of 4 arrows joined together); use the arrow keys on the keyboard to move the corresponding border to the desired position and finally press ENTER.
Note: The minimum size of a window is usually 5 x 2 cm., depending on the screen resolution.

## 6.2.3. Minimizing a window

You can reduce a window to an icon to partially free the screen, provided that the operation was enabled by the programmer. By minimizing a window you can clear some memory in the pc or reduce Movicon processing work. The programmer is allowed to opt for unloading memory on the PC while the window is reduced to an icon, as described in the programming manual.
To minimize a window to an icon, double click on the corresponding button in the upper right corner of the window.
Using the keyboard, select the desired window (press CTRL+TAB to switch from one window to another); press ALT, Dash (-) to open the control menu and select the **Reduce To Icon** command from the control menu.

## 6.2.4. Restoring the size of a window

To restore the size of a window reduced to an icon:
- Using the mouse, double click on the icon or choose the **RESTORE** command from the control menu.
- Using the keyboard, select the icon by pressing the CTRL+TAB keys, until the icon or the desired window is selected. Then, press the ALT+Dash keys to open the control menu and select the **RESTORE** command.

To restore the size of a maximized window, click with the mouse on the restore button in the right upper corner of the desired window, or select the **RESTORE** command from the control menu.

## 6.2.5. Maximizing a window

Usually, a window can be maximized to occupy the full screen. To maximize a window, click with the mouse on the corresponding button in the right upper corner of the window or double click on the title bar.
Using the keyboard, select the desired window (press CTRL+TAB to switch from one window to another); press ALT, Dash (-) to open the control menu and select the **Maximize** command from the control menu.
Following these instructions, the window will be maximized and the Maximize button will be replaced by the restore button. Later in this manual we will describe how to hide the tool bar and the title to occupy the full screen.
Note: When one of the windows is maximized in a project, remember that the others are still open behind it even if they are hidden.

> ***Tip: Experience tells us that the programmer has to be careful about leaving the inexperienced operator the liberty to resize the windows of a project, as this could create problems****. To prevent this, Movicon allows the programmer to limit the resizing of each window in the programming phase and to save the configurations, as described in the "Use of the windows configurations" chapter.*

## 6.2.6. Docking of the project window

The project window of Movicon can be "Docked", that is kept in the foreground on the left side of the working area. This allows you to work with other windows (synoptics, resources, etc.) in programming or in debug mode, keeping the system information visible.
To dock or undock the project window, select the Docking View command from the **View** menu or with the mouse right button.
The Docking is deactivated using the same command.

# 6.3. Use of the Scrolling Bar

Some windows have scrolling bars (vertical or horizontal) that can be displayed to allow you to view some information or drawing which is hidden outside the visible window area.
To scroll the display of a window, click with the mouse on the scrolling Up and Down arrows, click above or under the scrolling box, or drag the scrolling box.
Using the keyboard, press the Arrow up, Arrow down or PageUP, PageDOWN keys (to scroll vertically).
Note: when the contents of a window appear entirely, the scrolling bars are not visible or are grey.

> *Tip*: to scroll quickly through the contents of a synoptic window, click with the mouse right button inside the window and drag the window to the desired position.

# 6.4. Use of the Menus

The main commands of Movicon are listed in menu. Each resource has its own menu automatically displayed on the main bar menu on the upper border of the working area.
Remember that the main commands can also be activated with the mouse from the tool bar, as described in the corresponding chapter.
Moreover, each window has a *control menu*, also named *system menu*. This menu can be opened by clicking on the icon on the upper left corner of each window. For more information, refer to the "Use of the control menu " chapter in this manual".

> *As well as the main menu, Movicon supports the mouse right button. If you click with the mouse right button a pop-up menu is displayed, including some commands regarding the area or the pointed resource.*
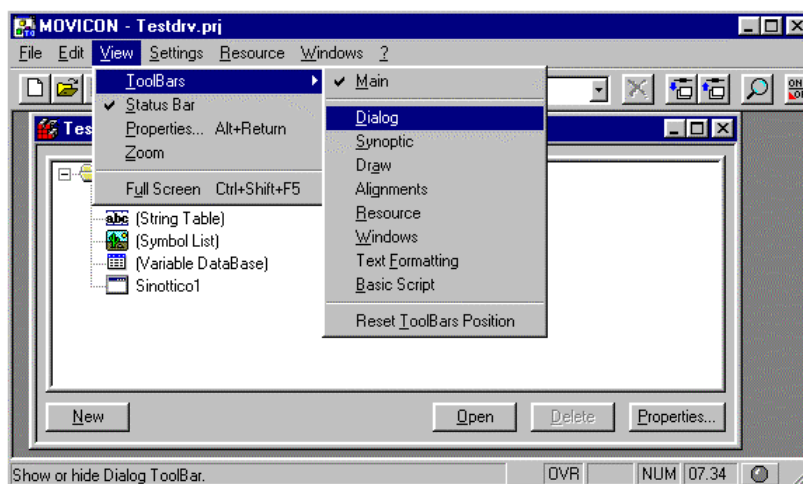


Example of a list of commands in the main menu.

## 6.4.1. Selecting and closing a menu

To execute the main commands, you must select the corresponding command from the menu. The selection of a command launches the corresponding operation directly.
- Using the mouse, point the feature of the menu bar, click on it with the mouse left button to open the menu and click on the desired feature to execute the corresponding command. You can also drag the cursor to the required item, then release the mouse button.

- Using the keyboard, press ALT to select the menu bar (the control menu will be highlighted) then press the LEFT or RIGHT arrows to select the correct menu, press ENTER to open it and the UP and DOWN arrows to reach the desired command. Finally, press ENTER to execute the command. To interrupt the sequence, press ESC repeatedly, until you exit from the menu bar.

**Tip** *: If an underlined letter appears in the name of a menu, you can activate the menu directly from the keyboard by pressing the ALT key followed by the underlined letter.*

Movicon uses some conventions for the menus, described below, established by the Windows Standards:

| | |
|---|---|
| **Greyed Feature** | The command cannot be selected at this stage of the operations. Select another item before using this command. |
| **Arrow ( ▾ ) :** | Menu expansion control. If menu contains other infrequently used items, they can be displayed by acting on arrow. |
| **Dots (...)** | When the command is selected, a dialog window containing the option required to execute the command appears. |
| **Tick (✓)** | The command is currently active. If selected again, it will become inactive and the sign will disappear. |
| **Combined keys** | The right side of the menu features usually specifies a set of combined keys, which allow fast selection using the keyboard (as long as the same keys are not used by the Movicon project). |
| **Arrow ( ▸ ) :** | When a feature of a menu followed by a black triangle is selected, another pop-up menu with another set of commands appears. |

# 6.5. The control menu

Each Movicon window, if not disabled by the programmer, has a control menu, which can be opened by selecting the icon on the upper left corner.

The control menu of the windows is different from the dialog windows one, as described below.

To open the control menu, click on the icon on the upper left corner of the window. *Be careful not to double click: this would close the window or reduce it to an icon.*

Using the keyboard, press ALT+SPACE BAR to activate the check box in the main window or ALT+Dash (-) to open the control menu from the active secondary window. This will select the box. To close the control menu without selecting any item, or to unselect the box, press ESC.

## 6.5.1. The Commands of the control menu

The following is a description of the main commands of the control menu; for more information, refer to Microsoft Windows user guide.

**Restore:** Restores the original size of a window after it was maximized.

**Move:** Allows you to move a window to another position using the keyboard arrow keys.

**Resize:** Allows you to modify the dimensions of a window using the keyboard arrow keys.

**Iconize:** Reduces the window to an icon. By pressing ENTER on the icon, the original dimensions will be restored.

**Maximize:** Maximizes the window or the icon to the maximum size.

**Close:** Closes the window. This command can also be executed by double clicking with the mouse the icon in the upper left corner of the window on the control box.

**Next** Switches to the next window opened in the working area.

# 6.6. Use of the pop-up menu

A Movicon project can contain some pop-up menu that are activated with a command predefined by the programmer by using a button, a key, or a hot region.
To execute a command from a pop-up menu using the mouse, simply click on the desired feature. Using the keyboard, simply use the UP and DOWN arrow keys to scroll the feature and ENTER to select the desired one.

*The commands associated with these custom menus can be chosen freely by the programmer. Therefore, for relative information, consult the specific uses of the project.*
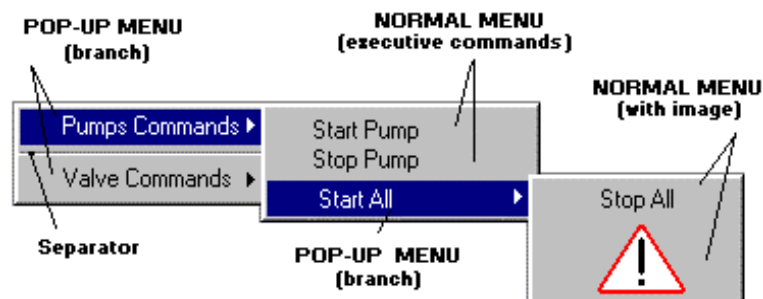
# 7. Screen Pages and synoptic Configurations

*A Movicon project bases the graphic interface on screen pages, which comprise the project Synoptic resources.*

In a Movicon project it may be essential to use the Synoptic Configurations. For Movicon a synoptic configuration corresponds to a screen page consisting of one or more synoptic windows, sized as described above to the optimum size and arranged in a logical, orderly manner on the screen.

The Movicon page change commands which can be associated with objects always refer to the Synoptic Configurations, i.e. the project's screen pages.

The synoptic configurations can be activated by the operator (if permitted by the programmer) at any time by clicking the mouse on the relevant button on the main toolbar or by selecting **Configurations** then **Open** from the **Windows** menu.

- *The project programmer normally allows synoptic configurations to be activated using commands that are simple and intuitive for the operator, using from customized buttons or icons, by clicking with the mouse on special hot regions in the synoptic, from the keyboard or even upon decision of the logics.*

If the project allows, the synoptic windows can be sized and moved as desired by the operator.

For example, screen pages can be arranged with two independent synoptics, with or without displaying the Tool bar or the Status bar. After the page has been formed, it can be saved as a Synoptic Configuration with a name and an identifier.

- *The name allows the screen page to be called up using a Movicon command or object. The identifier allows the page code to be called up according to an event established by the plant or the project.*

When you call up a screen page, it will appear exactly as it was when saved, adapting the toolbars to the screen.
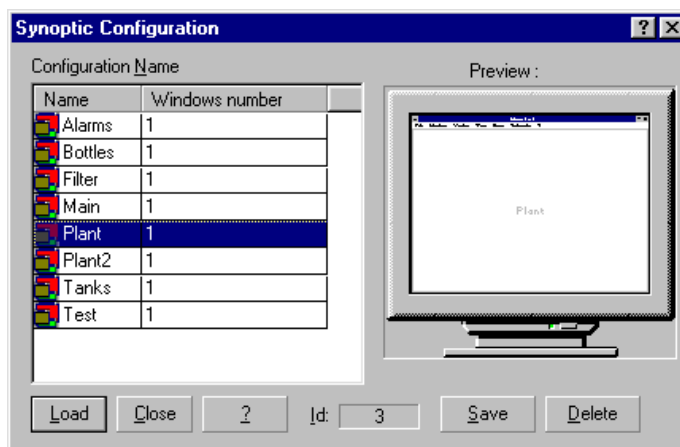


The Synoptic Configuration window (Screen Page)

Use of the Synoptics Configurations is advisable if not obligatory and has the following advantages:

- *It allows you to associate an Accelerator resource (i.e. a series of keyboard commands) with each screen page, thereby allowing the same function keys to be used for different purposes within a project.*
- *It allows project screen pages to be called up and activated upon the operator's command or upon an event established by variables.*
- It also permits the screen pages to be structured and organized in the best way for the operator, if necessary preventing him from opening or leaving open the project synoptics, which would unintentionally impair performance of the system.

## 7.1.1. The "Main" Synoptic Configuration

Movicon is set-up in such a way that when it starts, it will look for and display the **Main** synoptic configuration. If this configuration is not present, Movicon will start-up with all the project windows minimized. The operator can then double-click the required icons to open the synoptic windows.

## 7.1.2. Enabling the Open and Save Configuration Commands

The **Configurations - Save** and **Open** commands are available from the **Windows** menu in the following conditions:

1) Always, in development system programming mode.
2) Only if checked, during project runtime. The programmer can enable them by setting the appropriate Flags (F15.4 and F15.5) in the General Logic.

*These commands are disabled unless otherwise specified.*

The **Configurations** submenu can be accessed from the **Windows** menu if general logic is enabled (see Standard Flags). Thus the **Save** command will be available for saving the current screen page, or **Load** for activate a Configuration saved earlier.

## 7.1.3. Saving Synoptic Configurations

Before being able to display a screen page in the project, the Synoptic configurations must first be saved.
The **Configurations** - **Save** command from the **Windows** menu is used for saving the current situation in the workspace and hence the configuration of a single window or all the synoptic windows present in their current sizes.
You must give the configuration a name by typing it in the **Configurations Name** edit box.
By way of the general logic, the configuration's ID number provides an identifier for activating or reading the configurations from the logic or from the PLC. If you do not intend to use this option, this number will not affect the configurations.
If you enter a configuration name that already exists in the project, you will be asked to confirm overwriting.

*Bear in mind that the **Configurations - Save** command saves the setting for all the open synoptic windows, even if they are not displayed. Before saving, check that the synoptic you intend to save is the only one open so as to avoid pointless wastage of system resources.*
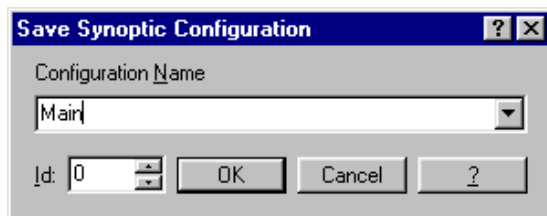


Window for saving a Movicon synoptic
configuration

> **Note**: The configuration name **Main** is to be considered a *special* name because it is used by Movicon to identify the synoptic configuration displayed at the start of project runtime. Remember that Movicon names are case-sensitive.

## 7.1.4. Opening Synoptic Configurations

Synoptic Configurations must previously have been saved in order to be opened and displayed. Only in this case will the page appear in the list of available and openable pages.

The **Configurations** - **Open** command from the **Windows** menu activates a previously saved configuration. You can use the relevant selection window to scroll through the currently listed configurations, preview their contents and activate the required configuration by double-clicking the name with the mouse or by clicking the **Load** button.

The new window configuration will now replace the one previously displayed in the workspace.
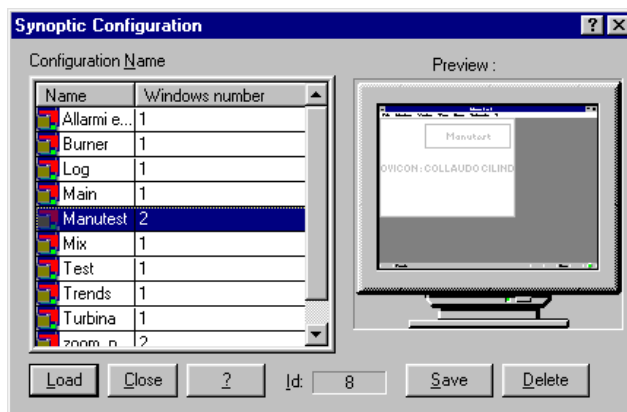


The **Delete** button, which is activated when a configuration is selected, allows the required synoptic configuration to be removed from the list. The removed configuration will no longer be available, but if necessary it can be restored using the **Save** function.

The preview image will display the synoptics and menu bars for the selected configuration.

> **Note**: *Movicon's synoptic configurations can also be opened using specific commands set by the programmer for this purpose. This means that in a project you can change page using buttons, Hot Regions or keyboard commands*.

## 7.1.5. Transparent Boxes

The Windows 2000 environment may use transparent boxes. A transparent box offers the operator the possibility to exploit transparency level to keep the below box content as displayed, by exploiting the transparency level of forefront box.

The transparency level can be set on project **General** Settings, which can be accessed by the programmer.

# 8. Using Windows and Objects

*This chapter briefly describes the use of the synoptic windows and of the objects contained inside them.*

## 8.1. Using a synoptic window

Apart from graphic animation, the synoptic windows can contain some predefined objects, which allow the operator to interact with the plant.
The available objects that can be inserted in a synoptic window are: *button, the switches, the potentiometers, and Spins*

Moreover, you can prearrange some areas so that a click above the area executes a predefined command. These areas are named Hot Regions and can be set with the Hot Region object. In run mode, the cursor changes its shape when it is above such a region.

The commands associated with the objects are chosen by the programmer and are specific for each project.
The next paragraph will describe the use of the Movicon object when inserted in a project for the control of the plant.
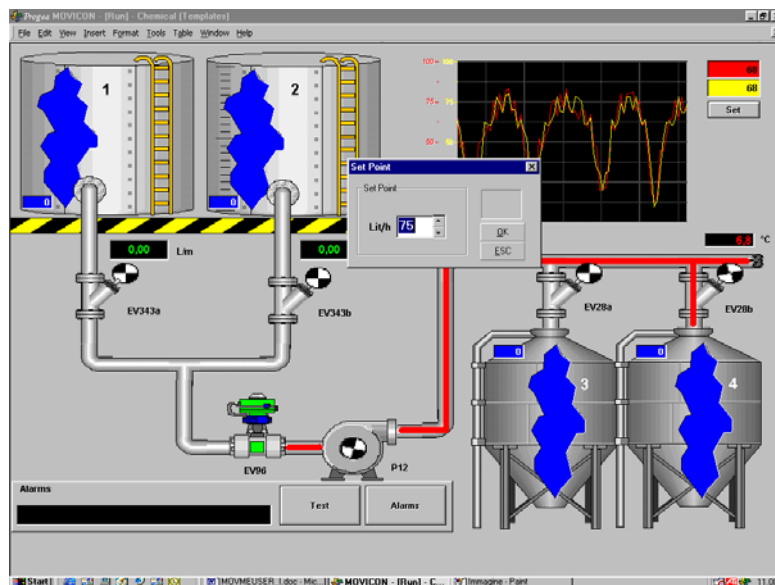


Example of synoptic containing command objects

## 8.1.1. Using a TouchScreen

It is often necessary to install the software application on machines without a keyboard, which use a TouchScreen as pointing device.

Obviously, the programmer has to take into consideration the fact that there is no keyboard and that special procedures are required to allow the operator to type in numerical or alphanumeric values. The operations normally performed with the mouse are not affected.

To speed up operations and allow the programmer provide a simple and easy-to-use interface for machines without a keyboard, Movicon uses special commands, which allow a "Virtual Keyboard" to be used. This is a software keyboard that allows the operator to type in the required values by bringing up the keyboard (NumPad or Alphanumeric) only when necessary.

This opportunity is provided by the following commands available from the **Command Type** list that can be selected from the **Execution Properties** of any object or resource set up for the command:
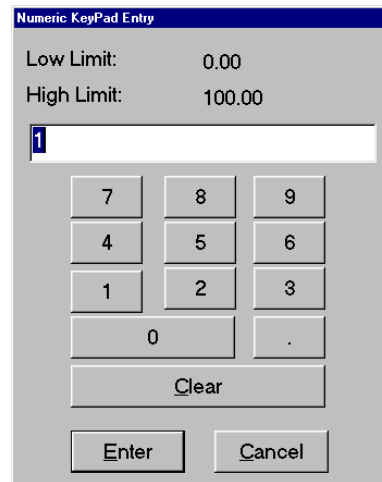
## 8.1.2. Synoptic Buttons

A synoptic window can contain one or more Movicon buttons.
Movicon buttons can have different shapes as well as different functions.
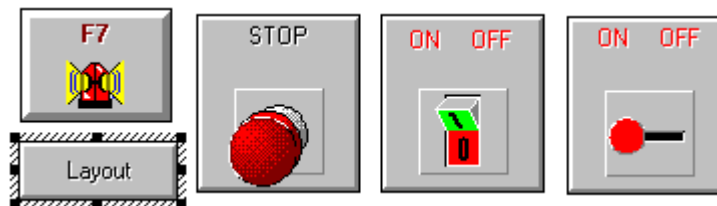
Some of the buttons available.

The command associated with a Movicon button can be directly activated with the mouse by clicking on its surface. If the mouse pointer is close to the button in its command area, the button is highlighted. If the mouse is not available, you can select a button by using the TAB or UPPERCASE+TAB keys repeatedly. Once the button is selected, you can activate it by pressing the ENTER key, or by simulating the left button of the mouse with the SPACE BAR.

## 8.1.3. Typology of the button objects

The Button can be set as latch, impulsive, timed.
Once the button is selected, you can simulate it by pressing the Left Mouse button, or using the keyboard with the Tab key to select the button and the SPACE BAR to activate it. The available types of buttons are:

**Normal**: *if you select this option, the button will be depressed all the time the left button of the mouse is held down and will be released when the button of the mouse (or its keyboard equivalents) is released.*
**Latch**: *if you select this option, after the button has been activated using the left button of the mouse, it will remain in this position until you press*

*the left button of the mouse again to return to the previous condition (bi-stable effect).*

**Impulsive***: if you select this option, once the button has been activated it will automatically return to the basic position after the time (in milliseconds) set in the edit box next to the Impulsive box even if the left button of the mouse (or its keyboard equivalent) is held down.*

**Timed***: if you select this option, once the button has been activated it will automatically return to rest position after the time (in milliseconds) set in the edit box next to the Time box.*

Note: The command associated with the button will always be activated after releasing the left button of the mouse or the SPACE BAR.

## 8.1.4. Potentiometers

A synoptic window can contain one or more Movicon potentiometers.
The Movicon potentiometer can have different shapes as well as different functions; they are normally used to preset the values or set-points of the plant.
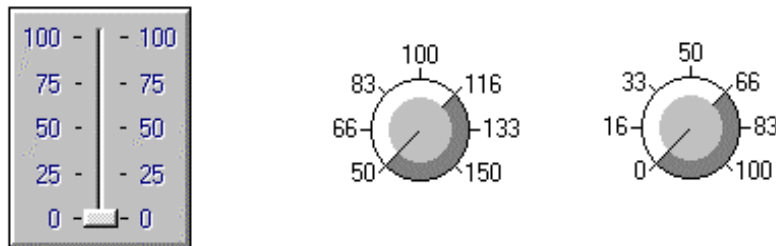


Example of  Sliders and Potentiometers

To use a potentiometer, you should point its cursor with the mouse, press the mouse left button, drag the cursor to the position of the cursor value with the value you want to set and release the mouse button. Using the keyboard, select the desired potentiometer with the TAB key, use the Up and Down arrow keys for a precise tuning and PageUP, PageDOWN for a rough tuning.

## 8.1.5. The Spin Button

A synoptic window can contain one or more Movicon spin buttons.
The spin buttons are usually associated with display objects and are used to increase or decrease the values of the plant set-points, like the sliders.



Example of spin object associated with a display
window

# 8.2. Modifying a Variable

If set by the programmer, some objects or resources (button, menu, commands from keyboard, etc) can activate a command which allows you to modify the value of the variables of a project.

This command will open a system window for the selection of the desired variable and the editing of the value. At the end of the setting, simply confirm the operation with the ENTER key or cancel it with the ESC key.

## 8.2.1. Modifying the Variables using the Display object

A display object is normally used to display the value of some variables, but if there is one, a Display can allow you to modify the value of the variables it is associated with.
To modify the value, click with the mouse on the digits of the display: they will appear in a different style; digit the value you want to set and confirm with ENTER. The value will be sent to the variable associated with the Display. The ESC key cancels the operation.

It is also possible to click on the display; with the right button of the mouse select the edit command and digit the value in the corresponding edit box.



# 8.3. Hot Region (Sensitive Zone)

The Hot Region of a synoptic is a mouse-sensitive, delimited area of the synoptic, since it can be associated with a command predefined by the programmer that is activated by a single click of the mouse above the area.

☞ The borders of the area are totally invisible. The only way for the operator to know that he is above a hot region is to notice the change in the mouse pointer (which becomes as in the figure on the left).

To execute the associated command, simply click on the area when the mouse pointer changes; when using the keyboard, use the arrows to go above the hot region and then press ENTER or the SPACEBAR when the mouse pointer changes.

*Note: The arrow keys are available only when another object of the synoptic is not selected. To deselect an object, press TAB or UPPERCASE+TAB. If you do it repeatedly, you will select the objects one after another until no object is selected. By pressing TAB again the first object of the synoptic will be selected.*

# 8.4. Use of a Dialog Box

The dialog window is used as a user interface to allow the operator to interact with the system and to insert the data needed by the process. The dialog window can be emitted by the system or by the project. The dialog windows emitted by the project were deliberately created by the programmer to be used in the management of the process. The handling of dialog windows will be described later in this section.
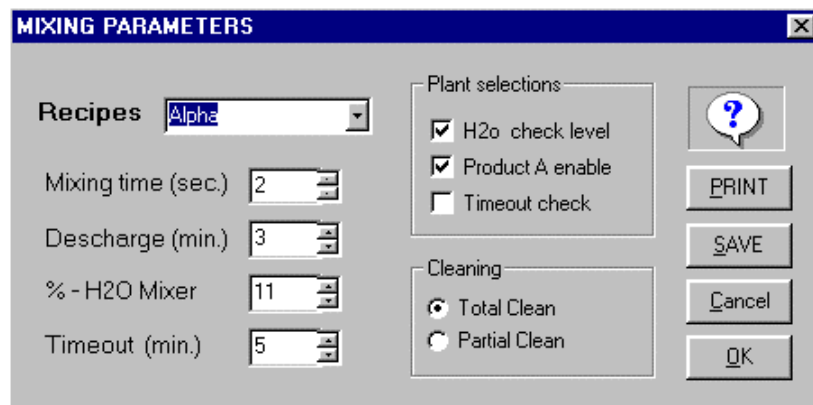


Example of dialog window for a simple recipe management.

## 8.4.1. To move inside a dialog window

It is often necessary to move the cursor position inside the dialog box to select one or more options. When an option is selected, it will be surrounded by a dashed rectangle or by a selection cursor.
To move inside a dialog window, click with the mouse on the desired option or on the corresponding area.
Using the keyboard, press the TAB key to move forward (generally from left to right) or UPPERCASE+TAB to move backwards. Or, if you want to move faster, keep the ALT key down and type the underlined letter present in the title of the option or of the group.
Inside an area, use the arrow keys to move from an option to another.

## 8.4.2. Closing a dialog window

Usually, every dialog window contains at least two buttons for closing the window: one to exit without saving (usually named **Cancel**) and the other to exit saving and activating the data (usually named **Ok** or **Enter**). With the keyboard, you must press the ESC key in the first case and the ENTER key in the second.
Anyway, if these buttons are not present, the dialog window can be closed by using the **Close** command from the control menu or by using the ESC key. With the keyboard you can also close the active window by using the ALT+F4 keys.
With the mouse, you can close the window by double clicking on the control box in the upper left corner of the window.

# 8.5. The controls in the dialog box

Different types of controls can exist inside a dialog window. A complete description of them is available in the programmer manual in the chapter about the dialog windows.
The different types of controls in a dialog window are:

## 8.5.1. Edit Box

In an Edit box, you can type information. When you move to an empty text box, a blinking bar appears on the left side of the box. This bar is called insertion point and indicates that the inserted text will be displayed starting from this bar.
If the edit box already contains some text, this will be automatically selected and replaced by any new text typed; otherwise, you can scroll it with the keys and modify it as desired.
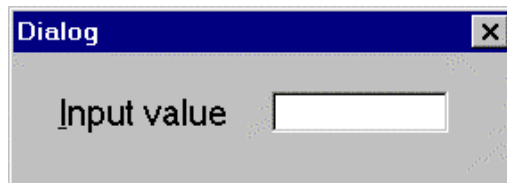


Edit box combined with a Text box.

## 8.5.2. List box

A list box displays a list of features available for a selection. If the list is too long to be contained inside the list box, the scrolling bars will appear. The features of a list box can be selected with the cursor bar or with the mouse one at a time.
To enable the selection, use the scrolling bar and double click on the corresponding feature, or scroll the list with the arrow keys and press ENTER when you are on the desired feature.
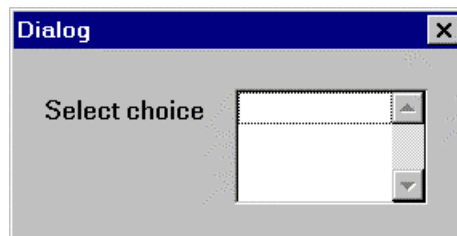


Example of standard List Box

## 8.5.3. Combo Box

The combo box looks like a rectangle containing the voice selected. If you select the arrow on the right side of the rectangle, a list box containing the available voices appears. If the list box is too narrow to display the complete features, the scrolling bars are displayed. This type of edit box is typically used inside small dialog windows. To open the list box, press the button with the right arrow design or press the ALT + Down arrow keys.
To activate the selection, use the scrolling bar and double click on the desired feature, or scroll the features using the arrow keys and press ENTER when you are on the desired feature.

Note: You can select one voice at a time inside the combo box. In some cases, you can select more voices at a time; to do this, follow the next steps:

Click on the first desired feature; then keep the Uppercase key or CTRL key pressed and click on the last desired feature. At the end, release the Uppercase or CTRL keys. To cancel the selection, click on any feature. Using the keyboard, use the arrows to select the first feature, then press the uppercase key and, at the same time, use the Up and Down arrow keys to select all the desired features.
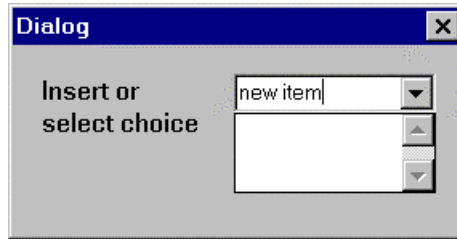


*Example of Combo Box*

## 8.5.4. Radio buttons

The radio buttons have a set of options, but only one of them can be selected. The selection of one option automatically cancels the selection of any other option of the group. The active option is enabled.
To activate an option, click with the mouse on the desired radio button.
Using the keyboard, press the TAB key to move on the desired option set and then use the arrow keys to select the desired radio button.
If an underlined letter appears in the name of the option, it is possible to select the desired option quickly, keeping the ALT key pressed and pressing the underlined letter.



*Example of radio buttons*

## 8.5.5. Check box

The check boxes represent options that can be selected or deselected, even with other options of the same group. An active check box contains an X inside.
To activate a check box, click on it with the mouse or using the keyboard, press the TAB key until you reach the desired check box and use the SPACE BAR to activate or deactivate it.
If an underlined letter appears in the option name, you can select the option quickly keeping the ALT key pressed and pressing the underlined letter.
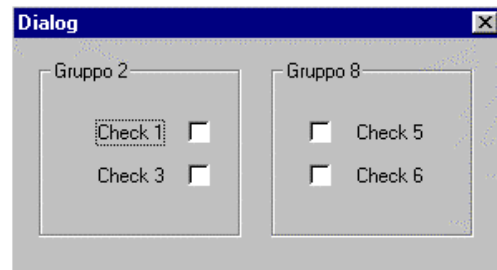


Example of check box

# 9. Alarms and Messages

*The alarms and messages in a project*
*allow you to monitor and to display any*
*event which appears during the process.*

Movicon allows you a management of the alarms which is completely settable and separated from message management. The alarm management allows the programmer to assign one of the five priority levels existing to each alarm.
The display of the alarms or messages can be decided by the programmer, since he can insert a Movicon object named Alarm or Message window in any synoptic window or video page.

> *The display of an alarm or message window is not defined rigidly by the system but is defined by the project developer using one of the many possibilities offered by the system to adapt the project to the various functional and aesthetic requirements of the client or plant.*

The display of the alarm or message window can be associated with a button, a function key, an icon or an event. The alarm or message windows can be configured by the programmer as desired. This chapter will describe all the options and possibilities given by the alarm and message windows.

# 9.1. The alarms window

The alarm window of Movicon, depending on how it was configured in the project, allows the operator to perform a complete management of the plant alarms. The window, whose size was defined in the project, allows you to visualize the alarm present in the plant or in a restricted area of the plant.
Each alarm can be associated with: a description, a priority, information about the time it appeared, the acknowledge time, comments, etc …).
Remember that this information is available only if enabled by the programmer.
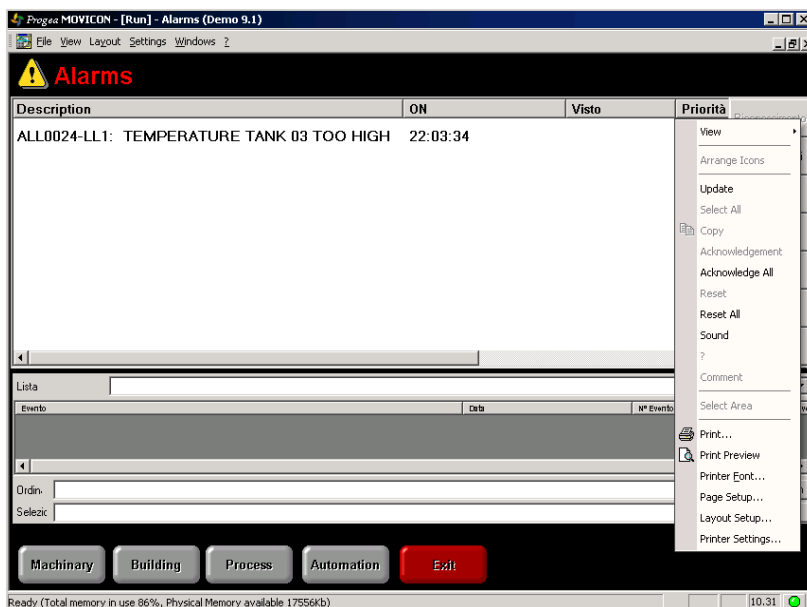


Synoptic containing an alarm window with the menu
enabled by the mouse right button.

## 9.1.1. Select the Alarm area

An alarm window can display all the alarms of a plant or only a set of them, arranged by areas defined by the programmer.
If an alarm window is dedicated to displaying area alarms, the programmer can set the window to let you choose and change the displayed area. If necessary, the operator can select the desired area, by clicking with the mouse right button on the windows and selecting the **Select Area** command. The next selection window will appear:
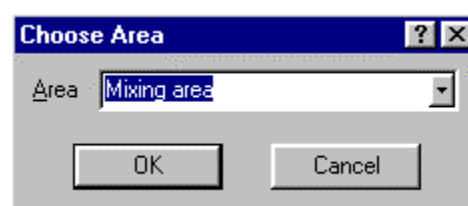


*The available areas are the ones predefined by the programmer, listed in the combo box "Area".*

# 9.2. Using the alarm window

Before selecting any command button in the alarm window, you must select one or more alarms. To select only one alarm, simply click on the corresponding alarm while, to select more alarms, keep the CTRL or Uppercase key pressed and click on the desired alarms.

If the mouse is not available, select the alarm window with the TAB key and use the Up and Down arrows to select the alarm inside the alarm window. To select more alarms, keep the Uppercase key pressed and use the arrow keys. When the alarms are selected, use the TAB key to select the desired command button and the SPACE BAR to execute the corresponding command.

## 9.2.1. Selecting the type of display

Even if the default display type is configured by the programmer, the operator can modify it according to his needs.

To modify the display type, click on the mouse right button and open the control menu.

These are the displays available in the Alarms window:

**Large Icons**: Displays the alarm texts under the corresponding icons indicating the priority.

**Small Icons**: Displays the alarm texts under the corresponding icons indicating the priority in a size smaller than in the previous option.

**List**: Displays the alarm texts in a list of icons indicating the priority.

**Details**: Displays the alarm texts in a list of icons indicating the priority. There are also some columns (sizable by the operator) displaying data related to each alarms as follows:

> *Description*: Alarm Text
> *ON*: When the alarm occurred
> *ACK*: When the alarm acknowledge occurs.
> *Priority*: Type of priority of the alarm.
> *State*: Status of the alarm. (0=OFF / 1=ON)

*Note: By enabling the display type "detail" you can select the color for each priority type. When you enable the color, the font of the alarm text will be automatically decided by the system.*

## 9.2.2. The Alarm priority

During the configuration of the alarms, the programmer should associate a priority level with each of them. This priority level should indicate the seriousness of the alarm. The operator can modify the color associated with the priority level by selecting the **Color** command button. Remember that this property sets the font without the possibility of modifying it.

> The alarms can be arranged in the alarm window by priority level by pressing the **priority** button, when the window is in the style properties with the "**Details**" list.

## 9.2.3. Occurrence and acknowledge time

If you select the "**Details**" display in the style property, the time when the alarm occurred and when it was acknowledged will appear in the corresponding column.

*Occurring Time*, appears in the column under the *ON* button on the right of the description column and specifies when the alarm occurred in the plant.

*Acknowledge Time* appears in the column under the *ACK* button on the right of the description column and specifies the time the alarm was acknowledged by the operator.

The *ON* and *ACK* buttons on the upper border of the window allow you to put the alarm in chronological order.

### 9.2.4. Alarm Description

The string text describing the alarms is necessary to identify them and, so, it is always displayed in the alarm window.

The *Description* button on the superior border of the window (when the "**Details**" style is selected) allows you to put the alarm description in alphabetical order in the window.

### 9.2.5. More information about an alarm

Movicon allows you to associate a help string with each alarm to supply more information about the alarm.

The help string is a string defined in the string resource and associated with the corresponding alarm by the programmer.

In order to display the help string, the "?" button must be available. In fact, when the alarm is selected, to display this string you must press the "**?**".button: a pop-up window containing  the string will appear.

To close this window, press ESC, or click with the mouse in the working area.

The display occurs only if a single alarm is selected.

### 9.2.6. Acknowledge Alarms

When an alarm occurs, it must be recognized before a possible reset.
- This operation will be reported in the alarm window, as well as in the Historical Log window with the acknowledge time.

The operation can be one for all the active alarms and is performed by using the "Ack all" button, or by using the "Ack" button only to recognize the selected Alarms. From the alarms window it is possible to acknowledge each alarm individually, selecting it with the mouse or the UP/DOWN arrow keys (selecting the window con TAB if necessary. If acknowledge a number of alarms simultaneously, select the required alarms dragging the selection with the mouse, of with the keyboard, select the alarm window keeping the UpperCase key pressed and using the Up and Down arrows.

> Note: the acknowledge operation can be performed by a variable defined inside the project. The effect will be the same as that using the pushbutton.

### 9.2.7. Reset Alarms

The Reset of an alarm will make it disappear from the alarm windows, if the cause which generated it is not present any more. If the cause is still active, a Reset (according to ISA standards), will restore the alarm and you will need to acknowledge it again.

*The Reset of one or more alarms can be executed only if the acknowledge procedure was performed before.*

The Reset operation, if performed properly, will be recorded in the Historical Log with indication of the time the alarm disappeared under the OFF voice.

The operation can be one for all the active alarms and it is performed by using the "Reset all" button, or by using the "Reset" button to reset only the selected Alarms. From the alarms window it is possible to acknowledge each alarm individually, selecting it with the mouse or the UP/DOWN arrow keys (selecting the window con TAB if necessary. If acknowledge a number of alarms simultaneously, select the required alarms dragging the selection with the mouse, of with the keyboard, select the alarm window keeping the UpperCase key pressed and using the Up and Down arrows.

Note: the reset operation can be performed by a variable defined inside the project. The effect will be the same as that using the pushbutton.

### 9.2.8. Comment about an alarm

If present on the left border of the window, the comment button allows you to type in edit window comments associated with the alarm.
For example, the operator can communicate some information, suggestion or, … to other operators.
The comment remains associated with the alarm until it is deleted from the corresponding comment window.
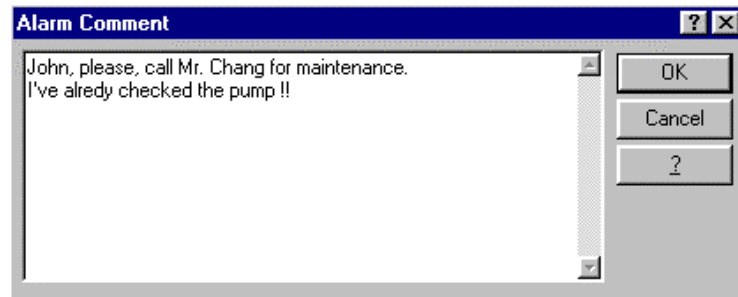


Comment associated with an alarm

### 9.2.9. Printing of the alarms

The operator can print the alarms by using the corresponding commands from the file menu or from the mouse right button.

# 9.3. The Messages window object

Movicon message window, depending on the way it was configured in the project, allows the operator to perform a complete management of the plant messages. The window, whose size was defined in the project, allows you to visualize the messages related to the plant or to a restricted area of the plant.
Each alarm can be associated with: a description, information about the time it appeared, comments, etc …).

*When the cause, which generated the message, has disappeared, the message disappears without requiring any acknowledge or reset operation.*

For each message, apart from the text, further information can be associated or comments can be entered. However, this information cannot be displayed in the window if it has not been set by the programmer. However, we shall proceed with the description, bearing in mind that availability for the operator depends on the project specifications.
The use of the Comment or **?** buttons, configuring the message window, selecting the message area … is already described earlier under the Alarms window.

*The operating mode for selecting Messages Area to be displayed or type of Message display are identical to the description in the previous paragraphs.*

# 10. Historical Log

*The purpose of the Historical Log is to record in chronological order all the significant events and alarms that occur in the plant managed by the project.*

The purpose of the Historical Log is to record in chronological order all the significant events that occur in the plant managed by the project.
These events are:

- ❏   *System operations carried out by the operator.*
- ❏   *System diagnostics (auto-diagnosis, Driver diagnosis).*
- ❏   *All project alarms and messages considered important by the programmer.*
- ❏   *The contents of the plant variables associated with project strings upon event established by the programmer.*
- ❏   *Messages from other applications, chosen by the programmer.*

Apart from the messages recorded by the system, all the other events can be recorded only if the programmer has allowed for the possibility in the alarm or message command settings in the General Logic program.
The events will be recorded according to the settings made in **Historical Log** from the Movicon **Settings** menu during the programming phase.
It is therefore up to the programmer to decide if and how to print the alarms, if and how to execute the backup of the historical data, the database file size and other parameters needed by the system for the Log management.
The events recorded in the Log can be displayed, in clearly distinct ways, through two very different types of windows linked to different types of archives. We will define these as **Default Historical Log** and **Optional Historical Log**.
The following paragraphs show the difference between the two types of Log management.

# 10.1. Default Historical Log

The Default Historical Log is always present in any project, and the corresponding recording engine is automatically activated at every project start.
> *The engine records the Log events and messages, in the manner established in the settings, in specific ASCII files called LOGxxxxx.INI by default, where the x's are replaced by progressive numbers.*

Each file constitutes a Log database which can be displayed by a special system window that can be activated solely in runtime by selecting **Historical Log** from the **Windows** menu (ALT+L).
All the events described above will be listed in the "Message List" window and sorted in chronological order.
The programmer can decide whether to display chronological details as year, month, day, time, hours, minutes or seconds or as combinations of these.
To view the messages that do not fit in the window, use the scrollbar on the right of the window, the UP/DOWN arrow keys or the PAGE UP/DOWN keys.
The CTRL+HOME and CTRL+END key combinations send the cursor to the beginning or end of the LOG text.
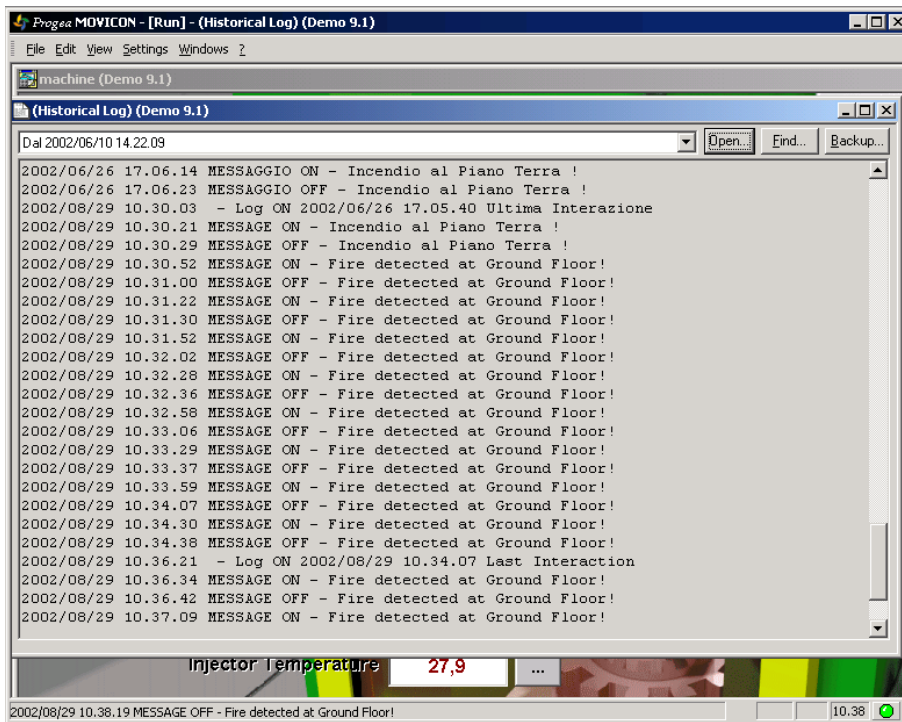
An example of a default historical log window

## 10.1.1. Message list range

The *Message list range* box tells the user the chronological range to which the messages in the list refer.

The range usually shows a starting date and, if there is more than one range, also a final date. These dates correspond to those of the first and last message in the Log list.

If you want to display a different message list range from the current one, you can scroll through all the ranges present using the box's dropdown list and selecting the one you want from those available using the techniques described in the "Using a Dialog Box" chapter.

> **Note**: in practice every message list range corresponds to a Log file. If you select and display a different range, the system will continue to record the events in the active range in the background.

The default historical Log window allows you to look for texts or dates using the **Find** command on the right of the message list field.

## 10.1.2. The Find command

It is sometimes useful to search for a key-word inside a list of messages in order to find the desired messages quickly. To do this, press the **Find** button**,** which will open a dialog window (see below) allowing you to type the desired search key word.
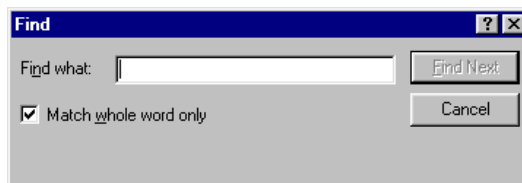


You can select the search direction (up or down) by selecting the corresponding radio button or specify if the system must be case-sensitive.

## 10.1.3. The Backup

The *Backup* control button allows to force a *saving* of present Log file. The saving, hereinafter named as backup, will be made automatically on destination disk with the path set by the programmer on default Historic Log **Settings.** If the programmer has not set any path or has enabled the choice possibility to operator, by pressing backup button the dialog box for destination file choice will appear.
*Unless otherwise specified, Movicon will use default name, path and unit.*

> ⚠️ *The cancellation of backup 'operation will involve the saving on Log file of system message "Backup procedure aborted by operator".*



Box for manually setting the backup file

By means of this dialog box, the operator can type the file name on which the backup will be performed by means of the "filename" editing box; alternatively, leave the default name which will automatically appear on box.
You can select the path by choosing it from among the available paths on Directory summary box. Then select destination unit or disk by Windows standard techniques. Unless otherwise specified, Movicon will use default name, path and unit.
The "**Save**" control button will start the saving. The "**Cancel**" control button will cancel the operation.

> *The operation cancellation will involve the saving in Log file of system message "Backup procedure aborted by operator".*

For further details on backup settings, please read the relevant chapter of the programming manual.

## 10.1.4. Font of the default Log window

You can customize the Font used for the displaying of the texts in the default Log window. To modify the predefined Font, select the **Font** command from the **File** menu. This command is available when the Log window is active.

By means of the standard Windows techniques, you can select the required font for the text in the Log window.
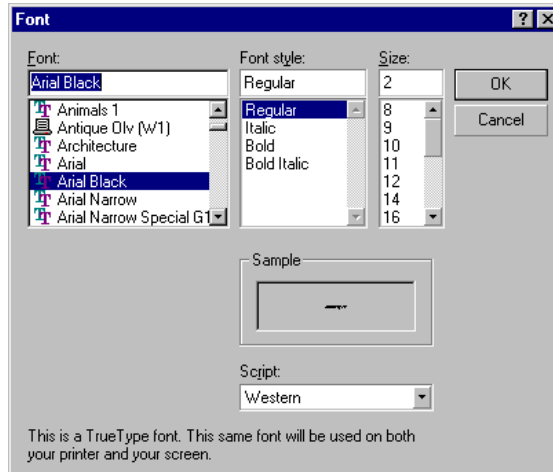


Window for the Font configuration

## 10.1.5. Printing the default Log

The print can be performed each time a new event occurs or can be delayed. These settings are specified by the programmer during the building of the project. The operator may decide to print the default Log by selecting the **Print** or **Print Preview** command from the **File** menu. The Print command opens a dialog window for the settings of the printing, complying with the windows standards and the Printer type.

If you want to print only a part of the contents of the Log, first select the desired text as described below:

Using the mouse, click at the beginning of the selection and, keeping the mouse left button pressed, bring the mouse pointer to the end of the selection, then release the mouse button. To deselect a previously selected text using **Select all** or selected partially, click with the mouse in any position inside the window.

To select the text with the keyboard, use the TAB and arrow keys to reach the beginning of the selection, then keep the upper case pressed and use the arrows until you reach the end of the selection. To deselect previously selected text, simply press any arrow key.

# 10.2. ODBC Historical Log

As well as the Default Historical Log, Movicon provides an Optional Historical Log. This must be enabled and configured in Movicon **Historical Log Settings**.
The Optional Historical Log records events like the Default Historical Log, but handles the archives in a very different manner. The record engines of this type of Log create database files of size defined during programming, in the format specified by the user.

> If enabled, the optional Historical Log records events in database files using the **ODBC** standard. The database files containing the log archive can have the format of the required database (Access, FoxPro, Paradox, dBase, Oracle, SQL, etc.).

This feature, very popular among users who have company management programs, is made possible by the ODBC link, which allows Movicon to record in the set format according to the Open Database Connectivity standard.

> ⚠ *The ODBC link settings are performed by using Microsoft standards and may depend on the type of driver used for the database you want to connect to. Further descriptions of ODBC links are contained in the relevant chapter in this manual.*

Although the archives recorded by Movicon can be read by the company management program database application, they can also be displayed by using a special object window called the **Log Window**.

Like other window objects, the Log window can be inserted and configured as you choose in any project synoptic*.
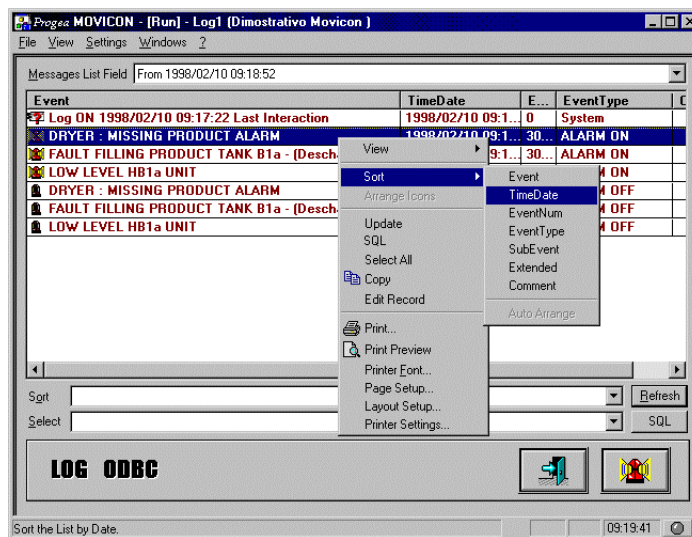


Example of screen page containing a Log object window and (smaller, bottom left) an Alarm object window. The Log object uses ODBC links and allows SQL queries.

The next paragraph will describe the operations the operator can perform with the ODBC Historical Log window.

# 10.3. Operations you can perform in the ODBC Historical Log window

The ODBC historical Log allows you to perform custom and advanced operations for the management of historical data.

When you press the mouse right button close to the Log window, a pop-up menu appears, giving you the opportunity to customize the commands concerning the Log window. Some of them are directly available from the command buttons on the sides of the window.

## 10.3.1. List Type

This list box allows you to select the style used for displaying the message lists in the window. The possible list types are:

**Large Icons**: choose this option to display only the texts arranged in the window under their respective icons indicating the type of event.

**Small icons**: choose this option to display only the texts arranged in the window in columns of icons indicating the type of event, with smaller icons than the previous option.

**List**: choose this option to display only the texts, arranged in the window in lists of icons indicating the type of event.

**Details**: choose this option to display texts arranged in the window in lists of icons. The window will also show columns (sizeable) indicating the data for each single message as follows:

- ❑ *Event*: Log message text
- ❑ *Date*: Time message appears
- ❑ *Event Num*: Event code number (e.g. priority)
- ❑ *Event Type*: Type of message (Alarm ON, ACK, OFF, Message ON, OFF, system, driver).
- ❑ *SubEvent*: Possible help text associated with alarm.
- ❑ *Extended*: Comment that can be associated with Log by operator.
- ❑ *Comment*: Comment that can be associated with Log by operator.
- ❑ *User*: User active at the time of recording.

## 10.3.2. Select Log messages

The Log window allows you to display only a given type of message from among those present in the window (list field). The selection is made according to the settable event type characteristic. This is permitted for all messages of the following type:

- ❑ Alarm ACK
- ❑ Alarm ON
- ❑ Alarm OFF
- ❑ Messages ON
- ❑ Messages OFF
- ❑ Messages from Driver
- ❑ System Messages

## 10.3.3. Sort Log messages

The Log window allows the messages in the window (list field) to be sorted according to various settable characteristics. The messages can be sorted by:

- ❑ *Event*: Log message text
- ❑ *Date*: Time message appears
- ❑ *Event Num*: Event code number (e.g. priority)
- ❑ *Event Type*: Type of message (Alarm ON, ACK, OFF, Message ON, OFF, system, driver).
- ❑ *SubEvent*: Possible help text associated with alarm.
- ❑ *Extended*: Comment that can be associated with Log by operator.

❑   *Comment*: Comment that can be associated with Log by operator.
❑   *User*: User active at the time of recording.

### 10.3.4. Refresh

When you open the optional Log window, you must normally refresh the data before analyzing them. Click the Refresh button to read the data recorded in the database linked via ODBC.

### 10.3.5. Query SQL

The optional Log window allows you to set the standard SQL language command for making customized data analysis queries. For SQL command settings, refer to the specific SQL programming manual.

**Example 1**: if you want to extract from a turbine management project's Log archive only the alarms for turbine number 1, identified in the alarms as "Turbine 1", you must type the following string:
```
SELECT *FROM Historic WHERE Event Like '% Turbine 1'
```

**Example 2**: if you want to extract from a project's Log archive only the ON alarms, ignoring all other events, you must type in the following string:
```
SELECT * FROM Historic WHERE EventType = 'ALARM ON'
```

**Example 3**: if you want to extract from a project's Log archive only the alarms falling within a given time period between one data and another, you must type the following string:
```
SELECT * FROM Historic WHERE Date >= '1998/04/24 10:00:00' AND
Date <= '1998/04/24 18:00:00'
```

**Example 4**: if you want to extract from a project's Log archive only the alarms that occurred while the user Ross was active, you must type in the following string:
```
SELECT * FROM Historic WHERE User = 'Rossi'
```

### 10.3.6. Messages list field

The box marked *Message List Field* indicates to the user the chronological period to which the messages contained in the list refer, as described for the default historical log.
The field box usually indicates an initial date and if more fields are present also a final date. These dates will correspond to the one of the first and of the last message present in the Log window.
If you want to display a field different from the actual one, select it in the combo-box using the techniques described in the chapter "Use of a dialog window".

> *Note: in practice every message list corresponds to a Log file. If you select and display a different field, the system will continue to record the events in the background over the current range.*

# 11. Trends

*Trends allow recording and display of plant variables. The Trend windows allow data analysis according to the operations envisaged by the programmer.*

Movicon's Trends allow you to display or register graphically the evolution of specified variables representing the plant status. Trends are thus the most efficient tools to register, print and analyze graphically the behavior of some variable (mostly analog) representing the plant, such as temperature, pressure, levels, weights, chemical measurements or any other physical value converted in an electrical signal.

Movicon allows you to represent variables on graphic curves through different techniques discussed in the following chapters:

⚠️ *The Trends boxes can be fully configured by programmer. Consequently, the graphic aspect and working options, such as buttons, variables, pens, display, texts and other details will vary from one application to another one.*

## Vectorial Trends

This type of Trend is based on Movicon's Vectorial Graphics and it allows an advanced management of data and of registration engines, and it also allows graphic representation of the values registered in the Data Logger.
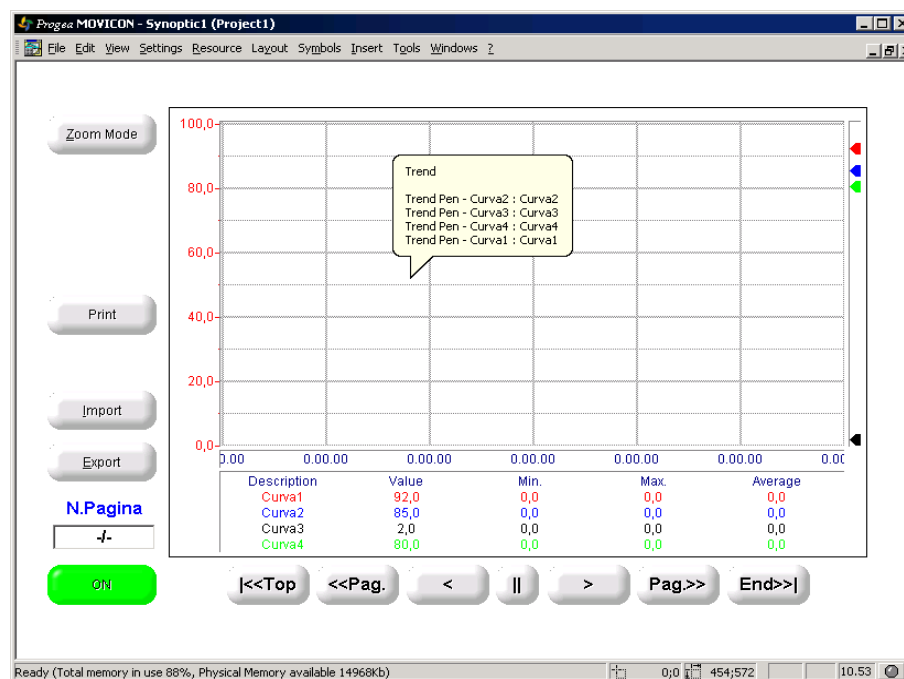


Example of Template containing a symbol made up by a Vectorial Trend object and by other correlated objects.

### Dynamic Trends

Movicon proposes two objects which are able to display the evolution of the variables without any registration. These objects also allow you to visualize in XY mode, drawing the curve based on the X and Y co-ordinates. For more information about these objects, see "Instrumental Trend and XY Plot" in the "Object" chapter in this manual.
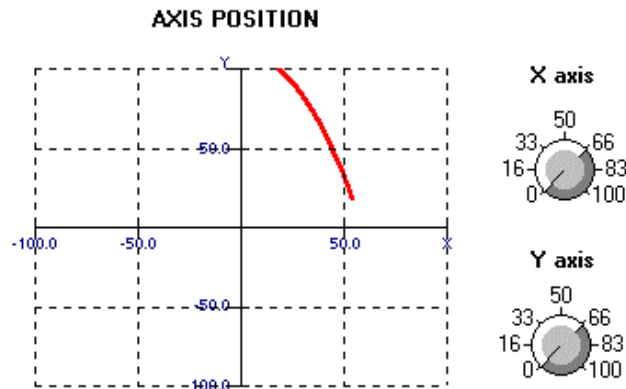
Example of XY Plot. This graphic, unlike the instrumental trend, represents data with both X and Y co-ordinates associated with variables.

# 11.1. Vectorial Trends

Vectorial Trends are the most powerful tool to manage display, analysis and registration of data contained in Movicon's variables or database files.
The Vectorial Trend object is a tool which allows you to visualize and register data but it also links to the database objects inserted in the Data Logger, thereby allowing representation of time and event based historic data.

> *As it is based on a vectorial design, the Vectorial Trend supports all the animation and configuration characteristics typical of a graphical symbol. The vectorial trend is a powerful tool for visualization and registration; it can register data in .CSV standard format and can visualize those data as well as the data registered by the Data Logger.*

The vectorial trend is designed to guarantee maximum flexibility in the management of graphic display of recorded data. This means there is amply scope for using this object, not only for graphic representation of data but more appropriately for working.
The Vectorial Trend is able to display the data registered by the **Data Logger**. In this case the Data Logger performs the function of registration engine. Nevertheless, the Trend is also able to register associated variables data in CSV text format and recover the recorded values by means of the data import function. If the vectorial trend is maintained inside an active synoptic, by activating the "Do not destroy window in RUN" option, it becomes a constantly active recording engine.
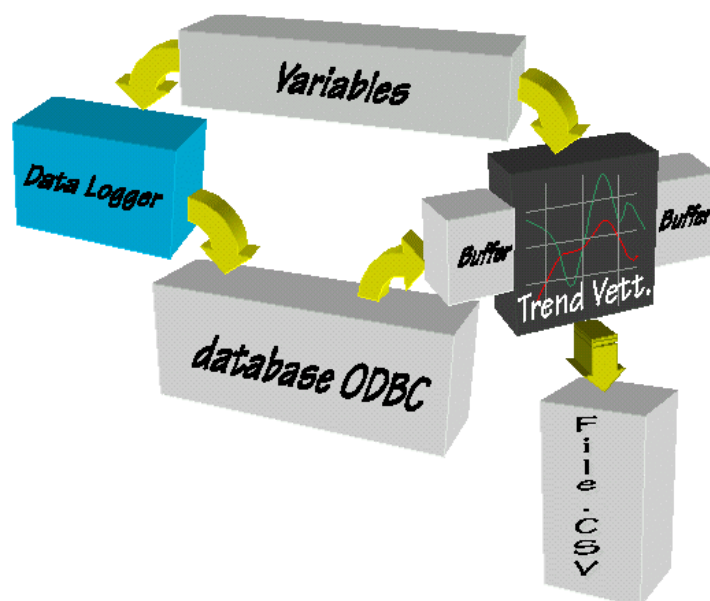
## 11.1.1. Vectorial Trends functionality

The Vectorial Trend has three functions:

1.  *display of real-time variable curves.*
2.  *display of data registered in the Data Logger curves.*
3.  *output Recorder of sampled data.*

The main task of Vectorial Trend does not consist in registering data archives. This is a Data Logger task (Data Logger is described at previous chapter). The main task of Vectorial Trend is data representation by means of a set of graphic functions which can make these data as clear as possible to the operator, based on functions which can be widely customized.

Recording is not the main task of Vectorial Trend object. The recording for data graphic analysis is a task of Data Logger, as previously said.

However, the Vectorial Trend can record data in order to make available data sampled by file output object, which can be read on Ms. Excel or any other non database applications. In fact, files saved data use  **.CSV** format, or text format with separator, interpreted by Excel and many other applications.



Block diagram of Vectorial Trend function

Recording text on file is optional and must be enabled in the Trend object configuration properties. This type of recoding is not suitable for large quantity of data or if filters are to be applied. These operations can be easily implemented if historic data recording is done by the Data Logger.

Just remember that when Trend object is enabled to send sampled data in output on file, this will take place only if the object is active on memory, i.e. if the synoptic containing it is displayed or has not been "discharged and destroyed" with page change.

> *Registration on .CSV file is performed by the Trend object only if the last one is in memory. To keep the Trend object active in memory make sure that the synoptic it is contained by has not been destroyed and unloaded from memory with the change of page. To avoid this, check the "No destroy window in Run"* *option in the synoptic window general properties.*

The registration on file is wholly independent and asynchronous from registration with the Data Logger. The actual writing of data on file will be performed through the cache memory, so as to gain access to disk only when requested by the type of

sampling. Other functions allow to define the number of files and their maximum size.
The values registered on file will use the following format if the file is open with Excel:

| | A | B | C | D | E |
|---|---|---|---|---|---|
| 1 | Time | Date | VAR0001 | VAR000 | |
| 2 | 14.10.57 | 14/06/1999 | 0 | 0 | |
| 3 | 14.10.57 | 14/06/1999 | 0 | 0 | |
| 4 | 14.10.58 | 14/06/1999 | 0 | 0 | |
| 5 | 14.10.58 | 14/06/1999 | 0 | 0 | |
| 6 | 14.10.58 | 14/06/1999 | 4 | 0 | |
| 7 | 14.10.58 | 14/06/1999 | 12 | 0 | |
| 8 | 14.10.59 | 14/06/1999 | 21 | 0 | |
| 9 | 14.10.59 | 14/06/1999 | 25 | 0 | |
| 10 | 14.10.59 | 14/06/1999 | 25 | 0 | |
| 11 | 14.10.59 | 14/06/1999 | 25 | 0 | |
| 12 | 14.11.00 | 14/06/1999 | 25 | 0 | |
| 13 | 14.11.00 | 14/06/1999 | 25 | 0 | |

Date and time values are recorded following the settings fixed in the operating system under the **International Settings** voice in the **Control Panel**.
The separator character can be chosen during the Trend configuration. The available separators are Tabulation and Comma.

### Trend Operativity

The Trend has two possible statuses: **Start and Stop**. Those are specified by a variable, which is assigned through the **Variable property** of the Trend.
When the Trend is in **Start** status, it samples and display data as set in the **Execution property** of the Trend. The buffer memory managed by the Trend can be configured as desired with a maximum capacity of 10,000 samples.
When the Trend is in **Stop** status, you can display the contents of the buffer. If a **Data Logger** engine is associated with the Trend, the contents of the buffer could be data extracted from the corresponding database; otherwise the contents of the buffer will be the samples registered by the Trend during the start status.
Remember that even **during Stop status the Trend object keep on sampling, buffering and registering data**.
The values in the buffer can be displayed using the corresponding scrolling command set in the Trend properties and can be associated with Movicon's variables. The cursor will point to data as requested by the configuration performed, as we will discuss in detail in the chapter about Trend properties.

## 11.1.2. Link between Vectorial Trend and Data Logger

The Vectorial Trend is designed to be linked with a registration engine managed by the Data Logger resource.
In this case, you can manage the Trend object in **Start** mode as display of data defined by the settings, and in **Stop** mode as display of the data extracted from the database registered in the Data Logger following extraction criteria defined by a query.
The Trend will represent graphically the extracted values from the database file, which will be loaded in the buffer of the Trend when the Trend switches in Stop mode.

# 12. Passwords and User

*A Movicon project can manage the security of access according to management of users, passwords and access levels. The users can be addressees of SMS, Faxes, Voice Messages, Email messages.*

Where appropriate, Movicon supervision system can enable Password management to increase security and diagnostics of processes requiring it due to company needs or due to a high risk or complexity of above process.

In a project Users and Groups of Users can be defined. They are necessary for an eventual sending of messages by event or alarm. This is for handling security to project functionality access. In fact, every control, which can be set from Movicon in project, can be associated to a prompt of one password, in relation to user level or to a specific user. In addition to this, Movicon system controls require (provided that password management is enabled) an access level equal to or higher than level 4.

Movicon password management is complete and efficient. In fact, it is structured by *Users.* The plant manager assigns a string of characters as a password and a *Usage* level to each of them.

The main definitions in the password management are:

- **Password**: This means a string of a maximum of 32 characters (case sensitive) which represents the access key which, combined with the user name, allows the user to execute a command characterized by a certain user level defined by the programmer. Each character typed will be replaced with an asterisk on the screen, in order to prevent other operators from seeing it.
- **User**: A string name containing a maximum of 32 characters (case sensitive) making it possible to identify an operator or a user of the plant or of the process. Each user in the user list must have a password and a user level.
- **User level**: The access level that a user has when he is using Movicon. Movicon proposes 8 normal user levels, apart from the ninth and tenth which are meant for the System Engineer and the Programmer.

"User Level 1" is the lowest level; this means that operators with this level have the lowest operativity in Movicon.

The configuration and activation of password management can be performed only by the programmer using the corresponding setting window.

*If you are planning to activate password management for a project, you need to define at least one user with the user level: "development", for the programmer of the project.*

To install new users, select the **user Access Passwords** command from the **Settings** menu. This operation can only be performed by a user having the "System" or "Development" level, to prevent unauthorized access.

# 12.1. Inserting a Password and activating an User

If the operator selects a command with which the programmer has associated a password, the system will open a dialog box asking him to type its user name and password.
- The lower border of the window will display the user level or the specific user name required.

So, each command can be protected with a password, as defined by the programmer.

The password may require:

1) **A user level**: you need to type the user's own name, followed by the password. Each user has a specific user level.
2) **A specific User**: you need to type the required user name with the specific password. In this case, only the user name and the password are relevant, but not the user level.

When you type the password, the characters are replaced by asterisks to prevent other operators from reading it.

If you want to cancel the operation, press the "Cancel" button or press the ESC key.

To confirm the data inserted, press the ENTER key or the "OK" button.



When the user name and the password are accepted by the system, the operating command will be executed.
- At the same time, Movicon will consider the user inserted as *active*, *recording the user name with the date and time of activation in the historical log*.

Every operation or command associated with passwords having a user level equal or smaller than the one active will no more require a password; The system considers by default that the user is always the same if the **AutoLog Off**. function is not enabled. If this function is enabled by the programmer, the user will be automatically deactivated after the time set.

Every operation or command associated with **Activation** or **Deactivation** of a user will be recorded as "System Event" in the Historic Log. If password management is not enabled, and Movicon is used as WinNT/2000 service, Movicon will consider the User as an active user (LogOn) at that moment.

### 12.1.1. Deactivating a user

After enabling a user, it can be disabled at any time (for instance due to shift change). To do so, enable the **Settings** item of main menu and select the **User's Disabling** control or type CTRL+D.
This operation will ensure that no users are active. Consequently, the next operating command for which a password is associated will again request a user's ID based on what is described above.
*The deactivation command will be automatically recorded in the historical Log indicating the date and time.*

- A user deactivation command can be predefined by the programmer and associated with a resource or Movicon symbol.
- If preset by the programmer, the deactivation or auto Log-off can occur automatically after the specified delay.

### 12.1.2. Installing a new user

A new user can be installed in addition to the ones already present in the Movicon user's list.
A new user can be installed from the Settings menu or with a suitable command provided by the programmer to manage access to the system functions according to the application criteria. If the Movicon Settings menu is not available, check the command provided by the programmer for installing new users in runtime.
Unless otherwise specified, to install a new user, activate Settings from the main menu and select the Edit User command. The window displayed is as shown below.
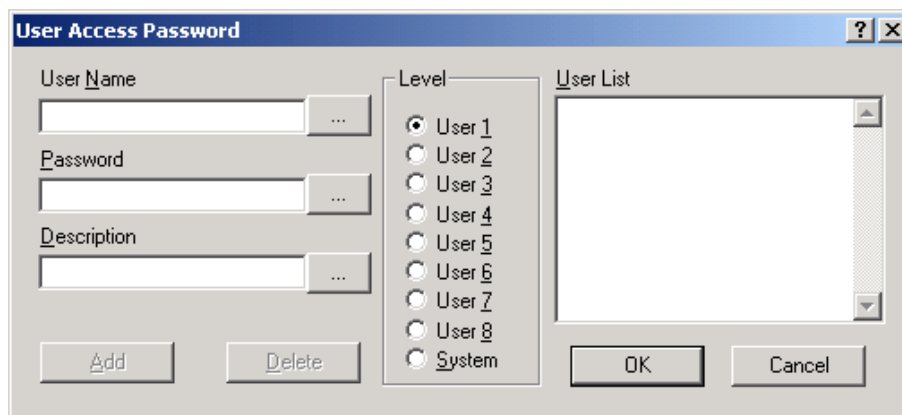


To insert a new User in the user list, type the user **name** and the **password** in the corresponding edit box, select the **user level** and then press the **Add** button. A new dialog box will appear, asking to confirm the password. If the confirmation corresponds to the previously inserted password, the user will be added in the user list. To delete a user, first select it and then press the **Delete** button.

## 12.1.3. Notes on CFR21 Standards Part 11

Movicon 9.1 completely supports the standards of Electronic Signature with reference to FDA specification CFR 21 Part 11.
The application projects to be validated in accordance with the standards must apply password management correctly; furthermore, they must also use specific operating system functions such as WinNT/2000 to guarantee safety in accessing historic data recorded by Movicon and prevent these being tampered with. Movicon must be used as a Service of the operating system.

> ⚠️ **It is the programmer's responsibility to ensure correct application of the procedure in accordance with the standards.**

Movicon offers the following functions:

1. Univocal management of password user names
2. Access by univocal combination of UserID and Password
3. Recording historic data of printable names, univocal, associated with password user
4. Recording every attempt of unauthorized access in the Log
5. Procedures for discouraging intrusion into the system
6. Automatic Auto Log Off procedure
7. Automatic functions for recording historic data with ID of active password user.

Further information for correct application of the standards is given in a special document provided by Progea.

# 13. D.D.E. Link

*The DDE is a tool which makes it possible to connect Movicon with other Windows applications.*

Movicon fully supports the communication standard with other Windows applications called DDE (Dynamic Data Exchange). This standard, created by Microsoft, allows different applications to communicate and exchange data via a software communication protocol.

Windows applications that support DDE can therefore dialog with Movicon and exchange information dynamically either in **Client** or in **Server** mode.

Movicon also supports NetDDE, i.e. the capability for exchanging DDE data between applications on different PCs using a Windows-supported network.

The DDE protocol is supported by almost all Windows applications. This feature permits interfacing between factory supervision and any other application, from small custom-built applications in Visual Basic to company administration management.

However, DDE is now technically rather outdated. Microsoft has developed application interface technologies in OLE (Object Linking and Embedded) technology, leading to the current COM (Component Object Model) technology from ActiveX. Refer to the relevant chapter in this manual for information on these new technologies supported by Movicon.

> ⚠️ *The DDE function is considered as optional. It must therefore be enabled by the license purchased. To check if the option is enabled execute the "Check Dongle Options" command from the File menu.*
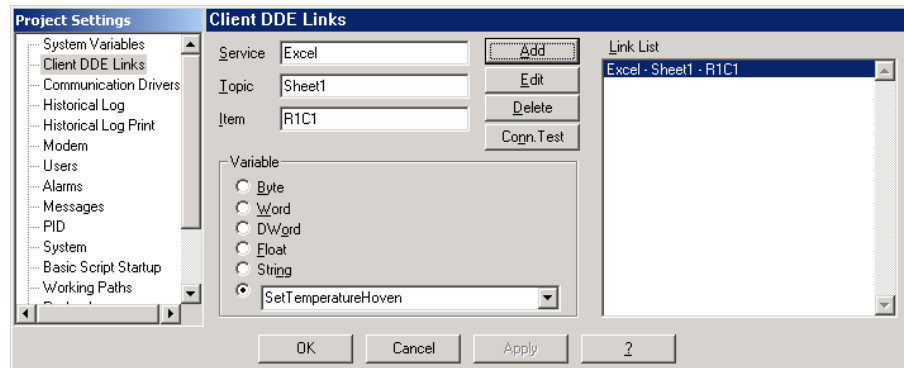


## 13.1.1. Movicon in Server mode

Movicon is a native DDE Server application. You need do nothing in your project when another application requests information from Movicon, i.e. when another application reads data from Movicon variables. In this case the Client (the other application) requests the variables in the Movicon memory areas according to its addressing procedures, while Movicon (the server) undertakes to meet the requests for information.

*In this case Movicon has to do nothing at all: it is the Client that has control over communication.*

The examples given on the Movicon CD refer to the use of Movicon as Server and Excel™ as Client DDE. Excel is one of the most widely-used Microsoft products.

## 13.1.2. Movicon in Client mode

Movicon can take the necessary action to establish connection and request information from other applications. In this case Movicon is the Client while the other application that provides the required information is the Server.

This mode does not (normally) request action on the server, while Movicon requires configuration and definition of the data requested. Thus Movicon must know the identity of the other application, the service required and the Item.

## 13.1.3. DDE Server Services offered by Movicon (Topics)

The "software" communication protocol defined by the DDE (Dynamic Data Exchange) standard consists of a series of basic information that Client applications must supply to Movicon:

>   Service

The Service is the name of the DDE Server application with which it is registered in Windows. Movicon is registered with the string "MOVICON".

>   Topic

The Topic is a string sent to the application and determines the type of DDE command required. It must be recognized by the server as belonging to its DDE services list.

>   SubTopic

The SubTopic is another string sent to the application to complete the command indicated, so it is generally used by the server application to add information to the command.

**For a complete list of the DDE commands and services offered by Movicon, consult the programming manual.**

### 13.1.4. Examples of DDE between Movicon Server and EXCEL™ Client

The Movicon installation disks contain some example files in Excel format (Movdde.XLS) and a Movicon project (Excel.prj) to demonstrate communication between a Movicon DDE Server and a DDE Client application.
The Movicon project uses sliders to set some variables whose values are displayed in the Excel file in graphic form.

### 13.1.5. Client DDE

Movicon uses the DDE in Client mode when it is given the task of requesting the data areas of other applications and temporarily storing the contents in its variables. In this case the Server (the other application) provides its memory areas according to the services allowed by each individual application.

*For this purpose it is essential to know what* **services** *the other application has and to set the characteristics to be associated with the Movicon variables in the Movicon memory areas.*

The services for the DDE link with Movicon in Client mode can be set in the **DDE** tab under the **Settings** menu, as described in the Programming Manual.

## 13.1.6. Windows NetDDE

The DDE software protocol does not support common networks and is therefore only applicable among applications running on the same computer. The Windows NetDDE service compensates for this by handling the network communication between applications wishing to communicate in DDE.

In order to ensure the Movicon DDE server is accessible to the Windows network, it is necessary to configure the utility DDESHARE.EXE on the computer in which the Movicon project is running.

From the "**Start**" menu of Windows select "**Run**" and key in the name of the program "**DDESHARE.EXE**". The Windows NetDDE service is thus activated and a window is proposed for its configuration.
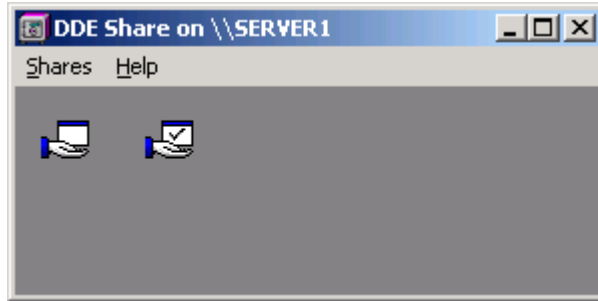
A new DDE sharing must be created by selecting "**DDE Sharing**" from the "**Sharing**" menu. In the dialog window that opens select "Add sharing" and configure the window **as described in the Programming Manual**.
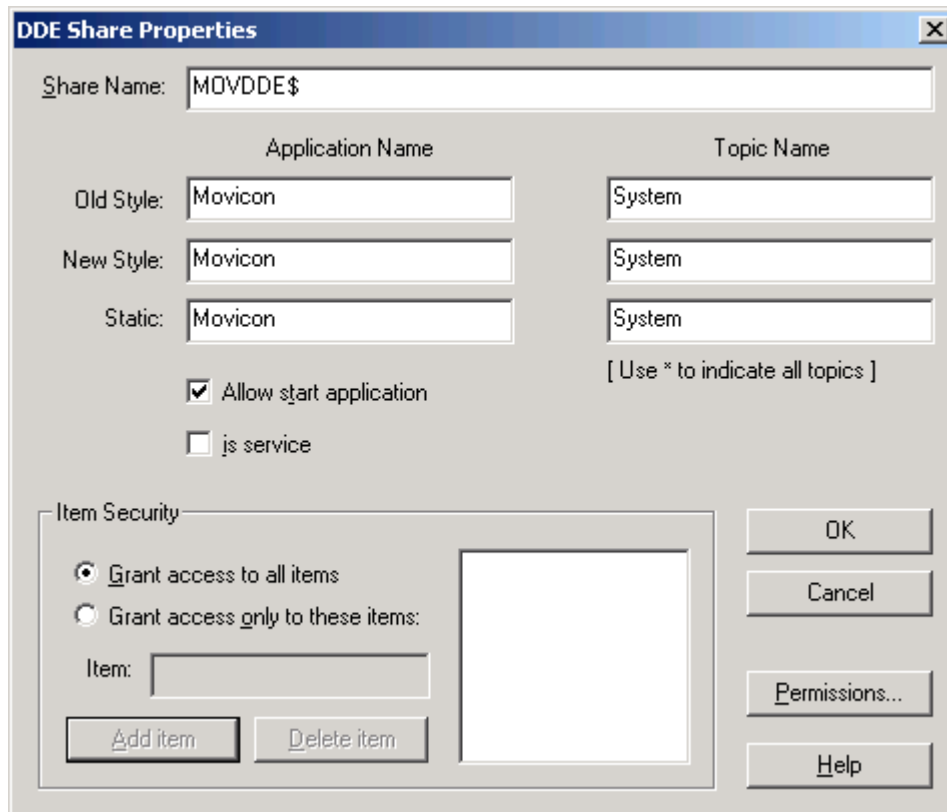
# 14. OPC (OLE for Process Control)

*OPC is an increasingly common standard that simplifies communication based on different bus technologies.*

OPC is the short for "OLE for Process Control", where OLE refers to Windows term: "Object Linking and Embedding", a powerful automation interface for Windows applications.

OPC contains the concept of programs implementing a unified interface between different bus technologies on one side and programs for displaying and automation on the other. Thanks to standard technology, today communication between automation devices aims at satisfying the independence of individual manufacturers, to produce equipment compliant with OPC standard. Thanks to the unified interface, hardware manufacturers increasingly guarantee the availability of OPC interfaces, i.e. of OPC Server software products to complete their hardware products. The user is thus sure of being able to interface purchased products with any software application compliant with OPC standards.

The OPC standard is defined by public specifications released by the **OPC Foundation**, with the support of all main manufacturers of automation industry, besides Microsoft.

Movicon is an application based on OPC standard (both Client and Server).

As a Client it is possible to interface with all OPC Servers based on 1.0A and 2.0 standards; as a Server it allows to share all or part of project variables with other applications and to notify to them events like alarms, messages, system information, and variations in project internal variables.

*Considering the increasing use of the OPC standard in industrial automation, it is crucial to consider this technology as a communication mode with devices on bus networks or simply other local or remote applications.*
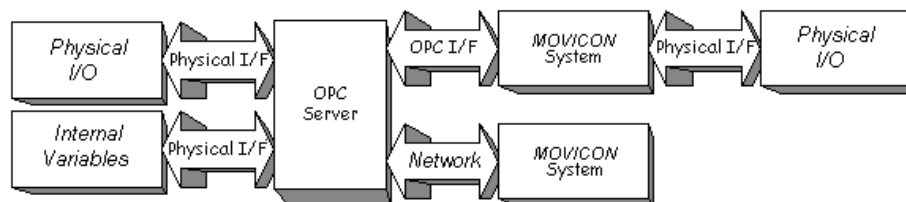
Figure shows the block-diagram of a typical OPC communication

# 14.1. OPC Client Editor

In OPC communication, Movicon uses a Client interface which can be fully configured and supports OPC 1.0A and 2.0 specifications. This resource, integrated in the system, is named as the **OPC Editor** name and can be accessed from the Movicon **Resource** menu, or by **F7** quick command.
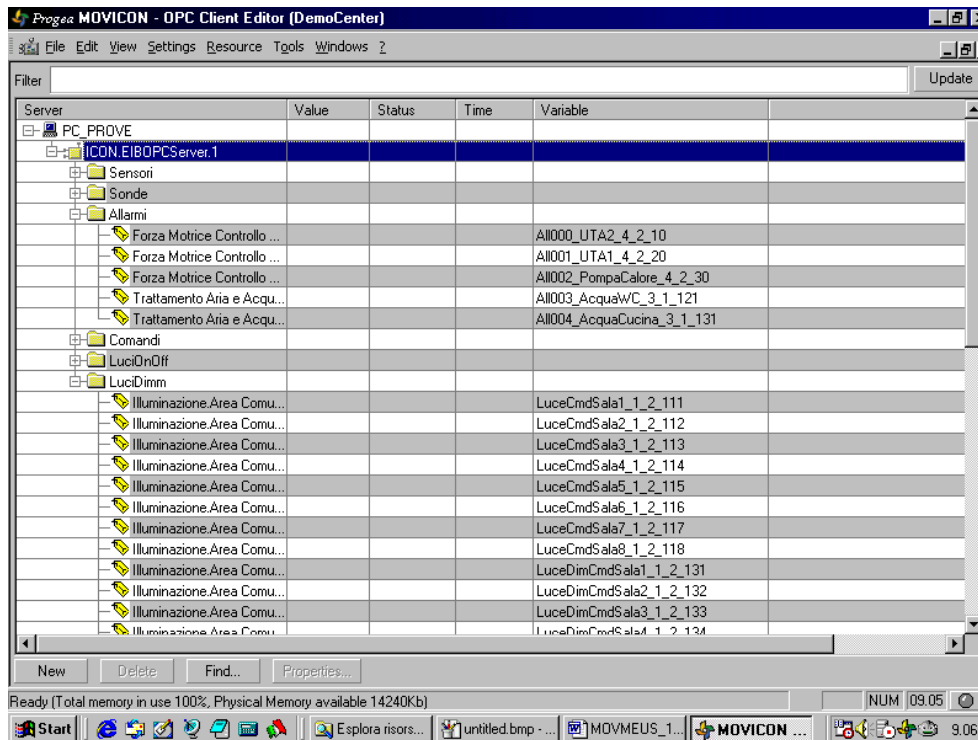


Figure shows OPC Editor resource of a Movicon project

This resource allows to set the OPC communication with one or more servers. Movicon displays a list of available servers on local PC, but it can also use OPC servers installed on remote or network connected or web connected PCs.
Presently, two OPC server interfaces are supported: "DataAccess" and "Alarms&Events", which are identified with "DA" and "AE" initials, respectively.

**Data Access Specification**
The first type of server is organized in a structure composed by groups and items, as shown in the figure. It allows to connect I/O or internal variables of a device, which is part of a field bus network with Movicon project variables.
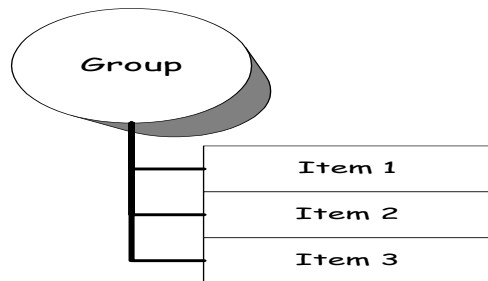


Figure shows the relationship between group and item

**Alarms & Events Specification**
The second type of OPC servers, "Alarm&Event", notifies the appearance of specific event and alarm specifications configured within the very server; then, the appearance of a specific event or alarm can be recognized within a Movicon project, thanks to the notification by the OPC server and then can be managed, consequently.

*The management of events and alarms sent by OPC server AE is possible by using the relevant event of any basic script within the project. Please refer to the basic script manual for further details on this topic.*

# 14.2. OPC Server

In addition to OPC Client interface, whose configurability of connections to OPC Servers has been described in the previous paragraph, Movicon integrates OPC Server function, that is it makes available and notifies events to any connected OPC Client applications. The Movicon OPC server supports the Clients implemented based on OPC "DataAccess" and "Alarms&Events" standards.
This technology allows sharing of project variables with other applications complete with OPC Client DA and in the meanwhile it can notify to a Client AE events such as Alarms, Messages, system Information and variations in real-time database variables of application project.

Any OPC Client to be connected to Movicon OPC server, based on the project parameter settings, can avail of a list of items to which one can connect. The list is contained in a group identified by the project name and every item takes the same name of the project variable to which it is connected. The possibility to change value is controlled within the project on settings of every single variable. This allows to make Movicon variables visible outside with maximum security.
On the basis of the project settings, the Movicon OPC Server can be automatically started at the time when a Client attempts to get connected and in the meanwhile its execution can be automatically stopped when shutting down connection with the Client.
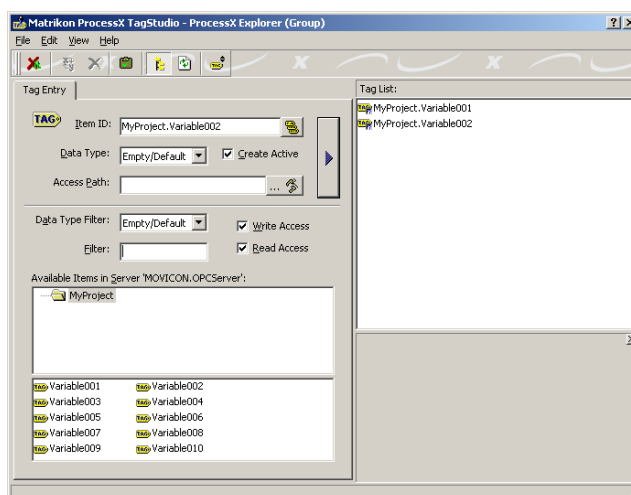


Figure shows the selection of items by a mutual OPC Client

# 15. O.D.B.C.

*Movicon fully supports the Open Database Connectivity standard which allows data storage in a standard format and a real-time connection with external databases.*

Open Data Base Connectivity (ODBC) is the Microsoft standard that allows an application to organize data in database files in the specific format of any other application capable of supporting this standard.
By using this technique it is possible to overcome data exchange barriers between different formats.

> *For example, using ODBC allows you to record the Log or record data tables containing Movicon variables. By using the ODBC link the data can be archived in the format required by the user. If for example the user has a management system based on MsAccess™, he can read and handle the data recorded by Movicon according to his needs.*
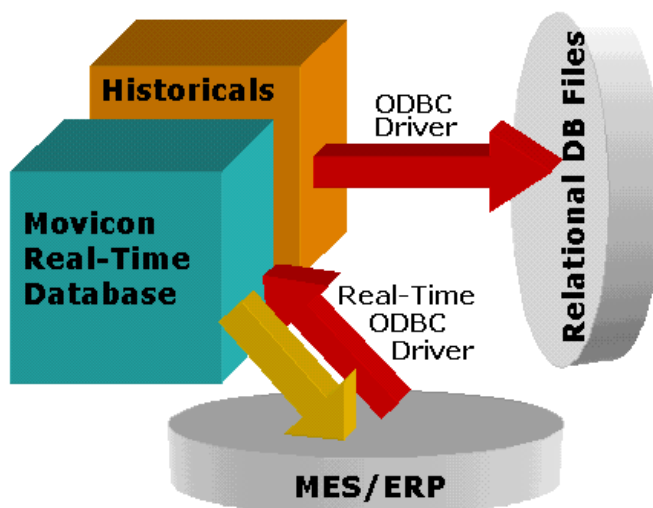


How data are linked according to the ODBC standard

Movicon records data using the standard ODBC language. The ODBC link interprets the recordings according to how it is configured. The ODBC driver then records the data in the established format. The file or files will therefore contain the Movicon data but will be materially recorded in the format requested by the ODBC system.

> *Movicon is independent from the format used to represent data, as the role of writing data belongs to the database owner or to the ODBC manager of the operating system. ODBC is a Microsoft standard, and the ODBC drivers are property of the owners of each individual application.*
> *For more information, refer to the ODBC on-line help or to the existing bibliography provided by Microsoft Inc. or by the owner of the database you are using.*

# 15.1. ODBC Drivers

To allow Movicon to log historical data on standard OBDC format files, Windows OS has to be complete with proper OBDC drivers for the chosen database product.

During the typical installation Movicon will install necessary files for ODBC management and drivers for MsAccess™ and Excel™. You can use **SQL Server** as data format to install the relevant driver from Movicon CD ROM, by performing the "Tailor-made installation".

> *Movicon is preset to install ODBC drivers of Microsoft Access, Excel products and, with tailor-made installation, also the SQL Server MSDE.*
> *For all other database products, verify that the concerned driver OBDC supplied by the manufacturer has been installed.*

However, the operating system is complete with a set of already available OBDC drivers for different formats  (Paradox, FoxPro, dBase, etc.), accessible like all other ODBC settings from **Control Panel** at item **ODBC Data Source (32 bits)**.

# 15.2. ODBC link

To allow an application to record data by means of the ODBC standard, apart from providing an ODBC  driver of the selected data format, it is also necessary to make the Connection between the server application and the destination file in which the values will be actually written by the ODBC driver.

It is by means of the "connection" between the ODBC driver that a Movicon project resource can record data on file. All ODBC links must be registered in the Operating system by ODBC system settings from the Control Panel under the item **ODBC Data Sources**.

Nevertheless, Movicon proposes a guide (Self Configurer) to create the ODBC link for all the Movicon resources or functions which allow its use.

*The ODBC link is a tool which connects an application to the ODBC driver allowing the application to write or read data in a standard format external to the application. The ODBC Standard is based on specifications defined by Microsoft.*
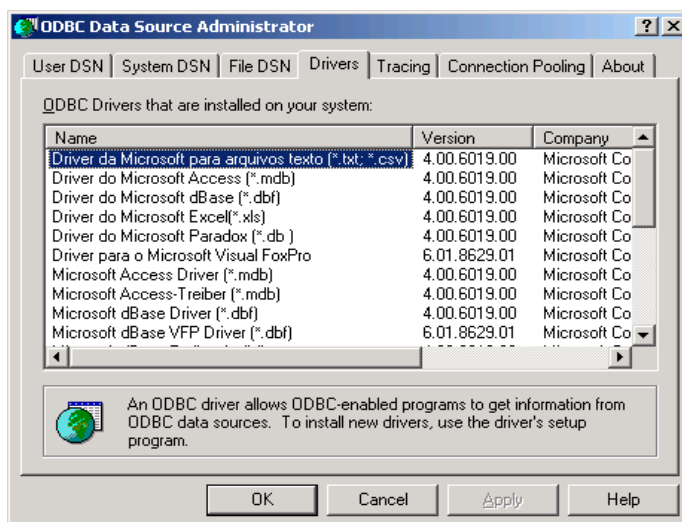


The window illustrates a list of the ODBC drivers installed by default by the Windows operating system. Other drivers could be present if other ODBC compliant applications have been installed.

When the settings of a Movicon object or resource allow it, the buttons for creating links, files or tables required for ODBC will be made accessible from the configuration window.



Button for automatic or semiautomatic creation of ODBC links



Button or icon for direct access to ODBC system

The ODBC link can be configured by setting the data manually, launching the ODBC system from Movicon or from the Windows control panel, and clicking the icon shown above. To facilitate the configuration operations, Movicon has a **Wizard** for automatic or semiautomatic creation of files or links.
Automatic creation allows you to create the link (and if necessary the file and/or table) in Access™ format with a single command.

> *If the user uses the **SQL Server™**, **Access**™ or **Excel**™ database format, Movicon considerably simplifies management of ODBC links by performing the necessary operations with a single command.*

## 15.2.1. Connections Pool

Starting with the 3.5 version of ODBC manager the "Connections Pool" tab was added for enabling pool management for each ODBC driver.
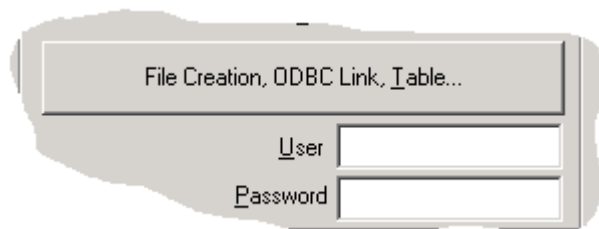"[…] The pool allows the user applications to use one of the connections available in the pool, so it need not be reset each time. As soon as a link is created, it is placed in a pool and the application can reuse the connection without having to repeat the entire connection procedure, with consequent improvement of performance."
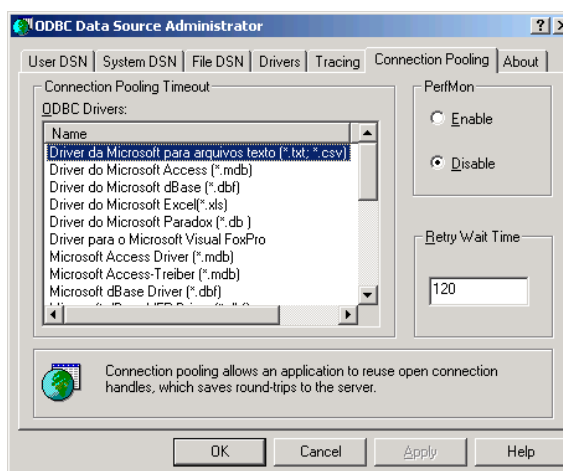


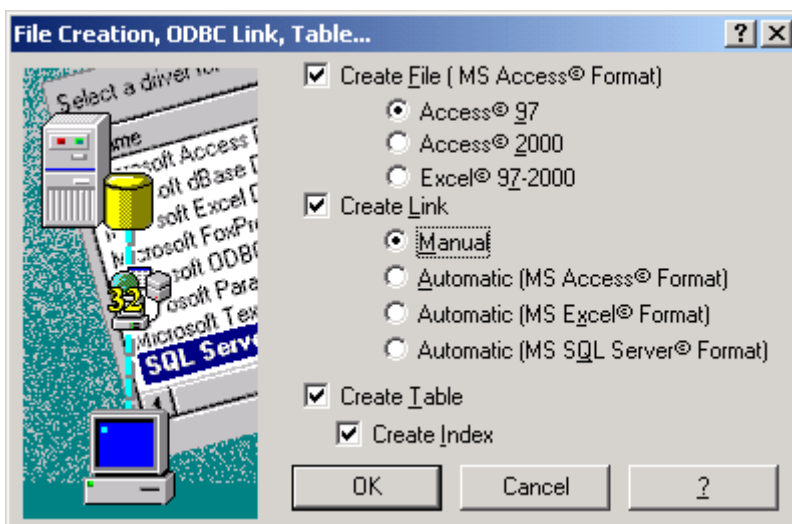> *Always check to ensure that the ODBC driver supports pool management, before enabling it.*

# 15.3. Creating ODBC links

You must create ODBC links when inserting objects or resources into the project that generate data tables or databases to be recorded according to this standard.

The ODBC link can be created automatically or semi-automatically by clicking the following button available from the settings or configuration window of the Movicon resource concerned:



Click this button to open a Wizard which considerably simplifies creation of the document.

If you want to use the MsAccess™ format, the Wizard can even create the link, file and table automatically. The Wizard has the following dialog box:



If you leave the default settings, the link and the file with the corresponding table will be created automatically in the data format of Microsoft Access™, SQL Server™ ed Excel™.

However, you can use the options available in this dialog box to create a customized link.

**Create File (MsAccess© Format)**: if this box is checked, the file will be created automatically with the syntax required for the link in Access™ 97, Access™ 2000 or Excel format.

If this box is not checked, only the link (and possibly the table) will be created without creating the file.

- The option of not creating a DB file is available for example when the file already exists and you do not want to replace it.
- *To use SQL Server, consult the next paragraph*.

**Create Table**: if this box is checked, the data table to be inserted in the DB file will be created automatically (the table is independent of the file format).

If this box is not checked, only the link (and possibly the file) will be created without creating the table.

- The option of not creating a data table is available for example when the table already exists and you do not want to replace it.

**Create Index**: if this box is checked, set the ID column and Time column as Table indices. Wherever possible, it is advisable to avoid eliminating this selection since using indices in the table ensures faster access to data.

> **Note***: On using the Microsoft Excel driver, indices must not be created in the table.*

**Create Link**: The link is essential for recording data. The link can be made automatically by using the Microsoft Access™ driver. If you want to use a different format for recording data, then you must set the link manually.

> *If you select **automatic link** you only have to confirm the operation and wait for Movicon to make the data settings necessary for the ODBC to make the link using the MsAccess driver.*

> **Note***: If you create a link without creating a table or a file, you must in any case make sure that they actually exist. If not, the system will be unable to record the data and will give an error message.*
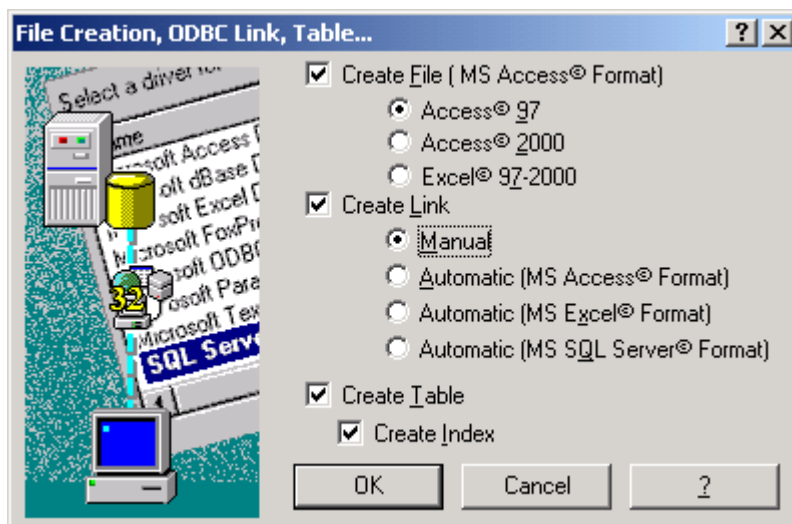
## 15.3.1. Manual ODBC link

You must create ODBC links when inserting objects or resources into the project that generate data tables or databases to be recorded according to this standard.
The ODBC link can be created automatically or semi-automatically by clicking the following button available from the settings or configuration window of the Movicon resource concerned:



Click this button to open a Wizard which considerably simplifies creation of the document.
If you want to use the MsAccess™ format, the Wizard can even create the link, file and table automatically. The Wizard has the following dialog box:

If you leave the default settings, the link and the file with the corresponding table will be created automatically in the data format of Microsoft Access™, SQL Server™ ed Excel™.

However, you can use the options available in this dialog box to create a customized link.

**Create File (MsAccess© Format)**: if this box is checked, the file will be created automatically with the syntax required for the link in Access™ 97, Access™ 2000 or Excel format.

If this box is not checked, only the link (and possibly the table) will be created without creating the file.

- The option of not creating a DB file is available for example when the file already exists and you do not want to replace it.
- *To use SQL Server, consult the next paragraph*.

**Create Table**: if this box is checked, the data table to be inserted in the DB file will be created automatically (the table is independent of the file format).

If this box is not checked, only the link (and possibly the file) will be created without creating the table.

- The option of not creating a data table is available for example when the table already exists and you do not want to replace it.

**Create Index**: if this box is checked, set the ID column and Time column as Table indices. Wherever possible, it is advisable to avoid eliminating this selection since using indices in the table ensures faster access to data.

> **Note***: On using the Microsoft Excel driver, indices must not be created in the table.*

**Create Link**: The link is essential for recording data. The link can be made automatically by using the Microsoft Access™, SQL Server or Excel driver. If you want to use a different format for recording data, then you must set the link manually.

- If you select **automatic link** you only have to confirm the operation and wait for Movicon to make the data settings necessary for the ODBC to make the link using the MsAccess driver.

> *Note: If you create a link without creating a table or a file, you must in any case make sure that they actually exist. If not, the system will be unable to record the data and will give an error message.*

# 15.4. SQL Server with MSDE

To use the SQL Server data format, Movicon allows installation of Microsoft MSDE, the standard SQL Server engine. To use the actual SQL Server product available, the user will abide by the instructions in the SQL Server User Manual.

The Microsoft MSDE service is installed automatically from the Movicon installation CD-ROM.

The Microsoft MSDE manager provides for use of .MDF formats of SQL Server freely managing customized tables within a single "Master.mdf" file.

If MSDE is to be reinstalled, launch the "MSDEx86.exe" file from the directory in the Movicon CD-ROM, following the installation instructions in the "readme.txt" file. If errors are encountered during the installation, refer to the "Setup.log" file, and more specifically, the "Sqlstp.log" file in the Windows installation directory.

Before making any ODBC connection with SQL Server data format, follow the Microsoft MSDE procedure given below:

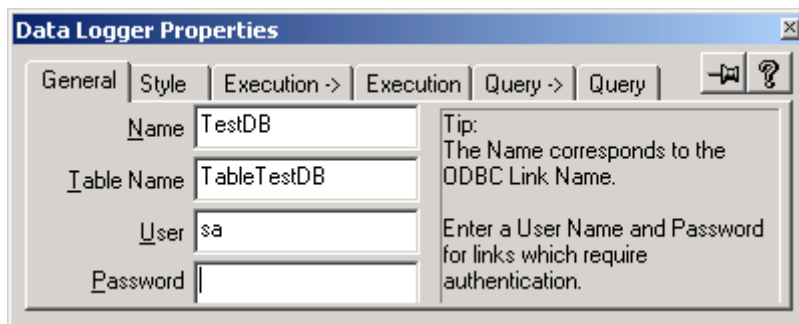1.  Launch the MSDE Service Manager program
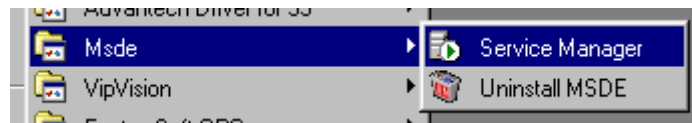


2.  Start/Continue the MSDE engine



3.  Ensure that the icon appears in the Windows menu



4.  Using the Data Logger, carefully create the database structure as follows:
    a.  Insert as user name "sa" (system administrator) for unlimited access (or use one of the SQL Server editors available on the market).
    b.  Do not enter the password.

5.  Proceed with creation selecting "Check ODBC Link", "Automatic SQL Server" and "Create Table" from the Movicon "Edit" menu.

6.  If the ODBC link already exists with that name, overwrite it (the corresponding columns and tables must not be modified).

# 16. Printing documentation

*The project may require management of printing of data, alarms or production reports*.

Movicon documentation or logic programs (whether general logic or LRP points) can be printed at any time using the Print or Print Preview commands from the **File** menu or by clicking with the mouse on the relevant button on the main toolbar.
Movicon allows the project to be fully documented. In fact, all the resources, including their structure and associated commands, can be documented.
All the Logics and variable Cross reference Lists can also be documented.

⚠️ *The document that will be printed is always the document or resource that is active at that moment, so you must activate the document before giving the print command.*

For example, to print the general logic program you must first select the General Logic resource, and to print the Variables DB you must first select it.
To print the program contained in the LRP logic points of a synoptic, you must first select the required synoptic, display the LRP points (**LRP** from **View** menu or F4 key) and select any one of them. The printout will show the contents of each LRP in numerical order specifying the number of the LRP point and its coordinates. To print another synoptic LRP program, select the new synoptic and proceed as described above.

⚠️ *Before starting to print you must correctly set up the connected printer and the print options, which also depend on the type of printer connected. The list of printers available to Movicon depends on the drivers of the printers installed in Windows Setup. If the connected printer does not appear on the list, it must be installed following the procedures described in the Windows Installation Manual.*
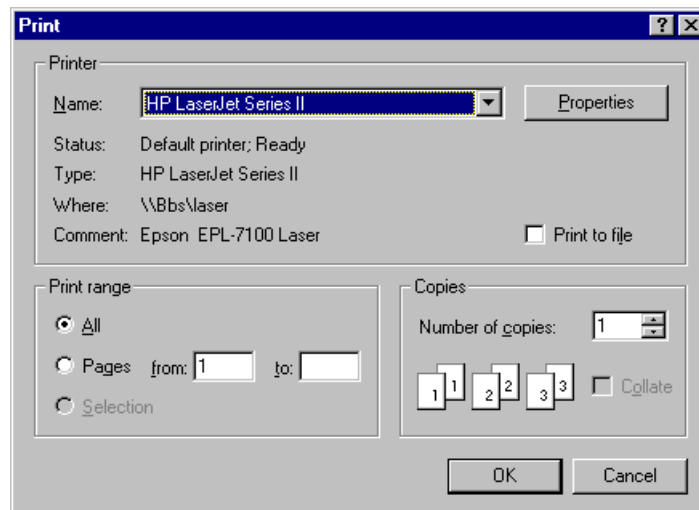
# 16.1. Print Setup

The **Printer Settings** command from the Movicon **File** menu allows you to change the default printer and modify the print options.
The same options are available by clicking the *Properties* button in the *Print* dialog box.
Selecting this command opens a dialog box for the print setup and printer selection.

> **Note**: *the printer settings vary according to the printer used. Refer to the printer's manual for further information. The information below must be considered a general guideline only as the printer settings depend on the type of printer used.*
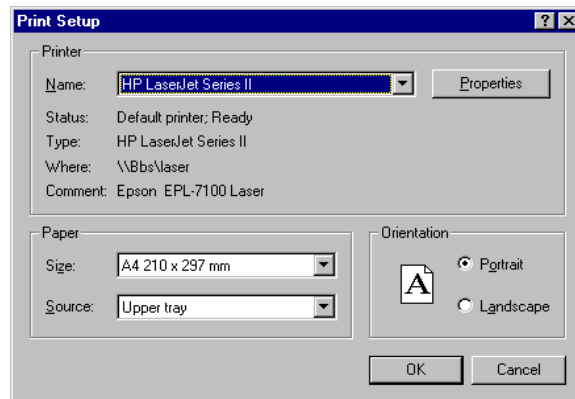
The group of settings marked as Printer allows you to select which printer, from those installed on the hardware platform, the print document will be sent to.
If you want to change printer, scroll through the list of printers installed in the system and select the one you want.
The Orientation option allows you to set the paper in Portrait or Landscape mode.
The  Paper option allows you to size the print according to the real size of the paper and to select the sheet feed tray, if necessary.

> For further information refer to the Windows user's manual or the printer setup manual.

# 16.2. Setting print font

If you want, you can set a different font for the printer from the one selected for viewing on the screen. To set the print font, select the **Printer font** command from the **File** menu on the menu bar. A dialog box opens allowing you to select the new font from those installed in Windows.
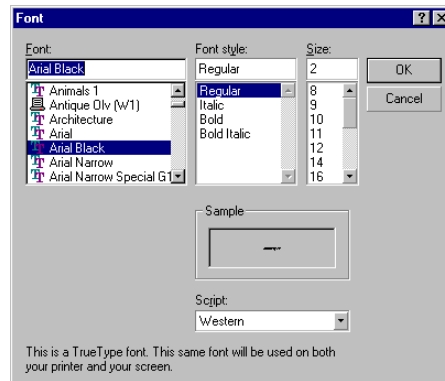
# 16.3. Page Setup

When printing a document you can customize the pages by inserting headers and footers. The **Page Setup** command from the **File** menu allows you to insert headers or footers in the document you want to print.

The codes displayed by Movicon by default determine:

**Header**: %H, %M correspond to the current time (file time or system time)

%A, %d, %B, %Y correspond to the current date (file date or system date).

&f corresponds to the name of the project file.

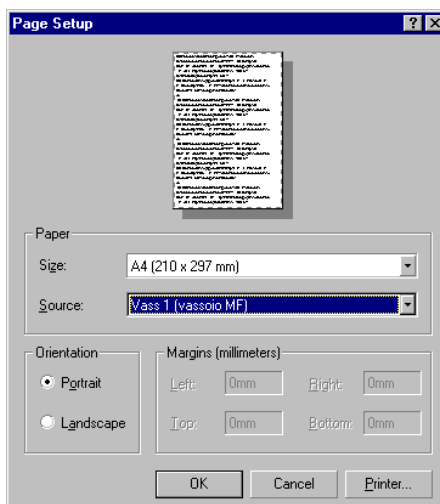**Footer**: &p corresponds to the current page number in the document.

If you want, you can modify the codes as you choose in the edit boxes.
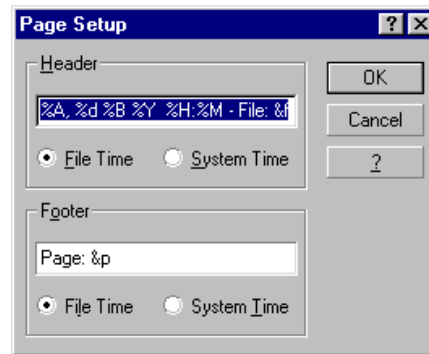
# 16.4. Layout Setup

The **Layout Setup** command from the **File** menu opens a window allowing you to configure the paper and margins for printing the document.

The available settings vary according to the type of printer used.

# 16.5. Print Preview

The **Print Preview** command from the **File** menu allows you to view the actual layout of the page or pages as they will be printed. This allows you to change the layout of the document if necessary before printing it.

In the Print Preview window the mouse pointer changes shape when it is on the page to indicate that the *Zoom* function is active. Clicking with the left mouse button enlarges the page by a given amount and finally returns to its original size

From the keyboard you can select the buttons called *Zoom In* and *Zoom Out* for the same function.

You can start printing directly from the Print Preview window.
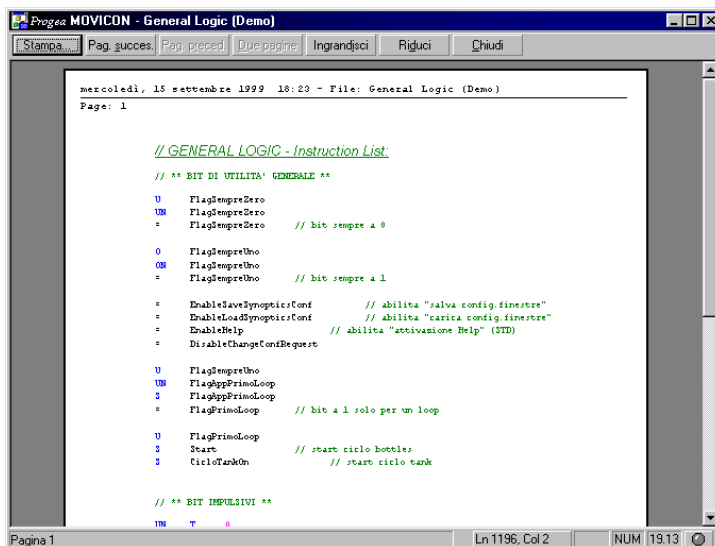
To cancel the operation and return to the Movicon workspace, close the Print Preview window in the normal way or by clicking the *Close* button on the window's button bar.

# 16.6. Printing the document

Before printing the document, check that the printer is set up correctly, that the paper is correctly positioned and that the print settings are correct.
Selecting the **Print** command from the **File** menu or clicking the Print button on the toolbar or from the Print Preview window will open the following dialog box:
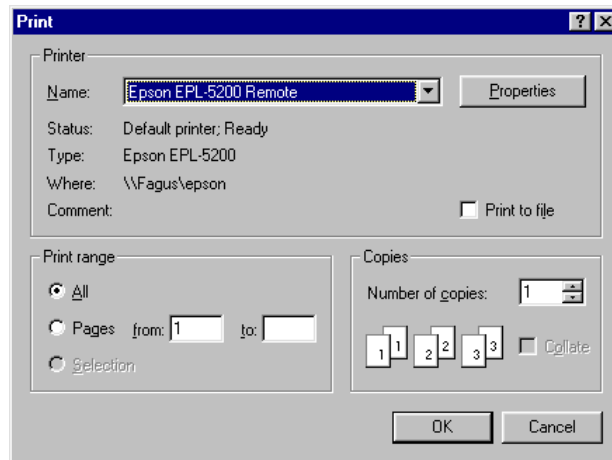


This window allows you to change the default options. The print range radio buttons allow you to print:

- the entire document
- the current selection only
- a range of pages which you must specify in the edit boxes

You can also specify the print quality, the number of copies to be printed and Collate.
Click the *Properties* button to open a dialog box for the printer settings as described in the previous paragraph.
For further information on print options, refer to the Windows user's manual or your printer's installation manual.

# Notes:

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