ACCON-NetLink-PRO
User Manual

22-06-07, from FW 1.40

The best solutions for PLC

DELTALOGIC Automatisierungstechnik GmbH

Stuttgarter Strasse 3
73525 Schwaebisch Gmuend

Germany

Phone sale: +49-(0)7171-916-120
Phone support: +49-(0)7171-916-112

Fax sale: +49-(0)7171-916-220
Fax support: +49-(0)7171-916-212

E-Mail sale: vertrieb@deltalogic.de
E-Mail support: support@deltalogic.de

Web site: http://www.deltalogic.de

Last update 2007-06-22. All technical changes reserved.

1 Table of Contents

2 Safety Instructions

Please follow the indicated safety instructions for your own safety and others. They are showing possible dangers and providing an indication of how to avoid them.

The manual in hand uses the following pictograms:

Hints and further information

Calls attention to dangers and sources of error

A general or specific danger

2.1 In General

The ACCON-NetLink-PRO is intended to be used in a complete system.

In individual cases the operator of a machinery is obligated to follow the safety regulations and the accident prevention regulation.

When projecting you have to follow the safety regulations and the accident prevention regulation as the case arises.

According to EN 60204 / IEC 204 emergency stops have to remain active in all machinery modes. Avoid undefined system restarts.

Errors appearing in the machinery which can cause damage to persons or material have to be intercepted by additional external mechanisms. In case of an error those mechanisms e.g. electro-magnetic safety switches, mechanic lockings,etc. (look EN 954-1, risk analysis)have to guarantee for a save operating status.

Do not execute or initiate security relevant functions via an operator terminal.

2.2 Access Control

As the assemblies are an open operational equipment they have to be installed in electrical operating areas, cabinets or cases only. It is important that they only can be entered with a tool or a key by authorized or instructed staff.

Only authorized staff may have access to the assembly!

2.3 User Note

This guide is for planners, operators and mechanics who are using the ACCON-NetLink-PRO.
This guide shows an operator the handling of the ACCON-NetLink-PRO and explains signaling functions. It also provides all necessary data for assembling.

The ACCON-NetLink-PRO is intended for the exclusively use with a Siemens S7-300/S7-400 automation device.

The ACCON-NetLink-PRO is intended to be used in a complete system. For this reason it is important that planners, users and mechanics are following standards, safety regulations and accident prevention regulations for the respective case of operation. The operator of the automation system is obligated to meet the above-mentioned regulations.

When projecting you have to follow the safety regulations and the accident prevention regulation as the case arises.

2.4 Appropriate Use

As already mentioned in the manual use the ACCON-NetLink-PRO as a communication system only.

2.5 Avoid inappropriate Use

Do not control security related functions via the ACCON-NetLink-PRO only.

Uncontrolled restarts are to be ruled out.!

3 Installation and Assembly

Installation and assembly have to be carried out according to VDE 0100 / IEC 364. As they are IP30 assemblies they have to be build in a control cabinet. For a secure use it is important that the ambient temperature must not exceed 60 ºC.

You have to de-energize all system components before installing new equipment.

3.1 Mounting Position

The ACCON-NetLink-PRO can be installed in any position.

3.2 Minimum Clearance

- To enable the assembling and disassembling of the ACCON-NetLink-USB
- That there is sufficient space to use all connections when the ACCON-NetLink-USB is installed
- That there is enough room for cable routings

Figure 1: ACCON-NetLink-PRO minimum clearance

3.3 Assembly Setup

To install the device on a plane surface or on top hat rails a wall holder or a top hat rail holder is required.

In chapter »4.5« you will find accessory with the respecting ordering numbers suitable for the ACCON-NetLink-PRO.

4 System Overview

4.1 Use and Functional Characteristics

The ACCON-NetLink-Pro is a communication adaptor between a TCP/IP net and a PPI, MPI or Profibus. Up to 7 TCP/IP connections and up to 12 PPI, MPI-/Profibus connections at the same time are supported. These connections can be configured independently from each other.

The following points are detected automatically:

- 10 MBit/s or 100 MBit/s
- Bus speed (9,6 KBit/s up to 12 MBit/s)
- Bus parameters

The ACCON-NetLink-PRO can either be sourced by a voltage feed of a bus interface of an automation system or by an external voltage feed.

A 1.2 m connection lead connects the ACCON-NetLink-PRO to the automated system. As the connecting plug is actively conducted there are no spur lines which could interfere the bus.

By the use of drivers it is possible to utilize the ACCON-NetLink-PRO as a

- Programming adaptor
- Communication adaptor

By using the RFC 1006 interface it is possible to use software from third-party companies. This option can be used with S7-300/400 (look for chapter »8 RFC 1006 (S7 TCP/IP)«).

The ACCON-NetLink-PRO is connected to the PC via a switch or hub. The supplied patch cable is used to establish a connection via a hub/switch.

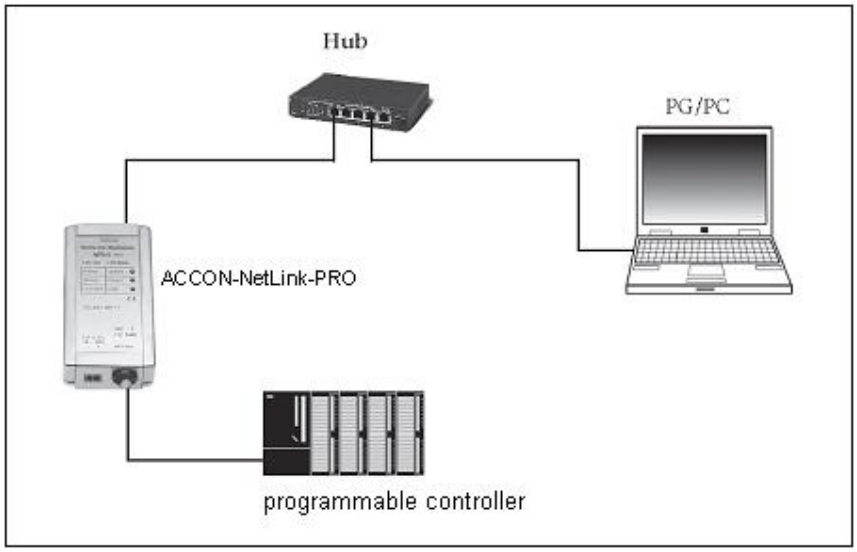


Figure 2: Connection via hub or switch

The communication with S7-200 controllers via RFC 1006 is not supported.

It is possible to use the ACCON-NetLink-PRO directly with a Network Interface Card (NIC). But you have to use a cross-over cable (not supplied).

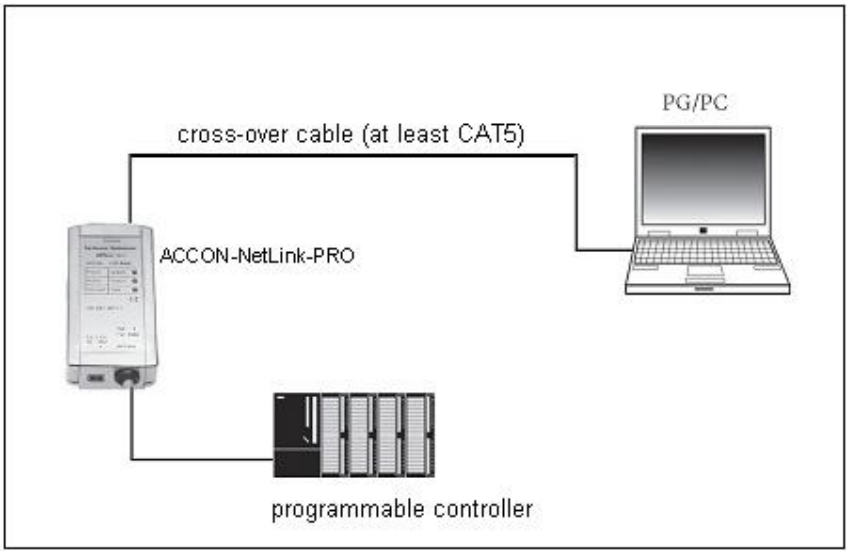


Figure 3: Connection via corss-over cable

4.2 Connections

The ACCON-NetLink-PRO has the following connection types:

- RJ45 bushing to connect the device to usual hubs or switches using a standard patch cable (Straight or Cross-Over).
- Voltage supply bushing for feeding DC 24 V.
  This can also be used if the utilized automation system does not have a bus connection with a sufficient voltage feed. Please look for the correct polarity.
- Bus plug with a PG bushing, selectable terminator and a 1.2 m long connection lead.
  The 1.2 m long connection lead is decoupled by the active bus plug thus there is no spur line and breakdowns with higher baud rates can be avoided.
  It is possible to attach additional users on the PG bushing. When the ACCON-NetLink-PRO is attached at the end or at the beginning of a bus segment a terminator has to be inserted (ON). If not the switch must be in the OFF position.

4.3 LED-Display

	Link LED GREEN	Active LED YELLOW
No connection to Ethernet	OFF	OFF
Ethernet activity	ON	BLINKING

Table 1: LED Display, RJ45 bushing

Starting the ACCON-NetLink-PRO

During the first seconds after the start the POWER LED lights green, the Active LED and the Connect LED red. After 5 seconds the Connect LED changes to green. After that the Power LED is blinking green. After the start activity has finished only the Power LED lights permanently green. Thus the start activity is complete and the device is ready to operate.

If RFC 1006 is activated the Power LED and the Active LED light green after the start activity.

	Power LED	Active LED	Connect LED
Ready to operate	GREEN		
Searching for TCP configuration	BLINKING GREEN		
Trying to log on bus	GRÜN	BLINKING GREEN	
Device is logged on the bus	GREEN	GREEN	
Active connection to a controller	GREEN	GREEN	GREEN
Data exchange with a controller	GREEN	GREEN	BLINKING GREEN
Transmit firmware update	BLINKING GREEN	BLINKING RED	BLINKING RED
Store firmware update	GREEN	RED	RED
Bus-sided exception error	GREEN		BLINKING RED
PC-sided exception error	GREEN	BLINKING RED	

Table 2: LED Display, ACCON-NetLink-PRO

4.4 Scope of Delivery

- A ready for use ACCON-NetLink-PRO
- A 3 m patch cable (Straight)
- A DELTALOGIC Automatisierungstechnik-CD including ACCON-S7-NET driver
- A user manual

4.5 Accessory

Top hat rail holder Item-No. 13012-HS

The top hat rail holder is required for mounting the ACCON-NetLink-PRO on DIN rails. No additional tool kits are required to separate the ACCON-NetLink-PRO from a top hat rail holder. To install the ACCON-NetLink-PRO on plane surfaces it is possible to channel the top hat rail holder into a wall holder by unscrewing the top hat rail adaptor.

Plug-in power supply unit 13012-24VDC

Input: AC 100-240 V / 50-60 Hz,

Output: DC 24 V / 330 mA

4.6 Firmware update

To use this manual with an ACCON-NetLink-PRO at least firmware 1.40 is required.

You can find actual drivers and firmware versions on our web site at www.deltalogic.de in the section Download/ACCON-NetLink or on the supplied DELTALOGIC Automatisierungstechnik-CD.

5 Installing ACCON-S7-NET driver

With installed ACCON-S7-NET drivers for the ACCON-NetLink-PRO you can access controllers with a PPI,MPI-/Profibus interface via TCP/IP from a PC.

5.1 Introduction

The ACCON-S7-Net latches into a PG/PC interface of an already existing Simatic application and can be used with most Simatic Engineering-Tools (Step7, ProTool, WinCC, etc.).
It is possible to access Simatic S7-200, S7-300 or S7-400 series controller. To connect a Simatic S7 controller with the Ethernet network a communication adaptor like the ACCON-NetLink-PRO is required.

5.2 System Requirements

To use the ACCON-S7-NET driver on PG side a PC with Windows 2000 or Windows XP as well as a Simatic-Engineering tool e.g. Step7 from version 5.1 or STEP7-Micro/Win from version 4.0 is required. By installing the ACCON-S7-Net driver further interfaces will be integrated into the PG/PC interface.

It is possible to install the ACCON-S7-NET driver under Windows 98/ME/NT but we do not provide any support. And please take notice of the used Step7 requirements.

The PCs must have a working network connection set up via Ethernet. The network configuration has to be known, too. Usual network interface cards can be used. To achieve a good performance in a local area network you have to use 100Mbit/s network interface cards and switches. Naturally it is possible to use 10Mbit/s network interface cards and switches but the performance is going down.

5.3 Installation Setup

After inserting the DELTALOGIC Automatisierungstechnik-CD please start the ACCON-S7-NET driver setup. The SetupAcconS7Net.exe is located in the »CD-drive:\ACCON-NetLink\S7-Treiber« directory.

You can download our latest ACCON-S7-NET drivers from our web site www.deltalogic.de at no charge.

When installing drivers under Windows 2000 or Windows XP you need to log on as administrator because the driver setup enrolls into the Windows registry.

Adding the interface to the PG/PC interface

After installing the driver for the first time the new interface parameterization ACCON-S7-NET NLPRO has to be set up. Administrator rights are required.

Click on the »Select« button after starting »adjust PG/PC interface« in the control panel.

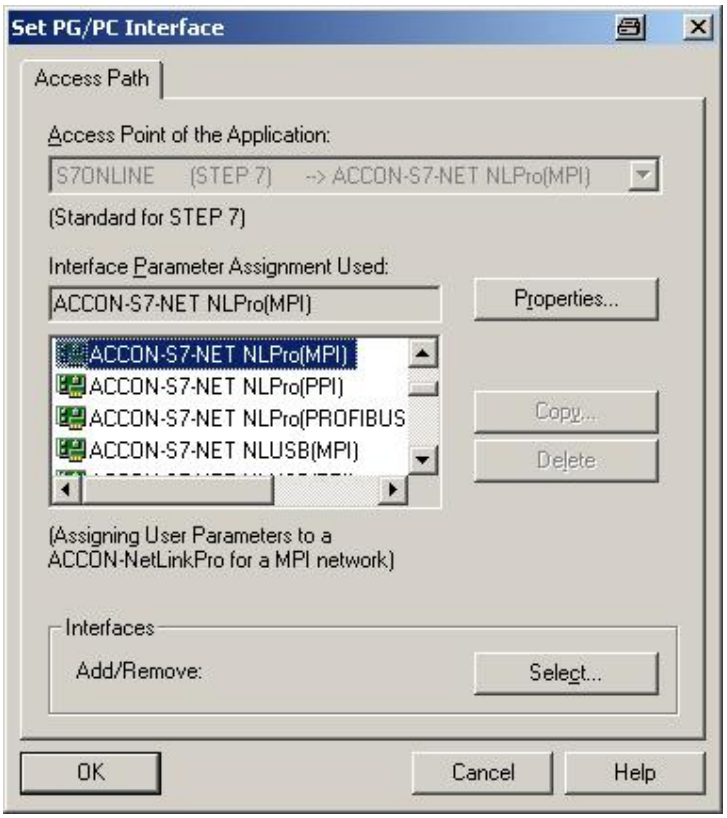


Figure 4: Set PG/PC Interface

Then the dialog field »Install / Remove Interfaces« appears

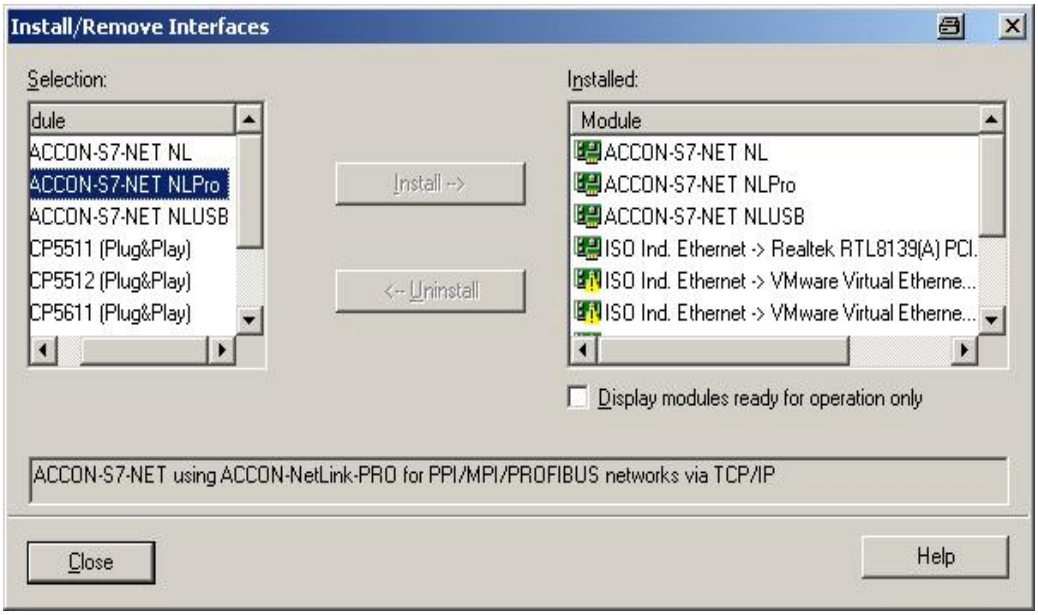


Figure 5: Install / Remove Interfaces

After choosing the entry »ACCON-S7-NET NLPRO« on the left click on the »install« button.

Thereupon the following inquiry appears:

»To be able to go online immediately with your installed interface, you must set the access path of the access point of your application to the interface parameter assignment that was created.

Should S7ONLINE access ACCON-S7-NET NLPro(MPI) now?«

If this inquiry is answered with »Yes« the ACCON-NetLink-PRO will be directly set as the actual access path. When choosing »No« the previous access path remains and the ACCON-NetLink-PRO will be just added to the list.

How to choose the desired interface parametrization

Now there are three additional ACCON-NetLink-PRO entries in the interface parametrization list.

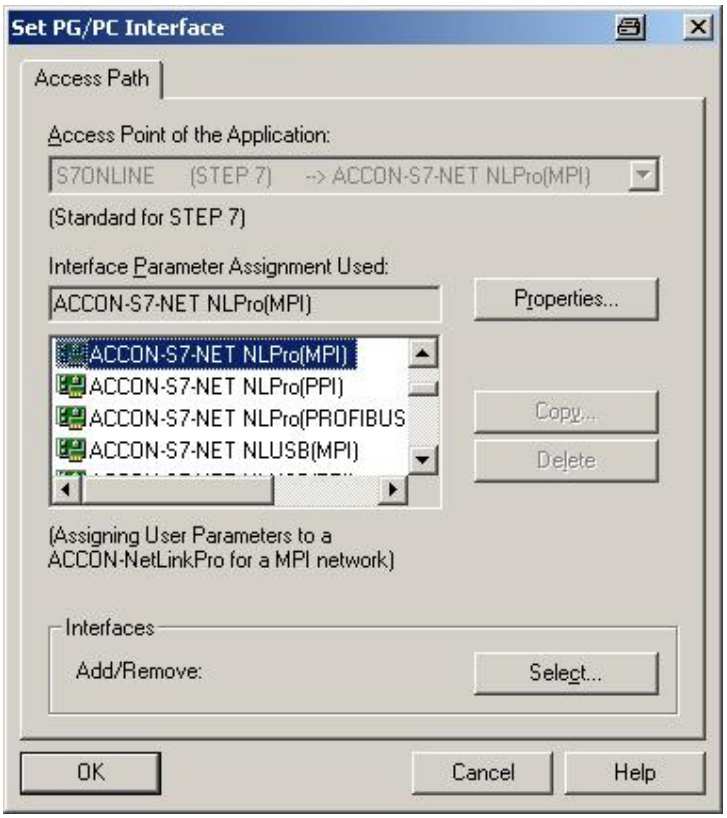


Figure 6: Registered ACCON-S7-NET NLPro

- Properties:
  Click this button to adjust the properties of the ACCON-S7-NET driver.

- Diagnostics:
  When clicking on this button a new window opens. In this window you can perform a hardware diagnostics of the modules.

  § Click on the button »Read« to receive the following data:

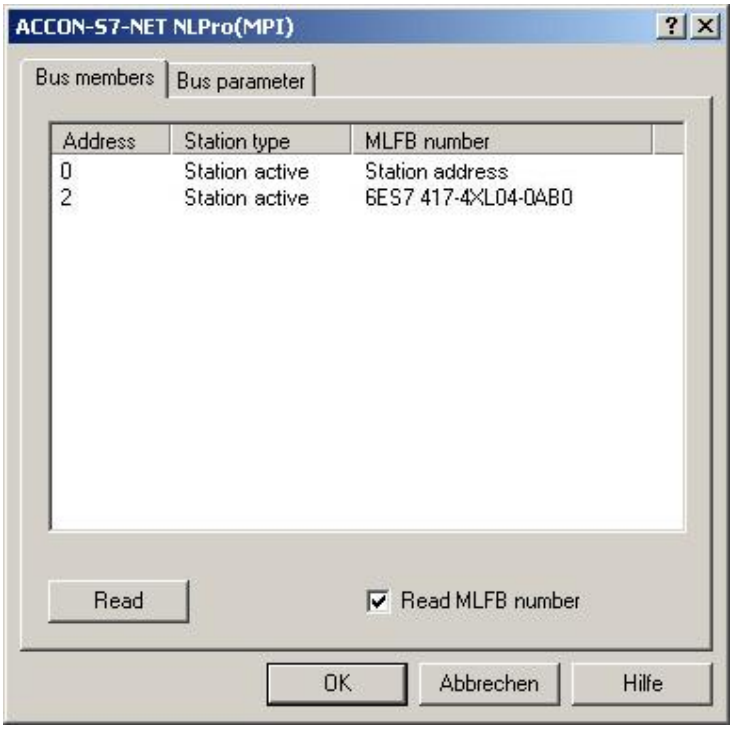


Figure 7: Bus members

§ List of all reachable bus participants

- Address: Bus address of the bus participant
- Station type: There are active (Master) and passive (Slave) participants.
- MLFB Number: The order number of the participant will be shown if the switch is set to »Detect MLFB number«
  Notice: The own address of an active ACCON-NetLink-PRO is shown as »station address«.

§ Bus parameters with which the ACCON-NetLink-PRO logs into the bus. If there is no automatic detection of the bus parameters then the set bus parameters are shown (look for chapter »6.2 Bus settings«).

.

6 Interface parametrization

When choosing the ACCON-NetLink-PRO in the »Adjust PG/PC interface« window you can specify the access path by the »Properties« button.

The access path's attributes of the ACCON-NetLink-PRO are split into the following three parts:

- Local Connection (TCP/IP)
  Here you can adjust via which ACCON-NetLink-PRO address the desired connection to the automation system should be established. Furthermore the ACCON-NetLink-PRO can be parametrized via this window.
- Bus Settings:
  Here you can configure with which bus configuration (e.g. station address, baud rate) the ACCON-NetLink-PRO is reporting to the bus system.
- Options:
  Here you can change the ACCON-S7-Net driver's language and readout the driver's version information.

Figure 8: Settings ACCON-S7-Net

6.1 Create station

To access an ACCON-NetLink-PRO via the ACCON-S7-NET driver you have to create a station. This station is just virtual and will not be stored in the ACCON-NetLink-PRO. This is for a better assignment if there are several ACCON-NetLink-PROs used.

Via the button »New« you will get to an input dialog. There you have to enter a reachable IP address of an ACCON-NetLink-PRO and a user-defined name.

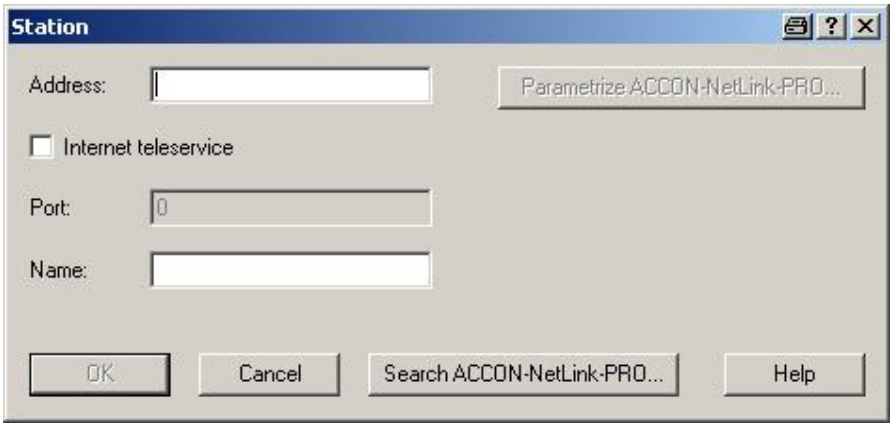


Figure 9: Create station

When using more than one ACCON-NetLink-PRO behind a router, you have to set the »internet remote maintenance« function for each station. Every station must have its own port address. Furthermore the router must support NAPT (Network Address Port Translation) respectively PAT (Port Address Translation) For more information look for chapter »7 TCP/IP parametrization«.

By clicking »OK« the station will be stored and can be used from now on.

It is more comfortable to search in the local network for already existing ACCON-NetLink-PRO. To do this click on the »Search ACCON-NetLink-PRO« button. This function can be used in a physical network segment only.

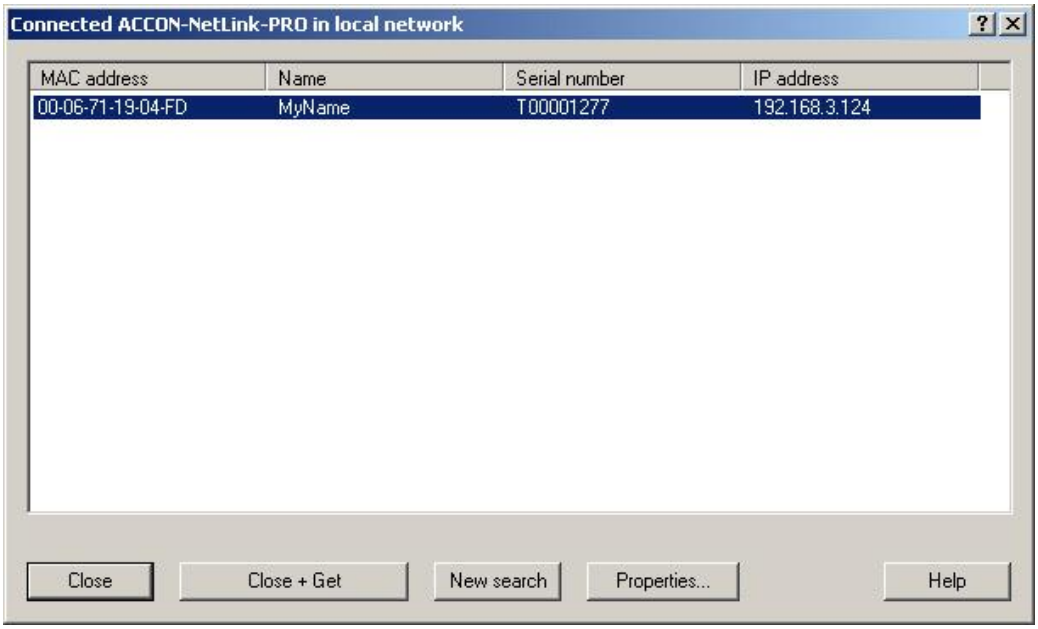


Figure 10: Connected ACCON-NetLink-PRO in local network

When chosen the desired ACCON-NetLink-PRO click on the button »Close + Get«. Then the following dialog appears again:

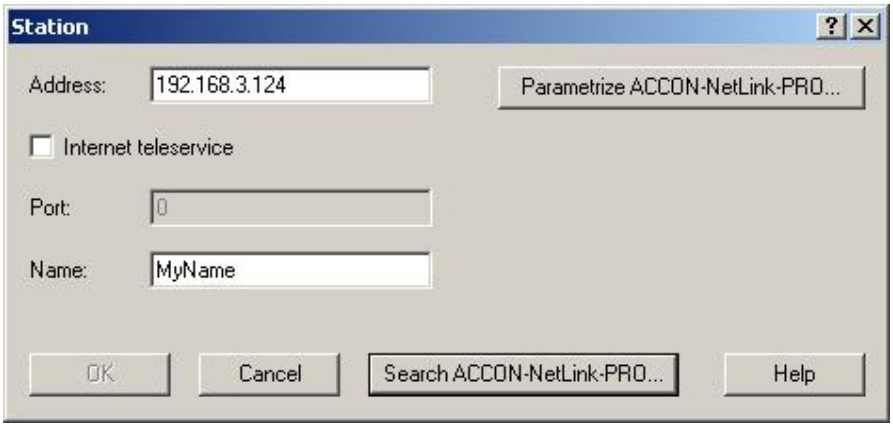


Figure 11: Station

This can be saved by the »OK« and is from now on available.

If you want another name as the one stored in the ACCON-NetLink-PRO you can delete it (instead of »MyName« you can choose e.g. »Thomas«).

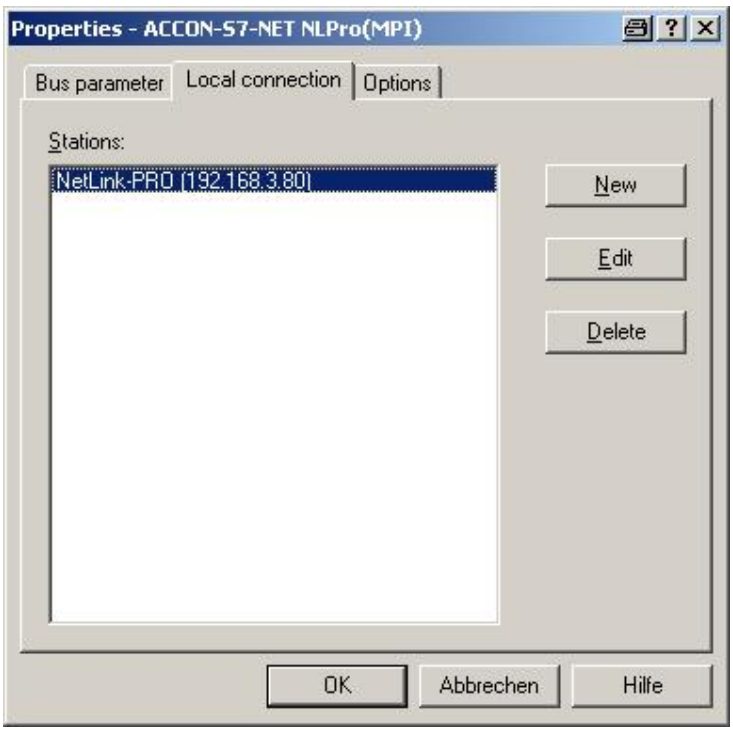


Figure 12: Properties, local connection

The driver-sided settings are complete now.

It may be possible that the ACCON-NetLink-PRO must be adjusted to the conditions of the network.

It is possible to configure the ACCON-NetLink-PRO via the web interface (look for chapter »7.3«) or the tool »NETLink PRO Konfiguration« (look for chapter »7.2«).

6.2 Bus settings

The ACCON-NetLink-PRO can be used with three different bus systems, PPI, MPI and Profibus.

From a user's view the bus systems only differ in the selectable transfer rates. As well as in the additional options for Profibus.

The ACCON-NetLink-PRO can be used without indicating bus-specific information. Through the autobaud function the ACCON-NetLink-PRO determines the bus parameters independently. This enables that the ACCON-NetLink-PRO can be used with different automation systems with different transfer rates. You can do this without switching the ACCON-S7-NET driver.

This autobaud function is only supported when in the participating automation system the function »Cyclic distribution of the bus parameters« is enabled.

There are older Siemens PLCs which do not support the autobaud function on MPI. This function is not available for S7-200 systems.

If you want another name as the one stored in the ACCON-NetLink-PRO you can delete it (instead of »MyName« you can choose e.g. »Thomas«).

MPI Configuration

The station address is the most important setting in connection with the bus configuration. It is the address which should the ACCON-NetLink-PRO have when going online. The station address' value can be in the range of »0« to »126« if the chosen address is less or equal the highest node address (HSA).

Example: HSA = 31

For the station address you can indicate any value in the range of »0« to »31« unless this address does not already exist on the bus.

You can parametrize the timeout of the ACCON-S7-NET driver in the station-related settings. If there is no response to a driver request within the set timeout a communication error will be sent to the Simatic application. When shortening the timeout you will neither get a reduction of the transmission time nor an increase of the data throughput, etc. .

You have to adjust the transfer rate as well as the HSA of the automation system to be communicated with in the network-related settings.

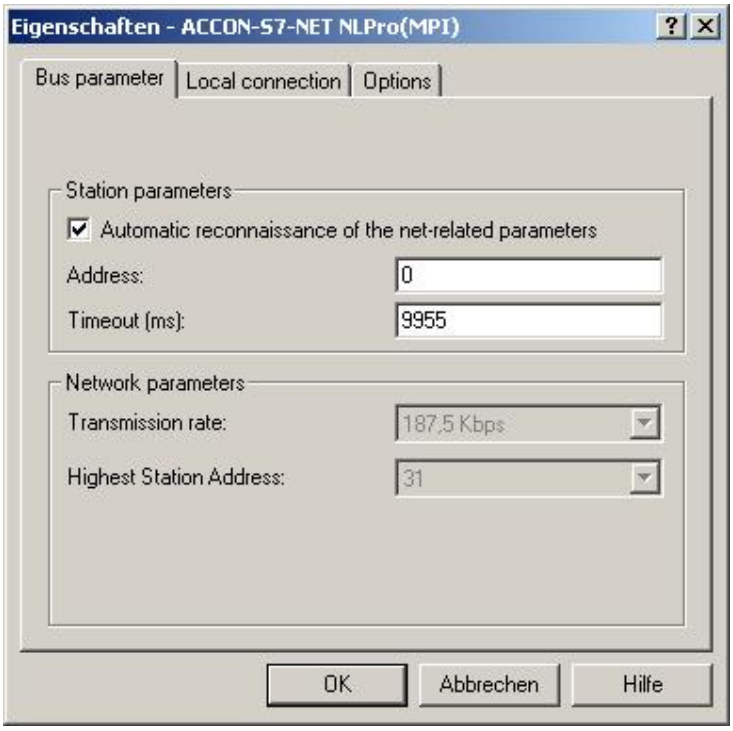


Figure 13: Autobaud function activated, MPI

To ease the configuration you can use the function »Automatic reconnaissance of the net-related parameters«. Because of this the initialization of a connection lasts a bit longer as online parameters have to be determined.

»Automatic reconnaissance of the net-related parameters« (autobaud function) can not be used when in the utilized PLC the function »Cyclical bus parameter spreading« is not activated or supported, e.g.

- S7-200

- Older Siemens S7 PLCs

- ACCON-NetLink-PRO is the only master on the bus

It is possible that the autobaud function does not work reliably when using a slower transfer rate (e.g. 19,2 Kbit/s) or with global data communication.

Profibus configuration

In principle it is the same as with the MPI configuration. But you have to remember that the net-related parameters are more voluminous.

With Profibus you have the additional parameter fields »bus profile« and »bus parameters«.

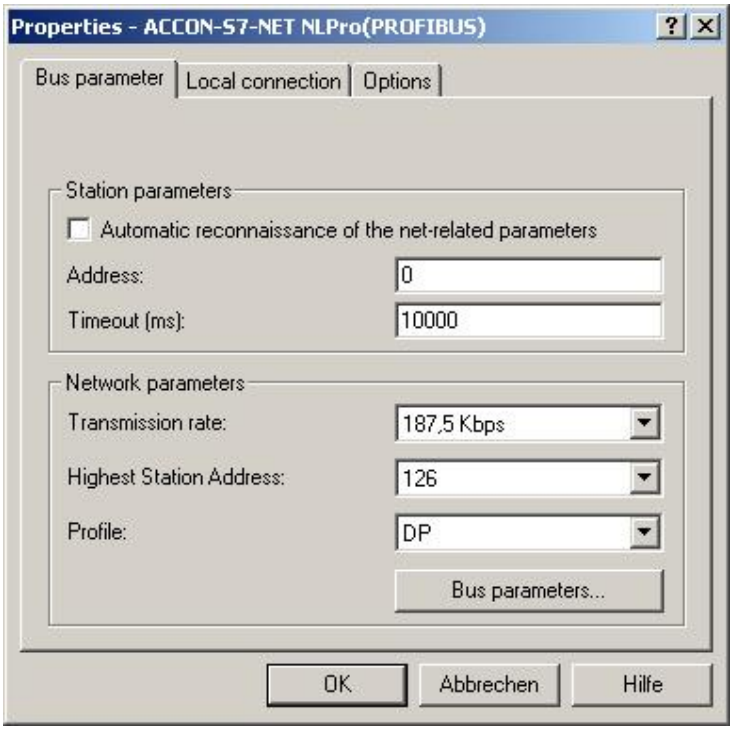


Figure 14: Autobaud function deactivated, Profibus

Profile:

Generally, in Profibus there are the profiles »DP«, »Standard« and »User-defined«. You have to choose the profile which is used in the automation system.

Bus parameters:

Unlike the MPI bus profile the bus parameters with Profibus are not constant and change with the type and number of the used Profibus participants.

You should always set the Profibus parameters which are used in the automation system.

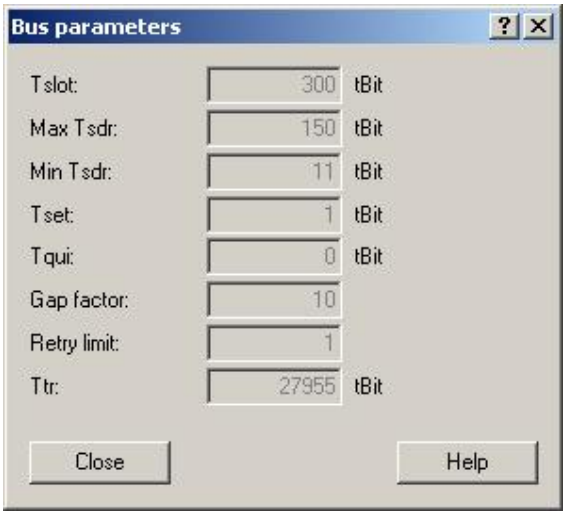


Figure 15: Bus parameters

To avoid these partly complex steps it is advantageous to use the autobaud function. This function determines the bus parameters automatically.

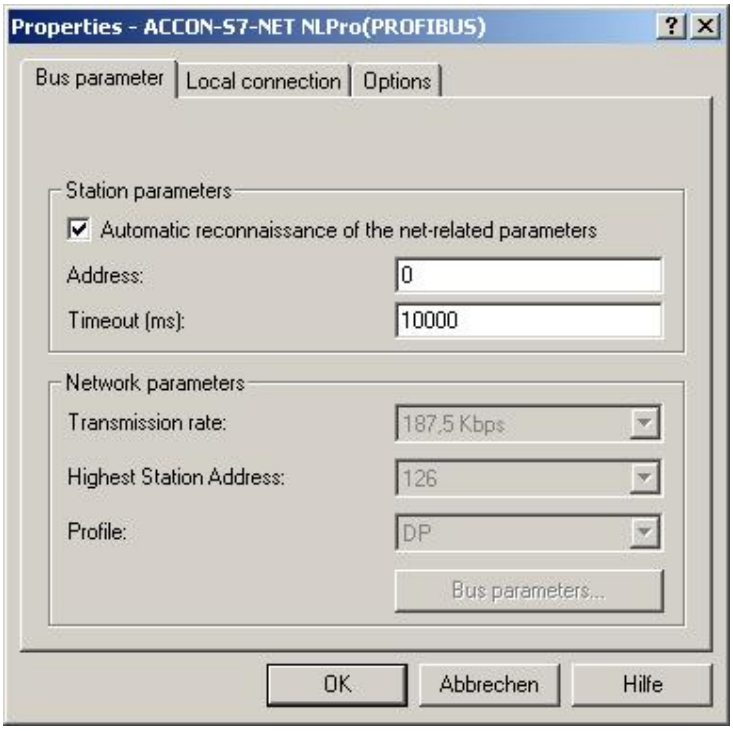


Figure 16: Autobaud function activated, Profibus

»Automatic reconnaissance of the net-related parameters« (autobaud function) can not be used when in the utilized PLC the function »Cyclical bus parameter spreading« is not activated or supported, e.g.

- S7-200

- Older Siemens S7 PLCs

- ACCON-NetLink-PRO is the only master on the bus

The following screenshot shows the switch for the »cyclic distribution of the bus parameters«. The switch is located in the hardware configuration of any Profibus interface.

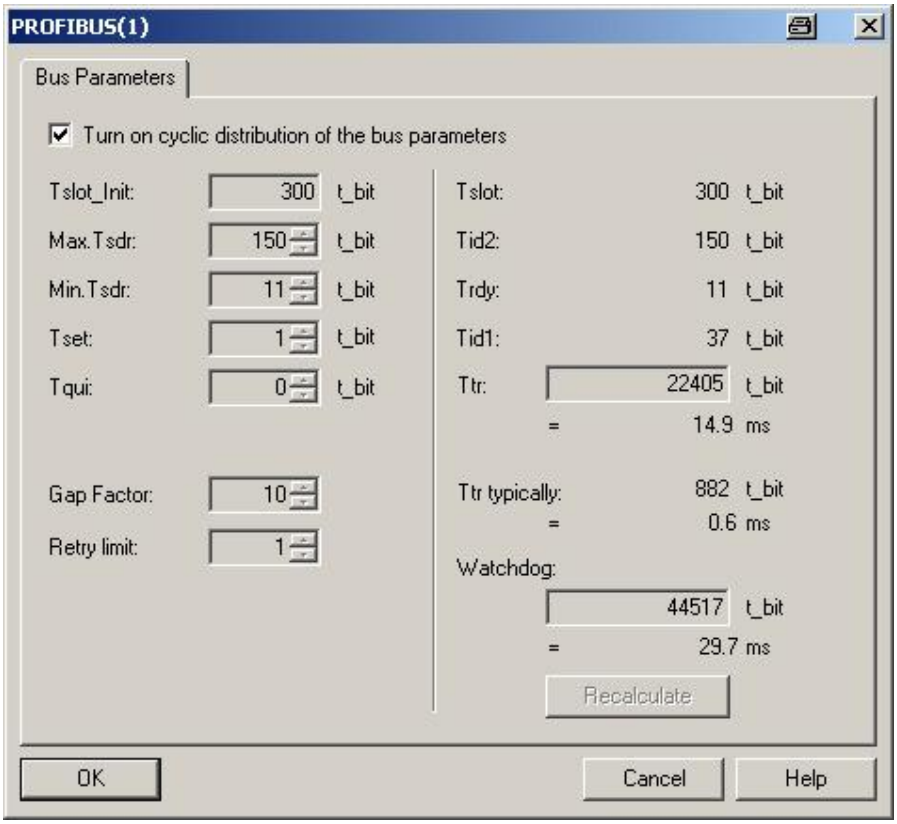


Figure 17: Profibus, bus parameters

PPI configuration

The station address is the most important setting in connection with the bus configuration. It is the address which the ACCON-NetLink-PRO has when going online. The station address' value can be in the range of »0« to »126« if the chosen address is less or equal the highest node address (HSA). The address must not be on the bus.

The timeout value shows how long the communication drivers should try to establish a communication.

Using network-related settings the transfer rate and the highest node address have to meet that of the automation system which is responded to.

Normally, the baud rate cannot be determined on PPI busses, automatically!

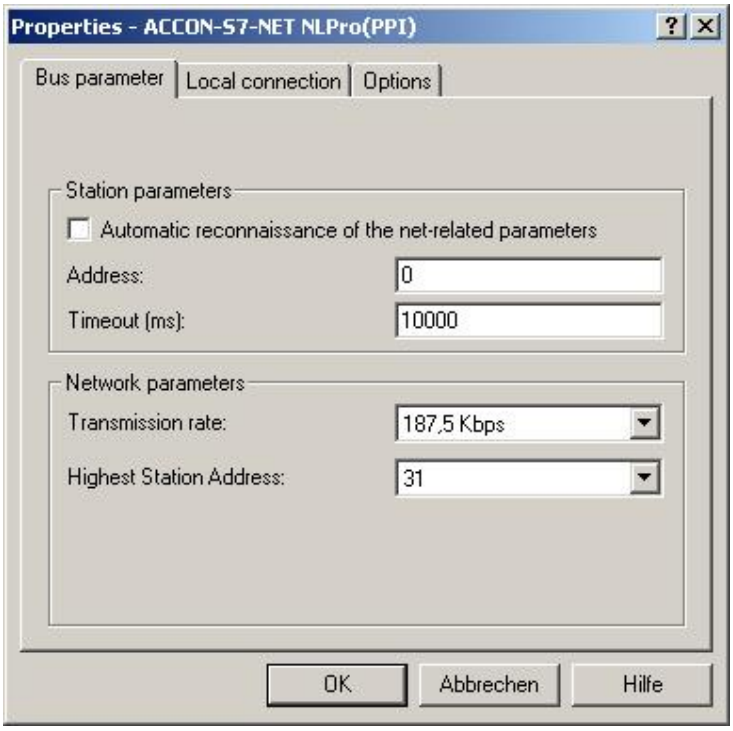


Figure 18: »Use bus parameters from ACCON-NetLink S7« deactivated

For further information about Advanced PPI please look for the manual of your S7-200 programming software.

The automatic detection of net-related parameters is not possible with S7-200 controls.

You have to activate Advanced PPI when communicating with an EM 277.

The PPI communication is supported from version 2.5 of the ACCON-S7-NET driver. You need at least firmware version 1.40.

You will find actual drivers and firmwares on our web site at www.deltalogic.de in the section download/ACCON-NetLink.

6.3 Driver options

You can change the language of the driver's output and help texts in the options of the ACCON-S7-NET driver. And the versions of the used driver data can be read out, too.

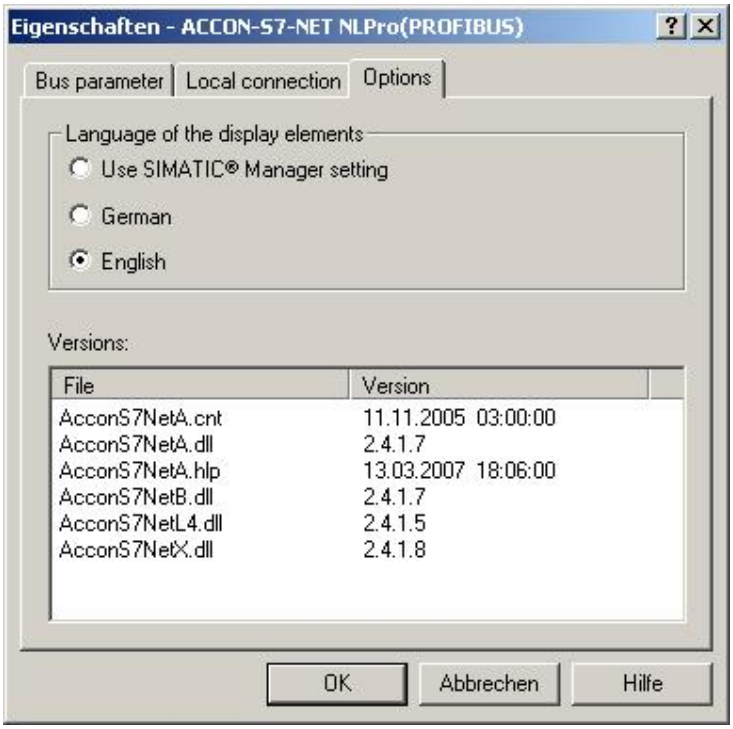


Figure 19: Language settings

Switching the language

You can choose between German and English.

After you have switched languages call the settings window again to accept the changes.

Versions

The names and versions of all driver data are indicated here.

If problems occur you can quickly check if the correct versions are installed by indicating the driver data.

You will find actual drivers and firmwares on our web site at www.deltalogic.de in the section download/ACCON-NetLink.

7 TCP/IP parametrization

There are three ways to make the TCP/IP parametrization in the ACCON-NetLink-PRO.

- Parametrization via »Set PG/PC Interface«
- Parametrization via the tool »NETLink PRO Konfiguration« (look for chapter »7.2«)
- Parametrization via the web interface of the ACCON-NetLink-PRO (look for chapter »7.3«)

The ACCON-NetLink-PRO has the IP address 192.168.4.49 in the condition as supplied to the customer.

7.1 Notices and error messages

When configuring the ACCON-NetLink-PRO via the ACCON-S7-NET driver you have to remember the following things:

- If the ACCON-NetLink is active on the bus at the same time as the desired parametrization (e.g. if a module or a variable table is being watched) no change will be made. The following message appears:

  »The ACCON-NetLink-PRO cannot be parametrized now.«

- Via a password the ACCON-NetLink-PRO can be protected against unauthorized parametrization. If you want to parametrize it using an invalid password you will receive the following message:

  »Wrong Password«

*The used standard values **before firmware 1.40***
User name: ACCON-NetLink-PRO
Password: (empty)

*The used standard values **from firmware 1.40***
User name: ACCON-NetLink-PRO
Password: admin

- The message »ACCON-NetLink-PRO parameters written successfully « appears when the password and the parametrization period are kept in mind during the parametrization.

The reboot period depends on the DHCP (Dynamic Host Configuration Protocol) timeout. This period may take approximately 20 seconds plus the adjusted DHCP timeout.

Setting TCP/IP parameters

To change the TCP/IP parameters just choose the desired station and call it via the »Change« button.

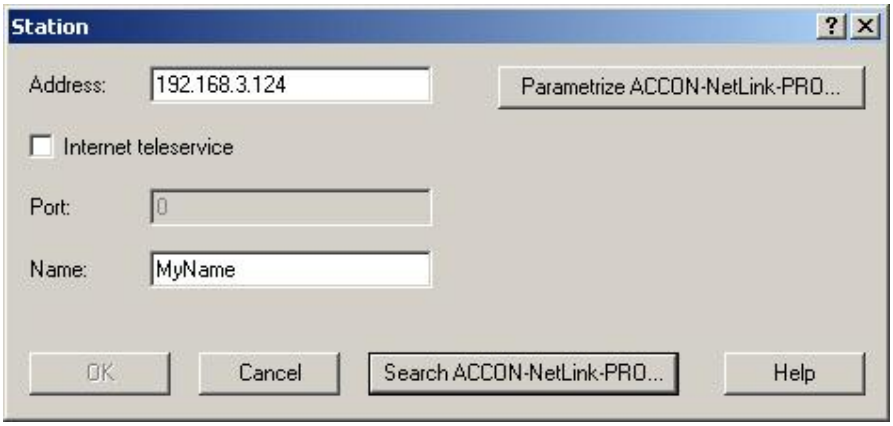


Figure 20: Chosen station

Via the button »Parametrize ACCON-NetLink-PRO...« you will get to an input mask which is filled with read out parameters of the ACCON-NetLink-PRO.

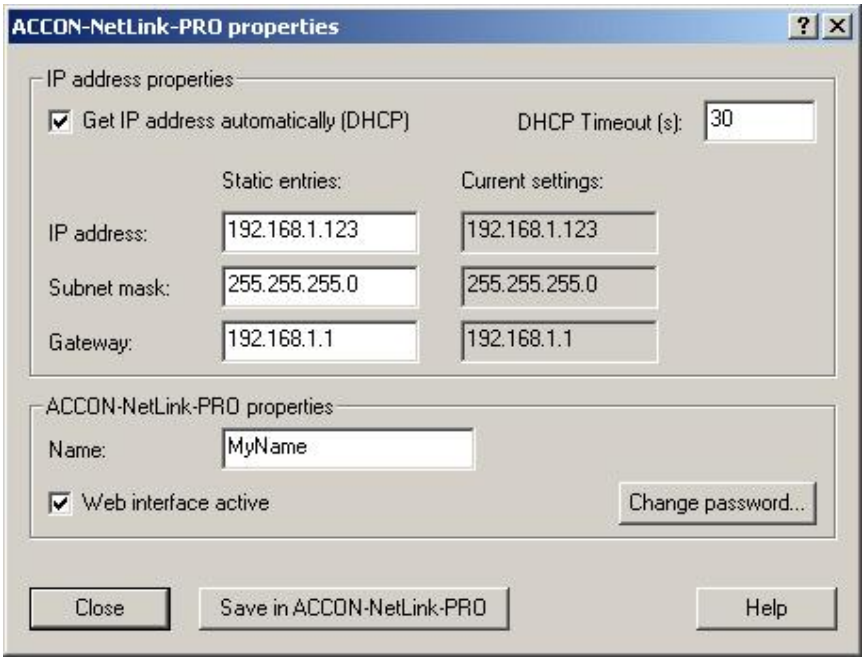


Figure 21: Settings ACCON-NetLink-PRO

If there is no ACCON-NetLink-PRO reachable by using the station's indicated IP address the following message appears:

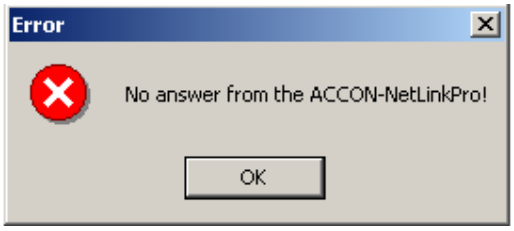


Figure 22: ACCON-NetLink-Pro does not respond

Two possible reasons:

- There is no ACCON-NetLink-PRO in connection with the indicated IP address (e.g. the device is off-state or still booting).
- The IP configuration of the used PC does not match the IP configuration of the indicated ACCON-NetLink-PRO (e.g. different network addresses).

As you can see in the parametrization mask it is possible to assign IP parameters via DHCP (Dynamic Host Configuration Protocol) next to the static IP address assignment.

Static TCP/IP-Configuration

If the ACCON-NetLink-PRO is used in a network without a DHCP server or the device shall be used in a DHCP server but is designated to operate with a static IP address you have to enter the desired IP parameters in the »Static Parameters« input masks.

In this case do not tick the »Assign IP addresses automatically (DHCP)« function. When selecting »Save in ACCON-NetLink-PRO« the parameters are saved in the ACCON-NetLink-PRO.

Using DHCP

DHCP has the problem that after each switch-on the DHCP server is assigning another IP address to the parametrized ACCON-NetLink-PRO.

The DHCP system administrator can take measures against this when doing the following: He has to assign a fix IP-address to the ACCON-NetLink-PRO's MAC address on the DHCP server. This requires additional work for the system administrator.

If the ACCON-NetLink-PRO should receive its IP parameters automatically via the DHCP server you have to activate the »Assign IP addresses automatically (DHCP)« function.

In addition the »DHCP Timeout in S« function is enabled. Does the ACCON-NetLink-PRO not receive parameters from a DHCP server within the time set it will use static parameters. This secures that the device is reachable an re-configurable.

As most of the DHCP servers need 12 to 20 seconds to assign valid parameters, inputs lesser than 30 seconds will be replaced by a standard value of 30 seconds.

By clicking on the »Store in NetLink-Pro« button the parameters will be stored in the ACCON-NetLink-PRO.

Additional Features

When choosing the »ACCON-NetLink-PRO Properties« button you are in the »ACCON-NetLink-PRO Settings« with the following options:

- Name:
  Here you can give the ACCON-NetLink-PRO a proper name which eases its identification in the searching window. This name is stored in the device.
  It is advantageous to name the devices in connection to its site (e.g. conveyor HG1), users (e.g. John Q. Public) or miscellaneous.
- Change Password:
  Here you can set a new password or change an already existing one.
  When using a password you can only change the ACCON-NetLink-PRO's configuration with it. Parametrization via drivers and web interface is protected by this password.

*The used standard values **before firmware 1.40***
User name: ACCON-NetLink-PRO
Password: (empty)

*The used standard values **from firmware 1.40***
User name: ACCON-NetLink-PRO
Password: admin

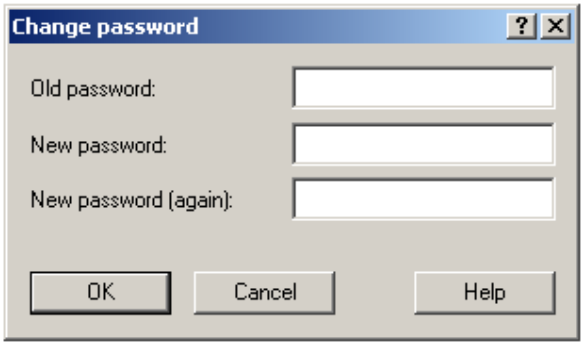


Figure 23: Change password

- Active Web Interface
  If activated you can watch the ACCON-NetLink-PRO's parametrization via all standard browsers e.g Internet Explorer, Opera, Mozilla Firefox and as the case may be change it. But the respective password is required.
  For more information about the web interface please look for chapter »7.3«.

To store parameters in the ACCON-NetLink-PRO click on »Store in NetLink-Pro« button.

Using the ACCON-NetLink-PRO for Remote Maintenance

When using the ACCON-NetLink-PRO for remote maintenance the network administrators of both locations have to be consulted.

There are different ways to realize a remote maintenance via a WAN (Wide Area Network). Here are a few suggestions:

Assigning an own and public IP address which is directly connected to the net:

Advantages	Disadvantages
-realized very fast	-only a few addresses world-wide available
-Administrator does note have to engage	-additional network with a direct WAN is required
	-not secure

Utilization behind a router using NAT:

Advantages	Disadvantages
-integrable into an already existing infrastructure	-network administrators have to parametrize routers and firewalls between the involved communication partners
-not visible/usable for everyone when the administrator is taking measures	

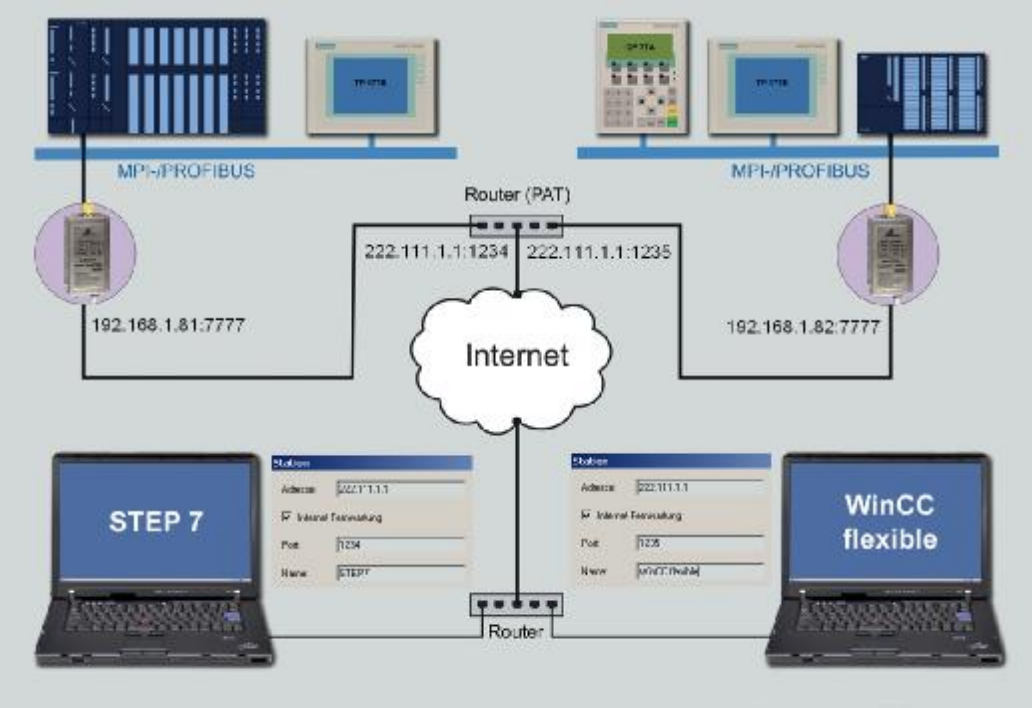


Figure 24: More than one ACCON-NetLink-PRO behind a router

When using more than one ACCON-NetLink-PRO behind a router you have to mark the function »Internet teleservice« and to every station there must be a port address assigned to. Furthermore the router must support NAPT (Network Address and Port Address Translation) respectively PAT (Port Address Translation).

Using a dial-up router (ISDN):

Advantages	Disadvantages
-easy to realize if a telephone extension is available	-telephone charges causing additional costs -loose of performance due to low bandwidth

A little help when using TCP/IP

Basic problems when using TCP/IP and the most frequent sources of error are discussed in chapter »9 Troubleshooting«.

7.2 Parametrization via a separate configuration tool

If there is no Siemens PG/PC interface on the parametrization PC you can parametrize the ACCON-NetLink-PRO via the integrated web interface (chapter »7.3«) or the separate configuration tool.

After the installation of the ACCON-S7-NET driver you can start the tool via »Start/Programs/DELTALOGIC/NETLink-S7-NET/NETLink PRO Konfiguration«. After starting the program the network will be searched for ACCON-NetLink-PROs. The result is shown in the following window:

Figure 25: »NETLink PRO Konfiguration«

When choosing any ACCON-NetLink-PRO from the list you can parametrize it by clicking on »Parametrieren« (parametrize). It is the same way as described in chapter »7.1«.

The ACCON-NetLink-PRO has the IP address 192.168.4.49 in the condition as supplied to customer.

7.3 Web interface

If not deactivated by the user the web interface of the ACCON-NetLink-PRO can be opened with every standard browser (e.g. Internet Explorer, Mozilla Firefox, Opera, etc.). The web interface should provide the user with information and support him when doing configuration tasks.

Welcome page

You can call the ACCON-NetLink-PRO's welcome page when entering »http://<ip-address».

*The used standard values **before firmware 1.40***
User name: ACCON-NetLink-PRO
Password: (empty)

*The used standard values **from firmware 1.40***
User name: ACCON-NetLink-PRO
Password: admin

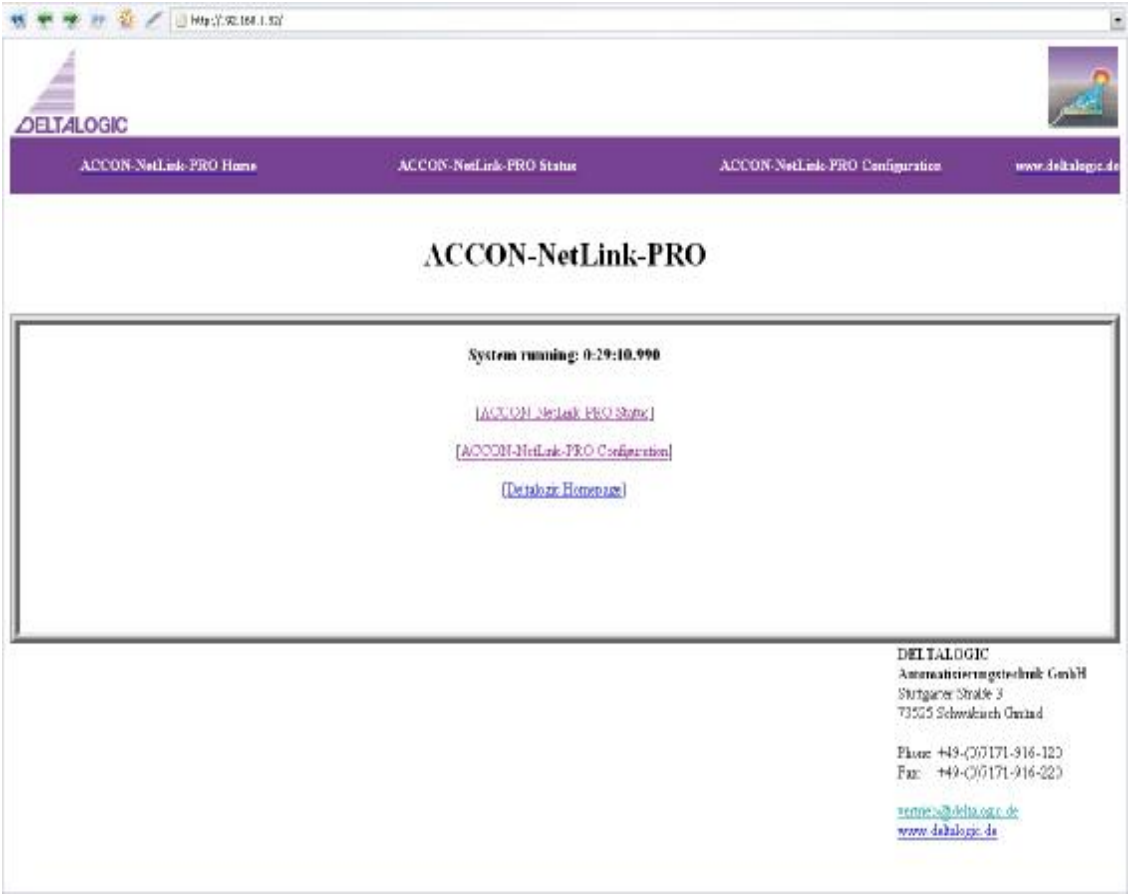
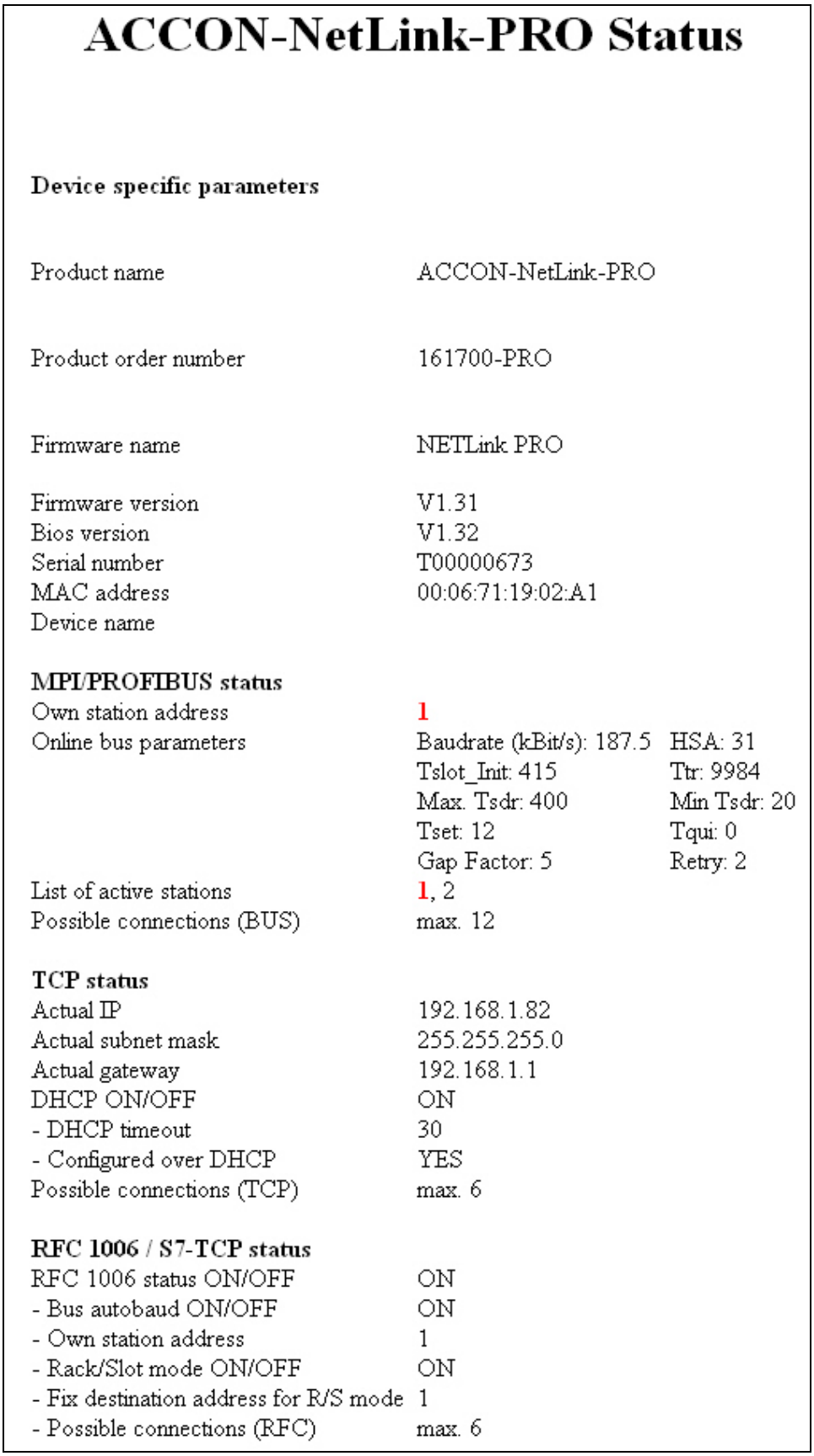


Figure 26: Web interface of the ACCON-NetLink-PRO

From this site you get to the status site, configuration site and to the web site of the DELTALOGIC Automatisierungstechnik GmbH.

Status site

From the status site reachable via a link on the welcome page you gain information about the ACCON-NetLink-PRO but you cannot reconfigure it.



ACCON-NetLink-PRO Status

Device specific parameters

Product name	ACCON-NetLink-PRO	
Product order number	161700-PRO	
Firmware name	NETLink PRO	
Firmware version	V1.31	
Bios version	V1.32	
Serial number	T00000673	
MAC address	00:06:71:19:02:A1	
Device name		

MPI/PROFIBUS status

Own station address	1	
Online bus parameters	Baudrate (kBit/s): 187.5	HSA: 31
	Tslot_Init: 415	Ttr: 9984
	Max. Tsdr: 400	Min Tsdr: 20
	Tset: 12	Tqui: 0
	Gap Factor: 5	Retry: 2
List of active stations	1, 2	
Possible connections (BUS)	max. 12	

TCP status

Actual IP	192.168.1.82
Actual subnet mask	255.255.255.0
Actual gateway	192.168.1.1
DHCP ON/OFF	ON
- DHCP timeout	30
- Configured over DHCP	YES
Possible connections (TCP)	max. 6

RFC 1006 / S7-TCP status

RFC 1006 status ON/OFF	ON
- Bus autobaud ON/OFF	ON
- Own station address	1
- Rack/Slot mode ON/OFF	ON
- Fix destination address for R/S mode	1
- Possible connections (RFC)	max. 6

Figure 27: ACCON-NetLink-PRO status

This site provides general (e.g. firmware version, number of possible connections, etc.) as well as special (baud rate, active participants, DHCP status, etc.) information which eases the search for errors.

Device-specific parameters:

Product name	ACCON-NetLink-PRO
Firmware name	ACCON-NetLink-PRO
Firmware version	e.g. V1.00
Serial number	e.g. T00000062
MAC address	e.g. 00:06:71:19:00:3E

Bus-specific parameters:

Station address	When the ACCON-NetLink-PRO is active on the bus, the own station address is indicated.
Bus parameters	When the ACCON-NetLink-PRO is active on the bus, the bus parameter set is shown broken down.
Max. possible bus connections	Number of highest possible and simultaneous bus connections (at the moment 12).
List of active stations	When the ACCON-NetLink-PRO is active on the bus a list of the active stations is output. The own address is marked red.
Sum of used bus connections	When the ACCON-NetLink-PRO has opened at least one bus connection then the number of open connections is shown here.

TCP/IP-specific parameters:

IP address	The actual IP address of the ACCON-NetLink-PRO is shown (e.g. 192.168.4.54).
Subnet mask	The actual subnet mask of the ACCON-NetLink-PRO is shown (e.g. 255.255.255.0).
Gateway	The actual standard gateway of the ACCON-NetLink-PRO is shown (e.g. 192.168.4.33).
DHCP status	Shows if DHCP is activated or not. If on it shows if DHCP was successful or if the parametrized default IP address is used..
Device Name	If so the free-selectable name of the ACCON-NetLink-PRO is shown.
Max. possible bus connections	Number of the maximum possible and simultaneous IP connections (at the moment 7).
Communication port	Port number of the TCP/IP communication port (standard 7777)
Sum of used TCP connections	The number of open TCP connections is shown if the ACCON-NetLink-PRO has at least one open RFC or TCP connection.

Configuration site

From the configuration site reachable via a link on the welcome page you can configure the ACCON-NetLink-PRO. Before you can open this site you have to enter the **correct device name** (ACCON-NetLink-PRO) and the **password**.

Figure 28: Name and password

Take notice of case sensitivity.

*The used standard values **before firmware 1.40***
User name: ACCON-NetLink-PRO
Password: (empty)

*The used standard values **from firmware 1.40***
User name: ACCON-NetLink-PRO
Password: admin

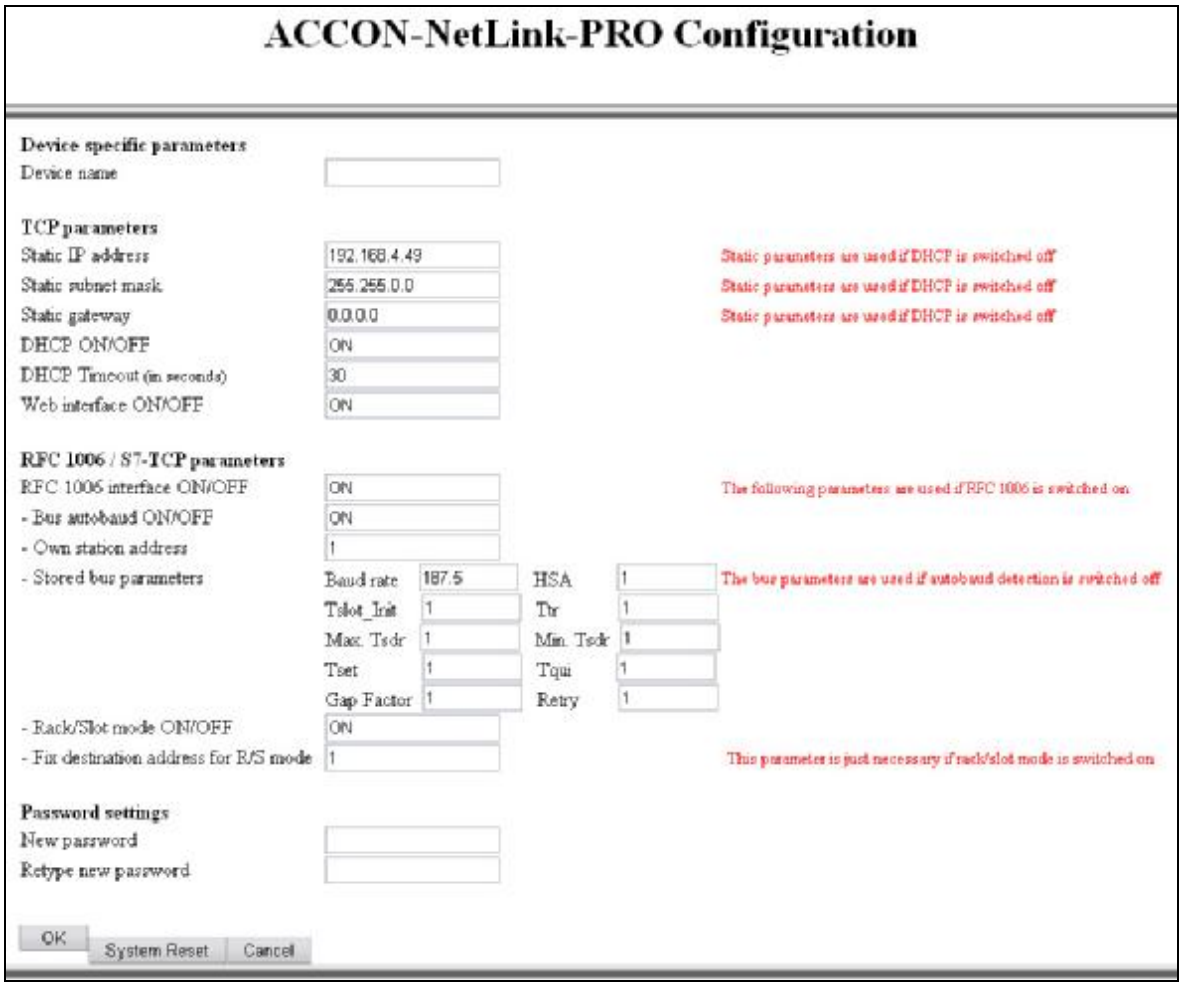


Figure 29: ACCON-NetLink-PRO configuration

If entered all data successfully you can access all parameters. They are not write-protected and configurable via the ACCON-S7-Net's driver interface.

Static IP address	Used when DHCP is switched-off or DHCP timeout expires.
Static Subnet Mask	Used when DHCP is switched-off or DHCP timeout expires.
Static Gateway	Used when DHCP is switched-off or DHCP timeout expires
Device Name	Alpha-numeric name with a maximum length of 20.
DHCP Status	ON or OFF
DHCP Timeout	30 to 65500 Seconds
Web Status	Web Interface ON or OFF
New Password	Password with a eight-digit maximum
Retype new Password	Retype Password with a eight-digit maximum

Table 3: ACCON-NetLink-PRO parameters

RFC 1006 specific parameters

RFC 1006 status	Shows if RFC 1006 has been activated or not (ON or OFF). When activated (ON) further parameters are visible.
Bus autobaud ON/OFF	Shows if the bus parameters of the bus system should be detected automatically (ON). Or if the stored bus parameters should be used to go online (OFF).
Own station address	Indicates the own station address. The ACCON-NetLink-PRO uses this address to participate on the bus cycle.
Stored bus parameters	If autobaud is OFF the stored bus parameters are shown here. The ACCON-NetLink-PRO uses these to go online when RFC 1006 is activated.
Rack/Slot mode	Shows if the R/S-Mode (ON) or the Addressed-Mode (OFF) is used.
Fixed target address for R/S mode	If R/S mode is activated all incoming RFC 1006 requests are forwarded to the here parametrized bus address.
Max. possible IP connections (RFC)	Number of maximum possible and simultaneous IP connections for the RFC 1006 communication.
Sum of the used RFC connections	The number of open RFC connections is shown here when the ACCON-NetLink-PRO has opened at least one TCP or RFC1006 connection.

Table 4: RFC 1006 specific parameters

You can undo the already made changes by clicking the »Cancel« button.

When clicking on the »OK« button the entries are tested for correctness. If necessary a false entry with an appropriate solution is shown.

If all entries are correct the changes which will be stored in the ACCON-NetLink-PRO are shown.

After saving new parameters the ACCON-NetLink-PRO restarts to activate the new configuration.

If desired the ACCON-NetLink-PRO can be restarted remotely. Just click on »System Reset«.

The restart period depends on the DHCP (Dynamic Host Control Protocol) timeout. But it takes at least 20 seconds plus the adjusted DHCP timeout.

Security site

The security site is reachable via the link »ACCON-NetLink-PRO Security«. From this site rudimental TCP security settings can be carried out. But before you can open this site you have to enter the correct device name (ACCON-NetLink-PRO) and the password (standard password »admin«). Via the button »factory defaults« you can reset the ACCON-NetLink-PRO.

*The used standard values **before firmware 1.40***
User name: ACCON-NetLink-PRO
Password: (empty)

*The used standard values **from firmware 1.40***
User name: ACCON-NetLink-PRO
Password: admin

8 RFC 1006 (S7 TCP/IP)

As an additional function the ACCON-NetLink-PRO has implemented the RFC 1006-Protocol (also known as S7-TCP/IP or as ISO on top of TCP). This function can be activated via the ACCON-NetLink-PRO's web interface.

As many visualization system manufacturers have implemented this protocol to realize a connection to Simatic controllers via Ethernet-CPs from Siemens (e.g. CP343 or CP443), the ACCON-NetLink-PRO with RFC1006 is a low-cost alternative to communicate with these visualization systems.

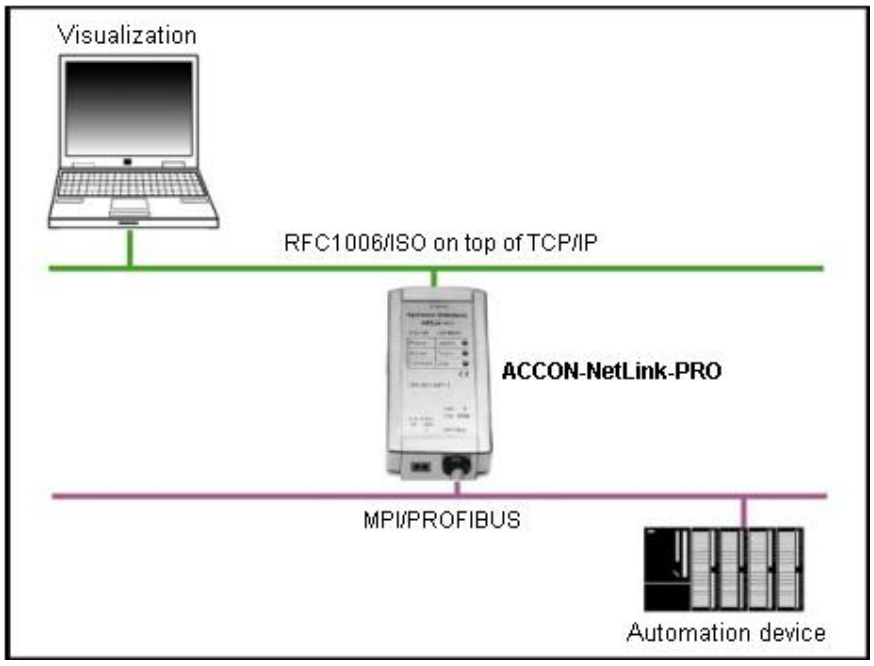


Figure 30: RFC 1006 options

The following software packages incl. RFC 1006 support have been tested in conjunction with the ACCON-NetLink-PRO:

- WinCC V6.0 (Siemens AG)
- ZenOn V6.2 (COPA-DATA)
- PROCON-Win V3.2 (GTI Control)
- S7-OPC-Server V3.1 and higher (Systeme Helmholz GmbH)
- AGLink V4.0 (DELTALOGIC Automatisierungstechnik GmbH)
- INAT-OPC-Server (INAT GmbH)
- WinCE 5.0 Terminal TP21AS (Sütron Electronic GmbH)

The communication with S7-200 controllers via RFC 1006 is not supported.

8.1 Configuration of the RFC1006 option

RFC1006 is configured via the web interface. When activated you have to parametrize the following options.

After saving the configuration and restarting the ACCON-NetLink-PRO, the settings are shown clearly on the status site of the web interface.

Autobaud

By using the option »Bus autobaud ON/OFF« you can preset if the ACCON-NetLink-PRO is searching for bus parameters when logging on the bus. Then you can choose if the NetLink should go online with the found or the stored bus parameters.

Possible inputs are »ON« or »OFF«.

Own station address

The »own station address« option indicates the bus address with which the ACCON-NetLink-PRO will log on to the bus.

The value for the station address must have any value in the range of »0« to »126« The only precondition is, that the selected address is not larger than the HSA (highest station address) and is not already being used for another device on the same bus.

Store specified bus parameters

If the »Bus autobaud ON/OFF« option has been deactivated (OFF), the parameter fields of the sub item »Stored bus parameters« must be configured carefully.

When parametrizing, please note that all parameters for Profibus are interdependent. That is, if a parameter, e.g. the baud rate, is changed, all the other parameters usually also change.

For MPI, on the other hand, all parameters besides the baud rate are fix. This means that if an MPI connection increases from e.g. 187.5 kBit/s to 12000 kBit/s, all other parameters remain unchanged.

The following parameters must be taken into account:

- Baud Rate:
  The required baud rate is entered in Kbps. E.g. »187.5« or »12000«. The possible values are: 9,6; 19,2; 45,45; 93,75; 187,5; 500; 1500; 3000; 6000 and 12000.
- HSA
  The highest station address is entered here. For MPI generally »31« and for Profibus »126«. However you do not have to use the standard values.
- TSlot_Init
  This value is always »415« for MPI – regardless of which baud rate. For Profibus the appropriate value should be read from the Profibus project.
- Ttr
  This value is always »9984« for MPI – regardless of which baud rate. For Profibus the appropriate value should be read from the Profibus project.
- Max. Tsdr
  This value is always »400« for MPI – regardless of which baud rate. For Profibus the appropriate value should be read from the Profibus project.
- Min. Tsdr
  This value is always »20« for MPI – regardless of which baud rate. For Profibus the appropriate value should be read from the Profibus project.

- Tset
  This value is always »12« for MPI – regardless of which baud rate. For Profibus the appropriate value should be read from the Profibus project.
- Tqui
  This value is always »0« for MPI – regardless of which baud rate. For Profibus the appropriate value should be read from the Profibus project.
- Gap
  This value is always »5« for MPI – regardless of which baud rate. For Profibus the appropriate value should be read from the Profibus project.
- Retry
  This value is always »2« for MPI – regardless of which baud rate. For Profibus the appropriate value should be read from the Profibus project.

Please note that under unfavourable circumstances an incorrectly parametrized ACCON-NetLink-PRO can interfere the bus to the extent that a regular bus operation is no longer possible.

For this reason, the autobaud function is provided to ensure that the correct parameters are used. But the PLC must support this function!

Wrong bus parameters can interfere the bus, considerably!

Addressing

RFC1006 connections are virtual point-to-point connections, that means, connections from the PC to the programmable controller (possible branching within the programmable controller is managed by the PLC => Routing).

Because the ACCON NetLink-PRO is a point-to-multipoint communications adaptor (»PC to ACCON NetLink-PRO« on the one hand and »ACCON NetLink-PRO to many bus stations« on the other), it was necessary to implement different addressing methods to permit all communication variations. You have to differ between two addressing methods.

Addressed Mode

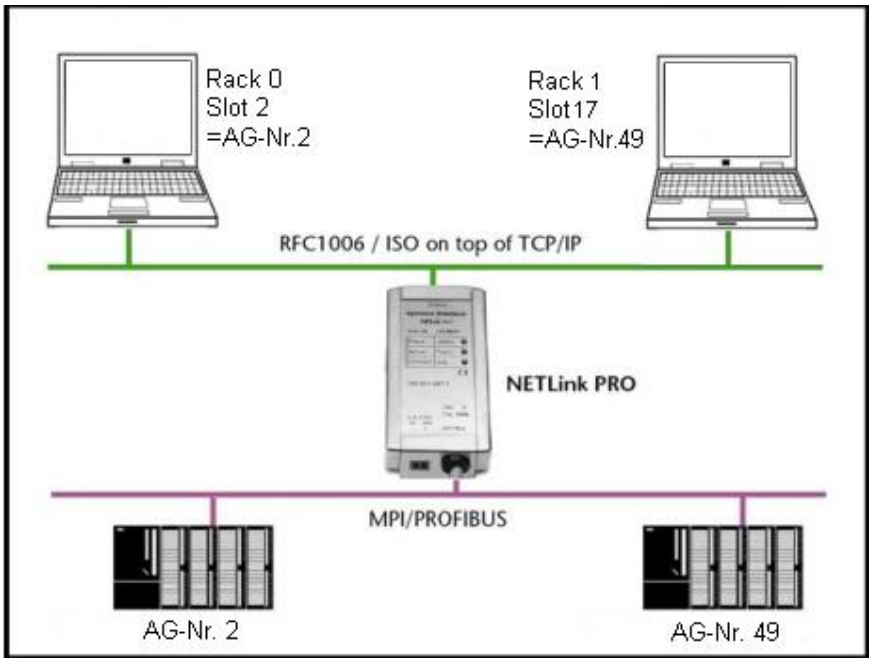


Figure 31: Addressed mode

The addressed mode is suitable if different PLCs are to be accessed on the same MPI/Profibus via RFC1006.

If this mode is used, the following setting must be parametrized on the configuration page of the web interface:

- »Rack/slot mode« must be deactivated (OFF), then the Addressed Mode is active

Now the destination address has to be entered in the RFC1006 driver of the Windows application (e.g. WinCC, see Section 7.2.1) instead of the rack and slot. In chapter »8.2« and »8.3« you will find examples for ACCON-AGLink and WinCC.

Please note that the rack and slot together fill only one byte which is divided as follows:

- Rack fills the upper three bits (11100000_{bin} for Rack 7, Slot 0)
- Slot fills the lower five bits (00011111_{bin} for Rack 0, Slot 31)

If you now want to communicate with destination address 2, the following has to be entered:

Rack 0, Slot 2.

If you want to communicate with destination address 49 the following has to be set:

Rack 1, Slot 17.

You will find in chapter »10.3« a table where you can gather the already converted values for rack and slot from.

There are also parametrization tools that do not provide fields with names like rack and slot. These tools normally have a parametrization field with a name such as Remote TSAP that is usually two bytes long and in hex format. This field, in which only the lower byte is of interest, is parametrized as follows:

If you want to communicate with destination address 2, the following has to be entered:

Remote TSAP 0202_{hex}.

If you want to communicate with destination address 49 the following has to be set:

Remote TSAP 0231_{hex}.

You will find in chapter »10.3« a table where you can gather the already converted values for rack and slot from.

You can use the formula »Rack * 32 + Slot = Address«.

In chapter »7.2« the addresses mode is explained with the help of a WinCC example.

Rack/Slot Mode

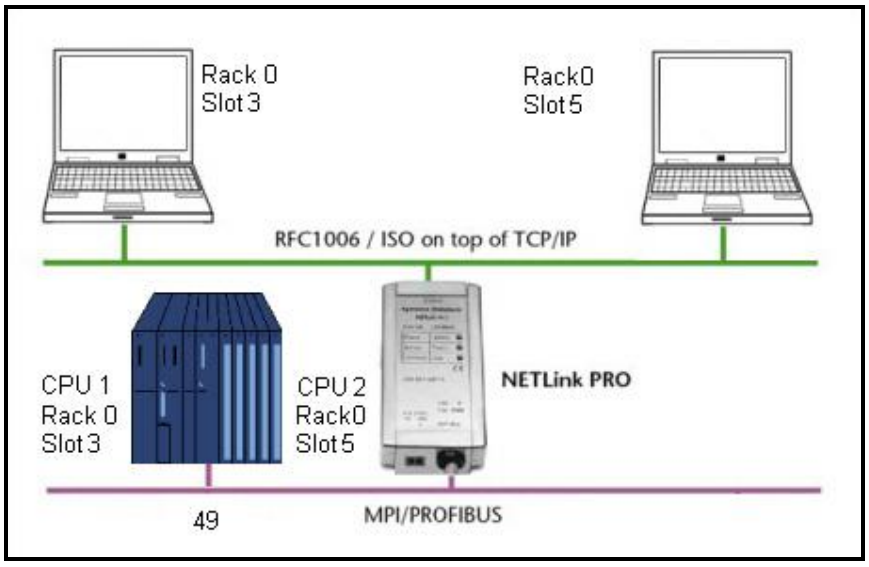


Figure 32: Rack/Slot mode

In rack/slot mode, it is possible to access several PLCs which are on the same rack via a bus address.

This is achieved by just communicating directly with one pre-parametrized station. This station routes the data packets not intended for it to the required rack/slot.

This makes it possible, for example, to communicate in S7-400 systems with more than one PLC on a rack (Multicomputing) without having to attach further PLCs to the bus.

To use this function, it is necessary to parameterize the following on the configuration page of the web interface:

- »Rack/slot mode« must be enabled (ON)
- For »Fix destination address for R/S mode«, the address of the required communication partner must be entered.

8.2 Using RFC1006 with ACCON-AGLink

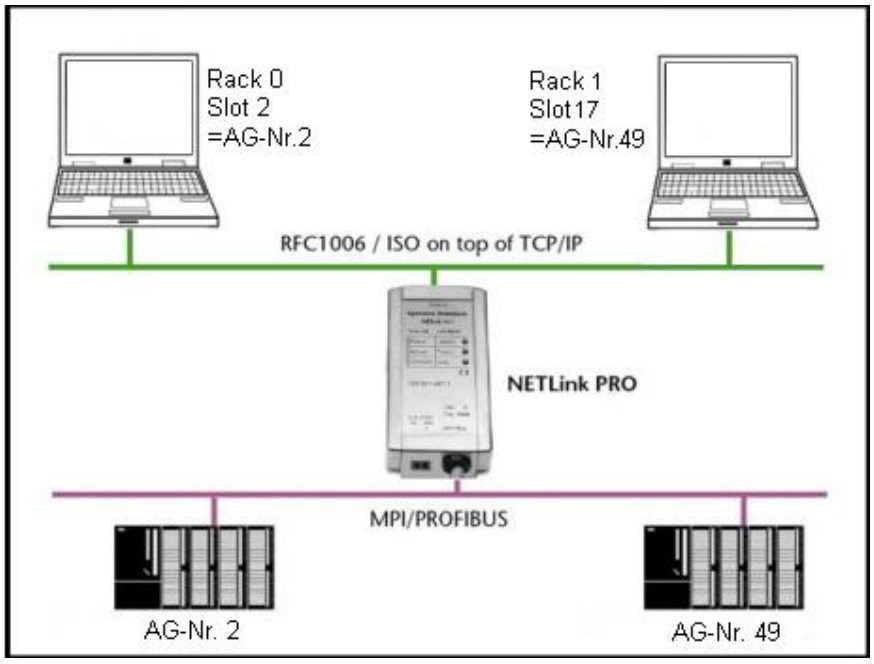


Figure 33: RFC 1006 with ACCON-AGLink

Using the addressed mode it is possible to access several PLCs which are on the MPI-/ Profibus bus.

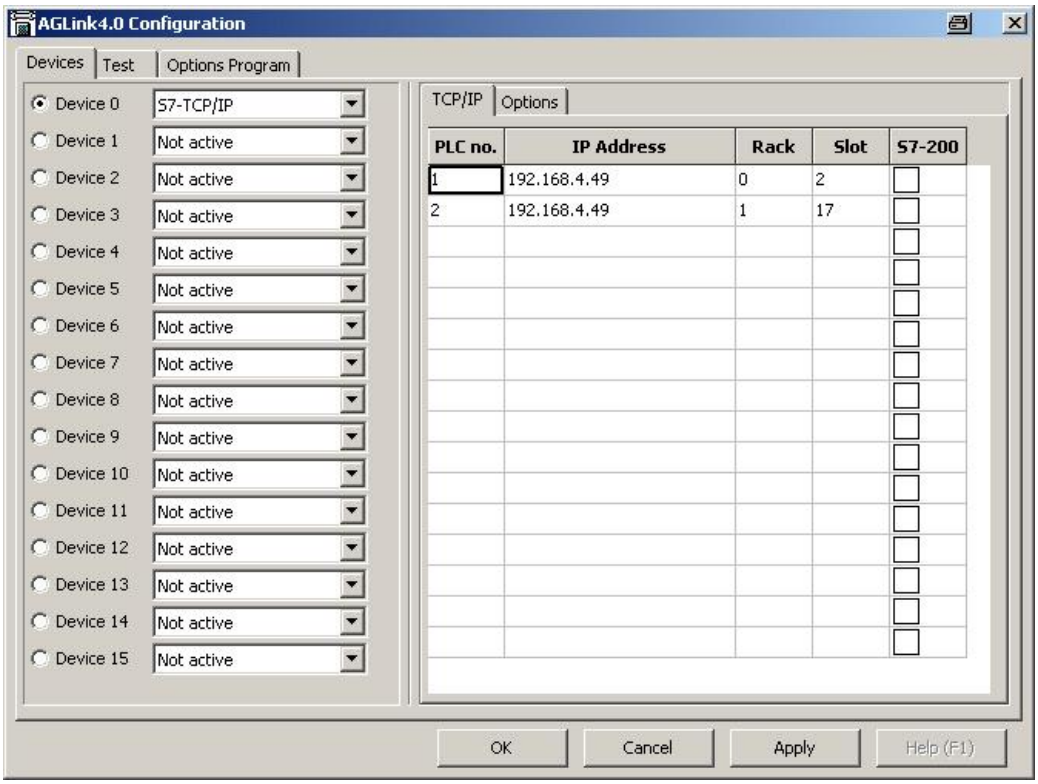


Figure 34: AGLink 4.0 configuration

This configuration can be used for the following software packages:

- ACCON AGLink Version 3.x und 4.0
- DELTALOGIC S7/S5 OPC-Server
- SPS-Analyzer Autospy
- ACCON-S7-Power Tools
- ACCON-S7-EasyLog

8.3 Using RFC1006 with WinCC v 6.0

The basic parametrization of RFC1006 connections in visualization systems is explained here. E.g. using WinCC V6.0 of the Siemens AG.

To parametrize a RFC 1006 connection in WinCC you have to create a new TCP/IP connection in the »SIMATIC S7 PROTOCOL SUITE«. This connection is called »NetLink_PRO«.

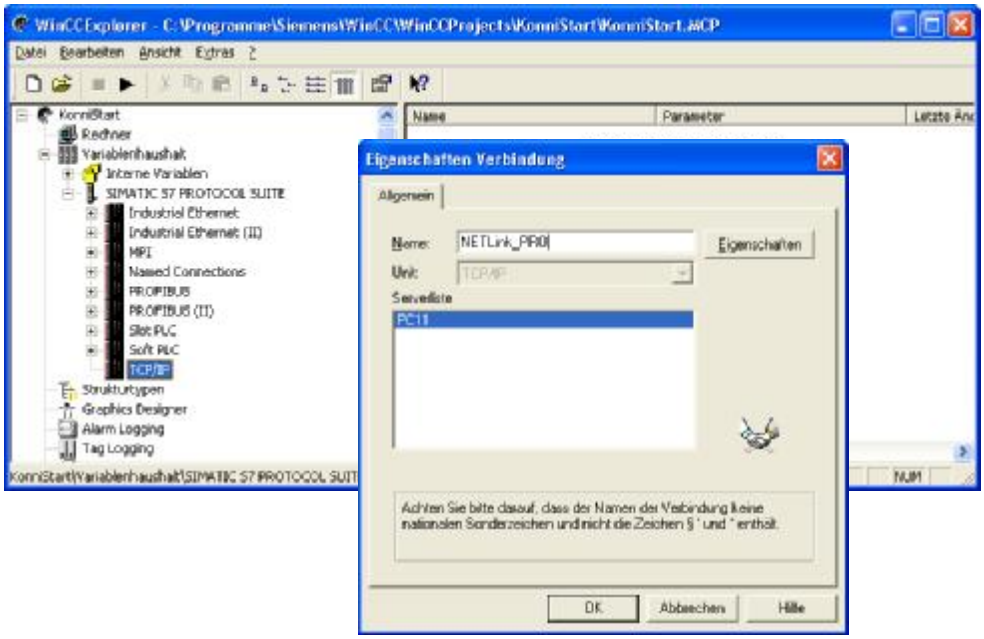


Figure 35: RFC 1006 with WinCC v 6.0

By clicking on »settings« you will get to a mask where you have to enter the IP address of the ACCON-NetLink-PRO as well as the Rack/Slot address of the target.

In this case the ACCON-NetLink-PRO has the IP address 192.168.4.38. The target PLC with which should be communicated has the Profibus address 49. The addressed mode is used so you can take the values for Rack and Slot from the address conversion table in chapter »10.3«.

Figure 36: TCP/IP connection parameters

If you are using several PLCs in one Rack (Multicomputing) you can access every single PLC. Therefore you must use the Rack/Slot mode (look for chapter Rack/Slot mode). You have to indicate the corresponding rack and slot number for the respecting PLC.

This recently configured connection must get a variable. This is done by a right click to open the context menu of the new connection and selecting »New variable…«.

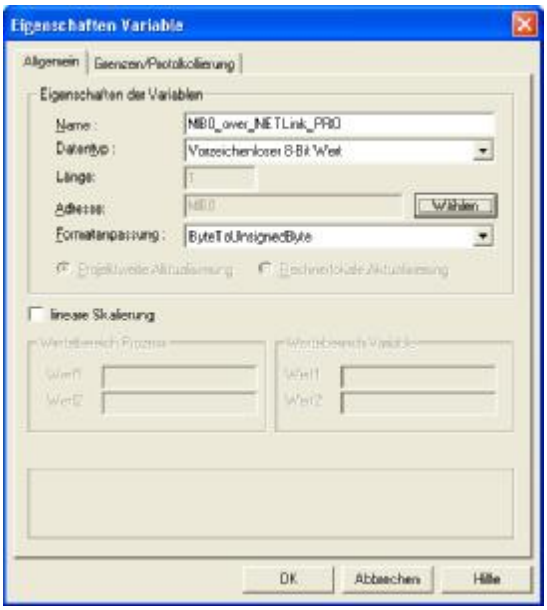


Figure 37: Variable properties

In the properties window of the variable, which was named »MB0_over_NETLink_PRO«, we can now select the type of variable by clicking on the »Select« button.

Flagbyte 0 is configured here.

Figure 38: Flagbyte 0 configured

The following screenshot shows that »NETLink_PRO« connection has now a variable named »MB0_over_NETLink_PRO«.

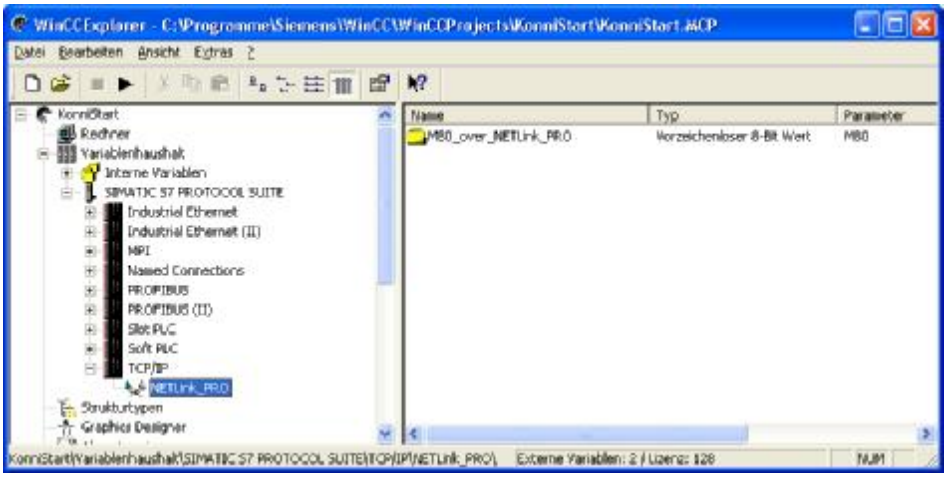


Figure 39: Connection »NetLink_PRO«

If this variable is now included in the initial screen of the WinCC project, for example, a connection will be established to the PLC with address 49 via the ACCON NetLink-PRO to read or write flagbyte 0 from this address.
Of course, further variables of different types can be created and used according to the same scheme.
It is also possible to create additional TCP/IP connections in order to communicate not only with the PLC with bus address 49 but also with other PLCs.

9 Troubleshooting

Q: I do not know my PC's IP address.

A: Use the prompt and enter the command »ipconfig« to gain information about your Ethernet interface.

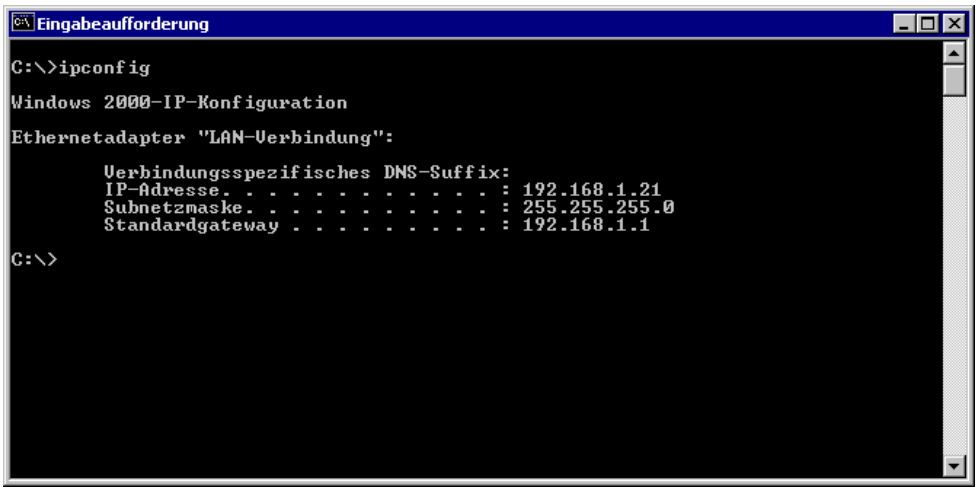


Figure 40: ipconfig

Q: My PC has a firewall which ports do I have to release?

A: The ACCON-S7-Net driver communicates with the ACCON-NetLink-PRO via TCP/IP port 7777. The UDP ports 25342 and 25343 are used when searching for ACCON-NetLink-PRO devices. To have the ACCON-S7-Net driver's basic functions please release at least port 7777.

Q: The configuration tool as well as the web interface asks for a password. But I did not enter one.

A: From firmware version 1.40 the ACCON-NetLink-PRO must have a password. If no password is set, the standard password is »admin«.

Q: There are no dialog settings in the Simatic Manager.

A: When you installed the ACCON-S7-NET driver for the first time you have to add it to the PG/PC interfaces, too.
Make sure that you have administrator rights when installing the driver. After an successful installation you have to reboot your system.
Look for chapter »5.3« page 12-14. Simatic Manager Version 5.1 is minimum!

Q: It is not possible to go online when the adaptor is put on the Profibus

A: If possible use the autobaud function.
If not desired or possible you have to check the Profibus' timing parameters in the STEP7 project planning. Via the »Bus Parameters« button you can enlist the read off values into the extended bus parameter settings. If you still cannot go online you have to increase the »TRT« (Target Rotation Time) parameter in the ACCON-NetLink-PRO as well as on the PLC. Look for chapter »8.3« page 40/41.

Q: The program Starter experiences difficulties when accessing a Micromaster drive.

A: Increase breakdown monitoring to 200 ms and application monitoring to 5000 ms.

Q: Every time I am executing a certain function it fails and the red Active-LED is blinking.

A: An exception error in the communication between your PC and the ACCON-NetLink-PRO has occurred. Please contact our support and tell them how to trigger this error. We will try to solve the problem as soon as possible.

Q: Every time I am executing a certain function it fails and the red Connect-LED is blinking.

A: An exceptional error in the communication between the ACCON-NetLink-PRO and the automation system has occurred. Please contact our support and tell them how to trigger this error. We will try to solve the problem as soon as possible.

Q: Sometimes MPI or Profibus connections with high baud rates are getting disconnected although the ACCON-NetLink-PRO is put on the PLC and no other users are connected.

A: Be sure that the bus is correctly terminated.
Even though the ACCON-NetLink-PRO is the only device connected to the bus in addition to the PLC. You have to insert the final resistor. Above all high baud rates can be interfered.

Q: If I set the ACCON-NetLink-PRO to autobaud in the PG/PC interface and try to go online, the active LED lights up briefly before a message appears telling me that the bus parameters cannot be determined.

A: Please deactivate the autobaud functionality in the NETLink-S7-NET driver (PG/PC interface) and set the correct baud rate and the correct profile.

Q: In the web interface, I enabled the RFC functionality and would like the ACCON-NetLink-PRO to go onto the bus using autobaud.
Unfortunately, the active LED just flashes but no communication is possible via my visualization system.

A: Please deactivate the autobaud functionality in the web interface of the ACCON-NetLink-PRO and set the correct baud rate with the corresponding bus parameters.

Q: I have read that the ACCON-NetLink-PRO can communicate with up to seven PCs at the same time. But I can’t manage to query a status of my automation system from more than six PCs at once.

A: A total of seven TCP connections are available that can be used at the same time. However, please note that only up to six connections can be used at once per type of connection (NETLink-S7-NET or RFC1006 connections are possible). The purpose of this is to keep one connection channel free for the other protocol.

Q: I am using the rack/slot mode of the RFC1006 interface and have specified address 2 for my existing PLC in the web interface in »Fix destination address for R/S mode«.
Although ACCON-NetLink-PRO online is active (active LED lights up), my visualization system tells me that no connection can be established.

A: Make sure you have assigned the correct values to rack and slot in the parametrization. Look for chapter »8.1« page 43.

Q: I would like to use addressed mode of the RFC1006 interface (rack/slot mode = OFF) because of that way I can access several PLCs on the same bus. Unfortunately, I am not sure how to parameterize the fields rack and slot in the visualization used.

A: If addressed mode is used, a combination of rack and slot specifies the destination address of the automation system. Look for chapter »8.1« page 42.

Q: If I mix RFC1006 connections and connections via the STEP7 driver, the connection sometimes breaks off or error messages appear saying that it is not possible to establish a connection.

A: For communication with S7-300 modules it may be necessary to parameterize the communication resources.
The user can influence the allocation of existing »Connection Resources« under object properties of the PLC in the hardware configuration.

Q: Once the configured Profibus slaves have been added on my PLC, communication between ACCON-NetLink-PRO and STEP7 becomes markedly slower.

A: The user can influence the allocation of »Scan Cycle Load from Communication [%]« under object properties of the PLC in the hardware configuration. The default value is 20 %.

10 Appendix

10.1 Connector Pin Assignment

MPI/Profibus Interface Assignment

Connection	Signal	Meaning
1	-	unused
2	GND	Mass (looped through)
3	RxD / TxD-P	Received Data-P / Transmission Data-P
4	-	unused
5	DGND	Mass for bus scheduling (looped through)
6	DVCC	DC 5 V for bus scheduling (looped through)
7	VCC	DC 24 V (looped through)
8	RxD / TxD-N	Received Data-N / Transmission Data-N
9	-	unused

Table 5: MPI/Profibus Interface Assignment

Ethernet Interface assignment (Host-Interface)

Connection	Signal	Meaning
1	TX+	Sending Data
2	TX-	Sending Data
3	RX+	Receiving Data
4	-	unused
5	-	unused
6	RX-	Receiving Data
7	-	unused
8	-	unused

Table 6: Ethernet Interface assignment (Host-Interface)

The ACCON-NetLink-PRO is provided with a 5 m category 5 screened patch cable.(straight).

According to IEEE802 the length between two ethernet stations must not exceed 100 m.

For distances greater than 100 m it is advisable to use hubs/switches.

Voltage Bushing

If you use an external voltage supply please look for the correct polarity and follow technical data.

10.2 Technical Data

Dimensions in mm (LxWxH)	102 x 54 x 30
Weight	ca. 180 g
Operating Voltage	DC 24 V ±25 %,
Power Input	150 mA
Ethernet Interface	10 Base-T / 100 Base-TX
Ethernet Connection	RJ45 bushing
Ethernet Transmission Rate	10MBit/s and 100 MBit/s
MPI/Profibus Interface	RS485, separated potentially
MPI/Profibus Transmission Rate	9,6 kBit/s; 19,2 kBit/s 45,45 kBit/s; 93,75 kBit/s 187,5 kBit/s; 500 kBit/s 1,5 MBit/s; 3 MBit/s 6 MBit/s; 12 MBit/s
MPI/Profibus Connection	SUB-D-Plug, 9-pole with PG-Interface and a terminating resistor
MPI/Profibus Protocols	FDL-Protocol for MPI and Profibus
Display	3 LEDs, two bicolored, for general system information
Degree of Protection	IP 30
Operating Temperature	0°C ... 60°C
Storing and Transporting Temperature	-20° C to +90°C
Relative Humidity Operating	5% to 85% at 30°C (no dew)
Relative Humidity Storage	5% to 93% at 40°C (no dew)

Table 7: The ACCON-NetLink-PRO's technical data

10.3 Further Documentation

Address conversion table

This table provides a parametrization aid. With it you can find the correct setting for rack/slot respectively for remote TSAP in the addressed mode.

Bus-adr.	Rack	Slot	TSAP	Bus-adr.	Rack	Slot	TSAP	Bus-adr.	Rack	Slot	TSAP	Bus-adr.	Rack	Slot	TSAP
0	0	0	0200	32	1	0	0220	64	2	0	0240	96	3	0	0260
1	0	1	0201	33	1	1	0221	65	2	1	0241	97	3	1	0261
2	0	2	0202	34	1	2	0222	66	2	2	0242	98	3	2	0262
3	0	3	0203	35	1	3	0223	67	2	3	0243	99	3	3	0263
4	0	4	0204	36	1	4	0224	68	2	4	0244	100	3	4	0264
5	0	5	0205	37	1	5	0225	69	2	5	0245	101	3	5	0265
6	0	6	0206	38	1	6	0226	70	2	6	0246	102	3	6	0266
7	0	7	0207	39	1	7	0227	71	2	7	0247	103	3	7	0267
8	0	8	0208	40	1	8	0228	72	2	8	0248	104	3	8	0268
9	0	9	0209	41	1	9	0229	73	2	9	0249	105	3	9	0269
10	0	10	020A	42	1	10	022A	74	2	10	024A	106	3	10	026A
11	0	11	020B	43	1	11	022B	75	2	11	024B	107	3	11	026B
12	0	12	020C	44	1	12	022C	76	2	12	024C	108	3	12	026C
13	0	13	020D	45	1	13	022D	77	2	13	024D	109	3	13	026D
14	0	14	020E	46	1	14	022E	78	2	14	024E	110	3	14	026E
15	0	15	020F	47	1	15	022F	79	2	15	024F	111	3	15	026F
16	0	16	0210	48	1	16	0230	80	2	16	0250	112	3	16	0270
17	0	17	0211	49	1	17	0231	81	2	17	0251	113	3	17	0271
18	0	18	0212	50	1	18	0232	82	2	18	0252	114	3	18	0272
19	0	19	0213	51	1	19	0233	83	2	19	0253	115	3	19	0273
20	0	20	0214	52	1	20	0234	84	2	20	0254	116	3	20	0274
21	0	21	0215	53	1	21	0235	85	2	21	0255	117	3	21	0275
22	0	22	0216	54	1	22	0236	86	2	22	0256	118	3	22	0276
23	0	23	0217	55	1	23	0237	87	2	23	0257	119	3	23	0277
24	0	24	0218	56	1	24	0238	88	2	24	0258	120	3	24	0278
25	0	25	0219	57	1	25	0239	89	2	25	0259	121	3	25	0279
26	0	26	021A	58	1	26	023A	90	2	26	025A	122	3	26	027A
27	0	27	021B	59	1	27	023B	91	2	27	025B	123	3	27	027B
28	0	28	021C	60	1	28	023C	92	2	28	025C	124	3	28	027C
29	0	29	021E	61	1	29	023D	93	2	29	025D	125	3	29	027D
30	0	30	021F	62	1	30	023E	94	2	30	025E	126	3	30	027E
31	0	31	0220	63	1	31	023F	95	2	31	025F				

Table 8: Conversion table

Updates on the internet

You can find up to date drivers and firmwares on our web site at www.deltalogic.de in the section download/S7-Adaptor.

11 Table of Figures

12 Table of Charts

13 Index