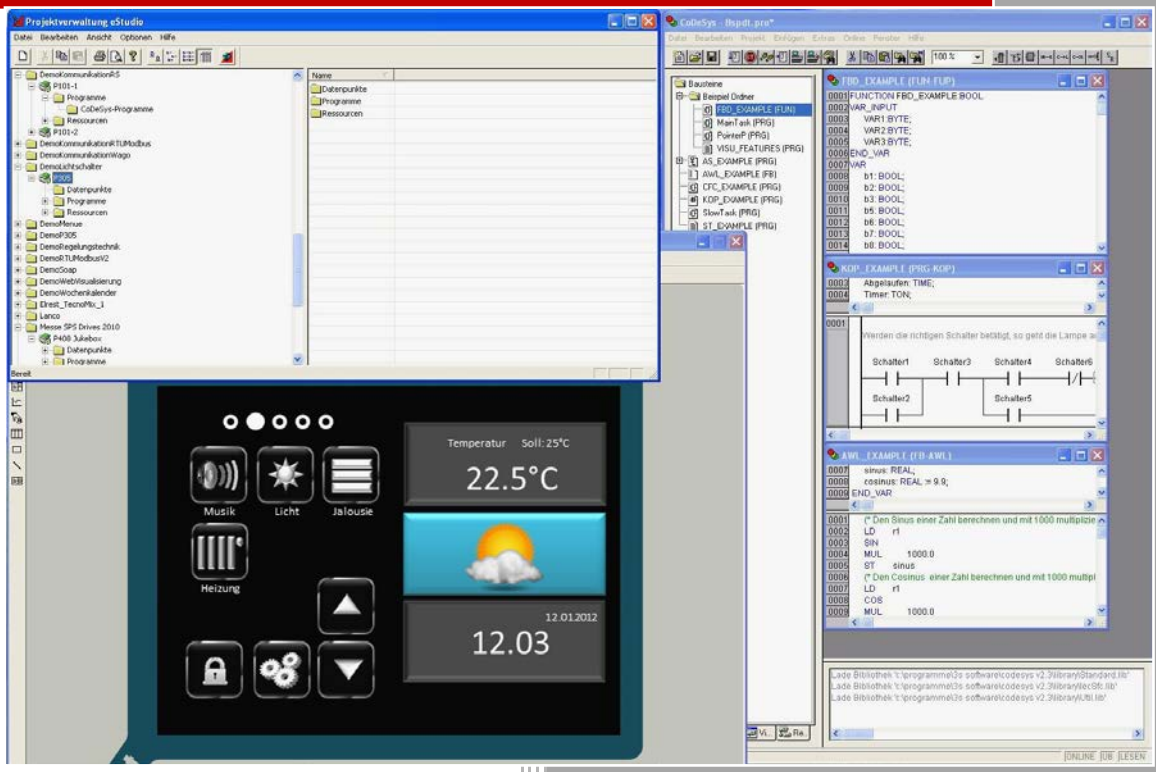
Platform CE-devices
eStudio Version 2.91



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Content

Content 2

1 How to use CE-devices 6

1.1 Panel Configurations Tool (PaCo) 6

1.1.1 General 6

1.1.2 Watchdog 7

1.1.3 Auto start 8

1.1.4 User admimistration 8

1.1.5 FTP 9

1.1.6 http 9

1.1.7 RAS 9

1.1.8 Advanced 9

1.2 Initalisation of the datapoints (CoDeSys) 11

1.3 Initalisation of the datapoints (eStudio) 12

1.3.1 Constant Value in eStudio 12

1.3.2 In persist file stored (PERSTENT) with eStudio 13

1.3.3 Batterie buffered values (RETAIN) with eStudio 14

1.4 Use the device internal EEprom‘s 15

1.4.1 EEprom.bin: Verwendung in CoDeSys 16

1.5 Boot the system 17

1.5.1 Startup Procedures: Overview 17

1.5.2 Start of batch files at device start 18

1.5.3 Startup of Windows CE applications 18

1.5.4 Update functionality in devices starting 18

1.5.5 Start the PLC runtime system 19

1.5.6 Starting application from CF-card 19

1.6 Network configuration 21

1.7 Update the devices 22

1.7.1 Update the runtime 22

1.7.2 Update the runtime with the SD/CF-card/USB-Medien 24

1.7.3 Update der Geräte-Registry 26

1.7.4 Update the runtime with CF-Telnet 27

1.7.5 Update the runtime from CoDeSys 29

1.7.6 Update device files 30

1.7.7 Update the Windows CE© operating system 31

1.7.8 Update FPGA 31
1.8 Remote maintenance with Microsoft Tools 31
1.8.1 Sysadmin 31
1.8.2 RemoteAdmin 34
1.9 Remote maintenance with Telnet 36
1.9.1 General to Telnet 36
1.9.2 Telnet command: help 38
1.9.3 Telnet command: state 39
1.9.4 Telnet command: date 39
1.9.5 Telnet command: stepper 40
1.9.6 Telnet command: analog 40
1.9.7 Telnet command: digital 41
1.9.8 Telnet command: option 43
1.9.9 Telnet command: save 45
1.9.10 Telnet command: load 46
1.9.11 Telnet command: rs232 47
1.9.12 Telnet command: can 47
1.9.13 Telnet command: profibus 51
1.9.14 Telnet command: setdef 53
1.9.15 Telnet command: password 53
1.9.16 Telnet command: setmod 54
1.9.17 Telnet command: setip 54
1.9.18 Telnet command: subnet 56
1.9.19 Telnet command: gateway 56
1.9.20 Telnet command: setdhcp 57
1.9.21 Telnet command: cf 57
1.9.22 Telnet command: threats 58
1.9.23 Telnet command: reset 61
1.9.24 Telnet command: restart 61
1.10 Application 62
1.10.1 Start an Application 62
1.10.2 Terminate an Application 62
1.11 Data Exchange 63
1.11.1 Establish an AutoScan-Connection 63
1.11.2 Establish a ftp-connection 63

1.11.3 Establish a telnet-connection 63
1.11.4 Establish a VNC-connection 63
1.11.5 Web-visualization 64
1.12 Operating system settings 66
1.12.1 Memory allocation 66
1.12.2 Calibration of the Touch 68
1.13 Preemptive multitasking 69
1.13.1 Task configuration 69
1.13.2 Description of the task's 71
1.13.3 Recommended Task configuration 74
1.13.4 Task configuration in the undisturbed operation 76
1.13.5 Task configuration with realtime error 76
1.13.6 Interrupt from Task’s 76
1.14 Multi Languages 78
1.14.1 Configuration of the Keypads 78
1.14.2 Configuring its self-created keypad layouts 78
1.14.3 Configuring the language selection 81
1.14.4 Language dependent font selection 82
1.14.5 Configuring different languages 83
1.14.6 Download the languages text and the keypads 84
1.14.7 Import / export from languages 85
1.15 Recipe 86
1.15.1 Create of recipe 86
1.15.2 Load and save recipes 87
1.16 Alarms 89
1.16.1 Create alarm definitions 89
2 Communication 91
2.1 ActiveSync and mobile device center 91
2.2 Modem connection 91
2.2.1 RAS (Remote Access Service) 91
2.2.2 Remote maintenance via modem 95
2.2.3 VPN-connection 117
2.2.4 Direct-connection on the serial interface (Null-Modem-Cabel) 127
2.3 RS232 143
2.3.1 Low-Level RS232 or RS485 143

2.3.2 RTU-Modbus over RS232 or RS485 143
2.4 CAN 143
2.4.1 Low-Level CAN 143
2.4.2 CANopen from 3S 144
2.4.3 Change under 3S control configuration 144
3 Visualization 146
3.1 Visualization with ElaDesign 146
3.2 Visualization with CoDeSys 3S Target-Visu 146
3.2.1 Runtime 146
3.2.2 Development Envirement 146
3.2.3 WEB-Server 148
4 Application 149
4.1 Voice- and sound output 149
4.2 Rotate the screen 149
4.3 VNC enable 150
4.4 Starting applications 151
4.4.1 Internet Explorer 151
4.4.2 PDF Viewer 151
4.4.3 PaCo 152
5 Support 153
6 History 153

1 How to use CE-devices

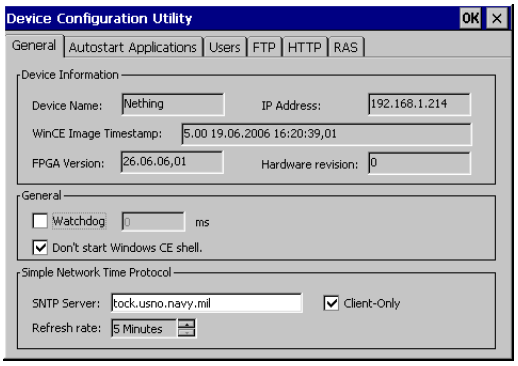
The following interfaces from CE-devices will be supported by elrest:

dvi	Digital interface to terminal
VGA	Analog interface to terminal
USB	Interface to all peripheral devices like USB-stick, keyboard, mouse, printer and so on
RS 232 / RS 485	Serial interfaces RS232 and/or RS485. These interfaces can be used with all UART protocols or the still implemented protocol RTU-Modbus.
CAN	Open field bus interface to all CAN protocols, like Truck-Norm J1939-based.
CANopen	CANopen is a popular Layer7 protocol for the automation.
ESB	elrest Systembus, a CAN based self configure system bus.
Ethernet	TCP-Modbus as UDP or TCP can be used for Ethernet. Other protocols can be implemented with the socket functions.

1.1 Panel Configurations Tool (PaCo)

1.1.1 General

Start ➔ Programs ➔ Utilities ➔Panel Configuration



General

field 1: DEVICE INFORMATION

- Information above the device.
  Please keep ready this information in the case of contacting our support.

field 2: GENERAL

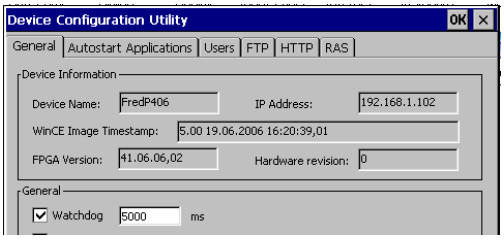
- Watchdog
- Don't start Windows CE© Shell
  If activated, the Windows CE© can not be called.
  If the application runs, the taskbar will no longer display.
  CAUTION: use input fields, so when you click on the field the keyboard input will not support anymore.

- A boot without your application looks like this:
  retreating of this option:
  Press the service switch you can recall the Windows – Shell.

field 3: Simple Network Time protocol

In an existing internet connection the system clock will be synchronized in adjustable intervals.

1.1.2 Watchdog



It is generally divided into:

- Hardware Watchdog
- Software watchdog (e.g. Watchdog in Codesys)

<u>The visionary P4xx has a hardware watchdog:</u>

This is implemented in the FPGA. To activate or to refresh the time in 10ms is written to a register of the FPGA.

The settings for the watchdog to be made in the panel configuration.

The settings in the registry under the key HKEY_LOCAL_MACHINE \ Drivers \ BuiltIn \ watchdog ' in the entries, IsEnabled 'and' timeout 'saved.

If the option is enabled and a value> 0 then set the watchdog is activated by ElaDesign in Ob0. At this point, the same is also the refresh of the watchdog. If this is not within the specified time, the panel will be restarted. The settings are taken only once at the start of ElaDesign.

When you exit the ElaDesign watchdog will be disabled.

<u>The visionary P2xx has a software watchdog:</u>

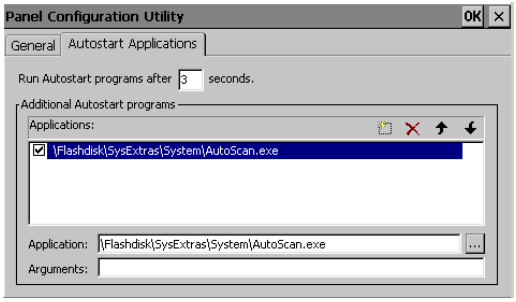
The Windows CE kernel resets the Prozessor-Watchdog in a Watchdog-Thread back. This thread has a CE-priority of 100.

The watchdog is not reset, so after 16 seconds a reset is triggered, i.e. the device restarts.

So the watchdog reset is triggered only when an error in a program with a higher priority (i.e. , less than 100) occurs.

1.1.3 Auto start

Integration of files, which after the boot should be started.



Tipp

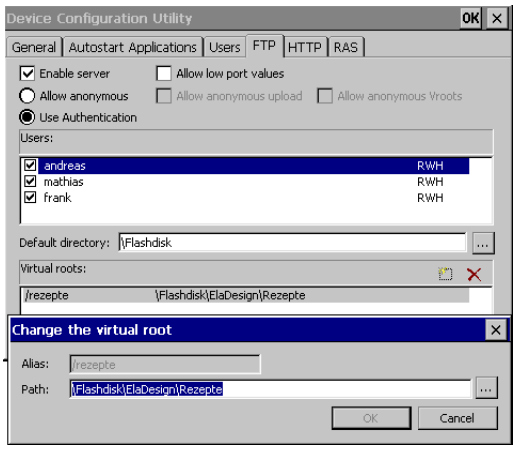
Adjust all starting application programs. The order in the list is the order of calling the programs.
The first entry should be autoscan.exe for supporting the eStudio auto scan functionality.

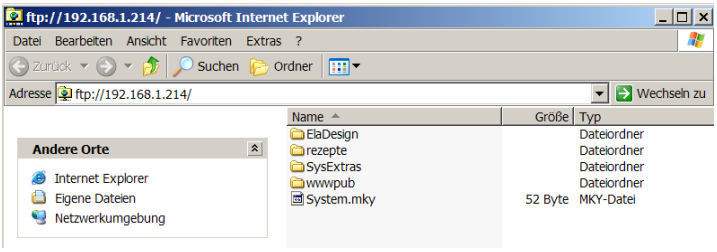
1.1.4 User admimistration

With the Panel Configuration all ftp-users, rights awarded and directories are assigned.
The menus are self-explanatory.
The following points should be explained in detail:

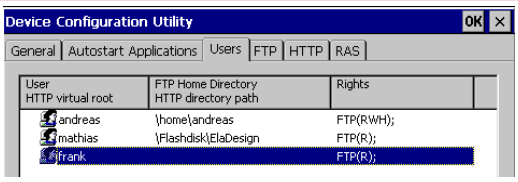
Home Directory: the user starts downwards. The access of directories above is impossible.

Virtual Roots: a directory from another tree can be merged to the home directory. You have access to this directory and all following.

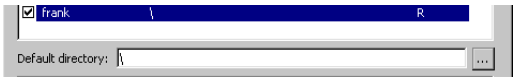




If no home directory is selected, the user has full access to the panel despite write rights.



Be aware, the home directoy must have at least one backslash.



1.1.5 FTP

See user administration.

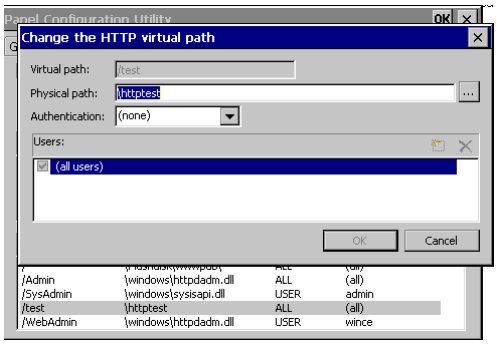
1.1.6 http

Release the directories for the http web server

Application sample:

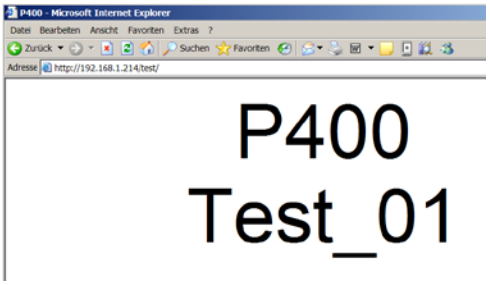
A directory \httptest was created on the flashdisk.

In this directory a web side index.htm was created.



Configuration from this samples:

Access to the web browser:



1.1.7 RAS

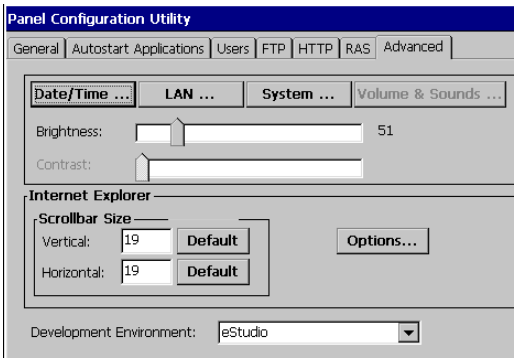
See chapter RAS

1.1.8 Advanced

The tab „Advanced“ is the system button for windows presetting.

Brightness:

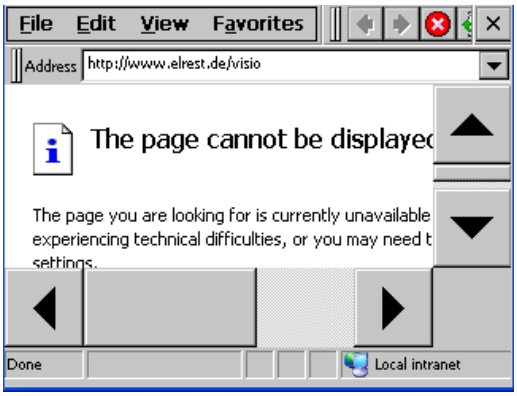
- Strength of the backlight



Internet Explorer

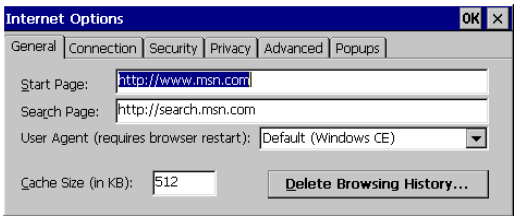
An indication of the scroll bar width options:

In the example value 50-50 in place of Default 19/19



Options...

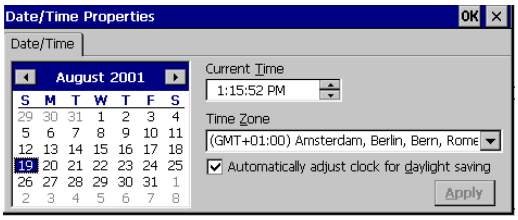
Adjustments of the Internet- Explorers



Date/Time

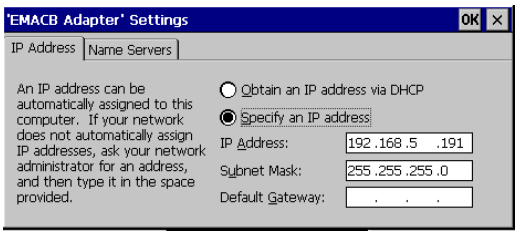
Adjustment of

- Date
- Time
- Time zone



LAN

- Specify the IP- address and subnet mask
- Obtain the DHCP
- Specifiy the Domain Name Servern (DNS)
- WINS



System

- Display the system informations

Memory

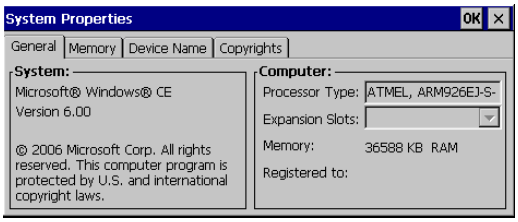
- RAM - Adjustments between flashdisk file system or program memory strorage of the runtime.
- Only the unused storage can be adjusted.

Device Name

- Specify the device name and descripe the name of the device in the network.

Copyright

- Specify the Rights.



Volume and Sound

(not on all CE-devices available)

Adjustments of loudness, keyboard an touch beeper.

The upper adjustments can also under telnet or the CoDeSys application adjust. See telnet setting.

1.2 Initalisation of the datapoints (CoDeSys)

Initalisation, see CoDeSys manual:

- Retain variables are identified by the keyword RETAIN. These variables maintain their value even after an uncontrolled shutdown of the controller as well as after a normal switch off and on of the controller (corresponding to command 'Online' 'Reset'). When the program is run again, the stored values will be processed further. A concrete example would be a piece-counter in a production line, which recommences counting after a power failure. All other variables are newly initialized, either with their initialized values or with the standard initializations.
  However, be retain variables in 'Reset cold', 'Reset Origin' and - in contrast to persistent variables - in the case of a re-download re-initialized.
- Persistent variables are identified by the keyword PERSISTENT. Unlike Retain variables, these variables retain their value only after a re-Download, but not after an 'Online' 'Reset', 'Online' 'Reset (original)' or 'Online' 'Reset (cold)', because they are not saved in the "retain area". If also persistent variables should maintain their values after an uncontrolled shutdown of the controller, then they have to be declared additionally as VAR RETAIN variables. A concrete example of "persistent Retain-Variables" would be an operations timer that recommences timing after a power failure.

x = value will be retained - = value gets reinitialized

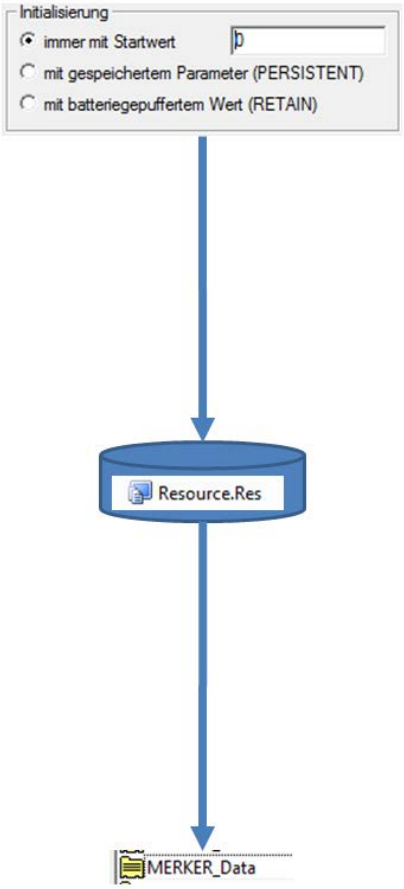
after Online-command	VAR	VAR RETAIN	VAR PERSISTENT	VAR RETAIN PERSISTENT VAR PERSISTENT RETAIN
Reset	-	x	-	x
Reset cold	-	-	-	-
Reset origin	-	-	-	-
Laden (=Download)	-	-	x	x
Online Change	x	x	x	x

The behavior from CoDeSys is not identical with the behavior from eStudio. We distinguish the following chapter Constant, PERSTENT and RETAIN.

1.3 Initalisation of the datapoints (eStudio)

1.3.1 Constant Value in eStudio

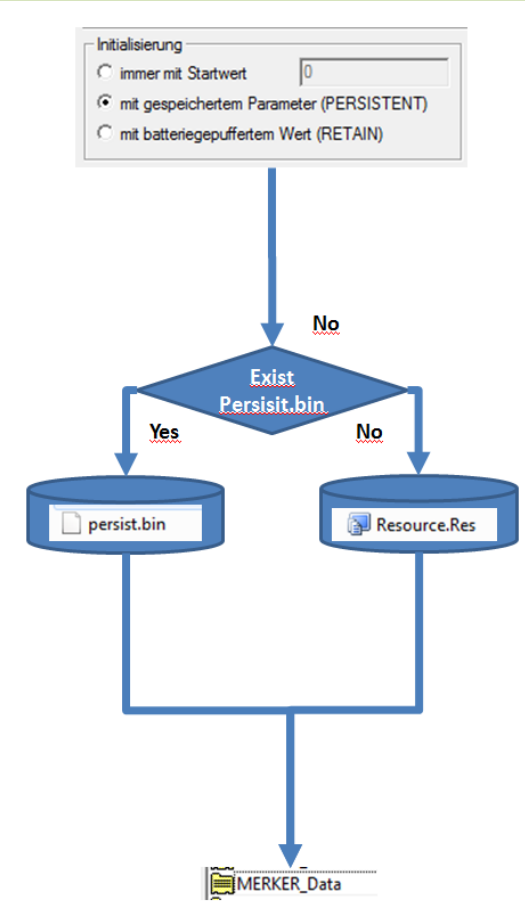
However retain variables are in 'Cold reset', 'Reset origin' and - re-initialized after a new program download - as opposed to persistent variables.



1.3.2 In persist file stored (PERSTENT) with eStudio

If the persist.bin file exists, and at least the persit file has once stored all datapoints, then all datapoints will be initialized with this stored value at each power up.

If not, and if the resource.res file exists, all datapoints will be initialized with this start value at each power up.



Before every firmware download, store the file persit.bin and erase this file afterwards.

You can store the file persist.bin:

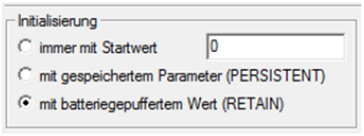
- with the CoDeSys function FwSave(SAVE_PERSIST_BIN); from the library sFWxx.lib
- or with the telnet “save” command.
- with the datapoint „SaveParameter“

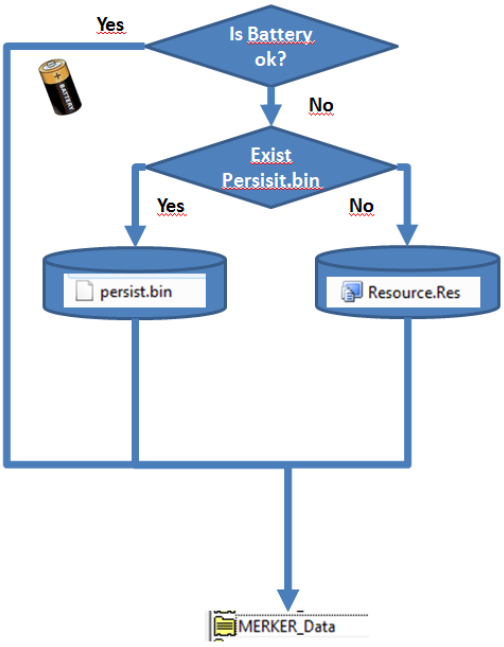
1.3.3 Batterie buffered values (RETAIN) with eStudio

If the SRAM works correct, the values are stored by batterie buffered sram. The correct behavior of these values depends on the state of the battery and a checksum from the sram.

If this does not exist, but the file persist.bin exists, and at least the persit file has once stored all datapoints, then all datapoints will be initialized with this stored value at each power up.

If not, and if the resource.res file exists, all datapoints will be initialized with this start value at each power up

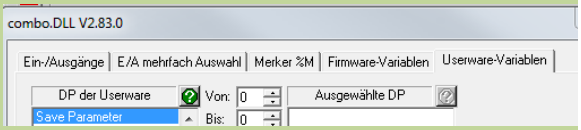




Before every firmware download, store the file persit.bin and erase this file afterwards.

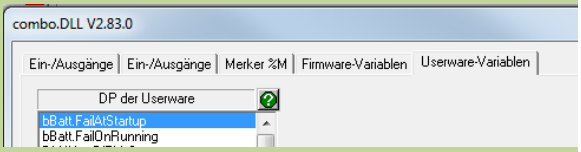
You can store the file persist.bin:

- with the CoDeSys function FwSave(SAVE_PERSIST_BIN); from the library sFWxx.lib
- or with the telnet “save” command.
- with the datapoint „SaveParameter“



The state of the battery can be checked

- with the datapoint:



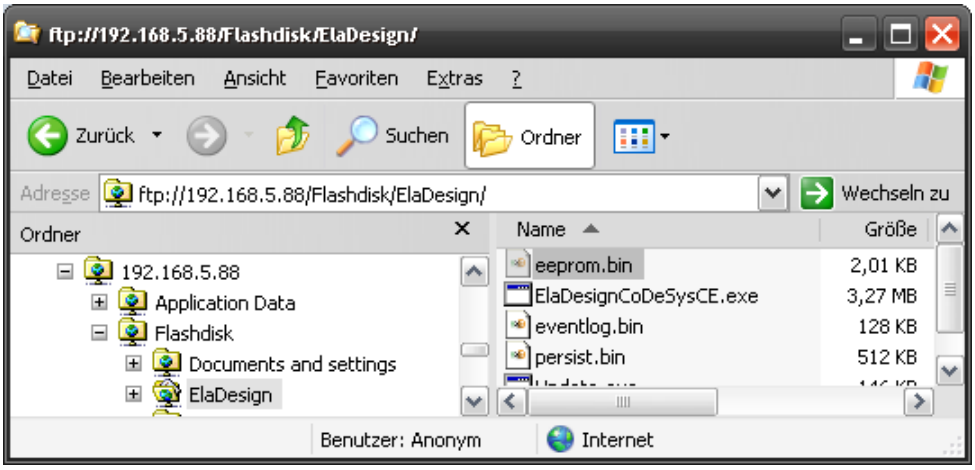
- In CoDeSys with the sUW struct. There ist the element:
  psUW^.bBatterieFailedAtStartup
  psUW^. bBatterieFailedOnRunning

  See details in sUWxx_GB.pdf.

1.4 Use the device internal EEprom‘s

	Data in the EEPROM may be written up to 100,000 times

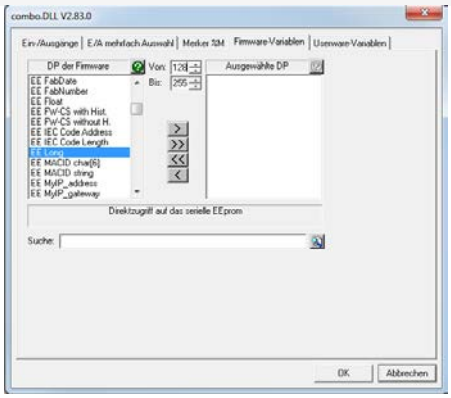
Each device has a large 2 Kbytes EEPROM file. These can be viewed under ftp / copied. For security purposes, you can save this file to a device of a serial number on the PC.



Of these, 2 Kbytes are only **512 bytes** for application-specific data free. The data can only be stored in format DWORD or REAL These data types have a size of four bytes, so *maximum 128* variables of type **DWORD** or **REAL** can be stored.

To access of these values the following optionsare given:

- In eStudio can dialog, **data points firmware** variables can be created.



- In the field **DP firmware** can **'EE' data types long** (ie DWORD) or **EE float** (ie REAL) is selected.
- Using the control elements of 'and' through the variable index can only be given in the region of 128-255 .About the control field “>”the data points will be created.

1.4.1 EEprom.bin: Verwendung in CoDeSys

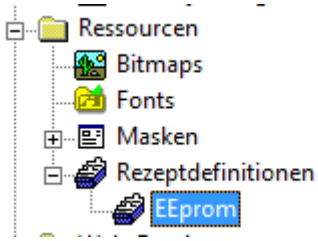
May, within CoDeSys SFW it can be accessed directly to the data

Note: aUserFreeSpace[ ] is from Typ WORD, because of this the Word-Index [256] corresponds to the DWORD-Index [128], from which the EEPROM data are starting.

ST

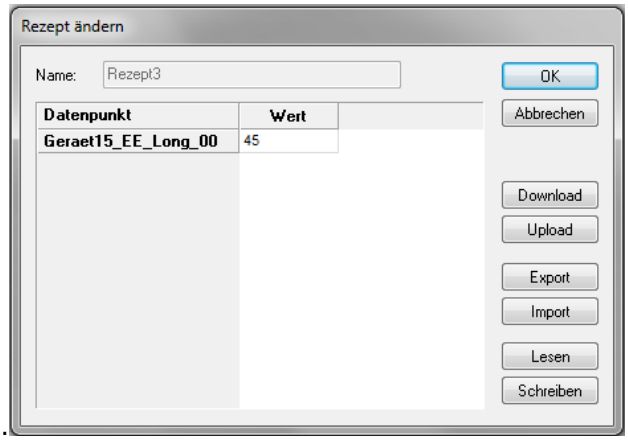
```
VAR
   psFW           : POINTER TO sFW;                    (* Zeiger auf sFW *)
   pEepromDword   : POINTER TO ARRAY [0..127] OF DWORD; (* Zeiger auf eeprom
*)
END_VAR

(* Programm *)
psFW        := FwGetStructPointer (TRUE); (* Zeiger auf sFW *)
pEepromDword:= ADR (psFW^.uRemanent.sUserEEprom.aUserFreeSpace[256]);
pEepromDword^[1]  := 16#12345678; (* Schreibender Zugriff *)
```

If you want to copy the EEPROM data into the project, you can create a recipe:



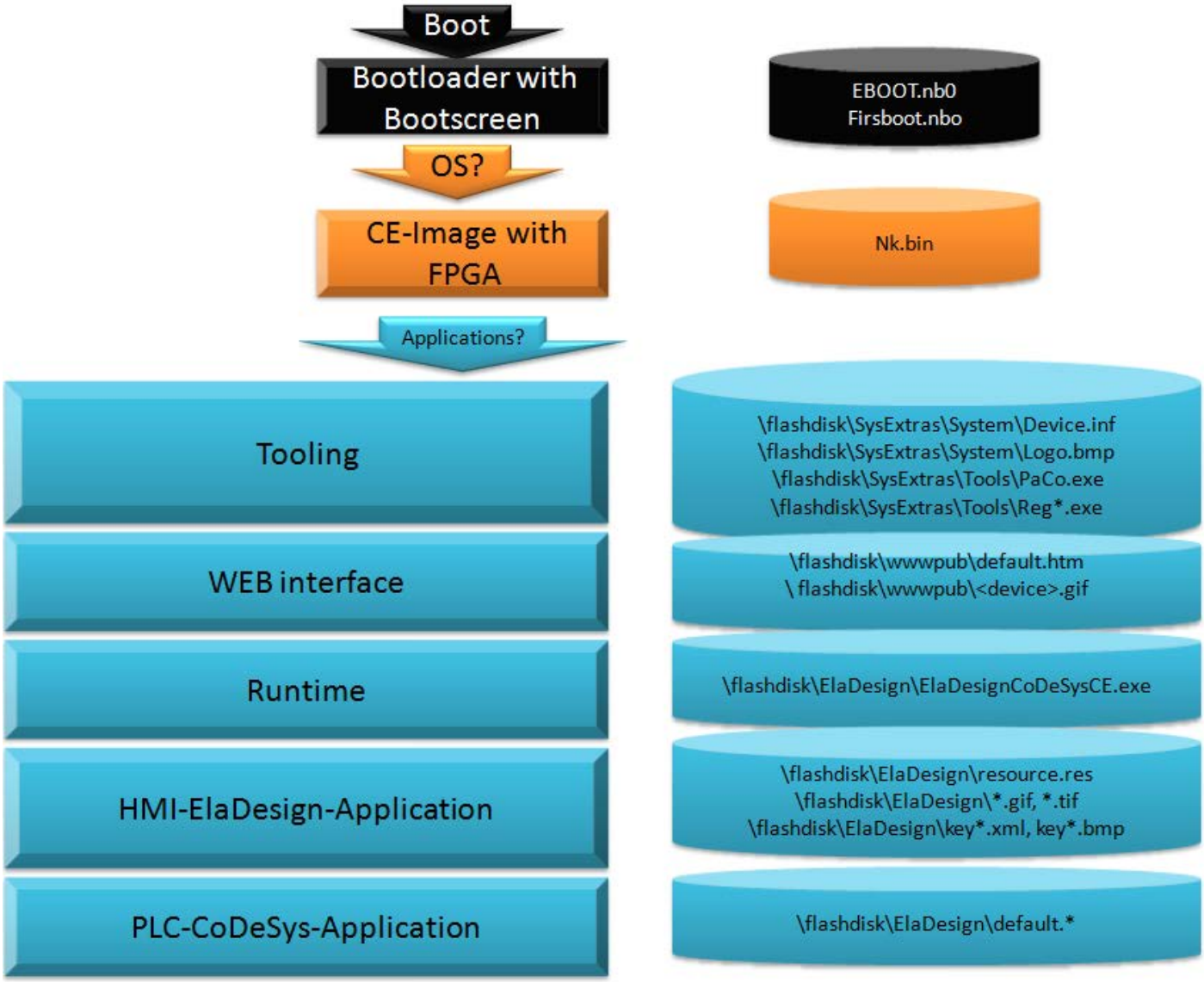
All configured EEPROM values can be copied by pressing the "READ" key and transmitted with the WRITE key "to another device.

„.



1.5 Boot the system

After power up comes for app. 10 seconds the boot screen.



Which of the possible applications should be started, can be configured in the panel (Paco)

1.5.1 Startup Procedures: Overview

The devices are equipped on startup about various auto startup mechanisms.

- The o Start of batch files
- launch of Windows CE applications (configurable via configuration tool "Paco"
- Start of an update procedure to update device software from external data sources.

1.5.2 Start of batch files at device start

When you start Windows CE, if available, the following batch files are executed (in this order):

- *On a USB flash drive: \ Memory Stick \ ElaAutostart.bat*
- *On the device: \ Flash Disk \ SysExtras \ Startup batch \ startup.bat*

1.5.3 Startup of Windows CE applications

After the start of Windows CE a button appears on the desktop, with this can be interrupted the startup procedure. This termination is possible only for a certain configurable period of time, a second counter counts backwards. Then the configured applications will be started.

This startup procedure can be configured by the configuration tool elrest , named "Paco".

Here can be set the application to be started and the time duration for the demolition switching field

With duration of 0 seconds, the user has no possibility to interrupt the startup procedure at the device start

Here, and in the factory settings are usually the following applications configured and should normally not be disabled.

- Autoscan.exe
  is responsible that the device from eStudio can be found via autoscan if the runtime is not running.
- ElaDesignCoDeSys.exe
  The actual application runtime. Maybe the name of the file can be varied by device or type of use

1.5.4 Update functionality in devices starting

When you start Windows CE it will be searched for a previously created backup.

Updates are performed (in order) to the external USB keys and (if supported by the device) of CF card.

Details of the backup / update functionality see the chapter "Update the Device".

1.5.5 Start the PLC runtime system

The PLC runtime system will be started by a startup item (in the Paco tool, see above).

Depending upon the device, the following run-time applications are available:

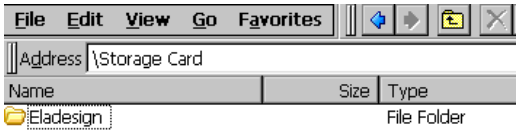
- ElaDesignCoDeSysCE.exe:
  elrest HMI and CoDeSys PLC run-time environment.
- ElaDesignCE.exe:.
  elrest HM, this is a pure Visio panel without PLC. A programming can be here with C / C + + optionally done
- PLC_CE_RT.exe
  HMI / CoDeSys runtime environment of the Wago-derivatives (Control Panel / CP)
- CE_RT.exe
  HMI runtime environment of the Wago-derivatives (VisuPanel / VP
- PLCCEARM.exe
  Target visualization / CoDeSys runtime environment CoDeSys V2.3
- P4xx_V3.exe
  TargetVisualisierung / CoDeSys- runtime environment CoDeSys V3
  the programming

1.5.6 Starting application from CF-card

The requirements are still increasing. If the storage space of the internal flashdisk is not large enough, then the application can change to the external CF/SD card.

Plug in an CF card an create an new folder : “Eladesign”

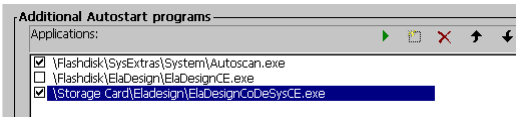
Don’t use a different name. Some services like visioweb need this absolute path.



Copy all file from your project from : \Flashdisk\Eladesign
to \Storage Card\Eladesign\

or in case of a new project, just copy the runtime (ElaDesignCoDeSysCE.exe) to this folder.

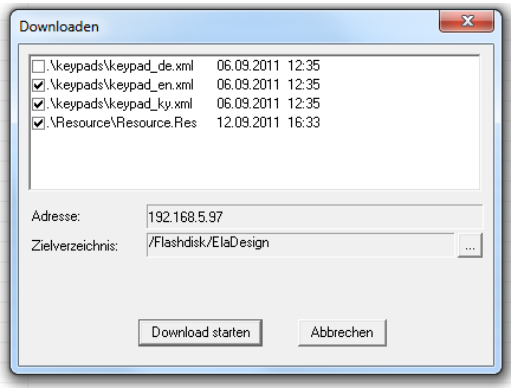
Cange in PaCo the directory.



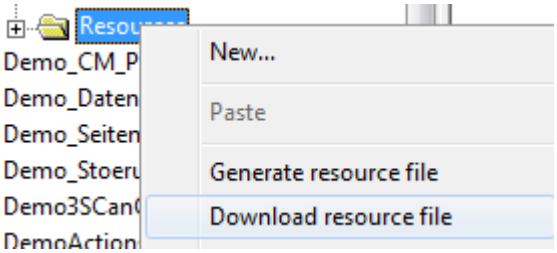
If you have copied the complete project, your are ready. With the next starting of the system the application will be started from CF card.

Change in eStudio

Change the target directory to the new working directory.

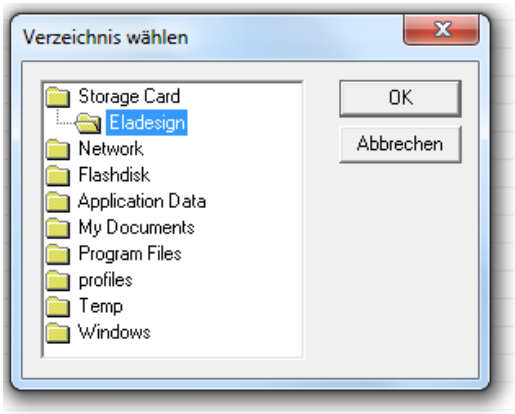


Select



„Download resource file“.

Change now the target directory to:



Start the download of the resource file.

If you still starting the runtime from the internal flashdisk a CF card ist plugged with the resource file, then this primarly started.

If you want to start the application from the internal storage, just unplug the CF card and the system will start from \Flashdisk\Eladesign\

Spaces in the name from directories are supported under CoDeSys.

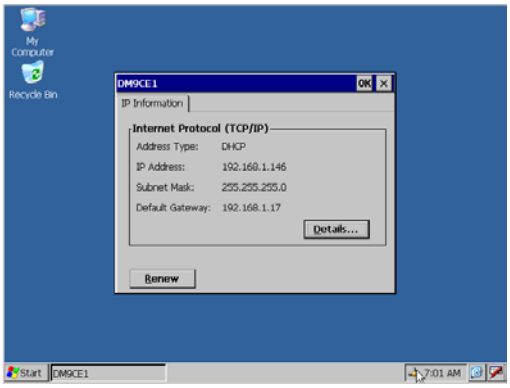
ST

```
sDirName       :STRING:='/Storage Card/'; (* CF- card *)
sDirNameUSB    :STRING:='/Memory Stick/'  (* USB-stick *)
sDirNameFlash  :STRING:='/flashdisk/Eladesign/'; (* internal flash *)
```

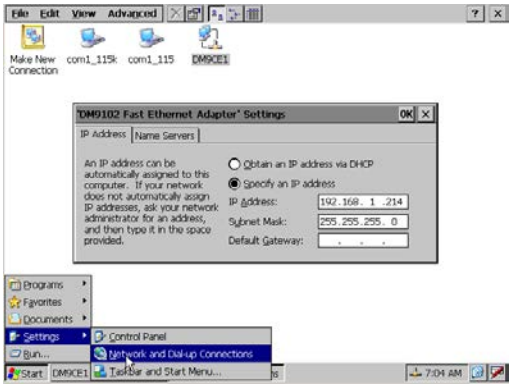
1.6 Network configuration

Check the IP- Adresse:

Click in the task bar to the network symbol.



Change the IP- address:



In PaCo:

Start ➔ Setting ➔ PaCo,

or

Start ➔ Settings ➔ Network and Dial-Up Connections ➔ DM9CE1

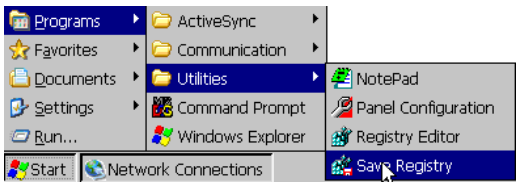
right mouse click Properties

Confirm with [OK]

Save the (System-) Settings:

Start ➔ Programs ➔ Utilities ➔Save Registry

confirm with OK.



If the settings are not saved in the registry, the next startup comes up with the old settings.

When Exit of PaCo a dialog for saving appears.

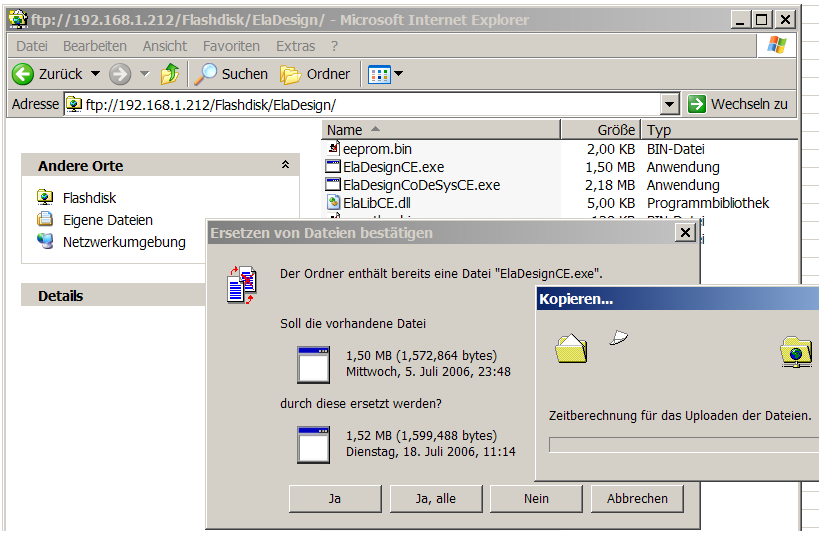
1.7 Update the devices

1.7.1 Update the runtime

Select the files for the update carefully and use only the files that are to be actually updated!

Copy the new runtime file to the directory Flashdisk\Eladesign\

Exit the runtime before copying.

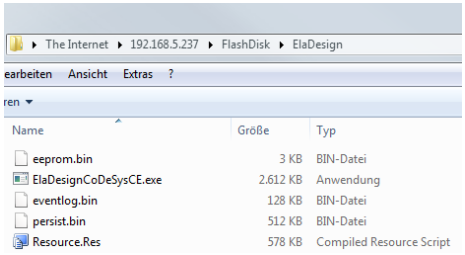


Tipp

On different updates the firmware struct can be changed. If you want start from default, just delete the file eeprom.bin.
The runtime will create a new eeprom.bin with default values at startup.

To avoid losing data produce them in any case, a backup copy of all in the ElaDesign directory the files. For example, in the file eeprom.bin etc. telnet and ESB - deposited settings.

The following files should be copied with ftp:



- **eeprom.bin**
  see chapter eeprom.

- **eventlog.bin**
  In this file all alarm and event messages are stored.
  If you need this information, copy this file.

- **ElaDesignCoDeSysCE.exe**
  This file must be copied.

- **DEFAULT.PRG**
  If you want copy the CoDeSys application, also the file **DEFAULT.CHK** must be copied.

- **persit.bin**
  In this file all MARKER (%M) datapoints independent of CONSTANT, RETAIN oder PERSIT setting will be stored.
  To store the datas, use the following CoDeSys code lines:
  psUW := UwGetStructPointer(FALSE);
  M5_PERSIST := M5_PERSIST + 1;
  psUW^.nSaveParameter := 1;
  To be sure, that the file will be stored, at least one PERSIT datapoint must be changed.

- **Resource.res**
  This file is from resgen generated with all visualization elements.
  HINT: some picture files like BMP 24 color, JPEG and GIF are not included.

1.7.2 Update the runtime with the SD/CF-card/USB-Medien

1.7.2.1 Overview

To prepare for the update, copy the files to upgrade to an external storage medium in the directory*:*
CCopy the files from the following directories

„\Control\<Geräteart>\Update\ElaDesign\“ to the CompactFlash card:

<Device type> corresponds to the device type of the panel as **visio_P408** (see either eStudio dialog Modify / device settings or Telnet> command state).

visio P2xx supports here USB devices and SD cards, visio P4xx CF cards and USB media.

It can either be updated the following files:

- ElaDesignCE.exe ElaDesign-runtime
- ElaDesignCoDeSysCE.exe ElaDesign/CoDeSys-runtime
- ElaLibCE.dll program library for the ElaDesign-runtime
- default.* CoDeSys- program files
- eeprom.bin setting of the ElaDesign-runtime
- eventlog.bin event list
- persist.bin persist datas
- resource.res resource
- keypad*.xml keypad-files
- *.rec recipies

Ab der CustomInitUtils.dll-Version V1.65.0.0 können hier sämtliche Dateien im Verzeichnis \Eladesign sowie bis zu 50 darin enthaltene Unterverzeichnisse aktualisiert werden.

From the CustomInitUtils.dll version V1.65.0.0 can all files in the \ Eladesign and up to 50 contained sub-directories be updated

Außerdem kann die Geräte-Registry aktualisiert werden. Weitere Informationen hierzu siehe Abschnitt ‚Update der Geräteregistry’.

In addition, the device registry can be updated. For further information, see the section, update the device registry’

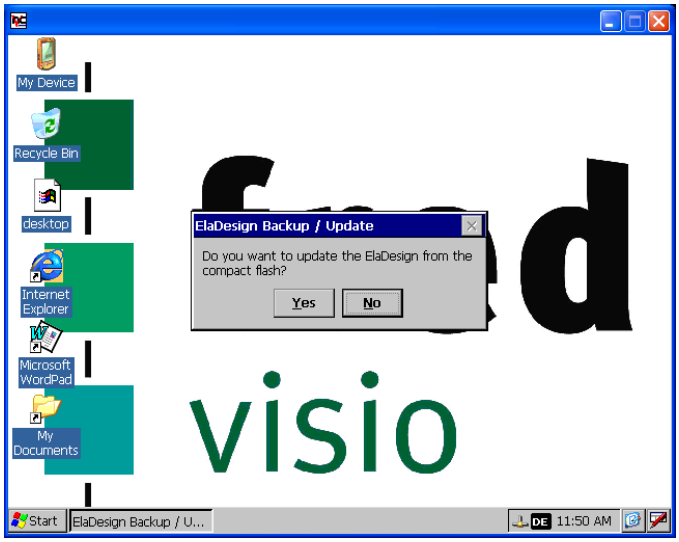
1.7.2.2 Realization des Updates

Insert the Compact Flash card or USB storage device into the slot on the panel and then start the panel. After the launch of Windows CE © following window appears:

If you confirm with “YES” a backup to „\Control\< type of device >\Backup\ElaDesign

If you continue with 'yes' will be first a backup of all runtime-files in the directory "\control\\backup\ElaDesign\" is created.

This will only happens if this directory is empty or not present.



Then the update will be processed.

On the panel, the date of the updated files stored, so that when a re-start of the panel of the update process will not start running again.

1.7.3 Update der Geräte-Registry

This functionality is available from the CustomInitUtils.dll version V1.65.0.0.

For this purpose, before the above-described update process a file

\Control\<*kind of device*>\Update\ElaDesign\registry.dat

Have to be created. It is copied to the update process on the device, and then written into the device registry. The registry is stored.

The text file "registry.dat" is evaluated using the following syntax

First, set a registry key to be called:

```
[HKEY_LOCAL_MACHINE\Software\MyKey1]
```

The following values will be stored under this registry key:

```
"DWORD-Registry-Typ-Name":dword=1234
"STRING-Registry-Datentyp-Name"="STRING-Registry-Datentyp-Wert"
"@"="default String-Eintrag"
```

Now, additional registry keys can be described:

```
[HKEY_LOCAL_MACHINE\Software\MyKey2]
```

The following values will be stored under this registry key:

```
"DWORD-Registry-Typ-Name":dword=1234
```

An example of writing a Paco startup entry:

```
[HKEY_LOCAL_MACHINE\Software\elrest automationssysteme GmbH\Init]
"Launch01"="\Flashdisk\MyFolder\MyApp.exe"
"Params01"="-MyCommandlineParameter"
"Enable01"=dword:1
```

Aktuell werden die Registry-Schlüssel HKEY_LOCAL_MACHINE, HKEY_CLASSES_ROOT und HKEY_CURRENT_USER und die Registry-Datentypen DWORD und String unterstützt.

Currently, the registry key HKEY_LOCAL_MACHINE, HKEY_CLASSES_ROOT, and HKEY_CURRENT_USER and the registry data types DWORD and string are supported.

There should be no space before/ after the equal sign and the colon

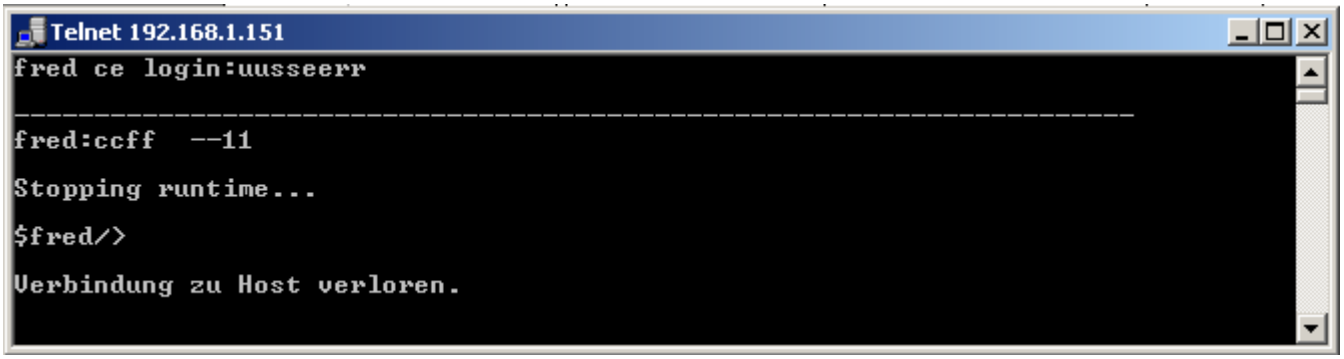
1.7.4 Update the runtime with CF-Telnet

Preparation see 'Update when Windows starts '

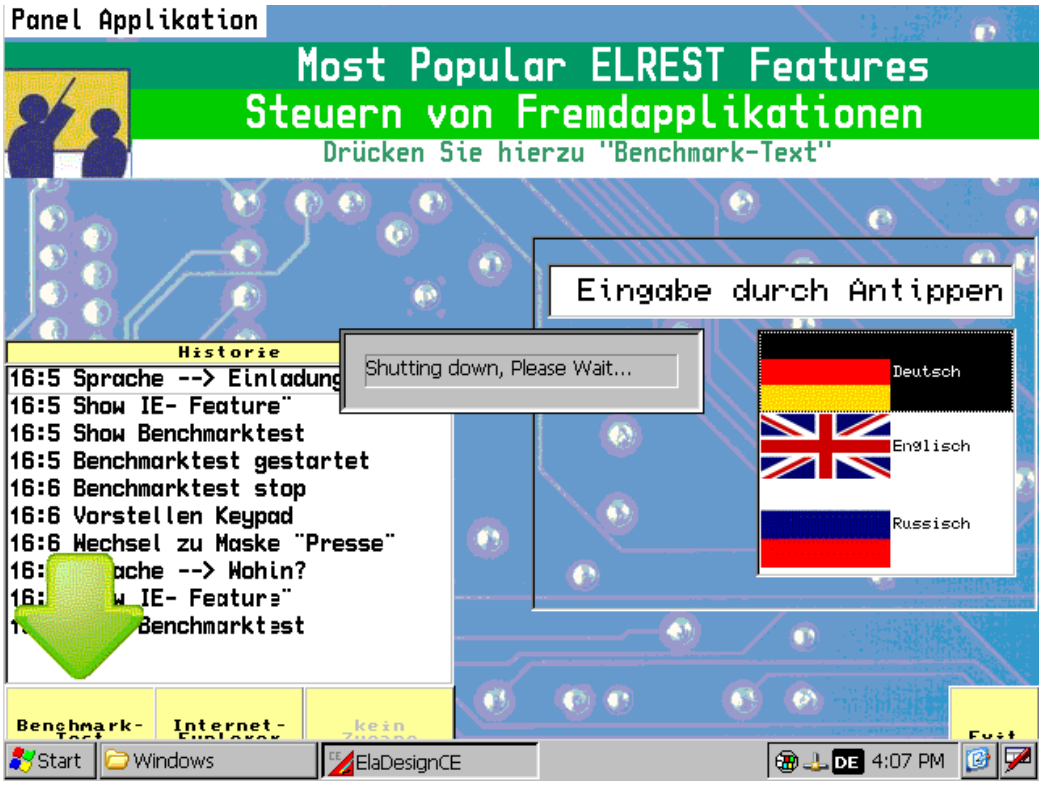
Set a telnet connection to the device.
Therefore on the panel has to be run ElaDesign - Runtime

Enter the command cf -1

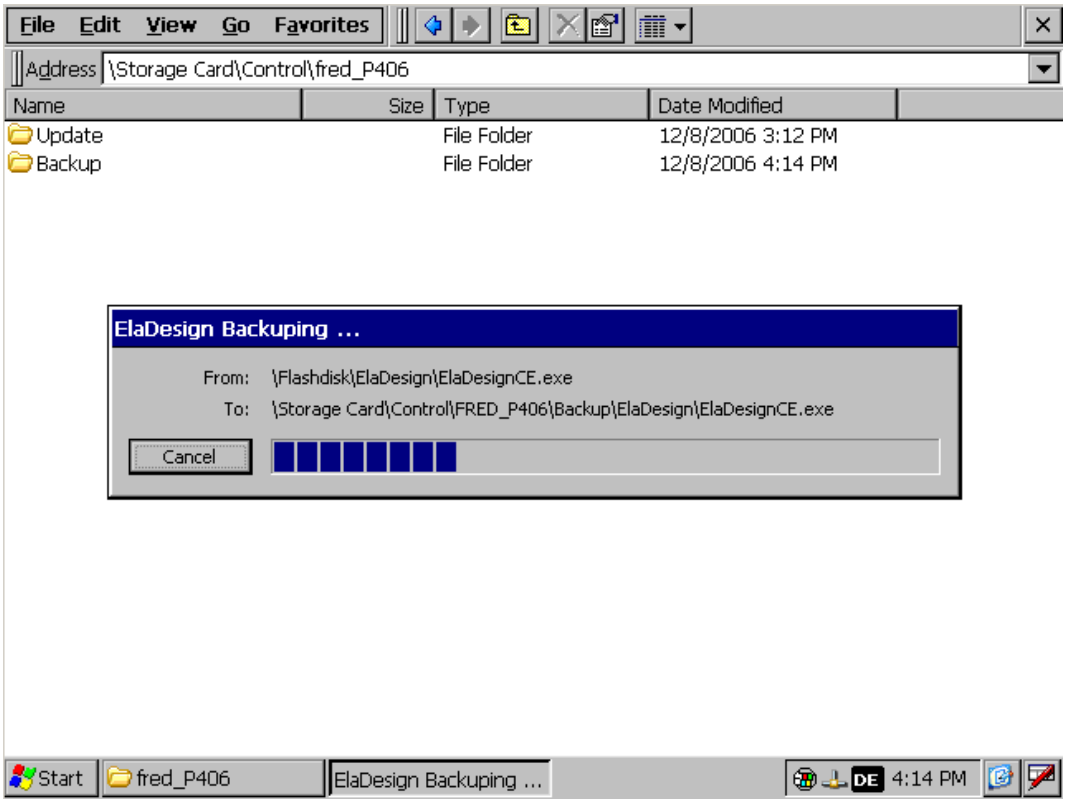
It appears the following in Telnet:



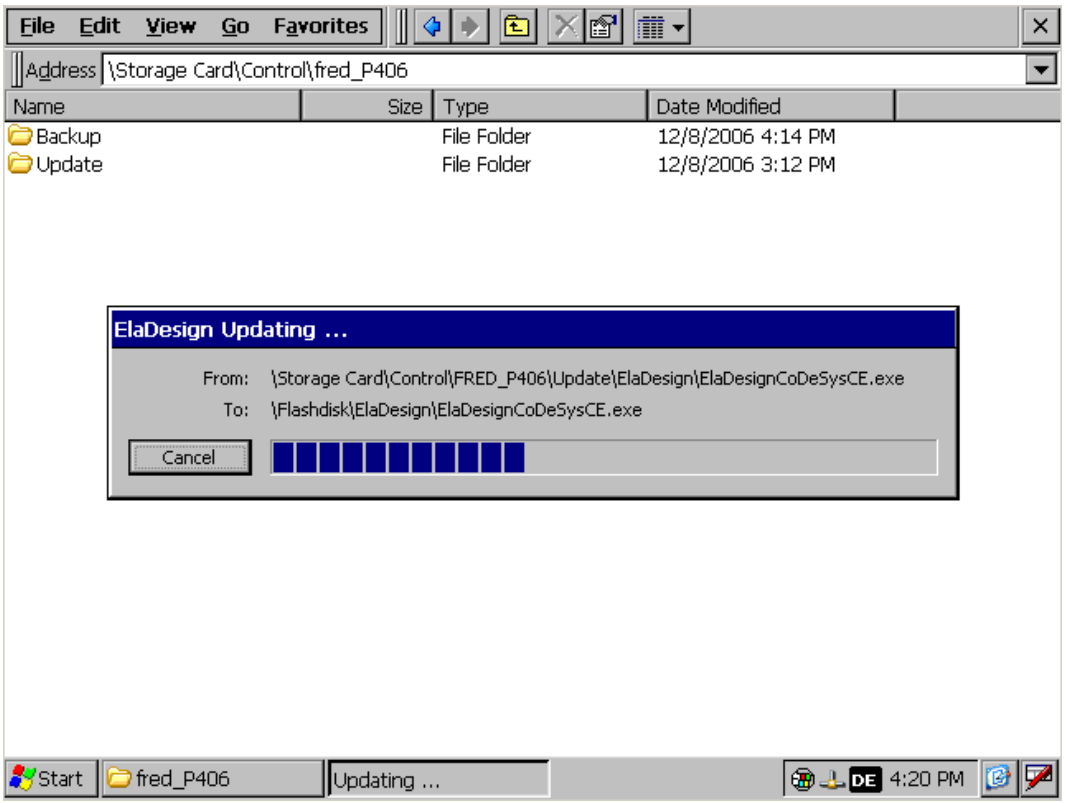
On the panel will be first the runtime terminated.



Then it will be a backup of all runtime - files in the directory " \control\\backup\ElaDesign\" is created.
This will only happens if this directory is empty or not present



Then the update will be processed.



And afterwards re-strarting the runtime.

1.7.5 Update the runtime from CoDeSys

Preparation see 'Update when Windows starts

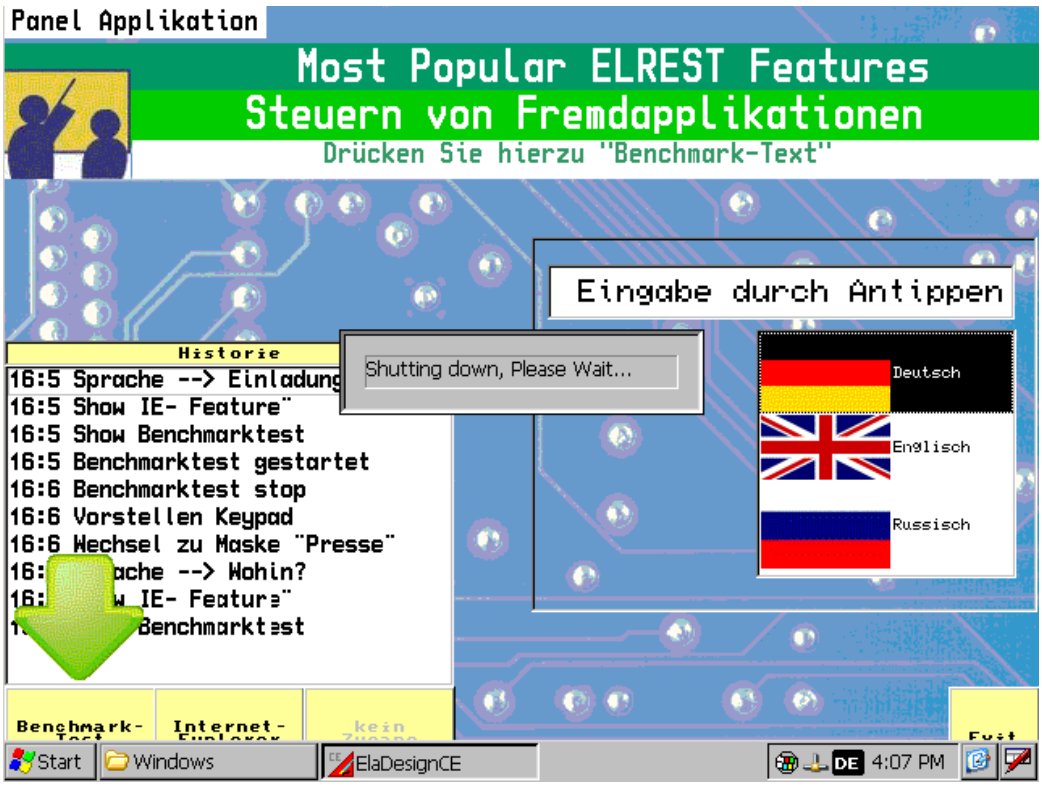
To carry out CoDeSys out an update to the runtime using the function with the parameter 1 FwCFRestore

```
FwCFRestore(1) or FwCFRestore(RUNTIME)
```

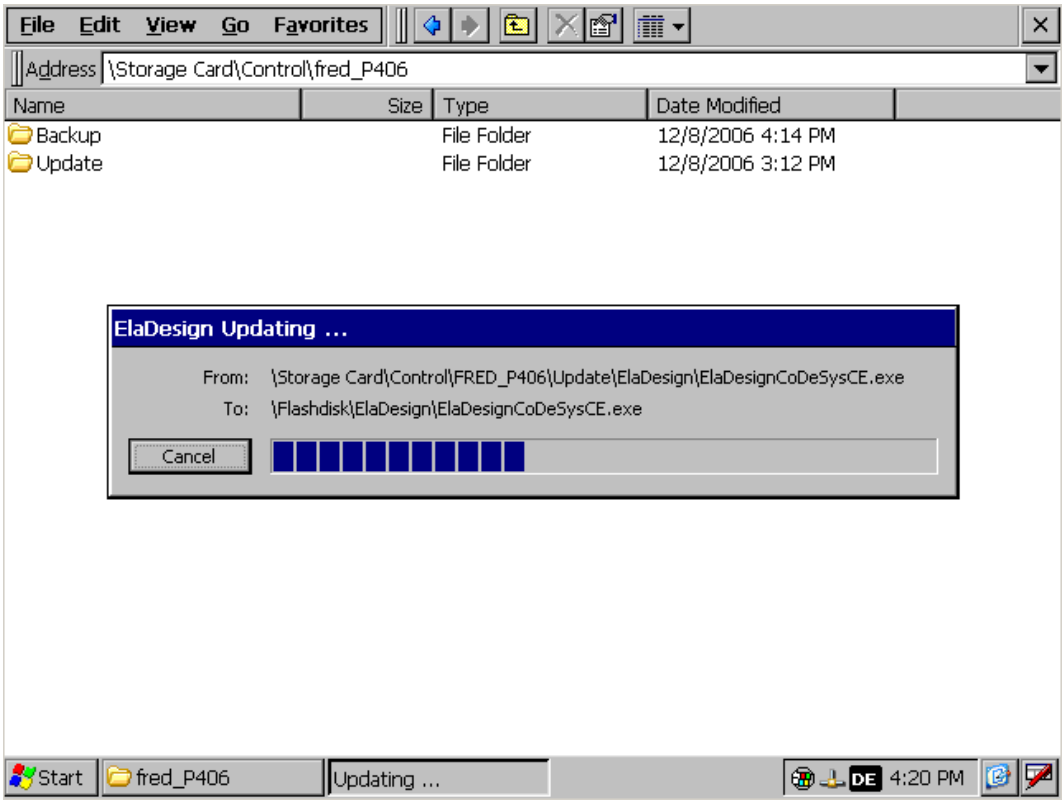
ST

This function is located in the library sFW05.

On the panel will be first the runtime terminated.



Then the update will be processed



And afterwards re-strarting the runtime.

Tipp

In the use of the function "FwCFRestore" no backup will be created.
In order to create a backup using the function "FwCFSave".

1.7.6 Update device files

There is a fundamental possibility to copy files to the device with FTP or devices files to update via FTP.

Attention! Update device software (such as editing dll files) should normally be carried out only after consultation with a elrest staff. This could lead to possibly equipment malfunctions

Here then is the device start at startup mechanism to interrupt (startup dialog). For start- up the device then the autostart mechanism has to be interrupted.(startup dialog). For devices without a display, the corresponding startup entries should be disabled, and reboot the device.

Then, the service switch should be pressed in order to stop the running components.in the background, which are running maybe.

1.7.7 *Update the Windows CE© operating system*

An upgrade of the Windows CE© operating system only by elrest or by trained service personnel will be carried out

At the windows - upgrade can be stored in the registry settings will be lost.
A downgrade (uploading a older version) is not allowed and can impair the function of the device and the device damage.
The files in the directory "SysExtras" and its subdirectories must be of elrest for the respective Windows CE© Image released.

1.7.8 *Update FPGA*

An update of the FPGA can be carried out only in the house elrest.

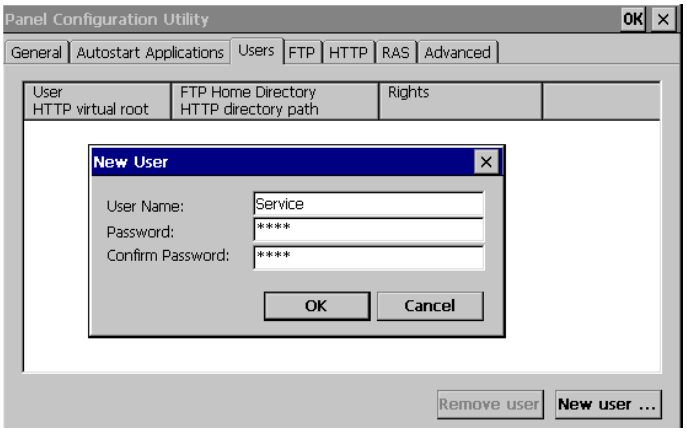
1.8 Remote maintenance with Microsoft Tools

1.8.1 *Sysadmin*

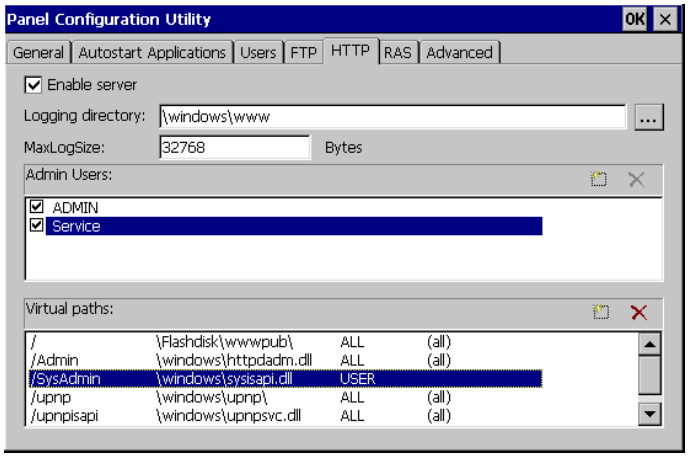
Windows CE5 and CE6 offer opportunities to control the device from a remote location, or to administrate.

Access to the system as a sysadmin should be strictly protected.
Therefore it is recommended to create a user, with the as a sysadmin on the device can be accessed.

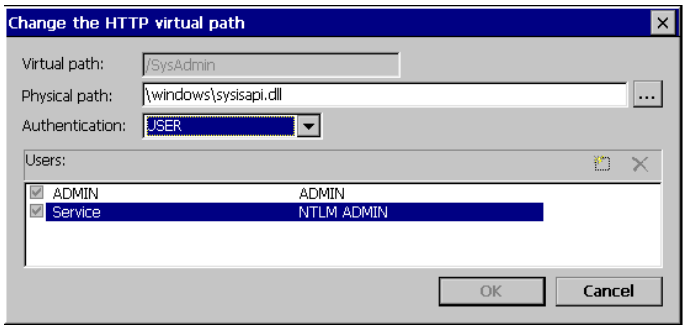
Insert, for example the user "Service" to.



You go in the combo box under Enable the user "service" and change the virtual path for sysadmin on user.



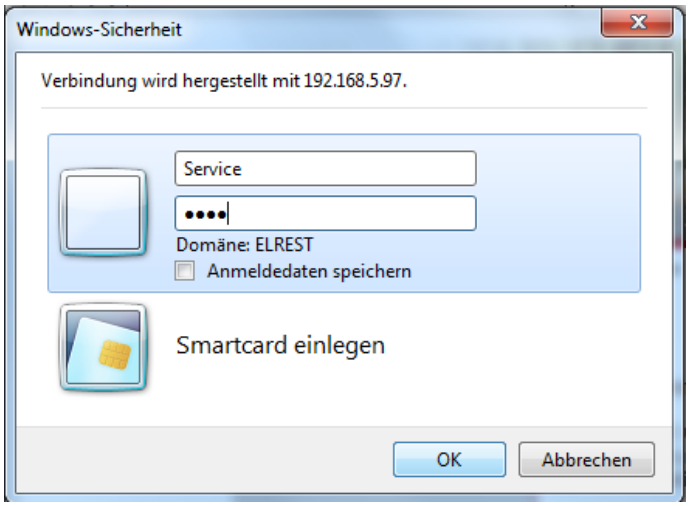
After these changes, storing the registry, and a device reboot is necessary.



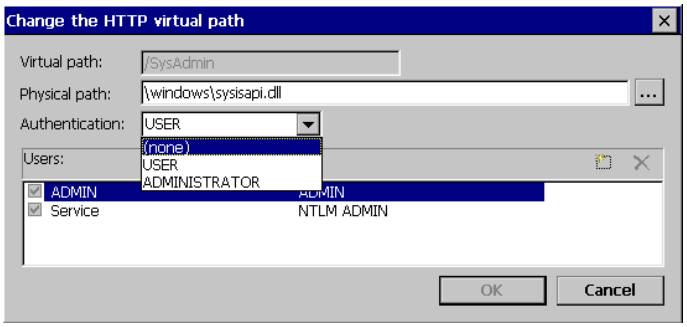
Known problems in Windows 7:

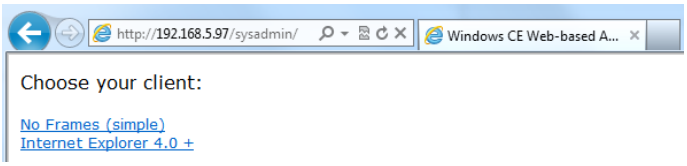
Is your Windows 7 PC within a domain, it attempts to register you on the domain.

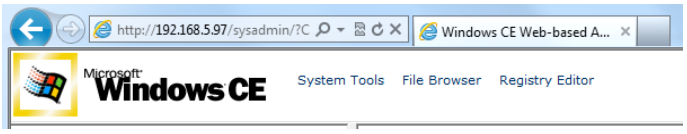
Of course this is not possible
because P4xx usually not in a domain. The login failed



Solution:
allow the other unprotected access as a sysadmin on the device. Set the sysadmin to "USER" to "All" (Authentication = none)







System Tools - Processes

This menu allows you to terminate processes and any to start.
It is very useful in order to e.g. the runtime to terminate to update, and try again to start.

eg:

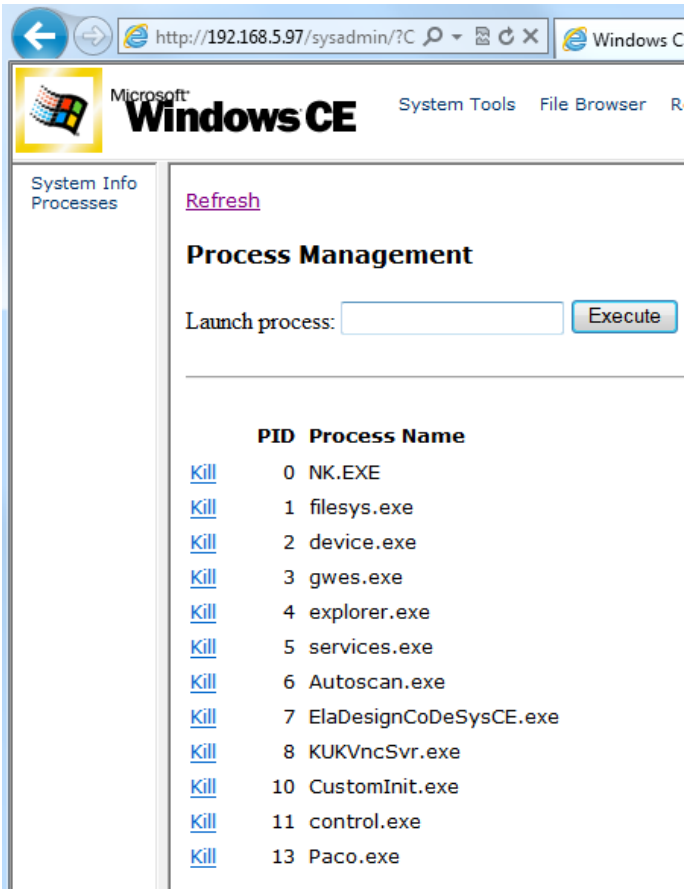
1.) Delete : ElaDesignCoDeSysCE.exe

2.) Transfer the runtime

3.) Launch Process:

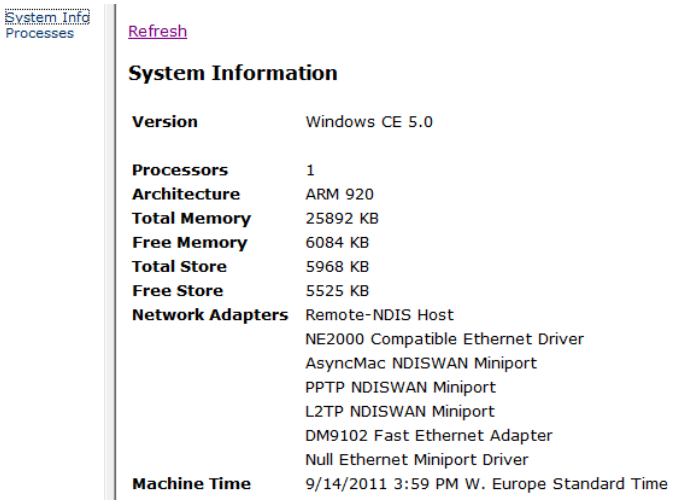
/Flashdisk/Eladesign/ElaDesignCoDeSysCE.exe

Key <Execute>



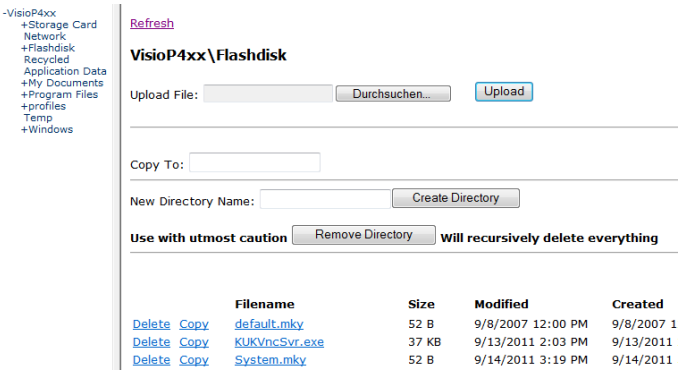
System Tools – System Info

This menu allows you to regard the memory.
It is very useful in order to detect e.g. memory leakage.



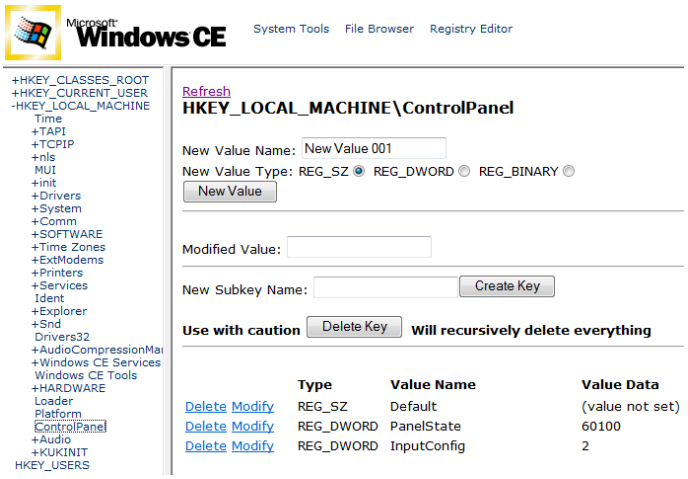
File Browser - +VisioP4xx

In order to transfer files suitable.
However, this task can be solved via FTP elegant also.



Registry Editor

It allows you to edit the Windows registry.



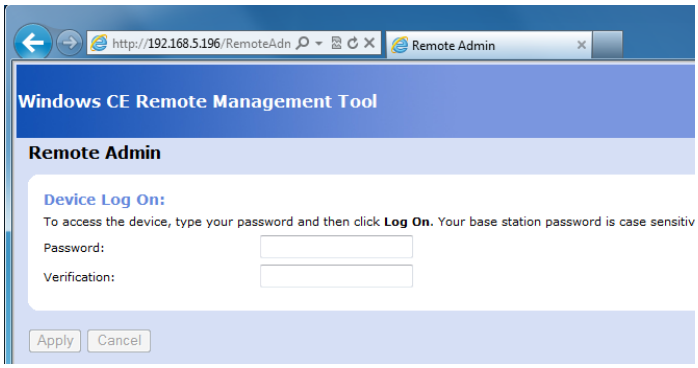
1.8.2 RemoteAdmin

Windows CE6 offers possibilities the device from a remote location to control, or to administrate.

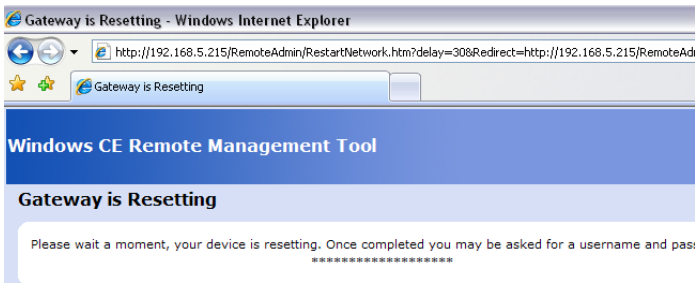
Login in as:

User: admin

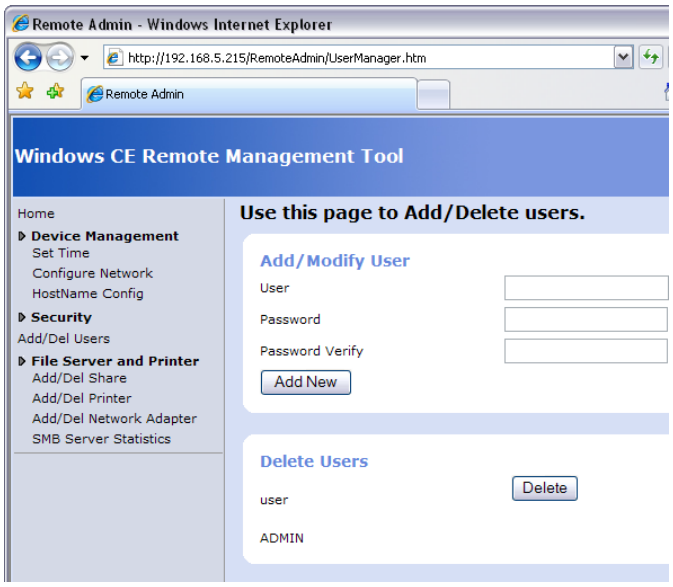
Password: admin

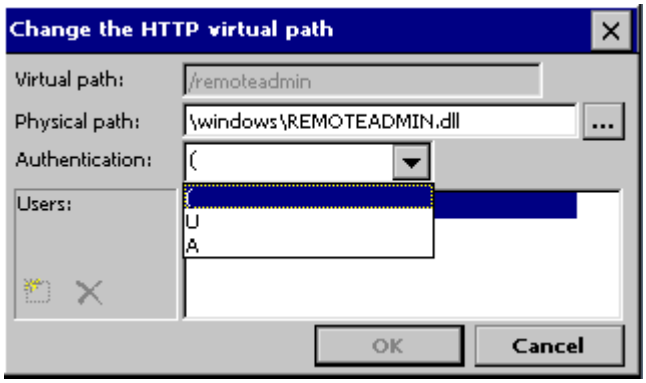


The device reset.



As a result you can administrate your own password and the system.





1.9 Remote maintenance with Telnet

1.9.1 General to Telnet

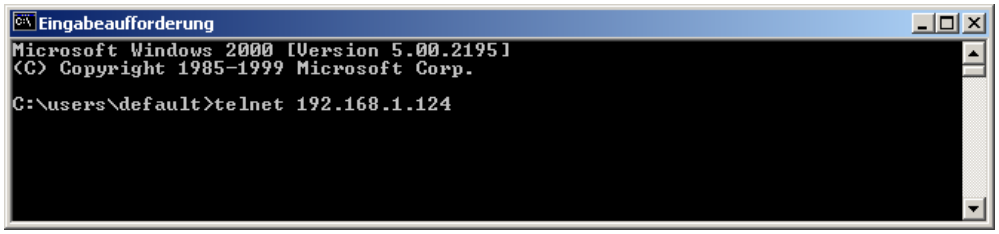
Telnet is designed to operate an external computer via the Internet as you would in front of it. Telnet is a simple solution for that telewor

Telnet is mainly intended for unix systems. It allowed the in-OS login (login) of a user to a host computer connected to the Internet in the form of an rlogin (remote login). The login is only possible if you are familiar with user-ID and password, i.e. on the selected host as a registered user. After the dial-up you will get a Unix shell (command prompt) and can enter operating system commands on the remote computer, start programs etc.

The program allows, by its own PC devices from the series visio or combo to configure. For the configuration of these devices is necessary knowledge of the commands, as described below.

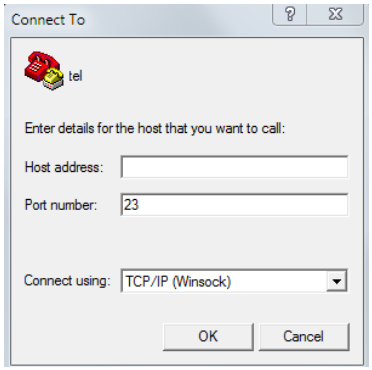
You can establish an Telnet connection:

- With the program „telnet.exe“.



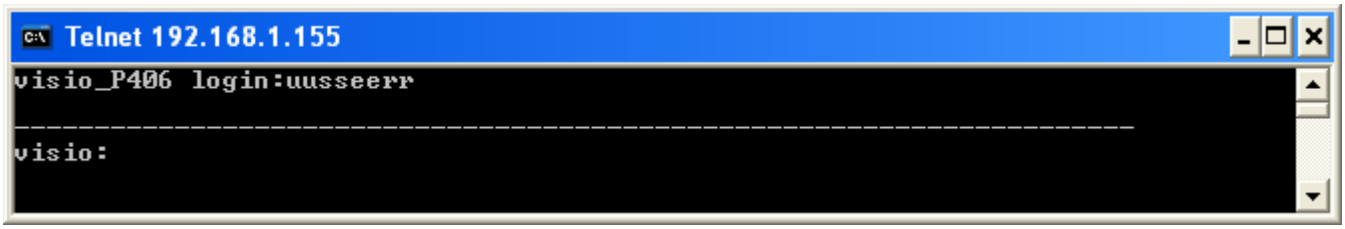
  HINT: is to win 7 is no longer in the standard package.

- With the program „hyperterminal.exe“.You can choose the option:



- Or if you have in the target system the RS232-debug option enabled, you can use the serial interface with each Terminlprogramm (hyperterminal, Tera term, o. (a.) use equally.

Except in the case of the serial connection is initially a login:



Confirm with “user” or “supervisor”.

With the command : **help** you can list all available commands.

For your convenience commands have a submenu. By entering the commands will appear the submenu or at a command the information.
All commands can be executed by their initial letters, as long as the assignment is clear.

Program hints:

many telnet settings can be read and written in coDeSys. I.e. the codesys- window initialization routine can be written in a way that your system settings in codesys can be carried out.
As a result you will find code samples each relate to the reading. In order to be able to write the value, simply swap the allocation:

```
(*read*)        nDisplayBrightness :=psFW^.uRemanent.sMasterEEprom.nDisplayBrightness;

(*write*)       psFW^.uRemanent.sMasterEEprom.nDisplayBrightness:= nDisplayBrightness;
```

IMPORTANT:

Before you can work the first time with psFW (PointerStructureFirmWare) and psUW (PointerStructureUserWare), you must have the pointer initialized.
By the Initialize codesys is the beginning of the exploitable the FW and UW announced.

WARNING to pointers:

This assignment does not find, or faulty instead, is the access to the system randomly. The change of the password can for the overwrite of the operating system be responsible. Therefore you should make sure it is essential that all Pointerinitialisierung are correct

```
PLC_PRG (PRG-ST)
0001 PROGRAM PLC_PRG
0002 VAR
0003     psFW : POINTER TO sFW:=0;    (* Zeiger auf sie Startadresse der Firmwaredatenpunkte *)
0004     psUW: POINTER TO sUW:=0;     (* Zeiger auf sie Startadresse der Userwaredatenpunkte *)
0005 END_VAR
0006
0007
0008

0001 IF psFW = 0 OR psUW = 0 THEN
0002     psFW:= FwGetStructPointer(0 (*nDummy*));
0003     psUW:=UwGetStructPointer(0 (*nDummy*));
0004     RETURN; (* Nachfolgendet Code darf nur ausgeführt werden, wenn für psFW/psUW eine Adresse zugewiesen wurde *)
0005 END_IF;
0006
```

In the following you have online access to all data points:

```
psFW = <00810000>
    psFW^
        .pOfThisStruct = 8454144
        .nSizeOfFWStruct = 43834
        .nVersionOfFirmware = 131078
        .szFirmwareLabel = 'CM100'
        .szFirmwareDate = 'Sep 08 2010'
        .szFirmwareTime = '17:35:57'
        .psUW = 8514338                    ...
```

All commands can be executed by their initial letters, as long as the assignment is clear. It is important to pay attention to upper / lower case.

The scope and the content of the commands vary with the respective device and the software version of the runtime. A clear command - description is therefore only in the product manual can be seen.

1.9.2 Telnet command: help

You will find further help with the command "help diagnostic".

```
$visio_P205V/>help diagnostic
SNMP Station: diagnostic commands:
   logging  - set logging options
```

By entering the following commands the following functions can be executed:

logging (submenu) : functions to logging

1.9.3 Telnet command: state

Display the state of the device:

```
$visio_P205V/>state
>visio_P205V
>Runtime-Version       : 2.03-01 Aug 11 2010 18:57:11
>CE-Version            : 6.16 13.07.2010
>CoDeSys CAN
>Module 191=run, CAN:terminated 125kBaud
>192.168.5.191, subnet 255.255.255.0, gatew. 0.0.0.0
>MAC=00-07-7E-00-57-B7 fOK SN=-1737075662 Date 25.07.2001 01:07:48
```

row 1: type of device

row 2: runtime- version

row 2: software type

row 3: modul number, CAN termination resistor activated, CAN transfer rate

row 4: Ethernet IP-address

row 5: MAC-ID and system date

1.9.4 Telnet command: date

Read and modify the system clock / system date
Example:

```
CM211/>date
>Date/Time: 2.1.2008 07:12
CM211/>date 15.12.2010 17:00
>Date/Time: 15.12.2010 17:00
```

1.9.5 Telnet command: stepper

```
CM211/>stepper

1 = Move Relative
example:
stepper 1 1 250
stepper +----------------> 1=Start relative movement
stepper   +--------------> bit coded stepper => 1:= Stepper 0
stepper      +-----------> relative Position in pulses
-------------------------------------------------------------------------------------------
3 = PositionActual
-------------------------------------------------------------------------------------------
4 = StepperRamp
example:
stepper 4 7 1000 1000 1000 0
stepper +--------------------> 4=set Ramp
stepper   +------------------> bit coded stepper => 7:= Stepper 0, Stepper 1 + Stepper 2
stepper       +--------------> Velocity [Pulses/s]
stepper            +---------> Accelaration [Pulses/s^2]
stepper                 +----> Decelaration [Pulses/s^2]
stepper                    +-> RampForm [For now only 0]
7 = Initialize
Has to be run after Reboot
-------------------------------------------------------------------------------------------
```

1.9.6 Telnet command: analog

Monitor, modify and configure the analog channel

```
CM211/>analog


calibrate all channel in to valid range

sensor ==> 0=AIN_0_10VOLT, 3=AIN_0_20mA, 21=AIN_PT100_2WIRE

example:

analog 3 0 0 50 777

analog +----------------> 3=calibrate

analog   +--------------> 0=channel

analog     +------------> 0=sensor AIN_0_10VOLT
analog        +---------> 50=min value for 0[V]

analog           +------> 777=max value for 10[V]

-------------------------------------------------------------------------------

analog 1                                = show all analog channels

analog 2 <channel> <sensor>             = configure the analog sensor

analog 3 <channel> <sensor> <min> <max>  = calibrate the analog channel=<0..n>, min=value for 0[V],
max=value for 10[V]
```

1.9.7 Telnet command: digital

Overview:

```
CM211/>digital

adjust the frequency inputs
frequency type ==> 0=FIN_OFF (Stepper), 1=FIN_FREQUENCY_INPUT, 2=FIN_COUNTER_INPUT, 3=FIN_QUADCOUNT,
4=FIN_DUALCOUNT, 5=FIN_SINGLECOUNT
example:
digital 2 0 0
digital +----------------> 2=adjust the frequency inputs
digital   +--------------> 0=channel
digital     +------------> 0=frequency mode
-------------------------------------------------------------------------------
digital 1                                 = show all digital channels
digital 2 <channel> <type>                = configure the digital frequency (....)
```

Digital 1 :
HINT: this monitoring-output is on the serial interface not supported. Please us the telnet.

```
---- digital : show all channels -----

CM211  2.9-8 Dec 15 2010 14:37:30 HW1.0
-------------------------------------------------------------
digital inputs:
000000000 0000000
-------------------------------------------------------------
digital outputs: <n>,<p> change channel, <+>,<-> change FORCED value
000000000 0000000 PLC values
********* ******* FORCED values
^
-------------------------------------------------------------
frequency inputs:  <r> reset to zero
channel [0]='FIN_OFF             '
channel [1]='FIN_OFF             '
channel [2]='FIN_OFF             '
channel [3]='FIN_OFF             '
channel [4]='FIN_OFF             '
channel [5]='FIN_OFF             '
channel [6]='FIN_OFF             '
channel [7]='FIN_OFF             '
```

Digital 2 <Channel> <Type>

Example:

Digital 2 1 3

→ channel 1 will be set as quadcounter

```
CM211  2.9-8 Dec 15 2010 14:37:30 HW1.0
------------------------------------------------------------
digital inputs:
000000000 0000000
------------------------------------------------------------
digital outputs: <n>,<p> change channel, <+>,<-> change FORCED value
000000000 0000000 PLC values
********* ******* FORCED values
 ^
------------------------------------------------------------
frequency inputs:  <r> reset to zero
channel [0]='FIN_OFF             '
channel [1]='FIN_QUADCOUNT       ':      0.000[Hz] overflow
channel [2]='FIN_OFF             '
channel [3]='FIN_OFF             '
channel [4]='FIN_OFF             '
channel [5]='FIN_OFF             '
channel [6]='FIN_OFF             '
channel [7]='FIN_OFF             '
```

1.9.8 Telnet command: option

Change the device specific options:

```
$visio_P205V/>option
Clear Eventlogger      :  6...clear eventlog SRAM
Key repeatabili.       :  7...set value [0,1] ->"on"
Key beeper (0=off)     :  8...set value [0...15] -> (2)
Touch beeper(0=off)    : 12...set value [0...15] -> (3)
Modbus0=Off,1=TCP,2=UDP: 20 -> 2
Modbus Port Read  <502>: 21 -> 502 (client+server)
Modbus Port Write <502>: 22 -> 502 (client)
Brightness Display     : 26...[0..<200>..255] (51)
Use internal keyboard  : 27...set value [0,1] ->"yes"
Edit Style             : 34...set value [<0>-standard,1-4keys] ->"0"
RTU: Use Coils for Bits: 37...set value [<0>,1] ->"no"
RTU Timeout            : 38...set value [ms] -> 200
RTU Frame Spacing      : 39...set value [ms] -> 10
```

- **Clear Eventlogger** („option 6“)**:**

  Erase the eventlog entries, stored in RAM storage.

- **Key repeatabili.** („option 7“)**:**

  If this option is enabled, the keys are cyclically of control panels for the duration of the activity. At deactive option, only the state changes of the keys.

- **Key beeper** („option 8“)**:**

  This option determines whether and how long (factor of 10 ms) the internal beeper when pressing a button is turned on.

- **Touch beeper** („option 12“)**:**

  This option determines whether and how long (factor of 10 ms) the internal beeper when pressing the touch is turned on.

- **Modbus0=Off,1=TCP,2=UDP** („option 20“)**:**

  Determines whether the integrated Modbus client/server is active and with what protocol he works.

- **Modbus Port Read** („option 21“)**:**

  Determines the port for read operations of the internal Modbus Client/Server

- **Modbus Port Write** („option 22“)**:**

  Determines the port for write operations of the internal Modbus Client/Server

- **Close KeyPad after inp.** („option 24“)**:**

With this option, it can be determined whether or not the input field is to close after an entry or not.

- **Brightness Display** („option 26“)**:**

  With this option you can adjust the brightness of the display will be set in normal operation.
  (*O 26 Byte*) nDisplayBrightness
  :=psFW^.uRemanent.sMasterEEprom.nDisplayBrightness;

- **Use internal Keyboard** („option 27“)**:**

  With this option, it can be determined whether the input field of the runtime (internal) or the Windows CE is to be used.

- **Keyb. Backl. Brightness** („option 28“)**:**

  With this option you can adjust the brightness of the keyboard backlight be set..

- **Edit Style** („option 34“)**:**
  : 34...set value [<0>-standard,1-4keys] ->"0"

- **RTU: Use Coils for Bits** („option 37“)**:**

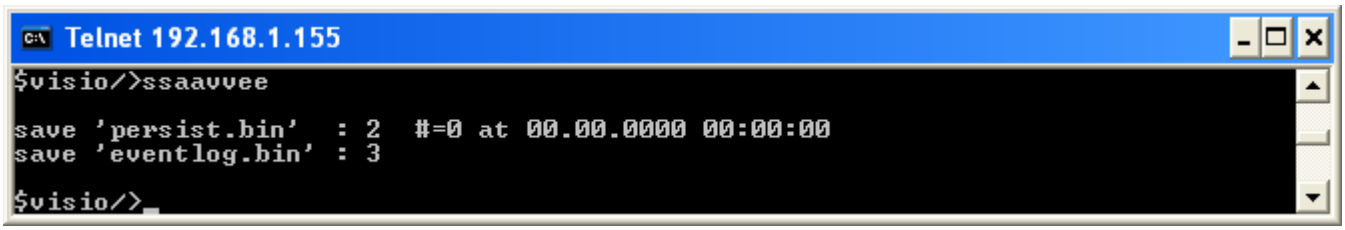
  With this option, the request of bits will be done as coils (FunktionCode 02), instead of FunktionCode 03, the default is No.

- **RTU Timeout** („option 38“)**:**
  Default:=200ms
  Time after which a new request for additional tabs by the master is made, if the slave does not response.

- **RTU Frame Spacing** („option 39“)**:**
  Default:=10ms
  Actuating between 2 inquiries. This time is set too small; the register will be requested again, although the Slave news in the concept is to respond. The value should be at least verified is like choosing the double of the cycle time of the slaves.

1.9.9 Telnet command: save

Save the datas in files:



save 'persist.bin' (save 2) :

Saves the data points as a 'persistent' defined in the file 'persist.bin'. With storage of persistent data will also retain data is stored, if at least a current value of the persistent data differs from the stored values (see also command load). The persistent data can also by setting the Userware-Variablen SaveParameter = 1 are stored.

In addition the number of saves, and the time and date of the last save operation.

save 'eventlog.bin' (save 3) :

Saves the stored in RAM in the entries of the Eventloggers file 'Eventlog.bin'.

CoDeSys is available here under the command FwSave(nMode) of the library sFwXX.lib are available.

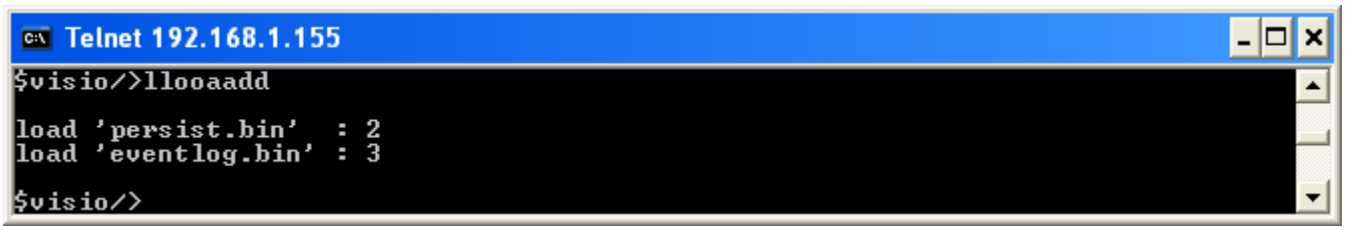
For example:

ST

```
(* flash the retain- and persistant-datas *)
FwSave(16#11);
```

1.9.10 Telnet command: load

Load the datas from file:



load 'persist.bin' (load 2) :

Invites persistent data (default values for "with stored parameters (persistent)" and "with battery-backed value (retain)" defined data points) from the file 'persist.bin' (see also save command).

load 'eventlog.bin' (load 3) :

Loads in the file 'Eventlog.bin' entries stored in the RAM of the Eventloggers. The file does not exist; the entries in RAM will be erased.

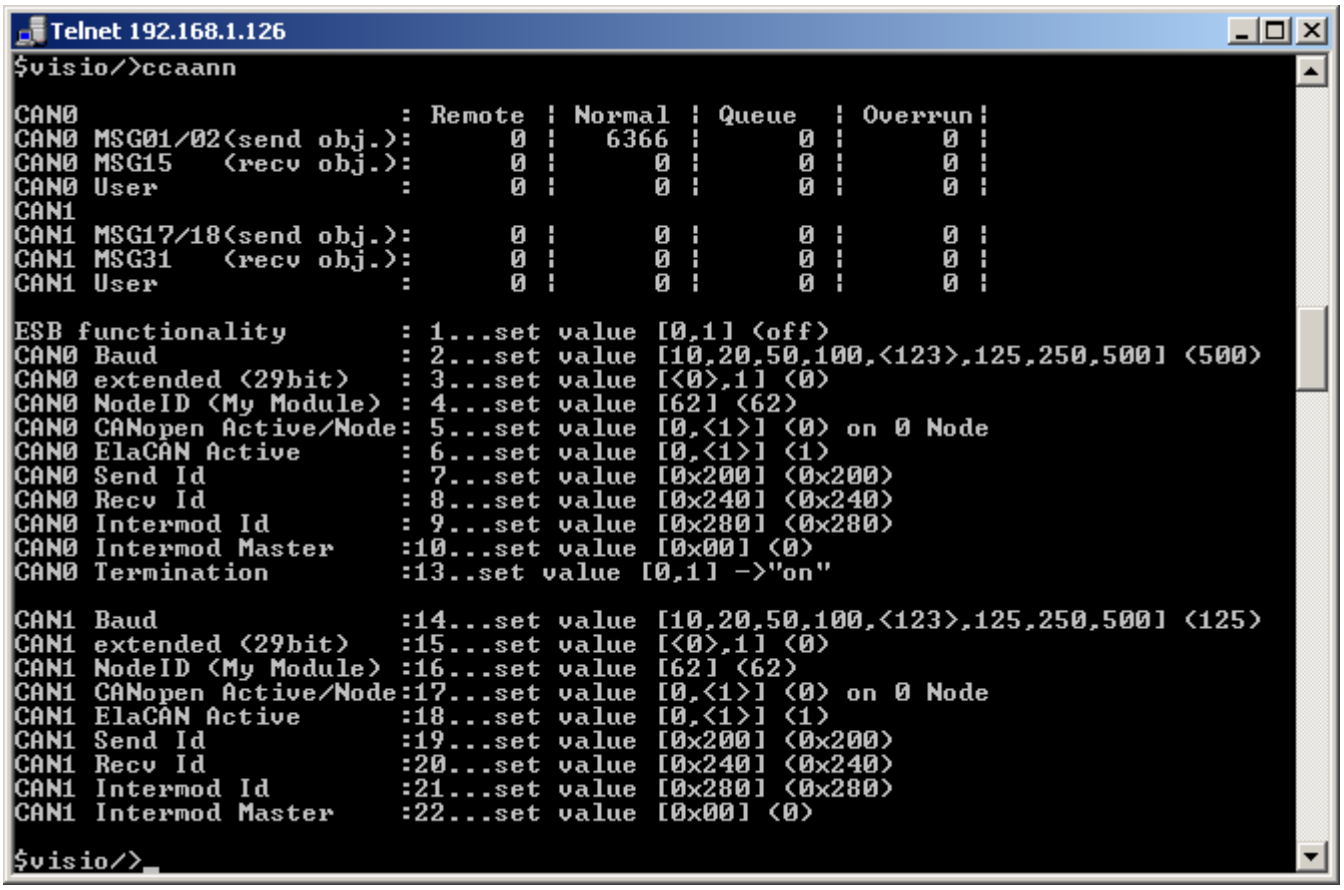
ST

```
(* Load the stored retain- & pers.- datas *)
FwLoad(1);
```

1.9.11 Telnet command: rs232

1.9.12 Telnet command: can

Change of parameters and diagnosis of the CAN-interfaces:



Statistic:

Shows the number of received and sent telegrams of the CAN-interfaces

In the statistics queue/overrun there must be no overflow.
If this occurs, however, must be adjusted Thread-Zeiten.

CAN monitor ("can 0 "):
HINT: This Monitoring-output as serial output is not available. Please use Telnet.

Scroll keys with +/ -

```
CAN 0 : show receiving CAN frames, press <+>,<-> for page or <CR>

CAN=Bus ok(00000000), 125[kBits/s], 11bit normal, MaxIndex=0256, Free=      3076 from      18480[kB]

CAN0      |receive      0+RTR     0          ||   1082.728|transmit      0+RTR     0

Timestamp |Index|ID  |L|E|R|Data             ||Timestamp  |Index|ID  |L|E|R|Data

     0.000|>000<|0000|0| | |                 ||      0.000|>000<|0000|0| | |

     0.000| 001 |0000|0| | |                 ||      0.000| 001 |0000|0| | |

     0.000| 002 |0000|0| | |                 ||      0.000| 002 |0000|0| | |

     0.000| 003 |0000|0| | |                 ||      0.000| 003 |0000|0| | |

     0.000| 004 |0000|0| | |                 ||      0.000| 004 |0000|0| | |
```

```
     0.000| 005 |0000|0| | |                ||      0.000| 005 |0000|0| | |
     0.000| 006 |0000|0| | |                ||      0.000| 006 |0000|0| | |
     0.000| 007 |0000|0| | |                ||      0.000| 007 |0000|0| | |
     0.000| 008 |0000|0| | |                ||      0.000| 008 |0000|0| | |
     0.000| 009 |0000|0| | |                ||      0.000| 009 |0000|0| | |
     0.000| 010 |0000|0| | |                ||      0.000| 010 |0000|0| | |
     0.000| 011 |0000|0| | |                ||      0.000| 011 |0000|0| | |
     0.000| 012 |0000|0| | |                ||      0.000| 012 |0000|0| | |
     0.000| 013 |0000|0| | |                ||      0.000| 013 |0000|0| | |
     0.000| 014 |0000|0| | |                ||      0.000| 014 |0000|0| | |
     0.000| 015 |0000|0| | |                ||      0.000| 015 |0000|0| | |
```

```
CAN=Busoff(00000001), 125[kBits/s], 11bit normal, MaxIndex=0256, Free=      3076 from      18480[kB]
CAN1      |receive      0+RTR     0          ||   1082.740|transmit      0+RTR     0
Timestamp |Index|ID  |L|E|R|Data             ||Timestamp  |Index|ID  |L|E|R|Data
     0.000|>000<|0000|0| | |                ||      0.000|>000<|0000|0| | |
     0.000| 001 |0000|0| | |                ||      0.000| 001 |0000|0| | |
     0.000| 002 |0000|0| | |                ||      0.000| 002 |0000|0| | |
     0.000| 003 |0000|0| | |                ||      0.000| 003 |0000|0| | |
     0.000| 004 |0000|0| | |                ||      0.000| 004 |0000|0| | |
     0.000| 005 |0000|0| | |                ||      0.000| 005 |0000|0| | |
     0.000| 006 |0000|0| | |                ||      0.000| 006 |0000|0| | |
     0.000| 007 |0000|0| | |                ||      0.000| 007 |0000|0| | |
     0.000| 008 |0000|0| | |                ||      0.000| 008 |0000|0| | |
     0.000| 009 |0000|0| | |                ||      0.000| 009 |0000|0| | |
     0.000| 010 |0000|0| | |                ||      0.000| 010 |0000|0| | |
     0.000| 011 |0000|0| | |                ||      0.000| 011 |0000|0| | |
     0.000| 012 |0000|0| | |                ||      0.000| 012 |0000|0| | |
     0.000| 013 |0000|0| | |                ||      0.000| 013 |0000|0| | |
     0.000| 014 |0000|0| | |                ||      0.000| 014 |0000|0| | |
     0.000| 015 |0000|0| | |                ||      0.000| 015 |0000|0| | |
```

- **ESB functionaltity** („can 1“): Default:1
  with this command can the ESB - functionality on the CAN-interface 0 selected.
  Select CAN or ESB functionality in order: 0 for Can or 1 for ESB.
  Example in CoDeSys;
  (*C 1 Byte*) bESBActivated:=psFW^.uRemanent.sMasterEEprom.bESBActivated;
  If the ESB functionality is not activated ,the following additional options for both CAN interfaces are available. If it is turned on only for CAN 1
- **CANn Baud** („can 2 / 14“) Default:125
  Selection of the baud rate for the respective CAN interface.
  Note: 123 kbaud is not supported for CoDe Sys-programming.
  Example in CoDeSys;

(*C 2 INT*) nCAN0Baudrate:=psFW^.uRemanent.sMasterEEprom.nCAN0Baudrate;
(*C 13 INT*) nCAN1Baudrate:=psFW^.uRemanent.sMasterEEprom.nCAN1Baudrate;

- **CANx Extended (29bit)** („can 3 / 15“) Default: 0
  Length of the CAN Identifier (1 = 29 bit, 0 = 11 bit)
  Example in CoDeSys;
  (*C 3 Byte*) bCAN029bit:=psFW^.uRemanent.sMasterEEprom.bCAN029bit;
  (*C 14 Byte*) bCAN129bit:=psFW^.uRemanent.sMasterEEprom.bCAN129bit;

- **CANx NodeID (My Module)** („can 4 und 16“):
  a) CANopen active : Node for CANopen Slave
  b) CAN Layer2 active: modul address for CoDeSys-programming over USB- or Centronix-interface

- **CANx CANopen Active/Node** („can 5 und 17“):
  Activate from CoDeSys-CANopen. The CANopen node will be configured from CoDeSys.
  Note: For the for CoDeSys-programming muss CANopen be activated.
  Example in CoDeSys;
  (*C 5 Byte*) bCAN0CanOpenActice:= psFW^.uRemanent.sMasterEEprom.bCAN0openActive;
  (*C 17 Byte*) bCAN1CanOpenActice:= psFW^.uRemanent.sMasterEEprom.bCAN1openActive;

- **CANx Layer2 Active** („can 6 und 18“):
  Activate the elrest CAN protocol.
  To enable this option, further options are available.
  For further details, see the chapter "communications can".
- **CANx Send Id** („can 7 und 19“):
  Base address for the Send-ID.
- **CANx Recv Id** („can 8 und 20“):
  Base address for the Receive-ID.
- **CANx Intermod Id** („can 9 und 21“):
  Base address for the Intermodul-ID.
- **CANx Intermod Master** („can 10 und 22“):
  Switch to Multi-Master operation mode.
- **CAN0 Termination** („can 13 <on/off>“) Default: 1
  Turns off the internal CAN0-termination resistor (if in hardware available)
  0 : termination resistor is off
  1 : termination resistor is on
  fixed on xxx board (on/off) : will be shown, if the termination resistor exist.
  Example in CoDeSys:
  Under CoDeSys there are no separate parameters. Here we must read, masked and be written.

```
(* Relaise für den Abschlusswiderstand rücksetzen, CAN Konfiguration und Neustart erforerlich ----------
    IF bCANTermination = 0 THEN
        nCopyTemp                                := INT_TO_BYTE(psFW^.uRemanent.sSlaveEEprom.OptionFlag);
        wMaskeOptionFlag                         := 2#00100000;
        nCopyTemp                                := nCopyTemp OR wMaskeOptionFlag;
        psFW^.uRemanent.sSlaveEEprom.OptionFlag  := nCopyTemp;
    ELSE
        nCopyTemp                                := INT_TO_BYTE(psFW^.uRemanent.sSlaveEEprom.OptionFlag);
        wMaskeOptionFlag                         := 2#11011111;
        nCopyTemp                                := nCopyTemp AND  wMaskeOptionFlag;
        psFW^.uRemanent.sSlaveEEprom.OptionFlag  := nCopyTemp;
    END_IF

ESB := psFW^.uRemanent.sSlaveEEprom.OptionFlag;
*)
```

Is the ESB-functionality is turned on, the following additional options for the CAN-interfaces 0 available.

```
Telnet 192.168.1.126
$visio/>ccaann

CAN1                        : Remote  ¦ Normal  ¦ Queue   ¦ Overrun¦
CAN1 MSG17/18(send obj.):       0 ¦       0 ¦       0 ¦       0 ¦
CAN1 MSG31   (recv obj.):       0 ¦       0 ¦       0 ¦       0 ¦
CAN1 User                   :       0 ¦       0 ¦       0 ¦       0 ¦

ESB functionality           : 1...set value [0,1] (CAN0)
Save ESB-Configuration      : 2...compare [<0>:OUI,1:TYP,2:NOT] -> TYP
Restart ESB-Config.         : 3
SDOs of module n            : 4


      actual ---ESB modules--- saved (2)  ESB-OK
  #  type  order OUI         type       OUI
  1  CS100 1   3025408       CS100   3025408
  2  CS100 1   3418624       CS100   3418624

CAN1 Baud                   :14...set value [10,20,50,100,<123>,125,250,500] (125)
CAN1 extended (29bit)       :15...set value [<0>,1] (1)
CAN1 NodeID (My Module)     :16...set value [62] (62)
CAN1 CANopen Active/Node:17...set value [0,<1>] (1) on 0 Node
CAN1 ElaCAN Active          :18...set value [0,<1>] (0)

$visio/>_
```

- **Save ESB-Configuration** („can 2“)**:**
  Saves the current device configuration in the serial EEPROM and determines whether and what the criterion (OUI, Type). This configuration should be checked.
- **Restart ESB-Config.** („can 3“)**:**
  Read the current configuration on the ESB.
- **SDOs of module n** („can 4“)**:**
  only for internal use.
- **Diagnose:**
  shows the current status of the ESB (for more information, see "communication ESB").

1.9.13 Telnet command: profibus

Prerequisite

- select the card:

At the beginning, the correct map under options may be enabled (2k or 8k). Failing that, the system selects 2k-card (Option 3 = True).

Options : 0.no Option 1.DIO8/IO1 2.RS232/RS [COM-2k] 4.COM-8k

- activate the profibus diagnostic:

```
$CP-104/>pprr
```

```
DPM     COM-DPM V01.208 26.10.06
set profibus diagnostic        : 1 -> On
get life list of slaves        : 2
get config. of slave           : 3 [1...127]
global state field             : 4
task info                      : 5
dump input data                : 6
dump output data               : 7
```

set profibus diagnostic („pr 1“)

After activation card must now in the first line with the name log. All other ProfibusOptionen will become visible. After activation of the card, the name of it has to be reported on the first line. All other ProfibusOptionen be visible.

get life list of slaves (“pr 2”)
list of seleteced and actually exisiting slaves

get config. of slave (“pr 3”)
Information on programming the slaves.

```
$CP-104/>pprr  33  55
station 5 :
Station 'S5' get config   f a i l e d  ----------------------
```

global state field (“pr 4”)
State information from the Profibus slaves

```
$CP-104/>pprr  44
0:GloablStateField
```

```
bCtrl=0
bAClr=0
bNonExch=1
bFatal=0
bEvent=0
bNRdy=0
bTout=0
bDPM_state=OPERATE
bErr_Rem_Adr=5
bErr_Number=17
usBus_Error_Cnt=0
usTime_Out_Cnt=0
20,00,20
00,00,00
00,00,00
00,00,00
00,00,00
00,00,00
00,00,00
00,00,00
00,00,00
00,00,00
00,00,00
00,00,00
00,00,00
00,00,00
00,00,00
```

global state field (“pr 5”)

```
$CP-104/>pprr  55
0:TaskInfo
        , Version=0000,Condition=0
PLC     , Version=1060,Condition=0
USR_INTF, Version=1394,Condition=2
```

```
        , Version=0000,Condition=0
        , Version=0000,Condition=0
        , Version=0000,Condition=0
FDL     , Version=3127,Condition=0
```

dump input data (“pr 6”)

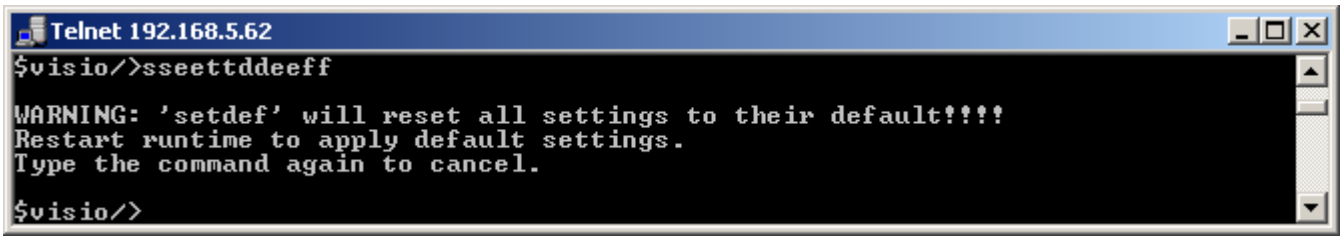
monitor the Profibus input – memory

dump output data (“pr 7”)

monitor the Profibus output - memory

1.9.14 Telnet command: setdef

Set all settings to the default factory values.



The values are only reset after a reboot of the runtime. Should the values not be reset so the command is still be entered once.

1.9.15 Telnet command: password

The command

password <own password>

will set the password for telnet after an restart.

In future it is only possible to login in Telnet with this password. The FTP functionality remains not.

Example:

```
visio_P205V login:user
user
User name ok, need password
------------------------------------------------------------------------
telnet:
$visio_P205V/>
```

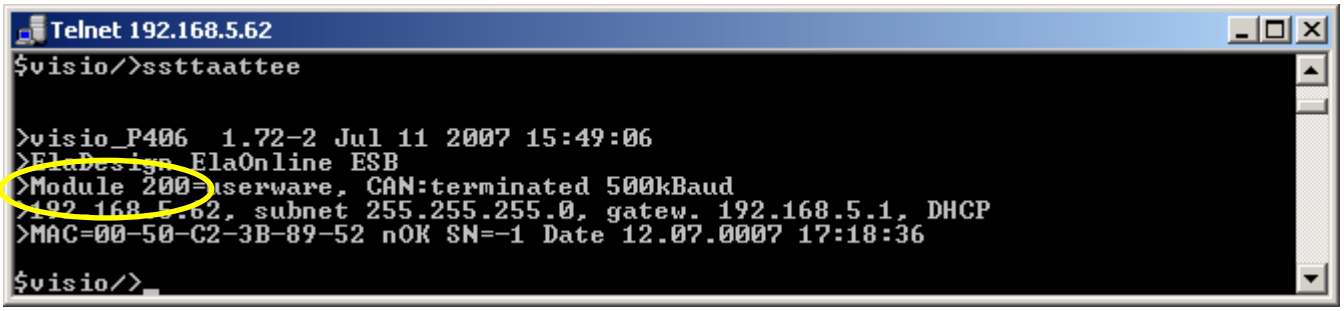
Erase the password:

After re-registration under the command telnet

Password *enter.

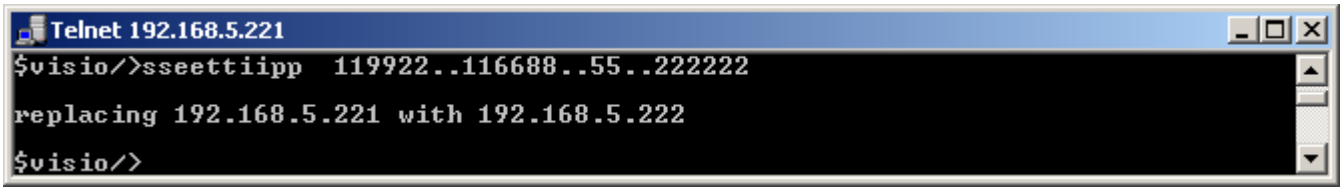
1.9.16 Telnet command: setmod

Change the module address:



1.9.17 Telnet command: setip

Change the IP-address:



The IP-address will be accepted only if DHCP is turned off. Telnet must subsequently with the revised IP address be restarted.

Example in CoDeSys:

ST

```
VAR
      psFW: POINTER TO sFW := 0;
      xREAD: BOOL;
      dwTemp: DWORD;
      xWRITE: BOOL;
      MP_IP_Adress: ARRAY [0..3] OF BYTE;
END_VAR
```

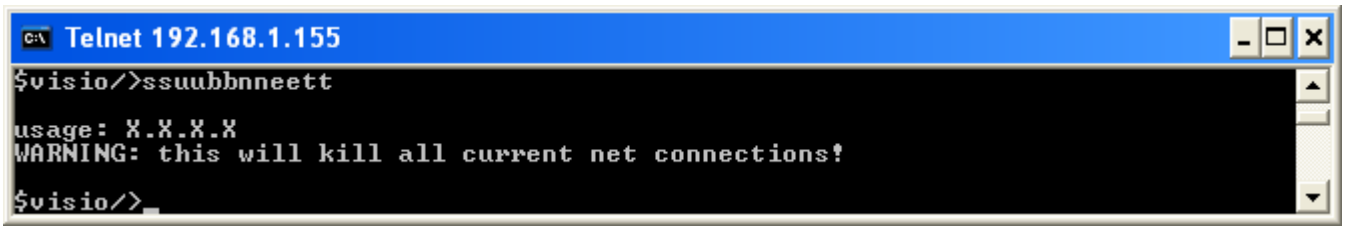
```
IF psFW = 0 THEN
      psFW := FwGetStructPointer(0);
END_IF
IF psFW <> 0 THEN
      IF xREAD THEN
            dwTemp := psFW^.uRemanent.sMasterEEprom.nMyIP_address;
            MP_IP_Adress[0]:=DWORD_TO_BYTE(SHR(dwTemp,0));
            MP_IP_Adress[1]:=DWORD_TO_BYTE(SHR(dwTemp,8));
            MP_IP_Adress[2]:=DWORD_TO_BYTE(SHR(dwTemp,16));
            MP_IP_Adress[3]:=DWORD_TO_BYTE(SHR(dwTemp,24));
            xREAD:=FALSE;
      END_IF;
      IF xWRITE THEN
            dwTemp:=USINT_TO_DWORD(MP_IP_Adress[0]);
            dwTemp:=dwTemp OR (SHL(USINT_TO_DWORD(MP_IP_Adress[1]),8));
            dwTemp:=dwTemp OR (SHL(USINT_TO_DWORD(MP_IP_Adress[2]),16));
            dwTemp:=dwTemp OR (SHL(USINT_TO_DWORD(MP_IP_Adress[3]),24));
            psFW^.uRemanent.sMasterEEprom.nMyIP_address:=dwTemp;
            xWRITE:=FALSE;
      END_IF;
END_IF
```

Runtime versions < 2.00 :
In this Runtime versions the IP-address is only updated when the program starts.
When at program start is not a valid Ethernet connection present, appears as an IP address the 0.0.0.0

As an IP-address is always the last set IP-address is output, indipendently whether the Ethernet connection is present or not.

1.9.18 Telnet command: subnet

Change the Subnet-Mask:



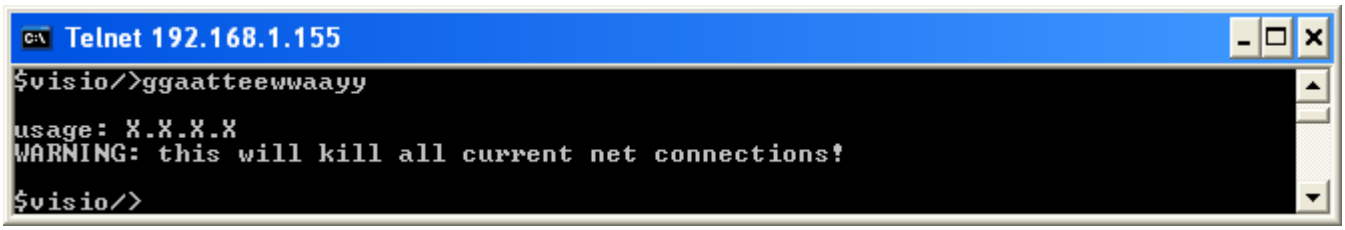
Example CoDeSys:

ST

```
IF xREAD then
      dwTemp: = psFW^.uRemanent.sMasterEEprom. nMyIP_subnet;
      MP_IP_Subnet[0]:=BYTE_OF_DWORD(dwTemp,0);
      MP_IP_Subnet[1]:=BYTE_OF_DWORD(dwTemp,1);
      MP_IP_Subnet[2]:=BYTE_OF_DWORD(dwTemp,2);
      MP_IP_Subnet[3]:=BYTE_OF_DWORD(dwTemp,3);

      XREAD:=FALSE;
END_IF;
IF xWRITE THEN

      dwTemp:=USINT_TO_DWORD(MP_IP_Subnet[0]);
      dwTemp:=dwTemp OR (SHL(USINT_TO_DWORD(MP_IP_Subnet[1]),8));
      dwTemp:=dwTemp OR (SHL(USINT_TO_DWORD(MP_IP_Subnet[2]),16));
      dwTemp:=dwTemp OR (SHL(USINT_TO_DWORD(MP_IP_Subnet[3]),24));
      psFW^.uRemanent.sMasterEEprom.nMyIP_Subnet:=dwTemp;
      xWRITE:=FALSE;
END_IF;
```

1.9.19 Telnet command: gateway

Change the Gateway-address:



1.9.20 Telnet command: setdhcp

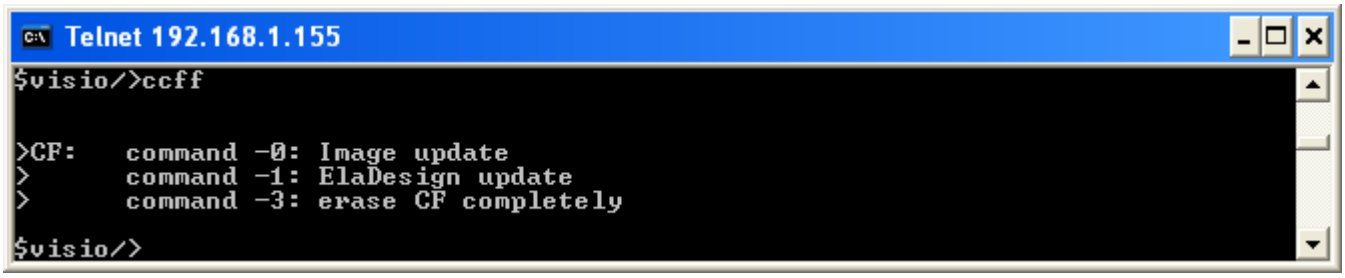
Turn the DHCP on or off.

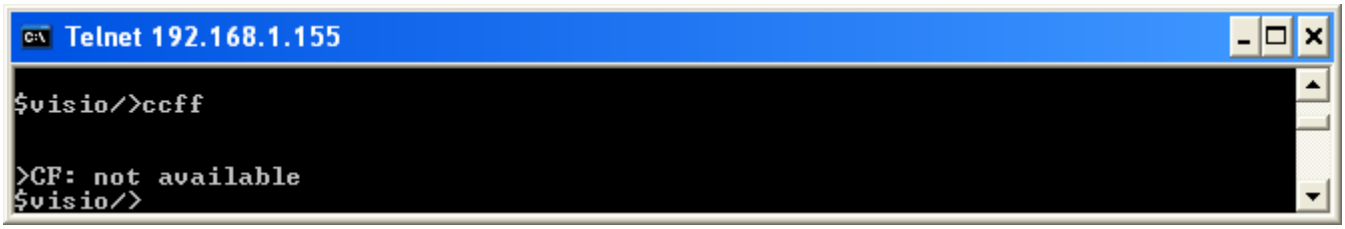
Example CoDeSys;

```
(*setdhcp byte*)          nDHCPactivated:=psFW^.uRemanent.sMasterEEprom.nDHCPactivated;
```

1.9.21 Telnet command: cf

See chapter „Update-functionality“

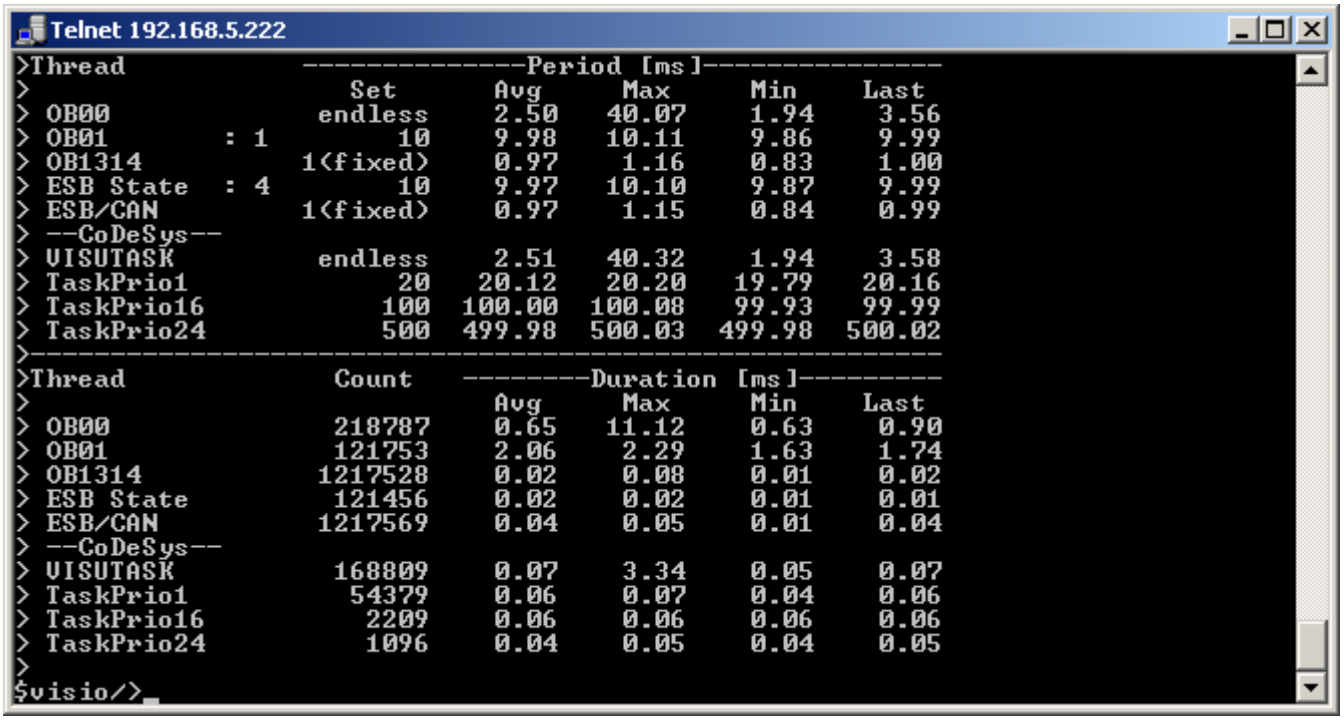




If no CF-card is plugged, the message „CF: not available”

1.9.22 Telnet command: threats

Show an Set the Thread-times:



In the upper part of the display, the cycle times of each task are displayed. Some threads (eg OB01) can be set here.

In the lower part of the number of iterations and the execution time of each task is displayed.

Cycle times and processing times are measured between two invocations of the command.

From the FW- Version 2.00 a further instruction set is available. It is listend in <threath> , or just <T>

<T 0>

An overview from the priorities of the threads:

```
table of all threads with prio: 0 .. 255, 0 is the highest priority.
-------------------------------------------------------------------------------
-------0 .. 96 reserved for real-time above drivers, e.g. CAN--------------------
Prio   1   RealTimeTicker       : low level hardware timer
Prio   2   CoDeSys CtrlTask     : low level hardware timer codesys
Prio  10   CAN Int              : CAN Task
Prio  13   CAN0/1               : CAN data exchange with application
Prio  14   IOs                  : all I/O processing
Prio  16ff CoDeSys Thread 0..15 : see task configuration the <value> priority
Prio  32   OB01                 : driver-communication
                                : TCP/UDP-Modbus communication
Prio  33ff                      : reserved
------97 .. 152 used by the default Windows CE-based device drivers, e.g. RS232, Ethernet-----
-----153 .. 247 reserved for real-time below drivers---------------------------------------
Prio 200ff CoDeSys Thread 16..23: see task configuration the <value> priority
Prio 208ff                      : reserved
Prio 247   CoDeSys VISU Task    : processing VisuLoop for 3S Target-Visu
-----248 .. 255 maps to non-real-time priorities-------------------------------------------
Prio 248ff CoDeSys Thread 24..31: see task configuration the <value> priority
Prio 250   OB00                 : recipe processing
                                : event list processing
                                : mask processing (VisuLoop)
                                : keyboard processing (VisuLoop)
-------------------------------------------------------------------------------
```

<T>

You will get a screenshot of the initiated system times.

```
> Memory Free=     11968 from      26796[kB]
> Threads-----------------|----------|------Period [ms]-------|----- Duration [ms]-----|Load-|--------
>         Set: [no]       |     Count|     Min     Cur.    Max|     Min     Avg     Max| %   |OS-Prio
 OB00              endless|     22923|   11.98   65.80   68.00|    0.55   48.13   48.13| 73.1|250
 OB01       :  1         5|     69404|    0.45   11.51   16.47|    0.33    1.70   11.68| 14.7| 32
 IOs        :  3        10|     42021|    9.71   10.01   10.31|    0.01    0.03    0.16|  0.3| 14
 OB1314           2(fixed)|    211119|    1.60    1.97    2.41|    0.03    0.04    0.26|  2.1| 15
 CAN Int         interrupt|         0|    0.00    0.00    0.00|    0.00    0.00    0.00|  0.0| 10
 CAN0/1           2(fixed)|    211723|    1.70    1.98    2.33|    0.02    0.04    0.22|  1.9| 13
> CoDeSys-Threads----------|----------|-----------------------|-----------------------|-----|--------
 Thread0                 5|    101667|    3.60   12.00   12.26|    0.08    9.90   10.00| 82.5| 16
 Thread1                 7|     72200|    0.14    0.15   13.69|    0.07    0.08    0.24| 52.4| 17
 Thread2                11|     43589|    0.14   11.94   16.47|    0.07    0.08    0.24|  0.7| 18
_Thread31                5|     80590|    0.14    6.89   77.04|    0.07   11.97   48.52|100.0|255
```

threads 0 = thread info

threads 1 <value> set new value of OB01 = 10 [ms]

threads 2 <value> set new value of OB02 = 10 [ms]

threads 3 <value> set new value of IOs = 10 [ms]

threads 10 = show cycle time perodic

By entering the command <T 10>, this table is constantly updated. Therefore you receive an online-monitor. The minimum and maximum values will be reset by a renewed call to the command.

Declaration for the picture:

Free Memory: Free space / Total Available memory in MB.
This information is valuable to get pogrammed wasted space on the track (memory-leech) Threads Name of System or projected CoDeSysthreads indicating the set cycle time

- Count:
  counter, calls total.
- Period [ms]
  scoreboard of the cycle time with min/max/jitter
- duration [ms]
  display the throughput time for a cycle with min- /max jitter
- load %
  ratio of duration to period in % Example: Period:10ms, Duration: 5ms load 50 %
- OP-prio
  Windows- priority of the respective task. HIGH [0 ..... 250] LOW

details of the Windows- priorities you will find under the Chapter threads

threads 1 <value> set new value of OB01 = 10 [ms]
threads 2 <value> set new value of OB02 = 10 [ms]
threads 3 <value> set new value of IOs = 10 [ms]

- <T 1 xyz>
  Set the time for the system OB1 (WindowsPrio 32).
  This Threath is triggered by the RealTimeTickerMainThread in an adjustable interval (1ms – 50 s)

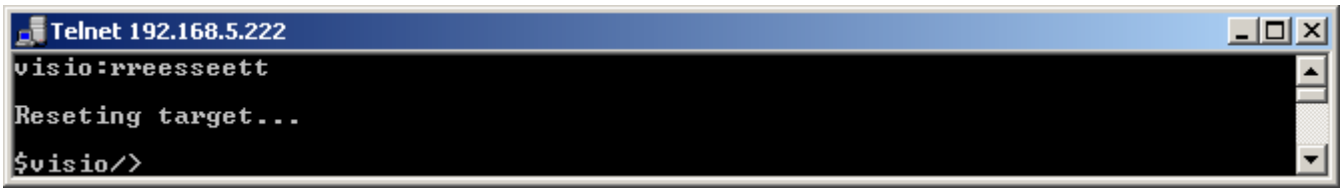
is called.
In this thread, Eonline processed, will be the TCP/Upd- Modbus communications and various UW-functions for IO's and CLC and the ElaSim-function OB1 () is called.

- <T 2 xyz>
  Setting the time for the system OB2 (WindowsPrio 16)
  This Threath is triggered by the RealTimeTickerMainThread in an adjustable interval (1ms – 50 s) is called. In this function ElaSim-function OB2 () is called.

- <T 3 xyz>
  Setting the time for the system IO (WindowsPrio 14)
  Here, all IO calls are made.

1.9.23 Telnet command: reset

Restart the device.



1.9.24 Telnet command: restart

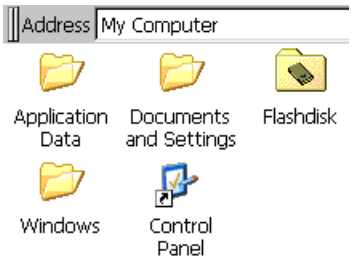
Restart the Runtime.

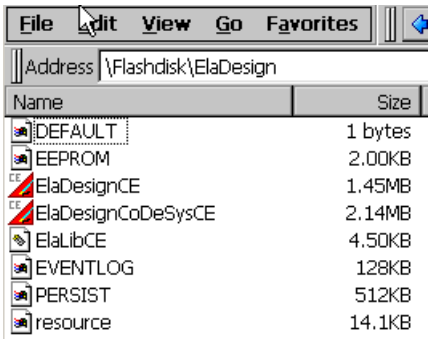
1.10 Application

1.10.1 Start an Application

If it has not already been opened by the Austostart was opened

My Computer -> Flashdisk –> ElaDesign –> ElaDesignCE or. ElaDesignCoDeSys





1.10.2 Terminate an Application

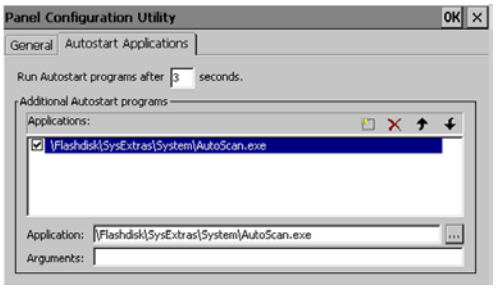
Close a project / of the Runtime and return to Windows CE©

1.) With the right mouse button on the runtime symbol in the taskbar.
2.) or you implement in your application the function "end program".

1.11 Data Exchange

1.11.1 Establish an AutoScan-Connection

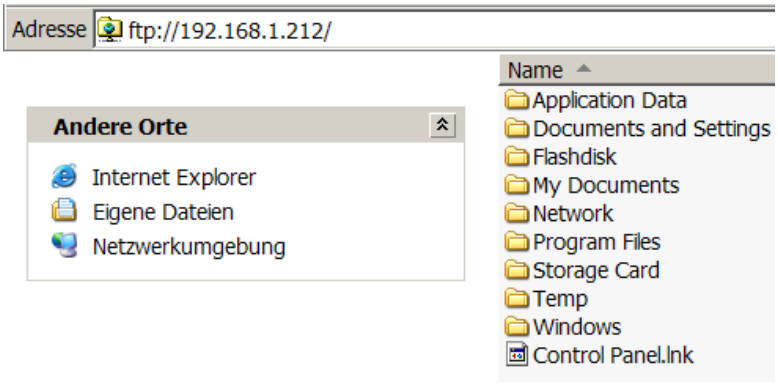
To make the device available for eStudio, it is necessary to include a program on the P4xx.



Start ➔ Programs➔Utilities➔Panel Configuration

- startup applications
- select the file, as shown to the right.
- confirm with [OK]
- **Save the registry**

1.11.2 Establish a ftp-connection



Register Anonymous

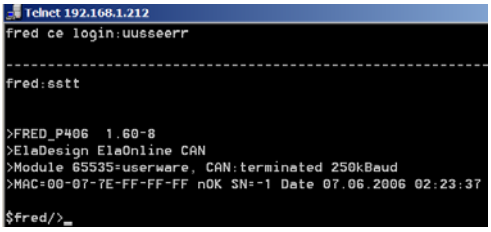
1.11.3 Establish a telnet-connection

This requires running the runtime!

Standard user password : user

For more detailed informationen see chapter Telnet.

Hint: You can connect with the HyperTerminal a telnet connection.



1.11.4 Establish a VNC-connection

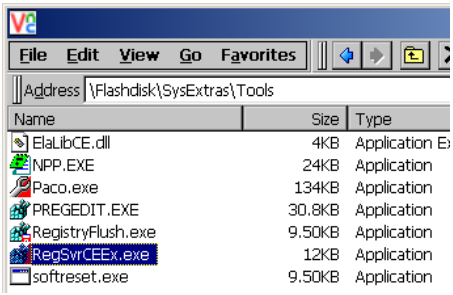
The connection with the RealVNC - viewer may occasionally be interrupted.
In addition, the use of VNC that only "right mouse clicks' are possible.

1.11.5 Web-visualization

Register the Visioweb - Libraray.

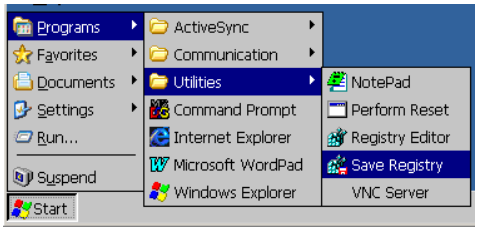
Start on panel side :

\Flaskdisk\SysExtras\RegSvrCEEx.exe



Select the file to be registered:

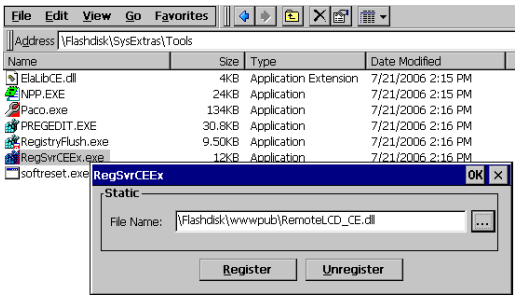
Save the registry.



Register the Visioweb Client dll

In order to access with your P400 on further devices with visioweb:

RemoteLCD.dll has to be initialized.



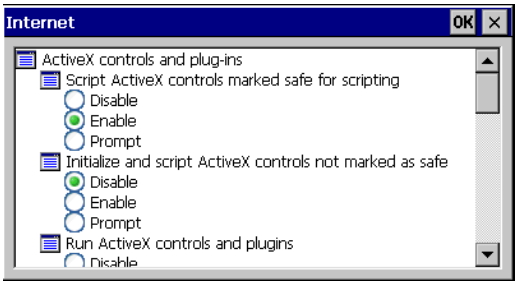
Furthermore the settings in Internet Explorer have to be changed:

Press the button "Settings"

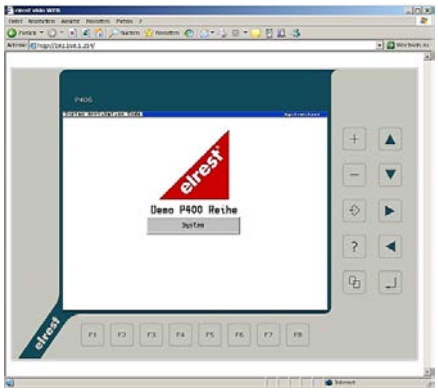
Set the

"Initialize and script ActiveX controls not marked as safe"

to "Enable"

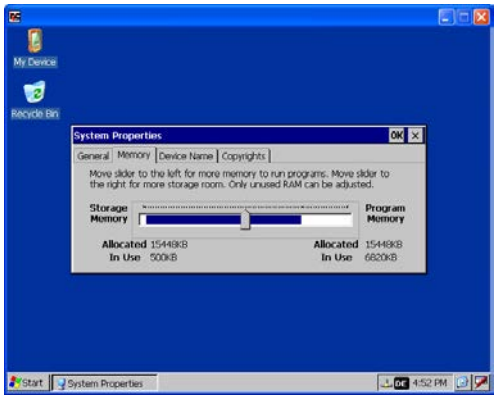


Start the Internet Explorer with the IP address of the device.



1.12 Operating system settings

1.12.1 Memory allocation



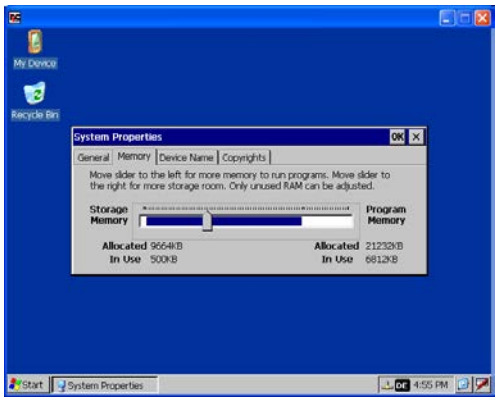
The memory layout of the system can be configured.
To enable the use of very large PLC and HMI applications resources, the following dialog can be used:

Start ➔ SettingsControl Panel ➔System ➔memory

Storage Memory named here space
that can be used for Windows internal processes
“Program Memory “designated space that can be used for Windows applications.
If there are problems with too large PLC applications , this field should be enlarged The controller should not be put fully on the left to make shure that the windiows system will have a minimum of storage memory available.
Should the change be permanent, then the registry must be saved.

If there are no problems with the resource or application on size, then the default will be retained.
Appears at the start of an application,
the error message "Insufficient memory", as described above may be that increased program memory '.

Recommendation for standard ab Windows CE© - Image:



(Settings for "Allocated Memory" in KB)

viso P2xx series, Booth CE version 6:18
Storage: 9856KB / Program: 25772KB

visio P4xx series
This setting differs depending on the version, Storage: 4-6Mb, 28Mb Program 26.

1.12.1.1 SRAM memory allocation

Is there a SRAM on the hardware platform, then this is assigned as follows

		Start-Offset [hex]	length [hex]
	SRAM-Speicher 512kB = 8:0000		
SRAM	ID	00:0000	00:0008
	CoDeSys Retain without presistant	00:0008	01:FFF8
	tIO / flag	02:0000	02:0000
	Debug	04:0000	01:0000
	Eventlogger	06:0000	02:0000

Since version 2.3.1 and 2.9.3 (205 will be only supported with CE image version of 6:18 or a specific driver.)

		Start-Offset [hex]	Länge [hex]
	SRAM-Speicher 1024kB = 10:0000		
SRAM	ID	00:0000	00:0008
	tIO / flag	02:0000	02:0000
	Debug	04:0000	01:0000
	Eventlogger	06:0000	02:0000
	CoDeSys Retain without Persistant	08:0000	08:0000

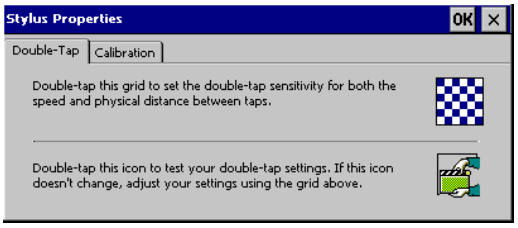
1.12.2 Calibration of the Touch

The touchscreen is already in the installations-menu calibrated. At the request of the touch but can be calibrated again.

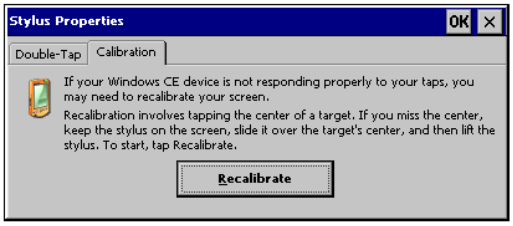
To this end, serves the tool "Stylus"

Start ➔ Settings ➔ Panelconfiguration ➔ Stylus

You double-click Settings



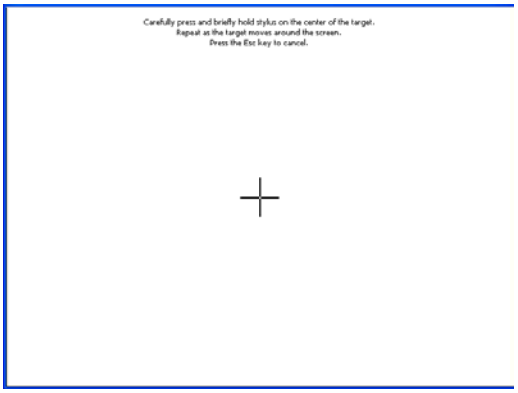
Touch- Recalibation



Change to tab-folder 2

Confirm with [Recalibrate]

Follow the instructions, in which you each in several steps in the middle of the crosshair typing. With the negative edge, so the resolve of the touch pen from the cross, spring the cross on its respective next position.



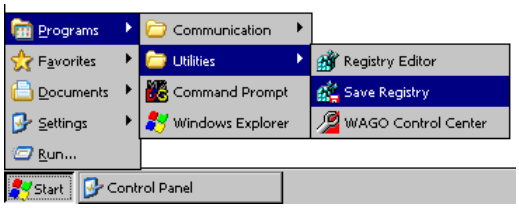
Carefully follow the instructions that are show displayed above the screen.

- Tap in the middle of the cross with the touch pen.
- Hold this for at least 2 seconds to position the cross again.

Save the new calibration

In order to save the determined values permanently, therefore the Windows Registry have to be stored.

Select:



Start ➔ Programs ➔ Utilities ➔ Save Registry

1.13 Preemptive multitasking

Why task configuration?

In many installations a safe and continuous control processing is indispensable.

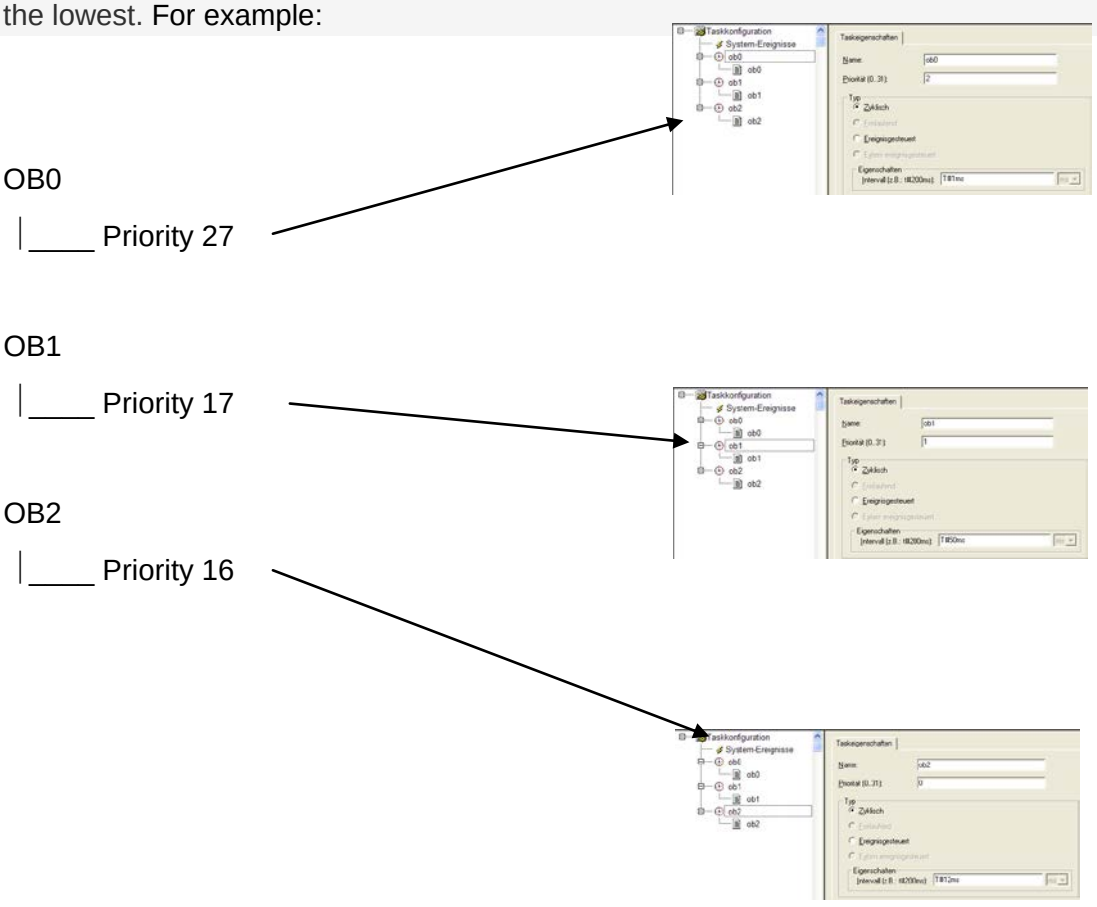
Therefore, tasks, such as a data collection, the checking of the system battery or the updating of the HMI in lower prior tasks created. These tasks are of little time critical and therefore allow an editing in the background. The main program will thus not disturb in the execution.

1.13.1 Task configuration

If no task configuration is selected under CoDeSys V2.3, the PLC_PRG program block is called from the thread. The thread can be observed by Telnet times.

If the task configuration used in CoDeSys is given a fixed allocationthen, a fixed allocation will then be given.

Under µE devices up to 32 tasks can be created. Here, 0 corresponds to the highest Prorität, 31 of the lowest. For example:



Since the CoDeSys version of the low-priority task can V2.3.6.x (OB0) are defined as free running. This means that both OB0 due to its priority, as well as its type property is always called when all other tasks are not processed.

Among P400 was significantly expanded with the CoDeSysVersion> = 2.3.6.x the configuration options. The most common default configuration represents below.

Main task:

- Name: OB2
- Priority: 16
- category: cyclical, 10ms
- functions: machine sequence

Normal task:

- name: OB1
- Priority: 17
- category: cyclical, 100ms
- function: FileIO, post-calculation, Print ...

HMI task:

- name: OB0
- Priority: not relevant since it automatically on WindowsPrio 247
- type: Externally driven Visuloop or Eladesignloop
- function: all the functionalities around HMI such as screen image updates, keyboard control etc.

The use of "externally driven" is for the HMI -task compared to "free running" should be preferred, since the CoDeSys-Task with the HMI task of the operating system's running. The system receives a significantly higher level of dynamics. Don’t use only a Singletask application.

1.13.2 Description of the task's

In ElaDesign Runtime the following threads are created:

Designation	Priority	Description
RealTimeTickerMainThread	1	This thread is a timer hardware interrupt triggered every 1ms executed. He serves as a clock for all the other timer-triggered threads
CtrlTask	2	CoDeSys internal task
CANCEThread	10	This thread is triggered by an interrupt of the CAN controller and contains the hardware-related CAN routines.
CANSyncThread	12	(No longer available as of version 1.70) This thread is triggered by the real-time ticker MainThread and is called in an adjustable interval (1ms - 50s). This thread is the synchronization of the ESB.
CANXchgThread	13	This thread is the real- time ticker MainThread triggered every 1ms called. This thread is the exchange of CAN or ESB.
CANStateThread	14	This thread is triggered by the real-time ticker main thread in a configurable interval (1ms - 50s) is called. This thread is monitoring the status of the ESB.
IOThread	14	Processing of the analog inputs and outputs. (Version 2.0)
TimerThreadOb13_14	15	This thread is the real-time ticker MainThread triggered every 1ms called. In this thread, various timer functions for 1 and 10 ms, and the OB13 ElaSim functions () and OB14 () is called
CoDeSys-Tasks	16 + CoDeSys-Prio.	CoDeSys program tasks with priority 0-15
TimerThreadOb02	*16*	This thread is triggered by the real-time ticker main thread in a configurable interval (1ms - 50s) is called. In this thread, the ElaSim ob2 function () is called.
TimerThreadOb01	32	TimerThreadOb01 32 This thread is triggered by the real-time ticker main thread in a configurable interval (1ms - 50s) is called. This thread is executed EOnline, is the Modbus communication and various functions for UW-O's and CLC and ElaSim ob1 function () is called.
CoDeSys-Tasks	200+CoDeSys-Prio.	CoDeSys program tasks with priority 16-23
tPlcLoad	245 (255 2.0 – 2.10)	CoDeSys internal task
tTCPSrv	245 (65 2.0 – 2.10)	CoDeSys internal task
tTCPClt0	245 (65 2.0 – 2.10)	CoDeSys internal task
VISU_TASK	247	CoDeSys Visutask program or task with the name VISU_TASK.oder task type, External Event-driven 'and the event ElaDesignLoop
CoDeSys-Tasks	248+CoDeSys-Prio.	CoDeSys program tasks with priority 24-31
MainThread	250	Thread of Windows CE application.
TimerThreadOb00	250	This thread is executed in a loop. Between each iteration is 1ms waiting for. This thread is executed ElaDesign and UDP communication and calls the function ElaSim Ob0 ().
TimerThreadLowPrio	253	This thread is executed in a loop. Between each iteration is 1ms waiting for. In this thread are low-priority work such as Telnet executed

Shaded entries are only a runtime with CoDeSys (ElaDesignCoDeSysCE.exe) exists.

All entries in italics are in a runtime with CoDeSys (ElaDesignCoDeSysCE.exe) not available.

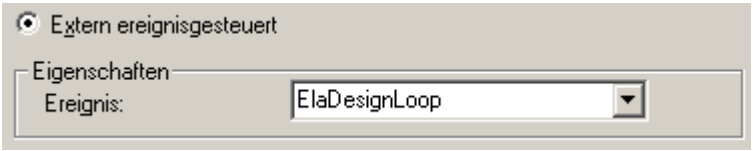
Telnet

```
CM211/>t 0
table of all threads with prio: 0 .. 255, 0 is the highest priority.
-------------------------------------------------------------------------------------------
-------0 .. 96 reserved for real-time above drivers, e.g. CAN-------------------------------------
Prio   1   RealTimeTicker       : low level hardware timer
Prio   2   CoDeSys CtrlTask     : low level hardware timer codesys
Prio  10   CAN Int              : CAN Task
Prio  13   CAN0/1               : CAN data exchange with application
Prio  14   IOs                  : all I/O processing
Prio  16ff CoDeSys Thread 0..15 : see task configuration the <value> priority
Prio  32   OB01                 : driver-communication
                                : TCP/UDP-Modbus communication
                                : remote panel communication
Prio  33ff                      : reserved
------97 .. 152 used by the default Windows CE -based device drivers, e.g. RS232, Ethernet---------
-----153 .. 247 reserved for real-time below drivers-----------------------------------------------
Prio 200ff CoDeSys Thread 16..23: see task configuration the <value> priority
Prio 208ff                      : reserved
Prio 247   CoDeSys VISU Task    : processing VisuLoop for 3S Target-Visu
-----248 .. 255 maps to non-real-time priorities---------------------------------------------------
Prio 248ff CoDeSys Thread 24..31: see task configuration the <value> priority
Prio 250   OB00                 : recipe processing
                                : event list processing
                                : mask processing (VisuLoop)
                                : remote panel communication
                                : keyboard processing (VisuLoop)
-------------------------------------------------------------------------------------------
CM211/>
```

We will be differences the following areas:

Description	Priorities
Real time tasks with a priority above the Windows CE© device drivers	0 – 15
Real-time above drivers tasks in real time with a priority below the Windows CE© device drivers	16 - 23
non-real-time tasks	24 - 31

All tasks are working asynchronously with each other and to ElaDesign
An exception is here an externally-driven task with the event 'ElaDesignLoop'. This is called in every run of ElaDesign.



1.13.3 Recommended Task configuration

If your application uses interfaces from the controller, the different priorities of the individual interfaces are considered.

- CAN
  Only the CanController operates on a higher priority than CoDeSys priority 0
  If you only CAN in the application, you can operate the main task of
  the application under CoDeSys with the priorities between 0.und.15
- Ethernet, RS, USB
  All other Windows CE-drivers are between CoDeSys 15 and 16 priority
  Do you need one of these interfaces, it is recommended that the main task from your application to run CoDeSys Prio16.
- FileIO
  The write and read of a file will be controlled by the CE operating system.The required time depends on location (Flaskdisk, USB, ExternHDD, CF, SD) and different amount of data.
  This time can be extremely varied and up to several seconds, this must necessarily be considered in your application. E.g. to create a log file should be a task with priority 31 (WindowsPrio 250) are created. Copy the required variables from the main task in this task order and start the necessary task in this file file services.

MAINTASK
The main task contains your application. This includes the processing of inputs and outputs, and communication with various other devices. The priority of this task arises from the interfaces used to control.
eg: Cyclic Task cycle time T # xyms priority 16

The application created by the system and the task can watch it with the telnet command <Threath>.
More, see the section: Telnet → Threads

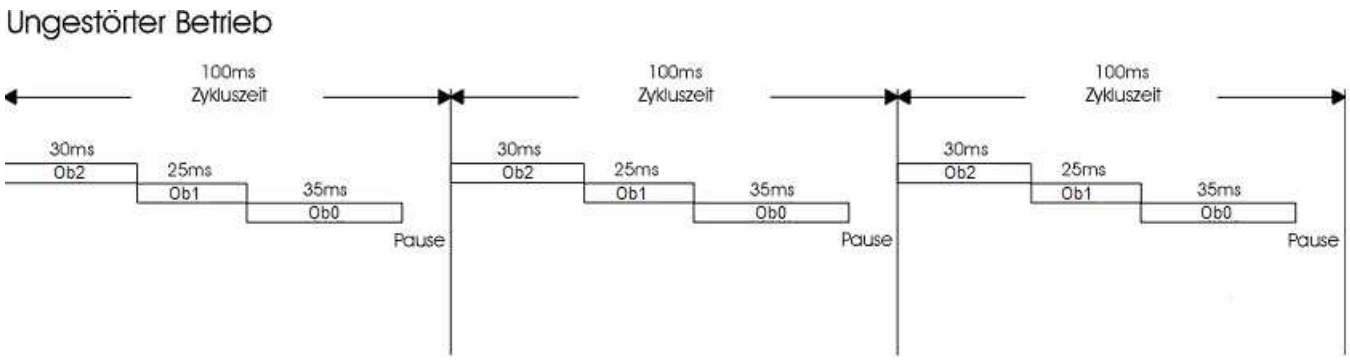
VISUTASK
Visutask belong all lines of code, wich deal with HMI employ. These include: query keys, screen position, numbers of screen-masks etc. Still, all commands of the library Pultxx compulsory to apply at this level such as PultMaskOpen, DrawBitmap ... etc.
At codesys- programs, this task usually will be designed freewheeling. However, since the runtime for its part has already a visutask it is advantageous, the codesys- Visutask in sync with the operating system-Visutask to edit. You should therefore select: externally driven - Visuloop /EleDesignLoop, prio <26 * > (WindowsPrio 247) .
Note: The priority plays no role in this case, since the interrupt regardless of their stated priority by the Visuloop of the operating system is triggered.

Telnet

```
CM211/>t
> Memory Free=     25500 from      37856[kB]
> Threads-----------------|----------|------Period [ms]-------|----- Duration [ms]-----|Load-|--------
>         Set: [no]        |     Count|     Min     Cur.    Max|     Min     Avg     Max| %   |OS-Prio
 OB00              endless|      2606|    9.83    9.83   28.95|    0.00    0.52    6.32|  5.2|250
 OB01       :  1         10|      2675|    8.94    9.92   28.95|    0.31    0.32    0.77|  3.3| 32
 IOs        :  3         10|      2676|    8.97    9.93   28.95|    0.23    0.23    0.45|  2.3| 14
 OB1314            1(fixed)|     26759|    0.04    1.00   11.35|    0.01    0.02    0.27|  2.1| 15
 CAN Int          interrupt|         0|    0.00    0.00    0.00|    0.00    0.00    0.00|  0.0| 10
 CAN0/1            1(fixed)|     26751|    0.05    0.98   11.09|    0.01    0.02    0.17|  2.2| 13
> CoDeSys-Threads----------|----------|-----------------------|-----------------------|-----|--------
 DefaultTas              10|      2675|    8.87    9.92   29.02|    0.04    0.05    0.32|  0.5|200


threads  0 = thread info
threads  1 <value> set new value of OB01 = 10 [ms]
threads  3 <value> set new value of IOs = 10 [ms]
threads 10 = show cycle time perodic
threads 11 = disable profiler
```

1.13.4 Task configuration in the undisturbed operation

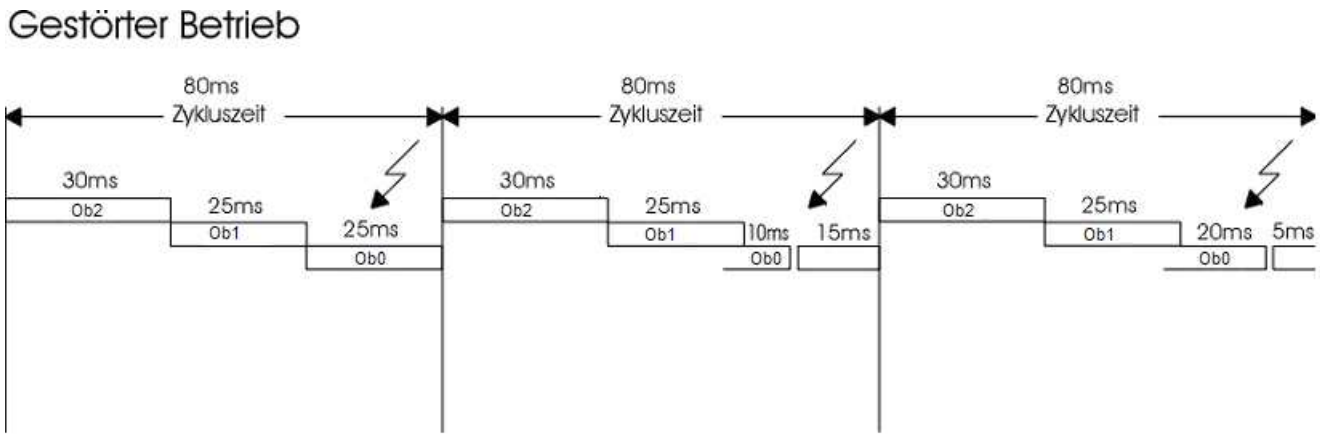
If the cycle time, such as in the example, 100 ms, large will be selected, as the sum of the individual program modules without realtime error, the correct task schedule will be processed. We speak of an undisturbed operation.



1.13.5 Task configuration with realtime error

When compared to the example for the smooth operation of the program within a thread will be replaced by a much longer or the cycle time is reduced, can be made in the example, OB0 not fully completed. The thread is interrupted and the next iteration of the program at the interruption continued. After the execution of the remaining Ob-Resets is the same thread again started and runs until the interruption after all of the cycle time.

Degraded mode



Also in the troubled operation is the execution of the OB2 and OB1 guaranteed.

In the present example is also the OB0 are dealt with, even if at a later date. It would, however, still an OBx present, so this was never executed.

1.13.6 Interrupt from Task's

The current task can be in any position of a higher prioity task being interrupted. The continuation of the task will be done at a later date to the body, the interruption took place.

Because this is a preemptive multitasking system, the inputs and outputs will be processed in a separate thread "IO with a higher priority than all user threads. If the cycle time of this thread is less or larger than the user threads, the input and output data are not available in every cycle re-read This happens regardless of whether the system is in undisturbed or faulty operation.

1.14 Multi Languages

What to do when creating a project with multi - languages using for example a cyrillic character.
Cross reference, read the documente:

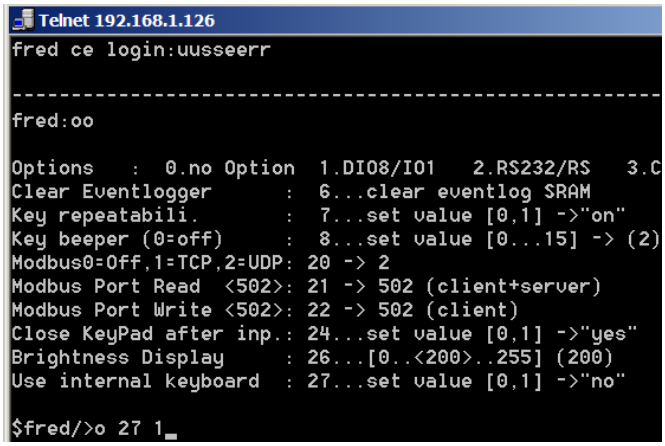
- Tips_and_Tricks_GB.pdf
- ElaDesign_GB.pdf

1.14.1 Configuration of the Keypads

If you are using telnet, Option 27

→ o 27 1 <return>

You do not have selected the internal keypad, so l the Windows CE© - keypad will be opened. But a language dependent switching will not be done.



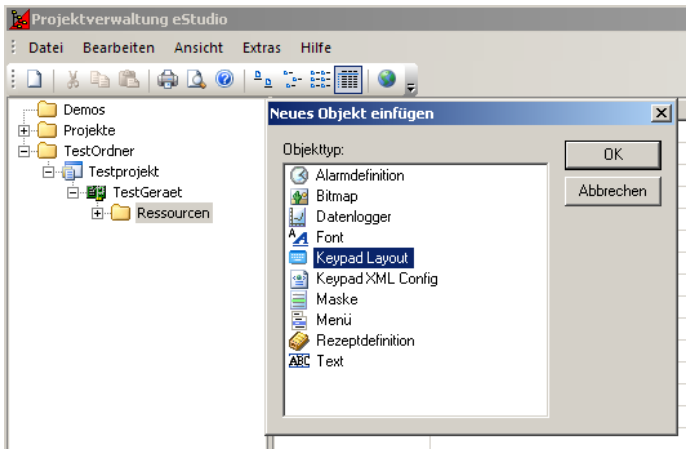
1.14.2 Configuring its self-created keypad layouts

In eStudio Version 2.83 inches are already multiple keypads included in the project.

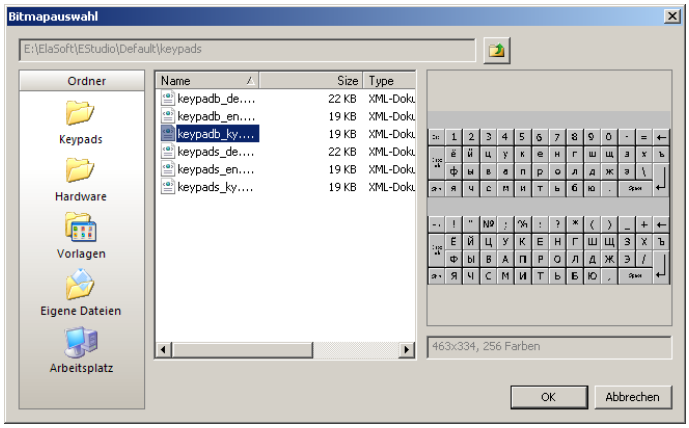
Ab eStudio Version 2.91 müssen Sie benötigten Keypads noch hinzufügen. Gehen Sie dabei wie folgt vor:

From eStudio Version 2.91 , you have to add the required keypads. Proceed as follows:

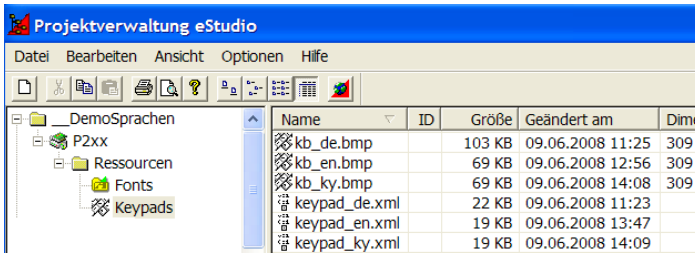
- Click the right mouse button on the resource
- *From the context menu, New '*
- *Select the Insert New Object "dialog the object type, keypad layout '*
- Click OK



- *Next, choose “Add from Template”*



- Click on „Template“ und choose the template whichyou want.



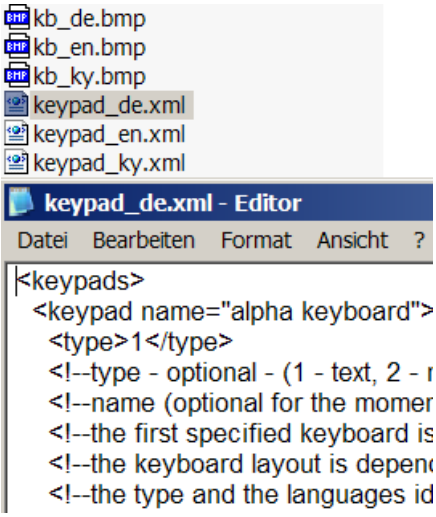
You can select these keypad_<language>.xml and kb_<language>.bmp to extend your required languages.

Create additional language keypads:

1.)Copy the xml file that you want to use as a template. Use this command, New Copy ... 'from the context menu. Assign an appropriate name, for example keypad_jp.xml in creating a Japanese fon

2.) Edit this file and follow the English-speaking comments in the XML file.

3.) Create the suitable kb_jp.bmp BITMAP file.based on the comments

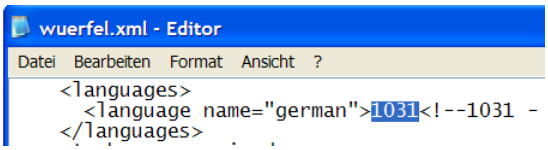


You can also customize an existing keyboard to your wishes. For example, the size change or create your own design. It is advisable always to use an existing keypad as a template.

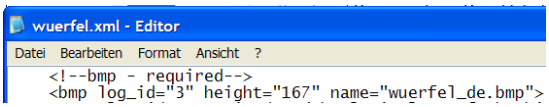
Chance the language code.

The example here is
1031 = German exchange. The new keyboard will replace this

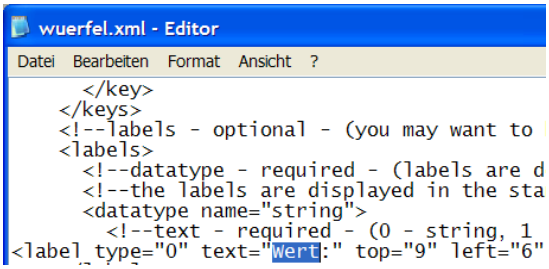
.



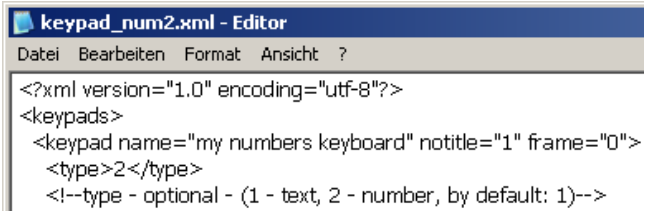
Change the keypad bitmap name.



Chance the label of the text.

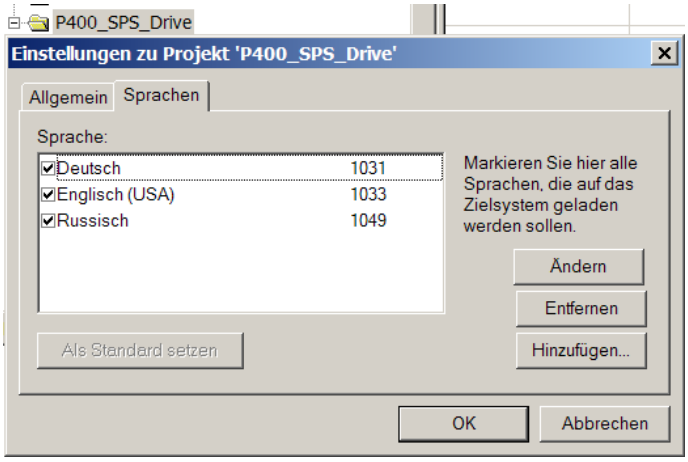


There is a distinction between numeric and alphanumeric keypads. These are used automatically to change according to the type of data. The distinction is made in the xml file by setting the type.



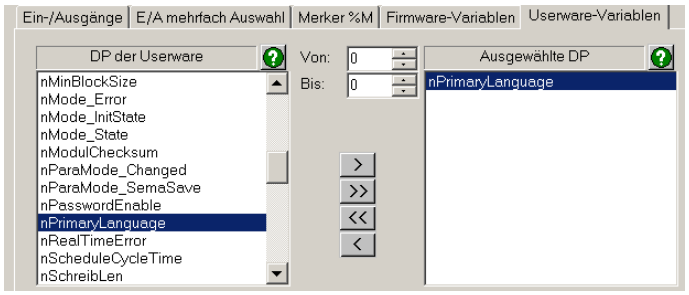
1.14.3 Configuring the language selection

Select in the foremost publicised the languages which should be used.



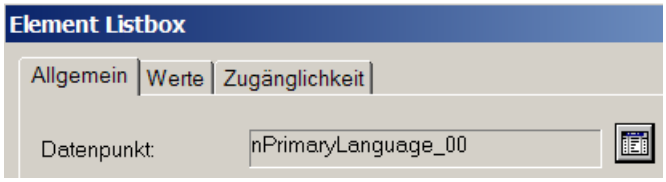
Create a userware datapoint “nPrimaryLanguage”.

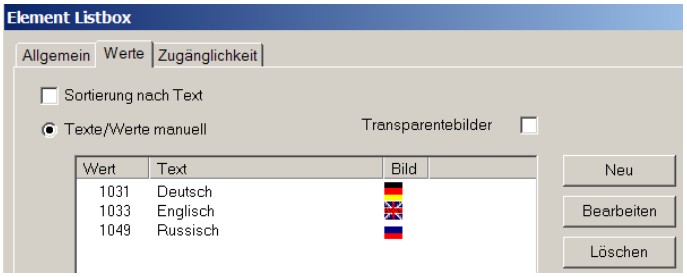
Select the data type "retain" so that your language setting is retained after a reboot.



Switching of the language.

Supply the userware datapoint with the value of the code

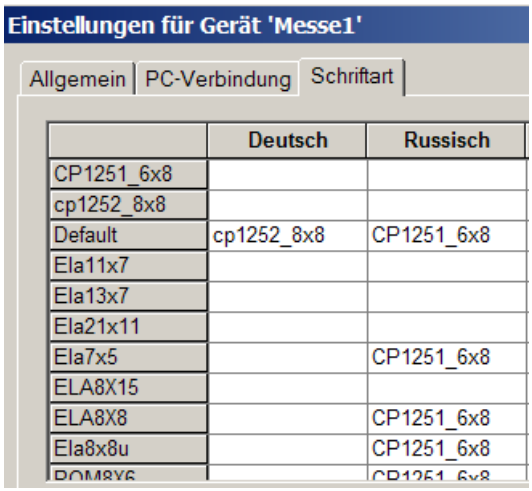




1.14.4 Language dependent font selection

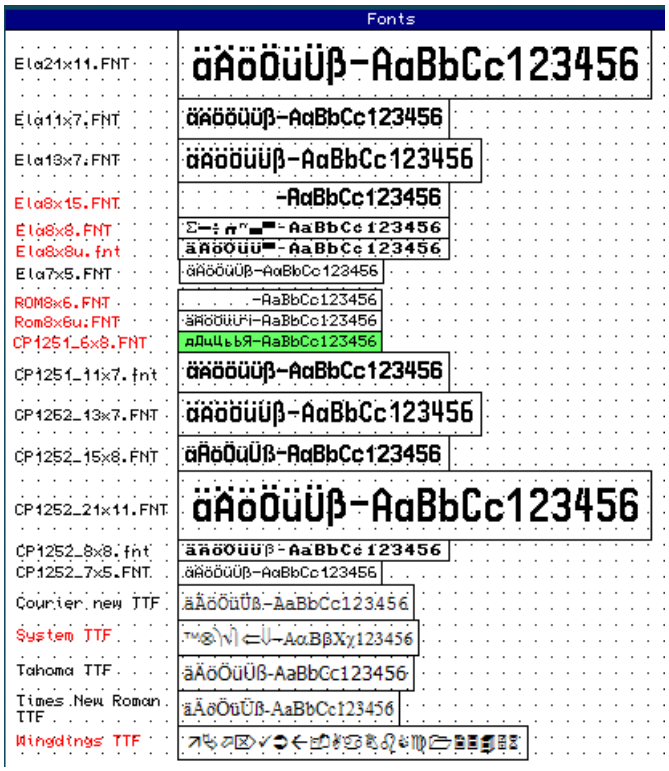
Using the example of Russian:
Select the "Device Settings" the original Russian character set.

I.e. is nPrimaryLanguage to 1049 (= Russian) found
Eladesign it turns all of the "Russian" to the specified character sets on CP1251_6x8.



FONT	german	english	russian
Ela21x11FNT	Yes	Yes	-
Ela11x7.FNT	Yes	Yes	-
Ela13x7.FNT	Yes	Yes	-
Ela8x15.FNT	-	Yes	-
Ela8x8.fnt	-	Yes	-
Ela8x8u.fnt	-	Yes	-
Ela7x5.FNT	Yes	Yes	-
ROM8x6.FNT	-	Yes	-
Rom8x6u.FNT	-	Yes	-
CP1251_6x8.FNT	-	Yes	Yes
CP1251_11x7.fnt	Yes	Yes	-
CP1252_13x7.FNT	Yes	Yes	-
CP1252_15x8FNT	Yes	Yes	-
CP1252_21x11.FNT	Yes	Yes	-
CP1252_8x8.fnt	Yes	Yes	-
CP1252_7x5.fnt	Yes	Yes	-
Times New (TTF)	Yes	Yes	-
System (TTF)	-	-	-
Tahoma (TTF)	Yes	Yes	-
Times New Roman (TTF)	Yes	Yes	-
WingDings (TTF)	-	-	-

So the fonts appear on the target system.

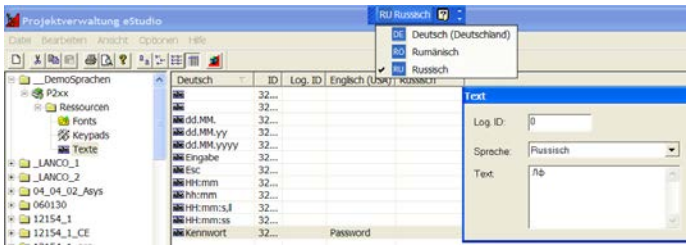


1.14.5 Configuring different languages

Enter the English and Russian texts in eStudio.

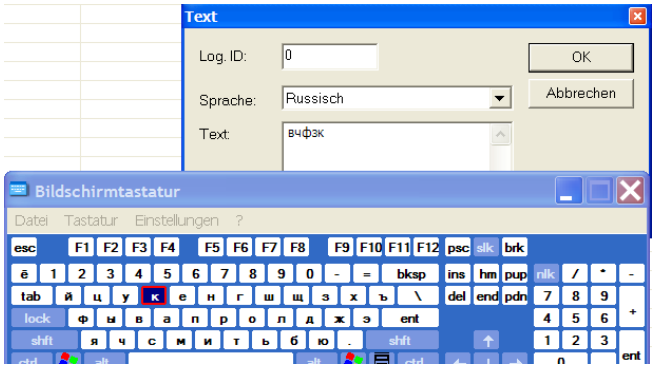
To enter the Russian texts, turn the language to the locale of the windows operating system on Russian.

The Cyrillic characters can now be entered directly into eStudio.



If you do not have Russian keyboard, they could be of great use a visual

For more information, please visit : "ElaDesign_DE"

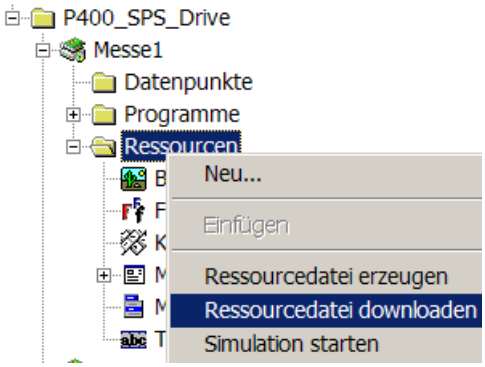


Not all fonts support German special characters.

Please note this in the project planning:

1.14.6 Download the languages text and the keypads

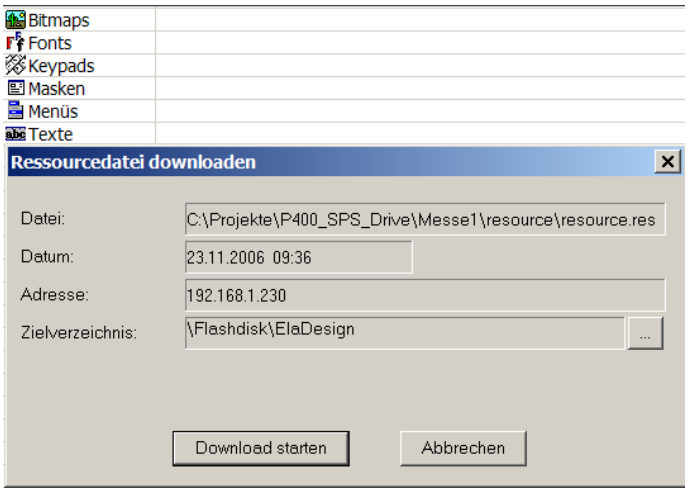
Translate the resource and transfer them to the device. Now another dialog appearsfor the XML file.

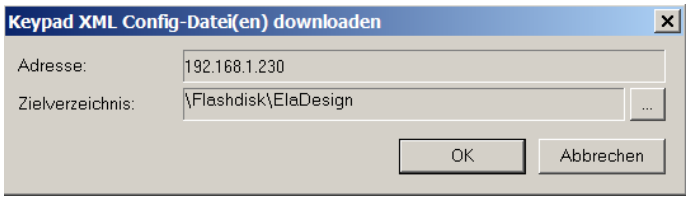


Please confirm this.

Hint:

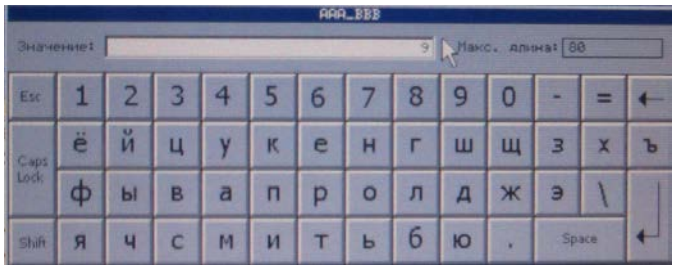
The keypad usually is transferred once.





If language selection is performed correctly, it will appear on the keyboard display.

Please note that the default font.
See "restrictions" below.

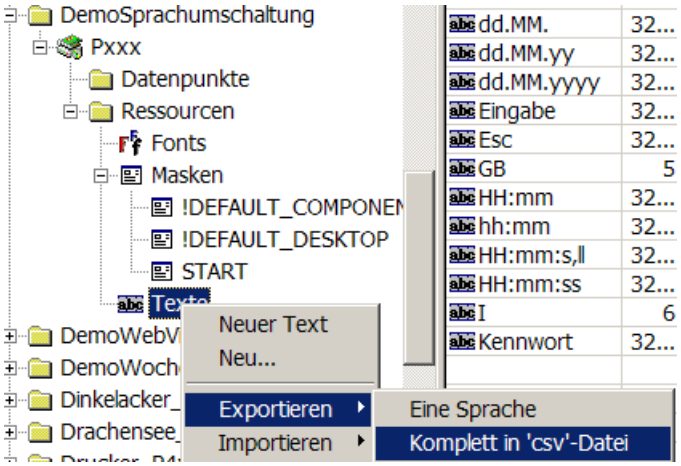


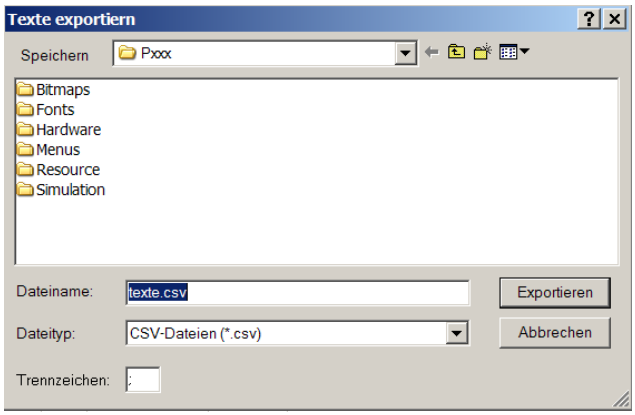
1.14.7 Import / export from languages

Export the language by selecting

"Export ➔ completely in CSV

Subsequent execution only applies for standard characters (no Kyrilisch, Japanese)

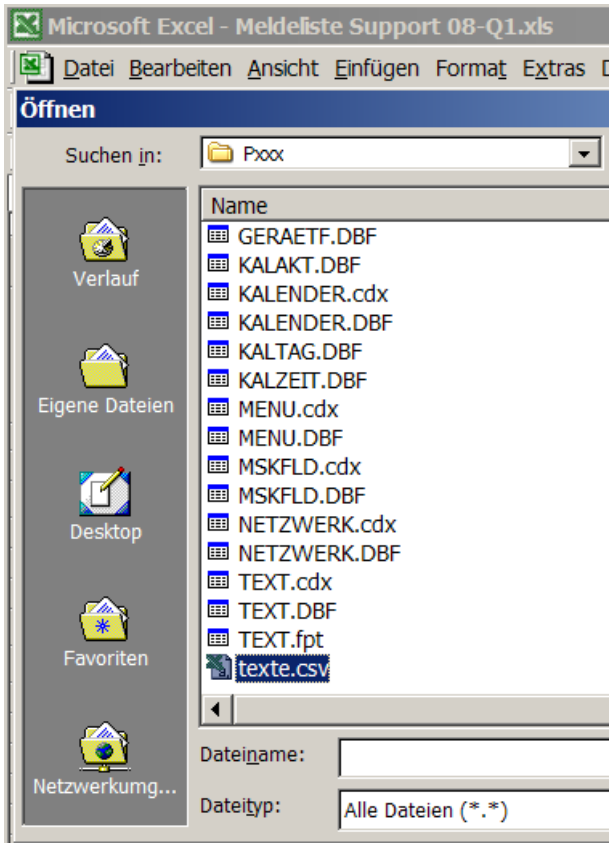




To import in Excel:
Open Excel, and then the CSV file. The start of Excel by double-clicking on the file may lead to an import is faulty

	A	B	C	D	E
1	Deutsch[1031]	id	Log. ID	Englisch (US/	Italienisch[1040]
2	Anzeige EINS	1	0	Display One	Due
3	Anzeige ZWEI	2	0	Display Two	tre
4	Anzeige DREI	3	0	Display Tree	Un
5	D	4	0		
6	GB	5	0		
7	I	6	0		
8	Eingabe	32773	0		
9	Kennwort	32774	0		
10	dd.MM.yyyy	32775	0	M/d/yyyy	dd/MM/yyyy
11	dd.MM.yy	32776	0	M/d/yy	dd/MM/yy
12	dd.MM.	32777	0	M/d/	dd/MM/
13	HH:mm:ss	32785	0	h:mm:ss xx	H.mm.ss
14	HH:mm:s,ll	32786	0	h:mm:s,ll xx	H.mm.s,ll
15	hh:mm	32787	0	h:mm xx	h.mm.
16	HH:mm	32788	0	H:mm	H.mm.
17		32795	0	AM	
18		32796	0	PM	
19	Esc	32797	0		
20		32798	0		

For the import in the project please go analog to the export before. (Excel safe in CSV, eStudio import).



1.15 Recipe

Recipes are used for handling larger quantities of data:

- Recipes on the devices can be read and written.
- You can recipes from the devices on the PC be read and written
- Recipes, with Excel (import/export) are to be replaced

1.15.1 Create of recipe

Recipes are loaded with
the CoDeSys functions FwSave / FwLoad and saved

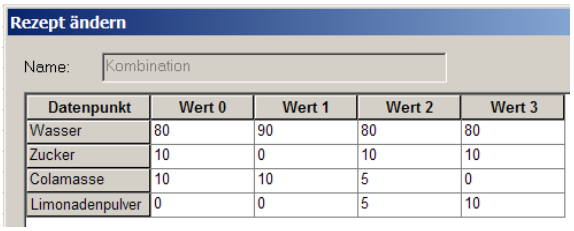
The data is saved on the "Flash Disk", so it is no program execution possible during the process. Only a limited number of write accesses are possible at the memory. Therefore it is necessary to plan the recipe-building during the development phase.

In general, it is useful to create a recipe for frequent changes array. I.e. They lead the change, or modify the recipe does not save, but only when you save the whole recipe. See the example on the right:

- value 0= Cola access on indexes[0]
- value 1= Cola Light access on indexes[1]
- value 2= spezi access on indexes[2]
- value 3 = lemonade access on indexes[3]

The following example was carried out without the array in order to explain the function and structure of recipes

All values are in %



Datenpunkt	Wert 0	Wert 1	Wert 2	Wert 3
Wasser	80	90	80	80
Zucker	10	0	10	10
Colamasse	10	10	5	0
Limonadenpulver	0	0	5	10

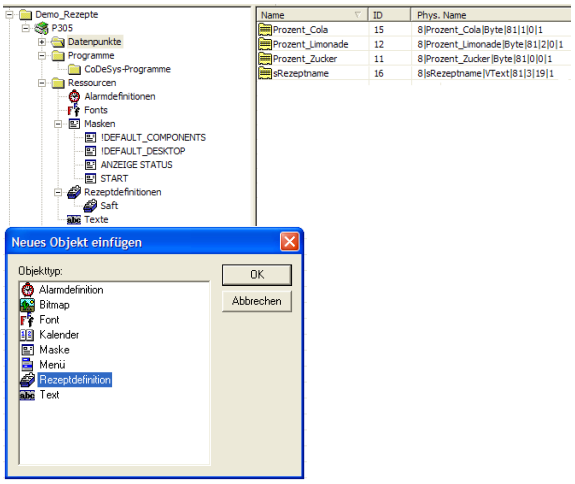
In this example forms the vertical components, the drinks and the horizontal the ingredients in the programming is then accessed as follows on the values.

- KindOfDrink: = 2; (* Selecting spezi *)
- Mixer1: =water[KindOfDrink];
- Mixer2: =sugar[KindOfDrink];
- Mixer3: =weight of Cola[KindOfDrink];
- Mixer4: =powder of lemonade [KindOfDrink];

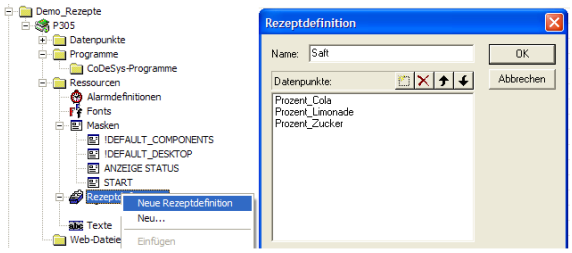
Creating the data points

In this example, the data points, percent_Cola; percent_Fanta; percent_ suggar and create a text variable in which the recipe name is passed.

A recipe will be created in:
project
device name
new object
recipe defintion



datapoints: percent_Cola; percent_Fanta; percent_ suggar
The name of the recipe is juice

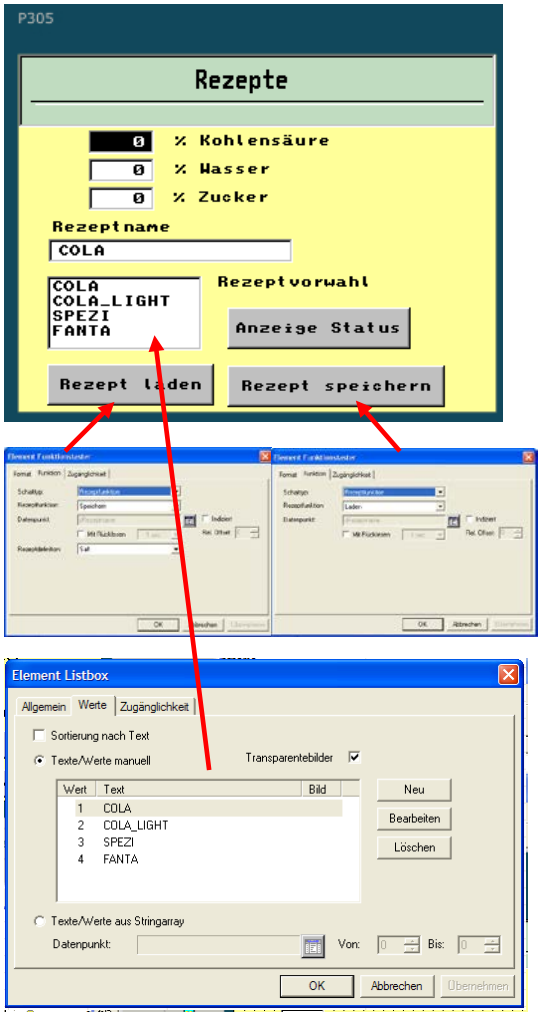


In the listbox, the recipe will be selected.

The values will be shown: carbon dioxide, water and sugar.

In the input fields cola, lemonade and sugar the recipe can be

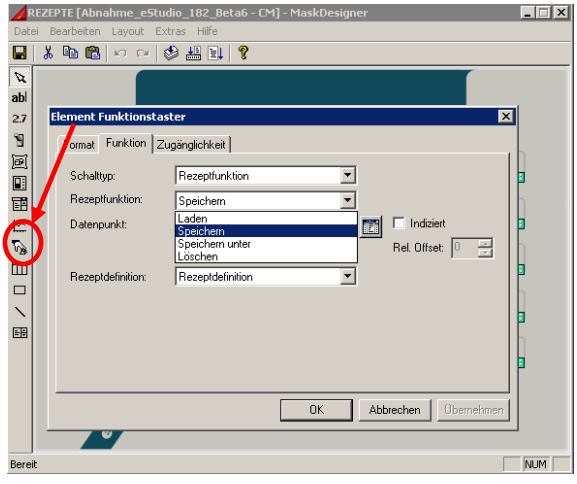
- Shown
- Set
- stored



1.15.2 Load and save recipes

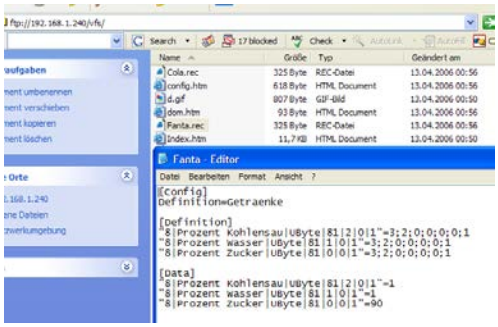
Save or load of recipes will be performed with the following functions:

- Function key element
- Switch Type
- Recipe Definition
- Recipe
- Data point: load or store to select



Important when Reset of the device:

- files with the recipes are **not remanently savedt** by Eladesign "save"
- files with the recipies are **remanently saved and loaded** with the function and **FwLoad and FwSave.**




```
0001 (*----------------------------------FWsave FWload Rezepte--
0002 IF xLoad THEN
0003     FwLoad(4);
0004 END_IF
0005
0006
0007 IF xSave THEN
0008     FwSave(7);
0009     xSave:=FALSE;
0010 END_IF
0011
```

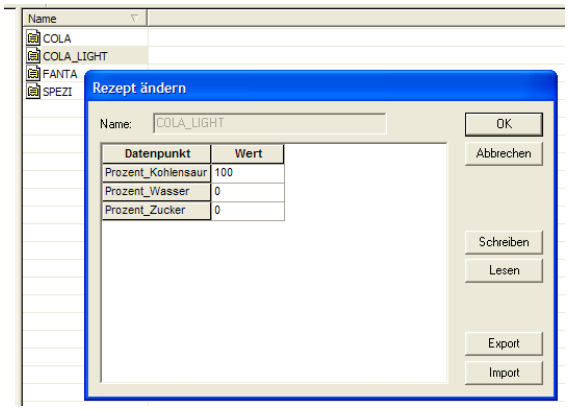
With Fwsave the data will be written into the flash. This has the consequence that performing the FwSave no threads at this priority or below will be executed. See chapter Task.

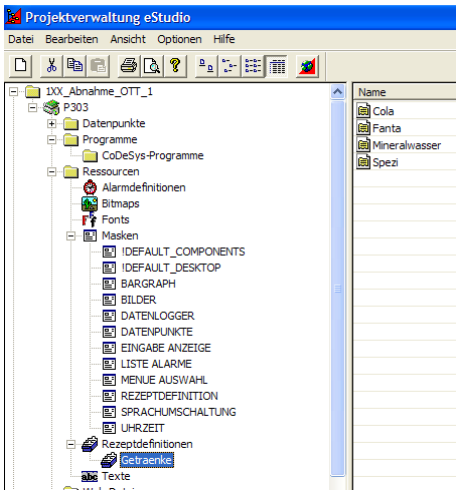
The recipes.exe can be operated stand-alone or in this example by eStudio from start.

- Recipe
- Drinks
- Right-click on Recipe: change.

The Recipes.exe offers the following options:

- Writing prescriptions
- Read recipes
- export a csv file (Excel file)
- Import is possible only with the csv file that was generated by exports.



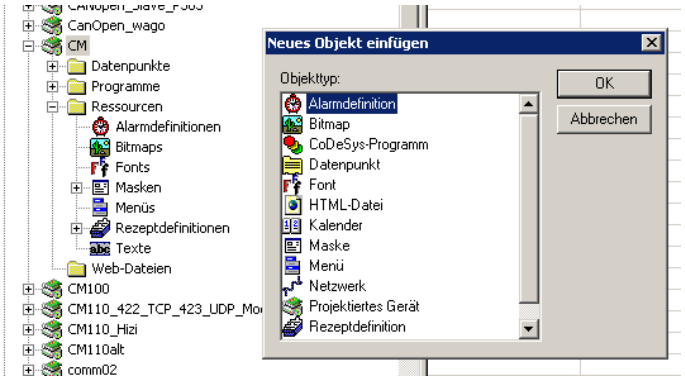


1.16 Alarms

Alarms are used to handle of alarm - and event messages.

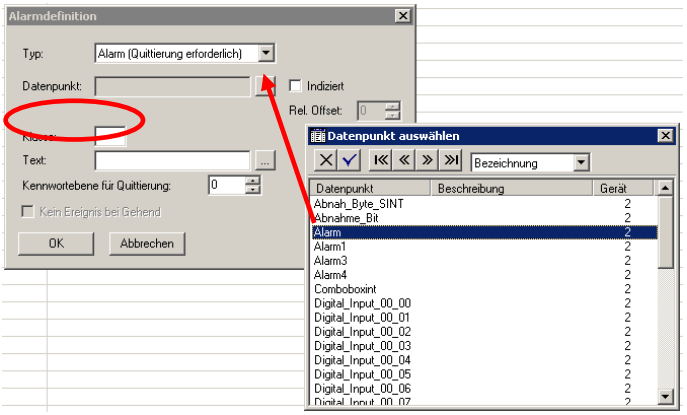
1.16.1 Create alarm definitions

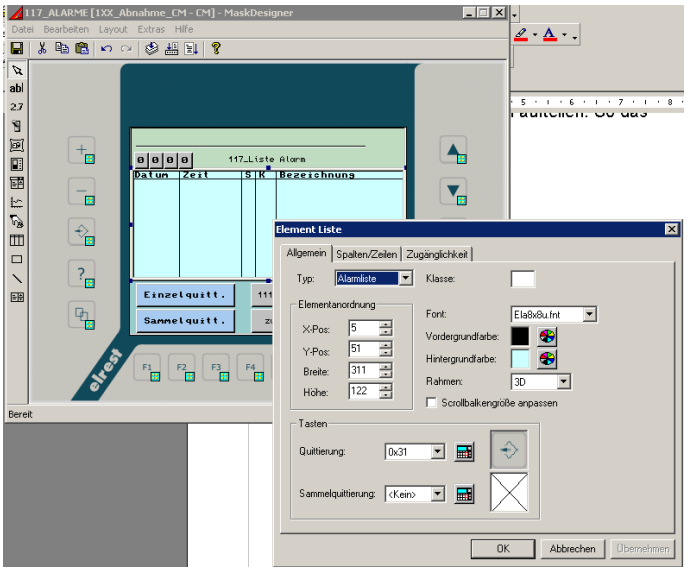
Right mouse click at device type => New => Alarm definition.



Classes:

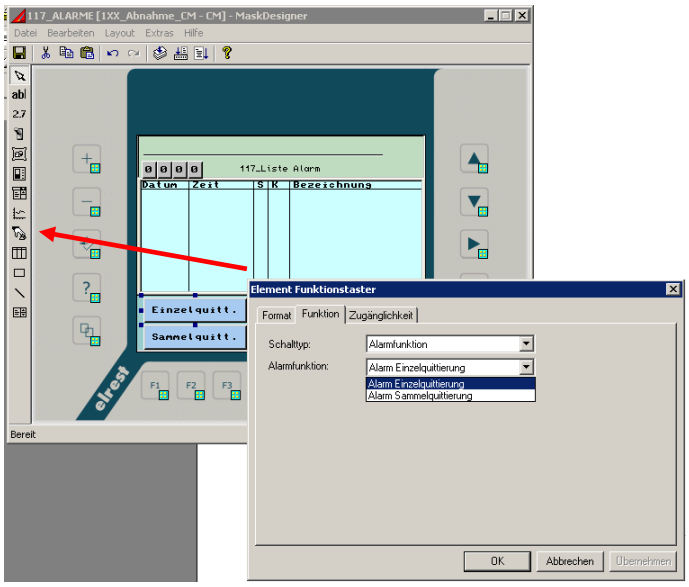
The alarms can be divided into classes. Thus all alarms or one class per alarm list will be displayed.





Single and all confirmation of alarm.

Under the element function key the typ alarm function have to be selected.
Now it is possible, to select single and all confirmation of alarm.



If alarms come, go, collect or individual are acknowledged, all tasks on the same priority or below will be stopped briefly.

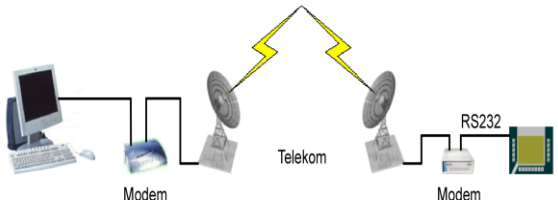
Reason: the alarms are written in the evenlog.bin file. This file will be saved remanently on the Flash and during the Flash deletion all tasks will be stopped

2 Communication

2.1 ActiveSync and mobile device center

2.2 Modem connection

The connection between PC and CE devices build an analog telephone line.



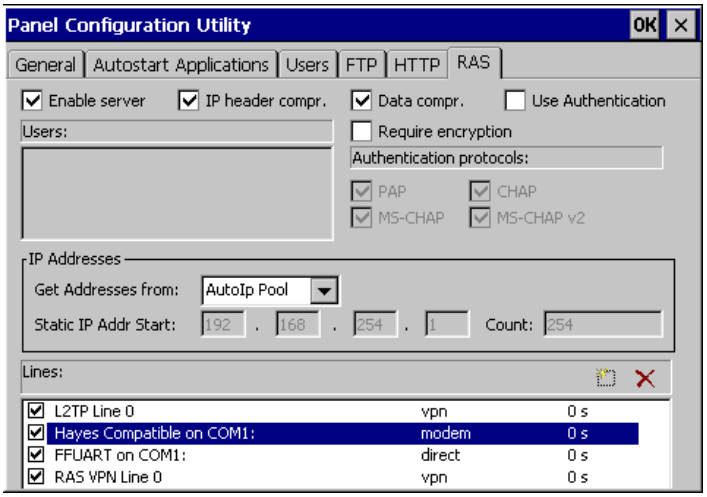
auf der PC Seite

auf der visio control devices Seite

2.2.1 RAS (Remote Access Service)

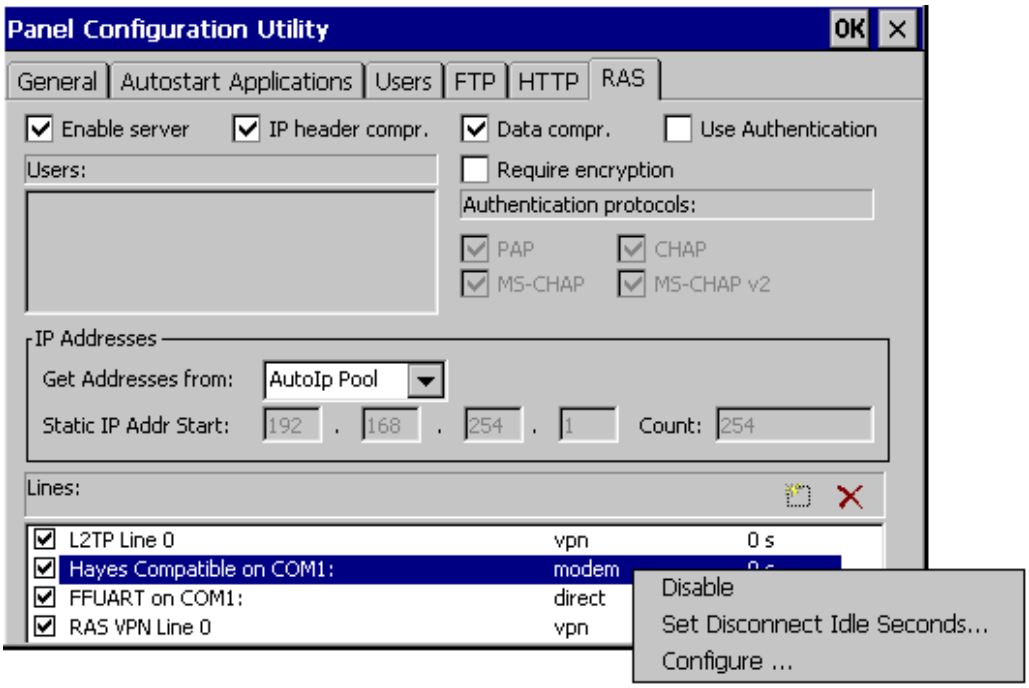
The **Remote Access Service** is a service for remote access to a Windows CE© - device. Both RAS-functionalities, server and client, are supported. The connection between a RAS-client and the RAS-server can be via a modem, VPN or direct connections are produced.

The RAS can be configured on the Windows CE© device over the Panel Configuration Utility, short PaCo.

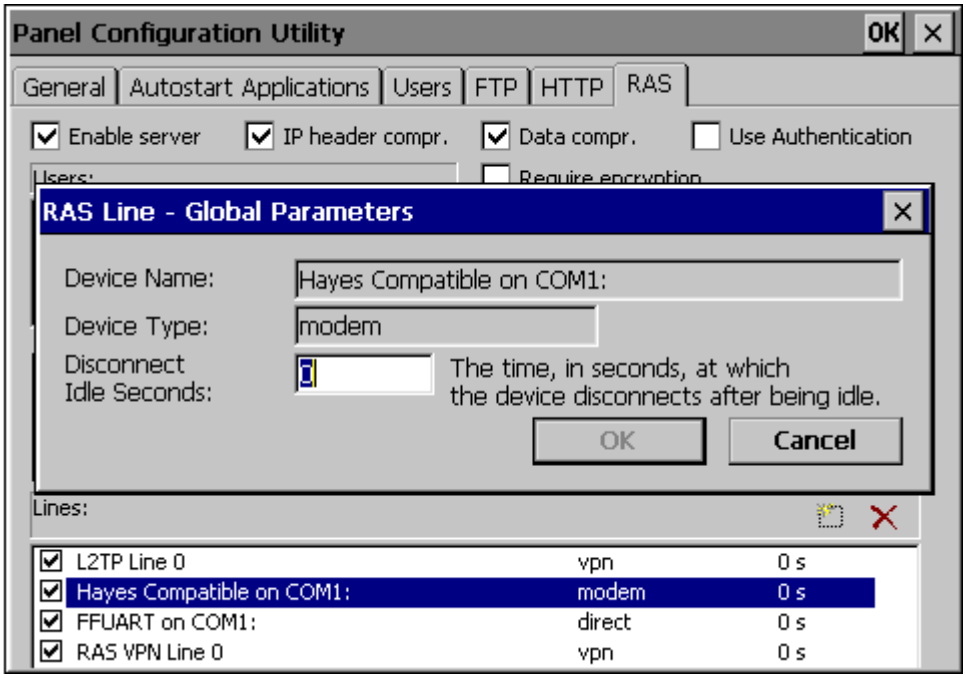


Enable server	Enable the RAS-Server on each system start.		
IP header compr.	The RAS-Server use VJ TCP/IP header compressing method.		
Data compr.	The RAS-Server use data compressing.		
Use Authentication	A RAS connection can only be produced on a user authentication.		
Require encryption	A RAS-connection requires encryption.		
Users	The list of users for an authenticated RAS-connection can be established. A new user can be created on the **users** page.		
IP Addresses			
Get Addresses from			
	AutoIp Pool	The RAS-Server generates random IP addresses from the 'standard subnet pool' and shall communicate this to.	
	DHCP	The RAS-server calls IP addresses from a Dynamic Host Configuartion Protocol (DHCP) server.	
	Static Pool	The RAS-Server uses IP-addresses from the static collection. This will always be the lowest unused IP address allocated.	
		Static IP Addr Start	The first IP address in the static collection.
		Count	The number of IP-addresses in the static collection.
Authentication protocols	The RAS Server support the following Authentication protocols: PAP (Password Authentication Protocol) CHAP (Challenge Handshake Authentication Protocol) MS-CHAP (Microsoft Challenge-Handshake Authentication Protocol) MS-CHAP v2 (Microsoft Challenge-Handshake Authentication Protocol version 2.0)		
Lines	The following RAS-enabled devices are supported: Modem VPN (Virtual Private Network) The network uses a public transportation for private data. Participants of a VPN can exchange data, such as in an internal LAN. Each of the participants themselves have not to be directly connected. The connection via the public network is usually encrypted. The term "private" does not mean, as it´s often assumed that it is an encrypted transmission. A connection between the networks will be produced via a tunnel between VPN Client and VPN server. Mostly the tunnel will be backed up, but also an unsecured plain text tunnel is a VPN. Direct - via a serial interface **CAUTION: it is only COM1 supports.**		

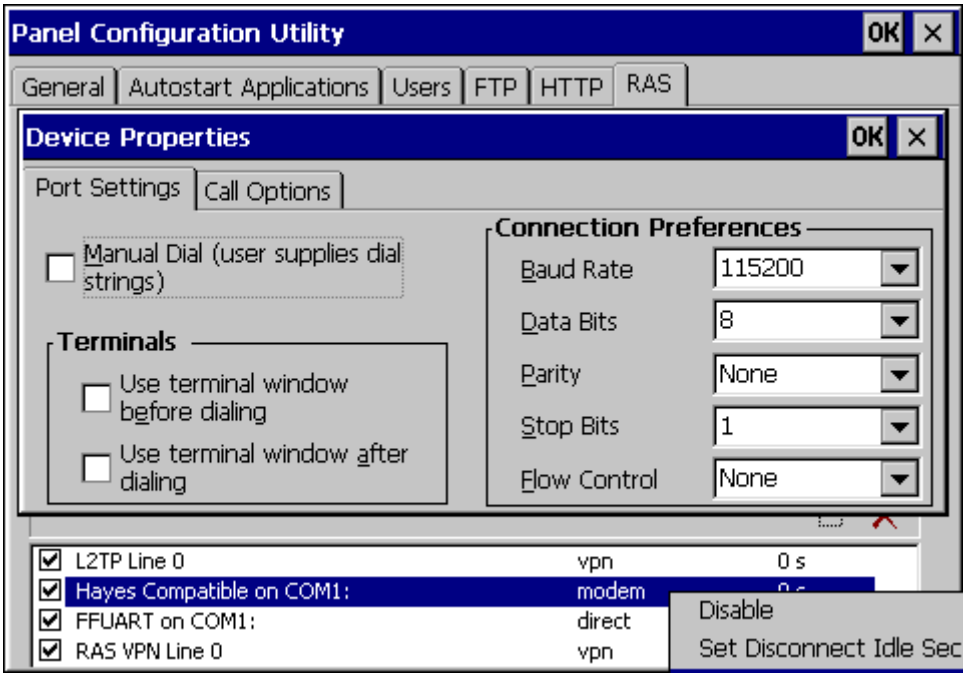
For each RAS-head you can **disconnect idle seconds** setting.

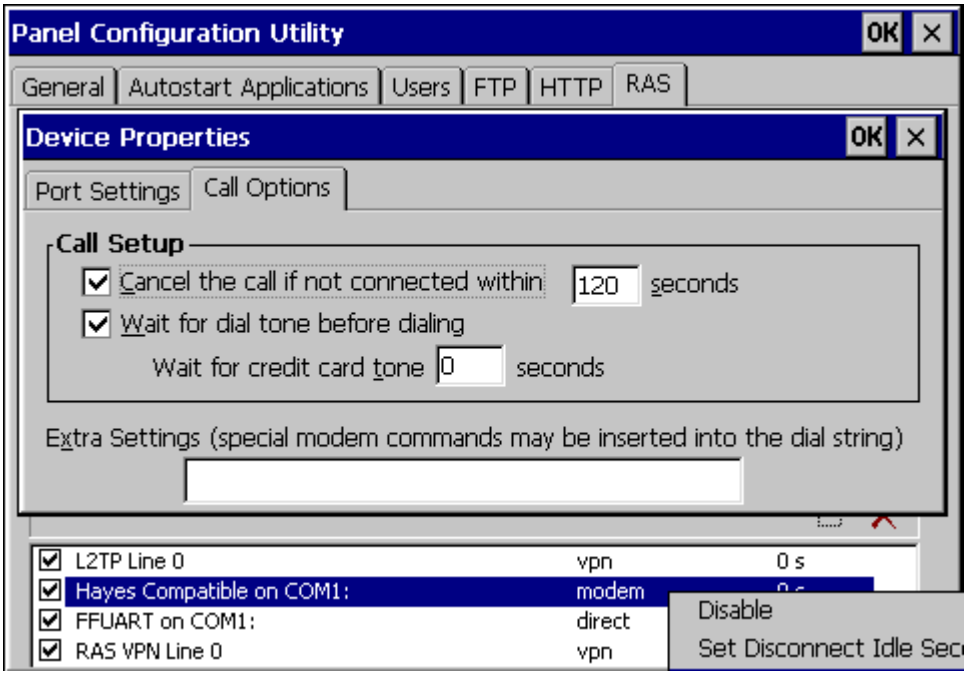


Disconnect idle seconds - the time, in seconds, after which the device disconnects if no traffic is carried out.



Modem and direct lines can be configured.





- Make sure that the authentication mechanism of Server and Client match.
- Make sure that the security mechanisms of Server and Client match.
- Make sure that the settings, in particular, the flow control, of a modem lines in the Panel Configuration Utility (PaCo) match with those of the modem. Not all modems are properly after a reboot will be reconfigured. This can be checked with AT commands status. If the settings do not match, change the modem settings through appropriate AT commands and save them in a profile on the modem
- If you want to create a RAS-connection via the serial interfacewill make sure that the interface will not be used from another program. By default, COM1 is used for an activesync connection. You can check this functionality on the setting **allow connection with desktop computer when device is attached in**

  ➔ Settings ➔ Control Panel ➔ PC Connection
  disable.
- The baud rates from the server and the client should be the same.
- If you have a CE-device-panel as a client would like to use make sure that these RAS-management is not for the RAS-server is enabled (see Panel Configuration Utility). If you use a P4XX-panel as a client make sure that these RAS-line is not activated for the RAS-server (see Panel Configuration Utility).
- There is only supported COM1
- The RAS-functionality is available from Imageversion 5.03 and also needs the appropriate "SysExtras" -directory.
- Windows CE© 5.0 or 6.0 supports the EAP (Extensible - Authentication - protocol) does not.

2.2.2 Remote maintenance via modem

2.2.2.1 Remote maintenance with Robotics

Windows CE© -device as a remote access server, PC as a RAS-Client (Windows XP Professional)
Users can access from a PC via a dial-up connection on a Windows CE© -device

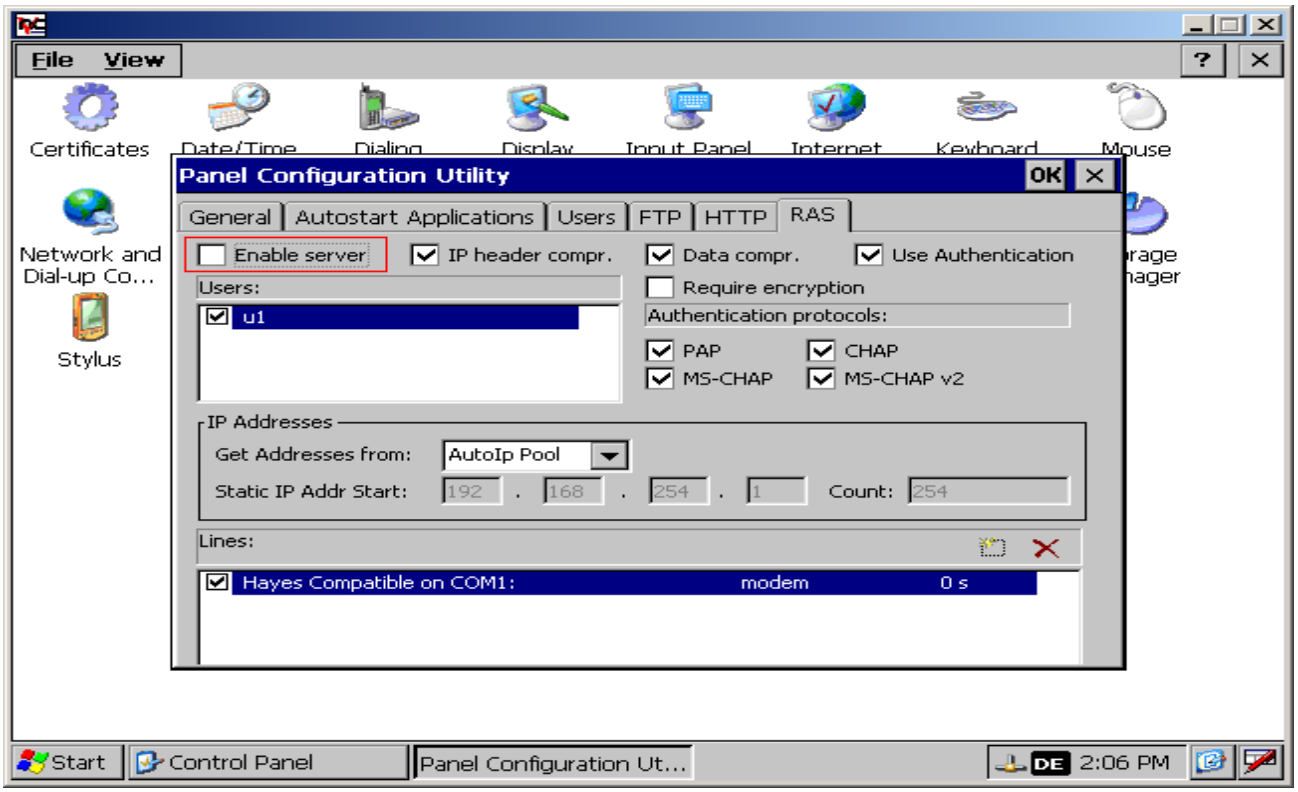
Modem setting for a example

Modem an CE-Device/PC: U.S. Robotics 56k Faxmodem

standard setting

AT&F0	Loads the default parameter settings of the Firmware
AT&W0	Saves the current configuration of the modem in profile 0.
ATY0	When you turn on the modem, it woll tbe loaded the configuration profile 0.

The modem and the panel restart to examine the default settings of the modem.
Therefore the RAS-Server have to be without saving the registry:

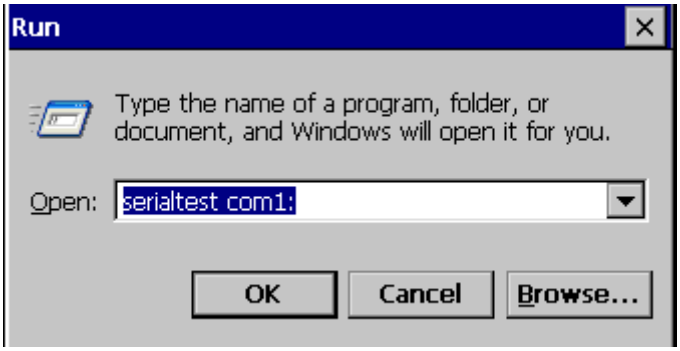


Start the „Windows CE© DDK TTY“ –Tool from Microsoft:

➔ Run

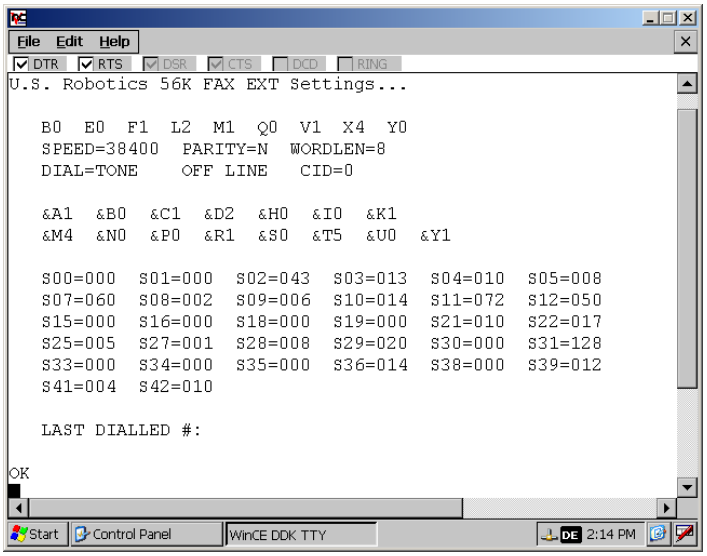
Start the „Windows CE© DDK TTY“ –tool from Microsoft:

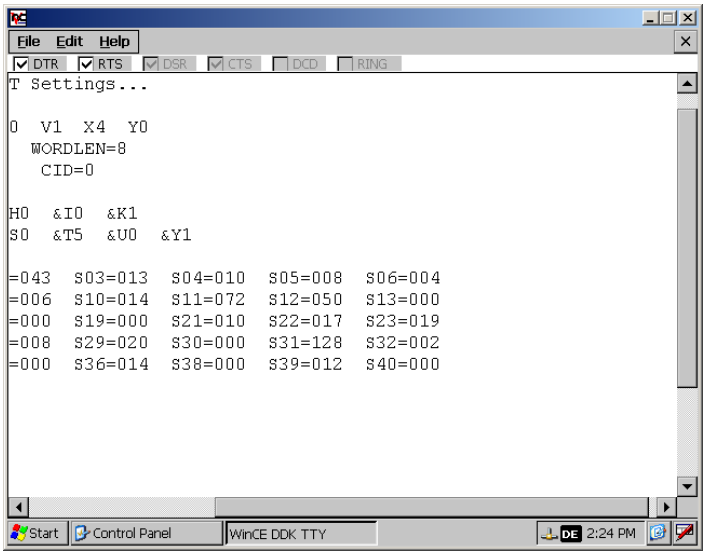
➔ Run



The modem and the panel **restart** to examine the default settings of the modem.

This requires to disabled the RAS- Server without saving the registry:





2.2.2.2 Remote maintenance with Devolo

Modem PC/Windows CE© -Device: **MicroLink 56k i Devolo**

settings: standard

For example, with the Hyper Terminal-Tool you can set the default settings.

AT&F	Loads the default parameter settings of the firmware.
AT&W0	Saves the current configuration of the modem in profile 0.
AT&Y0	When you turn on the modem, it woll tbe loaded the configuration profile 0.

Restart the modem and check the default settings of the modem.

With the AT&V-command can be displayed the current configuration profile.

```
active profile:

 E0    L0    M1    Q0    V1    X3
$B0   $D0   $T0
%A0   %E1
&C1   &D2   &G0   &S0   &T4   &Y0
*E0   *Q0
-H0   -M0
\C0   \D0   \J0   \T0   \V0
:D0

S00:000  S02:043  S07:060  S10:010  S64:010  S94:000

Press any key to continue...
```

2.2.2.3 Remote maintenance with Dr. Neuhaus

Modem with Windows CE© -Device: Dr. neuhaus Smarty 19.2 TI

setting: standard

AT&F	Loads the default parameter settings of the firmware.
AT&W0	Saves the current configuration of the modem in profile 0.
AT&Y0	When you turn on the modem, it woll tbe loaded the configuration profile 0.

Restart the modem and check the default settings of the modem.

With the AT&V-command can be displayed the current configuration profile.

:

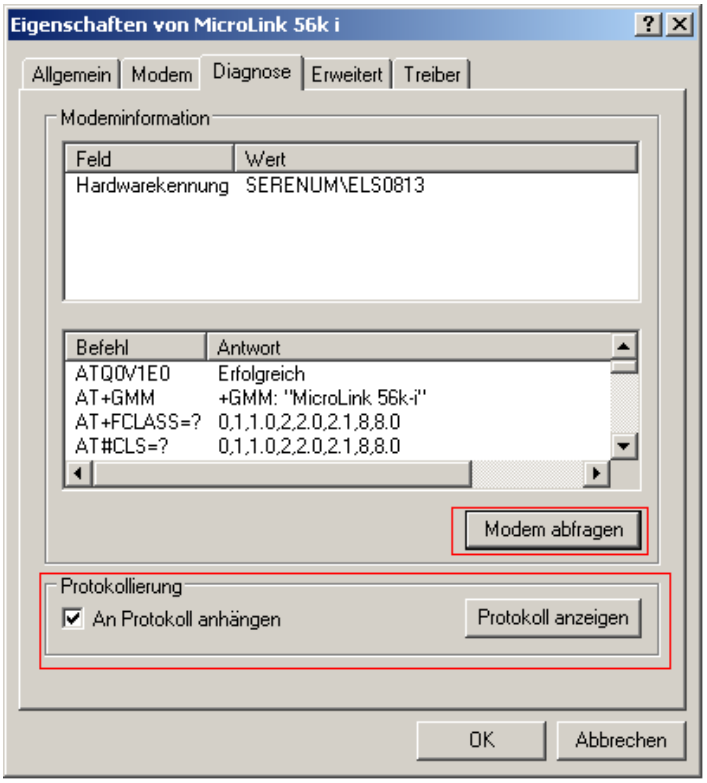
```
at&v
ACTIVE PROFILE:
B99 E1 L2 M1 Q0 V1 W2 X3 Y0 %D0 %E1 %U0 &C1 &D2 &G0 &S0 &Y0
S00:000 S01:000 S02:043 S03:013 S04:010 S05:008 S06:002 S07:060
S08:002 S09:006 S10:000 S12:050 S14:2AH S16:00H S18:000 S21:30H
S22:36H S23:1EH S25:005 S26:001 S27:00H S38:000

STORED PROFILE 0:
B99 E1 L2 M1 Q0 V1 X3 Y0 %D0 %U0 &C1 &D2 &G0 &S0
S00:000 S14:2AH S18:000 S21:30H S22:36H S23:1EH S25:005 S26:001
S27:00H S38:000

STORED PROFILE 1:
B99 E1 L2 M1 Q0 V1 X3 Y0 %D0 %U0 &C1 &D0 &G0 &S0
S00:001 S14:2AH S18:000 S21:20H S22:36H S23:1EH S25:005 S26:001
S27:00H S38:000

TELEPHONE NUMBERS:
&Z0=
&Z1=
&Z2=
&Z3=

OK
```

- The Panel, the modem and possibly the PC reboot.
- On the PC-page, you can query the modem and view the log file for the modem.

Check the cable (see modem manual)

- DTR-status ignore (AT&D0 for devolo / U.s. robotics)
- auto answer mode on the modem of the device.

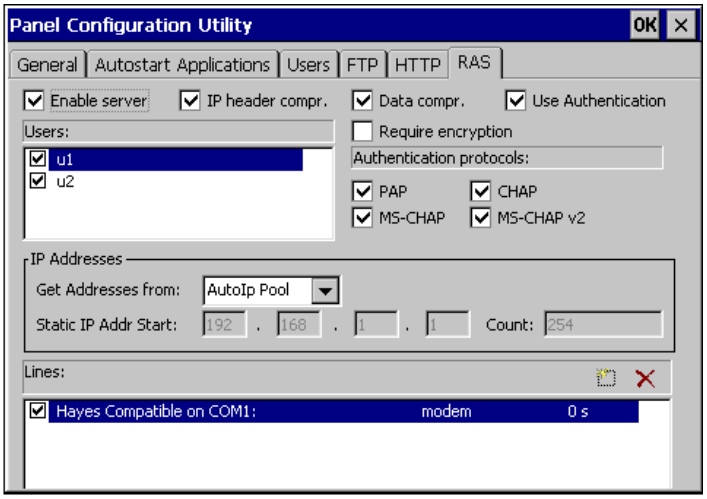
- Appropriate "SysExtras" -directory use.



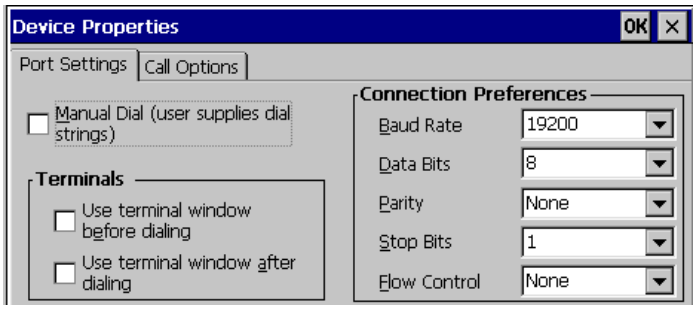
More information about the modem settings refer to the documentation. "Communication_RS232_GB".

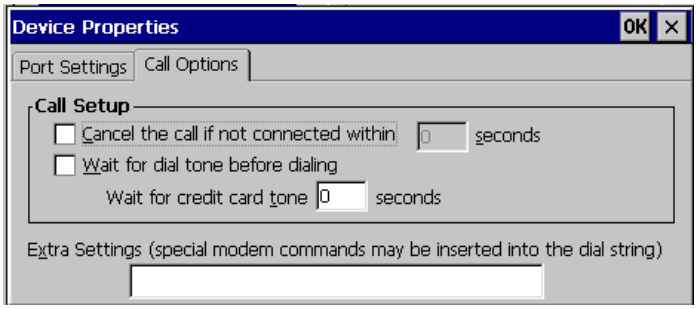
2.2.2.4 Configuration of the CE-device

RAS-server configuring over the Panel Configuration Utility.



1. Double-click on the **Hayes Compatible on COM1:** to configure the RAS-line. The server settings have to be matched with the client settings and those of the modem.

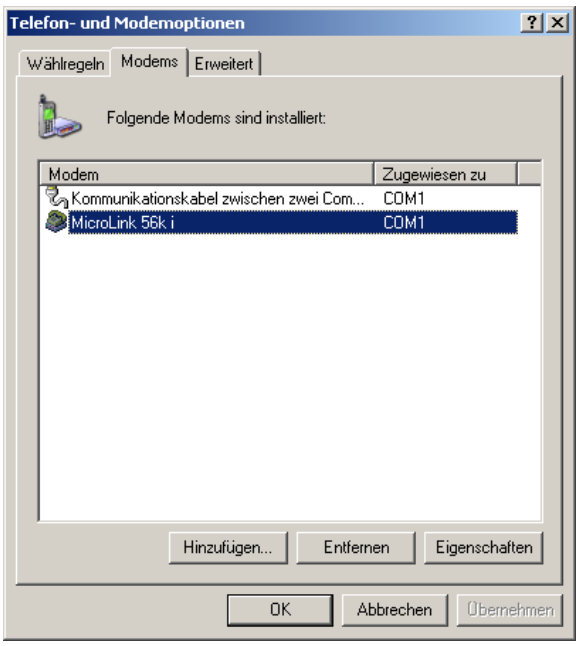




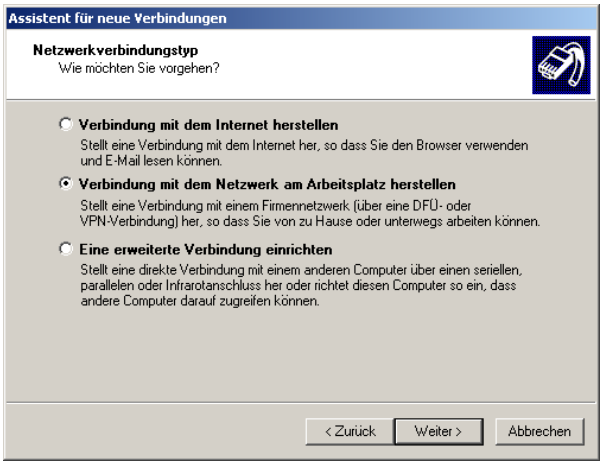
2. Registry saving.
   Start ➔ P**rograms ➔ Utilities ➔ Save Registry**
   If you don't save the registry after a reboot of the device; the connection entry is no longer available. In the newer versions PaCo they are prompted to save when you exit the program

2.2.2.5 Configuration of the PC

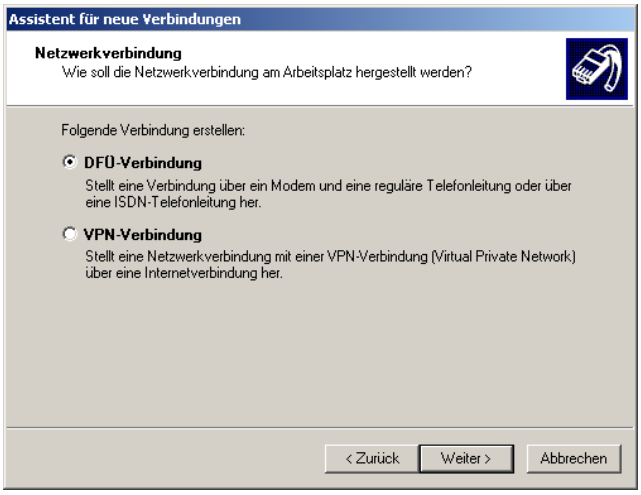
3. Modem install (**Start -> Settings -> Control Panel -> Phone- and Modem Optionens)**



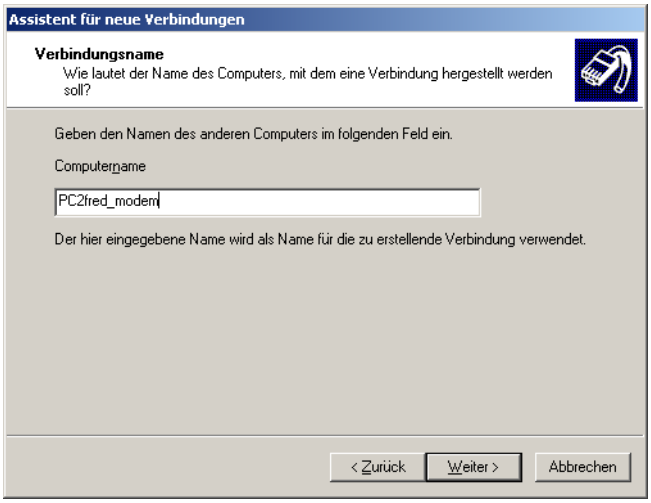
4. Select
   Start -> Settings-> Netzwork Connections -> Create new Connections



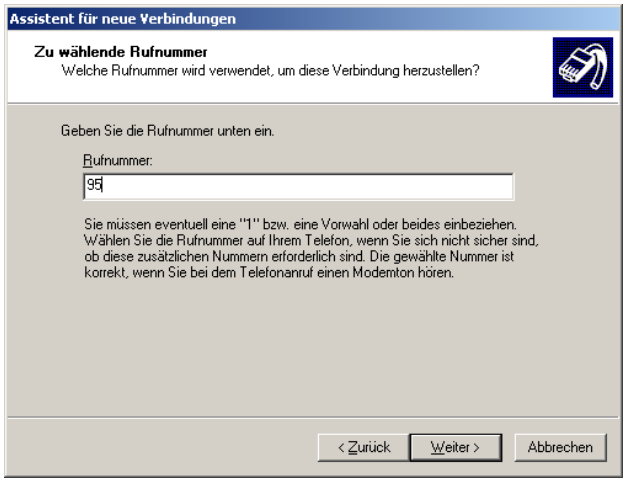
5. Choose a dial-up connection.



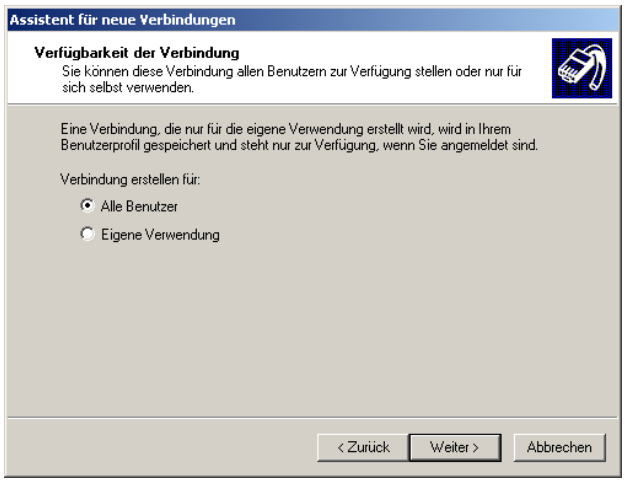
6. Enter the connection name.



7. Enter the number with which the connection will be established.

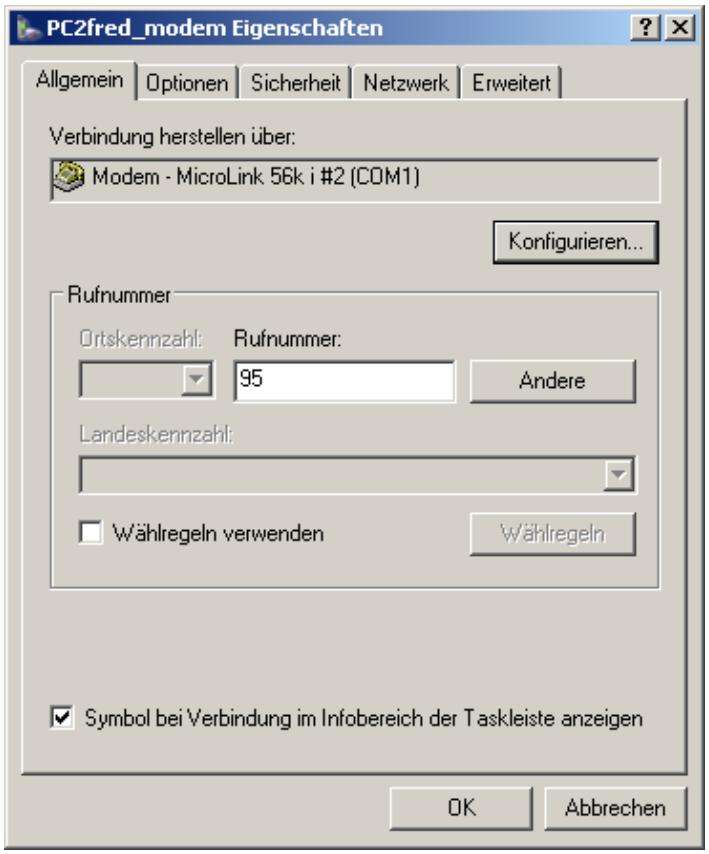


8. You can make this connection available to all users or only use it for themselves

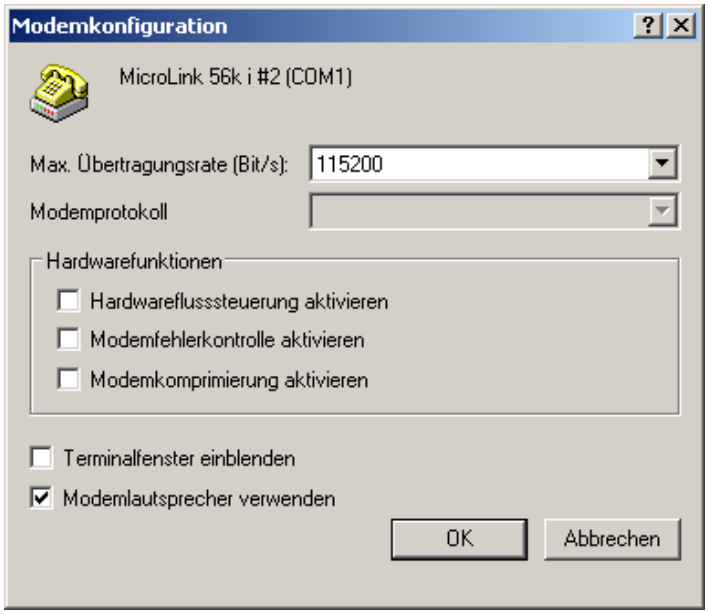


9. Click on the **Properties** button to configure the connection

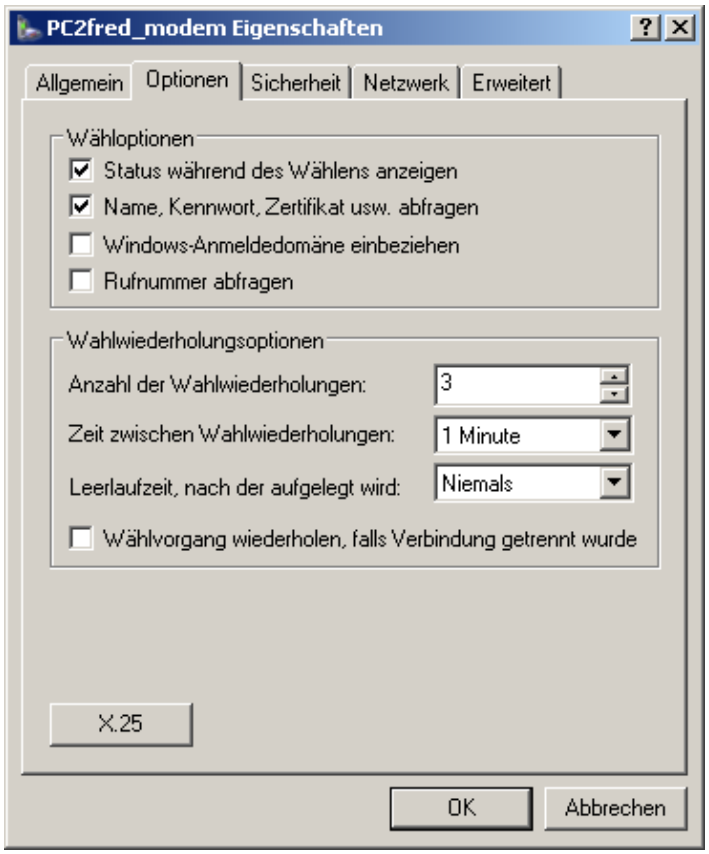
10. Click on the **Configure** button to configure the modem.



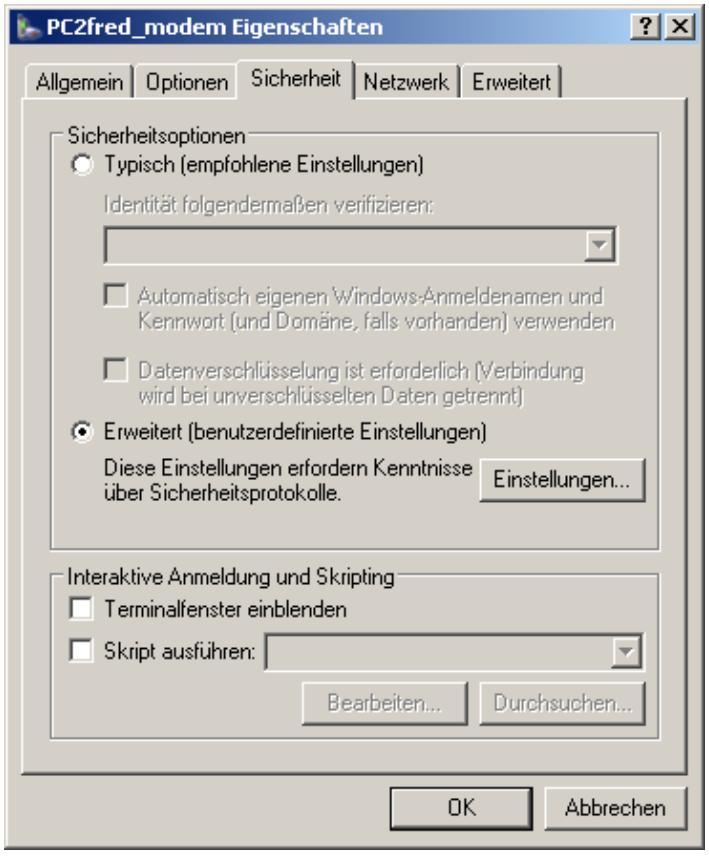
11. The PC-modem, the modem settings of the Windows CE© © -device and the modem settings must be fit together.



12. Select the connection options.

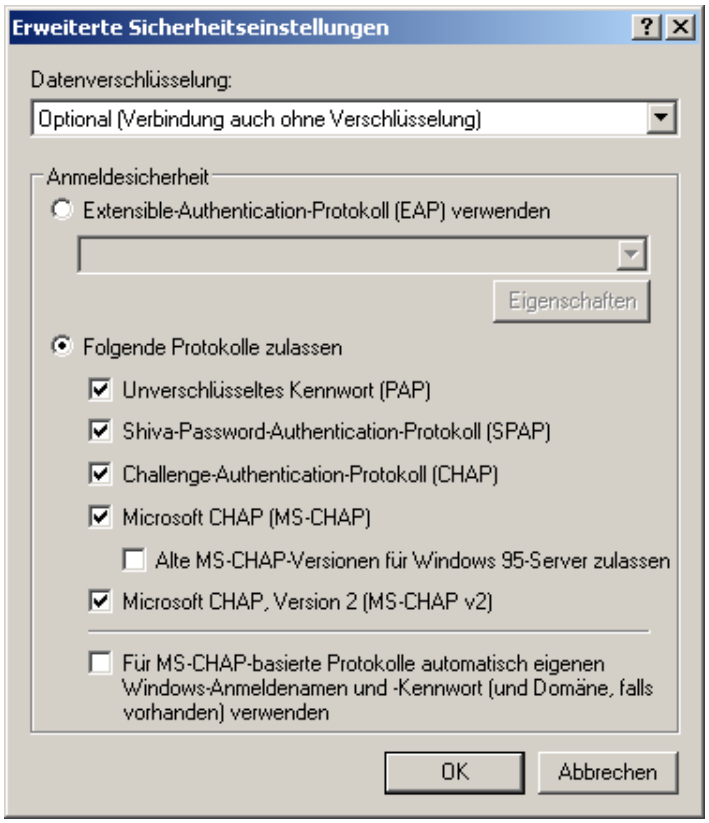


13. On the Security tab, select the security option “**Expands”** for defining the advanced security settings.

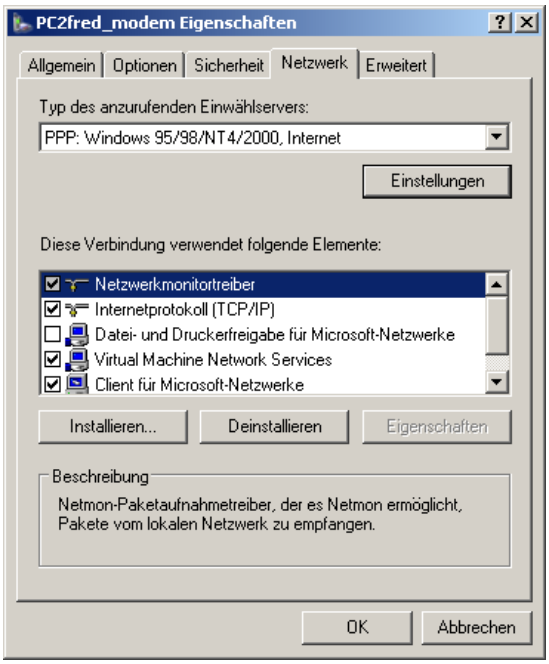


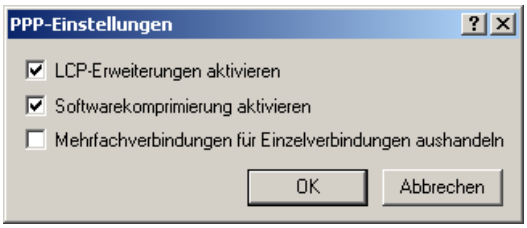
14. Select the data encryption. This must according to the Panel- data encryption option.

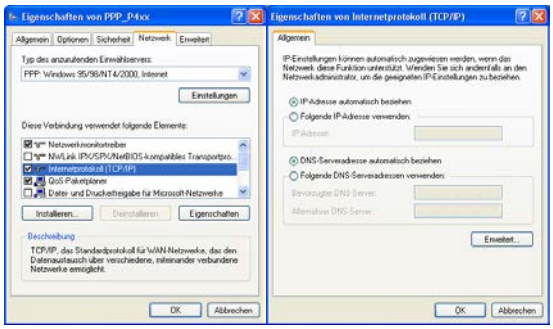
Windows CE© does not support this!



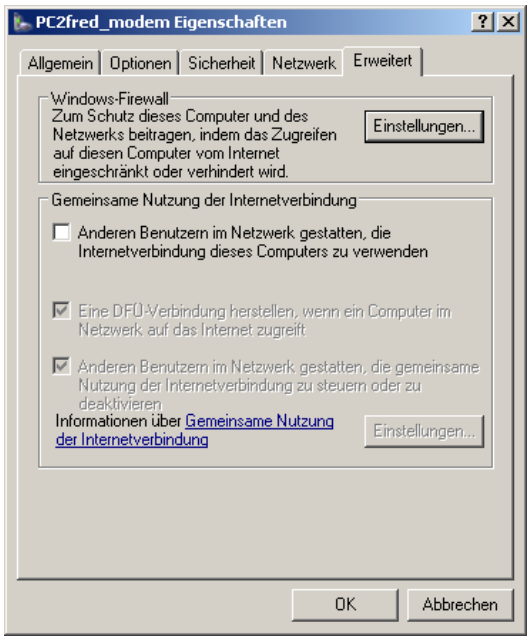
15. Set the network settings.



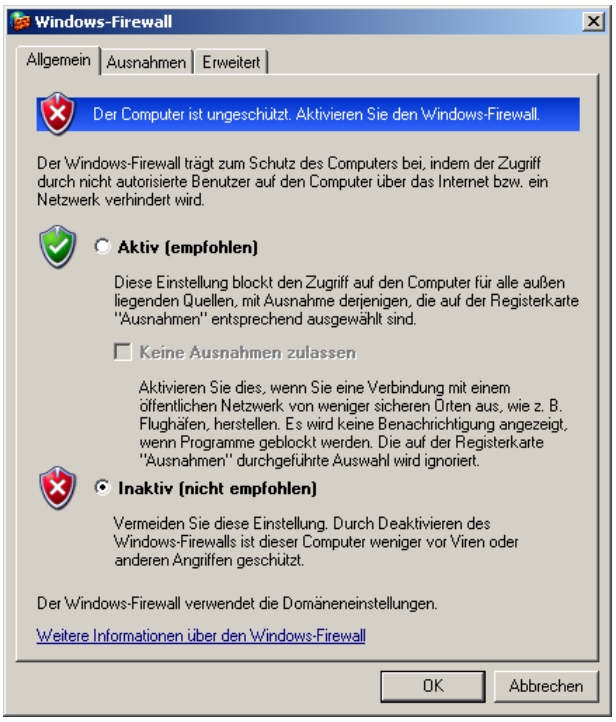




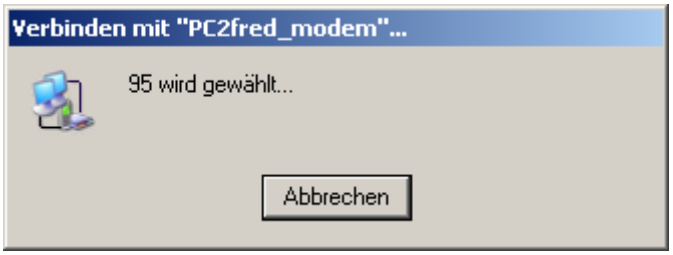
16. On the **Advanced** tab, click the **Settings** button, to make sure, that Windows Firewall allows this connection.



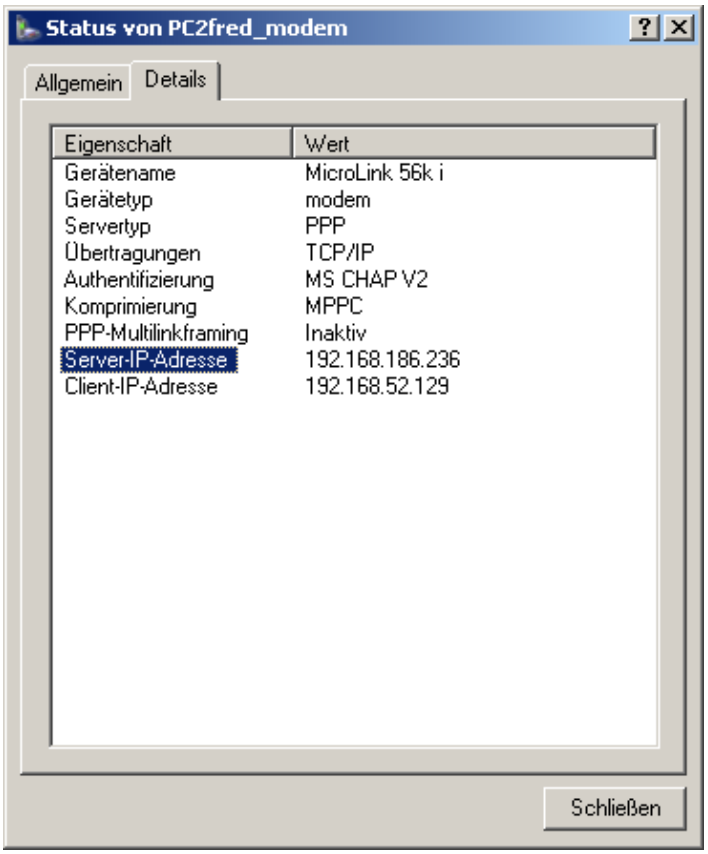
17. In this case deactivate the Windows-Firewall.



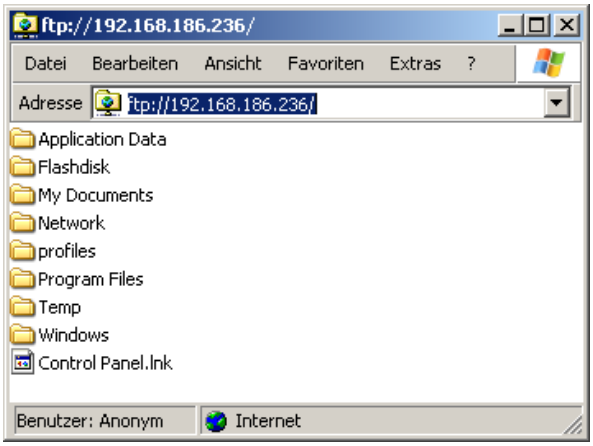
18. Now you can establish the connection.



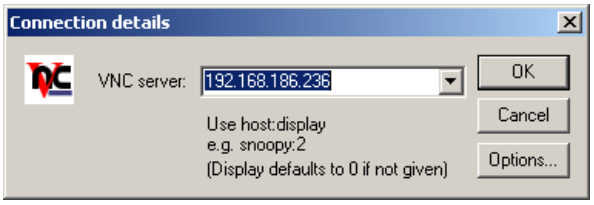
19. After the connection is established you will have the icon , displayed in the taskbar. If you double-click on it the status of the connection will be indicated.



Now the connection can be used for the maintenance.



With the VNC server

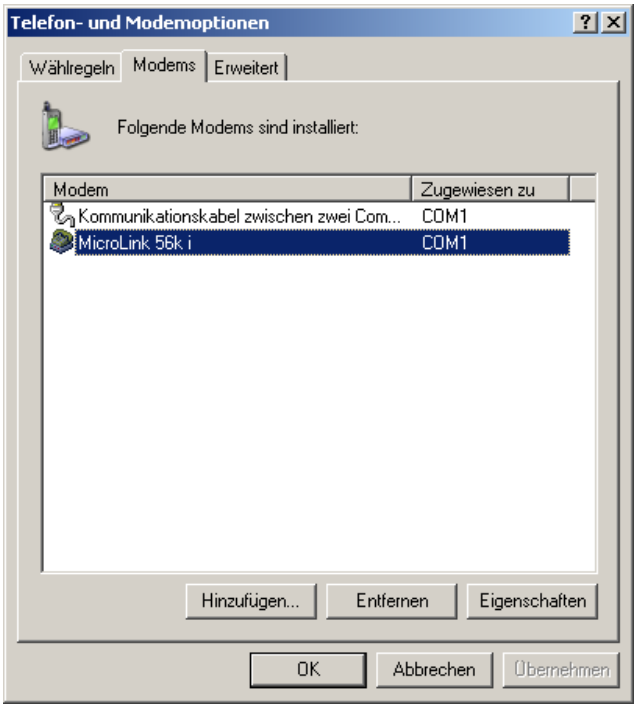


a remote maintenance can be done by:

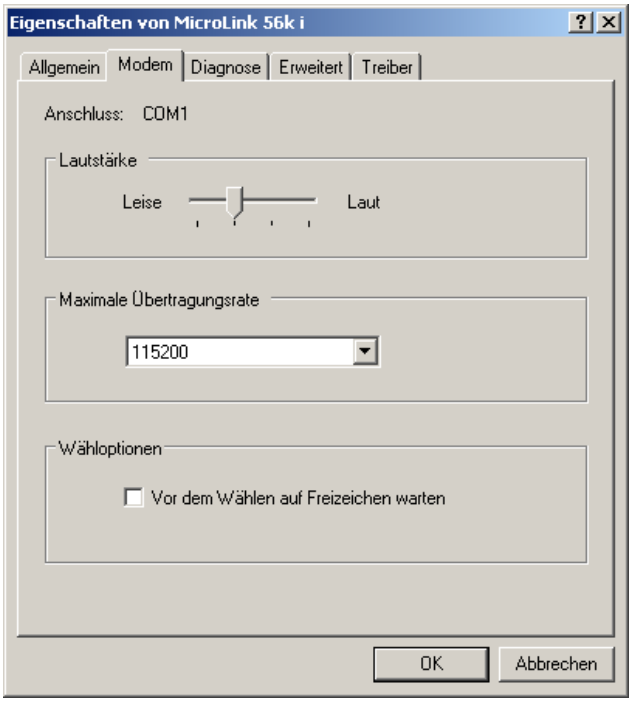
2.2.2.6 Windows CE© -device as RAS-client, PC as RAS-server (Windows XP Professional)

On the PC-side:

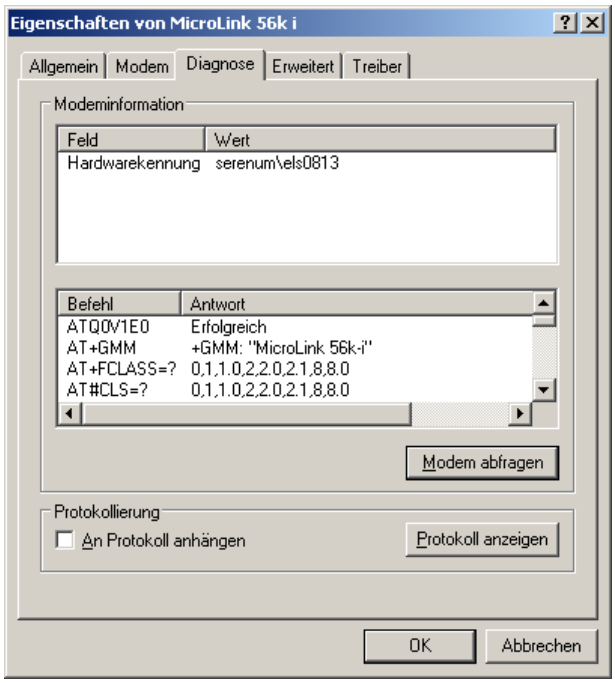
1. Windows CE© -device as a RAS-client, PC as a RAS-Modem install (Start -> Settings -> Control Panel -> Phone and Modem Options).



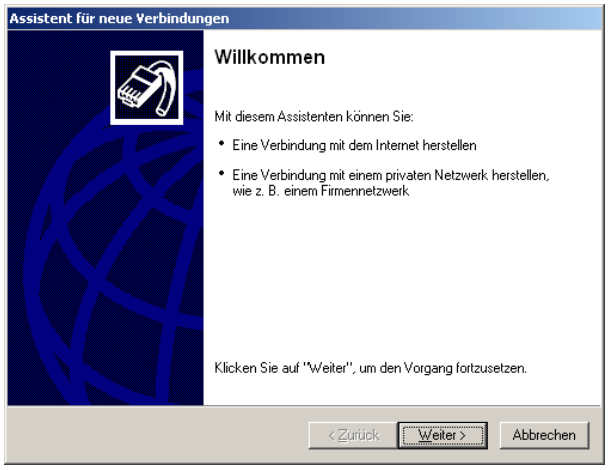
2. Set the maximum data transfer rate between the PC and the modem and set the dial option.



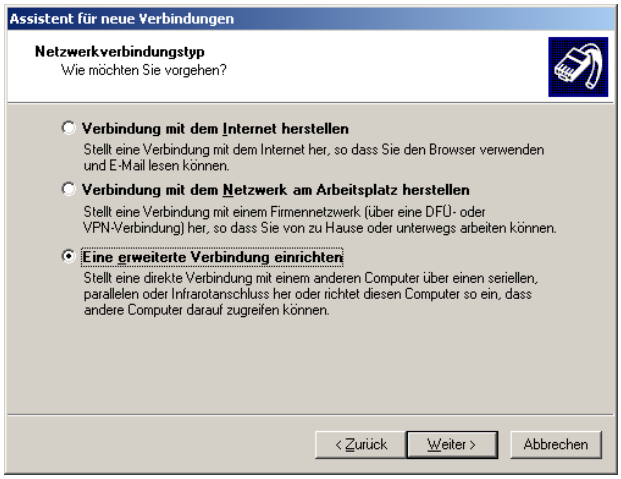
3. On the **Diagnostics** tab can be tested the modem. If the test is successful, the result will be is displayed as follows:



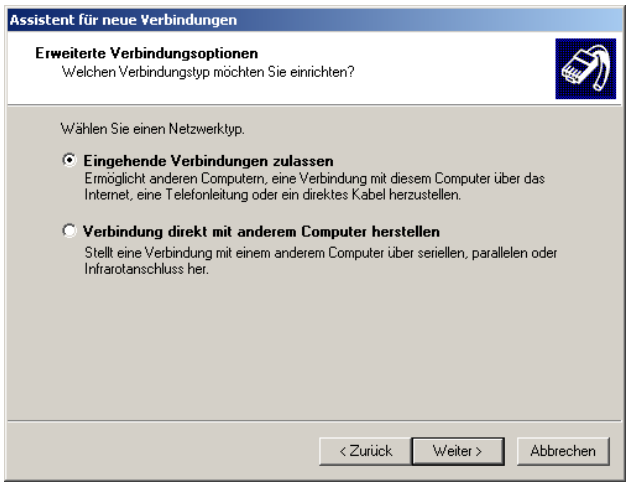
4. Create an incoming connection (Start -> Settings -> Control Panel -> Network Connections -> create a new connection).



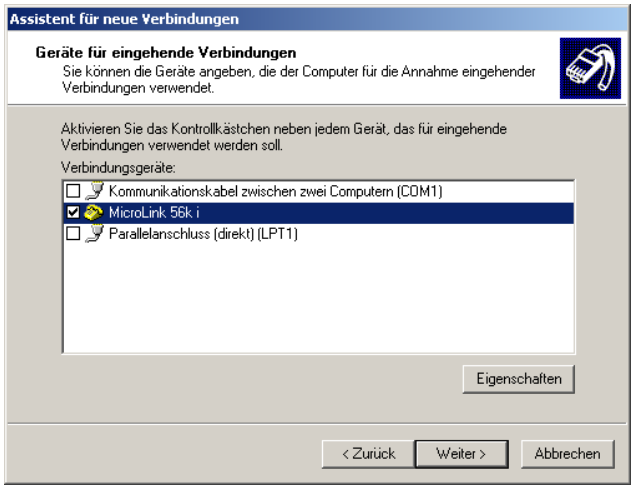
5. Select the “network connection type” and choose” setting up an advanced connection” to, set up the PC so that a Windows CE© -device can access it.



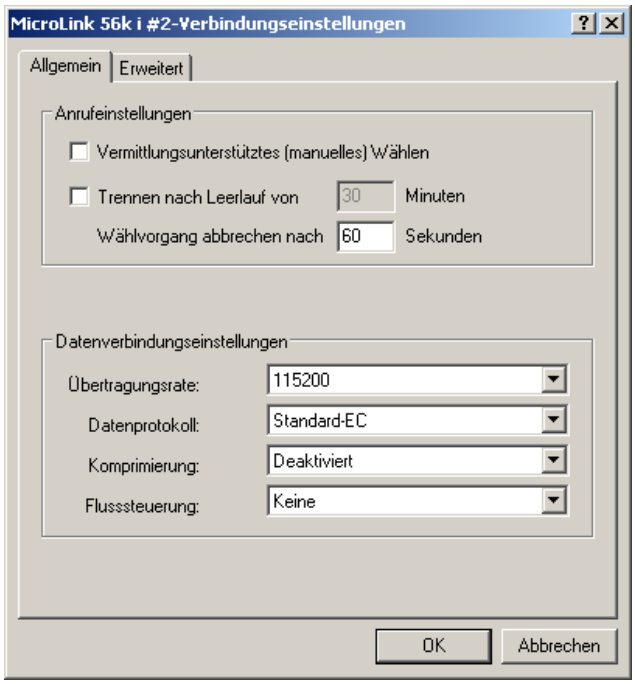
6. Select the type of network “incoming connections to allow”.
   Thus a Windows CE© -device is able to make a connection to this PC via modem .

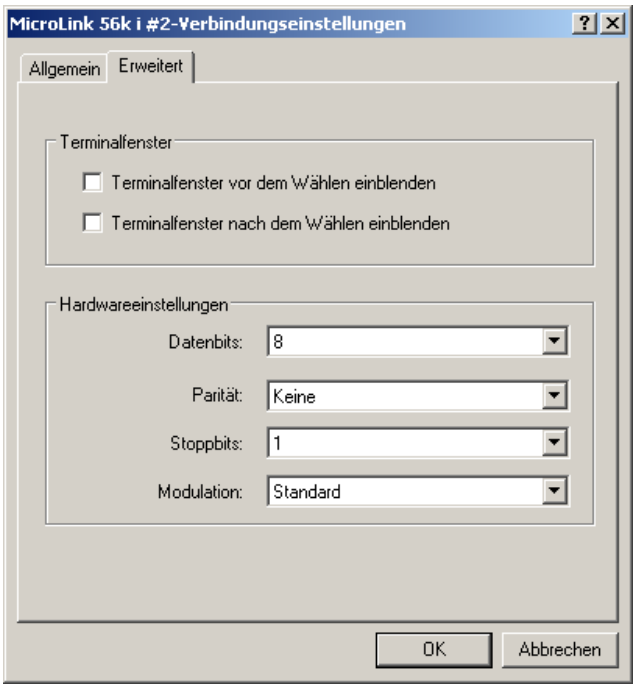


7. Select the modem that the PC for the incoming connections should use.
   Press the Properties button to adjust the PC-modem properties.

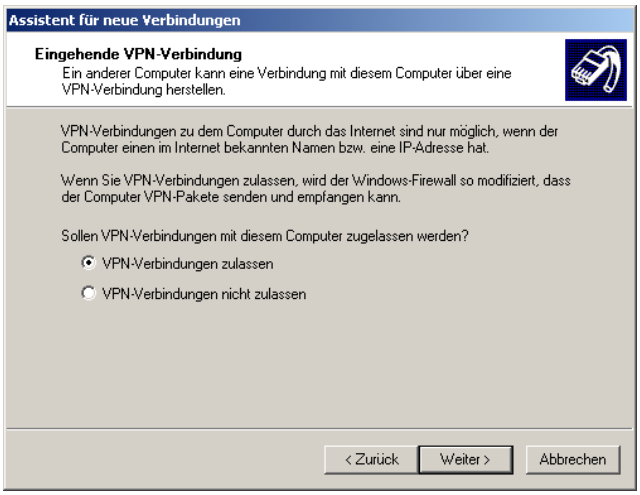


8. Set the PC Modem-connection settings.

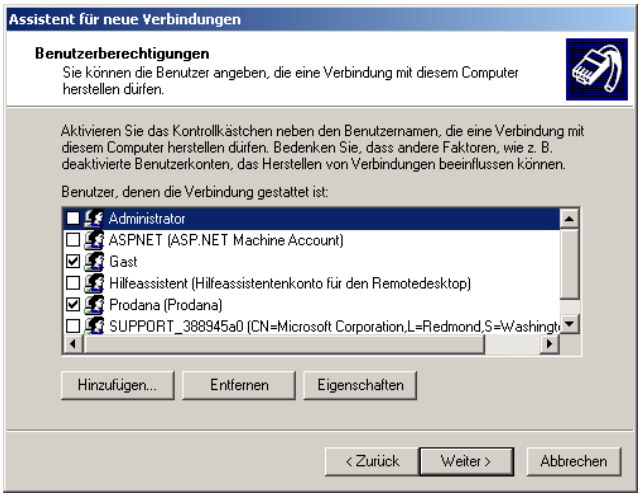




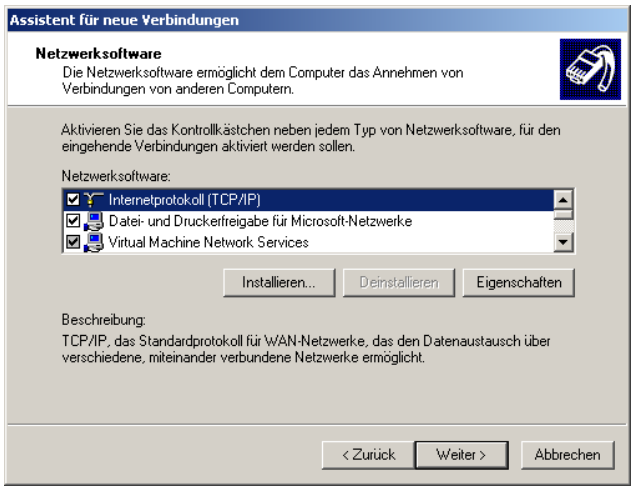
9. You can allow or to refuse the VPN connections



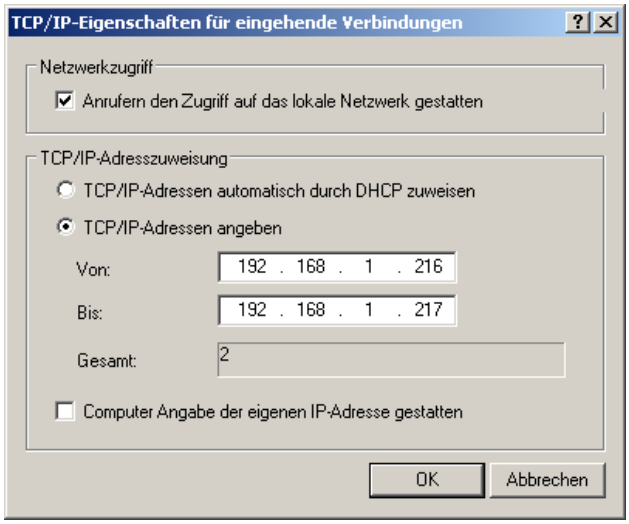
10. Select the users that are allowed to connect to this PC

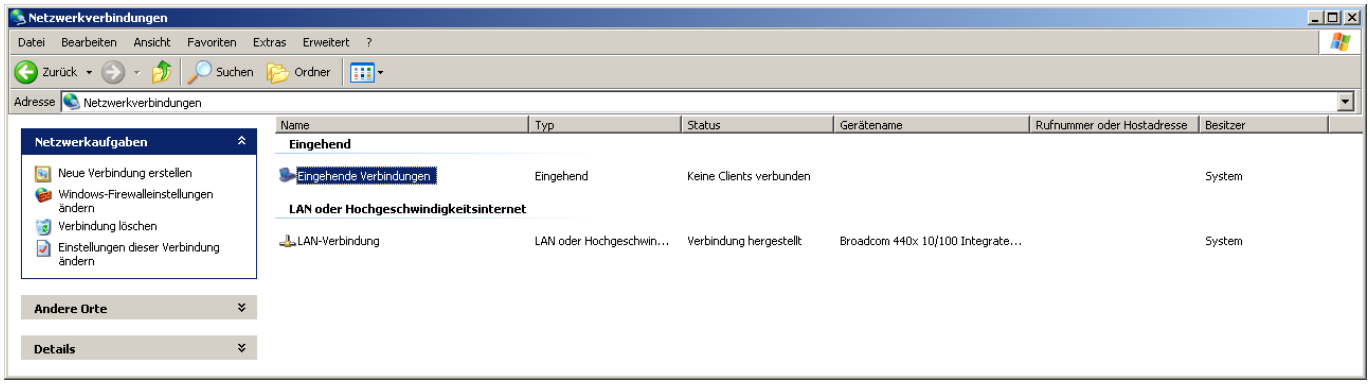


11. Select the Internet protocol (TCP/IP) and press the properties button.



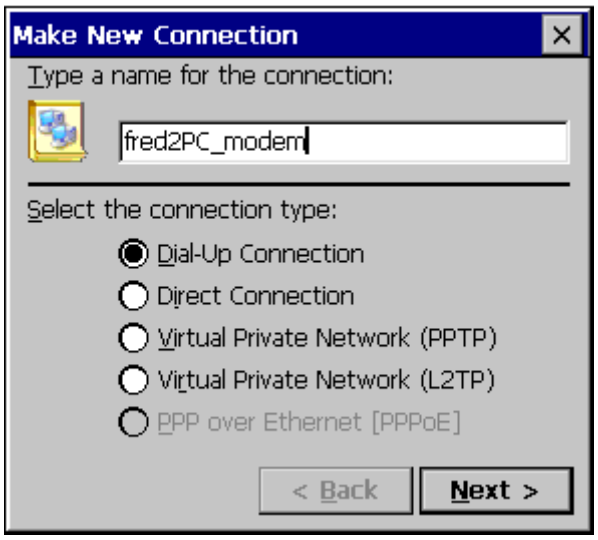
12. Set how and wich IP addresses are to be assigned to the registering computer.



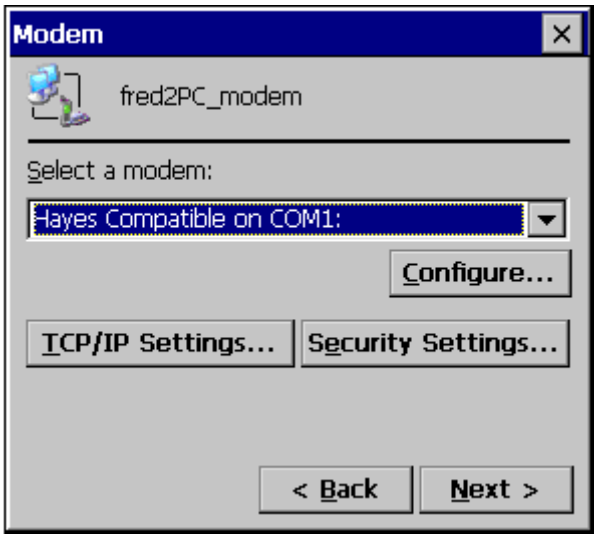


On the WindowCE-devices side:

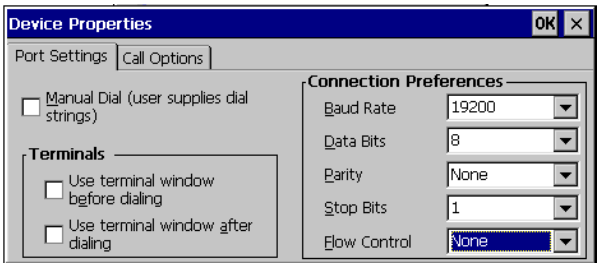
13. Select
    Start ➔ Settings ➔ Network and Dial-Up Connections ➔Make New Connections
    Select the connection type Dial-up Connection.

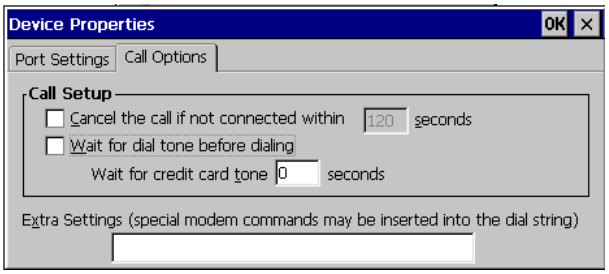


14. Select the modem Hayes Compatible on COM1.
    CAUTION: it is only COM1 supports.
    Press the button Configure. The modem will be configured.



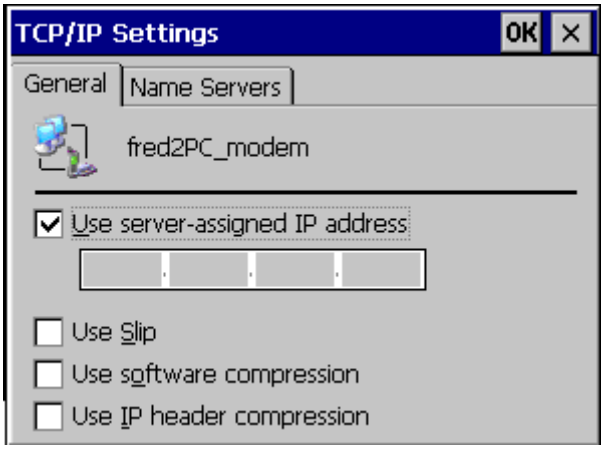
15. The modem settings must be consistent with those of the modem (in the special flow control and baud rate). This can be checked via AT-commands (see modem documentation). After you have left this dialog with OK press the button TCP/IP Settings

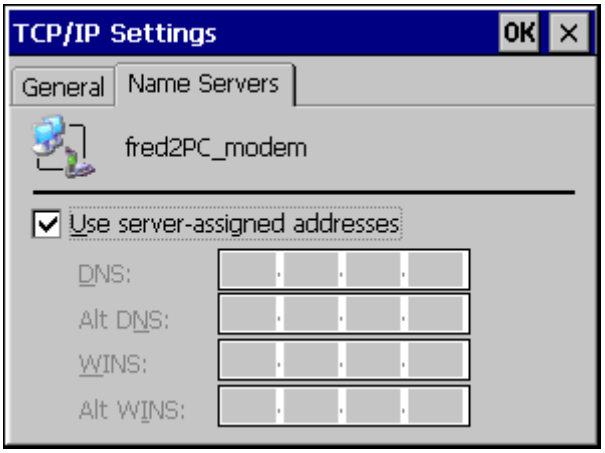




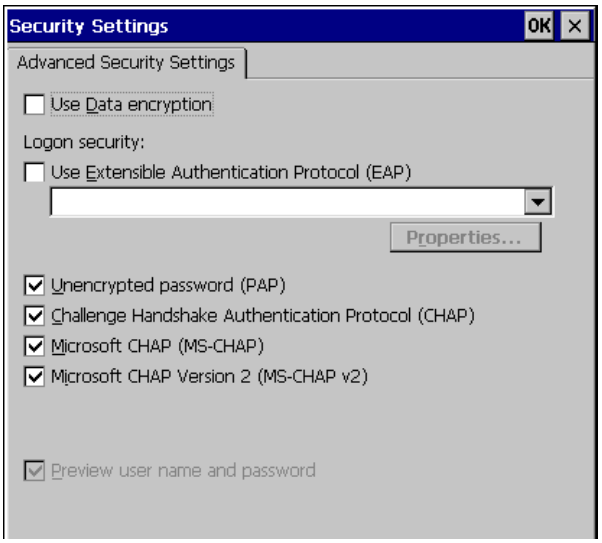
16. Insert here the TCP/IP settings.

    The protocol that the server can be used either PPP (POINT-TO- Point-Protocol), or SLIP (Serial Line Internet Protocol). The software compression can lead to a higher data transfer rate than the hardware compression done. It must also, if possible, the corresponding setting in the modem will be set (via AT-commands, see modem documentation).
    Normally improves use IP header compression the capacity. In some cases, it will not be handled correctly by the server.
    Finish the dialog with OK.

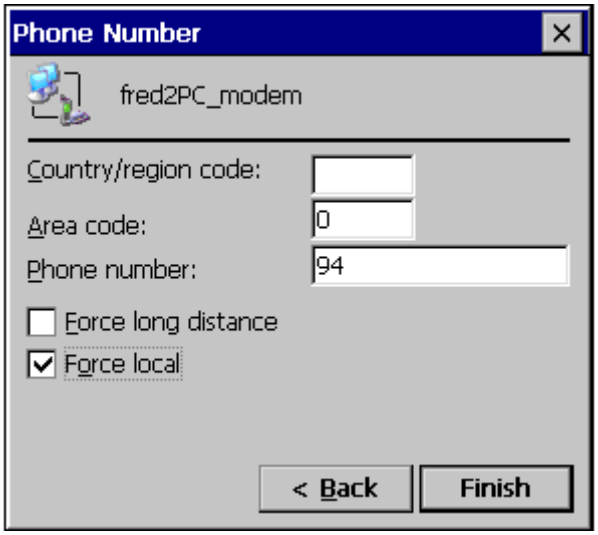




17. To set the security settings the Security Settings button has to be pressed
    It is necessary that these match with the server settings.
    Windows CE© 5.0 or 6.0 supports EAP does not.
    Save your settings with OK.



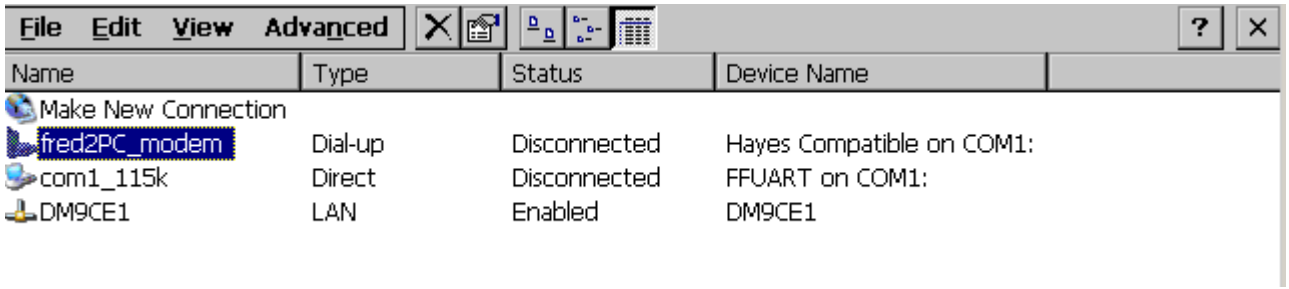
18. Enter the phone number in order to establish the connection.



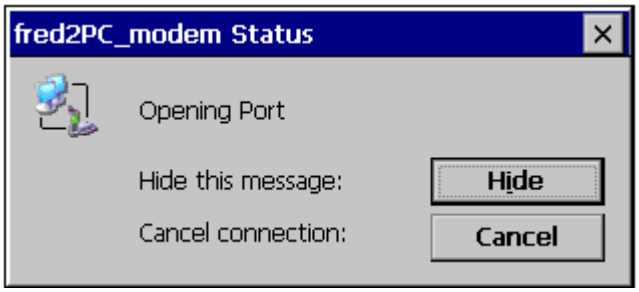
19. Save the Registry.

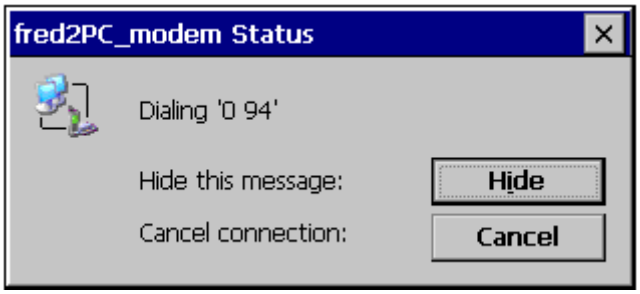
Start ➔ Programs ➔ Utilities ➔ Save Registry

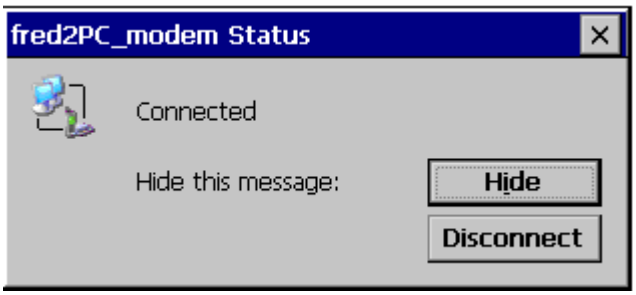
if you don't save the registry, after a restart of the device the connection entry will no longer exist.



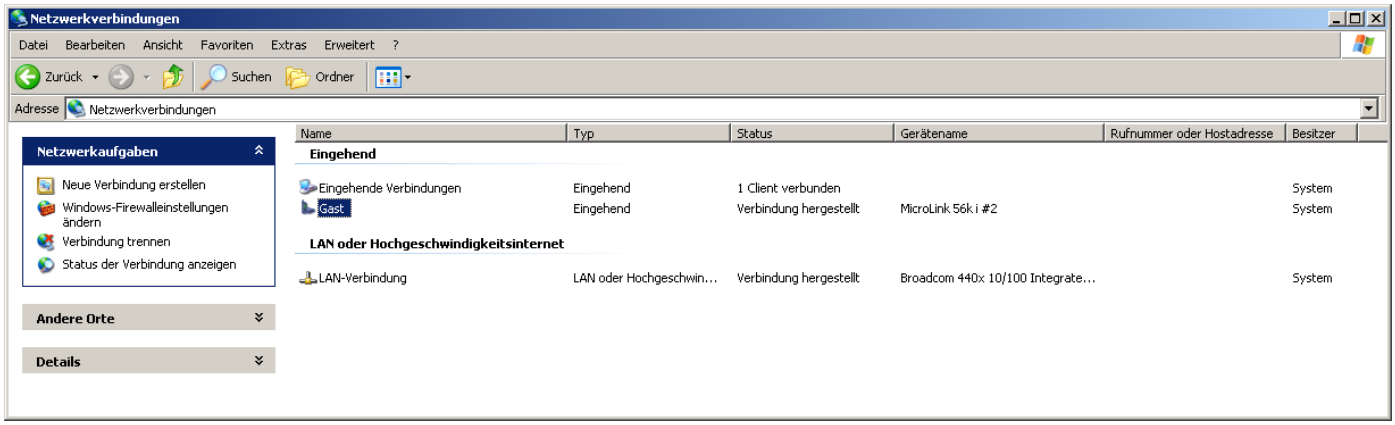
20. Double-click the modem connection, enter the user and the password and press the Connect button.







On the PC-side the connection appears.

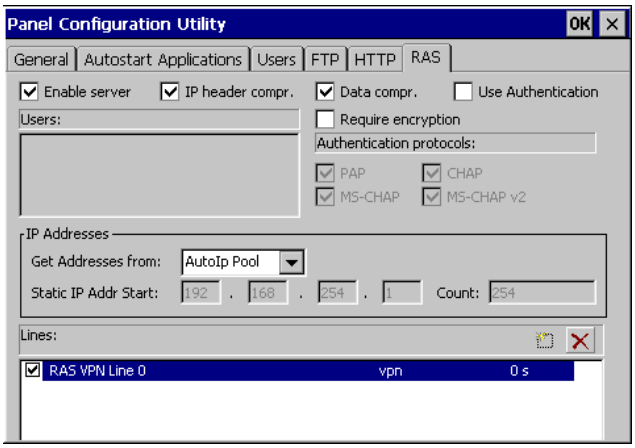


2.2.3 VPN-connection

2.2.3.1 Windows CE© -device as RAS-Server, PC as RAS-Client (Windows XP Professional), without Authentication

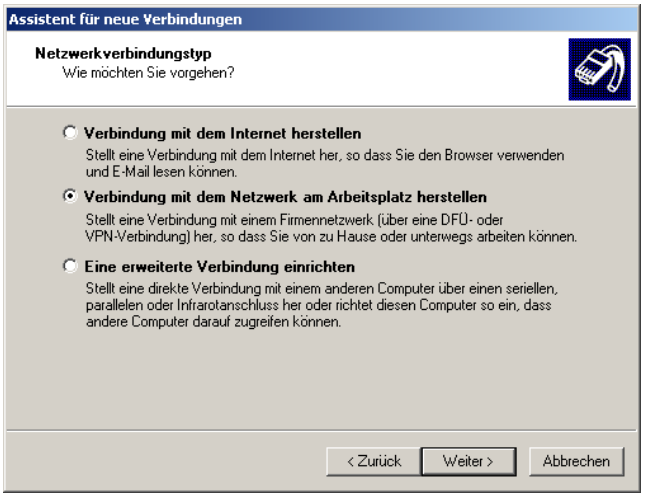
On the Windows CE© -devices-side:

1. With the **Panel Configuration Utility** can the RAS-server be configured.

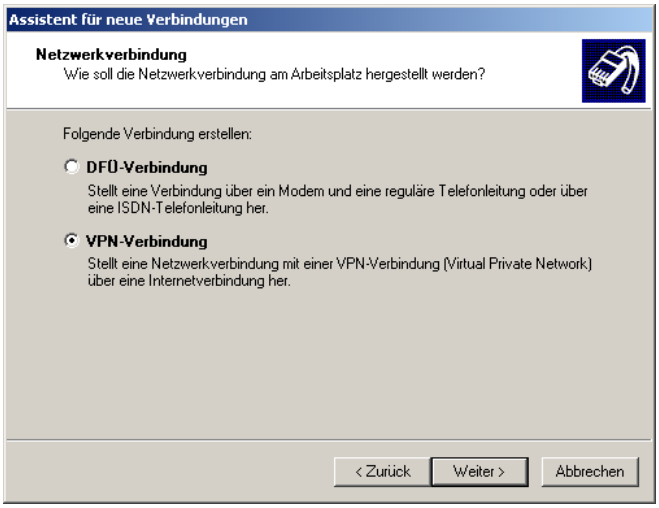


On the PC-side:

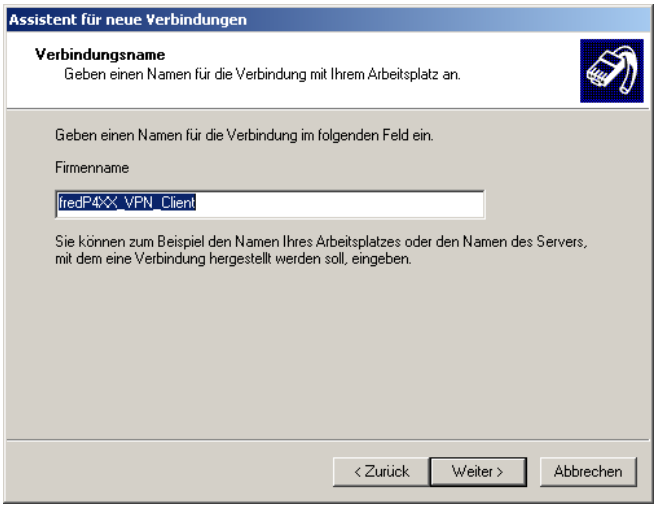
2. Select
   Start -> Settings -> Control Panel -> Network Connections -> create a new connection.
   Select the network connection type with the network at the workplace, in order to manufacture from a VPN connection to the Windows CE© -device to produce. In “network connection type” select "Connect to the network at my workplace" to restore a VPN-connection to the Windows CE© -device.



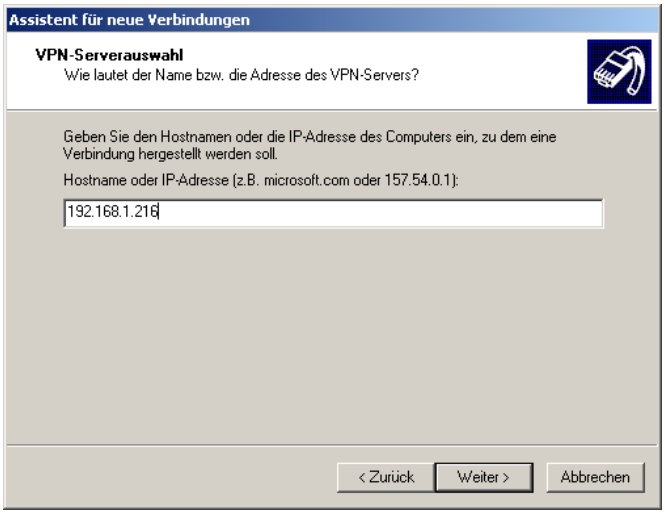
3. Select the VPN connection to make a network connection with a VPN connection.



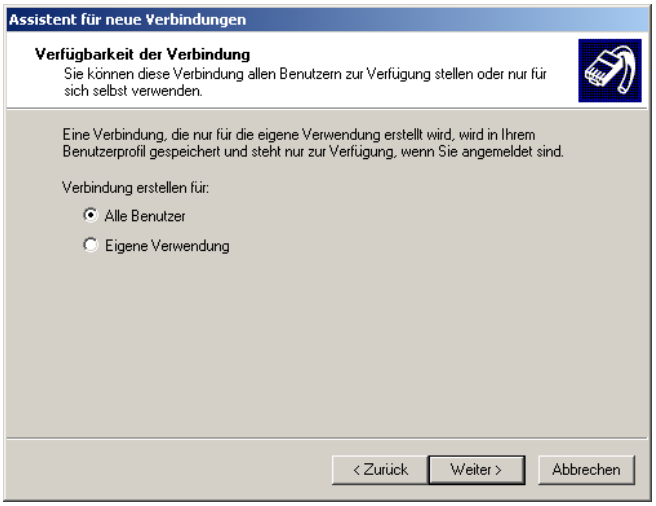
4. Enter the connection name



5. Select the IP address of the Windows CE© -device, to which a connection is to be established

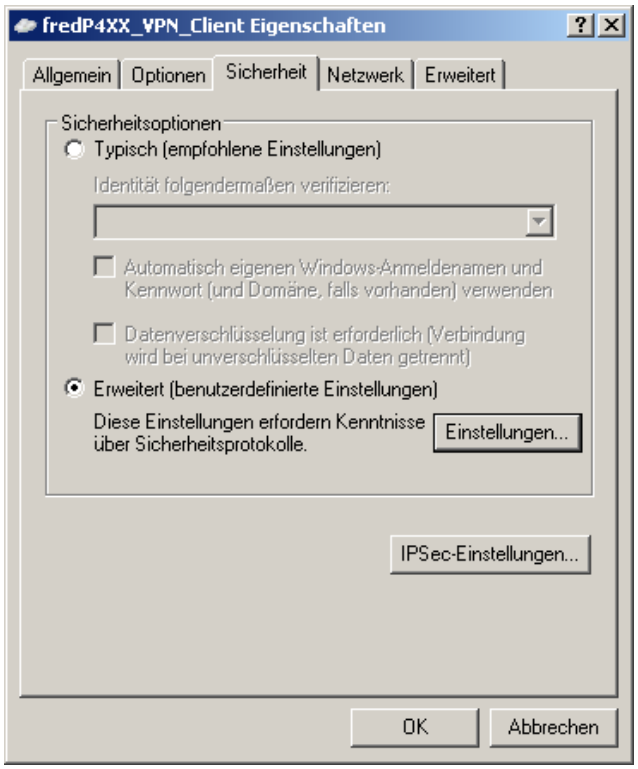


6. This connection can make available to all users or only use for themselves



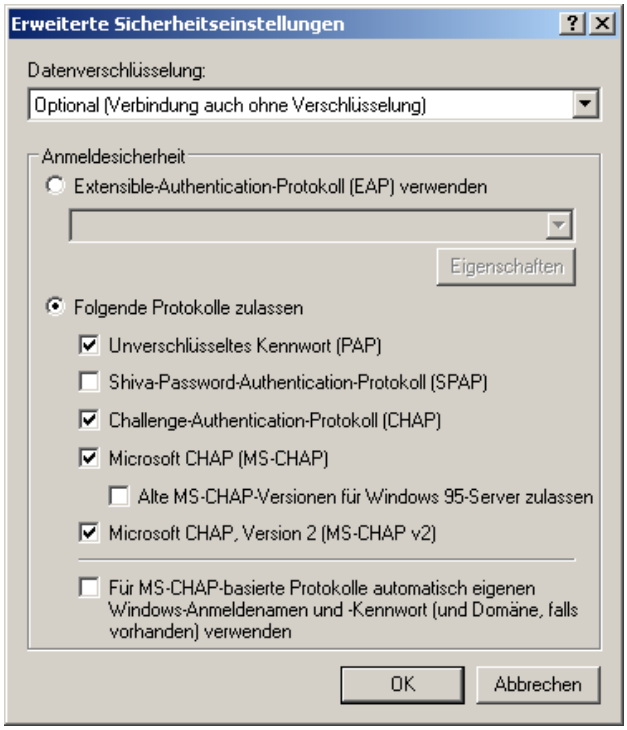
7. Click on the **Properties** button in order to configure the connection.

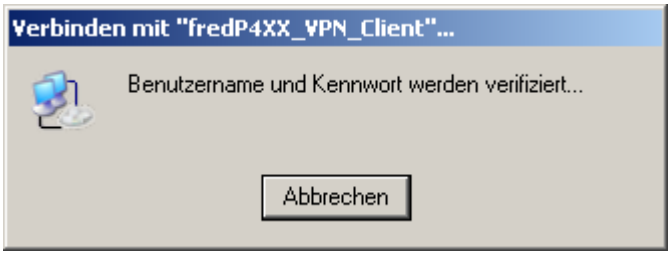
8. On the **Security** tab you can select the licensable security option expands from, in order to put the advanced security settings.

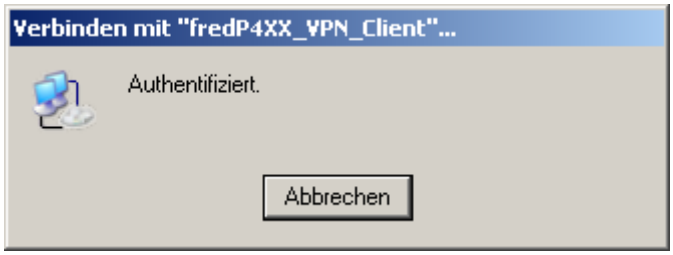


9. Select the data encryption. This must be match with the Windows CE© -device.

   Windows CE 5.0 or 6.0 doesn't support EAP.



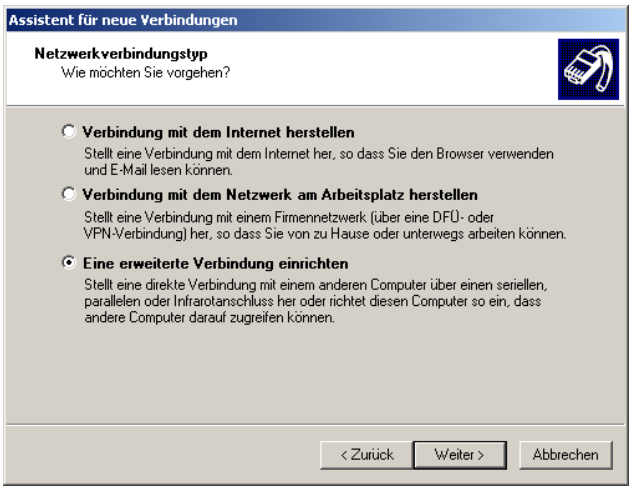




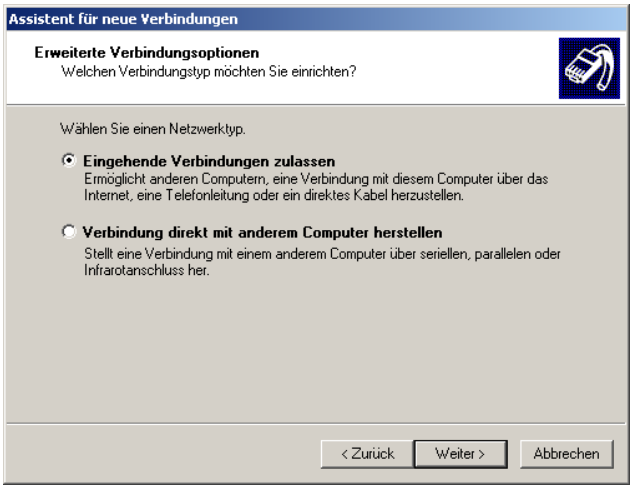
2.2.3.2 Windows CE© -device as RAS-Client, PC as RAS-Server (Windows XP Professional)

On PC-side:

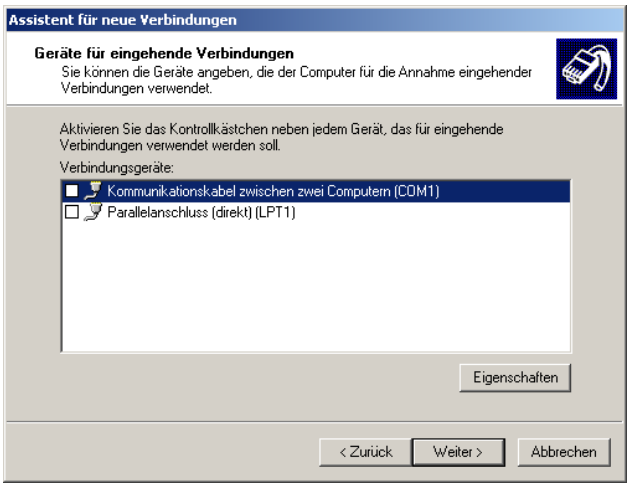
- Select
  Start -> Settings -> Control Panel -> Network Connections -> create a new connection.
  Select “network connection type” “setting up an advanced connection” so a Windows CE© -device can access it.



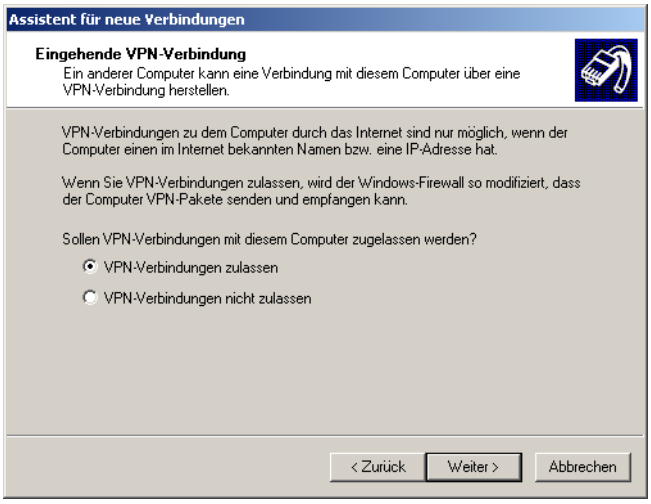
- Select the “network type”:
  ”incoming connections to allow”
  A Windows CE © - device can thus establish a connection with this PC over the Internet / Intranet



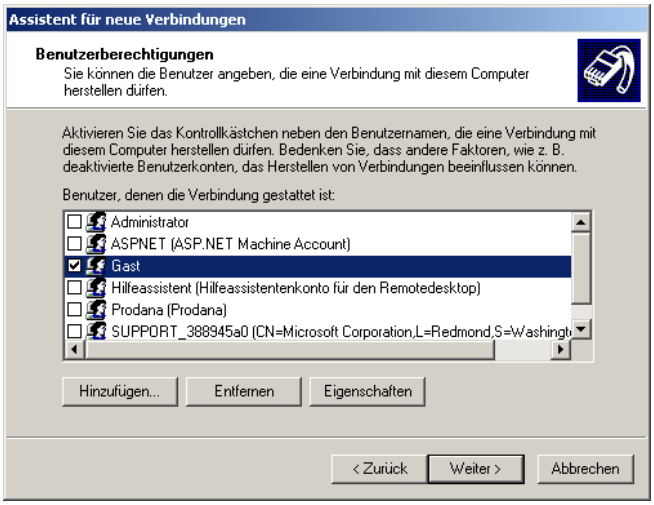
- Ignore the window and press Next.



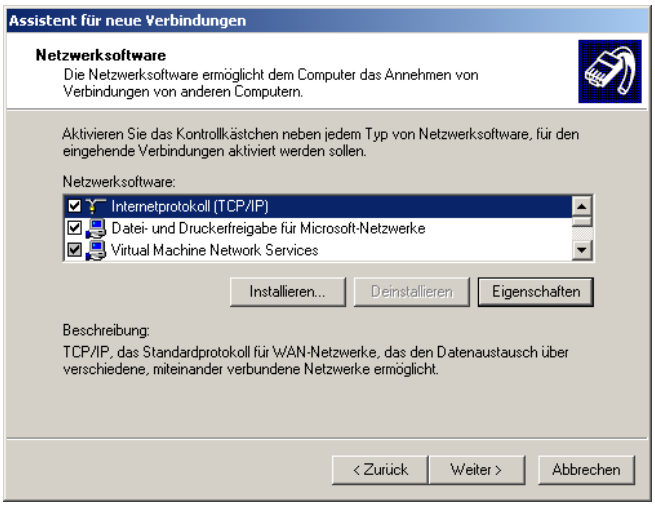
- Select the option “Allow VPN connections.”



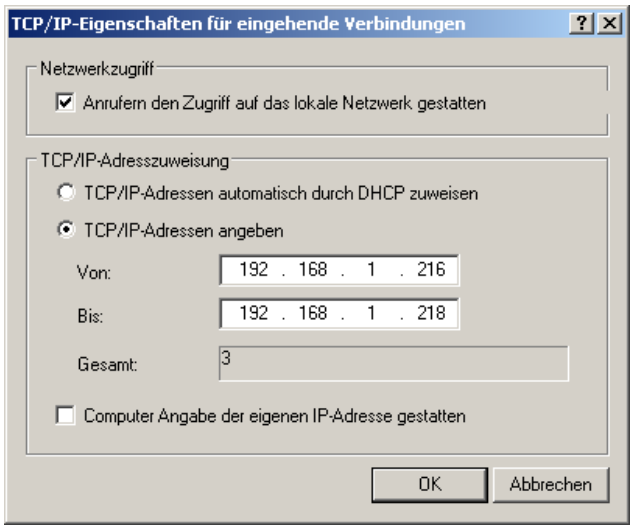
- Select the user who may connect to this PC

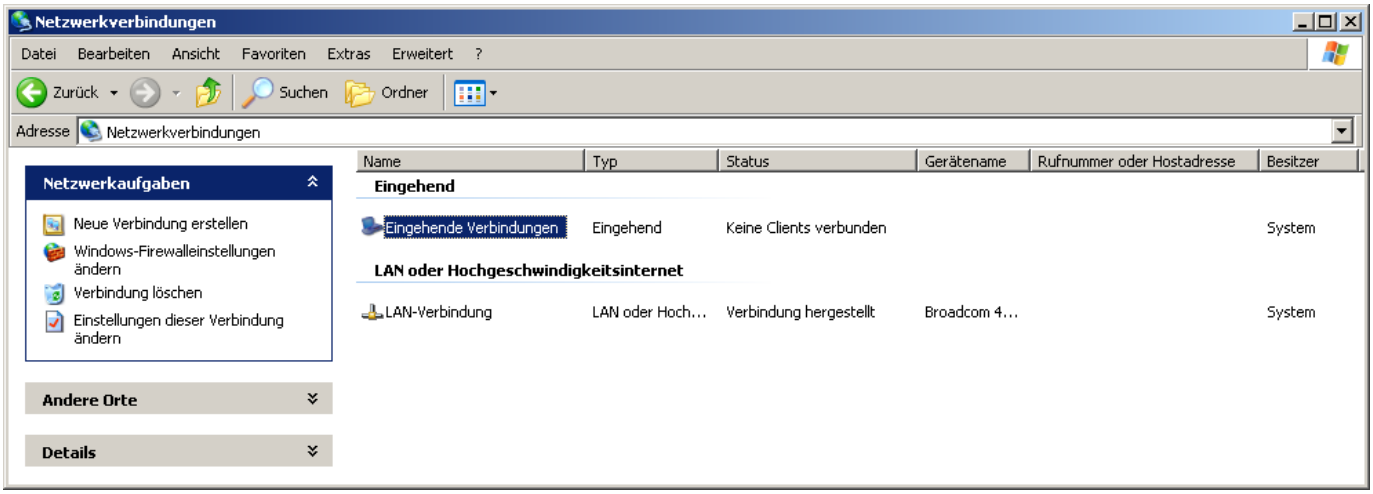


- Highlight the entry Internet Protocol (TCP/IP) and press the Properties button.



- Ensure a how and what are the IP-addresses will be assigned to the PC dialing computers.



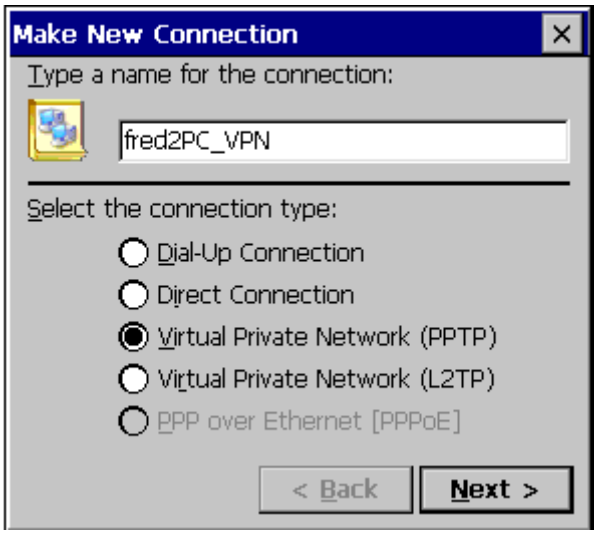


On the Windows CE© -devices-side:

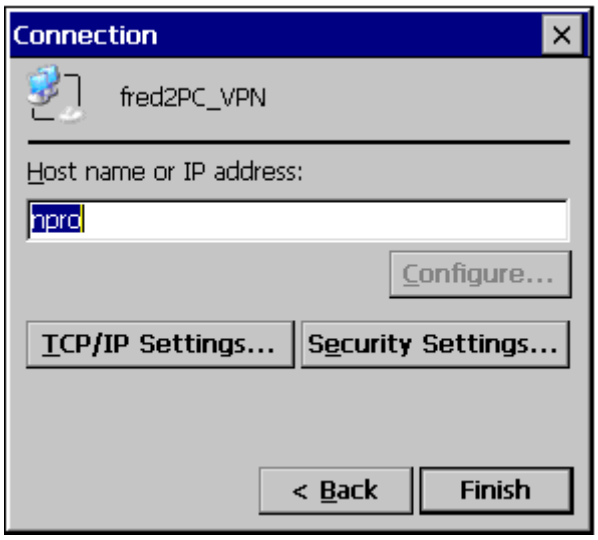
Select

Start ➔ Settings ➔ Control Panel ➔

- Network and Dial-Up Connections
- Make a new connection.
- Select the connection type Virtual Private Network (PPTP).

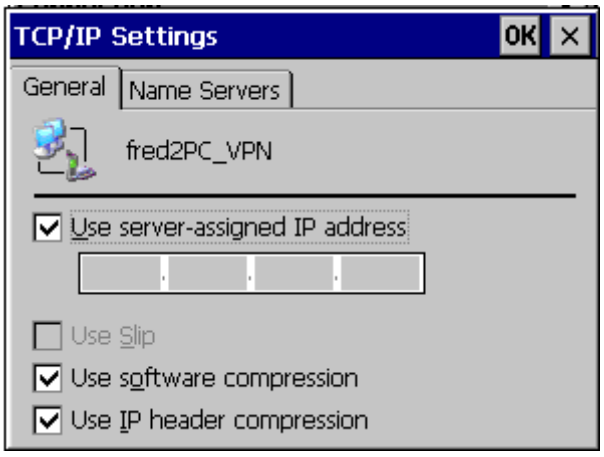


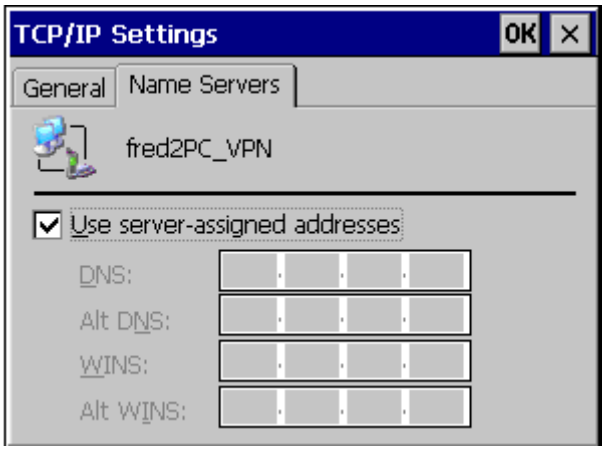
- Either enters the hostname or the IP address of the PC, to which a connection will be established.



- Insert here the TCP/IP settings.

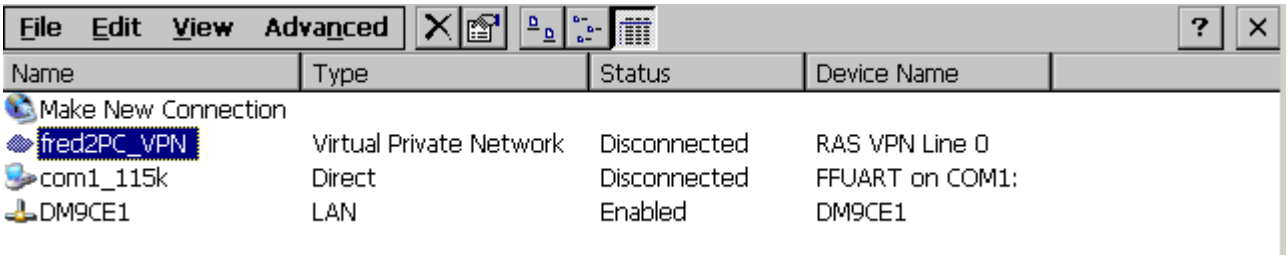
  Can the software compression to a higher data transfer rate. Normally improves use IP header compression the capacity. In some cases, it will not be handled correctly by the server.
  Finish the dialog with OK.



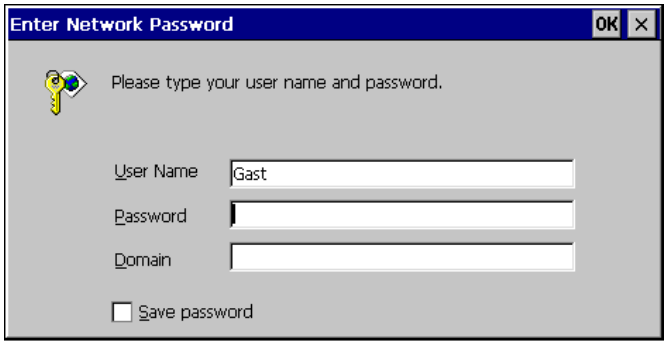


- Press the buttonSecurity Settings ... to set this .They have to be be agreed with the server settings. Windows CE© 5.0 or 6.0 does not support EAP. Save your settings and click OK.

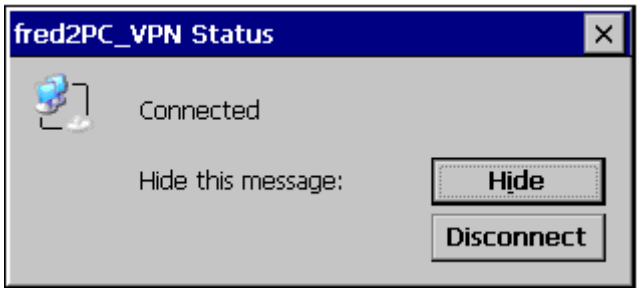
- Save the Registry.
  Start ➔ Programs ➔ Utilities ➔ Save Registry
  if you don ‘t save the registry, after a restart of the device the connection entry does no longer exist.



- Double-click on the VPN connection, enter the user and password and press the OK button.

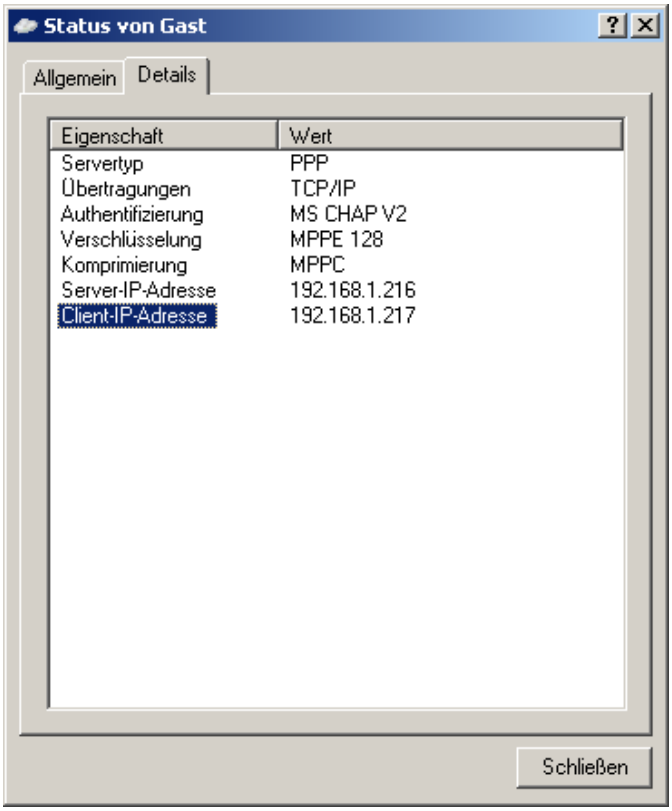


- Status of the set VPN connection is displayed



On the PC-side the connection appears:

After you have set up the connection in the taskbar, the icon will be displayed. When you double-click, the status of the connection will be indicated.

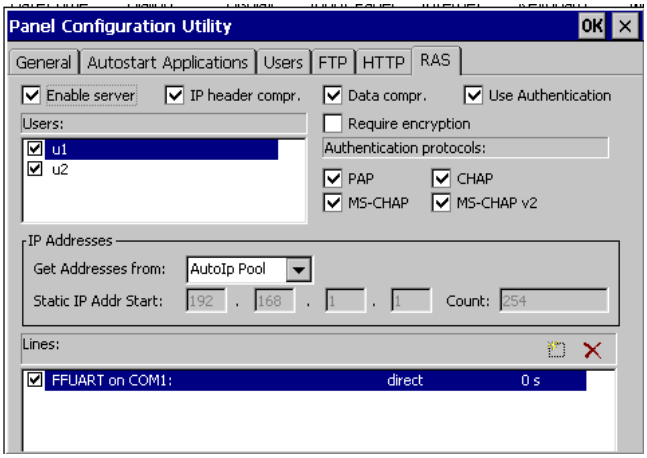


2.2.4 Direct-connection on the serial interface (Null-Modem-Cabel)

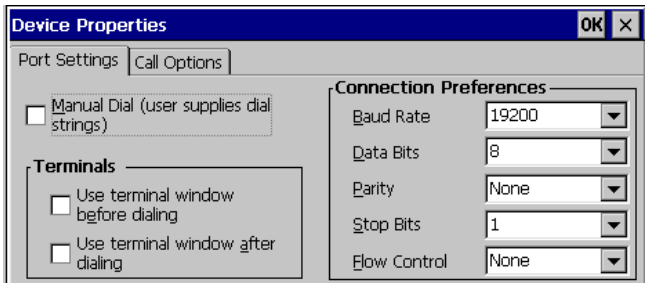
2.2.4.1 Windows CE© -Device as RAS-Server, PC as RAS-Client (Windows XP Professional), with authentication

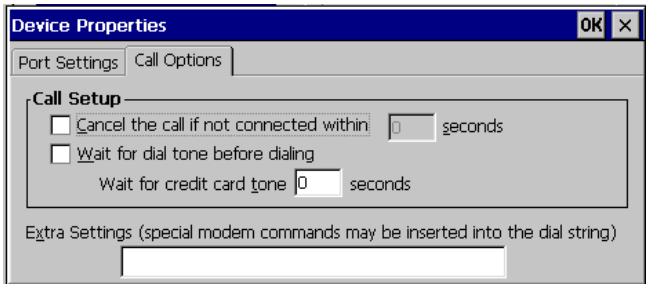
On the Windows CE© -device side:

1. The RAS-server will be configured on the Panel Configuration Utility



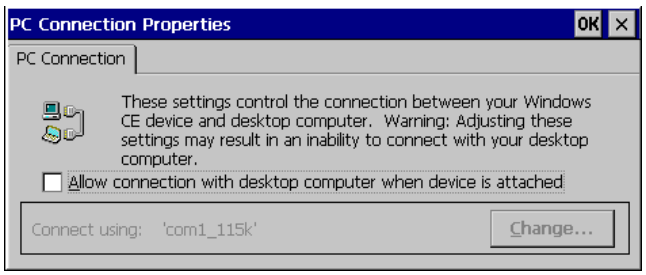
2. Double-click the entry FFUART on COM1: in order to configure the RAS-head.
   The server settings should match with the client settings.





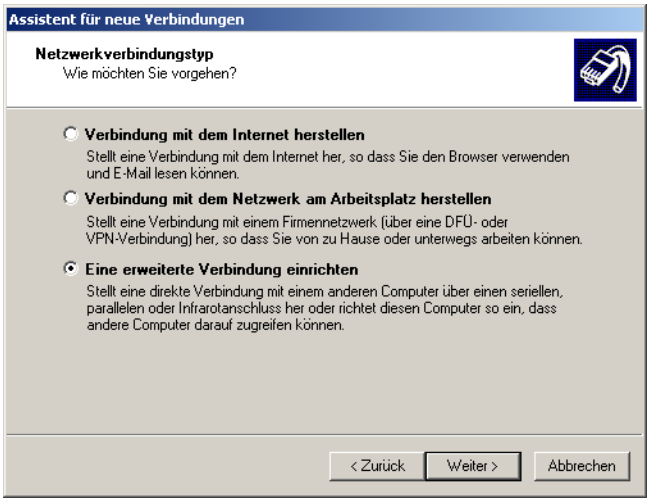
3. Save the registry.
   Start ➔ Programs ➔ Utilities ➔ Save Registry
   If you don ‘t save the registry, after a restart of the device the connection entry does no longer exist.

4. Select
   Start ➔ Settings ➔ Control Panel ➔ PC Connection
   COM1 can’t used at the same time from the RAS-Server and the ActiveSync

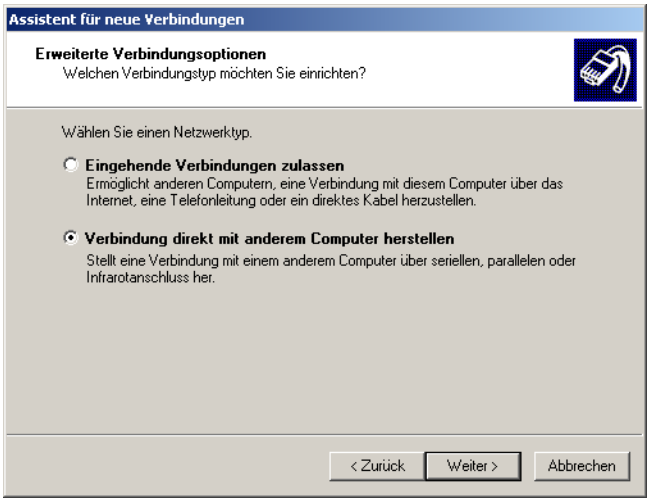


On the PC-side:

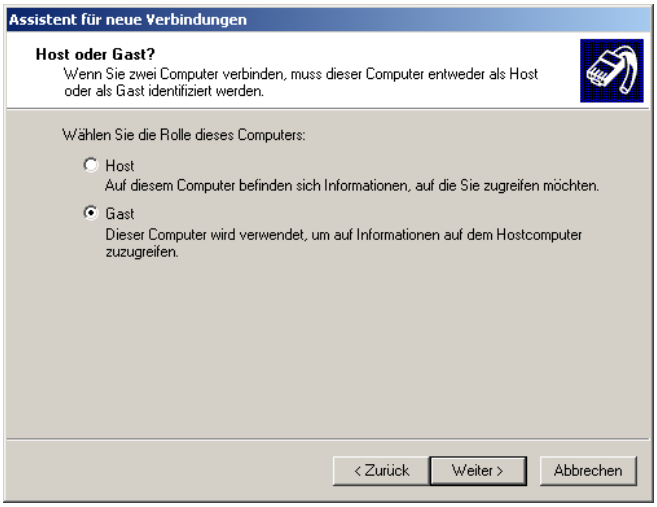
5. Select
   Start -> Settings -> Control Panel -> Network Connections -> create a new connection.
   Select the network connection type setting up an advanced connection from a connection with a Windows CE© -device via the serial interface.



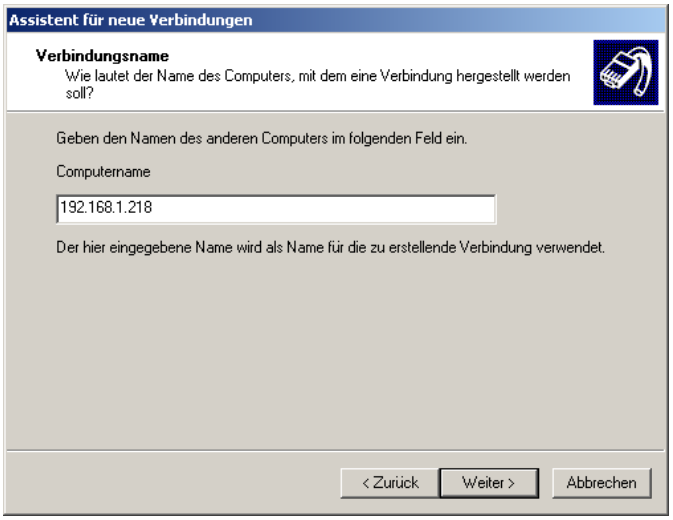
6. Select the network connection directly with other computer manufacture from the connection over the serial connection.



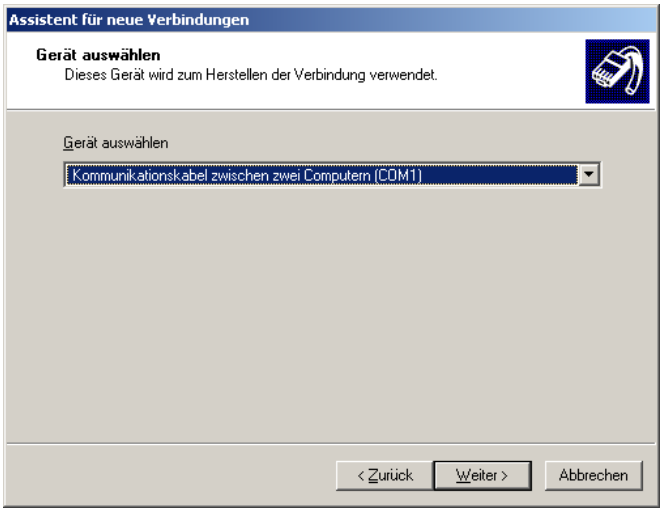
7. Select the PC as a guest



8. Enter the connection name.



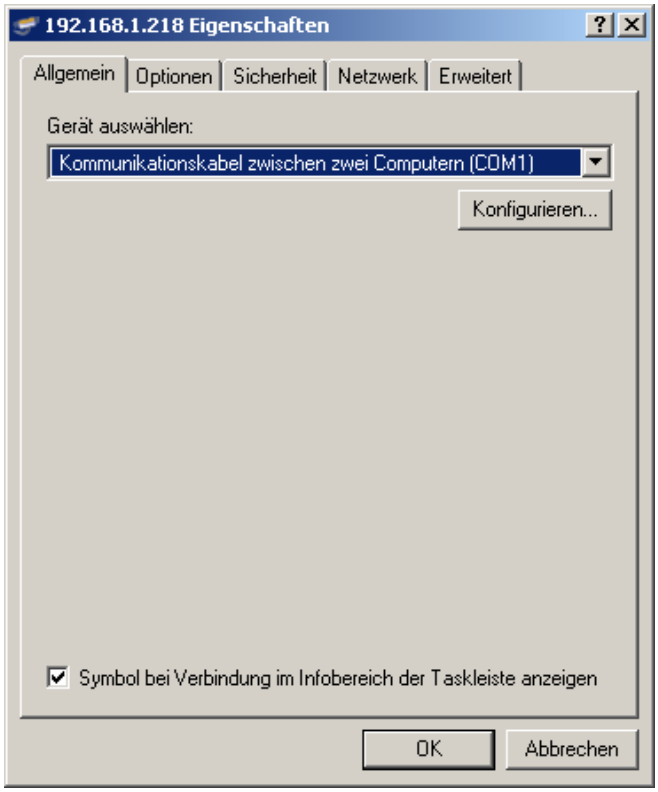
9. Select the COM port from the Windows CE© - device is connected.



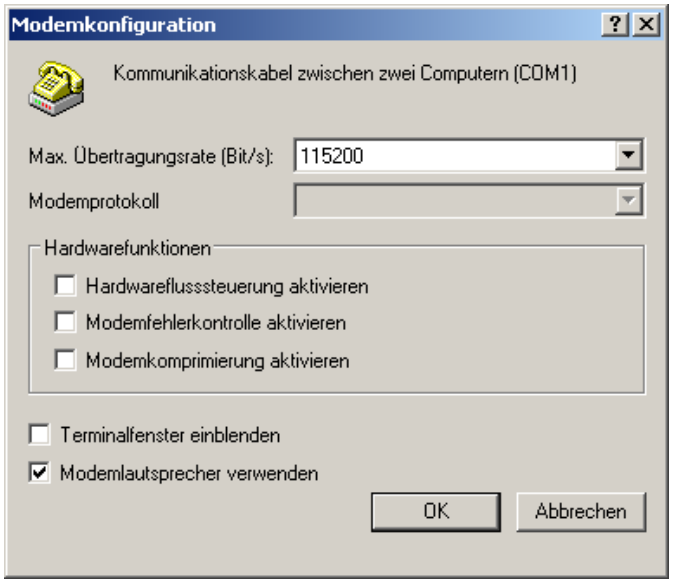
10. You can connect to all users or only for themselves.

11. Click on the Properties button in order to configure the connection.

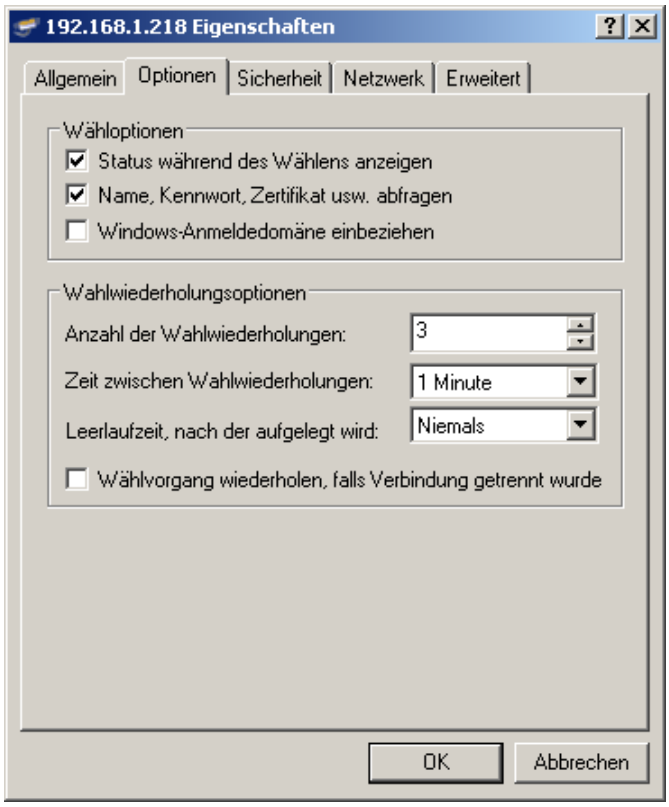
12. Click on the **Configure button** to enter the selected COM-Port to configure.



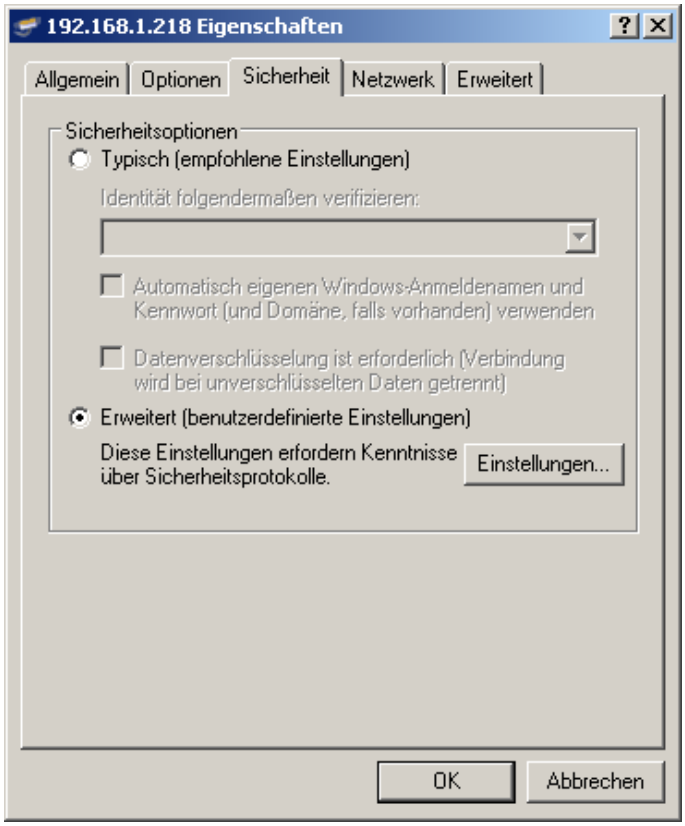
13. The PC settings and the Windows CE© - device have to match.



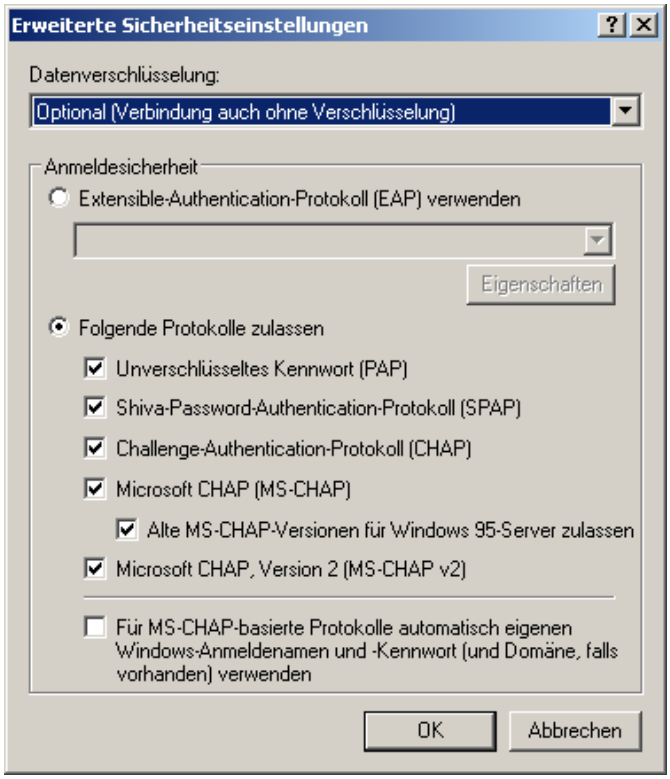
14. Select the connection options.



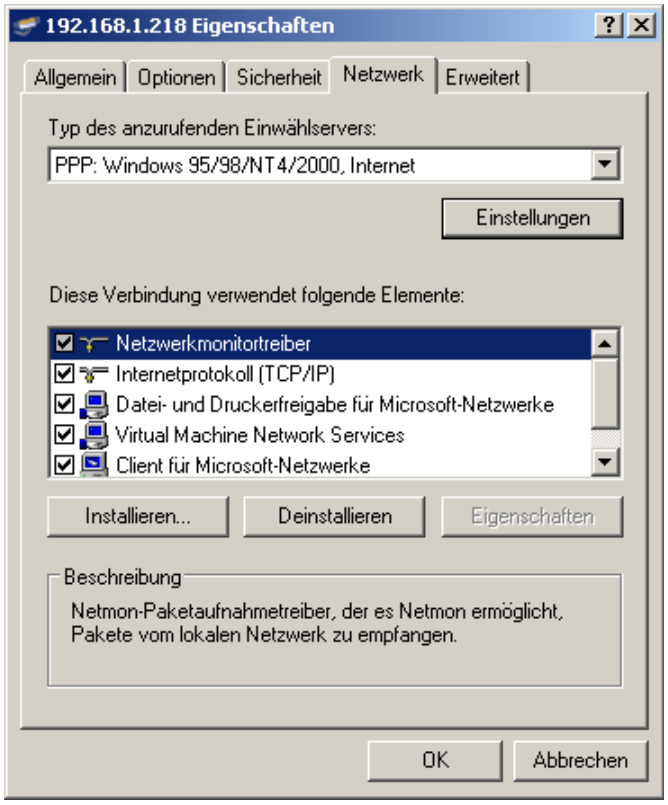
15. **Advanced search setting**
    security
    advanced

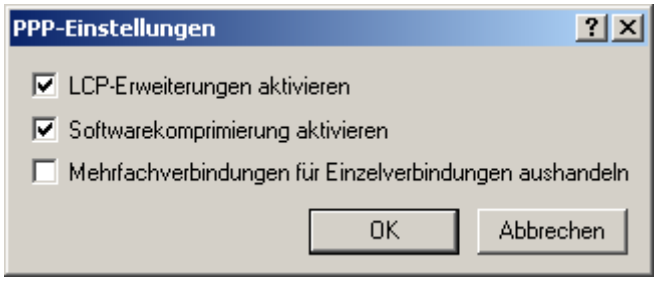


16. You can select the data encryption.
    This must be in according to the Windows CE© - device.
    Windows CE© supports EAP does not.

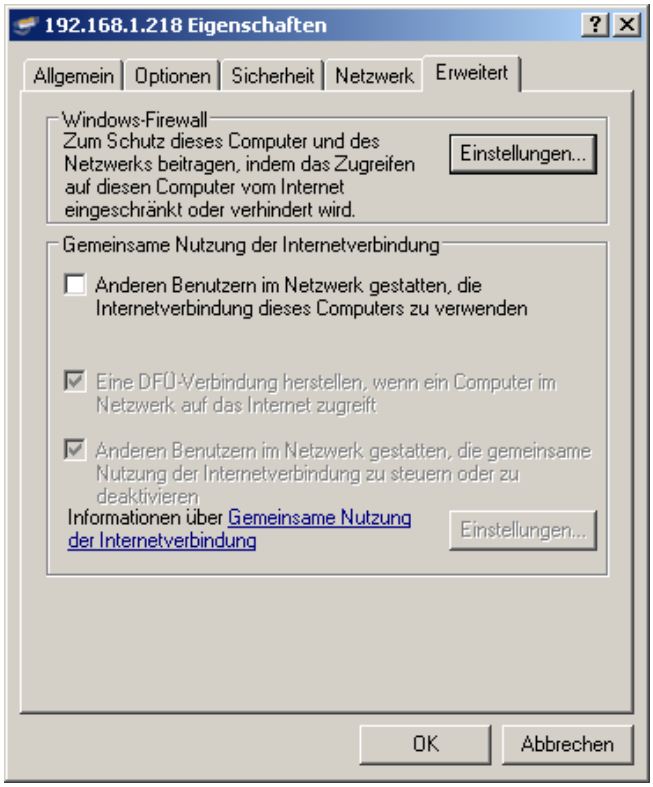


17. The network properties.

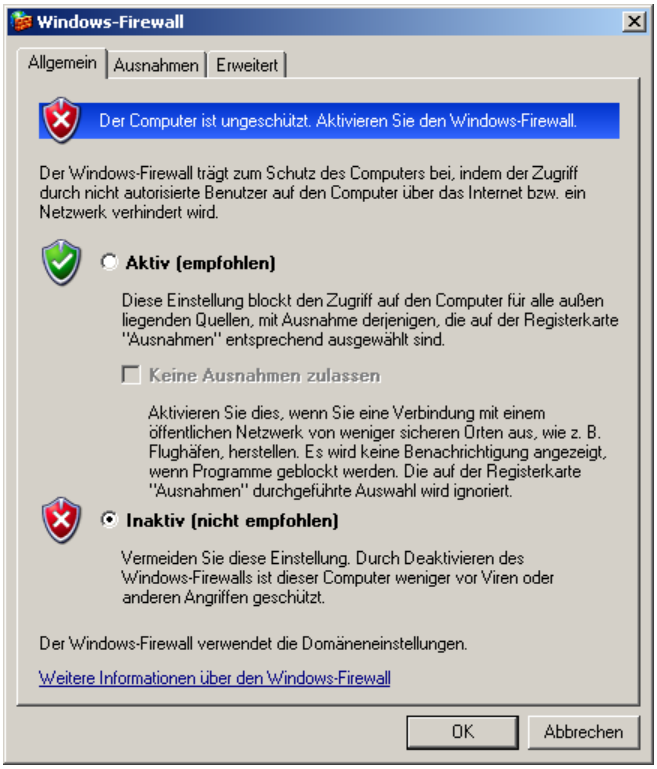




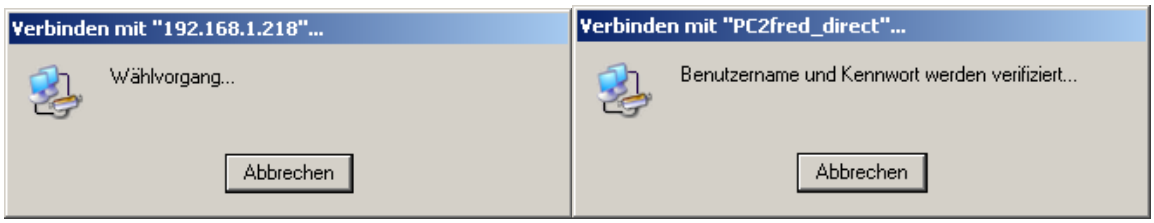
18. On the **advanced** tab, click the **setting** button, to be sure that the Windows Firewall allows the connection.



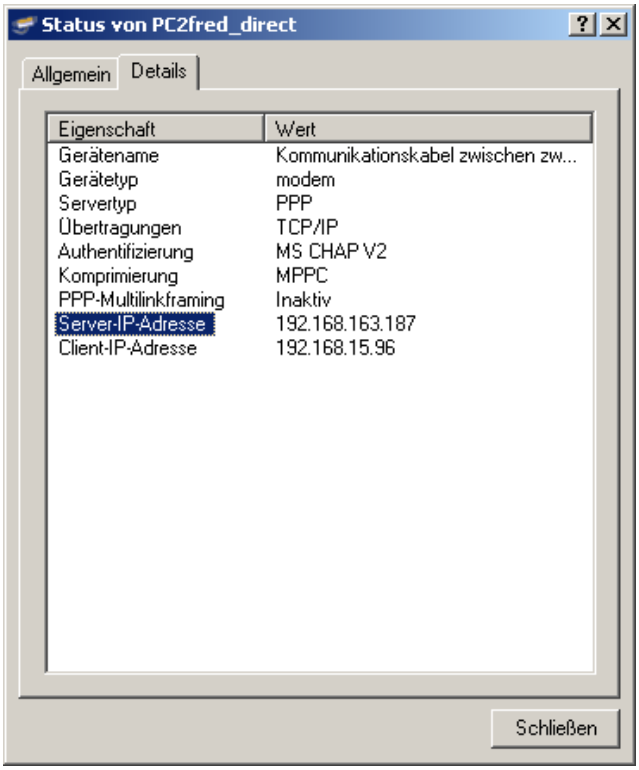
19. In this case you disable the Windows Firewall.



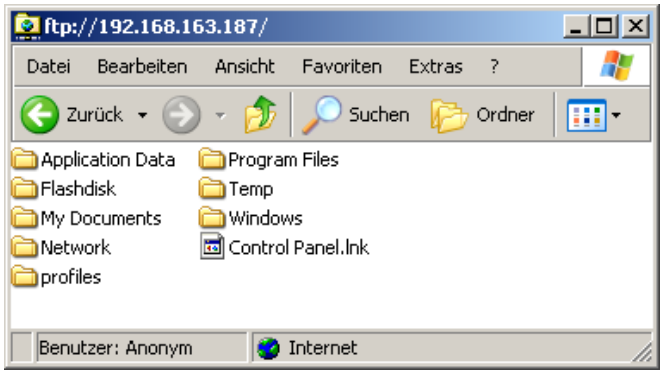
20. Now you can connect



21. After the connection is established you will have the icon displayed in the taskbar. With double-click the connection status will be displayed.



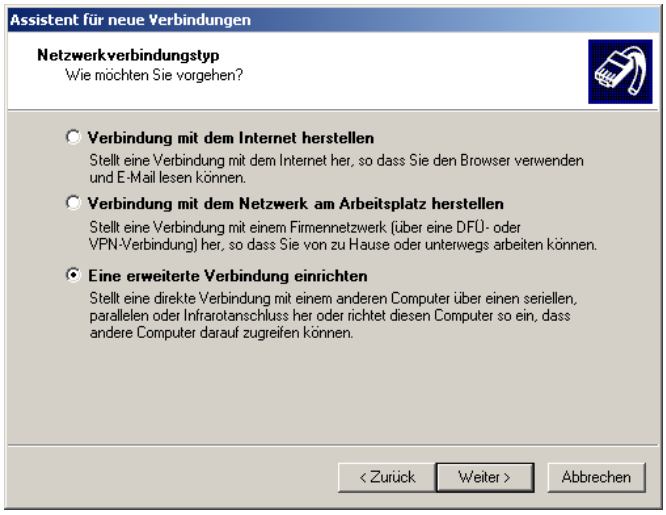
22.



2.2.4.2 Windows CE© - device as RAS-Client, PC as RAS-Server (Windows XP Professional), without authentication

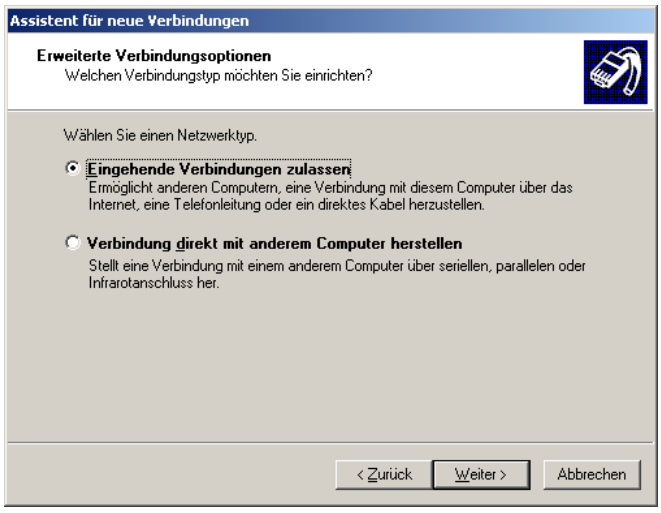
On the PC-side:

- Select
  Start -> Settings -> Control Panel -> Network Connections -> create a new connection

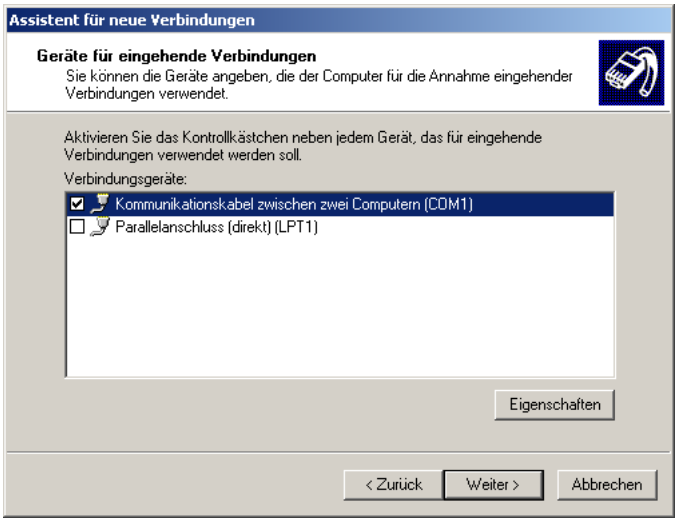


- Select the network connection type:
  an advanced connection
  A Windows CE© - unit can now be accessed.

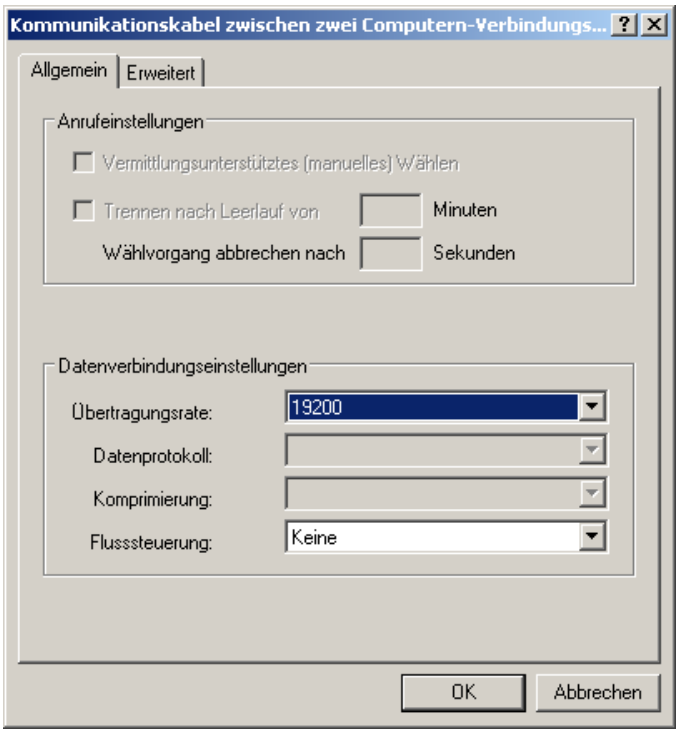
- Select the network type incoming connections to allow
  A Windows CE © - device can now connect via the serial interface



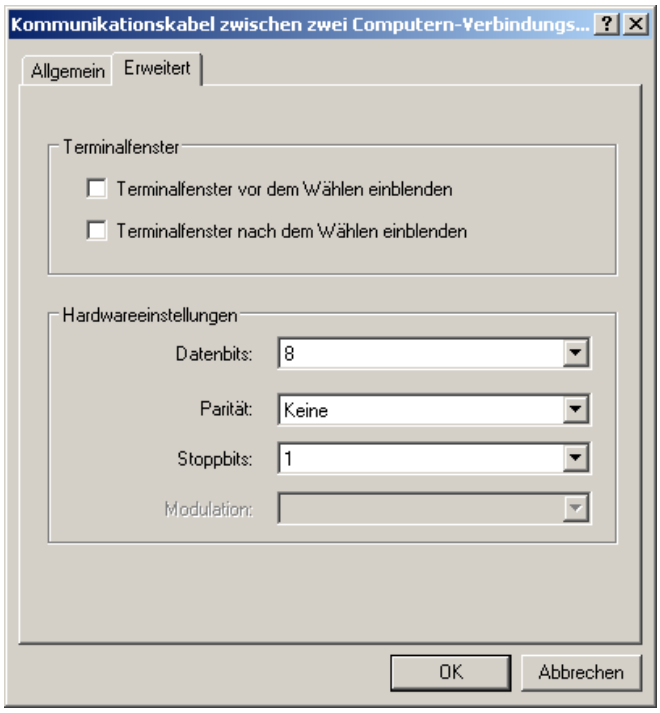
- Select the COM-Port.
  Press the Properties button in order to configure the connection.



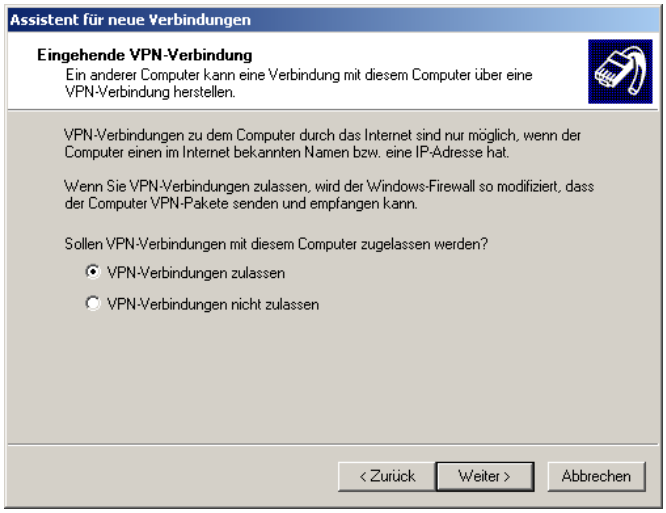
- Connection settings



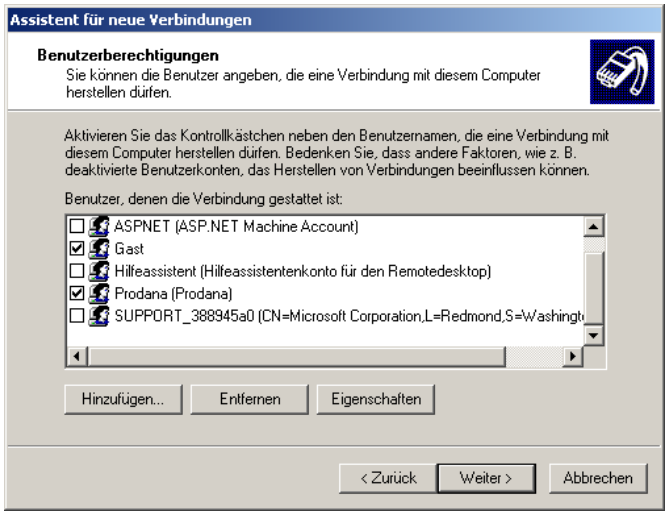
- Hardware setup



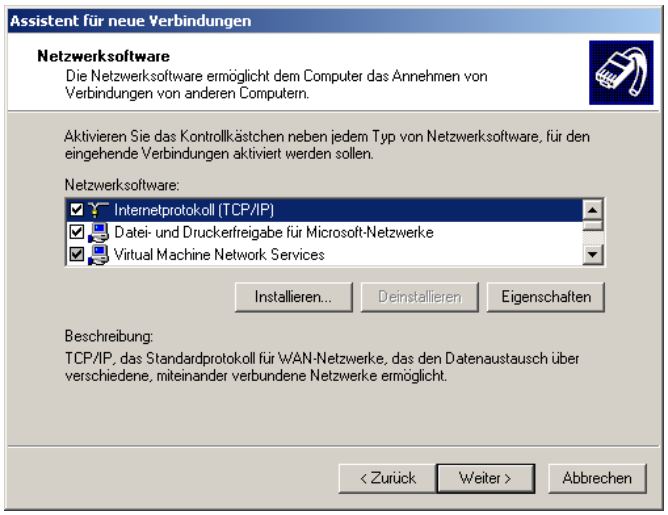
- VPN connections allow or refuse



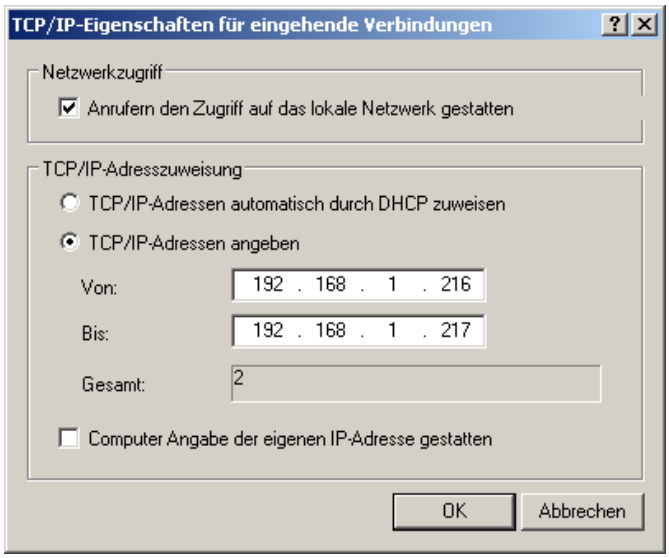
- You can provide the connection to all users or only for themselves.



- Select the Internet protocol (TCP/IP and press the **Properties** button.

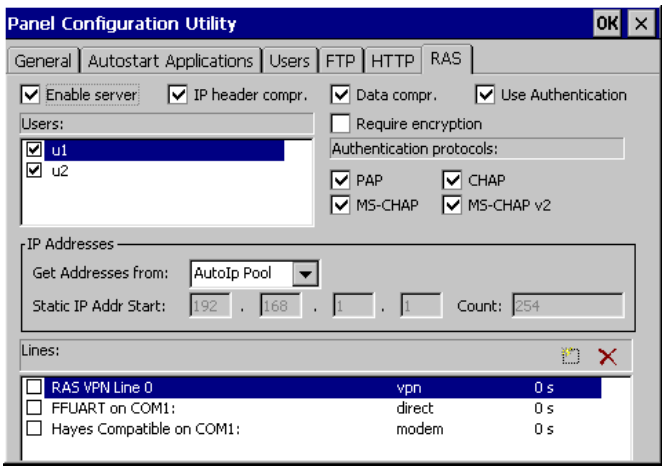


- Setting like / what IP address is assigned to the dialed-in computer

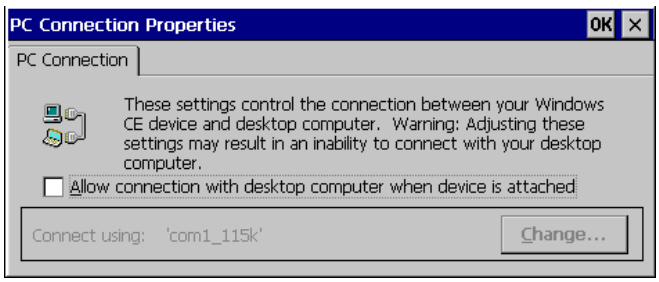


On the Windows CE© - devices-side:

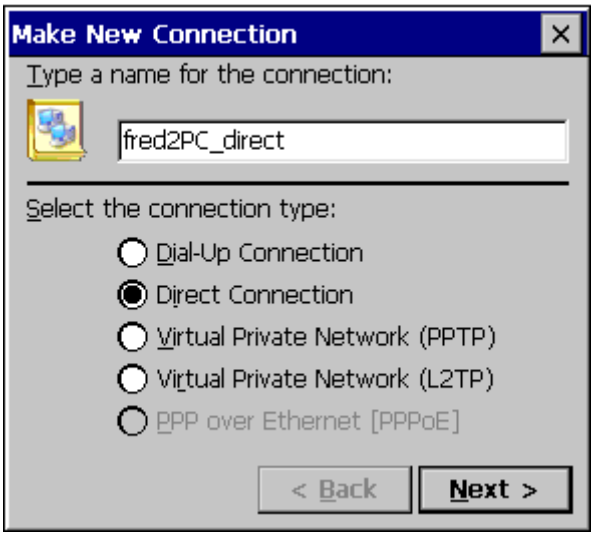
- Make sure that no direct RAS-head is enabled.



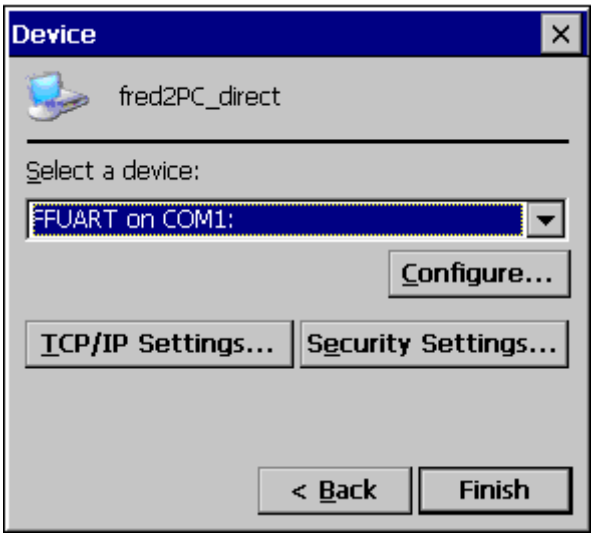
- Select
  Start ➔ Settings ➔ Control Panel ➔ PC Connection.
  COM1 can not be used at the same time from the RAS-client and activesync



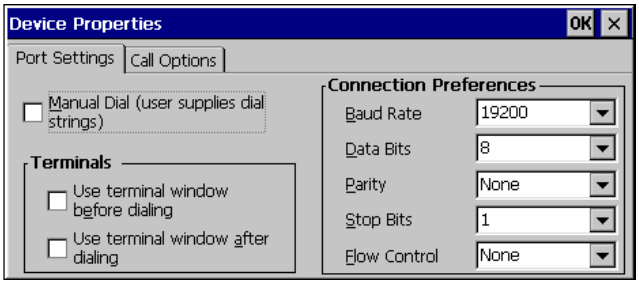
- Select
  Start ➔ Settings ➔ Control Panel ➔ Network and Dial-Up Connections ➔make new connection➔ Direct Connection

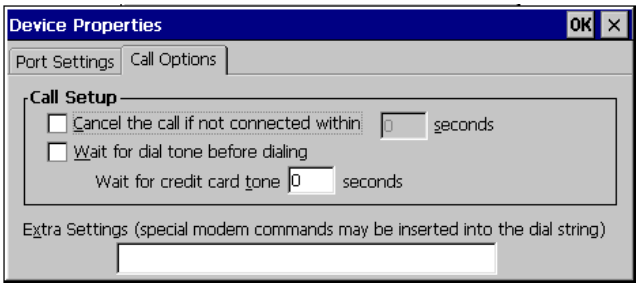


- Select FFUART on COM1 from.
  CAUTION: only COM1 is supported.
  Press the button “Configure” for the COM1-interface to configure.

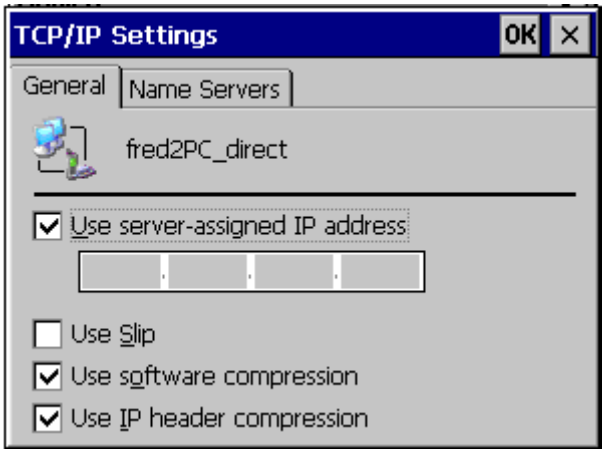


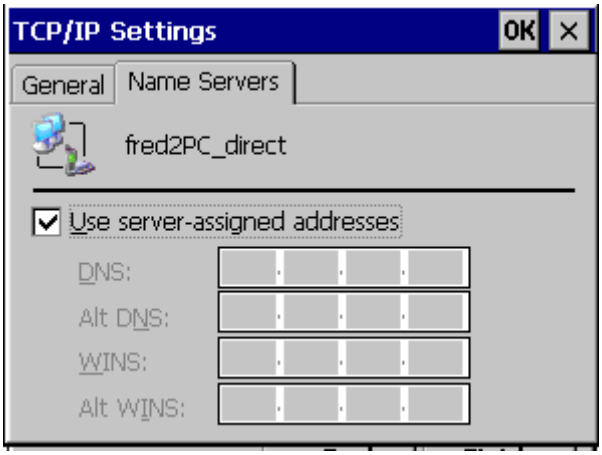
- The settings must be agree with those of the PCs (in the special flow control and Baud rate) after you have left this dialog with OK press the button TCP/IP Settings …



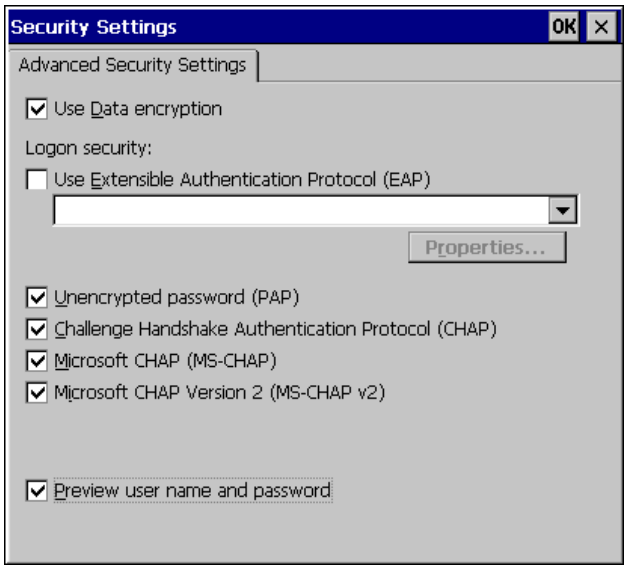


- Insert here the TCP/IP settings. The protocol that the server used is either PPP (POINT-TO- Point-Protocol), or SLIP (Serial Line Internet Protocol).
  The software compression can cause to a higher data transfer rate.
  Normally improves use IP header compression performance. In some cases, but these do not work correctly handled by the server.
  Normally the Use IP header compression will be improved the performance. Partly this is not correctly handled from the server Close the dialog with OK.

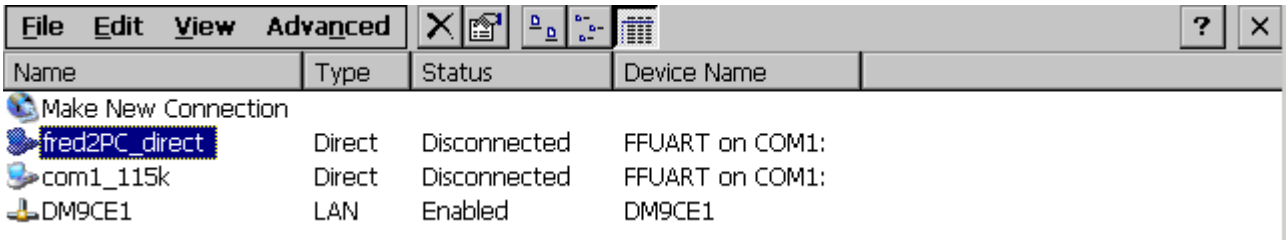




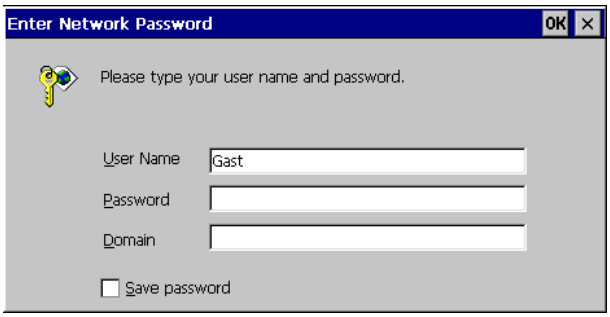
- Press the button Security Settings ... to set the security settings.
  They must be consistent with the server settings.
  Windows CE© 5.0 or 6.0 does not.
  Support EAP
  Save your settings with OK.



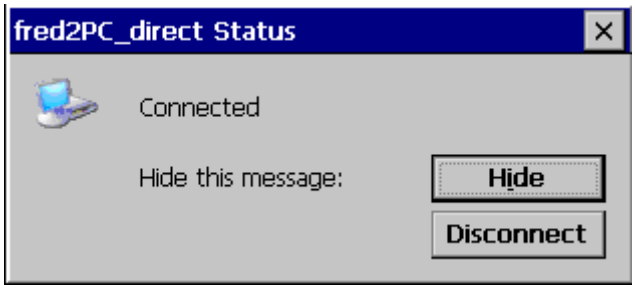
- Save the Registry.
  Start ➔ Programs ➔ Utilities ➔ Save Registry
  if you do not save the registry is after a restart of the device of the connection entry no longer exists.



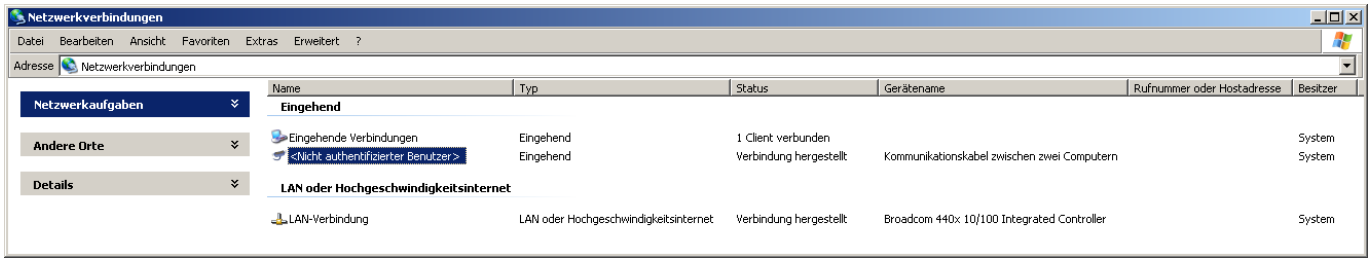
- Double-click the direct-connection and enter the users password.



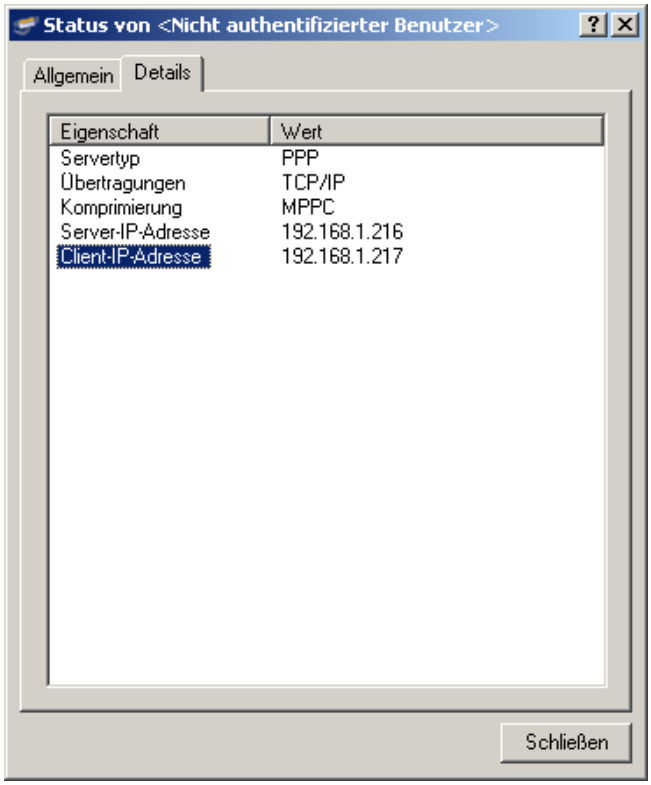
-



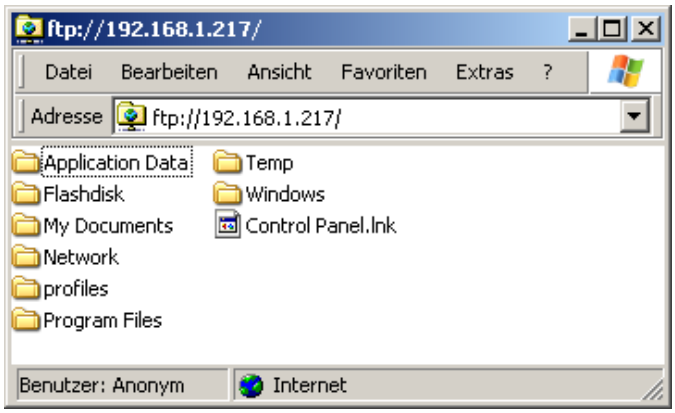
On the PC-side the connection will be appeared :



- After the connection is established you will have the icon displayed in the taskbar. With double-clicking the connection status is displayed.



-



2.3 RS232

2.3.1 Low-Level RS232 or RS485

2.3.2 RTU-Modbus over RS232 or RS485

2.4 CAN

2.4.1 Low-Level CAN

The CAN- communication is analogous to the previous VisioControl -systems with CAN03.lib.

The following should be considered when a project of Can03 changed to 04.

- The command CanInit() now called CanInitialize( );
- The naming structure within the firmware has changed

Background
From Can sfW04 multiple interfaces ca be addressed

ST

```
nCheckRecvID := psFW^.uRemanent.sMasterEEprom.nCan0BaseIntermodulID +
INT_TO_DWORD(psFW^.uRemanent.sMasterEEprom.nCan0ClientNo);
```

2.4.2 CANopen from 3S

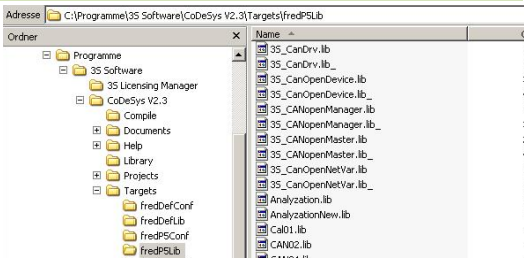
Here you can translate in the codesys both CANopen Master as well as CANopen slave be projected.

In the documents "Kommunikation_CANopen_DE.pdf" this is described in detail.

By using 3S- CANopen for manufacture a communication you need older libraries. The current 3S- libraries are faulty and have a continuous connection reset as a result.

Use the "older" files (in the image scanned) in place of the original files. (here with a underline marked)

The communication takes place now, as in other systems



The use of CANopen Bibliotheken from codesys the calls according to the following schedule:

If there is no module parameter of the generated CanMasters updating, then the call of the CanMasters will be generate in the first alphabetical task. Otherwise, these module parameter is pecified the name of the task, in which the CanMaster is called.

The Rx and Tx-PDOs are in the highest priority of all the tasks that the PDO referencing, called.

If PDOs or the Master calling after the above schema in an event task called, a warning is printed.

For shifting the PDO-calls in a different task, the IO-references have to move in this task.

To move the master call, the module update task parameter has to be changed, or another task to be done about name change to alphabetically first.

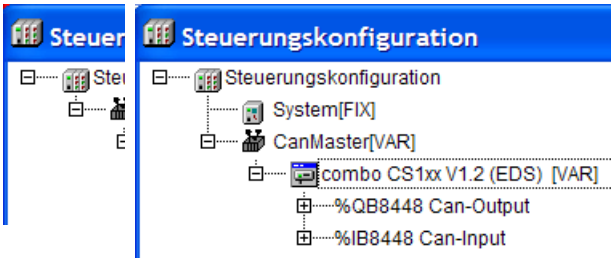
The calls to the library CanDevice are all produced in the CanDevice specified task.

For further information on the use of the can Open-Bibliotheken under codesys are the documentation "Kommunikation_CANopen_DE.pdf" to remove..

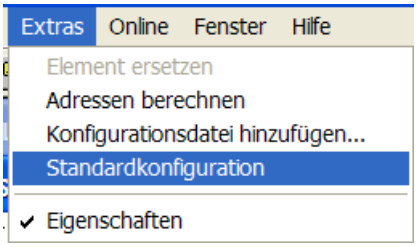
2.4.3 Change under 3S control configuration

For version 2.0 the control configuration must be rebuilt. An acquisition from an older version is not possible. You want to migrate from V1 to V2, recommends it, both by means of 2 emitted by many programs to keep an open mind in order to replicate the V2 canWould you like to migrate from V1 to V2, it is recommended that both control configurations are still opened with 2 programms using two programs open to reproduce the V2.

V1 (old) V2 (new)



It will be automatically registered a block with System. [fix] when a CanMaster is integrated
The address moves on 8448Dec.
Should this not be done automatically, so please choose Extras➔Default configuration



3 Visualization

To grant the customer maximum flexibility it can be choosen between two visualizations

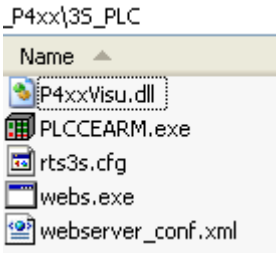
3.1 Visualization with ElaDesign

See the eStudio_manual

3.2 Visualization with CoDeSys 3S Target-Visu

3.2.1 Runtime

the following files have to be installed on the target :

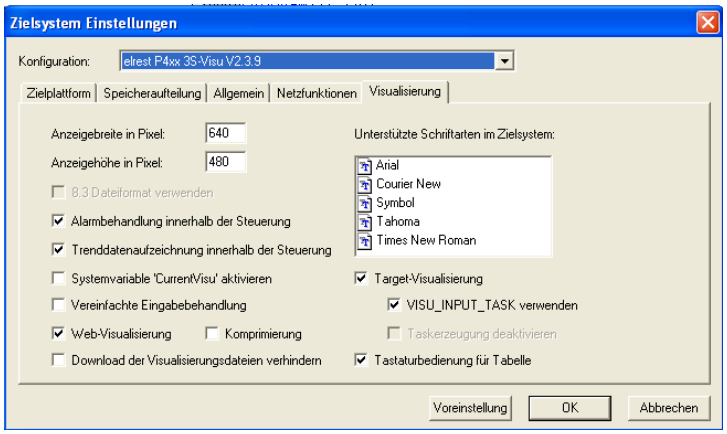


In the PACO the following programs have to be started in the above order:

- AUTOSCAN.exe
- PlcCeArm.exe
- webs.exe
  This is only necessary for the Web server option.

3.2.2 Development Envirement

It must be selected following target setting :



Select the following options are:

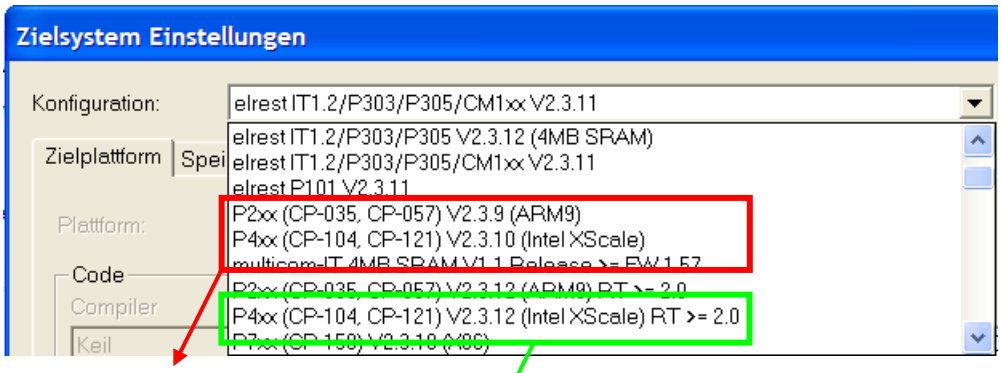
width in pixels.
This describes the subframe in the codesys Visual Editor.

- [X] web visualization
  Turn off or turn on this option. When this is turned off, will not generate various Java applets.
- [X] system variable 'CurrentVisu' causes a synchronous
  Operate flow between target, codeSys - Visu and Web server .

At the start of codesys from the eStudio project management will be the target system settings automatically set correctly.

An important change will take place in the task configuration.

To do this, you will receive from eStudio 2.84 additional, new Targetfiles.
Use the codesys - target: PXXX ..... RT >V2.0 <= Version 1.x (old) >= Version 2.0 (new)

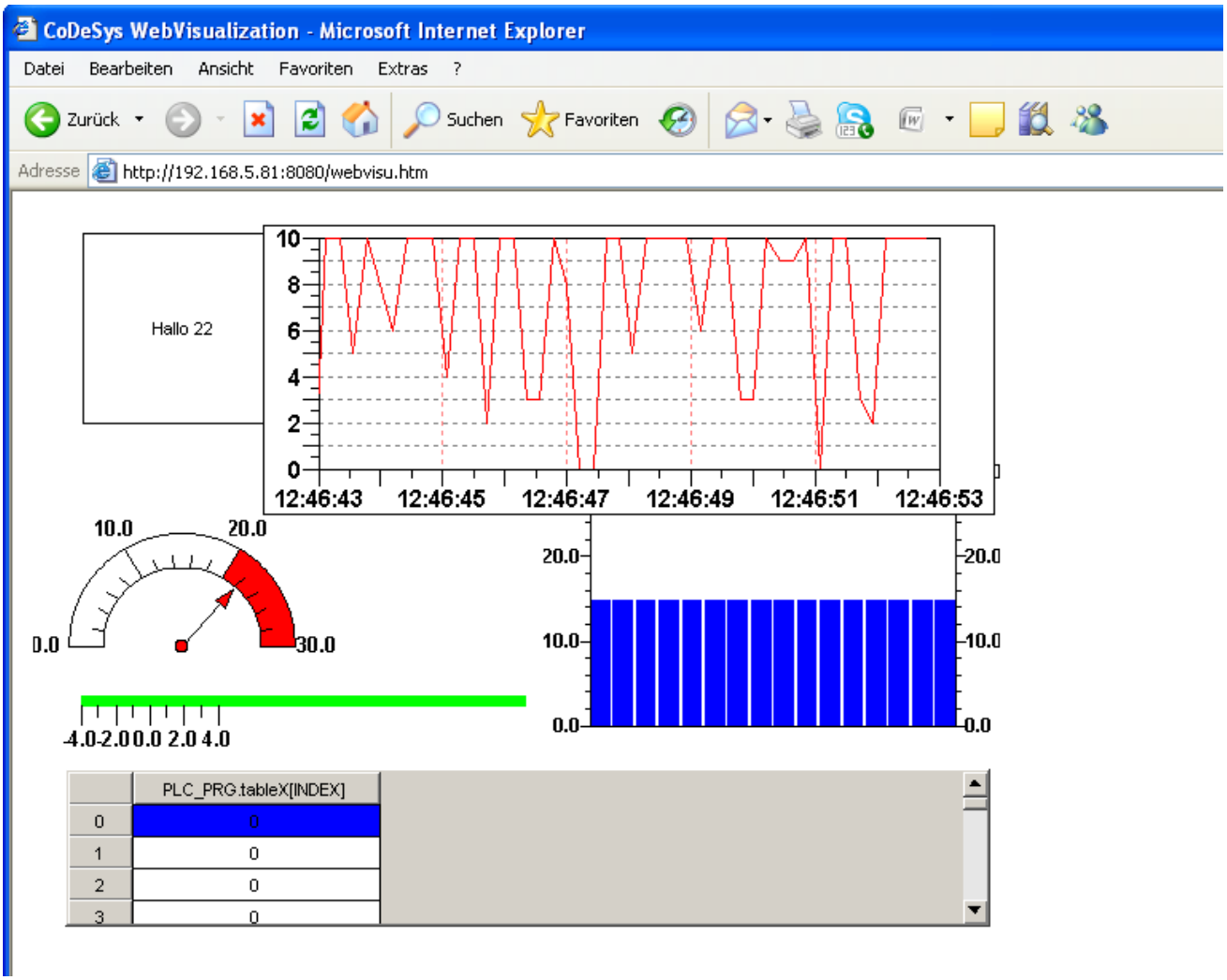


<= Version 1.x (old) >= Version 2.0 (new)

Manual installation of targets.

You can download from our homepage the V2- Target - package.

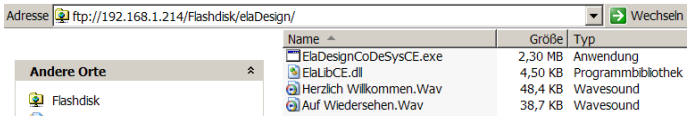
3.2.3 WEB-Server



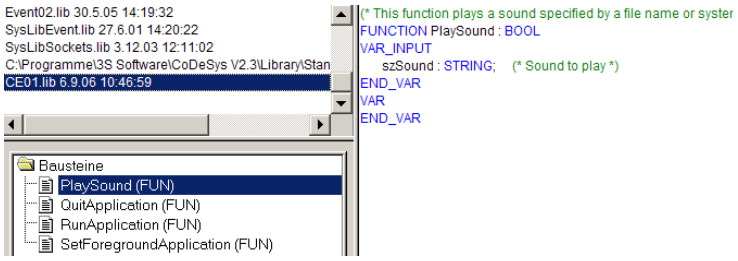
4 Application

4.1 Voice- and sound output

Copy the voice output files on the Flashdisk of the CE-device (only here users can deposit data!) permissible WAV formats are:
BitsPerSample: 8 or 16-bit.
SamplesPerSec: 8 / 11.025 / 16 / 22.05 / 32 / 44.1 / 48 kHz
mono or stereo.
Format: PCM.



Integrating the library CE01.lib under Codesys



Integrate the voice output function.

After successful processing you will receive the returns true

4.2 Rotate the screen

Rotate.exe <Degree>

This application allows you to your screen 90 °, 180° or 270° degrees to rotate.
For example, this is desired for service.

The rotate the picture via software requires up to 30% of the system performance.

ST

```
IF wRotate <> wRotate_old THEN
  CASE wRotate OF
    90:     dwAppl:= RunApplication('\Flashdisk\ElaDesign\Rotate.exe', '90');
    180:dwAppl:= RunApplication('\Flashdisk\ElaDesign\Rotate.exe', '180');
    270:dwAppl:= RunApplication('\Flashdisk\ElaDesign\Rotate.exe', '270');
    ELSE
     dwAppl:= RunApplication('\Flashdisk\ElaDesign\Rotate.exe', '0');
  END_CASE
  wRotate_old:= wRotate;
END_IF;
```

4.3 VNC enable

To this end, it offers itself to Windows CE© a VNC server to start. This may, for example with VNC viewer 3.3.3.3 be accessed.

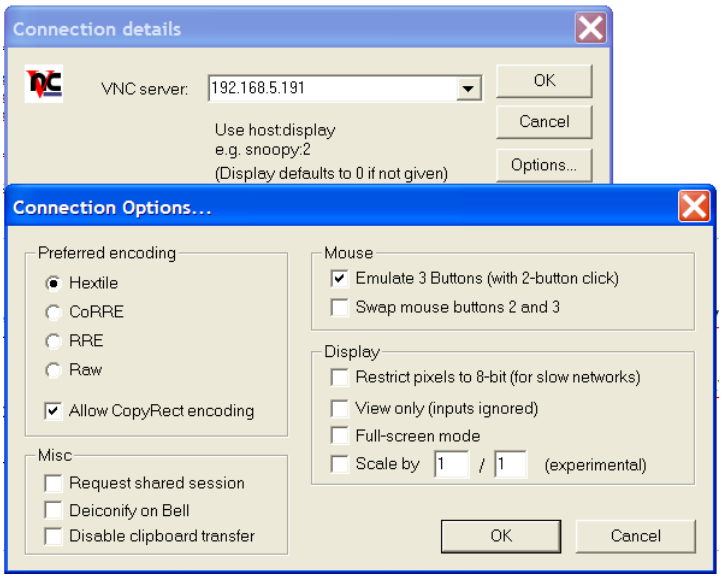
Tipp

The performance will be affected by this. Disable this for the Averse.

The settings for this purpose are as follows:

The access can be password protection:
this must be the following Registry - Key be changed:
[HKEY_LOCAL_MACHINE\SOFTWARE\VNC]
Password==<Passwort>"

Then save the registry.



4.4 Starting applications

4.4.1 Internet Explorer

In this example, the Internet Explorer start page and the "www.elrest.de" open (line9).

5 Seconds after the start of the application, the runtime by dwAppID=0 again brought to the foreground.

After a total of 10 seconds will be closed IE again.

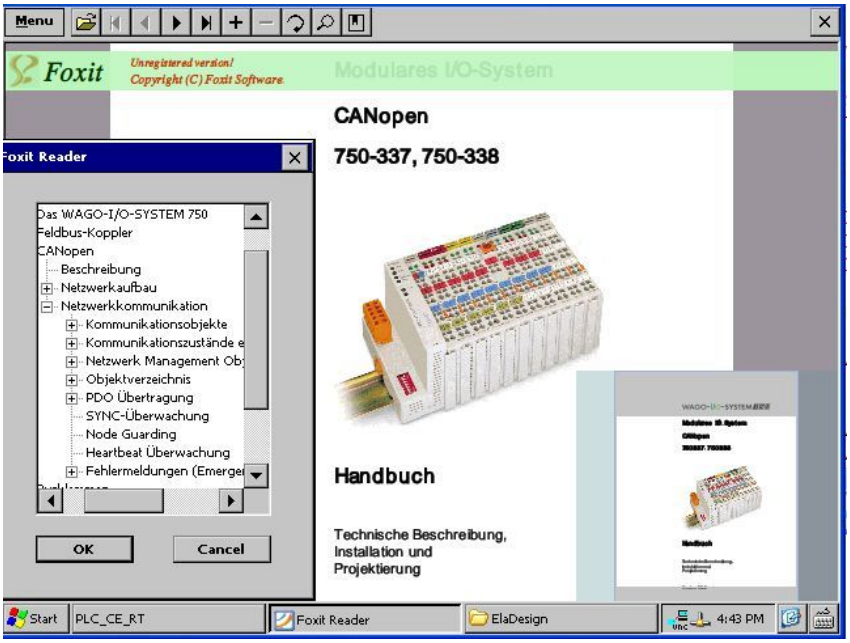
```
0005    IF xStartExecute THEN
0006        xStartExecute:=FALSE;
0007        timIEstarted:=TIME();
0008        bylEstarted:=1;
0009        dwAppID:=RunApplication('iesample.exe', 'www.elrest.de');     (* Star
0010    END_IF;
0011
0012            IF bylEstarted=1 AND (timCircleOB2-timIEstarted >t#5S) THEN
0013                SetForegroundApplication(0);
0014                bylEstarted:=2;
0015                END_IF;
0016
0017            IF bylEstarted=2 AND (timCircleOB2-timIEstarted >t#10S) THEN
0018                QuitApplication(dwAppID);
0019                bylEstarted:=0;
0020                END_IF;
0021
0022END_IF;
```

4.4.2 PDF Viewer

With external PDF- viewern documents can be called from within the application.
In the example below for example with Foxitreader and the wago 750-337 Manual in german or english language.

ST

```
(* ########################################################################################
        Open PDF
########################################################################################*)
IF xOpenManualPdf THEN
      xOpenManualPdf :=FALSE;
      IF psUW^.nPrimaryLanguage = 1033 (* Englisch *) THEN
                  ApplID:=RunApplication('\flashdisk\eladesign\Foxit.exe',
'\flashdisk\eladesign\BA_GB.pdf');
                  ELSE

      ApplID:=RunApplication('\flashdisk\eladesign\Foxit.exe',
'\flashdisk\eladesign\BA_DE.pdf');
      END_IF;
END_IF;
```



4.4.3 PaCo

Panel configuration is an integral part of elrest CE to get and is used for the comfortable setting of all important system settings.

ST

```
(* ##########################################################################################
        Open PaCo
##########################################################################################*)
IF xStartPaCo THEN
        xStartPaCo:=FALSE;
        ApplID:=RunApplication('\flashdisk\SysExtras\Tools\PaCo.exe', '');

END_IF;
```

5 Support

Hotline

For additional information and assistance, you can our hotline at the following times:

Monday - Friday: from 8.00 - 12.00 and 13.00 - 16.30

Outside of these times, you can contact us via e-mail or fax to get:

Telephone: ++49 (0) 7021/92025-33
Fax: ++49 (0) 7021/92025-29
E-mail: hotline@elrest.de

Training and Workshops

We offer training or project based workshops to elrest products.

For further information, please contact our sales department.

Telephone: ++49 (0) 7021/92025-0
Fax: ++49 (0) 7021/92025-29
E-mail: vertrieb@elrest.d

6 History

date	*name*	*chapter*	*change*

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