Notice 1

The information in this document is subject to change without notice and should not be construed as a commitment by ABB. ABB assumes no responsibility for any error that may occur in this document.

Notice 2

This document complies with the CAP 505 version 2.1.0.

Notice 3

Additional information may be found in the Release Notes.

Trademarks

LIB 500 manuals

LIB 500 Configuration Manual	1MRS751880-MEN
LIB 500 Operator’s Manual	1MRS751885-MUM

LIB 510 manuals

LIB 510 Configuration	1MRS751886-MEN
LIB 510 MV Process Configuration	1MRS751887-MEN
LIB 510 MV Process Operator’s Manual	1MRS751891-MUM
LIB 510 Operator’s Manual	1MRS751888-MUM

SMS 510 manuals

SMS 510 Installation and Commisioning	1MRS751897-MEN
SMS 510 Operator’s Manual	1MRS751898-MUM

CAP 505 manuals

CAP 505 Installation and Commissioning	1MRS751901-MEN
CAP 505 Operator’s Manual	1MRS751902-MUM
Relay Configuration Tool Tutorial	1MRS751903-MEN
Relay Mimic Editor Configuration	1MRS751904-MEN
Relay Configuration Tool Quick Start Reference	1MRS751905-MEN
SPTO Configuration Tool	1MRS751906-MEN
Protocol Editing Tool Operator’s Manual	1MRS751982-MUM

CAP 505/LIB 510/SMS 510 common manuals

Tools for Relays and Terminals	1MRS752008-MUM

CAP 505/SMS 510 common manuals

SM/Gateways Configuration	1MRS751870-MEN

Contents:

1. Introduction

This chapter describes the contents of the CAP 505 and the types of orders available for ordering the product.

1.1. Contents

1.1.1. 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 Tool for parameterization of RED 500 series relays. Includes also the relay product engineering tools.
SPACOM Support	SPACOM object type and the SPA Relay Tool for parameterization of SPACOM series relays.
DR Collector Tool	DR-Collector Tool for working with the disturbance recorders.
IEC-1131 Libraries	IEC-1131 libraries for the Relay Configuration Tool.
Initial IEC-1131 Libraries	Initial IEC-1131 libraries for the Relay Configuration Tool. These libraries are used in the REF 54x object type's sample application configurations.
Documentation	CAP 505 documentation in PDF format and an installer for installing the Acrobat®[1] Reader (version 3.01) from Adobe Systems Incorporated. The Acrobat Reader is needed to view the documentation.

This categorization is also present as installation options in the CAP 505 installation application.

1.1.2. Documentation

Complete list of CAP 505 manuals can be found above. In addition to the manuals, also Release Notes (1MRS751731-MZA) is included.

Note! For the 2.1.0 version of CAP 505, the documentation is available in electronic format only.

1. Acrobat is a registered trademark of Adobe Systems Incorporated.

1.1.3. Hardware

Table 1.1.3-1 Communication hardware

Cable	Type	Relays
1MKC950001-1	Opto	RED 500
SPA-ZP 17A3	RS 232 - RS 232	SPTO front SPCR front
SPA-ZP 5A3	RS 232 - TTL connector	RS 232 - TTL connector
SPA-ZP 6A2	RS 232 - RS 485	SACO, except for SACO 148D4 SPAC 300/500/600 rear
SPA-ZP 21A	Connection cable for SPA-ZP 6A2 to SACO screw terminal	SACO, except for SACO 148D4

1.2. Types of CAP 505 orders

There are four different types of orders you can place, so you can choose the one that is most suitable for your needs.

1.2.1. Relay product engineering tools package (CD-ROM and cables)

Contents of delivery

- Program CD, includes CAP 505 program and documentation in electronic format.
- Communication cable set, includes the communication hardware listed in Table 1.1.3-1 on page 2.

Order number

1MRS151000

1.2.2. Relay product engineering tools CD-ROM

Contents of delivery

- Program CD, includes CAP 505 program and documentation in electronic format.

Order number

1MRS151017

1.2.3. Communication cable set

Contents of delivery

- Communication cable set, includes the communication hardware listed in Table 1.1.3-1 on page 2.

Order number

1MRS120533

1.2.4. CAP 505 manual set

Contents of delivery

- The CAP 505 documentation in paper format. **Note!** Not available for the 2.1.0 version of CAP 505.

Order number

1MRS151018

2. CAP 505 requirements

CAP 505 v. 2.1.0 sets the following hardware and software requirements on the PC. Notice also the kernel-related dependencies, explained in section “System-wide product interdependencies” on page 7.

2.1. Software requirements

Table 2.1.-1 Software requirements

Item	Required
Operating system	Microsoft®[a] Windows NT®[b] 4.0 Workstation or higher. It is recommended to have the Service Pack 5 installed.
Network	Windows NT Network software installed with at least one network protocol (e.g. TCP/IP).

a. Microsoft is a registered trademark of Microsoft Corporation.
b. Windows NT is a registered trademark of Microsoft Corporation.

2.2. Hardware requirements

Table 2.2.-1 Hardware requirements

Item	Miminum	Recommended
Processor	Pentium®[a] 133 MHz	Pentium II 200 MHz
Memory	64 MB	128 MB
Display	SVGA, 800x600, 256 colours	SVGA, 1024x768, 256 colours
File system	Windows NT file system on the installation drive	
Hard disk space	150 MB	250 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	
ISA slots	One slot for each RER 109 PCLTA card	
PCI slots	One slot for each PCLTA-20 card	
Network adapter card	Any device supported by the operating system	

a. Pentium is a registered trademark of Intel Corporation.

2.3. Additional requirements

Table 2.3.-1 Additional requirements

Item	Description

Table 2.3.-1 Additional requirements

User account	You must be logged on to Windows NT with administrator rights in order to install the software 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.

3. Installation

This chapter describes the software installation procedure of the CAP 505.

3.1. Overview

3.1.1. Product's current version

CAP 505 installations maintain a single current version of CAP 505 on your computer's system registry. The current version information is the basis for installations to determine proper install-time actions.

3.1.2. About older product versions

This version of CAP 505 does not detect versions 1.1.0-1 or older that are installed on the target computer and vice versa. This means that you can install CAP 505 v. 2.1.0 to a drive already containing e.g. CAP 505 version 1.1.0 preserving the older version.

3.1.3. Reinstalling version 2.0.0 on version 2.1.0

If you, for any reason, reinstall the version 2.0.0 onto a disk drive already having version 2.1.0 installed, please rename the CAP 505 root directory first, from CAP505 to e.g. CAP505_210. Otherwise, reinstallation of version 2.0.0 results in a mixed-version CAP 505 installation, in which correct operation is not guaranteed.

3.1.4. 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 to a destination containing the same version of CAP 505 as determined by the current version information.

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

3.1.5. 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 505 has not been installed to the target computer previously or another version of CAP 505 has been installed to the currently selected destination. This is to guarantee consistent software installations.

3.1.6. License of the product

After the installation of the CAP 505 Base System, you are requested to supply license information when you start CAP 505 for the first time.

The required information is included in the CAP 505 delivery on the license label, which is located on the cover of the CAP 505 Program CD case.

3.1.7. Applications running at install-time

It is recommended to close all unnecessary applications before installing CAP 505.

3.1.8. System-wide product interdependencies

3.1.8.1. 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 may raise considerations 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 501 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.

3.1.8.2. 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 505 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 of 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 grant this right also to any user belonging either to the built-in Users group or any non-built-in user 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 “MicroSCADA Service Access Manager” on page 19.

3.1.8.3. The MicroSCADA user account

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

Note! Never modify the MicroSCADA user account using the operating system tools, such as User Manager on Windows NT, since it may bring the kernel into an inoperable state. Reinstallation of the CAP 505 Base System is required in order to recover in such a case.

3.1.8.4. Kernel incompatibility issues

Kernel revisions, that are incompatible with this version of CAP 505 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 on your computer, please take into account, that the installation of CAP 505 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 505. To continue using the SYS 500 and COM 500 products, you must upgrade them according to the following table.

Table 3.1.8.4-1 Required SYS 500, 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 505 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.

Note! If you are unsure about the possible effects of CAP 505 installation on the SYS 500 and/or COM 500, it is recommended that you do not install CAP 505.

3.2. Software installation procedure outlined

When you have started the CAP 505 installation, first it gathers the following information from your system:

Operating system

If you are not running Windows NT 4.0 or higher, 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 logon to operating system using an account having Administrator rights.

Current version

If a version of CAP 505 already has 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 505 installation.

After these initial checks, the installation welcomes you to the CAP 505 installation. Thereafter, the CAP 505 product license agreement is displayed, explaining you the terms under which the product may be used. Once you have accepted license agreement terms by continuing the installation, a purely informative system information dialog box, based on the current version information, informs you about the current status of CAP 505 on your computer.

Next, you enter the Select dialog box, which is the main dialog box of the installation. Provided, that the current version is the same that you are installing to and you are using the suggested destination drive, you can select any combination of the available installation options. Otherwise, the installation forces to install all the available options to the selected destination drive. You can change the destination drive by means of the Select Destination Drive dialog box, which you access from the Select dialog box.

Once you are satisfied with the settings you have specified, you can start the actual software installation from the main dialog box. 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 your computer's configuration.
- 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 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 505 2.1.0, which contains the icons for using CAP 505 software. Also, a shortcut to this program folder is added onto your operating system desktop.

3.3. Installing the software

3.3.1. Starting the installation

To start the CAP 505 installation, place the CAP 505 Program CD into your CD-ROM drive. The installation application is named as CAP505.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 box:

```
Y:\CAP505.EXE
```

- Click OK to start the CAP 505 installation.

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

3.3.2. Installation Wizard

The software installation comprises a series of dialog boxes referred to as the Installation Wizard, which guides you through the CAP 505 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 505, is gathered in the Installation Wizard dialog boxes, 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 dialog boxes in the order they appear during the installation.

3.3.2.1. Welcome

The Welcome dialog box welcomes you to the CAP 505 installation, see figure 3.3.2.1.-1.

Fig. 3.3.2.1.-1 The Welcome dialog box

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

3.3.2.2. Product License Agreement

The Product License Agreement dialog box contains the license agreement of the CAP 505, see figure 3.3.2.2.-1.

Fig. 3.3.2.2.-1 The Product License Agreement dialog box

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 box is displayed only once during the installation.

3.3.2.3. System Information 1

If you have not installed CAP 505 previously you will see the System Information dialog box shown in figure 3.3.2.3.-1.

Fig. 3.3.2.3.-1 The System Information dialog box

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

3.3.2.4. System Information 2

If the installation detects that a CAP 505 version above 2.0.0 has been installed to the destination, you will see the System Information dialog box shown in figure 3.3.2.4.-1.

Fig. 3.3.2.4.-1 The System Information dialog box

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

3.3.2.5. System Information 3

If the installation detects that the same version of CAP 505 has been installed to the destination, you will see the System Information dialog box shown in figure 3.3.2.5.-1.

Fig. 3.3.2.5.-1 The System Information dialog box

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

3.3.2.6. Select - forced installation

In case of a forced installation, you will see the Select dialog box shown in figure 3.3.2.6.-1.

Note! As stated on this dialog box, the options represented on the dialog box cannot be selected.

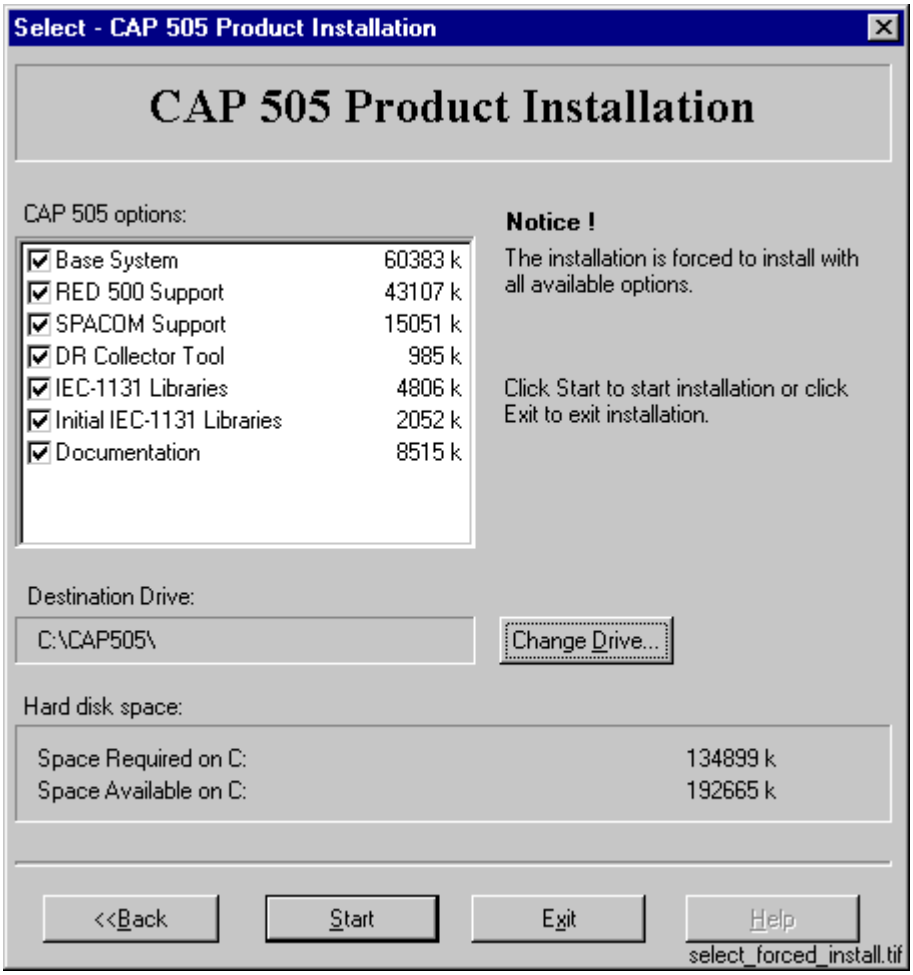

Fig. 3.3.2.6.-1 The Select dialog box

This dialog box 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, see section “Destination Drive” on page 16. To view the previously displayed System Information dialog box, click <<Back. If you are satisfied with the current settings, click Start to start the actual software installation.

3.3.2.7. Select - non-forced installation

In case of a non-forced installation, you will see the Select dialog box shown in figure 3.3.2.7.-1.

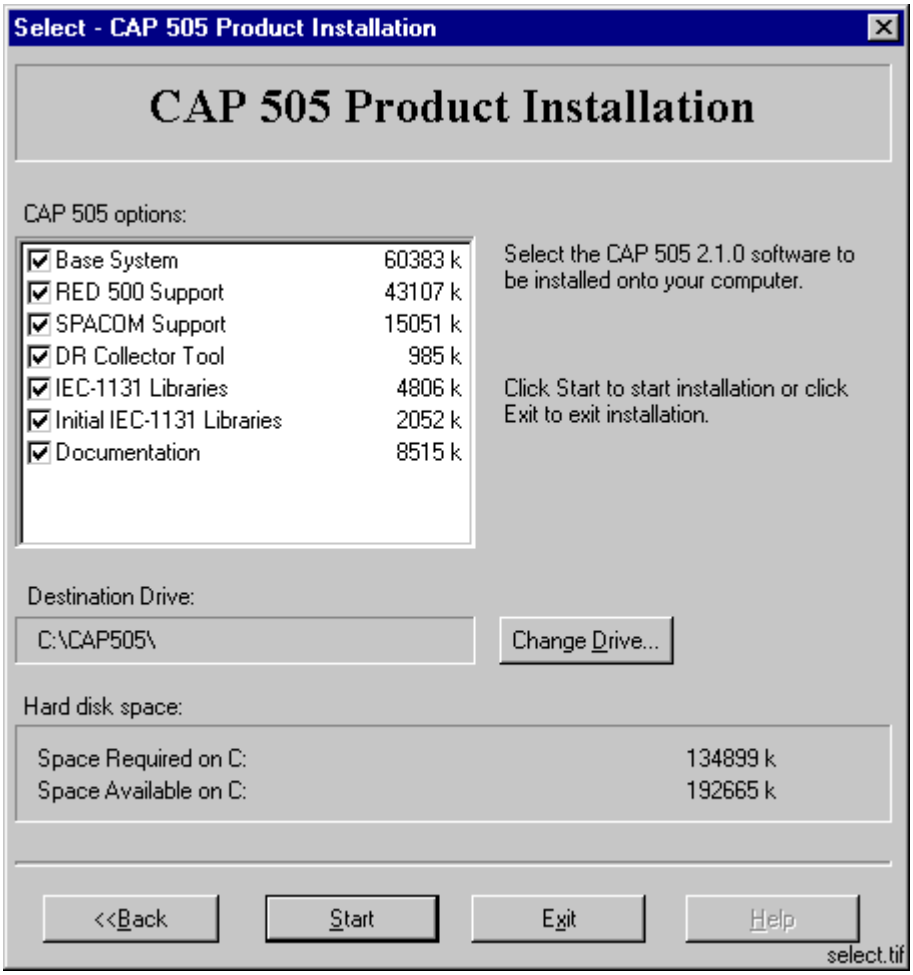

Fig. 3.3.2.7.-1 The Select dialog box for a reinstallation

This dialog box 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 software options which will be installed.

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.

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

3.3.2.8. Destination Drive

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

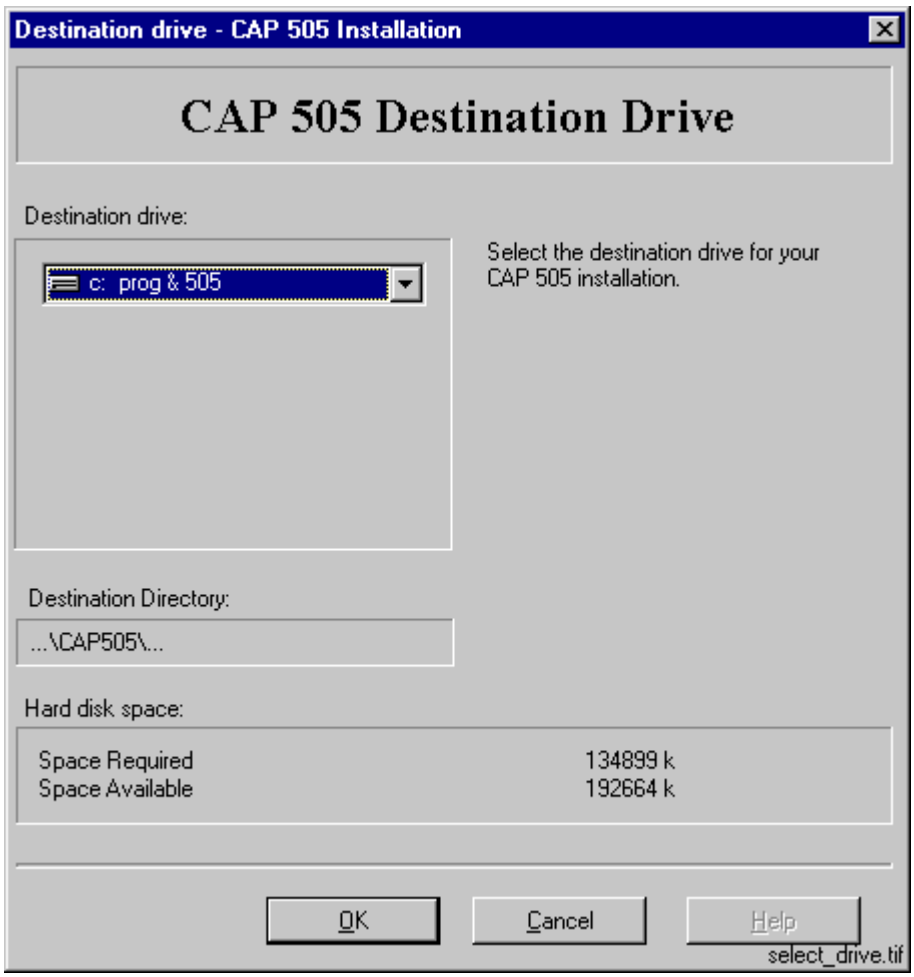

Fig. 3.3.2.8.-1 The Destination Drive dialog box

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

Press the <F4> key from the keyboard or click on the arrowhead on the right side of the drive list to view it in the drop-down mode. You can use either 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 box, is reset as the destination drive. The possible notifications are described in more detail in section “Troubleshooting destination drive error messages” on page 64.

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

3.3.2.9. Installing

Once you have clicked the Start button on the Select dialog box, the progress of the installation is displayed in a dialog box shown in figure 3.3.2.9.-1.

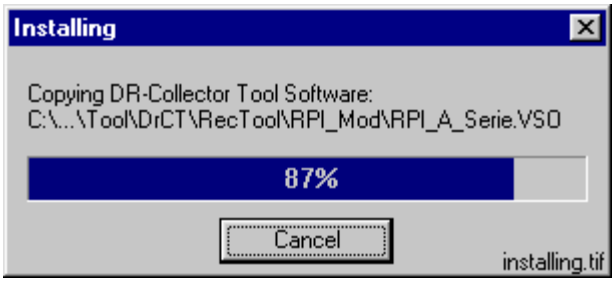

Fig. 3.3.2.9.-1 The Installing dialog box

You may cancel the installation by clicking Cancel.

Note! No support for a roll-back or uninstall is available, meaning that you cannot revert to the configuration that existed prior to the installation of CAP 505.

3.3.2.10. MicroSCADA user account

If you are prompted for the MicroSCADA user password, you will see the dialog box shown in figure 3.3.2.10.-1. The installation does not continue until you have closed this dialog box.

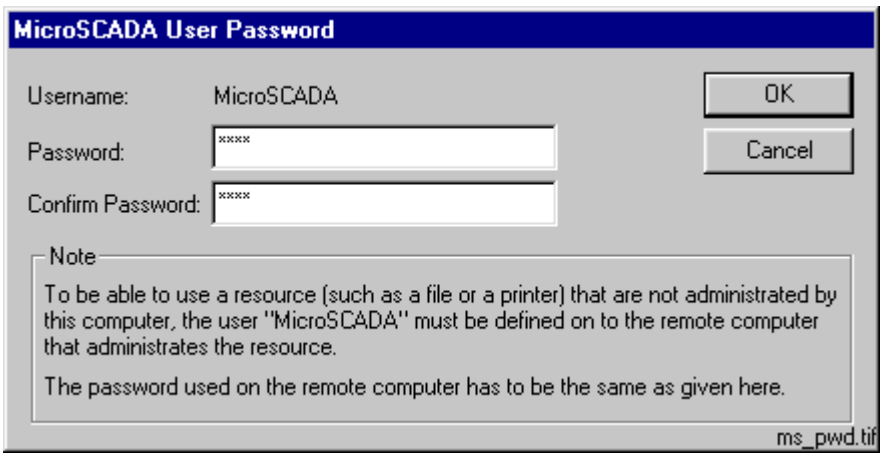

Fig. 3.3.2.10.-1 The MicroSCADA User Password dialog box

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.

Note! In order to have a working installation of CAP 505, the MicroSCADA user account must exist on your computer. Do not by-pass the account creation by clicking Cancel, if you do, you will have to reinstall the CAP 505 Base System in order to create the MicroSCADA user account.

Note! If other products, that also utilize the MicroSCADA user account, already are installed on your computer, use the same password that has been used before for the account.

Note! The note text on the dialog incorrectly states that the MicroSCADA user account is used for accessing non-local printer resources. In CAP 505, you access non-local printer resources in the logged-on user's security context.

3.3.2.11. MicroSCADA Service Access Manager

Overview

If you install the Base System, the MicroSCADA Service Access Manager dialog box, shown in figure 3.3.2.11.-1, appears. The installation does not continue until you have closed this dialog box. The installation adds an icon for this tool to the CAP 505 program folder, so you can use it anytime after the installation. However, usage of this tool requires that you have logged on to the operating system with administrator rights.

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 the CAP 505 on the computer. In addition to the user-defined 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, hence the tool never displays the Administrators group. Obviously, if the users of CAP 505 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 start and stop rights.

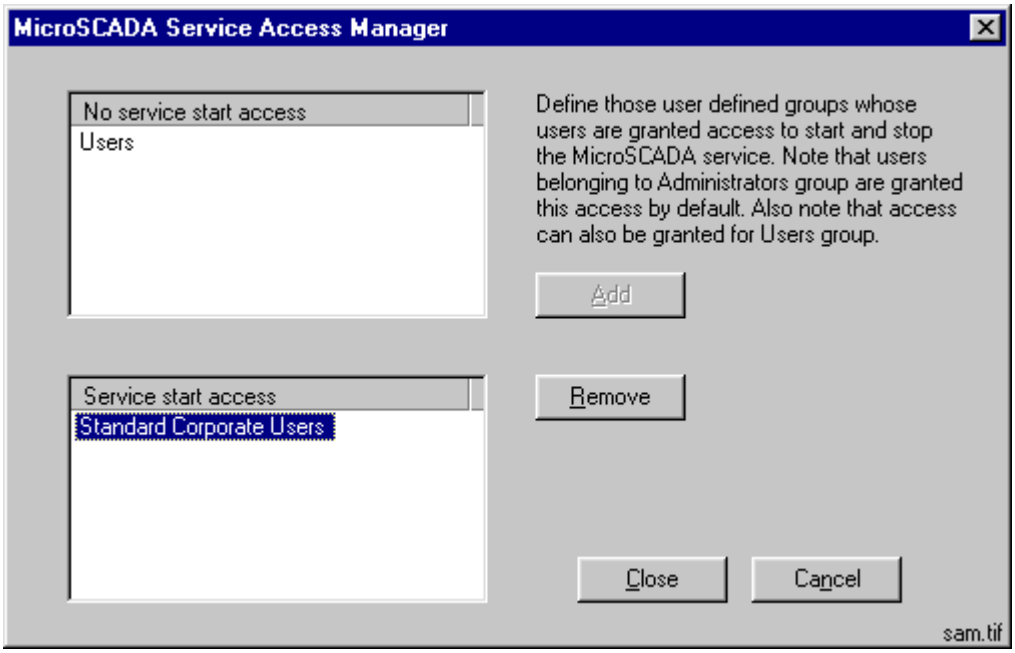

Fig. 3.3.2.11.-1 The MicroSCADA Service Access Manager dialog box

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 labeled No service start access and click Add. In the above example, the user group Standard Corporate Users is 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 labeled 'Service start access' and click Remove. In the above figure, the operating system's built-in user group named Users has been revoked these rights.

Note! This is a system-wide configuration affecting also all other products using the same kernel software. For example, if you have SYS 500 installed on the computer and you grant the rights to an imaginary group named Visitors, intended for ordinary visitors, any logged on member of that group is able to start and stop both CAP 505 and SYS 500 on the computer.

Saving the configuration

To save the configuration, click Close and confirm that by clicking OK on the dialog box that will open, see figure 3.3.2.11.-2.

Fig. 3.3.2.11.-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 box. Provided that the configuration has been changed, you must confirm the cancellation by clicking OK on the dialog box that will open, see figure 3.3.2.11.-3, otherwise click Cancel to return to the manager.

Fig. 3.3.2.11.-3 Confirm to discard the changes to the service access configuration

3.3.2.12. Installation completed

After the selected software has fully been transferred onto your system, the CAP 505 installation displays the following message to inform you that the installation has been completed.

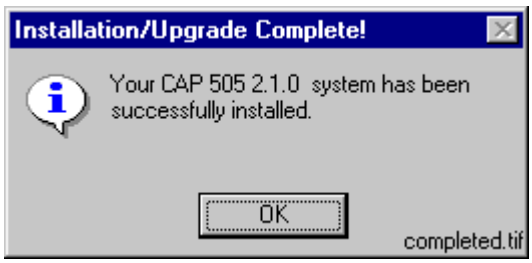

Fig. 3.3.2.12.-1 Notification that the installation has been completed successfully

Click OK to acknowledge the message.

3.3.2.13. 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 figure 3.3.2.13.-1.

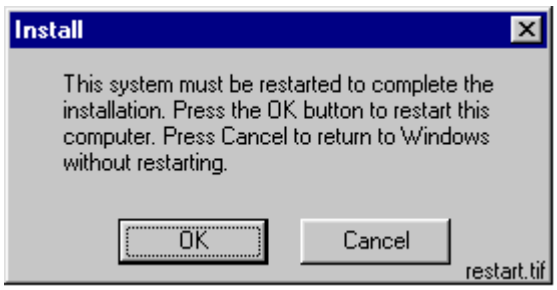

Fig. 3.3.2.13.-1 Request to reboot the computer

Click OK to reboot your computer immediately. You may reboot later if you wish, by clicking Cancel. Notice however, that before starting the CAP 505, you must reboot the computer in order for all of the changes to take effect in the system.

3.3.3. Cancelling the installation

When you are about to cancel the installation, the dialog box shown in figure 3.3.3.-1 appears.

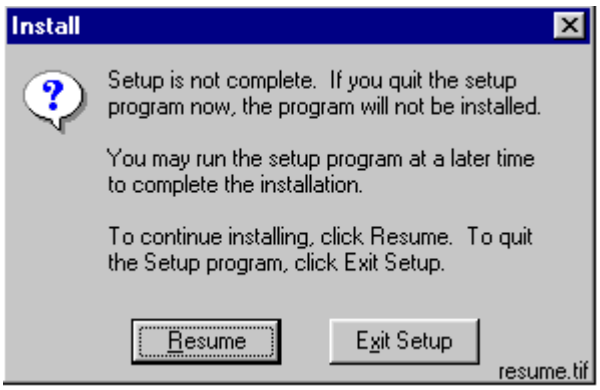

Fig. 3.3.3.-1 Confirmation to cancel the installation

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

3.4. CAP 505 program folder

The program folder for CAP 505 is named as CAP 505 2.1.0 and it is accessible to all logged on users. The folder contains the items shown in figure 3.4.-1.

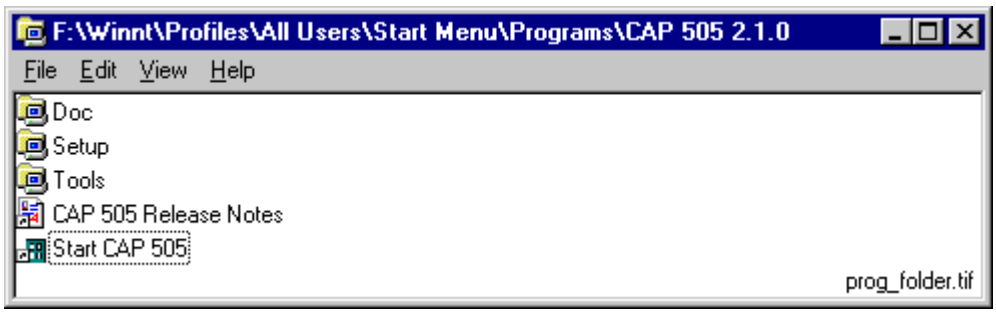

Fig. 3.4.-1 CAP 505 program folder

- To start the CAP 505, double-click the icon Start CAP 505.
- To view the CAP 505 Release Notes, double-click the icon CAP 505 Release Notes.

The three subfolders are explained below.

3.4.1. Subfolder - Doc

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

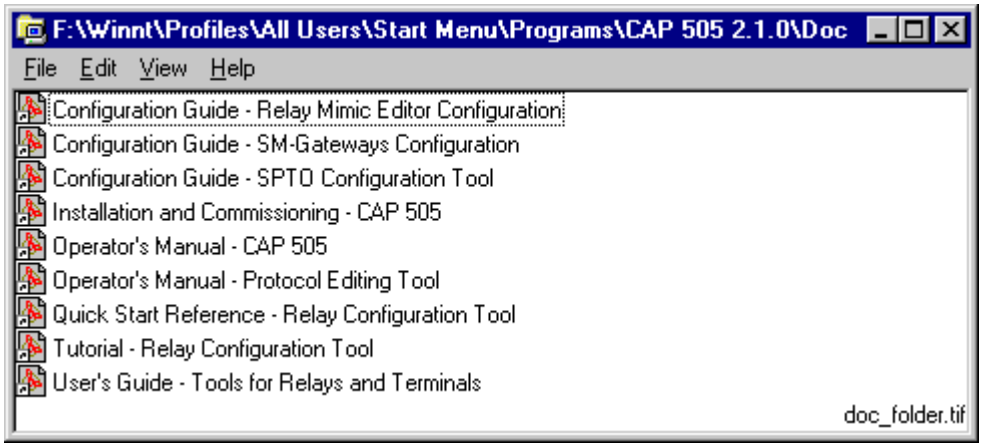

Fig. 3.4.1.-1 Subfolder - Doc

3.4.2. Subfolder - Setup

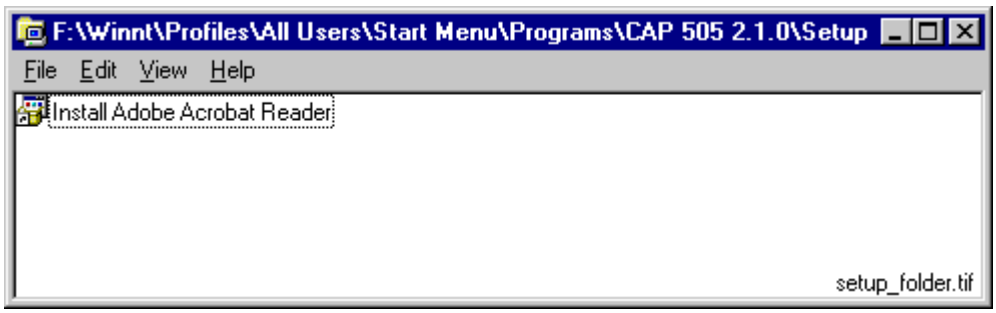

Fig. 3.4.2.-1 Subfolder - Setup

- To install the Adobe Acrobat Reader, close any programs you have running and double-click the icon Install Adobe Acrobat Reader.

3.4.3. Subfolder - Tools

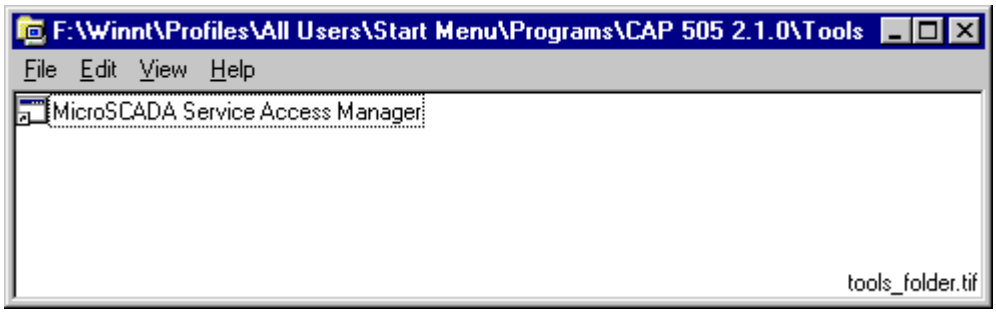

Fig. 3.4.3.-1 Subfolder - Tools

- To start the MicroSCADA Service Access Manager tool, double-click the icon MicroSCADA Service Access Manager.

3.4.4. Shortcut to the CAP 505 program folder

A shortcut named CAP 505 2.1.0 is added onto your desktop, see figure 3.4.4.-1. This shortcut provides access to the CAP 505 program folder from your desktop.

Fig. 3.4.4.-1 The shortcut to the program folder on your desktop

- To open the CAP 505 program folder, double-click the shortcut.

3.5. Uninstalling the software

Currently uninstalling the CAP 505 software is not supported.

4. Commissioning

This chapter describes the commissioning activities after software installation.

4.1. Overview

Commissioning the installed software involves the following tasks:

- Applying the license information for CAP 505. Whenever the CAP 505 Base System has been installed, this task must be performed. Without proper license information, CAP 505 will not execute. You apply the license information using the License tool, see section “License tool” on page 27.
- Preparing the computer for LON®[2] communication. This comprises installation and configuration of LON communication card(s) and accompanying device drivers, if not done previously. This you accomplish by means of the System Configuration tool, see section “System Configuration tool” on page 30.
- Optionally, configuring the operating system’s user groups whose members are granted the rights to start and stop the MicroSCADA service on your computer. You grant these rights using the MicroSCADA Service Access Manager tool, see section “MicroSCADA Service Access Manager” on page 19.

4.2. Communication support

4.2.1. Protocols

Table 4.2.1-1 Supported communication protocols

Protocol
SPA
LON

For information on which communication protocols are applicable to various relay terminals, refer to the *Tools for Relays and Terminals* manual.

4.2.2. Channels

CAP 505 allows you to define the total of eight (8) communication channels in a system configuration. Each defined serial port using SPA protocol and each LON card channel occupies one communication channel. For example, a dual-channel RER 109 card reserves two communication channels thus allowing you to define six serial ports with SPA protocol.

4.2.3. Serial port communication

4.2.3.1. CAP 505 vs. Windows NT serial port configuration

General

Each serial port defined for use in CAP 505 must also exist at the operating system level. For example, if you define serial ports COM1 through COM4 in CAP 505, you must define them also under the operating system.

2. LON is a registered trademark of Echelon Corporation.

Regarding the computer's serial port communication capabilities, it is recommended to verify that the serial ports are correctly configured and working at the operating system level.

For detailed information on configuring the serial ports under the the operating system, refer to the the operating system Help or other applicable source of information.

Advanced serial port settings

Advanced serial port settings are defined at the operating system level only so you do not have to define them in CAP 505. These settings include:

- interrupt request line (IRQ)
- input/output (I/O) addresses
- data buffering settings

Basic serial port settings

The basic serial port settings that are defined at the operating system level are overridden by the settings you specify in CAP 505. These settings include:

- baud rate
- data bits
- parity
- stop bits

4.2.4. LON communication

4.2.4.1. LON communication adapters

Table 4.2.4.1-1 LON adapter support

Adapter	Type	Device driver	Remarks
RER 109 PCLTA Card	ISA full-length bus card	MiSCLONP	n/a
PCLTA-20 PCI LonTalk Adapter	PCI half-length bus card	PNPLON	Supports Plug-and-Play and downloadable memory.
PCC-10 PC Card	A Type II PC card, formerly PCMCIA	PNPLON	Only a single card can be present in the system at a time, due to the operating system Type II PC Card support capabilities. Supports Plug-and-Play and downloadable memory.

Note! The PCLTA-10 PC LonTalk Adapter is not supported.

4.2.4.2. LON communication software components

Table 4.2.4.2-1 Software components for LON communication

Item	Remarks
MiSCLONP device driver	The device driver for the RER 109 PCLTA Card. Supplied with an installation and a configuration tool.
PNPLON device driver	The device driver for the PCC-10 and PCLTA 20 Cards. Supplied as a third-party (Echelon) installation and configuration package.
Net Interface Tool	For initial configuration of the Neuron®[a] Chip(s) on the RER 109 PCLTA Cards.

a. Neuron is a registered trademark of Echelon Corporation.

4.3. Commissioning communication components

Generally, commissioning the communication components comprises the following procedures:

1. Install the LON communication card(s) into your computer.
2. Install the device driver for the LON communication card(s).
3. Configure the device driver for the LON communication card(s).
4. If necessary, configure the Neuron Chip on the LON communication card(s).
5. Verify that the computer's serial ports are working correctly.

The main tool for accomplishing these tasks is the CAP 505 System Configuration Tool, see "System Configuration tool" on page 30.

4.4. License tool

4.4.1. General

The License tool is intended for applying the license information. CAP 505 does not provide any specific entry for accessing the License tool, instead the tool appears automatically at CAP 505 start-up, if the computer does not contain a valid license.

4.4.2. License Information dialog box

The License Information dialog box is illustrated in figure 4.4.2.-1 as it is initially displayed when the license information cannot be found or is otherwise invalid.

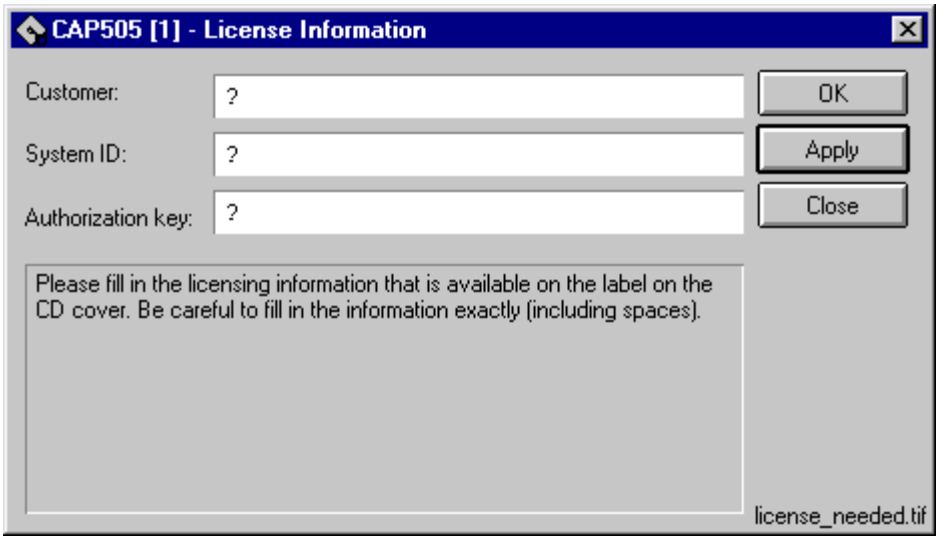

Fig. 4.4.2.-1 License Information dialog box

Table 4.4.2-1 Dialog box items

Customer field	For entering the value for Customer.
System ID field	For entering the value for System ID.
Authorization key field	For entering the value for Authorization key.
OK button	For saving the license information and closing the License tool, see section “Entering license Information” on page 28.
Apply button	For saving the information without closing the License tool, see section “Entering license Information” on page 28.
Close button	For closing the License tool.

4.4.3. Entering license Information

The CAP 505 delivery contains the license information printed on the license label, which you find on the cover of the CAP 505 Program CD.

Note! Be sure to store that information, so that it is available in case you need to re-supply the license information.

When you enter the requested items, be careful to type the text exactly as provided on the license label. All fields are case-sensitive, also space characters are taken into account.

After you have entered all items, apply the information, thereafter you must restart CAP 505 in order for the new license to take effect.

To enter the license information:

1. Enter the Customer name into the Customer field.
2. Enter the System ID value into the System ID field.
3. Enter the Authorization key value into the Authorization key field.
4. Click OK, or Apply if you do not want to close the dialog box immediately. If the supplied information was correct, you will see one of the messages shown below:

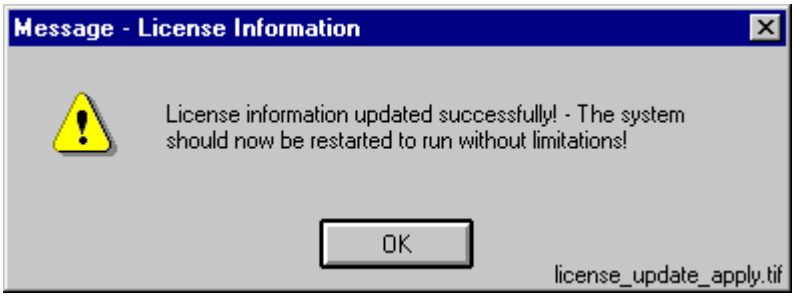

Fig. 4.4.3.-1 License information updated successfully

Fig. 4.4.3.-2 License information updated successfully

Dismiss the message by clicking OK. When you close the dialog box, you will be yet notified with the message shown in figure 4.4.3.-3.

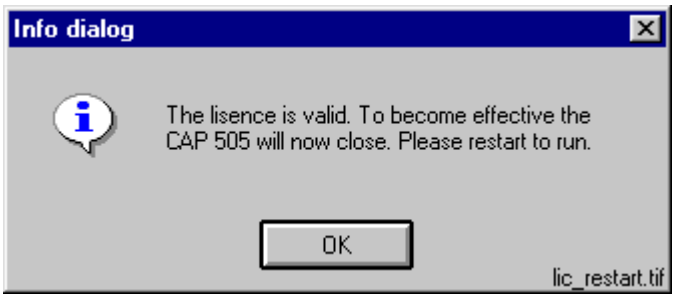

Fig. 4.4.3.-3 Restart required

As stated in the message, you have to restart CAP 505.

4.4.4. Invalid license information

If you have supplied incorrect information, the tool displays the message shown in figure 4.4.4.-1.

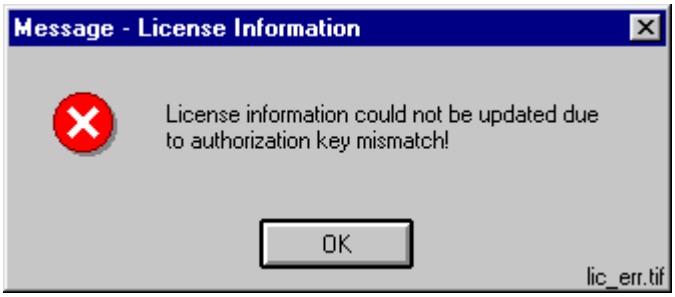

Fig. 4.4.4.-1 Incorrect license information could not be saved

Click OK to dismiss the message and correct the license information carefully.

An example of a valid license information is provided in figure 4.4.4.-2.

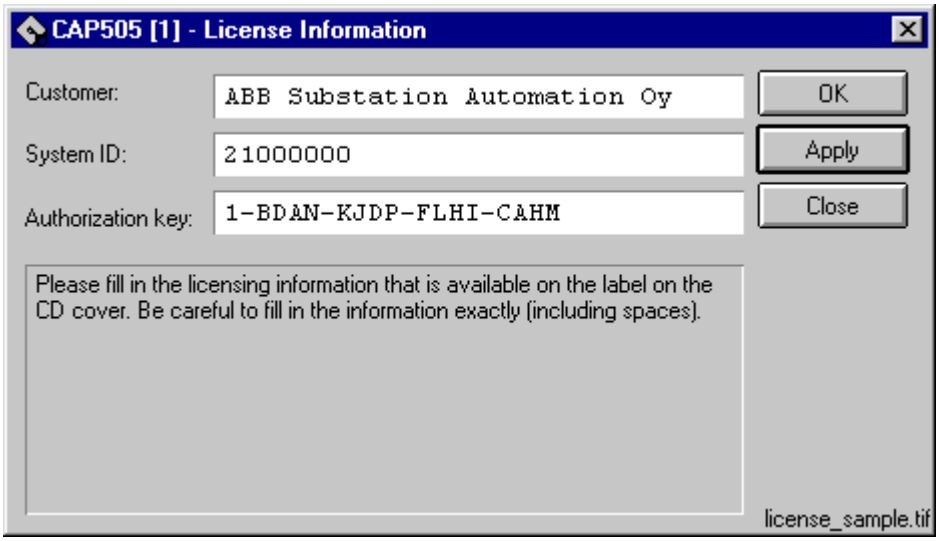

Fig. 4.4.4.-2 Example of license information

4.5. System Configuration tool

4.5.1. General

The System Configuration tool is intended for setting up the system configuration, which is required to enable communication with the relays in CAP 505. Every project has its own copy of the system configuration, which is enforced when the project is opened into the Project Structure Navigator. Likewise, when a project is closed, its system configuration is stored with the project.

Note! Some of the System Configuration tool functions, such as modifying LON device driver settings, require administrator rights at the operating system level.

4.5.2. Target project

The System Configuration tool automatically edits the system configuration of the project that is being opened into the Project Structure Navigator. If there is no project open in the Project Structure Navigator, the System Configuration tool will not execute.

4.5.3. Starting

Two entry points for accessing this tool are provided:

- On the Project Structure Navigator's System Tools menu.
- On the Communication page of the General Object Attributes dialog box.

4.5.4. System Configuration tool dialog box

The System Configuration tool dialog box is shown in figure 4.5.4.-1.

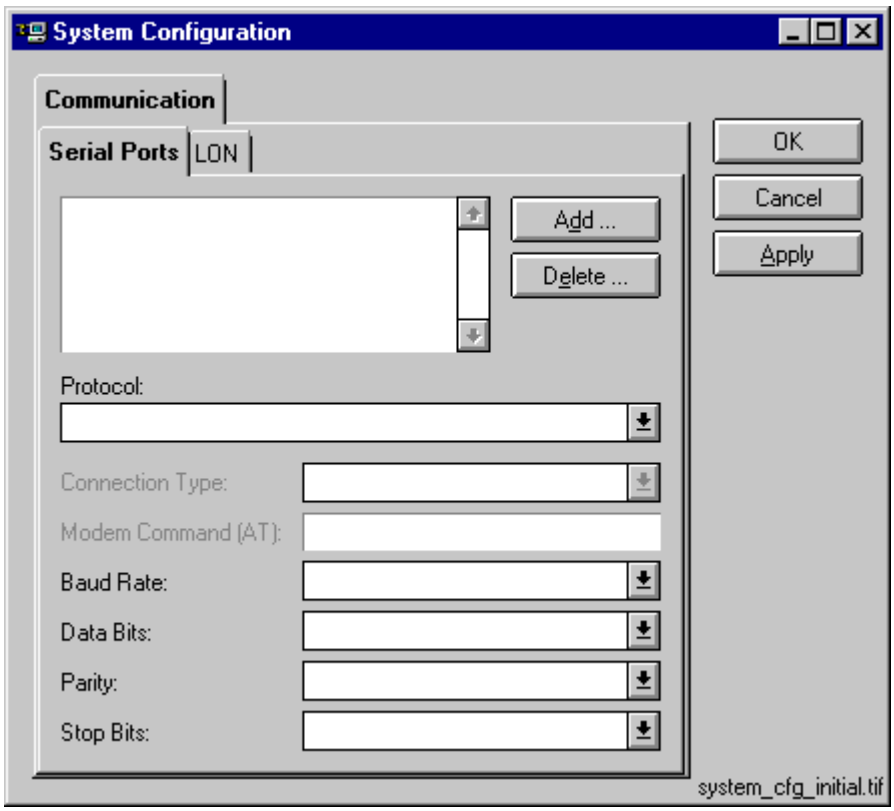

Fig. 4.5.4.-1 System Configuration tool dialog box

The Communication page contains two pages:

- Serial Ports
- LON

Table 4.5.4-1 System Configuration tool items

Communication configuration pages	
Serial Ports	For managing serial port configuration, see section “Serial Ports page” on page 32.
LON	For managing the LON configuration, see section “LON page” on page 34.
Common dialog box buttons	
OK	For closing the System Configuration tool and saving the configuration, see section “Save configuration - close tool” on page 38
Cancel	For closing the System Configuration tool without saving the configuration, see section “Discard configuration changes” on page 38.

Table 4.5.4-1 System Configuration tool items

Apply	For saving the configuration without closing the System Configuration tool, see section “Save configuration - proceed configuration” on page 38.

4.5.4.1. Serial Ports page

The System Configuration tool’s Serial Ports page is shown in figure 4.5.4.1.-1. Initially the configuration is empty, as illustrated.

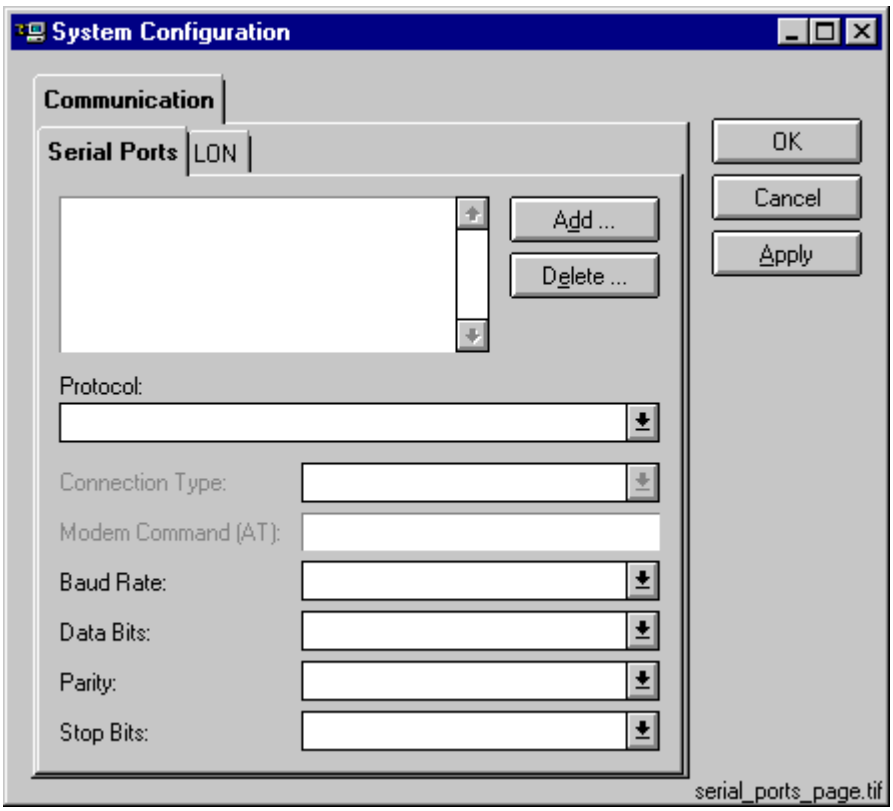

Fig. 4.5.4.1.-1 The Serial Ports page

Table 4.5.4.1-1 Serial Ports page items

Serial Ports list	For selecting a serial port. Displays all currently defined serial ports.
Protocol list	For assigning the communication protocol to the currently selected serial port.
Connection Type list	This list is not used in CAP 505 and is always disabled.
Modem Command (AT) field	This field is not used in CAP 505 and is always disabled.
Baud Rate list	For assigning the baud rate to the currently selected serial port.
Data Bits list	For assigning the data bits setting to the currently selected serial port.
Parity list	For assigning the parity setting to the currently selected serial port.
Stop Bits list	For assigning the stop bits setting to the currently selected serial port.

Table 4.5.4.1-1 Serial Ports page items

Add … button	For adding a new serial port, see section “Serial ports - Add” on page 33.
Delete … button	For deleting the currently selected serial port, see section “Serial ports - Delete” on page 34.

4.5.4.2. Serial ports - Add

To add a serial port:

Click Add … to bring up the dialog box shown in figure 4.5.4.2.-1.

1. Enter the serial port number, which must be in range of 1 through 8, inclusive. If you enter an out-of-range value or a value, which already is in use, you are requested to enter a proper value.

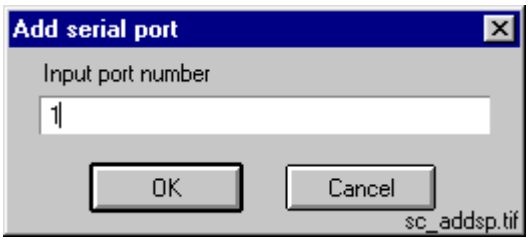

Fig. 4.5.4.2.-1 Define the port number for the new COM port

2. Click OK to add the new serial port, which appears in the Serial Ports list, see figure 4.5.4.2.-2. Otherwise, click Cancel to keep the configuration unchanged.

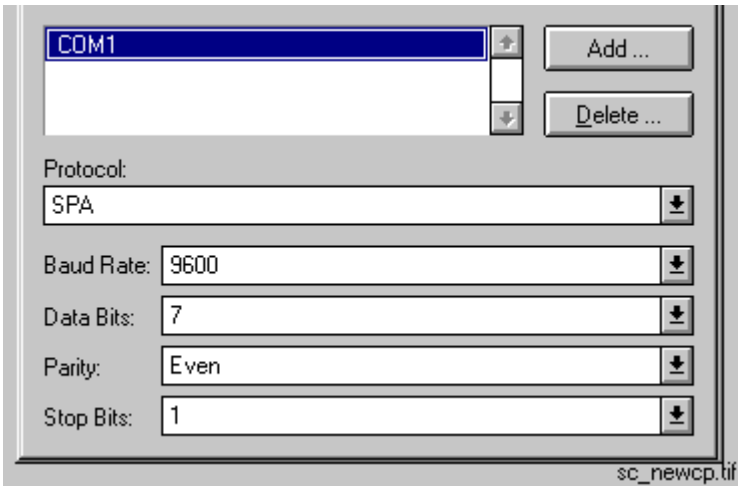

Fig. 4.5.4.2.-2 A new serial port COM1 added with default values

The newly added port's basic settings and communication protocol are assigned default values. If you wish to use other than the default values, you can configure them as described below.

4.5.4.3. Serial ports - Configure

The following table displays serial port properties, which you can configure on a per-port basis.

Table 4.5.4.3-1 Configurable serial port properties

Property	Available values
Communication protocol	SPA
Baud Rate	300, 600, 1200, 2400, 4800, 9600, 19200
Data Bits	5, 6, 7, 8
Parity	None, Odd, Even
Stop Bits	1, 2

To configure a serial port property:

1. Select the serial port from the Serial ports list.
2. Configure the item by selecting the desired value from the appropriate list.

4.5.4.4. Serial ports - Delete

Any serial port, defined in a project's system configuration, can be deleted at any time.

To delete a serial port from the configuration:

1. Select the serial port from the Serial ports list.
2. Click Delete ….
3. When prompted to confirm the deletion, see figure 4.5.4.4.-1, click Yes to delete the serial port. Otherwise click No to leave the serial port intact.

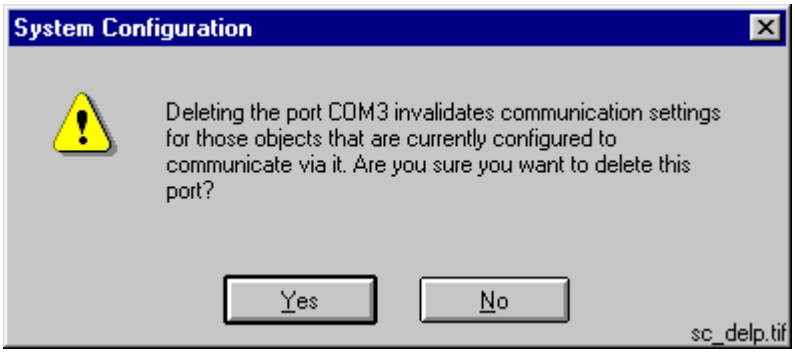

Fig. 4.5.4.4.-1 Confirm to delete the selected serial port

The deletion invalidates the communication settings of any device objects, which have been configured to use the port you are about delete.

Note! If you accidentally delete ports you can revert to the most recently saved system configuration by clicking Cancel, see section "Discard configuration changes" on page 38.

4.5.4.5. LON page

The System Configuration tool's LON page is shown in its initial state in figure 4.5.4.5.-1.

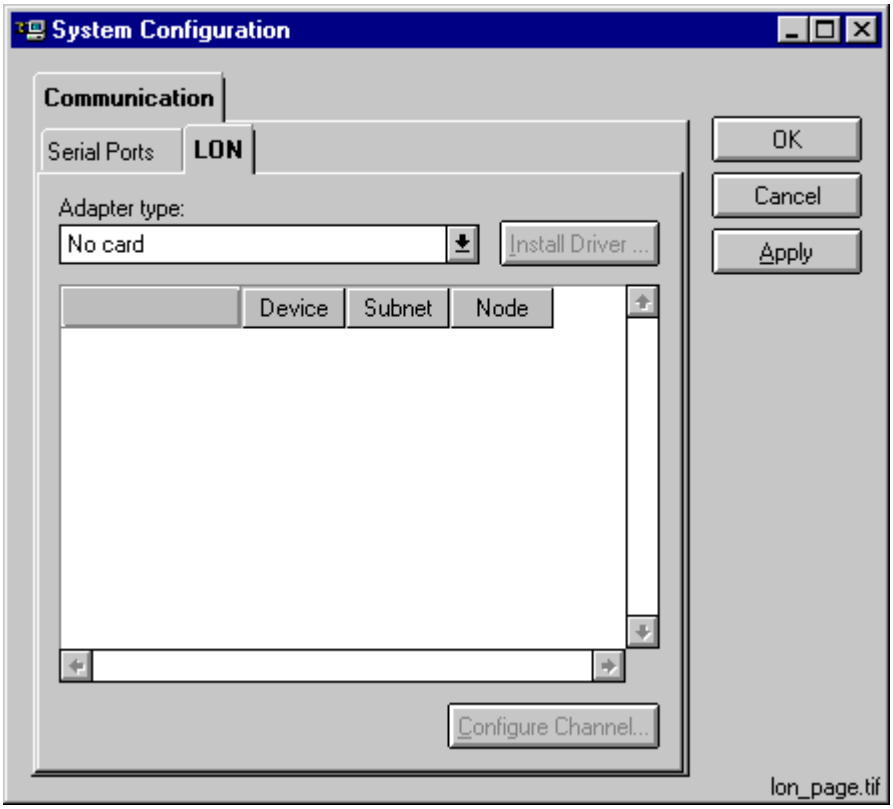

Fig. 4.5.4.5.-1 The LON page

Table 4.5.4.5-1 LON page items

Adapter type list	For selecting the adapter type. Displays all supported adapters.
Card list	For assigning the Subnet and Node values to the LON channels.
Install Driver… button	For installing/configuring the driver for the currently selected adapter. **Note!** Driver installation and some of the configuration functions require that you have logged on with Administrator Rights.
Configure Channel… button	For initiating the initial configuration of the currently selected channel and for enforcing modified Subnet/Node values to the currently selected channel.

4.5.4.6. Selecting the adapter

The System Configuration tool allows to use only a single type of LON card at a time i.e. you cannot have multiple types of LON cards in-use simultaneously. The LON card is selected from the Adapter type list. If you don't use any LON cards, then select the option No card from the list.

When you select an adapter from the Adapter type list, the tool scans the computer for currently defined LON devices for the selected adapter type. If such are found, they will be displayed immediately, thus allowing you to take the channel(s) into use by assigning the appropriate channel settings, see section "Assigning Subnet/Node settings" on page 36.

If no LON devices have been defined or you want to modify the current configuration by e.g. adding new devices or removing currently defined devices,

click the Install Driver button. For RER 109 PCLTA cards this invokes the MicroSCADA Device Driver Configuration tool, for other types of cards, this invokes the application, which installs the device driver onto your computer.

4.5.4.7. Assigning Subnet/Node settings

Each LON channel needs to have a unique Subnet/Node value pair assigned to it, since it appears as any other node on the network. Valid range is 1 through 127, inclusive for both Subnet and Node.

To assign the Subnet/Node values to a LON channel:

1. Click with the mouse on the intended channel's Subnet cell to activate it, figure 4.5.4.7.-1.

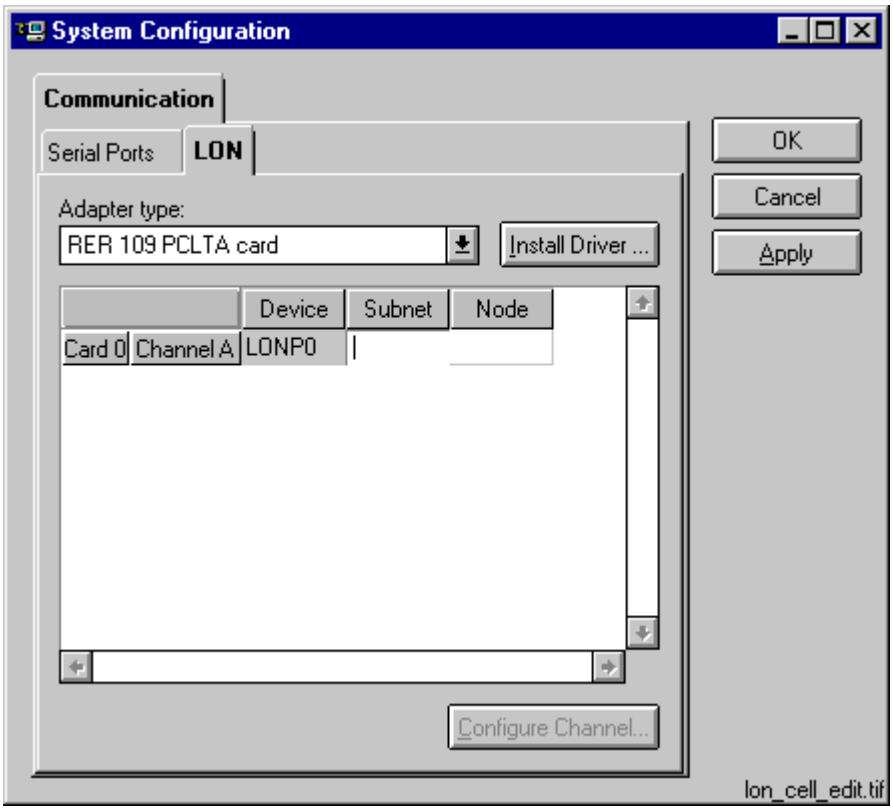

Fig. 4.5.4.7.-1 Subnet cell of channel A is activated

2. Type in the appropriate value for the Subnet.
3. Repeat the procedure for the Node cell.

When you edit these values, the device name of the edited channel begins to blink, reminding you, that the edited values yet have to be written to the respective card. To have the values written to the card, select the channel and press the Configure Channel... button. Upon pressing the button, the System Configuration tool functions according to the type of the currently selected adapter as follows:

RER 109 PCLTA card

When the Network Interface dialog box shown below appears, click the Standard button and wait until you are informed that the configuration has been done, see figure 4.6.4.5.-7 on page 49. Dismiss the notification by clicking OK and you are done. For detailed information on the Net Interface Tool see section “RER 109 PCLTA Card Neuron Chip configuration” on page 46.

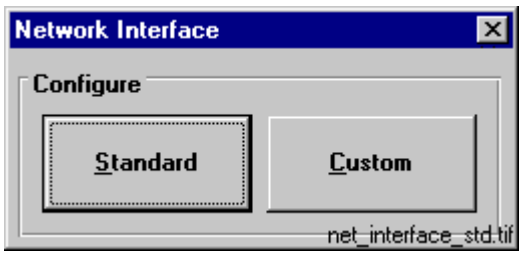

Fig. 4.5.4.7.-2 The start-up dialog box of the Net Interface Tool

PCC-10 PC card/PCLTA-20 card

If you haven’t done the initial configuration for the selected channel, then configure it by means of the LonWorks® Plug’n Play control panel as explained in sections “PCC-10 initial configuration” on page 50 or “PCLTA-20 initial configuration” on page 55. In case you are just applying modified Subnet/Node values, just close the LonWorks® Plug’n Play control panel when it appears and you are done.

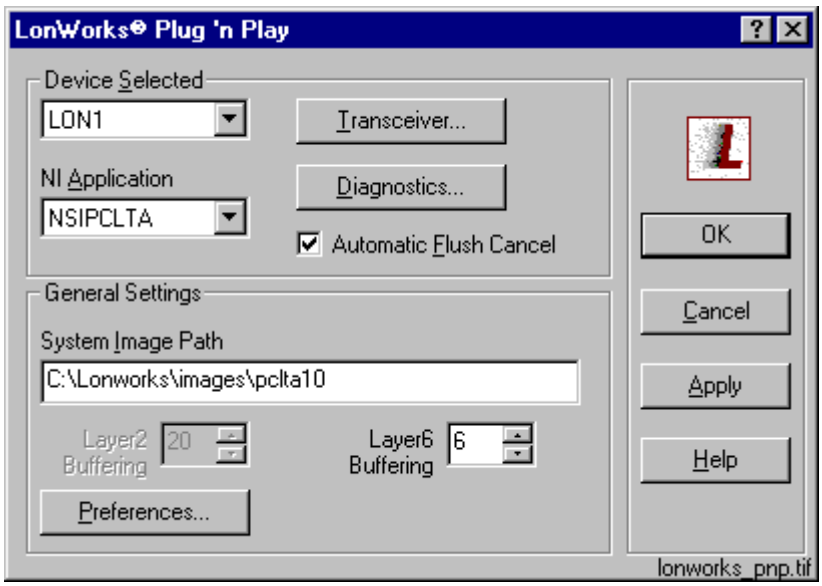

Fig. 4.5.4.7.-3 The LonWorks® Plug’n Play control panel opened for a PCLTA-20 card

Finally, save the system configuration as explained below.

4.5.4.8. Saving system configuration

The system configuration is saved permanently by using either the OK or the Apply button. The difference is, that the OK button closes the System Configuration tool whereas the Apply button allows you to proceed working with the tool.

The tool also provides you with the possibility to revert to the most recently saved configuration in order to prevent accidental changes to the configuration, see section “Discard configuration changes” on page 38.

4.5.4.9. Save configuration - close tool

To save a changed configuration closing the System Configuration tool, click OK. The System Configuration tool prompts you to confirm the operation, see figure 4.5.4.9.-1.

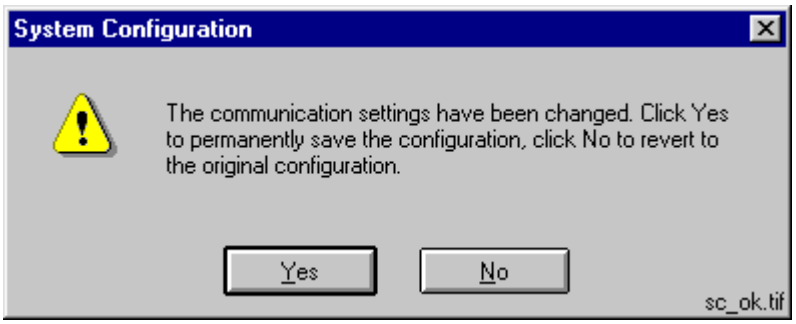

Fig. 4.5.4.9.-1 Confirm to save the configuration

To save the configuration click Yes. Clicking No enforces the most recently saved configuration.

4.5.4.10. Save configuration - proceed configuration

To save a changed configuration without closing the System Configuration tool, click Apply. The System Configuration tool prompts you to confirm the operation, see figure 4.5.4.10.-1.

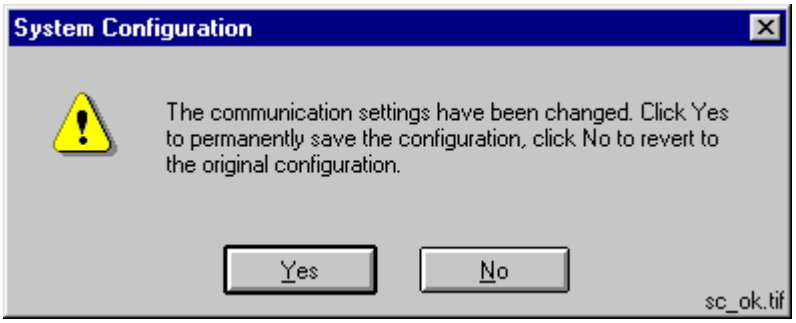

Fig. 4.5.4.10.-1 Confirm to save the configuration

To save the configuration click Yes and the configuration becomes the most recently saved configuration. Otherwise click No to proceed without saving.

4.5.4.11. Discard configuration changes

To revert to the most recently saved configuration, click Cancel. This closes the System Configuration tool without further prompting.

4.6. Installing LON cards

4.6.1. RER 109 PCLTA Card commissioning procedure

The RER 109 PCLTA card hardware and software is configured in the following order:

1. Install the card into the PC. See section “RER 109 PCLTA Card installation and configuration” on page 39.
2. Install and configure the RER 109 PCLTA Card device driver (MiSCLONP). See section “Device driver installation and configuration” on page 41.
3. Assign LON channel Subnet and Node values. See section “Assigning Subnet/ Node settings” on page 36.
4. Configure the Neuron Chip on the RER 109 PCLTA card, if necessary. See section “RER 109 PCLTA Card Neuron Chip configuration” on page 46.

4.6.2. PCC-10 PC Card commissioning procedure

The PCC-10 PC Card communications hardware and software are configured in the following order:

1. Install the card into the PC. See section “PCC-10 PC Card installation and configuration” on page 49.
2. Install and configure the PCC-10 PC Card device driver (PNPLON). See section “Device driver installation” on page 49 and “PCC-10 initial configuration” on page 50.

4.6.3. PCLTA-20 Card commissioning procedure

The PCLTA-20 Card communications hardware and software are configured in the following order:

1. Install the card into the PC. See section “PCLTA-20 Card installation and configuration” on page 54.
2. Install and configure the PCLTA-20 Card device driver (PNPLON). See section “Device driver installation” on page 54 and “PCLTA-20 initial configuration” on page 55.

4.6.4. RER 109 PCLTA Card installation and configuration

4.6.4.1. Card overview

A RER 109 PCLTA Card may have one or two channels, thus allowing the connection of one or two transceivers, as shown in figure 4.6.4.1.-1.

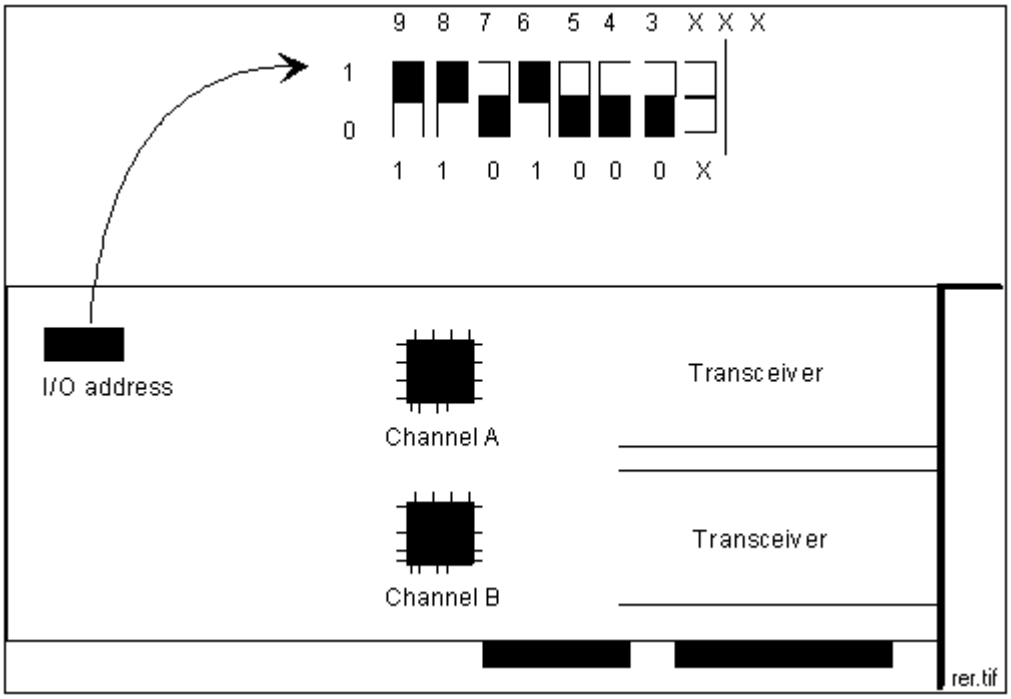

Fig. 4.6.4.1.-1 A RER 109 PCLTA Card

The use of the cards requires the installation and configuration of a MicroSCADA (MiSCLONP) device driver. During the device driver configuration, each transceiver is given a device number.

During the driver installation, the I/O base addresses of the cards are requested. These addresses must coincide with the addresses set physically on the cards.

4.6.4.2. Card installation

To install:

1. Select an I/O base address for the card and set it on the card as described in the PCLTA Card manual, also refer to figure 4.6.4.1.-1. Any free I/O address where the next 7 addresses are free can be selected. The driver installation tool suggests the 300 default value, the setting shown in figure 4.6.4.3.-4. Other possible values are 308, 310, 318 ... 370 and 378 hex. The selected I/O address should be noted down, e.g. in Table 4.6.4.2-1 on page 40, because it will be needed during the driver configuration. If transceivers other than RER 107 are used, the card will probably have to be configured for the transceivers. For more information, refer to the PCLTA Card and the transceiver documentation.

Table 4.6.4.2-1 The card information needed during system configuration

Card No.	I/O Address	Channel	Device No = n	Device Name = LONPn
1		A		
		B		
2		A		
		B		

4.6.4.3. Device driver installation and configuration

Overview

The device driver for the RER 109 PCLTA Card is installed and configured using a special configuration tool - MicroSCADA Device Driver Configuration tool.

This tool is started through the Install Driver… button, located on the LON page of the System Configuration tool, see figure 4.6.4.3.-1.

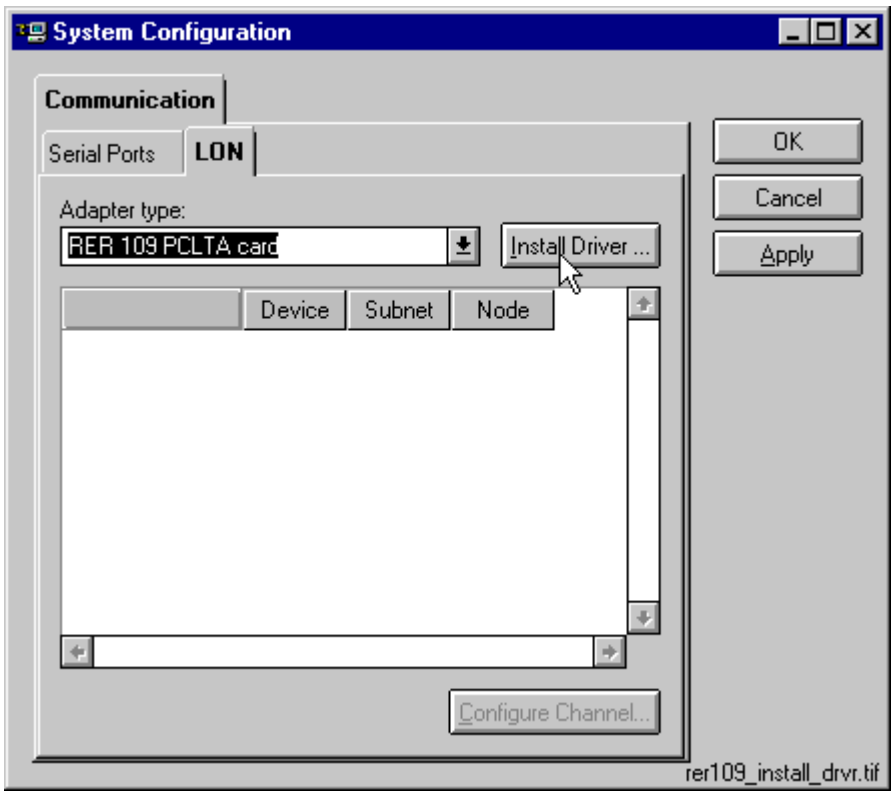

Fig. 4.6.4.3.-1 Starting the driver installation/configuration for the RER 109 PCLTA Card

Device driver configuration

Once the configuration tool starts, the dialog box shown in figure 4.6.4.3.-2, appears:

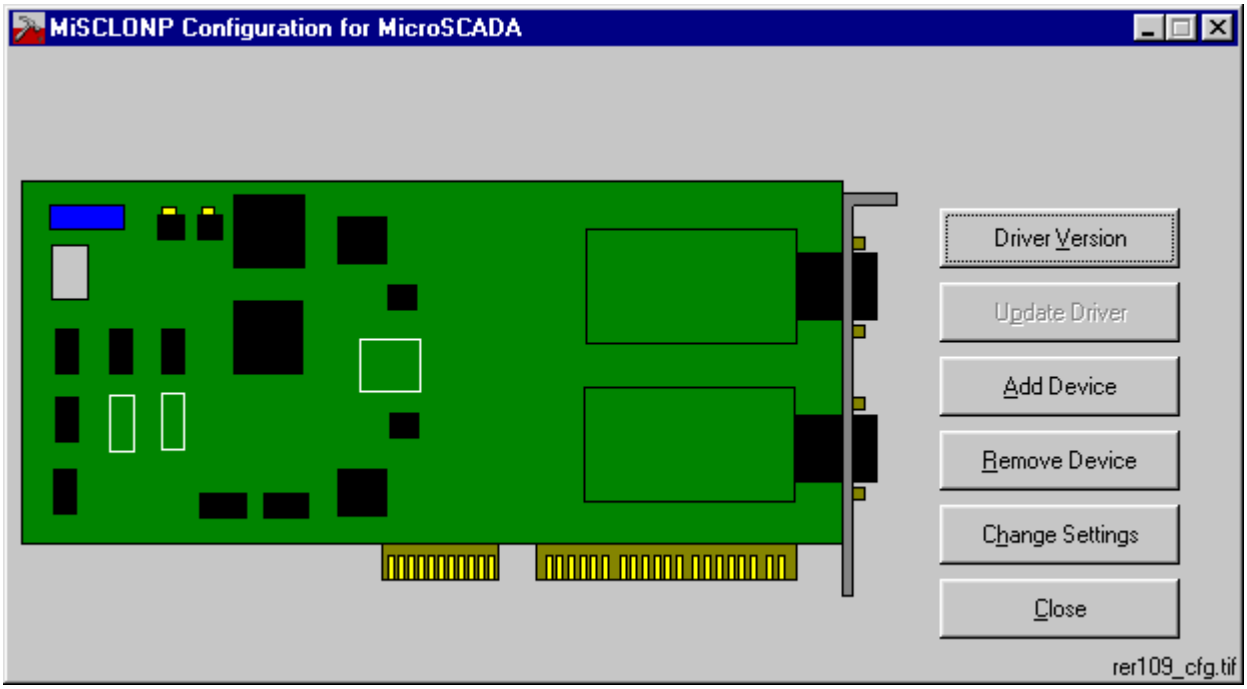

Fig. 4.6.4.3.-2 Starting the device driver configuration

The following table briefly explains the functions available on this dialog box:

Table 4.6.4.3-1 Dialog box buttons

Driver Version	To view which version of the MiSCLONP driver currently is in use and which version of the driver has come with the installed package, use this button.
Update Driver	If there is an older version of the MiSCLONP driver currently in use, then you can use this button to update the driver to the latest version. If the version, which currently is in-use, is newer than the one in the installed package, then this button remains disabled i.e. you cannot downgrade the driver.
Add Device	Use this button to add and configure a RER 109 PCLTA card. If no cards have been defined previously, the MiSCLONP driver is automatically installed on the computer when adding the first card.
Remove Device	Use this button to remove a RER 109 PCLTA card. When you remove the last card, you have the option to remove the MiSCLONP device driver from the computer.
Change Settings	Use this button to change settings of an existing device.
Close	Use this button to exit the configuration tool. **Note!** Depending on the actions, you have taken, you may be requested to reboot the computer. In that case, prior to reboot, close the System Configuration tool and exit CAP 505 first.

1. Click Add Device to bring up the dialog box shown in figure 4.6.4.3.-3.

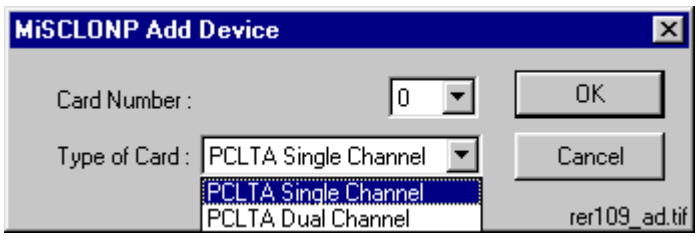

Fig. 4.6.4.3.-3 The MiSCLONP Add Device dialog box

2. Enter the following data:

Card Number	The number of the card. It is recommended that you set the first card as card number 0, the second card as card number 1 and so on.
Type of Card	The type of the card. The following card types are supported: PCLTA Single Channel and PCLTA Dual Channel cards.

3. Click OK.

The dialog box shown in figure 4.6.4.3.-4 appears. In this dialog box, you specify each of the channels of the card.

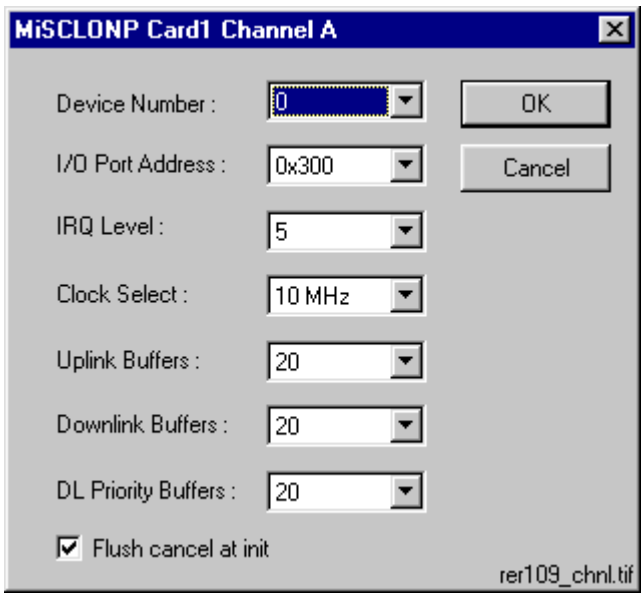

Fig. 4.6.4.3.-4 The configuration of the channels

4. Enter the following data for each of the channels of the card:

Device Number	The device number. Each channel is seen as a device with a device number. It is recommended that you set channel A on card 0 as device 0 and channel B as device 1. Then use numbers 2 and 3 for the two channels on card 1.
I/O Port Address	The I/O base address of the card. **Note!** This must be the same as the address set physically on the card. If a card has two channels, channel B is automatically given an I/O base address which is 4 + the address of channel A.

IRQ Level	The interrupt level used by the channel. This must be unique among all devices in the computer. Allowed values are 5, 9, 10, 11, 12, and 15. You can check which of the values are free in the operating system Diagnostics tool (WINMSD.EXE).
Clock Select	The Neuron clock rate for the channel. The default value, 10 Mhz, can be used.
Uplink Buffers	The number of uplink buffers used by the channel. The default value 20 can be used.
Downlink Buffers	The number of downlink buffers used by the channel. The default value 20 can be used.
DL Priority Buffers	The number of downlink priority buffers used by the channel. The default value 20 can be used.
Flush cancel at init	If this option is checked (default), the device driver will issue the niFLUSH_CANCEL command to the network interface after reset. This means that the network interface is reset into NORMAL state and can participate in network transactions. If no niFLUSH_CANCEL command is issued, the network interface remains in a FLUSH state where it ignores all incoming messages and prevents all outgoing messages.

5. Click OK and define the next channel on the card in the same way, and then the next card.

When all cards and channels have been configured, click Close to close the tool and configure automatic start-up of the driver as described in the following section. If you are prompted to reboot the computer, exit CAP 505 first.

4.6.4.4. Automatic MiSCLONP device driver start-up

Removing the MicroSCADA Device Driver Notification

Once the device driver has been installed, a MicroSCADA Device Driver Notification dialog box will appear at the next system start-up as shown in figure 4.6.4.4.-1.

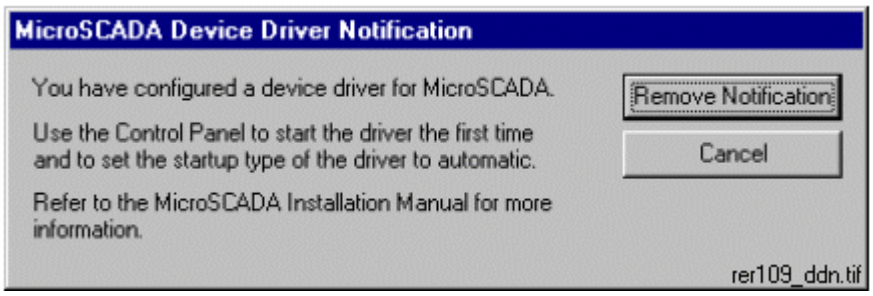

Fig. 4.6.4.4.-1 MicroSCADA Device Driver Notification dialog box

Note! The reference to the MicroSCADA Installation Manual is irrelevant in CAP 505 context.

To prevent this dialog box from appearing at future system start-ups:

1. Click Remove Notification.

Configuring the automatic start-up

The MiSCLONP device driver should be configured to automatically start at system start-up. On Windows NT 4.0, this is done through the Control Panel applet named Devices, see, see figure 4.6.4.4.-2.

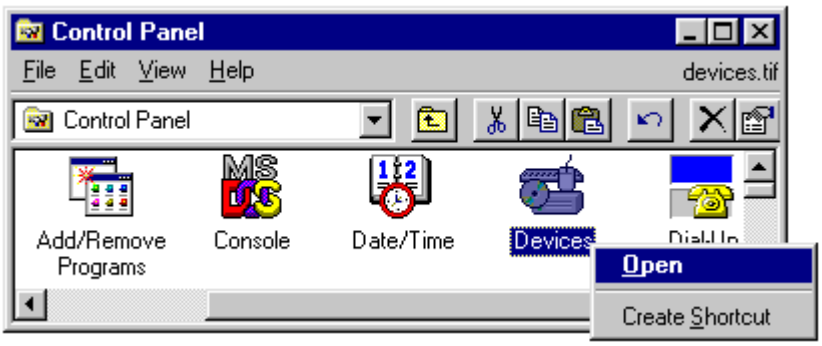

Fig. 4.6.4.4.-2 Starting the Windows NT Devices applet

1. Open the applet and when it is running select the MiSCLONP device from the device list, see figure 4.6.4.4.-3.

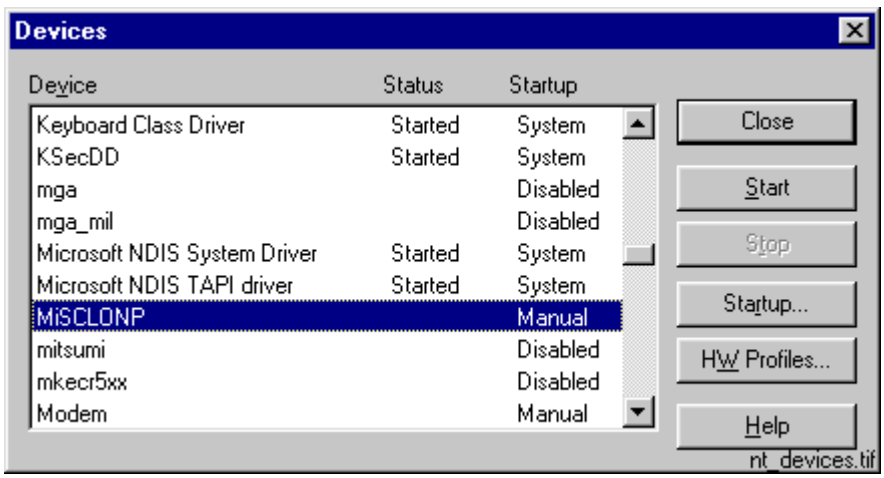

Fig. 4.6.4.4.-3 The MiSCLONP device

Note! If you cannot find the MiSCLONP device driver name, the driver installation has failed and must be redone.

2. Click Startup to enter the Device dialog box, shown in figure 4.6.4.4.-4, and select the option Automatic.

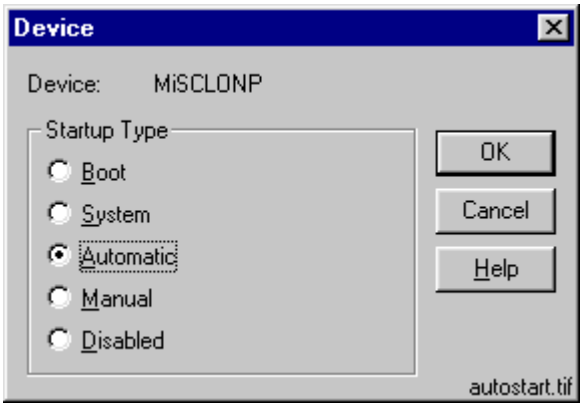

Fig. 4.6.4.4.-4 Start-up settings for the MiSCLONP device

3. Click OK to dismiss the dialog box accepting the changes.

At the next operating system start-up, the MiSCLONP device starts automatically. You can now either reboot the computer or directly attempt to start the MiSCLONP device by clicking Start on the Devices dialog box, see figure 4.6.4.4.-3, whereafter the device driver should be fully working.

4.6.4.5. RER 109 PCLTA Card Neuron Chip configuration

Overview

The Neuron Chip on the card must be configured initially after installation of the card and re-configured when the Neuron Chip's communication ability has been lost due to a newly installed transceiver module, such as RER 107. The Neuron Chip is configured using the Net Interface Tool.

The following Neuron Chip values are modified by the Net Interface Tool:

- comm_type
- comm_pin_dir
- comm_clock
- input_clock

When the RER 107 module is used, the comm_type value is typically zero, meaning that the PCLTA Card is unable to communicate. Usually the other values are correct.

The Net Interface Tool provides two configuration methods for different purposes, namely the Standard and the Custom methods. The desired method is selected at the tool's start-up.

Standard configuration method

When configuring a RER 109 PCLTA Card equipped with the RER 107 optical module, the Standard configuration method allows for a quick configuration.

Custom configuration method

The Custom configuration method is to be used on the following occasions:

- The Neuron Chip configuration is to be verified.

- Some other than the default values should be used.

Starting the Net Interface Tool

The Net Interface Tool is started through the Configure Channel… button, located on the LON page of the System Configuration tool, see figure 4.6.4.5.-1.

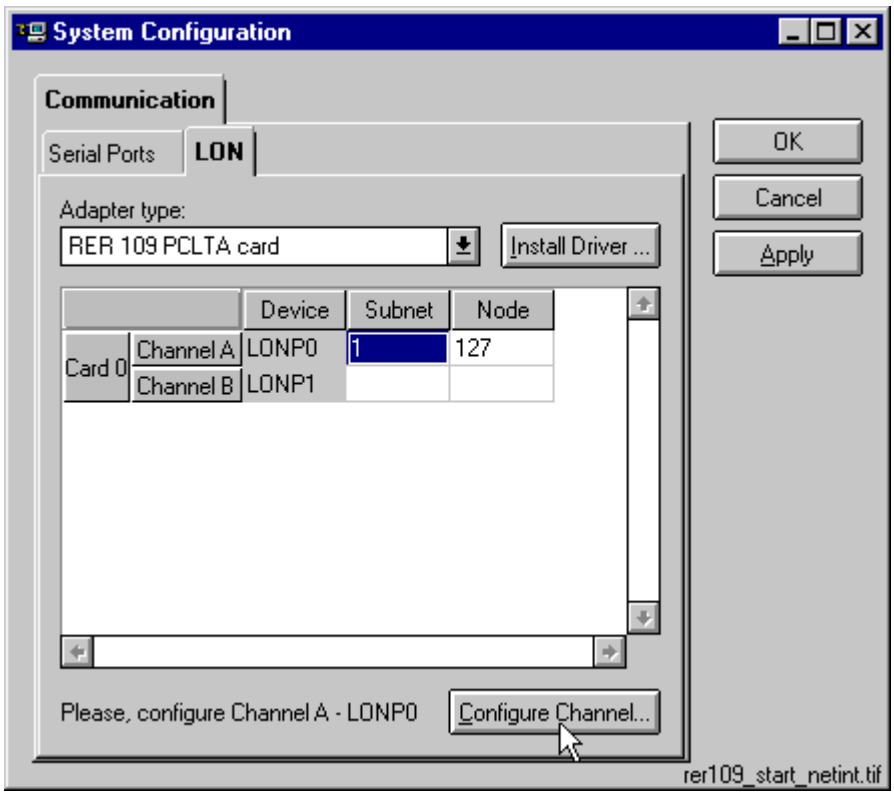

Fig. 4.6.4.5.-1 Starting the Net Interface Tool

Note! In order for the configuration to be successful, the MiSCLONP device driver must be started at the time you start the Net Interface Tool.

At the tool's start-up, you are prompted whether to proceed the operation, see figure 4.6.4.5.-2. To return to the System Configuration tool, click No.

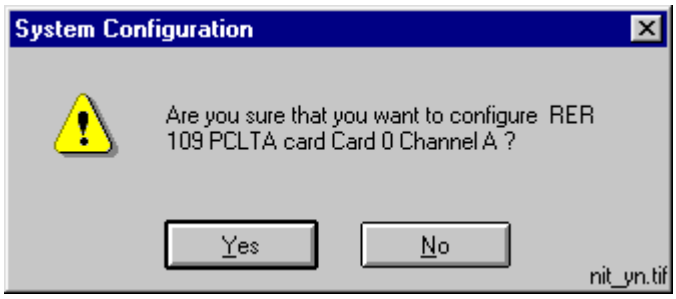

Fig. 4.6.4.5.-2 Confirm to continue with the Neuron Chip configuration

If you answered Yes, the dialog box for selecting the configuration method appears, see figure 4.6.4.5.-3.

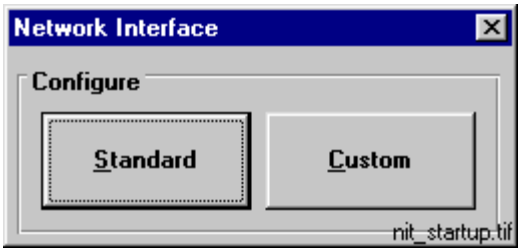

Fig. 4.6.4.5.-3 Network Interface configuration methods

At this stage, the dialog box displayed in figure 4.6.4.5.-4, appears and is automatically iconized in a few seconds of time.

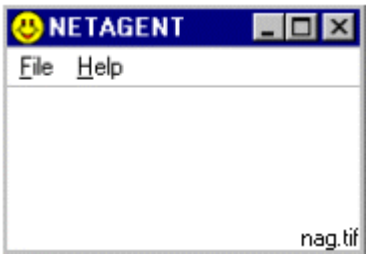

Fig. 4.6.4.5.-4 The start-up dialog box of the LON NetAgent

Standard configuration method

Once the Standard configuration method has been selected on the start-up dialog box, the Net Interface Tool directly attempts to write the default values to the Neuron Chip, the default values are listed in the table below.

Table 4.6.4.5-1 Neuron Chip configuration data of the Standard Method

Parameter	Value
comm_type	1 (single-ended)
comm_pin_dir	0x0E (direct mode, single-ended)
comm_pin_dir	0 (bit rate = input_clock / 8)
input_clock	5 (10.0 Mhz)

Upon completion of the Neuron Chip configuration, the Net Interface Tool displays the following message:

Fig. 4.6.4.5.-5 Network Interface message after successful configuration

At this point, the Net Interface Tool terminates and the Neuron Chip should be able to communicate.

Custom configuration method

Once the Custom configuration method has been selected on the start-up dialog box, the dialog box shown in figure 4.6.4.5.-6, appears.

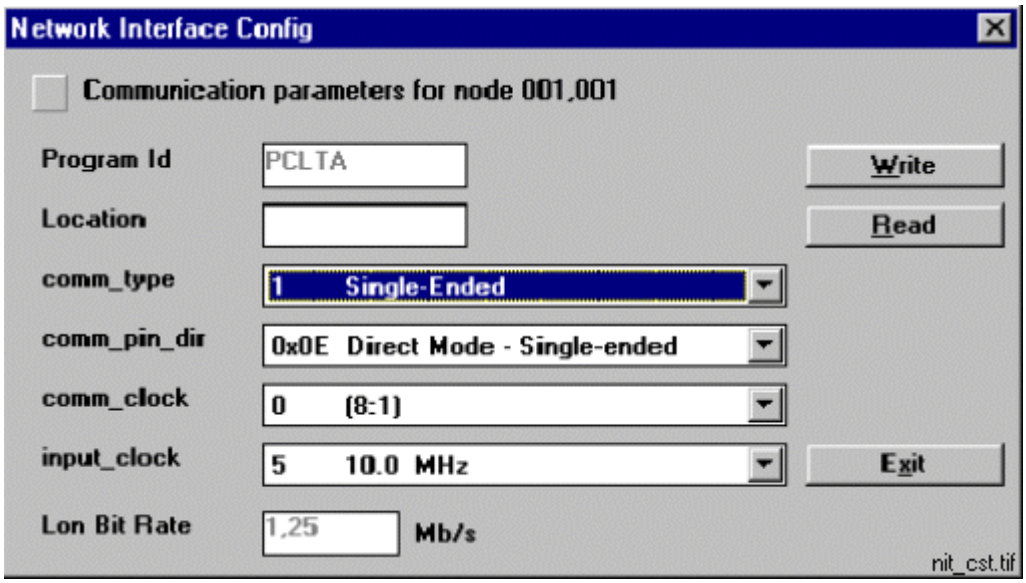

Fig. 4.6.4.5.-6 Sample PCLTA Card Neuron Chip configuration values

Here the desired comm_type, comm_pin_dir, comm_clock and input_clock can be manually selected. In addition, the bit rate derived from the clock (Lon Bit Rate) value is also shown and is not subject to change.

To read the values from the Neuron Chip and to verify that they have been set correctly, choose Read.

To update the settings to the Neuron Chip choose Write. After a successful write operation the message shown in figure 4.6.4.5.-7, appears.

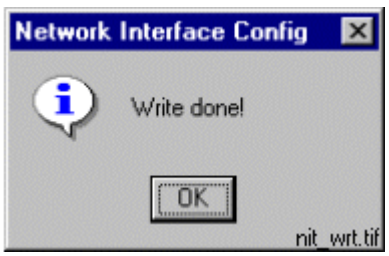

Fig. 4.6.4.5.-7 Write operation completed

4.6.5. PCC-10 PC Card installation and configuration

For information on installing and configuring the PCC-10 PC Card, please view the documentation shipped with the card.

4.6.5.1. Device driver installation

The installer for the PCC-10 PC Card device driver is started through the Install Driver… button, located on the LON page of the System Configuration tool, see figure 4.6.5.1.-1.

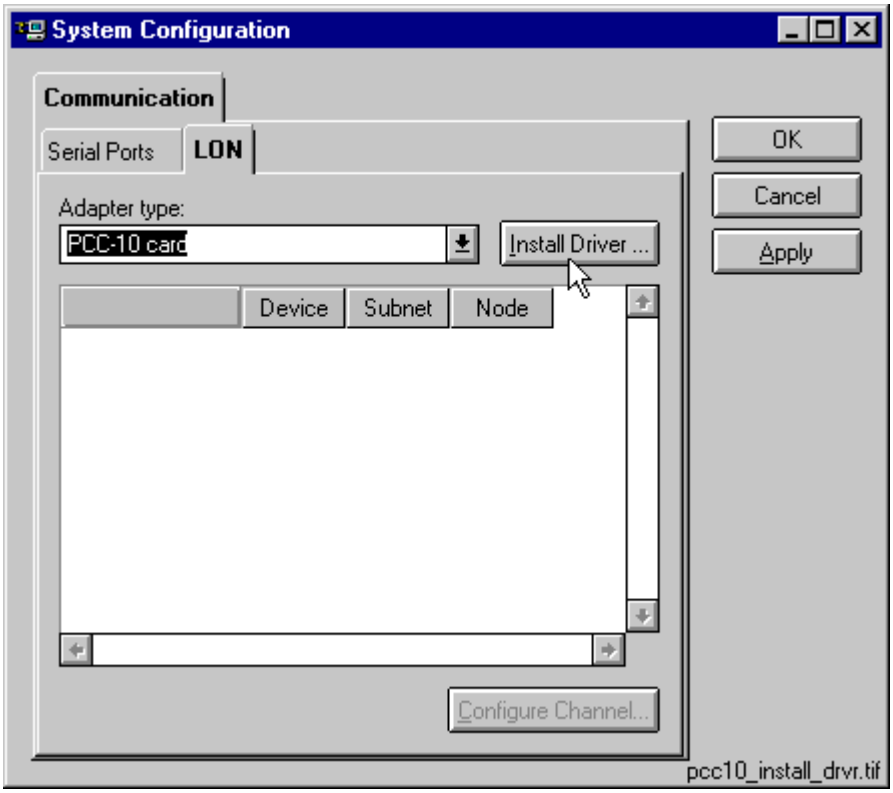

Fig. 4.6.5.1.-1 Starting the driver installation for the PCC-10 PC Card

Note! The program, which you start, installs images and the driver (PNPLON.SYS) for the PCC-10, PCLTA-10 and PCLTA-20 cards.

Selecting the destination directory

By default, the destination directory will be C:\LONWORKS. If you decide to install to another directory, you have to manually specify the directory path to the installed system image later.

Selecting the numeric base for LonWorks devices

During the driver installation you will be prompted to supply the numeric base for all LonWorks Plug'n Play devices. To be compatible with CAP 505, please use 1 as the numeric base, so the device name will be created as LON1.

After the driver installation, restart the computer and perform the initial device driver configuration as explained below.

4.6.5.2. PCC-10 initial configuration

After you have installed the PCC-10 card, its device driver and rebooted the computer, you yet have to verify that correct settings are to be used and initialize the node state of the card's channel to *configured*. This means that the following tasks have to be done:

- Selecting the correct type of the transceiver. The default setting FT-10 has to be changed to Custom with appropriate data.

- Selecting the correct type of the network interface application (NI Application). By default, the device driver installation program configures the NSIPCC as the NI Application, however, NSIPCC has to be changed to PCC10L7.
- Initializing the card to the configured node state along with initial Subnet/Node settings.

To configure:

1. Start CAP 505 and enter the LON page of the System Configuration tool.
2. If not selected, select the PCC-10 card as the type of the adapter. By this time, a LON channel should be available on the System Configuration tool. If there are none, then the device driver has failed to start and needs to be re-configured. See section “PCC-10 PC Card preferences” on page 58.
3. Enter values for Subnet and Node and press the Configure Channel... button to open the LonWorks® Plug’n Play control panel.

Selecting the network interface application

4. First, select the PCC10L7 network interface application, as shown below.

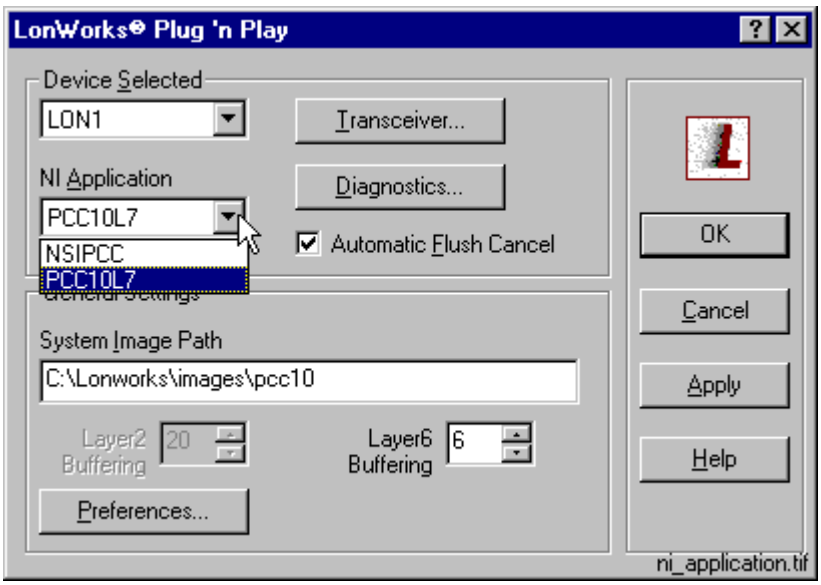

Fig. 4.6.5.2.-1 Selecting the correct NI Application

5. Check the *Automatic Flush Cancel* option as in the figure above.
6. Click Apply to apply the selections.

Selecting the type of the transceiver

7. Click the Transceiver... button to open the dialog box shown below.

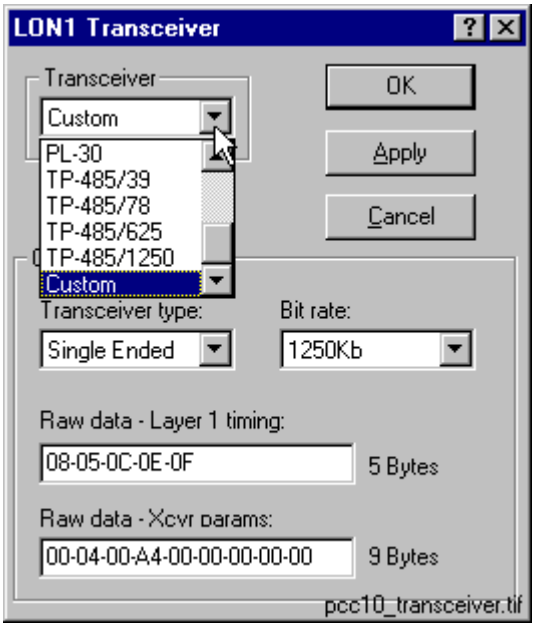

Fig. 4.6.5.2.-2 Switching from the default transceiver setting to the Custom transceiver

8. From the Transceiver list, select the option Custom.
9. Select the Single Ended as the type of the transceiver.
10. Set the Bit rate to 1250 Kb.
11. For Raw data - Layer 1 timing, ensure that the following data ‘08-05-0C-0E-0F’ is used.
12. For Raw data - Xcvr params, ensure that the following data ‘00-04-00-A4-00-00-00-00-00’ is used.
13. Click OK to save the configuration closing the Transceiver dialog box. Next, initialize the card to the configured state as explained below.

Initializing the node state to configured

14. On the LonWorks® Plug’n Play control panel (Figure 4.6.5.2.-1 above), click the Diagnostics... button to open the Diagnostics dialog box shown below.

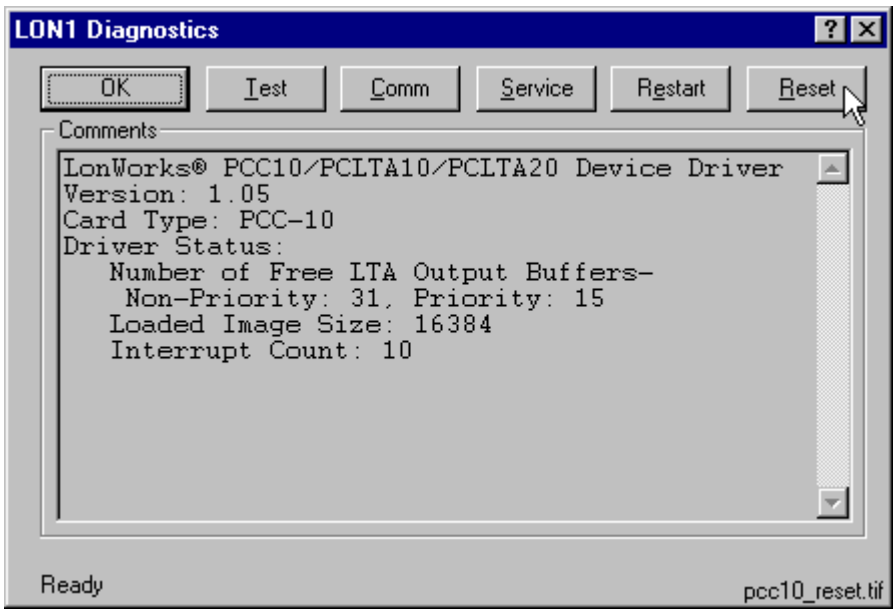

Fig. 4.6.5.2.-3 Some basic diagnostics information available indicating that the device driver has started and can be configured

15. Initialize the node state to *configured* by clicking Reset.
16. Verify the initialization by clicking Test. Observe that the *Node State* is reported to be Configured as in the figure below.

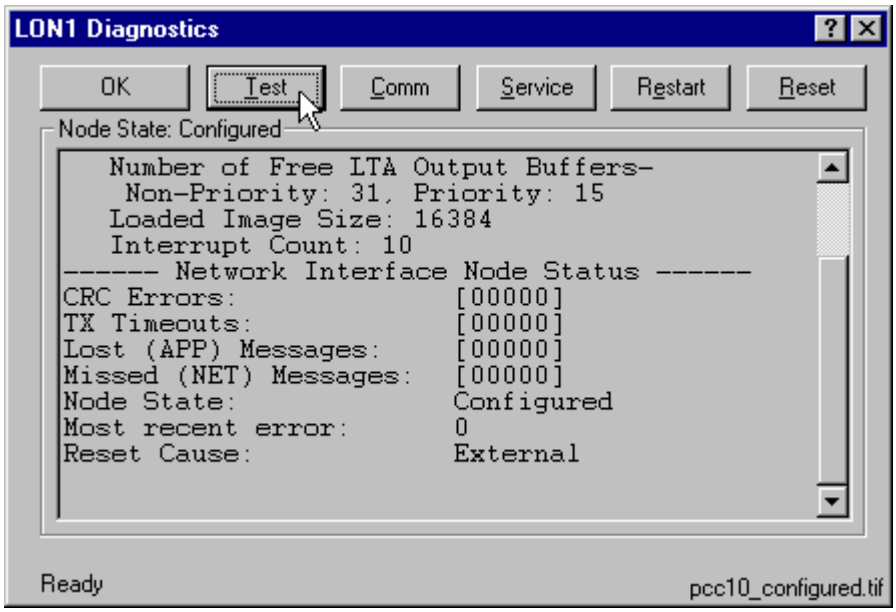

Fig. 4.6.5.2.-4 Results of the Test function, the state is now configured

17. At this stage the card is ready for use. Click OK to close the dialog box. Close also the LonWorks® Plug'n Play control panel by clicking OK on it and continue your work with the System Configuration tool.

For additinal information on configuring the PCC-10 device driver, you may want to view the Windows Help shipped with the device driver package. See also section "PCC-10 PC Card preferences" on page 58.

To access the Help, open the operating system's Control Panel and open the applet titled LonWorks® Plug'n Play, shown in figure 4.6.5.2.-5.

Fig. 4.6.5.2.-5 Starting the LonWorks® Plug'n Play control panel

Once the LonWorks® Plug'n Play control panel is running click Help to view the Help for the package.

4.6.6. PCLTA-20 Card installation and configuration

For information on installing and configuring the PCLTA-20 Card, please view the documentation shipped with the card.

4.6.6.1. Device driver installation

The installer for the PCLTA-20 Card device driver is started through the Install Driver… button, located on the LON page of the System Configuration tool, see figure 4.6.6.1.-1.

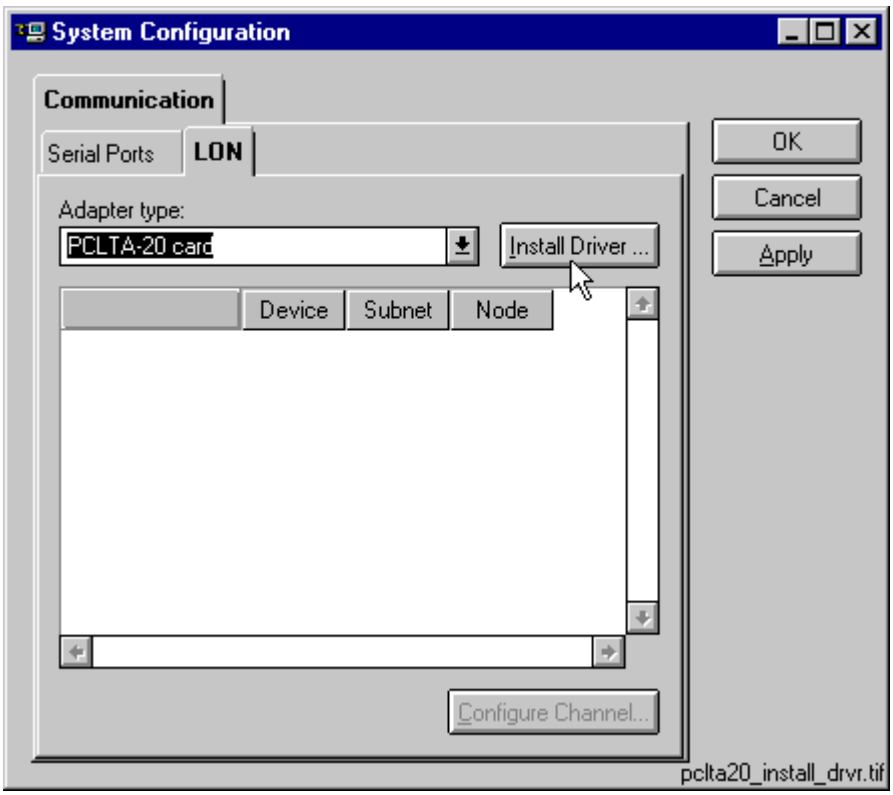

Fig. 4.6.6.1.-1 Starting the driver installation for the PCLTA-20 Card

Note! The program, which you start, installs images and the driver (PNPLON.SYS) for the PCC-10, PCLTA-10 and PCLTA-20 cards.

Selecting the destination directory

By default, the destination directory will be C:\LONWORKS. If you decide to install to another directory, you have to manually specify the directory path to the installed system image later.

Selecting the numeric base for LonWorks devices

During the driver installation you will be prompted to supply the numeric base for all LonWorks Plug'n Play devices. To be compatible with CAP 505, please use 1 as the numeric base, so the first device name will be created as LON1, the second as LON2 and so on.

After the driver installation, restart the computer and perform the initial configuration as explained below.

4.6.6.2. PCLTA-20 initial configuration

After you have installed the PCLTA-20 card(s), the device driver and rebooted the computer, you yet have to verify that correct settings are to be used and configure the node state of each of the channels to *configured*. This means that the following tasks have to be done:

- Ensuring that the correct type of the transceiver is used for each channel.
- Ensuring that the correct type of the network interface application (NI Application) is used for each channel.
- Initializing the card to the configured node state along with initial Subnet/Node settings.

To configure:

1. Start CAP 505 and enter the LON page of the System Configuration tool.
2. If not selected, select the PCLTA-20 card as the type of the adapter. By this time, as many LON channels as there are PCLTA-20 cards on computer, should be available on the System Configuration tool. If there aren't, most probably the operating system has failed to provide the card with sufficient/suitable IRQ and I/O resources, try to free some resources and reboot the computer.
3. For each LON channel, enter values for Subnet and Node and press the Configure Channel... button to open the LonWorks® Plug'n Play control panel.

Selecting the device name

4. First, ensure that the device selected matches the device name of the channel you selected in System Configuration tool, see figure below.

Fig. 4.6.6.2.-1 Device name LON1 selected both in System Configuration Tool and the LonWorks control panel.

Selecting the network interface application

5. Select the NSIPCLTA NI Application, as shown below.

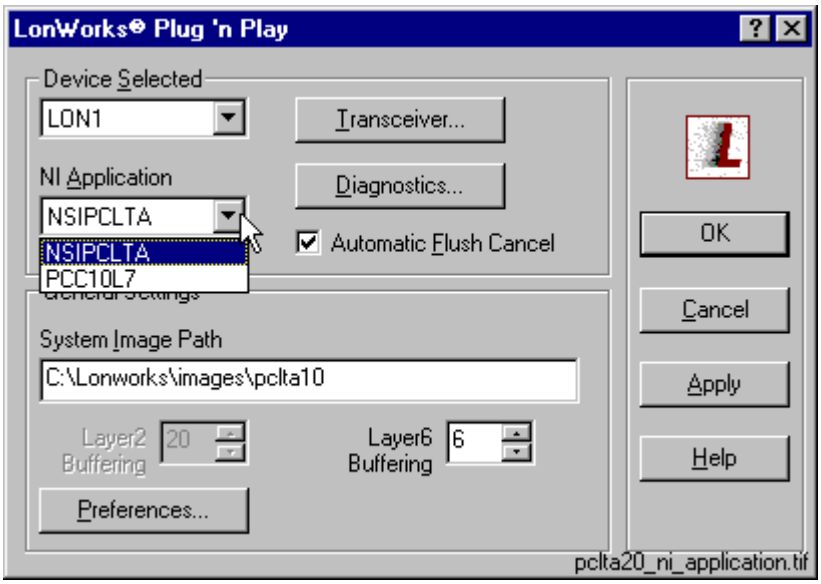

Fig. 4.6.6.2.-2 Selecting the correct NI Application

6. Check the *Automatic Flush Cancel* option as in the figure above.
7. Click Apply to apply the selections.

Selecting the type of the transceiver

8. Click the Transceiver... button to open the dialog box shown below.

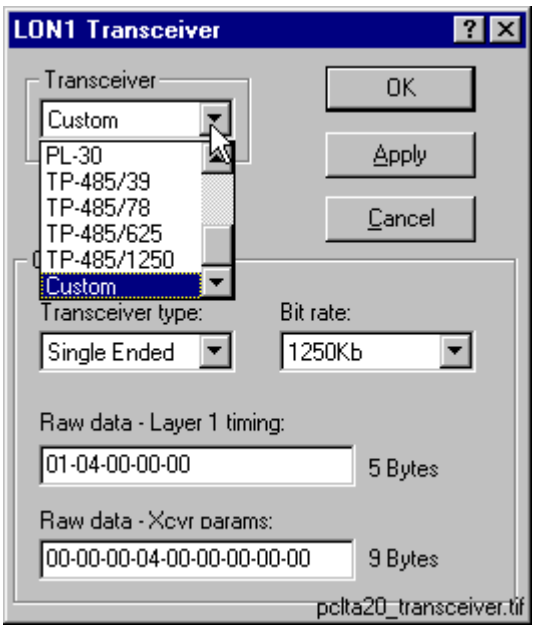

Fig. 4.6.6.2.-3 Switching from the default transceiver setting to the Custom transceiver

9. From the Transceiver list, select the option Custom.

10. Select the Single Ended as the type of the transceiver.
11. Set the Bit rate to 1250 Kb.
12. For Raw data - Layer 1 timing, ensure that the following data ‘01-04-00-00-00’ is used.
13. For Raw data - Xcvr params, ensure that the following data ‘00-00-00-04-00-00-00-00-00’ is used.
14. Click OK to save the configuration closing the Transceiver dialog box. Next, initialize the card to the configured state as explained below.

Initializing the node state to configured

15. On the LonWorks® Plug’n Play control panel (Figure 4.6.6.2.-2 above), click the Diagnostics... button to open the Diagnostics dialog box shown below.

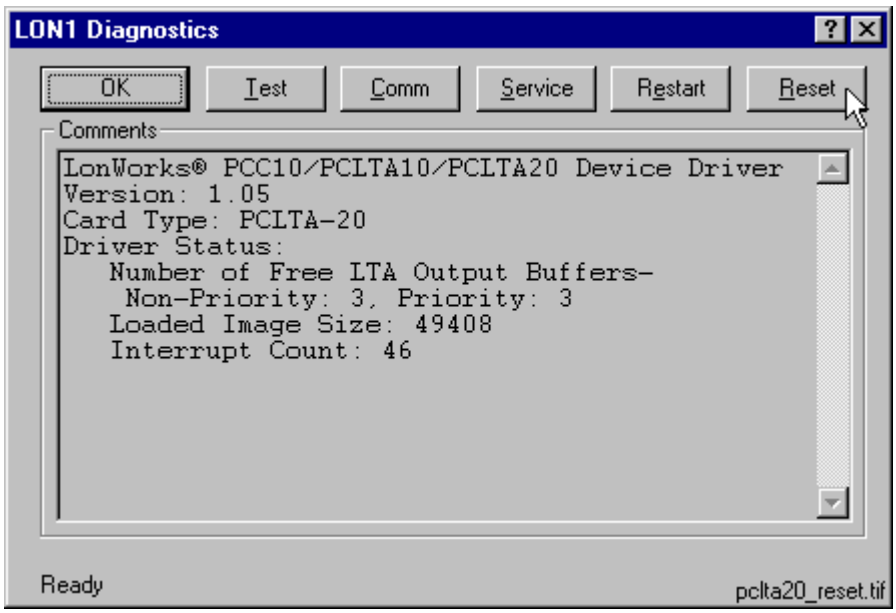

Fig. 4.6.6.2.-4 Some basic diagnostics information available indicating that the device driver has started and can be configured

16. Initialize the node state to *configured* by clicking Reset.
17. Verify the initialization by clicking Test. Observe that the *Node State* is reported to be Configured as in the figure below.

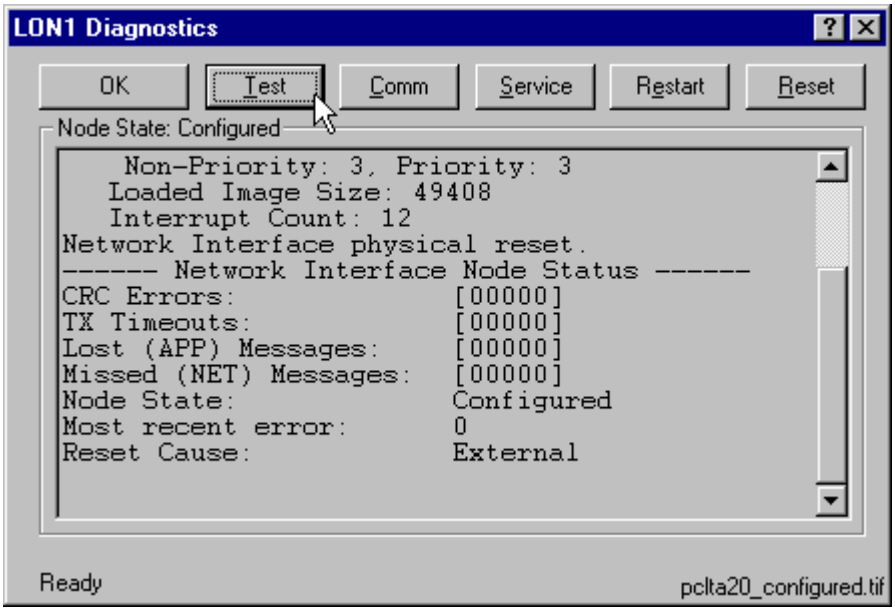

Fig. 4.6.6.2.-5 Results of the Test function, the state is now configured

18. At this stage the card is ready for use. Click OK to close the dialog box. Close also the LonWorks® Plug'n Play control panel by clicking OK on it and continue your work with the System Configuration tool.

For additional information on configuring the PCLTA-20 device driver, you may want to view the Windows Help shipped with the device driver package.

To access the Help, open the operating system's Control Panel and open the applet titled LonWorks® Plug'n Play, shown in figure 4.6.6.2.-6.

Fig. 4.6.6.2.-6 Starting the LonWorks® Plug'n Play control panel

Once the LonWorks® Plug'n Play control panel is running click Help to view the Help for the package.

4.6.7. Troubleshooting LON

4.6.7.1. PCC-10 PC Card preferences

It may be necessary to configure the preferences of the PCC-10 card's device driver, if you are unable to configure the card to the configured state. In such a case, open the Preferences page of the LonWorks® Plug'n Play control panel and try another IRQ and/or I/O range setting for the card, see the figure below. You can modify the current settings by means of the up/down buttons on the dialog box, see the cursor in the figure.

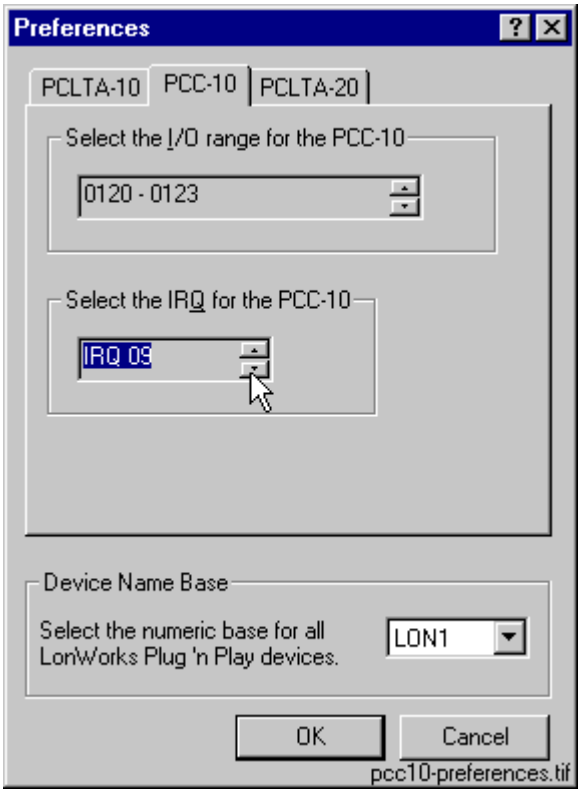

Fig. 4.6.7.1.-1 PCC-10 preferences

The default IRQ setting is *automatic*, however, on Windows NT it may happen that the automatic IRQ assignment results in a non-working configuration even if the assigned IRQ appears to be free for use. You can use e.g. the operating system's diagnostics application (WINMSD.EXE) to determine the IRQs that are free and try to manually set a new IRQ for the PCC-10 card. In the figure above, IRQ 9 has been set for the card. The new setting will take effect on next computer reboot.

4.6.7.2. LON channel configuration failure

On computers having the Lon Network Tool (LNT 505) installed, it may happen that upon pressing the Configure Channel... button, the error message shown in Figure 4.6.7.2.-1 appears. In this case, dismiss the message by clicking OK. Do the corrective measures explained in section "Recovering from failure to configure LON channels" on page 60 and retry the channel configuration.

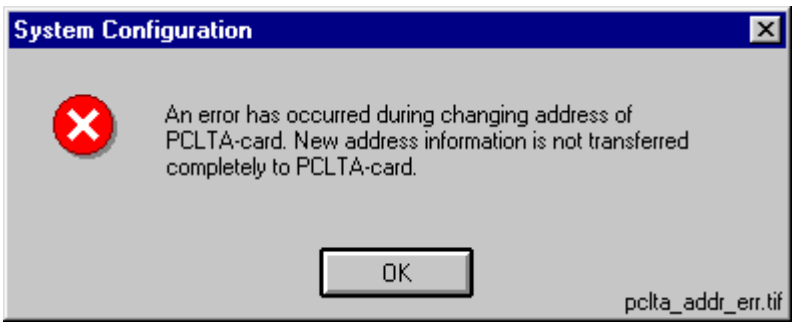

Fig. 4.6.7.2.-1 Failure in card initialization

4.6.7.3. Recovering from failure to configure LON channels

This section provides instructions to fix a situation where usage of the Lon Network Tool (LNT 505) has prevented the channel configuration in CAP 505.

Both LNT 505 and CAP 505 use a common file NETTOOLS.INI. This file is located in the Windows directory of the computer, e.g. C:\WINNT. If you cannot find it there, then you have to reinstall the CAP 505 Base System in order to get a working copy of the file.

The LNT 505 may modify the values of the following NETTOOLS.INI keys, so that they cannot be read by the CAP 505 kernel:

- FTR
- LOOKUP
- OFFLINE

These keys can be found under the section STATUS, see Figure 4.6.7.3.-1.

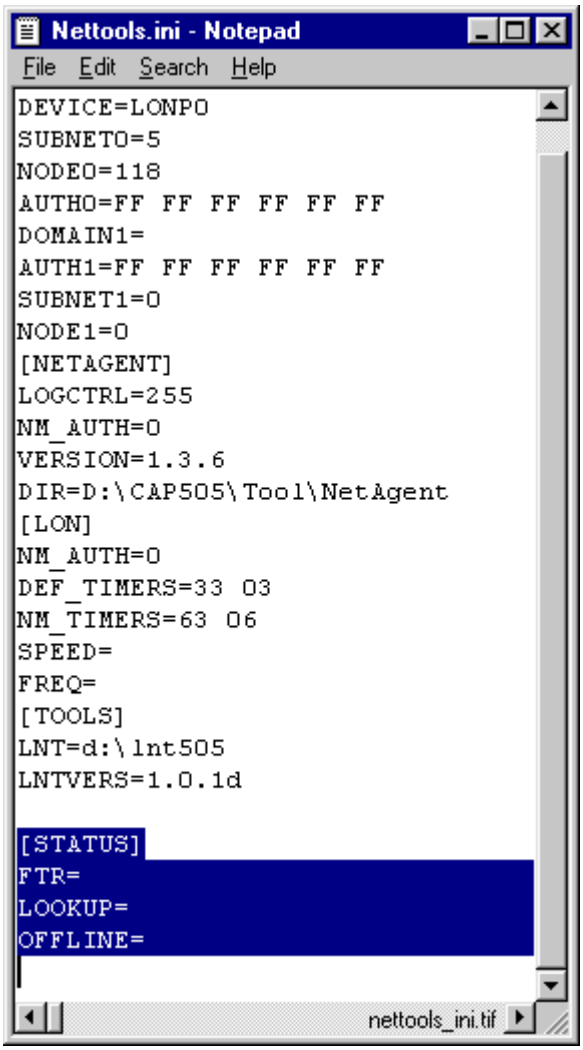

Fig. 4.6.7.3.-1 An example of the file NETTOOLS.INI. As the selection indicates, lengthy data has been written for the critical keys

The solution for the problem is to empty the values of the addressed keys, which is a safe operation to do.

To empty the values:

1. Preferably, exit LNT 505 if it is running.
2. Open the file NETTOOLS.INI in any ASCII editor, for example Notepad (NOTEPAD.EXE).
3. Under the section STATUS, empty the values of the keys FTR, LOOKUP and OFFLINE as illustrated in Figure 4.6.7.3.-2 below.

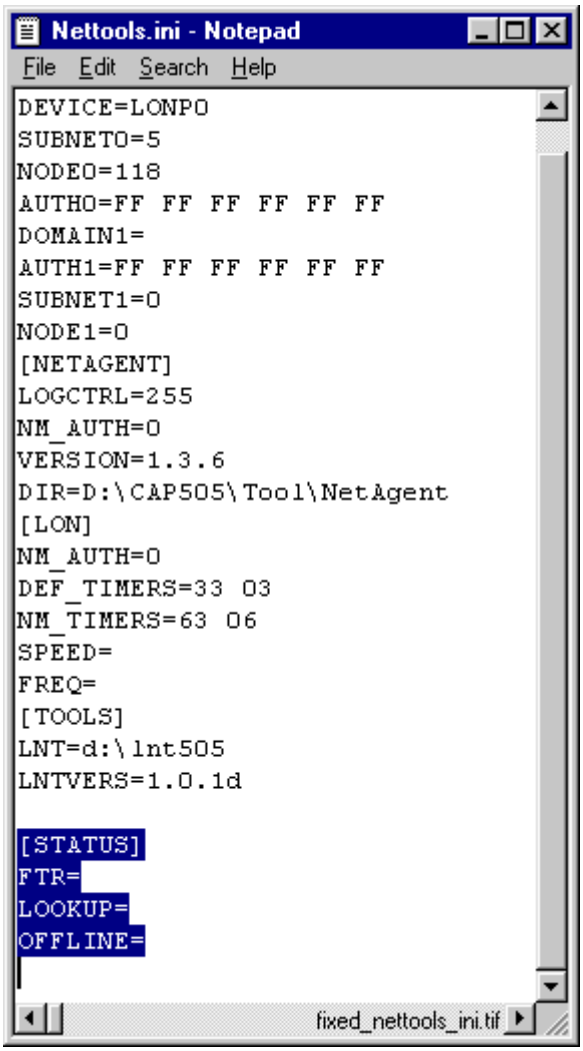

Fig. 4.6.7.3.-2 The values have been removed

4. Save changes to the file and close the editor.
5. Retry the channel configuration.

4.6.7.4. Overlapping LON communication settings

In CAP 505, every object communicating over LON must be assigned a LON settings configuration that is unique within the project. The LON settings configuration comprises the following items:

- Card Number
- Channel
- Subnet Number
- Node Number

If you have specified a non-unique settings configuration, the following notification appears upon clicking OK on the Project Structure Navigator's General Object Attributes dialog box.

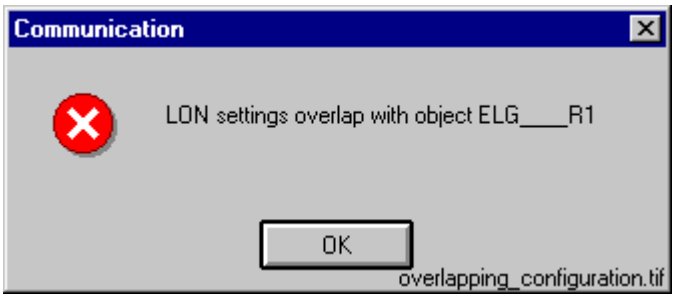

Fig. 4.6.7.4.-1 Overlapping LON settings have been specified. In this case the offending object is named ELG___R1

In such a case, you have to change one or more of the above presented four items to form a unique settings configuration within the project.

5. Toubleshooting installation

This chapter provides information that aims to help your recovering from problems that you have encountered during the CAP 505 installation.

5.1. 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 figure 5.1.-1.

Fig. 5.1.-1 Insufficient user rights to install CAP 505

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

Note! 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 “TEMP environment variable” on page 68 for instructions to recover.

5.2. MicroSCADA service is running

If the MicroSCADA service is running when you start the CAP 505 installation, you are notified with the message shown in figure 5.2.-1.

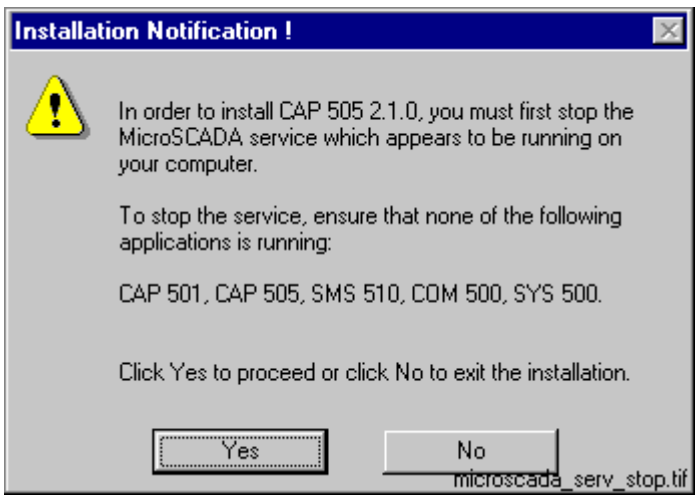

Fig. 5.2.-1 MicroSCADA service must be shut down before continuing with the installation

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.

5.3. Failing to install the MicroSCADA service

If the installation of the MicroSCADA service does not succeed, the installation displays the message shown in figure 5.3.-1.

Fig. 5.3.-1 The MicroSCADA service installation has failed

The most probable reason for this is that the MicroSCADA service has started during the CAP 505 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 box. Restart the installation and install at least the Base system.

5.4. Troubleshooting destination drive error messages

Depending on the current destination drive setting and your computer configuration, you may be notified with any of the following messages.

CD-ROM drive as destination

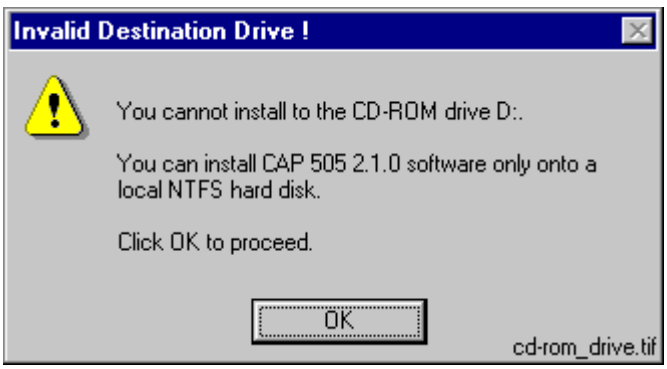

Fig. 5.4.-1 You cannot install to a CD-ROM drive

Non-NTFS drive as destination

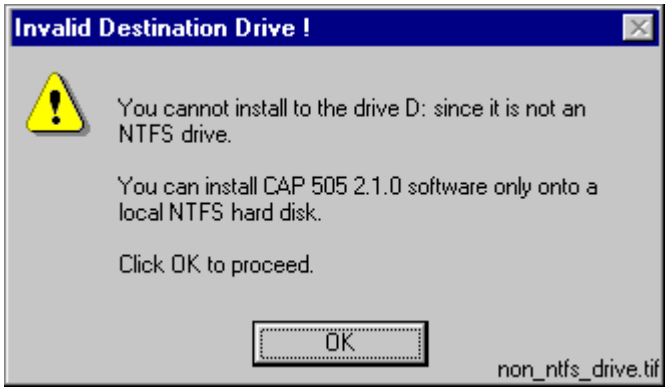

Fig. 5.4.-2 You cannot install to a non-NTFS drive

Network drive as destination

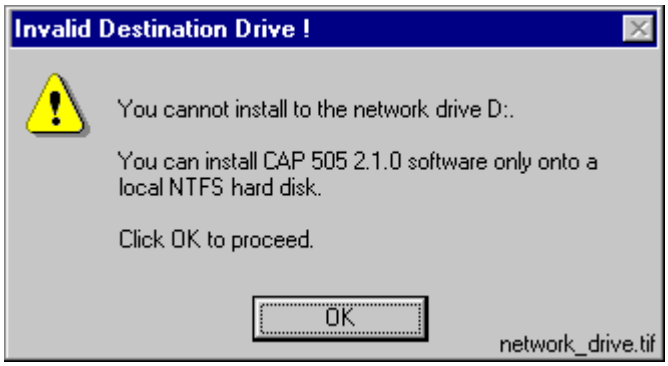

Fig. 5.4.-3 You cannot install to a network drive

Removable media drive as destination

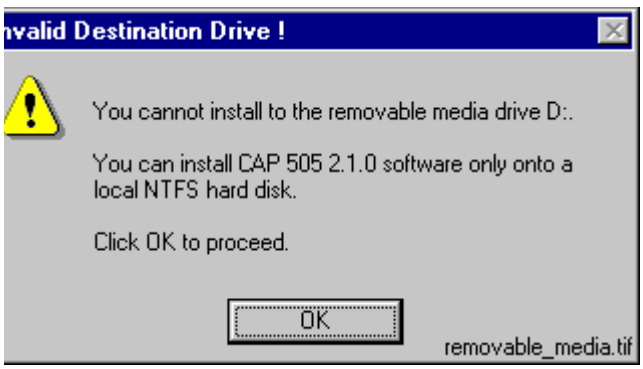

Fig. 5.4.-4 You cannot install to a removable media drive

Virtual drive as destination

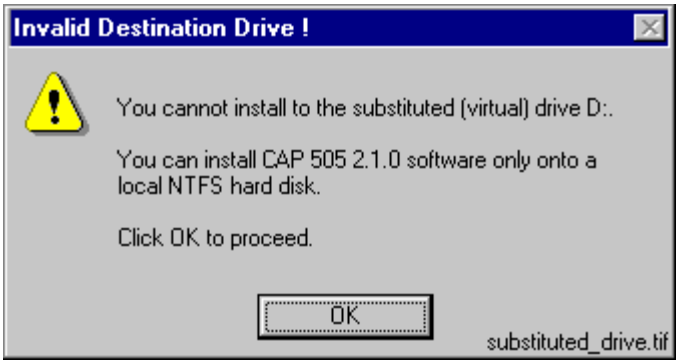

Fig. 5.4.-5 You cannot install to a virtual (substituted) drive

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

5.5. Insufficient disk space

Provided, that the selected destination drive does not contain sufficient free disk space the installation displays the dialog box shown in figure 5.5.-1.

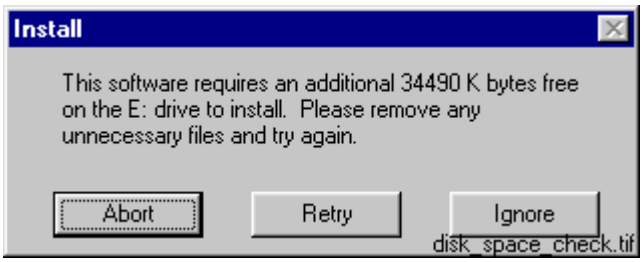

Fig. 5.5.-1 Insufficient disk space to install

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 redisplays this dialog box 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.

5.6. No suitable destination drive available

If your computer does not contain any drives formatted to NTFS and you have not installed CAP 505 v. 2.0.0 or above before, the installation displays the message shown in figure 5.6.-1.

Fig. 5.6.-1 No suitable destination drive available for installation

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

In order to install CAP 505, you must format a drive to NTFS. You should use the operating system's tools, for example, the Windows NT's Disk Administrator, to accomplish the task.

5.7. Incompatible SYS 500 and/or COM 500 installed

During the start-up of the installation, you may see the notification displayed in figure 5.7.-1.

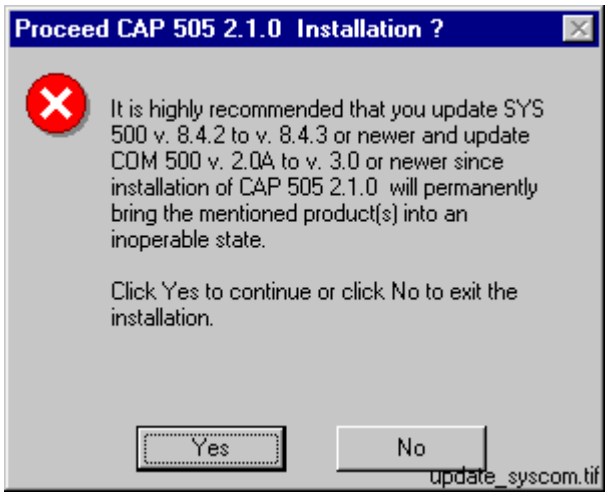

Fig. 5.7.-1 Product upgrades will be required if CAP 505 is installed

As stated, the old versions of SYS 500 and COM 500 cannot be used if you install CAP 505. If you are unsure about installing CAP 505 click No to exit the installation, otherwise click Yes to continue with the installation.

Note! Provided, that you choose to install CAP 505, remember that the SYS 500 and COM 500 must be updated to the respective versions stated in the message, before you can continue using those products.

5.8. Miscellaneous

5.8.1. 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 505 in order to guarantee correct installation of CAP 505.

5.8.2. TEMP environment variable

Notice that the TEMP environment variable must be defined on your computer and its content must reference an existing directory on the computer.

Index

Page

L

M

T

U

Customer Feedback

About This Chapter

This chapter contains information on how to send customer feedback.

Customer Feedback Database

Customer Feedback is a Lotus Notes database which ABB companies can use to report errors, make improvement proposals and queries related to products manufactured by ABB Substation Automation Oy. The Customer Feedback database is connected to the change management system of ABB Substation Automation Oy, which handles all error corrections and improvements, made to the products.

Please note that the Customer Feedback database is primarily intended for writing reports about released products. If you are using for example a beta release in a pilot project, this should be clearly stated.

Writing A Customer Feedback Report

When writing a Customer Feedback report the following general instructions should be taken into consideration:

- Write the report in English.
- Write only one error report, query or improvement proposal in a Customer Feedback Report.
- If you are reporting an error, try to isolate the error as good as possible. Describe the sequence of events and actions causing the error. If any error messages or other debug information is provided by the system, please write it down. Include also information of the system, e.g. a system diagram, revision information and configuration data.
- If you are making an improvement proposal, try to describe how the improved function should work. Avoid providing solutions. Information about the importance of the improvement, e.g. number of projects that require the improvement, helps us to make the decision whether and when the improvement should be implemented.

To make a Customer Feedback Report, select Feedback Report from the Create menu. This opens an empty Customer Feedback document. Fill out the fields listed below. A question mark next to a field provides help for filling out the field.

1 Subject. This should contain a short description of the issue. A more detailed description can be given in the Description of Feedback field below.

2 Type of Feedback: Comment/Improvement, Query or Complaint/Error.

3 Customer Information.

4 Reporting Information. This should contain detailed information about the product that is handled in the report.

5 The person who you want to send the feedback to and whether you want to get a reply from that person or not.

6 Information related to internal handling of the report (not obligatory).

7 Category.

You can issue the report by clicking the Issue Feedback button. This will send the report to the selected person and change its status to “in progress”.

Actions

When ABB Substation Automation Oy receives a Customer Feedback report it is analysed by a sales person or a representative of the technical support. The analyser may ask for additional information in order to complete the analysis. After the report has been analysed, the following actions are taken:

- In case of a clear error the report is moved to the change management system of ABB Substation Automation Oy. In this system the error is analysed in detail and corrected in a future patch release or major release depending on the severity and impact of the error.
- In case of an improvement proposal the report is also moved to the change management system where it is considered as a requirement for future releases.
- In case of a query an answer is provided.

When Customer Feedback reports are handled in the change management system, the outcome can be one of the following:

No Actions	This means that it is decided that the report requires no further action. If for example the problem is caused by a configuration error, it belongs to this category.
Will be implemented in patch/current release	This means that the correction or new feature will be available in the next official program release.
Moved to future release	This means that the new feature will be available in a new program release in the near future.