MPI/PPI user manual

(english)

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MPI/PPI

1 Description

The MPI/PPI-cable connects the programming device or the computer with the MPI-interface of an S7-300/400 or with the PPI-interface of an S7-200 over the serial interface (COM-Port). The cable recognizes automatically while attach on it on the PLC, which PLC-type is connected. At the first access from the PD´s on the cable it recognizes the baud rate for communication with the PLC. With the programming device PG-2000 or S7-for-windows the MPI/PPI-cable works up to 115.2 kbaud on the computer side.
Here it can communicate with each member which is connected to the bus or even with the backplane bus. It is the best to work over the S7-project.

The MPI/PPI-cable supplies itself from the PLC and didn´t need a foreign supply. All power supplies are galvanic seperated. To reach high distance to an PLC with the MPI/PPI-cable you need the MPI-NETZ-adapter to feed the cable with the 24VDC supply voltage.

2 System requirements

2.1 Operating system (s)

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

2.2 Software

- PLC - programming software (eg PG2000, Step © 7, S7 for Windows, Microwin)

2.3 Hardware

- 9pin. or 25 pins. COM interface
- 24V power supply (MPI or PPI interface)

3 Installation

3.1 Hardware

MPI/PPI standard mode:
The cable is plugged with the short cable side to the MPI- or PPI-port of the PLC. The MPI/PPI-cable sources itself normally with the 24V of this port and do not need externel voltage. The cable needs everytime a PLC of course the 24V supply or optionally the MPI-Netz-Adapter. The longer cable side has to connect in the COM-port of your PD or PC.

As the cable has supply voltage, you can see in the display the version of the included firmware and start with an internal test of the included parts. After this test the adaptor checks if he is connected to a PLC and tries to recognize the baudrate of the connected bus. In the display of the cable you can see all relevant information.

The cable detects automatically the baudrate parameters to the programming device when the communication starts and will use them.

If your PD or PC has only a COM-port with 25pin, you can use a normal "mouse adapter" or our article number 9359-9 to change the pins from 25 to 9pin.

If you will use the plc-programming-software PG2000 or S7-für-Windows the MPI/PPI-cable will work with 115.2 kBaud on the PC-side.

MPI/PPI as TS-Adapter (TS = Tele Service):
The TS-possibility allows the connection of a modem, to make a connection with a 2nd Modem and a PC to a S7-300/400. The Cable must be connected between the modem (with a special adapter piece, no Gender-Changer) and the PLC.
To work with the MPI-Cable in his TS-function, you must make the following actions:

1) The cable must be configured as a TS-Adapter (instead of „PG“ or „Pg“ the LCD display shows „TS“ or „Ts“). You can turn on/off these function with the free program „MPI cable manager“.

2) The program inside of the cable must have a version greater than V1.45. This version number will be displayed for a short time behind the plugging to a S7 PLC. You can update the cable software with the free program „MPI cable manager“.

3) You need the TeleService-software from Siemens in your PC to work with the cable. The configuration of the cable can be made with the TeleService-software from Siemens or with the „MPI cable manager“.

4) The connection of the modem to the MPI-cable must made with a special adapter plug (no Gender-Changer or so)

Order information for the special adapter:
Adapter for TS-function 9-pol Article-no. 9350-TS

The adapter for the TS-function only works with the MPI/PPI–Cable with the order-number 9350 !

MPI/PPI as HMI-Adapter (HMI = Human Machine Interface):
The HMI-possibility allows the connection of a operator panel (who has not an internal MPI-port, but the HMI-protocol and a RS232-interface) with a S7-300/400. The cable must be connected between the operator panel and the PLC. The HMI-protocol must be a part of the operator panel.

Behind the version V1.45 of the software inside the cable, you can use the cable as a HMI adapter. Some operating panels are made to work with a **Siemens-HMI-Adapter**. The pining to our cable is different. You may turn the wires 2 and 3 in a little adapter. Please look into the handbook of the operator panel what you need for the correct pinning.

4 Control elements

4.1 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 ¾ 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

5 Implementing

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

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

5.1 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.

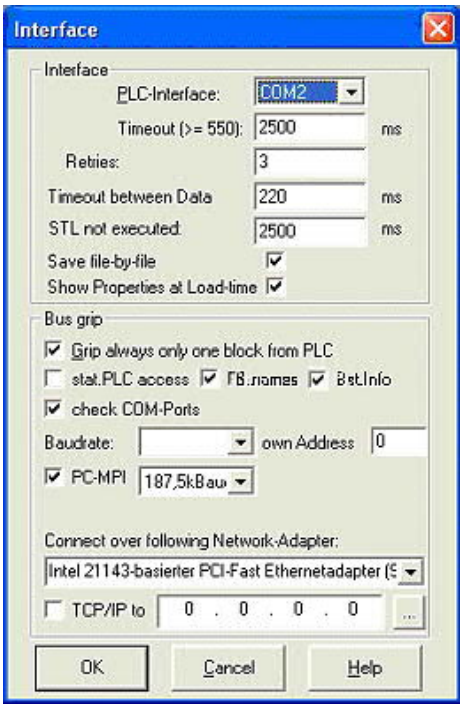
How you have to adjust your programming software is described in the following points:

5.1.1 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 “187,5kBaud“.

5. Save your configuration by pressing “OK“.

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

Click the symbol “Open“ and afterwards press “PLC”.

Alternative you can click:
„File“ => „Open“ => „PLC“

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

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

5.1.2 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“.

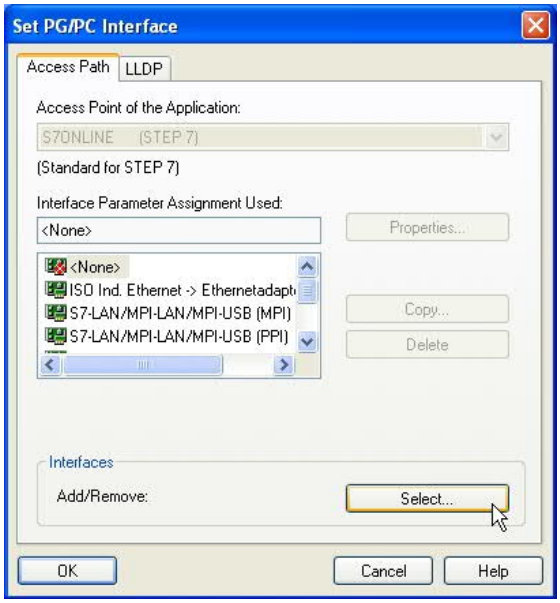
3. A Dialog with a list box named “Interface Parameter Assignment Used:” appears. This box should offer following entries

- 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

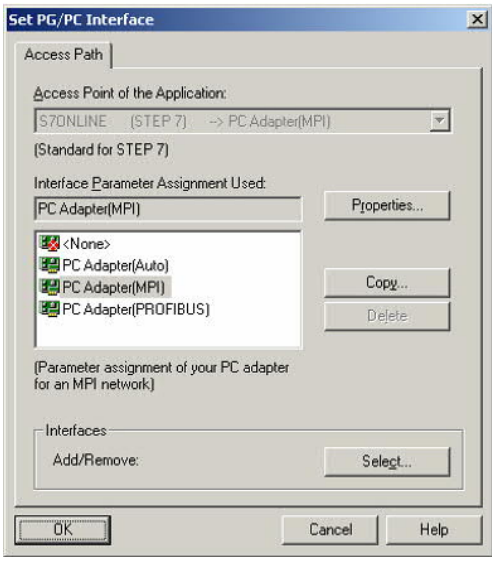
or some “TCP/IP” entries

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.



5.1.2.1 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".

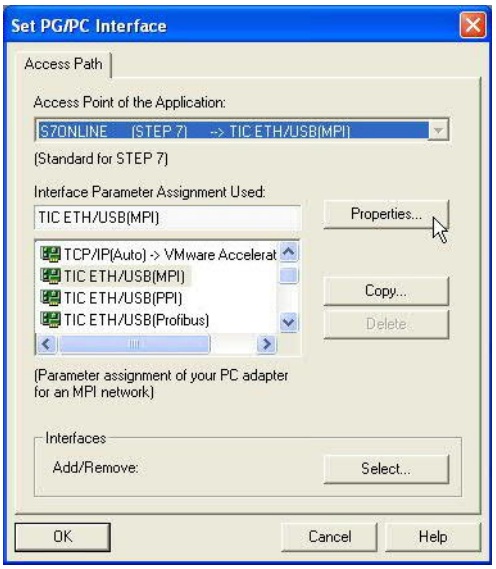
6. After successful installation, click "Close".

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 .

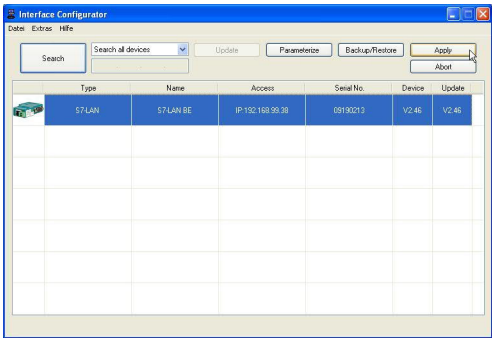
5.1.2.2 MPI setting



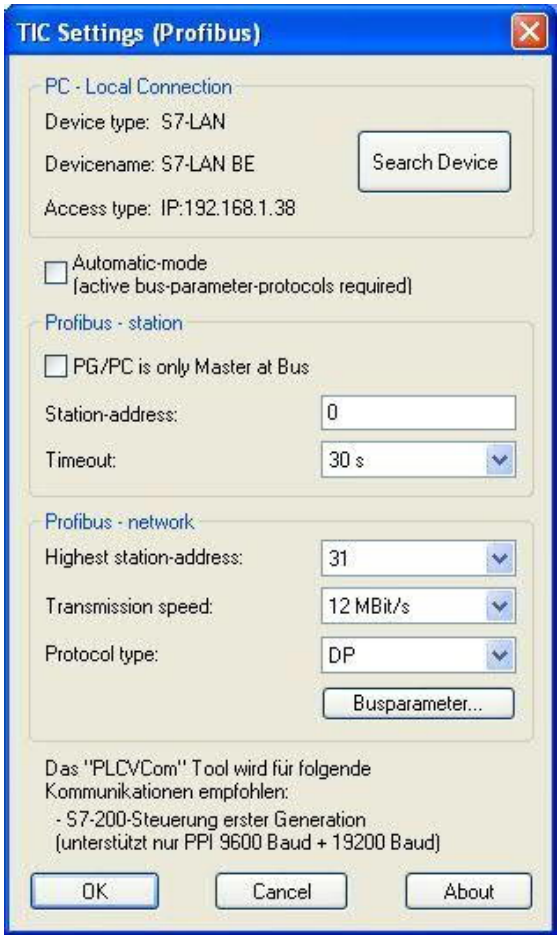
7. Select "TIC ETH/USB(MPI)" and click "Properties".

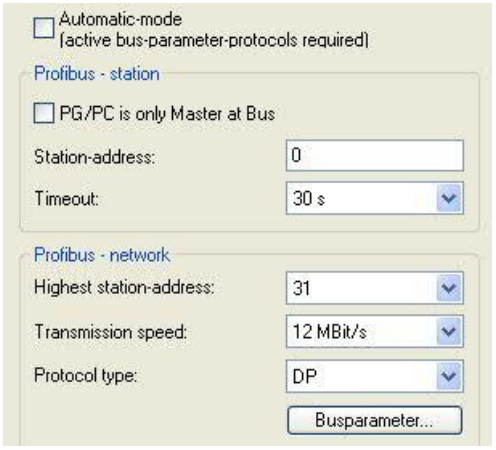
8. Open the properties dialog

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".



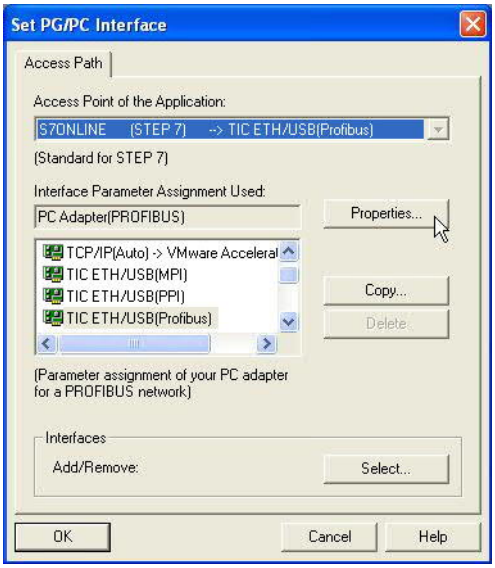
10. Activate the "Automatic-mode" when you will be shure, that the connected PLC sends cyclic bus-parameter-protocols. When not please configure the bus by hand.





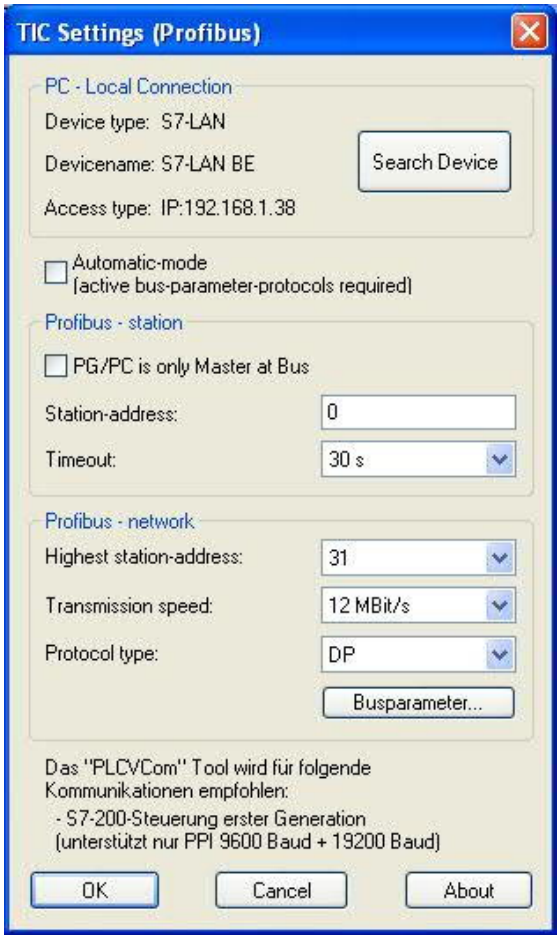
5.1.2.3 Profibus setting

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

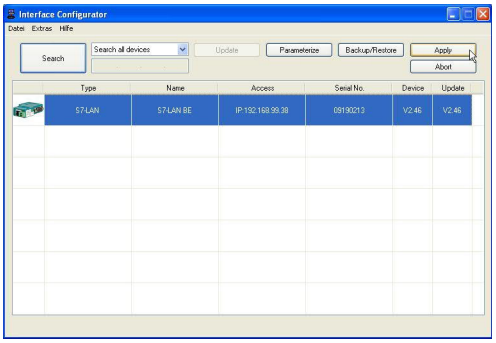


12. Mark the entry „TIC ETH/USB(PROFIBUS)“ and click on „Properties“.

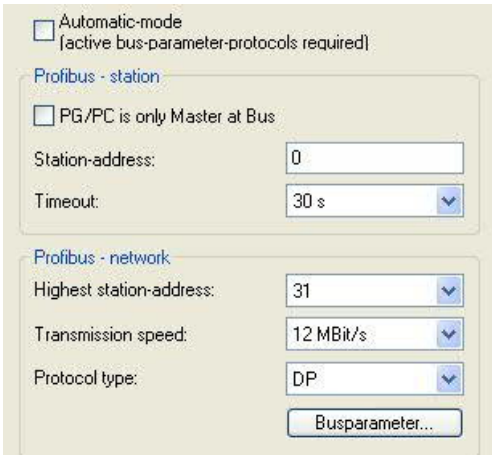
13. Open the properties dialog



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.

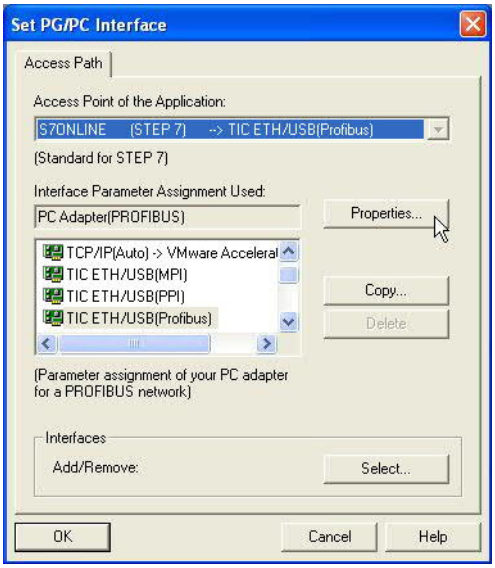


16. Save your configuration with „OK“ and close the „Set PG/PC–interface“ dialog with „OK“.

5.1.2.4 TCP/IP RFC1006 setting

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

5.1.2.5 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

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

Configurate 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.

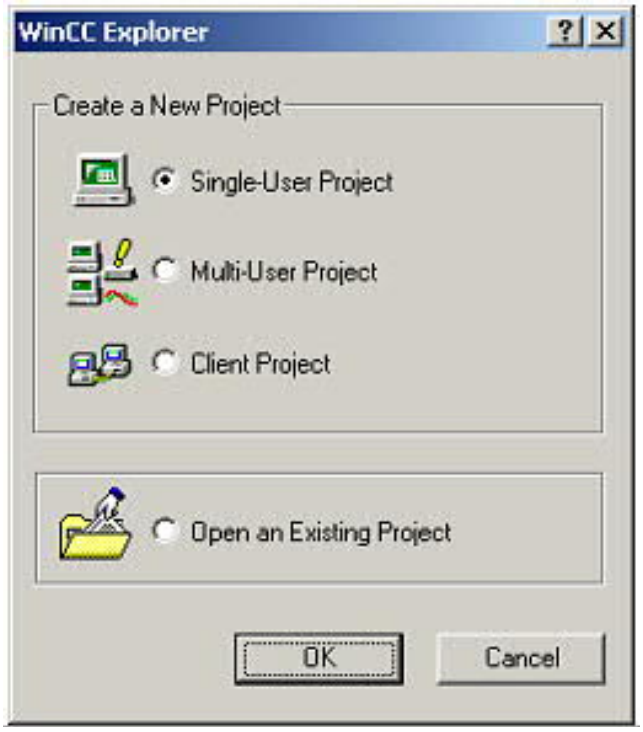
3. In this window you can edit each assembly with his blocks.

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

Configurate 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.

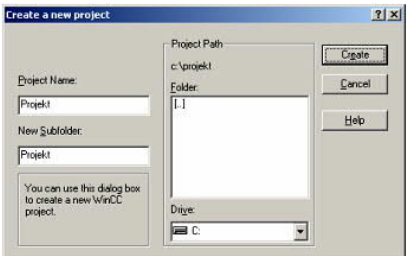


3. The next dialog offers you several project types “Single-User Project”, “Multi-User Project” and “Client Project”.

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

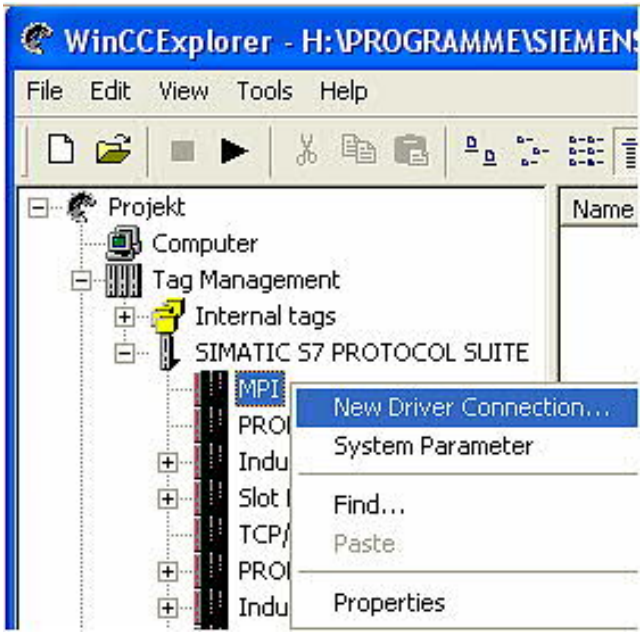
4. “OK” leads you to a new dialog. Type in the “Project Name” and the “Subfolder” of the project path.

The chosen configuration is confirmed with “Create”.



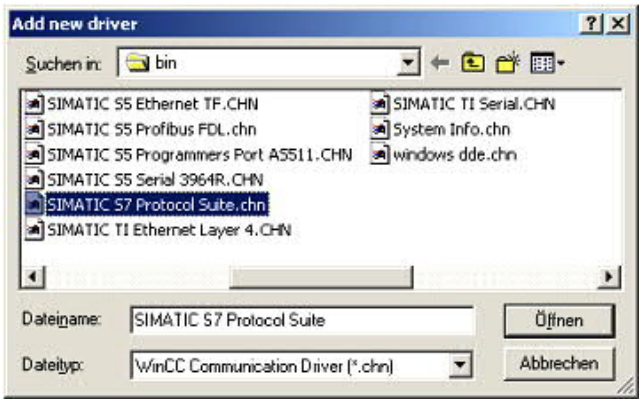
To use one of the other options please go ahead and read in the manual of WinCC software.

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 … “.



7. In the „Add new driver“ dialog select the driver which fits to your PLC

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

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

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

8. You should see now in the Explorer under the branch “Tag Management” the branch “SIMATIC S7 PROTOCOL SUITE”. Expand the branch and many protocols for various compounds will appear.

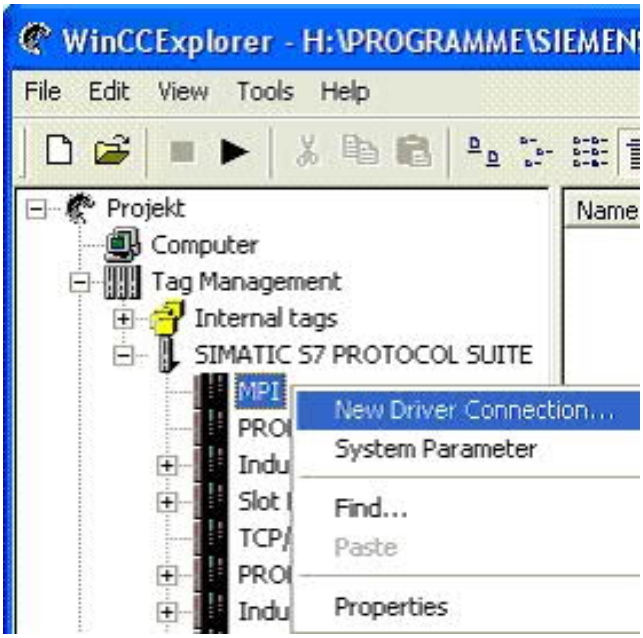
The General way of proceeding a new connection is to:

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

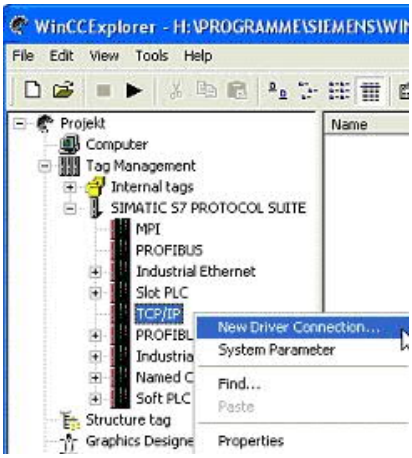
This manual describes the connection configurations:

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

MPI



TCP/IP



5.1.4.1 MPI Configuration

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

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

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

Read further "Communication and fault diagnosis “ .

5.1.4.2 TCP/IP Configuration

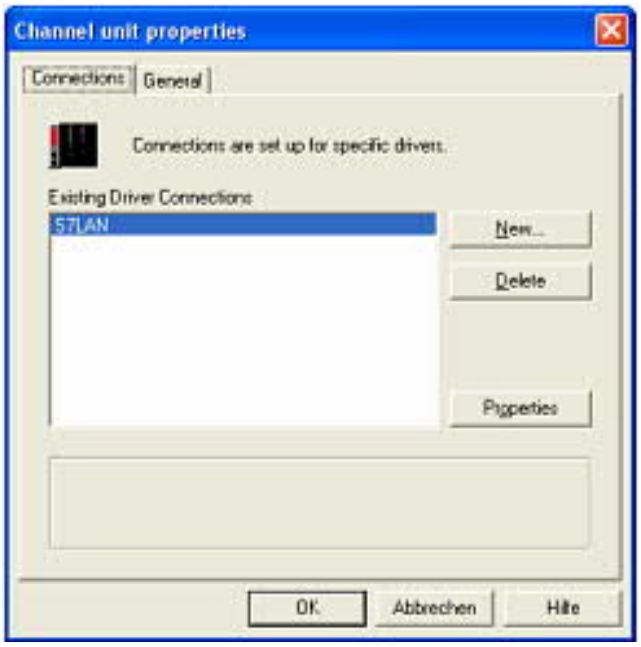
10. A dialog appears where you can configure the connection parameters.

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

Confirm this configuration by clicking “OK”.

Example configuration:
IP - address 192.168.1.55
Rack - Number: 0
Slot - Nr.: 2

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



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

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

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

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

To add a new variable click on „New”.

13. 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 - > „).

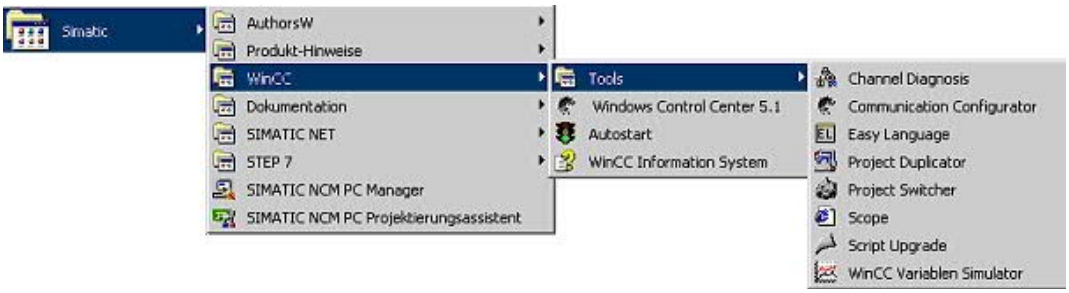
17. Confirm with „OK“.

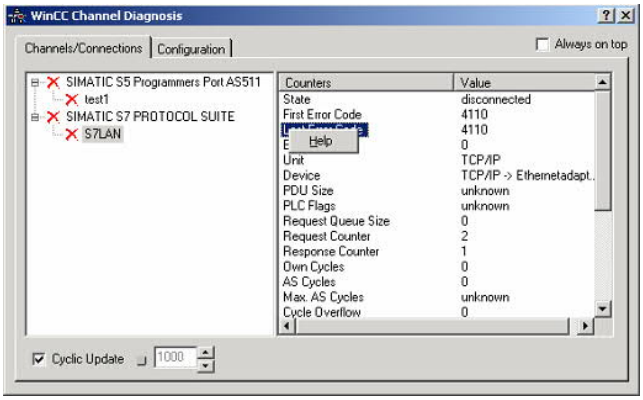
18. Now you are able to start the communication. Stop it by clicking on .

5.1.4.3 Communication and fault diagnosis

To clean up errors faster the WinCC Software offers a tool named "Channel Diagnosis”. This tool analyses all connections from your WinCC software. For demonstration purposes please stop the last started connection from your WinCC explorer.

19. Start the software "Channel Diagnosis“ by using your link in the start menu.

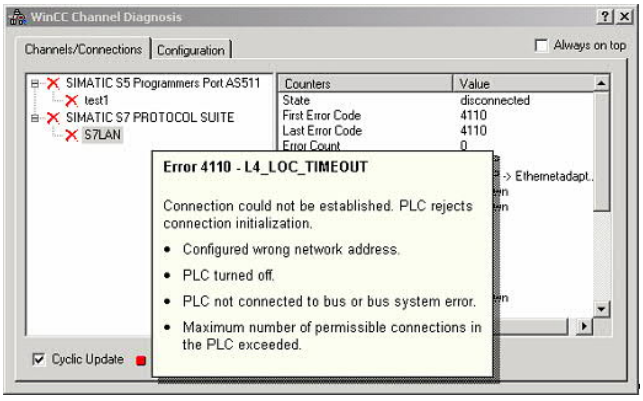




20. The tool could not detect a running connection so it marked the connection/s with a red ‘X’ (registry card "Channels/Connections“).

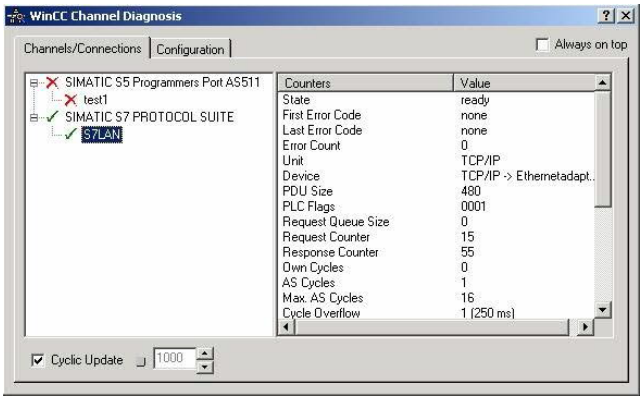
Click on the last created, not active connection (with the red ‘X’) and some informations from the connection will appear in the right part of the dialog.

One of these counters is called "Last Error Code“.



21. If you take a right-click on the error value a window opens with “Help”.

Click on the “Help” window and a yellow window appears (tooltip) with detailed error descriptions.



22. Lets see what happens if the connection runs properly. Start the connection from your WinCC Explorer.

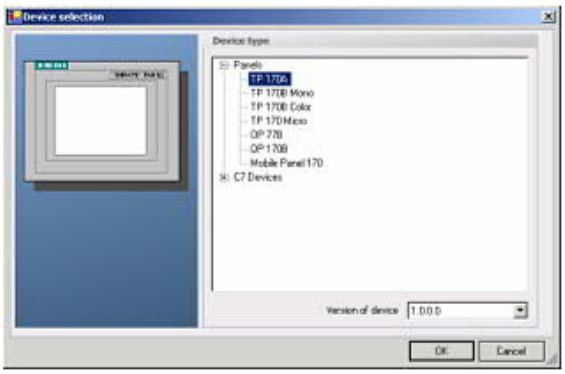
The "Channel Diagnosis“dialog marks the connection with a green hook if everything worked out.

5.1.5 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

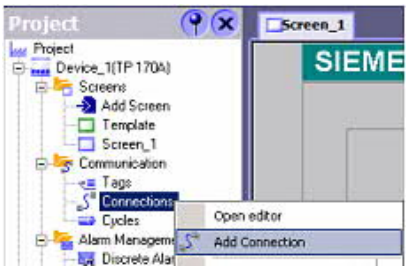
1. Start the WinCC flexible 2004 software by using the desktop link or the program entry in the start menu.

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“.



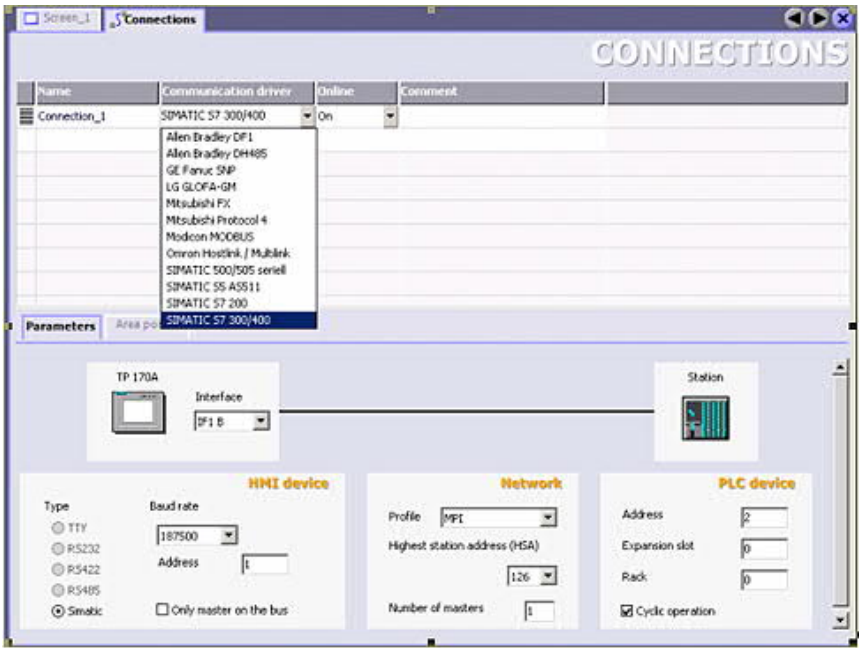
4. After the project has been created right-click in the project window on “Connections“of the sub menu “Communication“.

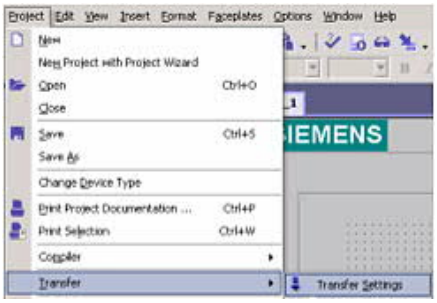
In the context menu click on “Add Connection“.

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“)



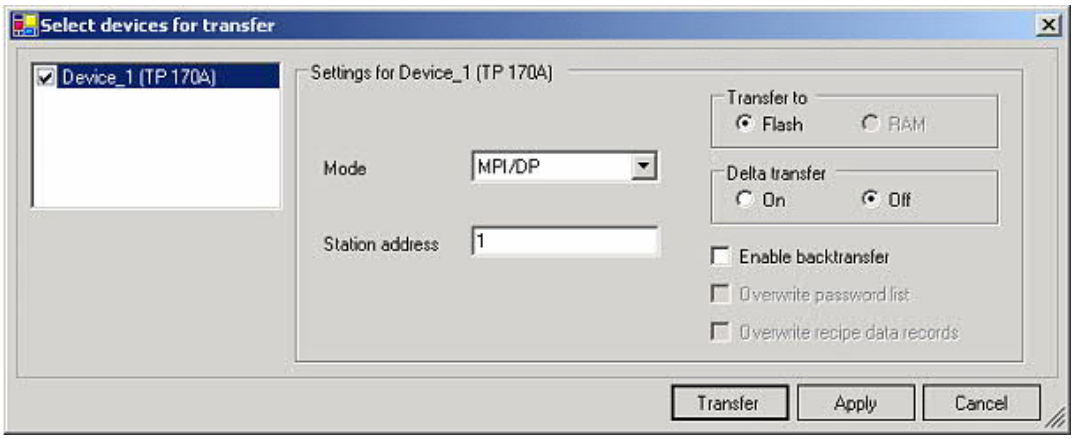


6. Now you can start with your work.

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.

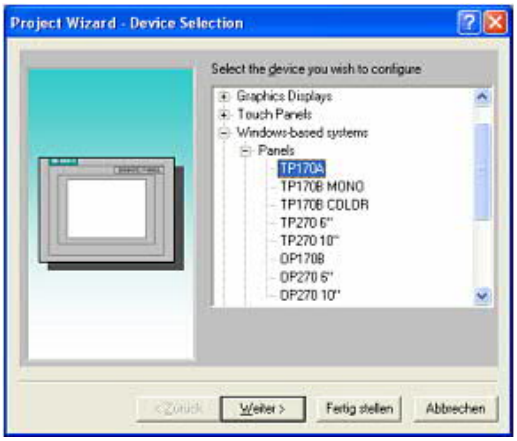
The WinCC flexible software is now able to communicate with your operator panel.

5.1.6 ProTool/Pro v6.0 SP2

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

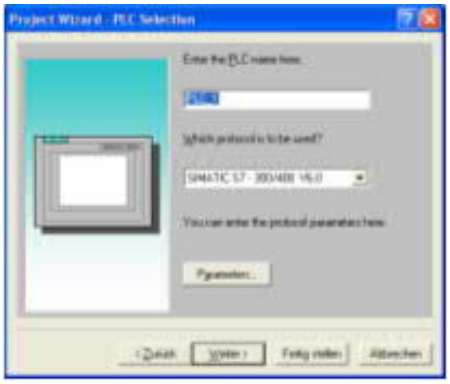
1. Start ProTool/Pro by using the desktop link or program entry in the start menu.

2. Choose from the menu „File“ the sub menu „New“ or click on the right symbol.



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

Mark the used panel (e.g. „TP 170A“)

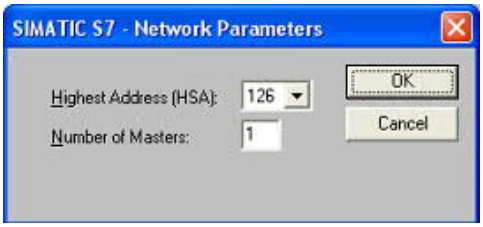


4. „Next“ leads you to a new dialog. Type in the specfic fields the name of the PLC device and choose the used PLC in the driver selection (e.g. „SIMATIC S7 – 300/400 V6.0“).

5. Via „Parameter...“ you are calling an configuration dialog from the chosen PLC driver

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

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



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

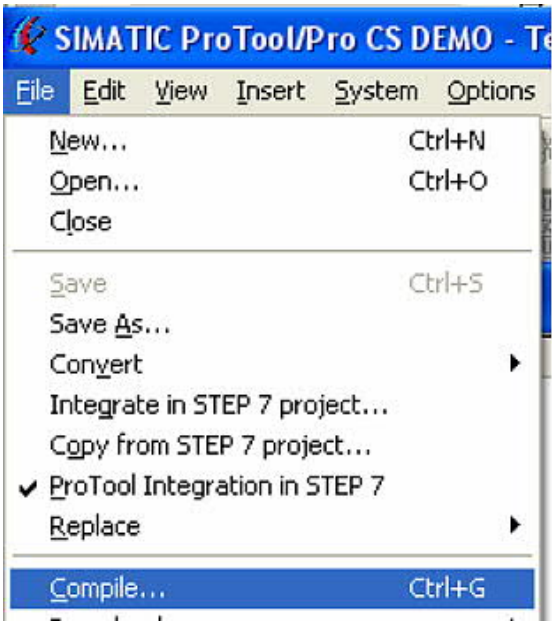
7. confirm with „OK“ until you got back to the „Control Selection“.Go on with „Next“.

8. In the main window start the Transfer Settings dialog by clicking on „File“ „Transfer“ „Settings...“. Choose „MPI / PROFIBUS DP“ from the listbox and type in the station address of the operator panel (e.g. „1“).

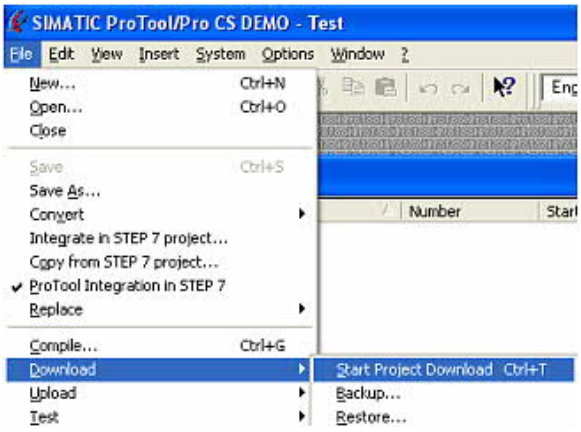
Confirm with „OK“.

and start with your work

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



9. If you want to transfer you project to the panel you have to generate the project first. This can be done with a click on „File“ -„Compile“.



10. To transfer the project just click on „File“ „Download“ „Start Project Download“ or click on the right symbol .

Please wait while the project is transferred.

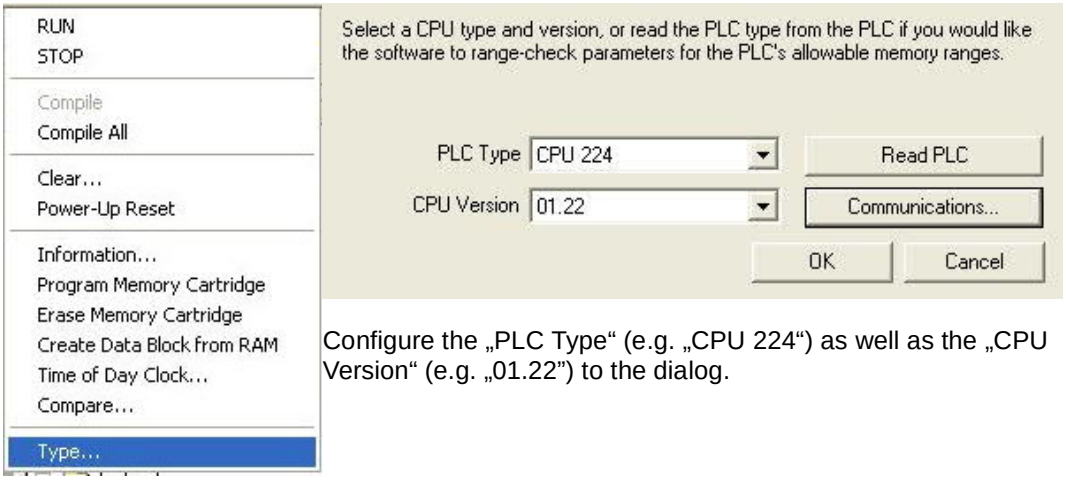
The communication between the operator panel is now established.

5.1.7 Microwin v3.2 (only for S7 200)

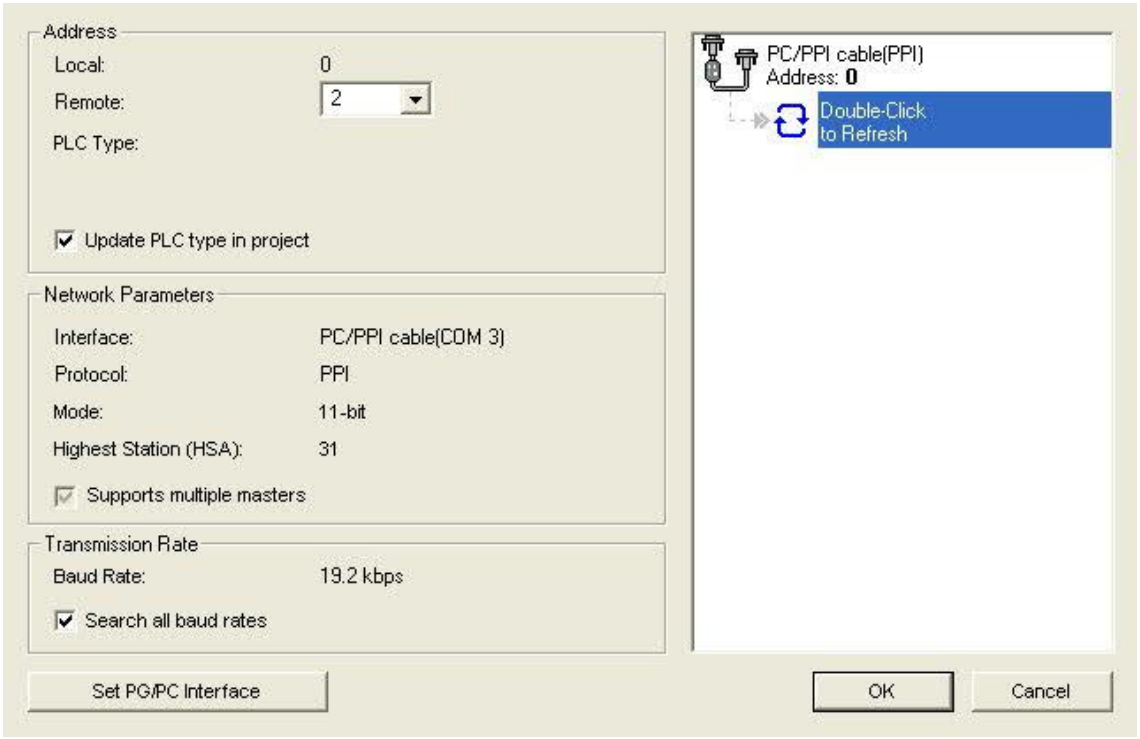
Please be sure that the interface configuration is correct as described in PD/PC-set interface

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.



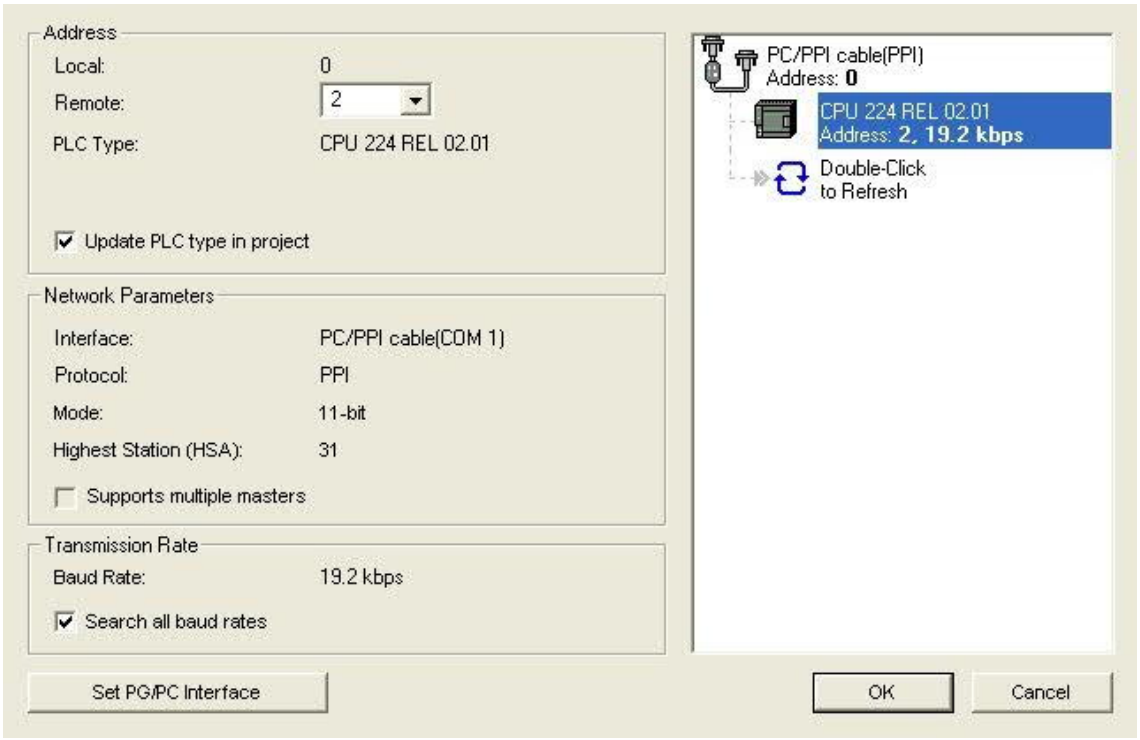
3. Click on „Communications...” to start the next dialog.

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.

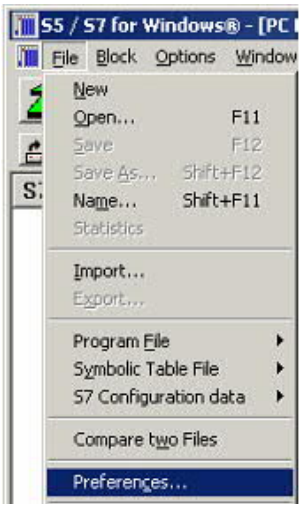
The communication with the PLC ist now established.

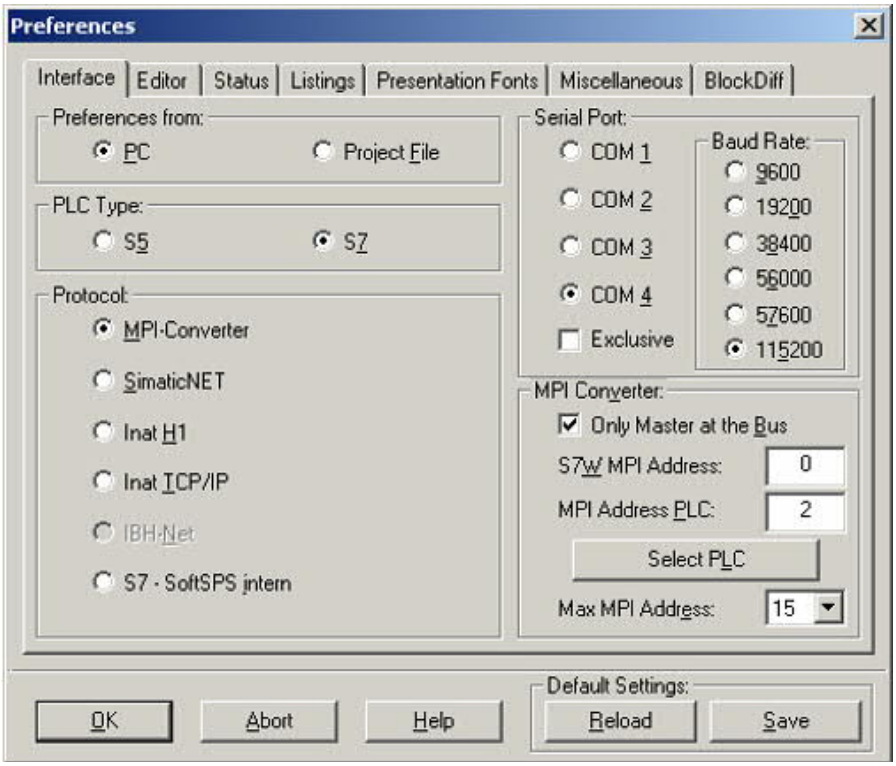
5.1.8 S7 for Windows v5.02

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

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

A new dialog appears which provides to set up a lot of configuration data about the communication with your PLC.





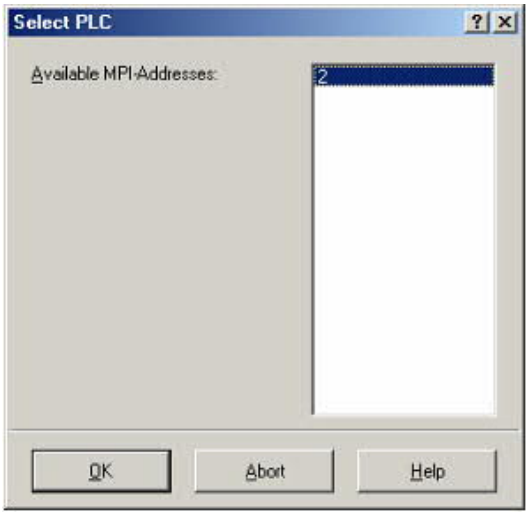
3. Choose the first registry card „Interface“ (standard) and set up the configuration data as descriped below:

=> Area: „Preferences from:“ =>PC
=> Area: „PLC Type:“ => S7
=> Area: „Protocol:“ => MPI - 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.

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 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

6.1 Language selection:

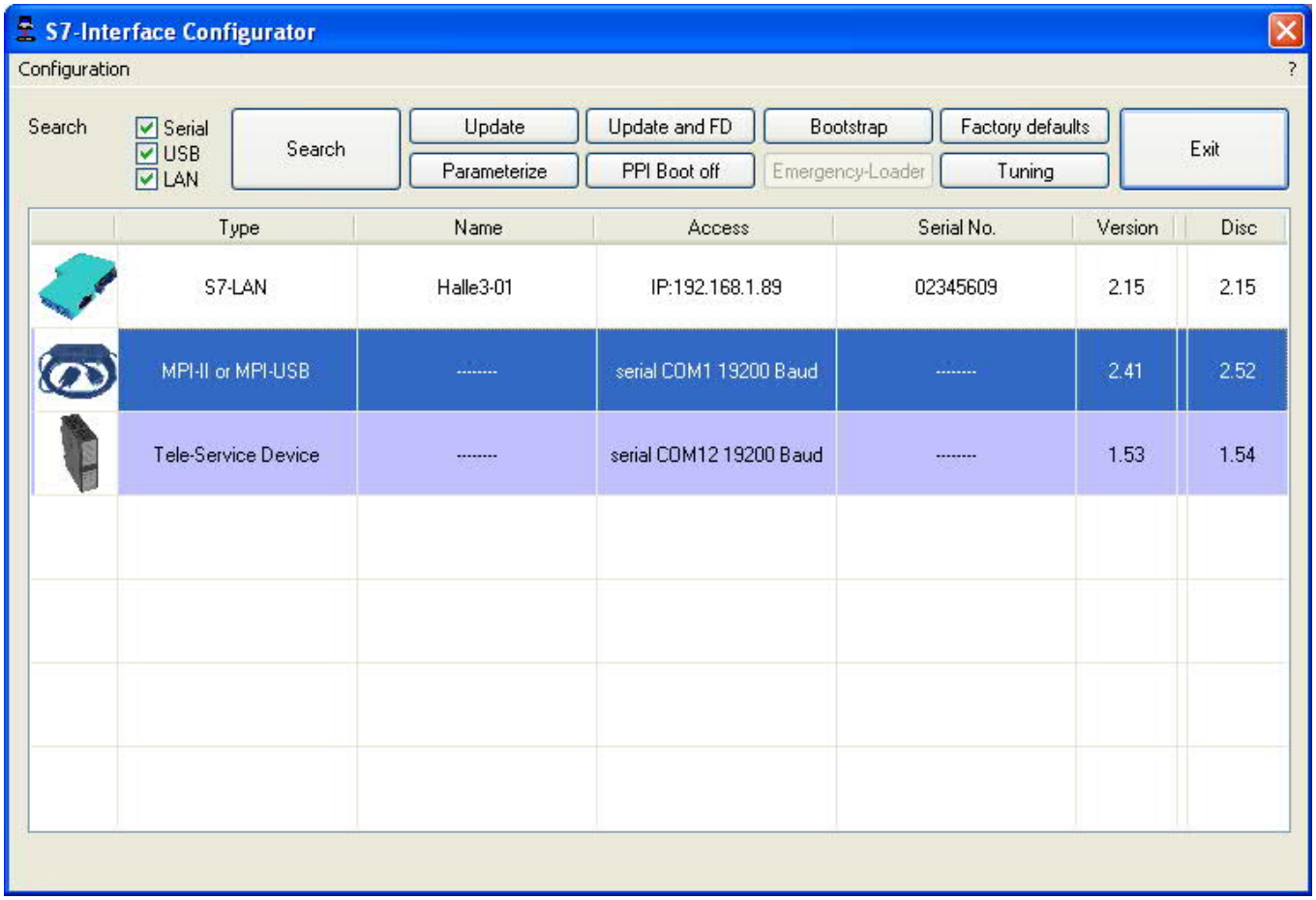
Select the menu **Configuration** to change the language permanently:

6.2 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 occured by accessing the device
- Yellow — Update is in progress for this device
- Dark blue — Selected device

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

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	*Choices:* Bus configuration Parameterize TELEService
S7-USB	Bus configuration
S7-LAN MPI-LAN	*Choices:* Bus configuration Network settings

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

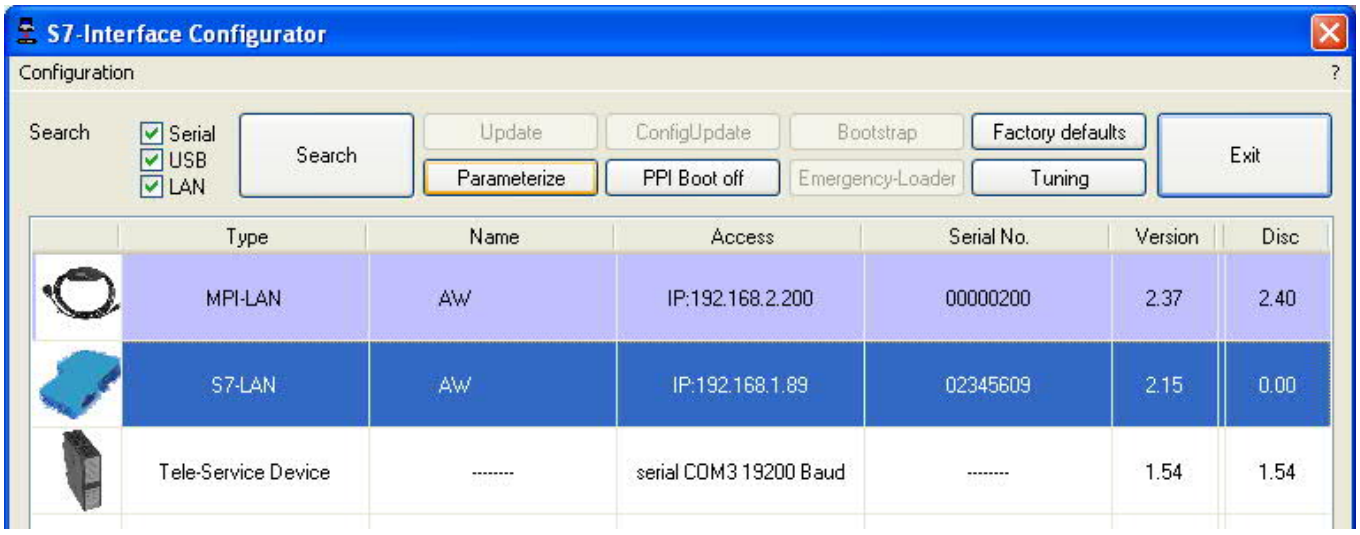
The button **Emergency-Loader** tries to repair LAN products which are in emergency-loader mode.

The button **Tuning** activates a dialog for special parameters.

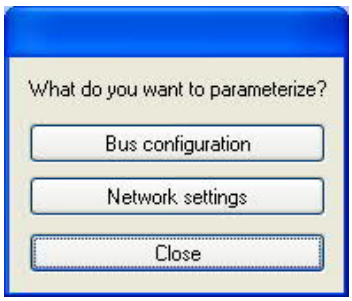
The button **Exit** leaves the application.

6.3 Bus configuration

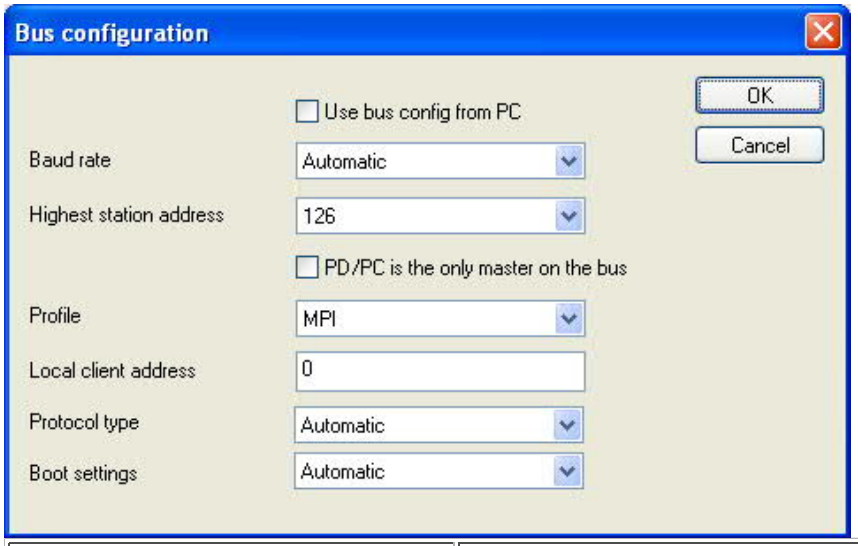
To parameterize the connection to the device, select a device and click "**Parameterize**".



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



Here you can parameterize the following:



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

6.4 Network settings

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

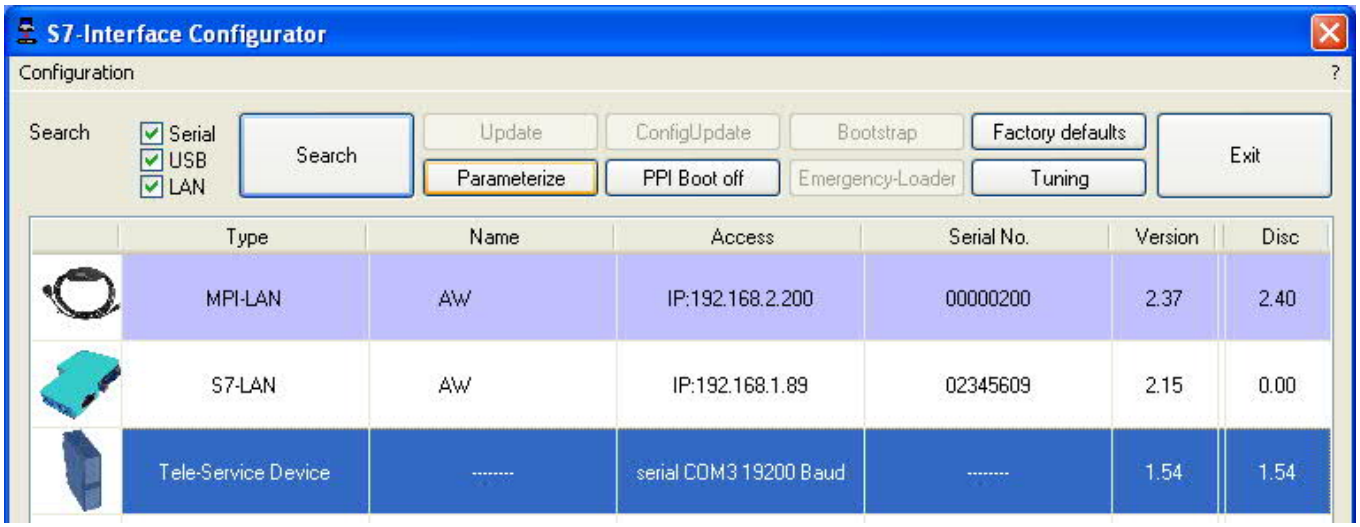
• Factory default	This button sets all over the network reachable devices to factory default.
• DHCP-client active	When set the device acts as DHCP-client.
• IP address	Here you could enter the IP Address over which the device is accessed in the network.
• Subnetmask	Here you could enter the Subnetmask 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:

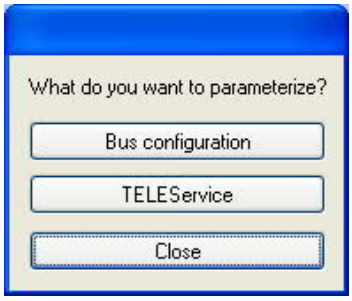
• DHCP-client active	*not set*
• IP Address	192.168.1.56
• Subnetmask	255.255.255.0
• Gateway address	0.0.0.0
• Device name	*empty*

6.5 Parameterize TELEService

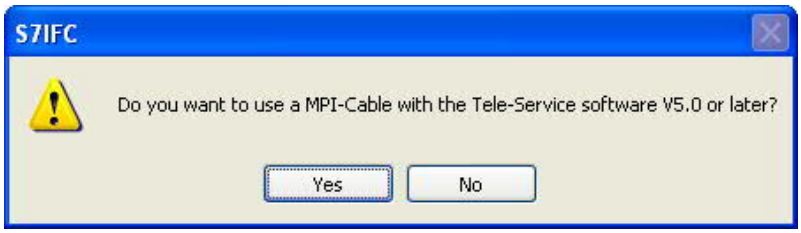
To parameterize the device, first click on the device, after that on "**Parameterize**".



Regarding to the device, you maybe have to click on the **TELEService** button.



After clicking on "**TELEService**" a message will show up:

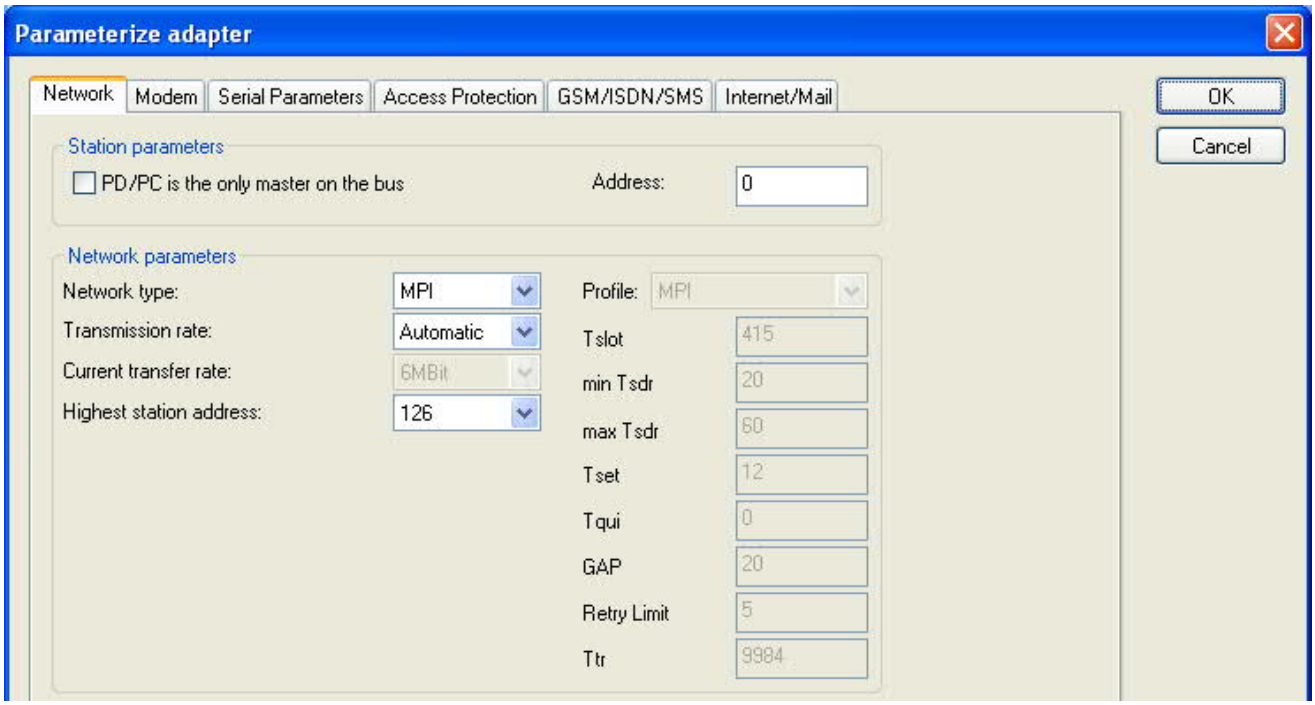


Depending on the version of your TELEService software choose **Yes** or **No**.

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

6.5.1 Index "Network":

Here you can configurate following:



Station related:

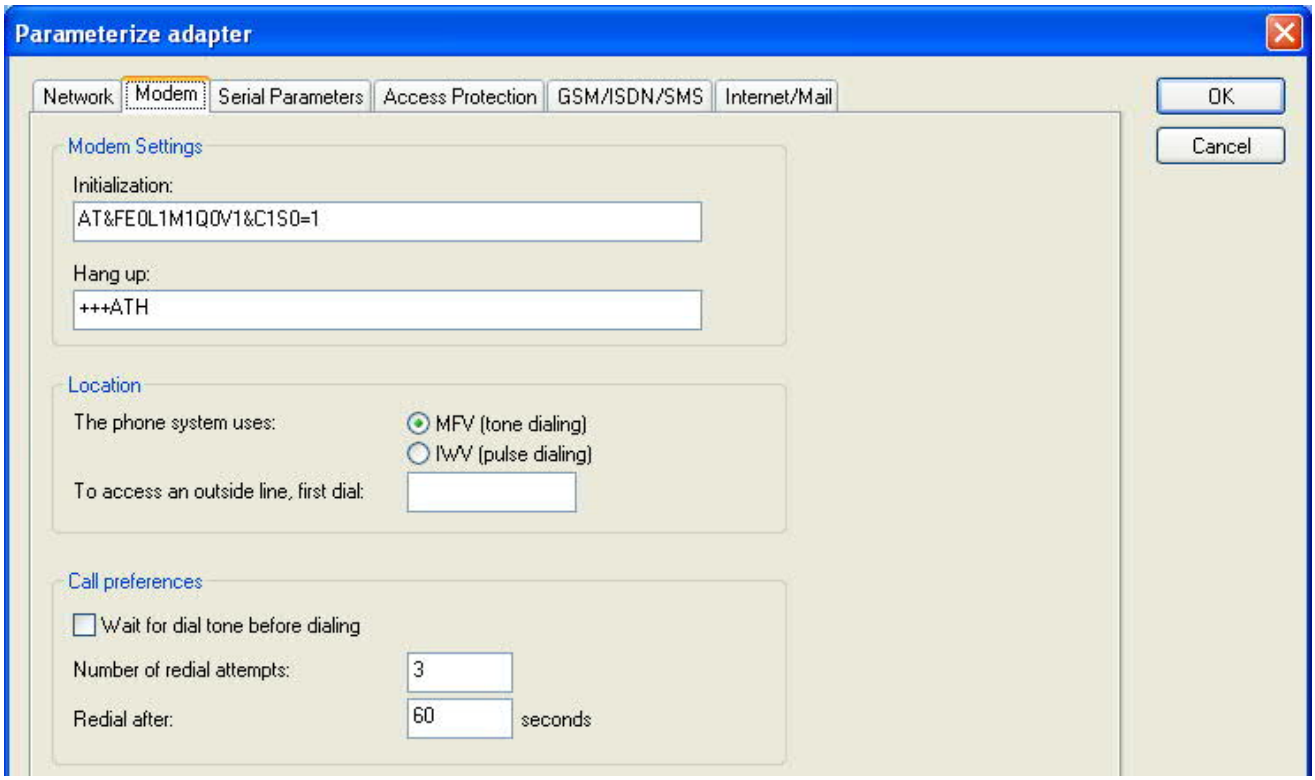
• **PD/PC is the only master on the bus**	The TS-Adapter is the only master on the MPI-bus (adapter must speak to all passive clients)
• **Address**	Which local station-address is used for the TS-Adapter. Please consider that a programming device has normally the number 0, operator panel have 1, CPU's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

Network related:

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

6.5.2 Index "Modem":

In this dialog you could configure the modem related setup.



Modem Settings:

• **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
• **Hang up**	+++	Switch to command mode
	AT	start command
	H	Hang up connection

Location:

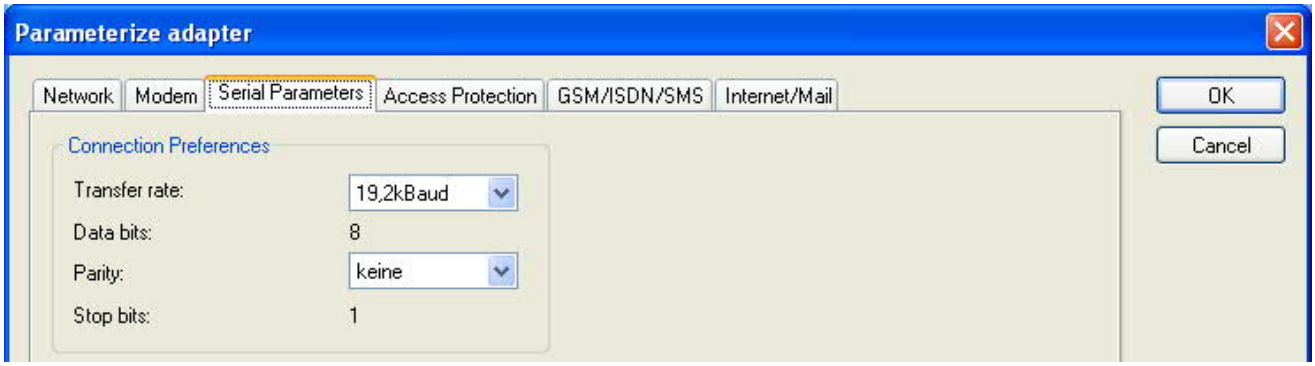
• **The phone system uses**	There are two possible call techniques: MFV tone, the telephone number is transfered by several frequencies IWV pulse, the telephone number is transfered with the amount of several pulses on the line
• **To access an outside line, first dial**	If you need a prefix before your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

Call Preferences:

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

6.5.3 Index "Serial parameter":

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

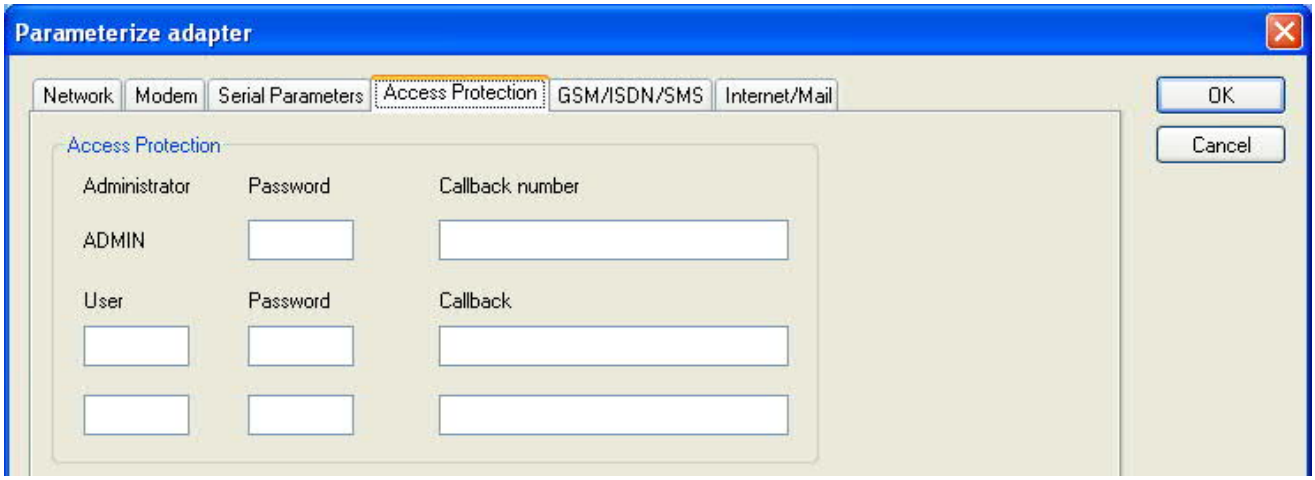


Connection Preferences:

• **Transfer rate**	The transfer-rate could choosen between the follwing 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)

6.5.4 Index "Access Protection":

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



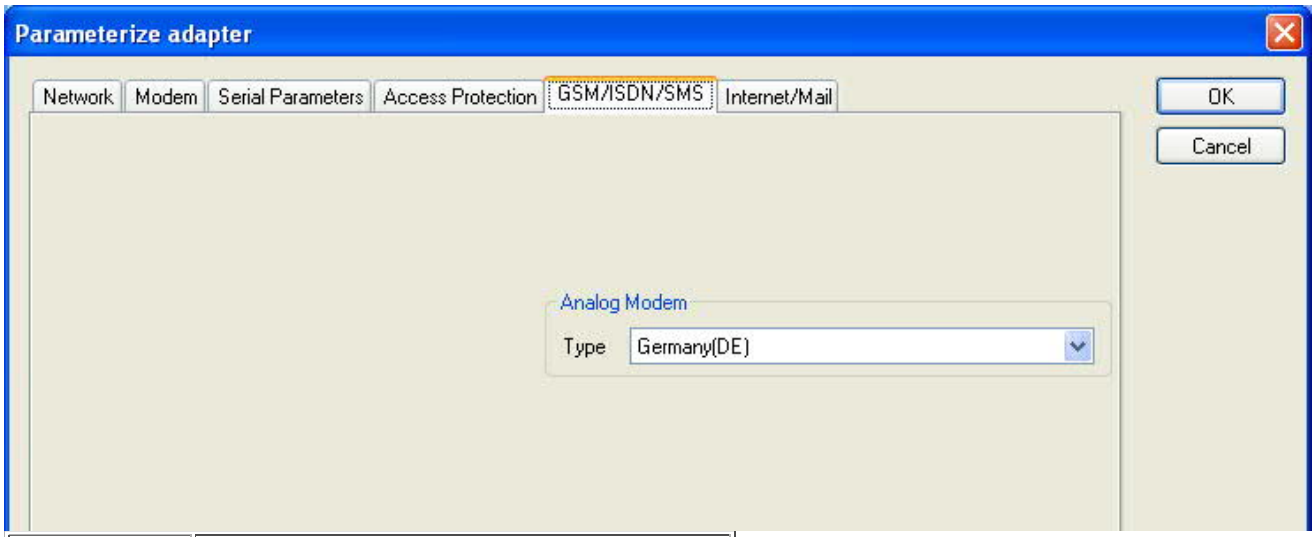
Access Protection:

• The administrator can change the configuration over a telephone line. • The two user accounts can not change the configuration.
• The username is maximal 8 characters long. • Every user and the administrator should use a password which is used to login in the TELEService over a telephone-line.
• After three failed retries the connection is hanged up, so you must call again (not like the original TS-adapter).
• After changing the password for a user/administrator you must re-type it again correctly.
• You can enter a callback number which is used for a callback from the TS-adapter. After you dialed the number of the TS-adapter, you are asked for username and password. In case the username and password is valid, the connection is hang up and the TS-adapter calls back the configured callback number.

6.5.5 Index "GSM/ISDN/SMS":

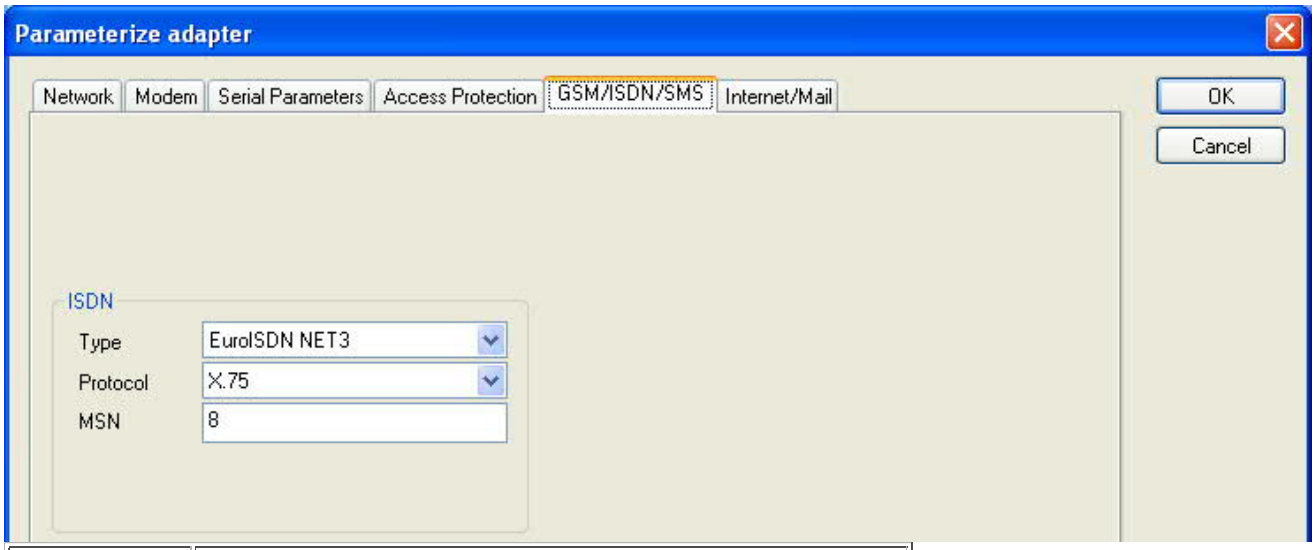
Information about the three different devices:

Analog Modem::



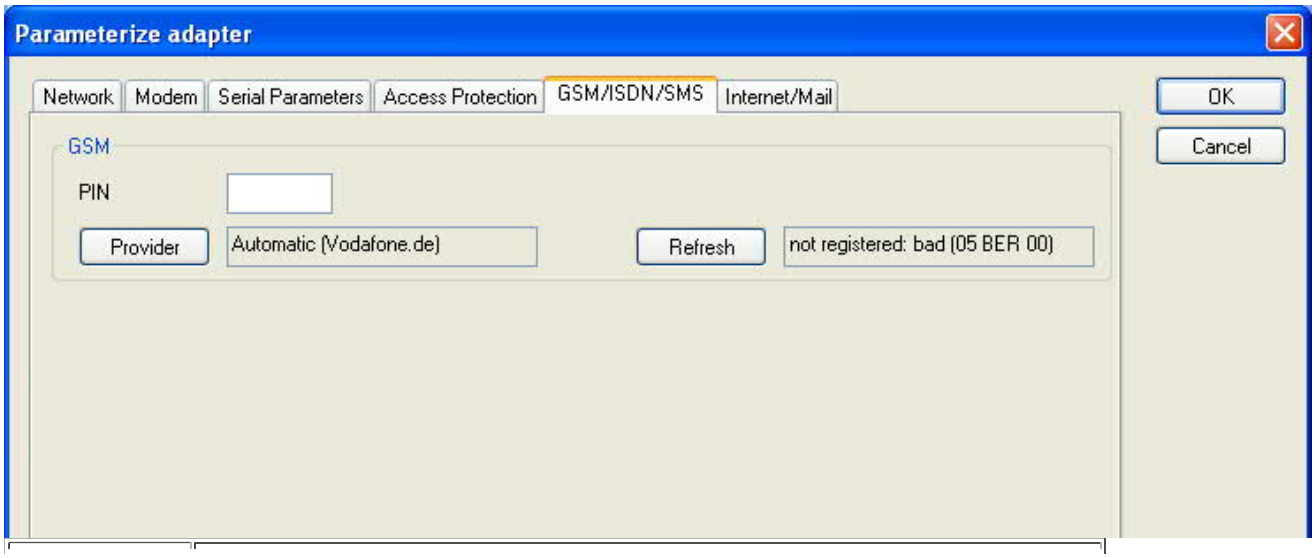
• **Type**	You could choose the location of the modem.

ISDN Modem:



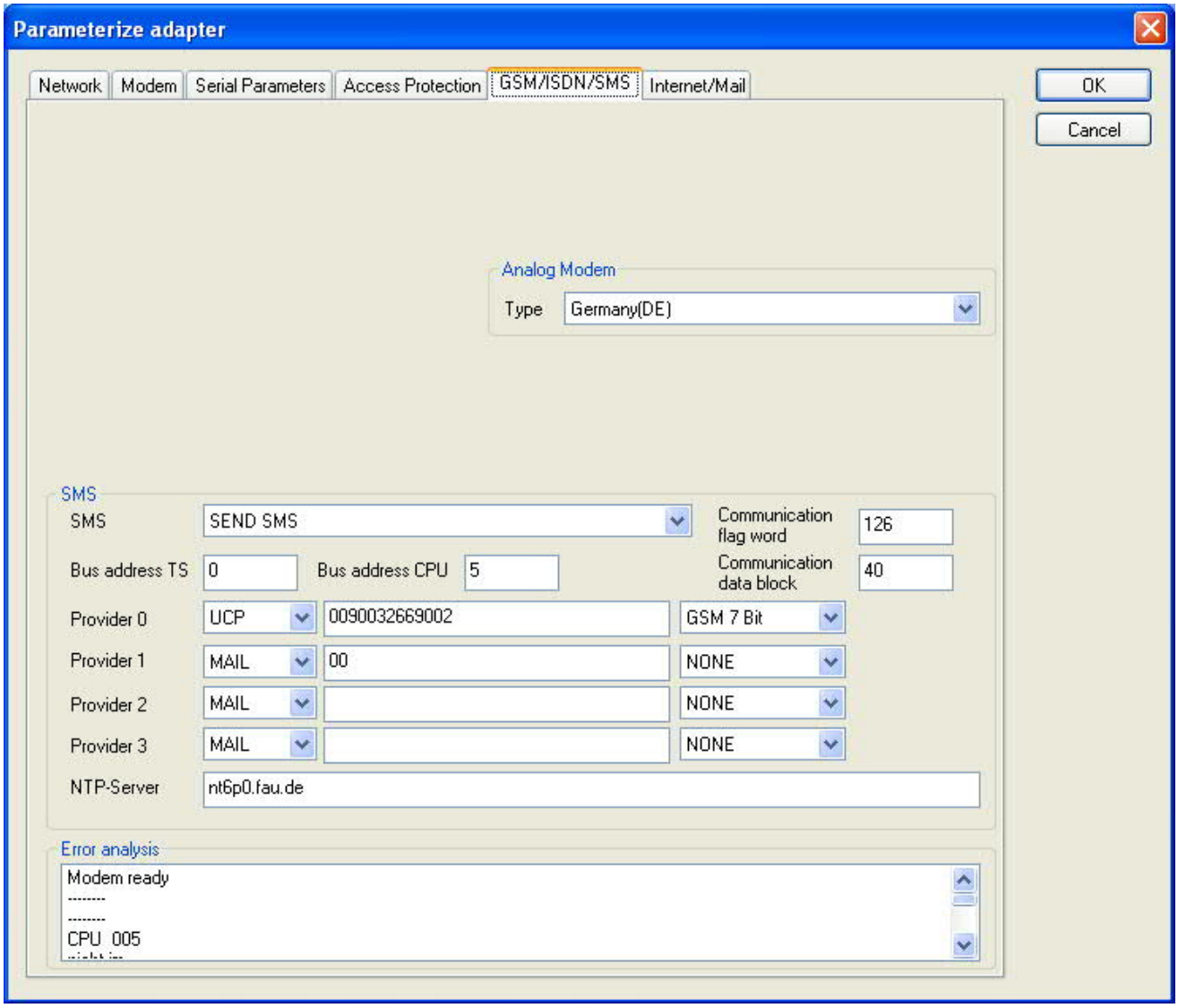
• **Type**	Choose the type of the ISDN network: • AT&T 5ESS • Nothern Telecom DMS-100 • EuroISDN NET3 (Standard) • INS64 • US NI-1 • VN4
• **Protocol**	Choose the transfer protocol type: • Modem like • V.120 • X.75 (Standard) • ML-PPP • SoftBonding • HDLC • CLEAR
• **MSN**	• Multiple Subscriber Number is used for all ISDN channels. • If empty no MSN is used.

GSM Modem:



• **PIN**	• PIN number of the SIM card, up to eight numeric characters (only for TELE-SERVICE GSM).
• **Provider**	• With the button „Provider“ the provider could be choosen. • Read the list of providers could be elapse more than a minute. • In the end the possible provider are listed for selection. With „Automatic“ the GSM-Modem tries to connect automatically to a provider. On the right side of the button, the actual used selection is displayed. **Display Description:** • Automatic: The provider is automatically searched and selected from the GSM-modem. • Manual: The Provider is selected manually from the GSM-Modem • no network registered: No connection to the GSM-network, the receive-quality is too bad • set format: The format of the provider is set • Manual/automatic: The modem tries to select manually the provider, if this fails an automatic search is done • unknown: Unknown response from GSM-Modem
• **Refresh**	• The button „Refresh“ reads the signal strength from the modem, the quality is displayed. **Display Description:** • Unknown: Unknown state of the GSM-network • no registration: The modem is not registered in the GSM network, no provider found • registration denied: Registration in the GSM-network is denied • Search network: In Search for a GSM-Provider • GSM: Attached to GSM • GSM(ROAMING): Attached to GSM, but with a Roaming-Partner. This could lead to high costs! The radio quality is displayed, together with the bit-error-rate. **Value Description:** • 99 No network, no receive • 00 Very, very bad receive-quality • 01 Very bad receive-quality • 02 to 09 Bad receive-quality • 10 to 17 Medium receive-quality • 18 to 25 Normal receive-quality • 26 to 30 Good receive-quality • 31 Best receive-quality

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



SMS:

• **SMS**	Switches: • NO • SEND SMS • RECEIVE SMS • SEND+RECEIVE SMS • DMTF CONFIRMATION • SEND SMS+DTMF CONFIRMATION • RECEIVE SMS+DTMF CONFIRMATION • SEND+RECEIVE+DTMF CONFIRMATION • SEND MAIL • SEND MAIL+SEND SMS • SEND MAIL+RECEIVE SMS • SEND MAIL+SEND+RECEIVE SMS • SEND MAIL+DTMF CONFIRMATION • SEND MAIL+SEND SMS+DTMF CONFIRMATION • SEND MAIL+RECEIVE SMS+DTMF QUITTUNG • SEND MAIL+SEND+RECEIVE+DTMF CONFIRMATION **Attention**: before setting ON check configuration, after activating the device will go on the MPI bus and tries to connect to the defined PLC. Receive of SMS only with TELEService-GSM Receive of DTMF only with TELEService GSM

• **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**	Configure the SMS-Provider to use, including type, phone-number and char-code. 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 Protocoll - Server

Error analysis::

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

Message

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

LAN-Send-Error

The PD-Numberr is wrong

The transferred SAP is wrong/unknown

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

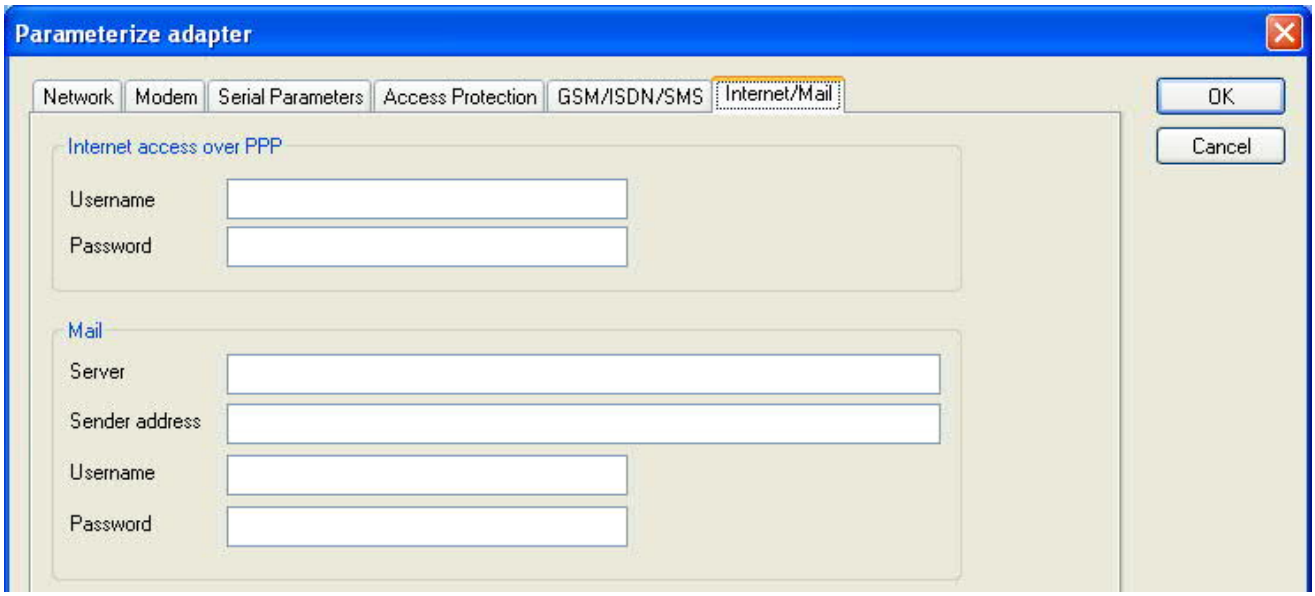
ErrCode 1E: FPGA has caused an interrupt although no data present.
(SD1=XXh,SD1=YYh,CPU=ZZZ,FC=UUh)

ErrCode 20: Unknown protocol at PPIMultimaster-Mode. (FC=XXh,Länge=YYY)

ErrCode 21: Unknown baud-rate at PPIMultimaster-Mode. (Baudrate=XXh)

After that additional hints are displayed.

6.5.6 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:

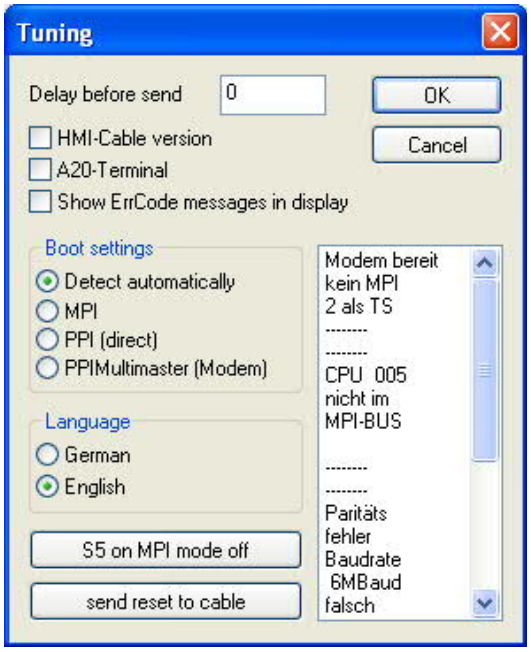
• **Username**	Username for the Internet access
• **Password**	Userpassword for the Internet access

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

6.6 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 TELEService-function is not working. With this property the control-lines are no longer used and therefore the A20/M20 can communicate over TELEservice.
• **Show ErrCode messages in display**	Shows error messages on the display of the connected device

Boot settings:

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

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

Language:

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

S5 on MPI mode off:

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

send reset to cable:

Send reset to cable.

Console:

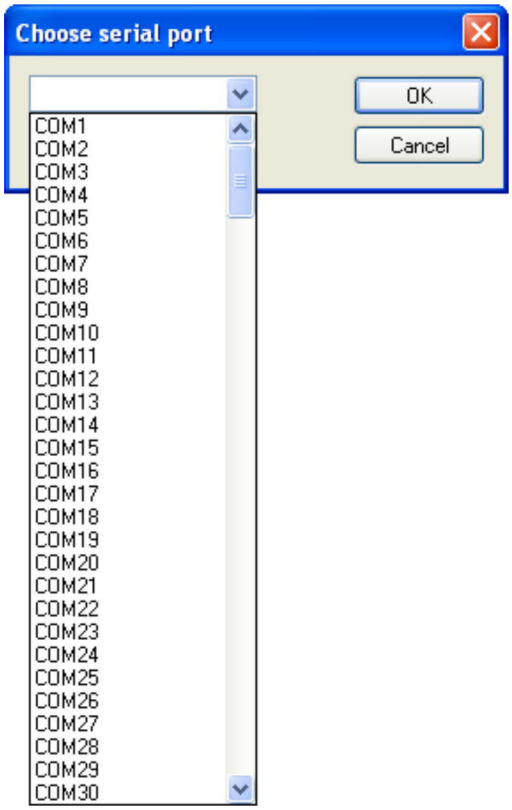
Shows some information about the status of the connection.

6.7 Factory defaults

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

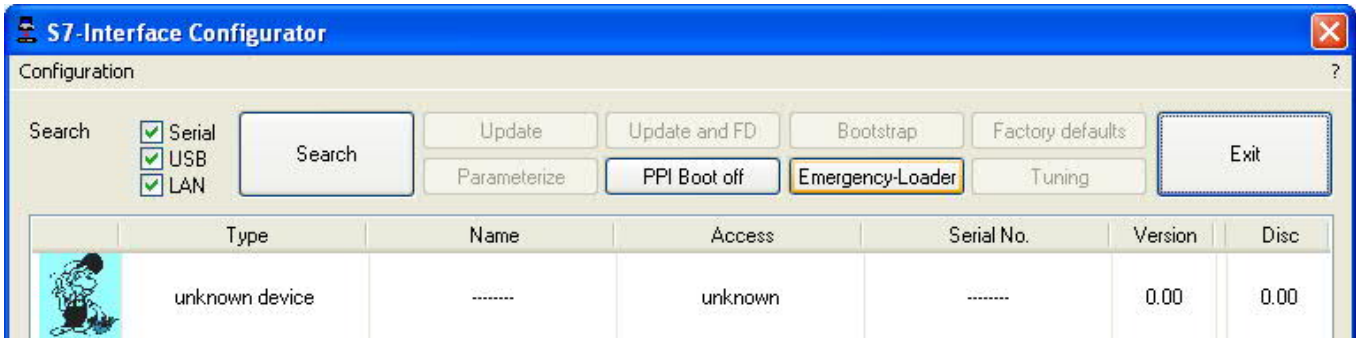
6.8 PPI Boot off

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:

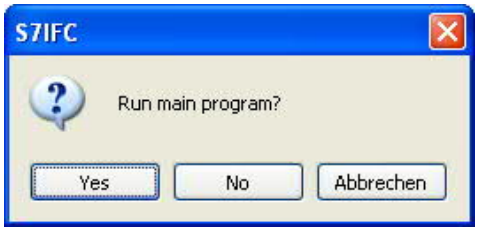


6.9 Emergency-Loader

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.

7 MPI cable manager

7.1 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

7.2 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".

7.3 Overview

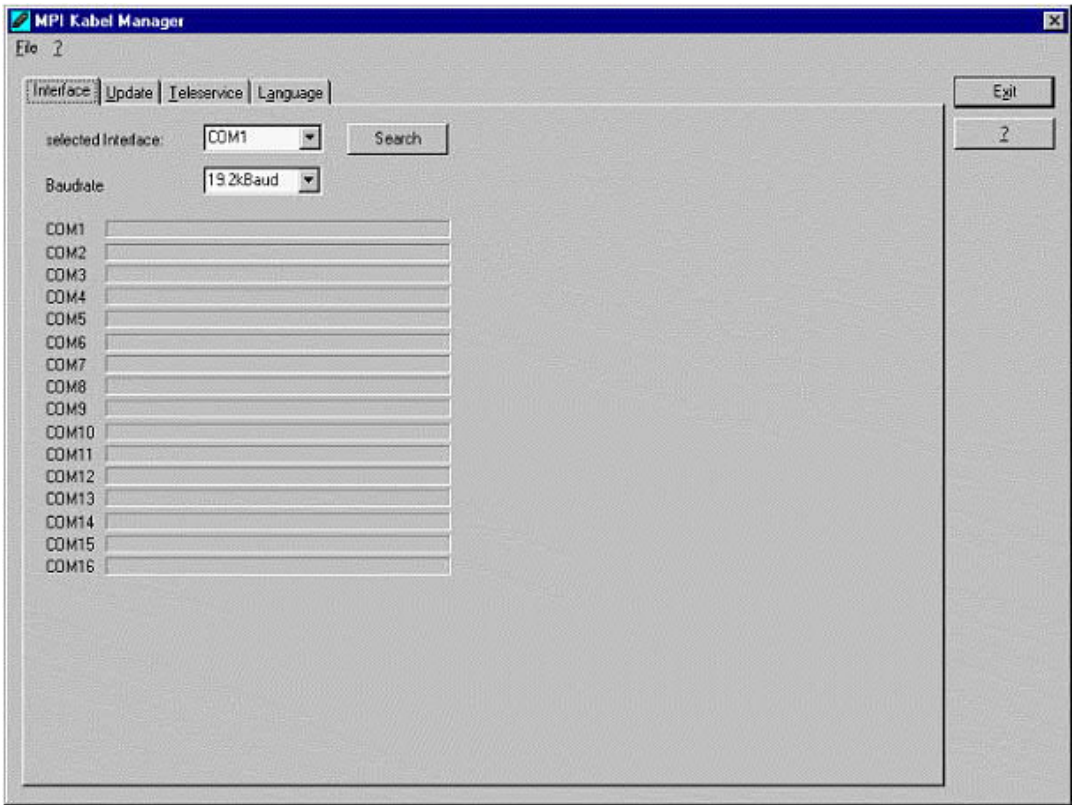
7.3.1 Language

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.

7.3.2 Interface



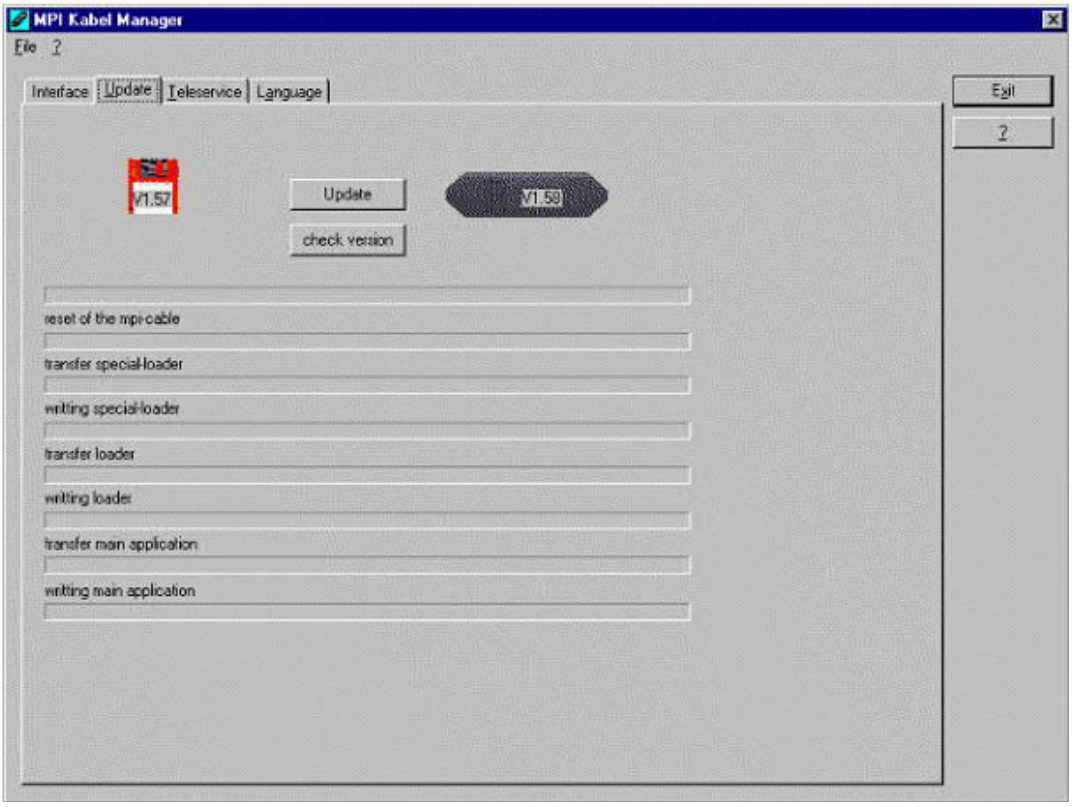
In „set interface“ you can choose the COM-port you device is connected at. Only the COM-port which was aktive at starting the MPI-Kabel-Manager are shown.

„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.

7.3.3 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.

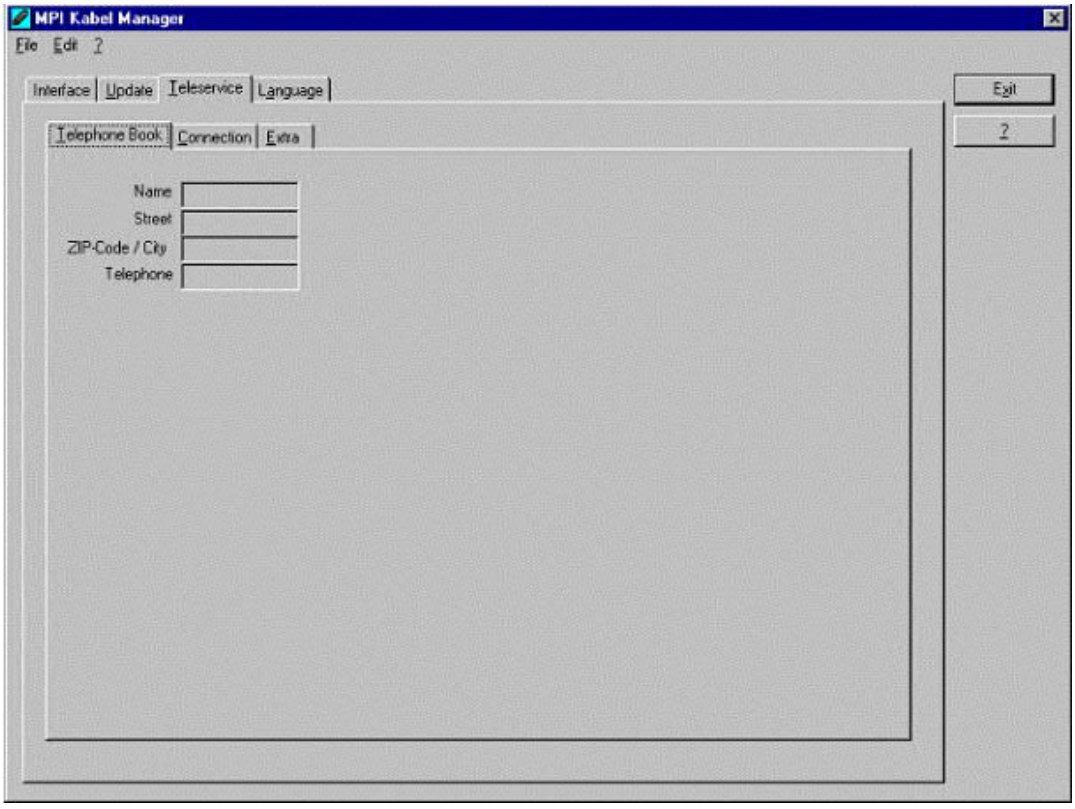
The symbol next to version check shows the running update.

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.

7.3.4 Teleservice

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



7.3.4.1 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

7.3.4.2 Connect

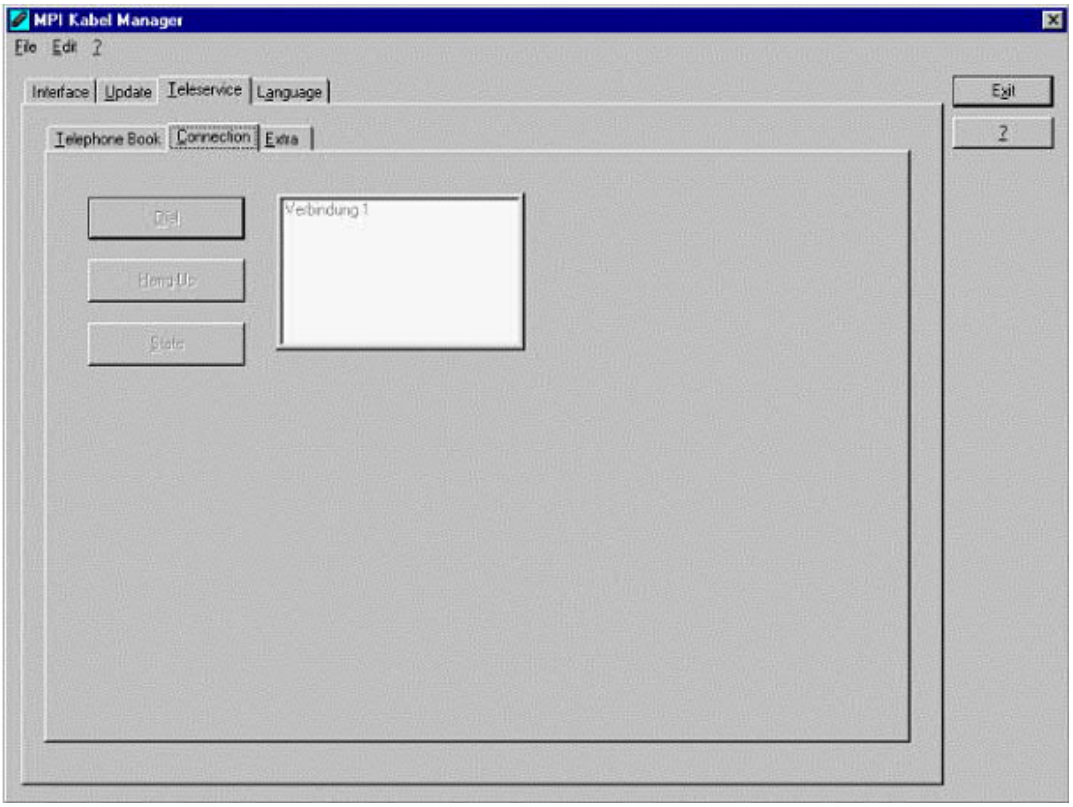
At the moment not implemented!

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.

7.3.4.3 Extra



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

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

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

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

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

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

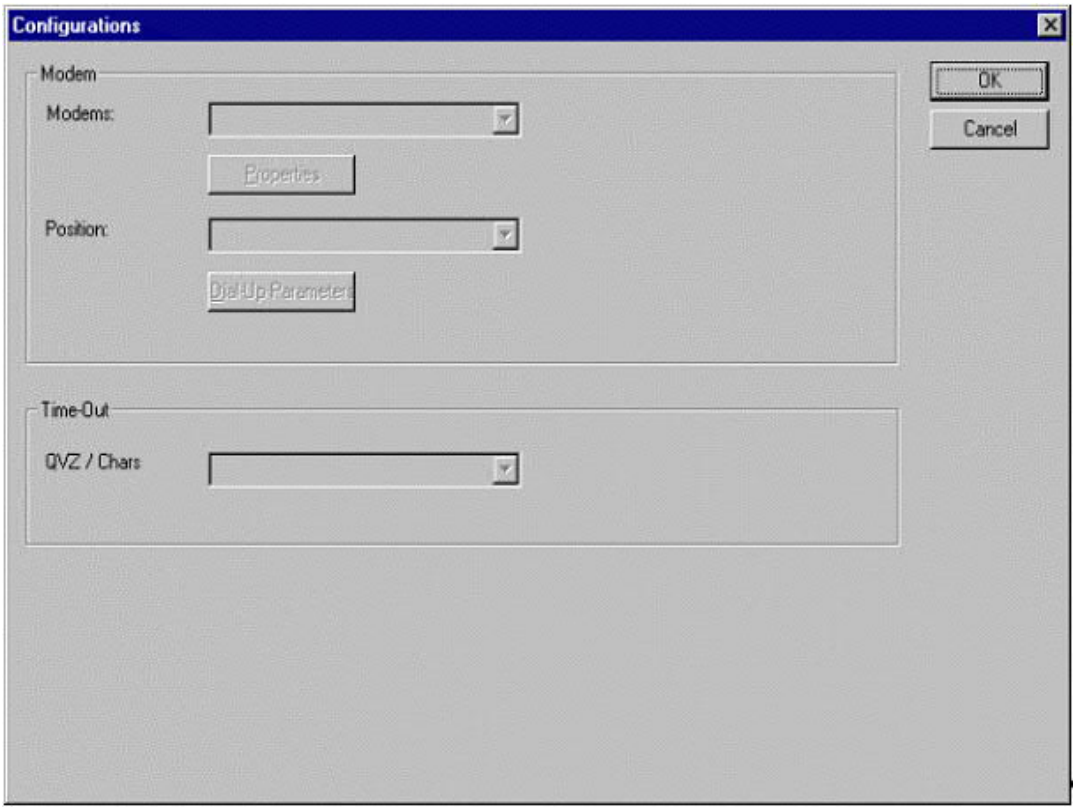
„SNDERR“ or „RCVERR“

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

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

7.3.4.3.1 „Setup“

In the follwing dialog you could choose the used modem.



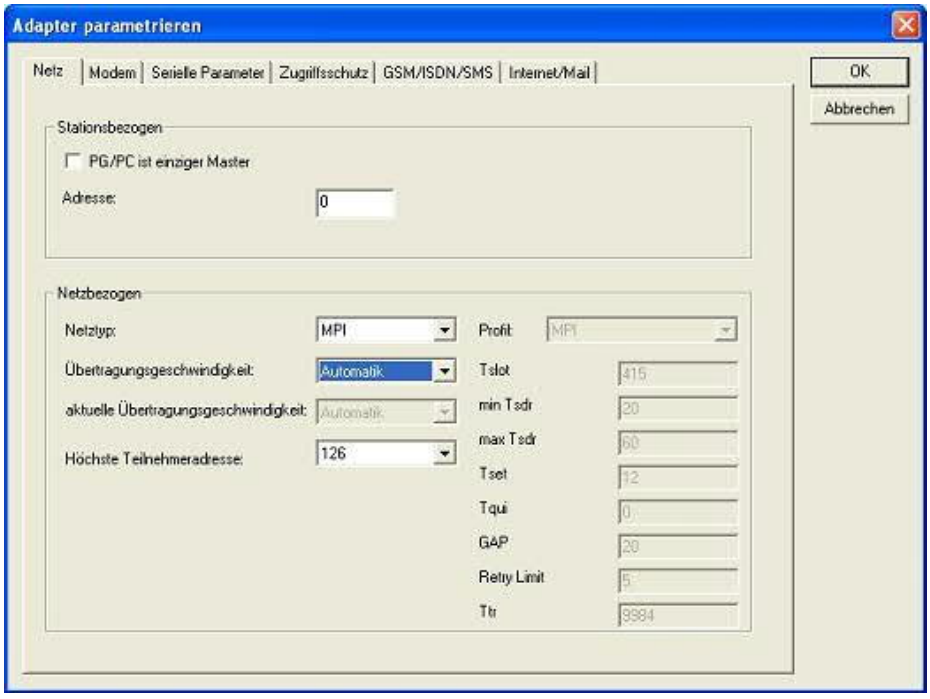
7.3.4.3.2 „TS-function“

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.

7.3.4.3.3 „configure adapter“

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

Network



station related:

Here you can configurate following:

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

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

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

network related:

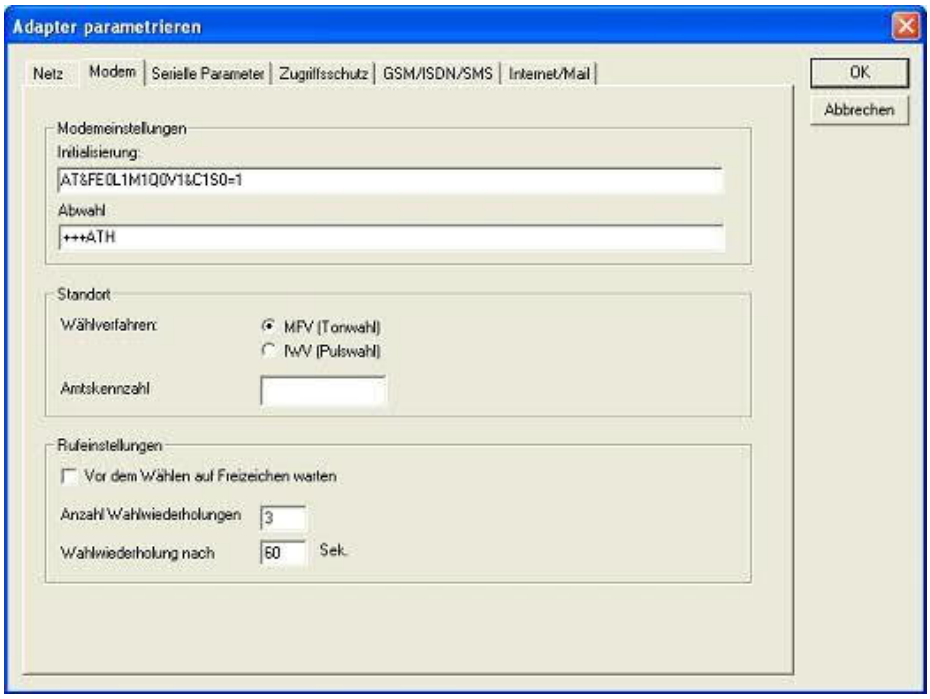
Here you can configurate following:

The Nettype MPI or PROFIBUS

The transfer-speed on the MPI-bus

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

Modem



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

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

The Hang-Up-String is composed of 2 elements:
+++ => Change to command-mode
AT => start command
H => Hand-Up connection

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

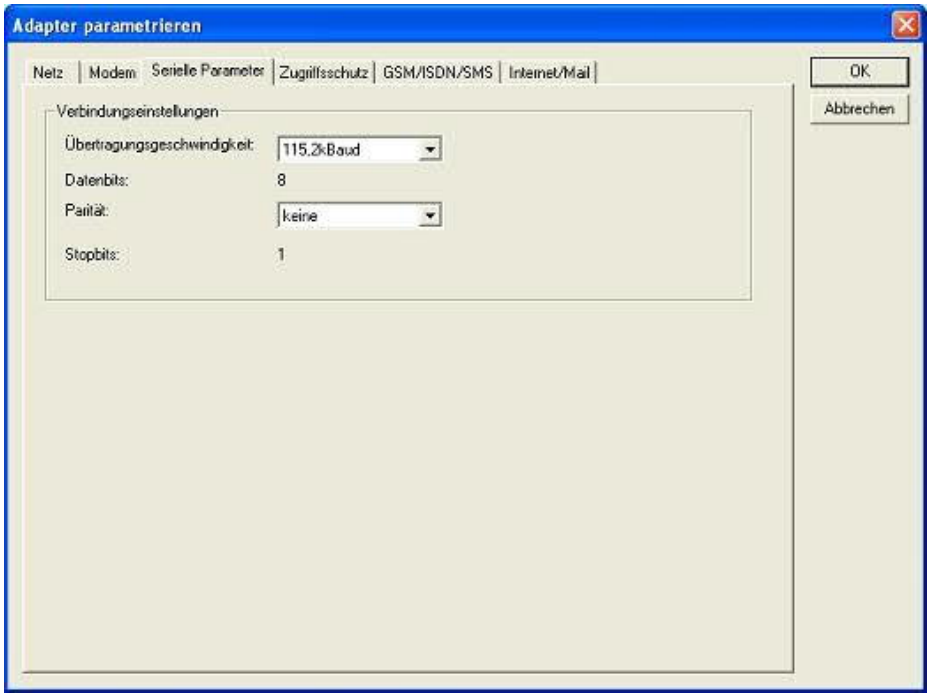
When you must a pre-call to establish a call outside your company, you could define it at Amtskennzahl.

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

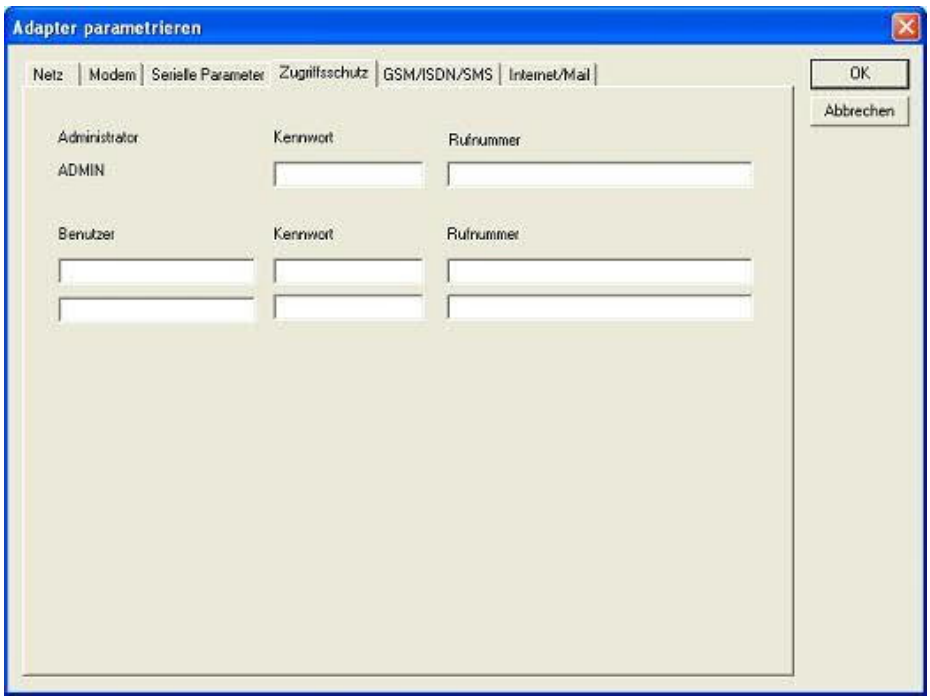


In this dialog the transfer-rate between modem and TS-Adapter is selected.
The transfer-rate could choosen between the follwing values:
2400, 4800, 9600, 19.2k, 38.4k, 57.6k and 115.2kBaud

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

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

Password



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

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

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

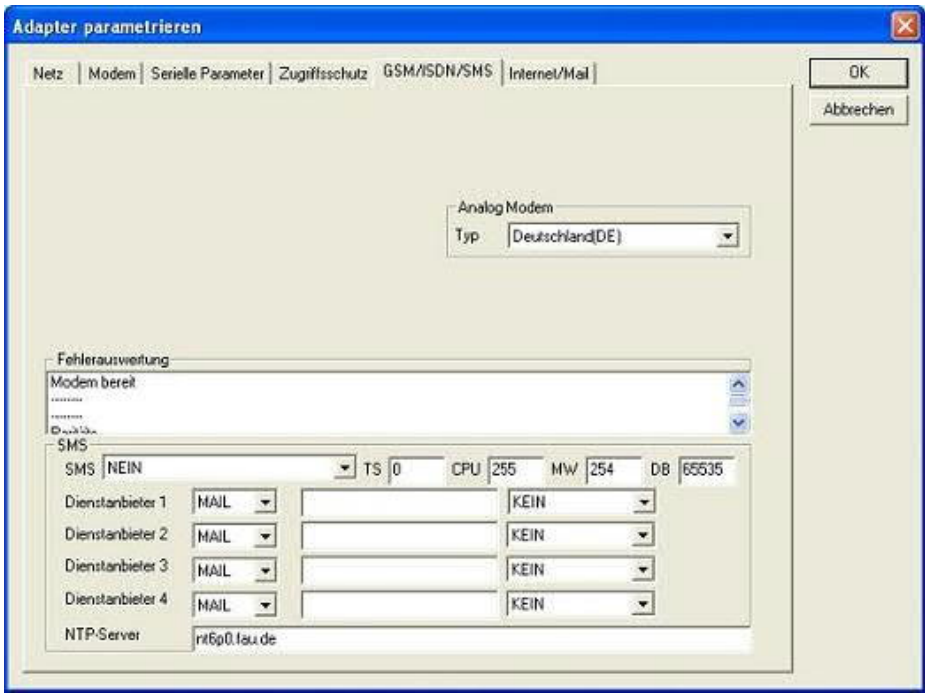
After 3 wrong retries the connection is hanged up, so you must call again (Not so with an original TS-adapter).

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

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

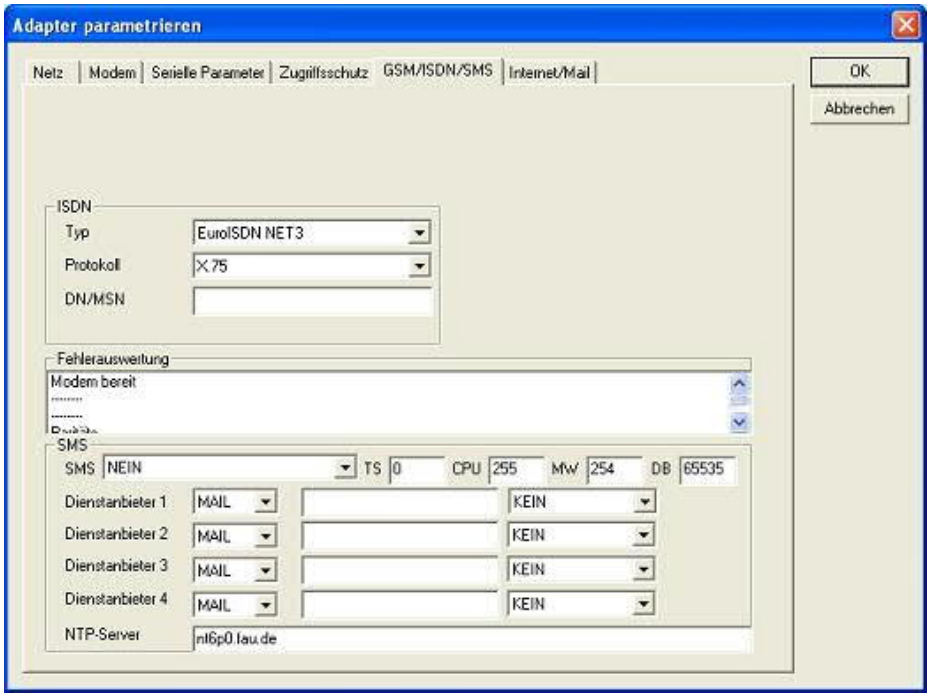
GSM/ISDN/SMS

Analog modem:



You could choose the Location of the Modem.

ISDN modem:



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

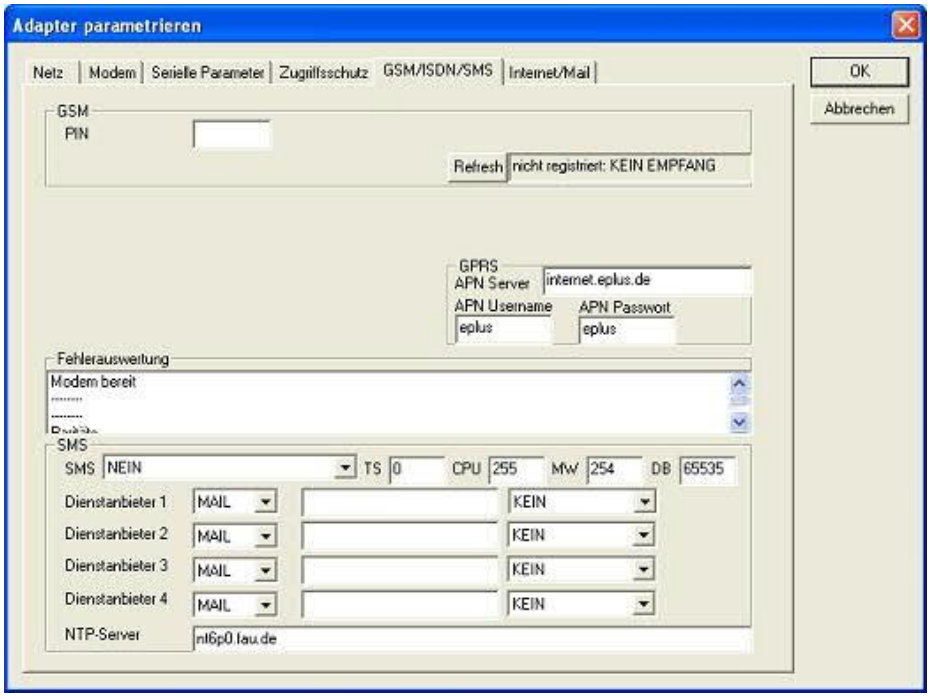
AT&T 5ESS
Nothern Telecom DMS-100
EuroISDN NET3 (Standard)
INS64
US NI-1
VN4

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

Display Description:

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

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

Display Description:

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

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

Value Description:

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-Recieve-Error
LAN-Send-Error
The PD-Numberr is wrong
The transferred SAP is wrong/unknown

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

ErrCode 1E: FPGA has caused an interrupt although no data present.
(SD1=XXh,SD1=YYh,CPU=ZZZ,FC=UUh)

ErrCode 20: Unknown protocol at PPIMultimaster-Mode. (FC=XXh,Länge=YYY)

ErrCode 21: Unknown baud-rate at PPIMultimaster-Mode. (Baudrate=XXh)

After that additional hints are displayed.

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!)

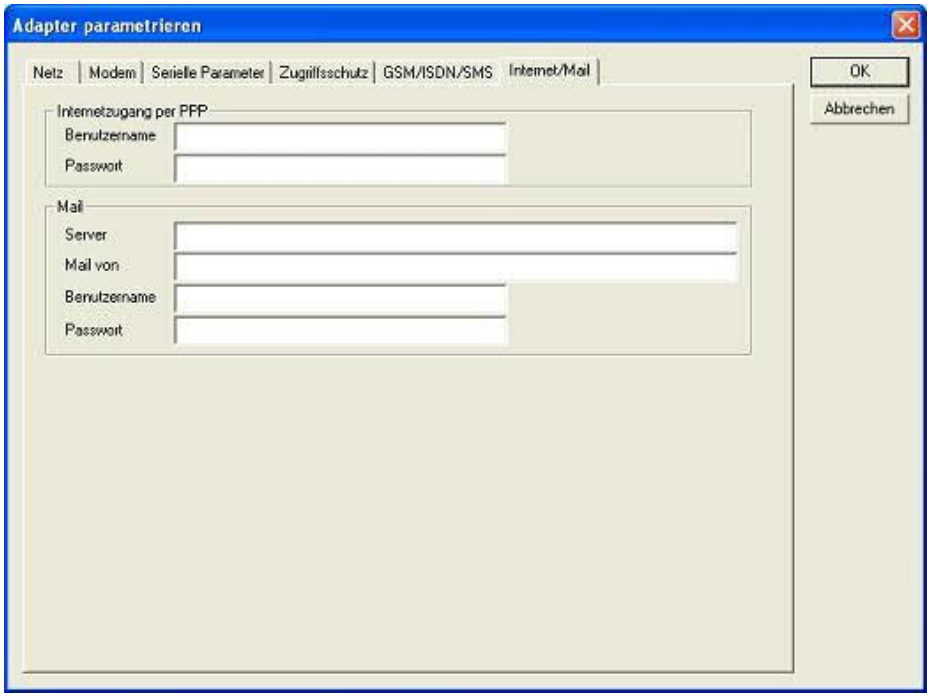
PLC: from this station-address the Flagword and Data-block is accessed for communication

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



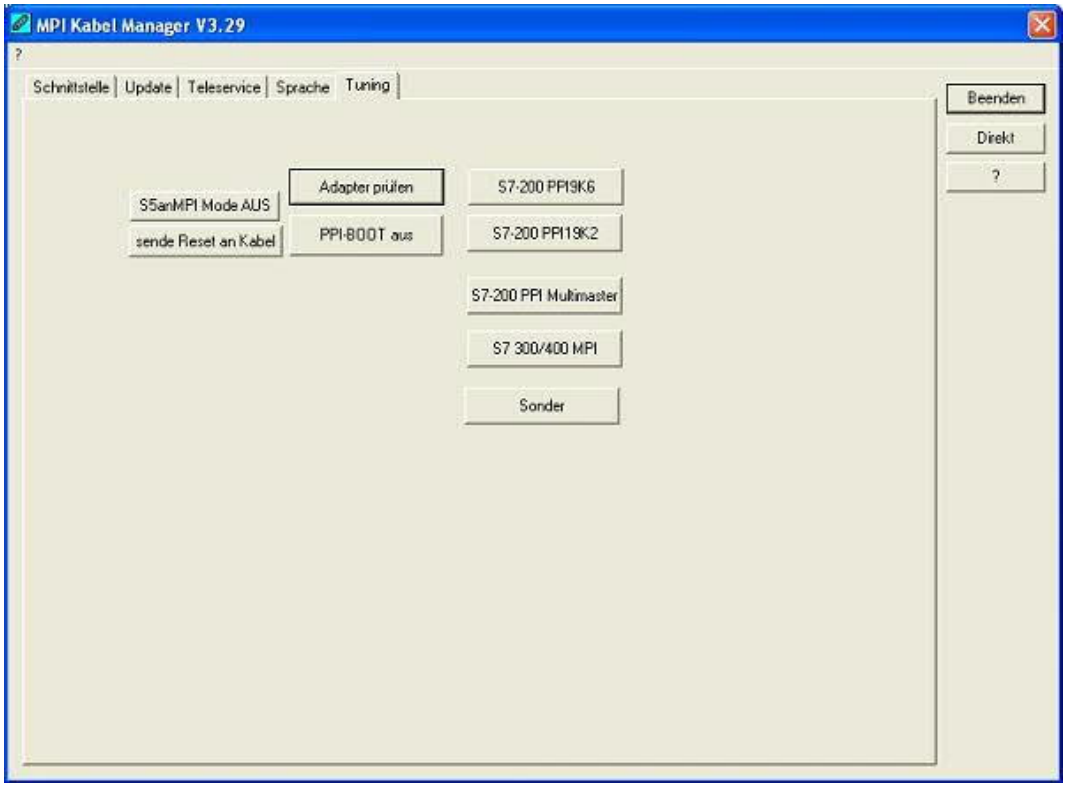
7.3.4.3.4 „Import parameter“

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

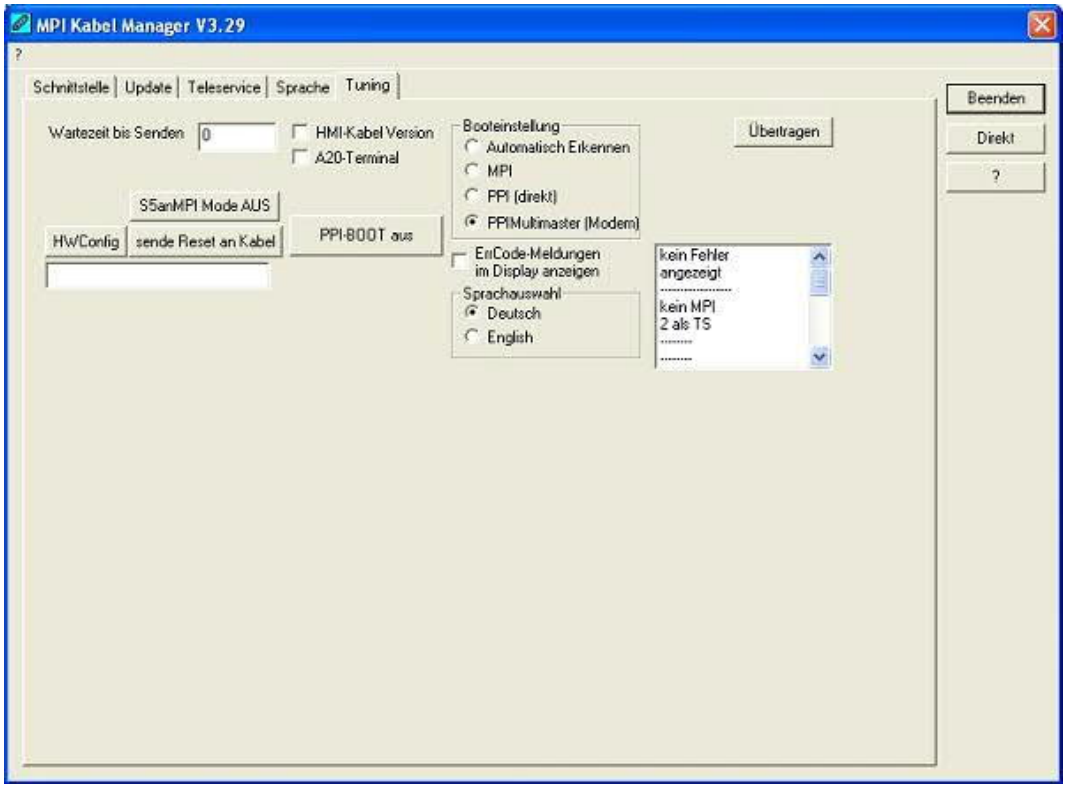
7.3.4.3.5 „Export parameter“

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

7.3.5 Tuning



This tab is only used in some special cases. If you press the button „Check Adapter“ the cable is connected und after that the following dialog is displayed:



There are the following configuration possible, they will be transferred to the MPI-Cable by pressing the button „Transfer“. The configuration is saved permanently in the Flash-ROM:

Time to send:

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

HMI-Cable-Version:

Some Touch-panels have the problem, that when they get a wrong version-information they

never retry to connect (and then the correct version is transferred). In this case the HMI-version-information could be transferred immediately.

A20-Terminal:

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

Bootconfiguration:

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

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

Language:

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

8 Technical data

Supply voltage:	24V DC +/- 20%
Power consumption:	2 watt
Display:	double lined LCD-display
Handling/Configuration:	Kabelmanager-Software
Interfaces:	**to the PLC:** PPI/MPI-bus interface: 9,6 KBd - 187,5 KBd **to the PD/PC:** RS232: 9,6 KBd - 115,2 KBd
Galvanic separation:	1000V PPI/MPI-bus to the PC
Operating temperature:	-30 - +55°C
Case:	ABS-plastic case
Dimensions:	146 x 41 x 29 mm
Scope of delivery:	
	MPI/PPI-cable

8.1 Pinning RS232

Pin Nr.	Notation	Signalname	Direction (of cable)
1	DCD	Data Carrier Detect	In
2	TXD	Transmitted Data	Out
3	RXD	Received Data	In
4	DSR	Data Set Ready	Out
5	GND	Signal Ground	
6	DTR	Data Terminal Ready	In
7	CTS	Clear to Send	Out
8	RTS	Request to Send	In
9	NC	Not Connected	

This cable is designed to be connected directly on a COM interface of a PC. The cable can be lengthened by a 1:1-cable to the PC up to 15m maximum. The cable should have a good quality.

8.2 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).