

CAP 501

Installation and Commissioning Manual



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1. About this manual

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1.3. Guarantee

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1.4. General

This manual provides thorough information on the installation and commissioning of the CAP 501, Relay Setting Tools software. This document complies with the CAP 501 version 2.4.0.

Pictures shown are examples only and they may represent older program versions.

Additional information such as the Release Note and README.TXT can be found on the program distribution media.

ABB Oy regularly provides standard training courses on its main products. The training program is available on the Internet at <http://www.abb.com/substationautomation>. Please contact your ABB representative for more information.

1.5. Use of symbols

This publication includes warning, caution, and information icons that point out safety related conditions or other important information. It also includes tip icons to point out useful information to the reader. The corresponding icons should be interpreted as follows:



The caution icon indicates important information or warning related to the concept discussed in the text. It might indicate the presence of a hazard which could result in corruption of software or damage to equipment or property.



The information icon alerts the reader to relevant facts and conditions.



The tip icon indicates advice on, for example, how to design your project or how to use a certain function.

Although warning hazards are related to personal injury, and caution hazards are associated with equipment or property damage, it should be understood that operation of damaged equipment could, under certain operational conditions, result in degraded process performance leading to personal injury or death. Therefore, comply fully with all warning and caution notices.

1.6. Abbreviations

TCP/IP	Transport Control Protocol/Internet Protocol
--------	--

1.7. Related documents

Name of the manual	Document ID
CAP 501 User's Guide	1MRS751900-MUM
LIB, CAP and SMS, Tools for Relays and Terminals, User's Guide	1MRS752008-MUM

1.8. Document revisions

Version	SW Revision number	Date	History
F	2.3.0	12.12.2003	Hardware updates, Windows XP updates, New chapter: Uninstallation
G	2.3.0-4	05.01.2005	Maintenance updates
H	2.4.0	07.02.2006	Maintenance updates

2. Introduction

This chapter describes the contents of CAP 501.

2.1. Contents

2.1.1. Software

Categorization of the software:

Base System	Kernel software, additional base tools and services, providing a framework for the object types and tools.
RED 500 Support	RED 500 object types and the RED Relay Setting Tool for parametrization of RED 500 series relays.
SPACOM Support	SPACOM object type and the SPACOM Relay Setting Tool for parametrization of SPACOM series relays.
DR-Collector Tool	DR-Collector Tool for working with the disturbance recorders for RED 500 and SPACOM series relays.
Documentation	CAP 501 documentation in PDF format. The Adobe Reader is needed to view the documentation.

This categorization is also present as installation options in the CAP 501 installation application.

2.1.2. Documentation



The CAP 501 delivery contains the documentation in electronic format only.

2.1.3. Hardware

Table 2.1.3-1 Communication hardware

Relay	Type	Order number
REF 541, 543, 545 RET 541, 543, 545 REM 543, 545 REX 521 REJ 51_ / 52_ REU 513, 523	Opto	1MKC950001-2
REC 523	RS 232	1MRS120520
REF 610 REM 610 REU 610	Opto.	1MRS050698
SPTO front connector SPCR front connector	RS 232 - RS 232	SPA-ZP 17A3
SPACOM 100/300 series	RS 232 - TTL connector	SPA-ZP 5A3
SPAC 300/500/600 rear	RS 232 - RS 485	SPA-ZP 6A2

Table 2.1.3-1 Communication hardware

Relay	Type	Order number
SACO 16A3, 16D1, 16D3 and 64D4	*Connection cable for SPA-ZP 6A2 to SACO screw terminal	SPA-ZP 21A* and SPA-ZP 6A2

2.2. Acquiring CAP 501

The CAP 501 program and the latest Add-On software can be downloaded from our home page (<http://www.abb.com/substationautomation>). CAP 501 is delivered free of charge on CD together with protection relay or terminal deliveries when requested. When CAP 501 is ordered separately, an order-handling fee is applied.

2.2.1. Relay setting tools package

The order number for CAP 501 is 1MRS151019. The CAP 501 delivery contains the program CD, including the CAP 501 program and documentation in electronic format, and the latest Add-On CD (containing the latest Add-On when available).

2.2.2. Communication cables

Communication cables are regarded as accessories and are not included in the tool delivery. They can be acquired by placing a separate order (see Table 2.1.3-1)

Order number

The order numbers for the communication cables are listed in Table 2.1.3-1

3. CAP 501 requirements

This chapter describes the requirements for installing the CAP 501 software.

3.1. Software requirements

CAP 501 sets the following hardware and software requirements on the PC. Notice also the kernel-related dependencies, explained in Section 4.1.7. System-wide product interdependencies.

Table 3.1.-1 Software requirements

Item	Required
Operating system	Microsoft Windows NT 4.0 Workstation Microsoft Windows 2000 Microsoft Windows XP Professional
Network	Operating system Network software installed with at least one network protocol (e.g. TCP/IP).

3.2. Hardware requirements

Table 3.2.-1 Hardware requirements

Item	Minimum	Recommended
Processor	233 MHz or higher Pentium compatible CPU	1 GHz or higher Pentium compatible CPU
Memory	128 MB	256 MB
Display	SVGA, 800x600, 256 colours	SVGA, 1024x768, 256 colours
File system	NTFS file system on the installation drive	
Hard disk space	300 MB	500 MB
Serial ports	Two COM ports	
Parallel ports	Optionally one parallel port for printing purposes, if network printing not available	
CD-ROM	Any device supported by the operating system. Required for installation	
Mouse	Any device supported by the operating system	
Network adapter card	Any device supported by the operating system	

3.3. Additional requirements**Table 3.3.-1 Additional requirements**

Item	Description
User account	You must be logged on to the operating system with administrator rights for the software to be installed successfully. Otherwise the installation is denied.
MicroSCADA service	The MicroSCADA service is not allowed to run in the background during the installation. Otherwise the installation is denied.

4. Installation

This chapter describes the software installation procedure of CAP 501.

4.1. Overview

4.1.1. Installing additional software

Before installing CAP 501, it is recommended to check the status and, if necessary, install the following programs.

Network software

Even if your computer will not be connected to a network, install the network software if it has not been done previously. It is recommended to install at least the TCP/IP network protocol.

Adobe Reader

Adobe Reader is needed to view the documentation included in the CAP 501 delivery. If Adobe Reader 5.0 or later is not already installed in the system, Adobe Reader 6.02 can be installed by starting the ADBERDR602_DISTRIIB_ENU.EXE from the \SETUP subdirectory of the CAP 501 Program CD.

4.1.2. Current version of the product

CAP 501 installations maintain a single *current version* of the product on your computer's system registry. The current version information is the basis for installations to determine proper install-time actions.

4.1.3. About older product versions

This version of CAP 501 does not detect versions 1.0.0-1 or older that are installed in the target computer and vice versa. This means that you can install CAP 501 2.4.0 in a drive already containing for example CAP 501 version 1.0.0-1 preserving the older version.

4.1.4. Non-forced installation

A *non-forced installation* means that the installation allows you to install any combination of the available installation options. This is possible only when you install in a destination containing the same version of CAP 501 as determined by the current version information.

This kind of installation should come into question, if part of the product has obviously become corrupt or is missing.

4.1.5. Forced installation

A *forced installation* means that the installation does not allow you to select which portions of the software to install. This happens if CAP 501 has not been installed in the target computer previously or another version of CAP 501 has been installed in the currently selected destination. This is to guarantee consistent software installations.

4.1.6. Applications running at install-time

It is recommended to close all the unnecessary applications before installing CAP 501.

4.1.7. System-wide product interdependencies**4.1.7.1. Multiple installations of the kernel software**

The kernel software is embedded into a line of products. Due to the nature of the kernel, some issues (described in the next subsections) may raise regarding computers containing multiple installations of the kernel (each product installs its own copy of the kernel software).

The product line using the same kernel comprises:

- CAP 505 v. 2.0.0 or newer
- COM 500 v. 3.0 or newer
- SYS 500 v. 8.4.3 or newer
- SMS 510 v. 1.0.0 or newer

4.1.7.2. MicroSCADA service

The MicroSCADA service serves as a core part in execution of the kernel software. Without a properly installed MicroSCADA service, you cannot use CAP 501 or any other product utilizing the kernel. A single kernel can execute at a time, i.e. you can use only one of these products at a time.

Controlling the rights to start and stop the MicroSCADA service

By default, you are allowed to start and stop the MicroSCADA service only if your logon account is granted Administrator rights. However, you may also grant this right to any user belonging either to the built-in Users group or any non-built-in Users group, defined on your computer. You can assign these rights by means of the MicroSCADA Service Access Manager tool. However, you should keep in mind that the access configuration is system-wide, affecting the above mentioned product line. For detailed information on the tool, see Section 4.3.2.11. .

4.1.7.3. MicroSCADA user account

A user account named MicroSCADA is added/updated during the installation. Changes to this account may affect the functionality of other products.

It is recommended that you do not change the account's password or other properties, once the account has been initially installed. More information on this user account is provided later in this manual.



Never modify the MicroSCADA user account by using the operating system's tool, such as User Manager, since it may bring the kernel into an inoperable state. Reinstallation of the CAP 501 Base System is required in order to recover in such a case.

4.1.7.4. Kernel incompatibility issues

Kernel revisions, that are incompatible with this version of CAP 501 and with the above mentioned product line, have been shipped with the following products:

- SYS 500 8.4.2A or older
- COM 500 2.0A or older

If you have either of these product versions installed in your computer, please take into account, that the installation of CAP 501 invalidates SYS 500 versions 8.4.2A and older, and COM 500 versions 2.0A and older. These products will not be operable after the installation of CAP 501. To continue using the SYS 500 and COM 500 products, you must upgrade them according to the following table.

Table 4.1.7.4-1 Required SYS 500 and COM 500 updates

Product	Incompatible version	Compatible version
SYS 500	8.4.2A or older	8.4.3 or newer
COM 500	2.0A or older	3.0 or newer

The CAP 501 installation notifies you, if it detects a SYS 500 or a COM 500 version which should be upgraded. You are also provided the option to cancel the installation without modifying the computer's configuration.



If you are unsure about the possible effects of the CAP 501 installation on SYS 500 and/or COM 500, it is recommended that you do not install CAP 501.

4.2. Software installation procedure outlined

When you have started the CAP 501 installation, first it gathers the following information from your system:

Operating system

If you are running an operating system version older than Windows NT 4.0, the installation notifies you that it cannot continue.

User rights

If you have logged on with insufficient user rights, you are prompted to exit the installation and to log on to the operating system by using an account having Administrator rights.

Current version

If a version of CAP 501 has already been installed, the installation suggests to use the destination drive of the existing installation. Otherwise the installation looks for the first suitable destination drive, a physical NTFS formatted hard disk drive, and uses it as the default destination drive.

Status of the MicroSCADA service

If the installation detects that the MicroSCADA service is running, you are prompted to exit the application that utilizes the service. You are not allowed to continue with the installation while the service is executing.

Incompatible kernel revisions of SYS 500 and COM 500

Installations of SYS 500 and COM 500, that are known to contain incompatible kernel revisions are detected. Provided, that such product versions are detected to be installed and superseding versions with compatible kernel of SYS 500 or COM 500 are not detected on the computer, you are prompted whether or not to continue the CAP 501 installation.

After these initial checks, the installation welcomes you to the CAP 501 installation (see Fig. 4.3.2.1.-1). Thereafter, the CAP 501 Product License Agreement is displayed, explaining you the terms under which the product may be used (see Fig. 4.3.2.2.-1). Once you have accepted the license agreement terms by continuing the installation, purely informative System Information dialogs, based on the current version information, inform you about the current status of CAP 501 on your computer.

Next, you enter the Select dialog, which is the main dialog of the installation (see Fig. 4.3.2.6.-1). Provided, that the current version is the same that you are installing and you are using the suggested destination drive, you can select any combination of the available installation options. These options are the same as described in the Section 2.1. Contents. Otherwise, the installation forces to install all the available options in the selected destination drive. You can change the destination drive by means of the Select Destination Drive dialog, which you can access from the Select dialog.

Once you are satisfied with the settings you have specified, you can start the actual software installation from the main dialog. Notice that prior to that, your computer has not been modified in any way.

If you install the Base System, the installation prompts you for the following information:

- Password for the MicroSCADA user account. Whether this MicroSCADA user account information is requested depends on the configuration of your computer.
- The operating system user groups, to which you wish to grant the rights to start and stop the MicroSCADA service on your computer.

Finally, when the installation has been completed, you are notified about it. Depending on the status of some of the installed files, you may be requested to reboot your computer.

After the installation has been completed, you will find a program folder named CAP 501 which contains the icons for using the CAP 501 software. A shortcut to this program folder will also be added onto your operating system desktop.

4.3. Installing the software

4.3.1. Starting the installation

To start the CAP 501 installation, place the CAP 501 Program CD into your CD-ROM drive. The installation application is named as CAP501.EXE and it is located in the root directory of the Program CD.

For example, provided, that your CD-ROM drive has been assigned the drive letter Y: do the following steps:

- Press the <Control>+<Esc> key combination to open the Start Menu of the operating system.
- Select Run and enter the following command in the Run dialog:

Y: \CAP501 . EXE

- Click OK to start the CAP 501 installation.

If the initial checks are passed without any notifications, the installation enters the Installation Wizard directly, which is explained in the following.

4.3.2. Installation Wizard

The software installation comprises a series of dialogs referred to as the Installation Wizard, which guides you through the CAP 501 installation. The installation can be exited virtually at any point by either clicking Exit where available or by pressing the <Esc> key from the keyboard. You will be prompted to confirm that you actually wish to exit the installation prematurely.

Most of the information needed to install CAP 501 is gathered in the Installation Wizard dialogs. Thereafter, the installation transfers the software onto your computer. However, during the process of transferring the software, you may be prompted for additional information depending on your computer configuration.

The following paragraphs describe in detail each of the Installation Wizard dialogs in the order they appear during the installation.

4.3.2.1. Welcome

The Welcome dialog welcomes you to the CAP 501 installation (see Fig. 4.3.2.1.-1.)



Fig. 4.3.2.1.-1 The Welcome dialog

Click OK to continue with the installation. To exit the installation, click Cancel.

4.3.2.2.

Product License Agreement

The Product License Agreement dialog contains the license agreement of CAP 501, (see Fig. 4.3.2.2.-1).

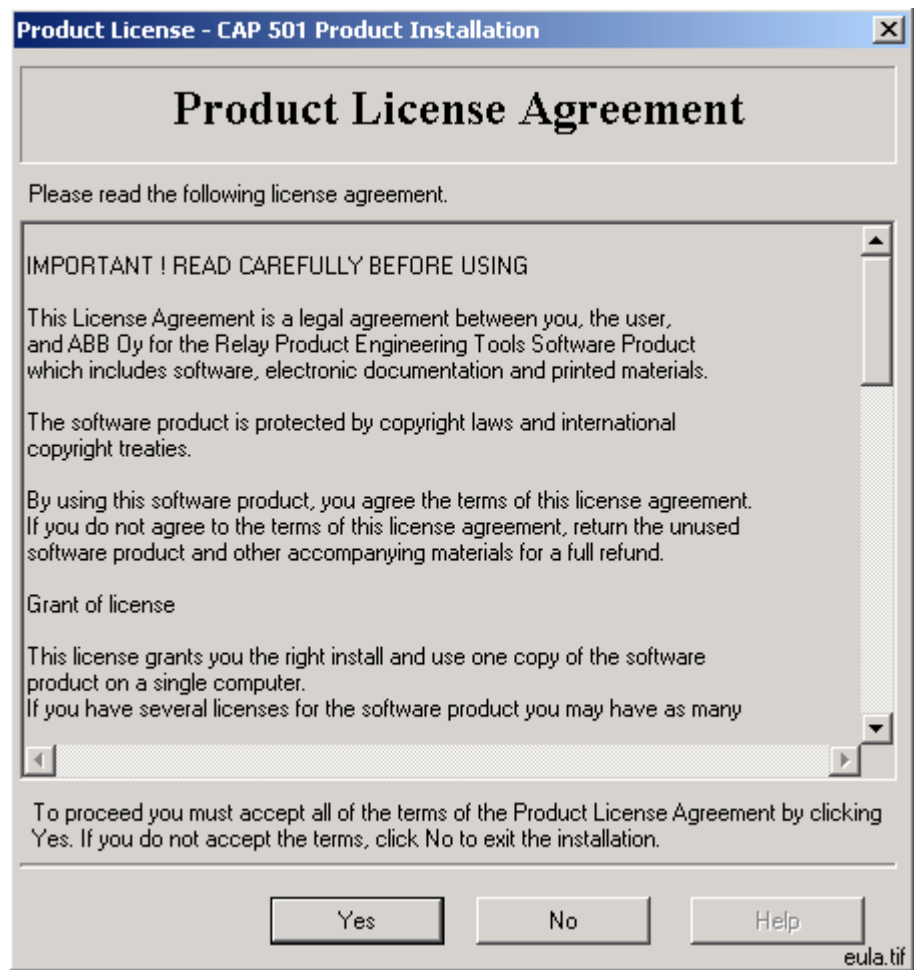


Fig. 4.3.2.2.-1 The Product License Agreement dialog

To accept the terms of the license, click Yes to continue. If you do not accept these terms, click No to exit the installation. This dialog is displayed only once during the installation.

4.3.2.3. System Information 1

If you have not previously installed CAP 501, you will see the System Information dialog shown in Fig. 4.3.2.3.-1.

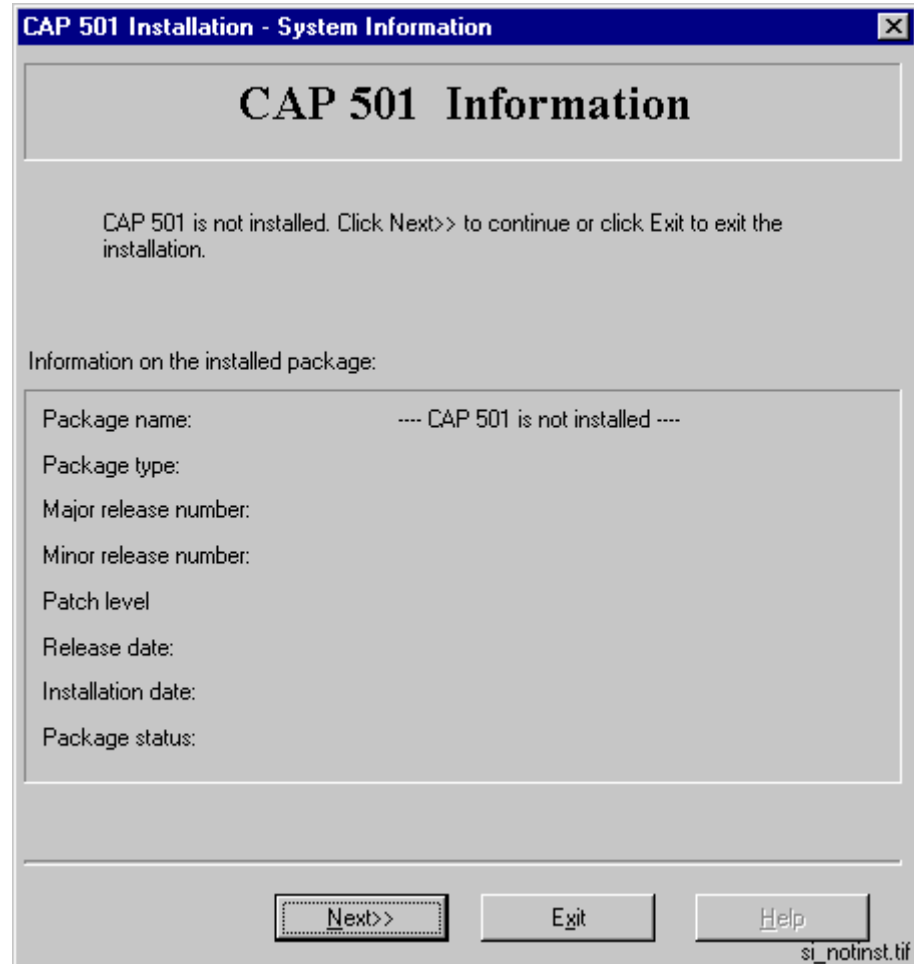


Fig. 4.3.2.3.-1 The System Information dialog

To display the Select dialog, click Next>>. Otherwise, click Exit to exit the installation.

4.3.2.4. System Information 2

If the installation detects that a CAP 501 version above 2.1.0 has been installed in the destination, you will see the System Information dialog shown in Fig. 4.3.2.4.-1.



Fig. 4.3.2.4.-1 The System Information dialog

The current version information is available here for viewing. To display the Select dialog, click Next>>. Otherwise, click Exit to exit the installation.

4.3.2.5. System Information 3

If the installation detects that the same version of CAP 501 has been installed in the destination, you will see the System Information dialog shown in Fig. 4.3.2.5.-1.



Fig. 4.3.2.5.-1 The System Information dialog

The current version information is available here for viewing. To display the Select dialog, click Next>>. Otherwise, click Exit to exit the installation.

4.3.2.6. Select - forced installation

In case of a forced installation, you will see the Select dialog shown in Fig. 4.3.2.6.-1.



As stated in this dialog, the options represented in the dialog cannot be unchecked.



Fig. 4.3.2.6.-1 The Select dialog

This dialog provides the following information:

- The currently selected destination drive and the root directory under which the software will be installed.
- The amount of hard disk space that is required and available on the currently selected destination drive.
- A notification that you cannot select or unselect individual options.

To change the destination drive for the installation, click Change Drive. For description of the Destination Drive dialog, see Section 4.3.2.8. Destination Drive. To view the previously displayed System Information dialog, click <<Back. If you are satisfied with the current settings, click **Start** to start the actual software installation.

4.3.2.7. Select - non-forced installation

In case of a non-forced installation, you will see the Select dialog shown in Fig. 4.3.2.7.-1.



Fig. 4.3.2.7.-1 The Select dialog for a reinstallation

This dialog provides the following information:

- The currently selected destination drive and the root directory under which the software will be installed.
- The amount of hard disk space that is required and available on the currently selected destination drive.

The selected options have a check mark on their left side and are subject to install. Clicking with the mouse on an option toggles its selection status.

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To change the destination drive for the installation, click Change Drive to see the description of the Destination Drive dialog below. To view the previously displayed System Information dialog, click <<Back. If you are satisfied with the current settings, click Start to start the actual software installation.

4.3.2.8.

Destination Drive

This dialog allows you to select the destination drive for the installation.

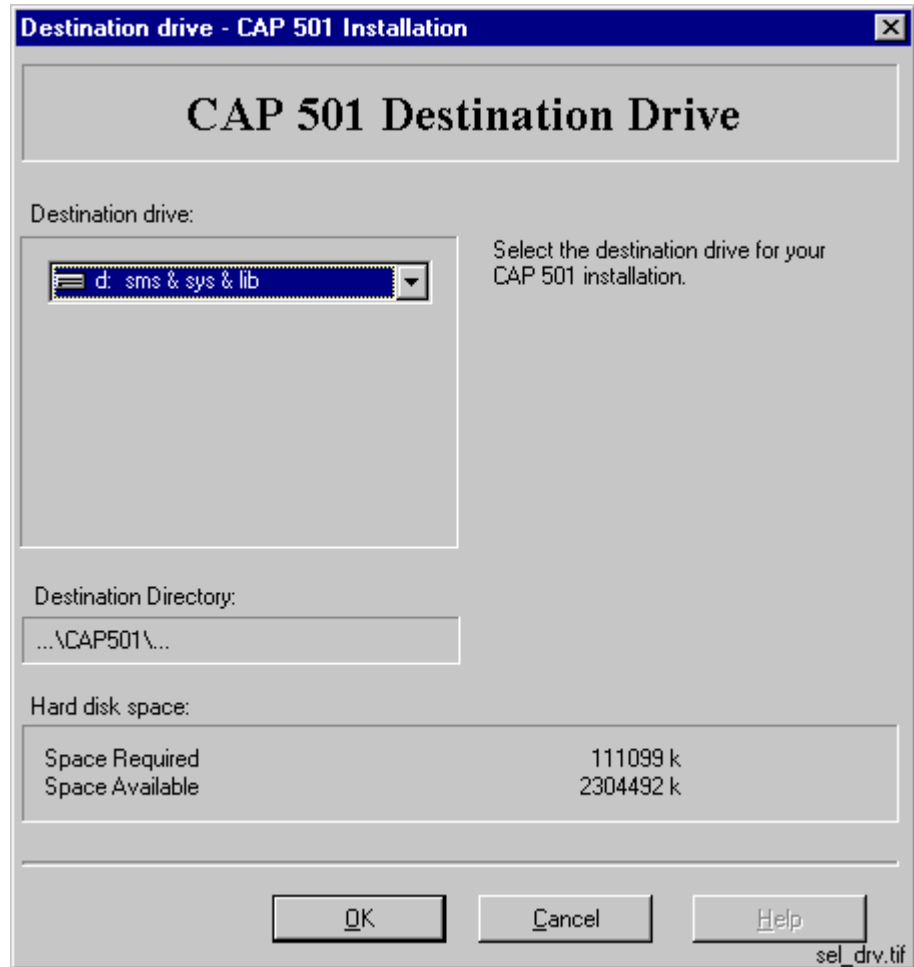


Fig. 4.3.2.8.-1 The Destination Drive dialog

All disk drives available to the operating system are listed on the drive list (highlighted in the above figure). The amount of available and required hard disk space is also shown on the lower right area of the dialog.

Press the <F4> key from the keyboard or click on the arrow head on the right side of the drive list to view it in the drop-down mode. You can either use the arrow keys on the keyboard or the mouse to select a drive from the list.

As you change the selection, the installation checks whether the drive can be used for installing the software. If it cannot be used, you will see a notification message and the drive that was selected at the time of entering the dialog, is reset as the destination drive. The possible notifications are described in more detail in Section 7.6. Troubleshooting destination drive error messages.

To use the selected drive and to return to the Select dialog, click OK. Otherwise, click Cancel and the changes to the destination drive will be discarded as you return to the Select dialog.

4.3.2.9.

Installing

Once you have clicked the Start button on the Select dialog, the progress of the installation is displayed in a dialog shown in Fig. 4.3.2.9.-1.

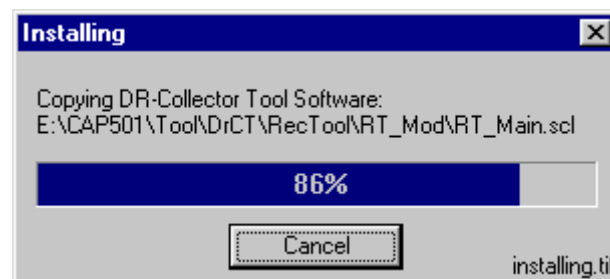


Fig. 4.3.2.9.-1 The Installing dialog

You may cancel the installation by clicking Cancel.



No support for a rollback is available meaning that you cannot revert to the configuration that existed prior to the installation of CAP 501.

4.3.2.10. MicroSCADA user account

If you are prompted for the MicroSCADA user password, you will see the dialog shown in Fig. 4.3.2.10.-1. The installation does not continue until you have closed this dialog.

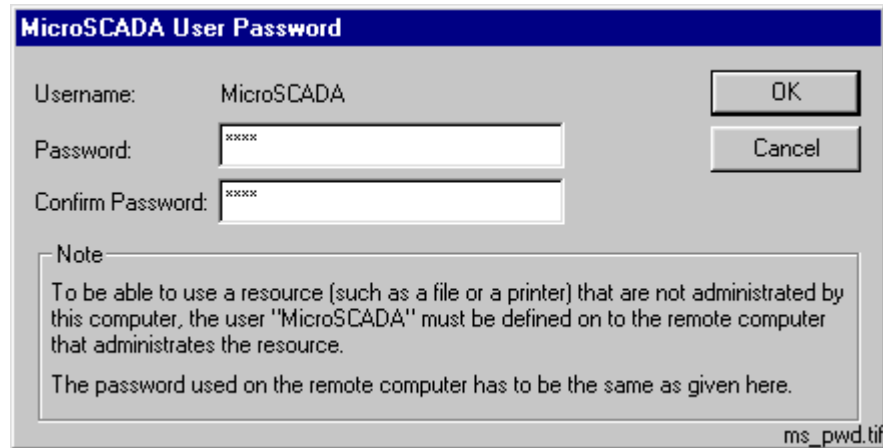


Fig. 4.3.2.10.-1 The MicroSCADA User Password dialog

Enter an appropriate password confirming it. Click OK to apply it and to continue with the installation. Other properties of the MicroSCADA user account are set automatically during the creation of the account.



In order to have a working installation of CAP 501, the MicroSCADA user account must exist on your computer.



The note text on the dialog incorrectly states that the MicroSCADA user account is used for accessing non-local printer resources. In CAP 501, you access non-local printer resources in the logged-on user's security context.

4.3.2.11. MicroSCADA Service Access Manager

Overview

If you install the Base System, the MicroSCADA Service Access Manager dialog appears on the screen (shown in Fig. 4.3.2.11.-1). The installation does not continue until you have closed this dialog. The installation adds an icon for this tool to the CAP 501 program folder, so you can use it any time after the installation, assuming that you have logged on with administrator rights at that time.

Purpose

By using the MicroSCADA Service Access Manager you can define those user-defined user groups whose members are allowed to start and stop the MicroSCADA service, i.e. start and stop CAP 501 on the computer. In addition to the user-defined

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user groups, the built-in Users group can also be granted these rights. By default, all users belonging to the operating system's Administrators group are granted these rights, and therefore, the tool never displays the Administrators group. If the users of CAP 501 on the computer will not be members of the Administrators group, you should use this tool to set up a proper configuration by granting the appropriate user groups the rights to start and stop the MicroSCADA service.

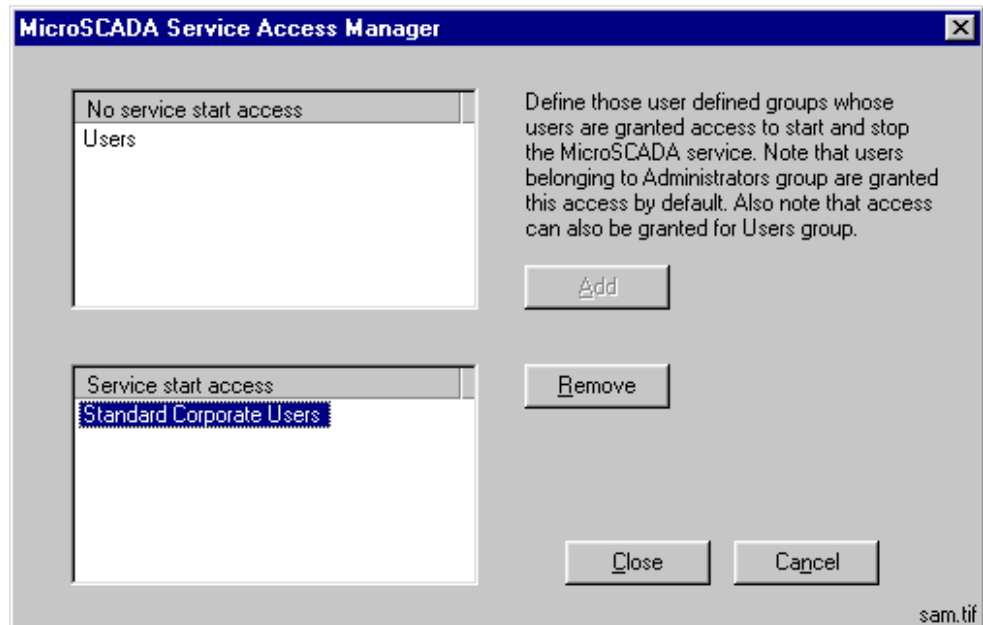


Fig. 4.3.2.11.-1 The MicroSCADA Service Access Manager dialog

Granting the rights to a group

To grant the rights to start and stop the MicroSCADA service to the appropriate user groups, first highlight the group in the upper list labelled 'No service start access' and click Add. In the above figure, the user group Standard Corporate Users has been granted these rights.

Revoking the rights from a group

To revoke the rights from a user group, first highlight the group in the lower list labelled 'Service start access' and click Remove. In the above figure, the operating system's built-in user group Users has been revoked these rights.



This is a system-wide configuration, which affects also all the other products using the same kernel software. For example, if you have SYS 500 installed in the computer and you grant the rights to an imaginary Visitors group (intended for ordinary visitors), any logged-on member of that group is able to start and stop both CAP 501 and SYS 500 on the computer.

Saving the configuration

To save the configuration, click Close. Confirm that action by clicking OK on the dialog shown in Fig. 4.3.2.11.-2.

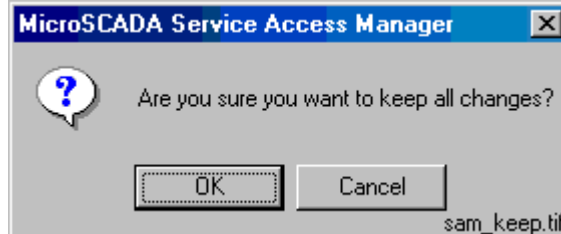


Fig. 4.3.2.11.-2 Confirm to save the service access configuration

Discarding changes to the configuration

To close the tool without saving the configuration, click Cancel in the MicroSCADA Service Access Manager dialog. Provided that the configuration has been changed, you must confirm the cancellation by clicking OK on the dialog shown in Fig. 4.3.2.11.-3. Otherwise click Cancel to return to the Service Access Manager.

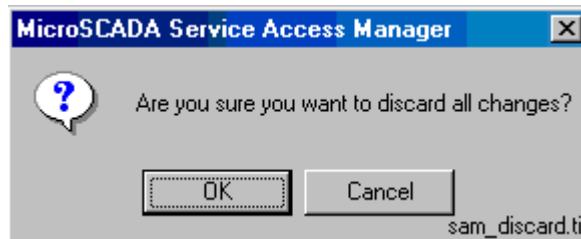


Fig. 4.3.2.11.-3 Confirm to discard the changes to the service access configuration

4.3.2.12.

Installation completed

After the selected software has fully been transferred onto your system, the CAP 501 installation displays the following message to inform you that the installation has been completed.

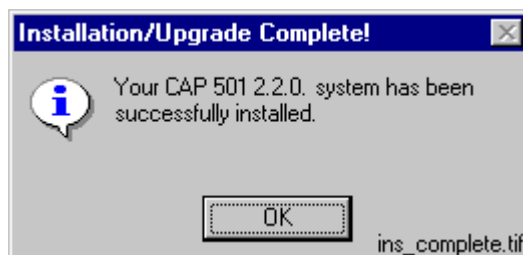


Fig. 4.3.2.12.-1 Notification that the installation has been completed successfully
Click OK to acknowledge the message.

4.3.2.13. System reboot

If some of the installed files were in use at the time of the installation, you are prompted to reboot your computer (see Fig. 4.3.2.13.-1).

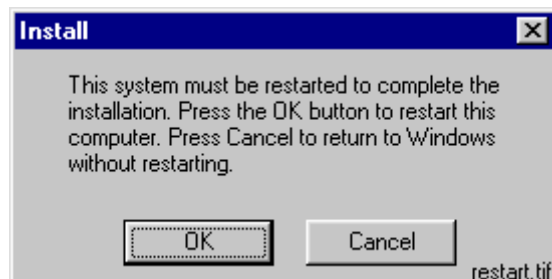


Fig. 4.3.2.13.-1 Request to reboot the computer

Click OK to reboot your computer immediately. You may reboot later if you wish, by clicking Cancel. However, notice that before starting CAP 501, you must reboot the computer in order for all of the changes to take effect in the system.

4.3.3. Cancelling the installation

When you are about to cancel the installation, the dialog shown in Fig. 4.3.3.-1 appears on the screen.

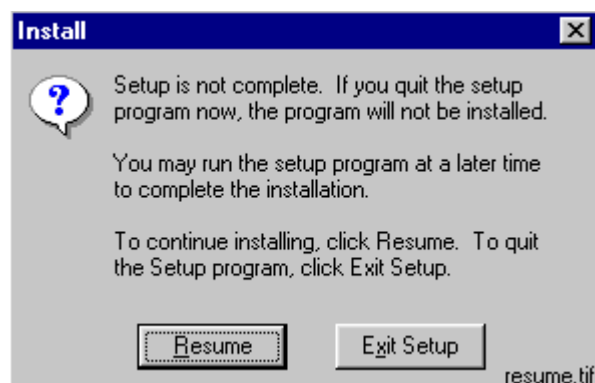


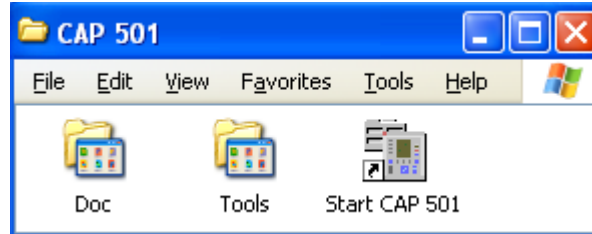
Fig. 4.3.3.-1 Confirmation to cancel the installation

Click Exit Setup to exit the installation. Otherwise click Resume to continue with the installation from where it was interrupted.

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4.3.4. CAP 501 program folder

The program folder for CAP 501 is named as CAP 501 and it is accessible to all logged-on users. The folder contains the items shown in Fig. 4.3.4.-1.

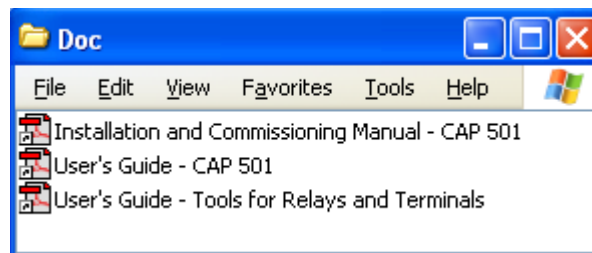


program_folder_1

Fig. 4.3.4.-1 CAP 501 program folder

- To start CAP 501, double-click the icon Start CAP 501.

The two subfolders are explained below.

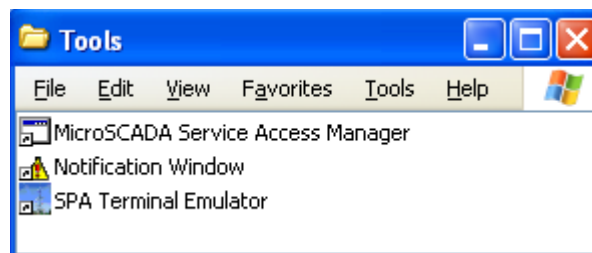
4.3.4.1. Subfolder - Doc

Doc_folder_1

Fig. 4.3.4.1.-1 Subfolder - Doc

- To view a manual, double-click the appropriate icon entry. Note! This operation requires that a viewer capable of reading PDF files is installed.

Fig. 4.3.4.1.-1 shows different manuals in the Doc subfolder.

4.3.4.2. Subfolder - Tools

Tools_folder_1

Fig. 4.3.4.2.-1 Subfolder - Tools

- To start the MicroSCADA Service Access Manager tool, double-click the icon MicroSCADA Service Access Manager.
- The Notification Window displays messages as they are sent by the system and tools. All notifications are also stored in the

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"...\sys\active\sys_\SYS_ERROR.LOG" file.

The Notification Window can be used for troubleshooting.

- To start the SPA Terminal Emulator, double-click on its icon.

(For more information about the SPA Terminal Emulator, please see the *Tools for Relays and Terminals* manual).

4.3.4.3.

Shortcut to the CAP 501 program folder

A shortcut named CAP 501 has been added onto your desktop (see Fig. 4.3.4.3.-1). This shortcut provides access to the CAP 501 program folder from your desktop.



Fig. 4.3.4.3.-1 The shortcut to the program folder on your desktop

To open the CAP 501 program folder, double-click the shortcut.

5. Commissioning

This chapter describes what is needed in order to take the installed software into use.

CAP 501 commissioning

In order to take CAP 501 into use, you only need to optionally define those operating system user groups whose members are granted the rights to start and stop the MicroSCADA service on your computer. You grant these rights by using the MicroSCADA Service Access Manager tool (see Section 4.3.2.11.).

5.1. Configuring CAP 501 start-up

This section provides information on how to avoid possible CAP 501 start-up problems that may occur under some operating system configurations. Unless you are experiencing CAP 501 start-up problems, you can skip this section.

5.1.1. Avoiding virtual memory overlap at CAP 501 start-up

The MicroSCADA service of CAP 501 uses a hard-coded address for the address of the memory pool.

However, it is possible that in certain PC configurations, some other system component (e.g. a hardware driver) happens to map on an address within the pool. The MicroSCADA service start-up itself has a search mechanism to handle the address overlapping, but it has no chance to prevent other MicroSCADA processes or external programs from failing to map the memory pool. Consequently, CAP 501 does not start.

If this happens, an error message of the following format will be shown in the CAP 501 error log file `\CAP501\SYS\ACTIVE\SYS_\SYS_ERROR.LOG` and on the Notification Window (it can be opened from the CAP 501 Tools program folder under Start menu).

```
Add the following line to sys_config.par and restart MicroSCADA
MEMORY_POOL_HOLE = 30000000 - 301FFFFFF
```

```
? Map_Global_Memory(MapViewOfFileEx): 487
```

Since the situation causes CAP 501 (e.g. PICA.EXE program) to crash, the computer must be restarted in order to take the corrective measures explained below.

As the remedy, the MEMORY_POOL_HOLE parameter must be activated in the file `\CAP501\SYS\ACTIVE\SYS_\SYS_CONFIG.PAR`. This parameter advises the MicroSCADA start-up code not to use the specified virtual memory area for the global memory pool.

To change the value, open the file `SYS_CONFIG.PAR` in a text editor (for example, `NOTEPAD.EXE`) and specify the memory pool hole copying the line containing parameter name `MEMORY_POOL_HOLE` exactly as shown in the message (note that the address range below is an example only, and the actual values to be used are always configuration dependent):

```
MEMORY_POOL_HOLE = 30000000 - 301FFFFFF
```

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The possibly existing parameter MEMORY_POOL_ADDRES should not be touched. The configuration file may also contain several MEMORY_POOL_HOLE lines, because there is a slight possibility that even the second start-up fails now suggesting another range to be excluded.

Save your changes and exit the editor. Be careful not to make any inadvertent changes to the file! After the restart CAP 501 should be initialized without errors.

Below is an example of a modified SYS_CONFIG.PAR:

```
; File:          Sys_config.par
; Description:   Configuration for 'static' base system parameters
;              Leading ';' indicates commented line
;              Base system version 8.4.4
;-----
;
MEMORY_POOL_HOLE          = 30000000 - 301FFFFFF ;Excluded virtual memory area
;MEMORY_POOL_SIZE        = 20 ;Must be 4,8,12,16,20,24,28,... (MB)
PICO_MEMORY_POOL_SIZE    = 16 ;Memory Pool for Monitor processes
;REPR_MEMORY_POOL_SIZE   = 4  ;Memory Pool for Report processes
;PRIN_MEMORY_POOL_SIZE   = 2  ;Memory pool for Printer processes
;
;ASYNCHRONOUS_SHADOW_RECEIVER = 1 ;Should be used in cross-shadowing systems
;
;ANALOG_SWITCH_STATE_OPEN   = 2 ;The semantics for MicroTOPOLOGY of AI
;ANALOG_SWITCH_STATE_CLOSED = 1 ;process objects used for indicating the
;ANALOG_SWITCH_STATE_MIDDLE = 0 ;state of a switching device
```

6. Uninstallation

6.1. Overview

The uninstallation is done by means of a special-purposed program (Uninstaller) designed for the removal of software products. Each product comes with its own designated Uninstaller installed with the product

6.2. Features

The Uninstaller has the following features:

- Removal of files, folders, services, registry keys, user accounts
- Logging of uninstallation operations
- Validation of the integrity of the data the uninstallation is based on
- Ability to cancel/abort the uninstallation
- Ability to re-run the uninstallation as long as the data the uninstallation is based on is available
- Detection of the need to reboot
- Graphical user interface (Uninstall Wizard)

6.3. Scope of uninstallation

Uninstalling the product comprises the following operations:

- Permanent removal of the product's main installation directory
- Permanent removal of the product's program folder(s)
- Permanent removal of the product's key system registry entries
- Permanent removal of the shared MicroSCADA components. This covers for instance the MicroSCADA Service and MicroSCADA User Account. However, the shared MicroSCADA components are removed only if the product utilizes the MicroSCADA Service and no other such a product has been installed.

6.4. Preparing for uninstallation

Prior to starting the uninstallation, it is recommended that you:

- Have backups of the data produced with the product. The only way to recover the data is to recover it from your personal backups.
- Close all other applications that are running
- Logon from an administrator account

6.5. Backing up the data

It is recommended to use the Project Export/Import Tool to backup the created project(s). More information about the Project Export/Import Tool can be found in the CAP 501 User's Guide.

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In addition to the project data, there are also two optional data locations to be considered before uninstallation. These locations include data, which may be useful later, but which is not mandatory from the project's point of view:

1. If the user-defined application libraries for REC 52x, REF 54x, RET 54x and/or REM 54x relay types need to be saved, it is recommended to export each configuration to a safe location by means of the object type's "Apl Utils" function. More information on this can be found in the Tools for Relays and Terminals manual.
2. If the uploaded disturbance recordings need to be saved, the contents of the "\\CAP501\Apl\CAP501\RECORDER" directory must be copied to a safe place.

Make sure you store the data outside the product's main installation directory (installation drive/CAP 501 directory).

6.6. Cancelling/aborting the uninstallation

As long as the Cancel button is enabled on the Uninstall Wizard, clicking on it causes the Uninstaller to prompt you to confirm that you wish to stop prematurely.

At a certain point, the Cancel button will be disabled during the actual uninstallation. This is because at that point, the Uninstaller removes the mandatory components for re-running itself.



If you abort the uninstallation when the removal has already been started, you must not try to use the product before you fully re-install it.

6.7. Starting the Uninstaller

Product uninstallation is started via Control Panel's Add/Remove Programs applet as shown below (see Fig. 6.7.-1):

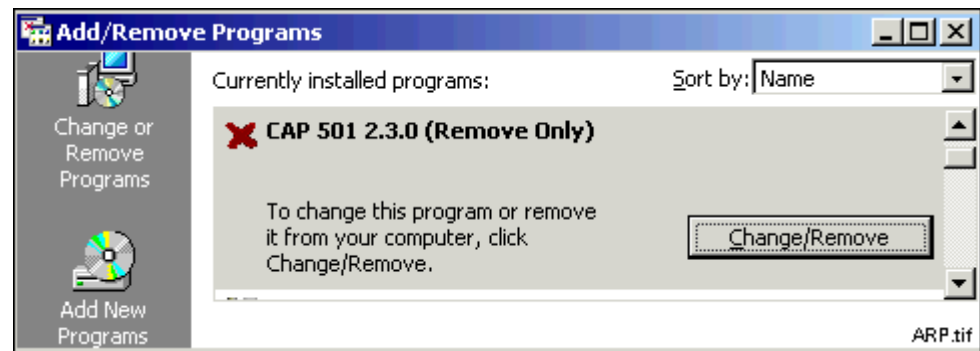


Fig. 6.7.-1 Add/Remove Programs applet

Prior to entering the Uninstall Wizard, the Uninstaller prompts you whether to proceed as shown below:

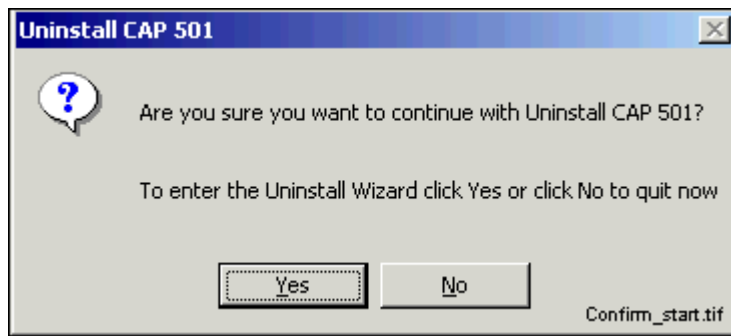


Fig. 6.7.-2 The Confirmation dialog

6.8. Uninstall Wizard

This section describes the Uninstall Wizard in detail.

6.8.1. Overview

The Uninstall Wizard comprises a series of dialogs which guide you through the steps required to uninstall the product. Your computer setup will be modified only after you make the decision to remove the product.

In addition to the dialogs depicted below, the Uninstaller may display other dialogs not documented here. Such dialogs appear, for example, if you decide to abort the uninstallation or unrecoverable error(s) occur at any point of the program execution.

Generally, you will be clearly notified about the end-result of the uninstallation and about the status of your computer setup.

6.8.2. Uninstall Wizard dialogs

The sequence of the dialogs that appear upon a successful operation is described below.

6.8.2.1. Welcome to Uninstall

This dialog welcomes you to the uninstallation (see Fig. 6.8.2.1.-1). Just click Next to proceed to the next dialog.

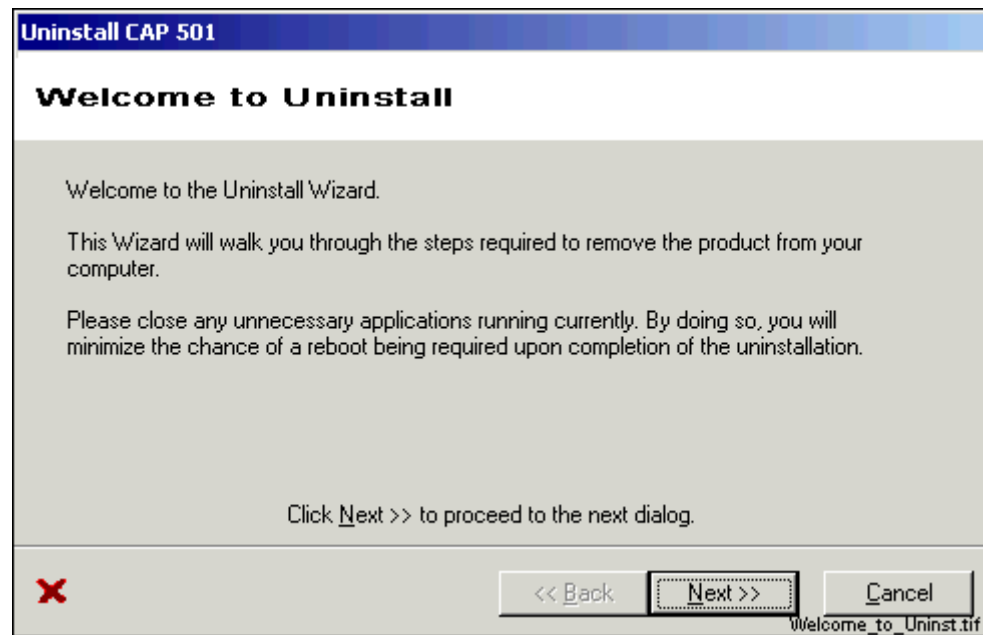


Fig. 6.8.2.1.-1 The Welcome dialog

6.8.2.2.

Backup Notice

This dialog notifies you to ensure backups of the data produced with the product (see Fig. 6.8.2.2.-1). All directories subject to removal are displayed. Notice that if you have installed the product in multiple locations (various drives), the list contains all of the main installation directories your installations have used. Be sure that you do not lose data accidentally.

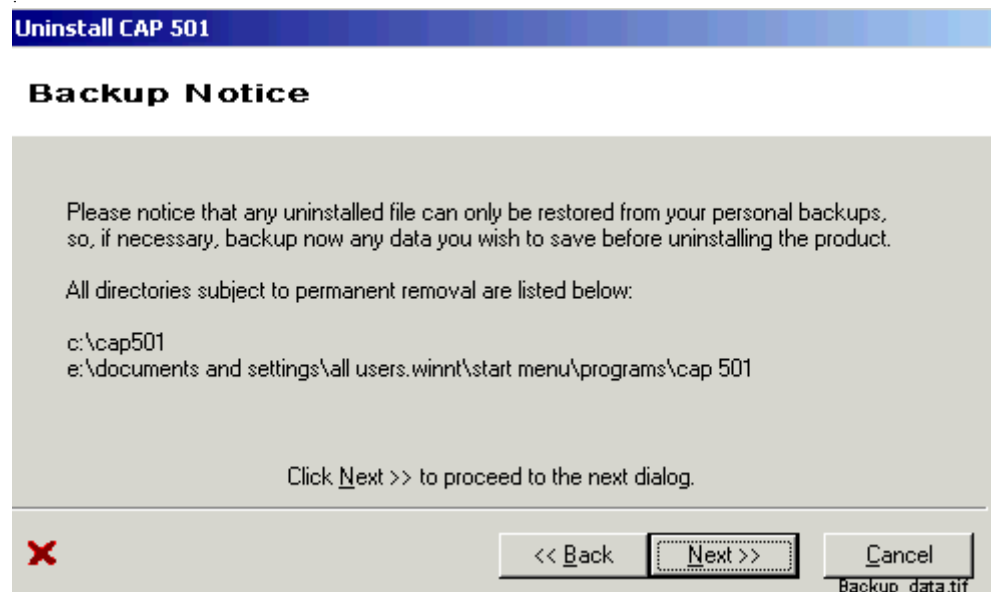


Fig. 6.8.2.2.-1 The Backup Notice dialog

6.8.2.3. Ready to Uninstall

This is the dialog where you start the actual uninstallation by clicking on Uninstall (see Fig. 6.8.2.3.-1). Remember that by clicking on Uninstall, your product installation becomes immediately unusable.

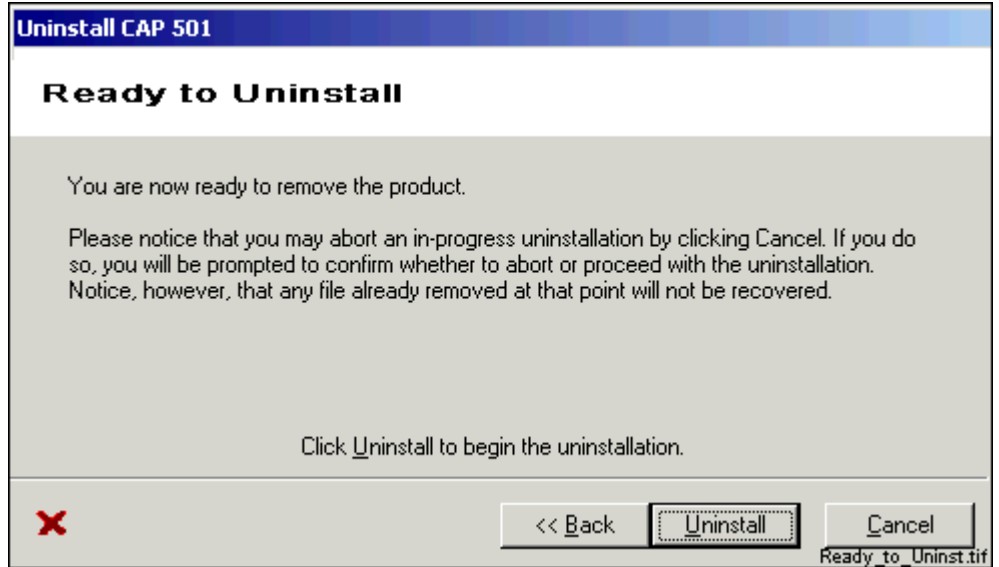


Fig. 6.8.2.3.-1 The Ready to Uninstall dialog

6.8.2.4. Uninstall in Progress

This dialog is displayed while the Uninstaller removes the product (see Fig. 6.8.2.4.-1).

This dialog displays the progress of the uninstallation while the product is being removed. To abort the uninstallation, click on Cancel (if enabled) and confirm the abort when prompted to do so.

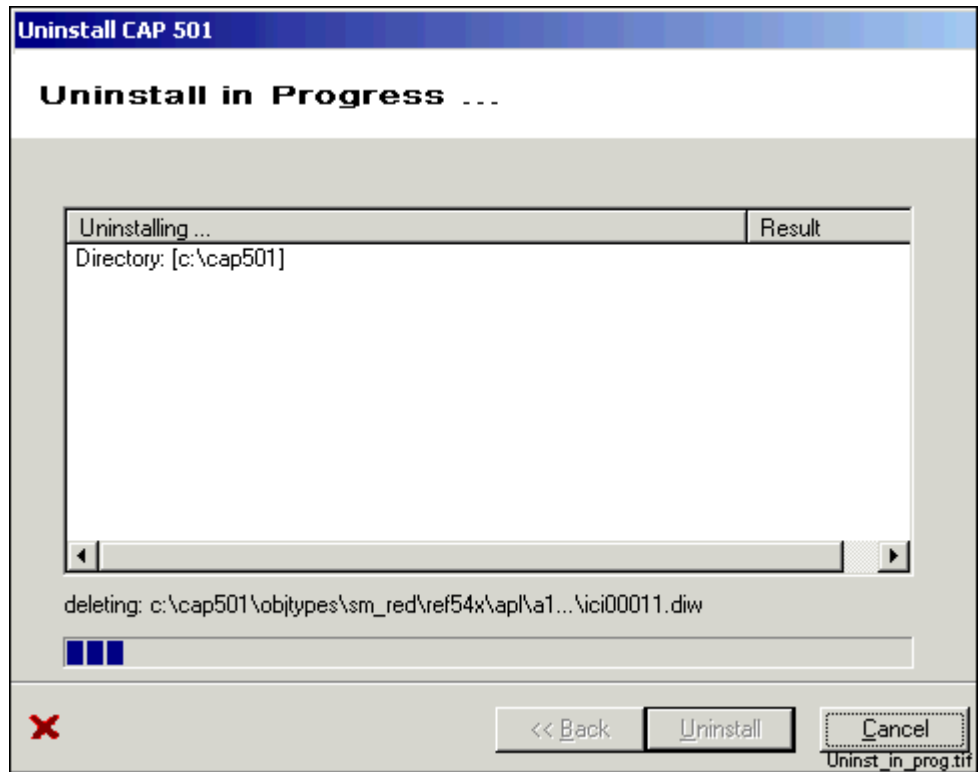


Fig. 6.8.2.4.-1 The Uninstall in Progress dialog

6.8.2.5.

Uninstall Completed

This dialog is displayed when the Uninstaller has successfully removed the product (see Fig. 6.8.2.5.-1). You may view the produced log file, if you wish.

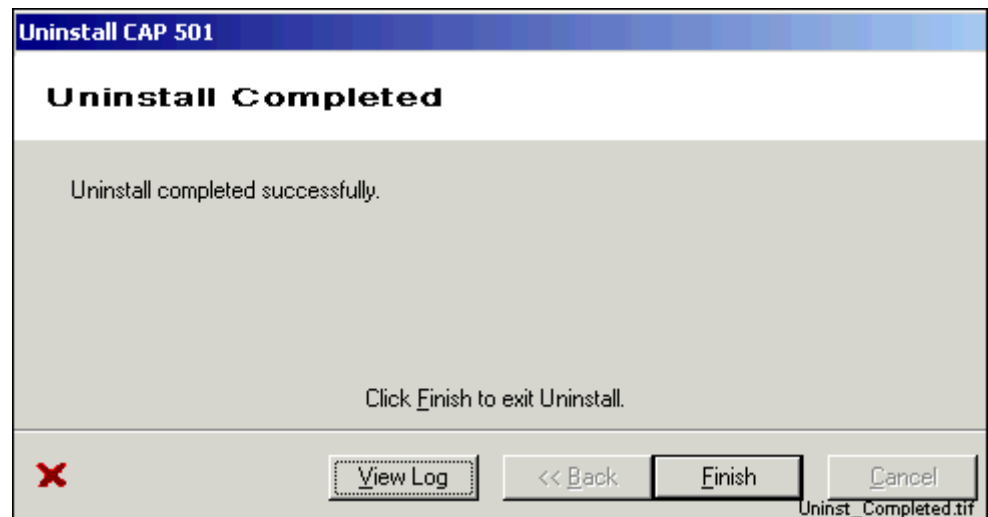


Fig. 6.8.2.5.-1 The Uninstall Completed dialog

6.9. Rebooting

Uninstaller operations may require a reboot in order to be fully carried out. Under such circumstances, the Uninstaller will prompt you to reboot the computer, when you exit the Uninstall Wizard.



It is mandatory to reboot the computer at least prior to installing any new software in the computer. Failure to adhere to that may cause malfunctioning software installations.

6.10. Troubleshooting

In case the uninstallation fails, please ensure that the produced log file remains available to aid in troubleshooting. It will be the only source of information usable for the purpose. You may open the log file in a text editor and save it in a location where it will not be modified further.

7. Troubleshooting

This chapter provides information that aims to help your recovering from problems that you have encountered during the CAP 501 installation.

7.1. Incorrect operating system detected

If you attempt to install CAP 501 in an operating system other than Windows NT 4.0, Windows 2000 or Windows XP, the installation notifies you with the message. Ensure correct computer configuration and rerun the installation.

7.2. Incorrect operating system version detected

If you attempt to install CAP 501 in a Windows NT operating system lower than version 4.0, the installation notifies you with the message. Ensure correct computer configuration and rerun the installation.

7.3. Insufficient user rights to install

If you have logged on to your computer having non-administrator rights, the installation notifies you with the message shown in Fig. 7.3.-1.

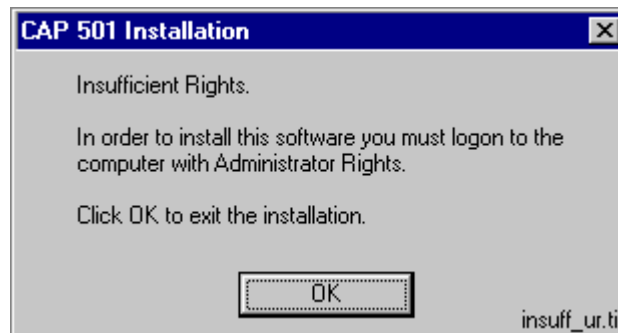


Fig. 7.3.-1 Insufficient user rights to install CAP 501

To recover, click OK and log on to the computer having administrator rights and restart the installation.



You may erroneously receive this notification even if you have logged on with administrator rights. When encountering such behaviour, the problem most probably relates to the TEMP environment variable setting on your computer (see Section 7.11.2. TEMP environment variable).

7.4. MicroSCADA service is running

If the MicroSCADA service is running when you start the CAP 501 installation, you are notified with the message shown in Fig. 7.4.-1.

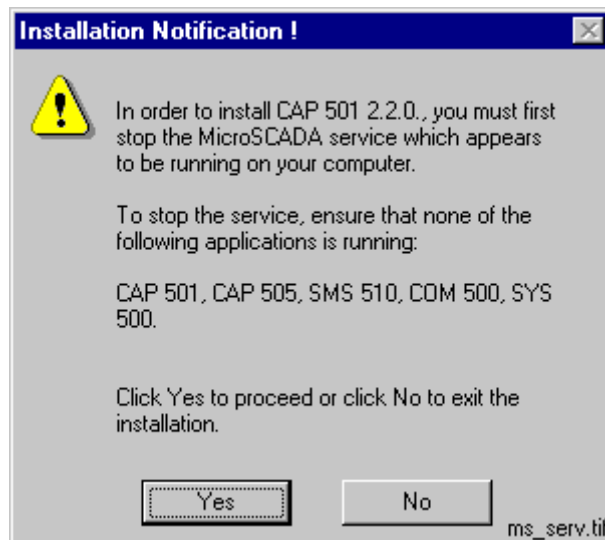


Fig. 7.4.-1 MicroSCADA service must be shut down before continuing with the installation

In order to continue, exit the application currently utilizing the MicroSCADA service and click Yes. The application is one of the applications listed in the message. Notice that you cannot continue with the installation while the service is executing. To exit the installation, click No.

7.5. Failing to install the MicroSCADA service

If the installation of the MicroSCADA service does not succeed, the installation displays the message shown in Fig. 7.5.-1.



Fig. 7.5.-1 The MicroSCADA service installation has failed

The most probable reason for this is, that the MicroSCADA service has started during the CAP 501 installation. In order to recover from this, click OK to dismiss the message and exit the installation by clicking Cancel on the Installing progress dialog. Restart the installation and install at least the Base System.

7.6. Troubleshooting destination drive error messages

Depending on the current destination drive setting and your computer configuration, you may be notified with a message that CAP 501 cannot be installed in:

- a CD-ROM drive
- a non-NTFS drive
- a network drive
- a removable media drive
- a virtual (substituted) drive

To proceed, click OK and select a suitable destination drive in the Installation Wizard's Select Destination Drive dialog.

7.7. Insufficient disk space

Provided that the selected destination drive does not contain sufficient free disk space, the installation displays the dialog shown in Fig. 7.7.-1.

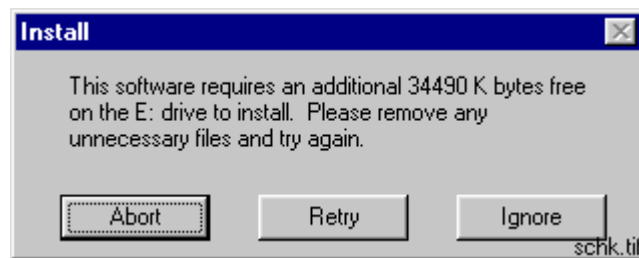


Fig. 7.7.-1 Insufficient disk space to install.

The available options are:

- Abort, which aborts the installation immediately. **Note!** Your computer configuration has not yet been modified at this point, so you can safely select this option to exit installation.
- Retry, which checks the disk space and redispays this dialog if the amount of available disk space has not increased sufficiently. Otherwise, the software installation continues normally.
- Ignore, which causes the installation blindly to continue copying the software to the destination. Notice that it is not recommended to use this option as the installation might eventually fail in its operation.

7.8. No suitable destination drive available

If your computer does not contain any drives formatted to NTFS and you have not installed CAP 501 v. 2.1.0 before, the installation displays the message shown in Fig. 7.8.-1.

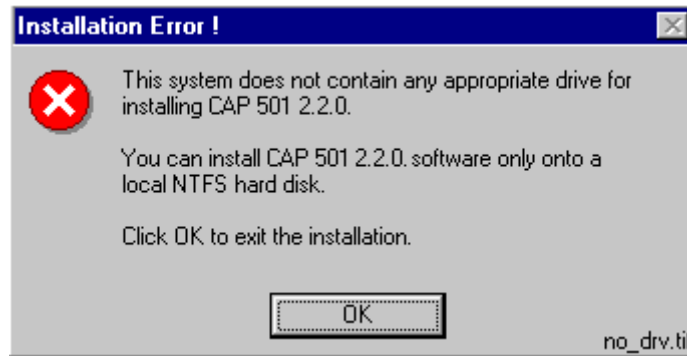


Fig. 7.8.-1 No suitable destination drive available for installation

Click OK to dismiss the message and to exit the installation.

In order to install CAP 501, you must format a drive to NTFS. You can use the operating system tools to accomplish the task.

7.9. Incompatible SYS 500 and/or COM 500 installed

During the start-up of the installation, you may see the notification displayed in Fig. 7.9.-1.

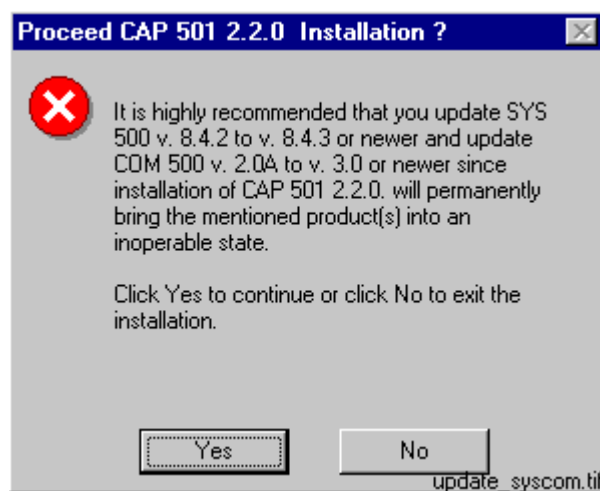


Fig. 7.9.-1 Product upgrades will be required if CAP 501 is installed

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As stated, the old versions of SYS 500 and COM 500 cannot be used if you install CAP 501. If you are unsure about installing CAP 501, click No to exit the installation. Otherwise click Yes to continue with the installation.



Provided that you choose to install CAP 501, remember that SYS 500 and COM 500 must be updated to the respective versions stated in the message before you can continue using these products.

7.10. Galaxy Debug window during first start-up

If a Galaxy Debug window is shown when you try to start CAP 501 the first time after its installation, you must restart your computer and try again. See Fig. 7.10.-1:

```

Galaxy Debug
An error has occurred. The following chain of information is available:
  error 1: /Memory/Alloc/
    errno: 2: No such file or directory
      requested size: -24
Hit a key to exit...
Hit a key to exit...
galaxy_debug.tif
  
```

Fig. 7.10.-1 Galaxy Debug window

7.11. Miscellaneous

7.11.1. Repaired operating system installations

If your computer experiences operating system failures and you repair the operating system installation, it is recommended that you reinstall at least the Base System of the CAP 501 in order to guarantee correct installation of CAP 501.

7.11.2. TEMP environment variable

The TEMP environment variable must be defined on your computer and its content must have reference to an existing directory to which you have read/write access. Also, make sure that the drive on which this directory exists is not running out of storage capacity.

To define the TEMP environment variable on Windows NT 4.0:

1. Open the System applet from the Control Panel.
2. Choose the Environment page as shown in Fig. 7.11.2.-1 and locate the TEMP variable from one of the lists. The setting may be defined both as a System and a User variable. If found, the User variable setting overrides the respective System variable setting

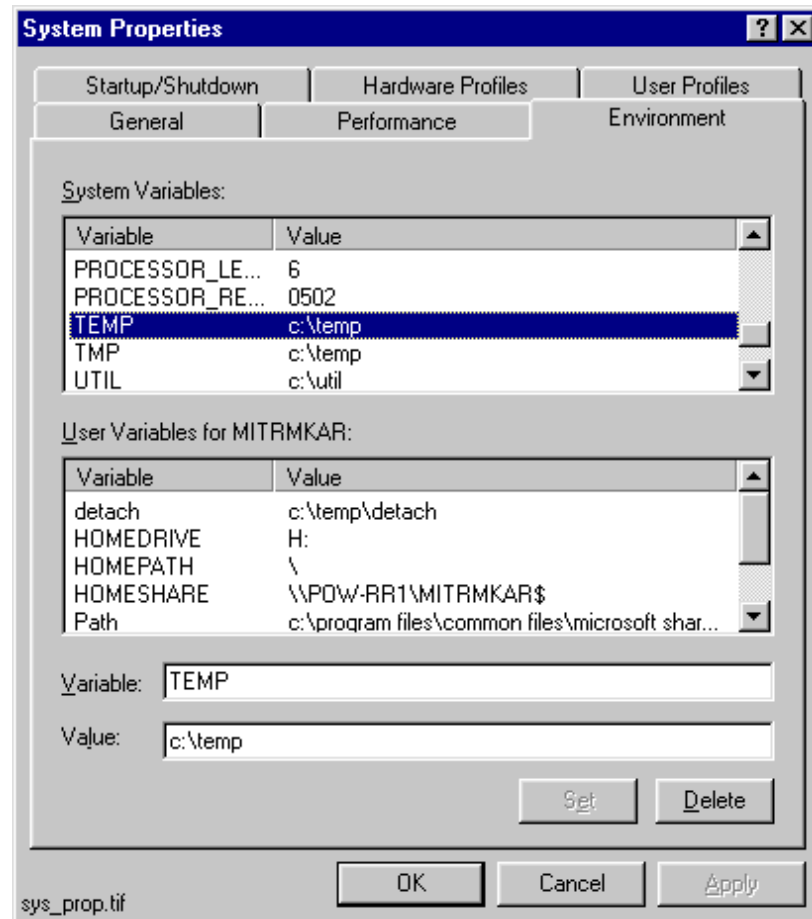


Fig. 7.11.2.-1 The TEMP environment variable setting

3. Make sure that the defined directory actually exists on your computer. In the figure above, the directory is 'C:\TEMP'. Use e.g. Windows NT Explorer to browse for this directory.

To define the TEMP environment variable on Windows 2000 or Windows XP:

1. Open the System applet from the Control Panel.
2. Select the Advanced page as shown in Fig. 7.11.2.-2

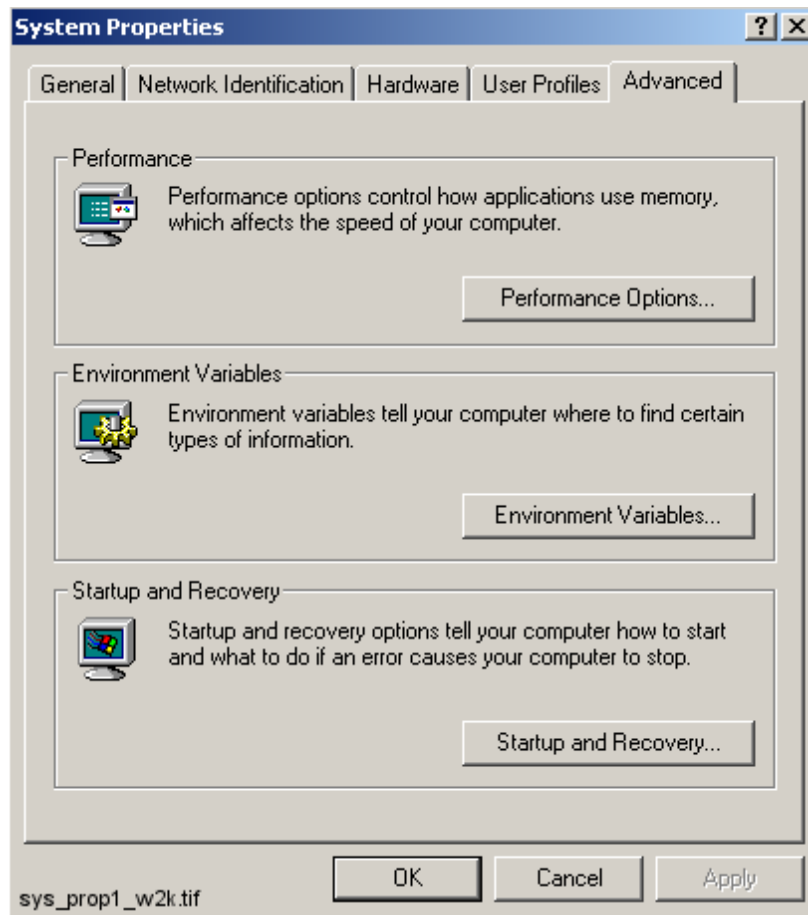


Fig. 7.11.2.-2 The Advanced page of System Properties

3. Choose the Environment Variables and locate TEMP variable from the list (see Fig. 7.11.2.-3). Verify that you have read/write access to the referenced directory and that there is enough storage capacity.

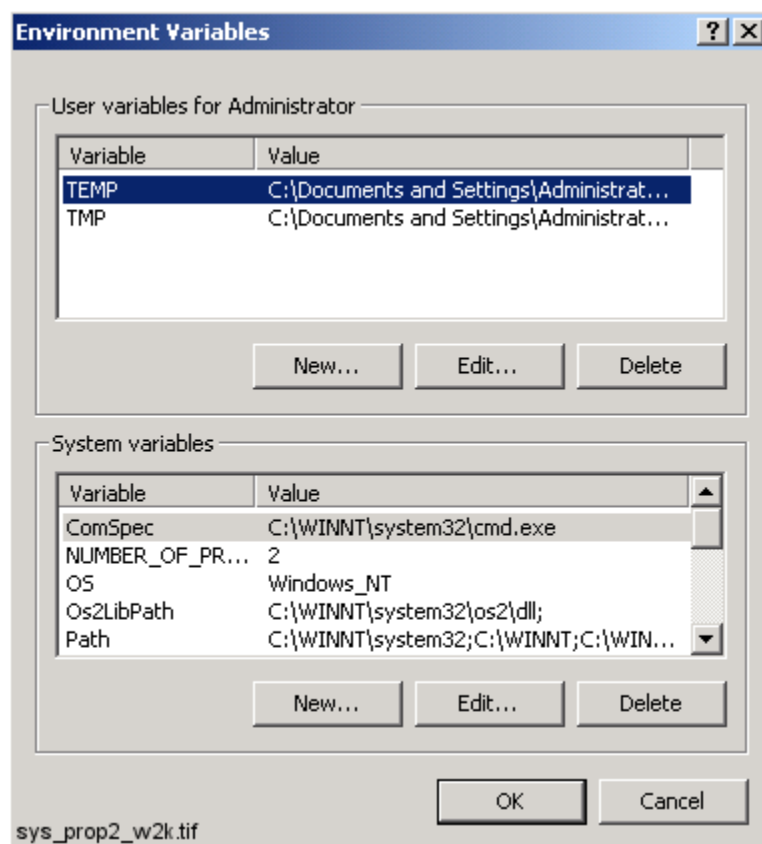


Fig. 7.11.2.-3 The TEMP environment variable setting in Windows 2000

7.11.3. Incorrect printouts

Printing from Visual SCIL based tools sometimes produces incorrect printouts. Black stripes may be added to the printout, or some images or texts are not printed at all.

Incorrect printouts are due to the "metafile spooling" option used in the current printer driver. This option should be disabled in the printer properties dialog. Different printer drivers may use different names for this "metafile spooling" feature; e.g. the term "advanced printer features" is used by some Hewlett-Packard drivers.

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ABB Oy

Distribution Automation

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