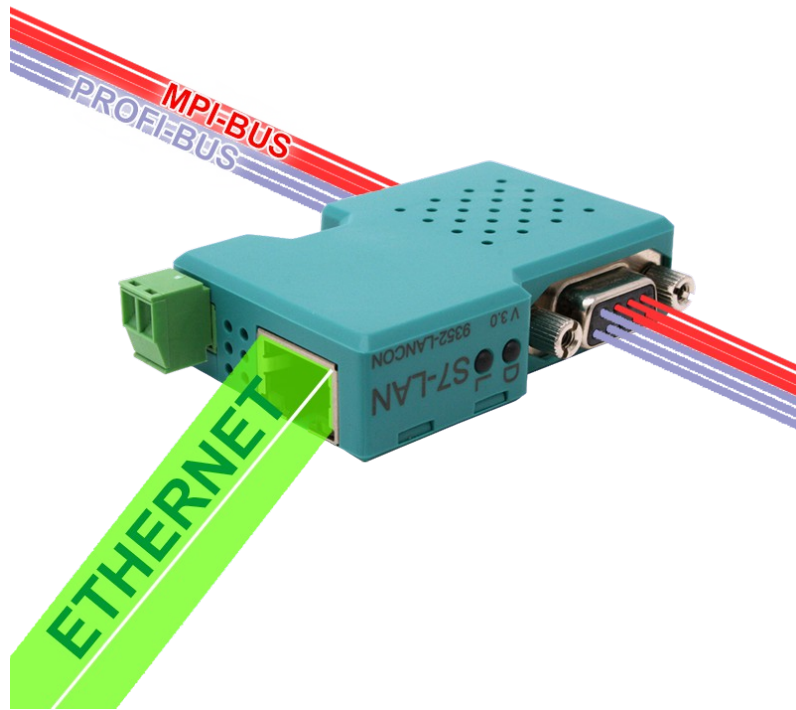


S7-LAN user manual

(english)



Art.Nr. 9352-LANCON

11.06.2019

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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 98 + SE
- Windows ME/NT/2000
- Windows XP
- Windows Vista
- Windows 7
- Windows 8 / 8.1
- Windows 10

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)

Attention of assignment of the Phoenix socket:

The device has a reverse polarity protection diode integrated, thus the device itself is protected against reverse polarity. When this reverse polarity driven module/cable is connected to a PLC, this can be damaged!

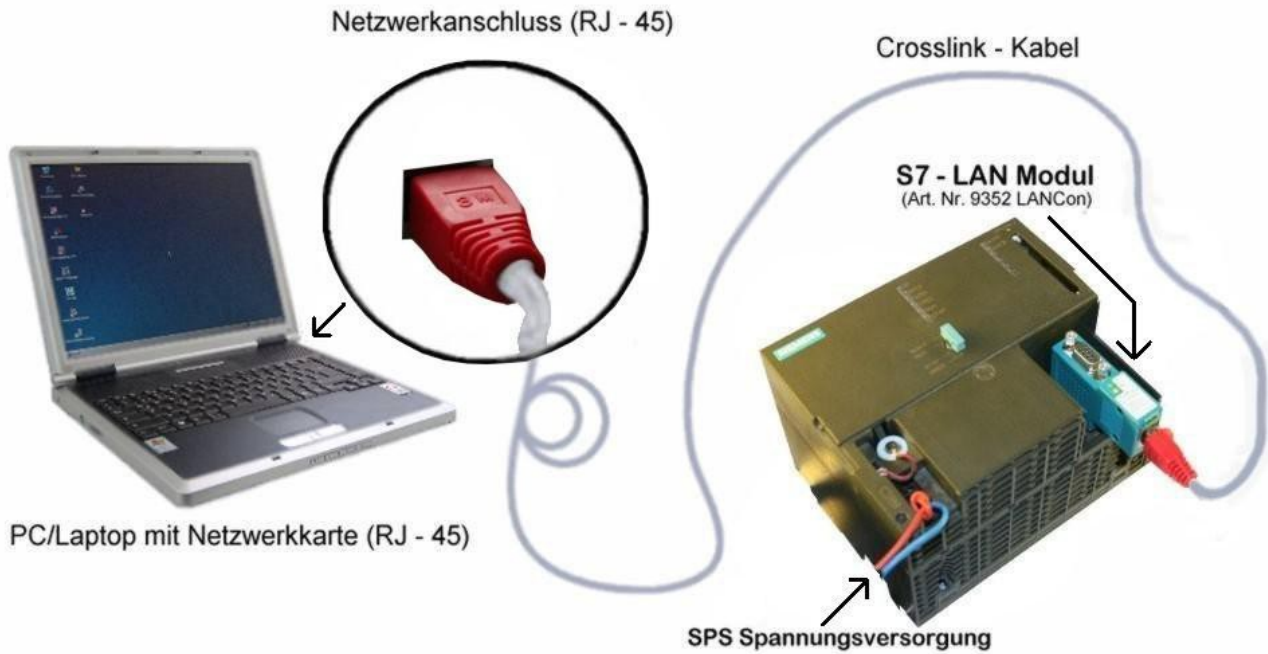
2.4 Provided PLCs

- S7-200
- S7-300 (provides baudraten up to 12M (when the PLC is able to support this))
- S7-400 (provides baudrates 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)

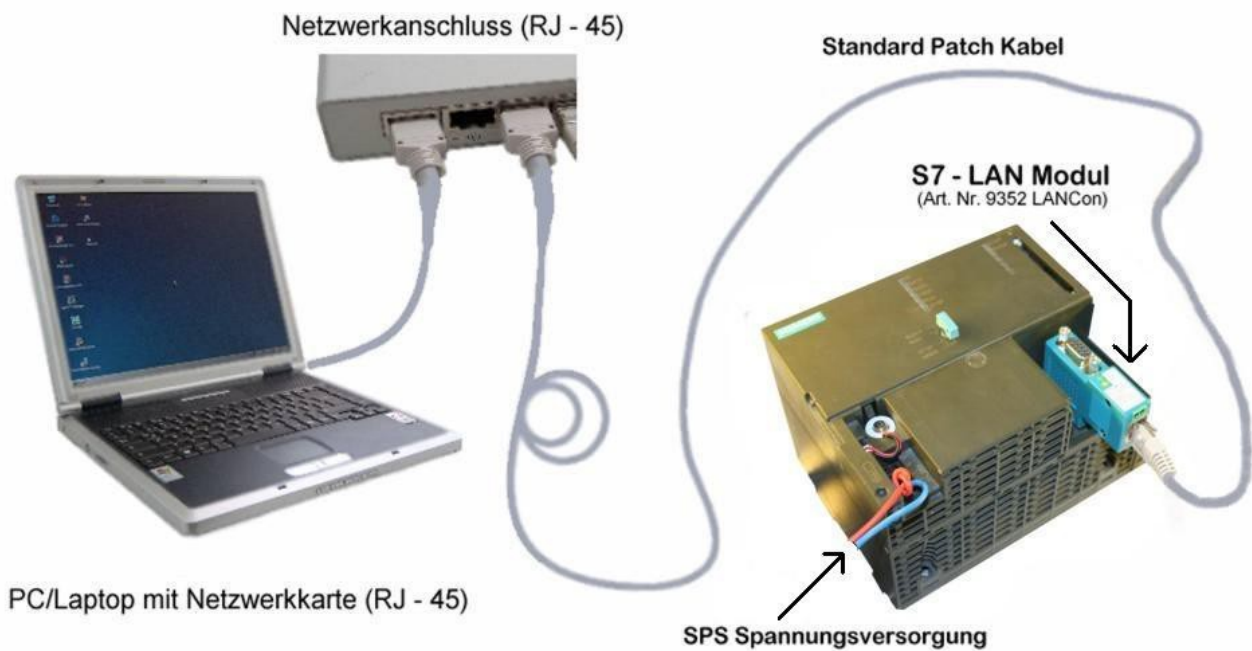
- SEW-EURODRIVE power inverter
- and at last routing of S7-PLCs

3 Connecting options

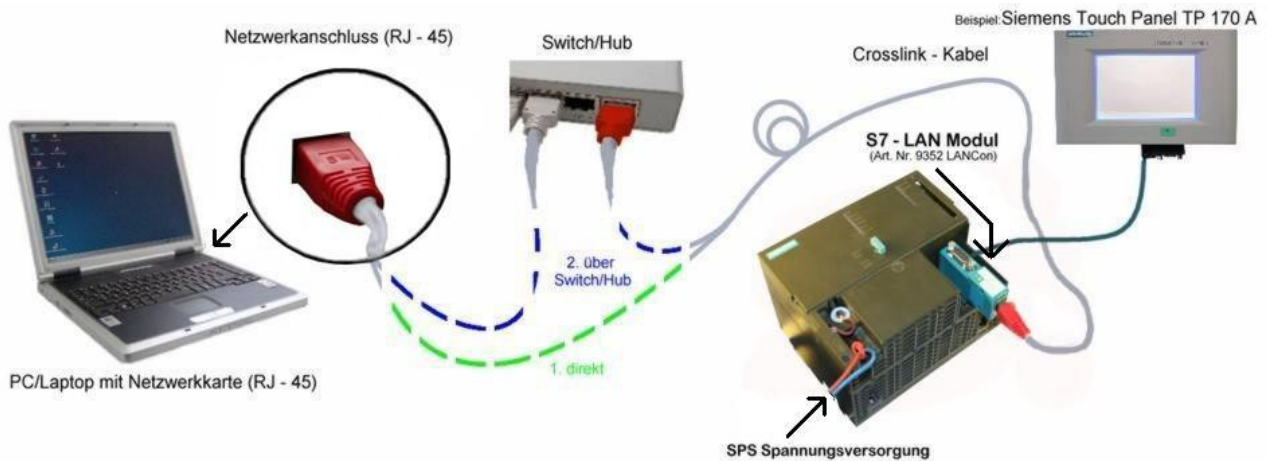
S7-LAN connected directly to the PC



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 S7-LAN:

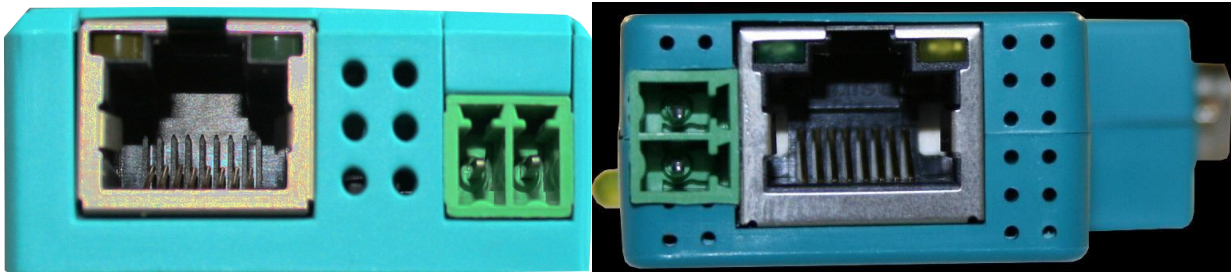
<u>Product</u>	<u>Driver</u>
TIA-Portal	TIC ⇒ "TIC ETH/USB" for MPI, PPI or PROFIBUS configuration of driver with controll-panel ⇒ setting PD/PC-interface
Simatic-Manager	TIC ⇒ "TIC ETH/USB" for MPI, PPI or PROFIBUS
Starter-Software	TIC ⇒ "TIC ETH/USB" for MPI or PROFIBUS

MicroWin TIC ⇒ "TIC ETH/USB" for PPI and S7-22x-PLC
 MicroWin PLCVCom for S7-21x-PLC (no MultiMaster-protocol)
 PG-2000 PLCVCom or for S7-LAN/MPI-LAN direct in interface-
 settings
 S7 für Windows TIC ⇒ "TIC ETH/USB" for MPI or PROFIBUS over
 PD/PC-interface
 S7 für 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 because Siemens has taken out the serial support in the driver "PC-Adapter"
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 für 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): Modul 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.

Bitte wählen Sie die gewünschte Sprache aus	Please select desired Language
Deutsch Englisch	German English
Optionen S7 Gateway ist nicht lizenziert Variable Steuern ist nicht lizenziert Watchdog ist nicht lizenziert	Options S7 Gateway is not licensed Modify Variables is not licensed Watchdog is not licensed

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 described 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:

- Internet-Explorer (also V8.0)
- Mozilla Firefox
- Google Chrome

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.

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

English

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

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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

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

English

S7-LAN V2.14

Modul von BE

IP:192.168.1.86

Allgemein

Name:	Modul von BE
Betriebsart:	S7-200
Werkzeinstellungen laden:	<input type="button" value="Jetzt laden"/>

Netzwerk

DHCP aktivieren:	<input type="checkbox"/>
IP-Adresse:	192.168.1.86
Subnetzmaske:	255.255.255.0
Gateway-Adresse:	192.168.1.254
Gratuitous ARP versenden:	<input checked="" type="checkbox"/>

Bus-einstellungen

Bus-Konfig von PC verwenden:	<input checked="" type="checkbox"/>
Baudrate:	Automatik
Höchste Stationsadresse:	126
PG/PC ist einziger Master:	<input type="checkbox"/>
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:	<input type="checkbox"/>
Ziel CPU:	255
S7-Subnetz-ID:	0000-0000
Busparameter:	Konfig

Sonstiges

Protokollart:	Automatik
TS-Adapterfunktionalität:	<input type="checkbox"/>
Fehlerausgabe auf Display:	<input type="checkbox"/>

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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:

107.168.1.86

5. Further steps and the configurations of your module/ cable are described in the chapter „configuration“.

5.5 Display



First line = #02PD00⁻

Second line = !02AG04[°]

Display description from left to right.

First line

#02 => In this example there are two active stations on the MPI – BUS

PD => letter definition of the PC - baud rate.

Display Descriptions

PD 115,2k or baud rate identification is active.

PU USB connection

P? Baud rate recognition and access way active.

TD 115,2k or baud rate recognition is active. (cable is configured as TS – adapter)

PG 19,2k

TS 19,2k (cable is configured as TS – adapter)

Pg 38,4k

Ts 38,4k (cable is configured as TS – adapter)

pG 57,6k

tS 57,6k (cable is configured as TS – adapter)

PM PPIMulti (187,5k)

00 => the station number of the MPI – cable. (Default is „0“)

(In the system configuration click on „Set PG/PC interface“. In the following dialog click “properties”. Now you can change in the registry card “MPI” part “station-related” the “adress” of the cable.)

(In the PG 2000 software you can find it by clicking on „Options“ „Interfaces“. Close to the bottom of the dialog you can change the „local address“ of the cable.)

– => if this sign appears in the top of the line, your cable is communicating with the PLC.

If this sign appears in the bottom of the line, your cable is communicating with the computer.

Second Line

! => (Exclamation mark) specifies the connection type to the PLC.

Display Description

! Directly connected to the PLC.

? Not directly connected to the PLC.

! (inverse) Directly connected to the PLC with passive unit of the PLC.

? (inverse) Not direct connected to the PLC with passive unit of the PLC.

02 => is the station number of a connected and active PLC in the MPI - BUS.

Every 750 milliseconds (a $\frac{3}{4}$ second) another user will be displayed if more then one user has been found.

AG =>The type of the protocol which is used for the cable to run up to the computer.

Display Description

AG Unknown because there is no connection or an older protocol version (before5.0) is used.

Ag v5.1 Protocol

Ag v5.0 Protocol

04 => Shows the station number of the device, which is connected in that moment with the computer software (in this example station number 04).

Configuration specific messages:

With the following baud rate settings, the menu message changes accordingly:

Baud rate – configuration	1. line	2. line
PPI 9,6k – (PPISER96)	PPISER96	ACTIVE
PPI 19,2k – (PPISER19)	PPISER19	ACTIVE
PPI 187,5k – (PPIMulti)	???PM?	????
PPILAN – (PPILAN)	PPILAN	ACTIVE

PPIUSB – (PPIUSB)	PPIUSB	ACTIVE
SONDSER	SONDSER	19,2 kBaud 8N1
SONDUSB	SONDUSB	38,2 kBaud 7E2
Description 8N1:		
8 = Data bits		
N = Parity		
1 = Stop bit		

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 described in the chapter "system requirements" . In addition, please make sure that the module is properly connected

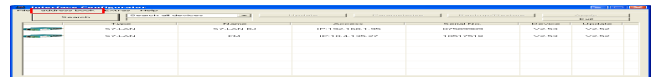
6.1 TIC-address-book



To use the address-book you need **TIC V2.37** or newer. For use with S5-LAN ++ modules (Step5) at least **PLCVCom V2.81** is required. Even if you work with Step5, the TIC must be also installed on the PC!

Install the TIC on your PC by clicking on the "Setup.exe" file. After restarting the PC, please start the TIC via "Start" => "all programs" => "TIC".

As soon as the TIC is started, it automatically starts searching for possible interface products. These are displayed in the table of the start menu.



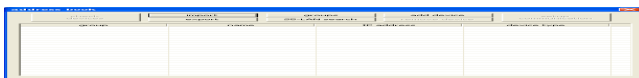
By clicking on "address book" => "open address book" opens the address book which manages the interface-products accessible via network.

You can also add devices directly to the address book by selecting the product in advance by clicking on it (deposit blue). After clicking on "address book" there is another menu-item entry "add device" clickable.

You will then get the prefilled dialog "add device" with the data of the selected device. By selecting the correct group and clicking on "OK" the entry is transferred directly to the address-book.



Open and use of the address-book



When the address-book is used for the first time, it is completely empty. For a better overview we recommend to define group-names. Click on "groups" to get to the group management. Here you can add group names and

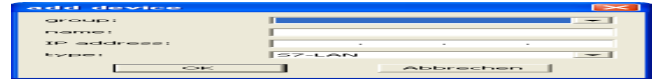
delete them if necessary.

Without a group-name, interface products can not be added.

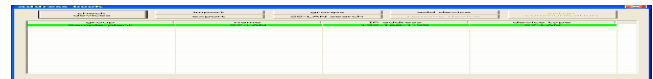
"Add device"

With this menu item all used modules can be entered. Also modules behind a router transition which are not found in the search. To enter the interface product, enter the required information:

- group
- name (for you to identify the product)
- IP address (of the product)
- type (of the respective product: S7-LAN, MPI-Lan, S5-LAN++)



=>



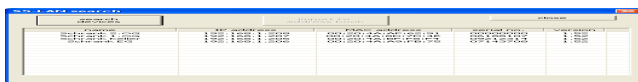
Click on the OK-button to accept the entries.

"Add S5-LAN++ through search"

S5-LAN++ are not displayed during the automatic search of the TIC, because they are not an S7-interface-product. Therefore, there is the possibility to search directly for S5-LAN++-modules with the button "S5-LAN search".

The table automatically lists all modules found in the network.

Caution: Modules that are behind a router transition can not be displayed during the search!

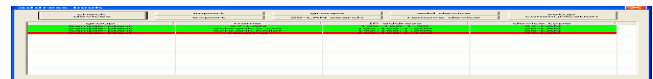


Click on the relevant module with the mouse and transfer it to the address book using "import to address-book". To confirm the selected module, the dialog "add device" with the data of the module is displayed. Click OK to accept and enter the device in the address book.

Attention:

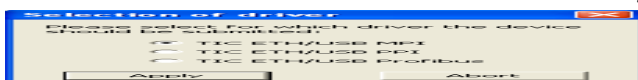
Modules inherited in the address book are not deleted in the search window! A multiple entry is not possible.

"Close" closes the search for S5-LAN++-modules, the address book looks like this, for example:

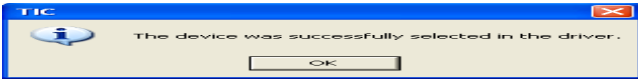


The entries in the address-book marked in green color are immediately accessible. If a module has a red background, then no communication can be established. This can happen, for example, through a non-active VPN-connection. In this case, set up the VPN-channel and check the accessibility of the stored modules again using "check devices".

In order to establish communication with one of these modules simply click on a "green" stored entry and select the communication-driver to be used by "setup communication":



and confirm with "Apply". Now the driver for the module has been parameterized and the

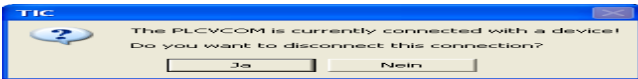


connection to the system can be established.

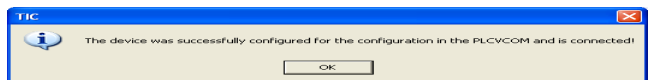
This can also be done with an S5-LAN++, except that there is no dialog for the PG/PC-interface settings, if necessary, the virtual Com-Port PLCVCom is started if it is not yet the case and the device-type and the IP-address of the device are transmitted to it. The program reports whether the access of the TIC in PLCVCom is switched on. If this is not the case, then please activate it in PLCVCom.



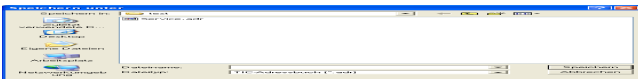
If the PLCVCom is connected to another module, this is indicated by a corresponding message. With "Yes" this connection is disconnected and rebuilt with the selected data.



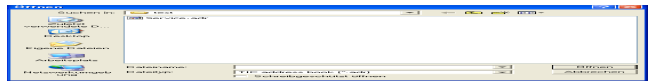
As soon as this connection is established, the corresponding feedback is sent to the user.



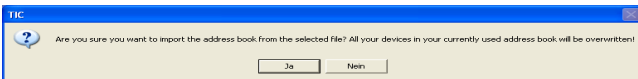
To transfer the address book from one PC to another PC, this can be done with the Import/Export-function. By clicking on "Export" the memory dialog opens to export the address book. Select the path and file name here and the export file will be written. This can be transferred to another PC.



To import the address book, just click on the button "Import". In the new dialog, select the address-book-file and accept with "open".



Attention: The import function overwrites any existing address book!



After clicking on "Yes" the selected address book is read in and can be used immediately.

6.2 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 problems with the use of PLC-VCOM software, go to the chapter 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.

6.3 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:

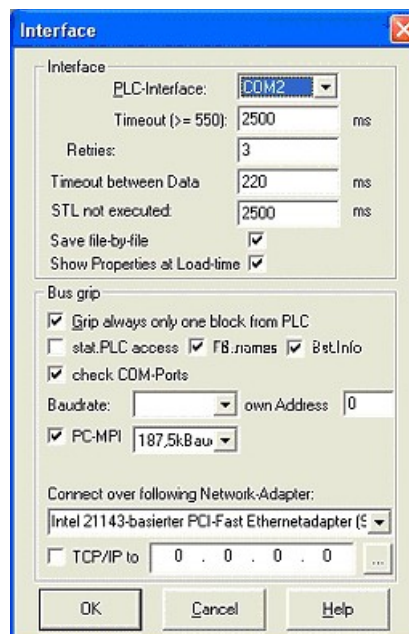
6.3.1 PG2000 für S7 (V5.10)

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 "187,5kBa".

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“

Mark	Baustein	Größe	Adresse	Bib.-Nr	Bausteinname	Zyklischer Bau
	SFC 000	128 W			SET_CLK	Uhrzeit setzen
	SFC 001	90 W			READ_CLK	Uhrzeit lesen
	SFC 006	128 W			RD_SINFO	Startinformab
	SFC 030	92 W			BUMOV	Variablenope
	SFC 021	92 W			FILL	Variablenpe
	SFC 022	96 W			CREAT_DB	Datenbauste
	SFC 023	90 W			DEL_DB	Löschen eines
	SFC 024	94 W			TEST_DB	Testen eines D
	SFC 038	96 W			MSK_FLT	Synchronisier
	SFC 037	96 W			DMSK_FLT	Synchronisier
	SFC 038	98 W			READ_ERR	Ergebnistat
	SFC 039	92 W			DS_RT	Bearbeitung ne
	SFC 040	92 W			EN_RT	Bearbeitung ne
	SFC 041	98 W			DS_AIRT	Bearbeitung vo
	SFC 042	93 W			EN_AIRT	Bearbeitung vo
	SFC 043	96 W			RE_TRIGR	Zyklussteuer
	SFC 046	96 W			STP	CPU in Betriebs
	SFC 047	98 W			WAIT	Verarbeitung v

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

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

6.3.2 PSet PG/PC interface

This step is required for the following software:

=> TIA-Portal

=> SIMATIC Step© 7 Manager

=> 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

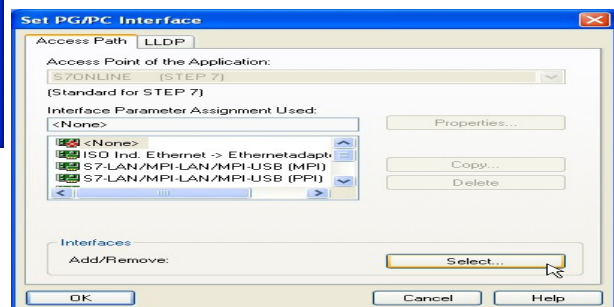


1. Open the system configuration by using the start menu.

2. Click on „Set PG/PC interface“.

3. A Dialog with a list box named “Interface Parameter Assignment Used:” appears. This box should offer following entries

- TIC ETH/USB(MPI) or TIC ETH/USB.MPI.1
- TIC ETH/USB(Profibus) or



TIC ETH/USB.Profibus.1

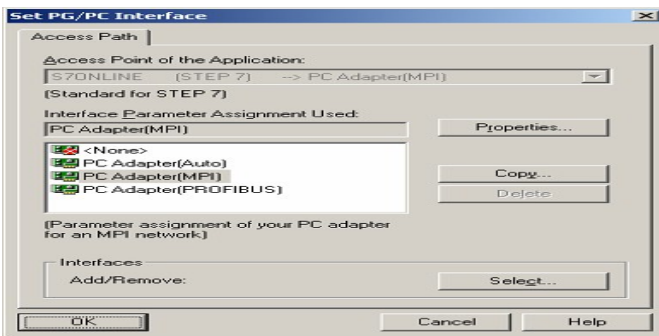
- TIC ETH/USB(PPI) or TIC ETH/USB.PPI.1

or some "TCP/IP" entries

If this is the case, please continue with the step MPI settings or Profibus settings.

If so not please install the "TIC-driver" on this PC and after a restart this entries must exist. If you want to install the TCP/IP-driver follow the link.

6.3.2.1 TCP/IP RFC1006 Communication



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

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

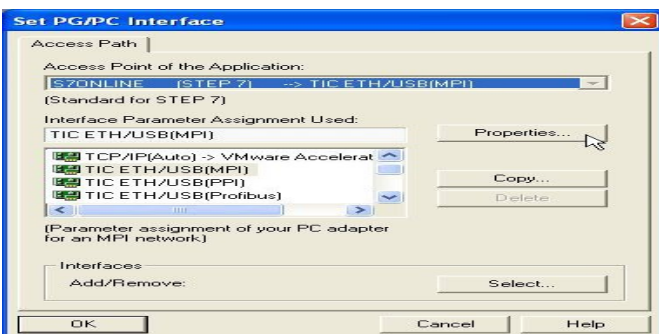
6. After successful installation, click "Close".

7. 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 step MPI setting .

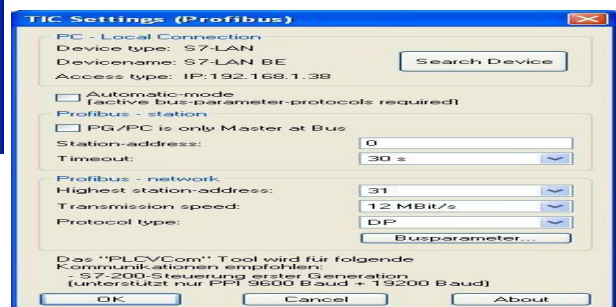
The settings for "PROFIBUS" is explained in Profibus setting .

6.3.2.2 MPI setting

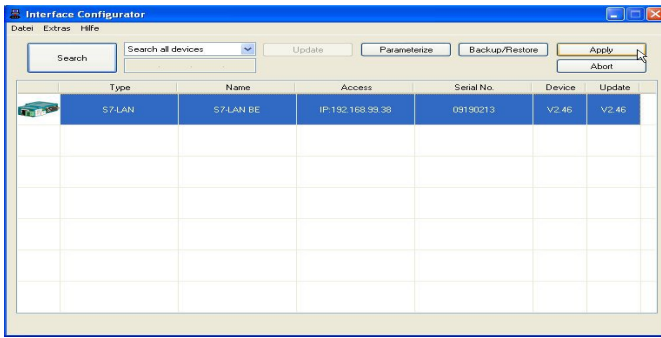


7. Select "TIC ETH/USB(MPI)" and click "Properties".

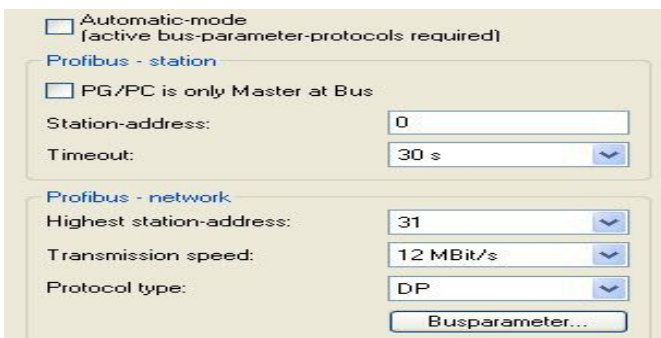
8. Open the properties dialog



9. Is the device-type is not identical with your used device, search for your device with "Search Device". Select the device in the result windows and click on the button "Apply".

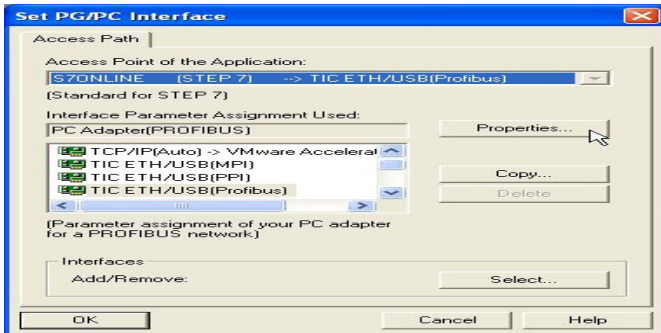


10. Activate the "Automatic-mode" when you will be shure, that the connected PLC sends cyclic bus-parameter-protocols. When not please configure the bus by hand.



11. Save your configuration with „OK“ and close the „Set PG/PC–interface“ dialog with „OK“.

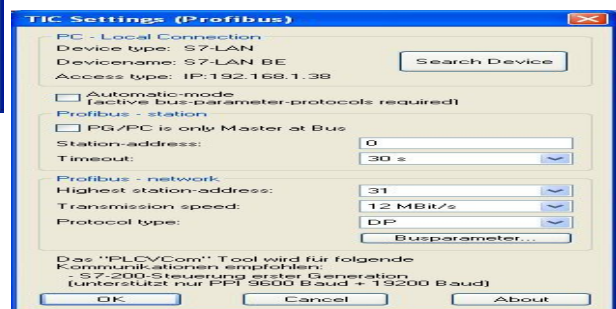
6.3.2.3 Profibus setting

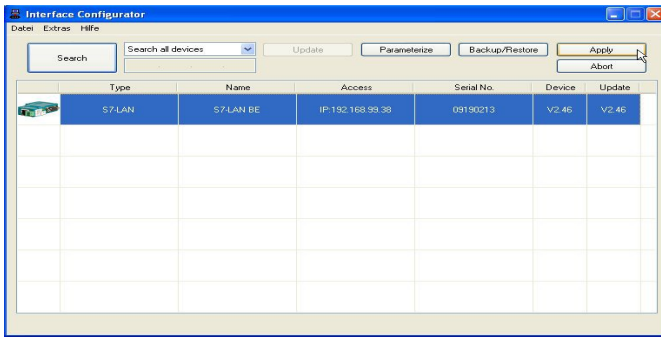


12. Mark the entry „TIC ETH/USB(Profibus)“ and click on „Properties“.

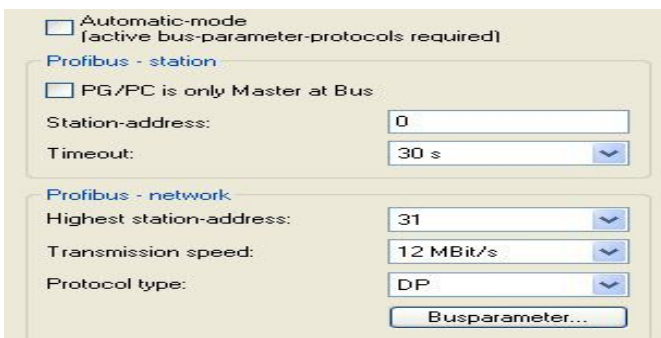
13. Open the properties dialog

14. Is the device-type is not identical with your used device, search for your device with "Search Device". Select the device in the result windows and click on the button "Apply".





15. Activate the "Automatic-mode" when you will be shure, that the connected PLC sends cyclic bus-parameter-protocols. When not please configure the bus by hand.

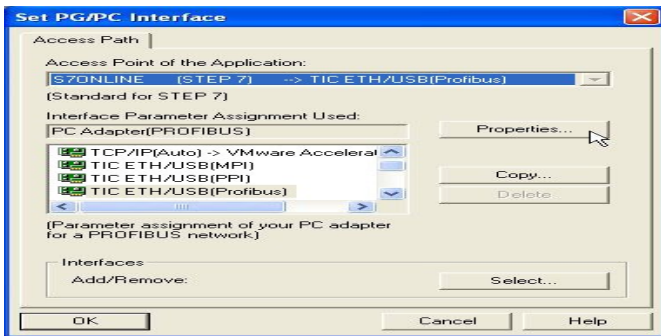


16. Save your configuration with „OK“ and close the „Set PG/PC–interface“ dialog with „OK“.

6.3.2.4 TCP/IP RFC1006 setting

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

6.3.2.5 ProTool/Pro RunTime (RT) Configuration



18. 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

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



Configure the interface as described in Set PD/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.

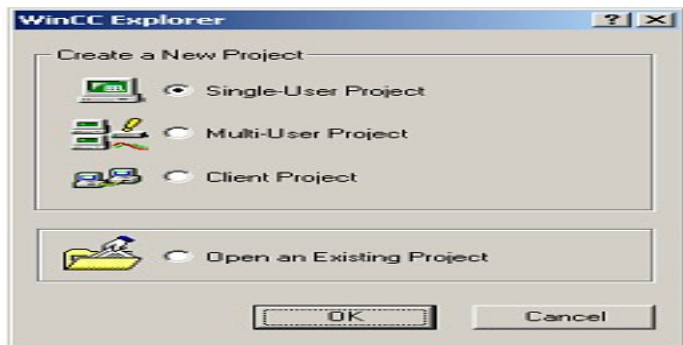
6.3.4 Windows Control Center (WinCC) (v6.0)



Configure the interface as described in Set PD/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. The next dialog offers you several project types “Single-User Project”, “Multi-User Project” and “Client Project”.

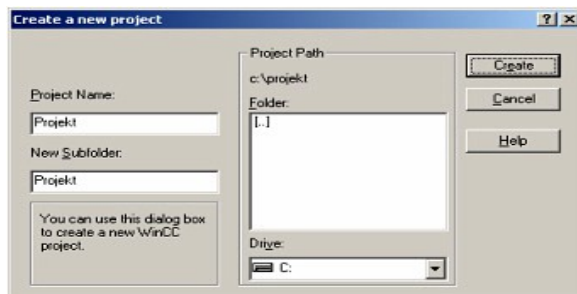
The next steps are the describing for the “Single- User Project”.

4. “OK” leads you to a new dialog. Type in the “Project Name” and the “Subfolder” of the project path.

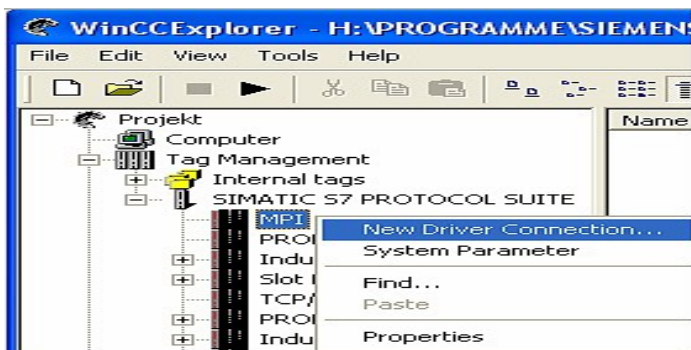
The chosen configuration is confirmed with “Create”.



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

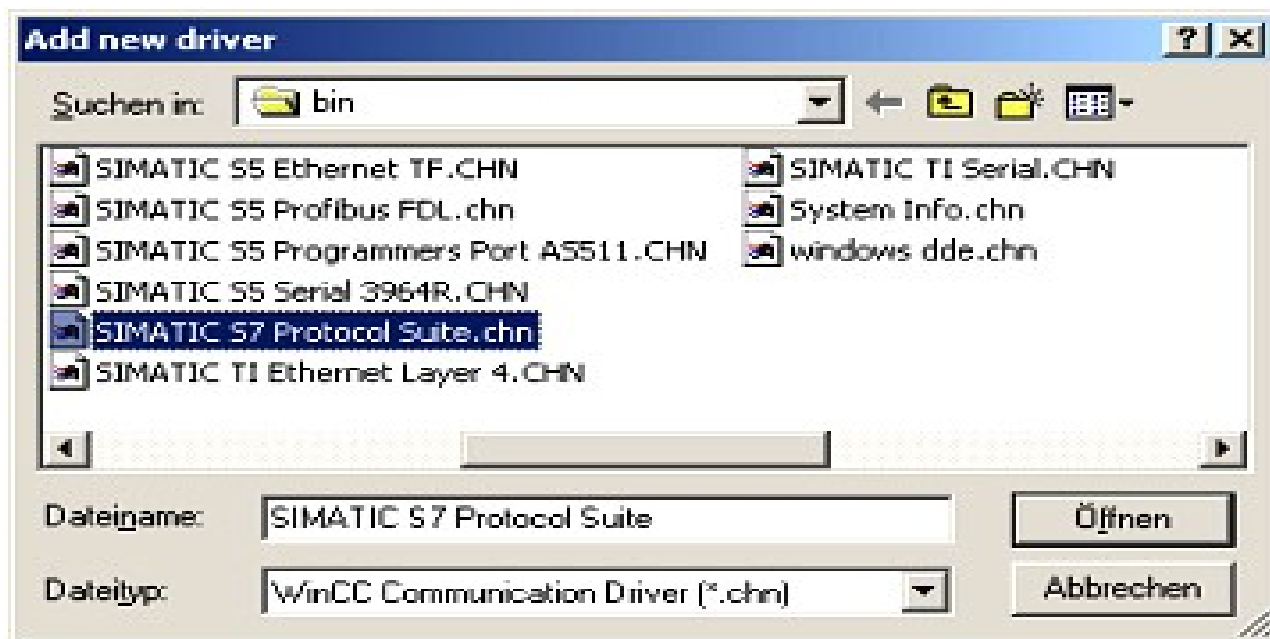


5. Please wait until the project is created. The project content will be shown in the left part of the main window.



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 ...”.



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).

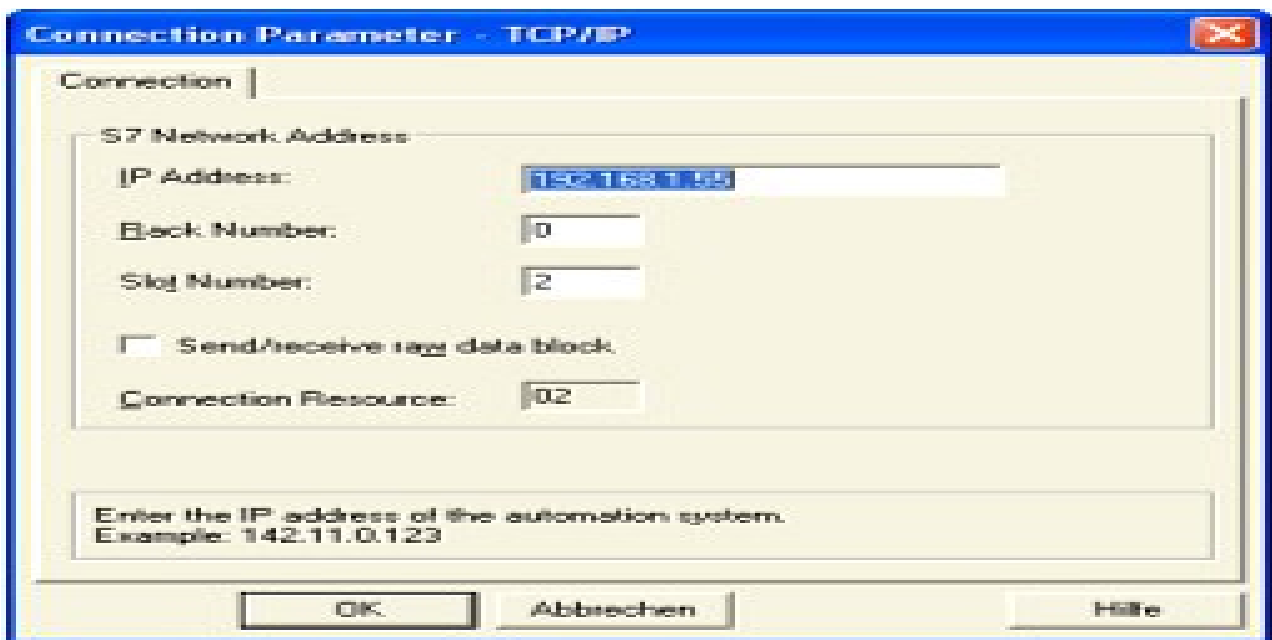
MPI



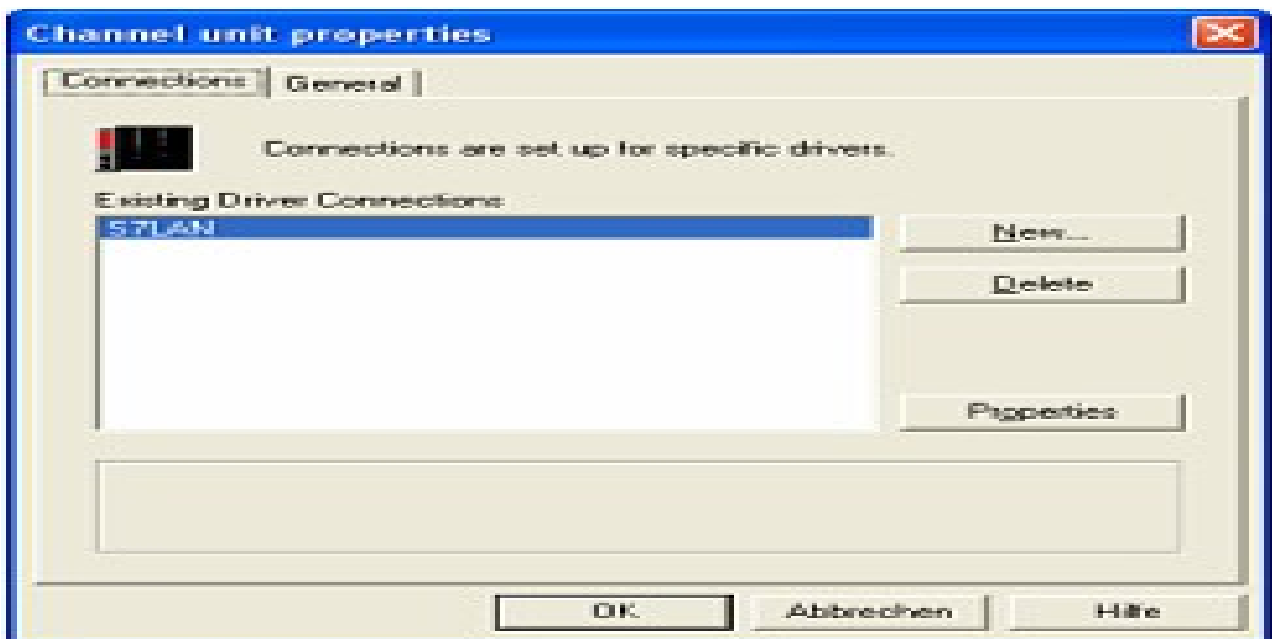
6.3.4.1 MPI Configuration



6.3.4.2 TCP/IP Configuration



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



13. Now 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 - > ,”).

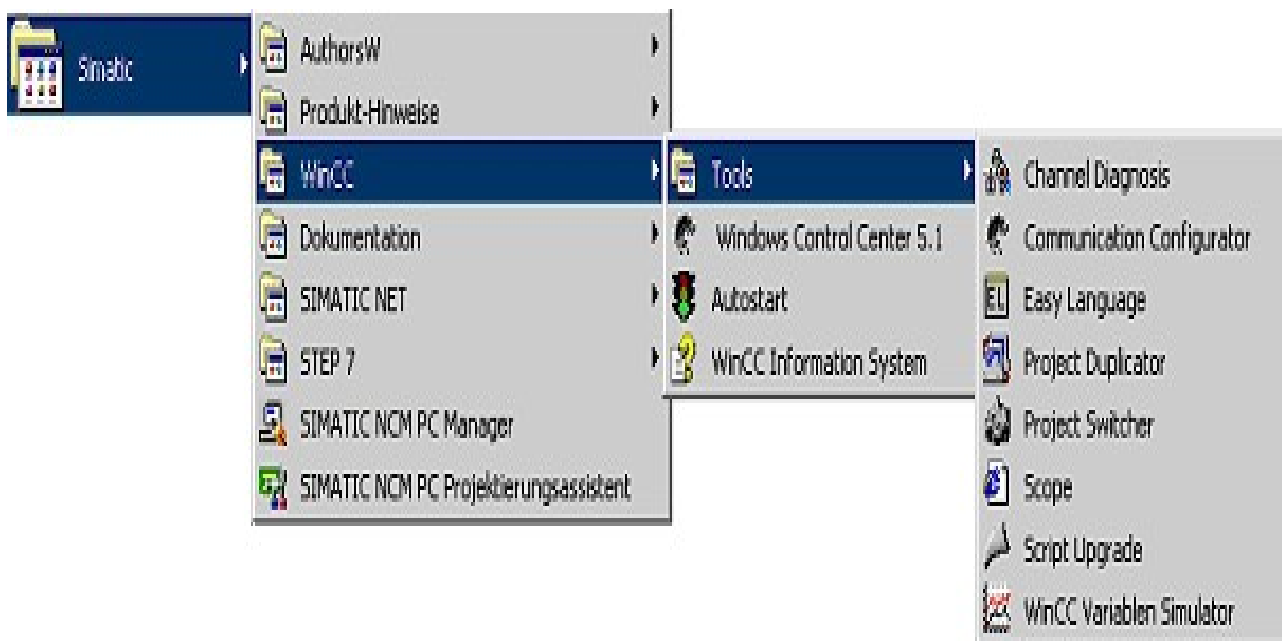
17. Confirm with „OK“.

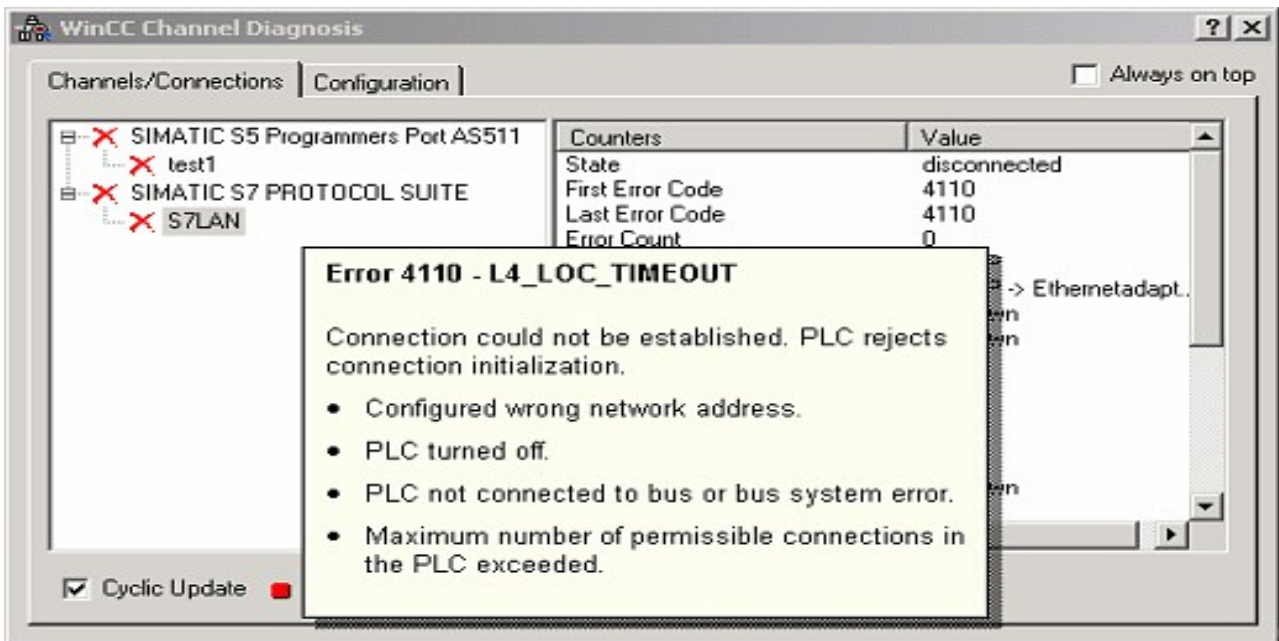
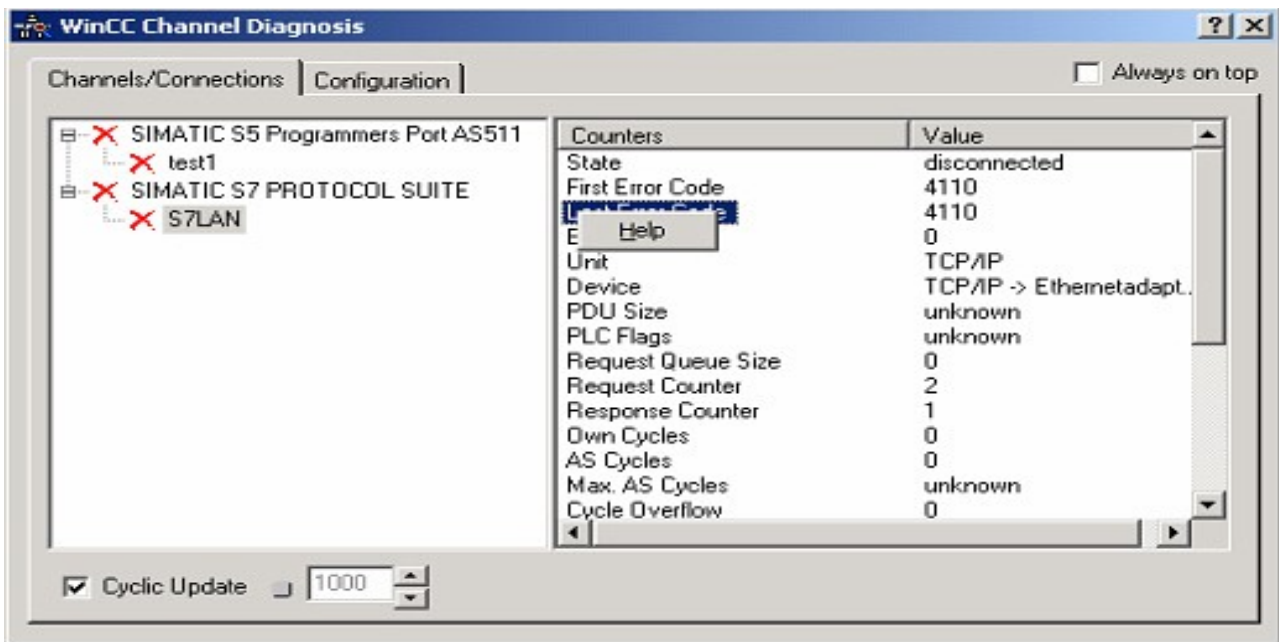
18. Now you are able to start  the communication. Stop it by clicking on .

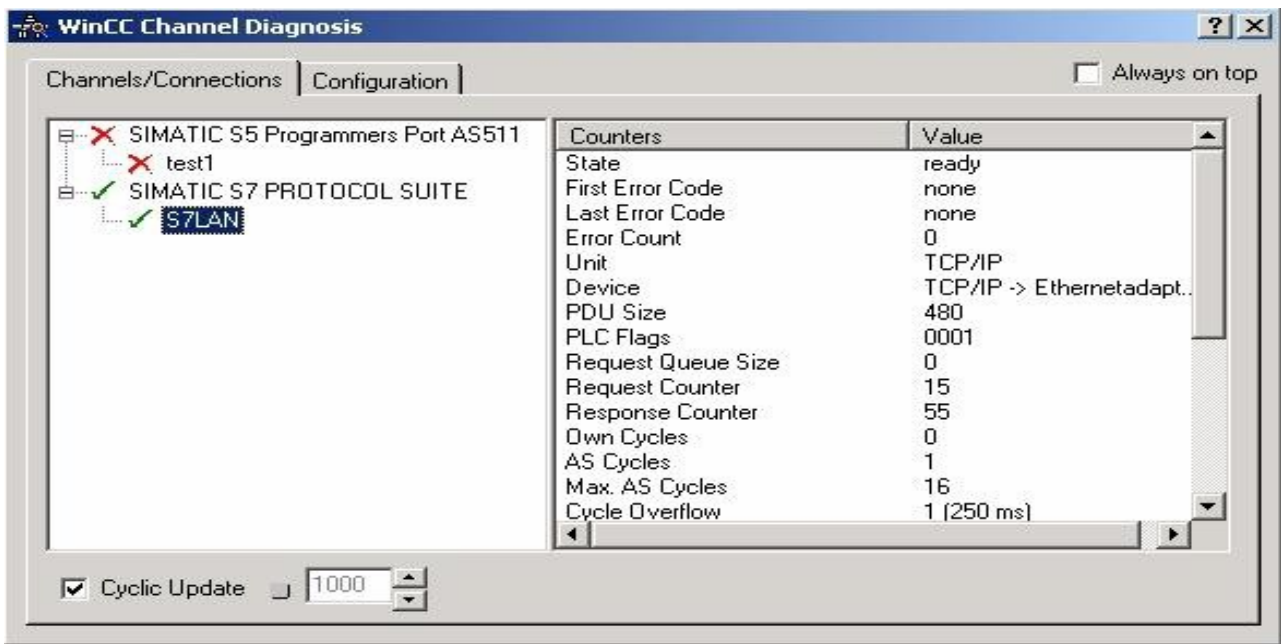
6.3.4.3 Communication and fault diagnosis

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.





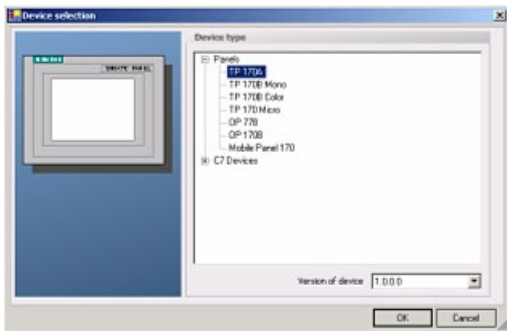


6.3.5 Windows Control Center flexible 2004 (WinCC flexible) (v5.2.0.0)



Please make sure that the interface configuration is correct as described in PD/PC-Set interface

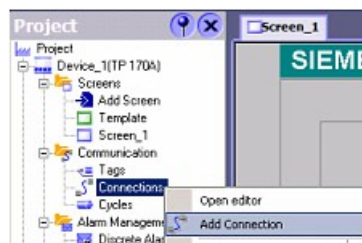
1. Start the WinCC flexible 2004 software by using the desktop link or the program entry in the start menu.
2. First you need to select “Create an empty project” on your first page.



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“.

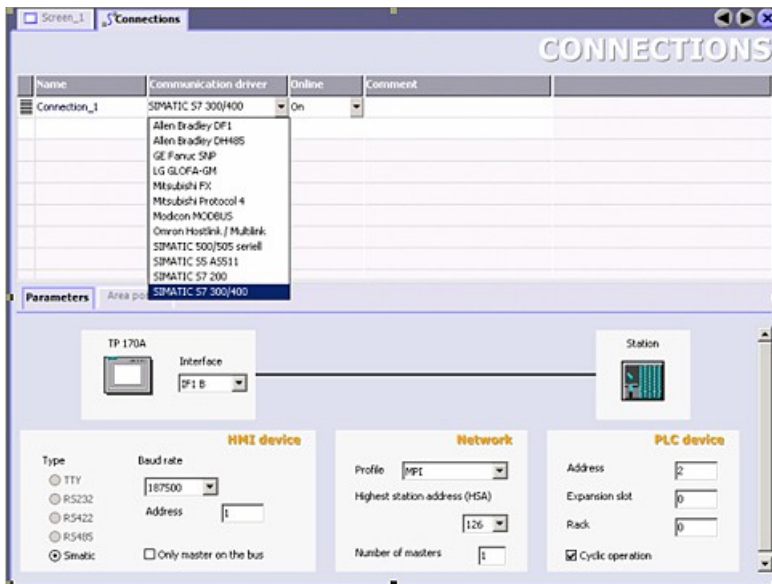


In the context menu click on “Add Connection“.

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

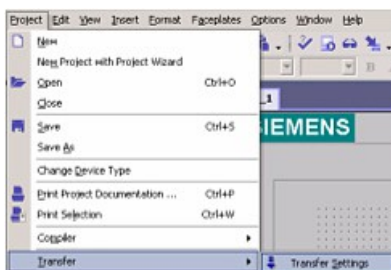
Important for the connection is:

- => 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")



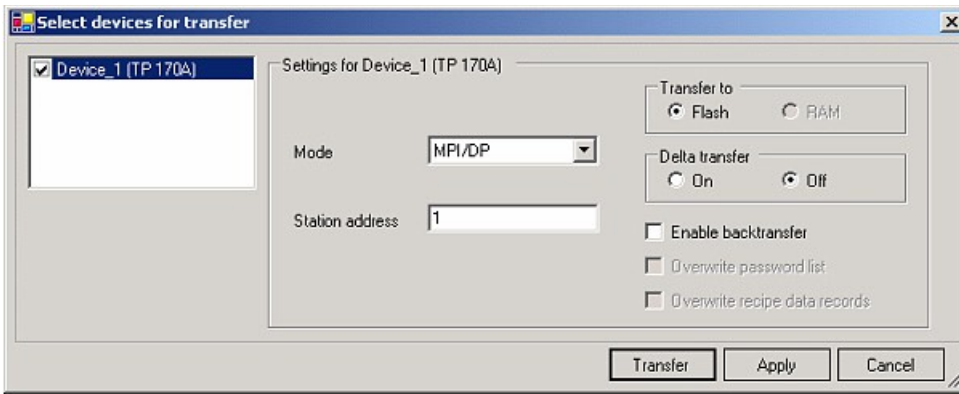
6. Now you can start with your work.

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



7. Choose „Transfer Settings“ from the sub menu „Transfer“.

8. In the new dialog change the „Mode“ to „MPI/DP“ and set the „Station address“ of the operator panel (e.g. „1“). If desired you can switch the „Delta transfer“ to „On“ (in this example we set it „Off“).



9. Press the button „Transfer“ to start communication with the terminal. Your project is about to be transferred.

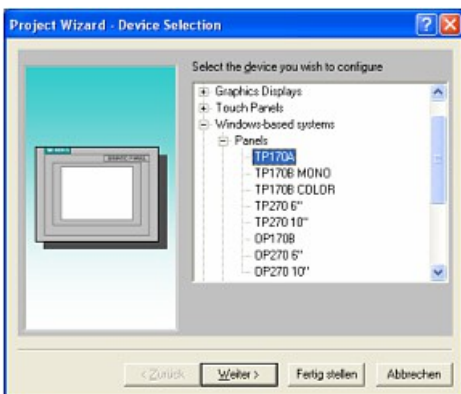
The WinCC flexible software is now able to communicate with your operator panel.

6.3.6 ProTool/Pro v6.0 SP2



Please be sure that the interface configuration is correct as described in PD/PC-set interface

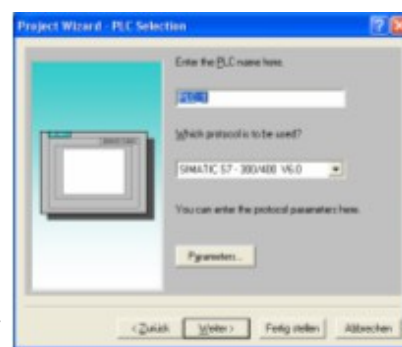
1. Start ProTool/Pro by using the desktop link or program entry in the start menu.
2. Choose from the menu „File“ the sub menu „New“ or click on the right symbol.



4. „Next“ leads you to a new dialog. Type in the specific fields the name of the PLC device and choose the used PLC in the driver selection (e.g. „SIMATIC S7 – 300/400 V6.0“).

3. The next dialog asks you which operator panel you are using.

Mark the used panel (e.g. „TP 170A“)



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“).

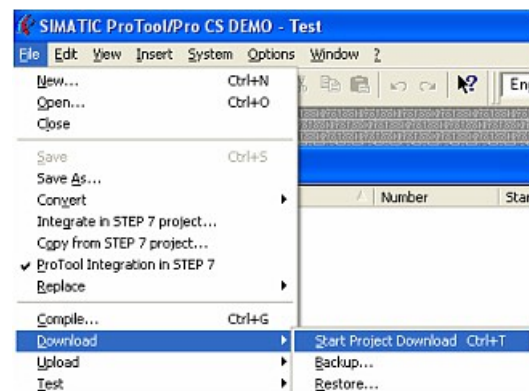
Confirm with „OK“.

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.

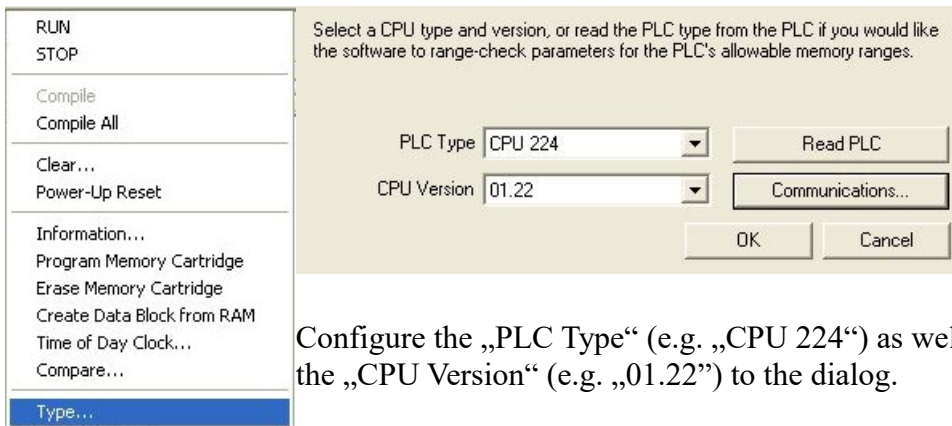
The communication between the operator panel is now established.

6.3.7 Microwin v3.2 (only for S7 200)

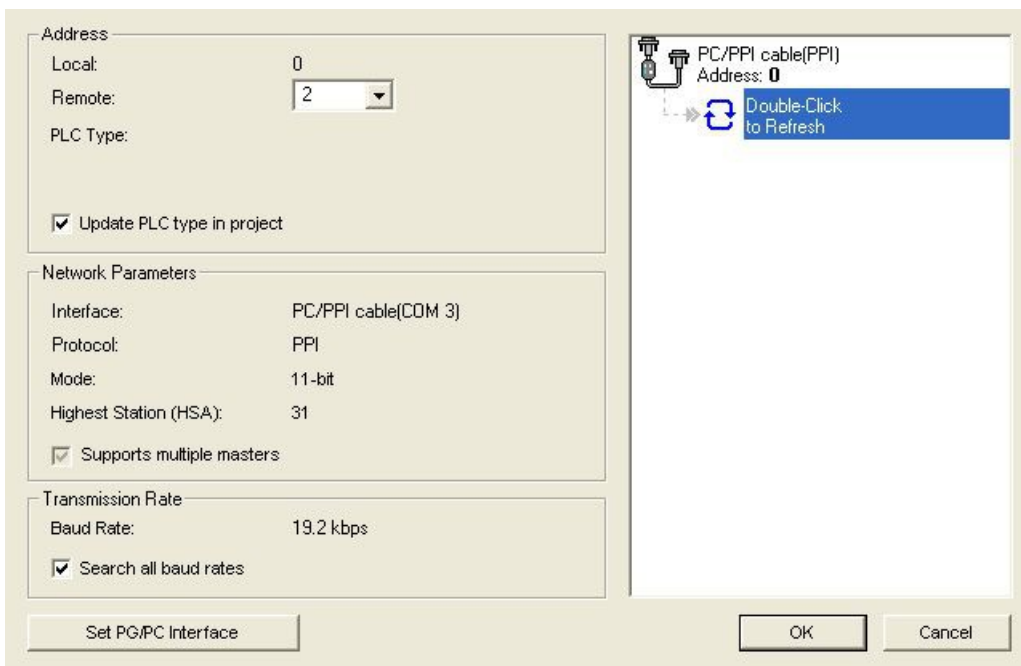


Please be sure that the interface configuration is correct as described in PD/PC-set interface

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“).

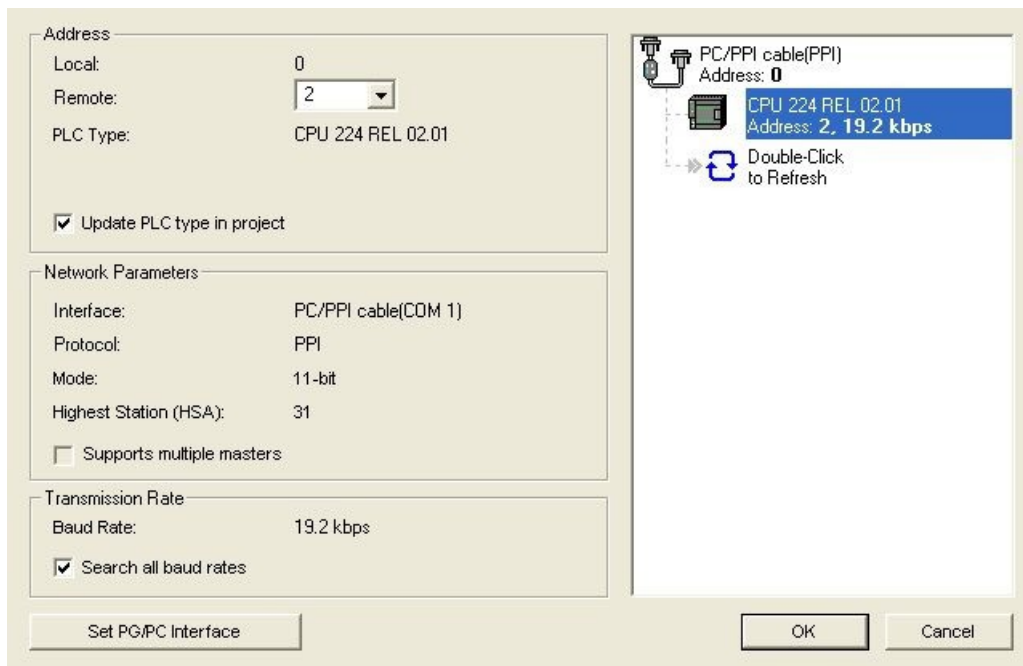


If you skipped the point b („ PD/PC-set interface“) you can configure the PG/PC interface with a click on „Set PG/PC interface“.

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 ist now established.

6.3.8 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.

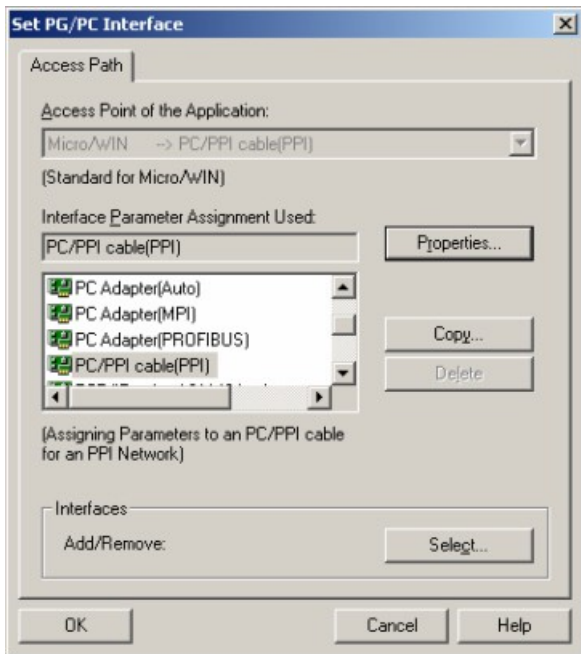
4. Now, you have to configure the PG/PC - Interface. This could you also do within the Microwin-Software.



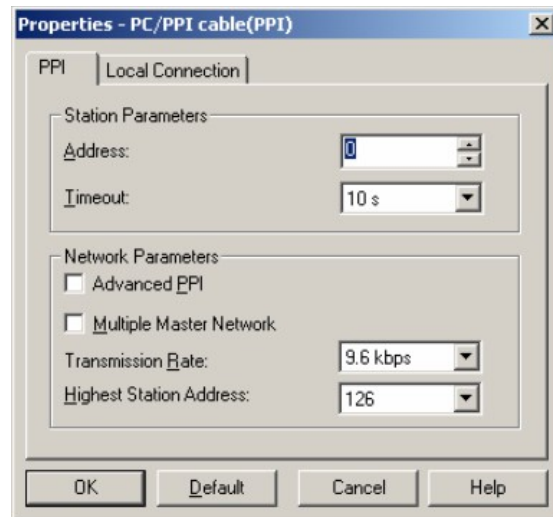
5. Start your Microwin-Software.

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“.

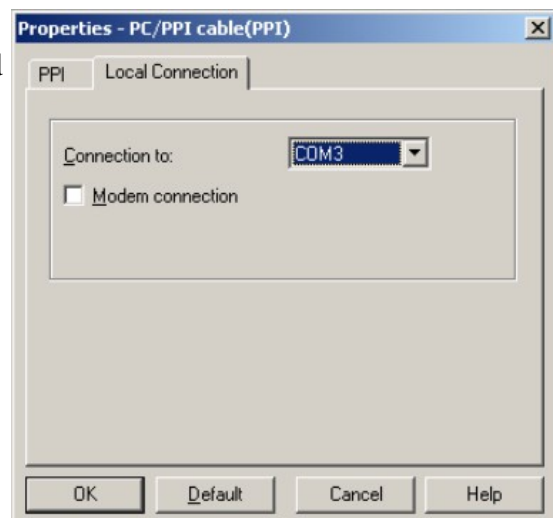


8. In the menu „PPI“ you are able to configure diverse settings like for e.g. “HSA“.

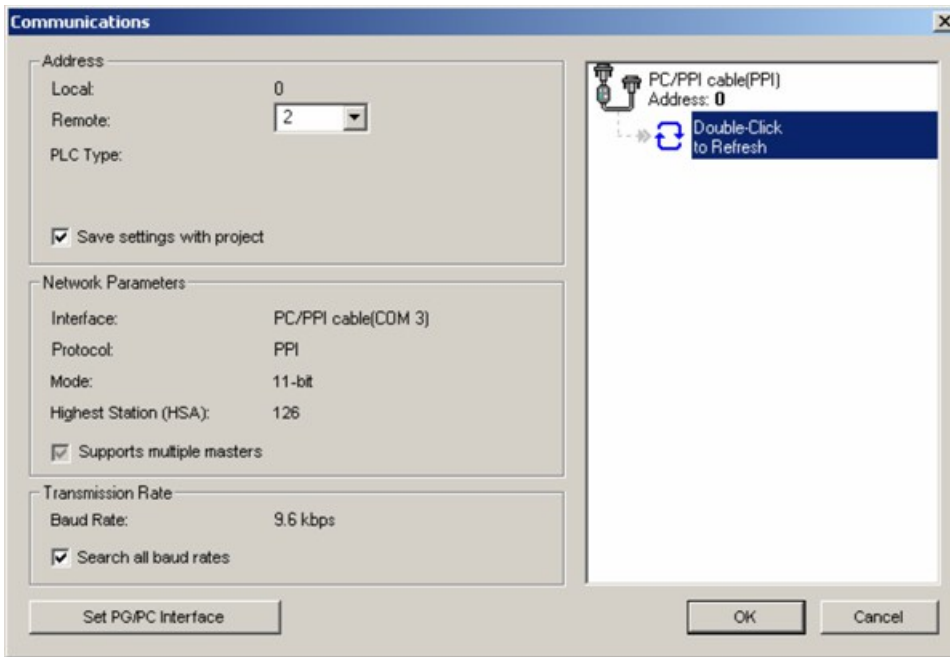


9. In the menu “Local Connection“ you select the com-port “Interface to“ to the port which is served from the tool PLCVCom.

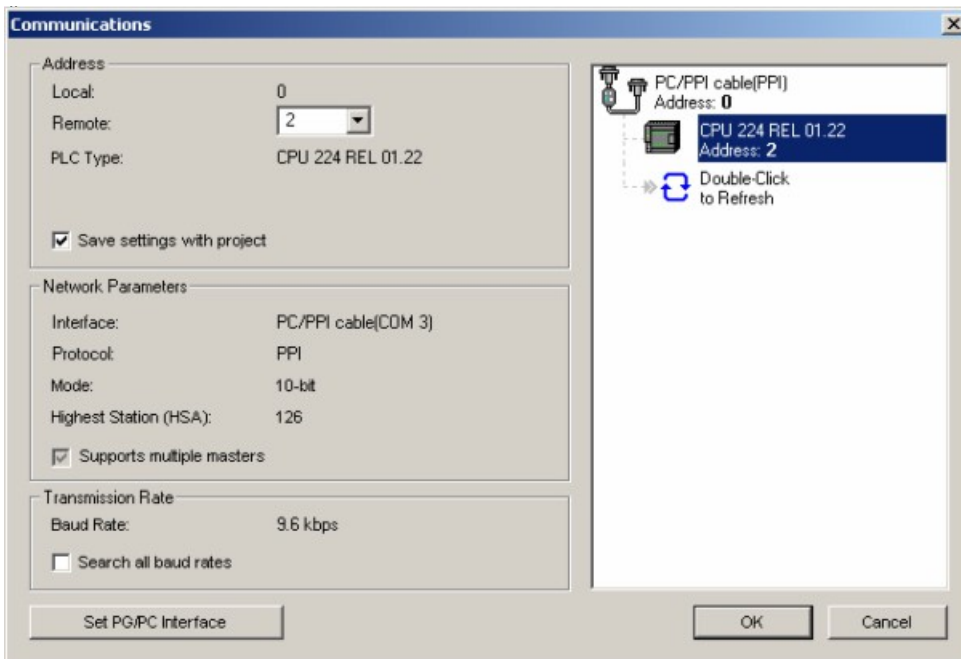
10. Click on the button “OK“ and click in the left down area in your windows on „Communications“.



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. Press the dialog with „OK“ until you would be in the main window.

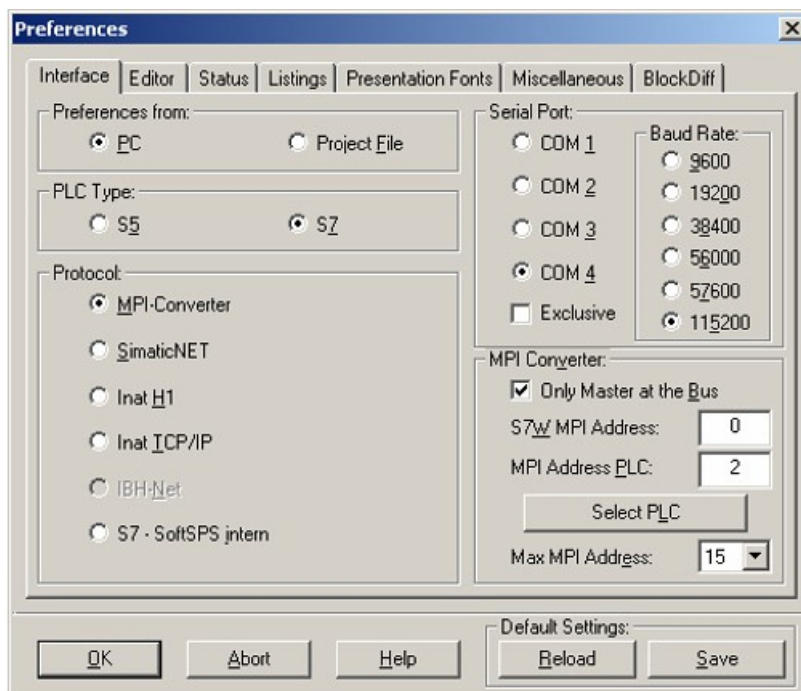
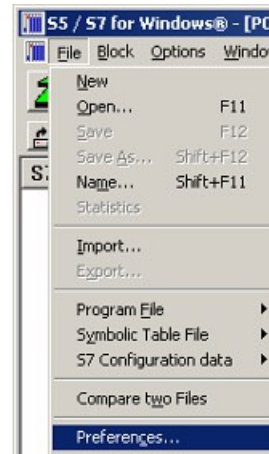
The communication to the PLC is now ready.

6.3.9 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 described below:

=> Area: „Preferences from:“ =>PC

=> Area: „PLC Type:“ => S7

=> Area: „Protocol:“ => MPI - Umsetzer

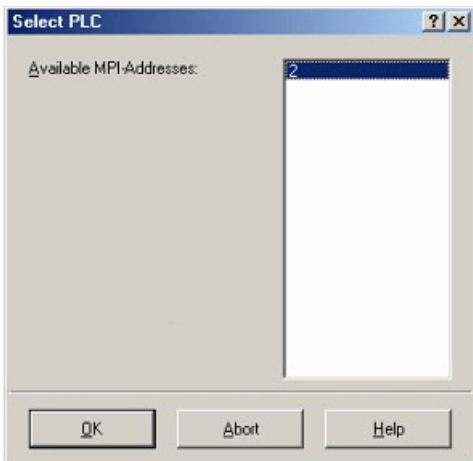
=> Area: „Serial Port:“ => Choose the virtual COM port which has been created by PLC - VCom (e.g. „COM 4”).

=> 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.



Baustein	Adress
OB 1	-
SFC 0	-
SFC 1	-
SFC 2	-
SFC 3	-
SFC 4	-
SFC 20	-
SFC 21	-
SFC 22	-
SFC 28	-
SFC 29	-
SFC 30	-
SFC 31	-
SFC 32	-
SFC 33	-
SFC 34	-
SFC 36	-
SFC 37	-
SFC 38	-
SFC 39	-
SFC 40	-
SFC 41	-
SFC 42	-
SFC 43	-
SFC 44	-
SFC 46	-
SFC 47	-
SFC 49	-
SFC 50	-
SFC 51	-

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.

6.3.10 Including S7-LAN module into a STEP 7 project

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

This communication 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.

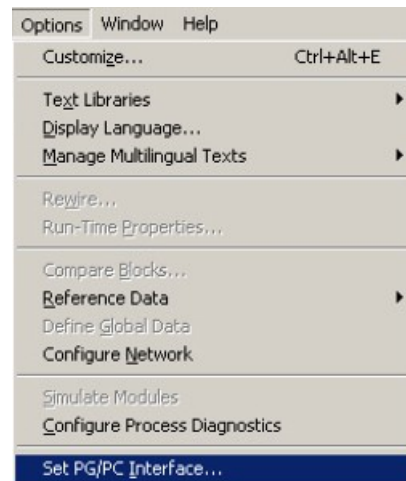
This description needs an existing project. Please read the Step 7 manual for more information about creating new projects.



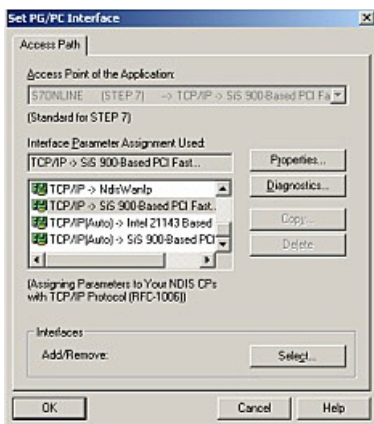
**Please be sure that you enter in the S7-LAN-module in the configuration menu the Subnet-ID of the connected bus.
Without this entry, a function is not given!**

1. Execute 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“.



3. In 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“.

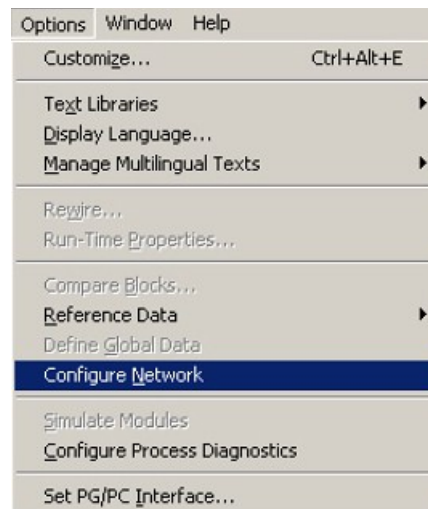


For the Step 7 software version 5.2 you need the SIMATIC NET package, otherwise the Step 7 software will not show the desired entries (TCP/IP, etc.) because it is not supported.

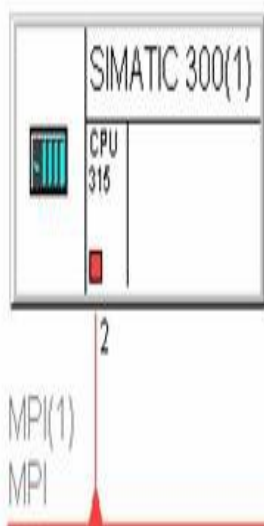


The Step 7 software version 5.3 has this package included after installation.

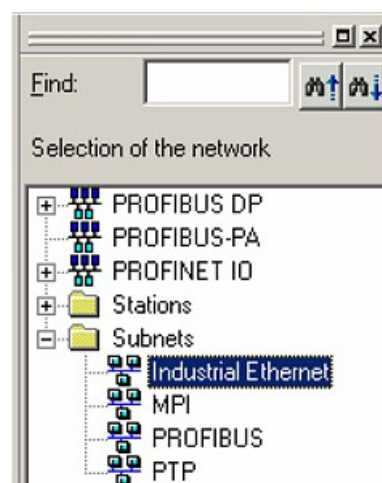
4. Back in the main window call, by using the menu „Options“, „Configure Network“. A new window appears.



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.



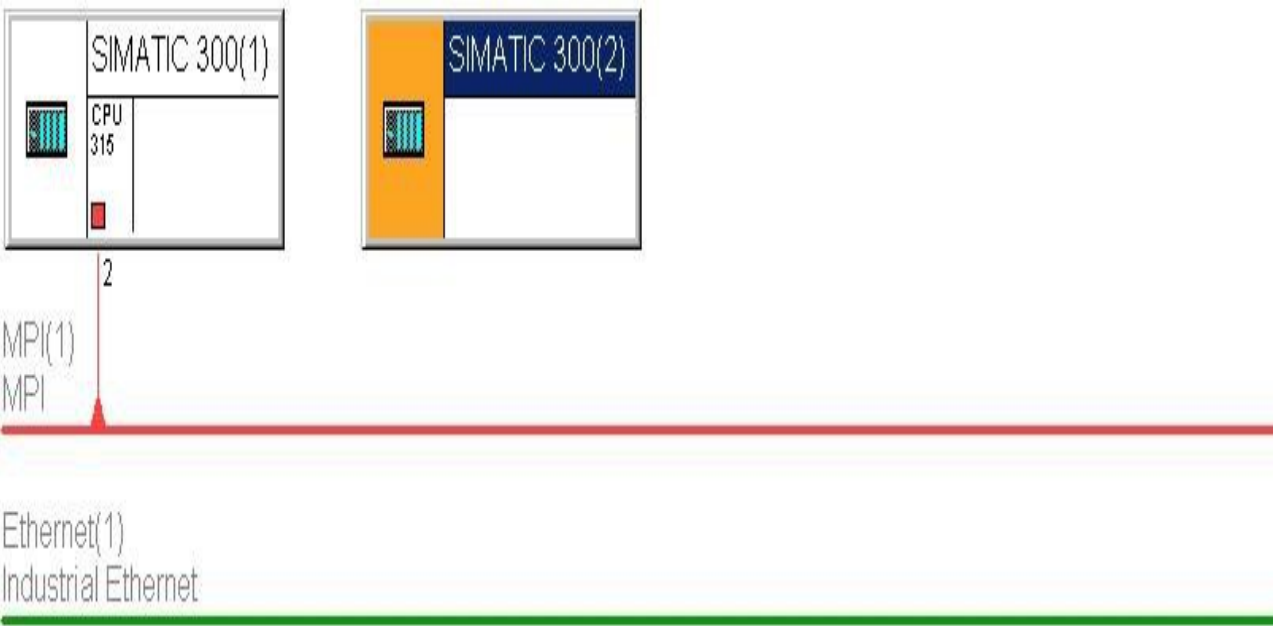
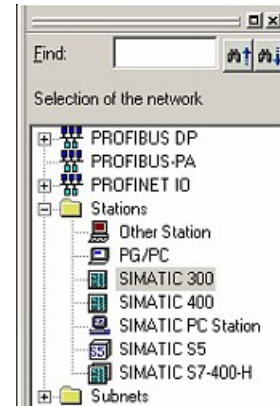


7. Now add a S7-PLC as replacement for S7-LAN/MPI-LAN which will be used for the CP mode later.

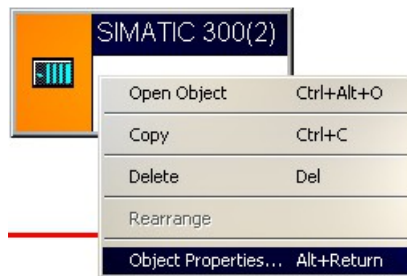
In the explorer „Selection of the network“ choose „SIMATIC 300“ from the branch „Stations“ to add a new virtual PLC.

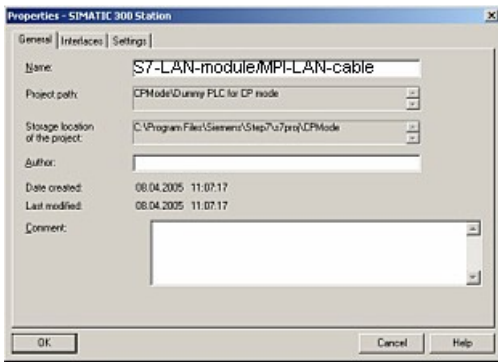
This takes effect to the left part of the window (see picture below).

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.

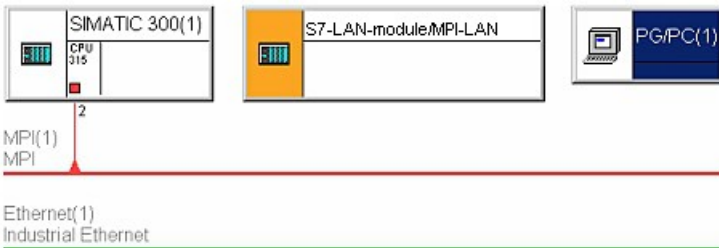
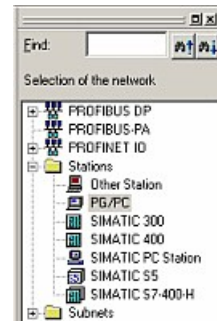




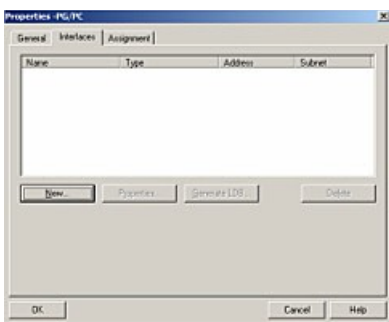
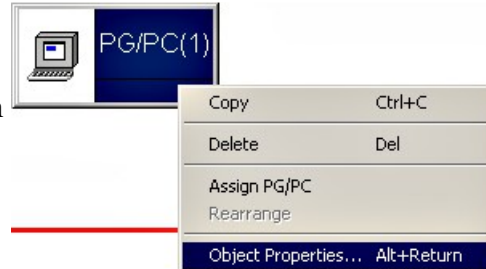
9. Type in the edit box “Name“ the new name of the PLC (e.g. “S7-LAN-module/MPI-LAN-cable for CP mode“). Confirm the new name with a click on “OK“.
The rectangle should be updated by the application.

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.



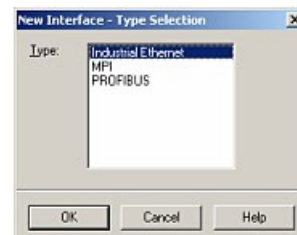
11. To configure the newly created object perform a right click on the „PG/PC(1)“ object and in the context menu choose “Object Properties...“.



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“.

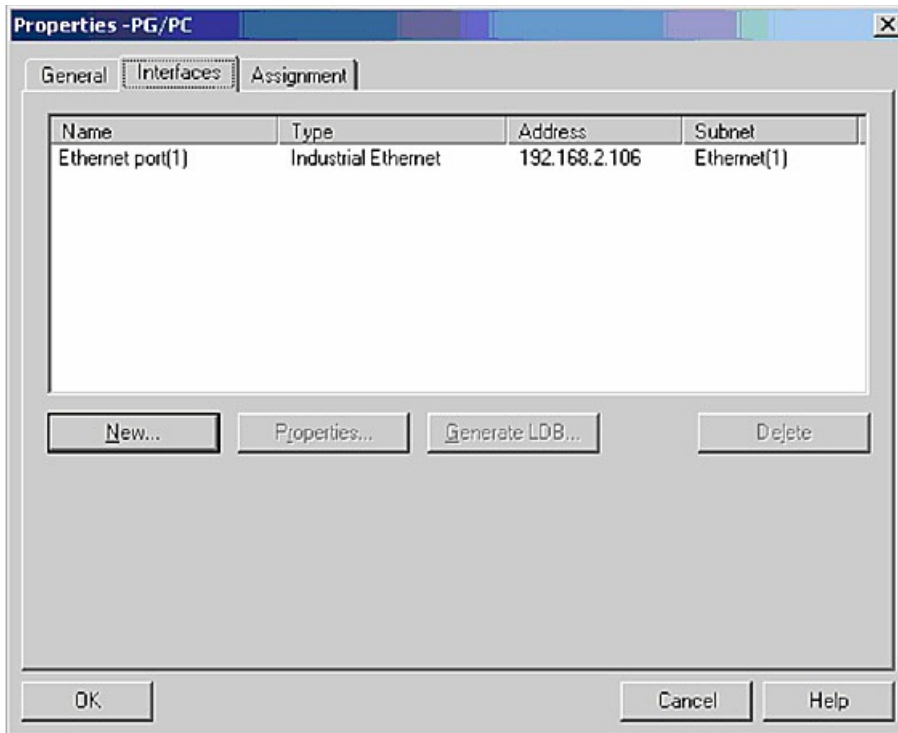


14. Now configure the IP address and the subnet mask from your

(e.g. IP address: „192.168.2.106“, subnet mask: „255.255.255.0“).

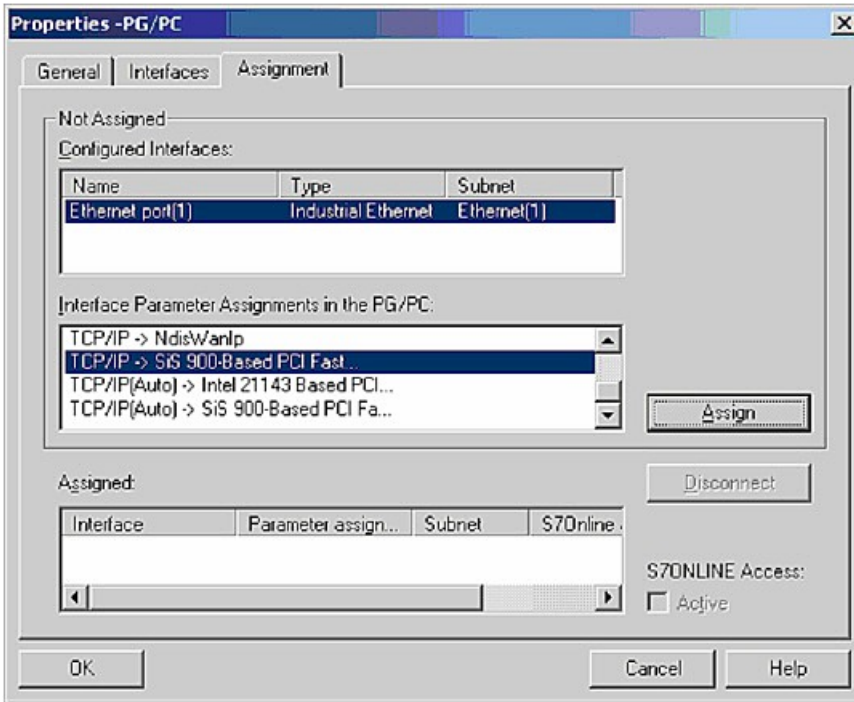
Before confirming with “OK” choose “Ethernet(1)” as the subnet you want to use.

15. The dialog “Properties – PG/PC“ should have two interfaces added to his list.

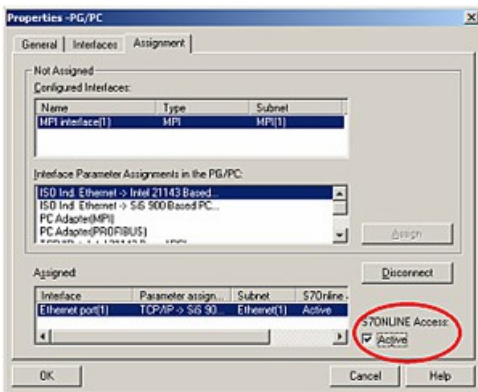
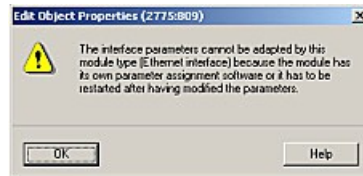


16. Select the registry card “Assignment“ and mark “Ethernet port(1)” by using the list “Configured Interfaces:”. In the list “Interface Parameter Assignments in the PG/PC:“ choose “TCP/IP - > XXX“. “XXX“ stands for the network interface card you want to use.

17. Assign the active connection to the device.



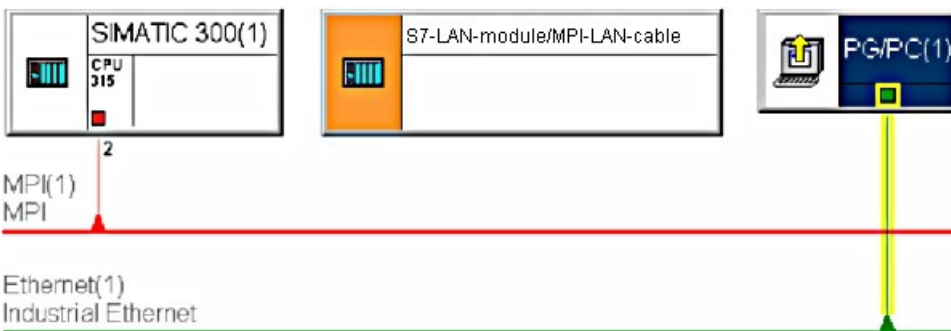
18. If this warning message appears just ignore it. Press “OK”.



19. Be sure to activate the checkbox “S7ONLINE Access:”.

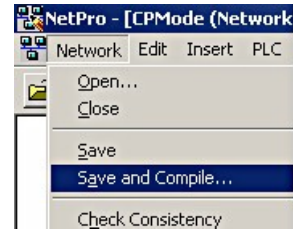
Confirm the dialog with “OK”.

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”.

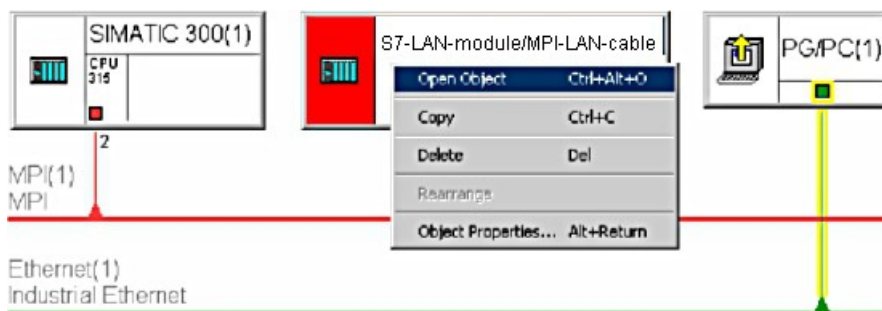
The option “Compile changes only” is good enough for our purpose.



21. A small window appears with a lot of error and warn messages. Do not panic that is part of the plan.

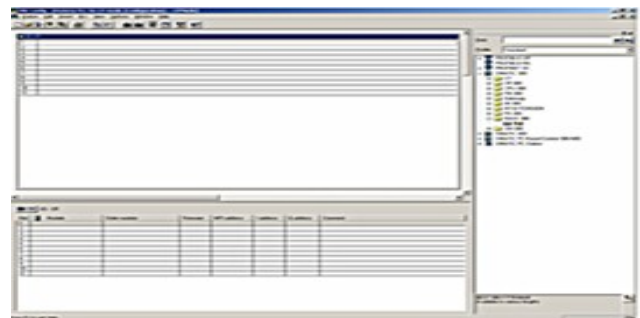
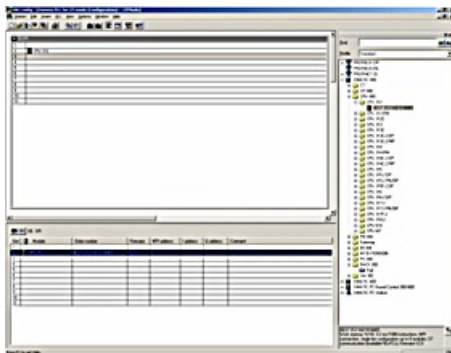
As you can see in the graphical section the “S7-LAN-module/MPI-LAN-cable for CP mode” has a red marked area. This signals that this object is currently not working.

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 -

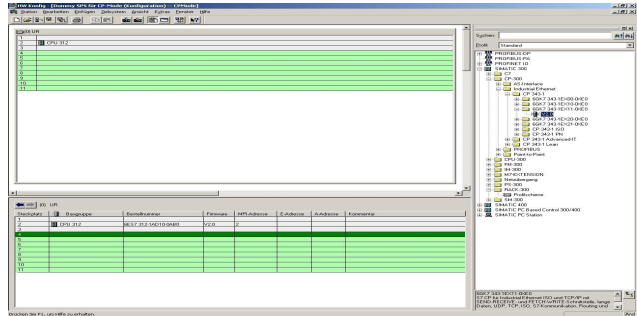
1AD10 - 0AB0“.

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).

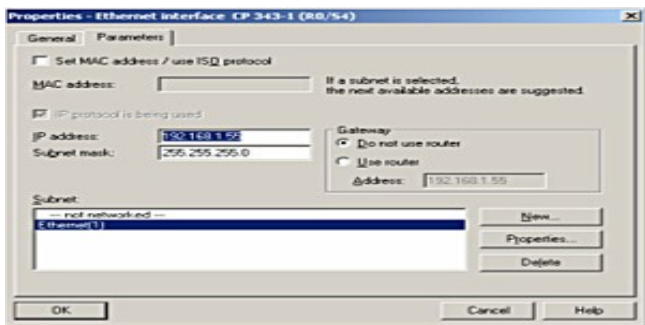
Now rapidly click twice on “V2.0“ to add the object to your rail.



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...”.

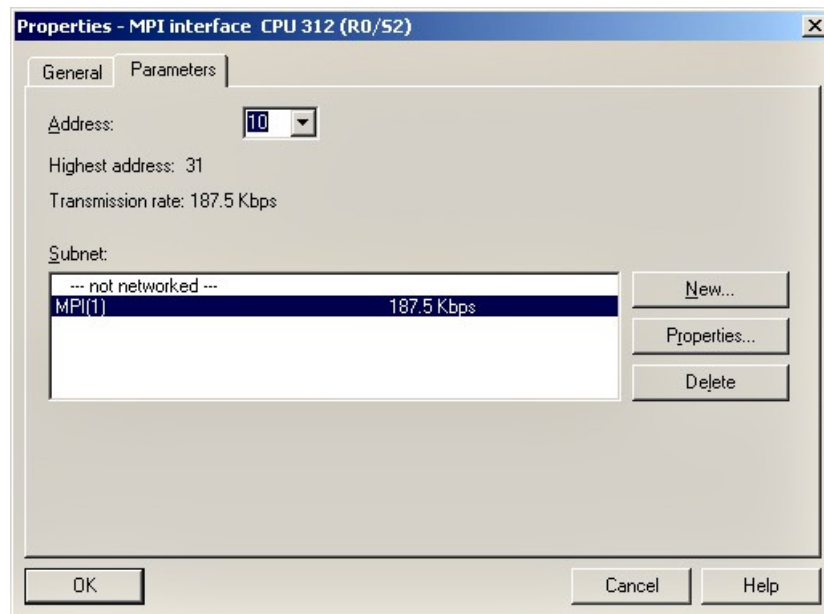


27. In the dialog “Properties – CPU 312 - (R0/S2)“ press the “Properties...” button. In the new dialog you can assign the MPI address to the CPU and choose the subnet the CPU should use.

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. Perform a right click on the “CP 343 - 1“ object you have created in the steps 27 and 28. Choose “Object Properties...” from the context menu.

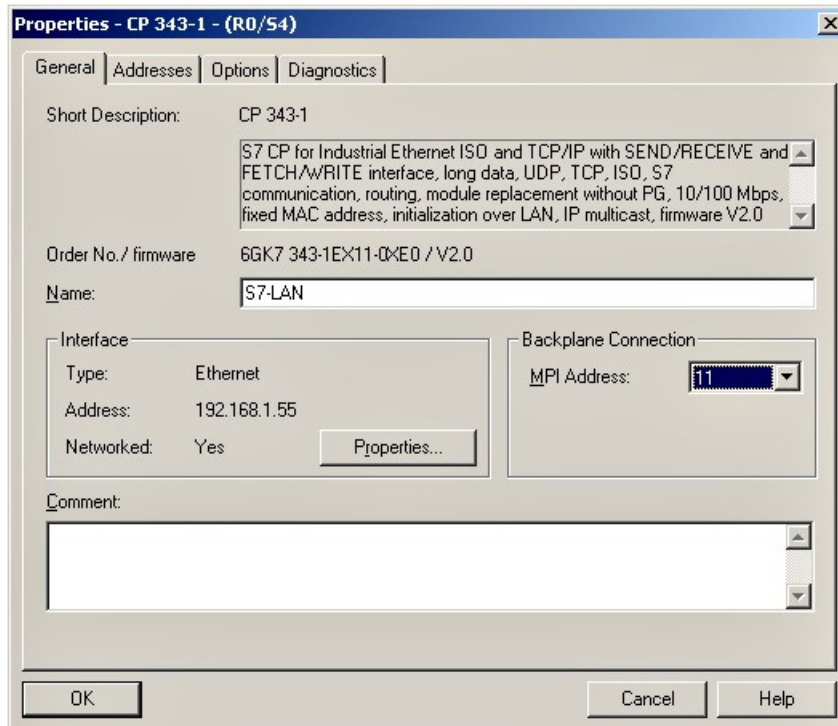


29. Another property dialog will open.

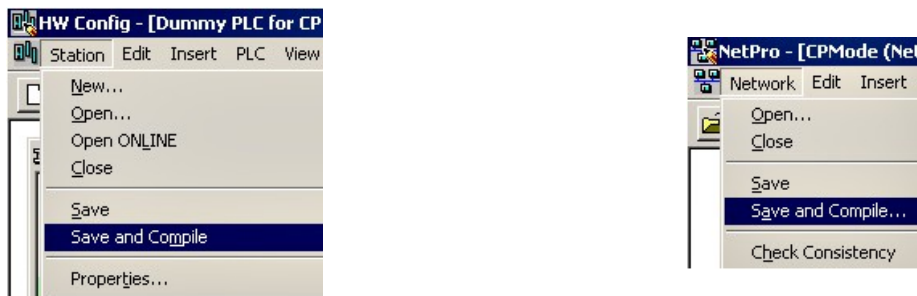
Set the name of the CP object to “S7-LAN“ (optional). Also set the MPI address which should be exact one station higher than the address you have given your “CPU 312“ in the step 30 (e.g. „10“ has been set for the “CPU 312“ object).

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.



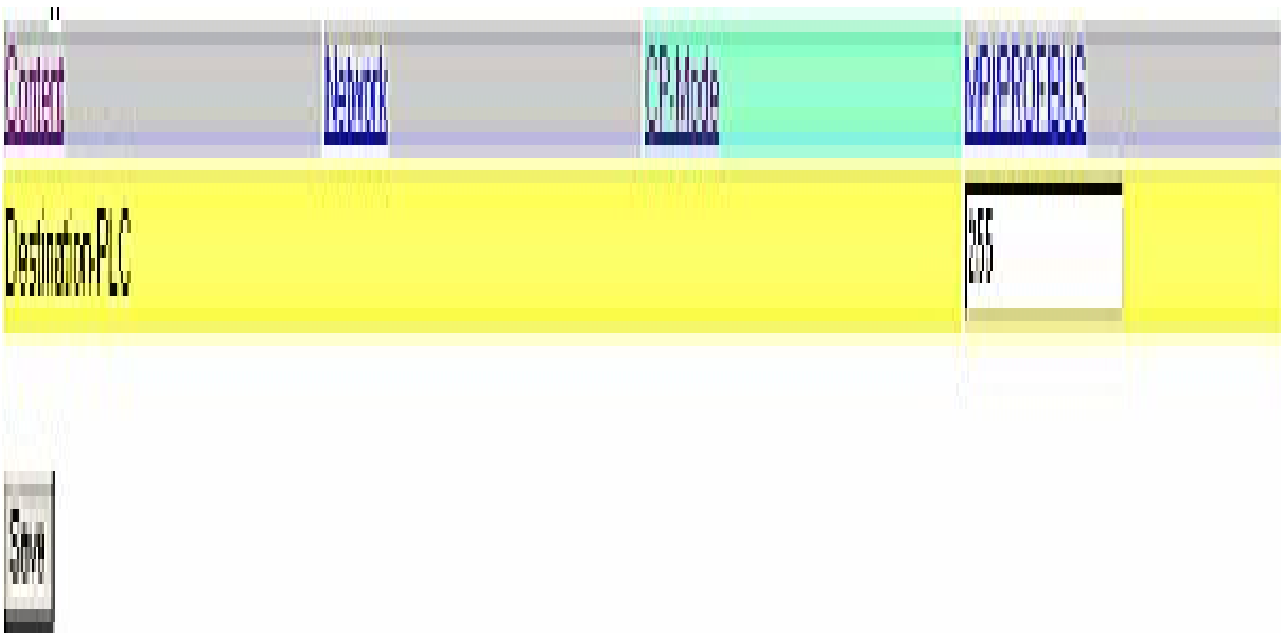
You do not know the S7 - LAN IP address? In this case you can use the PLC – VCom software to determine the S7-LAN IP address. Tip: The “Configuration“ dialog shows every connected device (to the computer or the network). See chapter „PLC - VCOM“.

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

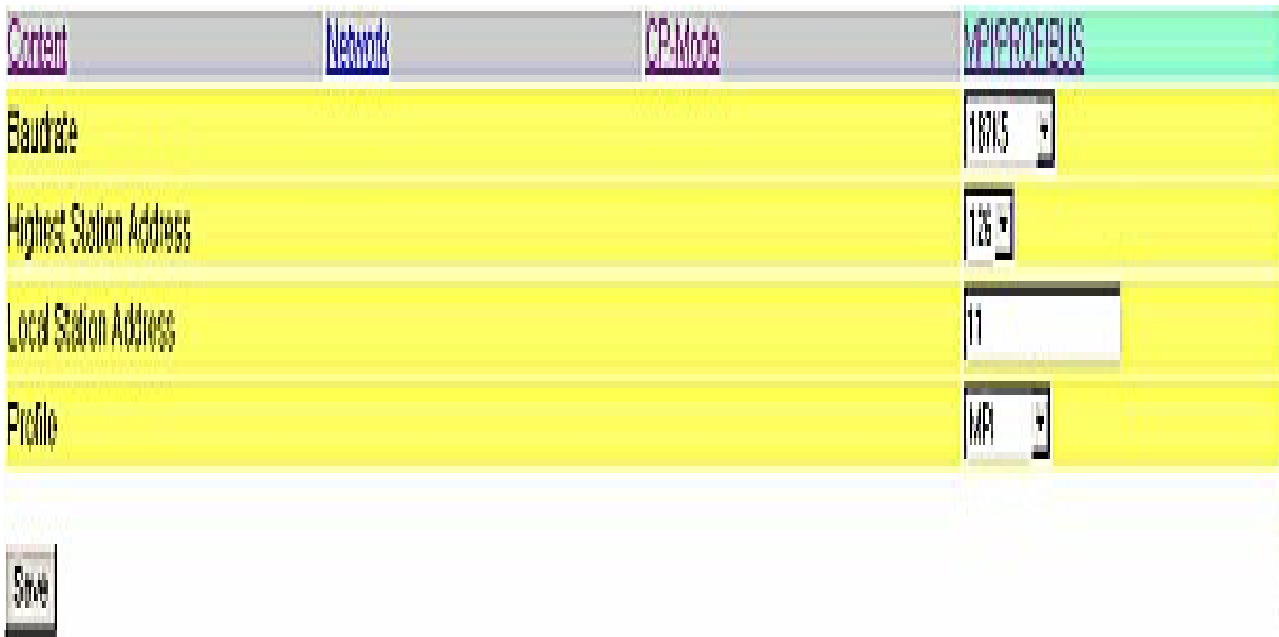
The only option you can configure for the CP mode is the “Destination - PLC”. You can set “255”. In this case the S7-LAN module connects automatically to the directly connected PLC.

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”).

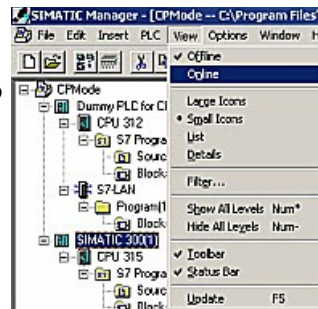


34. In the menu “MPI/PROFIBUS“ set the “Locale Station Address” which you have configured to your CP object in the step 32 (e.g. “11”).



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.

Object name	Symbolic name	HW/MW prot.	Load memory	Created in language	Size in Par work. us	Type	Version Header	Name Header
System data	--	--	RAM	--	--	SDB	--	--
OB1	--	--	STL	--	400	Organization block	01	--
SFC00	Yes	--	STL	--	--	System function	1.0	SET_CLK
SFC01	Yes	--	STL	--	--	System function	1.0	READ_ELT
SFC02	Yes	--	STL	--	--	System function	1.0	SET_FIRM
SFC03	Yes	--	STL	--	--	System function	1.0	CTRL_RTM
SFC04	Yes	--	STL	--	--	System function	1.0	READ_RTM
SFC20	Yes	--	STL	--	--	System function	1.0	ELMDEV
SFC21	Yes	--	STL	--	--	System function	1.0	FILL
SFC22	Yes	--	STL	--	--	System function	1.0	CREATE_DB
SFC28	Yes	--	STL	--	--	System function	1.0	SET_TRNT
SFC29	Yes	--	STL	--	--	System function	1.0	DATA_TRNT
SFC30	Yes	--	STL	--	--	System function	1.0	ACT_TRNT
SFC31	Yes	--	STL	--	--	System function	1.0	DRY_TRNT
SFC32	Yes	--	STL	--	--	System function	1.0	ERT_DINT
SFC33	Yes	--	STL	--	--	System function	1.0	DATA_DINT
SFC34	Yes	--	STL	--	--	System function	1.0	DRY_DINT
SFC36	Yes	--	STL	--	--	System function	1.0	MSC_FLT
SFC37	Yes	--	STL	--	--	System function	1.0	INDEX_FLT
SFC38	Yes	--	STL	--	--	System function	1.0	READ_ERR
SFC39	Yes	--	STL	--	--	System function	1.0	DVS_ERR
SFC40	Yes	--	STL	--	--	System function	1.0	ENL_ERR
SFC41	Yes	--	STL	--	--	System function	1.0	DVS_AHT
SFC42	Yes	--	STL	--	--	System function	1.0	ENL_AHT
SFC43	Yes	--	STL	--	--	System function	1.0	RE_TRIGR
SFC44	Yes	--	STL	--	--	System function	1.0	REPL_VAL
SFC46	Yes	--	STL	--	--	System function	1.0	STP
SFC47	Yes	--	STL	--	--	System function	1.0	WAIT
SFC48	Yes	--	STL	--	--	System function	1.0	LGC_GADR
SFC50	Yes	--	STL	--	--	System function	1.0	RO_LDADR
SFC51	Yes	--	STL	--	--	System function	1.0	ROV_SST
SFC52	Yes	--	STL	--	--	System function	1.0	WPL_USMSG
SFC55	Yes	--	STL	--	--	System function	1.0	WPL_PARM
SFC56	Yes	--	STL	--	--	System function	1.0	WPL_OFARM
SFC57	Yes	--	STL	--	--	System function	1.0	PARM_MCO
SFC58	Yes	--	STL	--	--	System function	1.0	WPL_PEC
SFC59	Yes	--	STL	--	--	System function	1.0	RO_ILC
SFC64	Yes	--	STL	--	--	System function	1.0	TIME_TOK

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.

6.3.10.2 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 be archived 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.



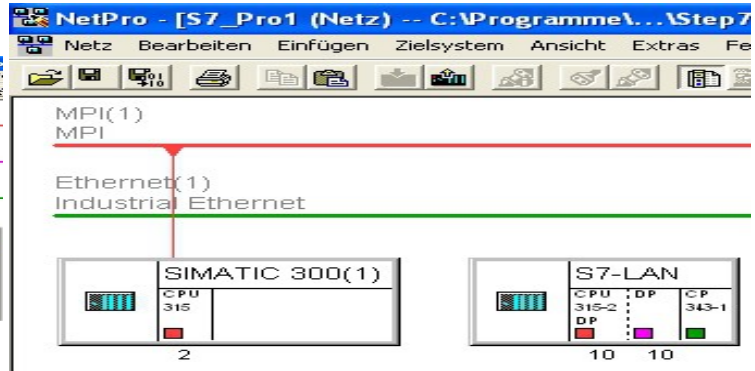
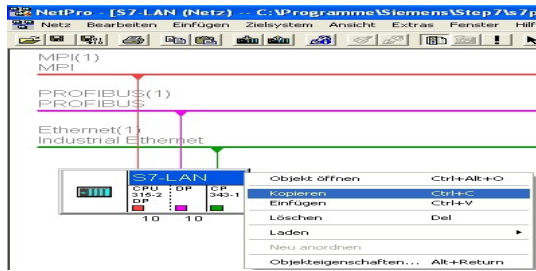
Shoot open the project with the name S7-LAN and open the network configuration.

8. Select the preconfigured S7-LAN Projekt and copy it into your own

9. Here you only have to connect the S7-LAN with the network and the addresses may change according to your

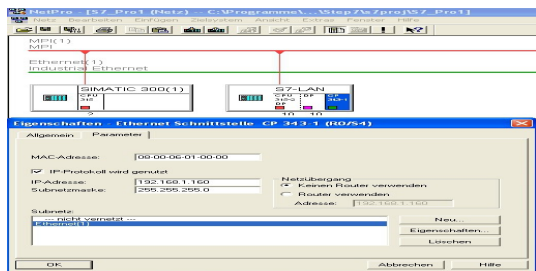
project.

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

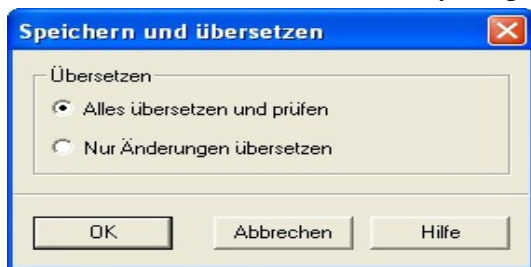


11. You can also adjust the back panel bus in the object properties of the CP.



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

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".

Now opens the start page of the S7-LAN go to Settings, right in the menu structure

14. These are the settings that you need to do in the configuration of the S7-LAN:

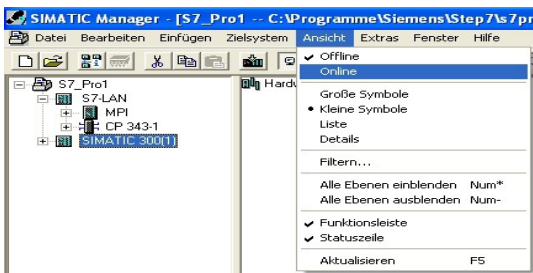
-The same IP that you have given your CP in the Step7 project and the S7-subnet-ID of the net which you communicate to your real PLC

-The local station address must be the same as that of the backplane bus of your CP's in the Step 7 project

-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")

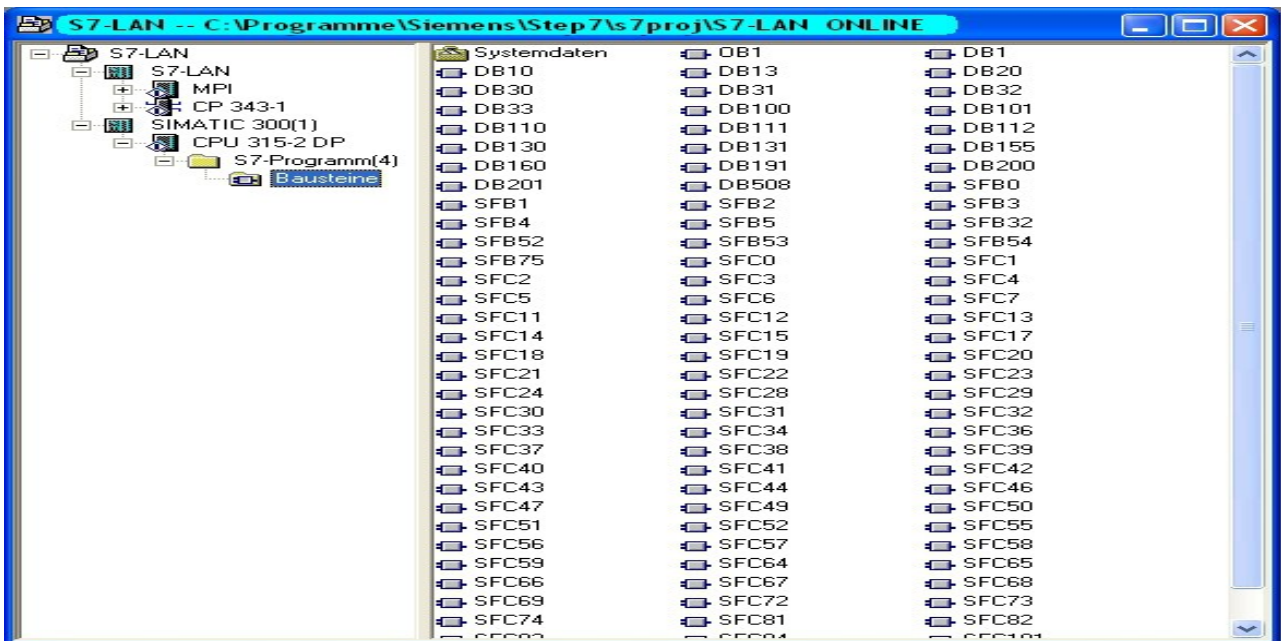
S7-LAN V2.13

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



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.



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

6.3.10.3 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.

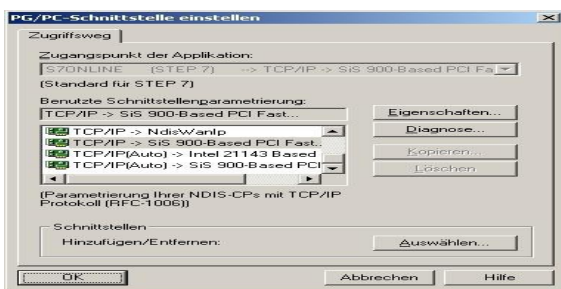
1. Start the Step - 7 © software.

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 parameterization" the entry "TCP / IP => XXX", where "XXX" for the used network card.



Then confirm with "OK".



On Version V5.2 of Step7 software you have to purchase and install the SIMATIC NET package too. Otherwise it won't work.

Version 5.3 have included the package after first installation.

4. Back to the main window of Step7 software you can configure your network at menu „Extras“, „Configure Network“.

Es erscheint ein neues Fenster.



5. That window will show you all devices on the bus (at our example, the „CPU 315“ at MPI – bus with address „,2“).



6. Select „Networkobjects“, the subnet „Industrial Ethernet“

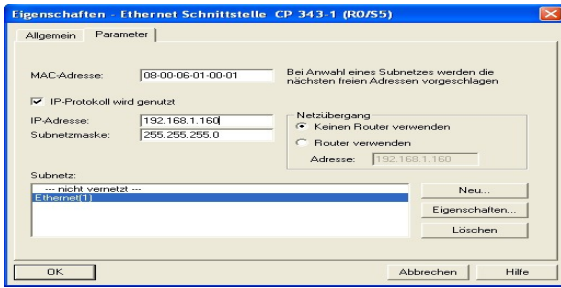
After that, the window will be changed like in the picture below.



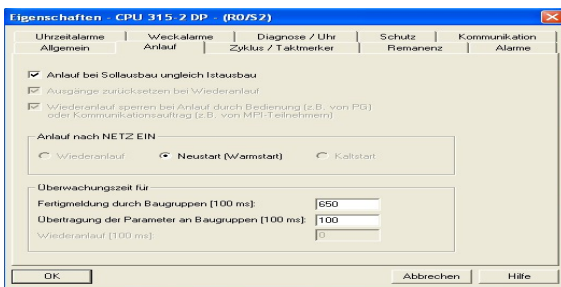
7. Open the hardware configuration of your SPS. Here you can see the menu SIMATIC 300 ⇒ CP-300 ⇒ Industrial Ethernet ⇒ CP 343-1 ⇒ the 6GK7 343-1EX10-0EX0 v1.0 on the right side. Please add this to your SPS.



8. Now, a window will open. Please configure the IP address of your S7/MPI-LAN or CP on this window to connect with ethernet.

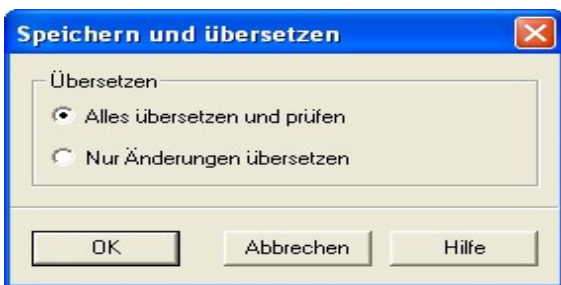


9. Now your CP is integrated on the CPU.
 With doubleclick on CP you can see the object configuration.
 Here you have to configurate the rear panel connectors. The address should be 1 higher then the MPI/Profibus address of your S7/MPI-LAN
 For example 3, because the MPI address of your CPU is 2.



10. In your network configuration you can open the object configuration of your cpu.
 Here you can find the option "shall escape" and "equal to actual configuration".
 The mark on checkbox should be set.

11. After that, please save and translate all to your SPS.



Here we will describe the expert area where you should the knowledge about S7/MPI-LAN. If you have any problems on the next steps you have to go to the chapter 2.6 "Operation".

12. Now you have to configurate the S7/MPI-LAN. This will be done with your webbrower. Enter

the IP address of your S7/MPI-LAN on address field.



If you don't know the IP address of your device. Open the PLC VCOM software to detect the IP address. On dialog: „Configure“ you can see all devices on your network. More about that on chapter 7 „PLC - VCOM“.

Now the Mainpage of your S7/MPI-LAN will be opened.

13. Now you have to configure following options:

- The same IP address of your CP, the S7-subnet, the id of your network and your SPS, which you set in your project in Step7 software before.

- The local address like your rear panel connectors and CP should be the same.

- On the destination CPU you should enter "255", that your S7/MPI-LAN will be connected automatically. If you use the IPS7Link software, you have to enter the station address of your CPU, which you want to connect directly to your S7/MPI-LAN. For example "2".

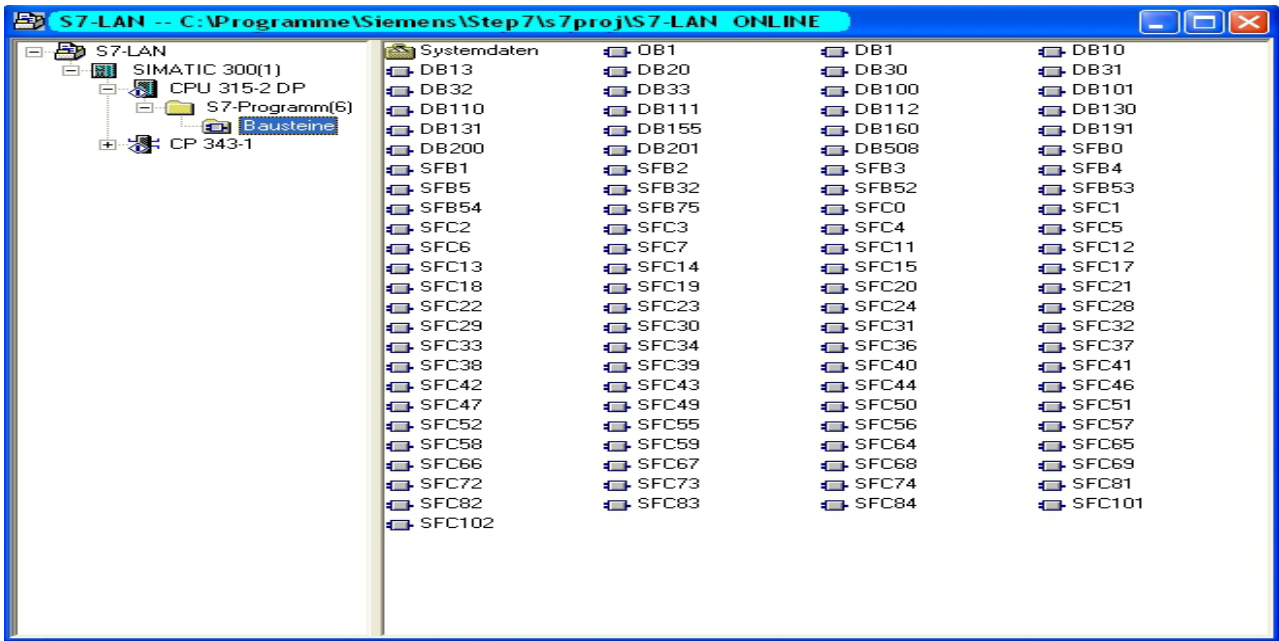
S7-LAN V2.13

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

14. Back on the main programm Step7 SIMATIC Manager. You can set your SPS to a online state. Click to online on menu "View". Dazu klicken Sie auf „Online“ im Menü „Ansicht“.



15. If you want to test the communication of your SPS. Click on "blocks" to get the block list of your sps.



If the blocks will be listed, your communication to your sps was successful.

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

1. Creating a new project

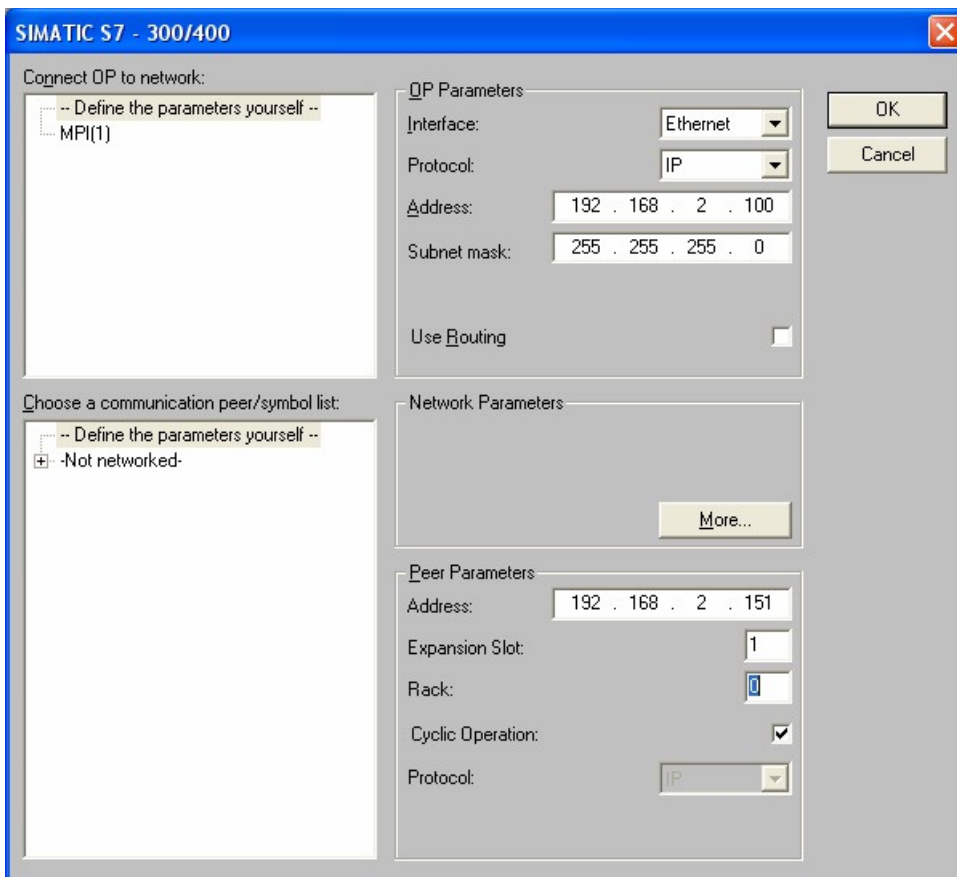
Start the ProTool/Pro CS software and click on File ? New. . A assistant will appear for entering the project settings.(for more Information about creating projects with ProTool/Pro CS v6.00 read the manual of the developer).

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”.

Protokol

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.

6.3.12 S7-200-communication with OPCmanager

You can also use the S7-LAN-module or MPI-LAN-cable to read/write data from an S7-200 with the OPC-server OPCmanager. You can access to following variables in the S7-200-PLC: flag-words, v-area (DB1) and inputs/outputs.

Before you parameterize the S7-LAN-module/MPI-LAN-cable, you need the following information from the S7-200-PLC:

- Baudrate of the PPI-interface
- Bus-address of the PLC

For our example, the S7-200-PLC has the following settings:

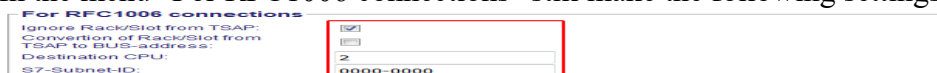
- Baudrate of te bus: 187,5 kbd
- Bus-address: 2

Now open your web-browser and enter the IP-address of the S7-LAN-module/MPI-LAN-cable at the top of the browser in the address-bar. Once the page has opened, click the menu item "Configuration" and go to the "bus-settings ". You will see the following picture there:



Take over the color-coded settings. "PG/PC is only master" ist very important!

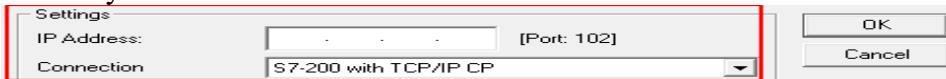
In the menu "For RFC1006 connections" still make the following settings:



We ourselves grab to the bus with bus-address "0".

Please save these settings and perform a reboot. Now the S7-LAN-module/MPI-LAN-cable is ready to communicate with the S7-200-PLC. It is important that no other user communicates on this interface, otherwise access to the module/cable will be restricted. Because the S7-200 is a point-to-point controller and can not communicate with multiple users at the same time.

In the OPCmanager, set the communication-driver to "Siemens S7-TCP/IP". The parameters are then very few:



Enter the IP-address of the S7-LAN-module/MPI-LAN-cable. It must be in the same subnet as the PC with the OPC-server, it may be you have a router between PC and module/cable, which acts as a gateway and converts the TCP-packets. The other parameters remain unchanged.

Now the communication of the OPC-server "OPCmanager" in the way with S7-200-PLC via S7-LAN-module/MPI-LAN-cable should running.

6.3.13 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.

6.3.13.1 S7-LAN configuration

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).

Open the configuration section



Note: S7 an S5/S7 licence has to be purchased before. Otherwise the option will don't work.

Allgemein	Netzwerk	CP-Mode	MPI/PROFIBUS	S7 an S5/S7 Bridge		
Verbindungstyp	Stationsnummer	Datenbaustein	Datenwort	IP-Adresse Partner	TSAP	Pollzeit
DB-Aktiv	1	1	0	192.168.2.103	Unique	100
AUS	255	65535	65535	255.255.255.255	xxxxxxxxxxxx	65535
AUS	255	65535	65535	255.255.255.255	xxxxxxxxxxxx	65535
AUS	255	65535	65535	255.255.255.255	xxxxxxxxxxxx	65535
AUS	255	65535	65535	255.255.255.255	xxxxxxxxxxxx	65535
AUS	255	65535	65535	255.255.255.255	xxxxxxxxxxxx	65535
AUS	255	65535	65535	255.255.255.255	xxxxxxxxxxxx	65535
AUS	255	65535	65535	255.255.255.255	xxxxxxxxxxxx	65535

Speichern

Connection type

type	description
OFF	Connection is not used.
DB-Activ (*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.

You can enter the IP address of a S5 – Gateway to establish a connection to an S5 PLC.

Data-block:

Determines the data block which is used for communication.

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.

Data-word:

Determines the memory range which is used for communication. At least 32 byte for each connection.

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.

IP – Address:

Enter the IP address of the partner which should be connected with the MPI cable.

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.

6.3.13.2 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	DENR	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	DENR	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 of TXERRRDY and 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.

Values	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.

6.3.14 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.



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.

6.3.15 Data-access from S7-1200/1500-PLC via PUT/GET-coupling

For accessing with PUT/GET from an S7-1200/1500-PLC to the "S7-LAN-module" or the "MPI-LAN-cable" we distinguish two possibilities:

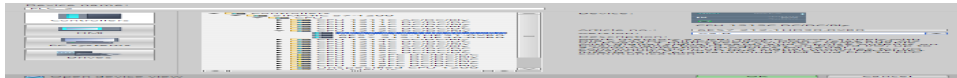
- Unspecified S7-connection
- Specified S7-connection

The S7-LAN-module and the MPI-LAN-cable support the unspecified S7-connection. This is characterized by the fact that no other participant is configured in the project and the TSAP of the partner must begin with 03.

Now from **firmware-version V2.48 for the S7-LAN-module and firmware-version V2.73 for the MPI-LAN-cable** the **specified S7-connection** is also supported. So in the TIA-project have to included the actual S7-1200/1500 and a S7-300-PLC with PN-interface corresponding to the S7-LAN-module/MPI-LAN-cable. The partner's TSAP is usually 10, and can be up to a maximum of 1F.

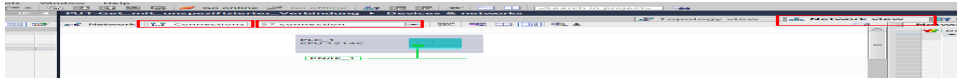
6.3.15.1 Unspecified S7-connection

Open the corresponding project and insert the PLC control (in this example an S7-1214C DC/DC/Rly).

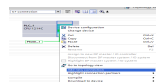


Parameterize the PLC according to your needs, do not forget to assign an IP-address and a subnet to the network port.

Then go to the "network view" and click on "connections" and select "S7-connection" as the connection type.



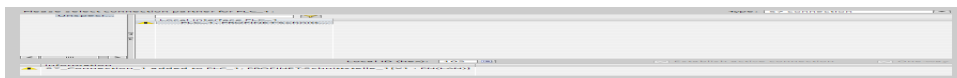
Then click on the actual PLC and right-click "Add new connection" to create the connection.



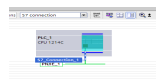
Now specify the connection partner.



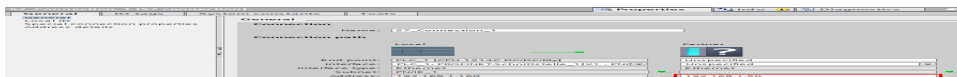
To do this, first click on "unspecified" then on the interface of the PLC and say "add".



Now open the properties of the created S7-connection by double-clicking with the mouse.

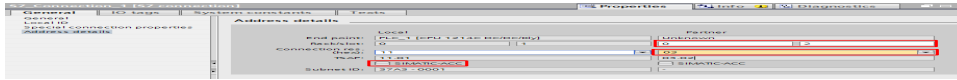


Specify the IP-address of the S7-LAN/MPI-LAN-cable.



Then specify the local TSAP as well as that of the partner. It is important that local no "Simatic AAC" should be activated and that the TSAP of the partner is "03".

Attention: Please enter the parameters of the PLC for rack/slot behind the S7-LAN-module/MPI-LAN-cable!



Now the configuration of the connection is complete. Do not forget to translate everything and transfer it to the S7-1200/1500-PLC.

Now you can call up and use the "PUT" and "GET" functions in your PLC program. The connection-number of the connection itself is also in the properties of the S7-connection.



6.3.15.2 Specified S7-connection

Open the corresponding project and insert two PLC controls (in this example, an S7-1214C DC/DC/Rly and 315-2-PN/DP as a replacement for the LAN product).

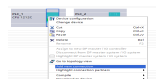


Parameterize the PLCs according to your needs, do not forget to assign an IP-address and a subnet to the network port.

Then go to the "network view" and click on "connections" and select "S7-connection" as the connection type.



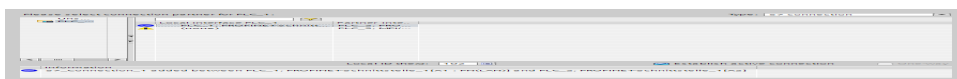
Then click on the actual PLC and right-click "Add new connection" to create the connection.



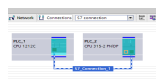
Now specify the connection partner.



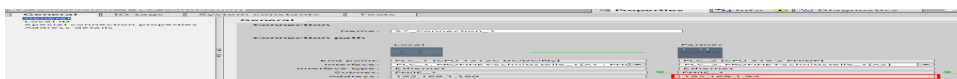
To do this, first click on "PLC 2 S7-315-2 PN/DP" as the connection partner and then on the interface of the PLC and say "add".



Now open the properties of the created S7-connection by double-clicking with the mouse.

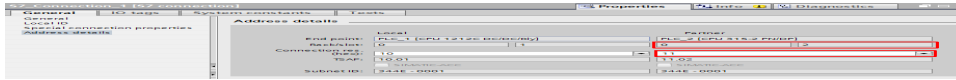


Specify the IP-address of the S7-LAN/MPI-LAN-cable.



Then specify the local TSAP as well as that of the partner. It is important that local no "Simatic AAC" should be activated.

Attention: Please enter the parameters of the PLC for rack/slot behind the S7-LAN-module/MPI-LAN-cable!



Now the configuration of the connection is complete. Do not forget to translate everything and transfer it to the S7-1200/1500-PLC.

Now you can call up and use the "PUT" and "GET" functions in your PLC program. The connection-number of the connection itself is also in the properties of the S7-connection.



6.3.16 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.

6.3.17 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 configured over the WebBrowser. Open in the WebBrowser "Options" the "NTP-Server" and following issue appears:



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 (Greenwich Mean Time) that the recorded time inside the PLC is correct. for example: +1:00 for Germany
Automatic change from summer- to winter-time	If you need the summertime change in your PLC you have to activate this control field.

wintertime

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: '2' '8'
DW2	Month, Month for example: '0' '2'
DW4 + 6	Year, Year, Year, Year for example: '2' '0' '1' '1'
DW8	Hour, Hour for example: '1' '0'
DW10	Minute, Minute for example: '2' '8'
DW12 (Bit8)	Synchronizing OK for example: 0x100

6.3.18 Option Watchdog

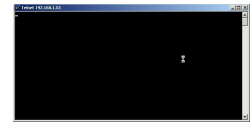
1. With this Option (you must buy it to use it) you could continueosly check the MPI/Profibus. The Number of detected Parity errors and Spikes are counted and saved into a 8 Bit Register. This Register could then be read from the PC or displayed by a WebBrowser. Try to use the special WebSide „WD.HTM“,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

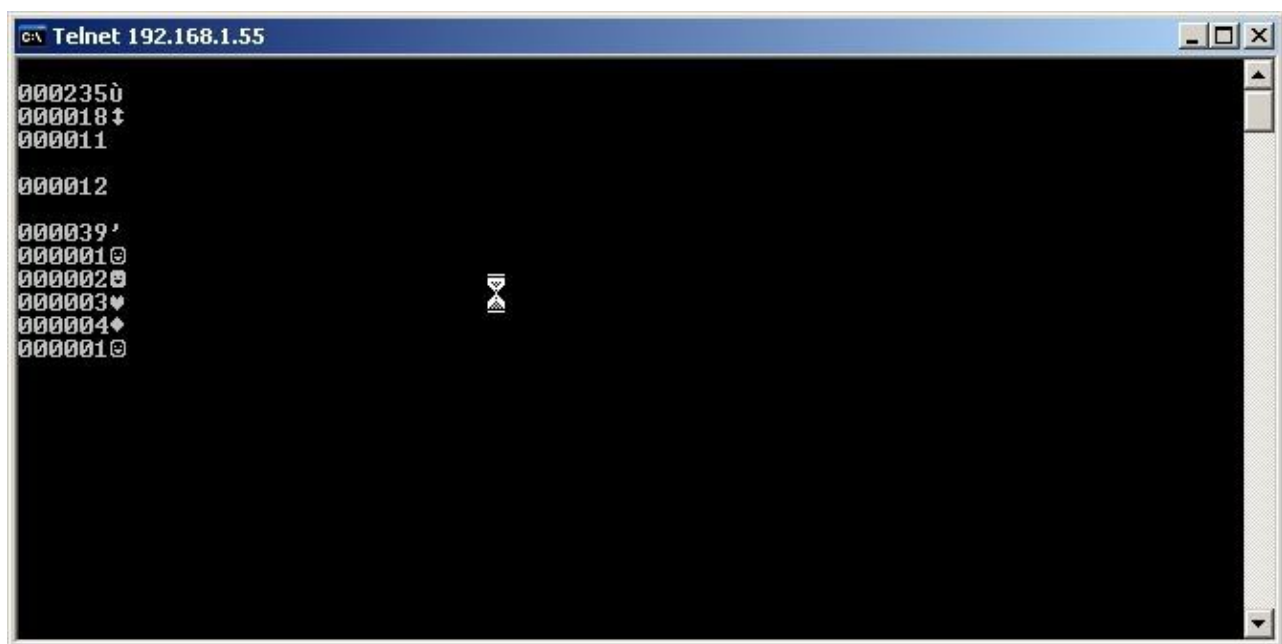
You could also access the S7/MPI-LAN directly. Start in a Command-Shell „telnet 192.168.1.56 133“ and Press <ENTER>.



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:

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:



4. The Structure of the recieved data is described in the next table:

Data	Description
30h	Parity – Counter as ASCII-Text, including leading Zeros and ending ,\0’
30h	here „001“
31h	
00h	
32h	Spike - Counter as ASCII-Text, including leading Zeros and ending ,\0’
35h	here „255“
35h	
00h	
01h	Binarer Pärity - Counter (8 Bit)
FFh	Binarer 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.

```
// WDTTest.cpp : Definiert den Einsprungpunkt für die Konsolenanwendung.
//
#include "stdafx.h"

typedef struct {
    unsigned char ucASCIIParity[4]; // Anzahl Paritätsfehler seit letzter Abfrage
    // 3 Ziffern mit abschließender '\0'
    unsigned char ucASCIISpikes[4]; // Anzahl erkannter Spikes seit letzter Abfrage
    // 3 Ziffern mit abschließender '\0',
    unsigned char ucBINParity; // Binärwert der Anzahl Paritätsfehler
    unsigned char ucBINSpikes; // Binärwert der Anzahl Spikes
} S7LANINFO;

int main(int argc, char* argv[])
{
    SOCKET sS7LAN;
    DWORD dwTimeout = 1000L; // 1 Sekunde 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,0,sizeof(sInfo));

    if (WSAStartup(MAKEWORD(1,1),&sWSAData) != 0) {
        printf("WSA Startup fehlerhaft => Abbruch\n");
        return(0);
    }

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

        // Sende/Empfangstimeout einstellen
        setsockopt( sS7LAN, SOL_SOCKET, SO_SNDTIMEO,(char
        *)&dwTimeout, sizeof(dwTimeout));
        setsockopt( sS7LAN, SOL_SOCKET, SO_RCVTIMEO,(char
        *)&dwTimeout, sizeof(dwTimeout));

        // Naggle-Algorithmus aus
        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-Adresse des 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) {

    // etwas senden => daraufhin ende S7LAN antwort
    send(sS7LAN, (const char *) "A", 1, 0);

    // Daten vom S7LAN empfangen
    if (recv(sS7LAN, (char *)&sInfo, sizeof(sInfo), 0)) {
        printf("Parity: %s Spikes: %s\nParity: %3d Spikes:
3d\n",&sInfo.ucASCIIParity[0],&sInfo.ucASCIISpikes[0],
(unsigned int) sInfo.ucBINParity,(unsigned int)
sInfo.ucBINSpikes );

    } else {
        printf("Empfang vom S7LAN gestört\n");
    }

    sLinger.l_linger = 0;
    sLinger.l_onoff = 1; // unmittelbar schließen

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

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

    closesocket(sS7LAN);

    } else {
        printf("S7LAN nicht erreichbar\n");
    }

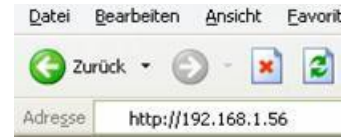
} else {
    printf("Socket nicht offenbar\n");
}
return 0;
}

```

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).



If you don't know the IP-Address of your S7/MPI-LAN, you can open the PLC software to find out the address. At configuration, you can display all connected devices (on PC or network). More about that on section „PLC - VCOM“.

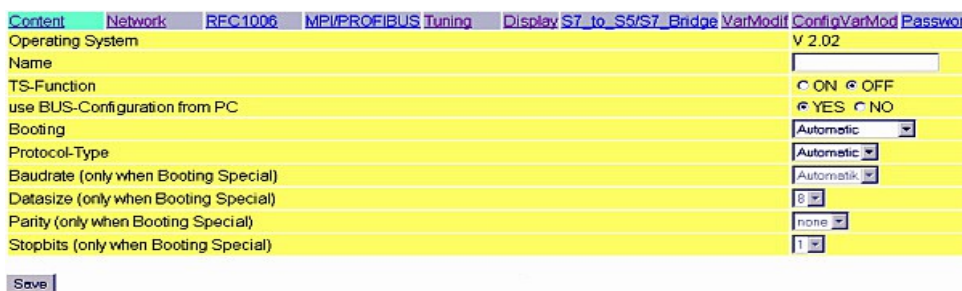


- 2. In the main page select the desired language to go on with the configuration pages
- 3. If a password for general access is defined, you are asked for it.

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.

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

Name:

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

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 (old)	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.

The screenshot shows a network configuration window with a yellow background. At the top, there are several tabs: 'Content', 'Network', 'RFC1006', 'MPI/PROFIBUS Tuning', 'Display S7 to S5/S7 Bridge VarModif', 'ConfigVarMod', and 'Passwort'. The 'Network' tab is selected. Below the tabs, there are four rows of configuration fields:

DHCP-Client	<input type="radio"/> ON <input checked="" type="radio"/> OFF
IP-Address (if no DHCP-Client or DHCP-Server not found)	<input type="text" value="192.168.1.55"/>
SubNet-Mask (if no DHCP-Client or DHCP-Server not found)	<input type="text" value="255.255.255.0"/>
Gateway-Address (if no DHCP-Client or DHCP-Server not found) if no Gateway then 0.0.0.0	<input type="text" value="0.0.0.0"/>

At the bottom left, there is a 'Save' button.

DHCP-Client:

Since the version 1.68 you can start a DHCP client for the

SubNet-Mask:

The format of the subnet mask is

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.

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).

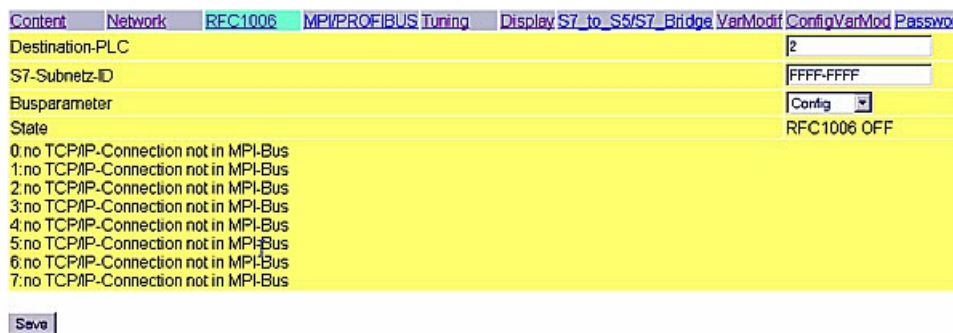
Gateway-Address:

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)



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-Subnetz-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 automatically 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.

Content	Network	CP-Mode	MPI/PROFIBUS	S7 to S5/S7 Bridge
Baudrate				187.5
Highest Station Address				126
Local Station Address				0
Profile				MPI

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.

Content	Network	REC1006	MPI/PROFIBUS Tuning	Display S7 to S5/S7 Bridge	VarModif	ConfigVarMod	Password
Set to Default							Execute
Change Language of WebSide to							German
Restart (restart is immediatly without response !)							Execute

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.

Connection-type	Station-number	Data-block	Data-word	IP-Address	TSAP	Poll-Time
DB-Active	1	1	0	192.168.2.103	Unique	100
OFF	255	65535	65535	255.255.255.255	??????????????	65535
OFF	255	65535	65535	255.255.255.255	??????????????	65535
OFF	255	65535	65535	255.255.255.255	??????????????	65535
OFF	255	65535	65535	255.255.255.255	??????????????	65535
OFF	255	65535	65535	255.255.255.255	??????????????	65535
OFF	255	65535	65535	255.255.255.255	??????????????	65535
OFF	255	65535	65535	255.255.255.255	??????????????	65535

Save

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.

You can enter the IP address of a S5 – Gateway to establish a connection to an S5 PLC.

Data-block:

Determines the data block which is used for communication.

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.

Data-word:

Determines the memory range which is used for communication. At least 32 byte for each connection.

IP – Address:

Enter the IP address of the partner which should be connected with the MPI cable.

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.

PLC	Address	Display format	Status value	Modify value
002	FD 00040	Hexadecimal	00000012	->
002	FD 00040	Decimal	000000018	->
002	FD 00040	SIMATIC Timer	012.0	->
002	FD 00040	Counter	012	->
002	FD 00040	Binary	00000000000000000000000000000010010	->
002	C 00018	Hexadecimal	0000	->
006	FD 00040	Hexadecimal	no access to PLC	->
004	DB 00010 DBD 01000	Hexadecimal	no read 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,

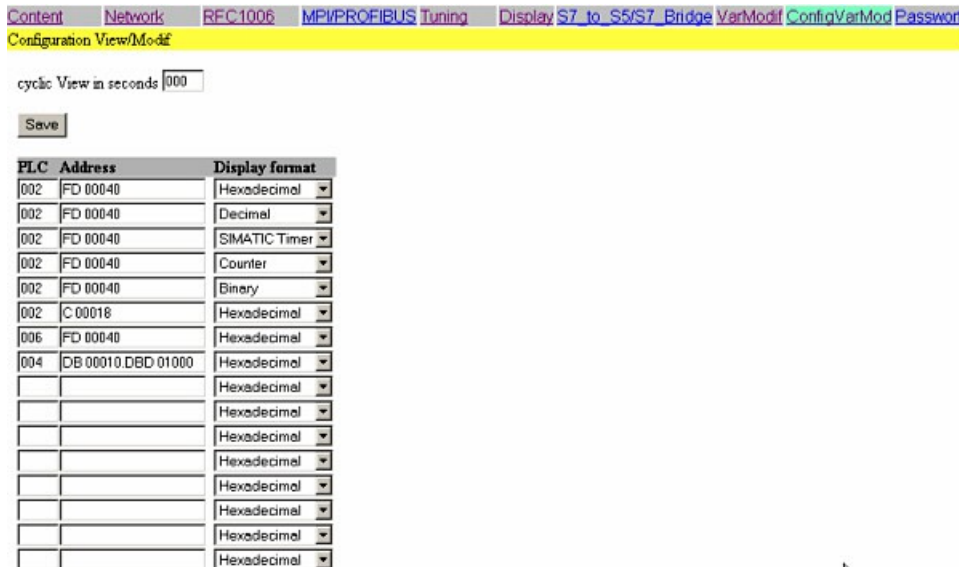
After transfer the status values are reread and displayed.

Address	Format	Input	Description
FB40	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
FD40	Hexadecimal	1234	The value 00001234h is transferred to PLC
FB40	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
F40.3	Binary	1	Bit is set in the PLC
FW40	Binary	111	The value 00000000000000111 is transferred to the PLC
FW40	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 123.2 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 configuration 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 selection 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 German format:

Address	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
Z12345 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	max 3 BCD - coded digits 0-9 before the dot and one digit
Timer	0-3 (0=10ms,1=100ms,2=1s,3=10s) after the dot
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 any parity errors or spikes on your MPI/Profibus They will be incremented and displayed as decimal values.

After the Page is loaded and all errors are readed, the counter will be resetted.

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

Content	Network	REC1006	MPI/PROFIBUS Tuning	Display S7 to S5/S7 Bridge	VarModif	ConfiaVarMod	Password
use general Access-Password (Attention: input Passwort on next line !)					<input checked="" type="radio"/> YES <input type="radio"/> NO		
general Access-Password (max 4 Chars)							1234
Password for Variable Modif (Attention: input Passwort on next line !)					<input checked="" type="radio"/> YES <input type="radio"/> NO		
Password for Variable Modif (max 4 Chars)							
Password for Configuration Variable Modif (Attention: input Passwort on next line !)					<input checked="" type="radio"/> YES <input type="radio"/> NO		
Password for Configuration Variable Modif (max 4 Chars)							abcd

The configuration of the passwords are done in normal text-mode, if the usage of a password is activated but the password is empty, saving the configuration 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

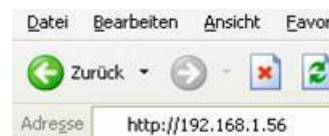
7.1.12 Ports

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 „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**

- Home
- Connections
- Display
- Options
- Configuration
- Password
- Restart

Deutsch

General

Product name:	S7-LAN
Version:	2.24
Name:	Modul
Serialnumber:	7091008

Network

DHCP:	Off
IP address:	192.168.1.86
MAC Address:	00:0B:F4:6C:33:40
Subnetmask:	255.255.255.0
Gateway address:	0.0.0.0
Send Gratuitous ARP:	On

Mode: S7-300/400 MPI

Profile:	MPI
Baudrate:	187K5
Lokal address:	0
Boot configuration:	MPI/PROFIBUS

Enabled options

Variable control:	licensed
S7-Gateway:	unlicensed
Watchdog:	licensed
NTP-Server	licensed

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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:

Shows 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).

- 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.

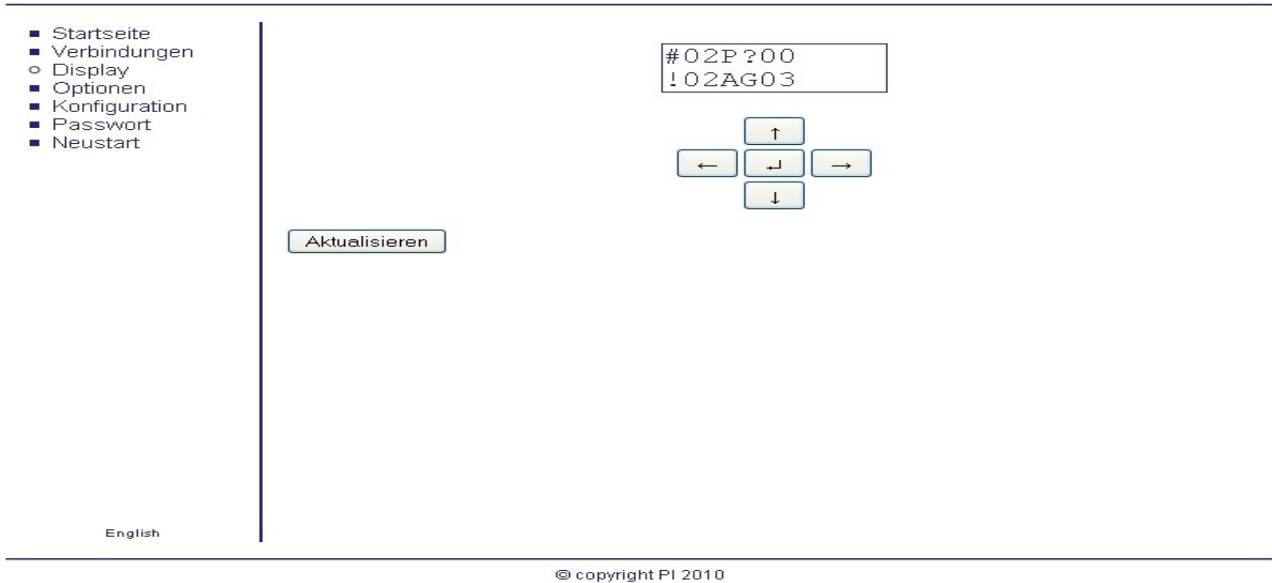
No TCP / IP connection = it is no computer or PG connected to the module via RFC1006.
not in the MPI bus = the participants connected via RFC1006 does not access the MPI bus

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.



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.

- Home
- Connections
- Display
- Options
 - Variable control
 - S7-Gateway
 - Watchdog
 - NTP-Server
- Configuration
- Password
- Restart

State Control / Watch

CPU	Operand	Format	State value	Control value	
2	FD 00000	Hexadecimal	A9DE1607		OK
2	FD 00000	Decimal	2849904135		OK
2	FD 00000	SIMATIC Tim	607.1		OK
2	FD 00000	Counter	607		OK
2	FD 00000	Binary	10101001110111100001		OK
3	FD 00000	Hexadecimal	no access to PLC		OK
2	DB 00011.DBD 01000	Hexadecimal	no read possible		OK

Updating every 10 seconds 290

Deutsch

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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	hexadeczimal	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	Faulty 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.

S7-LAN V2.24
Modul
IP:192.168.1.86

- Home
- Connections
- Display
- Options
 - Variable control
 - S7-Gateway
 - Watchdog
 - NTP-Server
- Configuration
- Password
- Restart

Configurate

CPU	Operand	Format	Query	Setpoint
2	FD 00000	Hexadecimal	≠	00001000
2	FD 00000	Decimal		
2	FD 00000	SIMATIC Timer		
2	FD 00000	Counter		
2	FD 00000	Binary		
3	FD 00000	Hexadecimal		
2	DB 00011.DBD 01 000	Hexadecimal		
		Hexadecimal		
		Hexadecimal		
		Hexadecimal		
		Hexadecimal		
		Hexadecimal		
		Hexadecimal		
		Hexadecimal		
		Hexadecimal		

Updating in seconds: 255 = Off

E-Mail

E-Mail Supervision:

Sender:

Receiver:

Server:

Port:

Username:

Password:

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

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

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

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

There would be following query possible:

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

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

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 select-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:

S7-LAN V2.24

IP:192.168.1.86

- Home
- Connections
- Display
- Options
 - Variable control
 - S7-Gateway
 - Watchdog
 - NTP-Server
- Configuration
- Password
- Restart

State Control / Watch

CPU	Operand	Format	State value	Control value	
2	FD 00000	Hexadecimal	AA265DDA		OK
2	FD 00000	Decimal	2854645210		OK
2	FD 00000	SIMATIC Tim	DDA.6		OK
2	FD 00000	Counter	DDA		OK
2	FD 00000	Binary	10101010001001100110		OK
3	FD 00000	Hexadecimal	no access to PLC		OK
2	DB 00011.DBD 01000	Hexadecimal	no read possible		OK

Updating every 10 seconds 293

Deutsch

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

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

<ul style="list-style-type: none">■ Startseite■ Verbindungen■ Display■ Optionen■ Konfiguration■ Passwort■ Neustart <p style="text-align: center;">English</p>	<p>Test E-Mail wird versendet!</p>
---	------------------------------------

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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	flag bit
F12345.1	
MB 12	
FB 12	Flag byte, spaces are ignored

MW1 FW1	flagword
MD100 FD100	double flag word
E12345.1 I12345.1	input bit
EB 12 IB 12	input byte
AW1 QW1	input word
ED100 ID100	input double word
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 byte
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.

- Home
- Connections
- Display
- Options
 - Variable control
 - S7-Gateway
 - Watchdog
 - NTP-Server
 - IPDeviceToS7
- Configuration
- Password
- Restart

S7-Gateway

Connection: Off

Partner IP address	Port	Poll time	CPU	Data block	Data word
255.255.255.255	102	65535	255	65535	65535
Src. TSAP (Hex) <input type="checkbox"/>				Dst. TSAP:	

Connection: Off

Partner IP address	Port	Poll time	CPU	Data block	Data word
255.255.255.255	102	65535	255	65535	65535
Src. TSAP (Hex) <input type="checkbox"/>				Dst. TSAP:	

Connection: Off

Partner IP address	Port	Poll time	CPU	Data block	Data word
255.255.255.255	102	65535	255	65535	65535
Src. TSAP (Hex) <input type="checkbox"/>				Dst. TSAP:	

Connection: Off

Partner IP address	Port	Poll time	CPU	Data block	Data word
255.255.255.255	102	65535	255	65535	65535
Src. TSAP (Hex) <input type="checkbox"/>				Dst. TSAP:	

Connection: Off

Partner IP address	Port	Poll time	CPU	Data block	Data word
255.255.255.255	102	65535	255	65535	65535
Src. TSAP (Hex) <input type="checkbox"/>				Dst. TSAP:	

Connection: Off

Partner IP address	Port	Poll time	CPU	Data block	Data word
255.255.255.255	102	65535	255	65535	65535
Src. TSAP (Hex) <input type="checkbox"/>				Dst. TSAP:	

Connection: Off

Partner IP address	Port	Poll time	CPU	Data block	Data word
255.255.255.255	102	65535	255	65535	65535
Src. TSAP (Hex) <input type="checkbox"/>				Dst. TSAP:	

Connection: Off

Partner IP address	Port	Poll time	CPU	Data block	Data word
255.255.255.255	102	65535	255	65535	65535
Src. TSAP (Hex) <input type="checkbox"/>				Dst. TSAP:	

Deutsch Save

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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)

Partner 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.

CPU:

Defines the local communications partner of the connection. This station must be located in the same MPI bus like the S7 module.

TSAP (source and destination):

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.

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.

Polling 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.

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

Port:

Here the port of the connection-partner is entered. Usually it is the port 102, but can also be customized. Then please also change the connection partner accordingly.

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
<ul style="list-style-type: none">■ Startseite■ Verbindungen■ Display○ Optionen<ul style="list-style-type: none">● Variablen-Steuern● S7-Gateway○ Watchdog■ Konfiguration■ Passwort■ Neustart	Parity: 0 Spikes: 0	
English		

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7.2.5 Configuration

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

Allgemein	
Name:	<input type="text" value="Test KM"/>
Werkseinstellungen laden:	<input type="button" value="Jetzt laden"/>
Netzwerk	
DHCP aktivieren:	<input type="checkbox"/>
IP-Adresse:	<input type="text" value="192.168.1.151"/>
Subnetzmaske:	<input type="text" value="255.255.255.0"/>
Gateway-Adresse:	<input type="text" value="0.0.0.0"/>
Buseinstellungen	
Bus-Konfig von PC verwenden:	<input checked="" type="checkbox"/>
Baudrate:	<input type="text" value="187K5"/>
Höchste Stationsadresse:	<input type="text" value="126"/>
PG/PC ist einziger Master:	<input type="checkbox"/>
Profil:	<input type="text" value="MPI"/>
Lokale Adresse:	<input type="text" value="0"/>
Booteinstellungen	
Profil:	<input type="text" value="MPI/PROFIBUS"/>
Für manuelle Profileinstellung	
Baudrate:	<input type="text" value="Automatik"/>
Datenbit:	<input type="text" value="8"/>
Parität:	<input type="text" value="keine"/>
Stopbit:	<input type="text" value="1"/>
Für RFC1006 Verbindungen	
Ziel CPU:	<input type="text" value="255"/>
S7-Subnetz-ID:	<input type="text" value="0000-0000"/>
Busparameter:	<input type="text" value="Konfig"/>
Sonstiges	
Protokollart:	<input type="text" value="Automatik"/>
TS-Adapterfunktionalität:	<input type="checkbox"/>
Fehlerausgabe auf Display:	<input type="checkbox"/>
<input type="button" value="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 addressable 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 aufWerkseinstellung zurücksetzen?
!!! Vorsicht: IP-Adresse ist danach **192.168.1.56** !!!

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

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 adress:

You can specify the gateway here so that the

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.

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 be 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):

Parity (only when booting setting Manual):

Set the desired speed on the BUS.

To make the data transfer can be tested you can adjust the parity.

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.

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.

Für 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.

- 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:

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 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)

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:

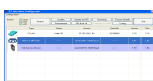


8.2 User interface:

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.

The background of the lines could use the following colours:

- White The 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 occurred 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):



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 **Parameterize** activates a dialog regarding to the device:

Overview:

Device	Dialog
TELEService MPI / PPI - Profibusmodem	Parameterize TELEService
MPI/PPI	Parameterize TELEService
MPI-II MPI-USB	<i>Choices:</i> Bus configuration Parameterize TELEService
S7-USB	Bus configuration
S7-LAN MPI-LAN	<i>Choices:</i> 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.

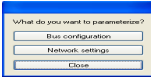
8.3 Bus configuration

To parameterize the connection to the device, select a device and click "**Parameterize**".

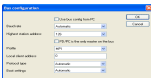


Regarding to the device you maybe have to click on the button **Bus configuration** (see

parameterize table).



Here you can parameterize the following:



<ul style="list-style-type: none"> • Use bus config for PC 	Tooks the bus configuration from the PC
<ul style="list-style-type: none"> • Baud rate 	chooses the Baut rate for the cable to bus communication
<ul style="list-style-type: none"> • 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)
<ul style="list-style-type: none"> • PD/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)
<ul style="list-style-type: none"> • Profile 	Bustype of the connection
<ul style="list-style-type: none"> • 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!
<ul style="list-style-type: none"> • Protocol type 	Protocol type of the connection
<ul style="list-style-type: none"> • 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:

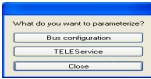
- DHCP-client active *not set*
- IP Address 192.168.1.56
- Subnetmask 255.255.255.0
- Gateway address 0.0.0.0
- Device name *empty*

8.5 Parameterize TELEService

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



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 configure following:



Station related:

<ul style="list-style-type: none">• PD/PC 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)
<ul style="list-style-type: none">• 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:

<ul style="list-style-type: none">• Network type	The network type MPI or PROFIBUS
<ul style="list-style-type: none">• Transmission rate	The transmission speed on the MPI bus

<ul style="list-style-type: none"> • Current transfer rate 	Shows the current transfer rate of the device
<ul style="list-style-type: none"> • 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:

<ul style="list-style-type: none"> • Initialization 	AT	start command
	&F	use factory settings
	E0	echo off
	L1	volume 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 carrier sound
	S0=1	automatic connection after 1 ring
<ul style="list-style-type: none"> • Hang up 	+++	Switch to command mode
	AT	start command
	H	Hang up connection

Location:

<ul style="list-style-type: none"> • The phone system uses 	There are two possible call techniques: MFV tone, the telephone number is transferred by several frequencies IWW pulse, the telephone number is transferred with the amount of several pulses on the line
<ul style="list-style-type: none"> • 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.

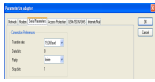
Call Preferences:

<ul style="list-style-type: none"> • Wait for dial tone before dialing 	In case the modem should wait for a free line, you should set the corresponding checkbox.
<ul style="list-style-type: none"> • Number of redial 	At number of retries you could configure the number of retries for a

attempts	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.

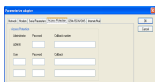


Connection Preferences:

• 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 choosen, but this is modem dependend 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:

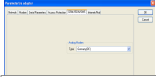
<ul style="list-style-type: none"> • The administrator can change the configuration over a telephone line. • The two user accounts can not change the configuration.
<ul style="list-style-type: none"> • The username is maximal 8 characters long. • Every user and the administrator should use a password which is used to login in the TELESERVICE over a telephone-line.
<ul style="list-style-type: none"> • After three failed retries the connection is hanged up, so you must call again (not like the original TS-adapter).
<ul style="list-style-type: none"> • After changing the password for a user/administrator you must re-type it again correctly.
<ul style="list-style-type: none"> • 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":

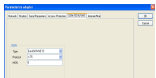
Information about the three different devices:

Analog Modem::



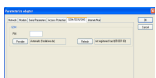
- **Type** You could choose the location of the modem.

ISDN Modem:



<ul style="list-style-type: none">• Type	Choose the type of the ISDN network: <ul style="list-style-type: none">• AT&T 5ESS• Northern Telecom DMS-100• EuroISDN NET3 (Standard)• INS64• US NI-1• VN4
<ul style="list-style-type: none">• Protocol	Choose the transfer protocol type: <ul style="list-style-type: none">• Modem like• V.120• X.75 (Standard)• ML-PPP• SoftBonding• HDLC• CLEAR
<ul style="list-style-type: none">• MSN	<ul style="list-style-type: none">• Multiple Subscriber Number is used for all ISDN channels.• If empty no MSN is used.

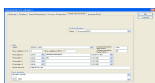
GSM Modem:



- **PIN**
- PIN number of the SIM card, up to eight numeric characters (only for

	TELE-SERVICE GSM).
<ul style="list-style-type: none"> • Provider 	<ul style="list-style-type: none"> • With the button „Provider“ the provider could be chosen. • 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
<ul style="list-style-type: none"> • Refresh 	<ul style="list-style-type: none"> • 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:

<ul style="list-style-type: none"> • SMS 	Switches:
--	-----------

	<ul style="list-style-type: none"> • 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 CONFIRMATION • 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
• Bus address TS	local station address (should not be used twice in the MPI/Profibus!)
• Bus address 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	<p>Configure the SMS-Provider to use, including type, phone-number and char-code.</p> <ol style="list-style-type: none"> 1. First Input: Choose a type of the transmission. 2. Second Input: Telephone number or email address. 3. Third Input: Choose a character encoding.
• NTP-Server	Input for an Network Time Protocol - 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 Type

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-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.

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:

• Username	Username for the 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)
• Username	Name of the User-account (often the E-Mail-address or Customer-number)
• Password	Password for the E-Mail-Account

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:

• 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 TELService-function is not working. With this property the control-lines are no longer used and therefore the A20/M20 can communicate over TELService.
<ul style="list-style-type: none"> • 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.

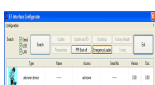
8.8 PPI Boot off

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:

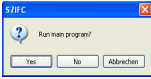


8.9 Emergency-Loader

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. ID. 9352-LAN
- S7-LAN module– Art. ID. 9352-LANCon
- MPI-USB cable– Art. ID. 9352-USB
- S7-USB module– Art. ID. 9352-S7-USB
- MPI-II cable (USB – operation) – Art. ID. 9352 + 9352.1
- MPI/PPI cable– Art. ID. 9350
- Tele-Service – Art. ID. 9377-(ANALOG/ISDN/GSM)-OP
- MPI/PPI-profibusmodem – Art. ID. 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

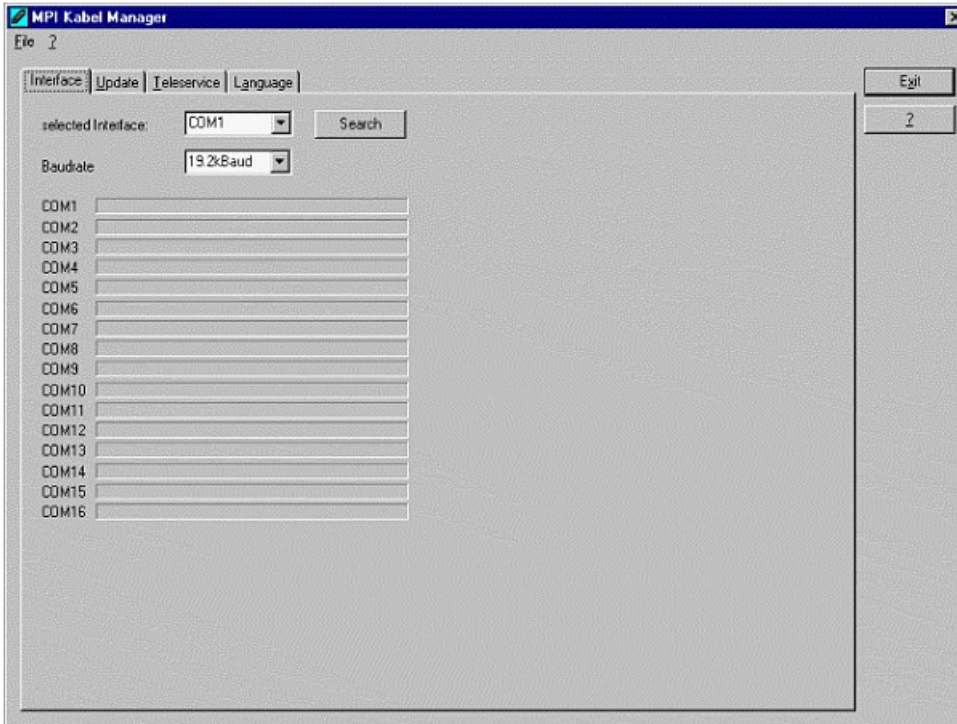


After starting the application the tab Language is displayed at first:

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

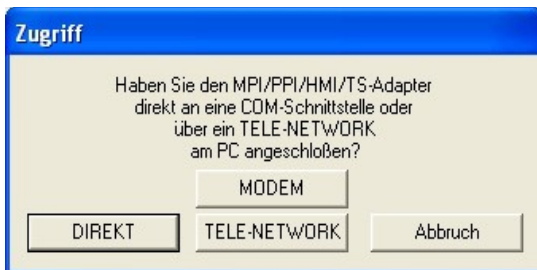
You could choose between German and English and confirm by clicking on the desired language.

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.

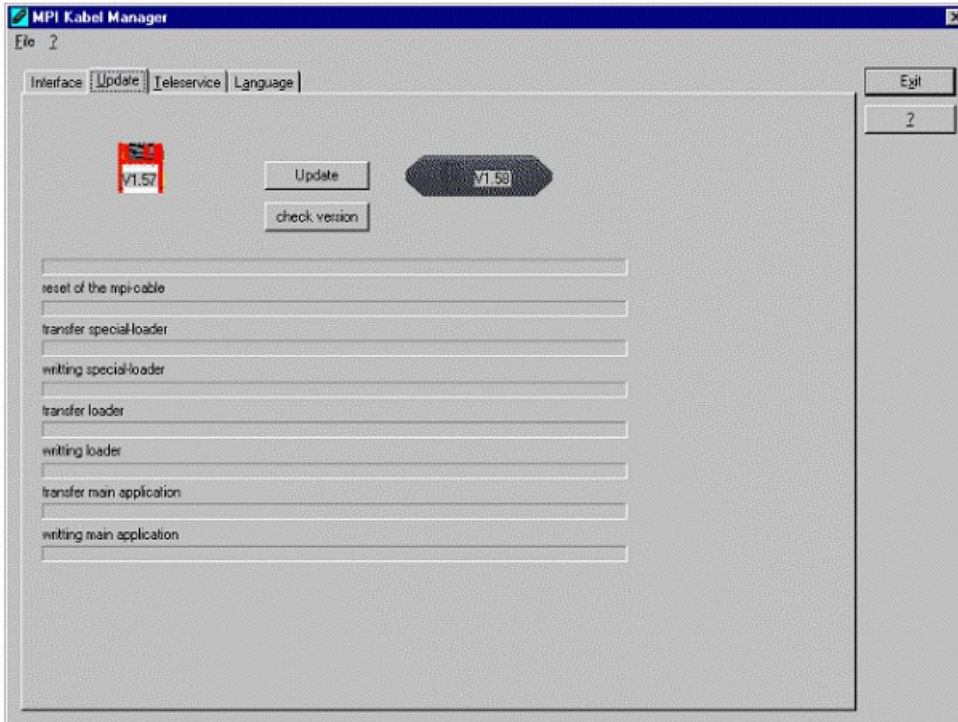
„Search“ update the COM-port listed in „set interface“ and put the Kabelmanager to the respective COM-port.



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.

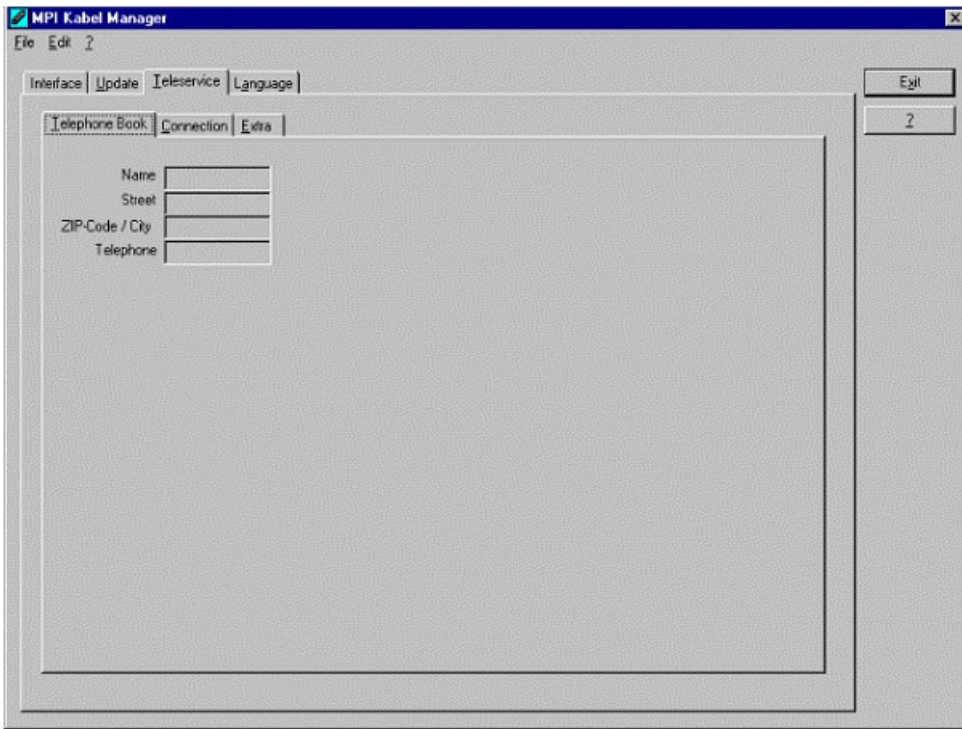
The symbol next to version check shows the running update.

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

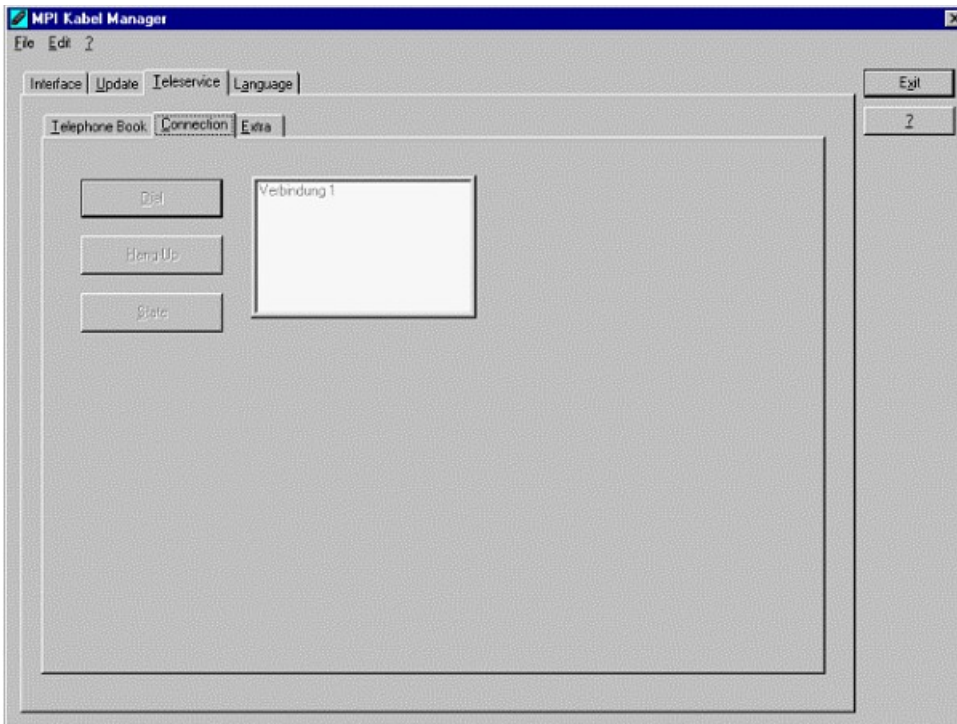
At the moment not implemented!

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 following 4 possible Messages could appear:

„TS-Adapterfunktion is NOT activ. To activate press TS-function“

The MPI-cable acts like an PC-Adapter. There will no answer for TS-spezifich 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-spezifich protocols, the adapter could now configured. An attached Modem will be initialized and the baud-rate to the modem is fixed.

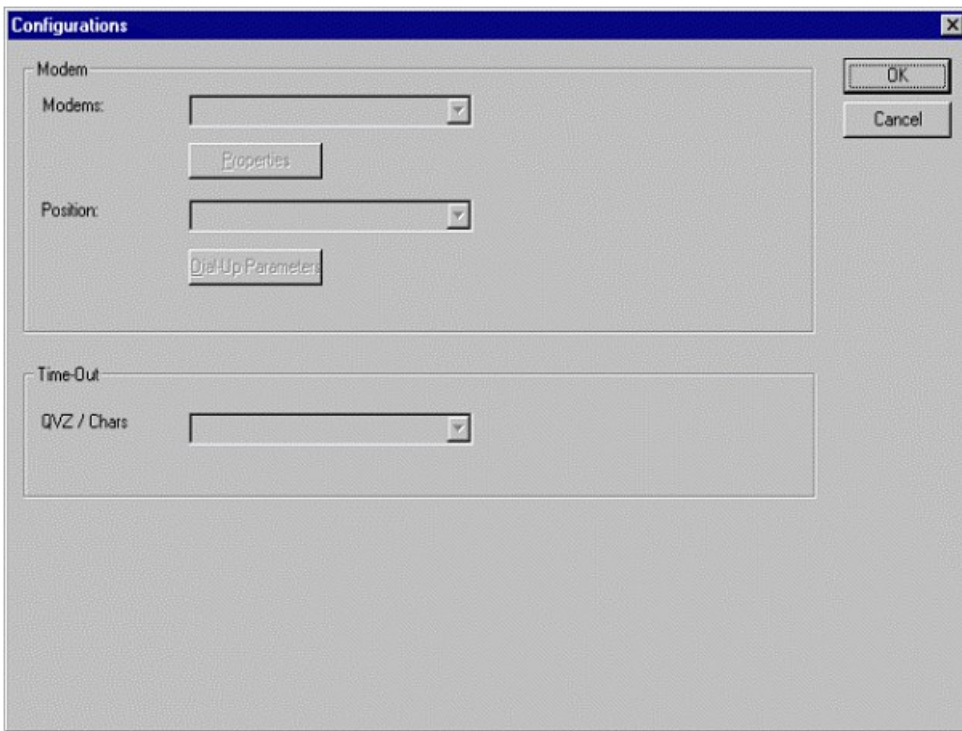
„SNDERR“ or „RCVERR“

There is a communication error at sending or receiving 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 following dialog you could choose the used modem.



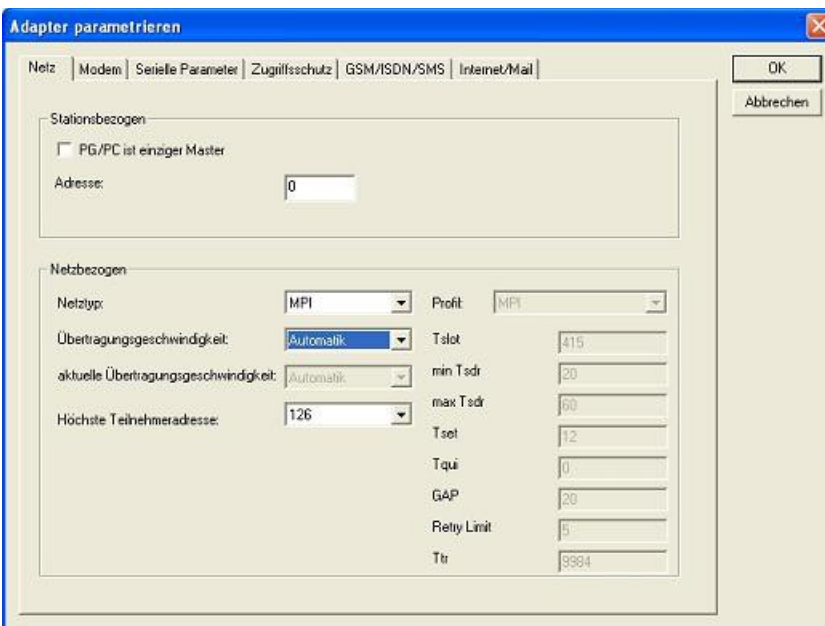
9.3.4.3.2 „TS-function“

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-specific 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:

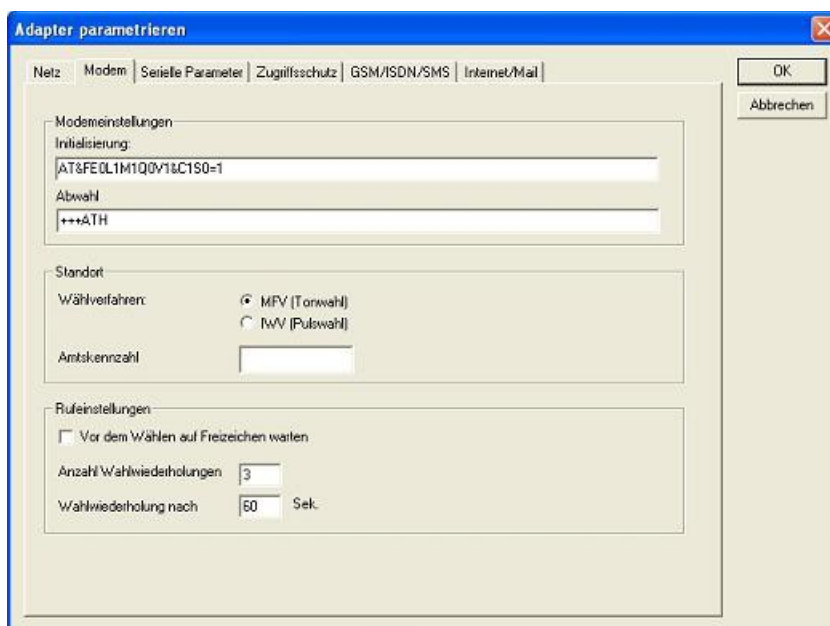
Here you can configurate following:

The Nettype MPI or PROFIBUS

The transfer-speed on the MPI-bus

The highest station-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)

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 techniques:

MFV tone, the telephone-number is transferred by several frequencies

IWV pulse, the telephone-number is transferred with the count of several pulses on the line

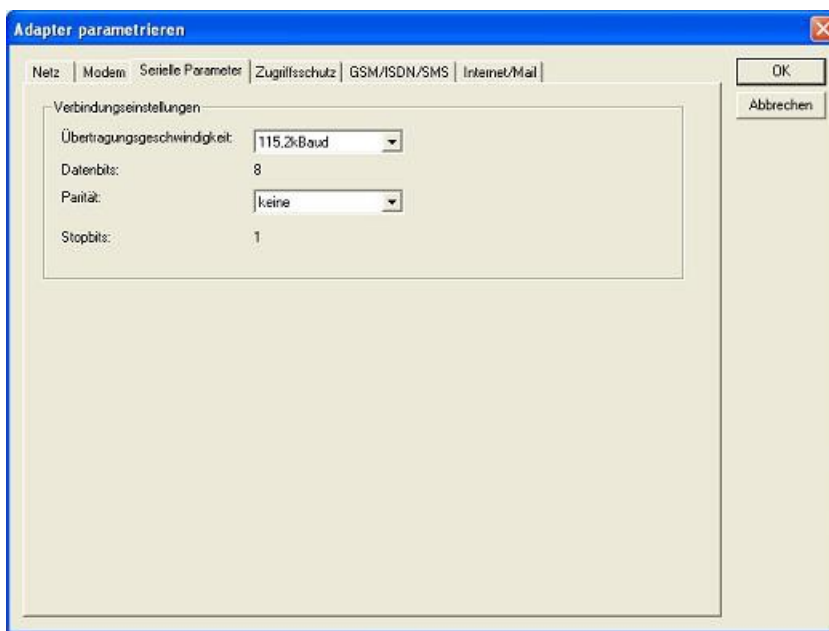
When you must have a pre-call to establish a call outside your company, you could define it at Amtskennzahl.

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 be chosen between the following values:

2400, 4800, 9600, 19.2k, 38.4k, 57.6k and 115.2kBaud

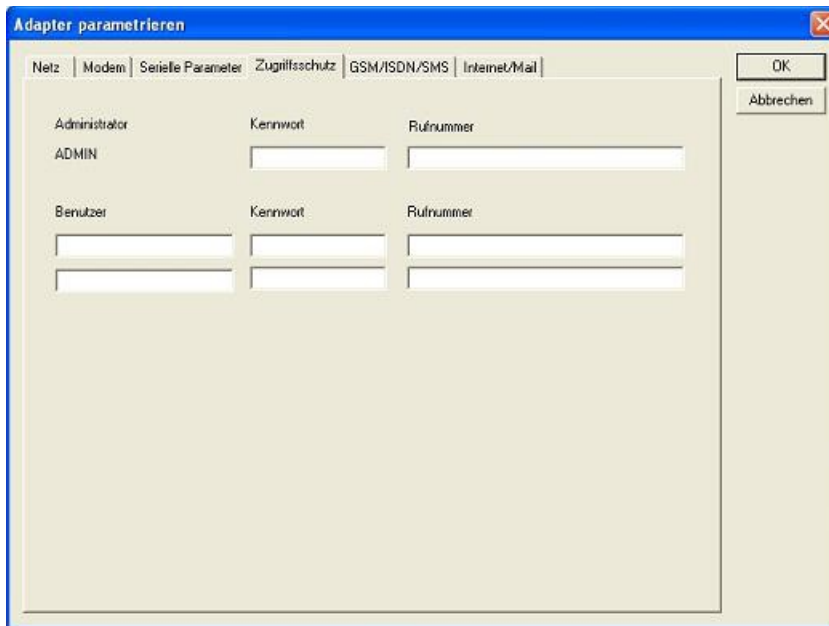
The Parity could be chosen, but this is modem-dependent because some modems could not transfer the parity-bit:

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).

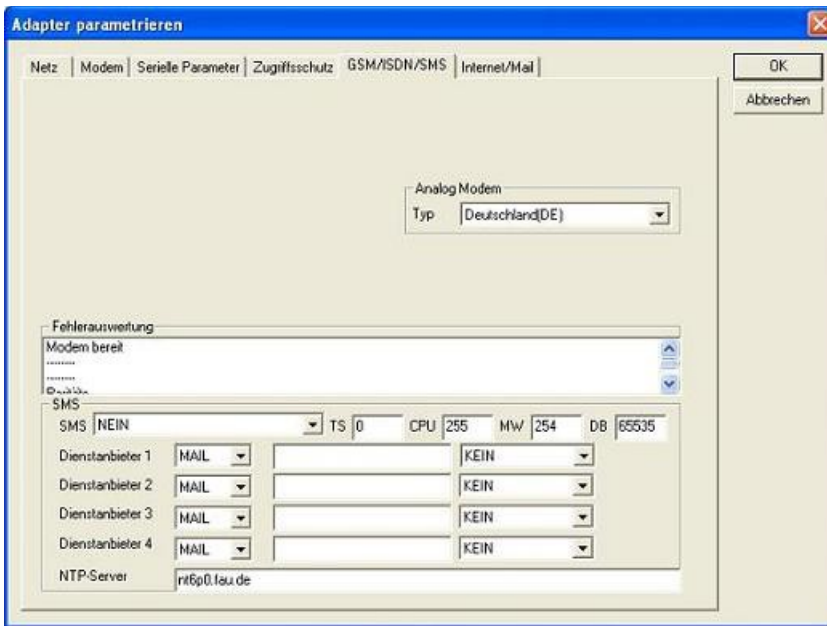
After changing the password for one user/administrator you must re-type it again correctly before it is used.

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.

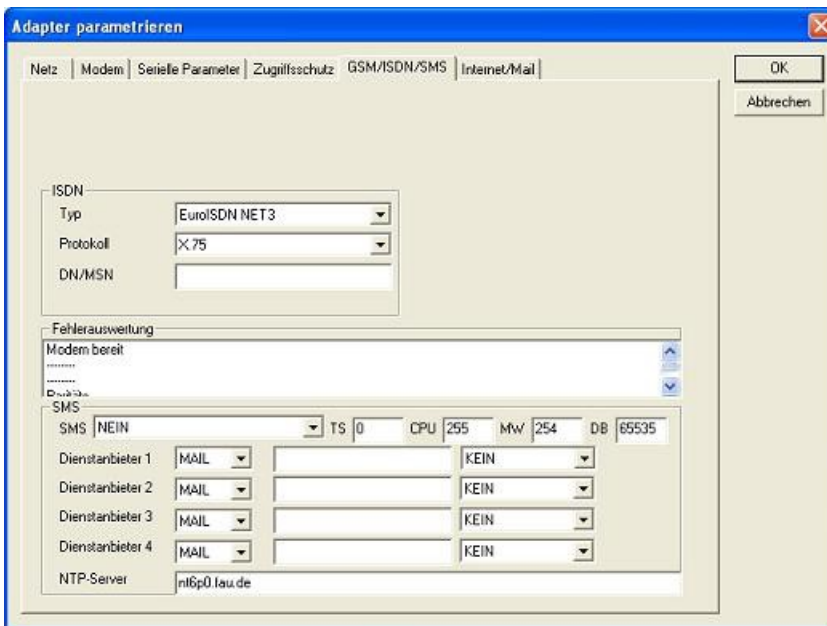
GSM/ISDN/SMS

Analog 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

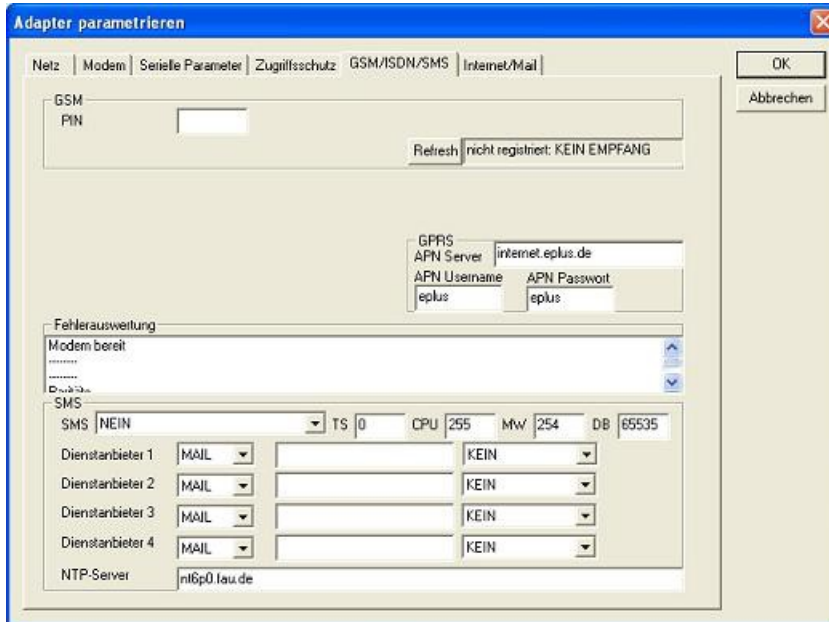
Protocol: Choose the transfer-protocol-type:

- 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 chosen. 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:

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

Messages:

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!)

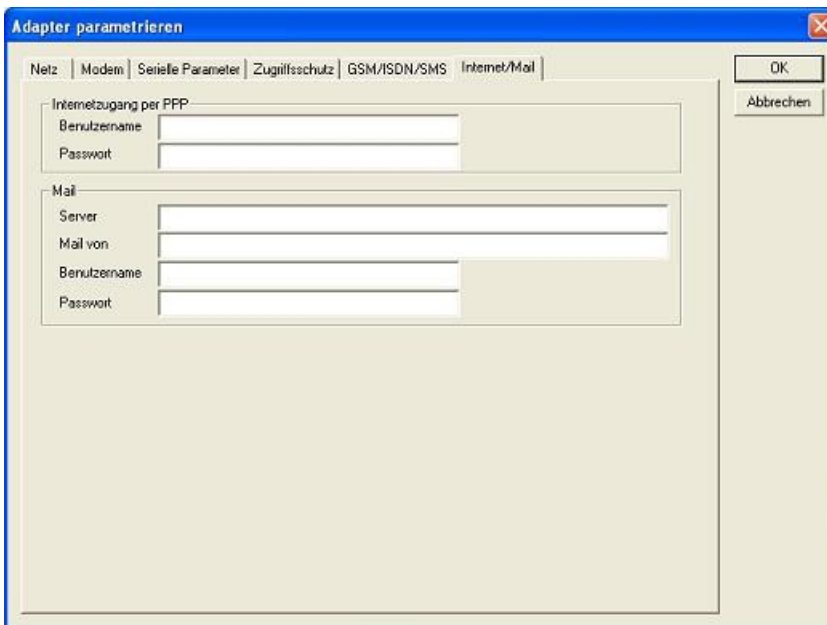
PLC: from this station-address the Flagword and Data-block is accessed for communication

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



The screenshot shows a software window titled "Adapter parametrieren" with a blue title bar and a close button. The window has several tabs: "Netz", "Modem", "Serielle Parameter", "Zugriffsschutz", "GSM/ISDN/SMS", and "Internet/Mail". The "Internet/Mail" tab is selected. Inside the window, there are two main sections. The first section is titled "Internetzugang per PPP" and contains two input fields: "Benutzername" and "Passwort". The second section is titled "Mail" and contains four input fields: "Server", "Mail von", "Benutzername", and "Passwort". On the right side of the window, there are two buttons: "OK" and "Abbrechen".

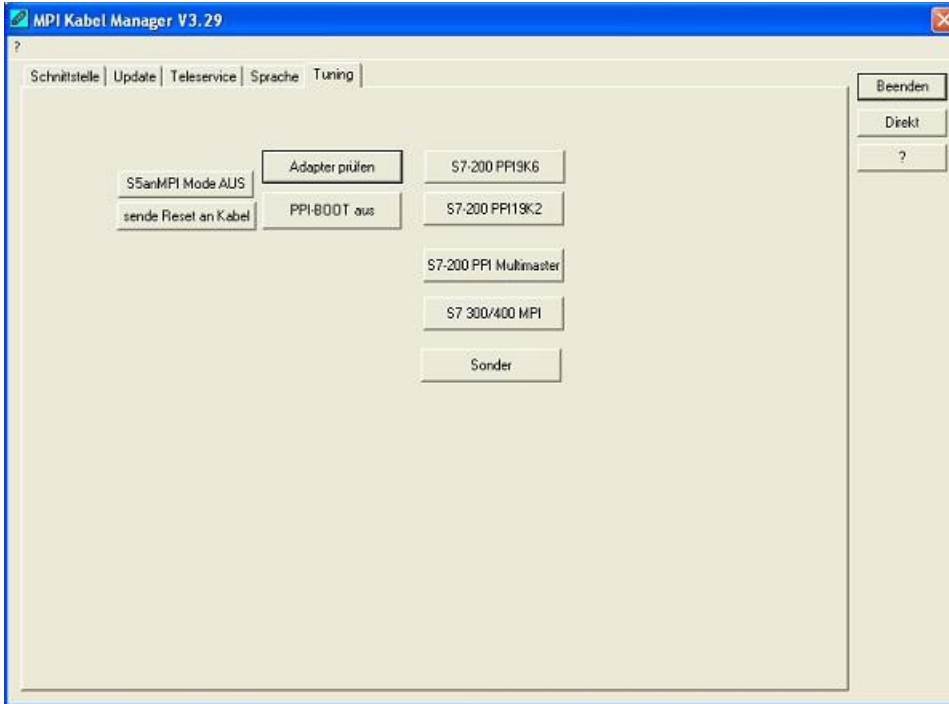
9.3.4.3.4 „Import parameter“

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

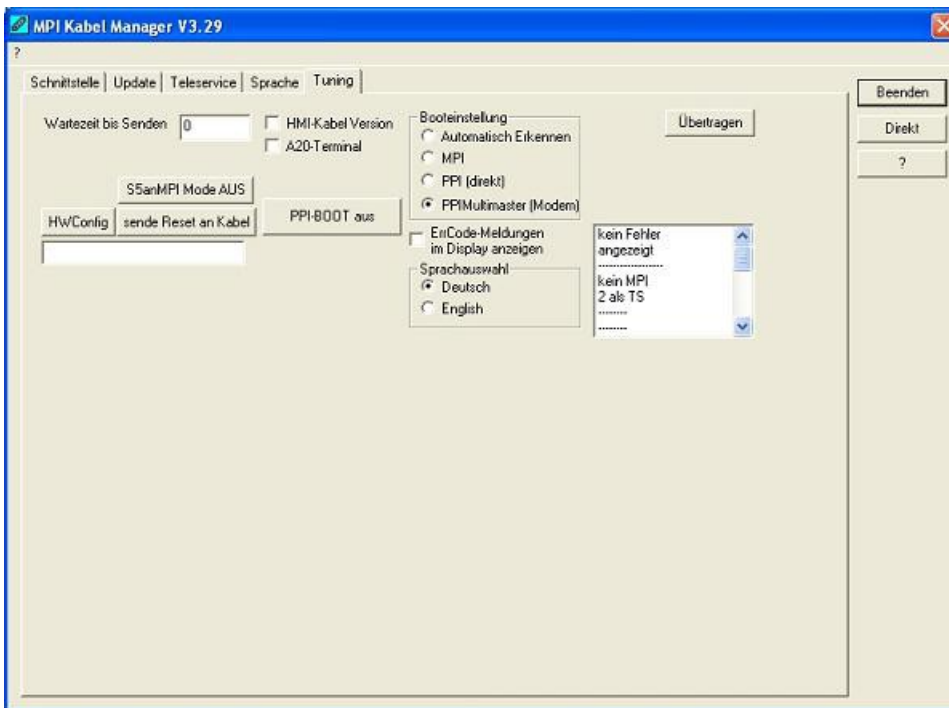
9.3.4.3.5 „Export parameter“

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 and 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

Supported operating-systems:

- Windows XP
- Windows Vista
- Windows 7 Professional, Ultimate and Enterprise
- Windows 8.1 Professional
- Windows 10 Pro and Enterprise

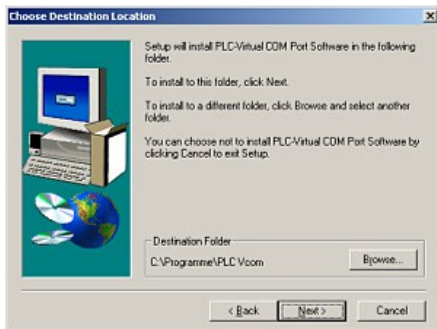
The PLC-VCom application is needed for use with the following devices:

- MPI-LAN Cable– Art. No.. 9352-LAN
- S7-LAN Modul – Art. No.. 9352-LANCon
- MPI-USB Cable– Art. No.. 9352-USB
- S7-USB Modul – Art. No.. 9352-S7-USB
- MPI-II Cable (USB – mode) – Art. No.. 9352 + 9352.1
- S5-LAN Modul – Art. No.. 9359-LAN
- Tele-Service (as programming adapter) – Art. No.. 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.



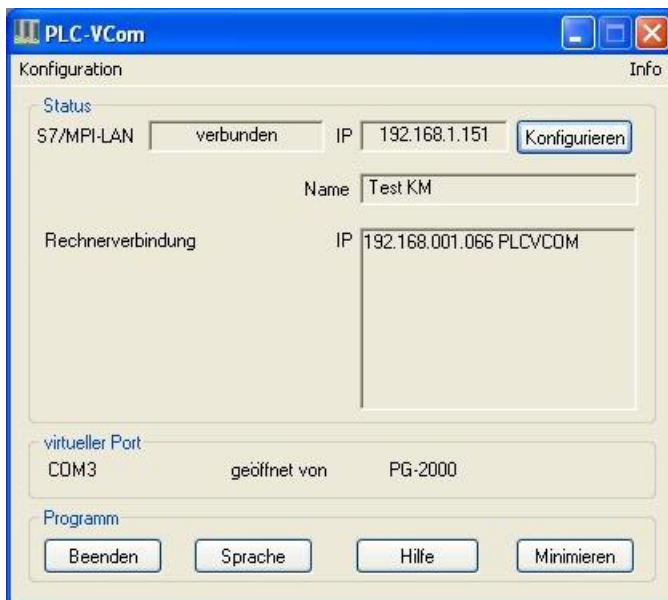
The red symbol indicates that sending/receiving data has been failed.

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/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

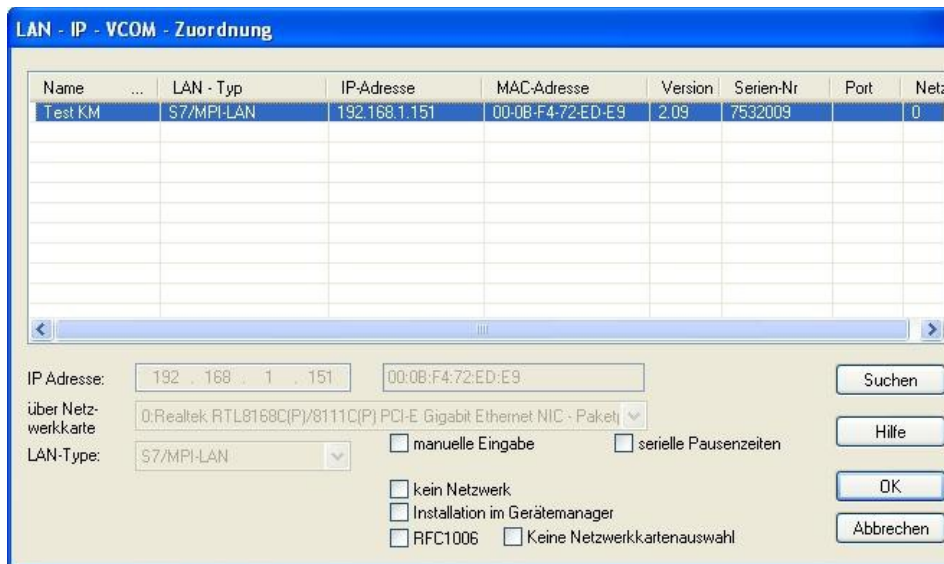
=> Language: Switch the Language to english/german.

=> 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:

=> Linewise 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

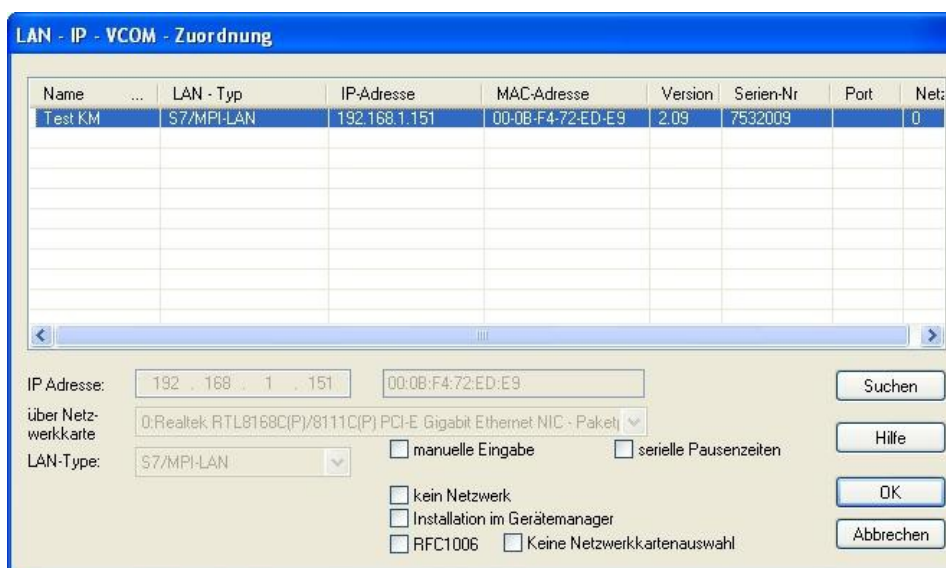
9. Cancel:

=> 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



Name	LAN - Typ	IP-Adresse	MAC-Adresse	Version	Serien-Nr	Port	Netz
Test KM	S7/MPI-LAN	192.168.1.151	00-0B-F4-72-ED-E9	2.09	7532009		0

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".

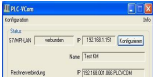
10.4.1.3 Final settings

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

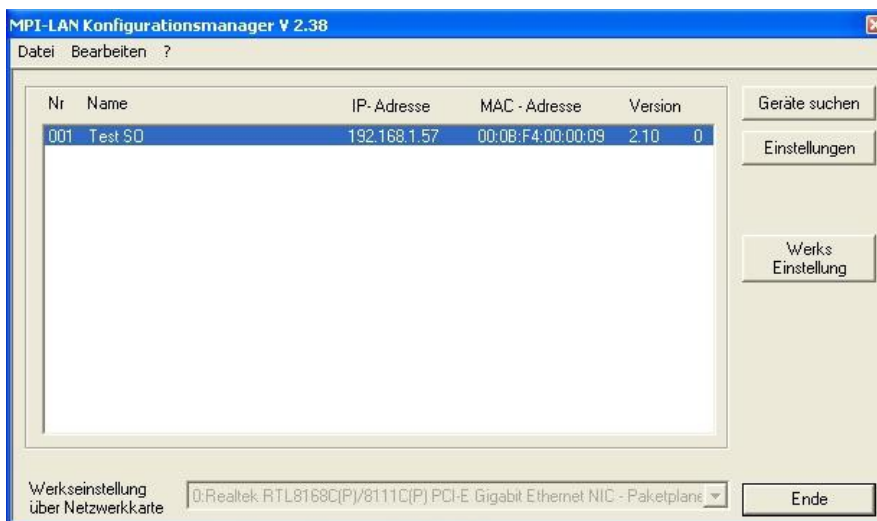
11.1 Installation

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:

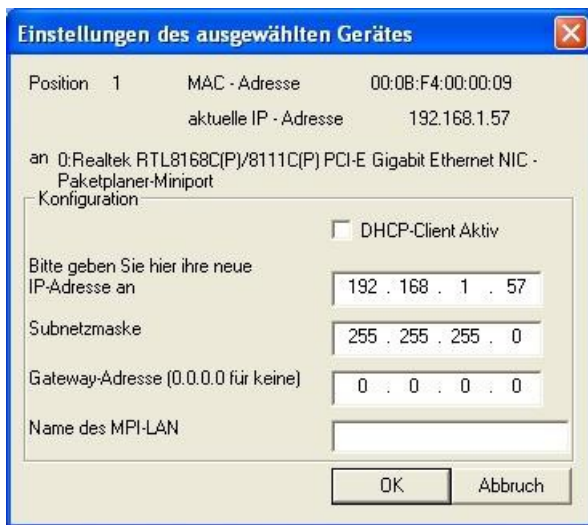
With a click on "Search devices" you send a broadcast to all cables which are available in your

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 TIC-Software
Interfaces:	to the PLC: PPI/MPI/Profibus interface: 9,6 KBd - 12 MBd to the PD/PC: PD/diagnosis jack 10/100BaseTX RJ45-ethernet jack
Galvanic separation:	1500V PPI/MPI/Profibus to the PC
Protocols:	RFC1006, DHCP, HTTP
Operating temperature:	0 - 55°C
Case:	ABS-plastic case
Dimensions:	65 x 43 x 17 mm

Scope of delivery:

S7-LAN-module
Power connector 2pins small

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	BiDi
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 Kommunikation

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.

Nr	Name	Typ	aktiv	P-Zyklus	Konfig-DB	IP-Partner	Port Lokal	Po
1	Exam...	ISO on ...		0	DB1.DBW0	192.168...	0	0
2		ISO on ...		0	DB0.DBW0	0.0.0.0	0	0

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:” allows 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 identifies 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".

The screenshot shows the 'Allgemein' (General) configuration page for the S7-LAN module. The 'Name' field is set to 'Example'. The 'TS-Funktion' is set to 'AUS' (Off). The 'BUS-Konfiguration vom PC verwenden' is set to 'NEIN' (No). The 'Booteinstellung' (Boot setting) is set to 'Automatik' (Automatic). The 'Protokollart' (Protocol type) is also set to 'Automatik'. Other fields like 'Baudrate', 'Datenbit', 'Parität', and 'Stopbit' are also set to 'Automatik'.

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

The screenshot shows the 'Netzwerk' (Network) configuration page. The 'DHCP-Client' is set to 'AUS' (Off). The 'IP-Adresse' is set to '192.168.1.52'. The 'Sub-Netzmaske' is set to '255.255.255.0'. The 'Gateway-Adresse' is set to '0.0.0.0'.

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".

The screenshot shows the 'MPI/PROFIBUS' configuration page. The 'Baudrate' is set to '187K5'. The 'höchste Stationsadresse' (highest station address) is set to '126'. The 'lokale Teilnehmeradresse' (local participant address) is set to '9'. The 'Profil' (profile) is set to 'MPI'. The 'stärkere Busanschaltung' (stronger bus connection) is set to 'AUS'.

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	MPIPROFIBUS	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	MPIPROFIBUS	Tuning	Anzeige	S7_an_S5/S7_Gateway	VarSteuern	Konfig	VarSt	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:	<input type="text" value="Test KM"/>
Werkseinstellungen laden:	<input type="button" value="Jetzt laden"/>
Netzwerk	
DHCP aktivieren:	<input type="checkbox"/>
IP-Adresse:	<input type="text" value="192.168.1.151"/>
Subnetzmaske:	<input type="text" value="255.255.255.0"/>
Gateway-Adresse:	<input type="text" value="0.0.0.0"/>
Buseinstellungen	
Bus-Konfig von PC verwenden:	<input type="checkbox"/>
Baudrate:	<input type="text" value="187K5"/>
Höchste Stationsadresse:	<input type="text" value="126"/>
PG/PC ist einziger Master:	<input type="checkbox"/>
Profil:	<input type="text" value="MPI"/>
Lokale Adresse:	<input type="text" value="0"/>
Booteinstellungen	
Profil:	<input type="text" value="Automatik"/>
Für manuelle Profileinstellung	
Baudrate:	<input type="text" value="Automatik"/>
Datenbit:	<input type="text" value="8"/>
Parität:	<input type="text" value="keine"/>
Stopbit:	<input type="text" value="1"/>
Für RFC1006 Verbindungen	
Ziel CPU:	<input type="text" value="5"/>
S7-Subnetz-ID:	<input type="text" value="0000-0000"/>
Busparameter:	<input type="text" value="Konfig"/>
Sonstiges	
Protokollart:	<input type="text" value="Automatik"/>
TS-Adapterfunktionalität:	<input type="checkbox"/>
Fehlerausgabe auf Display:	<input type="checkbox"/>

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".

- 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	

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" you 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 Kommunikation DB".KOM
SENDTYPE : = 'D'
SENDDDB : = 14
SENDADR : = 0
SENDLEN : = 20
ACT : = M10.0
LEN : = 20
DONE : = M10.1
ERROR : = M10.2
STATUS : = MW12

```

CALL "S7LAN_RECV"

```

KOMDB : = "S7LAN Kommunikation DB".KOM
RCVTYPE : = 'D'
RCVDDB : = 14
RCVADR : = 100
RCVLEN : = 20
ACT : = M11.0
NDR : = M11.1
ERROR : = M11.2

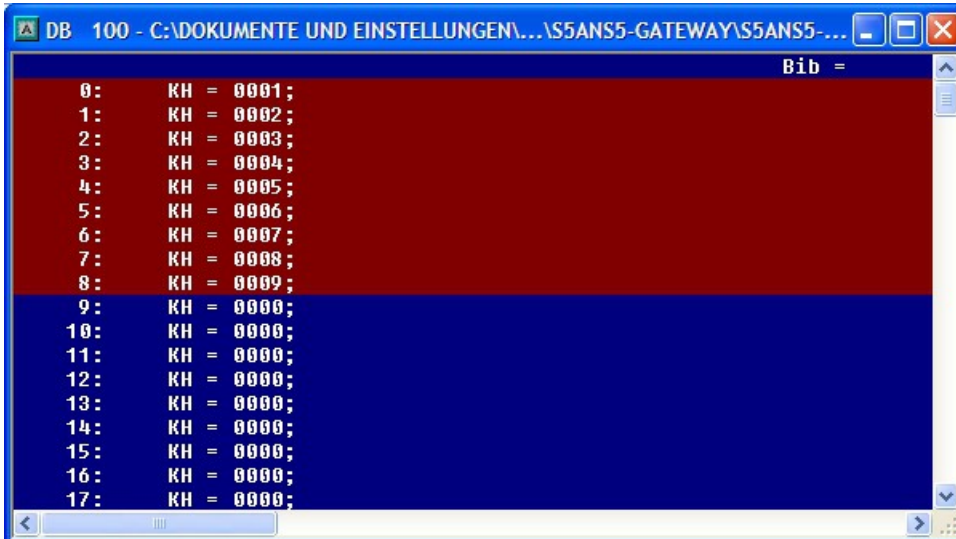
```

STATUS : = MW14
LEN : = MW16

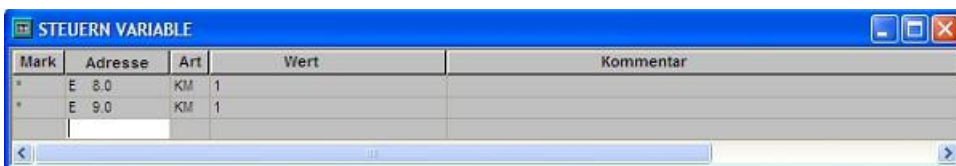
13.1.5 Test of the structure

1. Open the each DB100 in your PLCs and enter any values in the first 20 bytes.

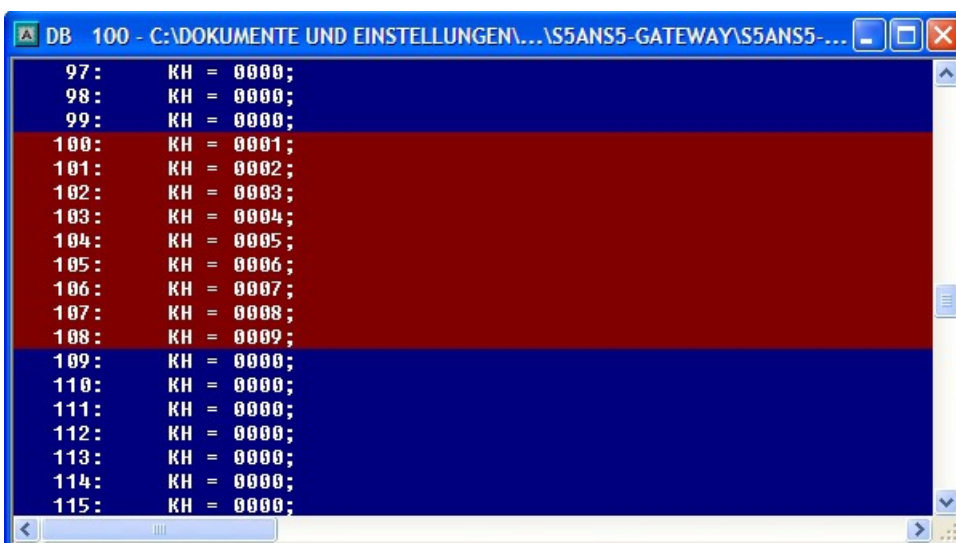
e.g.:(1; 2; 3; 4; 5; 6; 7; 8; 9)



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.



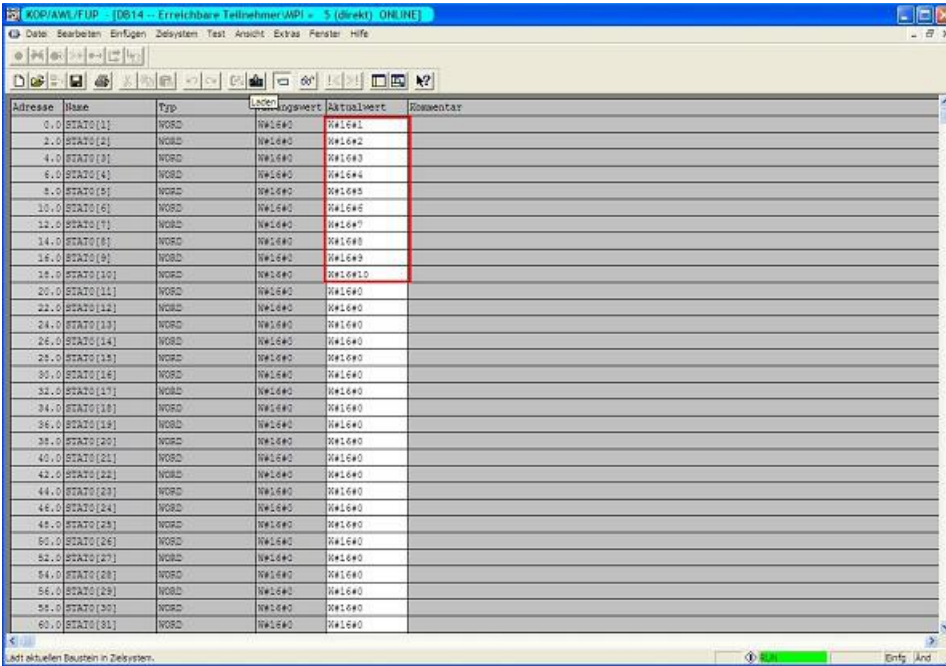
3. Now open the DB100 and check whether the values of the 20 bytes which you have configured in the other PLC in DB100 match with those from DW100.



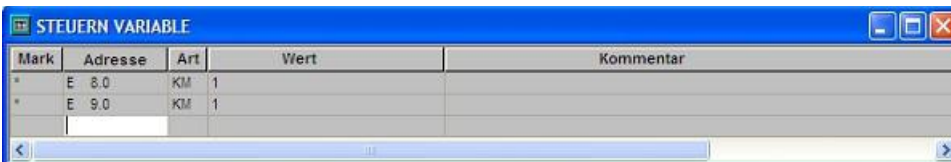
If they match, the communication was successful.

4. Open the DB14 in your S7 - PLC and enter any values in the first 20 bytes.

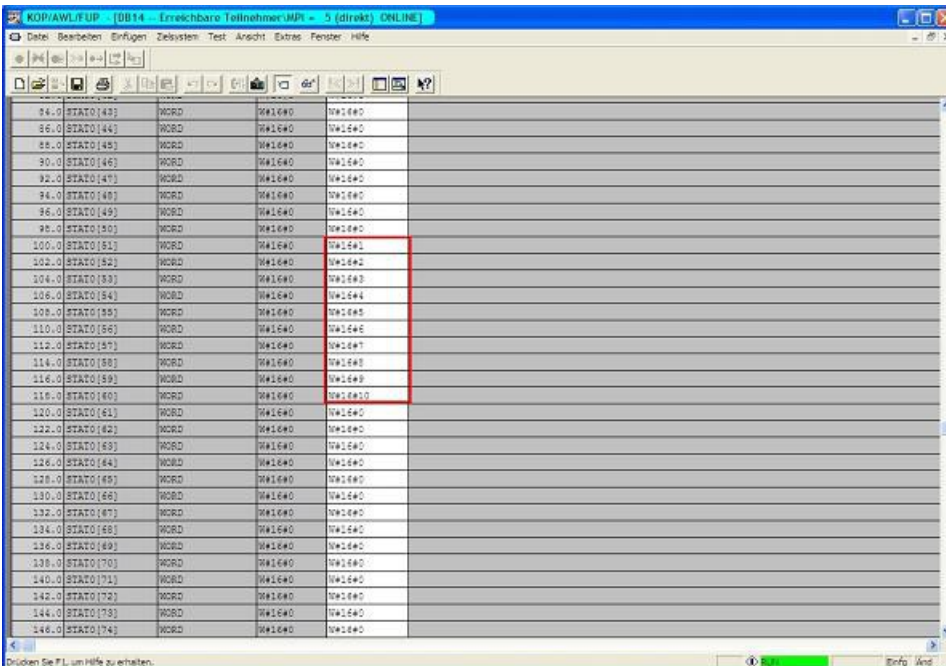
e.g.: (1; 2; 3; 4; 5; 6; 7; 8; 9; 10)



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"

The screenshot shows the 'Allgemein' (General) tab of the S7-LAN configuration interface. The 'Name' field is set to 'Exemple'. The 'TS-Funktion' is set to 'AUS' (Off). The 'BUS-Konfiguration vom PC verwenden' is set to 'NEIN' (No). The 'Booteinstellung' (Boot setting) is set to 'Automatik' (Automatic). The 'Protokollart' (Protocol type) is also set to 'Automatik' (Automatic). Other fields like 'Baudrate', 'Datenbit', 'Parität', and 'Stopbit' are also visible and set to default values.

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

The screenshot shows the 'Netzwerk' (Network) tab. The 'DHCP-Client' is set to 'AUS' (Off). The 'IP-Adresse' is set to '192.168.1.52'. The 'Sub-Netzmaske' is set to '255.255.255.0'. The 'Gateway-Adresse' is set to '0.0.0.0'.

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".

The screenshot shows the 'MPI/PROFIBUS' tab. The 'Baudrate' is set to '187K5'. The 'höchste Stationsadresse' (highest station address) is set to '126'. The 'lokale Teilnehmeradresse' (local participant address) is set to '9'. The 'Profil' (profile) is set to 'MPI'. The 'stärkere Busanschaltung' (stronger bus connection) is set to 'AUS'.

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	Polzeit	
DB-Aktiv <input type="checkbox"/>	5	10	0	192.168.1.54	1234	500	
AUS <input type="checkbox"/>	255	65535	65535	255.255.255.255		65535	
AUS <input type="checkbox"/>	255	65535	65535	255.255.255.255		65535	
AUS <input type="checkbox"/>	255	65535	65535	255.255.255.255		65535	
AUS <input type="checkbox"/>	255	65535	65535	255.255.255.255		65535	
AUS <input type="checkbox"/>	255	65535	65535	255.255.255.255		65535	
AUS <input type="checkbox"/>	255	65535	65535	255.255.255.255		65535	
AUS <input type="checkbox"/>	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	Password
Ziel-CPU										5
S7-Subnetz-ID										0000-0000
Busparameter										Konfig <input type="checkbox"/>
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

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

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

Allgemein

Name:

Werkzeugeinstellungen laden:

Netzwerk

DHCP aktivieren:

IP-Adresse:

Subnetzmaske:

Gateway-Adresse:

Buseinstellungen

Bus-Konfig von PC verwenden:

Baudrate:

Höchste Stationsadresse:

PG/PC ist einziger Master:

Profil:

Lokale Adresse:

Booteinstellungen

Profil:

Für manuelle Profileinstellung

Baudrate:

Datenbit:

Parität:

Stopbit:

Für RFC1006 Verbindungen

Ziel CPU:

S7-Subnetz-ID:

Busparameter:

Sonstiges

Protokollart:

TS-Adapterfunktionalität:

Fehlerausgabe auf Display:

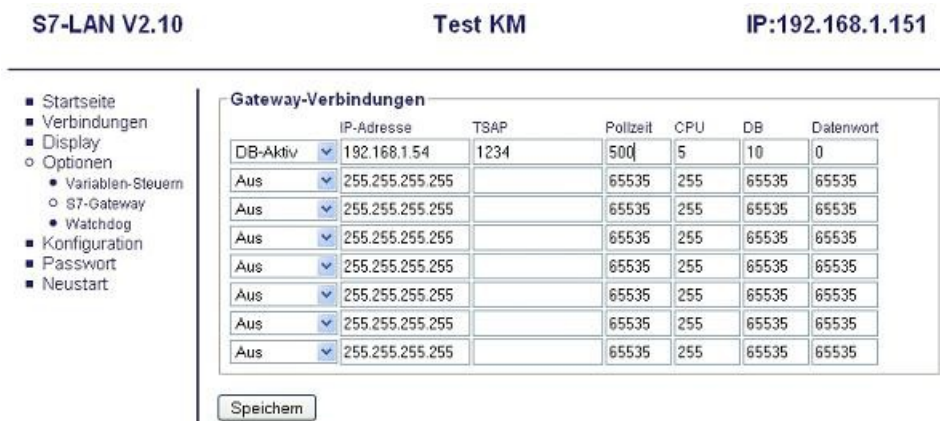
Adjust in the "General" what should be the name for your module.

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".



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 Communications DB".KOM
SENDTYPE   : = 'D'
SENDDDB    : = 14
SENDADR    : = 0
SENDLEN    : = 20
    
```

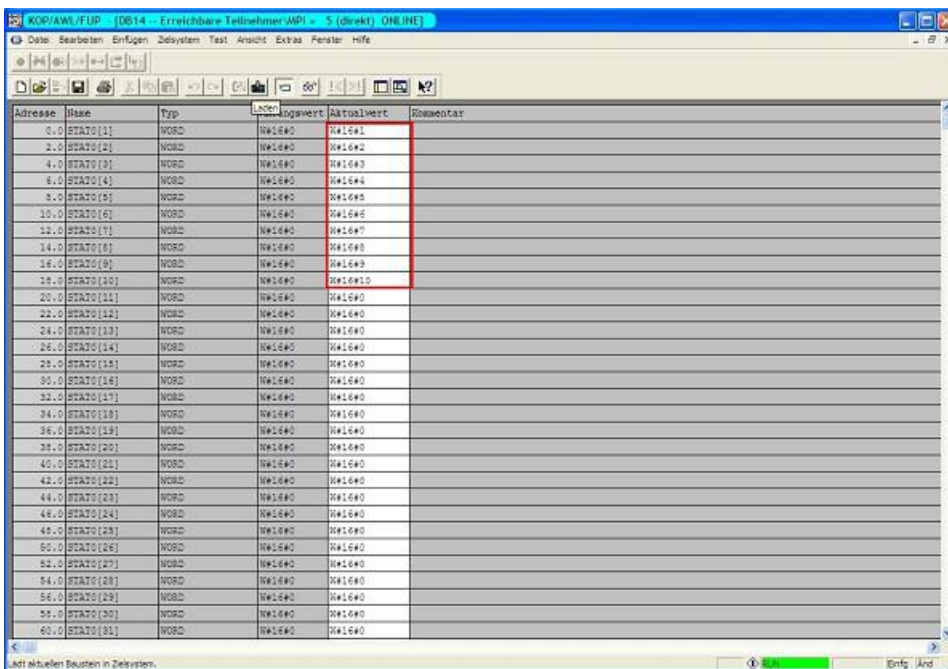
ACT : = M10.0
 LEN : = 20
 DONE : = M10.1
 ERROR : = M10.2
 STATUS : = MW12

CALL "S7LAN_RECV"

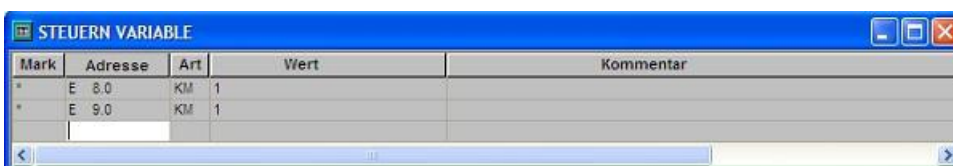
KOMMDB : = "S7LAN KommunikationsDB".KOM
 RECVDTYPE : = 'D'
 RECVDDB : = 14
 RECVADR : = 100
 RECVLEN : = 20
 ACT : = M11.0
 NDR : = M11.1
 ERROR : = M11.2
 STATUS : = MW14
 LEN : = MW16

13.2.4 Test of the structure

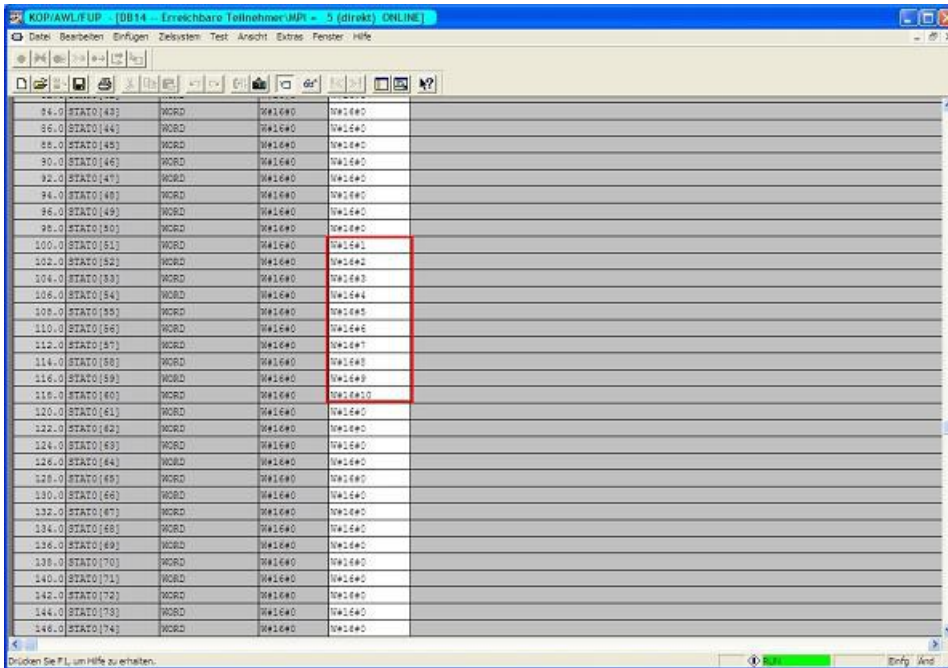
1. Open the DB14 in your S7 - PLC and enter any desired values in the first 20 bytes.
e.g.: (1; 2; 3; 4; 5; 6; 7; 8; 9; 10)



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,

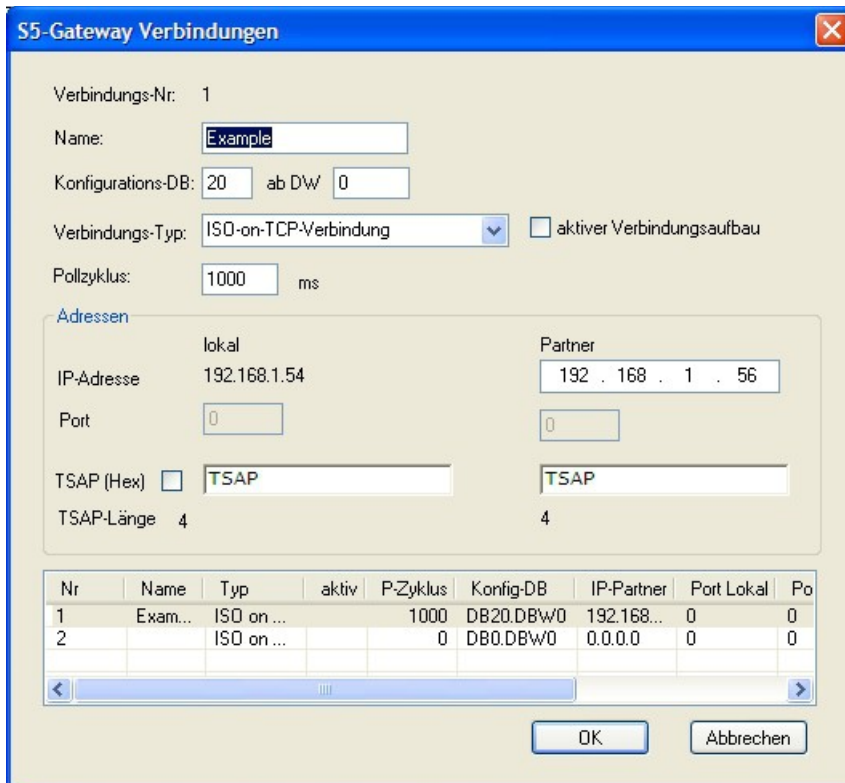
13.3 S7CP to S5 - Gateway communication

13.3.1 S5 – Configure Gateway

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.

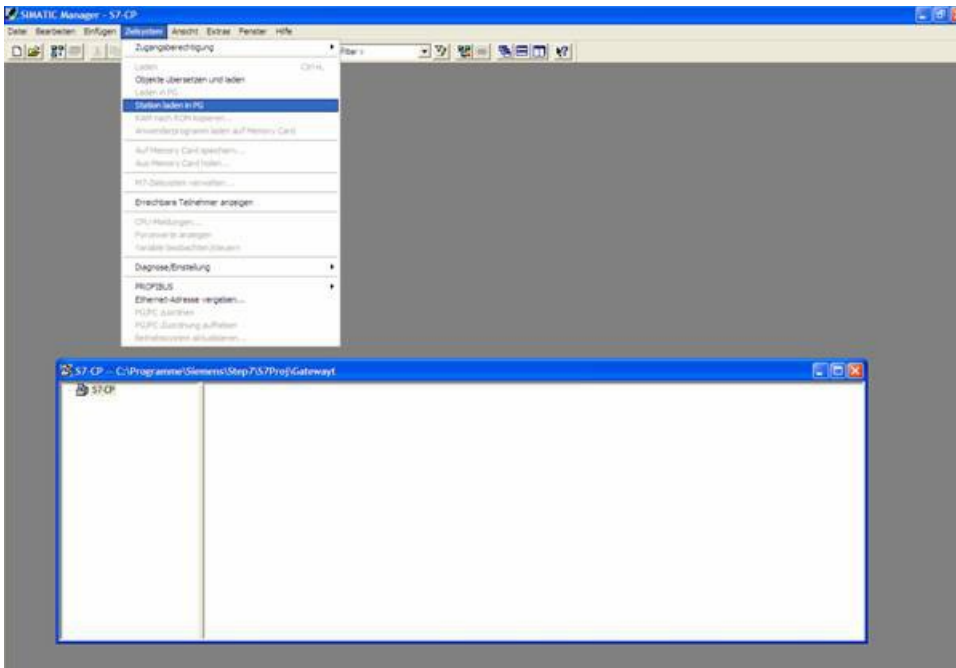


2. In the bottom of the dialog you find the link list, in which you can select the connection which you want to configure.
3. At "Name" you can now give the connection a logical name.
4. Under "Configuration - DB", enter the position of the data block in the left entry field, (eg "1" for DB1) and in 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 configured 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".

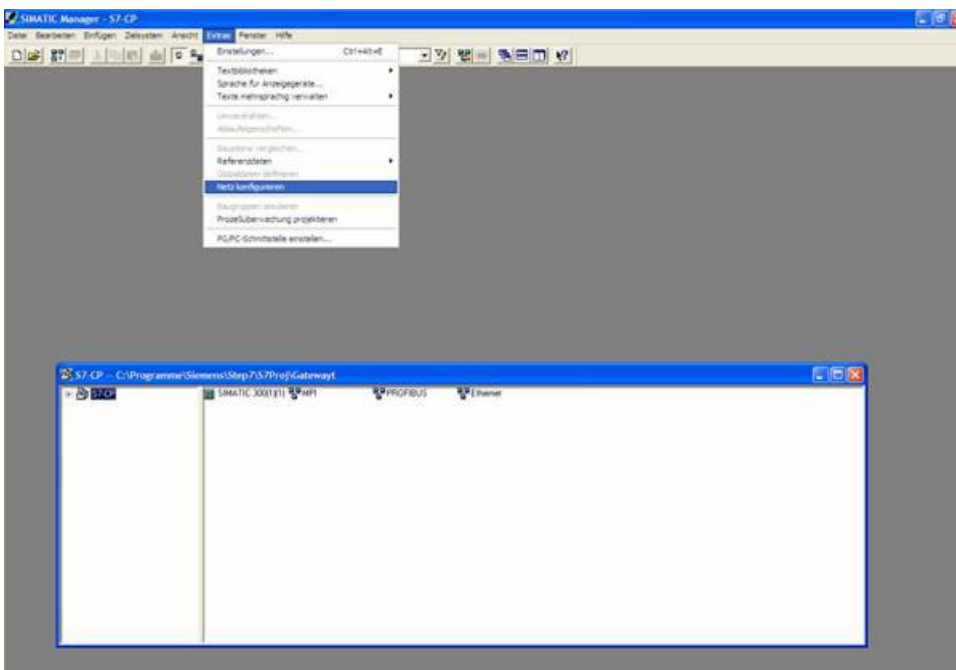
Communication via S5 - Gateway is now configured.

13.3.2 Configure S7-CP

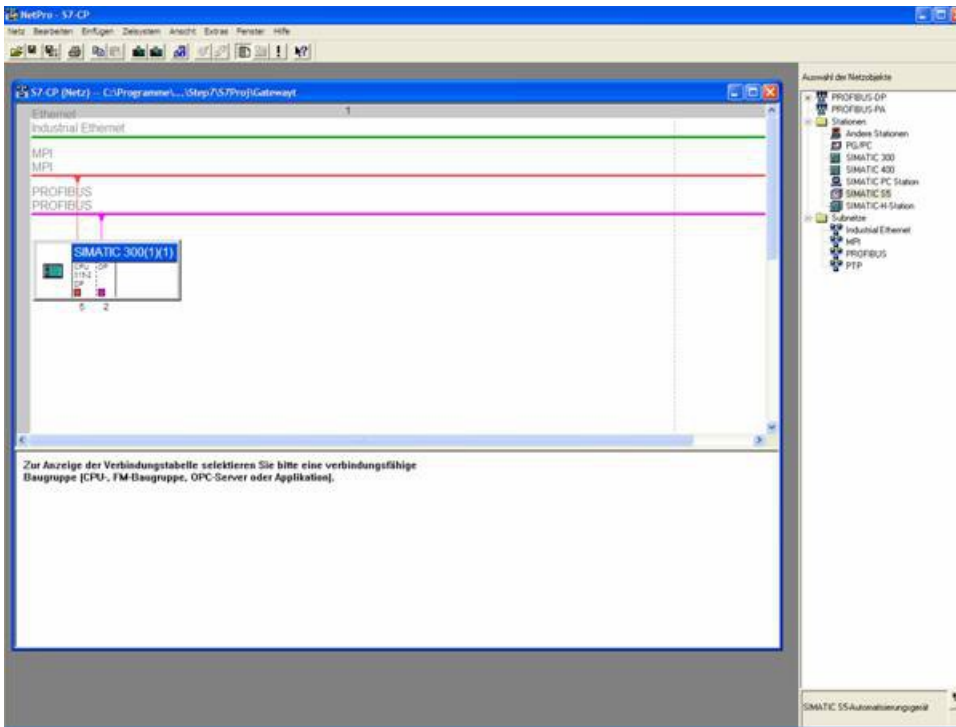
1. Start your programming software and load your station in the software.



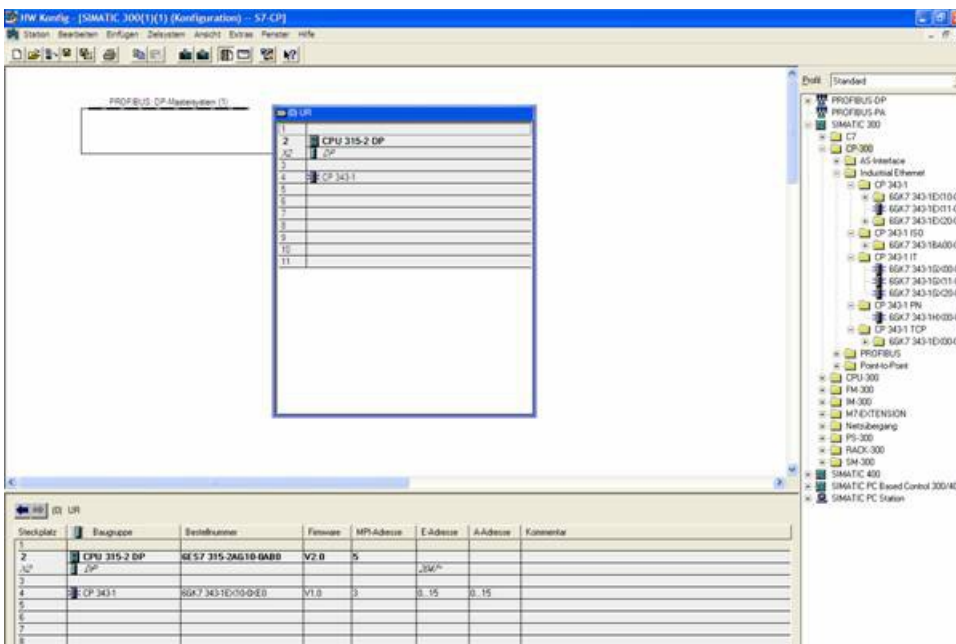
2. Now open the "NetPro" window over the "Tools" and "Configure Network", in which you can set up your stations and subnets.



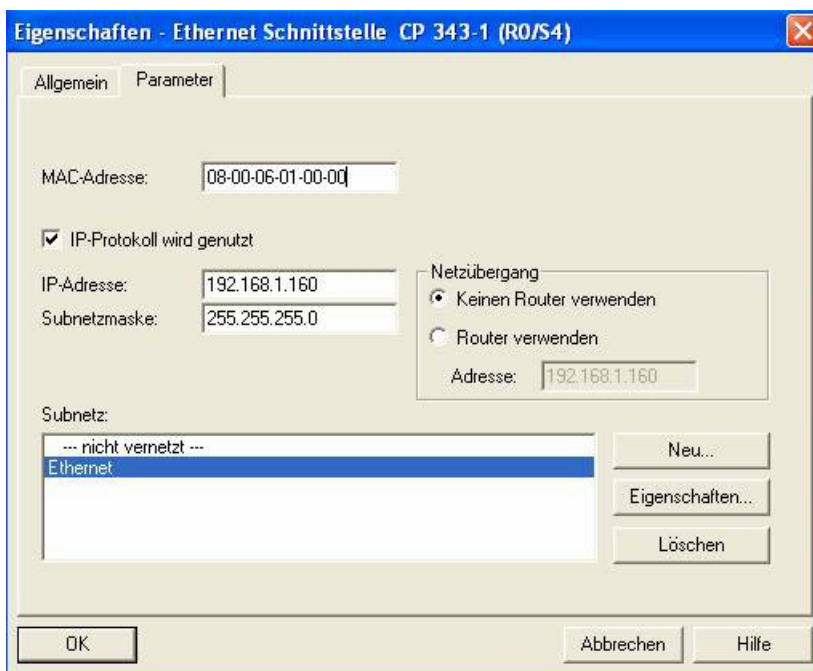
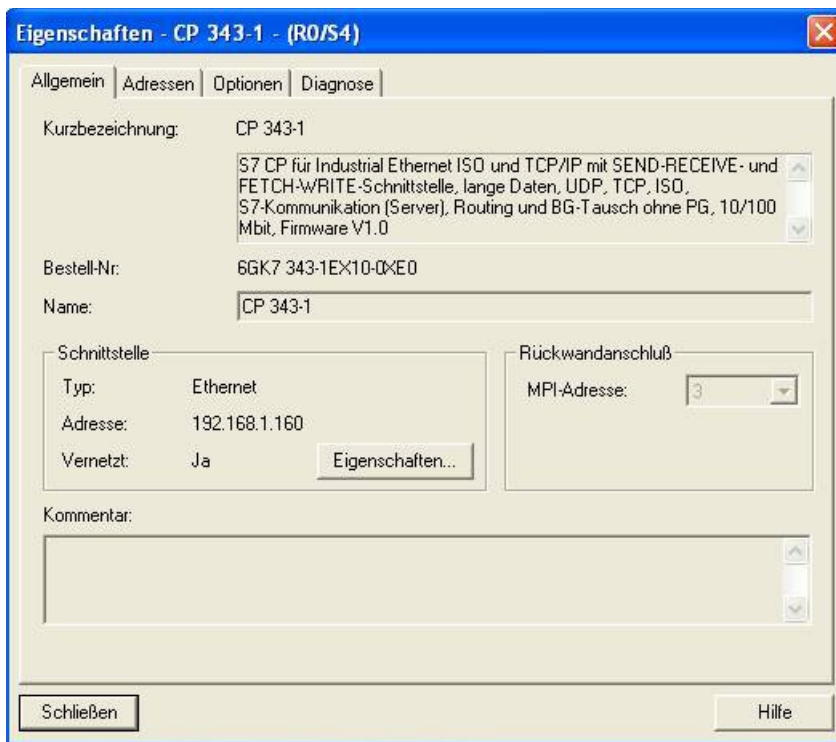
3. If you now execute a double click on your projected S7 opens the "Configure Hardware".



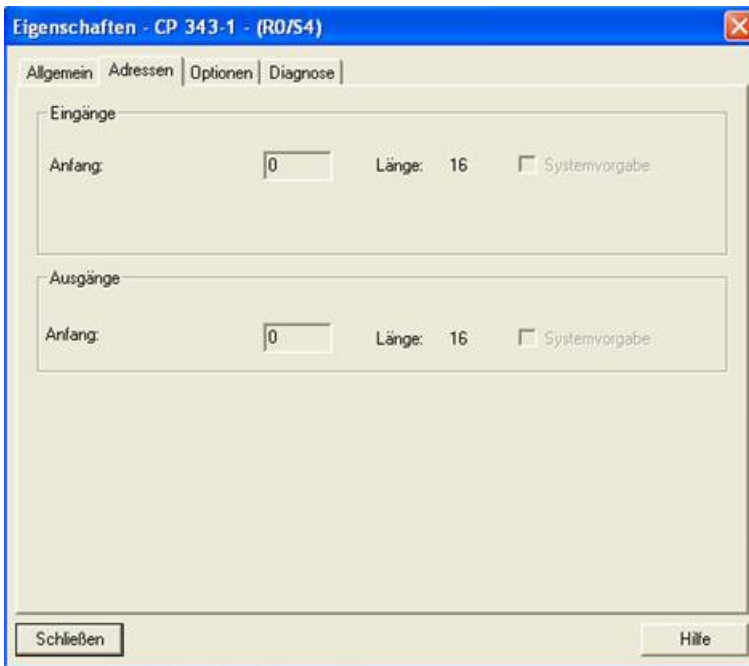
4. In the "Configure Hardware" you can select your CP in the right library from the list and paste it into your rack from slot 4. Save and translate your settings and close the "Configure Hardware".



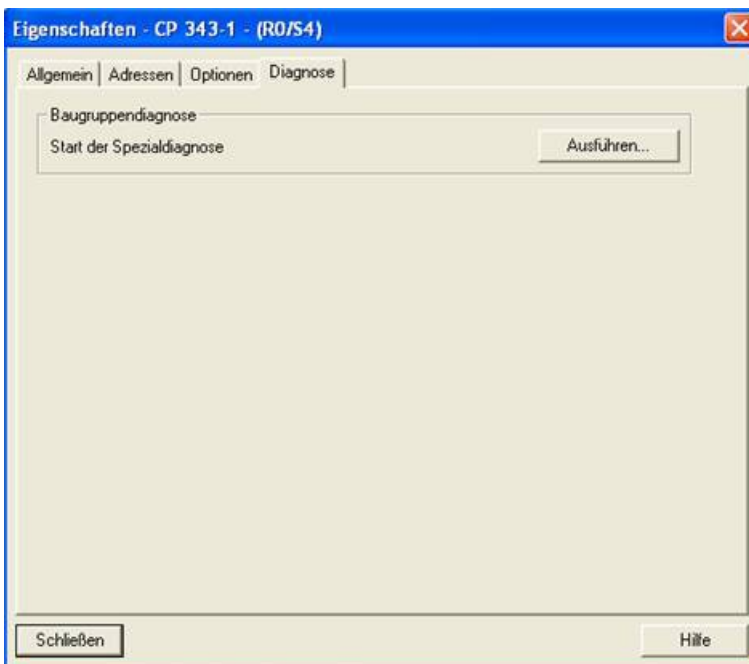
5. Now open the object properties with a right click on your projected CP. Under "General" you can now connect under interfaces these to the Ethernet network and assign an IP to him.



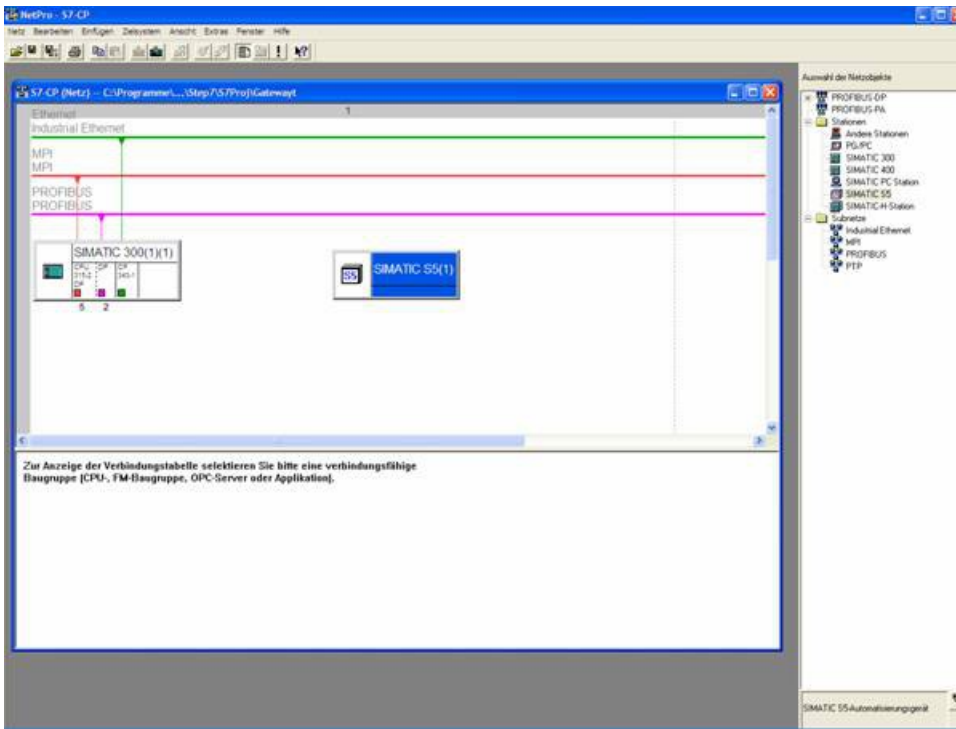
6. At the "Address" you can now determine the "beginning" and the "length" of the inputs and outputs.



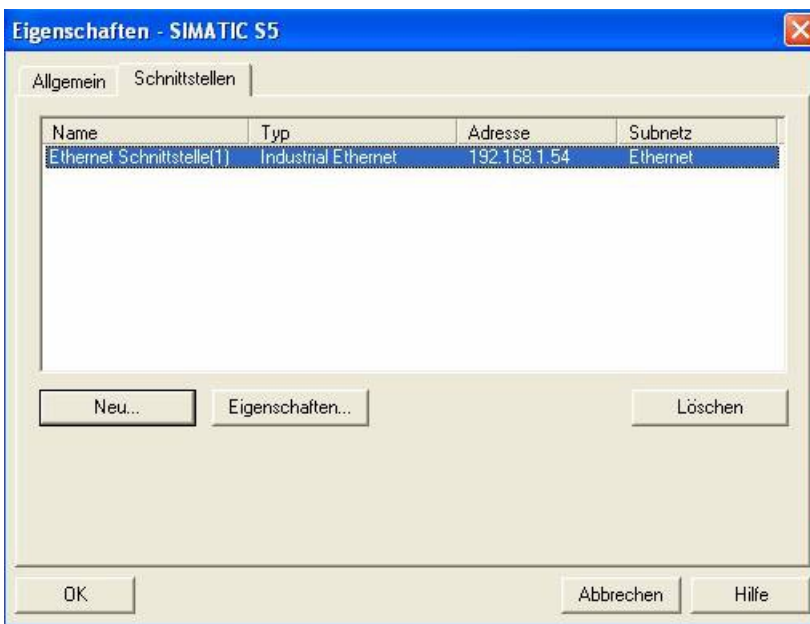
7. In the diagnosis part, you can open a diagnostic window that we need later to check our structure. So for the moment, you can close the object properties.

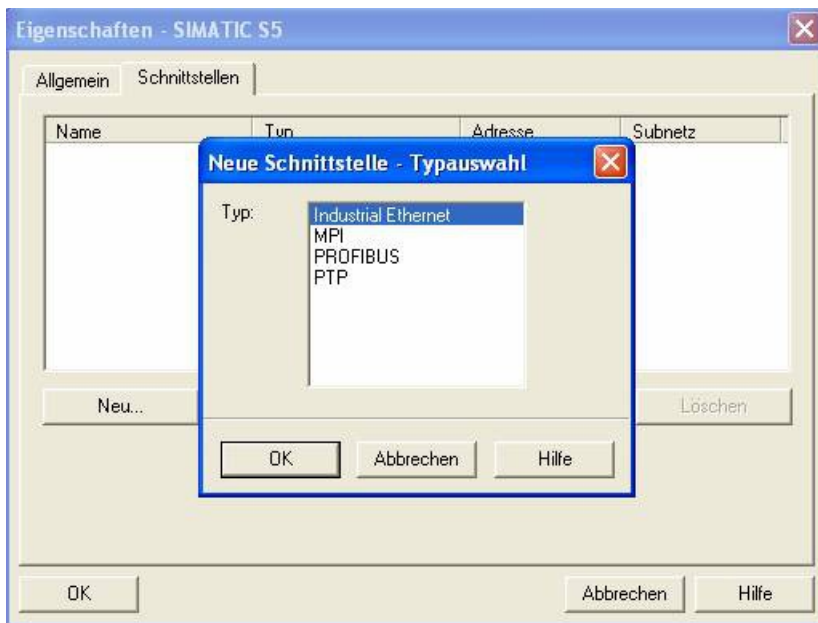


8. Now it is time to project your S5 - PLC in said you select from the right library and create by a double click.

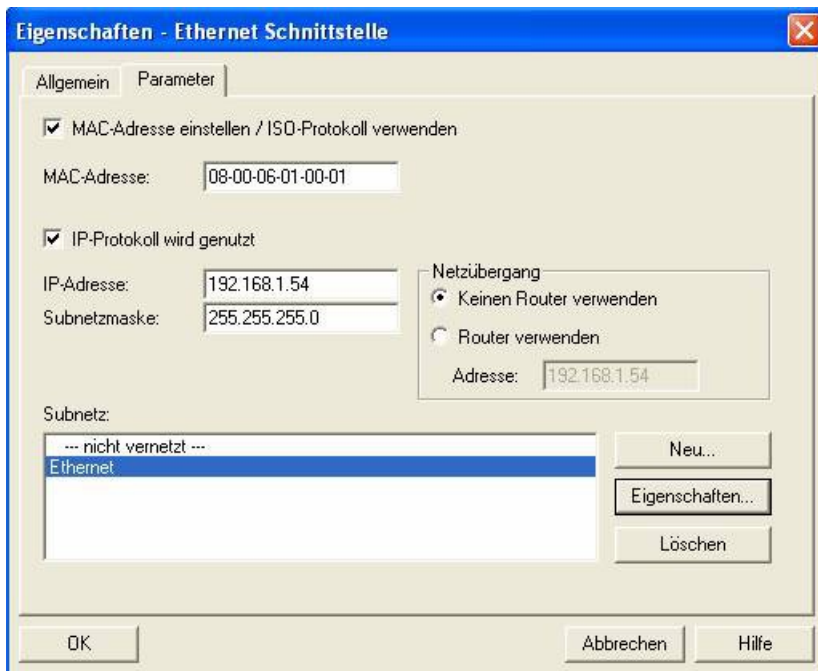


9. By right-clicking on your S5 you must now open the object properties in which you project a "Ethernet Interface" under interfaces as follows.

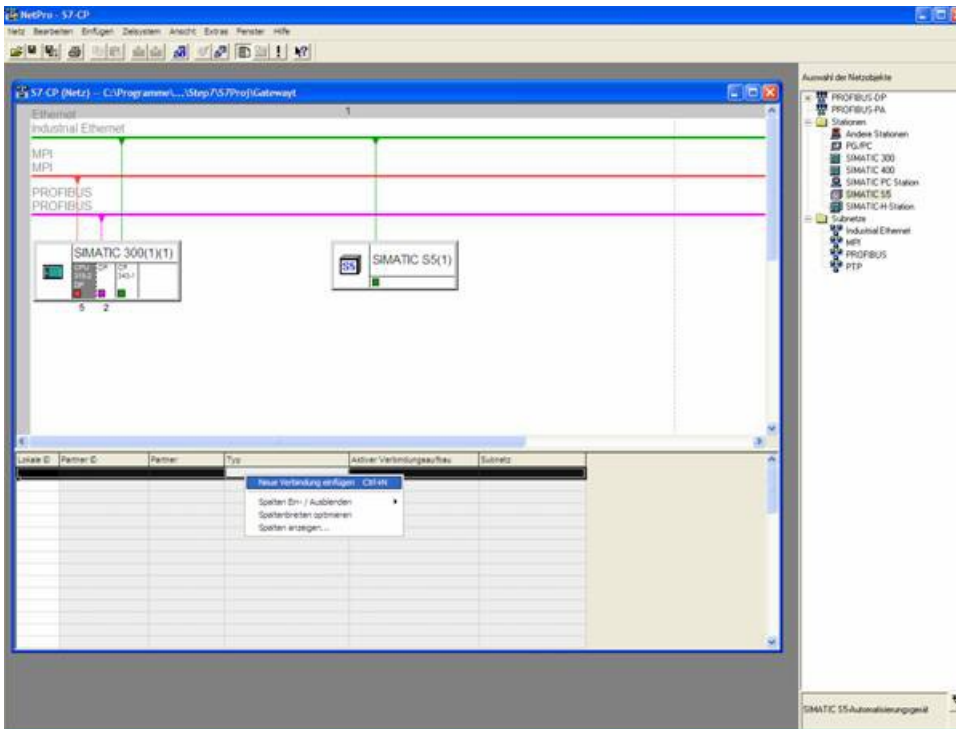




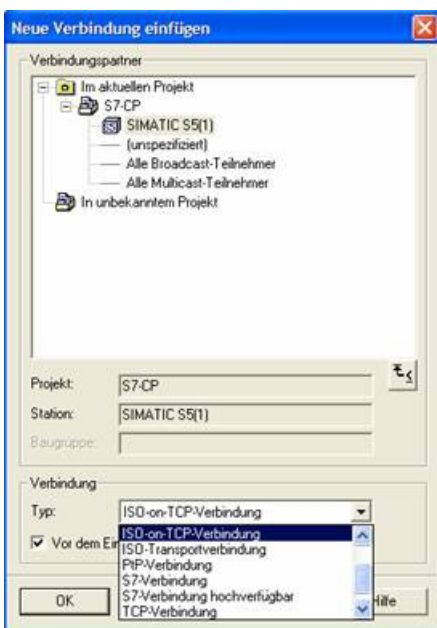
10. Type in "Parameters" then the IP of your S5 - LAN gateways, and confirm by clicking OK so that the object properties are now closed again.



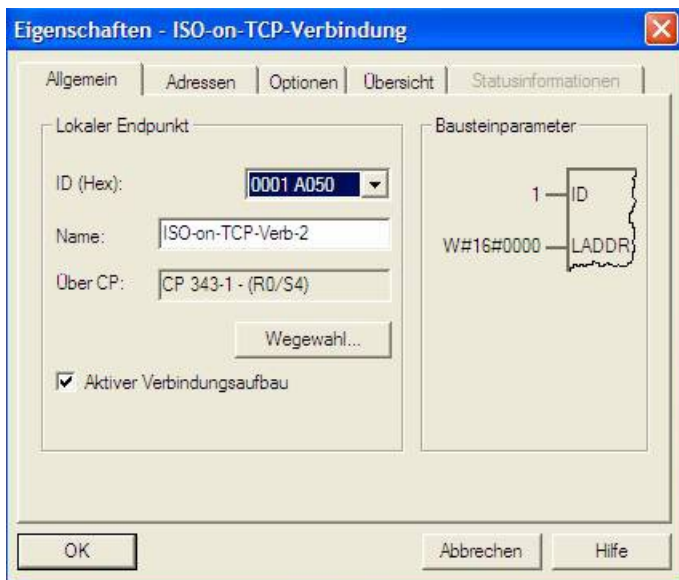
11. Now mark your CPU that is projected in your S7 by clicking. Now you can generate a new connection below in the connection table and indeed with a right click.



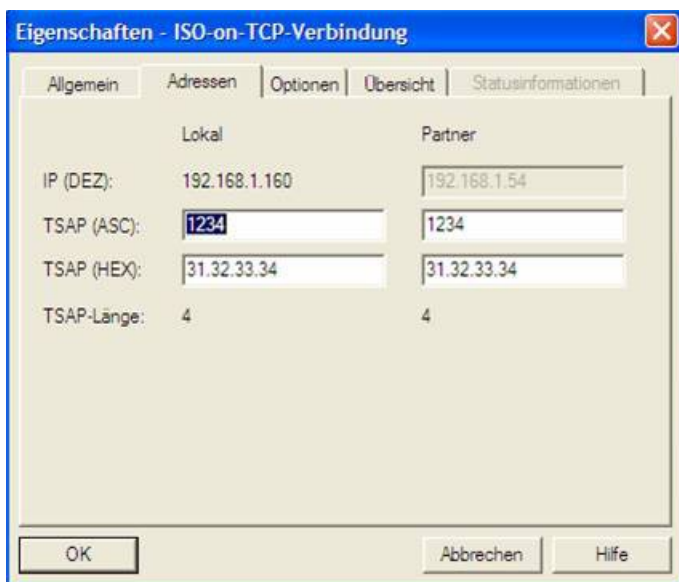
12. Now select here as the connection type the previously configured S5 - PLC and the "ISO-on-TCP connection".



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

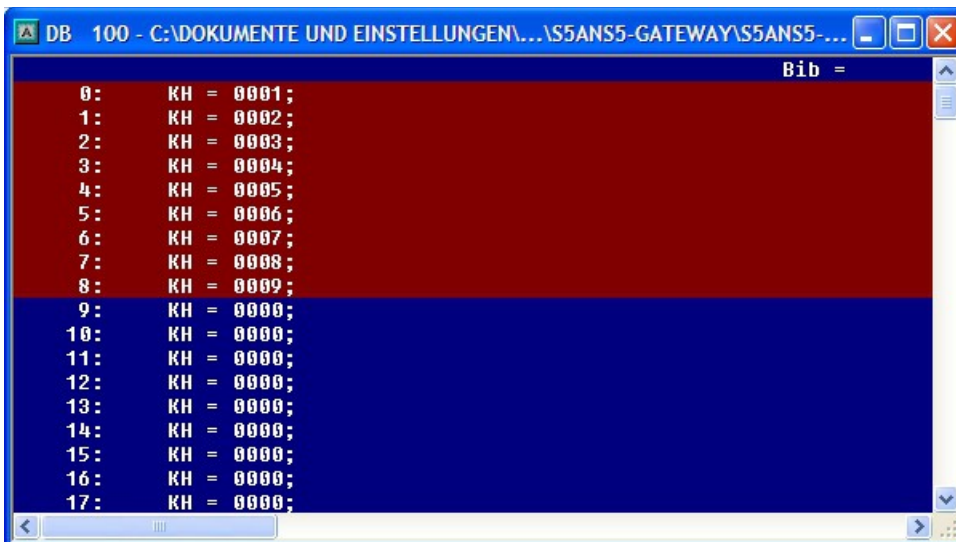
```

Then set the inputs E8.0 and E9.0 to "1" to start the cycle.

13.3.5 Test of the structure

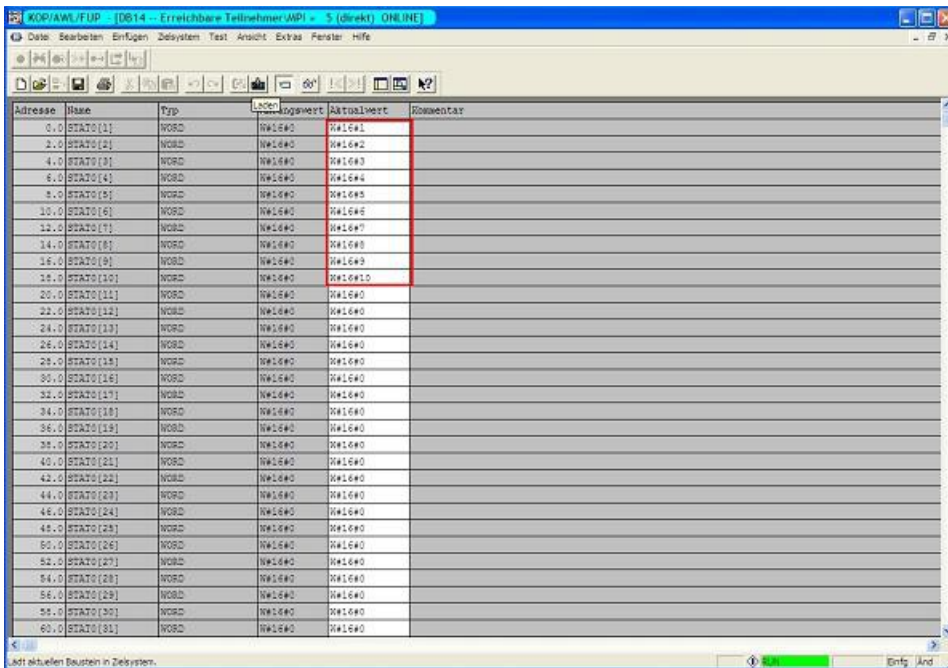
1. Open the DB100 in your S5 PLCs and enter any desired values in the first 20 bytes.

e.g.:(1; 2; 3; 4; 5; 6; 7; 8; 9)

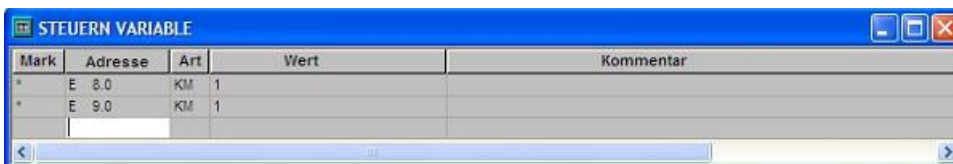


2. Open the DB14 in your S7 - PLC and enter any desired values in the first 20 bytes.

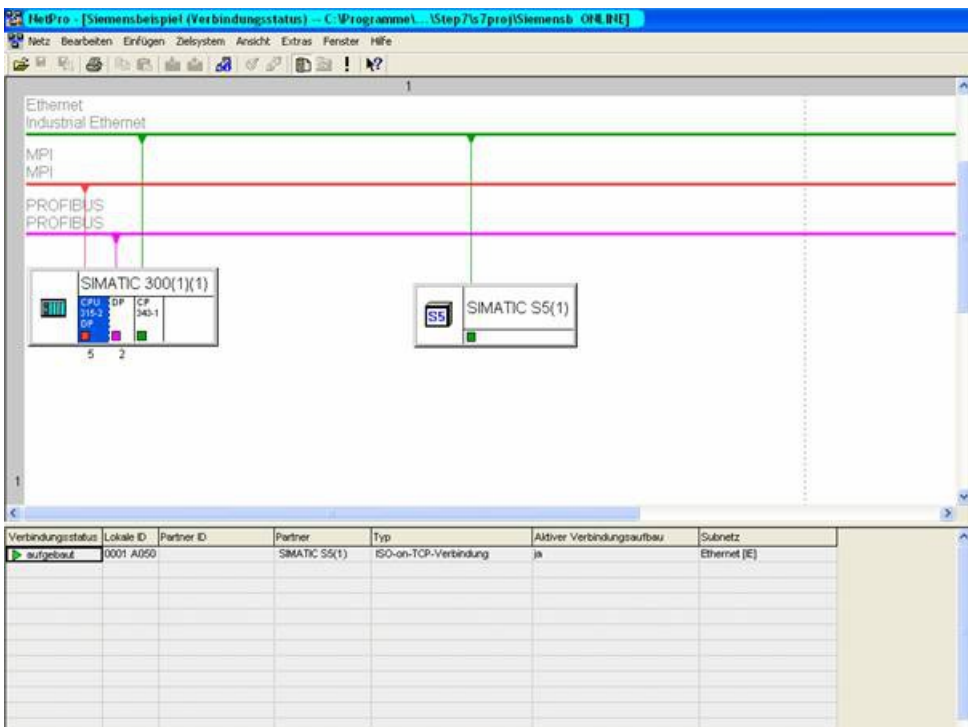
e.g.: (1; 2; 3; 4; 5; 6; 7; 8; 9; 10)



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.

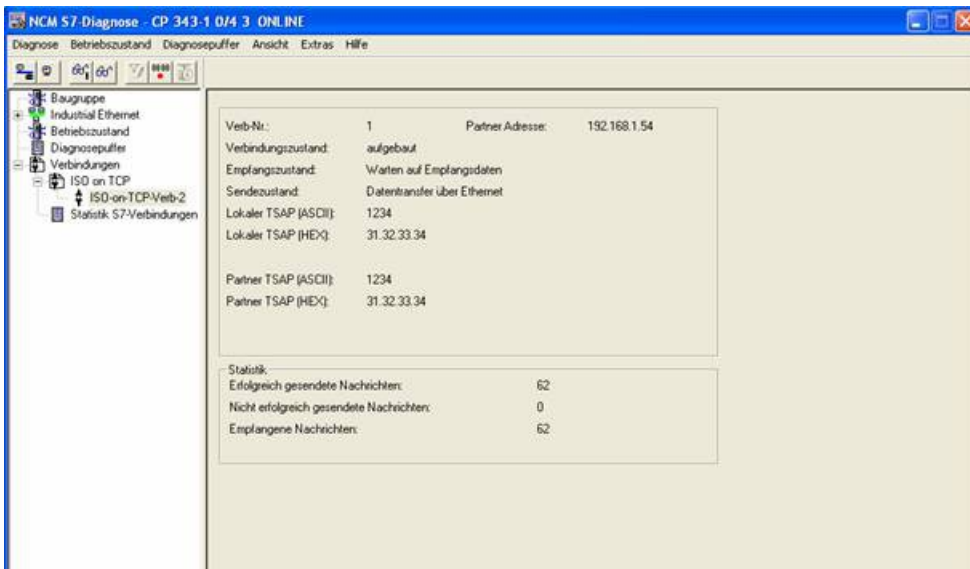


4. Now open the "NetPro" window again and mark your CPU. Now activate the "Connection Status". Now should be established the connection status below in your connection.

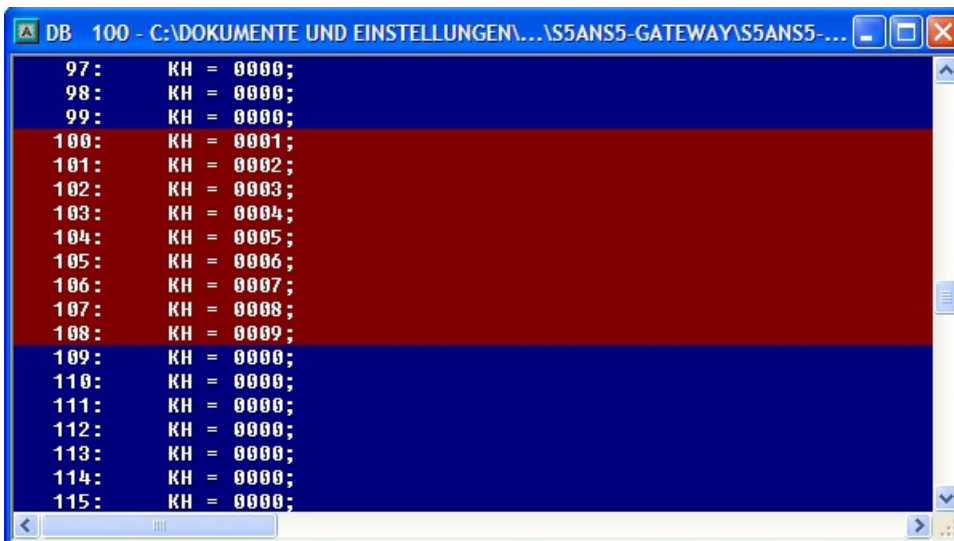


5. Now open the "diagnostic window" in the object properties of the "CP", as previously mentioned

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.

Address	Data Type	Value
94.0	STATO[43]	WORD
96.0	STATO[44]	WORD
98.0	STATO[45]	WORD
90.0	STATO[46]	WORD
92.0	STATO[47]	WORD
94.0	STATO[48]	WORD
96.0	STATO[49]	WORD
98.0	STATO[50]	WORD
100.0	STATO[51]	WORD
102.0	STATO[52]	WORD
104.0	STATO[53]	WORD
106.0	STATO[54]	WORD
108.0	STATO[55]	WORD
110.0	STATO[56]	WORD
112.0	STATO[57]	WORD
114.0	STATO[58]	WORD
116.0	STATO[59]	WORD
118.0	STATO[60]	WORD
120.0	STATO[61]	WORD
122.0	STATO[62]	WORD
124.0	STATO[63]	WORD
126.0	STATO[64]	WORD
128.0	STATO[65]	WORD
130.0	STATO[66]	WORD
132.0	STATO[67]	WORD
134.0	STATO[68]	WORD
136.0	STATO[69]	WORD
138.0	STATO[70]	WORD
140.0	STATO[71]	WORD
142.0	STATO[72]	WORD
144.0	STATO[73]	WORD
146.0	STATO[74]	WORD

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".

Parameter	Value
Betriebssystem	V 2.07
Name	Example
TS-Funktion	<input type="radio"/> EIN <input checked="" type="radio"/> AUS
BUS-Konfiguration vom PC verwenden	<input type="radio"/> JA <input checked="" type="radio"/> 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

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

Parameter	Value
DHCP-Client	<input type="radio"/> EIN <input checked="" type="radio"/> 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

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".

The screenshot shows the 'MPI/PROFIBUS' configuration window with the following settings:

- Baudrate: 187K5
- höchste Stationsadresse: 126
- lokale Teilnehmeradresse: 9
- Profil: MPI
- stärkere Busanschaltung: AUS

A 'Speichern' button is visible at the bottom left.

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.

The screenshot shows the 'S7_gateway' configuration window with a table of gateway settings:

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

A 'Speichern' button is visible at the bottom left.

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".

The screenshot shows the 'RFC1006' configuration window with the following settings:

- Ziel-CPU: 5
- S7-Subnetz-ID: 0000-0000
- Busparameter: Konfig
- Zustand: RFC1006 Aktiv

Below the settings, there is a status message: "0 mit IP: 192.168.001.054 verbunden mit CPU:005" and a list of 7 TCP/IP connection status messages, all indicating "keine TCP/IP-Verbindung nicht im MPI-Bus".

A 'Speichern' button is visible at the bottom left.

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:	<input type="text" value="Test KM"/>
Werkseinstellungen laden:	<input type="button" value="Jetzt laden"/>
Netzwerk	
DHCP aktivieren:	<input type="checkbox"/>
IP-Adresse:	<input type="text" value="192.168.1.151"/>
Subnetzmaske:	<input type="text" value="255.255.255.0"/>
Gateway-Adresse:	<input type="text" value="0.0.0.0"/>
Buseinstellungen	
Bus-Konfig von PC verwenden:	<input type="checkbox"/>
Baudrate:	<input type="text" value="187K5"/>
Höchste Stationsadresse:	<input type="text" value="126"/>
PG/PC ist einziger Master:	<input type="checkbox"/>
Profil:	<input type="text" value="MPI"/>
Lokale Adresse:	<input type="text" value="0"/>
Booteinstellungen	
Profil:	<input type="text" value="Automatik"/>
Für manuelle Profileinstellung	
Baudrate:	<input type="text" value="Automatik"/>
Datenbit:	<input type="text" value="8"/>
Parität:	<input type="text" value="keine"/>
Stopbit:	<input type="text" value="1"/>
Für RFC1006 Verbindungen	
Ziel CPU:	<input type="text" value="5"/>
S7-Subnetz-ID:	<input type="text" value="0000-0000"/>
Busparameter:	<input type="text" value="Konfig"/>
Sonstiges	
Protokollart:	<input type="text" value="Automatik"/>
TS-Adapterfunktionalität:	<input type="checkbox"/>
Fehlerausgabe auf Display:	<input type="checkbox"/>

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".

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

Gateway-Verbindungen

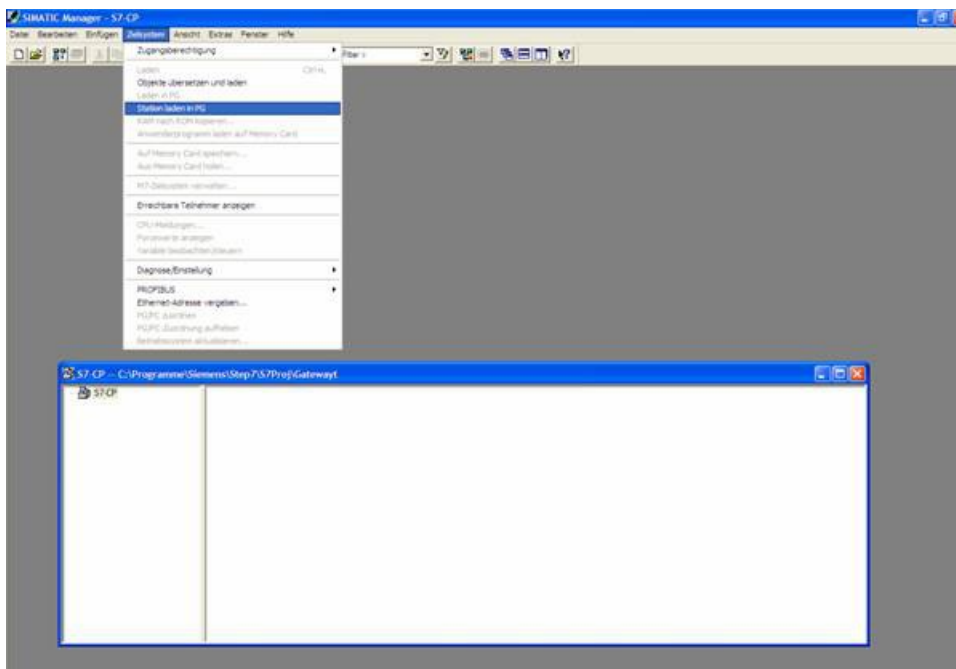
DB-Aktiv	IP-Adresse	TSAP	Pollzeit	CPU	DB	Datenwort
DB-Aktiv	192.168.1.54	1234	500	5	10	0
Aus	255.255.255.255		65535	255	65535	65535
Aus	255.255.255.255		65535	255	65535	65535
Aus	255.255.255.255		65535	255	65535	65535
Aus	255.255.255.255		65535	255	65535	65535
Aus	255.255.255.255		65535	255	65535	65535
Aus	255.255.255.255		65535	255	65535	65535
Aus	255.255.255.255		65535	255	65535	65535
Aus	255.255.255.255		65535	255	65535	65535

Speichern

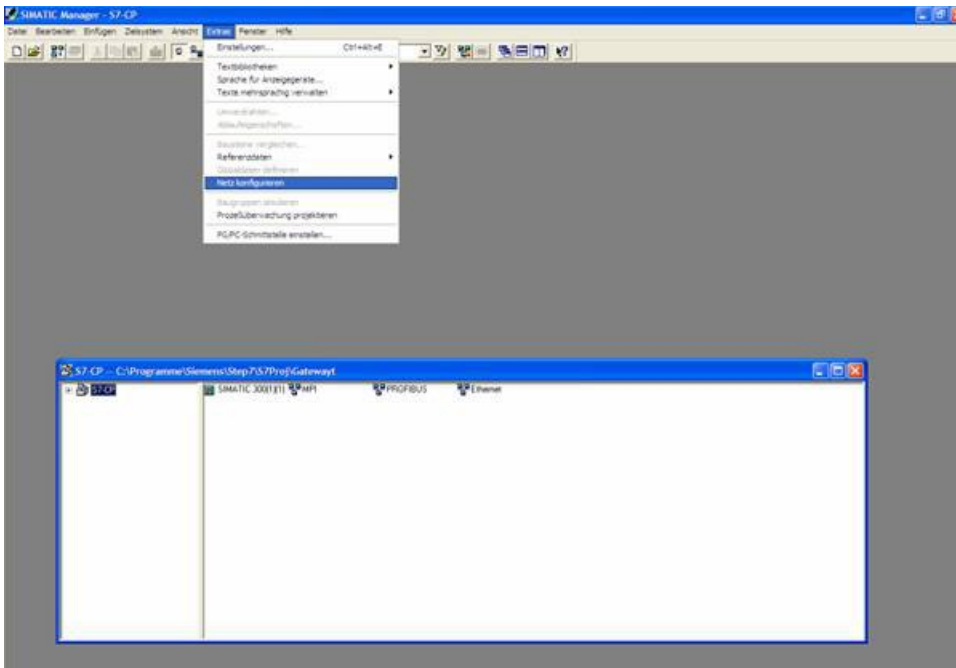
The final step is to configure the gateway. Here you have to set "Connection Type" to "DB - active" and at (the partner device" passive) "Station Number" you must enter the number of your PLC. Now you should decide which is the configuration data block in your PLC and from which data word. The IP - address 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

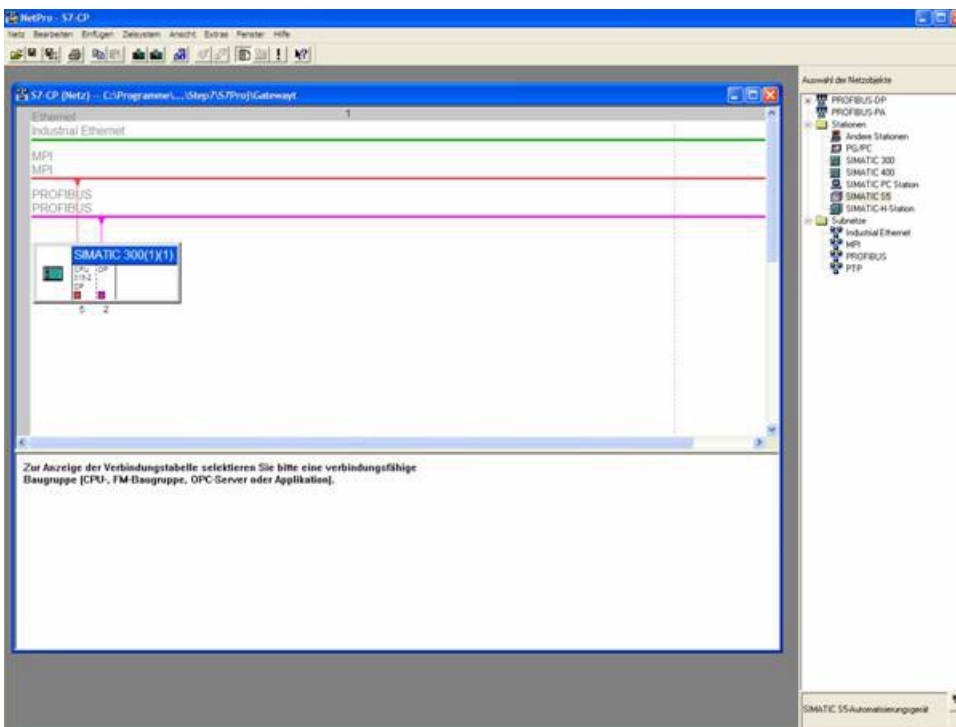
1. Start your programming software and load your station in the software.



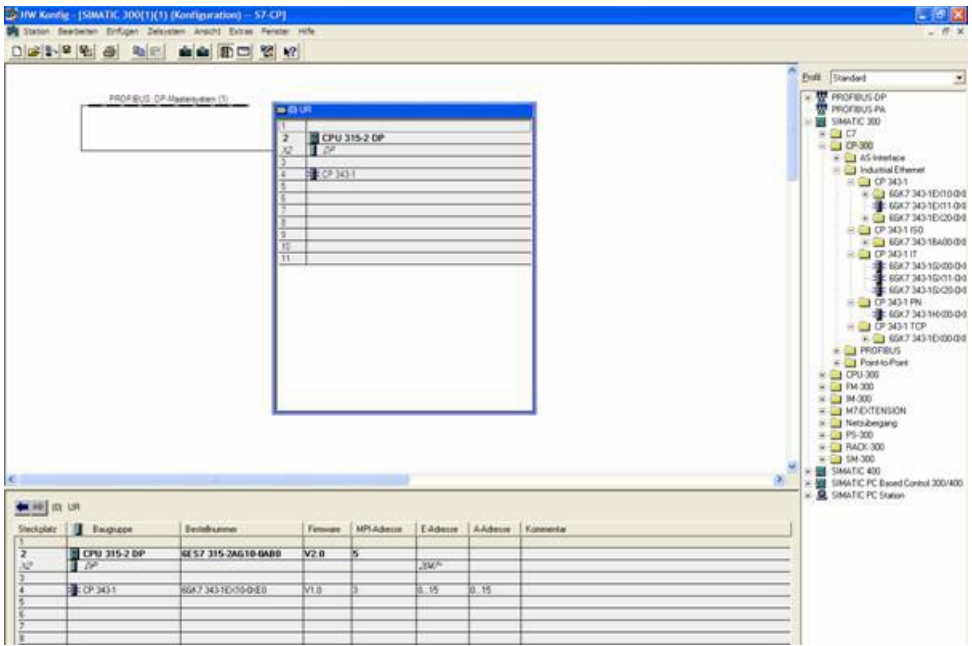
2. Now open the "NetPro" window over "Extras" and "Configure Network", in which you can set up your stations and subnets.



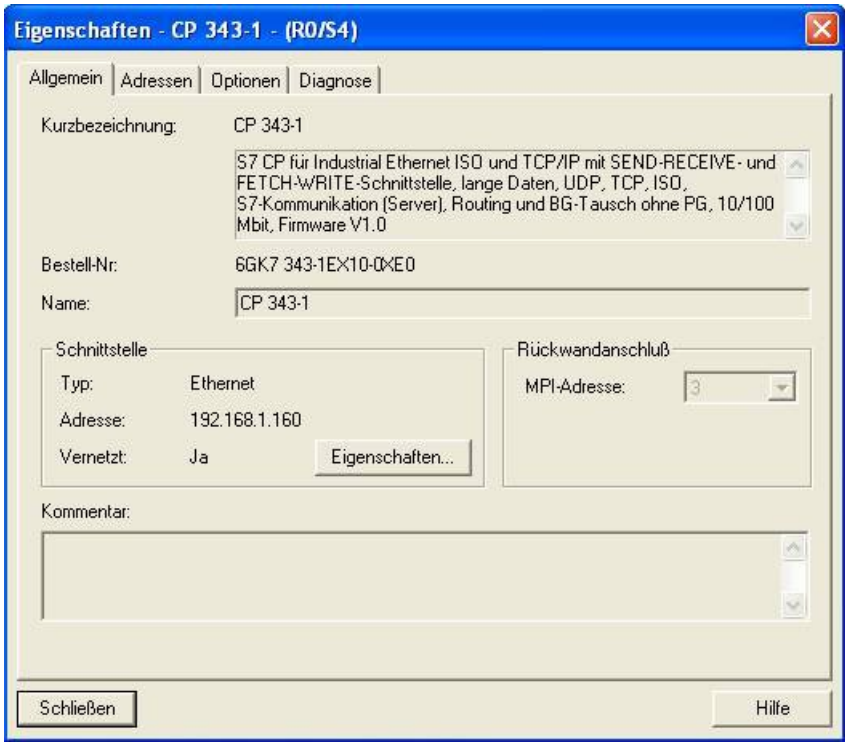
3. If you now double clicking on your configured S7, the "Configure Hardware" opens.

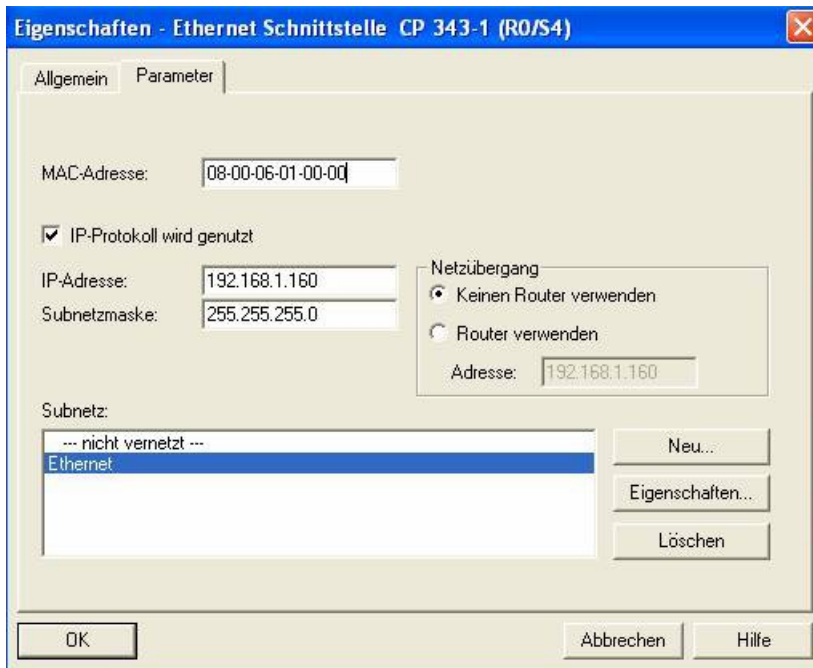


4. In the "Configure Hardware" you can select the right in the library your CP from the list and paste it into your rack from slot 4. Save and translate your settings and close the "Configure Hardware".

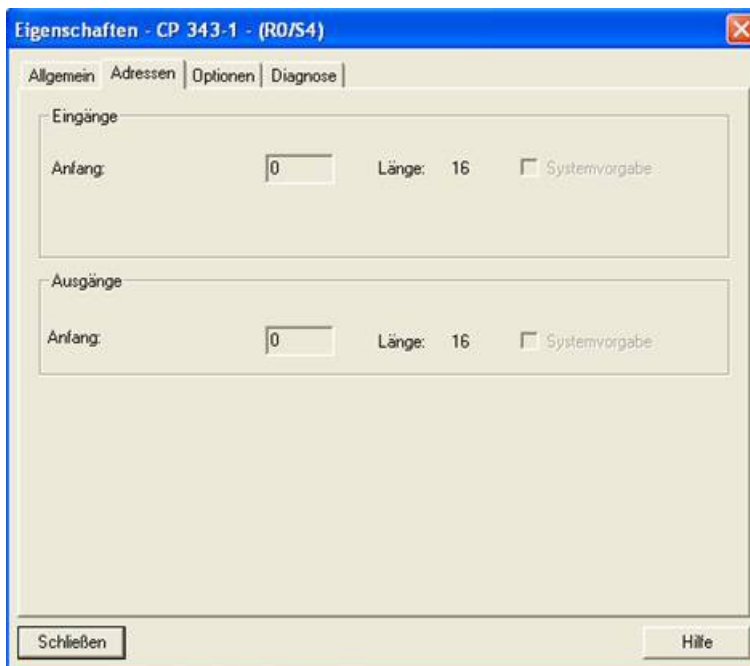


5. Now open the object properties by right-clicking on your configured CP. Under "General", you can now connect these to the Ethernet network under interfaces and assign an IP to him.

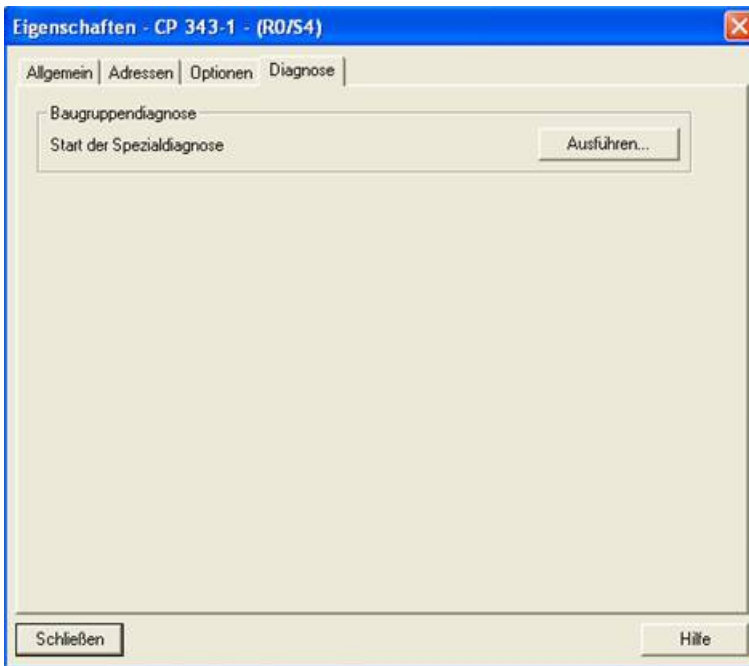




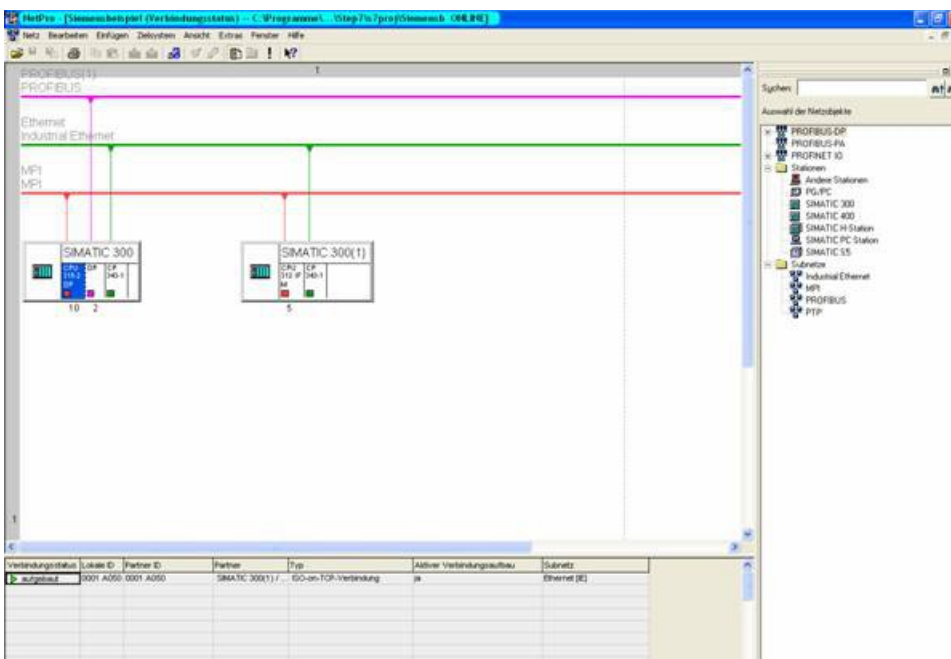
6. In the "Address" you can now determine the "beginning" and the "length" of the inputs and outputs.



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.

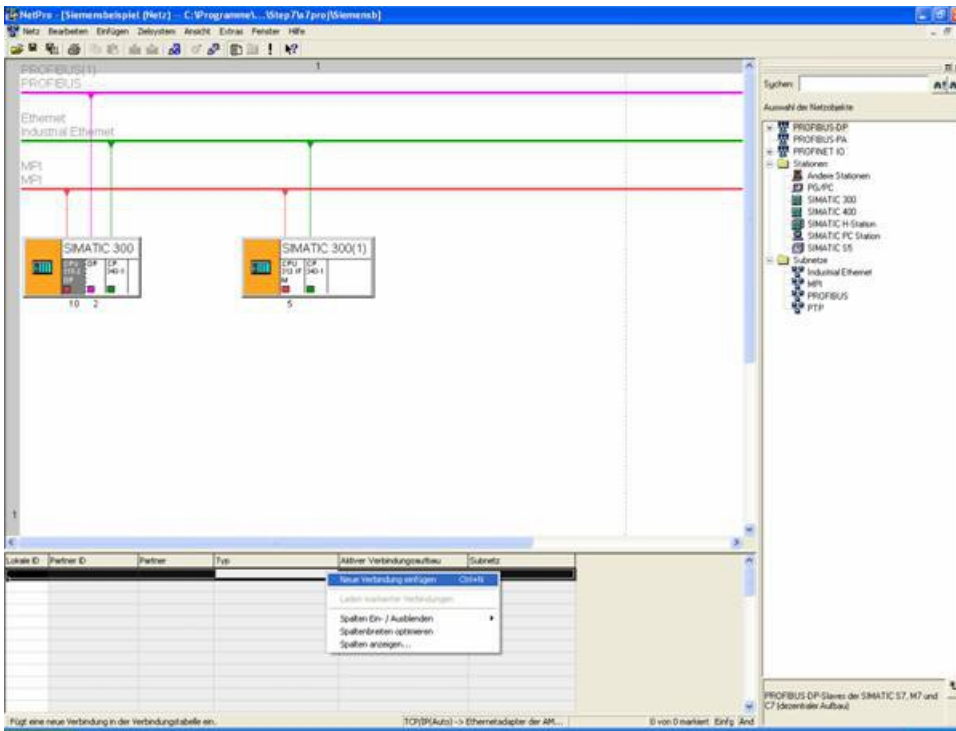


8. Now it is time for your partner to configure S7 - PLC with S7 - LAN gateway in which you selecting from the right library and double-click to create, like your first S7 PLC.



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.

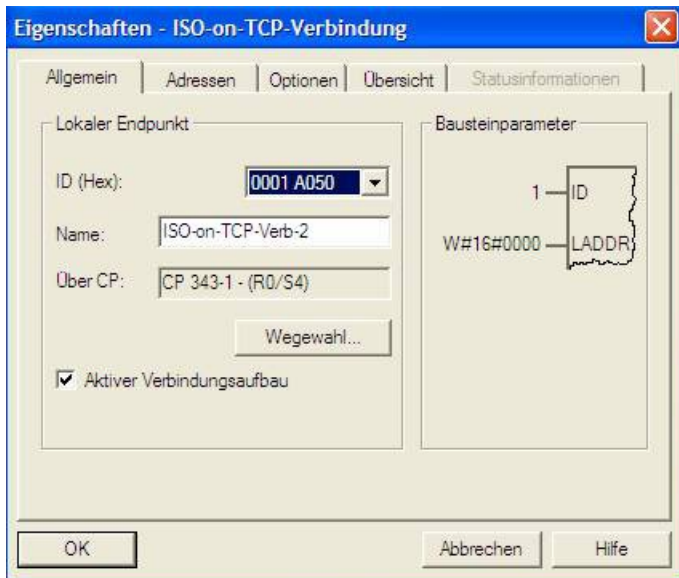
10. Now mark your CPU in your first have configured S7 - PLC by clicking. Now you can generate a new connection by right-clicking below in the connection table.



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 configured, 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"
```

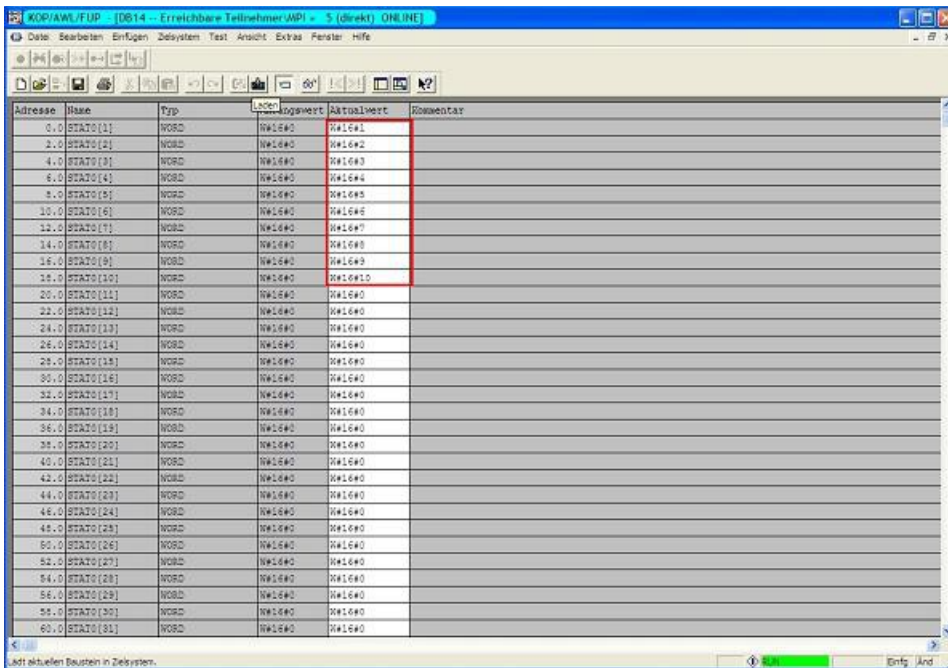
```
ID       :   =   1
LADDR   :   =   W#16#0
RECV    :   =   P#DB10.DBX100.0 BYTE 20
NDR     :   =   M20.0
ERROR   :   =   M20.1
STATUS  :   =   MW21
LEN     :   =   MW23
```

```
O                M 20.0
O                M 20.1
S                M 0.0
```

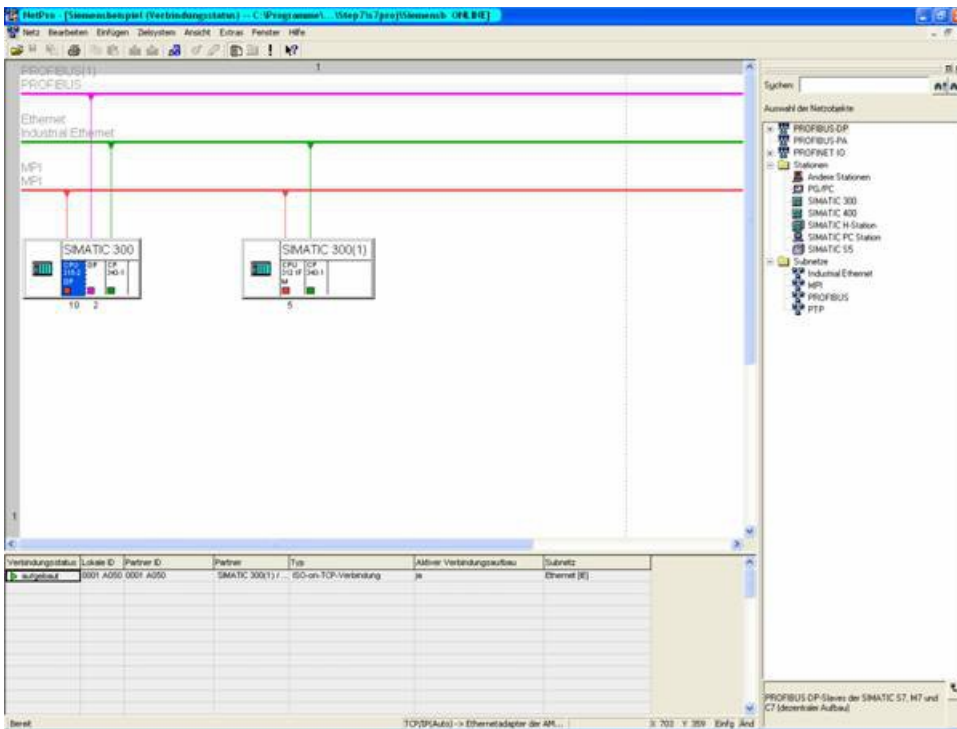
13.4.5 Test of the structure

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.

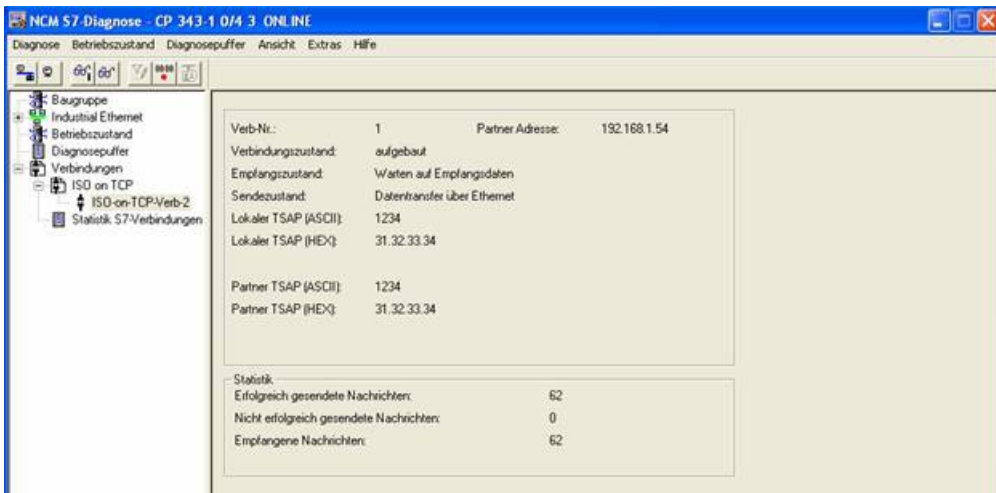
e.g.: (1; 2; 3; 4; 5; 6; 7; 8; 9; 10)



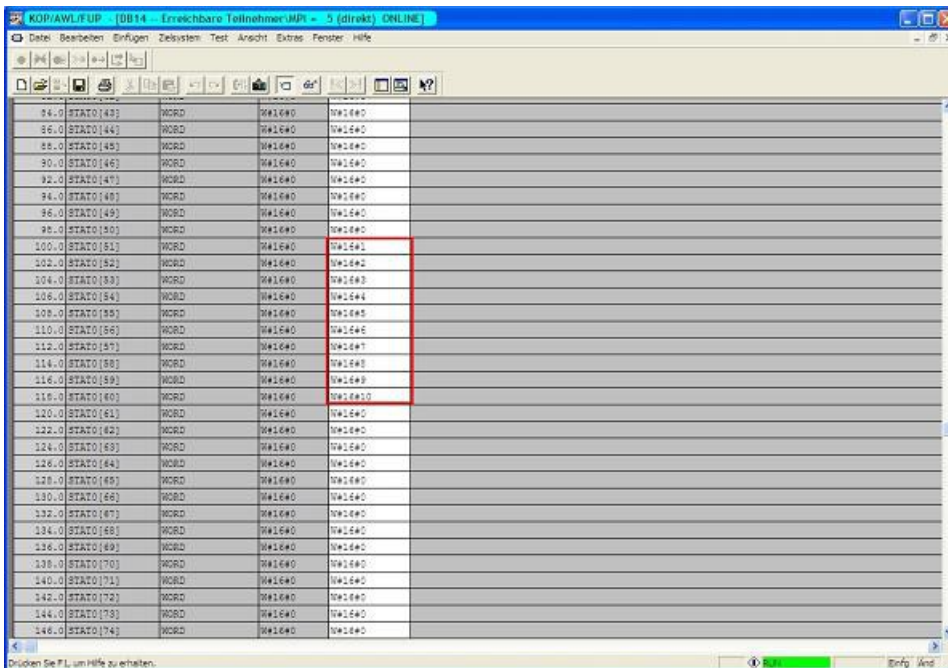
2. Save the changes in your DB. Now open the "NetPro" window again and select your PLC CPU (with CP). Now select the "Connection Status". Now should be established the connecting state below in your connection



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 configured 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.