S7-LAN

S7-LAN Connector | Art.Nr. 9352-LANCON

TRAEGER.de
INDUSTRY COMPONENTS

Documentation for Version 1.71

1 Description

The S7/MPI-LAN connects the computer via a TCP / IP network, with a MPI - or Profibus - interface (9 pin connector of the PLC).

2 System requirements

2.1 Operating system(s)

Windows

- 10
- 8
- 7
- Vista
- XP
- ME/2000/NT

2.2 Software

- PLC - programming software (eg. PG2000, Step © 7, S7 for Windows, Microwin)
- Direct driver for Simatic-Manager for LAN
- PLC - VCOM Software

A video description of the installation of direct-driver and how to configure it can be found on the page support!

2.3 Hardware

- Network card 10/100MBit
- 24V power supply (Phoenix socket or RS485 interface)

2.4 Provided PLC

- S7-200
- S7-300 (provides baud rates up to 12M (when the PLC is able to support this)
- S7-400 (provides baud rates up to 12M)
- FM-devices
- Sinamix (Step7-direct-driver up V1.20 or PLCVCom up V2.71)
- MicroMaster and other electrical drives and inverter-feds (Step7-direct-driver up V1.20 or PLCVCom up V2.71)
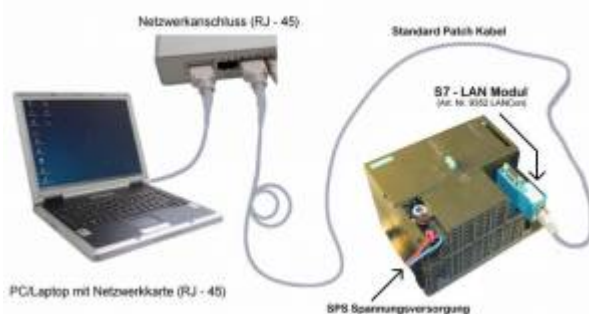- Sinumerik (only PLC-side)
- SEW-EURODRIVE power inverter

- and at last routing of S7-PLCs
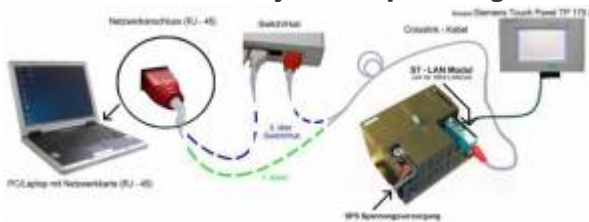
3 Connecting options

S7-LAN connected directly to the PC
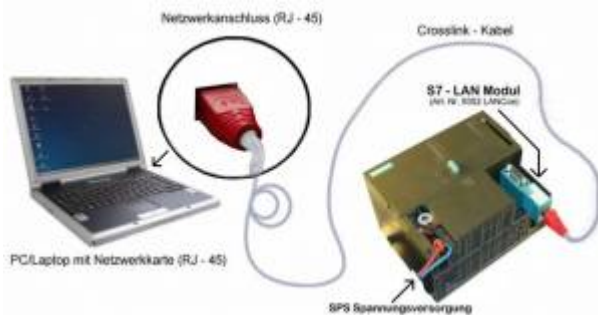
S7-LAN connected to the PC via a switch or hub

S7-LAN connectivity with operating terminal

4 Installation

4.1 Hardware

The S7-LAN module is plugged directly to the PLC. About the network connection of the module, the PLC can be connected as follows:

S7-LAN to Switch/Hub
Here, the network cable is plugged from the S7-LAN module to the switch / hub. If you use a crosslink cable, you plug this cable to the uplink port on the switch / hub. If you use a switch with auto - negotiating function, then you can plug the network cable into a free port on the switch.

S7-LAN to PC
In this variant, you must use a crosslink cable. This you plug with one end into the S7-LAN module and with the other end into the network card of your computer.

S7-LAN with operating terminal
The connecting cable of the panel must be plugged on the PPI / MPI / PROFIBUS - interface of the PLC. The

S7-LAN module will be plugged directly into the cable end (PLC side) of the operator terminal. The S7-LAN module is connected to the network as described above.

If your operator terminal is new, a serial communications must have taken place before. Therefore connect your terminal with the PC. After a successful communication, the terminal can be controlled via the PPI - / MPI - or PROFIBUS.

4.2 Software

To communicate with the PLC, please install following products for MPI-USB, S7-USB, MPI-II[only USB], MPI-LAN and en:hardware:s7:s7-lan:

Product	Driver
TIA-Portal	TIC ⇒ **TIC ETH/USB** for MPI, PPI or PROFIBUS configuration of driver with control-panel ⇒ PG/PC-interface
Simatic-Manager	TIC ⇒ **TIC ETH/USB** for MPI, PPI or PROFIBUS
Starter-Software	TIC ⇒ **TIC ETH/USB** for MPI or PROFIBUS
MicroWin	TIC ⇒ **TIC ETH/USB** for PPI and S7-22x-PLC
	PLCVCom for S7-21x-PLC (no MultiMaster-Protocol)
PG-2000	PLCVCom or for S7-LAN/MPI-LAN direct in interface-settings
S7 for Windows	TIC ⇒ **TIC ETH/USB** for MPI or PROFIBUS over PG/PC-interface
S7 for Windows	PLCVCom

To communicate with the PLC, please install following products for MPI/PPI and MPI-II[only serial]:

Product	Driver
TIA-Portal	No support has since Siemens drivers **PC adapter** serial support has taken out
Simatic-Manager	included driver "PC-Adapter" for MPI and PROFIBUS
Starter-Software	included driver "PC-Adapter" for MPI and PROFIBUS
MicroWin	included driver "PC/PPI-cable"
PG-2000	Standard-function, configuration in the interface-settings
S7 for Windows	Standard-function, configuration in the interface-settings

5 Control elements

5.1 Ethernet-LEDs

Green LED Off:	Link OFF (There is no connection to the network)
Green LED On:	Link ON (There is a connection to the network)
Yellow LED Off:	Listening (No data transfer)
Yellow LED flashing:	Transmission (data transfer running)
only yellow LED On (only for S7-LAN!):	Module is starting up, after ready for work LED is OFF

5.2 Lateral LEDs

The lateral LEDs behave exactly like the LEDs on the Ethernet socket.

5.3 Webbrowser

1. Open the web browser on your PC and enter the IP-address of your module. Confirm with <enter>. The main window of the module will open now.

2. In the main window of the module you can select your desired language, it shows you which options the S7/MPI-LAN owns and which options are unlocked for you.

3. Click on the desired language and then you will get into the configuration interface. Here you are able to select from different configuration options on the tab.

4. Further steps and the configurations of your module/ cable are descript in the chapter **Configuration**.

5.4 WebBrowser from V2.10 (S7-LAN) / V2.36 (MPI-LAN)

With following browser you can connect to the S7-/MPI-LAN:

1. Open the web browser on your PC and enter the IP-address of your module. Confirm with <enter>. The main window of the module will open now.

S7-LAN V2.24 — Modul — IP:192.168.1.86

- o Startseite
- ■ Verbindungen
- ■ Display
- ■ Optionen
- ■ Konfiguration
- ■ Passwort
- ■ Neustart

Allgemein

Produktname:	S7-LAN
Version:	2.24
Name:	Modul
Seriennummer:	7091008

Netzwerk

DHCP:	Aus
IP-Adresse:	192.168.1.86
MAC-Adresse:	00:0B:F4:6C:33:40
Subnetzmaske:	255.255.255.0
Gateway-Adresse:	0.0.0.0
Gratuitous ARP versenden:	Ein

Betriebsart: S7-300/400 MPI

Profil:	MPI
Baudrate:	187K5
Lokale Adresse:	0
Booteinstellung:	MPI/PROFIBUS

Freigeschaltene Optionen

Variablen Steuern:	lizenziert
S7-Gateway:	nicht lizenziert
Watchdog:	lizenziert
NTP-Server	lizenziert

English

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2. On the top you can see the Firmware-version, the name and the IP-address of your module.

3. On the left side on your menu you can do various settings of your S7-LAN.

4. In the middle you have an overview of those information, which parameters you have already set to the network and the bus profile and further options which you can unlock for an extra charge.

5. Simultaneously you will see the current operating mode of the module. You are able to set this in the menu "configuration". So you are able as a user to quickly click on one of the necessary parameters and if it is necessary to separate the not used parameters.

S7-LAN V2.14   Modul von BE   IP:192.168.1.86

- Startseite
- Verbindungen
- Display
- Optionen
- Konfiguration
- Passwort
- Neustart

Allgemein

Name:	Modul von BE
Betriebsart:	S7-200
Werkseinstellungen laden:	Jetzt laden

Netzwerk

DHCP aktivieren:	☐
IP-Adresse:	192.168.1.86
Subnetzmaske:	255.255.255.0
Gateway-Adresse:	192.168.1.254
Gratuitous ARP versenden:	☑

Buseinstellungen

Bus-Konfig von PC verwenden:	☑
Baudrate:	Automatik
Höchste Stationsadresse:	126
PG/PC ist einziger Master:	☐
Profil:	MPI
Lokale Teilnehmeradresse:	0

Booteinstellungen

Profil:	PPI MMaster

Für RS232/485-Umsetzer

Baudrate:	Automatik
Datenbit:	8
Parität:	keine
Stopbit:	1

Für RFC1006 Verbindungen

Umsetzen Rack/Slot(TSAP) auf BUS:	☐
Ziel CPU:	255
S7-Subnetz-ID:	0000-0000
Busparameter:	Konfig

Sonstiges

Protokollart:	Automatik
TS-Adapterfunktionalität:	☐
Fehlerausgabe auf Display:	☐

Speichern

English

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6. Here are the possible selectable opportunities:

Allgemein

Name:	Modul von BE
Betriebsart:	S7-200
Werkseinstellungen laden:	S7-200
	S7-300/400 MPI
	S7-300/400 DP
	RS232/485-Umsetzer
	Manuell

Netzwerk

DHCP aktivieren:

IP-Adresse: 192 168 1 86

7. Further steps and the configurations of your module/ cable are descript in the chapter **Configuration**

6 Implementing

Connect your module as described in the chapter **Hardware Installation** to the PLC and to the programming device or to your computer.

If you want to respond to a PLC via the module you have to comply the requirements as descript in the chapter system requirements. In addition,please make sure that the module is properly connected

6.1 Using the PLC-VCOM

(The PLC-VCOM is only needed if your module is not connected via the 9 pin COM port to the computer. For products with USB, Ethernet connection, etc., the PLC-VCOM is required)

1. Start the PLC - VCOM application (If it has not already started yet).
2. Click in the main window of the PLC-VCOM, in the status area "configure". The configuration wizard will start.
3. It lists all the found modules / cables and the additional information's such as IP address and MAC address of the module.
4. Choose the desired MPI cable and click „OK" to go on.
5. If the connection is established the chosen cable is shown in the section state and on the left side you can see the status connected.
6. It also displays, the PLC-VCOM the IP address for the module and the IP address of the computer which is connected to the module.

If you have any promlems with the use of PLC-VCOM software, go to the chapter 10-PLC-VCOM and look there for operating instructions.
The PLC-VCOM supports as well the communication to special assemblies like Sinamix, MicroMaster and other drives also to S7-200 - S7-400 devices.

6.2 Programming software to use with direct access

After you have adjusted and connected the PLC-VCOM or the programming adapter to the COM-port on your computer, you will be able to connect with your programming software to the PLC and work with it.
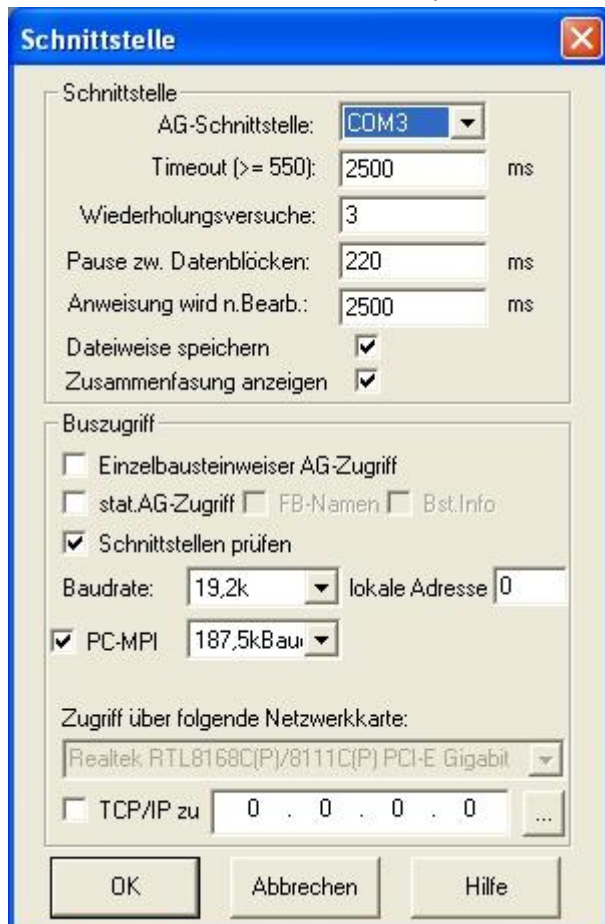
How you have to adjust your programming software is described in the following points:

6.2.1 PG2000 for S7 (V5.10)

1. Start the PG 2000 software by using the desktop link or by using the application entry in the start menu.
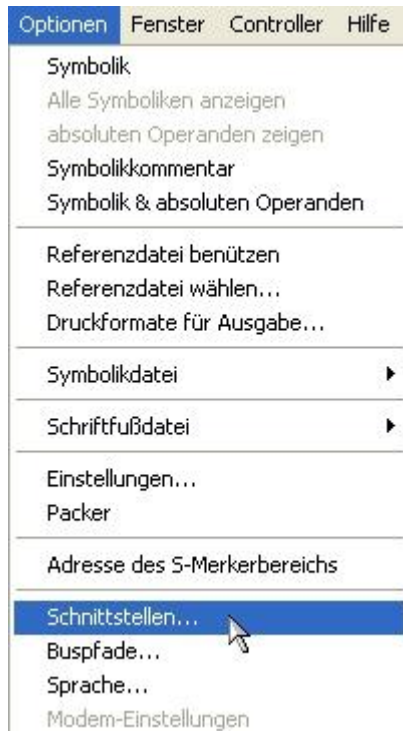
2. Choose from "View" ⇒ "S7-300/400". In the menu "Options" click "Interfaces"..

3. A dialog appears, in which you are able to set the "AG-Interface" (COM-port) in the section "Interfaces".

4. Configure the baud rate in the section "Bus access" to "19,2k". Below change the value for PC - MPI to "187,5kBaud".

5. Save your configuration by pressing "OK".

6. Now the software is ready to establish a connection to the PLC

Click the symbol "Open" and afterwards press "PLC".

Alternative you can click:

„File" ⇒ „Open" ⇒ „PLC"

The connection between PG 2000 and the PLC is now established.

A new window appears. Now you can edit the blocks in the PLC.

6.2.2 Set PG/PC interface

This step is required for the following software:

⇒ SIMATIC Step© 7 Manager (v5.2 + SP1)

⇒ Windows Control Center (WinCC) (v6.0)

⇒ Windows Control Center flexible 2004 (WinCC flexible) (v5.2.0.0)

⇒ ProTool/Pro (v6.0 + SP2)

⇒ Microwin 3.2

1. Open the system configuration by using the start menu.
2.Click on „Set PG/PC interface".
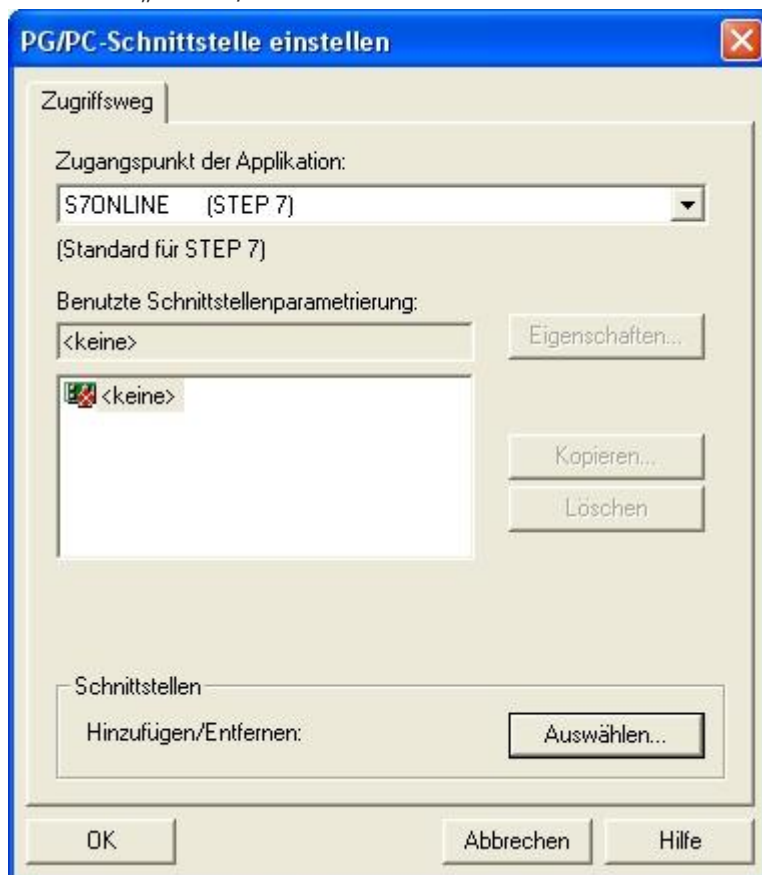
3. A Dialog with a list box named "Interface Parameter Assignment Used:" appears. This box should offer some "PC - Adapter" entries
If this is the case, please continue with the step MPI settings or Profibus settings.
If you can't find these entries go ahead with step PC-Adapter or TCP/IP installation.

6.2.2.1 PC-Adapter(Auto, MPI, PROFIBUS)

4. Click on „Choose" to add these entries to the PG/PC interface configuration
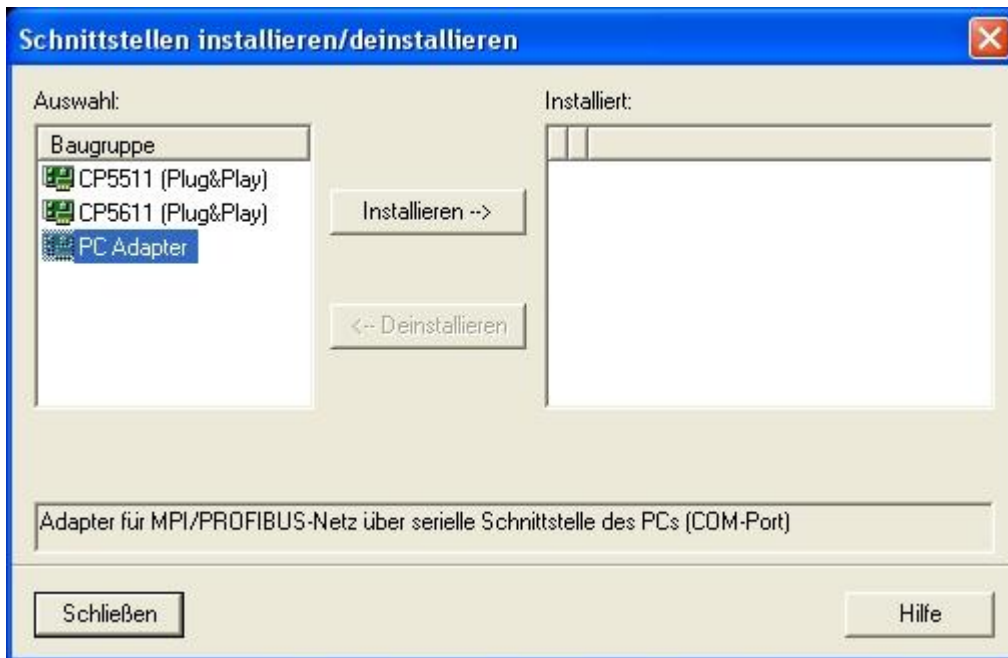
5. In this dialog you can deinstall every installed construction set

Furthermore you can add various modules (see "Selection")

Choose „PC - Adapter" from the „Selection" box on the left side and click on „Install".

6. The chosen construction set will be installed and a question appears which asks you to use the "MPI" access for the PLC used.

Click "Yes" if you want to use the „MPI"communication type.

Otherwise click "No"(e.g. if you want to use the "PROFIBUS" communication type).
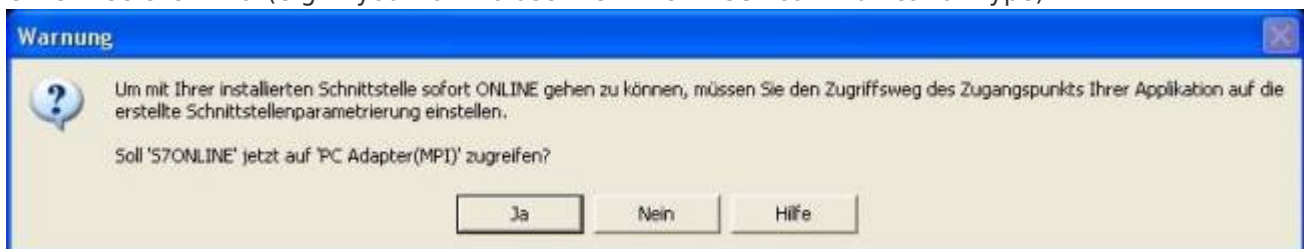
6.2.2.2 TCP/IP RFC1006 Communication

7. Press "Select" to add the RFC1006 required elements to the PG / PC - interface configuration.

8. In the dialog "Select", choose" TCP / IP" and click on "Install".

9. After successful installation, click "Close".

10. Back to the "Set PG/PC interface" dialog you will now find the desired entries called "PC - Adapter(Auto)" (not supported), "PC - Adapter(MPI)" and "PC - Adapter(PROFIBUS)". Now you are able to configure the bus.
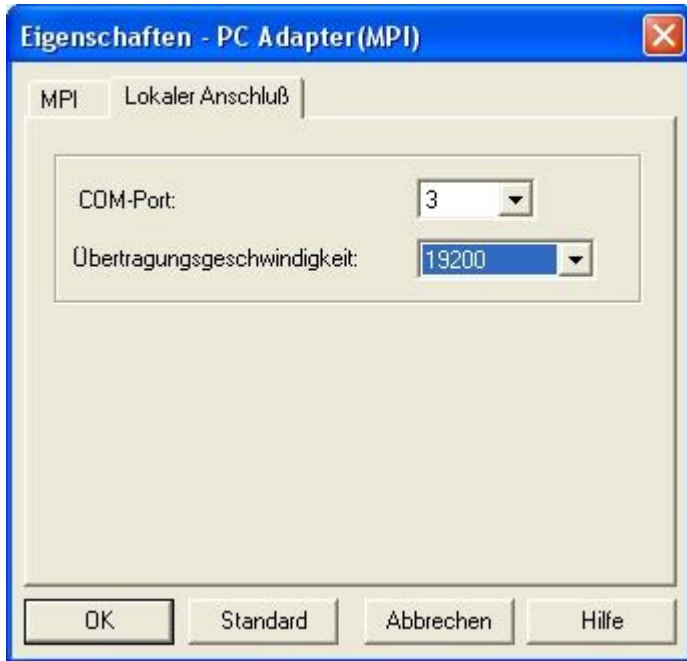
If you want to use the "MPI"communication type go ahead with stepMPI Settings.

The settings for "PROFIBUS" is explained in Profibus settings.

6.2.2.3 MPI Settings
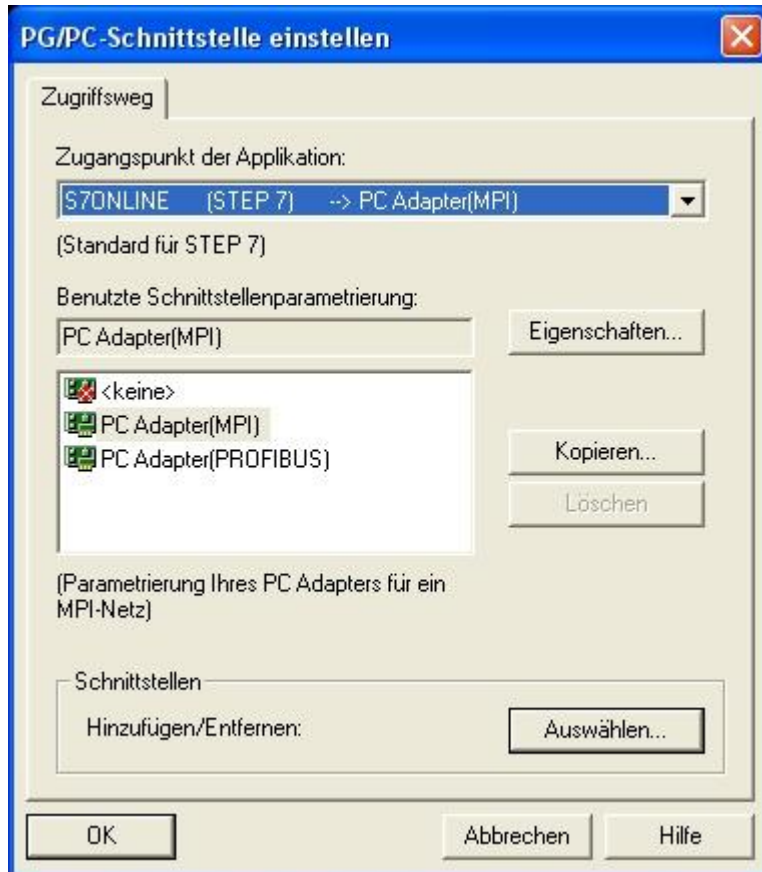
11. Select "PC Adapter (MPI)" and click "Properties".

12. Open the properties dialog

Choose the register "Local Connection"

Eigenschaften - PC Adapter(MPI)

MPI | Lokaler Anschluß |

COM-Port: 3

Übertragungsgeschwindigkeit: 19200

| OK | Standard | Abbrechen | Hilfe |

13. Set here the COM port.

14. You also change the "transfer rate" to "19200".

Eigenschaften - PC Adapter(MPI)

MPI | Lokaler Anschluß |

Stationsbezogen

☐ PG/PC ist einziger Master am Bus

Adresse: 0

Timeout: 30 s

Netzbezogen

Übertragungsgeschwindigkeit: 187.5 kbit/s

Höchste Teilnehmeradresse: 126

| OK | Standard | Abbrechen | Hilfe |

15. In the register card "MPI"choose the "Transmission Rate" to "187,5 kbit/s".

Change the "Highest Station Address" (HSA) to "126".

16. Accept your settings with "OK" and exit the "PG / PC interface setting" dialog with "OK"

6.2.2.4 Profibus Settings
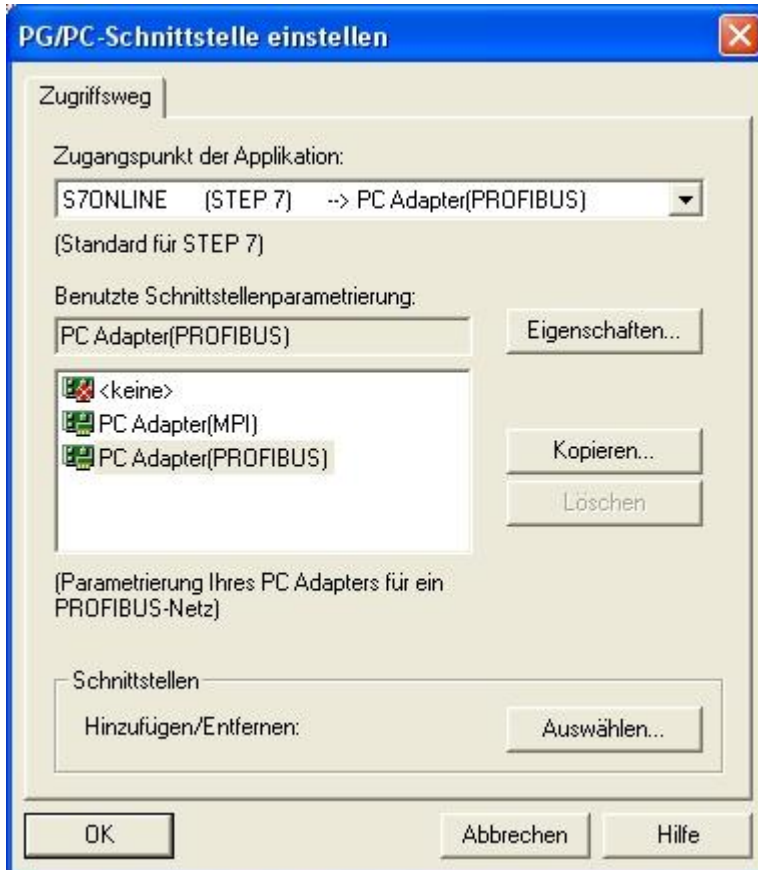
17. Mark the entry „PC - Adapter(PROFIBUS)" and click on „Properties".
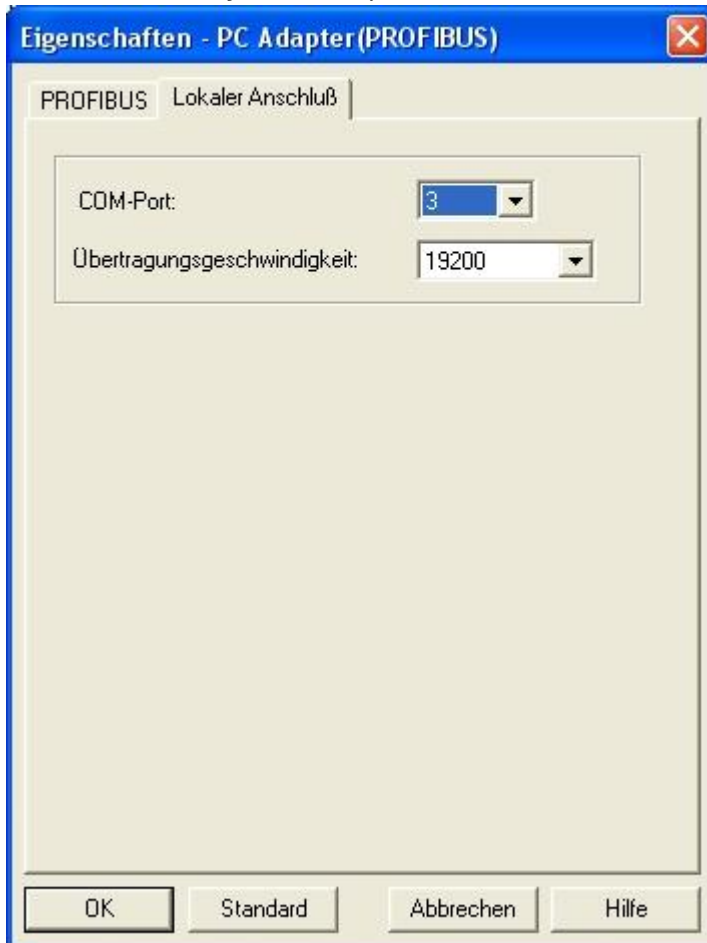
18. In the registry card "Locale connection" you have to set the COM Port.

19. Set the "Transmission Rate" to "19200"
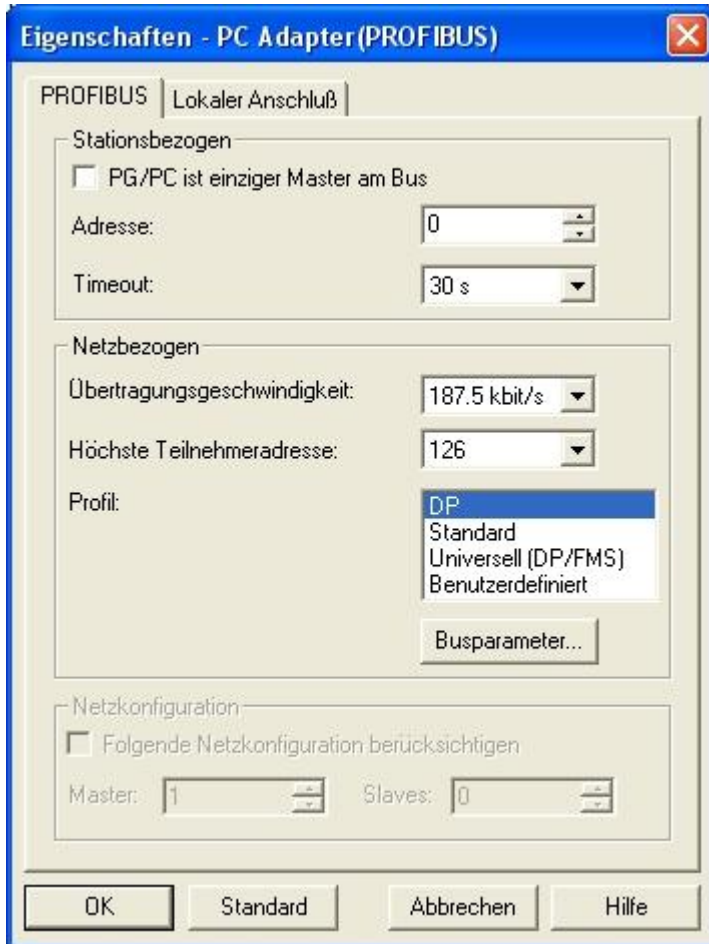
20. Choose the registry card "PROFIBUS" and set the "Transmission Rate" to "187,5kbit/s".

21. Set the "Profile" to "DP" ("decentralized Peripherals ").

22. Save your settings by clicking the "OK"button and close the opened "Set PG/PC - interface"dialog.

6.2.2.5 TCP/IP RFC1006 Settings

23. For this kind of communication you only have to install the corresponding software.

6.2.2.6 ProTool/Pro RunTime (RT) Configuration
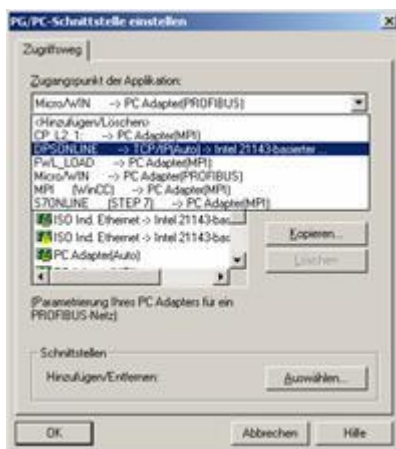
24. If you want to use ProTool/Pro RunTime you can set the "PG/PC Interface" by selecting the entry "DPSONLINE". Therefore you have to select "Access Point of Application" and configure it as described above. The easiest way is to use the S7-LAN/MPI-LAN/MPI-USB- driver which supports USB and LAN products.

The interface configuration for these programs is finished.

Continue with the software which you want to use:

⇒ SIMATIC Step© 7 Manager (v5.2 + SP1)
⇒ Windows Control Center (WinCC) (v6.0)
⇒ Windows Control Center flexible 2004 (WinCC flexible) (v5.2.0.0)
⇒ ProTool/Pro (v6.0 + SP2)
⇒ Microwin 3.2

6.2.3 SIMATIC Step© 7 Manager (v5.2 + SP1)

Configurate the interface as described in Set PG/PC-interface.

1. Klick in the drop - down menu "target system" on "Display Accessible Nodes".

2. If you can see the list with possible Bus-devices, a communication over the cable has taken place.

"Direct" connected devices will be shown, also the conditions if it is an "active" or "passive" assembly.

3. In this window you can edit each assembly with his blocks.

# 6.2.4 Windows Control Center (WinCC) (v6.0)

Configurate the interface as described in Set PG/PC-interface
1. Start WinCC by using the desktop link or the program entry in the start menu.
2. Choose „New" in the menu „File" or click on the white („letter") symbol to start a new project.

3. he next dialog offers you several project types "Single-User Project", "Multi-User Project" and "Client Project".

The next steps are the describing for the "Single- User Project".
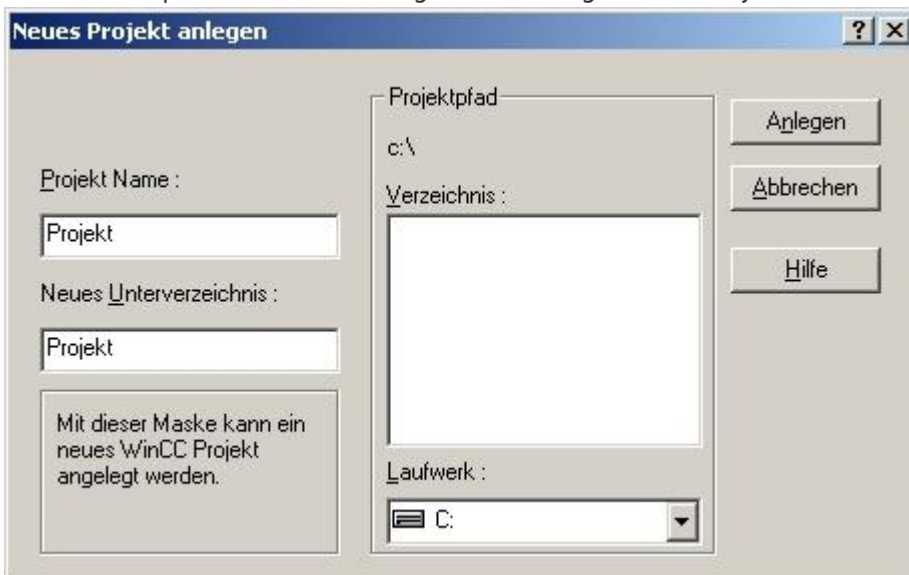
4. "OK" leads you to a new dialog. Type in the "Project Name" and the "Subfolder" of the project path. The chosen configuration is confirmed with "Create".

To use one of the other options please go ahead and read in the manual of WinCC software.

5. Please wait until the project is created. The project content will be shown in the left part of the main window.
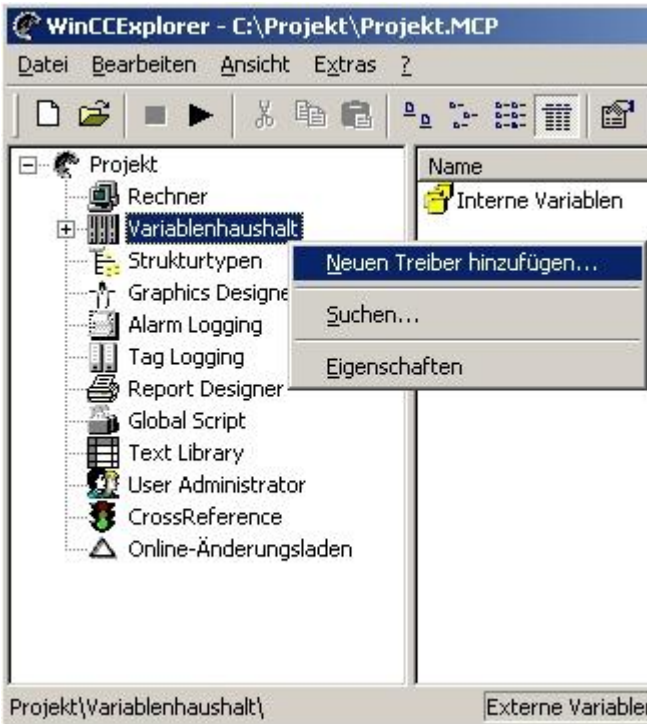
6. For a proper working communication with the PLC there must be defined how the software has to communicate with the PLC

Therefore you have to right-click on "Tag Management" it opens the context menu. Choose "New Driver Connection … ".
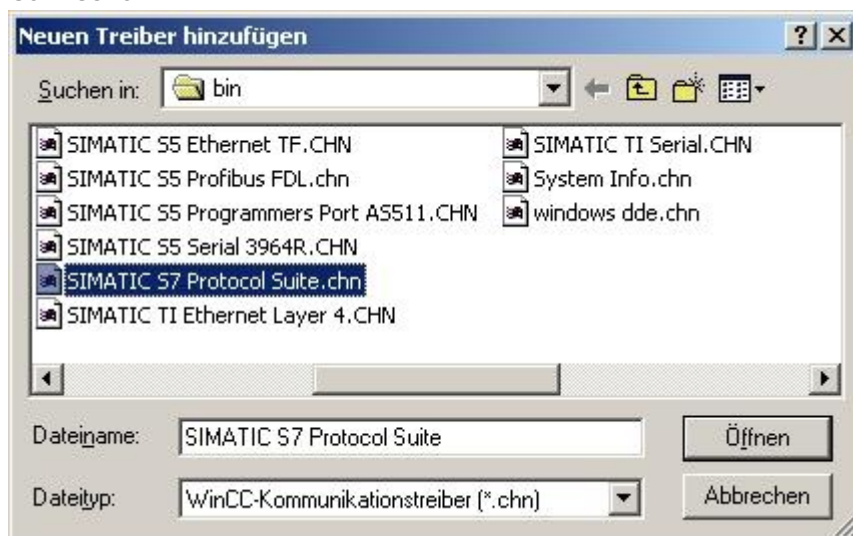
7. In the „Add new driver" dialog select the driver which fits to your PLC

For a S7 PLC choose „SIMATIC S7 Protocol Suite.chn".

If you want to use an other PLC please inform yourself first, which driver fits with your PLC.

It is very important that the selected driver fits with the PLC otherwise the connection cannot be established.

8. You should see now in the Explorer under the branch "Tag Management" the branch "SIMATIC S7 PROTOCOL SUITE". Expand the branch and many protocols for various compounds will appear.
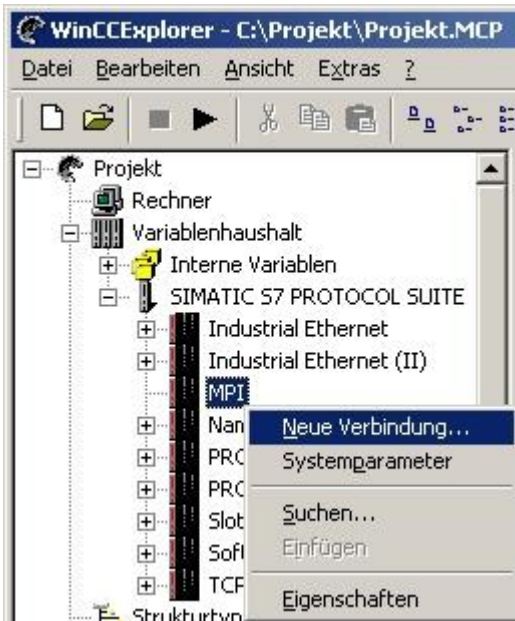
The General way of proceeding a new connection is to:

Right-click on the desired connection (MPI - > Picture: "MPI", TCP/IP - > Picture: "TCP/IP"). A context menu opens. Click on „New Driver Connection…".
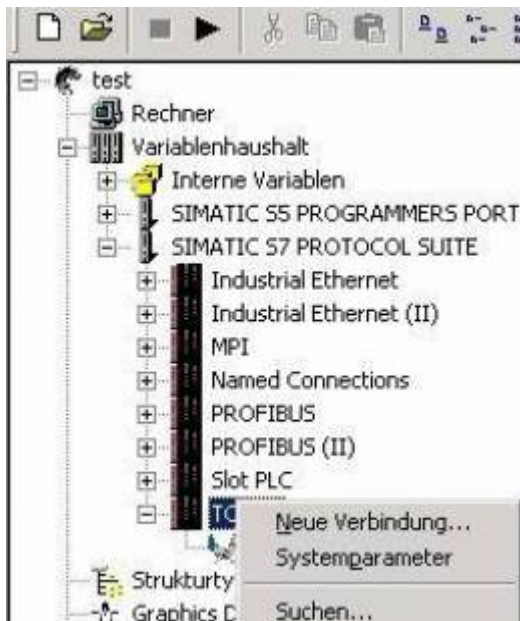
This manual describes the connection configurations:

- for MPI (MPI-II-cable, MPI-USB-cable, S7-USB-modul, S7-LAN-modul and MPI-LAN-cable)
- for TCP/IP (only S7-LAN-modul and MPI-LAN-cable).

MPI

TCP/IP

6.2.4.1 MPI Configuration

9. Now you are able to type in the name of the connection. With a click on "Configuration" a new dialog will appear. Now you are able to set the properties of the connection.

Set up the station address of the PLC (in this example "2").

Confirm with "OK" until you are back to the main window.

Read further "Communication and fault diagnosis".

6.2.4.2 TCP/IP Configuration

10. A dialog appears where you can configure the connection parameters.

Set up the IP - Address of the module and configure the rack number as well as the slot number.

Confirm this configuration by clicking "OK".

Example configuration:

IP - address 192.168.1.55

Rack - Number: 0

Slot - Nr.: 2

11.With a right-click on the new connection you can start the properties dialog. In this dialog please click on properties.

12. In this "Channel unit properties" you are able to see all "available connections".

Choose the latest created connection and click again on „Properties".

Now you can see all the variables which has been created for this connection.

In fact this connection is a new connection so there should not be any variable in the list.

To add a new variable click on „New".

13. INow you are able to set up the name of the variable and different more properties.

In our example, we assign the following values:

Name: „S7LAN_MW0"
Data type : „unsigned 16 - Bit value"
Length: „2"
Address: „MW0"
Format adaptation: „WordToUnsignedWord"

Click on „Choose" beside the Address to define the address from the variable.

Example configuration: The data area from the variable is set to „Mark" and the address is set to „Word".

The edit box „MW" is set to „0".

14. Confirm all open dialogs with „OK" until you reach the main window.

15. The connection needs to know which network interface card it should be used to send data via the Ethernet. Open the "System parameters"dialog from the context menu (right-click on TCP/IP).

16. Choose from the registry card „Unit" and set the "logical device name" to your network interface card (usually the name of the NIC begins with a „TCP/IP - > „).

17. Confirm with „OK".

18. Now you are able to start the communication. Stop it by clicking on .

6.2.4.3 Communication and fault diagnosis

To clean up errors faster the WinCC Software offers a tool named "Channel Diagnosis". This tool analyses all connections from your WinCC software. For demonstration purposes please stop the last started connection from your WinCC explorer. 19. Start the software "Channel Diagnosis" by using your link in the start menu.
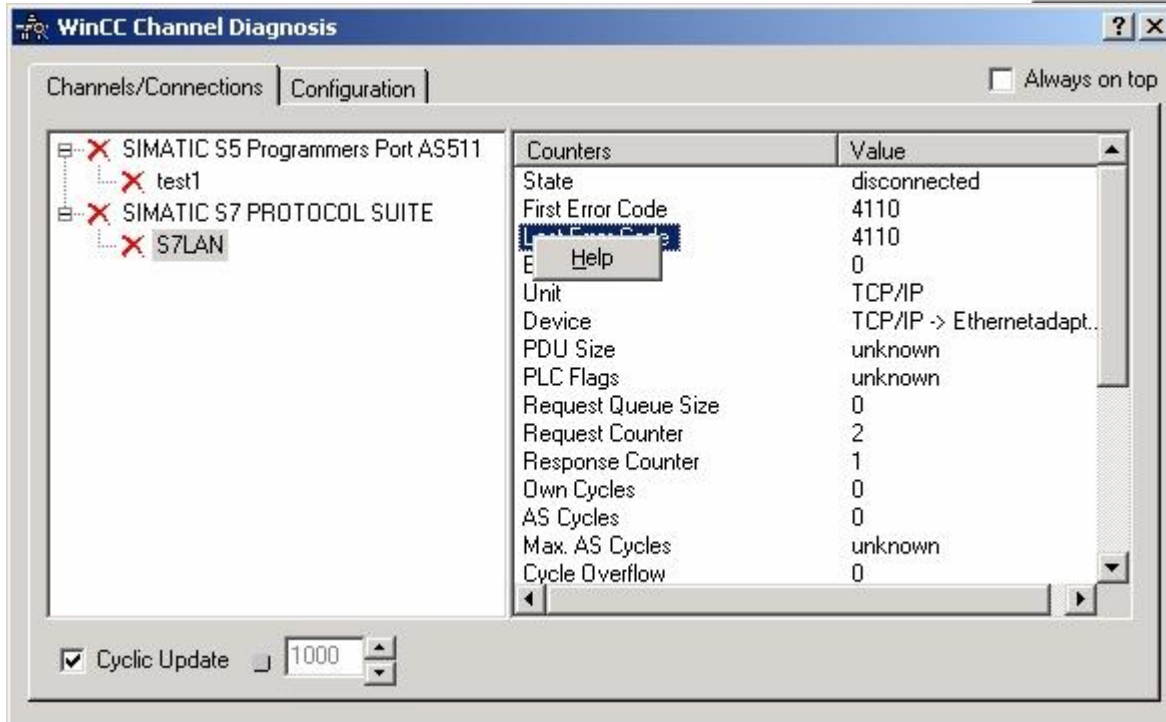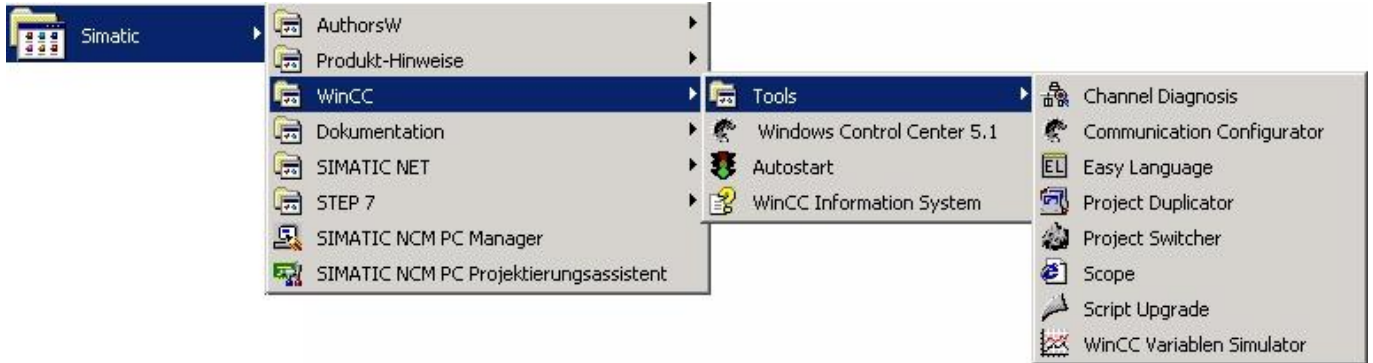
20. The tool could not detect a running connection so it marked the connection/s with a red 'X' (registry card "Channels/Connections").

Click on the last created, not active connection (with the red 'X') and some informations from the connection will appear in the right part of the dialog.

One of these counters is called "Last Error Code".
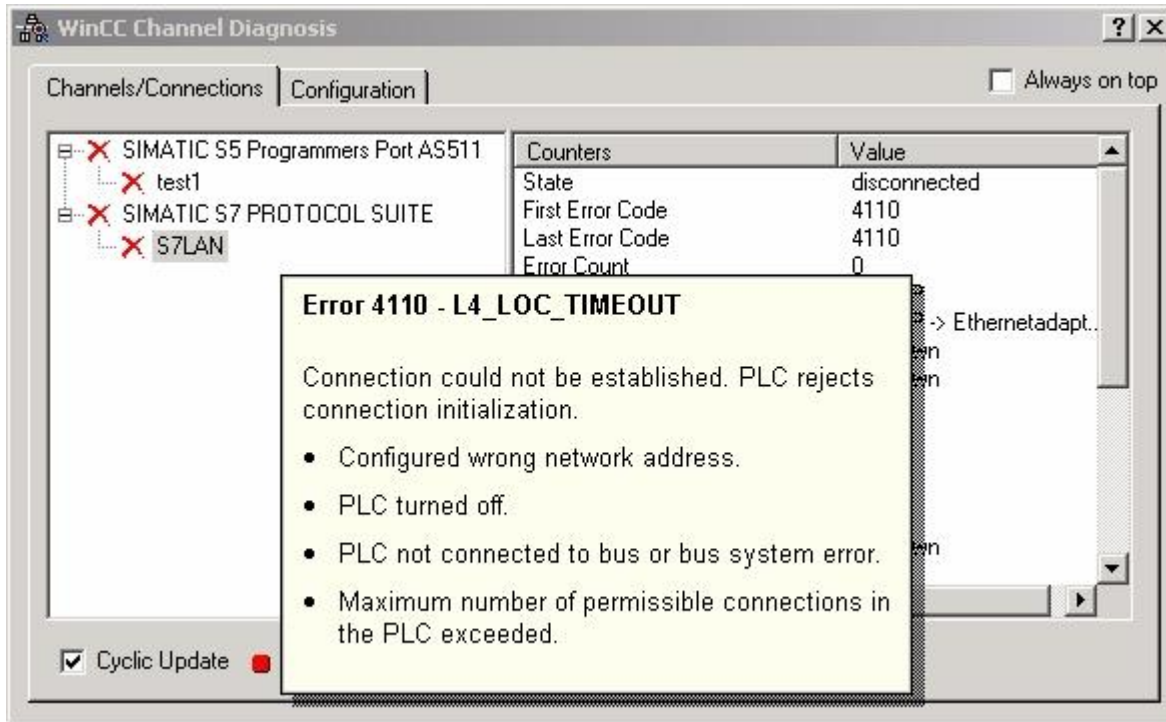
21. If you take a right-click on the error value a window opens with "Help".
Click on the "Help" window and a yellow window appears (tooltip) with detailed error descriptions.
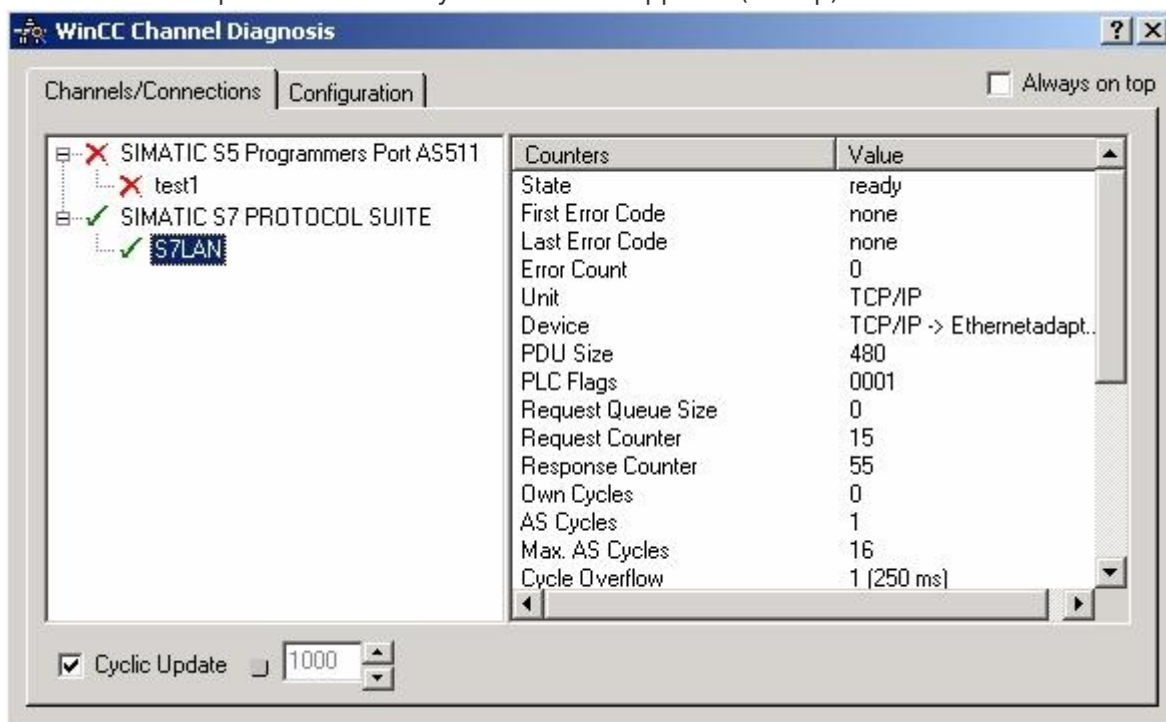

22. Lets see what happens if the connection runs properly. Start the connection from your WinCC Explorer.
The "Channel Diagnosis"dialog marks the connection with a green hook if everything worked out.

6.2.5 Windows Control Center flexible 2004 (WinCC flexible) (v5.2.0.0)

Please make sure that the interface configuration is correct as described in Set PG/PC-interface
1. Start the WinCC flexible 2004 software by using the desktop link or the program entry in the start menu.
2. First you need to select "Create an empty project" on your first page.
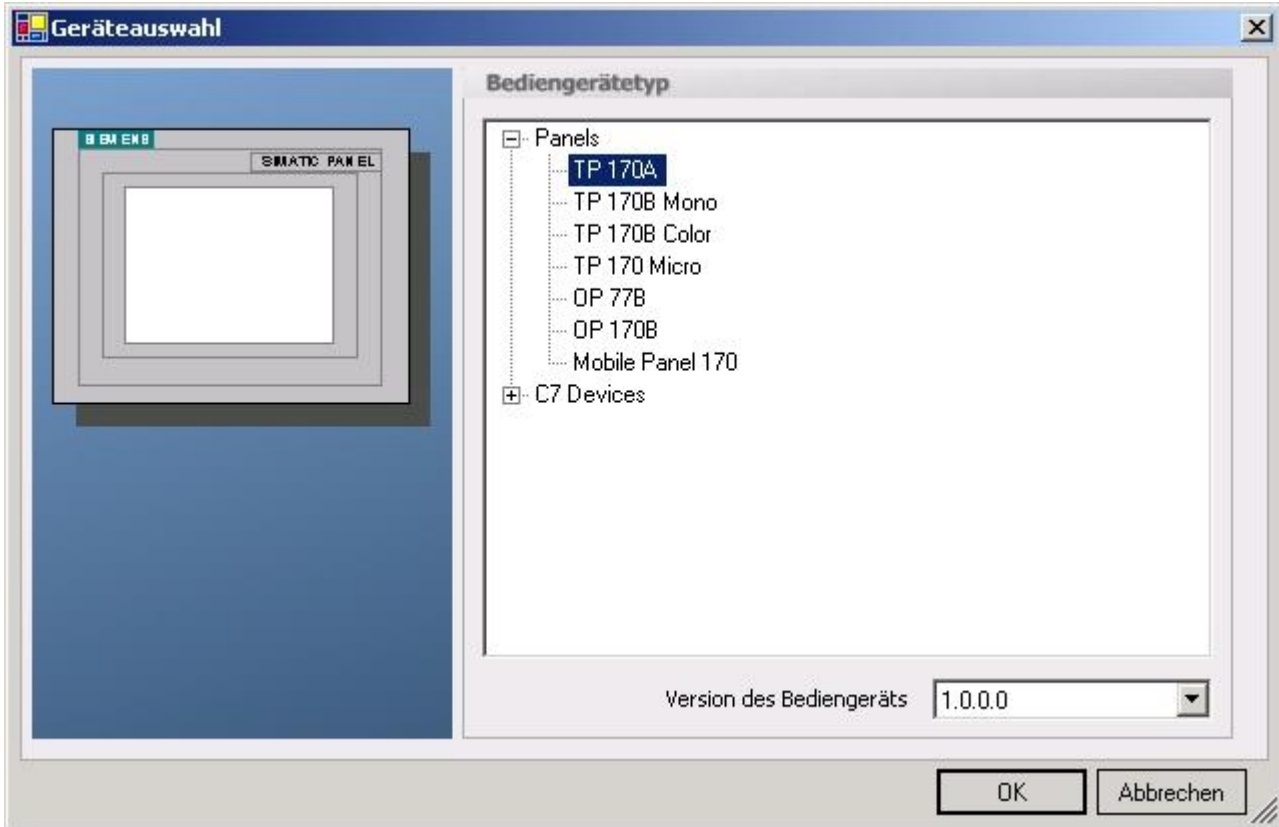
3. In the "Device selection"mark the used operator panel (example: "TP 170A") → confirm with "OK".
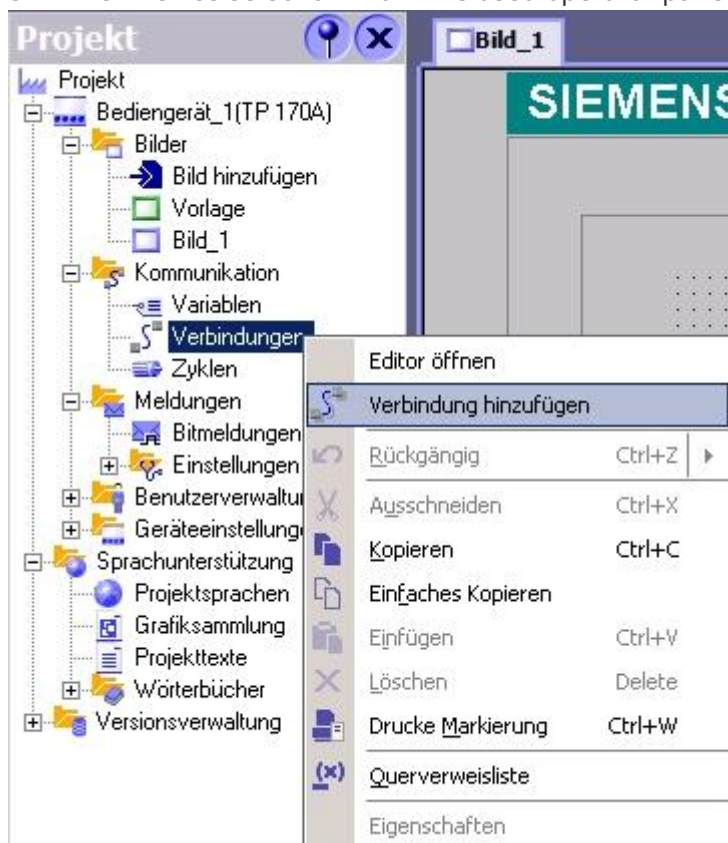
4. After the project has been created right-click in the project window on "Connections"of the sub menu "Communication".

In the context menu click on "Add Connection".

5. A new configuration window "Connections" opens in the right part of the main window. This offers you different setting options.

Important for the connection is:

⇒ the communication driver (set up which PLC you are using (example: "SIMATIC S7 300/400"))

⇒ the Baud rate (Set this on "187 500")
⇒ the address of the terminal (HMI) (in this example "1")
⇒ the Profile ("MPI" for example)
⇒ the Highest Station Address (HSA) (e.g. "126")
⇒ the address of the PLC (e.g. "2")
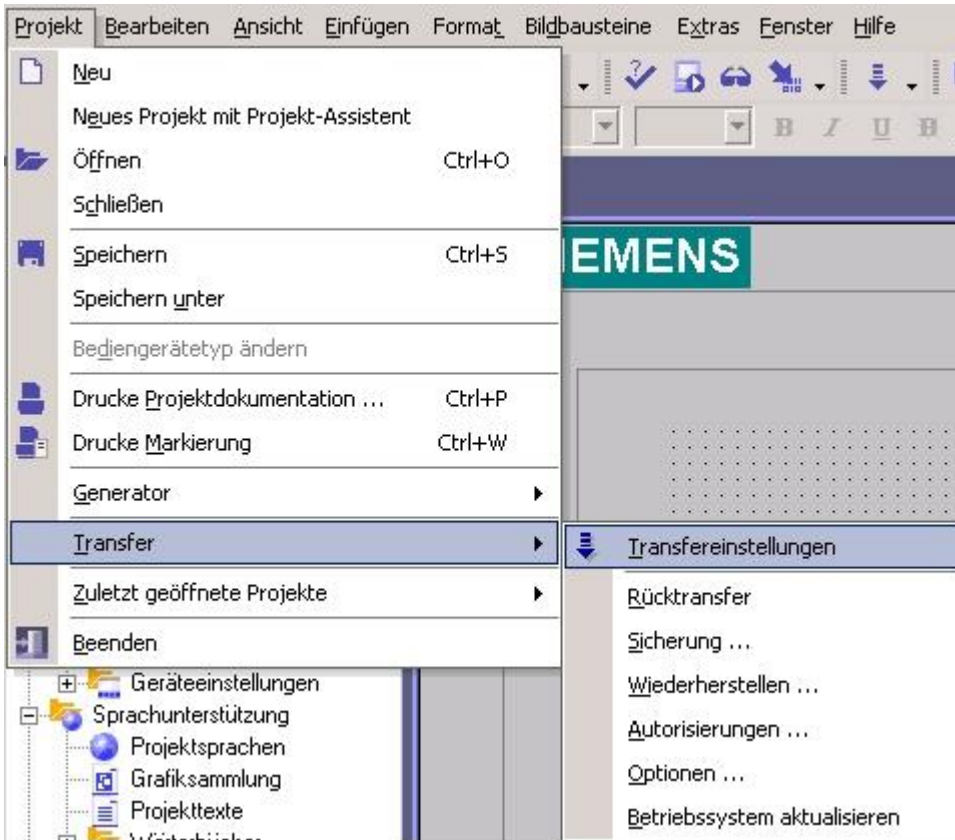
6. Now you can start with your work.

If you have finished work you can transfer this project to the panel by reading the next steps.

7. Wählen Sie im Menü Projekt das Untermenü „Transfer" ⇒ „Transfereinstellungen".

8. Es erscheint ein Dialog in dem Sie den Modus (im Beispiel auf „MPI/DP") einstellen und die Stationsadresse des Terminals angeben (Beispiel: „1"). Nach Wunsch können Sie nun den „Delta - Transfer" „Ein" oder „Aus" schalten (im Beispiel „Aus").
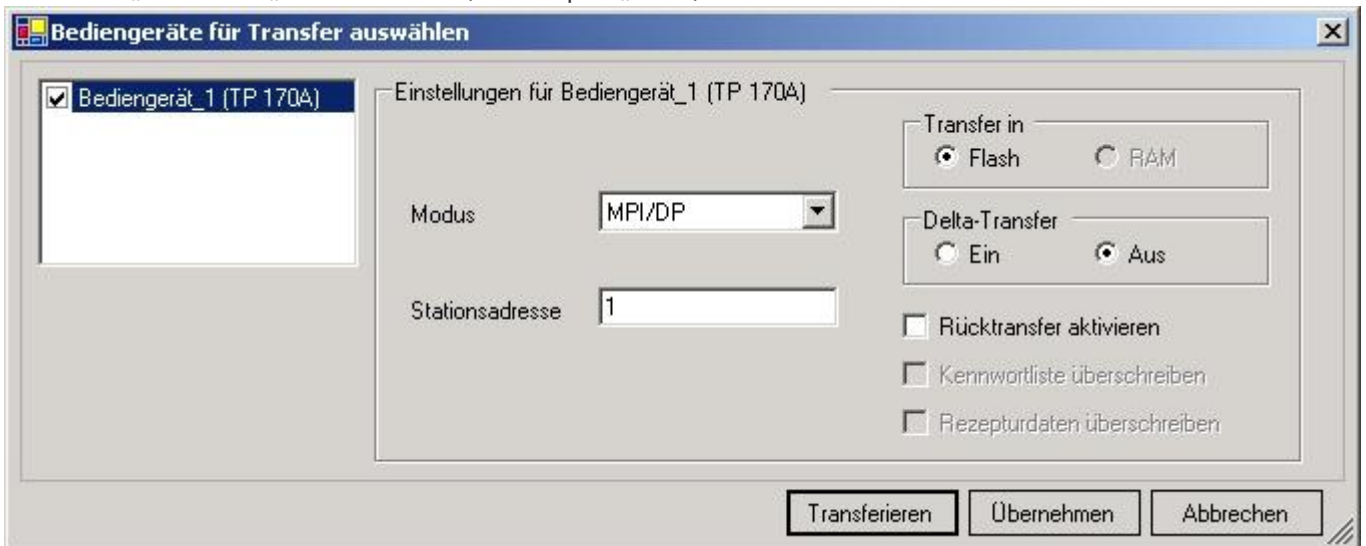
9. Press the button „Transfer" to start communication with the terminal. Your project is about to be transferred.

The WinCC flexible software is now able to communicate with your operator panel.

6.2.6 ProTool/Pro v6.0 SP2

Configurate the interface as described in Set PG/PC-interface

1. Start ProTool/Pro by using the desktop link or program entry in the start menu.

2. Choose from the menu „File" the sub menu „New" or click on the right symbol.
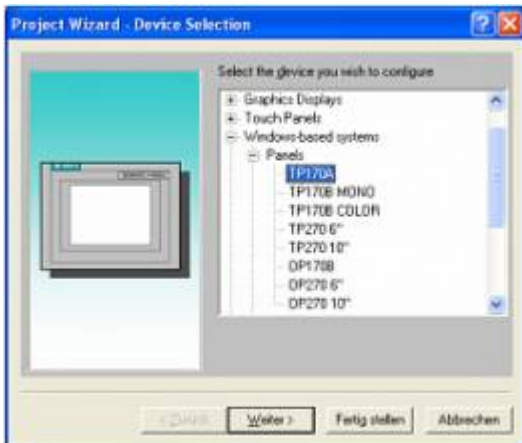
3. The next dialog askes you which operator panel you are using. Mark the used panel (e.g. „TP 170A")
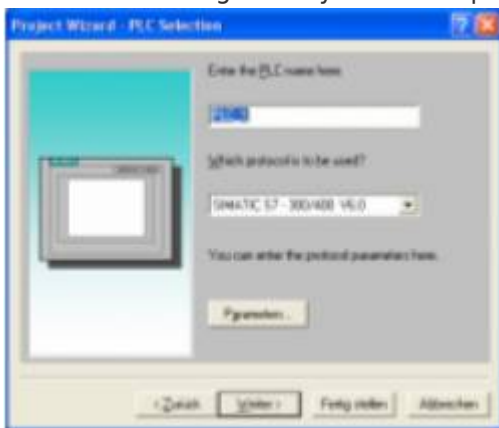
4. „Next" leads you to a new dialog. Type in the specfic fields the name of the PLC device and choose the used PLC in the driver selection (e.g. „SIMATIC S7 – 300/400 V6.0").
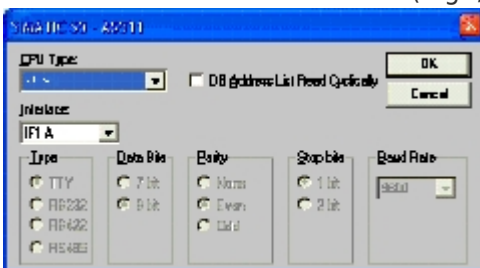
5. Via „Parameter…" you are calling an configuration dialog from the chosen PLC driver

Set up the station address of the panel (example „1") and of the PLC (example „2").

Leave the point "Interface" in the standard configuration. In the sector „Net parameter" choose the interface which uses your module on the PLC (e.g. „MPI"). Configure the baud rate to „187.5".

6. The button „More …" leads you to a small dialog where the „Highest Station Address" should be configured to „126". Set up the „Number of masters" (e.g. „1")

7. confirm with „OK" until you got back to the „Control Selection".Go on with „Next".

8. In the main window start the Transfer Settings dialog by clicking on „File" „Transfer" „Settings…".

Choose „MPI / PROFIBUS DP" from the listbox and type in the station address of the operator panel (e.g. „1").

Confirm with „OK" and start with your work

If you have finished working on this project you can go on with the next steps.

9. If you want to transfer you project to the panel you have to generate the project first. This can be done with a click on „File" -„Compile".
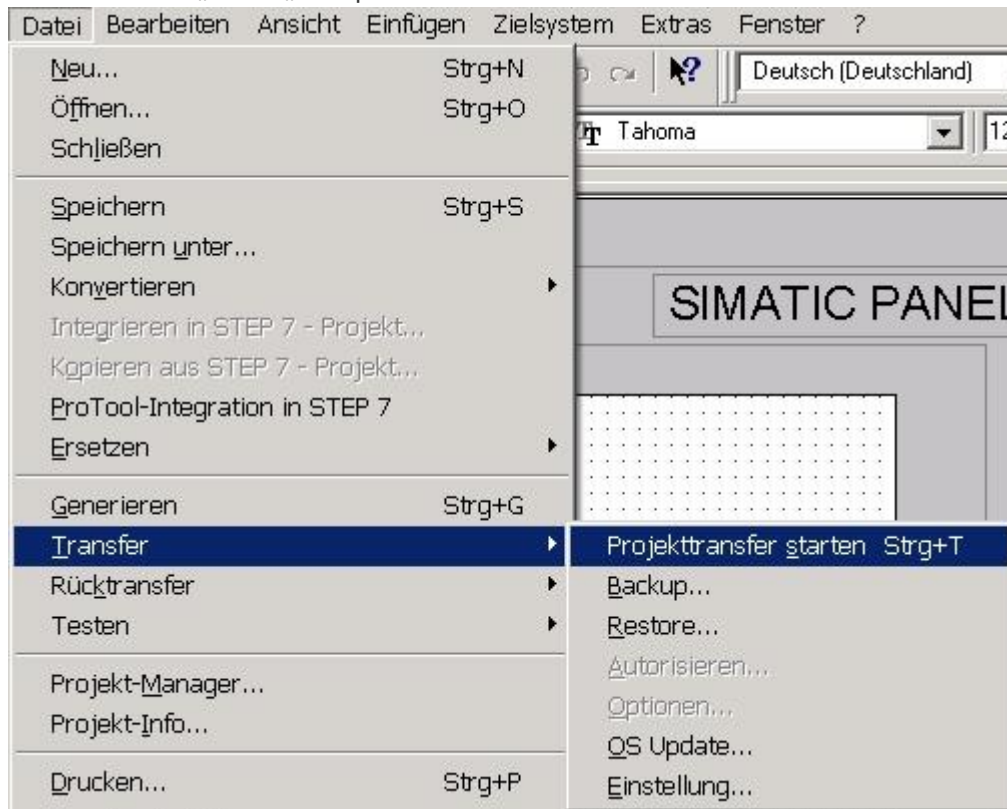
10. To transfer the project just click on „File" „Download" „Start Project Download" or click on the right symbol .

Please wait while the project is transferred. The communication between the operator panel is now established.


6.2.7 Microwin v3.2 (only for S7 200)

Configurate the interface as described in Set PG/PC-interface

1. Start Microwin using the desktop link or program entry in the Start menu.

2. Click on „Type" in the menu „PLC. Configure the „PLC Type" (e.g. „CPU 224") as well as the „CPU Version" (e.g. „01.22") to the dialog.
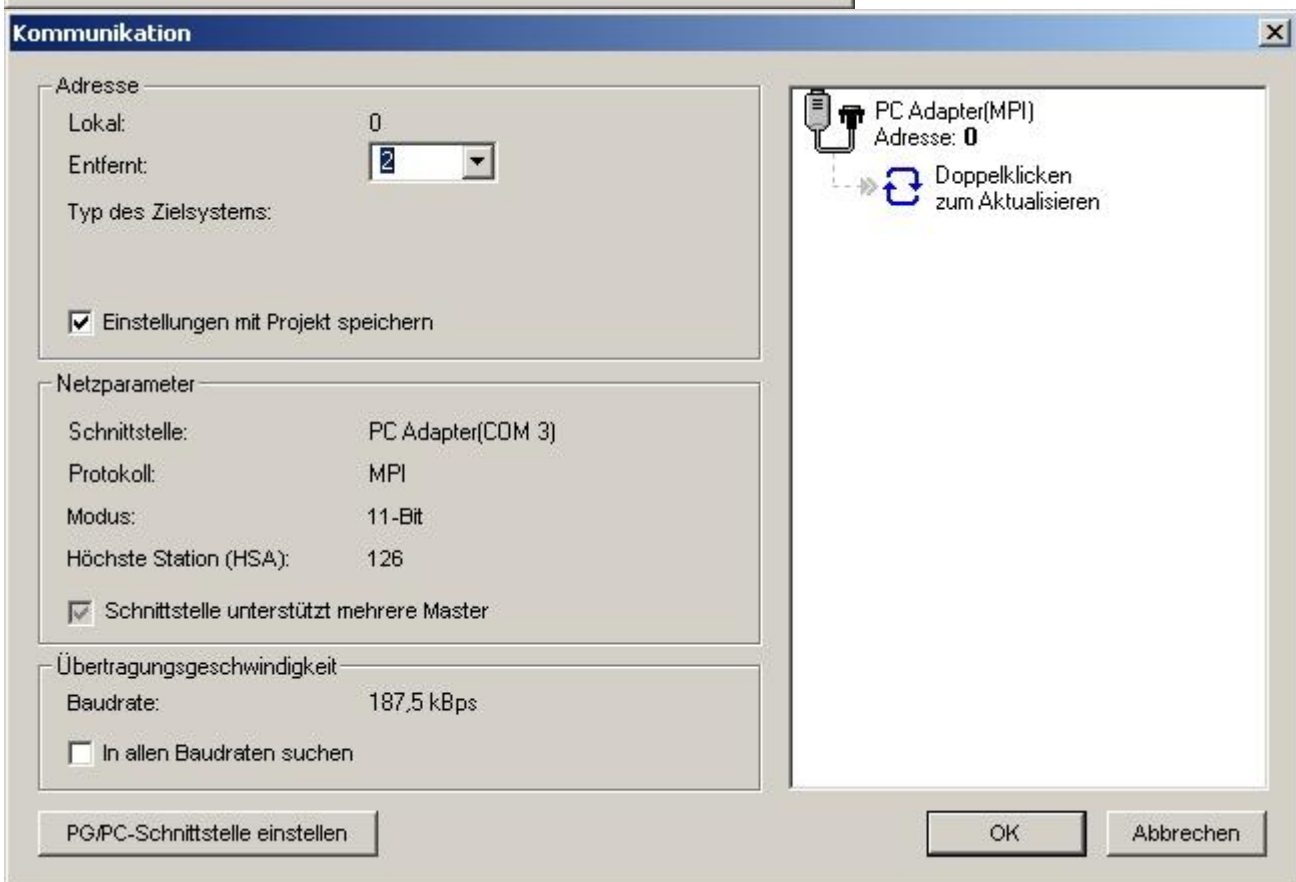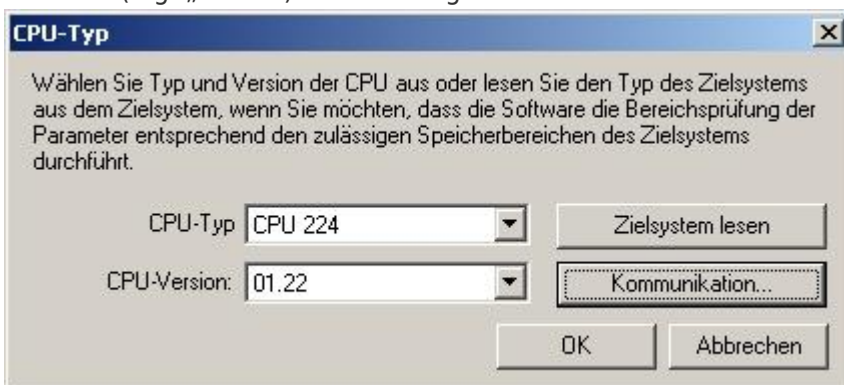
3. Click on „Communications…" to start the next dialog.

In the sector „Address" set up the „Remote" listbox with the station address of the PLC (e.g. „2").

If you skipped the point b Set PG/PC interface you can configure the PG/PC interface with a click on „Set PG/PC interface".

4. In the right part of the dialog double click on the blue arrow ⟳ symbol to test the communication with the PLC.

5. The sector „Address" should be updated and displays the „PLC Type". Also the CPU of the PLC is displayed in the right part of the dialog.
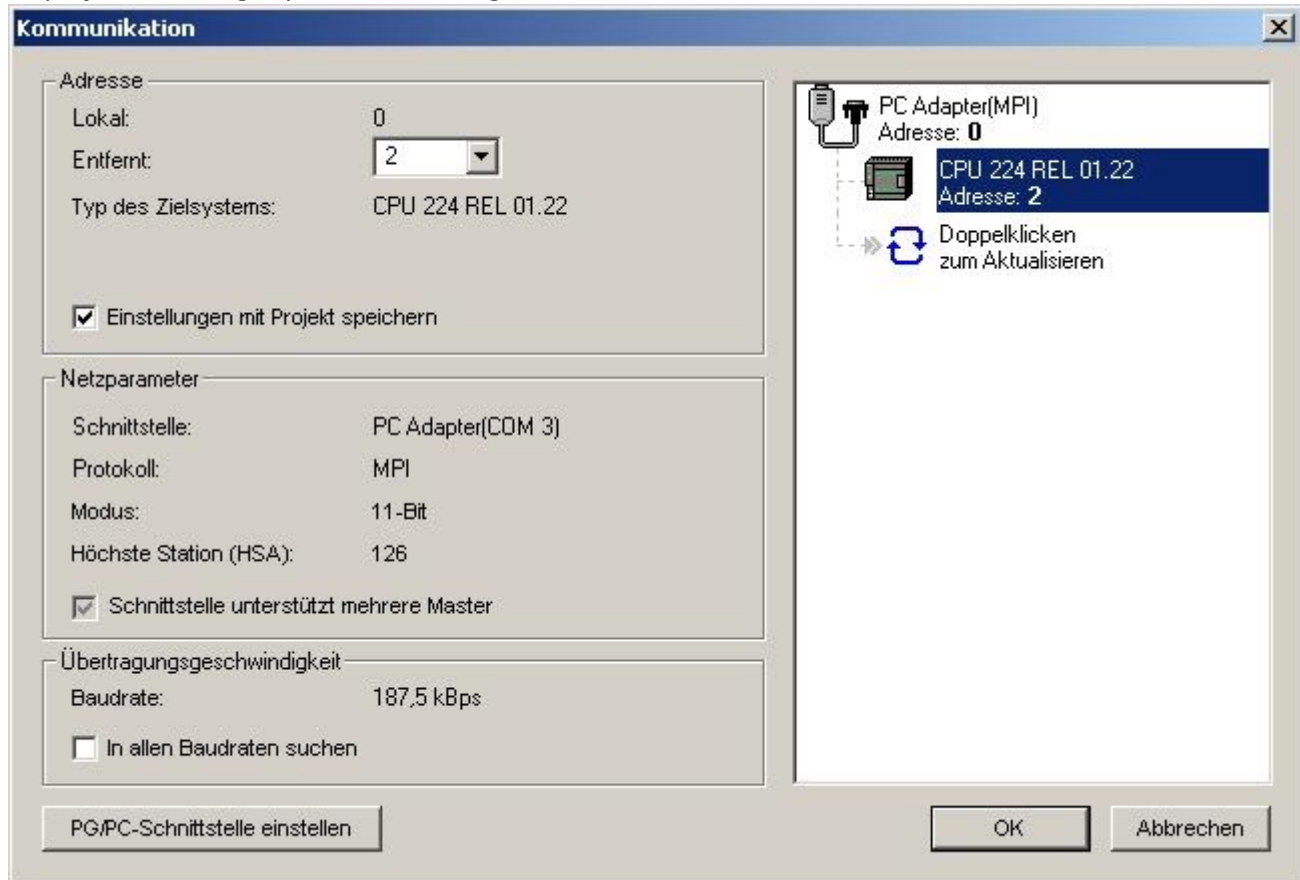
6. Confirm with „OK" until you get back to the main window. The communication with the PLC is now established.

6.2.8 Microwin v4.0 in PPI-Multimaster-Mode

1. The PPI-Multimaster-Mode was developed that more devices can communicate parallel with one PLC. The following steps describe how to configure this mode in hardware and software.

2. The module or cable has to switched in the PPIMulti-Mode. This mode can be switched in the menu-tree under „Generally" and „Bootconfiguration"

3. There you have to select „PPIMMaster" and confirmed with „Saving".
For LAN-devices you can do this in the integrated WebServer, also.

4. Now, you have to configure the PG/PC - Interface. This could you also do within the Microwin-Software.

5. Start your Microwin-Software.

6. Click on the button „Set PG/PC-Interface" under „View" in the left down part of the window.

7. Select the entry „PC/PPI cable(PPI)" and click on the button „Properties".
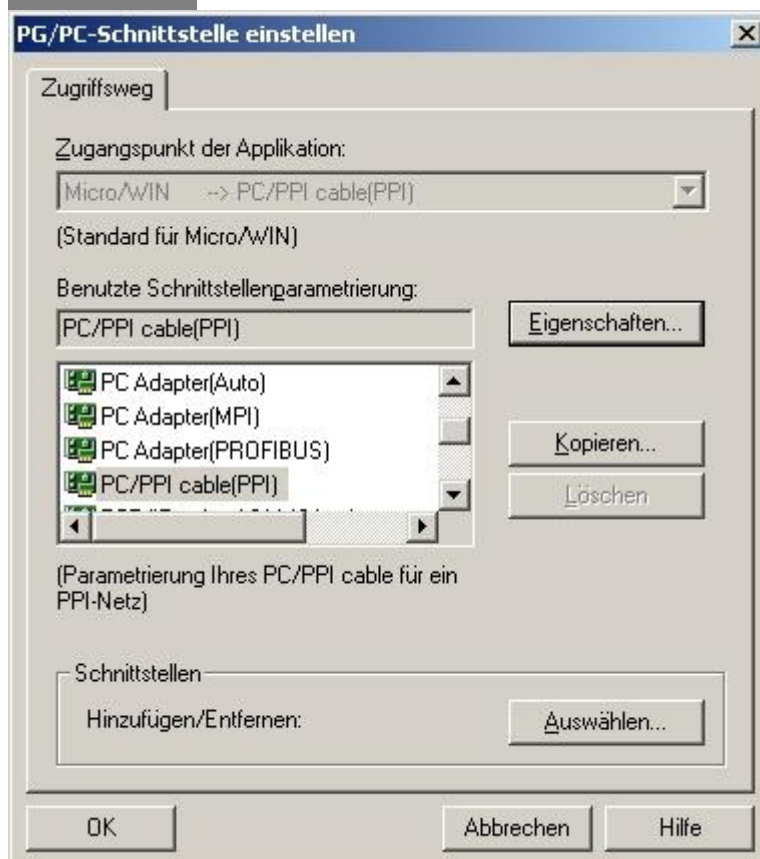
8. In the menu „PPI" you are able to configure diverse settings like for e.g. "HSA".

9. In the menu "Local Connection" you select the com-port "Interface to" to the port which is served from the tool PLCVCom.

10. Click on the button "OK" and click in the left down area in your windows on „Communikations".
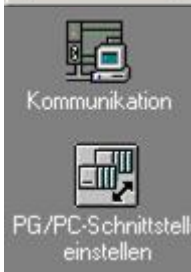
11. Click double on "Double-Click to refresh". The PLCs would be searched.

12. When the PLC was found, the picture changes it like this:

13. Prove the dialog with „OK" until you would be in the main window. The communication to the PLC is now ready.

6.2.9 S7 for Windows v5.02

1. Start the „S7 for Windows" software by using the link on your desktop or use the link in your start menu (standard is „Programs\S7 for Windows\S7 for Windows")

2. Choose File - >Preferences... to configure the communication configuration between the computer and the PLC.

A new dialog appears which provides to set up a lot of configuration data about the communication with your PLC.
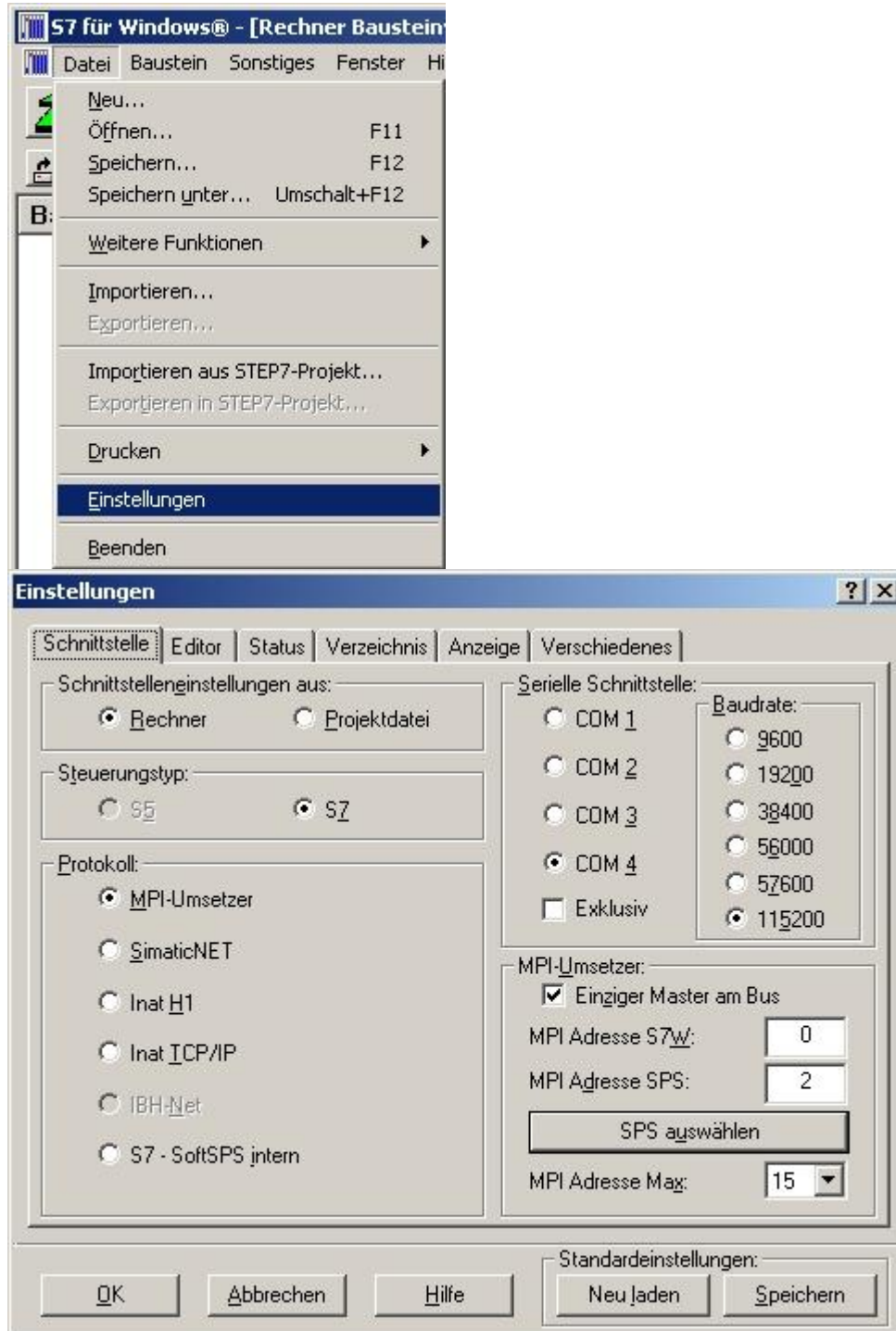
3. Choose the first registry card „Interface" (standard) and set up the configuration data as descriped below:

⇒ Area: „Preferences from:" ⇒PC

⇒ Area: „PLC Type:" ⇒ S7

⇒ Area: „Protocol:" ⇒ MPI - converter

⇒ Area: „Serial Port:" ⇒ Choose the virtual COM port which has been created by PLC - VCom (e.g. „COM 4").

⇒ Area: „Baud Rate" ⇒ Choose the speed you want to use at the bus (e.g. „115200")

⇒ Area: „MPI Converter:"

- Activate the checkbox „Only Master at the Bus" if you have only one PLC in the bus.
- Leave the fields „ S7W MPI Address" and „MPI Address PLC" as it is.
- The number in the listbox „Max MPI Address" must be higher than the PLC with the highest station address in your MPI bus. Otherwise every PLC which is higher than this number will not been seen (e.g. if there is only one PLC in your bus „15" is more than enough).

4. After the software is configured , please click „Select PLC" in the area „MPI Converter". A new dialog appears where you can select the desired PLC

5. The dialog displays all the PLCs that can be found in your MPI bus.

Select the desired one and confirm with „OK".

6. Close the preferences dialog by pressing the „OK" button.

7. Back in the main window press the „PC Block List" button for testing the new established communication configuration.

8. Please wait a moment for the software to read the desired blocks from the PLC. The blocks will be displayed in the listbox below the menu bar (see picture to the right).
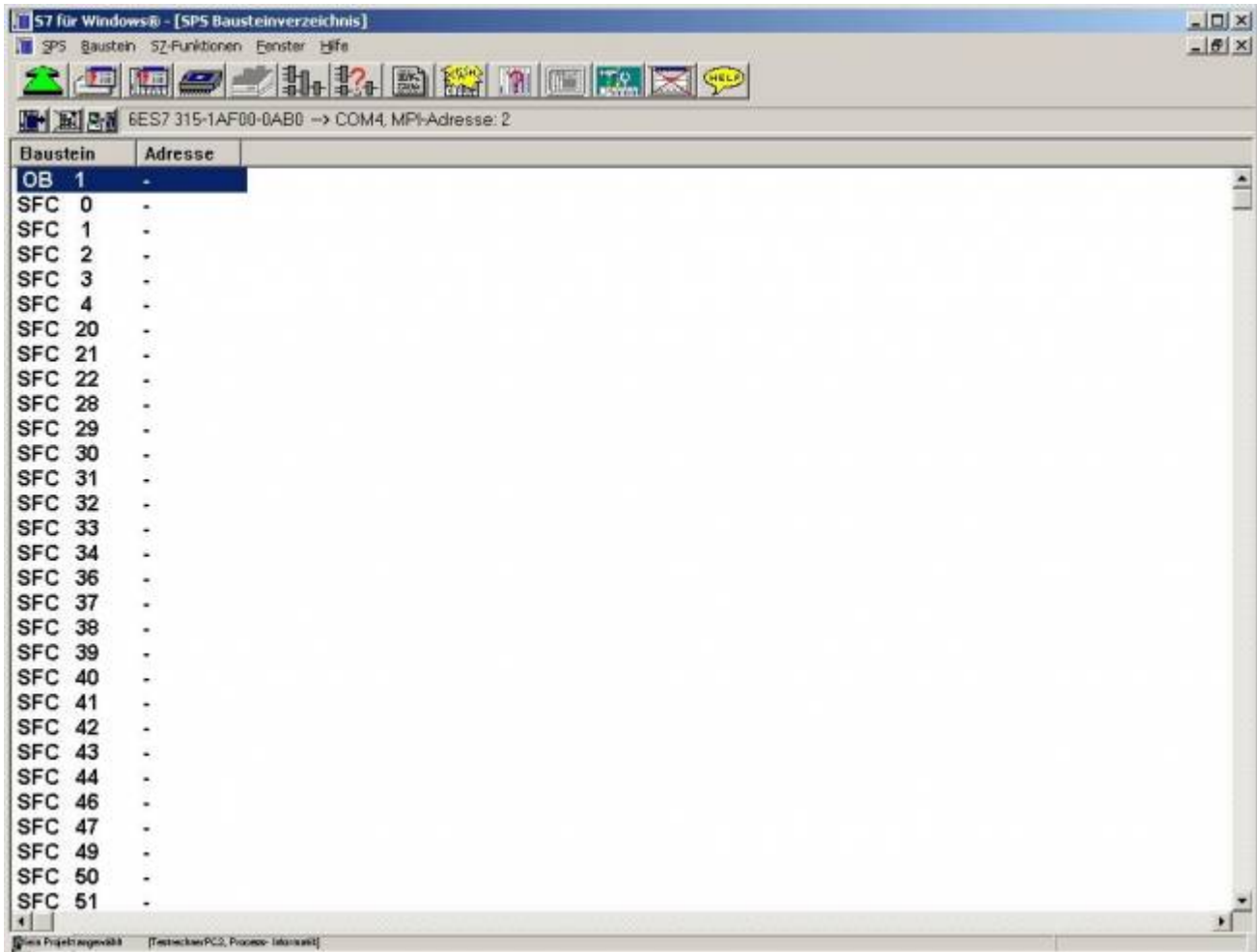
The communication between the software and your PLC is established.

6.2.10 Including S7-LAN module into a STEP 7 project

6.2.10.1 Direct communication using TCP/IP with Step7© v5.3 (CP mode)

This communcation does not need a simulated virtual COM port (PLC – VCom is not needed). A direct connection will be established to your network device. The CP mode is also called ISO protocol or RFC1006. At the moment it is not possible to exchange a CP completely.

This descritption needs an existing project. Please read the Step 7 manual for more information about creating new projects. **Please be sure that you enter in the S7-LAN-module in the configuration menu the Subnet-ID of the connected bus.**
Without this entry, a function is not given!
1. SExecute the Step 7 software by using the link on your desktop or use the link in your start menu.
2. Open your existing project and start the „Set PG/PC Interface…" dialog by using the menu „Options".

Extras Fenster Hilfe

Einstellungen...   Ctrl+Alt+E

Textbibliotheken   ►
Sprache für Anzeigegeräte...
Texte mehrsprachig verwalten   ►

Umverdrahten...
Ablaufeigenschaften...

Bausteine vergleichen...
Referenzdaten   ►
Globaldaten definieren
Netz konfigurieren

Baugruppen simulieren
Prozeßdiagnose projektieren

PG/PC-Schnittstelle einstellen...

PG/PC-Schnittstelle einstellen

Zugriffsweg

Zugangspunkt der Applikation:

S7ONLINE   (STEP 7)   --> TCP/IP -> SiS 900-Based PCI Fa ▼

(Standard für STEP 7)

Benutzte Schnittstellenparametrierung:

TCP/IP -> SiS 900-Based PCI Fast...

TCP/IP -> NdisWanIp
TCP/IP -> SiS 900-Based PCI Fast..
TCP/IP(Auto) -> Intel 21143 Based
TCP/IP(Auto) -> SiS 900-Based PCI

Eigenschaften...
Diagnose...
Kopieren...
Löschen

(Parametrierung Ihrer NDIS-CPs mit TCP/IP Protokoll (RFC-1006))

Schnittstellen
Hinzufügen/Entfernen: Auswählen...

OK   Abbrechen   Hilfe

3. WIn the listbox „Interface Parameter Assignment Used:" choose „TCP/IP - > XXX". The „XXX" stands for the network interface card you want to use. Confirm your input with „OK".

For the Step 7 software version 5.2 you need the SIMATIC NET package, otherwise the Step 7 software will not show the desired entries (TCP/IP, etc.) because it is not supported. The Step 7 software version 5.3 has this package included after installation.

4. Back in the main window call, by using the menu „Options", „Configure Network". A new window appears

5. This window shows the available devices and busses (in this example there is a PLC „CPU 315" with the station address "2" using the "MPI" bus).
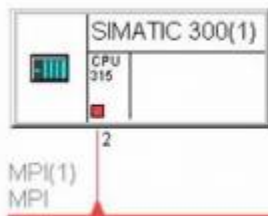
6. In the explorer „Selection of the network" choose „Subnets" and do a double click on „Industrial Ethernet". The left part of the window should change like the picture (below) shows.
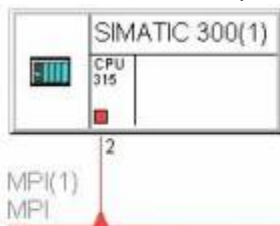
7. Now add a S7-PLC as replacement for S7-LAN/MPI-LAN which will be used for the CP mode later. In the explorer „Selection of the network" choose „SIMATIC 300" from the branch „Stations" to add a new virtual PLC. This takes effect to the left part of the window (see picture below). A rectangle with a orange (not always orange) marked area is shown.
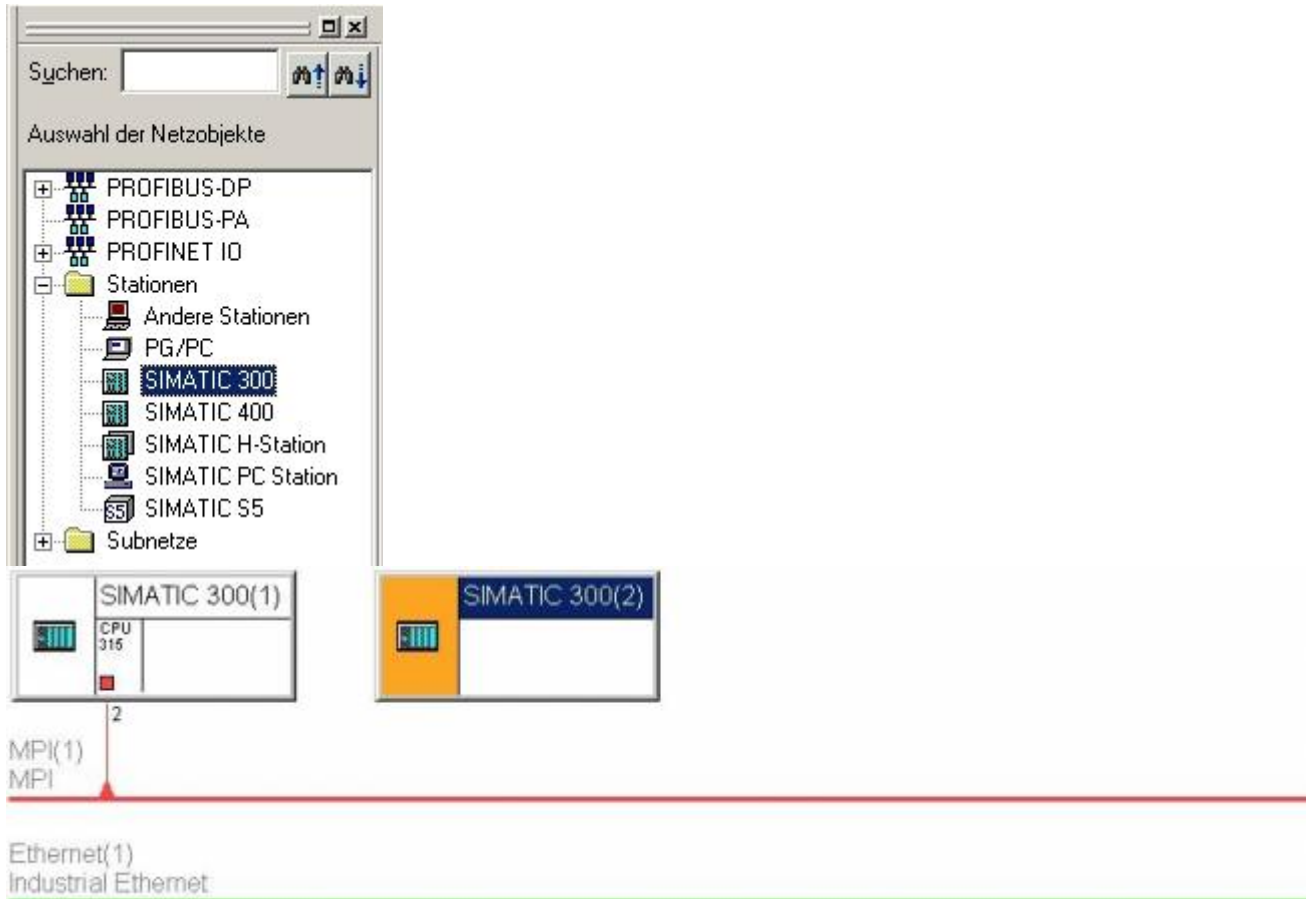
8. This is our replacement-PLC which is called „SIMATIC 300(2)". Change this with a right click on the object. From the context menu choose „Object Properties…" to open the "Object Properties" dialog.
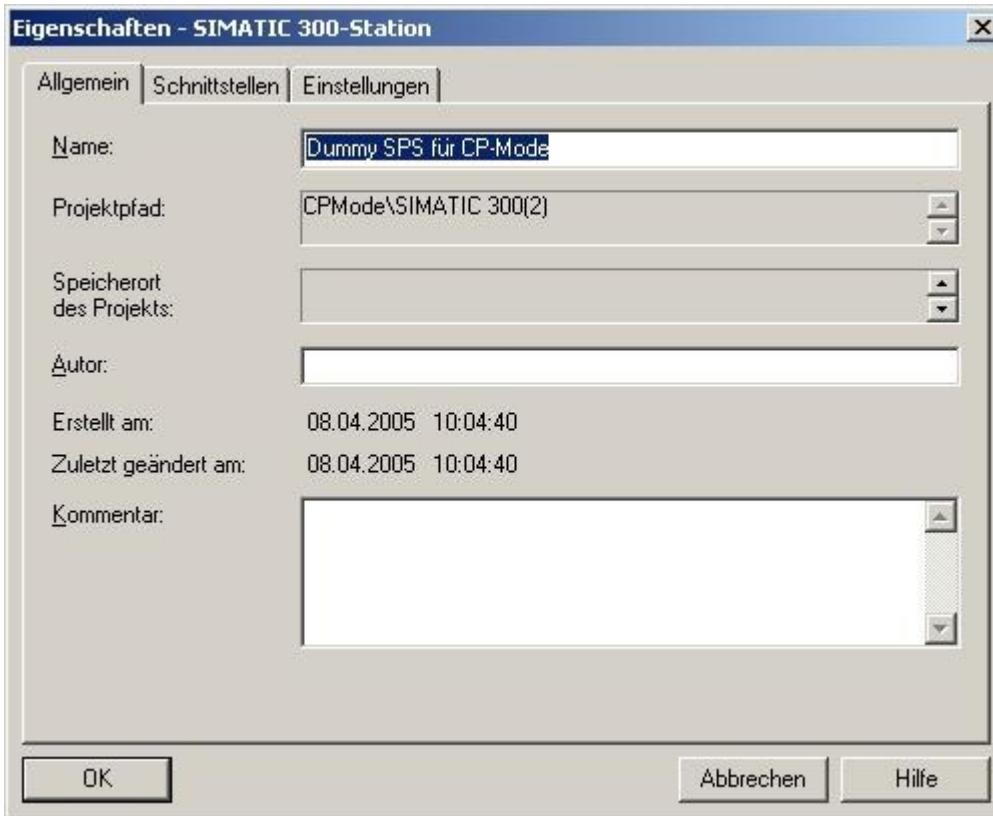
9. Type in the edit box "Name" the new name of the PLC (e.g. "S7-LAN-module/MPI-LAN-cable for CP mode").Confirm the new name with a click on "OK". The rectangle should be updated by the application.

10. In the explorer "Selection of the network" choose the branch "Stations" and from there choose the object "PG/PC". The graphical presentation will be extended with a „PG/PC(1)" object.
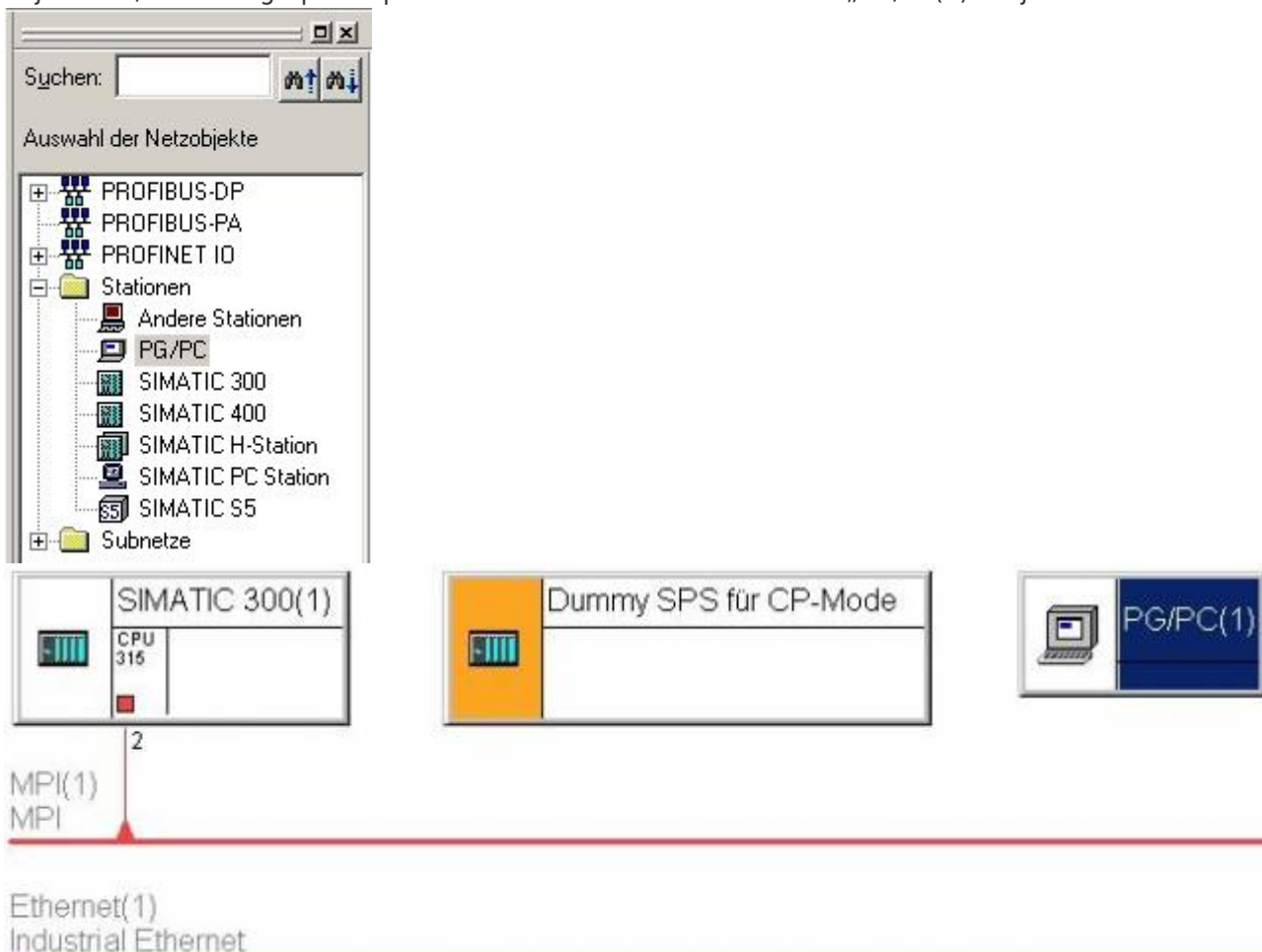
11. To configure the newly created object perform a right click on the „PG/PC(1)" object and in the context

menu choose "Object Properties…".
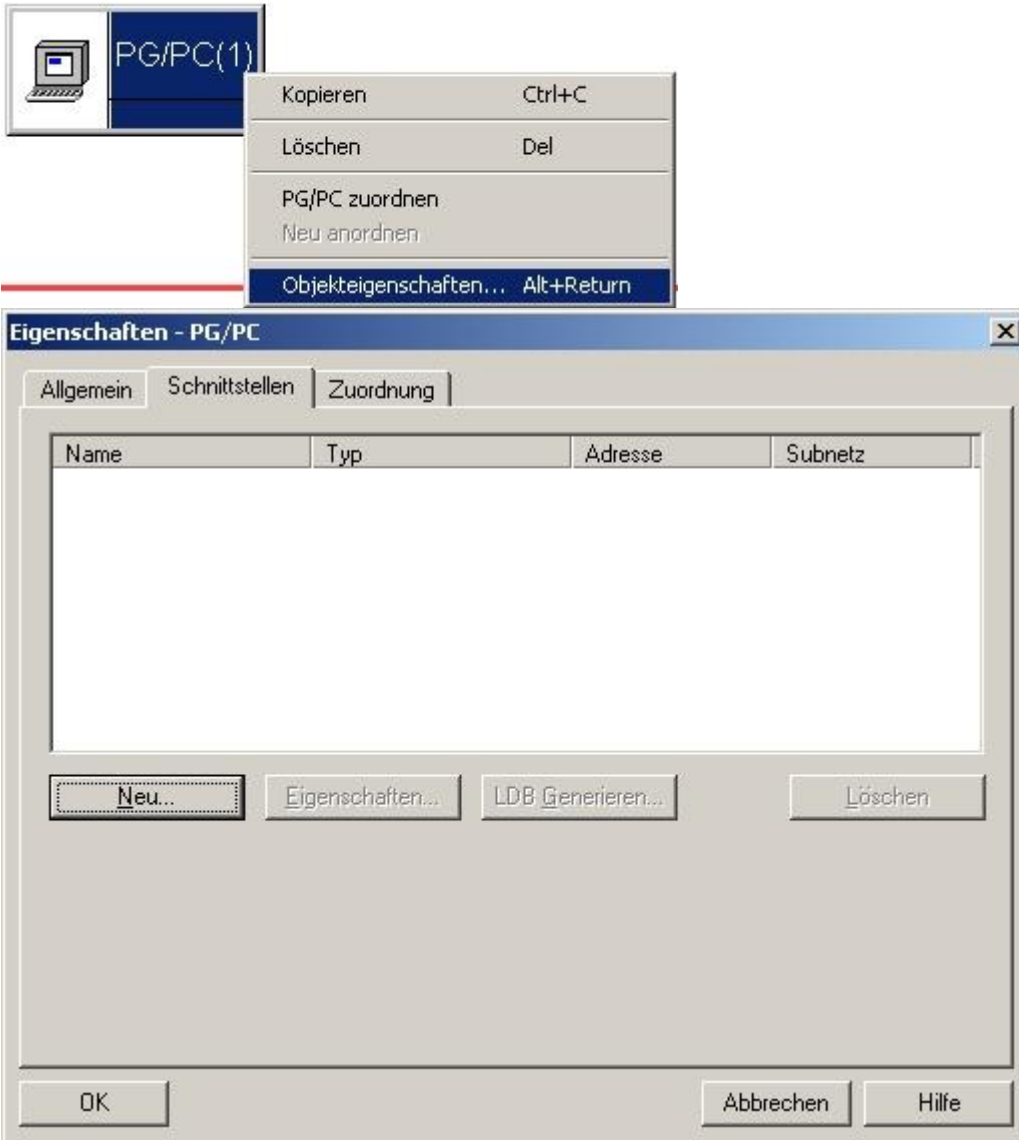
12. The "Properties - PG/PC" dialog offers the possibility to create new interfaces. Therefore choose the registry card "Interfaces". With the registry card "Interfaces" opened click on "New…".

13. Select "Industrial Ethernet" from the selection box and confirm with "OK".

14. Now configure the IP address and the subnet mask from your (e.g. IP address: „192.168.2.106", subnet mask: „255.255.255.0"). Before confirming with "OK" choose "Ethernet(1)" as the subnet you want to use.

15. The dialog "Properties – PG/PC" should have two interfaces added to his list.
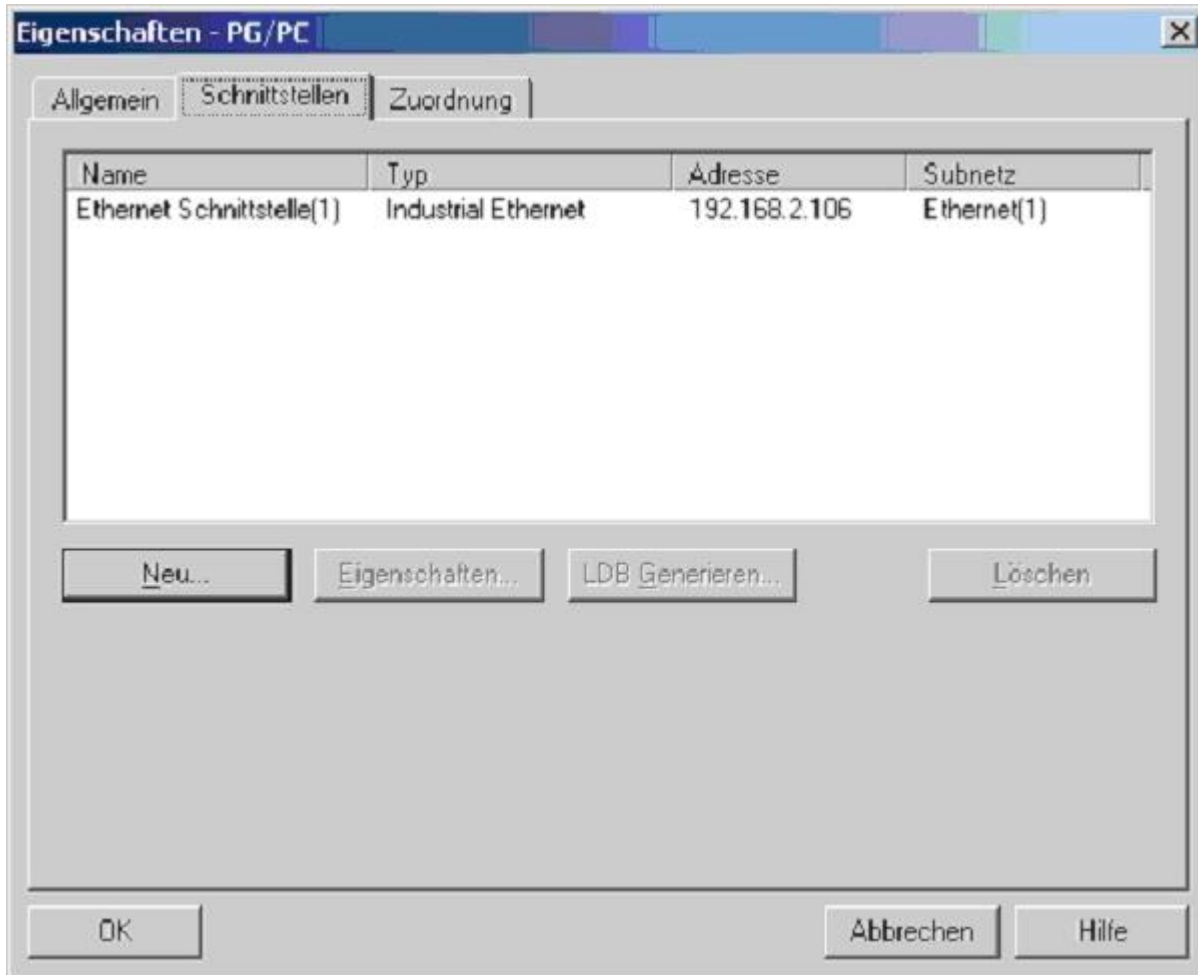
16. Select the registry card "Assignment" and mark "Ethernet port(1)" by using the list "Configured Interfaces:". In the list "Interface Parameter Assignments in the PG/PC:" choose "TCP/IP - > XXX". "XXX" stands for the network interface card you want to use.

17. Assign the active connection to the device.
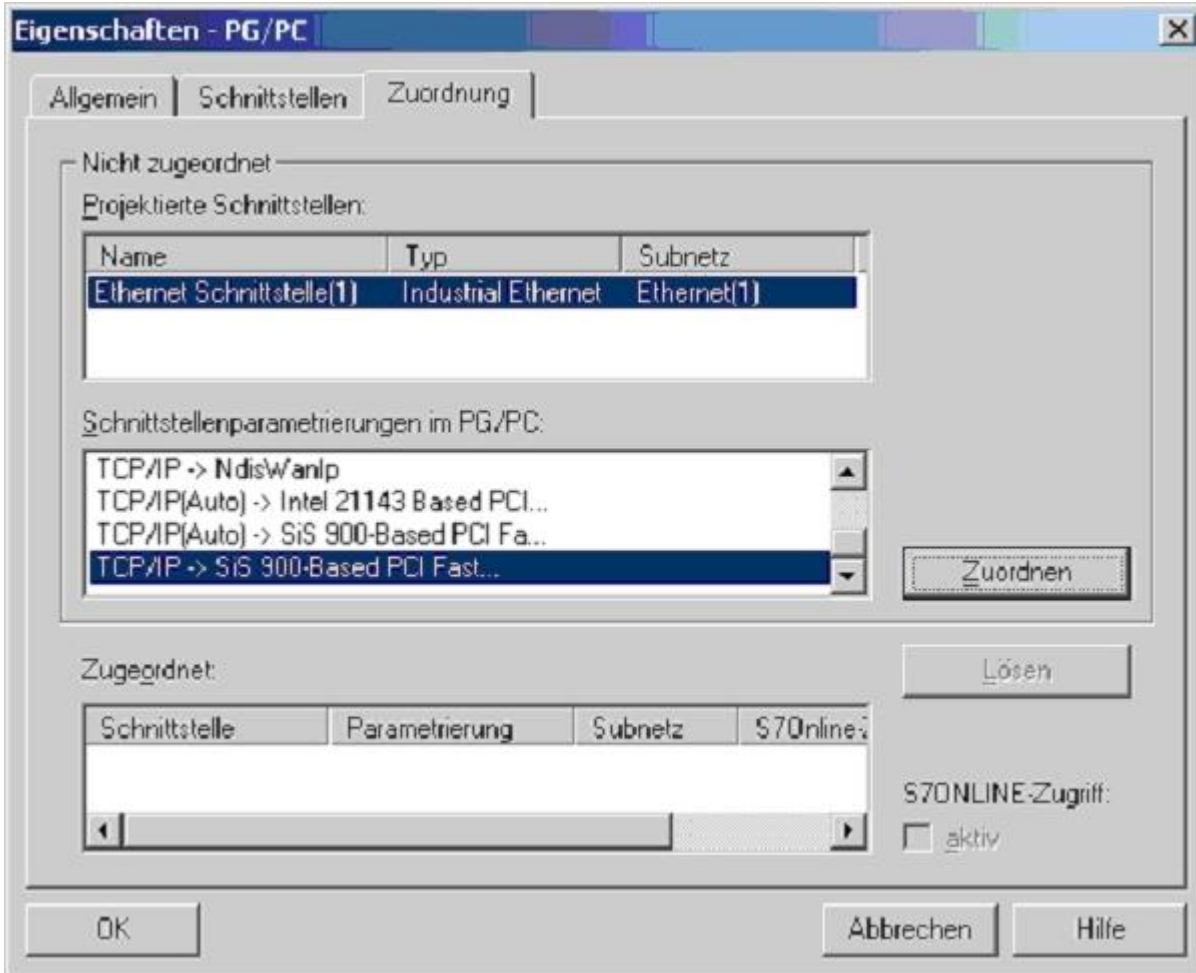
18. If this warning message appears just ignore it. Press "OK".
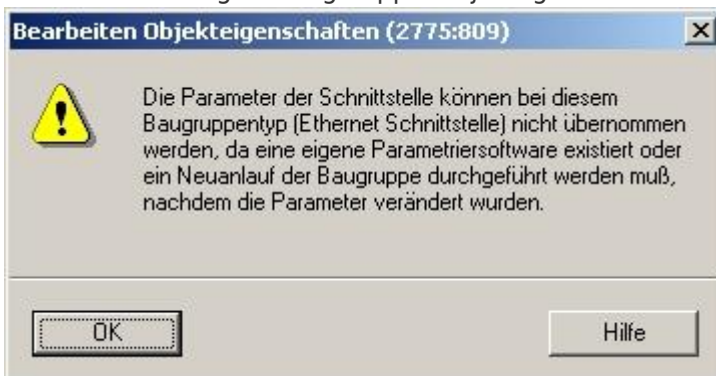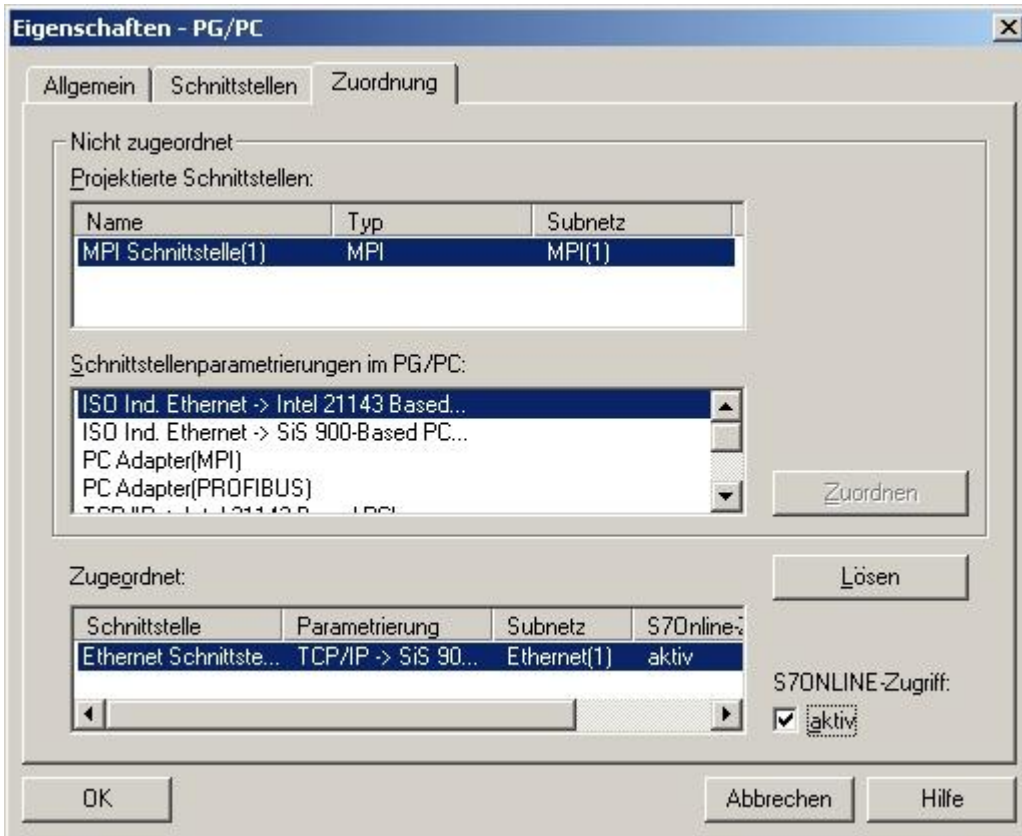
19. SBe sure to activate the checkbox "S7ONLINE Access:". Confirm the dialog with "OK". Because of your "PD/PC(1)" configuration the graphical presentation should have changed (as shown in the picture below). The yellow marked connection (green line) between "PG/PC(1)" and „Ethernet(1)" shows that the assigned interface („Ethernet(1)") from the "PG/PC(1)" object is used for the „S7ONLINE - Access".
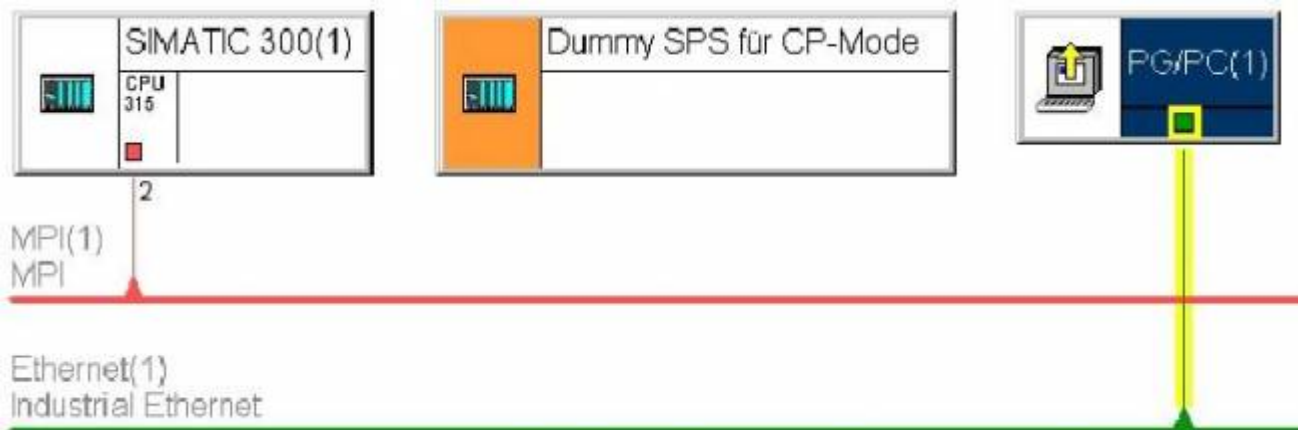
20. Now "Save and Compile…" your configuration by using the menu "Network". The option "Compile changes only" is good enough for our purpose.
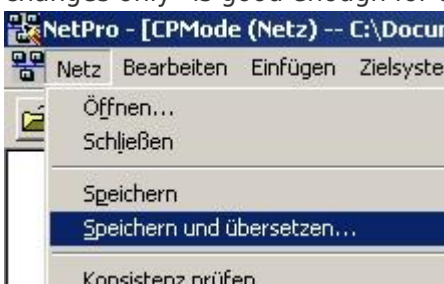
21. A small window appears with a lot of error and warn messages. Do not panic that is part of the plan.

As you can see in the graphical section the "S7-LAN-module/MPI-LAN-cable for CP mode" has a red marked area. This signals that this object is currently not working.

To solve this problem perform a double click to the "S7-LAN-module/MPI-LAN-cable for CP mode" or perform a right click to the object and choose "Open Object".
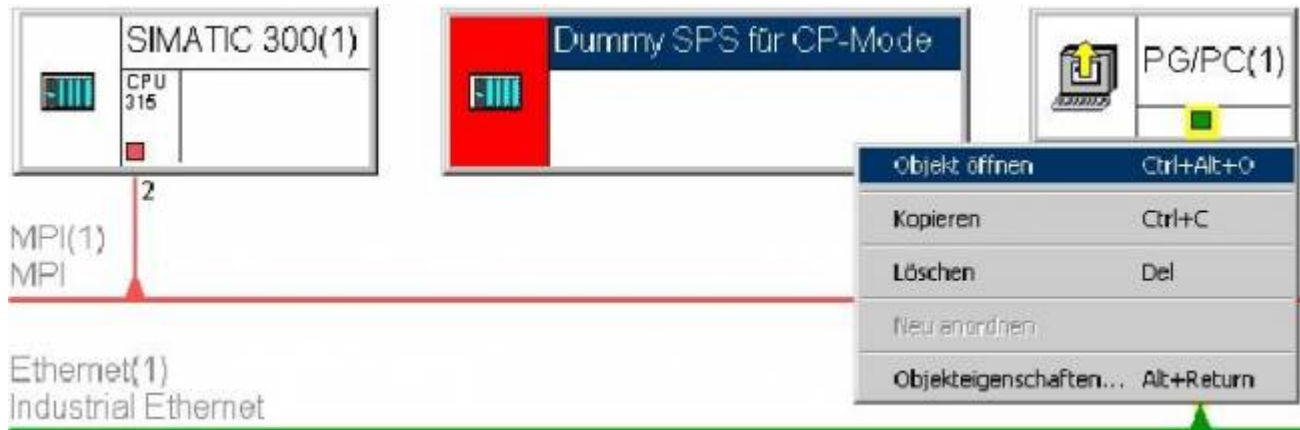
22. A new window opens (the hardware configuration). On the right you can see the hardware explorer where you should choose "Rail" from the branch „SIMATIC 300" - > „RACK - 300".
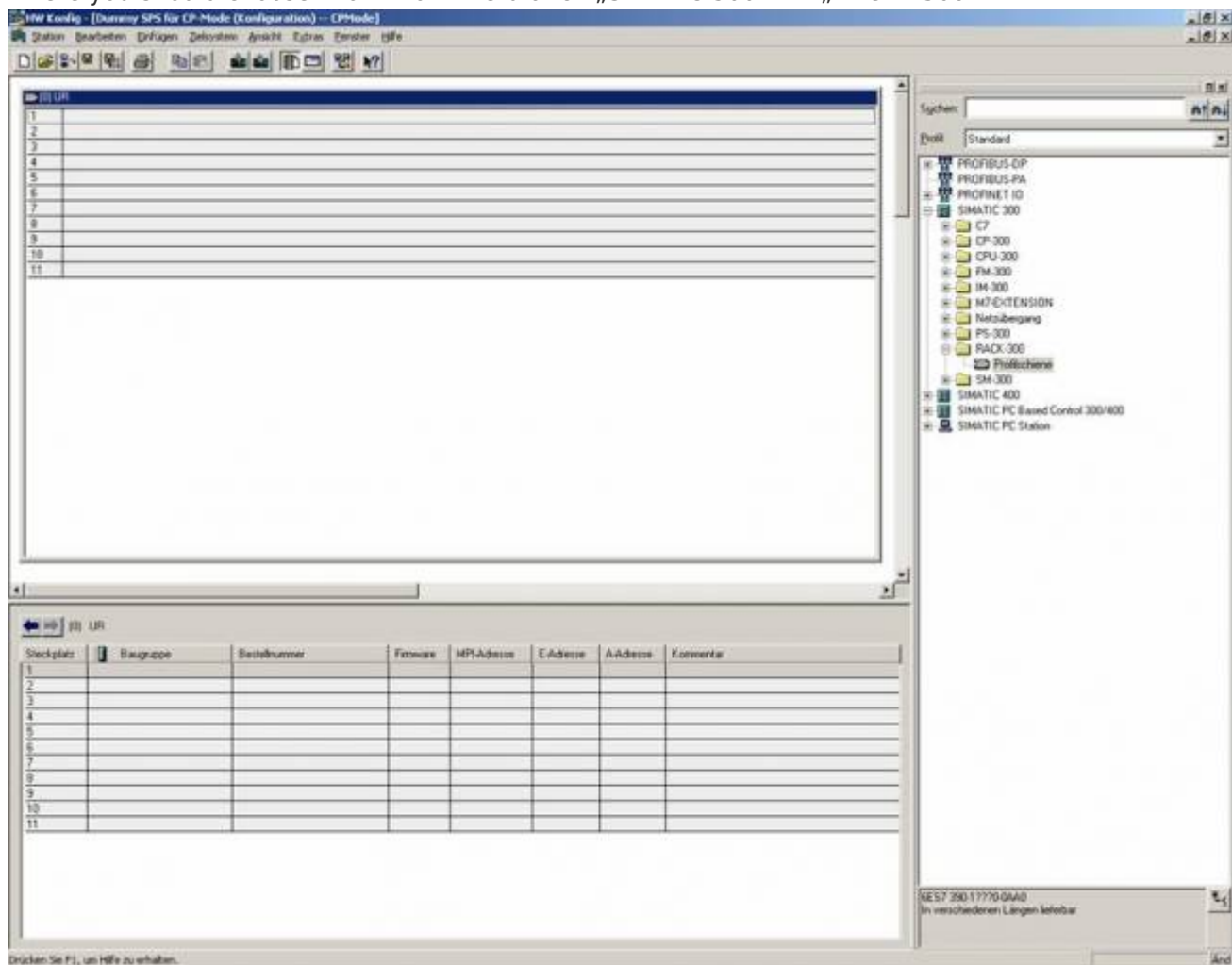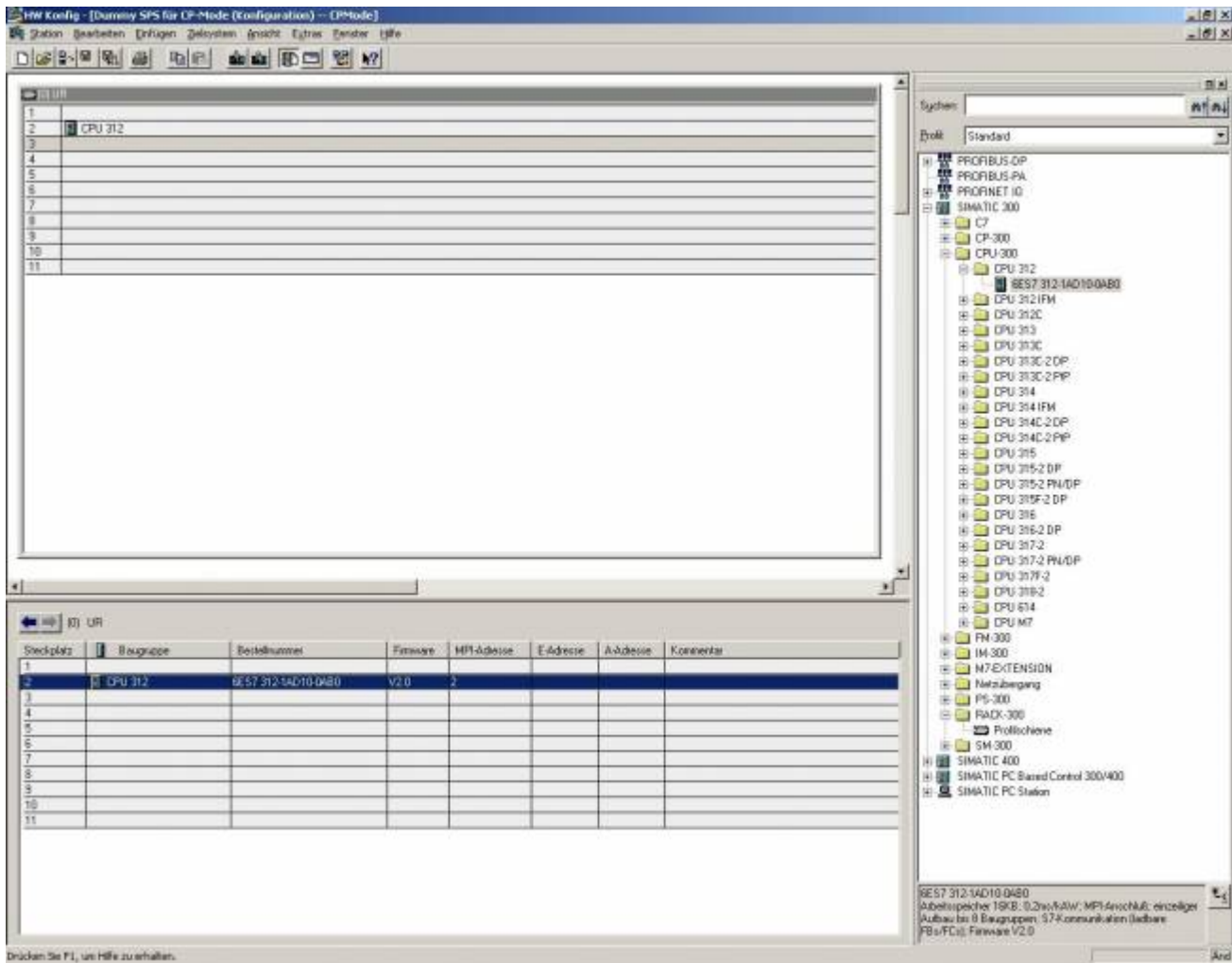
The picture below shows how the window should appear after you have added the "Rail".

23. In the hardware explorer open the branch: "SIMATIC 300" - > "CPU - 300" - > "CPU 312". From there double click on "6ES7 312 - 1AD10 - 0AB0".

The application is now adding this cpu to your rail.

The view should have changed as shown below.

24. In the hardware explorer mark "V2.0" from the branches "SIMATIC 300" - > "Industrial Ethernet" - > "CP 343 - 1" - > "6GK7 343 - 1EX11 - 0XE0" and select one of the green slots at the bottom left (see the dark green marked slot).

Now rapidly click twice on "V2.0" to add the object to your rail.
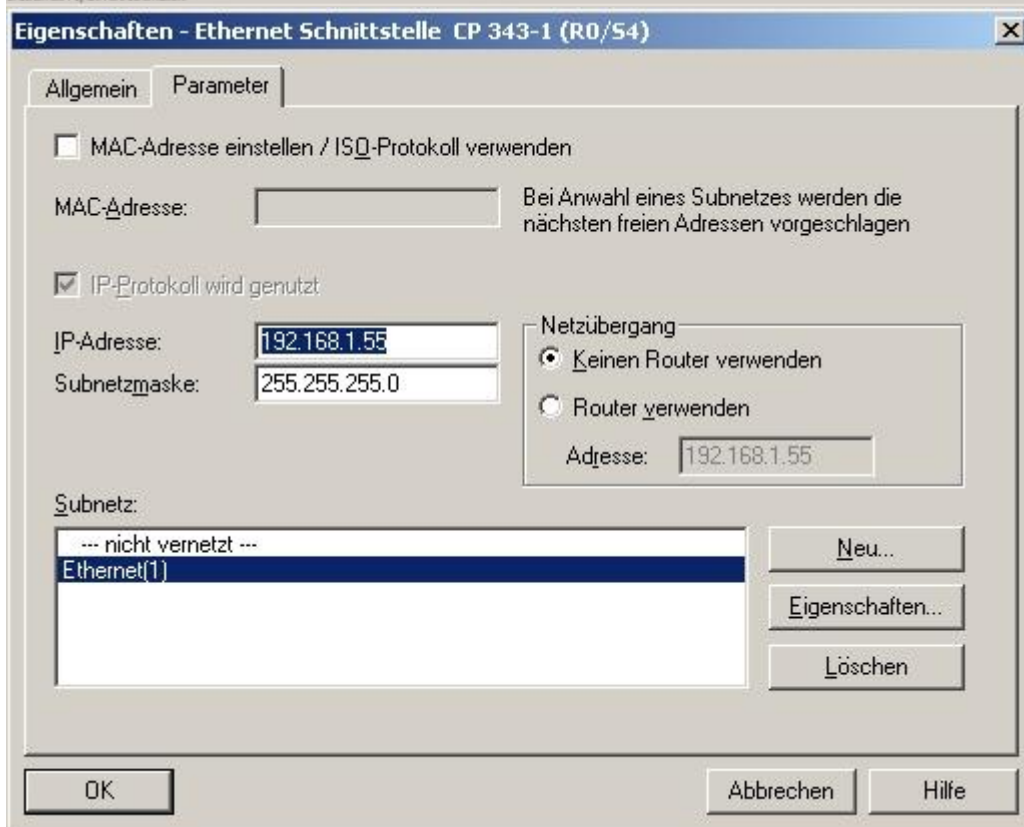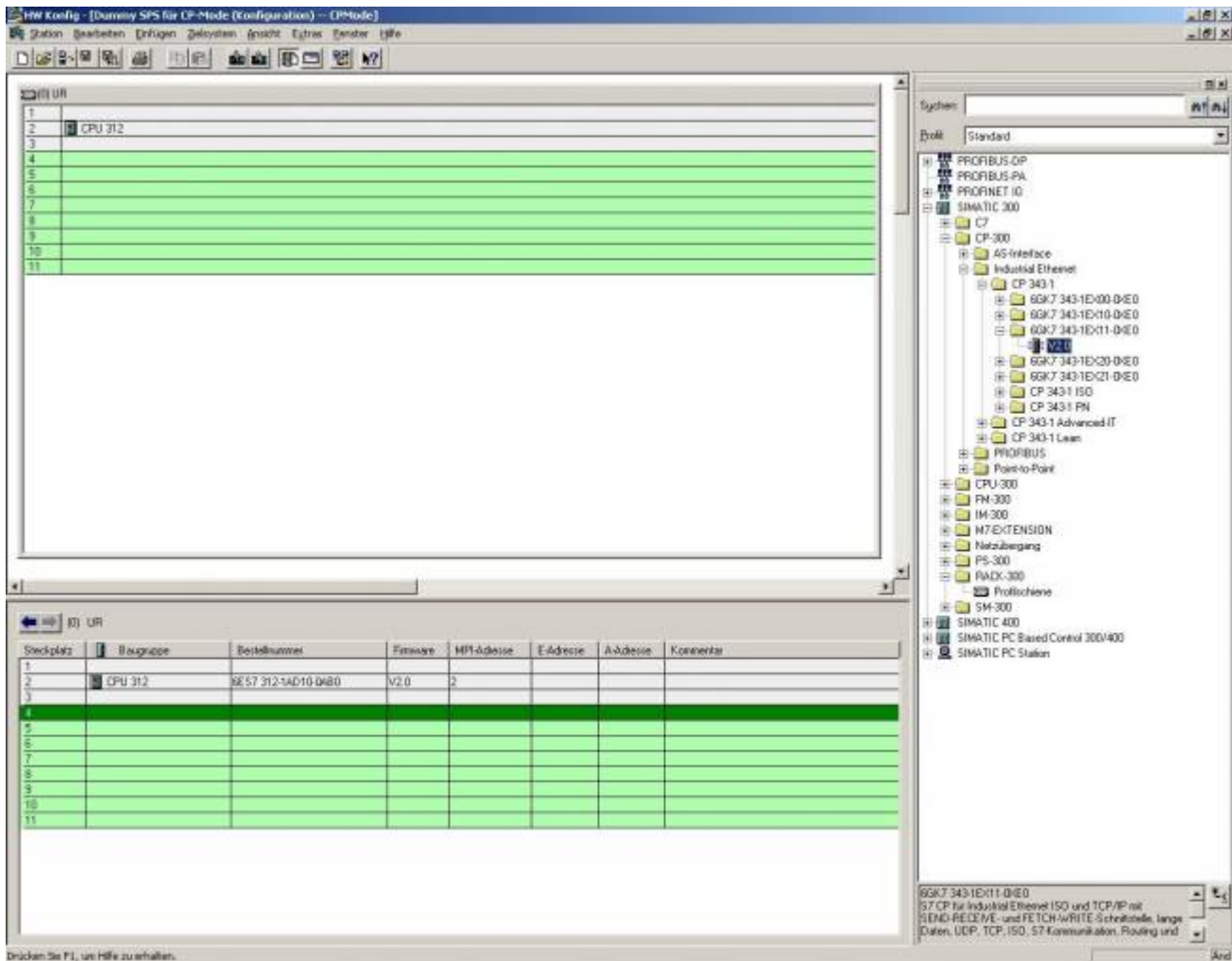
25. Before the application can add the object to your rail you have to configure it.

Therefore set, in the registry card "Parameters" of the new dialog, the IP address of the used S7-LAN module (e.g. "192.168.1.55") and select "Ethernet(1)" in the list "Subnet:" (the newly created interface).

The subnet mask should fit to the given IP address (e.g."255.255.255.0"). Confirm with "OK".

In our example we used a computer with the IP address 192.168.2.106 and a S7-LAN module with the IP address 192.168.1.55. Because of the different subnets (red marked numbers) of the devices a direct communication cannot be established. To solve this problem you can change the subnet mask from the computer to 255.255.252.0. Now the computer is available for exact three subnets 0, 1 and 2. Read the chapter 9.1 "Frequently Asked Questions" for further informations.

26. Right click on "CPU 312" in the bottom left sector and in the context menu choose "Object Properties…".

27. In the dialog "Properties – CPU 312 - (R0/S2)" press the "Properties…" button. In the new dialog you can assign the MPI address to the CPU and choose the subnet the CPU should use.

Select the "MPI(1)" "Subnet:" we have created in the steps before. The address (e.g. "10") of the CPU should be the only one in the entire network.

Also be sure that the next higher address is also free for use (it will be used later for the CP object). Save your configuration with "OK".
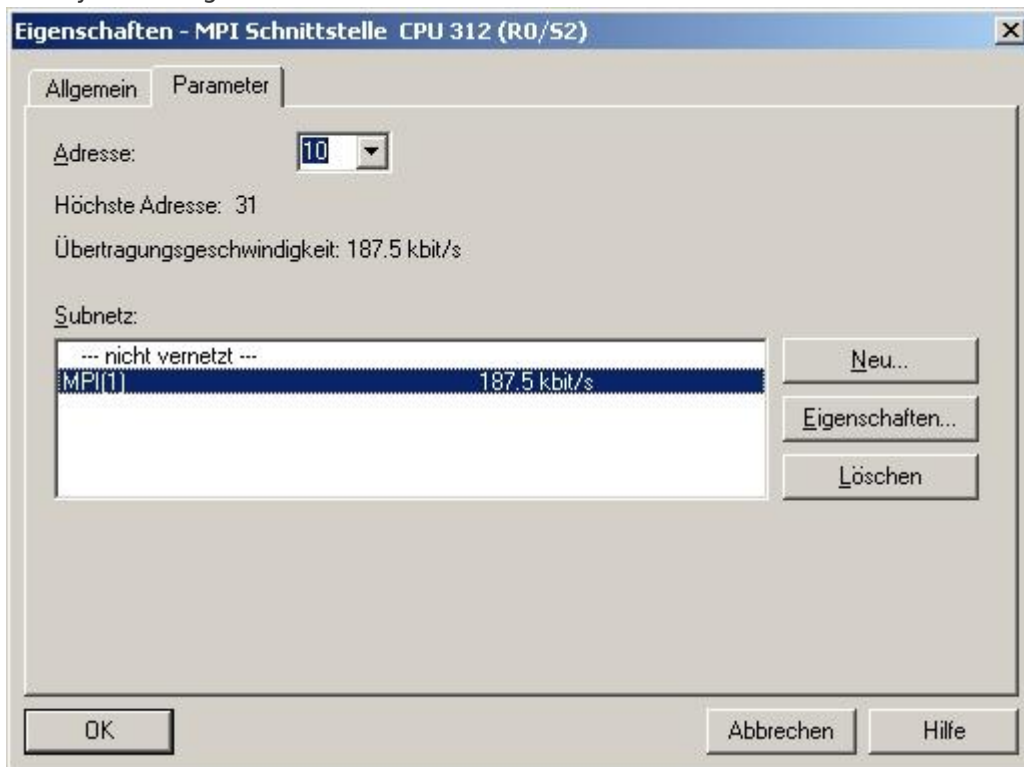
28. Right-click on the created CP object **CP343 - 1** and select **Object properties** from the shortcut menu.
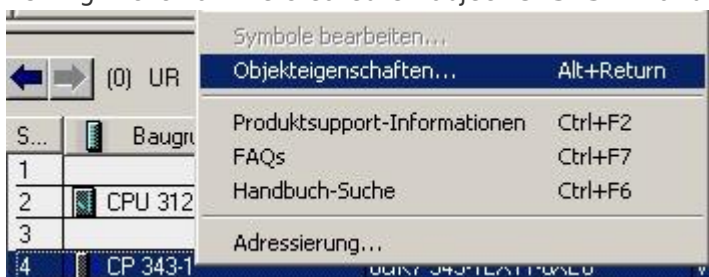
29. Another property dialog will open.

Set the name of the CP object to "S7-LAN" (optional). Also set the MPI address which should be exact one

station higher than the address you have given your "CPU 312" in the step 30 (e.g. „10" has been set for the "CPU 312" object.

So "11" has been the only right address for the CP object). Confirm with "OK".
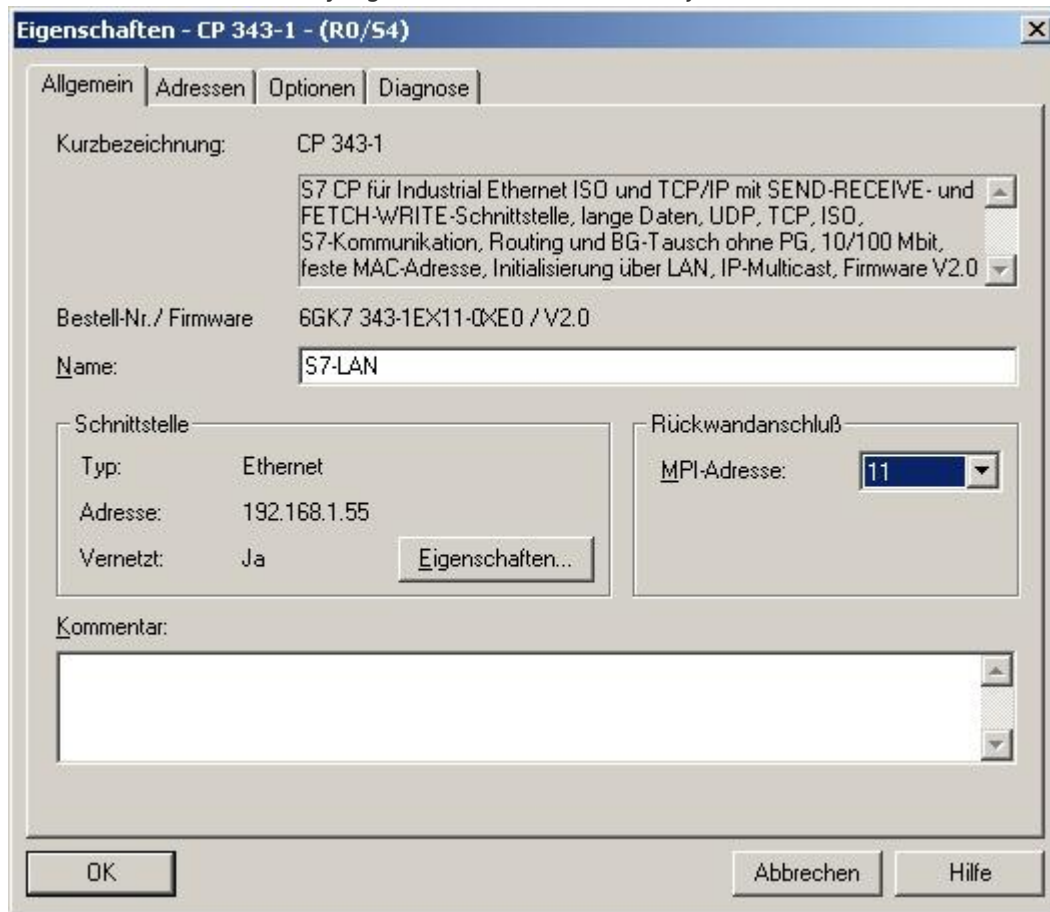
30. „Save and Compile…" the hardware configuration and the network configuration.
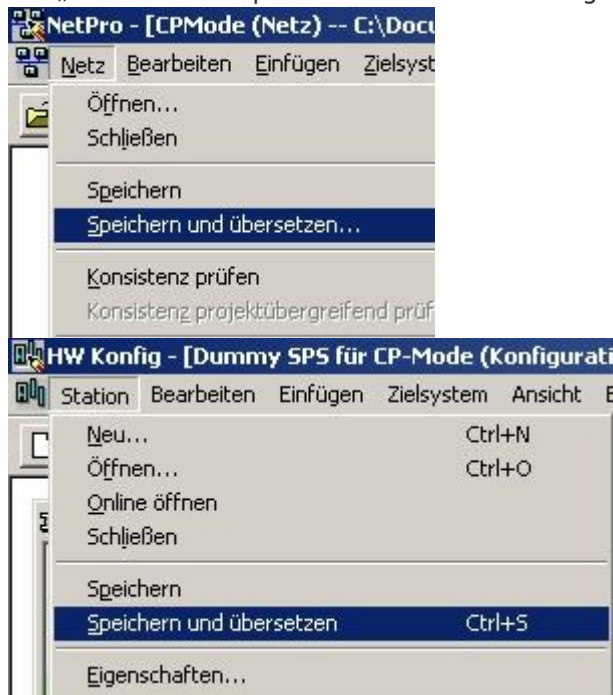
31. After you have saved the network configuration the graphical presentation of the devices and busses should appear as shown in the picture below. As you can see there are no more red marked sections.
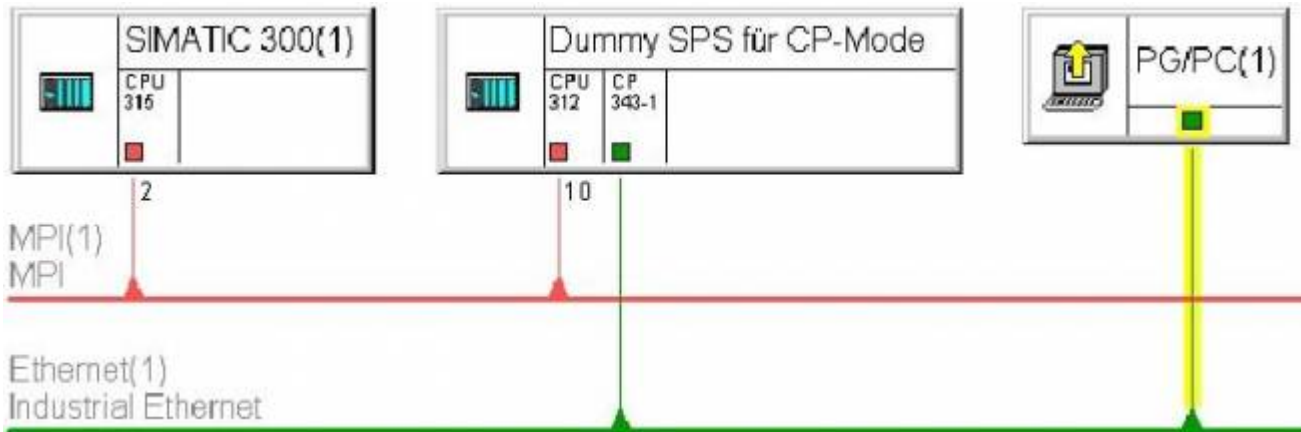
32. The last thing you have to do before the connection is established is to configure the S7-LAN module. You can access the configuration menu via web browser. In the address bar you must enter the S7-LAN IP address. Press the "Enter" key to start the web based configuration menu.

You do not know the S7 - LAN IP address? In this case you can use the PLC – VCom software to determine the S7-LAN IP address. Tip: The "Configuration" dialog shows every connected device (to the computer or the network). See chapter „PLC - VCOM".

33. Choose the desired language in the first site and click on "CP - Mode" in the second site.

The only option you can configure for the CP mode is the "Destination - PLC". You can set "255". In this case the S7-LAN module connects automatically to the directly connected PLC.

If you are using the IPS7Link software you could set the station address of the PLC CPU which is connected directly to your S7-LAN module (in this example "2").

Or type in the station address of the PLC CPU which you have configured in step 30 for the "CPU 312" (e.g. "10").
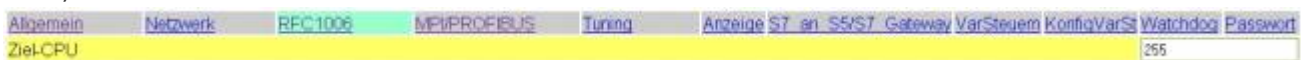
34. In the menu "MPI/PROFIBUS" set the "Locale Station Address" which you have configured to your CP object in the step 32 (e.g. "11").
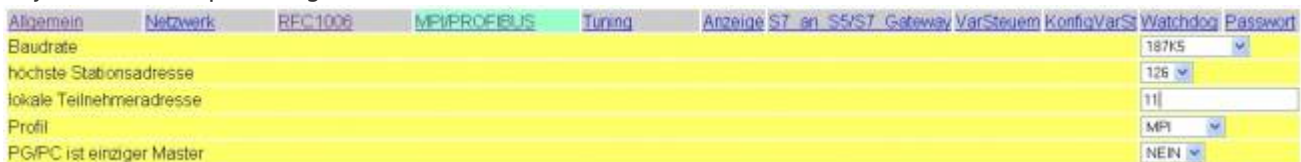
35. Back in the main application window (the SIMATIC Manager) set the real existing PLC into "Online" state.

Therefore just click on "Online" in the menu "View".
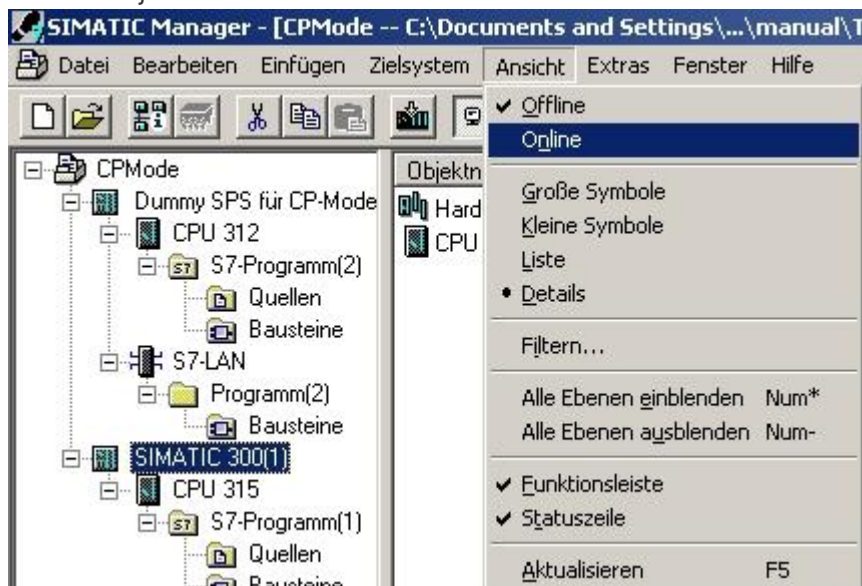
36. To test the communication open the branch of your real existing PLC (e.g. "SIMATIC 300(1)"). The branch below the PLC is the CPU Type (e.g. "CPU 315"). A additional red symbol is displayed next to the standard CPU symbol. Open this branch, too. The next branch you should open is named as „S7 Program" (e.g. "S7 Program(3)"). Finally click on "Blocks" to get a complete list of available blocks from your PLC.
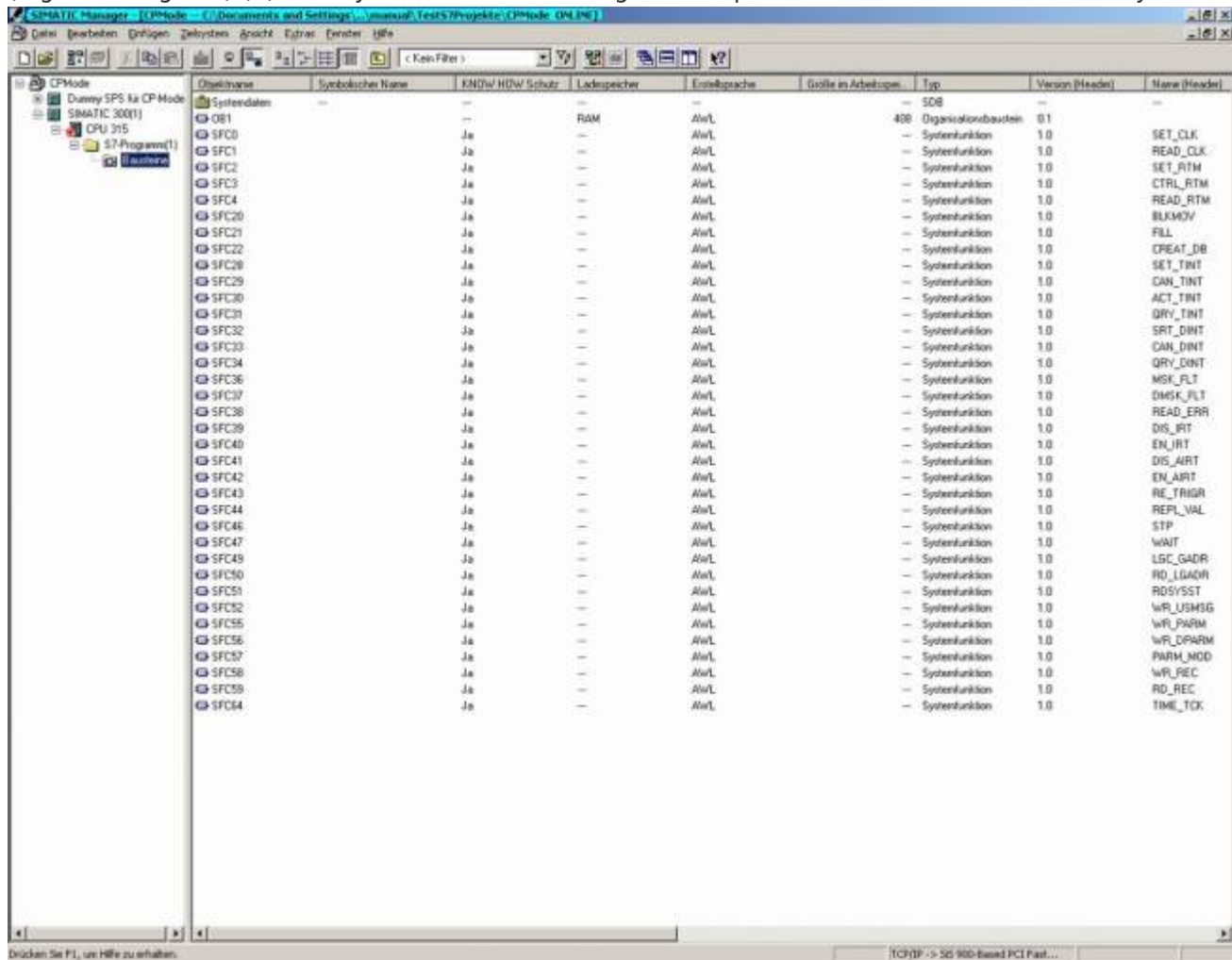
As soon as the blocks are shown, right beside the device explorer, the CP communication with the PLC over the S7-LAN module is established.

HINT: It is not possible to establish a normal communication and a CP communication at the same time. If you do so only the CP mode should work properly because it has a higher priority.

6.2.10.2 Direct communication with Step - 7 © v5.3 (S7-LAN-project)
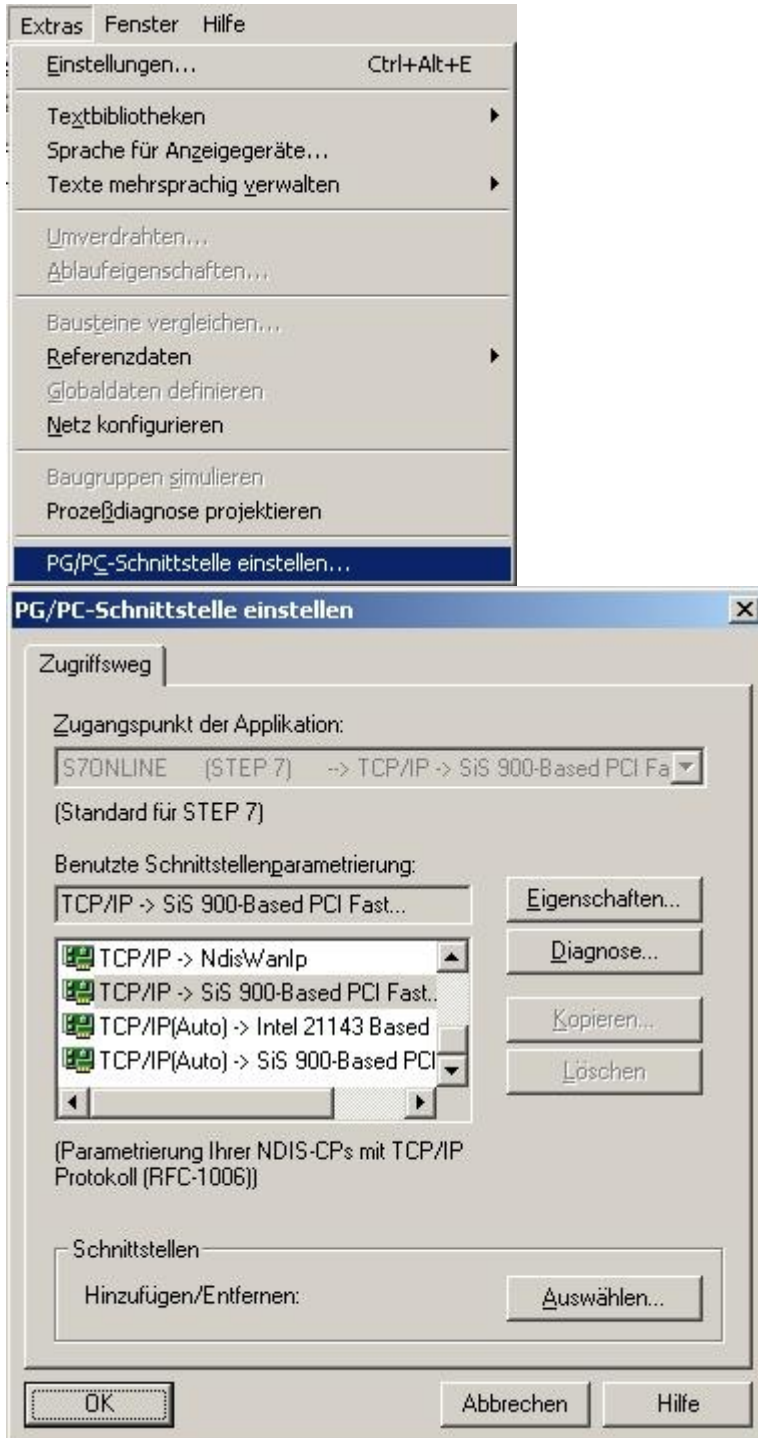
Another possibility is to keep including a S7-LAN-project. This project will be delivered with the S7-LAN as a zip file and must dearchived on Step 7. It is currently not possible to replace a CP completely.

This description is based on an existing project. For more information about creating a new project, we ask the help or the manual to use the Step 7 software.

Please be sure that you enter in the S7-LAN-module in the configuration menu the Subnet-ID of the connected bus.

Without this entry, a function is not given!

1. Start the Step - 7 © software. This can be run through the desktop shortcut or Start menu.

2. Next open the existing project and start with the menu "extras" the dialog "PG / PC interface set"

3. Select under "Used Interface". The entry "TCP / IP ⇒ XXX", where "XXX" is for the used network card. Then confirm with "OK".

In version 5.2 of the Step 7 software, you must acquire and install additional SIMATIC NET packet, otherwise the Step 7 software required entries (TCP, etc.) are not supported. The version 5.3 includes this package after the first installation.

4. Back in the main window of software STEP 7 in the menu "Extras" select "network settings". It opens a new window.

5.The window shows the available devices and busses (in our example, a PLC "CPU 315" on one MPI - Bus Station with the address "2").

6. Select in the network explorer the subnet "industrial ethernet". The window should change how the image
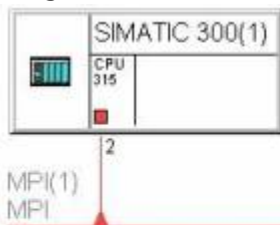
7. Now unzip the zip file included and select the location to unzip the files.

SIMATIC Manager - S7-LAN

Datei	Bearbeiten	Einfügen	Zielsystem	Ansicht	Extras	Fenster	Hilfe

Neu...	Ctrl+N
Assistent 'Neues Projekt'...	
Öffnen...	Ctrl+O
Schließen	
Multiprojekt	▶
S7-Memory Card	▶
Memory Card-Datei	▶
Speichern unter...	Ctrl+S
Löschen...	
Reorganisieren...	
Verwalten...	
Archivieren...	
Dearchivieren...	
Drucken	▶
Seite einrichten...	
1 gh (Projekt) -- C:\Programme\Siemens\Step7\s7proj\gh	
2 S7-LAN (Projekt) -- C:\Programme\Siemens\Step7\s7proj\S7-LAN	
3 S7_Pro1 (Projekt) -- C:\...\Siemens\Step7\s7proj\S7_Pro1	
4 Erreichbare Teilnehmer -- MPI	
Beenden	Alt+F4

Zielverzeichnis auswählen

```
    ⊞ 📁 s7ifc
    ⊞ 📁 S7IKX
    ⊞ 📁 S7INF
    ⊞ 📁 S7LIBS
    ⊞ 📁 S7MANUAL
    ⊞ 📁 S7MET
    ⊞ 📁 S7NGD
    ⊞ 📁 S7NVB
    ⊞ 📁 S7Proj
    ⊞ 📁 S7SKA
    ⊞ 📁 S7SYM
    ⊞ 📁 S7TIC.405
    ⊞ 📁 S7TIC.505
    ⊞ 📁 S7tmp
```

OK	Abbrechen	Hilfe

Shoot open the project with the name S7-LAN and open the network configuration.

8.Select the preconfigured S7-LAN Projekt and copy it into your own project.
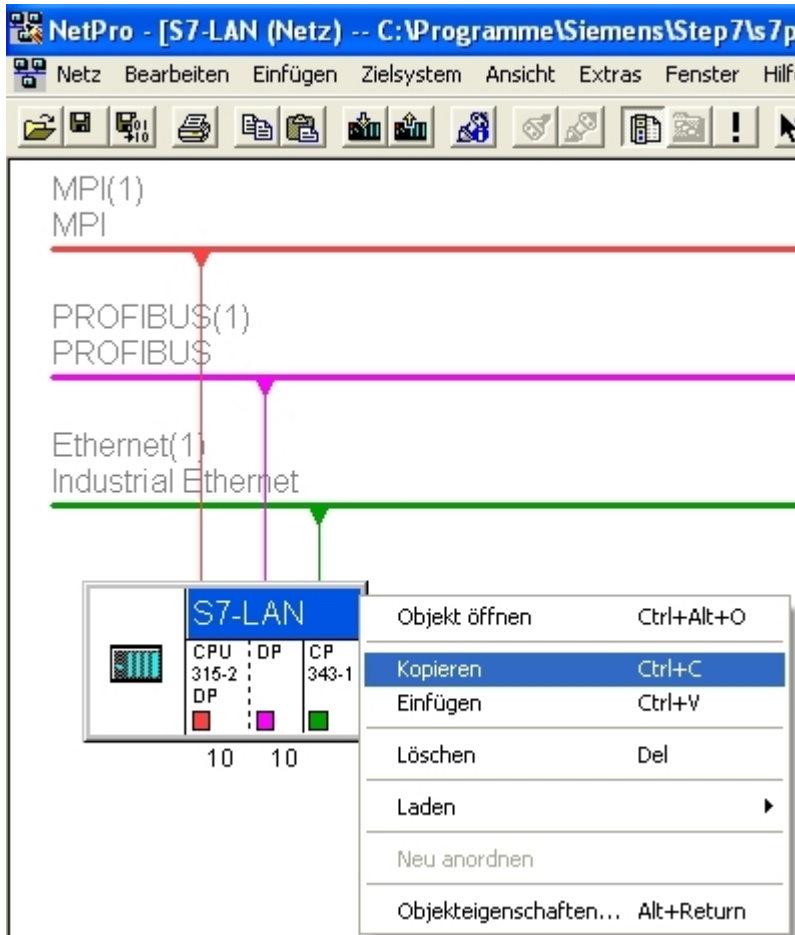
9. Here you only have to connect the S7-LAN with the network and the addresses may change according to your project.
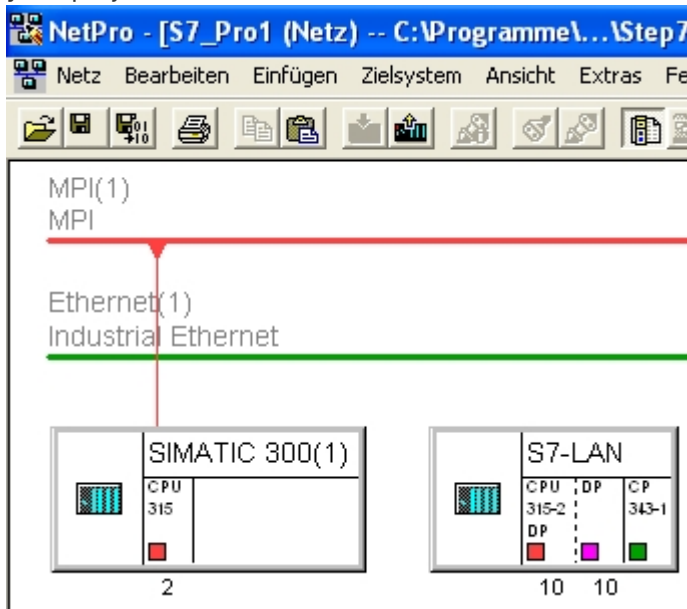
10. Double clicking on the CP, open the properties of the object. Here addresses the CP with the IP of your S7-LAN and networked it with the industrial network
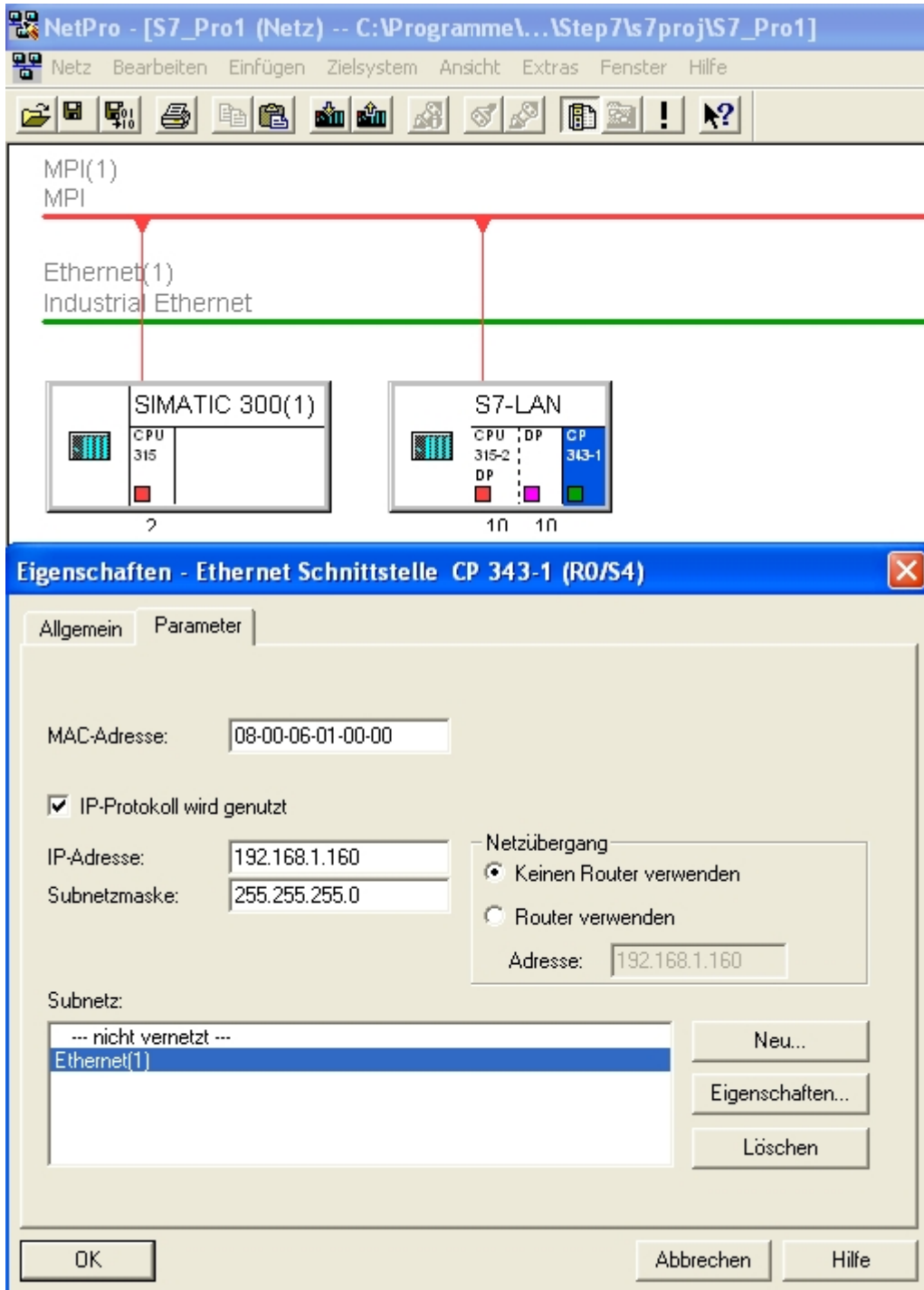
The MPI and PROFIBUS addresses must be 1 less than the address on the back wall of the CP. In this image the MPI and Profibus address is 10 therefore the address on the back panel of the CP is 11 11. You can also adjust the back panel bus in the object properties of the CP.

12. Below save and translate everything and transfer it to the PLC

In the following part of the description assumes that you are familiar with the configuration of the S7-LAN module. If you have problems in the following steps please read chapter 2.6 "Operation"

13. Now we just have to configure the S7-LAN accordingly. This is done via the web browser.Enter the IP - address of your S7-LAN module into the address bar of your browser and press "Enter".

You do not know the IP address of your S7-LAN? then you can use the PLC-VCOM software to determine the IP address. Tip: In the "Configure" dialog will display all connected devices (a PC or on the network). More on this in Chapter 7, "PLC - VCOM".

Nun öffnet sich die Startseite des S7-LAN's wo Sie nun rechts im Menübaum in die Configuration müssen

14. These are the settings that you need to do in the configuration of the en:hardware:s7:s7-lan:

- The same IP that you have given your CP in the Step7 project and the S7-subnet-ID of the net which you communicate to your real PLC
- The local station address must be the same as that of the backplane bus of your CP's in the Step 7 project

S7-LAN V2.13

- ○ Startseite
- ■ Verbindungen
- ■ Display
- ■ Optionen
- ■ Konfiguration
- ■ Passwort
- ■ Neustart

- In the target CPU must you enter the value "255" so that the S7-LAN can communicate automatically with the directly connected CPU. If you use the Software IPS7Link, please enter here the address of the CPU station which is directly connected to the S7-LAN (in our example would be "2")
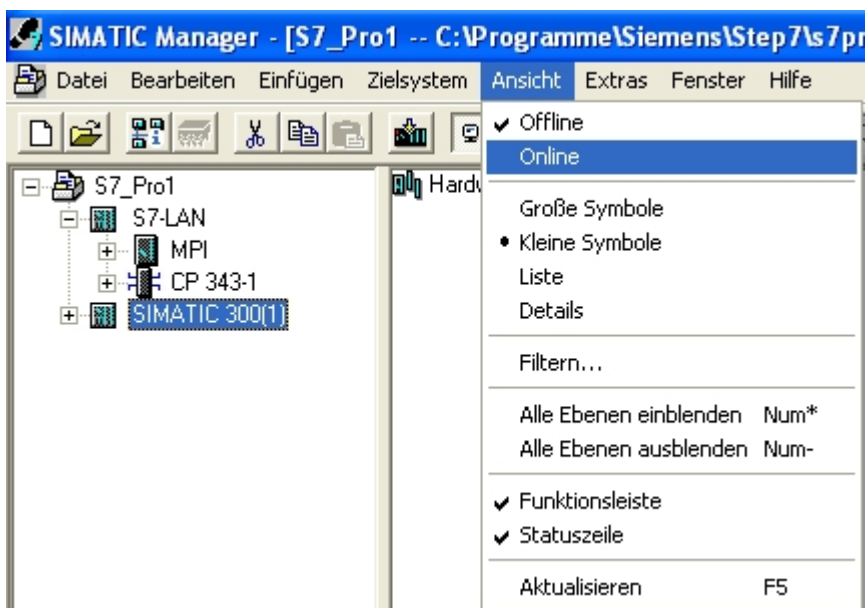
15. Back in the main program (the SIMATIC Manager). You put your real existing PLC (eg "SIMATIC 300 (1)") in the "online" - status. Just click on "Online" in the menu "View".

16. To test the communication you click on your real PLC (example: "SIMATIC 300 (1)"). A sub-branch with the corresponding CPU specification appears (example: "CPU 315-2 DP").This now has a blue icon (which stands for the run mode). Open this and the next branch "S7 - Program (1)". Finally, you click on the "blocks" to a block list of the PLC to receive.

```
S7-LAN -- C:\Programme\Siemens\Step7\s7proj\S7-LAN  ONLINE

S7-LAN                        Systemdaten    OB1        DB1
   S7-LAN                     DB10          DB13        DB20
      MPI                     DB30          DB31        DB32
      CP 343-1                DB33          DB100       DB101
   SIMATIC 300(1)             DB110         DB111       DB112
      CPU 315-2 DP            DB130         DB131       DB155
         S7-Programm(4)       DB160         DB191       DB200
            Bausteine         DB201         DB508       SFB0
                              SFB1          SFB2        SFB3
                              SFB4          SFB5        SFB32
                              SFB52         SFB53       SFB54
                              SFB75         SFC0        SFC1
                              SFC2          SFC3        SFC4
                              SFC5          SFC6        SFC7
                              SFC11         SFC12       SFC13
                              SFC14         SFC15       SFC17
                              SFC18         SFC19       SFC20
                              SFC21         SFC22       SFC23
                              SFC24         SFC28       SFC29
                              SFC30         SFC31       SFC32
                              SFC33         SFC34       SFC36
                              SFC37         SFC38       SFC39
                              SFC40         SFC41       SFC42
                              SFC43         SFC44       SFC46
                              SFC47         SFC49       SFC50
                              SFC51         SFC52       SFC55
                              SFC56         SFC57       SFC58
                              SFC59         SFC64       SFC65
                              SFC66         SFC67       SFC68
                              SFC69         SFC72       SFC73
                              SFC74         SFC81       SFC82
```

Once the blocks of your PLC is listed, is the communication with your PLC established successfully

6.2.10.3 Direct communication with Step - 7 © v5.3 (CP 343-1)

It can be inserted instead of a S7-PLC-replacement or S7-LAN-project immediately a CP in your configured PLC to communications. Under the presuppositions that the structure of the PLC with the CP (S7-LAN) is not checked for correctness, but ignores any errors and anyway the PLC switches to RUN mode.

This description is based on an existing project. For more information about creating a new project, we ask the help or the manual to use the Step 7 software.
1. Start the Step - 7 © software. This can be run through the desktop shortcut or Start menu.
2. Now open your existing project and start using the "Tools" and "PG / PC - Setting interface …" - dialog.
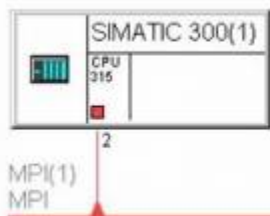
3. Select under "used Interface parametrization" the entry "TCP / IP ⇒ XXX", where "XXX" for the used network card. Then confirm with "OK".

In version 5.2 of the Step 7 software, you must additionally purchase and install the SIMATIC NET Packet, otherwise the STEP 7 software does not support the required entries (TCP, etc.). Version 5.3 includes this package after the initial installation.

4. Back in the main window of the Step 7 software, call up the menu "Tools", "Configure network". A new window appears.

5. The window shows the existing devices and buses (in our example a PLC "CPU 315" on an MPI bus with the station address "2").

6. Select the **Subnet Industrial Ethernet** in the Explorer for **Network Objects** . The window should then change as in the picture.
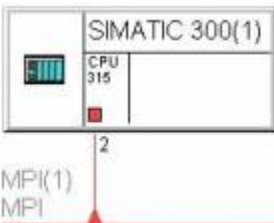
7. Now open the HW configuration of your PLC. Here you can see the menu tree under SIMATIC 300 on the right

⇒ CP-300

⇒ Industrial Ethernet

⇒ CP 343-1

⇒ The CP 6GK7 343-1EX10-0EX0 in the V1.0. Please add this to your PLC.

8. In the now populating window, you must now give the IP of your S7-LAN to the CP and connect it to Ethernet

Eigenschaften - Ethernet Schnittstelle CP 343-1 (R0/S5)

Allgemein | Parameter

MAC-Adresse: `08-00-06-01-00-01`   Bei Anwahl eines Subnetzes werden die nächsten freien Adressen vorgeschlagen

☑ IP-Protokoll wird genutzt

IP-Adresse: `192.168.1.160`
Subnetzmaske: `255.255.255.0`

Netzübergang
  ⦿ Keinen Router verwenden
  ○ Router verwenden
     Adresse: `192.168.1.160`

Subnetz:
  --- nicht vernetzt ---
  Ethernet(1)

Neu...
Eigenschaften...
Löschen

OK   Abbrechen   Hilfe

Suchen: [   ] [M↑] [M↓]

Auswahl der Netzobjekte

- ⊞ PROFIBUS-DP
- PROFIBUS-PA
- ⊞ PROFINET IO
- ⊟ SIMATIC 300
  - ⊞ C7
  - ⊟ CP-300
    - ⊞ AS-Interface
    - ⊟ Industrial Ethernet
      - ⊟ CP 343-1
        - ⊞ 6GK7 343-1EX00-0XE
        - ⊟ 6GK7 343-1EX10-0XE
          - **V1.0**
          - V2.0
        - ⊞ 6GK7 343-1EX11-0XE
        - ⊞ 6GK7 343-1EX20-0XE
        - ⊞ CP 343-1 ISO
        - ⊞ CP 343-1 PN
      - ⊞ CP 343-1 Advanced-IT
      - ⊞ CP 343-1 Lean
    - ⊞ PROFIBUS
    - ⊞ Point-to-Point
  - ⊞ CPU-300
  - ⊞ FM-300
  - ⊞ IM-300
  - ⊞ M7-EXTENSION
  - ⊞ Netzübergang
  - ⊞ PS-300
  - ⊞ RACK-300
  - ⊞ SM-300
- ⊞ Subnetze
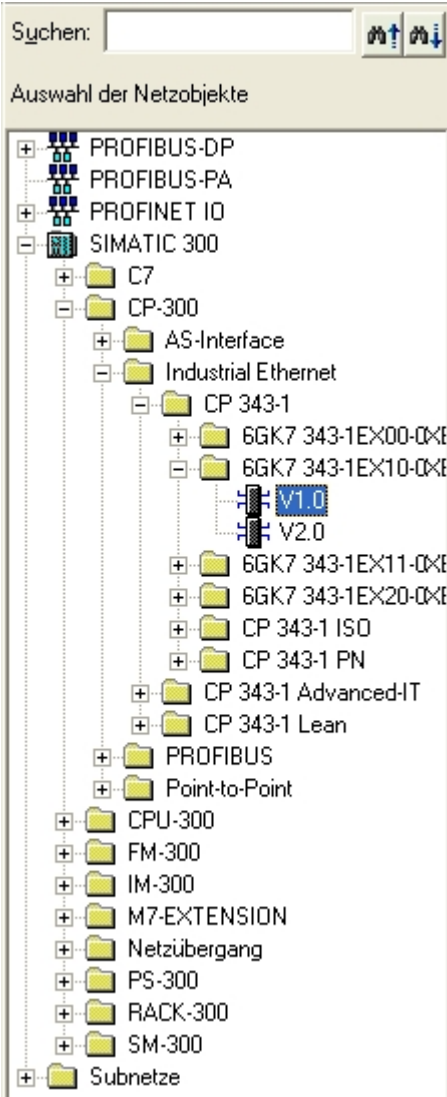
9. Now the CP has been added to your rack with the CPU. Double-clicking on the CP opens its properties. Here, only the backplane connection is to be set. The address should be 1 higher than the MPI or Profibus address on which your S7-LAN is to be plugged. In this example, the 3 should be set since the MPI interface of your CPU is addressed with 2.

Eigenschaften - CP 343-1 - (R0/S4)

Tabs: Allgemein | Adressen | Optionen | Diagnose

Kurzbezeichnung: CP 343-1

S7 CP für Industrial Ethernet ISO und TCP/IP mit SEND-RECEIVE- und FETCH-WRITE-Schnittstelle, lange Daten, UDP, TCP, ISO, S7-Kommunikation (Server), Routing und BG-Tausch ohne PG, 10/100 Mbit, Firmware V1.0

Bestell-Nr: 6GK7 343-1EX10-0XE0

Name: CP 343-1

Schnittstelle
Typ: Ethernet
Adresse: 192.168.1.160
Vernetzt: Ja   Eigenschaften...

Rückwandanschluß
MPI-Adresse: 11

Kommentar:

OK   Abbrechen   Hilfe

Eigenschaften - CPU 315-2 DP - (R0/S2)

Tabs: Uhrzeitalarme | Weckalarme | Diagnose / Uhr | Schutz | Kommunikation | Allgemein | Anlauf | Zyklus / Taktmerker | Remanenz | Alarme

☑ Anlauf bei Sollausbau ungleich Istausbau
☑ Ausgänge zurücksetzen bei Wiederanlauf
☑ Wiederanlauf sperren bei Anlauf durch Bedienung (z.B. von PG) oder Kommunikationsauftrag (z.B. von MPI-Teilnehmern)

Anlauf nach NETZ EIN
○ Wiederanlauf   ⦿ Neustart (Warmstart)   ○ Kaltstart

Überwachungszeit für
Fertigmeldung durch Baugruppen [100 ms]: 650
Übertragung der Parameter an Baugruppen [100 ms]: 100
Wiederanlauf [100 ms]: 0

OK   Abbrechen   Hilfe

10. In the network configuration, open the object properties of the CPU. There you will find under the tab **Start-up** the option **start-up for construction of the building is not the actual version** , this option must be set with the hacking.

11. Then save and translate everything and transfer the PLC into your.

Speichern und übersetzen

Übersetzen
- ⦿ Alles übersetzen und prüfen
- ○ Nur Änderungen übersetzen

[OK] [Abbrechen] [Hilfe]
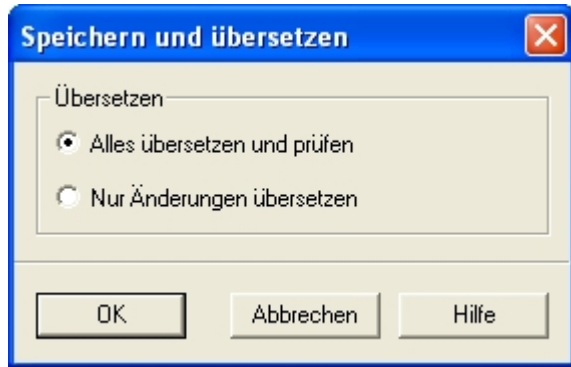
In the following part of the description it is assumed that you are familiar with the configuration of the S7-LAN module. If you have problems in the following steps, please refer to chapter 2.6 **Commissioning**
12. Now you just have to configure the S7-LAN accordingly. This is done via the web browser. Enter the IP address of your S7 - LAN module in the address bar of the browser and confirm with **Enter** .

You do not know which IP address your S7 - LAN has? Then you can use the PLC - VCOM software to determine this IP address. Tip: In the **Configure** dialog, all connected devices (on the PC or the network) are displayed. For more information, see chapter 7 **PLC - VCOM** .
Now open the start page of the S7-LAN where you have to go to the right of the menu tree to the configuration.
13. You must set up everything in the
configuration of the en:hardware:s7:s7-lan:

- The same IP that you have given to your CP in the Step 7 project and the S7 subnetwork ID of the network with which you are addressing your real PLC
- The local subscriber address, which must be the same as the backplane of your CP's in step 7 project

S7-LAN V2.13

- ○ Startseite
- ▪ Verbindungen
- ▪ Display
- ▪ Optionen
- ▪ Konfiguration
- ▪ Passwort
- ▪ Neustart

- You should enter **255** for the target CPU so that the S7-LAN automatically connects to the directly connected CPU. If you are using the IPS7Link software, please enter the station address of the CPU, which is connected directly to the S7 - LAN (in our example the **2**).
  14. Back in the main program (the SIMATIC Manager), Place your existing PLC (**SIMATIC 300 (1)**) in the **Online** state. To do so, click **Online** in the **View** menu.
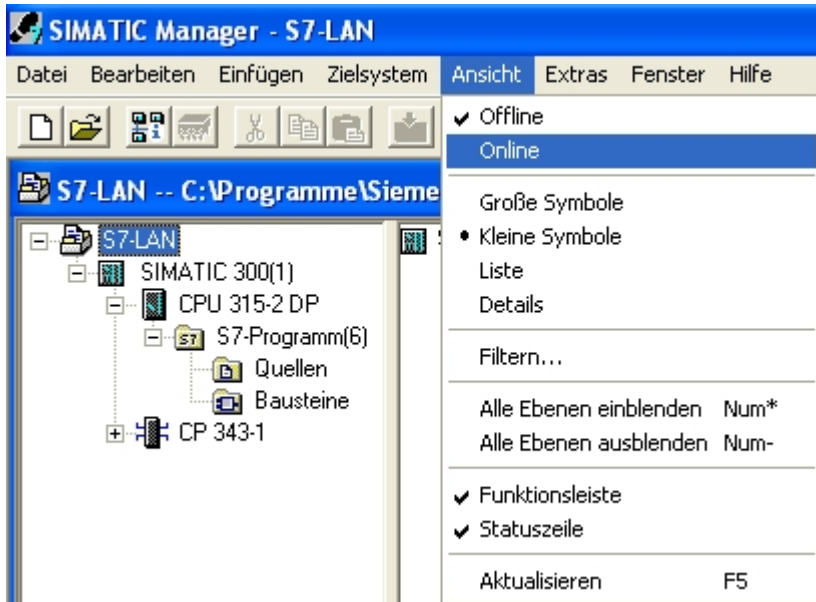
15. To test the communication, click on your real PLC (example: **SIMATIC 300 (1)**). A branch with the relevant CPU specification opens (example: **CPU 315-2 DP**). This has now a blue symbol (which stands for the run mode). Open this and the next branch **S7 program (1)** . Finally, click **Blocks** to get a block list from the PLC.
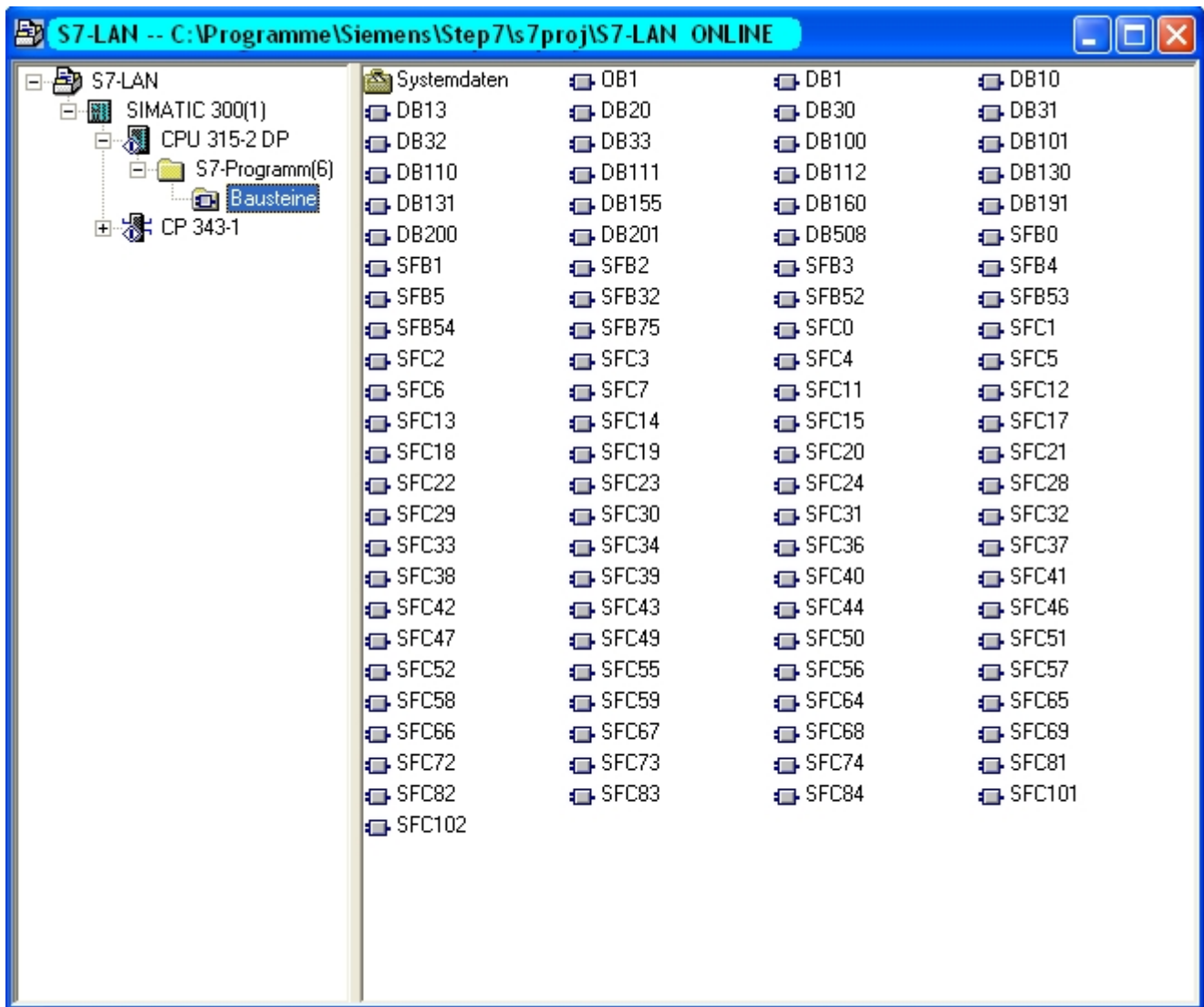
As soon as the blocks of a PLC are listed, communication with your PLC is successfully established

6.2.11 Direct communication with ProTool / Pro v6.00 (CP – Mode)

1. Creating a new project

Start the ProTool/Pro CS software and click on File ? New. . A assistant will appear for entering the project settings.(for more Information about creating projects with ProTool/Pro CS v6.00 read the manual of the developer).

2. Choosing a destination device

The destination device must support the Ethernet interface.

3. Choosing a PLC

Enter a typical PLC Name and select the used PLC type (e.g. „SIMATIC S7 300/400 V6.0").

After choosing the PLC type click on parameter.

OP-Parameter

Interface

If the desired destination device supports "Ethernet" you can change the interface to "Ethernet".

Protocol

Communication is established by using the IP protocol.

Address
Enter the IP address of your computer.

Subnet mask
Enter the subnet mask of your computer.

Routing
Activate this check box to reach members outside your subnet. Requires that the construction components of the station supports routing (CPUs und CPs). More information you will get in the "STEP 7 Online Help".

Parameter of the partner

Address
Enter the IP Address of the S7-LAN module which is plugged onto the PLC.

Slot
Enter the slot number of the destination CPU

Construction components
Enter the construction components.

Cyclic operation
If this check box is active the PLC optimizes the operation between ProTool/Pro Runtime and the PLC. This is used to get a better performance. For Parallel operations of more than one computers the cyclic operation check box should be deactivated.
Confirm the configuration with "OK".

4. Complete the project
Click on "Next" and then on "Complete" to end the project start configuration.
5. Alternative configuration
If you select the group "Controls" in the left part of the window you can see the available PLCs in the right part. Right click with the mouse button on the PLC and select "Properties" in order to get back to the configuration dialog we used in the project configuration at the beginning. At least to get there you have to click on "Parameter".
6. Transfer Properties
In the file menu click on „Transfer" - „Properties…" and the following dialog appears.
Choose "Ethernet" so that the connection can be established in the CP mode. If "Ethernet" is activated you can enter the "IP address" of the destination device (S7-LAN).
Confirm with "OK" to complete the configuration.

7. Configuration is complete

Now you can transfer the project.

6.2.12 Coupling of two PLC devices over the network

By coupling two PLCs it is possible to transfer data from one PLC to the other one. Can be joined two S5/S7 PLCs or one S5 with a S7. Per each S7/MPI-LAN are up to 8 connections possible, per S5 Gateway up to 2. For this example one S7-PLC was coupled with one S5-PLC. The interface between S7 and S5 are a S7/MPI-LAN and a S5-Gateway.

6.2.12.1 S7-LAN Configuration

Enter here the IP address of your S7-LAN module in the address bar of the browser and confirm with **Enter** . Call up the configuration page S7 at S5 / S7 Bridge. The following window appears.

S7 to S5 / S7 license must be purchased. Otherwise you will see the note that you have not purchased.

Connection type

Type	Description
AUS	Connection not used
DB-Aktiv (*1)	Establishes the connection actively via TCP
DB-Passiv (*1)	Wait for another device to connect
S7-Aktiv (*2)	Establishes the connection actively via TCP
S7-Passiv (*2)	Wait for another device to connect

(* 1) DB Use the Active and Passive function blocks FC 55 (send) and FC 56 (receive) to exchange data

(* 2) S7 Active and passive use a bridge function for data exchange.

Station number:

Defines the local communication partner of the connection. These stations must be in the same MPI bus as the S7 module. **Data block:**

Determines the data block used for the communication.

Data word:

Determines the memory area used for communication. At least 32 bytes per connection.

IP – Address Partner:

Enter the IP address of the partner with whom a connection should be established. You can specify an S5 gateway here to establish communication with an S5 PLC.

TSAP:

In order to uniquely identify the connection, the transport service access point must be specified here. Both devices must have the same TSAP. Maximum of 16 characters.

Polling time:

The module must constantly read from the partner. The polling time can be increased to reduce the load on the network. The specification is in 10ms units. With 20 units, the communication module of the counter is read in 200 ms. Note the higher this value is, the longer the communication can last.

If you want to establish a connection with an S5 gateway, please note that the S7 module should always be the Active Partner (DB Active Set for connection type). Furthermore, the polling time should be 60 - 100 units because the PG port can not send fast enough.

6.2.12.2 Data exchanging with the help of the data blocks

⇒ Structure of the communication data block

Adresse	Name	Typ	Anfangswert	Kommentar
0.0		STRUCT		
+0.0	RX	STRUCT		Empfangsfach für Daten
+0.0	TYP	WORD	W#16#0	Datentyp, unteres Byte auf E,A,M,T,Z,D
+2.0	DBNR	WORD	W#16#0	Datenbausteinnummer Quelle (bei Typ = 'D')
+4.0	START	WORD	W#16#0	Anfangsadresse in Bytes im Datenbaustein (Typ = 'D') oder Operandennummer
+6.0	LEN	WORD	W#16#0	Länge des Faches
+8.0	reserved	WORD	W#16#0	für spätere Anwendung reserviert
=10.0		END_STRUCT		
+10.0	TX	STRUCT		Sendefach für Daten
+0.0	TYP	WORD	W#16#0	Datentyp, unteres Byte auf E,A,M,T,Z,D
+2.0	DBNR	WORD	W#16#0	Datenbausteinnummer Ziel (bei Typ = 'D')
+4.0	START	WORD	W#16#0	Anfangsadresse in Bytes im Datenbaustein (Typ = 'D') oder Operandennummer
+6.0	LEN	WORD	W#16#0	Länge des Faches
+8.0	reserved	WORD	W#16#0	für spätere Anwendung reserviert
=10.0		END_STRUCT		
+20.0	TXLEN	WORD	W#16#0	Die wirklich zu übertragende Datenlänge
+22.0	TXSTATUS	WORD	W#16#0	Status der Übertragung (siehe FC55/FC56 und Dokumentation)
+24.0	TXACT	BOOL	FALSE	Sendeauftrag ausführen wenn = 1
+24.1	TXERR	BOOL	FALSE	Fehler bei Ausführung aufgetreten wenn = 1
+24.2	TXDONE	BOOL	FALSE	Auftrag wurde ausgeführt wenn = 1
+25.0	TXRESERVED	BYTE	B#16#0	für spätere Anwendung reserviert
+26.0	RXLEN	WORD	W#16#0	Anzahl Bytes die gelesen wurden
+28.0	RXSTATUS	WORD	W#16#0	Status der Übertragung (siehe FC55/FC56 und Dokumentation)
+30.0	RXACT	BOOL	FALSE	Empfangsfreigabe
+30.1	RXERR	BOOL	FALSE	Fehler bei Ausführung aufgetreten wenn = 1
+30.2	RXDONE	BOOL	FALSE	Auftrag wurde ausgeführt wenn = 1
+31.0	RXRESERVED	BYTE	B#16#0	für spätere Anwendung reserviert
=32.0		END_STRUCT		

Data bytes	Access type	Description
00 – 09	Read	Receive area. At this place the data received over the network will be saved.
10 – 19	Write	Send area. At this place the data will be send over the network.
20 – 30	Read, Write	Length, status and control byte for the send or receive area.

Format von TXERRRDY und RXERRRDY

These bytes are containing the transfer status.

Bit	Status	Description
0	1	Start of the transfer (TXERRRDY).
		Receiving allowed (RXERRRDY).
1	1	An error occurred.
2	1	Transfer completed (TXERRRDY).
		Received data (RXERRRDY).
3-7	?	Reserved

Usable data types

The following values are possible with the data types TX.TYP and RX.TYP.

Wert	Type	Responsible data types
D, d	Data block	TX.DBNR, RX.DBNR
	Byte of the data block	TX.DWNR, RX.DWNR
E, e, I, i	Reception byte	TX.DWNR, RX.DWNR
A, a, Q, q	Output byte	TX.DWNR, RX.DWNR
M, m, F, f	Keeping byte	TX.DWNR, RX.DWNR
T, t	Timer	TX.DWNR, RX.DWNR
Z, z, C, c	Counter	TX.DWNR, RX.DWNR

Status values (TXSTATUS, RXSTATUS)

Status values	Description
0000h	Instruction completed
7000h	Instruction will not be processed.
80B0h	Construction component does not know the record.
80B1h	Wrong length in the parameter.
80C3h	Memory temporary used.
80C4h	Communication error.
8183h	Project planning's not available or service has not been started yet.
8184h	Data type or source data range is wrong.
8185h	Length exceeds the maximum size of the source data range or the destination data range is too small.

⇒ Function blocks

- FC 55 (S7LAN_SEND)

- FC 56 (S7LAN_RECV)

These function blocks are used to send and receive data.

6.2.13 Coupling over WLAN with WLAN-Klemme or S7-WLAN-Bridge

To support this way of communication you need an S7-LAN with firmware version V2.12 or later, or a MPI-LAN with firmware version V2.38 or later. You have to unlock the "Gratuitous-ARP" in the integrated web server.

S7-LAN V2.15   IP:192.168.1.89

- Startseite
- Verbindungen
- Display
- Optionen
○ Konfiguration
- Passwort
- Neustart

Allgemein

Name:	AW
Betriebsart:	S7-300/400 MPI ▾
Werkseinstellungen laden:	Jetzt laden

Netzwerk

DHCP aktivieren:	☐
IP-Adresse:	192.168.1.89
Subnetzmaske:	255.255.255.0
Gateway-Adresse:	0.0.0.0
Gratuitous ARP versenden:	☑

Agree the button "Send Gratuitous-ARP" and your device will send this ARP as the modul or the cable will recognize a link-state.

Only with this ARP builds the connected WLAN-Klemme or the S7-WLAN-Bridge the WLAN-connection to the notebook (for Ad-Hoc-mode) or to the WLAN-router.

6.2.14 Direct setting of a slave address to a passive Profibus-Slave

With the S7-LAN-module or MPI-LAN-cable and Step7-direct-driver V1.21 (or later) and the MPI-II-cable (only with USB) or S7-USB and Step7-direct-driver V1.22 (or later) is it possible to give a directly connected Profibus-Slave a bus-address.

Important here is that the subscriber is connected directly to the S7-interface and the external supply of 24V DC is also connected. In the Step7-direct-driver must then in the properties set that "PD/PC is only master". There is no another note in this case, you will use this function as if you are connected with your PD to the module.

6.2.15 Option NTP-Server

With this charge option you can get the current time of an time server and save it inside the project PLC-device.

This option is configurated over the WebBrowser. Open in the WebBrowser "Options" the "NTP-Server" and following issue appears:

S7-LAN V2.13   KM   IP:192.168.1.130

- Startseite
- Verbindungen
- Display
- Optionen
  - Variablen-Steuern
  - S7-Gateway
  - Watchdog
  - NTP-Server
- Konfiguration
- Passwort
- Neustart

Zustand

- Die Zeit wurde erfolgreich mit dem Zeitserver synchronisiert am 28.02.2011 um 08:25:01 Uhr.
- Schreiben der Daten in SPS erfolgreich.

Einstellungen

☑ Automatisch mit einem Zeitserver synchronisieren

IP-Adresse Zeitserver	192.168.1.250
Zeitzone	+1:00
Automatische Sommer-/ Winterzeit Umstellung	☑
Aktualisierung in Sekunden	30
Ziel-CPU	2
Direkt in SPS schreiben	☑
Ziel-Datenbaustein	2

Speichern

English

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Agree the button "synchronize automatically with a time-server" and your device gets the time from the parameterized time-server.

In the area "Condition" the condition of the NTP-option is shown. When was the last synchronized, could you write into the PLC-device.

For that you have the following parameter:

Parameter	Definition
IP-Address timeserver	Here you have to enter the IP-Adresse of the timeserver. **Attention:** If the timeserver hasn't the same subnet, you have to enter a gateway-address in the module/cable! Don't use any timeserver outside the network. They have to be inhouse!
Timezone	Here you have to enter the difference to the GMT (**G**reenwich **M**ean **T**ime) that the recorded time inside the PLC is correct. for example: +1:00 for Germany
Automatic change from summer- to wintertime	If you need the summertime change in your PLC you have to activate this control field.
Update in seconds	Interval of the Update; here you have to enter the time duration, in which the time is read from the server and enter in the PLC-device.
Target-CPU	Here you have to enter the Bus-address of the receiver.
Write direct in the PLC	If the time should recorded direct into the PLC-device, this control field have to be activated. If this option is activated you can't do any messages in the field "Target-Datablocks".
Target-Datablocks	Here enter the datablock, in which the timeinformation should saved (ASCII-Format) for further processing.

Here an example of the datablock format:

Dataword	Definition
DW0	Day, Day for example: ʹ2ʹ ʹ8ʹ
DW2	Month, Month for example: ʹ0ʹ ʹ2ʹ
DW4 + 6	Year, Year, Year, Year for example: ʹ2ʹ ʹ0ʹ ʹ1ʹ ʹ1ʹ
DW8	Hour, Hour for example: ʹ1ʹ ʹ0ʹ
DW10	Minute, Minute for example: ʹ2ʹ ʹ8ʹ
DW12 (Bit8)	Synchronizing OK for example: 0x100

6.2.16 Option Watchdog

1. With this Option (you must buy it to use it) you could continueosly check the MPI/Profibus. The Number of detected Parity errors and Spikes are counted and saved into a 8 Bit Register. This Register could then be read from the PC or displayed by a WebBrowser. Try to use the special WebSide „WD.HTM", the following Output is displayed.

This side will refresh every second after completely loaded. The Counters are always reset to 0 when read.

2. You could also access the S7/MPI-LAN directly. Start in a Command-Shell
You could also access the S7/MPI-LAN directly. Start in a Command-Shell „telnet 192.168.1.56 133" and Press <ENTER>.
Telnet will establish a connection to the S7/MPI-LAN with the IP-Address 192.168.1.55 and on Port 133 (Statistic Service), a blank screen is displayed:

```
Telnet 192.168.1.55
```
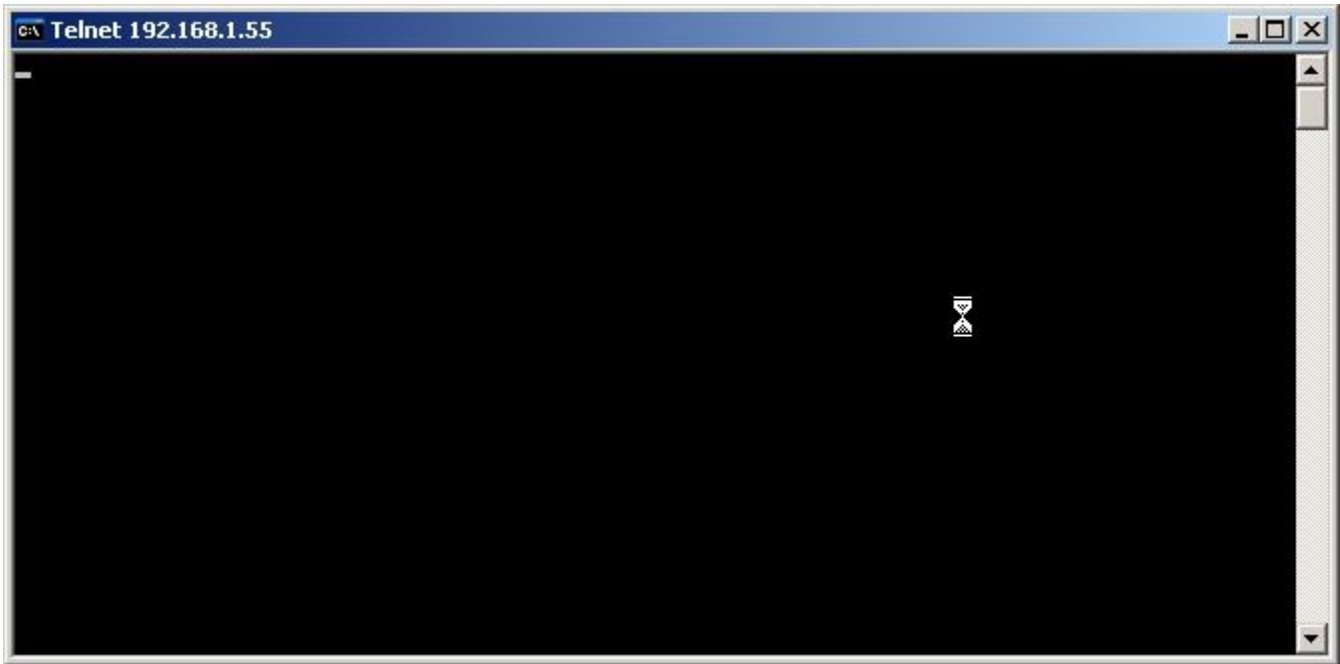
3. The S7/MPI-LAN sends only data when something is recieved on the open TCP/IP Socket on Port 133 (regardless of the length).

Press now the <ENTER>-Key several times, then the S7/MPI-LAN will response with some data:

```
Telnet 192.168.1.55

000235ù
000018↕
000011

000012

000039'
000001☺
000002☻
000003♥
000004♦
000001☺
```
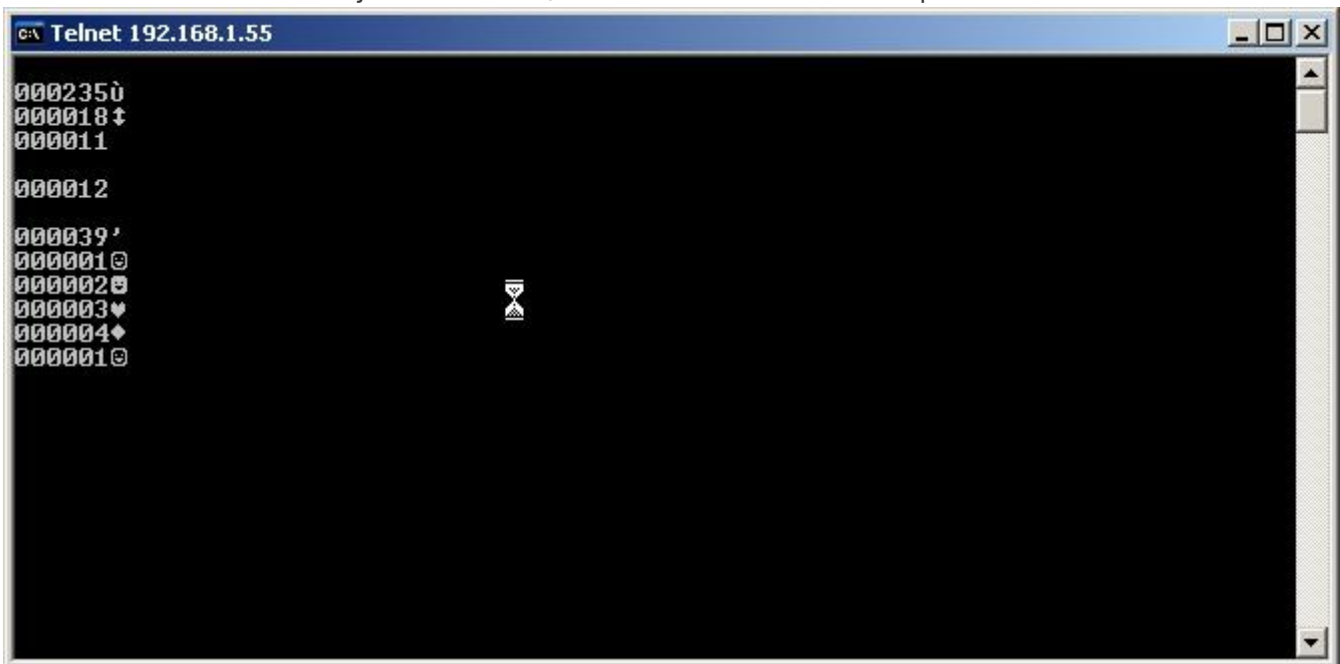
4. The Structure of the recieved data is descriped in the next table:

Data	Description
30h	Parity – Counter as ASCII-Text, including leading Zeros and ending ,\0' here „001
30h	
31h	
00h	
32h	Spike - Counter as ASCII-Text, including leading Zeros and ending ,\0'
35h	
35h	
00h	
01h	Binary Parity - Counter (8 Bit)
FFh	Binary Spike - Counter (8 Bit)

5. On the product website is also a console-application including source available which shows an example of access to S7/MPI-LAN.

```cpp
//WDTest.cpp : Defines the entry point for the console application.
#include stdafx.h
#include stdafx.h

typedef struct {

   unsigned char ucASCIIParity[4]; //Number of parity errors since last query
   //3 Digits with final '\0'
   unsigned char ucASCIISpikes[4]; //Number of detected spikes since last query
   //3 Digits with final '\0'
   unsigned char ucBINParity; //Binary value of the number of parity errors
   unsigned char ucBINSpikes; //Binary value of the number of spikes
} S7LANINFO;

int main(int argc, char* argv[])\\ {

   int main(int argc, char* argv[])
   {

      SOCKET sS7LAN;
      DWORD dwTimeout = 1000L; // 1 second Timeout
      int NaggleOn = 1;
      struct sockaddr_in sS7LANAdr;
      struct linger sLinger;
      S7LANINFO sInfo;
      WSADATA sWSAData;

      printf("S7LAN Watchdog Test V1.00\n\n");
      memset(&sInfo,,sizeof(sInfo));

      if (WSAStartup(MAKEWORD(1,1),&sWSAData) != ) {
        printf("WSA Startup faulty => Cancel\n");
        return();
   }

   sS7LAN = socket(AF_INET, SOCK_STREAM, ); //0
   if (sS7LAN != INVALID_SOCKET) {

      // set Send/Receive timeout
      setsockopt( sS7LAN, SOL_SOCKET, SO_SNDTIMEO,(char *)&dwTimeout, sizeof(dwTimeout));
      setsockopt( sS7LAN, SOL_SOCKET, SO_RCVTIMEO,(char *)&dwTimeout, sizeof(dwTimeout));

      // Naggle-Algorithms off
      setsockopt(sS7LAN, IPPROTO_TCP, TCP_NODELAY,(char*) &NaggleOn, sizeof(NaggleOn));

      sS7LANAdr.sin_family = AF_INET;
      sS7LANAdr.sin_port = htons(133); // Port 133; Statistic Service
      sS7LANAdr.sin_addr.S_un.S_un_b.s_b1 = 192; // IP-Address of S7LAN's
      sS7LANAdr.sin_addr.S_un.S_un_b.s_b2 = 168;
      sS7LANAdr.sin_addr.S_un.S_un_b.s_b3 = 1;
      sS7LANAdr.sin_addr.S_un.S_un_b.s_b4 = 56;

      if (connect(sS7LAN, (struct sockaddr *)&sS7LANAdr, sizeof(sS7LANAdr)) !=
SOCKET_ERROR) {

         // send something => Then end S7LAN answer
```

```c
            send(sS7LAN, (const char *) "A", 1, );

            // receive data from S7LAN
            if (recv(sS7LAN, (char *)&sInfo, sizeof(sInfo), )) {
            printf("Parity: %s Spikes: %s\nParity: %3d Spikes:
3d\n",&sInfo.ucASCIIParity[],&sInfo.ucASCIISpikes ],(unsigned int)
sInfo.ucBINParity,(unsigned int) sInfo.ucBINSpikes );

            } else {
            printf("Received by the S7LAN disturbed\n");
            }

            sLinger.l_linger = ;
            sLinger.l_onoff = 1; // immediately grind

            shutdown(sS7LAN,2); // Read and Write

            setsockopt(sS7LAN, SOL_SOCKET, SO_LINGER, (char *)&sLinger, sizeof(sLinger));

            closesocket(sS7LAN);

        } else {
        printf("S7LAN not reachable\n");
        }

    } else {
    printf("Socket not openable\n");
    }
    return ;

}
```

6.2.17 Settings TIA Portal

Please proceed as follows:

- configure S7-LAN
    - set IP-Address
    - set MPI-Address
    - select Protocoll (e.g. MPI 187 KB)
    - use Bus-config from PC → disable
    - Permanently on the bus → enable
    - Save config permanently

- In the TIA, a "proxy" / replacement must be created for the S7-LAN which is the gateway to the MPI bus.
- This PLC does not have to be programmed since it corresponds to the S7-LAN. The S7-LAN has an MPI / ProfiBus interface and an Ethernet interface. The IP address of the S7-LAN corresponds to the entered IP address and the entered MPI address corresponds to the set MPI address in the S7-LAN.
- Set the mains connection as shown in the figure
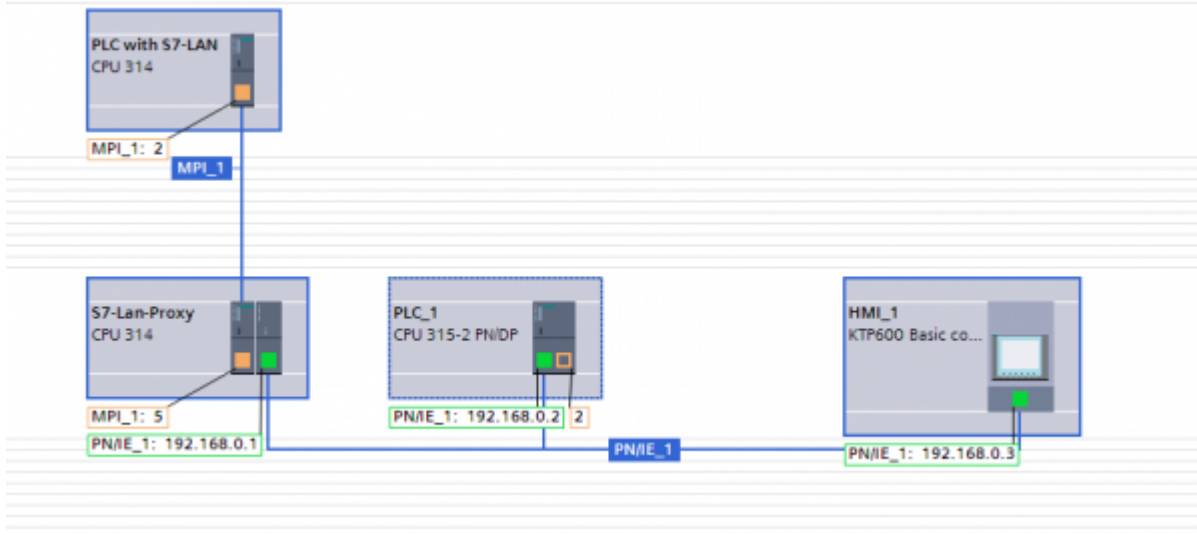
- Use the Ethernet driver from Siemens

6.2.18 S7-LAN via VPN

For full operation via VPN, you need the following ports

Port	Description
102	communication
80	Web interface from S7-LAN
292	Service port TIC, e.g. Firmware update
40501	TIC-Configuration

Since no broadcast is passed via VPN, you will not find the S7-LAN via the "undefined" search. Select "S7-LAN" from the drop-down menu and enter the IP address of the S7-LAN module.

You may have to enter a gateway in the S7-LAN so that the S7-LAN can process the data correctly.

7 Configuration

7.1 Web-Interface

1. Start the Web – Browser and enter in the address line "http://" and the IP address from the module you are using. The IP address is shown in the PLC-VCOM software. Confirm with ENTER to load the main page (Select language).
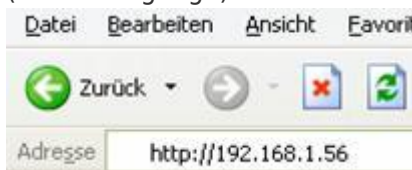
You do not know which IP address your S7 / MPI LAN has? \\Then you can use the PLC - VCOM software to determine the IP address. In the "Configure" dialog, all connected devices (on the PC or in the network) are displayed. For more information, see the chapter "PLC - VCOM".

2. In the main page select the desired language to go on with the configuration pages

3. If a password for general access is defined, you are asked for it.

On the top of the window you can see the unselected menus (gray background) and the selected menu (green background). The configurations are listed up below of the menu hyperlinks and are marked with a yellow background. The button "Save" is displayed below the configuration part and is always on the left.

7.1.1 Content

Set up the main configuration part of the cable.

Operating System:
Displays the current operating system version.

Name:
Enter the name of your MPI cable (up to 16 characters).

TS-Function:
Switches the TeleService function "ON" or "OFF".

use BUS-Configuration from PC:
Select "YES" if you want the cable to take the configuration from the PC.

Booting:
This configuration sets the mode of the cable.

The following booting modes are available:

Booting mode	Description
Automatic	Selects the used mode automatically.
MPI/PROFIBUS	Use this for the standard MPI/PROFIBUS configuration.
PPI 9K6	PPI mode with 9600 baud.
PPI 19K2	PPI mode with 19200 baud.
PPI MMaster	PPI mode. There are more than 1 Master devices in the bus.
Special	Special mode offers you the possibility to configure the used bus configuration by yourself.

Protocol-Type
Select the protocol version that should be used to communicate on the bus.

Protocol-Type	Description
Automatic	Selects the protocol type automatically.
V5.1	Faster than v5.0
V5.0 (alt)	More stable than v5.1.

Baudrate (only when Booting Special):
Set the desired speed on the bus.

Databit (only when Booting Special):
Defines how many usable bits will be transferred per block. A high value speeds up the connection.

Parity (only when Booting Special):

To make the transfer more checkable you can set the parity.

Stopbit (only when Booting Special):

Configure how many stop bits should be send per block. A high value could make the communication more stable.

7.1.2 Network

Special configurations are needed in the network. On this page they can be set more comfortable.

Allgemein	Netzwerk	RFC1006	MPI/PROFIBUS	Tuning		Anzeige S7 an S5/S7 Gateway VarSteuem KonfigVarSt Watchdog Passwort
DHCP-Client						○EIN ◉AUS
IP-Adresse (bei kein DHCP-Client oder kein DHCP-Server gefunden)						192.168.1.151
Sub-Netzmaske (bei kein DHCP-Client oder kein DHCP-Server gefunden)						255.255.255.0
Gateway-Adresse (bei kein DHCP-Client oder kein DHCP-Server gefunden) 0.0.0.0 für kein Gateway						0.0.0.0

DHCP-Client:

Since the version 1.68 you can start a DHCP client for the MPI-LAN cable. In this case the IP address of the cable is set automatically. Requires a DHCP server. If there is no DHCP server in the network the cable sets the IP address automatically to a standard value.

IP-Address:

To make the module recognizable in the network you have to set the IP address. This address consists of four numbers separated by a point. Each number can be a value between 0 and 254. It has to be unique which means that the IP address does not appear more than 1 times in the whole network.

Ask your system administrator for a usable IP address for the cable.

SubNet-mask:

The format of the subnet mask is identical to the format of the IP address. It describes the subnet (IP address range in the network) of your cable. In the picture above it is set to 255.255.255.0 which means that the cable is a member of the subnet 1 (third number of the IP address).

Gateway-Address:

For the reason that the cable can receive requests from other subnets you can define a gateway. The format is identical to the format of the IP address.

Usually the gateway is another computer or a router which routes the received packets to another subnet.

7.1.3 RFC1006

Also known as CP-Mode (CP = Communication Processor).

Allgemein	Netzwerk	RFC1006	MPI/PROFIBUS	Tuning		Anzeige S7 an S5/S7 Gateway VarSteuem KonfigVarSt Watchdog Passwort
Ziel-CPU						255
S7-Subnetz-ID						0000-0000
Busparameter						Konfig ▼
Zustand						RFC1006 AUS
0:keine TCP/IP-Verbindung nicht im MPI-Bus 1:keine TCP/IP-Verbindung nicht im MPI-Bus 2:keine TCP/IP-Verbindung nicht im MPI-Bus 3:keine TCP/IP-Verbindung nicht im MPI-Bus 4:keine TCP/IP-Verbindung nicht im MPI-Bus 5:keine TCP/IP-Verbindung nicht im MPI-Bus 6:keine TCP/IP-Verbindung nicht im MPI-Bus 7:keine TCP/IP-Verbindung nicht im MPI-Bus						

Destination-PLC:

Enter the PLC number of the device you want to communicate with directly. The value 255 defines that the MPI-LAN cable takes the PLC it is connected with.

S7-Subnetz-ID:

This ID marks the used bus unique. Enter the S7-Subnet-ID of the bus where the MPI-LAN cable is connected with.

Busparameter:

You could choose if at connection start the BUS-Parameter are determined automaticaly or if the configuration from the S7/MPI-LAN is used (See MPI/PROFIBUS). The Automatic is only possible when one of the PLC's is cyclic distributing the Bus - parameters.

State:

In this bloc you see if at minimum one RFC1006 communication is active and on a per channel basis the connected IP-address and PLC. Errors are also displayed here.

7.1.4 MPI/PROFIBUS

The MPI/PROFIBUS needs specific configurations, too. This configurations are listed up on this page.

Baudrate:

Sets the speed of communication. Alternatively you can set it to the option "From PC" (takes the configuration from the PC) or "Automatic" (selects the baud rate automatically).

Highest Station Address:

Enter the maximum station address. A high value slows down the communication.

Local Station Address:

Enter the station address of the cable. This number must be unique and has to be smaller than the number in the Highest Station Address field.

Profile:

Select "Standard" to use the standard PROFIBUS mode. "DP" (Decentral Peripherie), "DP/FMS" (Field Message System) and "MPI" (Multi Point Interface) are deviations of the PROFIBUS standard.

7.1.5 TUNING

In this dialog some functions are inserted which could not be inserted in the other dialogs.

Set to Default:

The configuration of the S7/MPI-LAN is erased and set to default. There will be an Query to acknowledge the erase, keep in mind that the IP-address of the S7/MPI-LANs is changed to the default-address 192.168.1.56 and additionally the DHCP-Client is activated.

Change language of WebSide to:

Click on the link to change the used language of the WebSide to German.

Restart:

The S7/MPI-LAN is restarting straight after the receive of the click, so no response is possible to send.

7.1.6 Display

In this Dialog you could remotely access the Menü of the display. The usage is exactly the same as when you are using the built in Keyboard. With „Display" a refresh of the LCD-Display is done.
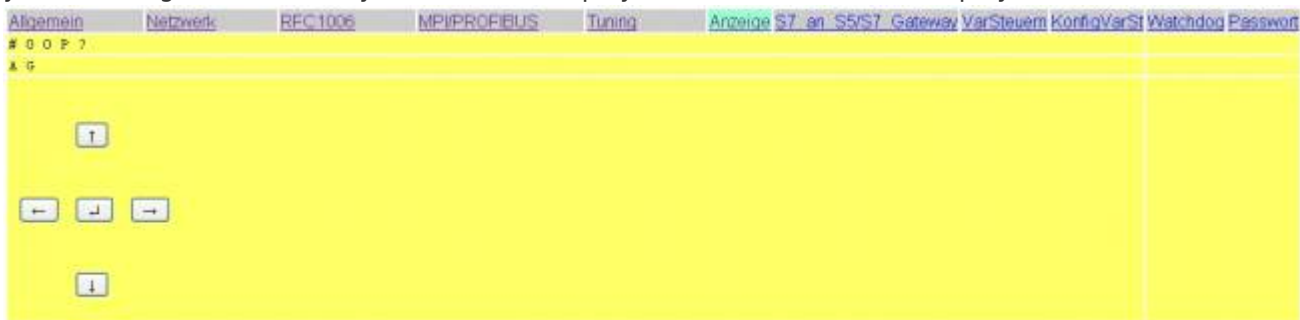
7.1.7 S7 to S5/S7 Bridge

This configuration page makes it possible to define connections with other PLCs for data exchange. The MPI-LAN cable supports up to 8 connections.

HINT: You have to buy the S7 on S5/S7 license to see this page. Otherwise there will be a page with the notice that you haven't bought the license.

Allgemein	Netzwerk	RFC1006	MPI/PROFIBUS	Tuning	Anzeige	S7_an_S5/S7_Gateway
Verbindungstyp	Stationsnummer	Datenbaustein	Datenwort	IP-Adresse Partner	TSAP	Pollzeit
AUS	255	65535	65535	255.255.255.255		65535
AUS	255	65535	65535	255.255.255.255		65535
AUS	255	65535	65535	255.255.255.255		65535
AUS	255	65535	65535	255.255.255.255		65535
AUS	255	65535	65535	255.255.255.255		65535
AUS	255	65535	65535	255.255.255.255		65535
AUS	255	65535	65535	255.255.255.255		65535
AUS	255	65535	65535	255.255.255.255		65535

Connection-type

Type	Description
OFF	Connection is not used.
DB-Active (*1)	Establishes the connection by using the TCP protocol.
DB-Passive (*1)	Waits until another device establishes the connection with it.
S7-Active (*2)	Establishes the connection by using the TCP protocol
S7-Passive (*2)	Waits until another device establishes the connection with it.

(*1)DB Active and Passive are using, for data exchange, the function block FC 55 (send) and FC 56 (receive).

(*2)S7 Active and Passive are using for data exchange a special bridge function.

Station-number:	Defines the locale communication partner. This station must be in the same MPI bus as the MPI cable.
Data-block:	Determines the data block which is used for communication.
Data-word:	Determines the memory range which is used for communication. At least 32 byte for each connection.
IP - Address Partner:	Enter the IP address of the partner which should be connected with the MPI cable. You can enter the IP address of a S5 – Gateway to establish a connection to an S5 PLC.
TSAP:	Every connection must be unique. To identify a unique connection you have to enter the Transport Service Access Point. Both devices must have the same TSAP. Length must not exceed 16 characters.
Poll time:	The cable has to read data frequently from the partner. To minimize the traffic on the network you can rise up this poll time. Every unit delays the polling for 10 milliseconds. For example 20 units delay the module to read every 200 milliseconds from his partner. Notice that a high value slows the communication down.

If you would like to establish a connection with a S5 Gateway you should set the cable to be the active partner (setting DB Active as connection type).

Also be sure to set the poll time between 60 and 100 units because the PG port cannot send data faster.

7.1.8 VarModif

With this Option you could access up to 16 variables of PLC's which are connected on the same MPI/Profibus as the S7/MPI-LAN. In the Demo version is only a single operand possible.

If a password for VarModif defined, you encounter a password check at access to this Dialog, if the password is wrong or not inserted the modification of operand-values is not permitted.

With the Button on the bottom of values you could reread the status value. If the PLC is not accessible or the operand could not be read the Text is colored red and displayed a corresponding error message.

According to the Display format the Modify value is inserted, erroneous inputs are ignored and not transferred to the PLC. The transfer of the value is started with the buttons "→" on the right side. Only one of the modified value is transferred,

After transfer the status values are reread and displayed.

Operand	Format	Input	Description
MB40	Hexadecimal	1234	Too much digits (Byte=2digits)
		1 2	Spaces are ignored. Value is then 12h and will be transferred to PLC
		Ab	Capitalized/little is ignored, here the value ABh will be transferred to PLC
		AG	Last Char is no hexadecimal digit
MD40	Hexadecimal	1234	The value 00001234h is transferred to PLC
MB40	Binary	11110001	Will be transfer to PLC
		12110011	2 is no binary digit
		1111111111	Too much digits
		1111 0010	Spaces are ignored, Value is transferred to the PLC
M40.3	Binary	1	Bit is set in the PLC
MW40	Binary	111	The value 0000000000000111 is transferred to the PLC
MW40	Decimal	1234	The decimal value 1234 is transferred to the PLC
		1a2B	No decimal digit (‚a',‚B')
		012	The value 12 is transferred to the PLC
		123456	Too much digits
T5	Timer	123.2	The timer-value 001.3 is transferred to the PLC
		1.3	The timer-value 001.3 is transferred to the PLC
		1,3	Error, Comma instead of a dot
		1234.2	Too much digits before the dot
		123.5	Wrong measure (0-3)
		A22.3	Erroneous digit
Z12345	Counter	123	The Counter-value 123 is transferred to the PLC
		A12	Erroneous digit
		1	The counter-value 001 is transferred to the PLC
		1 2 3	Spaces are ignored, value 123 is transferred to PLC

7.1.9 KonfigVarModif

In this dialog the operands for „VarModif" are configured. When you choose this dialog a possible defined configration password is checked.

With „cyclic View in seconds" the reread of the status values of the operands is done automatically.

The value is in seconds, 0 up to 255. The value 255 is the same as 000.

The reread of the status value is only started by the button below the status value or at seletion of "VarModif".

With the button „Save" the configured data is written in a permanent flash memory.

You could select the used PLC, the address of the operand and the display format on a line-by-line basis.

If one of the parameters are missing, this line is not used or displayed in „VarModif".

The PLC could be 1 to 126.

The following operands are possible, you could also input the addresses in the German format:

Operand	Description
M12345.1 F12345.1	Flagbit
MB 12 FB 12	Flagbyte, Spaces are ignored
MW1 FW1	Flagword
MD100 FD100	Flagdoubleword
E12345.1 I12345.1	Inputbit
EB 12 IB 12	Inputbyte, Spaces are ignored
AW1 QW1	Inputword
ED100 ID100	Inputdoubleword
A12345.1 Q12345.1	Outputbit
AB 12 QB 12	Outputbyte, Spaces are ignored
AW1 QW1	Outputword
AD100 QD100	Outputdoubleword
T12345	Timerword
12345 C12345	Counterword
DB12345.DBX12345.0	Data-Bloc-bit
DB 12345.DBB 12345	Data-Bloc-byte
DB 12345.DBW 12345	Data-Bloc-word
DB 12345.DBD 12345	Data-Bloc-doubleword

The operands could be displayed in the following display-formats, Binary operands (F123.4) are always displayed in binary, regardless the display-format.

Display format	Description
Hexadecimal	digits 0-9 and Chars a-f and A-F, Spaces are ignored
Decimal	Digits 0-9, Spaces are ignored
SIMATIC Timer	max 3 BCD - coded digits 0-9 before the dot and one digit 0-3 (0=10ms,1=100ms,2=1s,3=10s) after the dot

Display format	Description
Counter	Max. 3 BCD – coded digits 0-9
Binary	Digits 0-1,max. amount of digits due to the operand-size

7.1.10 Watchdog

Here you can monitor your MPI / Profi-BUS for parity errors and spikes. These are counted up into a counter and output as decimal values.

After the page is fully loaded and the errors are read, the counters are reset.

7.1.11 Password

In this dialog the passwords are configured. All passwords could be maximal 4 chars wide. To Display this dialog, the needed password must be checked. According the configuration the higher prior password is denied:

Passwords	Will Check password
none defined	none
General-Access	General-Access
Variable Modif	Variable Modif
Configuration Variable Modif	Configuration Variable Modif
General-Access + Variable Modif	Variable Modif
General-Access + Configuration Variable Modif	Configuration Variable Modif
Variable Modif + Configuration Variable Modif	Configuration Variable Modif
General-Access + Variable Modif + Configuration Variable Modif	Configuration Variable Modif

The configuration of the passwords are done in normal text-mode, if the usage of a passowrd is activated but the password is empty, saving the confioguration will deactivate the password (on the upper image the password for Variable Modif will be DEACTIVATED on saving)

The general Access-Password is checked at access to the WebSides of the Device right after the Language Selection:

On all HTML-Pages will then be an additional link „Log out" on the top right corner, which could erase ALL the inserted passwords. On the next access to the HTML- Pages the password is then again checked.

Password	Description
General Access-password	Checked on the first access to HTML-Pages after the language selection
Password for Variable Modif	Checked when „VariableModif" is selected, if the password is correct the modification of variavles is possible. If the password is wrong only the status values of the operands are displayed, the modification is locked.
Password for Configuration of Variable Modif	Checked when „ConfigVarMod" is selected

7.1.12 Ports

Please check that these ports are open (in/out) in your firewall on the PC or external!

Port	Type	Description
40501	UDP	Configuration MPI- / S7-LAN
64738	UDP	Communication port
291	UDP	NOT-Loader
292	UDP	Firmware-Update TIC
80	TCP	Web browser
102	TCP	RFC1006, CP-Mode
64738	TCP	Communication port (MPI)

7.2 Web interface from V2.10 (S7-LAN) / V2.36 (MPI-LAN)

Start your Web browser and enter the IP address of the module in the address bar with the preceding "http://". Confirm with the <ENTER> key to load the Main page (Language selection).

You dont know which IP address has your S7/MPI-LAN?
Then you can use the PLC - VCOM software to determine the IP address. In the dialog "Configure" are displayed all connected devices (on the PC or on the network). See chapter 10-PLC-VCOM.

7.2.1 Main page

This is a purely informational site that always appears at the beginning without password query because nothing can be changed.

S7-LAN V2.24   **Modul**   **IP:192.168.1.86**

o Startseite
■ Verbindungen
■ Display
■ Optionen
■ Konfiguration
■ Passwort
■ Neustart

Allgemein

Produktname:	S7-LAN
Version:	2.24
Name:	Modul
Seriennummer:	7091008

Netzwerk

DHCP:	Aus
IP-Adresse:	192.168.1.86
MAC-Adresse:	00:0B:F4:6C:33:40
Subnetzmaske:	255.255.255.0
Gateway-Adresse:	0.0.0.0
Gratuitous ARP versenden:	Ein

Betriebsart: S7-300/400 MPI

Profil:	MPI
Baudrate:	187K5
Lokale Adresse:	0
Booteinstellung:	MPI/PROFIBUS

Freigeschaltene Optionen

Variablen Steuern:	lizenziert
S7-Gateway:	nicht lizenziert
Watchdog:	lizenziert
NTP-Server:	lizenziert

English

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Head-line	Displays the product name, the latest version of the operating system, the name and the IP address.
Menu tree:	Here you can navigate through the settings and change the language at the bottom.
General:	This are informations about your module, such as product name, operating system version and a name you specified.
Network:	Displays the status of the DHCP mode of your module / cable. Furthermore the currently used network settings are displayed.
Bus profile:	Displays the current used bus profile. This can be detected automatically or entered manually.
Enabled options:	ZShows you the options and behind if this option is licensed to you or not.

7.2.2 RFC1006

Is also referred as CP-mode (CP = Communication Processor).

S7-LAN V2.11 **Test KM** **IP:192.168.1.151**

- Startseite
- Verbindungen
- Display
- Optionen
- Konfiguration
- Passwort
- Neustart

Bestehende RFC1006-Verbindungen

1. keine TCP/IP-Verbindung - nicht im MPI-Bus
2. keine TCP/IP-Verbindung - nicht im MPI-Bus
3. keine TCP/IP-Verbindung - nicht im MPI-Bus
4. keine TCP/IP-Verbindung - nicht im MPI-Bus
5. keine TCP/IP-Verbindung - nicht im MPI-Bus
6. keine TCP/IP-Verbindung - nicht im MPI-Bus
7. keine TCP/IP-Verbindung - nicht im MPI-Bus
8. keine TCP/IP-Verbindung - nicht im MPI-Bus

Zustand

RFC 1006: Aus

English

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Existing RFC1006 connections:

In this field is indicated, whether a RFC1006 communication is active and per channel, the associated destination IP address, as well as the addressed CPU. Also here are displayed possible errors.

No TCP / IP connection = it is no computer or PG connected to the module via RFC1006.
not in the MPI bus = the participants connected via RFC1006 does not access the MPI bus

State:
Displays whether RFC1006 is enabled in your module (ON) or disabled (off).

7.2.3 Display

In this mask it is possible to remote control the menu on the screen as in the MPI cables. Operation is the same as with the keyboard. "Upgrading" the display is new read in.

S7-LAN V2.10   Test KM   IP:192.168.1.151

- Startseite
- Verbindungen
- Display
- Optionen
- Konfiguration
- Passwort
- Neustart

```
#02P?00
!02AG03
```

↑
← ↵ →
↓
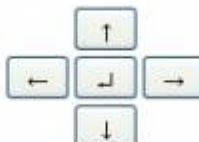
Aktualisieren

English

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First row:

#02 ⇒ Means that (in this example) 2 active stations have been found on the MPI bus

PD ⇒ Is the character recognition of the PC baud rate

Display	Description
PD	115,2k or Baud rate detection active
P?	Baud rate detection and access path active
PG	19,2k
Pg	38,4k
pG	57,6k

Second row:

! ⇒ Means how the S7-LAN is connected to the PLC.

Display	Description
!	S7-LAN is directly connected to the PLC
?	S7-LAN is not connected directly to the PLC
!	(inverse) S7-LAN is directly connected to the PLC (passive module)
?	(inverse) S7-LAN is not connected directly to the PLC (passive module)
02 ⇒	Represents the station numbers of the connected and active stations in the MPI bus

AG ⇒ The protocol type that leads the S7-LAN to the PC.

Display	Description
AG	Unknown since no communication or before v5.0 protocols.
Ag	v5.1 Protocol
ag	v5.0 Protocol

Display	Description
04 ⇒	Displays the station number of the device currently connected to the PC software (in this example station number 04).

7.2.4 Options

The menu tree will unfold and you have the following options to choose:

- control variable
- S7-Gateway
- Watchdog
- NTP-Server

The main window shows which of these options are licensed in this module and thus you can use.

7.2.4.1 Control variables

This option allows access to up to 16 variables of the controllers that are connected to the same MPI or Profibus. In the demo version only a single operand is possible.

Controlling variables can always be opened with a configured password, and the configured status values can be read out. Do you want at a configured password transferred the control values in the PLC you are asked for the password. At incorrect or missing input the controlling of the variables is not allowed.

With the "Reload" button below the status values can be triggered a reading out of the operands . If the CPU can not be reached or the specified operand could not be read, it will be highlighted in red and indicated with an appropriate error message.

Were set points assigned to each variable, then the condition is also shown in the table. As long as the condition is fulfilled should be the table with a "green" status value deposited. If the condition is not fulfilled the background color changes and by activated e-mail-delivery (only for S7-LAN) an e-mail is sent. If the condition is satisfied again, on exchange an e-mail (only for S7-LAN) will be sent again.

Update every x seconds, shows the automatic update time of the status values that was adjusted under "Configure".

Depending on the display format the control value must be indicated. Incorrect entries are ignored and are not transferred to the PLC. The transfer value of the individual is triggered by the button "OK". There is always only the value that is to transfer at the left side of this button.

After the transfer, a reading in of the status values is triggered.

Operand	Format	entry	remark
MB40	Hexadecimal	1234	To many digits (Byte = 2 digits)
		1 2	Spaces are ignored here. Value is 12h and then is transferred to the PLC
		Ab	Upper / lower case does not matter. Here, the value ABh is transferred to the PLC
		AG	Last letter is not a hexadecimal digit
MD40	Hexadecimal	1234	It is transmitted 00001234h to the PLC
MB40	Binary	11110001	Is transferred to the PLC
		12110011	2 is no binary digit
		1111111111	to many digits
		1111 0010	Spaces are ignored. Value is transferred to the PLC
M40.3	Binary	1	Bit in the controlling is set at 1
MW40	Binary	111	It is transferred the value 0000000000000111 to the PLC
MW40	Decimal	1234	The decimal value 1234 is transmitted to the PLC
		1a2B	No decimal number ('a','B')
		012	It 12 is transferred to the PLC
		123456	To many digits
T5	Timer	123.2	The value 123.2 is transferred to the PLC
		1.3	The value 001.3 is transferred to the PLC
		1,3	Error, comma instead of dot
		1234.2	Too many digits before the dot
		123.5	Unitspan wrong (0-3)
		A22.3	FFaulty letter
Z12345	Counter	123	The counter value 123 is transferred to the PLC
		A12 Faulty letter	
		1	The counter value 001 is transmitted
		1 2 3	Spaces are ignored

7.2.4.2 Configure variable controlling

In this mask, the operands for "variable Controlling" configured. In the selection this mask if you have a configured password that previously queried.

When set to "update in seconds" can the reading in the status values effected cyclically.

This specification is in seconds, value range is from 000 to 255.

A value of 255 is such as the value of 000 is triggered only on request or during the first display of the "Variable Control" screen, the status values reading in

There would be following query possible:

==	Query on equality
!=	Query on inequality
>=	Query whether equal or greater
⇐	Query whether equal or smaller
>	Query whether greater
<	Query whether small

With the button "Save", the configured data are transferred to a permanent storage.

Per line can be selected a CPU, the address and the display format.

Missing any of this information, the line "Variable Control" will be not used or displayed.

The value range of the CPU is 1 to 126

If an e-mail (**only for S7-LAN**) has to be sent on a condition change, then this is by the selest-field "E-Mail Supervision" activated.

Sender	Here is specified the e-mail address of the module (sender). Maximum 64 characters!
Receiver	Here is specified the recipient's e-mail address. Maximum 64 characters!
Server	Here is specified the IP-address of the e-mail-server, names are not possible! Maximum 15 characters separator is the "."!
Port	Here is specified the communication-port for the e-mail-server. Standard-port: 25 Range of values 0..65535!
Username	Here is specified the username of the used e-mail-account. Maximal 32 characters!
Password	Here is specified the password of the used e-mail-account. Maximal 32 characters!

To send a test-e-mail, you can call the "sm"-page in the WebBrowser:

The call of this page would be confirmed with following message:

S7-LAN V2.24   IP:192.168.1.86

- Startseite
- Verbindungen
- Display
- Optionen
- Konfiguration
- Passwort
- Neustart

Test E-Mail wird versendet!

English

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When the settings were done correctly, the user gets an e-mail with the following content:

Sie haben Ihre E-Mail Übertragung erfolgreich eingerichtet!
You have set up your E-Mail transfer successfully!

Now, the sending of the e-mails would be OK.

The following operands are possible:

(Entry can also be made in the English format)

Operand	Remark
M12345.1 F12345.1	Flag bit
MB 12 FB 12	Flag byte, spaces are ignored
MW1 FW1	Flag word
MD100 FD100	Flag double word
E12345.1 I12345.1	Input bit
EB 12 IB 12	Input byte
AW1 QW1	Input word
ED100 ID100	Input double word

Operand	Remark
A12345.1 Q12345.1	Output bit
AB 12 QB 12	Output byte, spaces are ignored
AW1 QW1	Output word
AD100 QD100	Output double word
T12345	Timer word
Z12345 C12345	Counter word
DB12345.DBX12345.0	Data block bit
DB 12345.DBB 12345	Data block byte
DB 12345.DBW 12345	Data block word
DB 12345.DBD 12345	Data block double word

The operands can be displayed in the following formats in binary. Operands (M123.4) are always displayed binary, no matter what was selected for a display format.

display format	remark
Hexadecimal	Numbers 0-9 and letters a-f as well as A-F admissible, spaces are ignored
Decimal	Numbers 0-9, spaces are ignored
SIMATIC Timer	Maximum 3 BCD - coded numbers 0-9 before the dot and a digit 0-3 (0 = 10ms 1 = 100ms, 2 = 1s, 3 = 10s) after the period.
Counter	Maximum 3 BCD - coded digits 0-9
Binary	Digits 0-1, max. Number of digits depending on operand

7.2.4.3 S7-Gateway

This configuration page is possible to establish connections with other controls for the data exchange. S7/MPI-LAN is supporting up to 8 connections.

NOTE: S7 gateway license must be purchased. Otherwise there will be the notice that you have not purchased them.

S7-LAN V2.11　　　　　**Test KM**　　　　　**IP:192.168.1.151**

- Startseite
- Verbindungen
- Display
○ Optionen
　● Variablen-Steuern
　○ S7-Gateway
　● Watchdog
- Konfiguration
- Passwort
- Neustart

Gateway-Verbindungen

		IP-Adresse	TSAP	Pollzeit	CPU	DB	Datenwort
Aus	▼	255.255.255.255		65535	255	65535	65535
Aus	▼	255.255.255.255		65535	255	65535	65535
Aus	▼	255.255.255.255		65535	255	65535	65535
Aus	▼	255.255.255.255		65535	255	65535	65535
Aus	▼	255.255.255.255		65535	255	65535	65535
Aus	▼	255.255.255.255		65535	255	65535	65535
Aus	▼	255.255.255.255		65535	255	65535	65535
Aus	▼	255.255.255.255		65535	255	65535	65535

Speichern

English

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Connection type:

Type	Description
OFF	Connection is not used
DB-Active (*1)	Establishes the connection via TCP
DB-Passive (*1)	Waits until another device establishes the connection

(*1) DB Active and Passive used for data exchange the function block FC 55 (send) and FC 56 (received)

IP-Address:	Enter the IP address of the partner to which a connection should be established. You can specify one S5 gateway to establish communication with the S5 PLC.
TSAP:	To flag the connection clearly ,here must be entered in the Transport Service Access Point. Both devices must have the same TSAP. Maximum of 16 characters.
Poll time:	The module must be constantly read by the partner. To reduce the full network utilization, here you can increase the polling time. The indication is in 10ms units. Read with 20 units in 200ms from the communication module of the opponent. Note: the higher the value is, the longer last the communication.
CPU:	Defines the local communications partner of the connection. This station must be located in the same MPI bus like the S7 module.
DB:	Determines the data block which is used for communication.
Data word:	Determines the memory range which is used for communication. At least 32 bytes per connection.
Save:	This allows you to take the gateway settings in a permanent memory.

If you want to connect with a S5 gateway, please note that the S7 module should always be the active partner (adjust DB on Active as connection type).

Furthermore should the polling time be 60 - 100 units, because the PG port can not send data fast enough.

7.2.4.4 Watchdog

Here you can monitor your MPI / Profibus bus on Parity Error and spikes. These are counted in a counter and displayed as decimal values .

The counter will be reset after the site is fully loaded and the errors have been read out.

S7-LAN V2.11   **Test KM**   **IP:192.168.1.151**

- Startseite
- Verbindungen
- Display
- Optionen
  - Variablen-Steuern
  - S7-Gateway
  - Watchdog
- Konfiguration
- Passwort
- Neustart

Parity: 0
Spikes: 0

English

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7.2.5 Configuration

S7-LAN V2.11   Test KM   IP:192.168.1.151

- Startseite
- Verbindungen
- Display
- Optionen
- Konfiguration
- Passwort
- Neustart

Allgemein

| Name: | Test KM |
| Werkseinstellungen laden: | Jetzt laden |

Netzwerk

DHCP aktivieren:	☐
IP-Adresse:	192.168.1.151
Subnetzmaske:	255.255.255.0
Gateway-Adresse:	0.0.0.0

Buseinstellungen

Bus-Konfig von PC verwenden:	☑
Baudrate:	187K5
Höchste Stationsadresse:	126
PG/PC ist einziger Master:	☐
Profil:	MPI
Lokale Adresse:	0

Booteinstellungen

| Profil: | MPI/PROFIBUS |

Für manuelle Profileinstellung

Baudrate:	Automatik
Datenbit:	8
Parität:	keine
Stopbit:	1

Für RFC1006 Verbindungen

Ziel CPU:	255
S7-Subnetz-ID:	0000-0000
Busparameter:	Konfig

Sonstiges

Protokollart:	Automatik
TS-Adapterfunktionalität:	☐
Fehlerausgabe auf Display:	☐

Speichern

English

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General:

Name:	The module hereby obtains a meaningful name and is displayed to you in the MPI-LAN Manager or PLC-VCOM. The module is not adressable by this name on the network.
Load factory settings:	Allows the S7/MPI-LAN to can be reset to factory settings. It also appears the security query. It should be noted that the IP address is adjusted to the default S7/MPI-LANs address 192.168.1.56. In addition, DHCP is enabled.

Wollen Sie das S7-LAN wirklich auf Werkseinstellung zurücksetzten?
!!! Vorsicht: IP-Adresse ist danach **192.168.1.56** !!!

Jetzt laden

Network:

In the network are necessary special settings which you can edit here.

Activate DHCP:	Since version 1.68, you can operate S7/MPI-LAN in DHCP mode. Thus, the IP address allocation is done automatically. However, there is required a DHCP server. When exists no DHCP server in the network, either is used a manually registered or the default IP address.
IP-Address:	To make the module on the network identified, it must have an IP address. This address consists of 4 numbers that are separated by dots. It must be unique on the network. Note that you can only use numbers from 0-254. Ask your system administrator for an appropriate IP address for the cable.
Subnet mask:	The format of the subnet mask is identical to the one of the IP address. It describes, in which subnet (area in the network) is the cable. In the example, 255.255.255.0 is configured. This means that the cable is located in subnet 1 (third digit of the IP address).
Gateway-Address:	You can specify the gateway here so that the S7/MPI-LAN also can process with queries from devices outside the subnet. The format of the address matches with the IP address The gateway is usually an other computer or router which to forward incoming packets to that subnet routes.
Bus:	The MPI / PROFIBUS also requires specific settings which can be configured here.
Use Bus config from the pc:	Without a "tick" the cable ignores incoming configuration data from the PC. (necessary to use "3M" and higher baud rates). If the a "tick" you set all the settings of the PC driver which are taken and it can only be the maximum baud rate of the PC driver are used.
Baud rate:	Here you can adjust the speed, at which the MPI / PROFIBUS should be communicated. Alternatively, you can select "Default PC" (adopts settings from the PC) or use "Automatic" (which chooses to use speed).
Highest station address:	Specify the maximum user address. The higher this value is the slower the communication is.
PG / PC is the only master:	The "tick" is required if your S7/MPI-LAN is the only master on the bus and all other participants must be addressed to build a communication.
Profile:	Select "Enable Default" to use the standard PROFIBUS operation. "DP" (decentralized peripherals) "DP / FMS" (Field Message System) and "MPI" (Multi-Point Interface) are variations of the PROFIBUS standard.
Local User Address:	Enter the participant address, which should used from the S7/MPI-LAN cable. This number can be present only once and must be less than the number in the field "Highest station address".
Boot Settings:	This setting specifies the mode in which to run the module / cable.

The following operating modes are available:

Operating mode	Description
Automatic	Automatically selects the mode to used
MPI/PROFIBUS	For standard MPI / PROFIBUS communication
PPI 9K6	PPI mode with 9600 baud
PPI 19K2	PPI mode with 19200 baud
PPI MMaster	PPI mode with multiple devices configured as a master in the BUS
manually	Special mode that enables you to manually configure the bus settings used

Baud rate (only when booting setting manual):	Set the desired speed on the BUS.
Data bit (only when booting setting Manual):	Indicates how much capacity should be transmitted per block. The higher the number the faster the data can be transferred.
Parity (only when booting setting Manual):	To make the data transfer can be tested you can adjust the parity.
Stop bit (only when booting setting Manual):	Configure how many stop bits to be used in the transmission. General rule the more stop bits, the more stable the connection could run.

For RFC1006 connections:

Reacting rack / slot from TSAP on BUS address:	Once this check box is enabled, for each communication, the RFC1006 slot address is read from the TSAP word and used as the destination address bus.
Target CPU:	255 means the module is always talking to the CPU on which it is plugged. If it does not you enter here the CPU number with which you want to communicate.
S7-Subnet-ID:	Is the local subnet mask of the MPI / Profibus
Bus parameter:	Here you can select whether the bus parameters is to be used with bus settings which are configured under "Config" or whether it should identify itself with the parameter "Automatic".

Other:

Protocol type:

Select the protocol version to be communicated on the bus.

Protocol type	description
Automatic	selects the protocol automatically
V5.1	faster than V5.0
V5.0 (alt)	Stable than V5.1 but slower

TS-adapter function:

Error output on screen:

Displays the error code on the display in the web browser in the case of an error. Disabled by default.

7.2.6 Password

In this mask, the passwords are configured. All passwords have up to 4 digits. To invoke this screen, the corresponding password is required. Depending on configuration, the higher priority password is required.

S7-LAN V2.11   **Test KM**   **IP:192.168.1.151**

- Startseite
- Verbindungen
- Display
- Optionen
- Konfiguration
- Passwort
- Neustart

Passwort für generellen Zugriff

☑ Passwort verwenden   (max. 4 Zeichen)

Passwort: ●●●●

Passwort wiederholen: ●●●●

Passwort für die Option Variablen-Steuern

☐ Passwort verwenden   (max. 4 Zeichen)

Passwort:

Passwort wiederholen:

Passwort zur Konfiguration der Option Variablen-Steuern

☑ Passwort verwenden   (max. 4 Zeichen)

Passwort: ●●●●

Passwort wiederholen: ●●●●

[Speichern]

English

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Put a "tick" in the password you want to set up, and for erasure the password remove this "tick". The input of the passwords are hidden with points. Confirm below to be able to exclude your password to an input error. Should the use of the password and the password is switched among them his empty then activate NO password for safety reasons.

Passwords	remark
general access password	Is queried for all menu items except the Main page and variable control.
Password for variable control	Is queried when calling "variable-control". With correct password the controlling of the operand is allowed. For wrong password is now shown the state of the variables and the control is locked.
Password for configuration StVar	This password is required when you call the Configure mask under variable control.

7.2.7 Restart

Click on "Restart" to restart your module for a configuration or possible changes in the bus again.

7.2.8 Logout

This appears after logging into your module with a defined password. Confirm this entry in order to unsubscribe from your module and to protect it against outside intervention.

7.2.9 NOT-Loader

If a problem occurs during the update, the device is located in the EMERGENCY Loader.
Possible causes:

- Firewall
- Network
- Defect in the device

Fix error:

- Download the current TIC version
- Connect the device directly to your PC. Make sure you have a network address in your PC.
- S7-LAN connection
- S7-LAN automatically obtains an IP address (its IP address + 1)
- Follow the instructions in the TIC under the menu "Extra" → "Notloader"
- The S7-LAN receives the current version

8 S7-Interface Configurator Help

Language selection
User interface
Bus configuration
Network settings
Parameterize TELEService
Index "Network"
Index "Modem"
Index "Serial Parameter"
Index "Access Protection"
Index "GSM/ISDN/SMS"
Index "Internet/Mail"
Tuning
Factory defaults
PPI Boot off
Emergency-Loader

8.1 Language selection

Select the menu Configuration to change the language permanently:

8.2 User interface

Select near Search which interfaces are searched permanently for devices.
You could choose:

Serial	All existing COM-Ports are scanned for devices
USB	Search devices which are connected by USB

LAN	Search devices on all network-cards

The button Search starts a parallel search on all selected interfaces. After selecting a updateable device the button Update gets available.
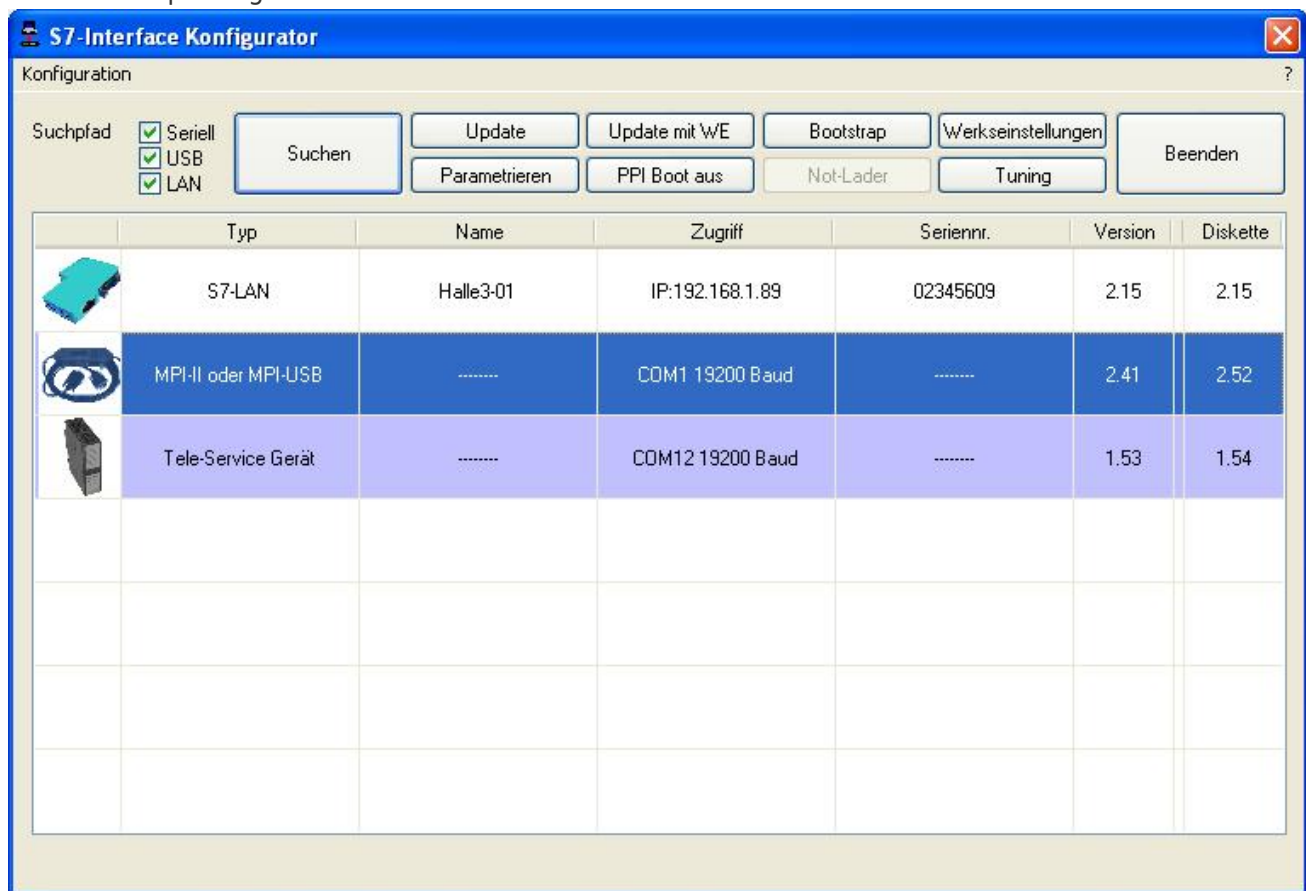
Below the buttons is a list of the found devices. In each line an image, the type of the device, name (if existing), interface, serial number (if possible) and the OS-version of the device is displayed. On the rightmost position the actual OS-version on the harddisk is displayed.

DThe background of the lines could use the following colours:

White	DThe OS of the device is up-to-date
Light blue	The OS of the device is not up-to-date, the device could be updated
Red	An error occured by accessing the device
Yellow	Update is in progress for this device
Dark blue	Selected device

Double click onto a device which could be updated shows the version-documentation of the device (only available in German):

Versionstext

- S7-USB, MPI-USB, MPI-II, S7-LAN, MPI-LAN Buskonfiguration und Bootoptionen integriert
- PPI Boot aus integriert

V 1.12 - 07.10.2011

- MPI / PPI - Profibusmodem Firmware kann jetzt aktualisiert werden
- Werkseinstellungen hinzugefügt
- Tuningbereich hinzugefügt
- Fehlermeldungen im TELEService Bereich überarbeitet
- Buskonfiguration und Netzwerkkonfiguration für MPI-LAN integriert
- Englische Sprachunterstützung für alle Bereiche
- Parametrieren wurde benutzerfreundlicher gestaltet
- LAN-Manager speichert jetzt keine Leerzeichen mehr hinter den Gerätename
- Nach dem speichern der Netzwerkeinstellungen wird eine Suche ausgeführt
- Produkte ohne Name und Seriennummer zeigen in den entsprechenden Feldern -------- an
- Hilfe überarbeitet und neue Funktionen integriert

OK

The button **Update with FD** updates the OS of the device and sets the factory default.

The button **Bootstrap** sets the firmware/configuration to factory default.

The button **Factory defaults** sets the configuration to factory default.

The button **Parametrize** activates a dialog regarding to the device:

Overview:

Device	Dialog
TELEService MPI / PPI - Profibusmodem	Parametrize TELEService
MPI/PPI	Parametrize TELEService
MPI-II MPI-USB	Choices: Bus configuration Parametrize TELEService
S7-USB	Bus configuration
S7-LAN MPI-LAN	Choices: Bus configuration Network settings

The button PPI Boot off disables the PPI boot option of a serial connected device.

The button Emergency-Loader tries to repair LAN products which are in emergency-loader mode.

The button Tuning activates a dialog for special parameters.

The button Exit leaves the application.

8.3 Bus configuration

To parametrize the connection to the device, select a device and click "Parametrize".

Regarding to the device you maybe have to click on the button Bus configuration (see parameterize table).:

param_frage.html
Here you can parametrise the following:

Use bus config for PC	Tooks the bus configuration from the PC
Baud rate	chooses the Baut rate for the cable to bus communication
Highest station address	The highest station-address in the bus (the less you use, the more performanceon the MPI-bus, must be corresponding with the configuration in the CPU's)
PG/PC is the only master on the bus	The TS-Adapter is the one and only master in the MPI-bus (adapter hast to speak to all passive clients)
Profile	Bustype of the connection
Local client address	Which local station-address is used for the TS-Adapter. Please consider that a programming device has normally the number 0, operator panel have 1, CPU's use 2, FM/CP's 3 etc. **Please**: Never use the same station-number for 2 different stations!
Protocol type	Protocol type of the connection
Boot settings	Boot setting of the connection

8.4 Network settings

Here you can set the network configuration of the selected device:

Factory default	This button sets all over the network reachable devices to factory default.
DHCP-Client active	When set the device acts as DHCP-client.
IP Address	Here you could enter the IP Address over which the device is accessed in the network.
Subnetmask	Here you could enter the Subnetmask of your network.
Gateway-Address	Here you could enter the IP address of your Gateway. Usual a router address.
Device name	Here you could change the device name.

Factory default:

DHCP-Client active	not set
IP Address	192.168.1.56
Subnetmask	255.255.255.0
Gateway-Address	0.0.0.0
Device name	empty

8.5 Parametrize TELEService

To parameterize the device, first click on the device, after that on "Parametrize".

Regarding to the device, you maybe have to click on the TELEService button.
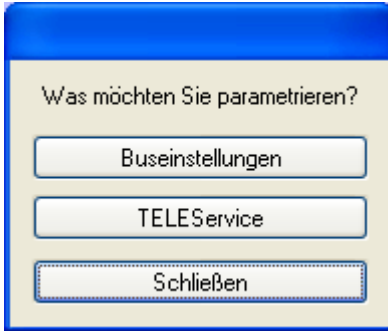
After clicking on "TELEService" a message will show up:
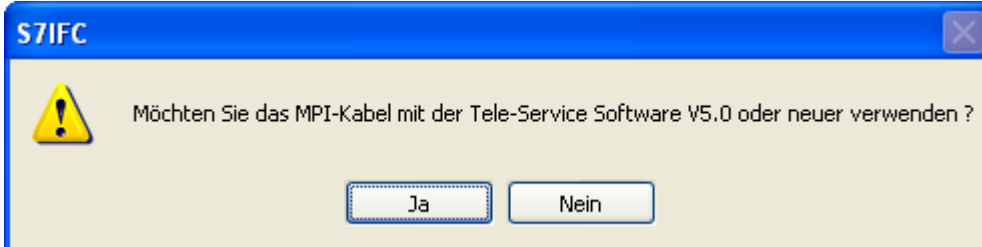
Depending on the version of your TELEService software choose Yes or No.

The regular parameters can be changed manually in the following categories:

8.5.1 Index "Network":

Here you can configurate following:
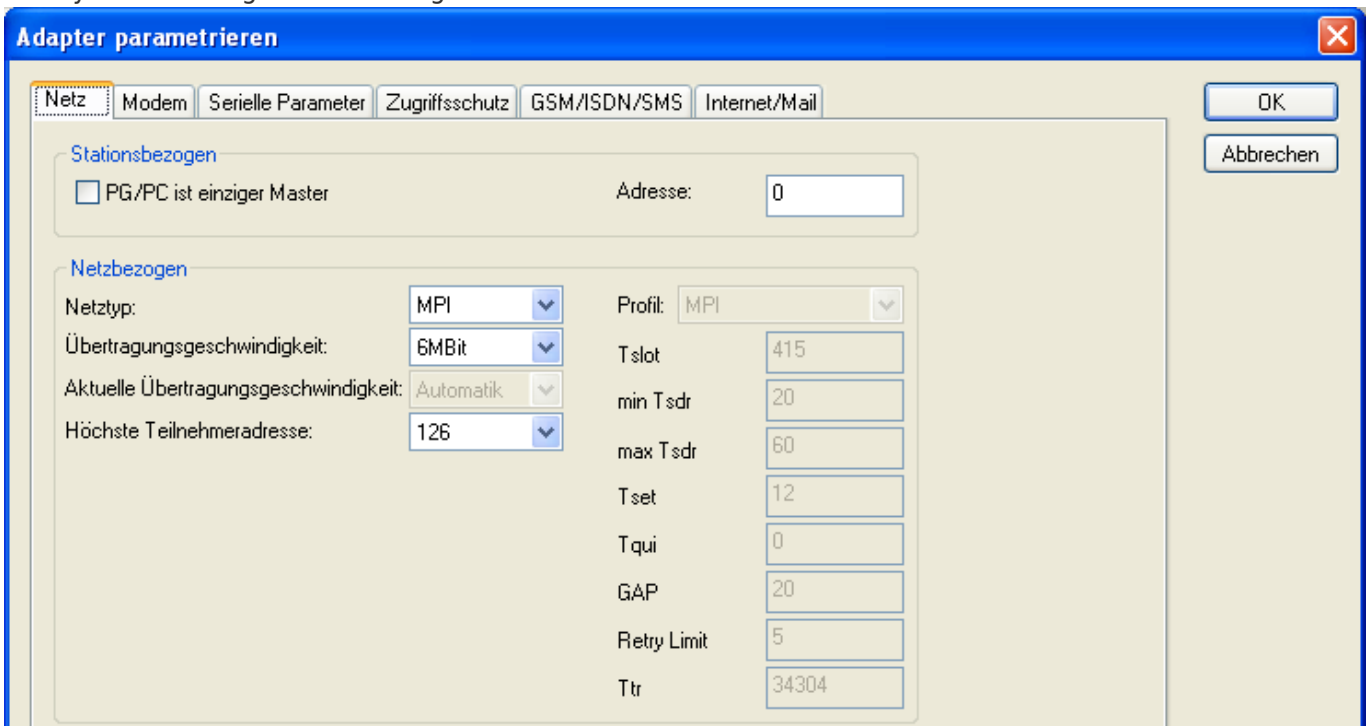
Station related::

PC/PG is the only master on the bus	The TS-Adapter is the only master on the MPI-bus (adapter must speak to all passive clients)
Address	Which local station-address is used for the TS-Adapter. Please consider that a programming device has normally the number 0, operator panel have 1, CPU's use 2, FM/CP's 3 etc. **Remind**: Never use the same station-number for 2 different stations!

Network related::

Network type	The network type MPI or PROFIBUS

Transmission rate	The transmission speed on the MPI bus
Current transfer rate	Shows the current transfer rate of the device
Highest station address	The highest station address in the bus (the less you use, the more performance on the MPI bus, must be corresponding with the configuration in the PLC's)

8.5.2 Index "Modem":

In this dialog you could configure the modem related setup.

Modem Settings::

	The initialization string consists of several commands to the modem: AT ⇒ start command &F ⇒ set Factory Settings E0 ⇒ Echo off L1 ⇒ volume of speaker is low
Initialization	M1 ⇒ speaker is on at connection Q0 ⇒ output of the return values V1 ⇒ return values plain text &C1 ⇒ DCD shows status of the carrier sound S0=1 ⇒automatic connection after 1 ring
Hang up	The de-selection text is made up of 2 parts: +++ ⇒ Switch to command mode AT ⇒ start command H ⇒ Hang up connection

Location:

The phone system uses	There are two possible call techniques: MFV tone, the telephone number is transfered by several frequencies IWV pulse, the telephone number is transfered with the amount of several pulses on the line
To access an outside line, first dial	If you need a prefix before your number to establish a call outside, you must enter the prefix here e.g. 0.

Call Preferences:

Wait for dial tone before dialing	In case the modem should wait for a free line, you should set the corresponding checkbox.
Number of redial attempts	At number of retries you could configure the number of retries for a connection before the call is stopped.
Redial after	Using a retry you could enter the seconds the application should wait between calls.

8.5.3 Index "Serial parameter":

In this dialog the transfer rate between modem and TS-Adapter is selected.

Connection Preferences:

Transfer rate	The transfer-rate could chosen between the following values: 2400, 4800, 9600, 19.2k, 38.4k, 57.6k and 115.2kBaud
Parity	The parity could be chosen, but this is modem depended because some modems could not handle the parity bit: None: (There is no parity testing) Odd: (The amount of bits set to 1 is odd) Even: (The amount of bits set to 1 is even)

8.5.4 Index "Access Protection":

The access over a telephone line could be configured in this dialog.

Access Protection:

The administrator can change the configuration over a telephone line. The two user accounts can not change the configuration.
The username is maximal 8 characters long. Every user and the administrator should use a password which is used to login in the TELEService over a telephone-line.
After three failed retries the connection is hanged up, so you must call again (not like the original TS-adapter).
After changing the password for a user/administrator you must re-type it again correctly.

You can enter a callback number which is used for a callback from the TS-adapter. After you dialed the number of the TS-adapter, you are asked for username and password. In case the username and password is valid, the connection is hang up and the TS-adapter calls back the configured callback number.

8.5.5 Index "GSM/ISDN/SMS":

Information about the three different devices:

Analog Modem:
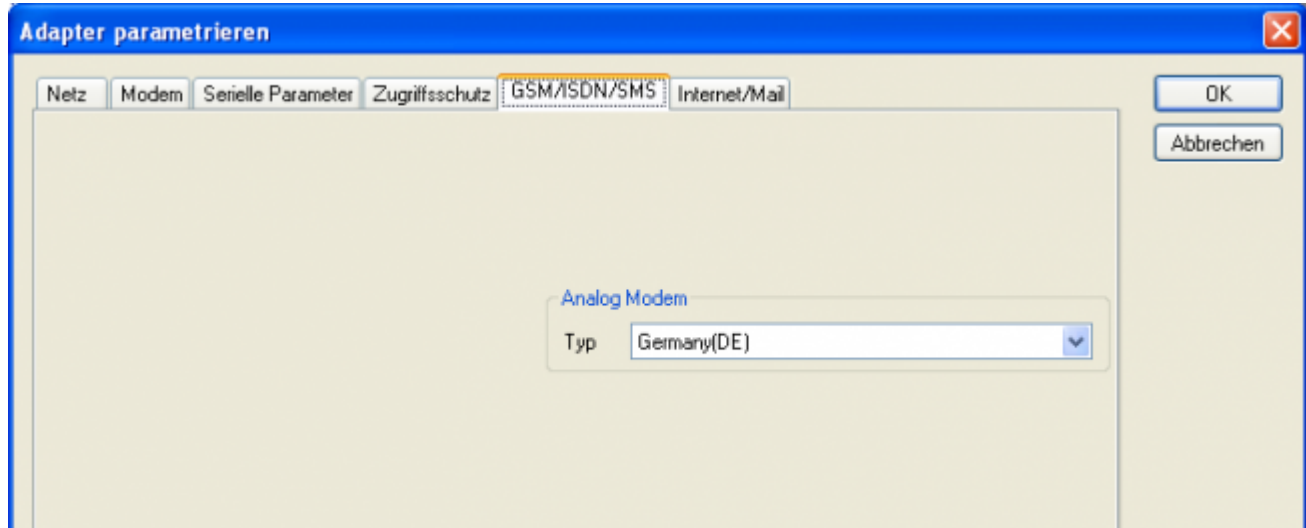
| **Type** | You could choose the location of the modem. |

ISDN Modem:
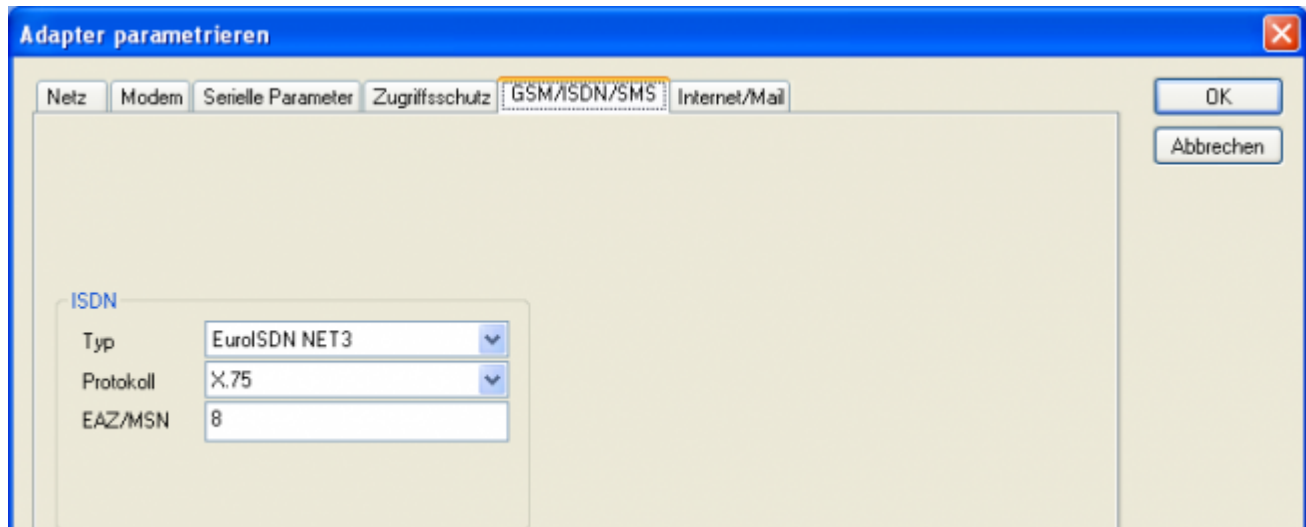
| **Type** | Choose the type of the ISDN network:
AT&T 5ESS
Nothern Telecom DMS-100
EuroISDN NET3 (Standard)
INS64
US NI-1
VN4 |

Protocol	Choose the transfer protocol type: Modem like V.120 X.75 (Standard) ML-PPP SoftBonding HDLC CLEAR
EAZ/MSN	Multiple Subscriber Number is used for all ISDN channels. If empty no MSN is used.

GSM Modem:

PIN	PIN number of the SIM card, up to eight numeric characters (only for TELE-SERVICE GSM).
Provider	With the button „Provider" the provider could be choosen. Read the list of providers could be elapse more than a minute. In the end the possible provider are listed for selection. With „Automatic" the GSM-Modem tries to connect automatically to a provider. On the right side of the button, the actual used selection is displayed. Display Description: Automatic: The provider is automatically searched and selected from the GSM-modem. Manual: The Provider is selected manually from the GSM-Modem no network registered: No connection to the GSM-network, the receive-quality is too bad set format: The format of the provider is set Manual/automatic: The modem tries to select manually the provider, if this fails an automatic search is done unknown: Unknown response from GSM-Modem

Refresh	The button „Refresh" reads the signal strength from the modem, the quality is displayed. Display Description: Unknown: Unknown state of the GSM-network no registration: The modem is not registered in the GSM network, no provider found registration denied: Registration in the GSM-network is denied Search network: In Search for a GSM-Provider GSM: Attached to GSM GSM(ROAMING): Attached to GSM, but with a Roaming-Partner. This could lead to high costs! The radio quality is displayed, together with the bit-error-rate. Value Description: 99 No network, no receive 00 Very, very bad receive-quality 01 Very bad receive-quality 02 to 09 Bad receive-quality 10 to 17 Medium receive-quality 18 to 25 Normal receive-quality 26 to 30 Good receive-quality 31 Best receive-quality

Information about the rest of the Index GSM/ISDN/SMS:

SMS:

SMS	Switches: NO SEND SMS RECEIVE SMS SEND+RECEIVE SMS DMTF CONFIRMATION SEND SMS+DTMF CONFIRMATION RECEIVE SMS+DTMF CONFIRMATION SEND+RECEIVE+DTMF CONFIRMATION SEND MAIL SEND MAIL+SEND SMS SEND MAIL+RECEIVE SMS SEND MAIL+SEND+RECEIVE SMS SEND MAIL+DTMF CONFIRMATION SEND MAIL+SEND SMS+DTMF CONFIRMATION SEND MAIL+RECEIVE SMS+DTMF QUITTUNG SEND MAIL+SEND+RECEIVE+DTMF CONFIRMATION **Attention**: before setting ON check configuration, after activating the device will go on the MPI bus and tries to connect to the defined PLC. Receive of SMS only with TELEService-GSM Receive of DTMF only with TELEService GSM
Busadresse TS	local station address (should not be used twice in the MPI/Profibus!)
Busadresse CPU	from this station address the flag word and data block is accessed for communication
Communication flag word	communication-flagword (the first byte is the command, the second is the state). Use even operand-addresses.
Communication data block	Address of the CPU in the Bus
Provider 0/1/2/3	Configure the SMS-Provider to use, including type, phone-number and char-code. First Input: Choose a type of the transmission. Second Input: Telephone number or email address. Third Input: Choose a character encoding.
NTP-Server	Input for an Network Time Protocoll - Server

Error analysis:

The possible error conditions for the modem, mpi bus problems or other problems are displayed in this text-field. First the modem-related information is shown:

Message

- Modem ready
- Modem error
- No answer from modem
- Modem detects ring
- End of connection
- connected via modem line
- No dialtone detected
- Phone-line or telephone busy
- Phone-number is blacklisted in modem
- Phone-number delayed. Access denied for 1 minute.
- Fax-call detected
- Data-call detected
- unknown error
- The selected direct-access-number not configured
- The configured PIN-Number is wrong for the inserted SIM-Card

- The SIM-Card is not or wrong inserted or the SIM-Card is a 5V

Possible MPI-Bus error-messages

- MPI/Profibus-Configuration erroneous
- Timeout at MPI/Profibus detach from device.
- The local station-address is used twice in the MPI/Profibus.
- A20/M20/TC35 Modem operation
- The MPI/Profibus is not correctly configured
- The HSA is not configured optimal
- The MPI/Profibus-Baudrate is not detectable
- Overflow in the internal MPI-Readbuffer
- Overflow in the internal LAN-Readbuffer
- Overflow in the serial Buffer
- The selected MPI/Profibus-Baudrate is wrong
- Overflow in internal LAN-Writebuffer
- LAN-Recieve-Error
- LAN-Send-Error
- The PD-Numberr is wrong
- The transferred SAP is wrong/unknown
- ErrCode 01: The Destination address (XXX) of a State protocol > 127 detected. In the MPI/Profibus-Bus there are no stations possible which station number is greater than 127. (FC=YYh)
- ErrCode 02: At state-protocol the Source-Address is detected as 127. This is the Broadcast-address which is not possible.
- ErrCode 03: The received State protocols destination address (XXX respectively YYY) does not exist in the MPI-Bus. (FC=ZZh)
- ErrCode 04: The function-code (YYh) of the received State protocol from XXX is incorrect. The 7th Bit is High, but according to the specification the Bit has to be low.
- ErrCode 05: A State protocol has been received. But the function-code (YYh) means that the participant is not ready to enter the bus.
- ErrCode 06: The function-code in the State-protocol received from XXX is unknown (FC=YYh)
- ErrCode 11: The sender (XXX) of the received data-protocol is unknown. To send data the participant must get the Token. (SSAP=YYh, FC=ZZh, length=UUU)
- ErrCode 12: Data-protocol with Source-address 255 (Broadcast) is useless. (CPU=XXX, SSAP=YYh, FC=ZZh, length=UUU)
- ErrCode 13: The sender (XXX) of the received data-protocol is unknown. To send data the participant must get the Token. (SSAP=YYh, FC=ZZh, length=UUU)
- ErrCode 14: The 7th Bit of the function-code is High, but according to the specification the Bit has to be low. (CPU=XXX, SSAP=YYh, FC=ZZh, length=UUU)
- ErrCode 15: The upper 4 Bit of the Function-code are wrong/unknown) (CPU=XXX, SSAP=YYh, FC=ZZh, length=UUU)
- ErrCode 16: Unknown function-code has been transmitted to the cable. (CPU=XXX, SSAP=YYh, FC=ZZh, length=UUU)
- ErrCode 17: Destination-SAP are defined till 3Fh in data-protocols. (CPU=XXX, SSAP=YYh, FC=ZZh, length=UUU)
- ErrCode 18: Source-SAP are defined till 3Fh in data-protocols. (CPU=XXX, SSAP=YYh, FC=ZZh, length=UUU)
- ErrCode 19: Received a data-protocol with destination-SAP=0, Connection request from another bus-participant with our cable. (CPU=XXX,SSAP=YYh,FC=ZZh,DSAP=UUh)
- ErrCode 1A: Participants are sending data to our cable with source-SAP = 0, which means that the

participant has not made a connection establishment or has lost the negotiated SAP.
(CPU=XXX,SSAP=YYh,FC=ZZh,DSAP=UUh)

- ErrCode 1B: Data-protocol with unknown data-function-code received.
  (CPU=XXX,SSAP=YYh,FC=ZZh,DFC=UUh)
- ErrCode 1C Data-protocol with unknown data-function-code received.
  (CPU=XXX,SSAP=YYh,FC=ZZh,DFC=UUh)
- ErrCode 1D: Received a state-protocol with error-code. (CPU=XXX,FPGA=YYh,RAM=ZZh)
- ErrCode 1E: FPGA has caused an interrupt although no data present.
  (SD1=XXh,SD1=YYh,CPU=ZZZ,FC=UUh)
- ErrCode 20: Unknown protocol at PPIMultimaster-Mode. (FC=XXh,Länge=YYY)
- ErrCode 21: Unknown baud-rate at PPIMultimaster-Mode. (Baudrate=XXh)

After that additional hints are displayed.

8.5.6 Index "Internet/Mail":

The internet connection is configured by PPP, often a username and password is needed. Define them in "Internet access over PPP".

Attention: This is NOT the username and password of your E-Mail-account!

In the next section "Mail" the E-Mail-account is defined:

Internet access over PPP:

Unter dem Bereich **Mail** wird der E-Mail-Zugang konfiguriert:

Internetzugang per PPP:

Username	Username for internet access
Password	Userpassword for the internet access

Mail:

Server	Name of the SMTP-Email-Servers, which is used to send the E-Mail.
Mail from	Source-E-Mail-Address (should be from the same Free-mailer, instead a delivery is often not possible)
Usename	Name of the User-account (often the E-Mail-address or Customer-number)
Password	Password for EMail-access

8.6 Tuning

This menu is only used in some special cases. Select the device and click the button "Tuning" and after that the following dialog is displayed:

The following configuration is possible, it will be transferred to the Cable by pressing the button „OK". The configuration is saved permanently in the Flash-ROM:

The first selection fields:

Delay before send	At ProTool RT the communication could break down, because the MPI-Cable is transferring the answer-protocol to fast. In this case you could insert a time in 0.1ms ticks. Insert at first 300, to great values are preventing the communication.
HMI-Cable-Version	Some Touch-panels has the problem, that when they get a wrong version-information they never retry to connect (and then the correct version is transferred). In this case the HMI-version-information could be transferred immediately.
A20-Terminal	When using the A20 or M20-Terminal, the control-lines on the serial port are not used. In that case the TELEService-function is not working. With this property the control-lines are no longer used and therefore the A20/M20 can communicate over TELEservice.
Show ErrCode messages in display	Shows error messages on the display of the connected device

Boot settings:

Normally the MPI-Cable automatically selects the correct bus type, no changes are needed. In special-cases the MPI-Bus could be selected as PPI.

For example: This application and the PLC are powered on at the same time. The application is communicating immediately with the cable, the PLC is booting, in this case the MPI-Bus is not running. The MPI-Bus is erroneous, so no communication is starting. If this occurs you could choose, that the cable is working as MPI-Adapter only.

Language:

You could select the language which is used on the cable (German or English).

S5 on MPI mode off:

Deactivates temporary the "S5 on MPI" function, the cable doesn't poll the bus anymore.

send reset to cable:

Send reset to cable.

Console:

Shows some information about the status of the connection.

8.7 Factory defaults

This button sets the configuration of the selected device to factory defaults.

8.8 PPI Boot off

In PPI boot mode S7IFC cannot communicate with the cable. To disable the PPI boot mode, click on the button PPI Boot off. In the following dialog you must select the serial port where the cable is connected:
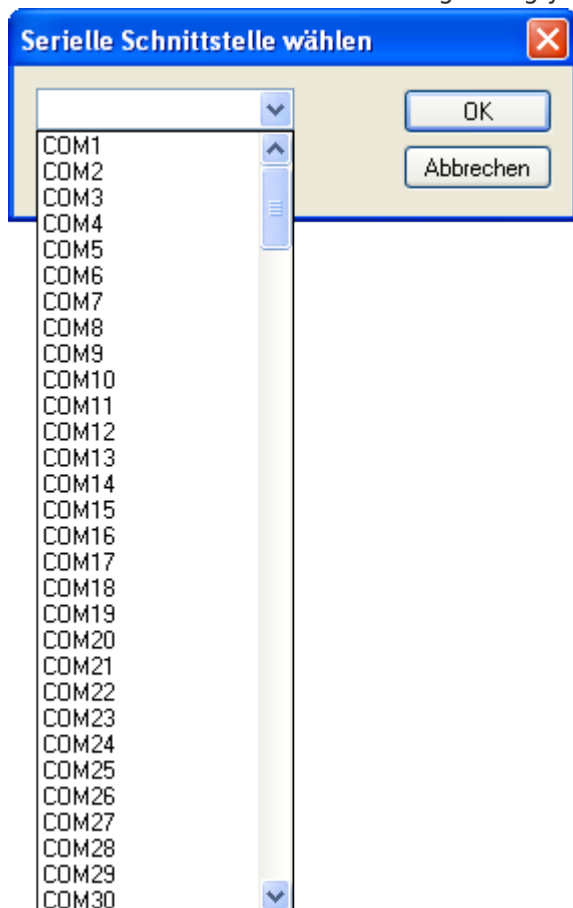
8.9 Emergency-Loader

LAN products running in emergency-loader are automatically found by S7IFC:
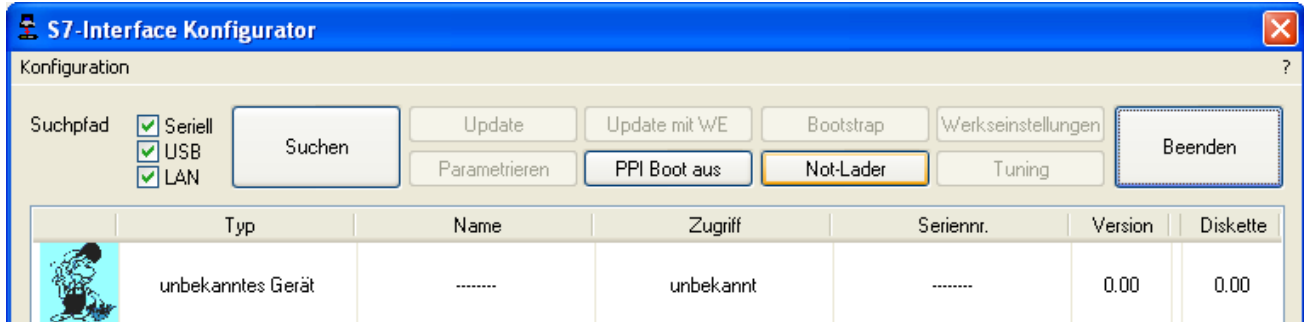
After a click on Emergency-Loader the following dialog appears:
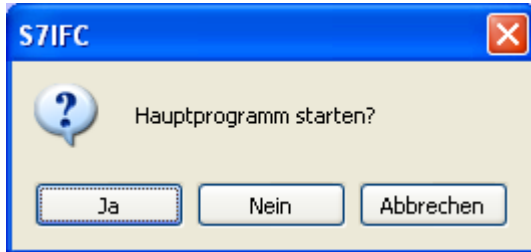
On a click on Yes the emergency-loader tries to run the main program of the firmware. On a click on No the emergency-loader tries to rewrite the complete firmware.

9 MPI-Cable Manager

9.1 Description

The MPI cable manager allows you to install an update in your cables and modules and configure them.

The MPI cable manager can be used for the following products:

- MPI-LAN Cable – Art. Nr. 9352-LAN
- S7-LAN Module – Art. Nr. 9352-LANCon
- MPI-USB Cable – Art. Nr. 9352-USB
- S7-USB Module – Art. Nr. 9352-S7-USB
- MPI-II Cable (USB – operation) – Art. Nr. 9352 + 9352.1
- MPI/PPI Cable – Art. Nr. 9350
- Tele-Service – Art. Nr. 9377-(ANALOG/ISDN/GSM)-OP
- MPI/PPI-Profibusmodem – Art. Nr. 9379-(G)-OP

9.2 Installation

1. Download the MPI-Kabelmanager from the product-page of your MPI-product and start the installation.

2. Following the Language selection the installation starts and a welcome-screen is displayed.
Next click onto the button „Next".
To change the installation path, click on "Browse".
Then click "Continue".

3. Select in this dialog the program folder for the MPI cable manager startup items.
Then click "Continue".

4. Wait for the installation of the files.

5. End the installation after a successful copy of data with "Finish".

9.3 Overview

9.3.1 Language

After starting the application the tab Language is displayed at first:

In this Dialog you could choose the used language in the application.

You could choose between German and English and confirm by clicking on the desired language.

9.3.2 Interface
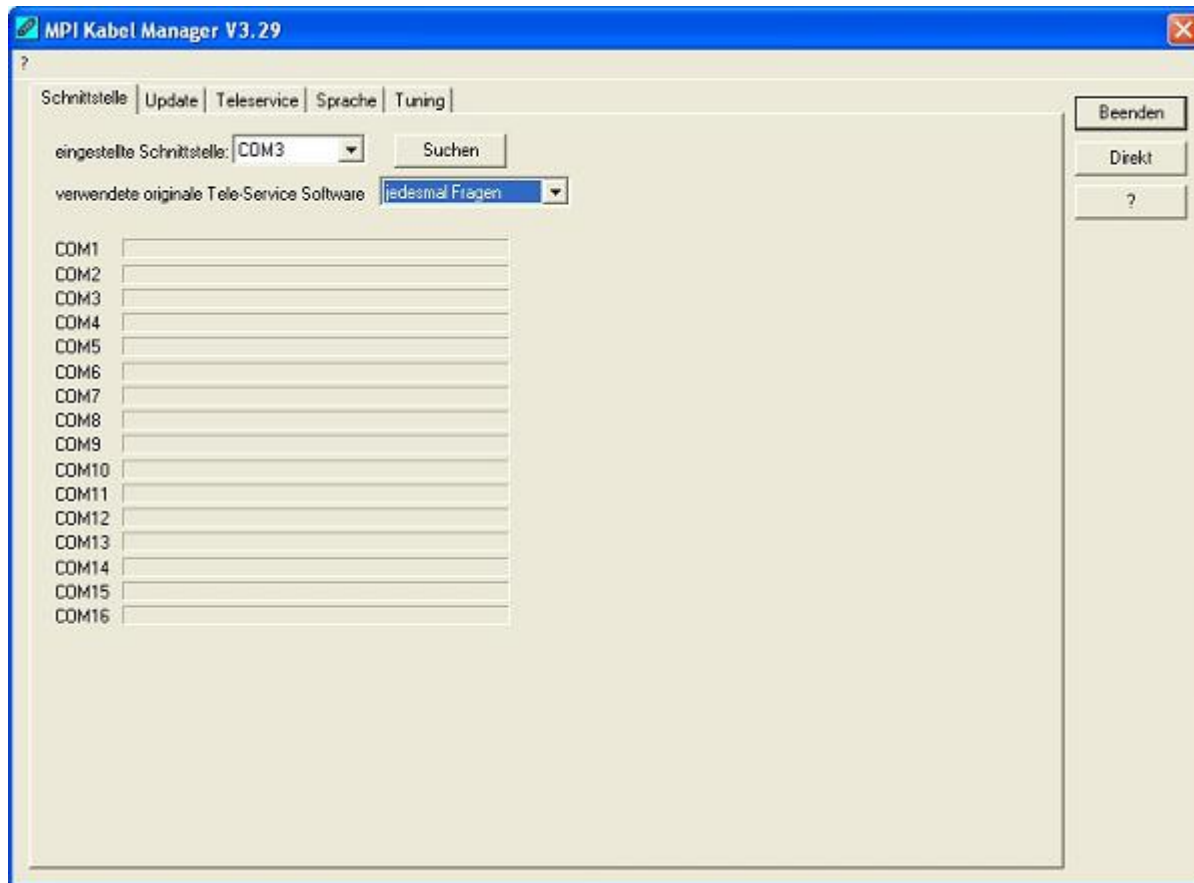
In „set interface" you can choose the COM-port you device is connected at. Only the COM-port which was aktive at starting the MPI-Kabel-Manager are shown.

„Search" update the COM-port listed in „set interface" and put the Kabelmanager to the respective COM-port.
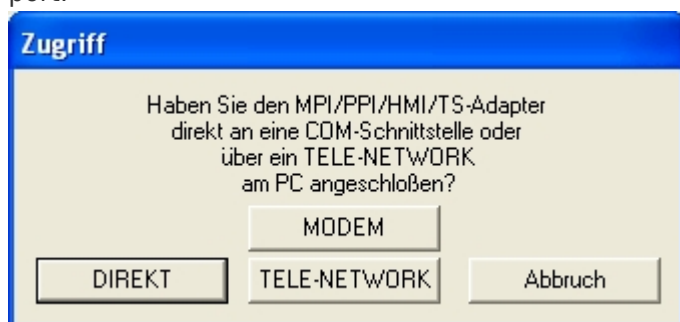
For access query choose „Direct" if your product connects via USB-cable or Nullmodem-cable. „Modem" if your product connects via telephone line or „TELE-Network" if your product connects with a TELE-Network device via telephone line.

The bars below shows at which COM-port something was found or not.

9.3.3 Update
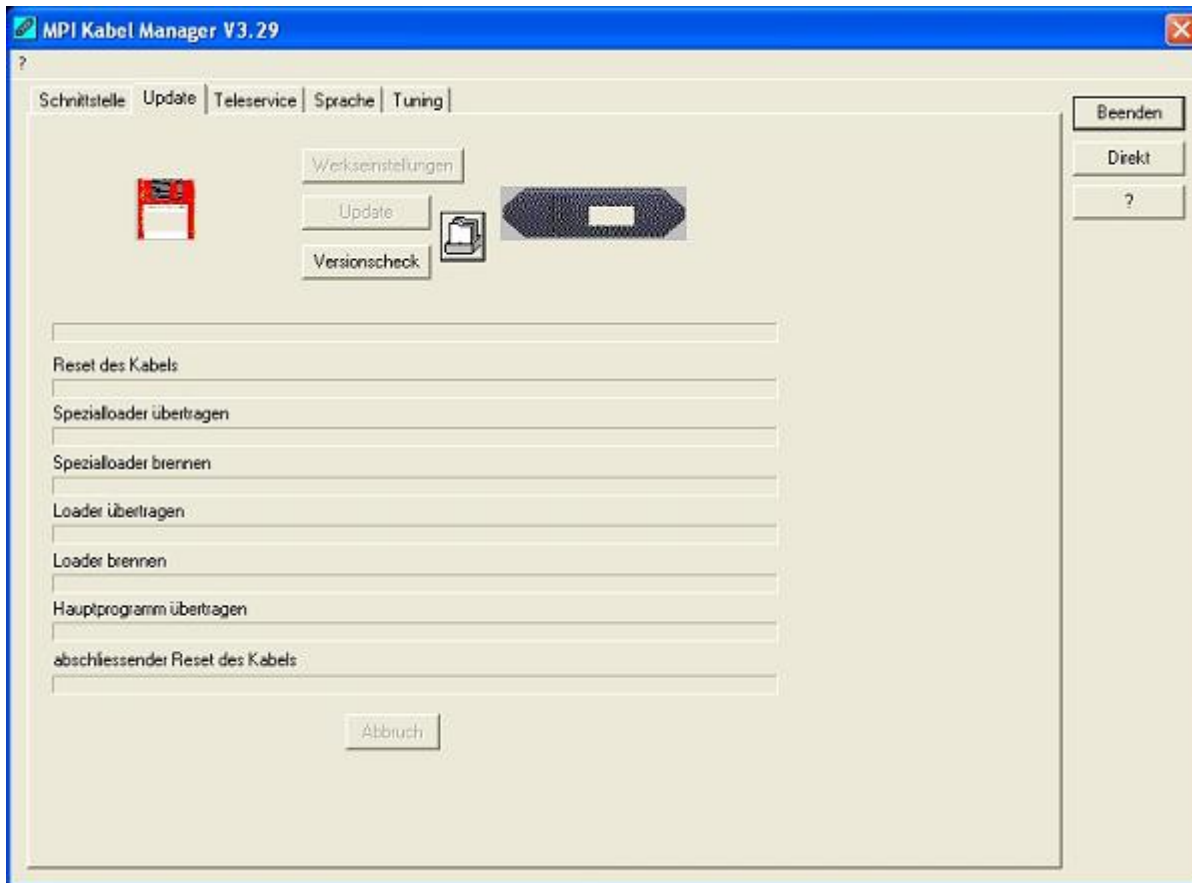
The diskette show the current operating system installed on your PC for corresponding product.

The cabel-symbol on the right show the operating system which is installed on your product at the moment.

With the button „default settings" you can set your products on default settings. Should the device be out of order after configurated. This button is selectable after the version check.

With „Update" you can install the current operating system. This button also is selectable after version check.

With „version check" your cable which is connected to the COM-Port reviewed.

The symbol next to version check shows the running update.

While update do not plug out the cable from the PLC or turn off the power supply (The cable will lost all data)!

If the update is breaking before finished, it could be that the MPI-Cable displays in the first line of the LCD „Load 1.50" and in the second line „CheckUpd". Close the MPI-Cable-Manger and restart it. After "check version" (which could time about 30 seconds) and following „Update" the broken update is restarted and finished.

9.3.4 Teleservice

In this dialog the spezific configuration of the Tele-Service is taken. There are 3 Tabs, where the last one is activated:
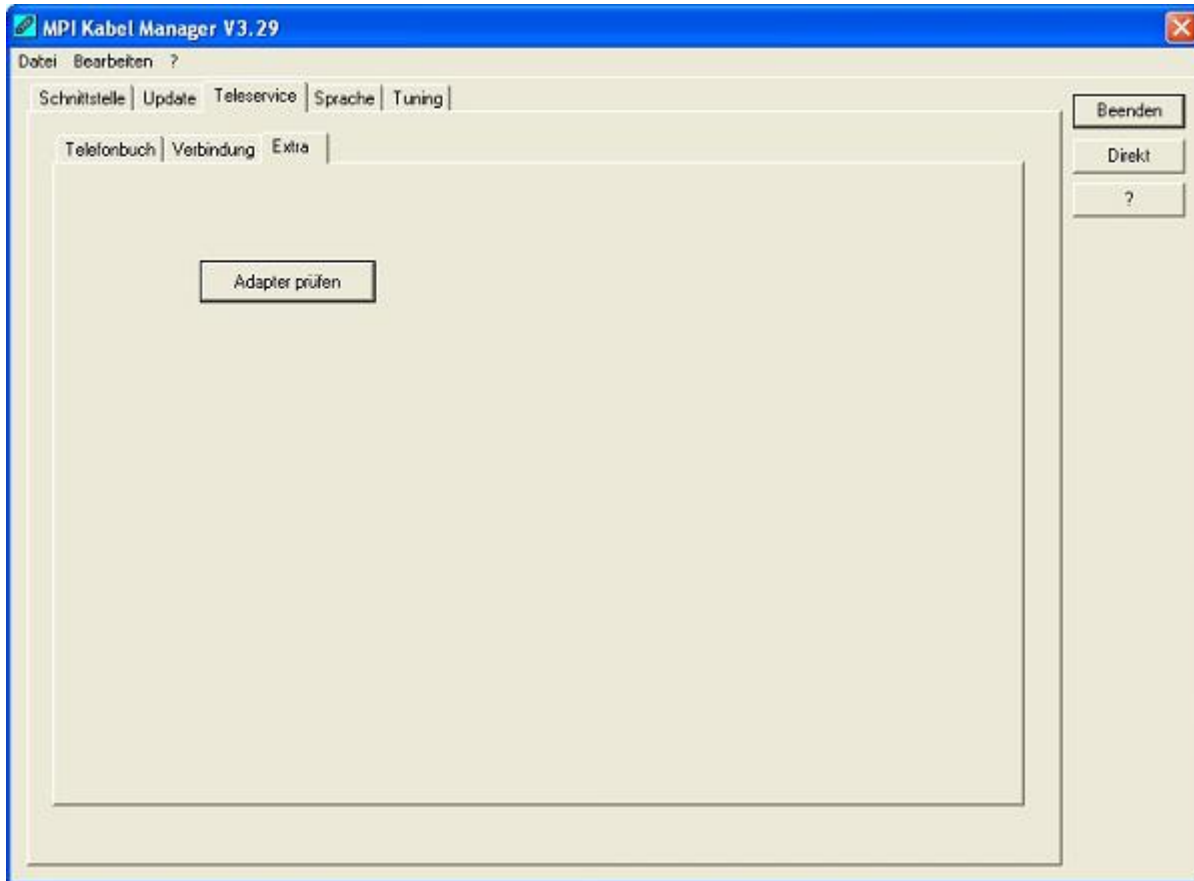
9.3.4.1 Telephone book

At the moment not implemented!

In this dialog you could define new elements or edit/erase existing elements in your telephone-book.

You could edit the following data:

⇒ Name for the connection (these are displayed at connection)
⇒ street
⇒ ZIP-code and country
⇒ Telephone number you can reach the TS-adapter

9.3.4.2 Connect

At the moment not implemented!

In this dialog the connection to another modem with a MPI-cable connected is started. Choose on the right side the named connection, then press „connect" to establish it.

With „Hang-Up" you could stop an existing connection.

With the button „State" the state of the connection is displayed at the lower side of the dialog.

9.3.4.3 Extra
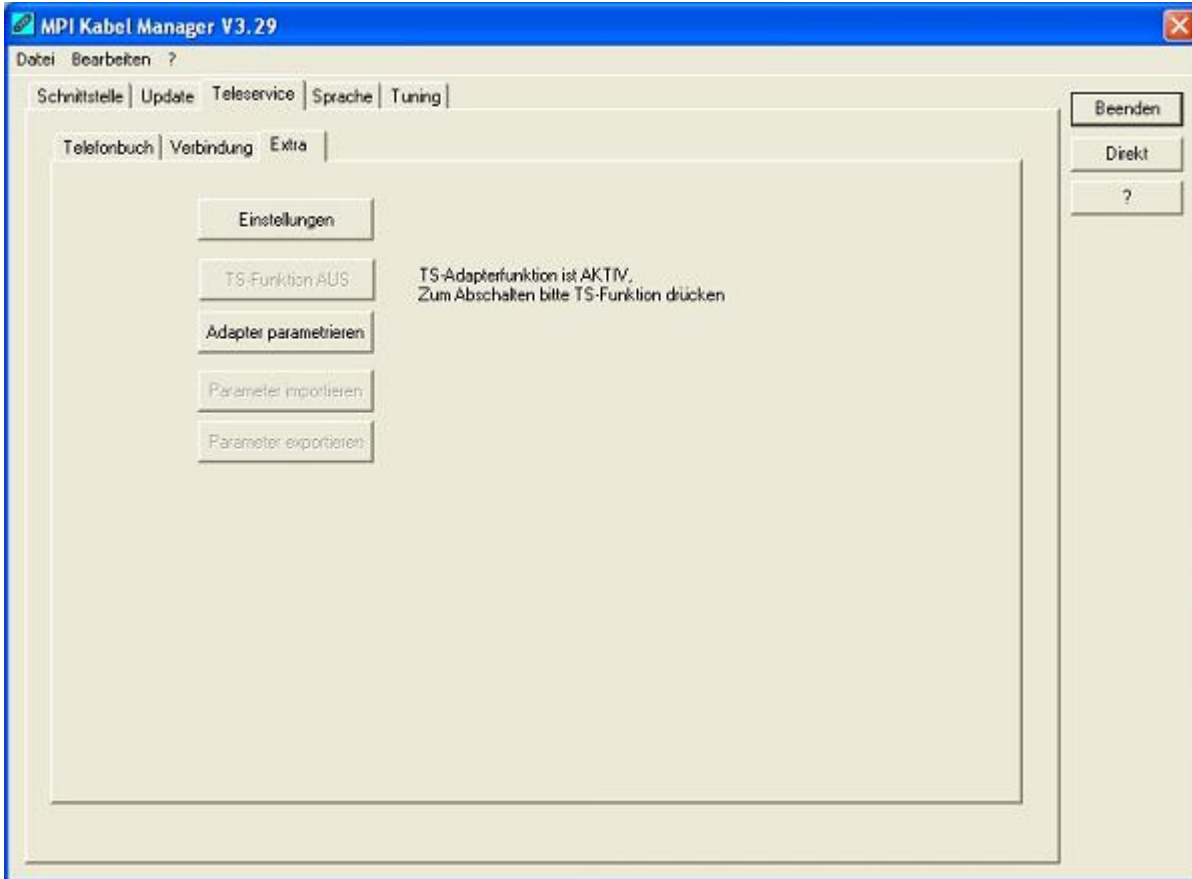
In this dialog, all configuration to the TS-adapter is done.

The actual state of the MPI-cable is displayed right of the button "TS-function", where the follwing 4 possible Messages could apear:

„TS-Adapterfunction is NOT activ. To activate press TS-function"

The MPI-cable acts like an PC-Adapter. There will no answer for TS-spezific protocols, the attached modem will not initialized and the baud-rate to the PG/Modem is not fixed. The baud-rate is detected automatically.

„TS-Adapterfunktion is ACTIVE. To disable press TS-function"

The MPI-cable acts like an TS-Adapter. There will an answer to TS-spezific protocols, the adapter could now configured. An attached Modem will be initiliazed and the baud-rate to the modem is fixed.

„SNDERR" or „RCVERR"

There is a communication error at sending or recieving data from the mpi-cable. Disconnect the MPI-cable from the power supply (PLC). Change to the tab Connect and after that back to Extra. If the problem remains, check the connection to the MPI-cable, especially the COM-port in the dialog interface.

With the buttons you could define which modem is used, activate or disable the TS-function or configure the TS-adapter:

9.3.4.3.1 Setup

In the follwing dialog you could choose the used modem.

Here you can define the modem, the location of the modem as well as the monitoring times.

9.3.4.3.2 TS-Function

With this button you select the function of the MPI-cable as TS- or PC-adapter. Right of this button the actual state of the MPI-cable is displayed.

9.3.4.3.3 configure adapter

In the following dialog you could, after activating the MPI-cable as TS-adapter, configure the TS-spezific setup.

Network

station related:

Here you can configurate following:

The TS-Adapter is the one and only master in the MPI-bus

Which local station-address is used for the TS-Adapter. Please consider that a programming device has normally the number 0, operator panel have 1, PLC's use 2, FM/CP's 3 etc.

Please: Never use the same station-number for 2 different stations!

network related:

Here you can configurate following:

The Nettype MPI or PROFIBUS

The transfer-speed on the MPI-bus

The highest station-adress in the bus (the less you use, the more performanceon the MPI-bus, must be corresponding with the configuration in the PLC's)

Modem

In this dialog you could configure the modem-related setup.

The Init-String is composed out of several commands to the modem:
AT ⇒ start command
&F ⇒ use factory settings
E0 ⇒ Echo off
L1 ⇒ loudness of speaker is low
M1 ⇒ speaker is on at connection
Q0 ⇒ output of the return values
V1 ⇒ return values plain text
&C1 ⇒ DCD shows status of the carriersound
S0=1 ⇒ automatic connection after 1 ring

The Hang-Up-String is composed of 2 elements:

+++ ⇒ Change to command-mode
AT ⇒ start command
H ⇒ Hand-Up connection

There are 2 possible calling technics: MFV tone, the telephone-number is transfer by several frequencies
IWV pulse, the telephone-number is transferred with the count of several pulses on the line

When you must a pre-call to establish a call outside your company, you could define it at Official number.

When the modem should wait for a free line, so you should set the corresponding checkbox.

At number of retries you could configure the number of retries for a connection before the call is stopped.

When using a retry you could choose the seconds which the application should wait between calls.

Serial Parameter
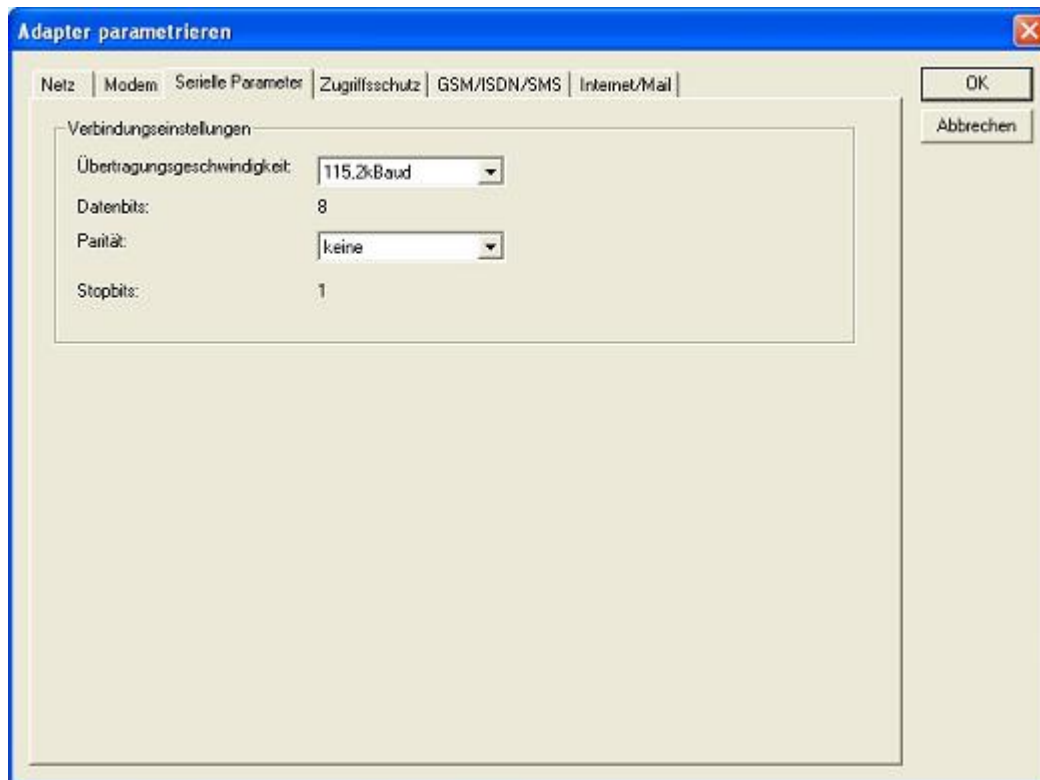
In this dialog the transfer-rate between modem and TS-Adapter is selected.
The transfer-rate could chosen between the following values:
2400, 4800, 9600, 19.2k, 38.4k, 57.6k and 115.2kBaud

The Parity could be chosen, but this is modem-dependant because some modems could not transfer the parity-bit:

None: (There is no parity testing)
Odd: (The number of one-bits are odd)
Even: (The number of one-bits are even)

Password

The Access over a telephone-line on the PLC could be configured in this dialog.

The Administrator could change the configuration over a telephone line, where an 2 User could not change the configuration.

The User-Name is maximal 8 Chars long.Every user and the administrator could use a password which is used to log into the PLC over a telephone-line. These have to enter for each new call.

After 3 wrong retries the connection is hanged up, so you must call again (Not so with an original TS-adapter).

After changing the password for one user/administrator you must re-type it again correctly before it is used.

In call-back-number you could define a telephone-number which is used for call-back from the TS-adapter. After you connect with the TS-adapter, you are asked for your user-name and password. When the correct password and user-name is transfered, the connection is hanged-up and the TS-adapter is calling back this configured call-back-number.

GSM/ISDN/SMS

Analogue Modem:

You could choose the Location of the Modem.

ISDN Modem:

Type: Choose the type of the ISDN-network switch:

AT&T 5ESS
Nothern Telecom DMS-100
EuroISDN NET3 (Standard)
INS64
US NI-1
VN4

Protocol: Choose the transfer-protocol-type:

Modem like
V.120
X.75 (Standard)
ML-PPP
SoftBonding
HDLC
CLEAR

DN/MSN: Directory Number resp. Multiple Subscriber Number Is used for both ISDN-channels. When using the number 255 no DN/MSN is used.

GSM Modem:

PIN:
PIN-Number of the SIM-Card, up to 8 numeric chars, (only for TELE-SERVICE GSM).

Provider:
With the button „Provider" the provider could be choosen. Reading of the list of providers could be elapse more than a minute. At end the possible provider are listed for selection. With „Automatic" the GSM-Modem tries to connect automatically to a provider. On the right side of the button, the actual used selection is displayed.

Display Description:

Automatic: The provider is automatically searched and selected from the GSM-modem.
Manual: The Provider is selected manually from the GSM-Modem
no network registered: No connection to the GSM-network, the receive-quality is too bad
set format: The format of the provider is set
Manual/automatic: The modem tries to select manually the provider, if this fails an automatic search is done
unknown: Unknown response from GSM-Modem

Refresh: The button „Refresh" reads from the Modem the receive quality, the quality is displayed.

Display Description:

Unknown: Unknown state of the GSM-network
no registration: The modem is not registered in the GSM network, no provider found
registration denied: Registration in the GSM-network is denied
Search network: In Search for a GSM-Provider
GSM: Attached to GSM
GSM(ROAMING): Attached to GSM, but with a Roaming-Partner. This could lead to high costs!

The Receive Quality is displayed, also as value together with the bit-error-rate.

Value Description:

Value	Beschreibung
99	No network, no receive
00	Very, very bad receive-quality
01	Very bad receive-quality
02 to 09	Bad receive-quality
10 to 17	Medium receive-quality
18 to 25	Normal receive-quality
26 to 30	Good receive-quality
31	Best receive-quality

Error analysis:

The possible error conditions for the modem, mpi-bus-problems or other problems are displayed in this text-field. Firstly, the modem-related information is shown:

Message
Modem ready
Modem error
No answer from modem
Modem detects ring
End of connection
connected via modem line
No dialtone detected
Phone-line or telephone busy
Phone-number is blacklisted in modem
Phone-number delayed. Access denied for 1 minute.
Fax-call detected
Data-call detected
unknown error
The selected direct-access-number not configured
The configured PIN-Number is wrong for the inserted SIM-Card
The SIM-Card is not or wrong inserted or the SIM-Card is a 5V Type

Following the possible MPI-Bus error-messages

Message
MPI/Profibus-Configuration erroneous
Timeout at MPI/Profibus detach from device.
The local station-address is used twice in the MPI/Profibus.
A20/M20/TC35 Modem operation

The MPI/Profibus is not correctly configured

The HSA is not configured optimal

The MPI/Profibus-Baudrate is not detectable\ Overflow in the internal MPI-Readbuffer

Overflow in the internal LAN-Readbuffer

Overflow in the serial Buffer

The selected MPI/Profibus-Baudrate is wrong

Overflow in internal LAN-Writebuffer

LAN-Receive-Error

LAN-Send-Error

The PD-Number is wrong

The transferred SAP is wrong/unknown

ErrCode 01: The Destination address (XXX) of a State protocol > 127 detected. In the MPI/Profibus-Bus there are no stations possible which station number is greater than 127. (FC=YYh)

ErrCode 02: At state-protocol the Source-Address is detected as 127. This is the Broadcast-address which is not possible.

ErrCode 03: The received State protocols destination address (XXX respectively YYY) does not exist in the MPI-Bus. (FC=ZZh)

ErrCode 04: The function-code (YYh) of the received State protocol from XXX is incorrect. The 7th Bit is High, but according to the specification the Bit has to be low.

ErrCode 05: A State protocol has been received. But the function-code (YYh) means that the participant is not ready to enter the bus.

ErrCode 06: The function-code in the State-protocol received from XXX is unknown (FC=YYh)

ErrCode 11: The sender (XXX) of the received data-protocol is unknown. To send data the participant must get the Token. (SSAP=YYh, FC=ZZh, length=UUU)

ErrCode 12: Data-protocol with Source-address 255 (Broadcast) is useless. (CPU=XXX, SSAP=YYh, FC=ZZh, length=UUU)

ErrCode 13: The sender (XXX) of the received data-protocol is unknown. To send data the participant must get the Token. (SSAP=YYh, FC=ZZh, length=UUU)

ErrCode 14: The 7th Bit of the function-code is High, but according to the specification the Bit has to be low. (CPU=XXX, SSAP=YYh, FC=ZZh, length=UUU)

ErrCode 15: The upper 4 Bit of the Function-code are wrong/unknown) (CPU=XXX, SSAP=YYh, FC=ZZh, length=UUU)

ErrCode 16: Unknown function-code has been transmitted to the cable. (CPU=XXX, SSAP=YYh, FC=ZZh, length=UUU)

ErrCode 17: Destination-SAP are defined till 3Fh in data-protocols. (CPU=XXX, SSAP=YYh, FC=ZZh, length=UUU)

ErrCode 18: Source-SAP are defined till 3Fh in data-protocols. (CPU=XXX, SSAP=YYh, FC=ZZh, length=UUU)

ErrCode 19: Received a data-protocol with destination-SAP=0, Connection request from another bus-participant with our cable. (CPU=XXX,SSAP=YYh,FC=ZZh,DSAP=UUh)

ErrCode 1A: Participants are sending data to our cable with source-SAP = 0, which means that the participant has not made a connection establishment or has lost the negotiated SAP. (CPU=XXX,SSAP=YYh,FC=ZZh,DSAP=UUh)

ErrCode 1B: Data-protocol with unknown data-function-code received. (CPU=XXX,SSAP=YYh,FC=ZZh,DFC=UUh)

ErrCode 1C Data-protocol with unknown data-function-code received. (CPU=XXX,SSAP=YYh,FC=ZZh,DFC=UUh)

ErrCode 1D: Received a state-protocol with error-code. (CPU=XXX,FPGA=YYh,RAM=ZZh)

ErrCode 1E: FPGA has caused an interrupt although no data present.
(SD1=XXh,SD1=YYh,CPU=ZZZ,FC=UUh)
ErrCode 20: Unknown protocol at PPIMultimaster-Mode. (FC=XXh,Länge=YYY)
ErrCode 21: Unknown baud-rate at PPIMultimaster-Mode. (Baudrate=XXh)
After that additional hints are displayed.

SMS:

SMS: Switches Processing OFF / Only Receive / Only Send / Receive and Send. Attention: before setting ON check configuration, after activating the device will go into the MPI-BUS and tries to connect to the defined PLC. Receive of SMS only with TELESERVICE-GSM Receive of DTMF only with with TELESERVICE GSM

TS: local station-address (should not be used twice in the MPI/Profibus!)
PLC: from this station-address the Flagword and Data-block is accessed for communication
MW: communication-flagword (the first byte is the command, the second is the state). Use even operand-addresses.
DB: communication-data-block.
Provider 1/2/3/4: Configure the SMS-Provider to use, including type, phone-number and char-code.

Internet/Mail

9.3.4.3.4 **Import parameter**

With this button you could import the parameter from an ASCII-file. This file is compatible to the original file-format.

9.3.4.3.5 **Export parameter**

With this button you could export the parameter to an ASCII-file which has the same file-format as the original.

9.3.5 Tuning
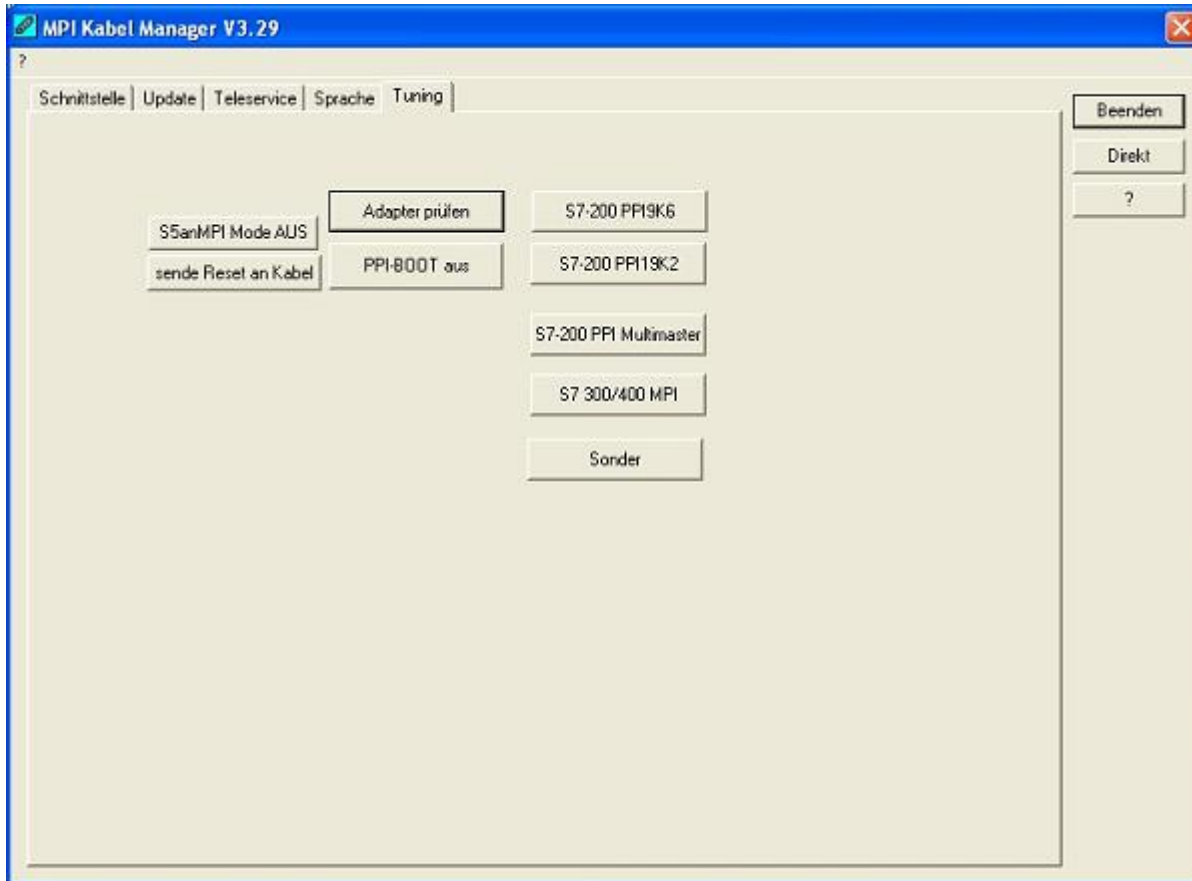
This tab is only used in some special cases. If you press the button „Check Adapter" the cable is connected und after that the following dialog is displayed:
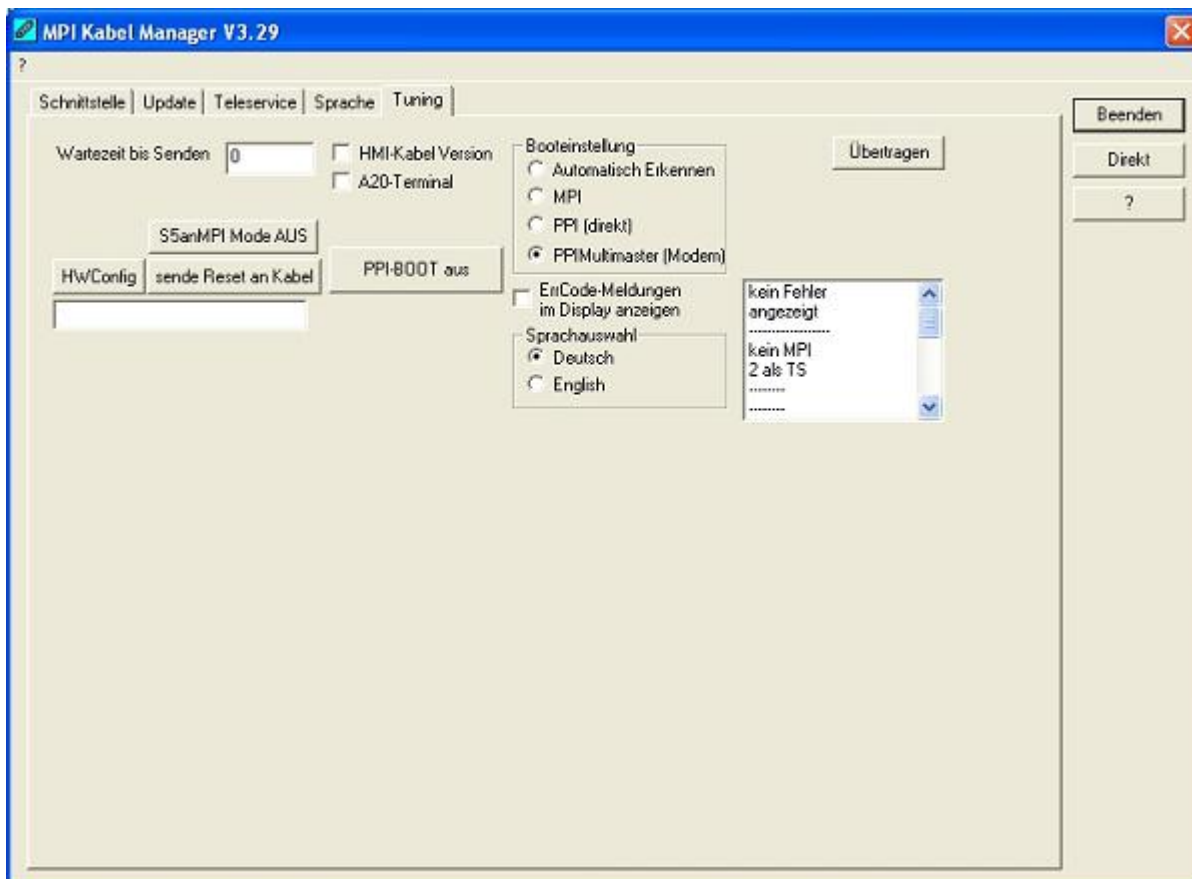
There are the following configuration possible, they will be transferred to the MPI-Cable by pressing the

button „Transfer". The configuration is saved permanently in the Flash-ROM:

Time to send:
At ProTool RT the communication could break down, because the MPI-Cable is transferring the answer-protocol to fast. In this property you could insert a time in 0.1ms ticks. Insert at first 300, to great values are preventing the communication.

HMI-Cable-Version:
Some Touch-panels have the problem, that when they get a wrong version-information they never retry to connect (and then the correct version is transferred). In this case the HMI-version-information could be transferred immediately.

A20-Terminal:
When using the A20 or M20-Terminal, the control-lines on the serial port are not used. In that case the tele-service-function is not working. With this property the control-lines are no longer used and therefore the A20/M20 can communicate over tele-service.

Bootconfiguration:
Normally the MPI-Cable automatically selects the correct bus-type, no changes are needed. In special-cases the MPI-Bus could be selected as PPI.

For example: This application and the PLC are powered on at the same time. The application is communicating immediately with the cable, the PLC is booting, in this case the MPI-Bus is not driven. The MPI-Bus is erroneous, so no communication is starting. If this occurs you could choose, that the cable is working as MPI-Adapter only..

Language:
You could select the language which is used from the cable (German or English).

10 PLC-VCOM

10.1 Description

It creates a new, virtual com-port in your system, with which the programming software of your PC (such a. PG 2000, Step© 5/7, S5/S7 for Windows, WinCC, Microwin) can communicate with the device

The PLC-VCom application is needed for use with the following devices:

- MPI-LAN Kabel – Art. Nr. 9352-LAN
- S7-LAN Modul – Art. Nr. 9352-LANCon
- MPI-USB Kabel – Art. Nr. 9352-USB
- S7-USB Modul – Art. Nr. 9352-S7-USB
- MPI-II Kabel (USB – mode) – Art. Nr. 9352 + 9352.1
- S5-LAN Modul – Art. Nr. 9359-LAN
- Tele-Service (as programming adapter) – Art. Nr. 9377-(ANALOG/ISDN/GSM)-OP

By installing the PLC-VCOM adiconalmente were installed the S5-LAN and the MPI-LAN. Both offer the possibility to manage the network configuration of your products

10.2 Installation

1. Download the PLCVCom from the product-page of your MPI-product and start the installation.

2. After choosing language the welcome dialog appears in the chosen language.

Click "Next" to define the installation path (see right picture).

This can be done with a click "Browse…"

If you are ready press "Next" to go on.

3. In the next dialog you can choose the program folder for your start menu.

Go on with "Next".

10.2.1 Final configuration of the PLC-VCOM

8. Choosing the COM – Port

Already occupied COM port can be viewed in Windows Device Manager if you are not sure which COM ports are still available.

If you are not sure which port is unused, press "OK".
Later you can start this dialog again by clicking in the application folder of your start menu on "SelectCOM".

9. The installation ends with a click on "OK".

10.3 Overview

Beside your watch, in your Windows – Taskbar, appears a new Symbol. This one is for the PLC – VCom software.

It shows the actual connection status with your cable/module MPI-II, MPI-USB, MPI-LAN, S7-USB, S7-LAN or S5-LAN.

10.3.1 Status description:

PLC –VCOM is connected with your cable/module and operational.
PLC – VCOM is not connected.
The red symbol indicates that sending/receiving data has been failed.
Send status: (left field): Data is send to the cable/module if this one is green.
Receive status: (right field): Data is received from the cable/module if this one is green.

10.3.2 Main Window
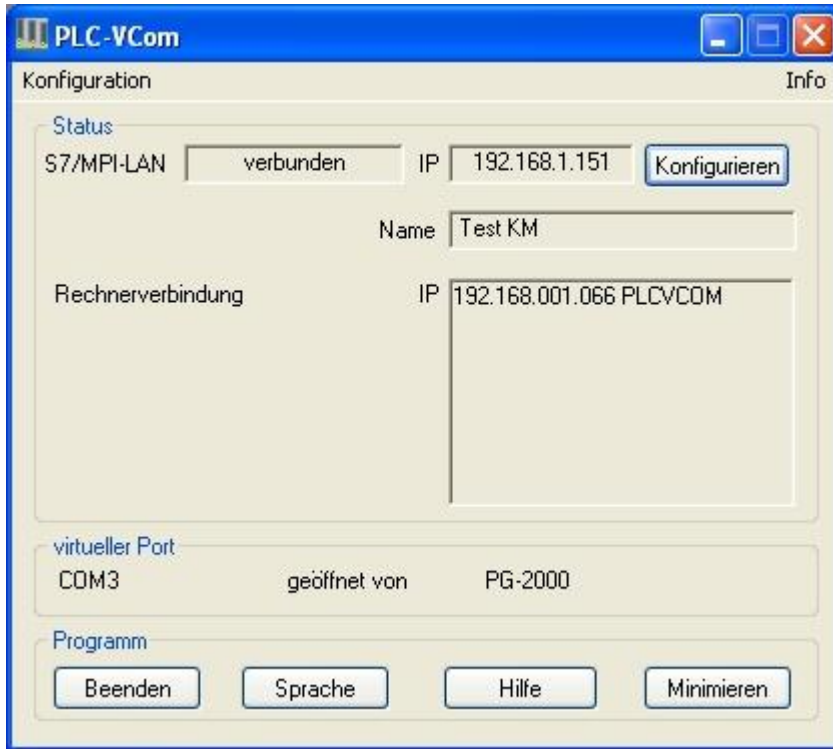
1. Configuration: Select and open the configuration program for your products.

⇒ PLC-VCOM: Management, connection and communication with the cables

⇒ S5-LAN: configuration of your S5-LAN modules

⇒ MPI/en:hardware:s7:s7-lan: Configuration of your MPI-LAN or S7LAN

2. Info: information about the PLC-VCOM and your computer.

3. Status: Display the connection parameters of the cable connected.

⇒ Top left: shows the name of the currently connected product

⇒ semi-left: shows the connection status

⇒ half right: shows the IP address of the connecting cable

⇒ Top right: Click here to search or select a device

⇒ right middle: name of the connected cable

⇒ bottom right: displays information about current computer connections

4. Virtual Port: Display of selected virtual COM ports and
the program that the last has accessed on this COM port.

5. Program: Buttons to adjust the PLC-VCOM

⇒ Exit. This button closes the program and the COM – Port

⇒ Language: Switch the Language to english/german.

⇒ Help: opens the Help menu of the PLC-VCOM, when they should have problems or questions

⇒ "Minimize" the dialog. This button does not close the program. It just minimizes the program. You will
find the PLC – VCom symbol in the Windows – taskbar beside the watch.

10.3.3 Configuration window

1. List of available cable / modules:
⇒ Line wise display of the products found with your properties

2. IP-Adress:
⇒ IP address and MAC address of the selected cable / module

3. Via network card:
⇒ Selection of the used network interface card

4. LAN-Type:
⇒ Selection of the be connected cable / Module Types

5. Several check boxes:
⇒ Manual entry: allows you to enter the parameters manually
⇒ no network: for products which are not in any network
⇒ Installing in the device Manager: Installs the PLC-VCOM COM port in Device Manager
(required only for S7 for Windows and S7 Doctor software)
⇒ RFC1006: activation of RFC1006 communication method
⇒ no network card selection: Passes the routing of packets to the operating system
⇒ serial interval times: slow down the serial transmission eg panel transfers

6. Search:
⇒ With a click on Search you are sending an broadcast to every cable/module that is connected with your network or your system. Every responding cable/module will be inserted to the list.

7. Help:
⇒ opens the Help menu of the configuration, if they have problems or questions

8. OK:
⇒ Ends the PLC-VCOM configuration and accepts the entered / selected settings

9. Cancel:
⇒ Ends the PLC-VCOM configuration and discards the entered / selected settings

10.4 Configuration

1. Start the PLC – VCom application, if this is not already running.

2. Open the PLC-VCOM by clicking on the icon ☒ PLC-VCOM in the system tray.

3. After the PLC-VCOM is open, click in the status area on the "Configure" and the wizard to configure is launched.

10.4.1 S7-LAN

10.4.1.1 Automatically

1. With a click on "Search" you send a broadcast to all cables and modules that are located on your network or directly connected to the computer. Each reacting cable / module to this broadcast, is entered in the list of participants.

2. Select the desired cable / module so that it is highlighted in blue. Here, all parameters are automatically included in the configuration wizard.

10.4.1.2 Manually

The manual entry relates to the network users that are behind routers in other networks because of the broadcast for the automatic detection is not passed from routers and these network devices thus can not be found.

1. If the IP address of your cable is known, you can enter them manually. To activate the input field for this purpose, click on the box "Manual input".

2. Type in the "IP address" the address of your cable / module, with that you want to connect and select your type of cable in the "LAN Type".

10.4.1.3 Final settings

3. Select the options that you may need, eg. RFC1006, no network card selection, installation in the device manager or serial breaks.

Information about the options which can be selected and deselected with the help of checkboxes, can be found in the section "Overview" of the PLC VCOMs.

4. Confirm your entry / selection with "OK".
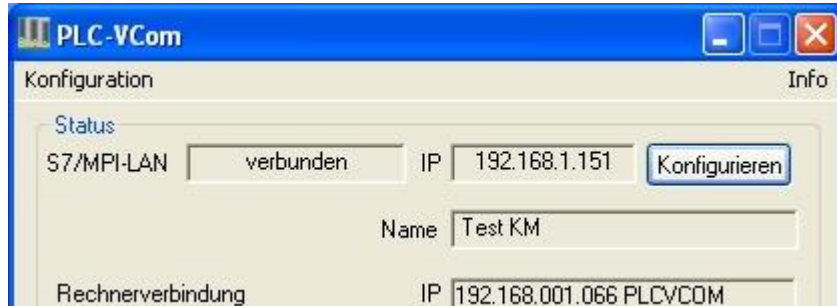
5. After a successful connection, in the main window of the PLC VCOMs appears the cable type with which the computer connects, the connection status is "connected", the IP address and the name of the connected participant and the existing connections to the cable / module.

6. Finally click "Minimize" to decrease the PLC-VCOM in the notification area, so that this can continue to manage the virtual COM port.

11 MPI-LAN Manager

11.1 Installation

The MPI-LAN Manager is installed automatically with the PLC-VCOM and the S5-LAN Manager. See chapter " PLC – VCOM ", to install this pack.

11.2 Operation

Start the PLC-VCOM and connect to the S7/MPI-LAN as described in " PLC - VCOM ".

Now start the MPI-LAN Manager from either the Start menu or in the PLC-VCOM menu under "Configuration" ⇒ "MPI/S7-LAN"
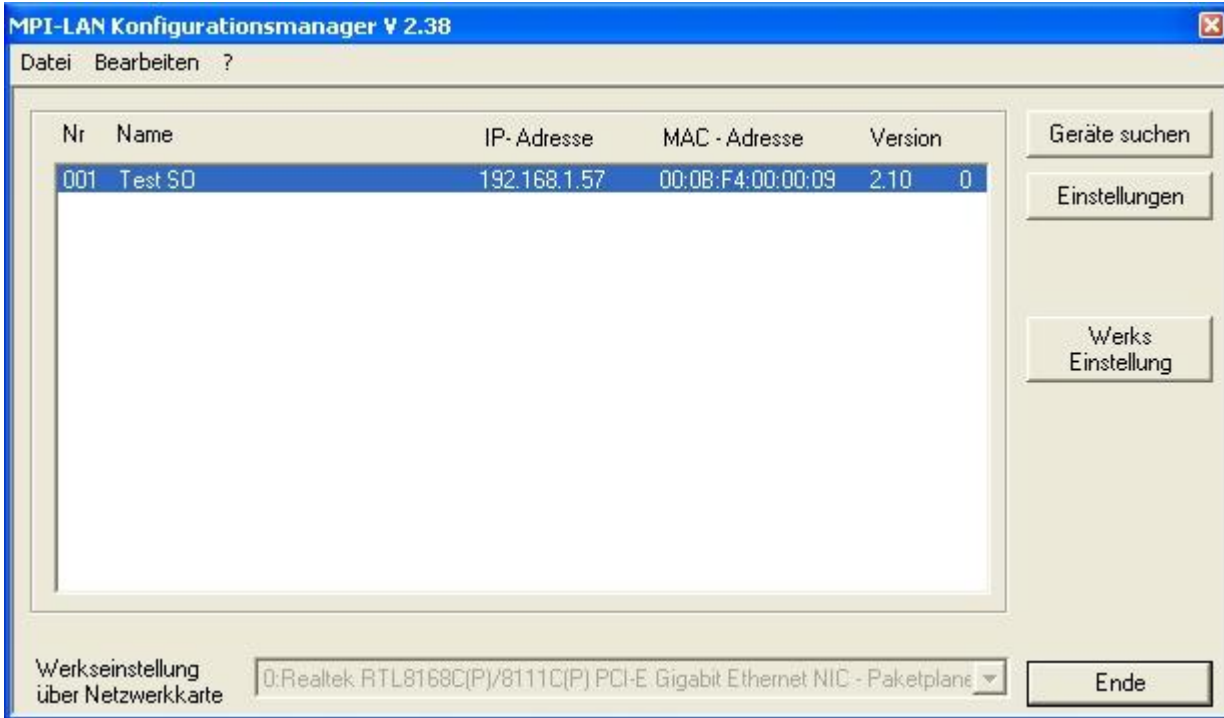
Search devices:

With a click on "Search devices" you send a broadcast to all cables which are available in your network. Each cable is responsive to these broadcast entered in the list.

Settings:

Click on a found cable / module to mark it.

Click on "Settings".
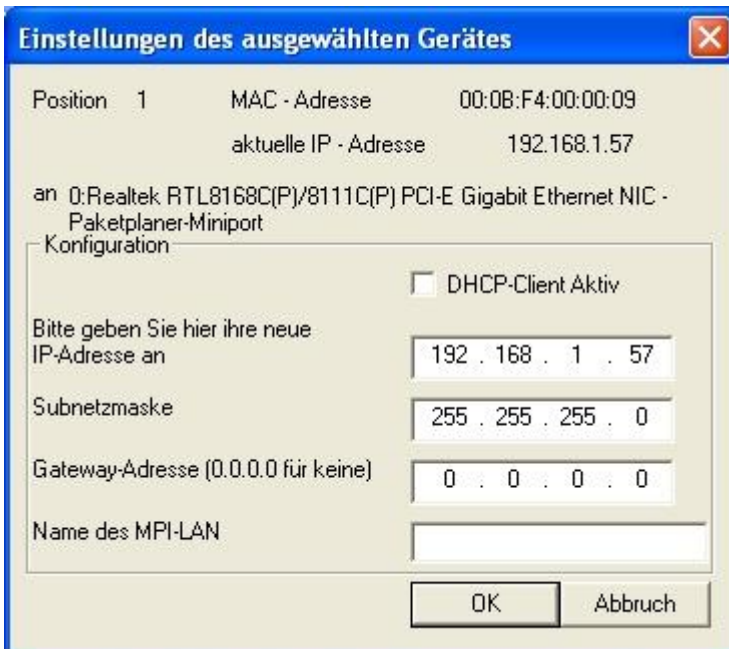
This dialog gives you the option:

- read adjusted parameter
- To activate the DHCP mode
- To change the IP address, subnet mask, gateway address, and the name of the cable

Click "OK" to save the settings.

Factory settings:

This feature allows you send the default setting to all the devices MPI/S7-LAN. For security reasons, here asked twice.

12 Technical data

Supply voltage:	24V/DC +/- 20%
Power consumption:	2 Watt
Display:	Web-Browser 2 Status-LEDs
Handling/Configuration:	Web-Browser Kabelmanager-Software
Interfaces:	zur AG: PPI/MPI/Profibus interface: 9,6 KBd - 12 MBd to PG/PC: 9pol. PG/Diagnose-Buchse 10/100BaseTX RJ45-Ethernetbuchse
Galvanic separation:	1500V PPI/MPI/Profibus to the PC
Operating temperature:	5 - 55°C
Case:	ABS-plastic case
Dimensions:	65 x 43 x 17 mm

12.1 Pin assignment

Pin No.	Notation	Signalname	Direction (of cable)
1	NC	Not Connected	
2	M24V	Ground of the 24V	In
3	Ltg_B	Data line B	BiDir.
4	RTS-AS	Request to Send from the PLC	In
5	M5V	Ground of the 5V	In
6	P5V	5V output	Out
7	P24V	24V Supply input	In
8	Ltg_A	Data line A	BiDir.
9	RTS-PG	Request to Send to the PLC	Out

Note:

The shield is attached with the MPI/PPI connector via the shield of the adapter casing. To find directly attended PLC´s , RTS-AS and M5V must be connected in the cable. P5V means a output of the cable and works only as an output for a bus-termination with resistors. This 5V output doesn't drive any load and have a 100R resistor inside his direction.

Observe:

Don't lengthen the connection by a 1:1 cable to the PLC, because there are 24V and 5V inside of the cable. The quality of the bus-signal will be risen down!

To lengthen the connection, please use a MPI-NETZ-Adapter and connect only the signals Ltg_A and Ltg_B 1:1 and the shield at both sides of the metal-casing at the SUB-D connector

For an extension of the cable please supply the cable with external power and only prolong the signals Ltg_A and Ltg_B 1:1. Connect the shield on the SUB-D connector, possibly include a termination resistors (on the bus-END).

12.2 Pinning Ethernet

Pin No.	Short name	Notation	Direction
1	TX +	receive line +	Out
2	TX –	receive line –	Out
3	RX +	send line +	In
6	RX –	send line –	In

13 Examples of applications

13.1 S5 to S7 – Gateway Communication

13.1.1 S5 – Configuring Gateway

Requirements: S5-LAN Manager
Supported since firmware version 0.44 of the S5 - Gateway.

1. Start the S5-LAN Manager and search for your S5 - Gateway module. As soon as found, select it and click on the button "S5 - Gateway - connection". It appears a dialog where you can set up the gateway connection.

2. In the lower part of the dialog you will find the connection list where you select the connection you want to edit.

3. At the top of the dialog a edit box called "name:" allowes you to give the connection a logical name.

4. Below set up the position of the "configuration data block". Therefore just set the position of the data block (DB) to the left edit box (e.g. "1" for DB1). Then set up the starting point which specifies when the configuration area starts (the edit box is called " from DW").

5. Set the connection type list box (it is called "connection type" in the dialog) to "ISO - on - TCP - connection". This connection type uses the TCP port 102.

6. The polling cycle (ms) specifies the elapsed time until the S5 - Gateway reads the configuration area and checks wether something has to be done. If this box is set to 0, the configuration area will be readed constantly.

7. Only the member of the IP address ("Partner") can be set in the address part ("Adresses"). The IP address of the S5 - Gateway you have to set as known by using the S5-LAN Manager.

8. Configure the TSAP (Transport - Service - Access - Point) to both devices. This one consists of 16 characters and identificates the connection. This will be needed to identify a connection to an IP address which has running more than one connections.

9. The communication is compatible to the "ISO - on - TCP - connection" connection of the CP343 - 1. In this case only has to be configured the required connections of the S7 - CP343 - 1. Set the TPDU - size (Transport - Protocol - Data - Unit) to 512. So you have specified that the maximum package size which can be received or transmitted is 512.

Finally the S5 - Gateway communication is set up.

13.1.2 Configure the S7 gateway

Start your Internet Explorer and type in the address bar the IP of the S7-LAN module. This will open the configuration page of the S7 - LAN.

13.1.2.1 With the web browser

Set in the "General" what should be the name for your module.
Among other things, the "TS function" must be turned off and "BUS - configuration use from PC" must be set to "NO". "Boot Settings" and "protocol type" must both be set to "Automatic".

Allgemein	Netzwerk	RFC1006	MPI/PROFIBUS	Tuning	Anzeige	S7_an_S5/S7_Gateway	VarSteuern	KonfigVarSt	Watchdog	Passwort
Betriebssystem										V 2.07
Name										Example
TS-Funktion										○ EIN ⊙ AUS
BUS-Konfiguration vom PC verwenden										○ JA ⊙ NEIN
Booteinstellung										Automatik
Protokollart										Automatik
Baudrate (nur bei Booteinstellung Sonder)										Automatik
Datenbit (nur bei Booteinstellung Sonder)										8
Parität (nur bei Booteinstellung Sonder)										keine
Stopbit (nur bei Booteinstellung Sonder)										1

Speichern

Under "Network" you must set the "DHCP - client" to "OFF", and adjust the IP - address of the module.

Allgemein	Netzwerk	RFC1006	MPI/PROFIBUS	Tuning	Anzeige	S7_an_S5/S7_Gateway	VarSteuern	KonfigVarSt	Watchdog	Passwort
DHCP-Client										○ EIN ⊙ AUS
IP-Adresse (bei kein DHCP-Client oder kein DHCP-Server gefunden)										192.168.1.52
Sub-Netzmaske (bei kein DHCP-Client oder kein DHCP-Server gefunden)										255.255.255.0
Gateway-Adresse (bei kein DHCP-Client oder kein DHCP-Server gefunden) 0.0.0.0 für kein Gateway										0.0.0.0

Speichern

Set the baud rate in "MPI / PROFIBUS" on 187K5 and determine the highest station address. Under "Local

Station Address" give an number to your S7-LAN. The "profile" must be set to "MPI".

Allgemein	Netzwerk	RFC1006	MPI/PROFIBUS	Tuning		Anzeige S7_an_S5/S7_Gateway VarSteuern KonfigVarSt Watchdog Passwort	
Baudrate							187KS
höchste Stationsadresse							126
lokale Teilnehmeradresse							9
Profil							MPI
stärkere Busanschaltung							AUS

Speichern

The next step is to configure the gateway. Here you have to set "Connection Type", "DB - Active" (the partner device "passive") and in the "Station Number" you must enter the number of your PLC. Now you should decide which of the configuration data block is in your PLC and from which data word. Type in the IP - address of your S5 - LAN in the field "IP - address partner". In "TSAP" your store the same name as you have assigned in the S5 - LAN Manager to your - S5 LAN.

Allgemein	Netzwerk	RFC1006	MPI/PROFIBUS	Tuning	Anzeige	S7_an_S5/S7_Gateway	VarSteuern
Verbindungstyp	Stationsnummer	Datenbaustein	Datenwort	IP-Adresse Partner	TSAP	Pollzeit	
DB-Aktiv	5	10	0	192.168.1.54	1234	500	
AUS	255	65535	65535	255.255.255.255		65535	
AUS	255	65535	65535	255.255.255.255		65535	
AUS	255	65535	65535	255.255.255.255		65535	
AUS	255	65535	65535	255.255.255.255		65535	
AUS	255	65535	65535	255.255.255.255		65535	
AUS	255	65535	65535	255.255.255.255		65535	
AUS	255	65535	65535	255.255.255.255		65535	

Speichern

Finally, you still have to enter the number of your CPU that is stored in your PLC about "RFC1006" in "destination - CPU", and the "Bus" should be "Config".

Allgemein	Netzwerk	RFC1006	MPI/PROFIBUS	Tuning		Anzeige S7_an_S5/S7_Gateway VarSteuern KonfigVarSt Watchdog Passwort	
Ziel-CPU							5
S7-Subnetz-ID							0000-0000
Busparameter							Konfig
Zustand							RFC1006 Aktiv
0:mit IP: 192.168.001.054 verbunden mit CPU 005 000:Empfangstatus:OK Auftrag ausgeführt 000:Sendestatus:OK Auftrag ausgeführt 1:keine TCP/IP-Verbindung nicht im MPI-Bus 2:keine TCP/IP-Verbindung nicht im MPI-Bus 3:keine TCP/IP-Verbindung nicht im MPI-Bus 4:keine TCP/IP-Verbindung nicht im MPI-Bus 5:keine TCP/IP-Verbindung nicht im MPI-Bus 6:keine TCP/IP-Verbindung nicht im MPI-Bus 7:keine TCP/IP-Verbindung nicht im MPI-Bus							

Speichern

13.1.2.2 With the web browser from V2.10 (S7-LAN) / V2.36 (MPI-LAN)

- Startseite
- Verbindungen
- Display
- Optionen
- Konfiguration
- Passwort
- Neustart

Allgemein

Name:	Test KM
Werkseinstellungen laden:	Jetzt laden

Netzwerk

DHCP aktivieren:	☐
IP-Adresse:	192.168.1.151
Subnetzmaske:	255.255.255.0
Gateway-Adresse:	0.0.0.0

Buseinstellungen

Bus-Konfig von PC verwenden:	☐
Baudrate:	187K5
Höchste Stationsadresse:	126
PG/PC ist einziger Master:	☐
Profil:	MPI
Lokale Adresse:	0

Booteinstellungen

Profil:	Automatik

Für manuelle Profileinstellung

Baudrate:	Automatik
Datenbit:	8
Parität:	keine
Stopbit:	1

Für RFC1006 Verbindungen

Ziel CPU:	5
S7-Subnetz-ID:	0000-0000
Busparameter:	Konfig

Sonstiges

Protokollart:	Automatik
TS-Adapterfunktionalität:	☐
Fehlerausgabe auf Display:	☐

Set in the "General" what should be the name for your module.

Under "Network" you must set the "DHCP - client" to "OFF" and adjust the IP - address of the module.

Set the baud rate in "Bus Settings", to 187K5 and determine the highest station address. Under "Local Station Address" you give a number to your S7-LAN. The "profile" must be set to "MPI" and at "BUS - use config from PC" must be set no "tick.

Under "other", the "TS Adapter functionality" must be off. "Boot Settings" and "protocol type" must both be set to "Automatic".

Finally, you still have to enter the number of your CPU that is stored in your PLC about "RFC1006" in "destination - CPU" and the "Bus" should be "Config".

The final step is to configure the gateway. Here you have to set "Connection Type", "DB - Active" (the partner device "passive") and at "Station Number" you have to enter the number of your PLC. Now you should decide which is the configuration data blocks in your PLC and from which data word. Type in the IP - address of your S5 - LAN in the field "IP - address partner". In "TSAP" your store the same name as you have assigned in the S5 - LAN Manager to your - S5 LAN.

13.1.3 Transfer blocks in PLC

1. Start your programming software and open the S5D - file "S5toS5 - Gateway".

2. Now connect with your S5 - Gateway modules and transfer all the blocks (OB1, FB55 and FB56) in the module belonging to the PLC. The same blocks you now even transfer into the second PLC. The blocks DB20 and DB100 are generated by itself.

3. Now open the S7P - file "S5toS7 - Gateway".

4. Now connect with your S7 - LAN module and transfer the blocks (OB1, FB10, FC15, FC16, DB10 and DB14) into the PLC

13.1.4 Start transmission cycle

S5-controller

In the following example, the DB20 is used as configuration - DB. M10.0 controls the sending and M12.0 controls the receiving. If M10.0 is "1", then 20 bytes of the DB100 are sent from the DW0. M12.0 the receive mailbox DB100 gives free 20 bytes from DW100.

:	SPA	FB	55
Name	:	S5L_SEND	
JDBN	:	KF	+00020
JDBW	:	KF	+00000
STYP	:	KC	D
SDBN	:	KF	+00100
SBEG	:	KF	+00000
SLEN	:	KF	+00020
ACT	:	M	10.0
LEN	:	KF	+00020
DONE	:	M	11.0

ERR	:	M	11.1
STAT	:	MW	20
:			
:	SPA	FB	56
Name	:	S5L_RECV	
JDBN	:	KF	+00020
JDBW	:	KF	+00000
RTYP	:	KC	D
RDBN	:	KF	+00100
RBEG	:	KF	+00100
RLEN	:	KF	+00020
ACT	:	M	12.0
LEN	:	MW	24
NDR	:	M	13.0
ERR	:	M	13.1
STAT	:	MW	22

Set the inputs E8.0 and E9.0 to "1" for sending and receiving.

S7-controller

In the following example, the DB10 is used as DB configuration. M10.0 controls the sending and M11.0 controls the receiving. If M10.0 is "1", then 20 bytes of the DB14 are sent from DW0. M11.0 the receive mailbox DB14 gives free 20 bytes from DW100.

CALL "S7LAN_SEND"		
KOMDB	:	= **S7LAN KommunikationsDB**.KOM
SENDTYP	:	= 'D'
SENDDB	:	= 14
SENDADR	:	= 0
SENDLEN	:	= 20
ACT	:	= M10.0
LEN	:	= 20
DONE	:	= M10.1
ERROR	:	= M10.2
STATUS	:	= MW12
	CALL "S7LAN_RECV"	
KOMDB	:	= "S7LAN KommunikationsDB".KOM
RECVTYP	:	= 'D'
RECVDB	:	= 14
RECVADR	:	= 100
RECVLEN	:	= 20
ACT	:	= M11.0
NDR	:	= M11.1
ERROR	:	= M11.2
STATUS	:	= MW14
LEN	:	= MW16

13.1.5 Test of the structure

1. Open the each DB100 in your PLCs and enter any values in the first 20 bytes.

e.g.:(1; 2; 3; 4; 5; 6; 7; 8; 9)

```
DB  100 - C:\DOKUMENTE UND EINSTELLUNGEN\...\S5ANS5-GATEWAY\S5ANS5-...
                                                    Bib =
     0:      KH = 0001;
     1:      KH = 0002;
     2:      KH = 0003;
     3:      KH = 0004;
     4:      KH = 0005;
     5:      KH = 0006;
     6:      KH = 0007;
     7:      KH = 0008;
     8:      KH = 0009;
     9:      KH = 0000;
    10:      KH = 0000;
    11:      KH = 0000;
    12:      KH = 0000;
    13:      KH = 0000;
    14:      KH = 0000;
    15:      KH = 0000;
    16:      KH = 0000;
    17:      KH = 0000;
```
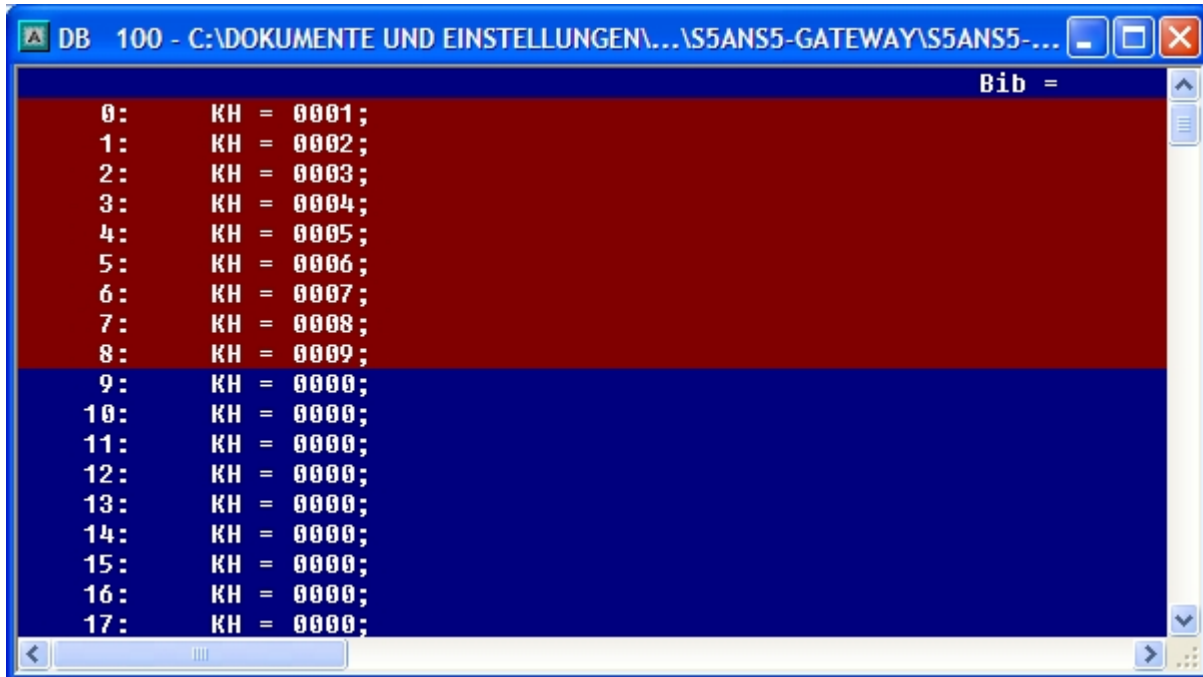
2. Save the blocks and set the inputs E8.0 and E9.0 to "1" in your PLC with the active S5 - Gateway module and restart the cycle.

```
STEUERN VARIABLE
Mark | Adresse | Art |    Wert    |         Kommentar
  *    E  8.0    KM    1
  *    E  9.0    KM    1
```
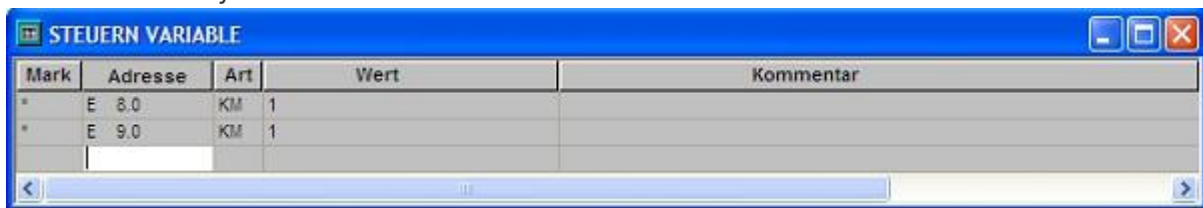
3. Now open the DB100 and check whether the values of the 20 bytes which you have configured in the other PLC in DB100 match with those from DW100.

```
DB  100 - C:\DOKUMENTE UND EINSTELLUNGEN\...\S5ANS5-GATEWAY\S5ANS5-...
    97:      KH = 0000;
    98:      KH = 0000;
    99:      KH = 0000;
   100:      KH = 0001;
   101:      KH = 0002;
   102:      KH = 0003;
   103:      KH = 0004;
   104:      KH = 0005;
   105:      KH = 0006;
   106:      KH = 0007;
   107:      KH = 0008;
   108:      KH = 0009;
   109:      KH = 0000;
   110:      KH = 0000;
   111:      KH = 0000;
   112:      KH = 0000;
   113:      KH = 0000;
   114:      KH = 0000;
   115:      KH = 0000;
```

If they match, the communication was successful.

4. Open the DB14 in your S7 - PLC and enter any values in the first 20 bytes.

e.g.: (1; 2; 3; 4; 5; 6; 7; 8; 9; 10)

5. Save the blocks and set the inputs E8.0 and E9.0 to "1" in your S5 - PLC and restart the cycle.

6. Open the DB14 in your S7 - PLC and check if the values of the 20 bytes which you configured in the other PLC in DB100 and DB14 from DW0 match with those from DW100. If that is the case, the communication between S5 and S7 was successfully performed.

The bytes from DW100 should be the same as the ones you have configured in the DB100 S5 - PLC from DW0.

If they match, the communication was successful

13.2 S7 to S7 - Gateway communication

13.2.1 S7– Configure Gateway

Start your Internet Explorer and enter the IP of the S7-LAN module in the address bar. This will open the configuration page of the S7 - LAN.

13.2.1.1 With the web browser

Set in the "General" what name should be have your module. Among other things must be the "TS" function is turned off, and "use BUS - configuration from the PC" must be set to "NO". "Boot Settings" and "protocol type" must both be set to "Automatic"

Under "Network" you have to set the "DHCP - client" to "OFF" and set the IP - address of the module.

Allgemein	Netzwerk	RFC1006	MPI/PROFIBUS	Tuning		Anzeige	S7_an_S5/S7_Gateway	VarSteuern	KonfigVarSt	Watchdog	Passwort
DHCP-Client										○ EIN ⊙ AUS	
IP-Adresse (bei kein DHCP-Client oder kein DHCP-Server gefunden)										192.168.1.52	
Sub-Netzmaske (bei kein DHCP-Client oder kein DHCP-Server gefunden)										255.255.255.0	
Gateway-Adresse (bei kein DHCP-Client oder kein DHCP-Server gefunden) 0.0.0.0 für kein Gateway										0.0.0.0	

Speichern

Adjust the baud rate in the "MPI / PROFIBUS" on 187K5 and determine the highest station address. Under "Local Station Address" give your S7-LAN a number. The "profile" must be set to "MPI".

Allgemein	Netzwerk	RFC1006	MPI/PROFIBUS	Tuning	Anzeige	S7_an_S5/S7_Gateway	VarSteuern	KonfigVarSt	Watchdog	Passwort
Baudrate									187K5	
höchste Stationsadresse									126	
lokale Teilnehmeradresse									9	
Profil									MPI	
stärkere Busanschaltung									AUS	

Speichern

The next step is to configure the gateway. Here you have to adjust "Connection Type", "DB - Active" (the partner device "passive") and at the "Station Number" you must enter the number of your PLC. Now you should decide which is the configuration data block in your PLC, and from which data word. Enter the IP - address of your S5 - LAN in the field "IP - address partner". In "TSAP" you store now have the same name as assigned in the S5 - LAN Manager to your S5 - LAN .

Allgemein	Netzwerk	RFC1006	MPI/PROFIBUS	Tuning	Anzeige	S7_an_S5/S7_Gateway	VarSteuern
Verbindungstyp	Stationsnummer	Datenbaustein	Datenwort	IP-Adresse Partner	TSAP	Pollzeit	
DB-Aktiv	5	10	0	192.168.1.54	1234	500	
AUS	255	65535	65535	255.255.255.255		65535	
AUS	255	65535	65535	255.255.255.255		65535	
AUS	255	65535	65535	255.255.255.255		65535	
AUS	255	65535	65535	255.255.255.255		65535	
AUS	255	65535	65535	255.255.255.255		65535	
AUS	255	65535	65535	255.255.255.255		65535	
AUS	255	65535	65535	255.255.255.255		65535	

Speichern

Finally, you still have to see "RFC1006" in "Target - CPU", enter the number of your CPU that is stored is in your PLC and the "Bus" should be set on "Config".

Allgemein	Netzwerk	RFC1006	MPI/PROFIBUS	Tuning	Anzeige	S7_an_S5/S7_Gateway	VarSteuern	KonfigVarSt	Watchdog	Passwort
Ziel-CPU									5	
S7-Subnetz-ID									0000-0000	
Busparameter									Konfig	
Zustand									RFC1006 Aktiv	
0:mit IP: 192.168.001.054 verbunden mit CPU:005 000:Empfangsstatus:OK Auftrag ausgeführt 000:Sendestatus:OK Auftrag ausgeführt 1:keine TCP/IP-Verbindung nicht im MPI-Bus 2:keine TCP/IP-Verbindung nicht im MPI-Bus 3:keine TCP/IP-Verbindung nicht im MPI-Bus 4:keine TCP/IP-Verbindung nicht im MPI-Bus 5:keine TCP/IP-Verbindung nicht im MPI-Bus 6:keine TCP/IP-Verbindung nicht im MPI-Bus 7:keine TCP/IP-Verbindung nicht im MPI-Bus										

Speichern

13.2.1.2 With the web browser from V2.10 (S7-LAN) / V2.36 (MPI-LAN)

- Startseite
- Verbindungen
- Display
- Optionen
- Konfiguration
- Passwort
- Neustart

Allgemein

Name:	Test KM
Werkseinstellungen laden:	Jetzt laden

Netzwerk

DHCP aktivieren:	☐
IP-Adresse:	192.168.1.151
Subnetzmaske:	255.255.255.0
Gateway-Adresse:	0.0.0.0

Buseinstellungen

Bus-Konfig von PC verwenden:	☐
Baudrate:	187K5
Höchste Stationsadresse:	126
PG/PC ist einziger Master:	☐
Profil:	MPI
Lokale Adresse:	0

Booteinstellungen

Profil:	Automatik

Für manuelle Profileinstellung

Baudrate:	Automatik
Datenbit:	8
Parität:	keine
Stopbit:	1

Für RFC1006 Verbindungen

Ziel CPU:	5
S7-Subnetz-ID:	0000-0000
Busparameter:	Konfig

Sonstiges

Protokollart:	Automatik
TS-Adapterfunktionalität:	☐
Fehlerausgabe auf Display:	☐

Adjust in the "General" what should be the name for your module.

Under "Network" you have to adjust the "DHCP - client" to "OFF" and set the IP - address of the module.

Adjust the baud rate in "Bus Settings" to 187K5 and determine the highest station address. Under "Local Station Address" you have to enter your S7-LAN a number. The "profile" has to be on "MPI" and at the "use BUS - config from PC" must be set no "tick".

Under "other", the "TS Adapter Functionality" must be set off. "Boot Settings" and "protocol type" must both to be set to "Automatic".

Finally, you still have to enter the number of the CPU under "RFC1006" in "Target - CPU", which is stored in your PLC and the "Bus" should be set "Config".

		IP-Adresse	TSAP	Pollzeit	CPU	DB	Datenwort
DB-Aktiv	⌄	192.168.1.54	1234	500	5	10	0
Aus	⌄	255.255.255.255		65535	255	65535	65535
Aus	⌄	255.255.255.255		65535	255	65535	65535
Aus	⌄	255.255.255.255		65535	255	65535	65535
Aus	⌄	255.255.255.255		65535	255	65535	65535
Aus	⌄	255.255.255.255		65535	255	65535	65535
Aus	⌄	255.255.255.255		65535	255	65535	65535
Aus	⌄	255.255.255.255		65535	255	65535	65535

Gateway-Verbindungen

Navigation: Startseite, Verbindungen, Display, Optionen, Variablen-Steuern, S7-Gateway, Watchdog, Konfiguration, Passwort, Neustart

Speichern

The last step is to configure the gateway. Here you have to adjust at "Connection Type", "DB - Active" (the partner device "passive") and at "Station Number" you have to deposit the number of your PLC. Now you should decide which is the configuration data block in your PLC and from which data word. The IP - address of your S5 - LAN you enter in the field "IP - address partner". In "TSAP" you deposit only the same name as you have assigned in S5 - LAN Manager to your S5 - LAN.

13.2.2 Overwrite blocks in PLC

1. Now open the S7P - file "S5toS7 - Gateway".

2. Now connect with your S7 - LAN module and overwrite the blocks (OB1, FB10, FC15, FC16, DB10 and DB14) in the PLC

13.2.3 Start transmission cycle

In the following example the DB10 is used as configuration - DB. M10.0 controls the sending and M11.0 the receiving. If M10.0 is "1", then 20 bytes are sent of the DB14 from DW0. M11.0 gives free 20 bytes the receive mailbox DB14 from DW100.

CALL "S7LAN_SEND"		
KOMDB	:=	"S7LAN KommunikationsDB".KOM
SENDTYP	:=	'D'
SENDDB	:=	14
SENDADR	:=	0
SENDLEN	:=	20
ACT	:=	M10.0
LEN	:=	20
DONE	:=	M10.1
ERROR	:=	M10.2
STATUS	:=	MW12
	CALL "S7LAN_RECV"	
KOMDB	:=	"S7LAN KommunikationsDB".KOM
RECVTYP	:=	'D'
RECVDB	:=	14
RECVADR	:=	100

RECVLEN	:	=	20
ACT	:	=	M11.0
NDR	:	=	M11.1
ERROR	:	=	M11.2
STATUS	:	=	MW14
LEN	:	=	MW16

13.2.4 Test of the structure

1. Open the DB14 in your S7 - PLC and enter any desired values in the first 20 bytes.
e.g: (1; 2; 3; 4; 5; 6; 7; 8; 9; 10)

2. Save the blocks and set the inputs E8.0 and E9.0 in your S5 - PLC to "1" and start the cycle.

3. Open the DB14 in your S7 - PLC and check if agree with those from DW100 the values of the 20 bytes that you configured in each others PLC in DB100 and DB14 from DW0. If that is the case, the communication between S5 and S7 was successfully completed.

The bytes from DW100 should be the same as the ones you have configured in the DB100 S5 - PLC from DW0.

If they match, then the communication was successful

13.3 S7CP to S5 - Gateway communication

13.3.1 S7CP to S5 - Gateway communication

Required tools: S5-LAN Manager
Supported from firmware - version 0.44 of the S5 - Gateway

1. Start the S5-LAN Manager and search for your module. Mark this, and click with the mouse on the button "S5 - Gateway - Connection". It opens a dialog for setting the connection.

2. In the bottom of the dialog you find the link list, in which you can select the connection which you want to configure.

3. At "Name" you can now give the connection a logical name.

4. Under "Configuration - DB", enter the position of the data block in the left entry field, (eg "1" for DB1) and in the right field from which data word (eg "1" for DW1) the configuration area is located.

5. As "connection - type" you adjust "ISO - on - TCP - Connection". In this setting is used the TCP - port 102.

6. The polling cycle (ms) specifies how much time elapses until the S5 - Gateway cyclically reads out the configuration area and checks if something needs to be done. If 0 is specified here is readed constantly from the PLC.

7. In the area "Addresses" you can only specify the IP - address of the partner. The IP - address of the S5 - Gateway module you further configurated via the S5 - LAN Manager.

8. With both devices you can adjust the "TSAP" (Transportation - Service - Access - Point). This consists of 16 characters and represents the identification of the connection. This is needed when several compounds with a IP - address exists. (From firmware version 0.45 in the S5 - Gateway can be built a connection with any TSAP)

9. In the second module must be described here in addition to the steps and the "tick" must be set on "Active connection establishment" in "Connection - Type".

Communication via S5 - Gateway is now configured.

13.3.2 Configurate S7-CP

1. Start your programming software and load your station in the software.
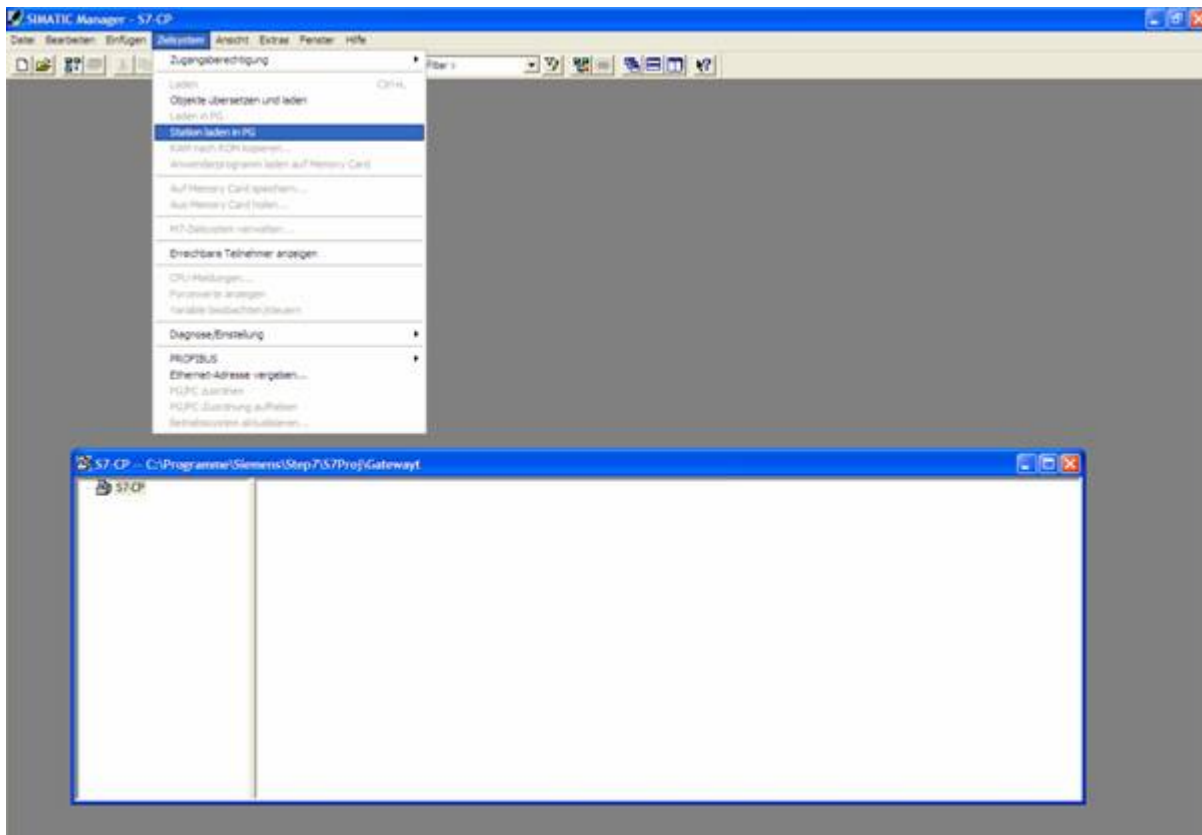
2. Now open the "NetPro" window over the "Tools" and "Configure Network", in which you can set up your stations and subnets.
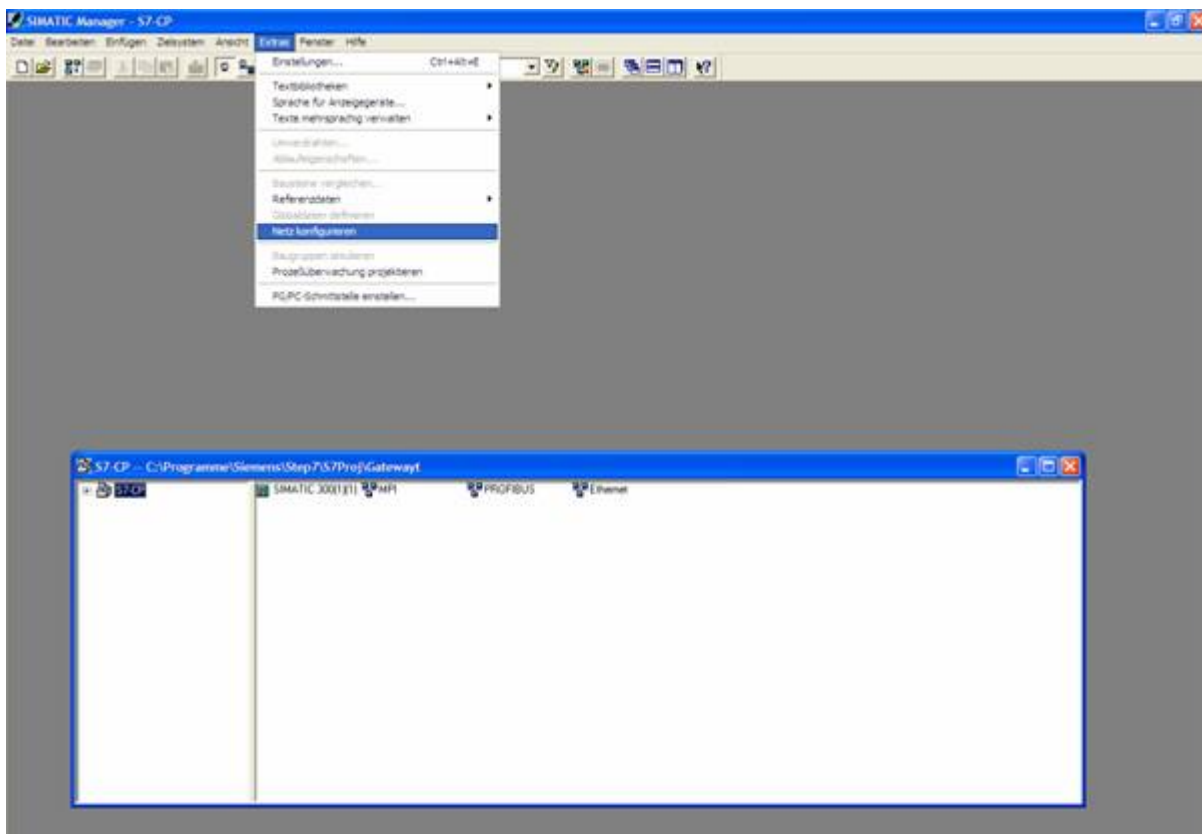
3. If you now execute a double click on your projected S7 opens the "Configure Hardware".
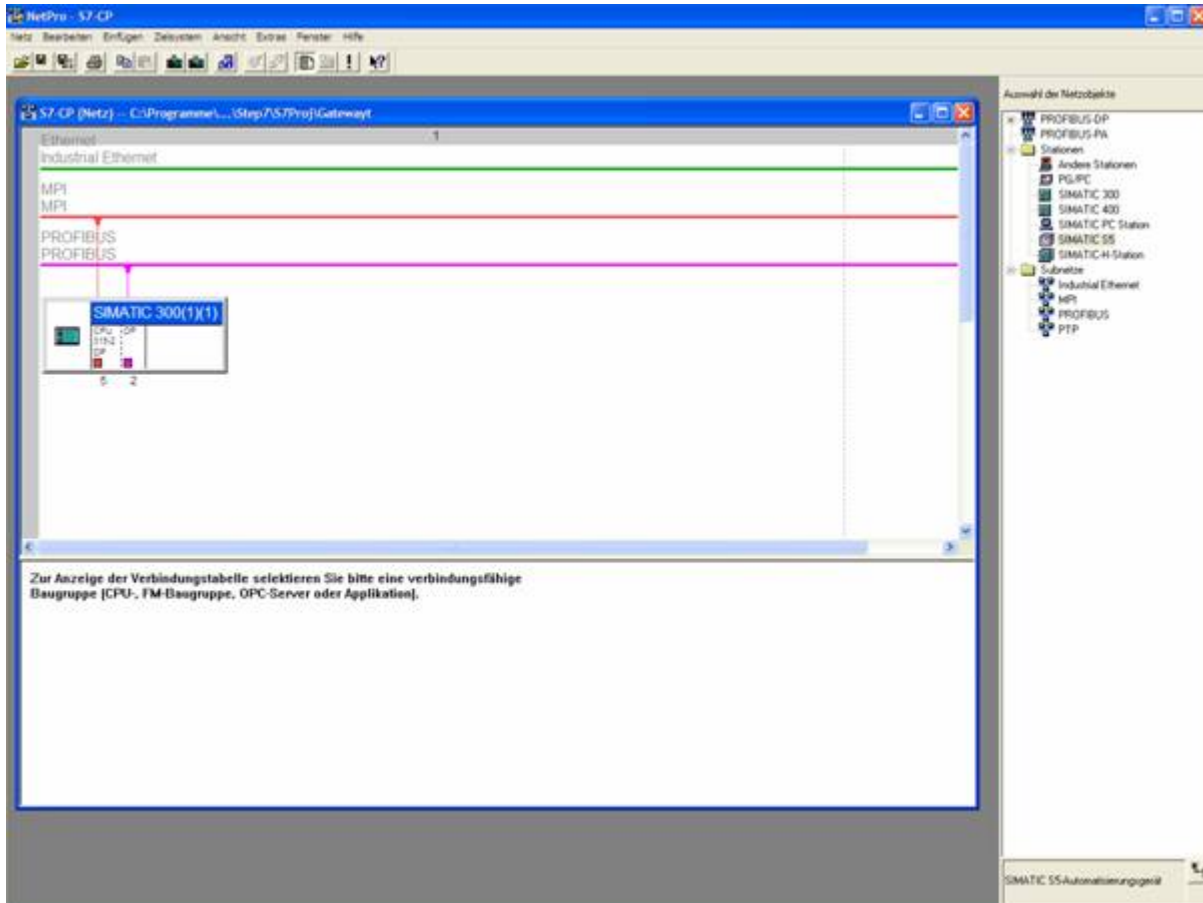
4. In the "Configure Hardware" you can select your CP in the right library from the list and paste it into your rack from slot 4. Save and translate your settings and close the "Configure Hardware".
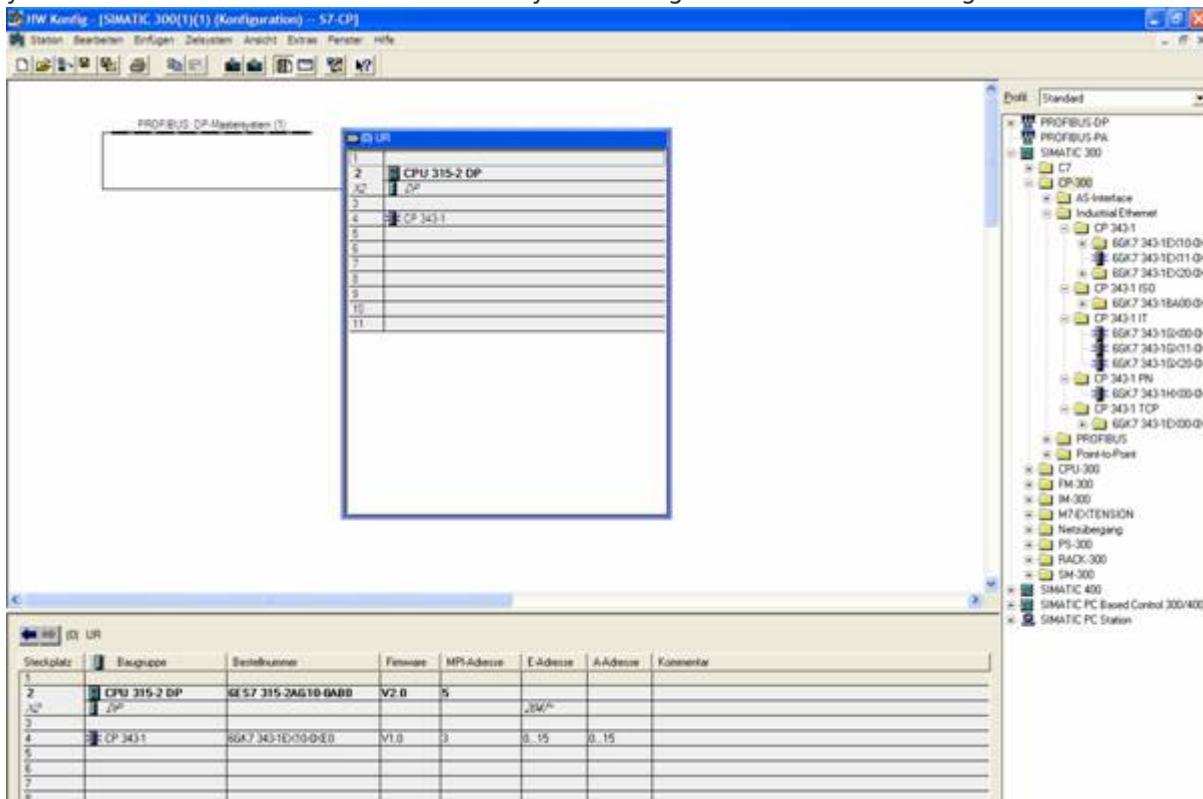
5. Now open the object properties with a right click on your projected CP. Under "General" you can now connect under interfaces these to the Ethernet network and assign an IP to him.

Eigenschaften - CP 343-1 - (R0/S4)

Allgemein | Adressen | Optionen | Diagnose

Kurzbezeichnung: CP 343-1

S7 CP für Industrial Ethernet ISO und TCP/IP mit SEND-RECEIVE- und FETCH-WRITE-Schnittstelle, lange Daten, UDP, TCP, ISO, S7-Kommunikation (Server), Routing und BG-Tausch ohne PG, 10/100 Mbit, Firmware V1.0

Bestell-Nr: 6GK7 343-1EX10-0XE0

Name: CP 343-1

Schnittstelle
Typ: Ethernet
Adresse: 192.168.1.160
Vernetzt: Ja   Eigenschaften...

Rückwandanschluß
MPI-Adresse: 3

Kommentar:

Schließen   Hilfe

Eigenschaften - Ethernet Schnittstelle CP 343-1 (R0/S4)

Allgemein | Parameter

MAC-Adresse: 08-00-06-01-00-00

☑ IP-Protokoll wird genutzt

IP-Adresse: 192.168.1.160
Subnetzmaske: 255.255.255.0

Netzübergang
⦿ Keinen Router verwenden
○ Router verwenden
Adresse: 192.168.1.160

Subnetz:
--- nicht vernetzt ---
Ethernet

Neu...
Eigenschaften...
Löschen

OK   Abbrechen   Hilfe

6. At the "Address" you can now determine the "beginning" and the "length" of the inputs and outputs.

7. In the diagnosis part, you can open a diagnostic window that we need later to check our structure. So for the moment, you can close the object properties.

8. Now it is time to project your S5 - PLC in said you select from the right library and create by a double click.
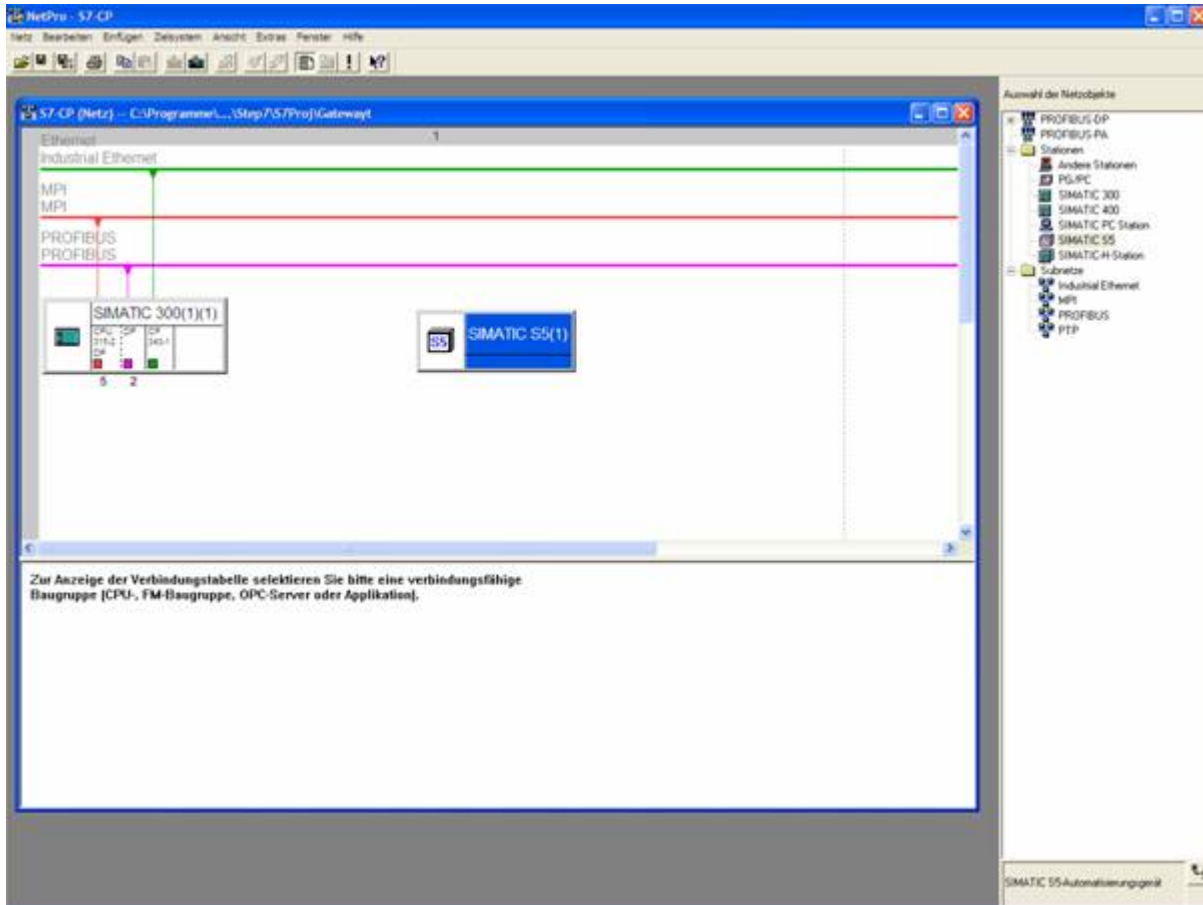
9. By right-clicking on your S5 you must now open the object properties in which you project a "Ethernet Interface" under interfaces as follows.
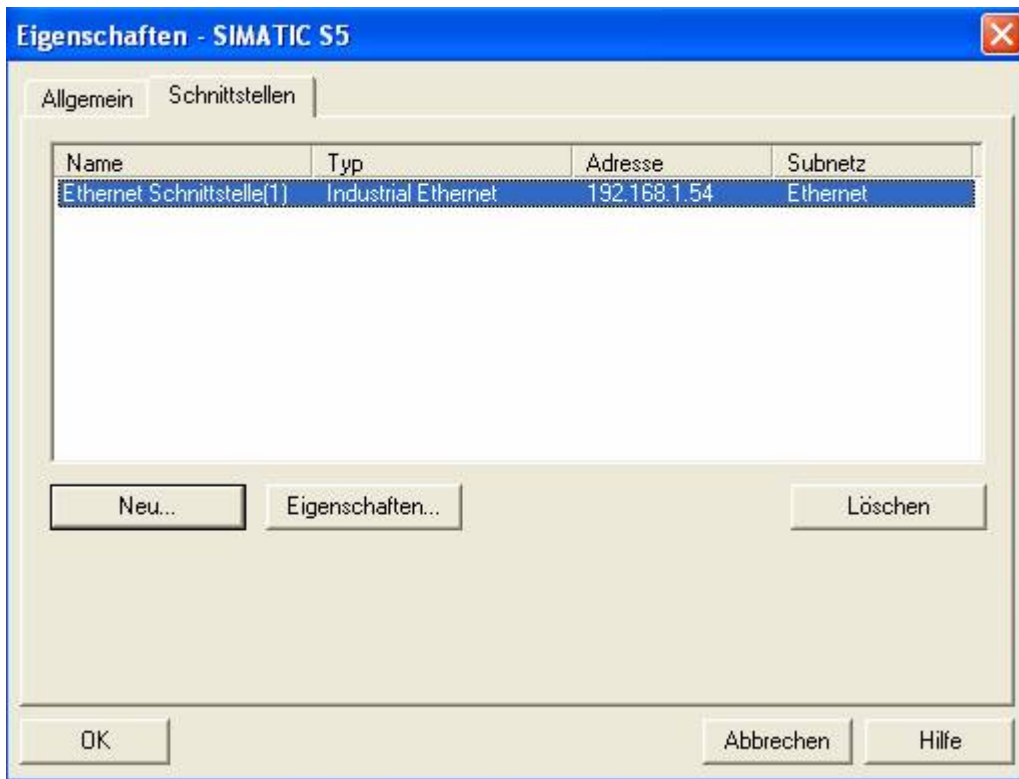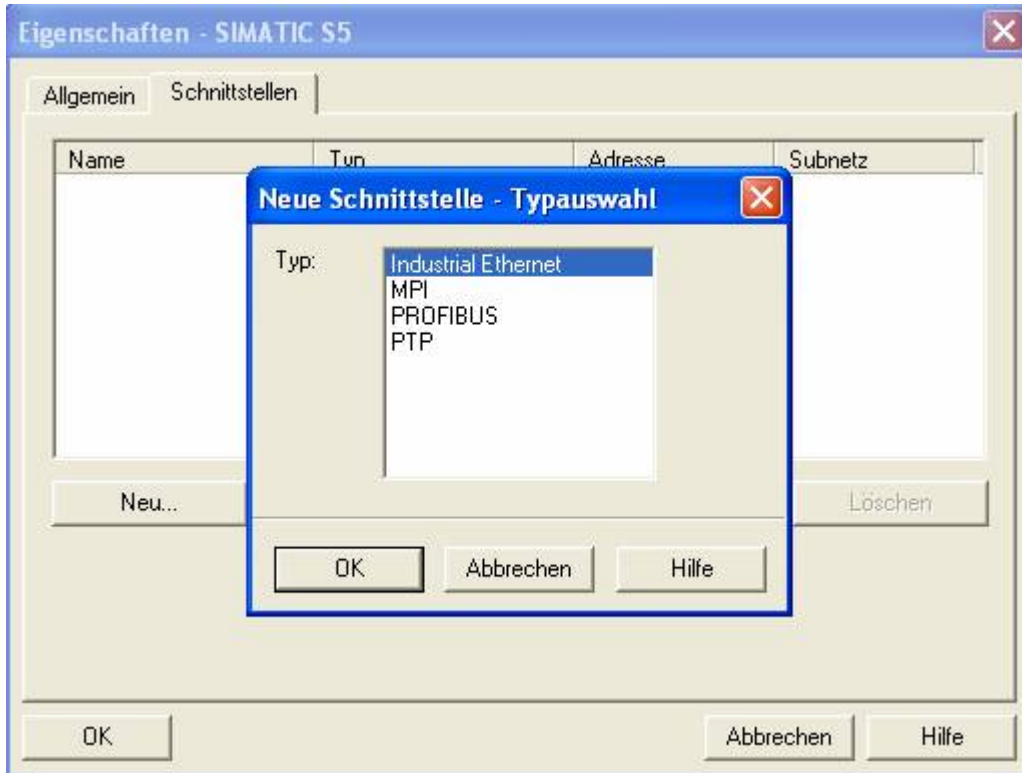
10. Type in "Parameters" then the IP of your S5 - LAN gateways, and confirm by clicking OK so that the object properties are now closed again.
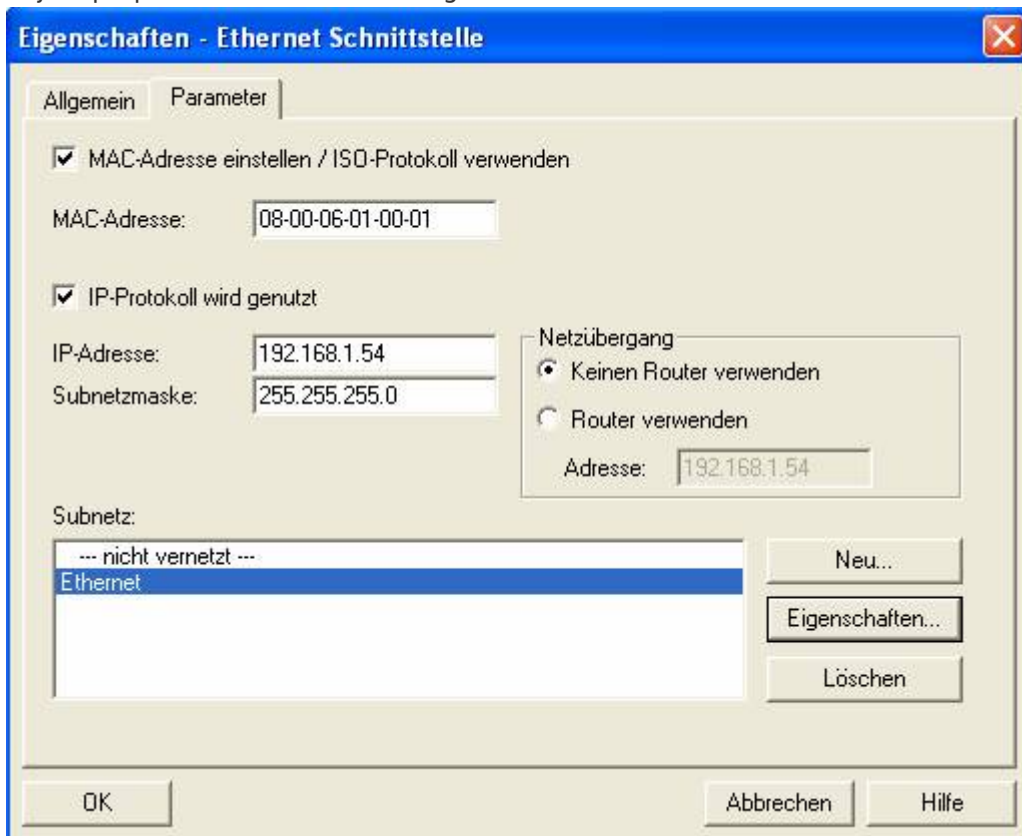
11. Now mark your CPU that is projected in your S7 by clicking. Now you can generate a new connection below in the connection table and indeed with a right click.
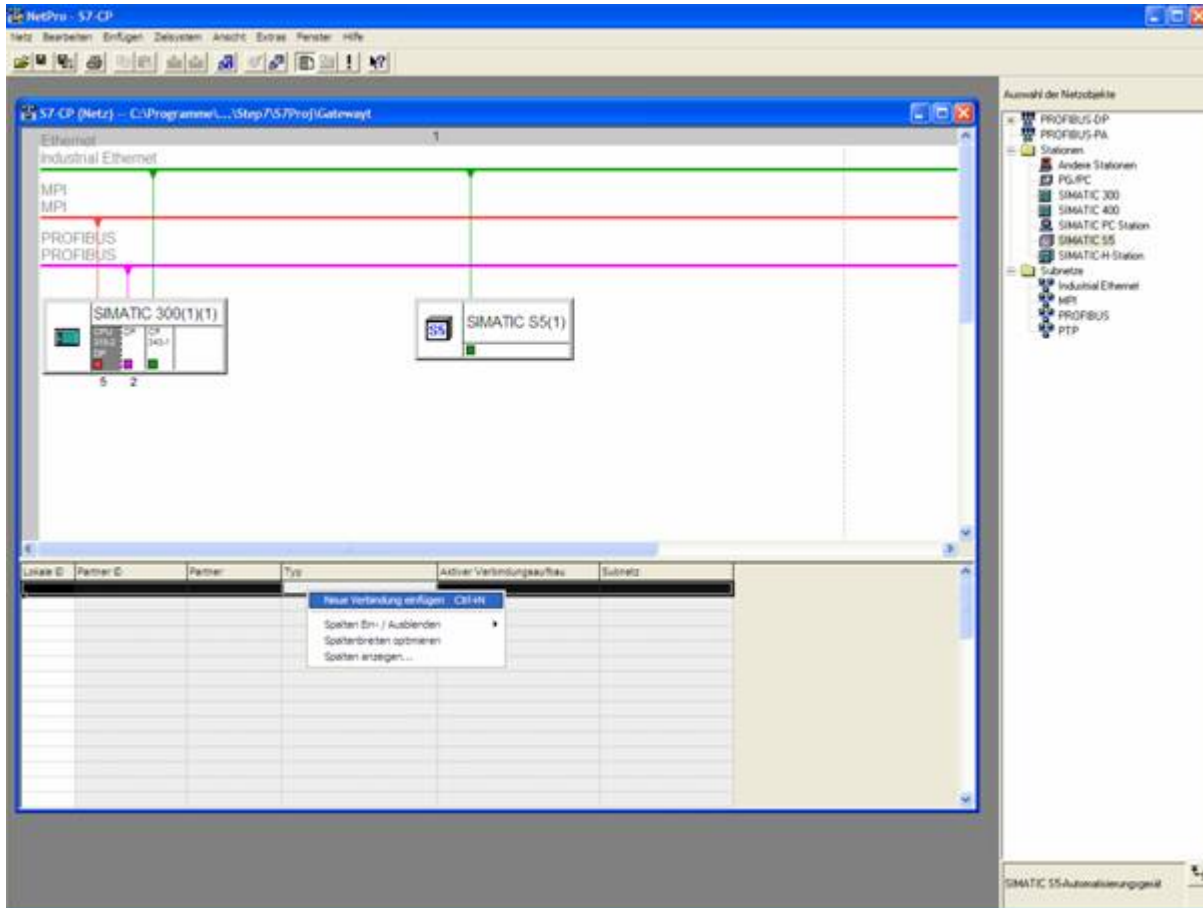
12. Now select here as the connection type the previously configured S5 - PLC and the "ISO-on-TCP connection".
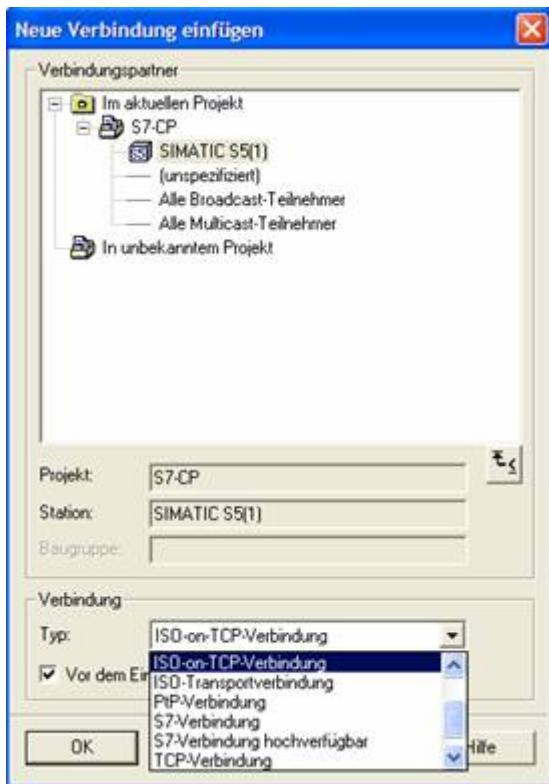
13. Now open the properties of the connection with "OK", where you must now put a "tick" under the "General" in "active connection".
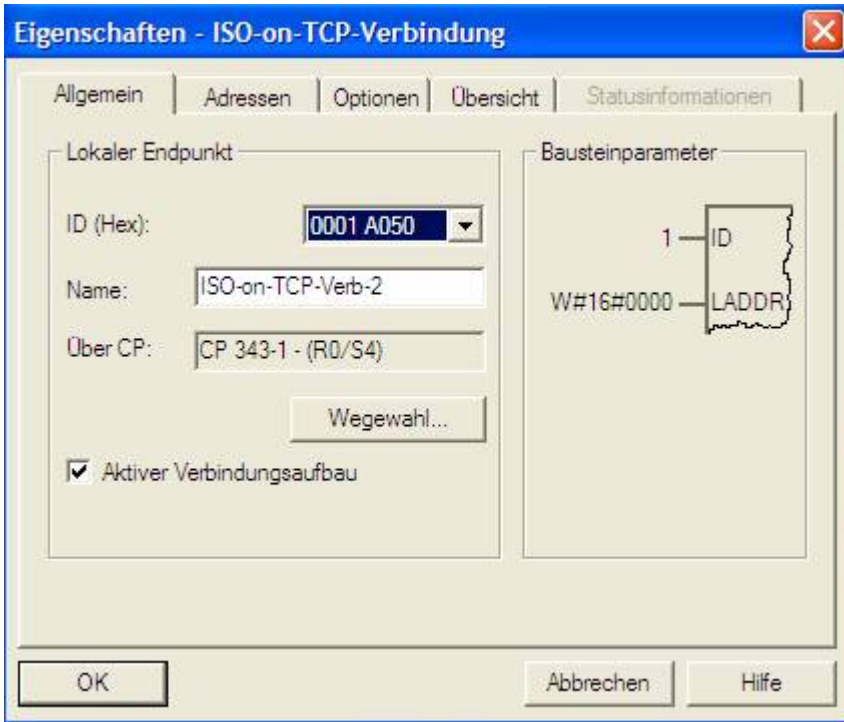
14. Under "Addresses" you just must now adjust the same "TSAP" like the one you have have given in S5 - LAN Manager to your S5 - LAN gateway.

13.3.3 Overwrite blocks in PLC

1. Start your programming software and open the S5D - file "S7 CPtoS5 - Gateway"
2. Now connect with your S5 - Gateway module and overwrite all blocks (OB1 FB55 and FB56) in the PLC. The blocks DB20 and DB100 are generated by itself.
3. Now open the S7P - file "S7 CPtoS5 - Gateway".
4. Now connect with your S7 - PLC and overwrite the blocks (OB1 FB1 FC5, FC6, and DB10) in the PLC

13.3.4 Start transmission cycle

S7 – Control:

The following example DB10 is used as the configuration - DB. M0.0 controls the sending and receiving. When M0.0 is "1", then 20 bytes of DB10 sent from DW0 and gives free the receive shelf DB10 from DW100 20 bytes.

CALL **AG_SEND**			
ACT	:	=	M0.0
ID	:	=	1
LADDR	:	=	W#16#0
SEND	:	=	P#DB10.DBX0.0 BYTE 20
LEN	:	=	20
DONE	:	=	M15.0
ERROR	:	=	M15.1
STATUS	:	=	MW11
	O	M 15.0	
O	M 15.1		
R	M 0.0		
SPB	noER		
L	MW 11		
noER	:	SET	
	CALL **AG_RECV**		
ID	:	=	1
LADDR	:	=	W#16#0
RECV	:	=	P#DB10.DBX100.0 BYTE 20
NDR	:	=	M20.0
ERROR	:	=	M20.1
STATUS	:	=	MW21
LEN	:	=	MW23
	O	M 20.0	
O	M 20.1		
S	M 0.0		

S5 –Control:

The following example DB20 is used as the configuration - DB. M10.0 controls the sending and M12.0 the receiving. When M10.0 is "1", then 20 bytes of DB100 sent from DW0. M12.0 gives free the receive shelf DB100 from DW100 20 bytes.

:	SPA	FB	55
Name	:	S5L_SEND	
JDBN	:	KF	+00020
JDBW	:	KF	+00000
STYP	:	KC	D
SDBN	:	KF	+00100
SBEG	:	KF	+00000
SLEN	:	KF	+00020
ACT	:	M	10.0
LEN	:	KF	+00020
DONE	:	M	11.0

ERR	:	M	11.1
STAT	:	MW	20
:			
:	SPA	FB	56
Name	:	S5L_RECV	
JDBN	:	KF	+00020
JDBW	:	KF	+00000
RTYP	:	KC	D
RDBN	:	KF	+00100
RBEG	:	KF	+00100
RLEN	:	KF	+00020
ACT	:	M	12.0
LEN	:	MW	24
NDR	:	M	13.0
ERR	:	M	13.1
STAT	:	MW	22

Then set the inputs E8.0 and E9.0 to "1" to start the cycle.

13.3.5 Test of the structure

1. Open the DB100 in your S5 PLCs and enter any desired values in the first 20 bytes.
e.g:(1; 2; 3; 4; 5; 6; 7; 8; 9)

2. Open the DB14 in your S7 - PLC and enter any desired values in the first 20 bytes.
e.g.: (1; 2; 3; 4; 5; 6; 7; 8; 9; 10)

3. Save the blocks and set the inputs E8.0 and E9.0 in your PLC with the active S5 - Gateway module to "1" and start the cycle.

4. Now open the "NetPro" window again and mark your CPU. Now activate the "Connection Status". Now should be etablished the connection status below in your connection.
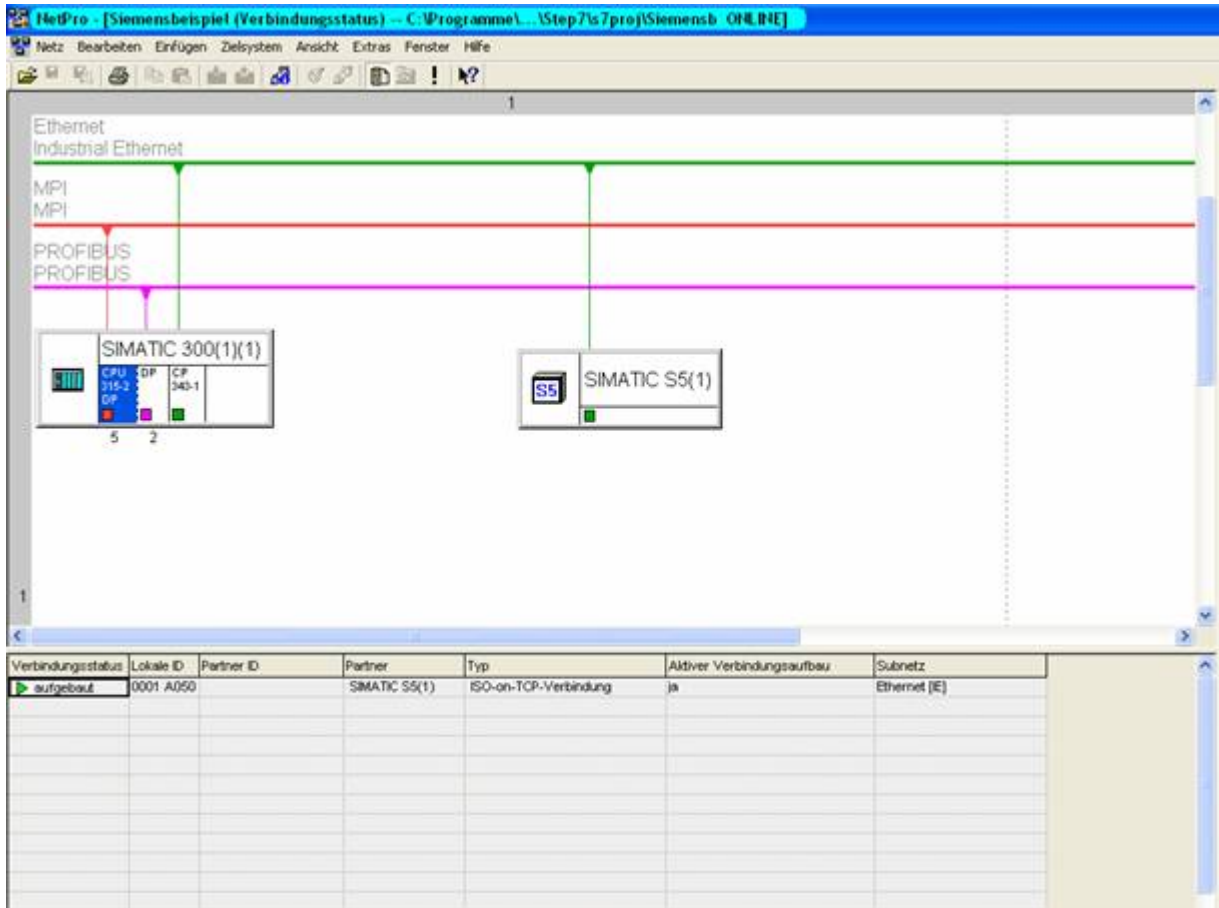
5. Now open the "diagnostic window" in the object properties of the "CP", as previously mentioned before. Then start the "Cyclic Refresh" and observe under your "ISO-on-TCP connection" the statistics, where the sent and received messages are counted. So you can check if your connection is available and also runs.
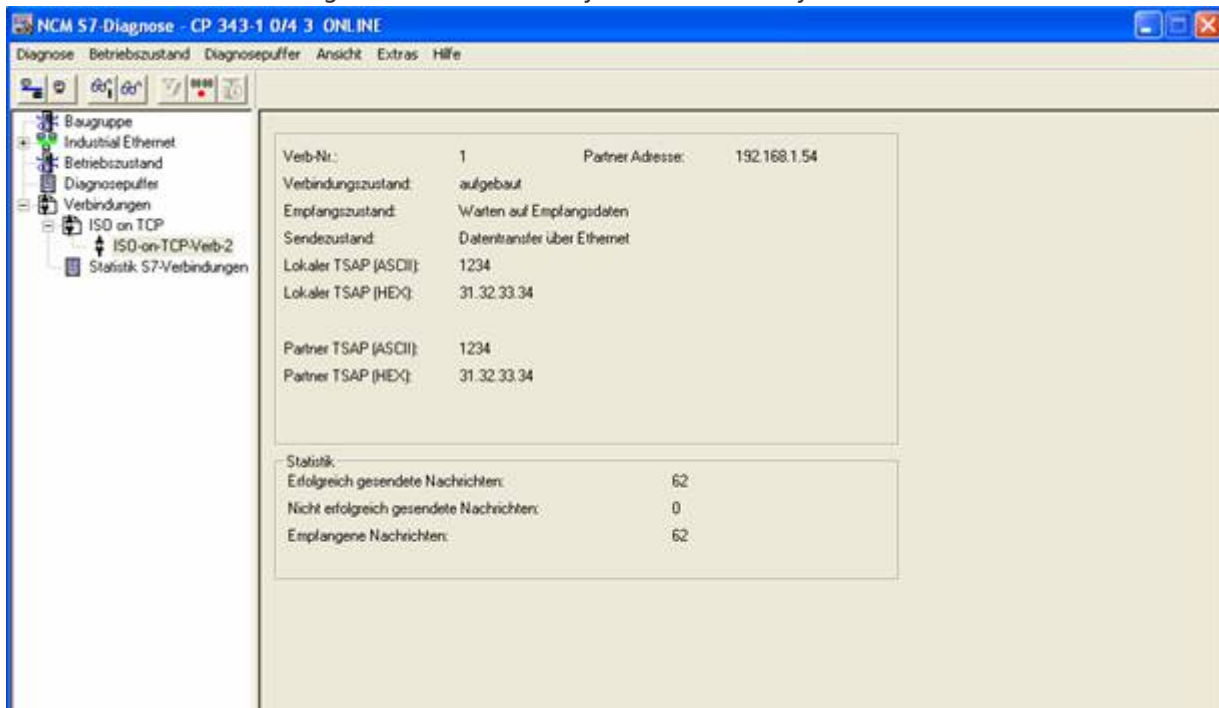
6. Now open the DB100 in your S5 - PLC and the DB10 in your S7 - PLC and check if the values are consistent with those from DW100 of the 20 bytes that you configured in the other PLC in DB100 and DB10 from DW0. If that is the case, the communication between S5 and S7 was successfully completed.
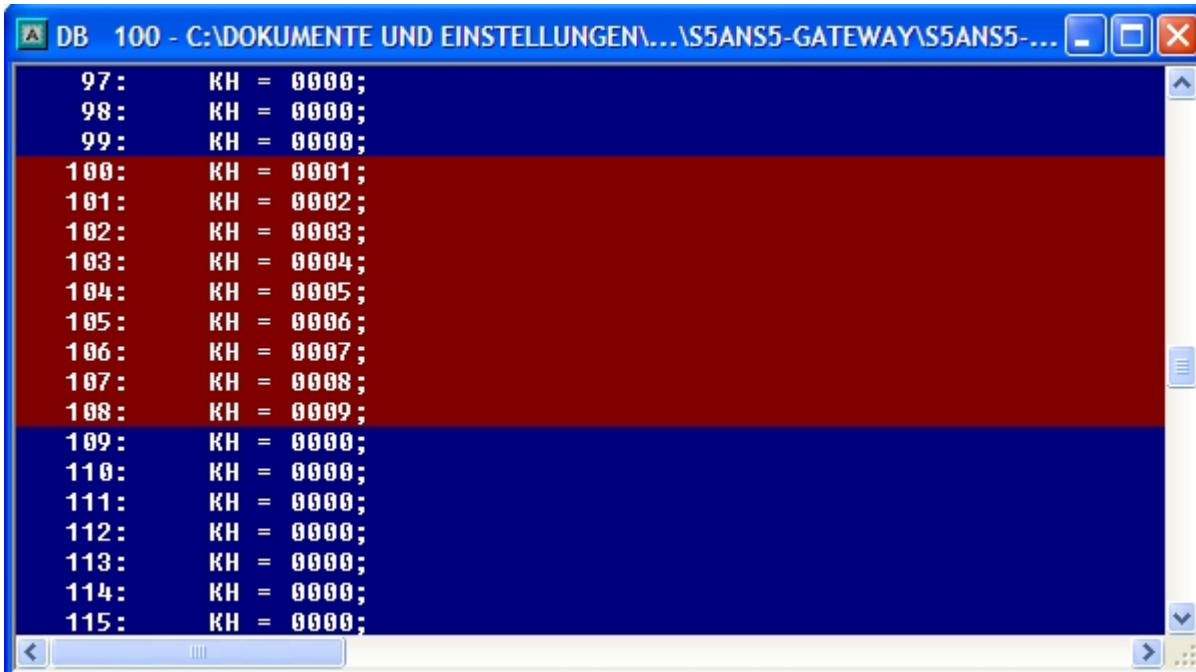
The marked bytes should be the same as the ones you have configured in DB10 of the S7 - PLC from DW0.
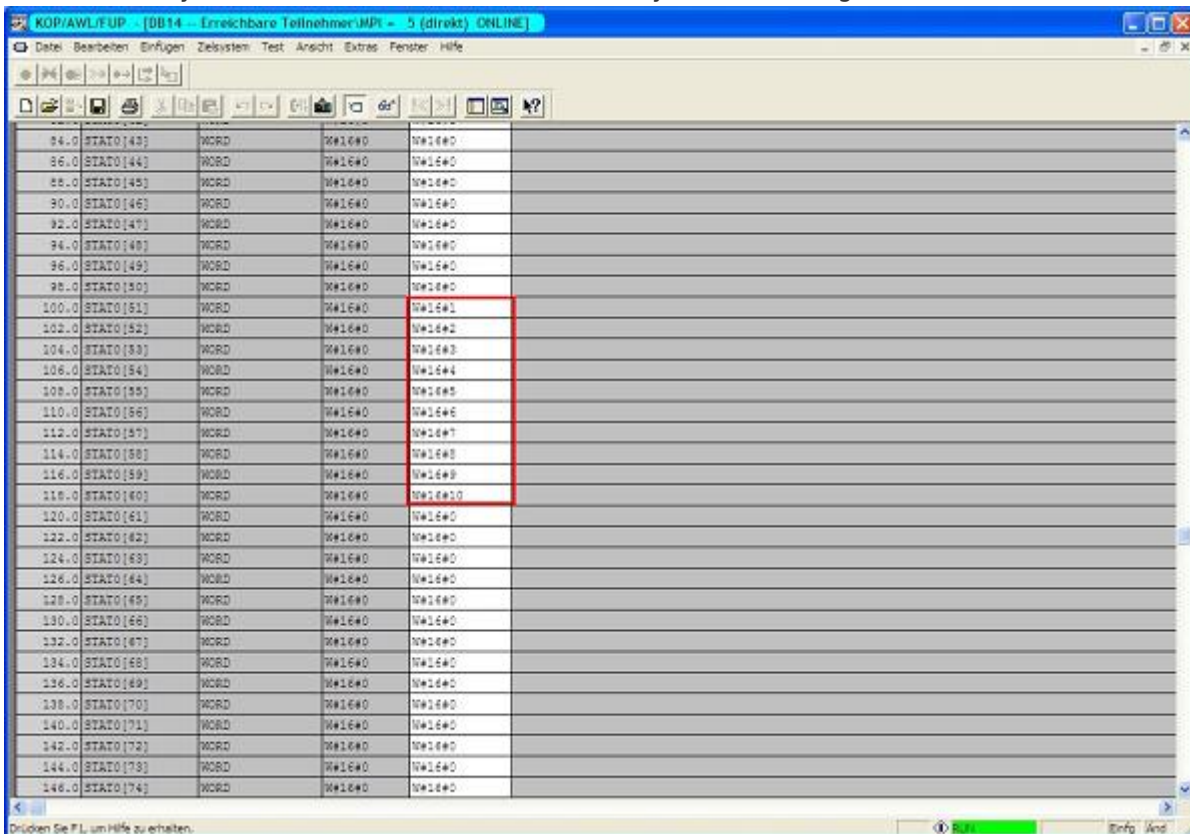
The marked bytes from DW100 should be the same as the ones you have configured in DB100 of the S5 - PLC from DW0.

13.4 S7CP to S7 - Gateway communication

13.4.1 S7– configure gateway

Start your Internet Explorer and type in the address bar the IP of the S7-LAN module. Now opens the configuration page of the S7 - LAN.

13.4.1.1 With the web browser

Set in the "General" which should be the name for your module.
Among other things, the "TS" function is turned off and "use BUS - configuration from the PC" must be set to "NO". "Boot Settings" and "protocol type" must both be set to "Automatic".

Allgemein	Netzwerk	RFC1006	MPI/PROFIBUS	Tuning	Anzeige S7_an_S5/S7_Gateway VarSteuern KonfigVarSt Watchdog Passwort
Betriebssystem					V 2.07
Name					Example
TS-Funktion					○ EIN ⊙ AUS
BUS-Konfiguration vom PC verwenden					○ JA ⊙ NEIN
Booteinstellung					Automatik
Protokollart					Automatik
Baudrate (nur bei Booteinstellung Sonder)					Automatik
Datenbit (nur bei Booteinstellung Sonder)					8
Parität (nur bei Booteinstellung Sonder)					keine
Stopbit (nur bei Booteinstellung Sonder)					1

Speichern

Under "Network" you have to adjust the "DHCP - client" to "OFF" and set the IP - address of the module.

Allgemein	Netzwerk	RFC1006	MPI/PROFIBUS	Tuning	Anzeige S7_an_S5/S7_Gateway VarSteuern KonfigVarSt Watchdog Passwort
DHCP-Client					○ EIN ⊙ AUS
IP-Adresse (bei kein DHCP-Client oder kein DHCP-Server gefunden)					192.168.1.52
Sub-Netzmaske (bei kein DHCP-Client oder kein DHCP-Server gefunden)					255.255.255.0
Gateway-Adresse (bei kein DHCP-Client oder kein DHCP-Server gefunden) 0.0.0.0 für kein Gateway					0.0.0.0

Speichern

In "MPI / PROFIBUS" set the baud rate on 187K5 and determine the highest station address. Under "Local Station Address" give your S7-LAN a number. The "profile" must be set to "MPI".

Allgemein	Netzwerk	RFC1006	MPI/PROFIBUS	Tuning	Anzeige S7_an_S5/S7_Gateway VarSteuern KonfigVarSt Watchdog Passwort
Baudrate					187K5
höchste Stationsadresse					126
lokale Teilnehmeradresse					9
Profil					MPI
stärkere Busanschaltung					AUS

Speichern

The next step is to configure the gateway. Here you have to set "Connection Type" "DB - active" ("passive" in partner device) and in "Station Number" you must enter the number of your PLC. Now you should decide what is the configuration data block in your PLC and from which data word. The IP - address of your S5 - LAN is specified in the field "IP - address partner". In "TSAP" you store now the same name as you assigned in the S5 - LAN Manager to your S5 - LAN.

Allgemein	Netzwerk		RFC1006	MPI/PROFIBUS	Tuning	Anzeige	S7_an_S5/S7_Gateway VarSteuern
Verbindungstyp	Stationsnummer		Datenbaustein	Datenwort	IP-Adresse Partner	TSAP	Pollzeit
DB-Aktiv	5		10	0	192.168.1.54	1234	500
AUS	255		65535	65535	255.255.255.255		65535
AUS	255		65535	65535	255.255.255.255		65535
AUS	255		65535	65535	255.255.255.255		65535
AUS	255		65535	65535	255.255.255.255		65535
AUS	255		65535	65535	255.255.255.255		65535
AUS	255		65535	65535	255.255.255.255		65535
AUS	255		65535	65535	255.255.255.255		65535

Speichern

Lastly, you must now enter the number of your CPU that is stored in your PLC under "RFC1006" in "destination - CPU" and the "Bus" should be "Config".

Allgemein   Netzwerk   RFC1006   MPI/PROFIBUS Tuning   Anzeige S7_an_S5/S7_Gateway VarSteuern KonfigVarSt Watchdog Passwort

Ziel-CPU	5
S7-Subnetz-ID	0000-0000
Busparameter	Konfig
Zustand	RFC1006 Aktiv

0 mit IP: 192.168.001.054 verbunden mit CPU 005
000:Empfangstatus:OK Auftrag ausgeführt
000:Sendestatus:OK Auftrag ausgeführt

1:keine TCP/IP-Verbindung nicht im MPI-Bus
2:keine TCP/IP-Verbindung nicht im MPI-Bus
3:keine TCP/IP-Verbindung nicht im MPI-Bus
4:keine TCP/IP-Verbindung nicht im MPI-Bus
5:keine TCP/IP-Verbindung nicht im MPI-Bus
6:keine TCP/IP-Verbindung nicht im MPI-Bus
7:keine TCP/IP-Verbindung nicht im MPI-Bus

Speichern

13.4.1.2 With the web browser from V2.10 (S7-LAN) / V2.36 (MPI-LAN)

- Startseite
- Verbindungen
- Display
- Optionen
- Konfiguration
- Passwort
- Neustart

Allgemein

Name: Test KM
Werkseinstellungen laden: Jetzt laden

Netzwerk

DHCP aktivieren: ☐
IP-Adresse: 192.168.1.151
Subnetzmaske: 255.255.255.0
Gateway-Adresse: 0.0.0.0

Buseinstellungen

Bus-Konfig von PC verwenden: ☐
Baudrate: 187K5
Höchste Stationsadresse: 126
PG/PC ist einziger Master: ☐
Profil: MPI
Lokale Adresse: 0

Booteinstellungen

Profil: Automatik

Für manuelle Profileinstellung

Baudrate: Automatik
Datenbit: 8
Parität: keine
Stopbit: 1

Für RFC1006 Verbindungen

Ziel CPU: 5
S7-Subnetz-ID: 0000-0000
Busparameter: Konfig

Sonstiges

Protokollart: Automatik
TS-Adapterfunktionalität: ☐
Fehlerausgabe auf Display: ☐

Set in the "General" what should be the name of your module.

Under "Network" you have to adjust the "DHCP - client" to "OFF" and set the IP - address of the module.

Adjust the baud rate in "Bus Settings" to 187K5 and determine the highest station address. Give your S7-LAN a number under "Local Station Address". The "profile" must be set to "MPI" and at "BUS - use config from PC" must be set no "tick".

Under "other", the "TS Adapter Functionality" must be set off. "Boot Settings" and "protocol type" must both be set to "Automatic".

Lastly, you still have to enter the number of your CPU that is stored in your PLC under "RFC1006" in "destination - CPU" and the "Bus" should be "Config".

S7-LAN V2.10   **Test KM**   **IP:192.168.1.151**

- Startseite
- Verbindungen
- Display
- Optionen
  - Variablen-Steuern
  - S7-Gateway
  - Watchdog
- Konfiguration
- Passwort
- Neustart

Gateway-Verbindungen

	IP-Adresse	TSAP	Pollzeit	CPU	DB	Datenwort
DB-Aktiv	192.168.1.54	1234	500	5	10	0
Aus	255.255.255.255		65535	255	65535	65535
Aus	255.255.255.255		65535	255	65535	65535
Aus	255.255.255.255		65535	255	65535	65535
Aus	255.255.255.255		65535	255	65535	65535
Aus	255.255.255.255		65535	255	65535	65535
Aus	255.255.255.255		65535	255	65535	65535
Aus	255.255.255.255		65535	255	65535	65535

Speichern

The final step is to configure the gateway. Here you have to set "Connection Type" to "DB - active" and at (the partner device" passive) "Station Number" you must enter the number of your PLC. Now you should decide which is the configuration data block in your PLC and from which data word. The IP - address of your S5 - LAN type in "IP - address partner" field. In "TSAP" you store now have the same name as in the S5 - LAN Manager your S5 - LAN are assigned.

13.4.2 Set S7-CP

1. Start your programming software and load your station in the software.
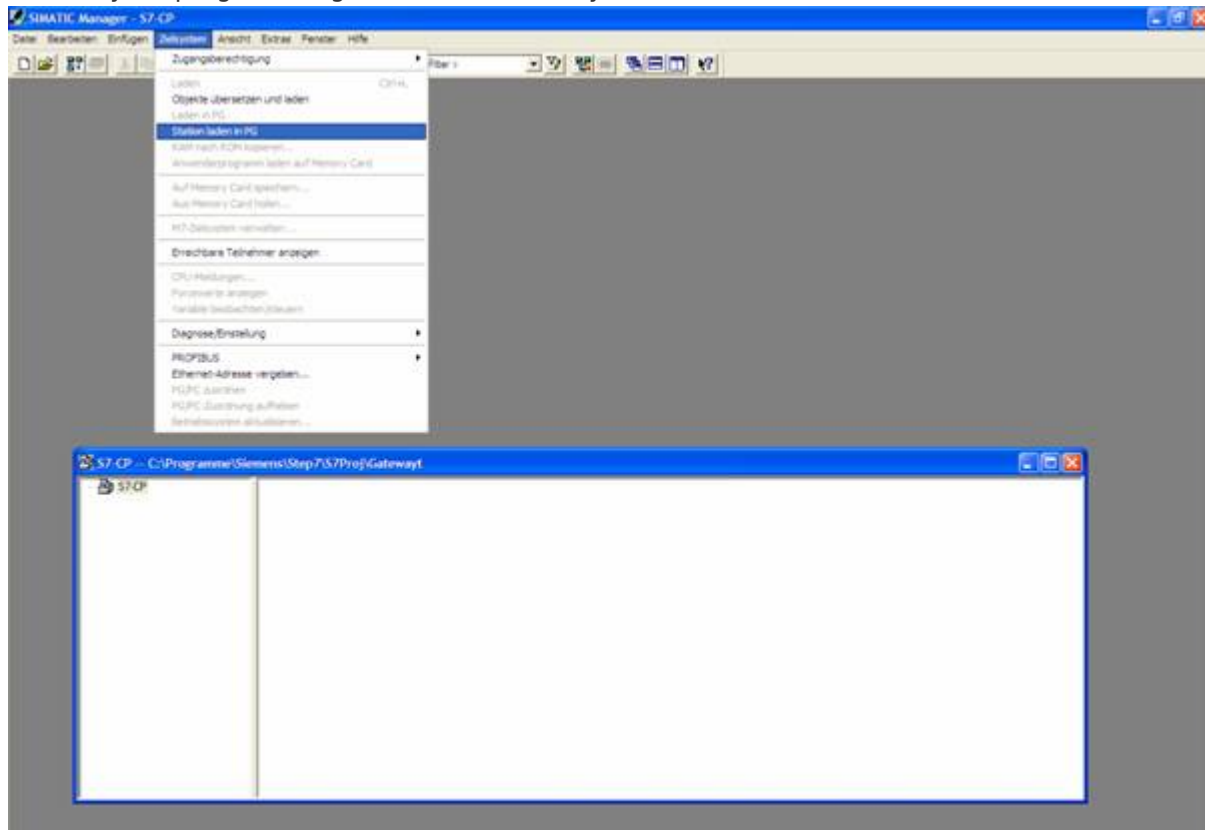
2. Now open the "NetPro" window over "Extras" and "Configure Network", in which you can set up your

stations and subnets.
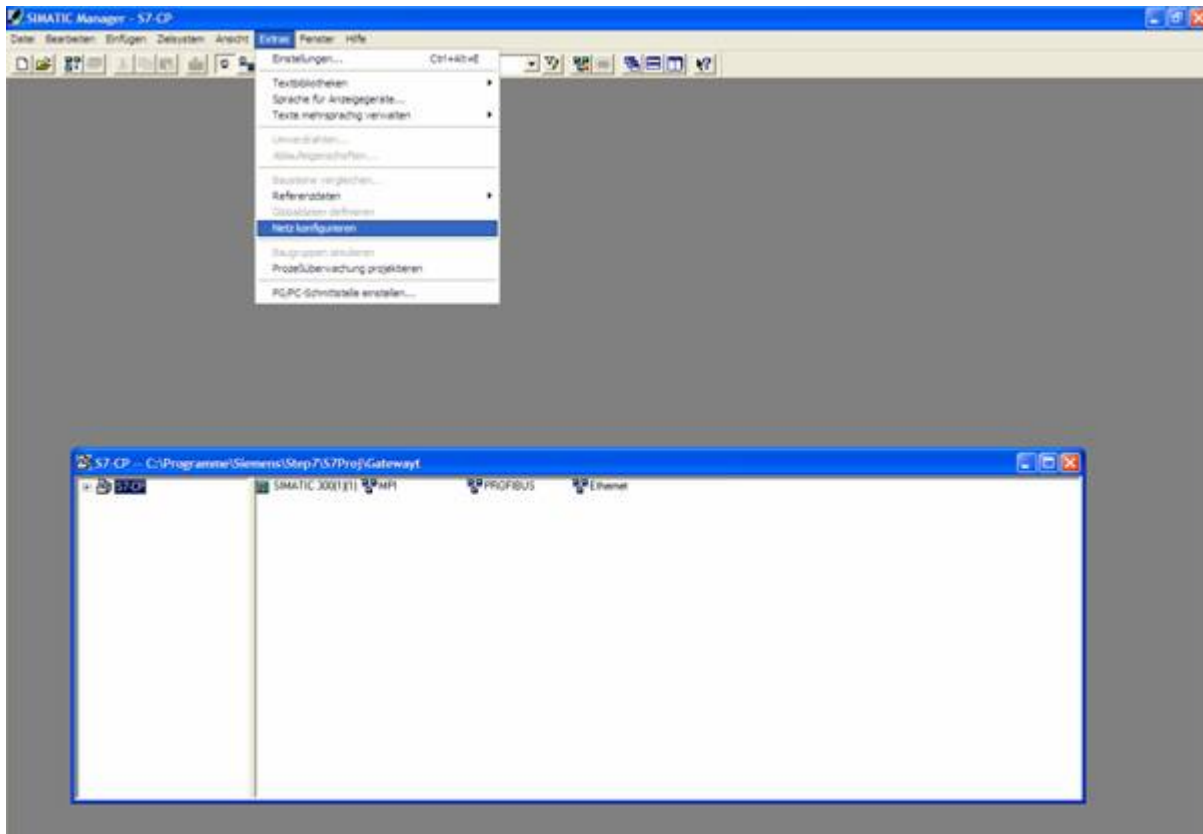
3. If you now double clicking on your configured S7, the "Configure Hardware" opens.
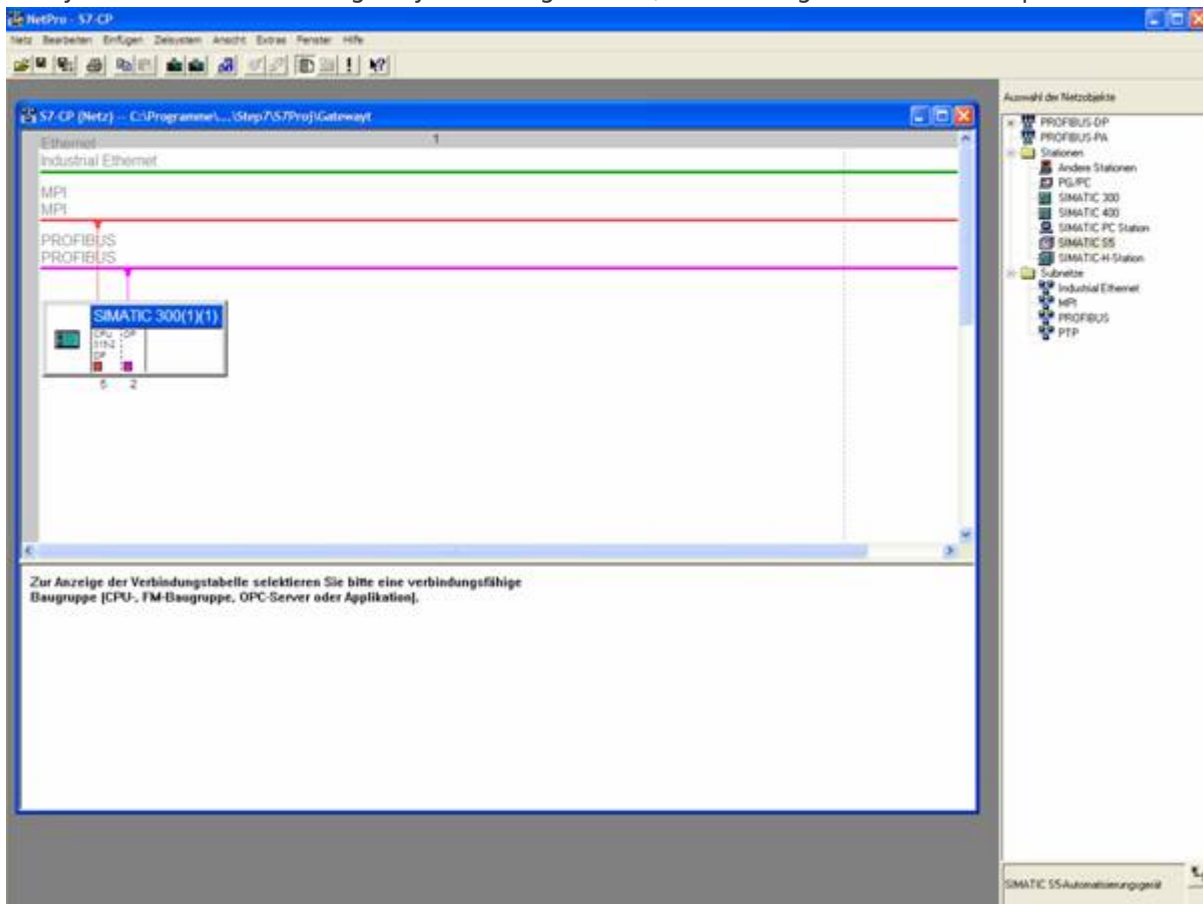
4. In the "Configure Hardware" you can select the right in the library your CP from the list and paste it into your rack from slot 4. Save and translate your settings and close the "Configure Hardware".
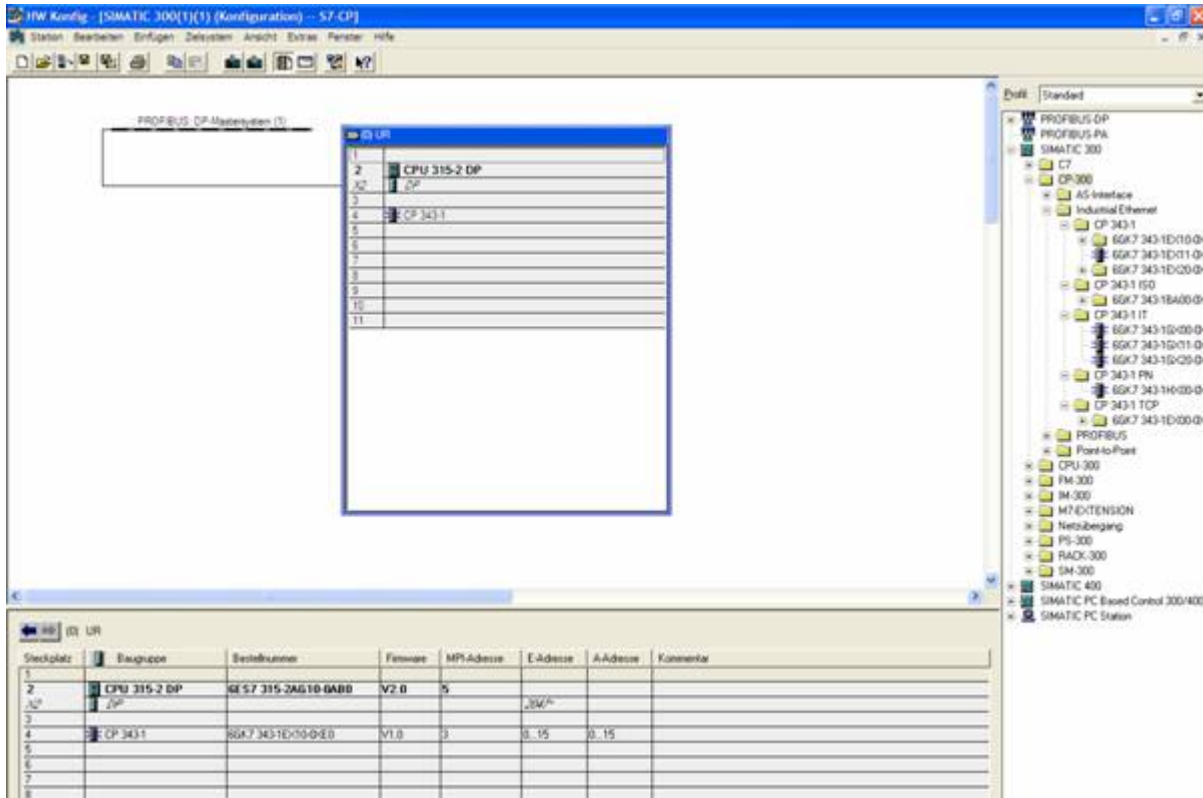
5. Now open the object properties by right-clicking on your configured CP. Under "General", you can now connect these to the Ethernet network under interfaces and assign an IP to him.

6. In the "Address" you can now determine the "beginning" and the "length" of the inputs and outputs.

7. In the diagnosis part, you can open a diagnostic window that we later need for checking our construction. So for now, you can close the object properties.
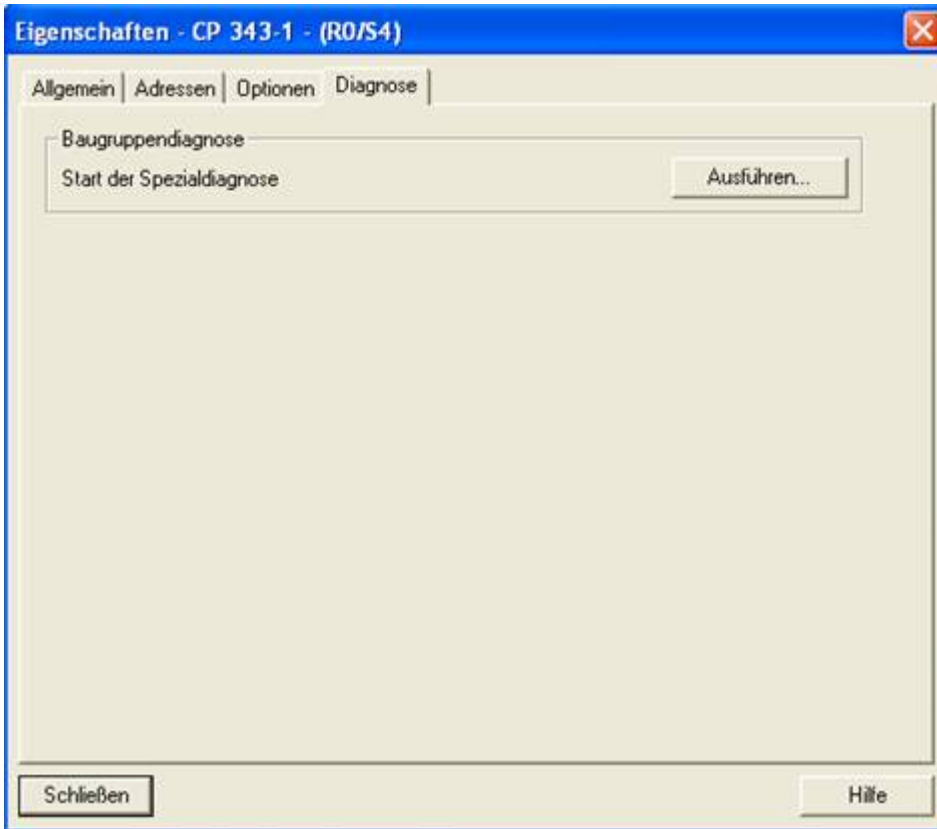
8. Now it is time for your partner to configure S7 - PLC with S7 - LAN gateway in which you selecting from the right library and double-click to create, like your first S7 PLC.
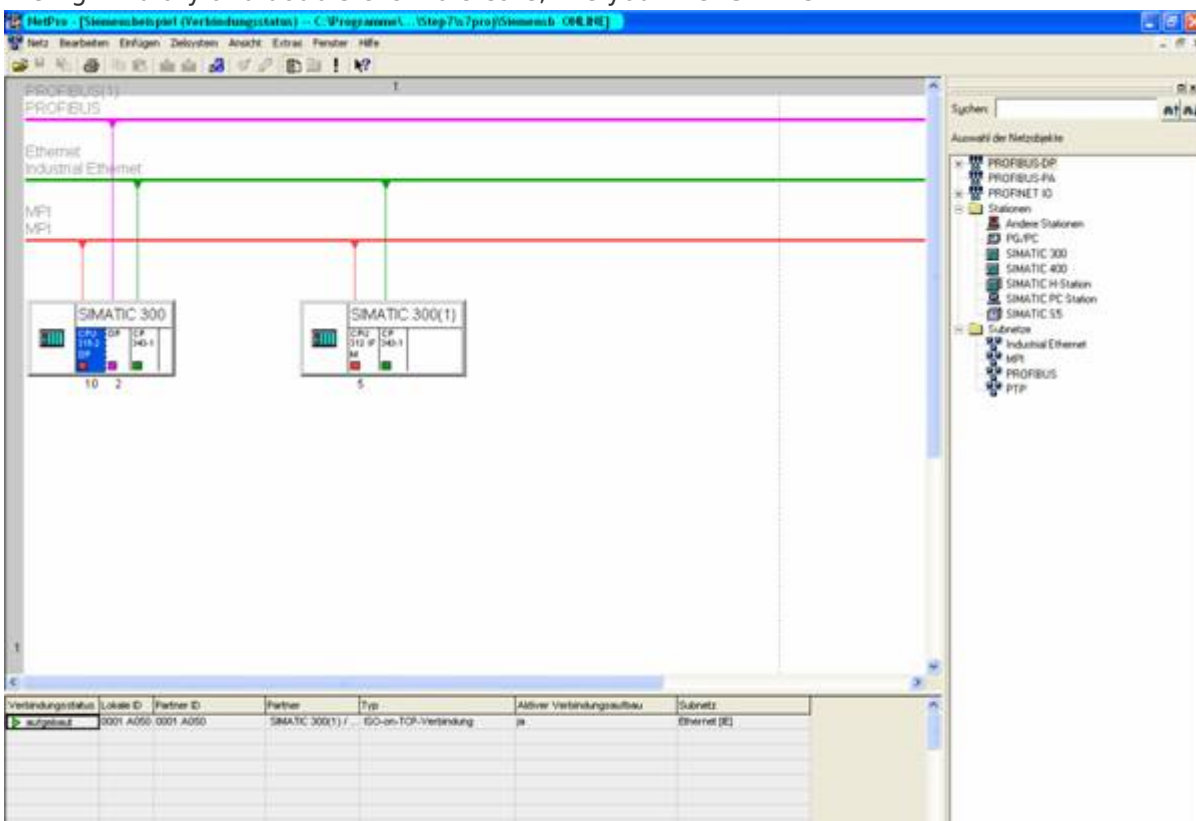
9. Now you have to adjust the "Configure Hardware" as with the S7 PLC before. There you add the same CP as in the first and of course the CPU of the PLC. The CPU and the CP (see 5 - 7) you adjust in the same manner as before. Download the configured stations in the respective PLCs after configuration.

10. Now mark your CPU in your first have configured S7 - PLC by clicking. Now you can generate a new connection by right-clicking below in the connection table.
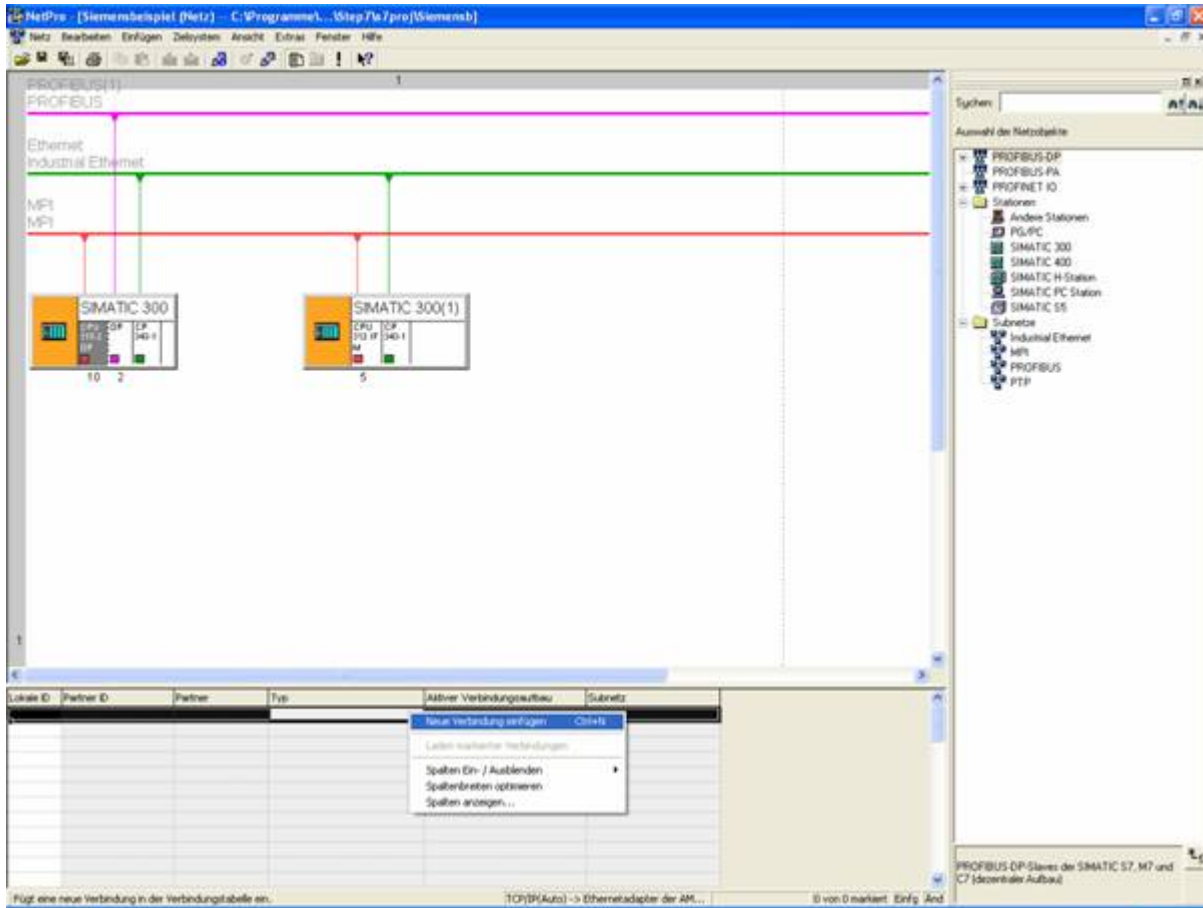
11. Now select the CPU of the previously configured partner S7 - PLC and as the connection type the "ISO-on-TCP connection."
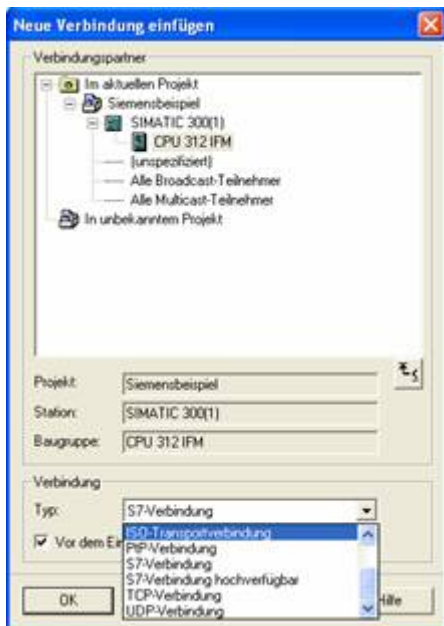
12. With OK now opens the properties of the compound where you have to put a tick under "General" at "active connection".
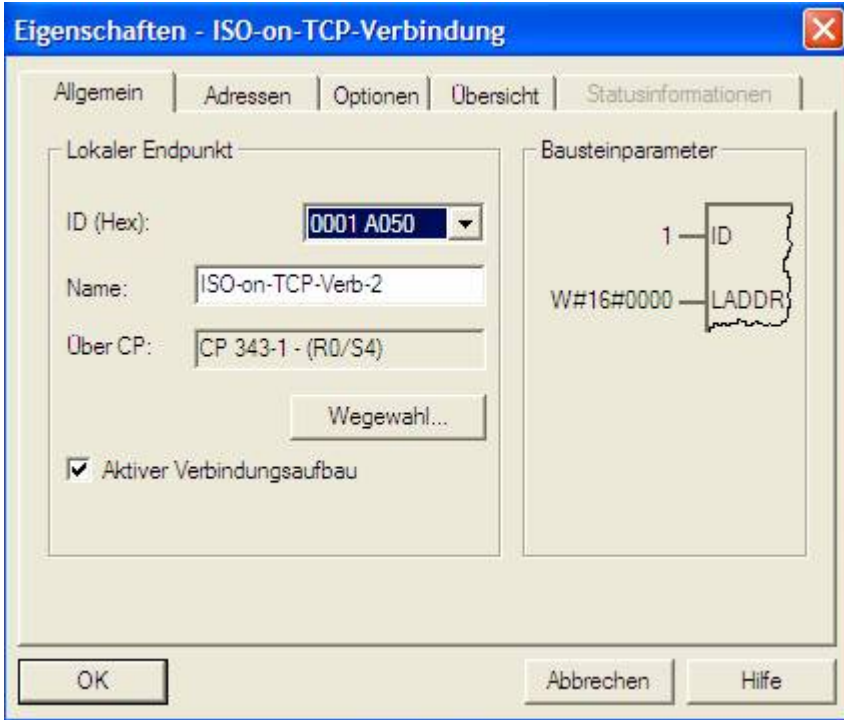
13. Under "Addresses" you just have to adjust the same "TSAP" like the one you have already assigned to your S7-LAN gateway.

14. When you have everything configurated, play again everything in the respectively associated PLC.

13.4.3 Overwrite blocks in PLC

1. Start your programming software and open now S7P - file "S7-CP."
2. So connect with your S7 - PLC (the PLC with the CP) and overwrite all the blocks (OB1, FB1, FC5, FC6, and DB10) in the PLC.
3. Now open the S7P - file "S7 - Gateway".
4. So connect with your S7 - PLC (the one with the S7 - LAN gateway module) and overwrite the blocks (OB1, FB10, FC15, FC16, DB10 and DB14) in the PLC

13.4.4 Start transmission cycle

In the following example DB10 is be used as the configuration - DB. M0.0 controls the transmission and receiving. When M0.0 is "1", then 20 bytes are sent from DW0 of DB10, and gives free the receive mailbox DB10 from DW100 20 bytes.

CALL "AG_SEND"			
ACT	:	=	M0.0
ID	:	=	1
LADDR	:	=	W#16#0
SEND	:	=	P#DB10.DBX0.0 BYTE 20
LEN	:	=	20
DONE	:	=	M15.0
ERROR	:	=	M15.1
STATUS	:	=	MW11
	O	M 15.0	
O	M 15.1		
R	M 0.0		
SPB	noER		
L	MW 11		
noER	:	SET	
	CALL "AG_RECV""		
ID	:	=	1
LADDR	:	=	W#16#0
RECV	:	=	P#DB10.DBX100.0 BYTE 20
NDR	:	=	M20.0
ERROR	:	=	M20.1
STATUS	:	=	MW21
LEN	:	=	MW23
	O	M 20.0	
O	M 20.1		
S	M 0.0		

13.4.5 Test of the structure

1. Click on DB10 in your S7 - SPS (with CP) and enter any desired values in the first 20 bytes. Then open the DB14 in your S7 - SPS (with S7 - LAN gateway), and enter any desired values in the first 20 bytes and start the cycle, you will see later in communicating immediately the changed values.
e.g.: (1; 2; 3; 4; 5; 6; 7; 8; 9; 10)

2. Save the changes in your DB. Now open the "NetPro" window again and select your PLC CPU (with CP). Now select the "Connection Status". Now should be established the connecting state below in your connection
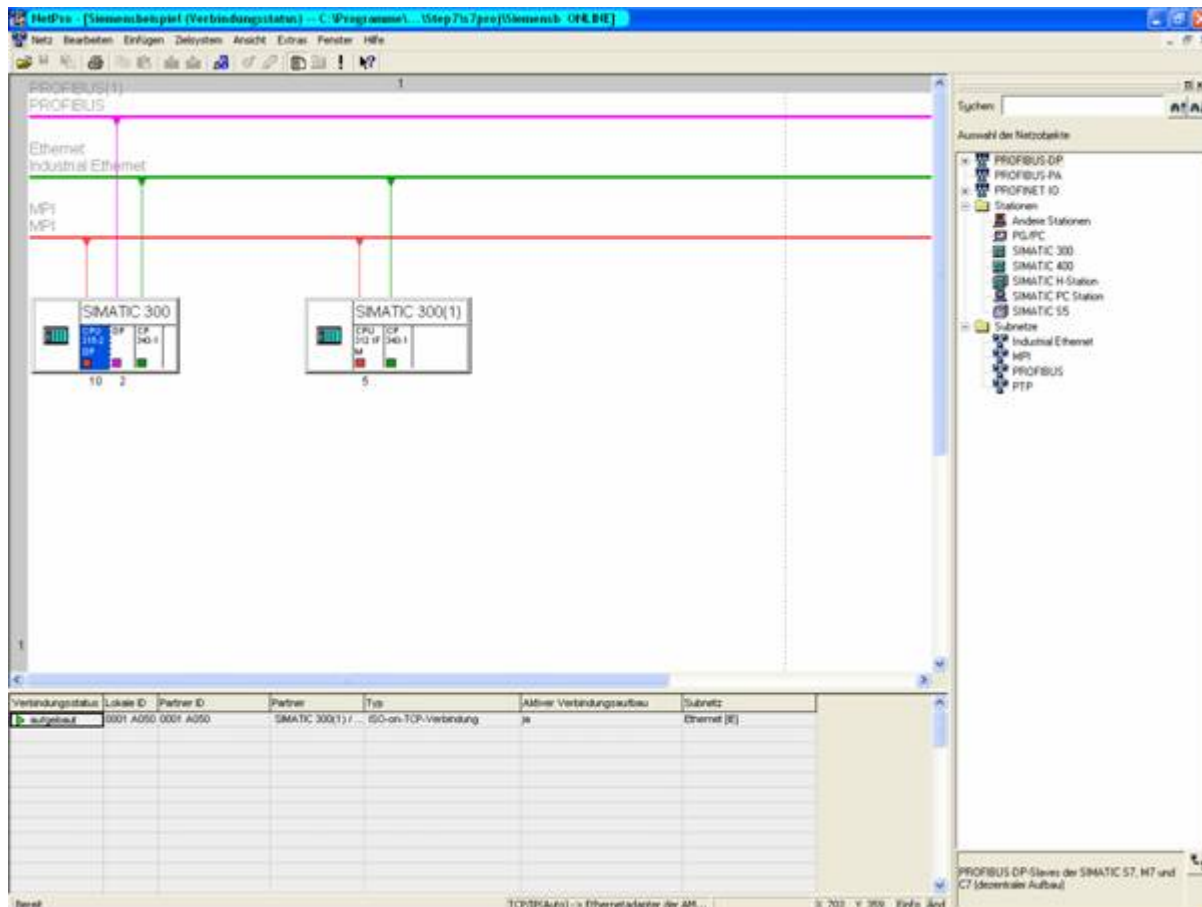
3. Now open as previously mentioned the "diagnostic window" via the object properties of the "CP". There you start the "Cyclic Refresh" and under your observe "ISO-on-TCP connection," the statistics where the sent and received messages are counted. So you can check if your connection is available and also runs.

4. For added control, you can now take the DB10 in your S7 - SPS (with CP) and take the DB14 in your S7 - SPS (with S7 - LAN gateway), and check if the values of the 20 bytes you have configure in the each other PLC in DB10 and DB14 from DW0, match with those from DW100. If that is the case, the communication between S7 and S7-CP-LAN was completed successfully.
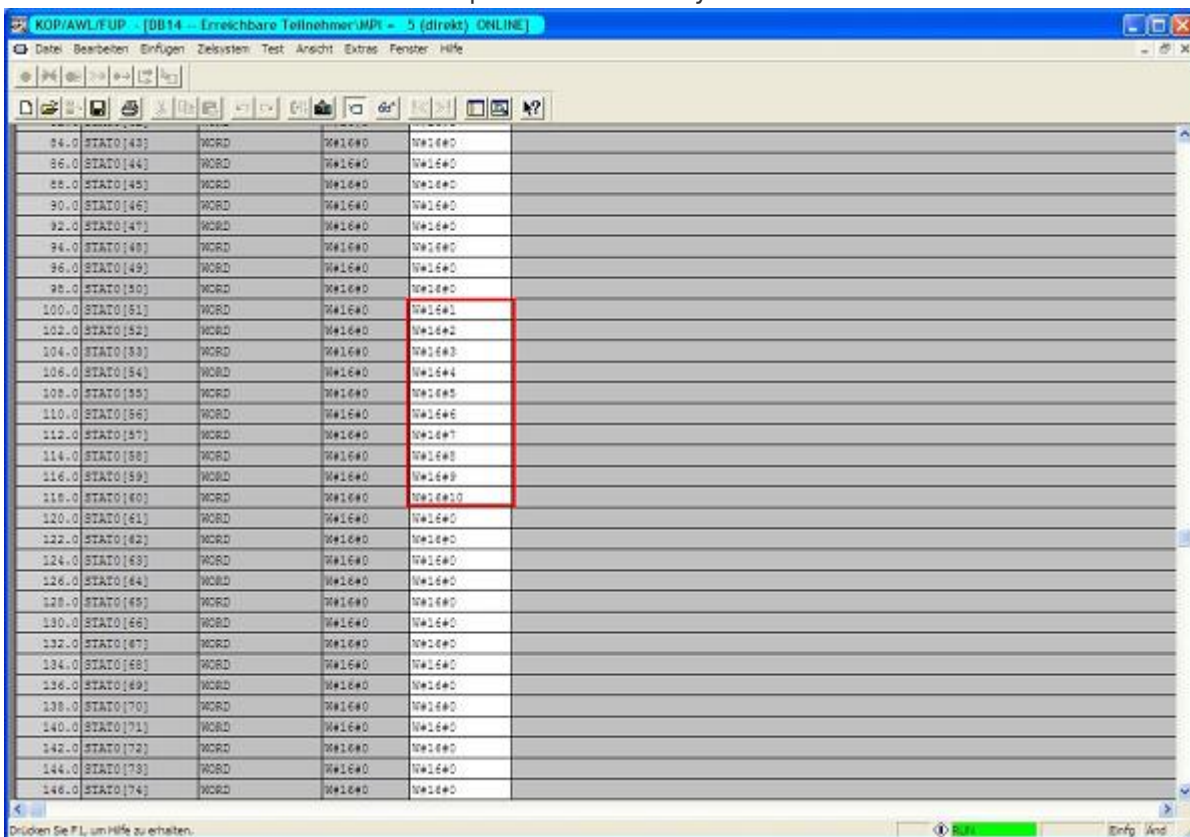
The highlighted bytes should be the same as those that you have configured in the other DB from DW0.

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