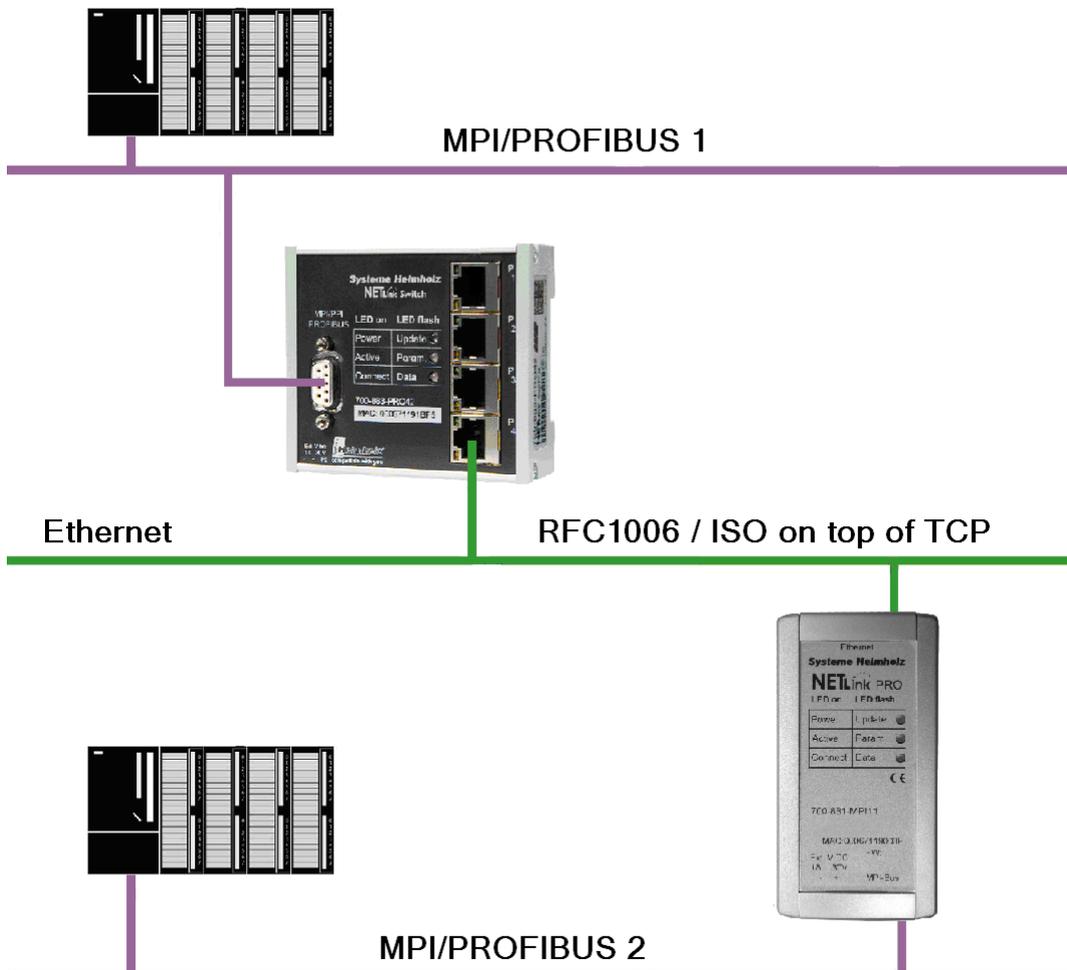


# NETLink<sup>®</sup> PRO family

## Example of Expanded NETLink<sup>®</sup> Functions

### CPU-to-CPU Communication

Edition 5 / 17.12.2012





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### Revision history of this document:

Edition	Date	Revision
1	10.11.2009	First edition
2	08.04.2010	Customized the PRO family
3	23.05.2011	Example projects completely revised and merged
4	05.11.2012	Added new chapters for FB14/FB15
5	17.12.2012	Added example project with explanation under chapter 10

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# 1 Overview

## 1.1 Application and function description

This document is intended as a supplement to the NETLink® PRO family product line manuals.

The Step7 software of Siemens contains SFCs (system functions) for the various communications options between the programmable controllers. All NETLink® Ethernet gateways with FW version 2.20 and higher can recognize these Simatic mechanisms and execute the processes required by the user with the SFCs X\_PUT, X\_GET and X\_ABORT.

A simple example project for the Step 7 programming software is included on the accompanying CD (NETLink® & OPC-Server) for the Step7 programming software.

This document describes the necessary procedures for successful data exchange by using the freely editable function FC29.

Step7 programming expertise is assumed – also for S7 basic communication.

## 1.2 Information in the figures

Many of the figures in this document contain settings and directions for use marked or highlighted in red.



*Please pay attention to the information in the figures*

## 2 System requirements

The NETLink® adapter, which should be integrated as an active part (server) in your system, has to be connected via a network card with the PC. The function of the Web interface must be activated. It is accessed via an Internet browser (for example, Mozilla Firefox, Opera, Konqueror, or Internet Explorer).

You do not need to install any additional drivers for the NETLink®.

The applications described here were performed on the Step7 version 5.4.

### 2.1 Information for the RFC 1006 feature

The examples described here will need the "RFC 1006" functionality, which is in all NETLink® Ethernet adapters implemented.

From the NETLink® Firmware version 2.30 the "RFC1006" function is always active. This means that the appropriate communication channel is open when an RFC 1006 message is detected by the NETLink®.

For adapters with versions < 2.30, is the corresponding information for the manual activation of RFC 1006, or the ability of a firmware update to the appropriate NETLink® described in the manual.

### 2.2 Important settings in the web interface

For the CPU-to-CPU communication it is necessary that the NETLink® adapter by itself goes online to the MPI/PROFIBUS as soon as he is activated. This function is performed by means of a setting in the web interface and can also be stored in the retentive NETLink®.

After the Web interface has been opened by entering the relevant URL '<http://<ip address>>,' the link to "Basic Configuration" appears. As soon as you have answered the security query, you will have write access to all parameters.

The 'Go online after boot up ON/OFF' option is activated by entering "ON" and confirming with the "Submit" button.

In the next window, the settings are displayed again and must be confirmed with "Store" before they are finally transferred to the NETLink®.

The following screenshots were created with NETLink® PRO Compact. These settings can also be conducted with other NETLink® Ethernet variants.

Configuration user interface of the NETLink® PRO compact:

**Systeme Helmholz®**  
compatible with you

[Home](#)   [Status](#)   [Basic Configuration](#)   [Security](#)   [Observe Variables](#)

## NETLink PRO Compact Basic Configuration

**Device specific parameters**  
Device Name:

**TCP Parameters**  
 Static IP Address:  Static parameters are used if DHCP is switched off  
 Static Subnet Mask:  Static parameters are used if DHCP is switched off  
 Static Gateway:  Static parameters are used if DHCP is switched off  
 Alternative NETLink Port:  Don't use well-known ports less than 1024 (Default port is 7777)  
 DHCP ON/OFF:   
 DHCP Timeout (in seconds):   
 Web Interface ON/OFF:

**MPI/Profibus Settings (RFC Mode is always activated)**  
 - Go online after boot up ON/OFF:  (e.g. necessary for PLC-PLC communication)  
 - NETLink MPI/PB Address:  (used when "Go online after boot up" is activated, NETLink MPI/PB address of PG/PC Interface is ignored!)

**Single Master bus parameters**  
 Bus Profil:  These bus parameters are used if adapter is single master.  
 Baud rate:  HSA:   
 Tslot\_Init:  Ttr:   
 Max. Tsdr:  Min. Tsdr:   
 Tset:  Tqui:   
 Gap Factor:  Retry:

- Rack/Slot Mode ON/OFF:   
 - Fix destination address for R/S mode:  This parameter is only necessary if rack/slot mode is activated

**User/Password Settings**  
 User:   
 New Password:   
 Retype New Password:   
  restart the adapter without power cycle

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### 3 Introduction

This document describes the possibility of CPU-to-CPU communications between two CPUs that are not connected to the same MPI/PROFIBUS. For this type of client-server communication, the familiar RFC1006 transport protocol (ISO on top of TCP) is used. In this way, on the receiving side (client), for example, CPs or Profinet CPUs are used that also support this protocol.

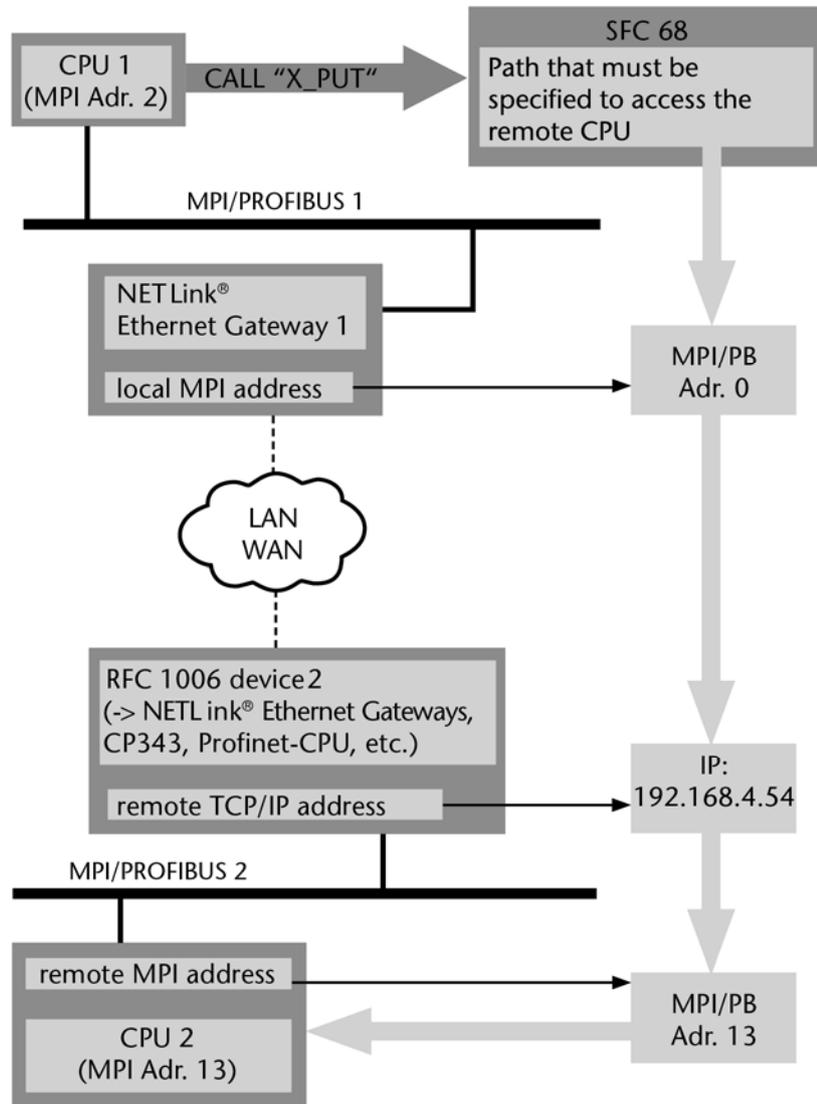
The S7-200, S7 300 and 400 PLCs can exchange data by means of S7 basic communication. This communication is performed by the SFC68 (X\_PUT) and SFC67 (X\_GET) by means of a “non configured connection.” The Step7 software of Siemens provides these system functions (SFCs). The Systeme Helmholtz product line NETLink® PRO family support these Simatic mechanisms (read and write data from/to a communicating partner outside the local S7 station). The number of useful data items that can be transmitted per communication request is up to 76 bytes for the entire system.

The connections are not configured but are explicitly established during the SFC call. For that reason, a connection resource is only permanently assigned for the communication at the “active” end. The “passive” end responds to the queries of the active partner and therefore only requires a resource if it establishes a connection.

This has the advantage that function calls only need to be stored at the active end (server).

## 4 Schematic representation of communication

The following configuration should be implemented to activate the described examples successfully. The settings given here are examples only and refer to the values from the example projects.



If the intention is to expand an already configured X\_PUT/X\_GET process via TCP/IP, it is only necessary to include an additional X\_PUT (with the parameters for the remote station -> see illustration) in the program execution to open the communication channel via the NETLink®.

## 5 Starting up the example project

Systeme Helmholtz GmbH has provided an example project adapted for communication with the NETLink® products on the accompanying product CD (NETLink®&OPC Server CD). Example programs for handling SFCs using S7 basic communication are also supplied when STEP 7 is installed. These are stored in directory \\step7\examples\com\_sfc1. They are not required for the described examples and are not dealt with in any further detail in this document. A general functional description of the standard functions is provided in the original Siemens document “*s7sfc\_a.pdf*”. This reference manual is included in the \\step7\s7manuals\ directory or is available from the Siemens Automation Support Internet pages.

### 5.1 Explanation of the example project

The included Simatic project is only a simple example and no warranty can be accepted for their limited functionality. Before you can use the provided blocks, you must adapt the hardware that you are using.

### 5.2 Activating the example

As soon as you have imported the Step7 project, the following blocks are available to you:

- SIMATIC 300(1\_server): OB1, FC29, the associated instance DB30, FC31, DB23, a variable table and the system functions SFC67, SFC 68 and SFC69.
- SIMATIC 300(2\_client): OB1 (not relevant to the function, as only “passive” here) and DB123 (receive data block).

In this project the FC29 is primarily responsible for the control. From this point onwards the FB30 is responsible for connection establishment and FC31 for data transfer. This simplifies the configuration of the project as in the connection establishment the X\_PUT and X\_GET calls are not in the main routine(FC29).

In OB1 only the FC29 is called. Here the MPI address of the local NETLinks must be entered.

In the FC29 the IP of the remote NETLinks and its MPI address must be entered in Network 2. Network 2 calls the FB30 in order to start the connection establishment.

Networks 3 and 4 in the FC29 are responsible for read and write access to the remote CPU.

At the end of each communication network the MW50 is evaluated. Here information about the condition of the communication process is displayed.

- MW50 = 0        communication finished
- MW50 ≠ 0        "busy"

When communication in one network is finished, the network to be processed can be specified, using the MW52 (e.g.: "MW52 = 3" = Network 3 "X\_PUT"). The MW52 is evaluated in the sector "main dispatcher"(Network 1) and then a jump made to the corresponding network. In this way the program flow can be easily controlled.

Communication is started with M100.0 = true and finished with M100.0 = false.

As an extension, further comments can be stored in the corresponding modules of the STEP7 project.

## 5.3 Explanation of call parameters

### 5.3.1 OB1

- "start" defines the bit which will be used for starting and stopping communications
- The bus address of the NETlink connected to the "Server" CPU must be entered for "*localNETLink\_MPIAddress*"
- The error code generated by the FC29 is returned in "*RET\_VAL*"
- "*isRunning*" stores whether the communication is running

### 5.3.2 FC 29 Network 2

- "*ESTABLISH\_CONNECTION*" is for connection establishment. This is controlled with the "#SFC\_Req" flag, which is set to "1" for requesting a connection and "0" when the connection should be disconnected (*BUSY\_FLAG* = 1).
- In "*localNETLink\_MPIAddress*" the local MPI address defined in OB1 is used
- The 4 octets of the remote IP address are stored in the area "*remote\_IP\_Byte1*" to "*remote\_IP\_Byte4*". Read direction is from left to right (-> 192.168.1.80)
- The MPI/PROFIBUS address of the remote CPU is entered in "*remotePLC\_MPIAddress*".
- As long as the "*BUSY\_FLAG*" is set new connections cannot be established.
- The error code from X\_PUT is returned in "*RETURN\_VALUE*".

### 5.3.3 FC 29 Network 3

- "ACTIVATE\_COMMUNICATION" behaves in the same way as "ESTABLISH\_CONNECTION" in Network 2
- The "Director" defines which system function will be used. ,P' stands for a following X\_PUT processing. The code "G" calls X\_GET.
- "local\_NETLink\_MPIAddress", "BUSY\_FLAG", "RETURN\_VALUE": see Network 2.
- On the local CPU "localPLC\_DataPtr" is the address of the MWs, DBs etc., from which data for the communication should be read. This data is then written to the remote CPU with "remotePLC\_DataPtr"
- "MW\_internal" contains the static flags of the FC31.

### 5.3.4 FC 29 Network 4

- See explanation in Network 2.
- "remotePLC\_DataPtr" is the address of the MWs, DBs etc. on the remote CPU, from which the data for the communication should be read. This data is then stored in the local CPU in "localPLC\_DataPtr".

## 5.4 Error messages

Error codes and messages are described in MW202.

## 6 Siemens error information

Excerpt from the SIEMENS reference manual

### Error Information

The "real" error information for SFCs 65 to 74 as shown in the table "Specific Error Information for SFCs 65 to 74" can be classified as follows:

Error Code(W#16# ...)	Explanation
809x	Error on the CPU on which the SFC is executed
80Ax	Permanent communication error
80Bx	Error on the communication partner
80Cx	Temporary error

#### Specific Error Information for SFCs 65 to 74

Error Code (W#16# ...)	Explanation (General)	Explanation (for Specific SFC)
0000	Execution completed without errors.	SFC 69 "X_ABORT" and SFC 74 "I_ABORT": REQ=1, and the specified connection is not established.
		SFC 66 "X_RCV":EN_DT=1 and RD=NIL
00xy	-	SFC 66 "X_RCV" with NDA=1 and RD<>NIL: RET_VAL contains the length of the received data (with EN_DT=0) or the length of the data copied to RD (with EN_DT=1).
		SFC 67 "X_GET": RET_VAL contains the length of the received block of data.
		SFC 72 "I_GET": RET_VAL contains the length of the received block of data.
7000	-	SFC 65 "X_SEND," SFC 67 "X_GET," SFC 68 "X_PUT," SFC 69 "X_ABORT," SFC 72 "I_GET," SFC 73 "I_PUT" and SFC 74 "I_ABORT": call with REQ = 0 (call without execution), BUSY has the value 0, no data transfer active.
		SFC 66 "X_RCV": EN_DT=0/1 and NDA=0
7001	First call with REQ=1: data transfer was triggered; BUSY has the value 1.	-
7002	Interim call (REQ irrelevant): data transfer is already active ; BUSY has the value 1.	SFC 69 "X_ABORT" and SFC 74 "I_ABORT": Interim call using REQ=1

Error Code (W#16# ...)	Explanation (General)	Explanation (for Specific SFC)
8090	Specified destination address of the communication partner is invalid, for example: <ul style="list-style-type: none"> <li>• Wrong IOID</li> <li>• Wrong base address exists</li> <li>• Wrong MPI address (&gt; 126)</li> </ul>	-
8092	Error in SD or RD, for example: addressing the local data area is not permitted.	SFC 65 "X_SEND," for example <ul style="list-style-type: none"> <li>• illegal length for SD</li> <li>• SD=NIL is illegal</li> </ul>
		SFC 66 "X_RCV," for example <ul style="list-style-type: none"> <li>• More data were received than can fit in the area specified by RD.</li> <li>• RD is of the data type BOOL, the received data are, however, longer than a byte.</li> </ul>
		SFC 67 "X_GET" and SFC 72 "I_GET," for example <ul style="list-style-type: none"> <li>• illegal length at RD</li> <li>• the length or the data type of RD does not match the received data.</li> <li>• RD=NIL is not permitted.</li> </ul>
		SFC 68 "X_PUT" and SFC 73 "I_PUT," for example <ul style="list-style-type: none"> <li>• illegal length for SD</li> <li>• SD=NIL is illegal</li> </ul>
8095	The block is already being executed in a lower priority class.	-
80A0	Error in the received acknowledgment	SFC 68 "X_PUT" and SFC 73 "I_PUT": The data type specified in the SD of the sending CPU is not supported by the communication partner.
80A1	Communication problems: SFC call after terminating an existing connection	-
80B0	Object is not obtainable, for example, DB not loaded	Possible with SFC 67 "X_GET" and SFC 68 "X_PUT" and SFC 72 "I_GET" and SFC 73 "I_PUT"
80B1	Error in the ANY pointer. The length of the data area to be sent is incorrect.	-

Error Code (W#16# ...)	Explanation (General)	Explanation (for Specific SFC)
80B2	Hardware error: module does not exist <ul style="list-style-type: none"> <li>The configured slot is not occupied.</li> <li>Actual module type does not match expected type</li> <li>Distributed peripheral I/Os not available.</li> <li>No entry for the module in the corresponding SDB.</li> </ul>	Possible with SFC 67 "X_GET" and SFC 68 "X_PUT" and SFC 72 "I_GET" and SFC 73 "I_PUT"
80B3	Data may either only be read or only written, for example, write-protected DB	Possible with SFC 67 "X_GET" and SFC 68 "X_PUT" and SFC 72 "I_GET" and SFC 73 "I_PUT"
80B4	Data type error in the ANY pointer, or ARRAY of the specified type not allowed.	SFC 67 "X_GET" and SFC 68 "X_PUT" and SFC 72 "I_GET" and SFC 73 "I_PUT": The data type specified in VAR_ADDR is not supported by the communication partner.
80B5	Execution rejected due to illegal mode	Possible with SFC 65 "X_SEND"
80B6	The received acknowledgment contains an unknown error code.	-
80B7	Data type and/or length of the transferred data does not fit in the area on the partner CPU to which it should be written.	Possible with SFC 68 "X_PUT" and SFC 73 "I_PUT"
80B8	-	SFC 65 "X_SEND": The SFC 66 "X_RCV" of the communication partner did not allow data acceptance (RD=NIL).
80B9	-	SFC 65 "X_SEND": The block of data was identified by the communication partner (SFC 66 "X_RCV" call with EN_DT=0), it has not yet been entered in the user program because the partner is in the STOP mode.
80BA	The response of the communication partner does not fit in the communication frame.	-
80C0	The specified connection is being used by another job.	-

Error Code (W#16# ...)	Explanation (General)	Explanation (for Specific SFC)
80C1	Lack of resources on the CPU on which the SFC is executed, for example: The maximum number of different send jobs is already being executed on the module. The connection resource is in use, for example, to receive data.	-
80C2	Temporary lack of resources on the communication partner, for example: <ul style="list-style-type: none"> <li>• The communication partner is currently processing the maximum number of jobs.</li> <li>• The required resources, memory, etc. are being used.</li> <li>• Not enough work memory. (compress memory).</li> </ul>	-
80C3	Error in connection establishment, for example: <ul style="list-style-type: none"> <li>• The local S7 station is not attached to the MPI subnet.</li> <li>• You have addressed your own station on the MPI subnet.</li> <li>• The communication partner is no longer obtainable.</li> <li>• Temporary lack of resources on the communication partner</li> </ul>	-

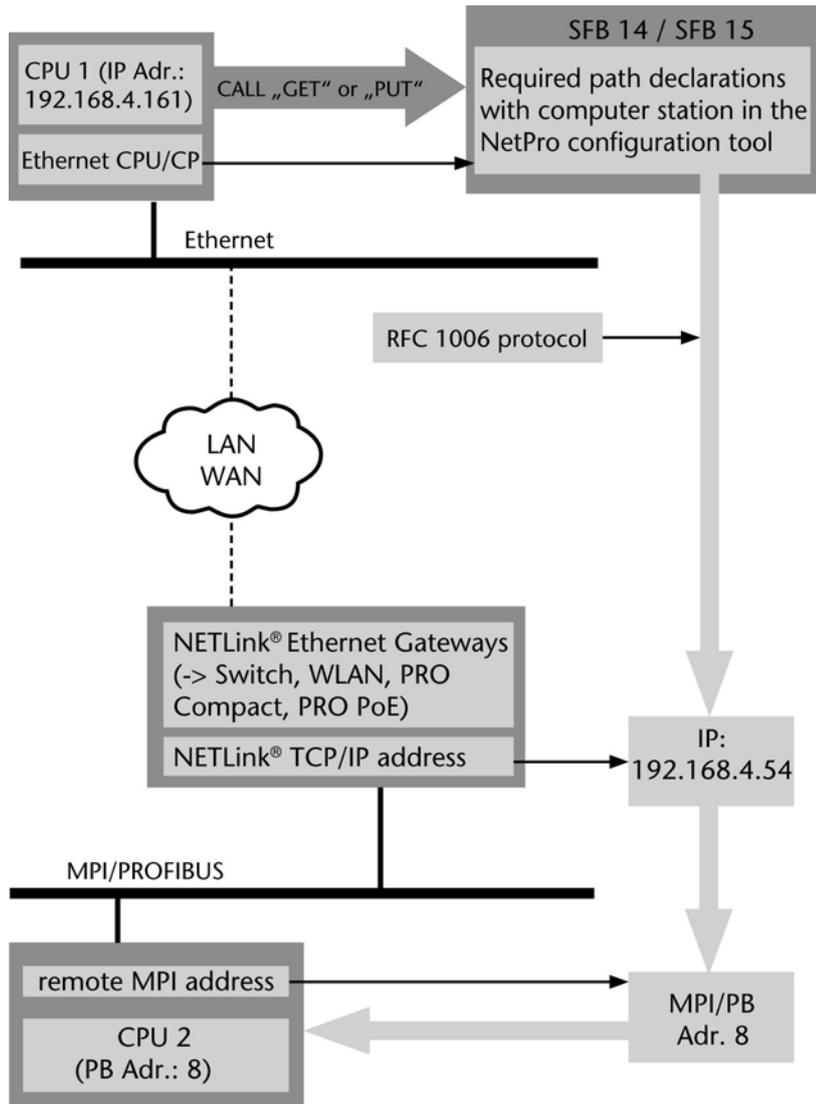
Source: s7sfc\_\_a.pdf/ Section 22.2 – Page 22-3 ff.



The error output: "80C3" usually points to an incorrectly configured address of the local NETLink in OB1.

## 7 Communications using Siemens' FB14 ("GET") and FB15 ("PUT") function blocks

In order to be able to transfer data between two S7-300 stations via an S7 connection configured in NetPro, Siemens' FB14 ("GET") and FB15 ("PUT") communication blocks have to be called in the S7 program. The S7 connection does not have to be configured on both ends, since communications in this case are based on a server-client model that uses a configured connection.

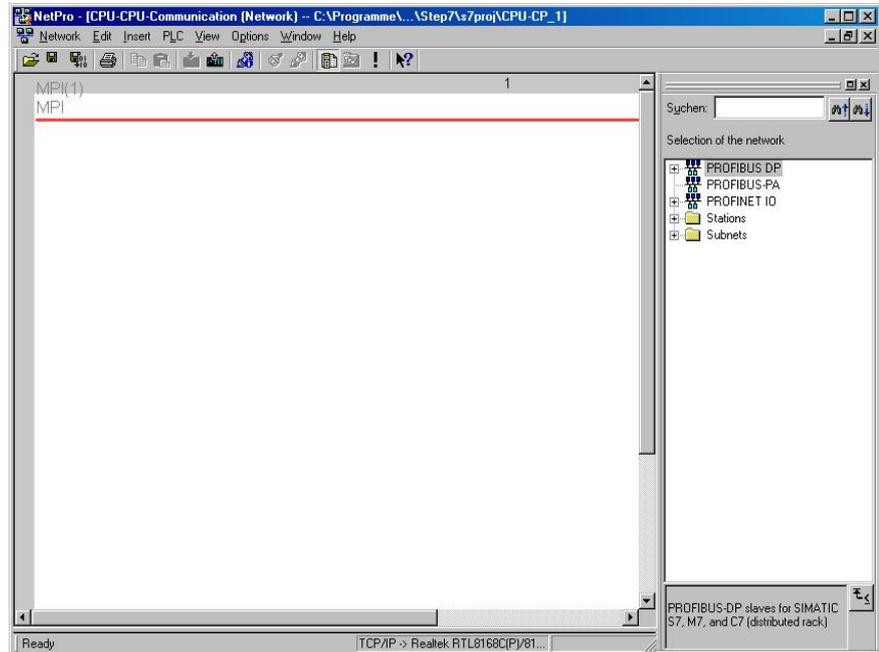


A general functional description can be found in the original Siemens document "Features of the Communication Blocks FB14 'GET' and FB15 'PUT'."

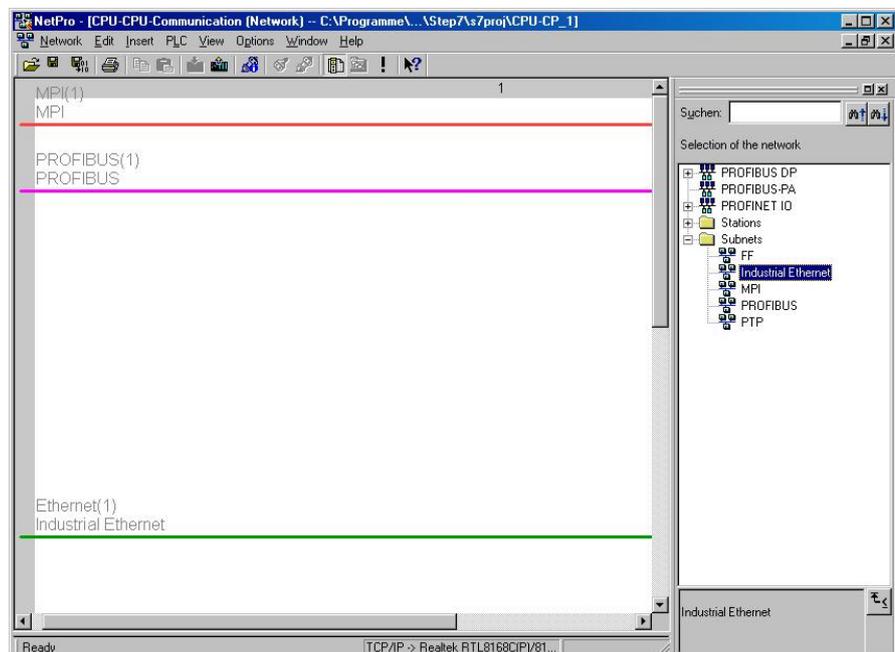
Once you install Siemens' STEP 7 program, you will be able to use a variety of features in SIMATIC Manager, including function blocks that are used to send and receive data and that are triggered by the connected S7 automation system. This function is supported by NETLink® PRO Compact units that are connected to the MPI or PROFIBUS interface of a CPU.

## 8 Settings in NetPro

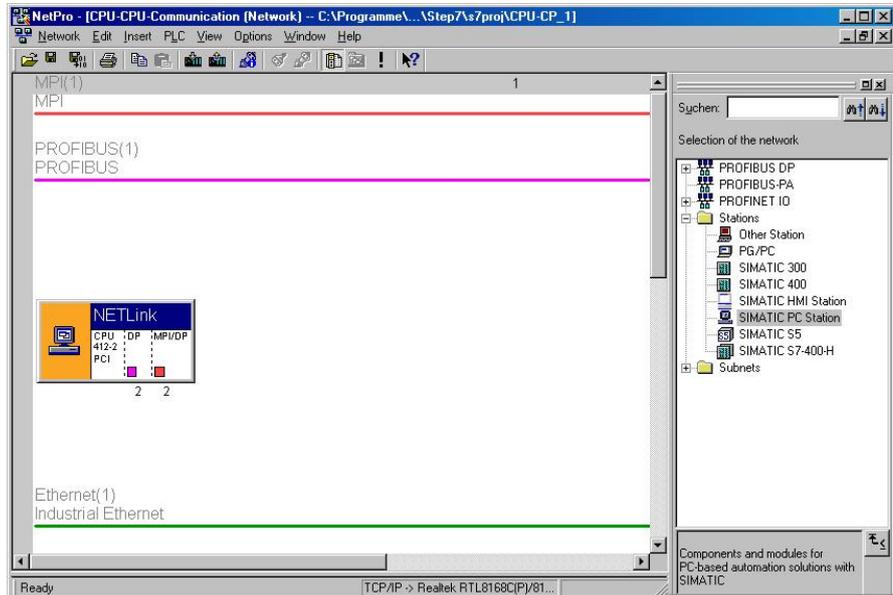
1. In order to be able to configure the connection, you will need Siemens' "NetPro" program.



First, create a PROFIBUS subnet and an "Industrial Ethernet" subnet.



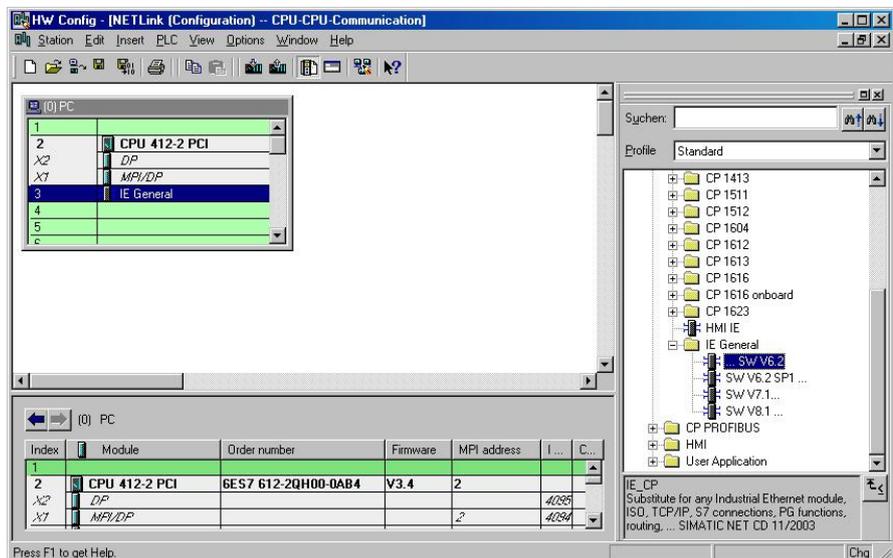
- Then add a "PC Station," which can be found in the "NetPro" catalog under "Stations -> Simatic PC Station." Now integrate a "CPU 412-2 PCI (6ES7 612-2QH00-0AB4 V3.4)" into this "PC Station."



- You will also have to use the hardware manager to integrate an "IE\_CP V6.2.1 (IE General)" into the "PC Station." Go to "Simatic PC Station -> CP-Industrial Ethernet -> IE General -> IE\_CP SW V6.2 SP1."

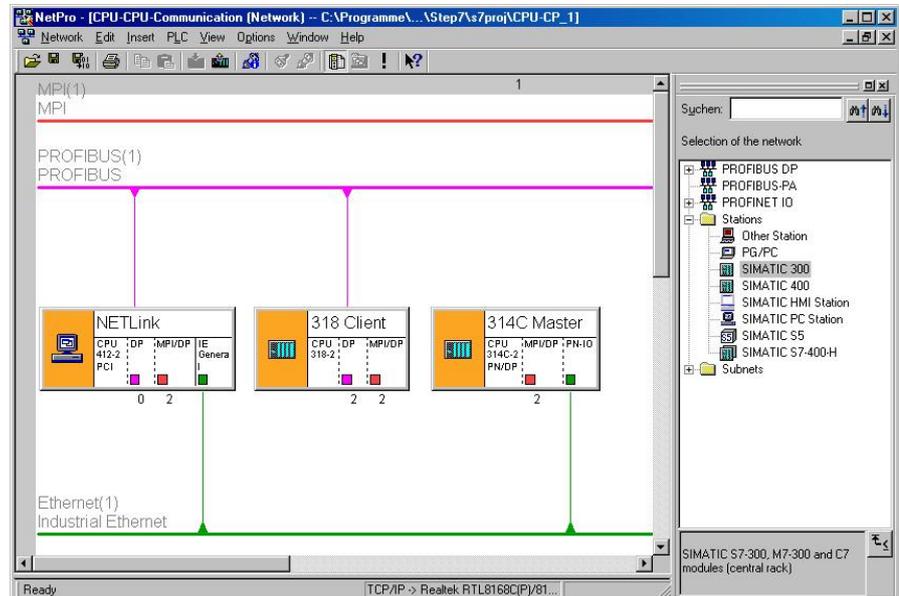


You can skip steps 3 and 4 if you are using the NetPro import function and are importing the NETLink® station from the product CD.

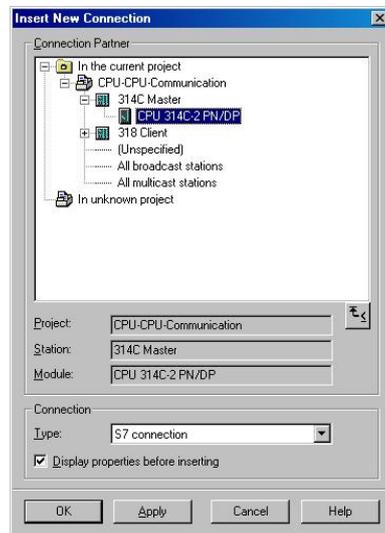




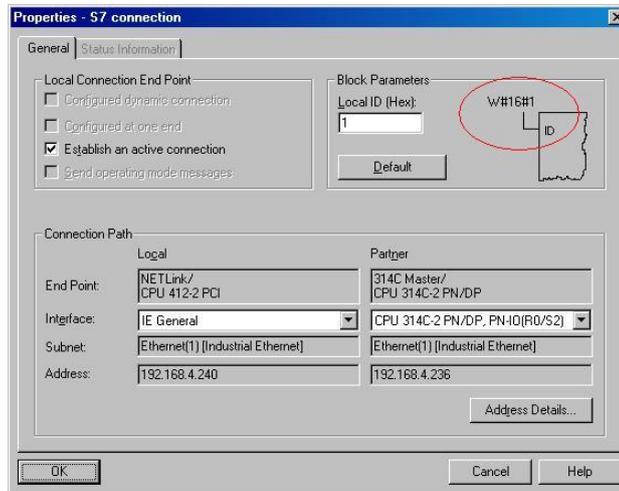
- Now you can add a CPU to the PROFIBUS/MPI bus subnet and another CPU to the Ethernet subnet. In this example, a “CPU 314C-2PN/DP” is being added as a master and a “CPU 318C-2” as a client. As the screenshot below shows, the client CPU is connected to the NETLink® unit via the PROFIBUS interface.



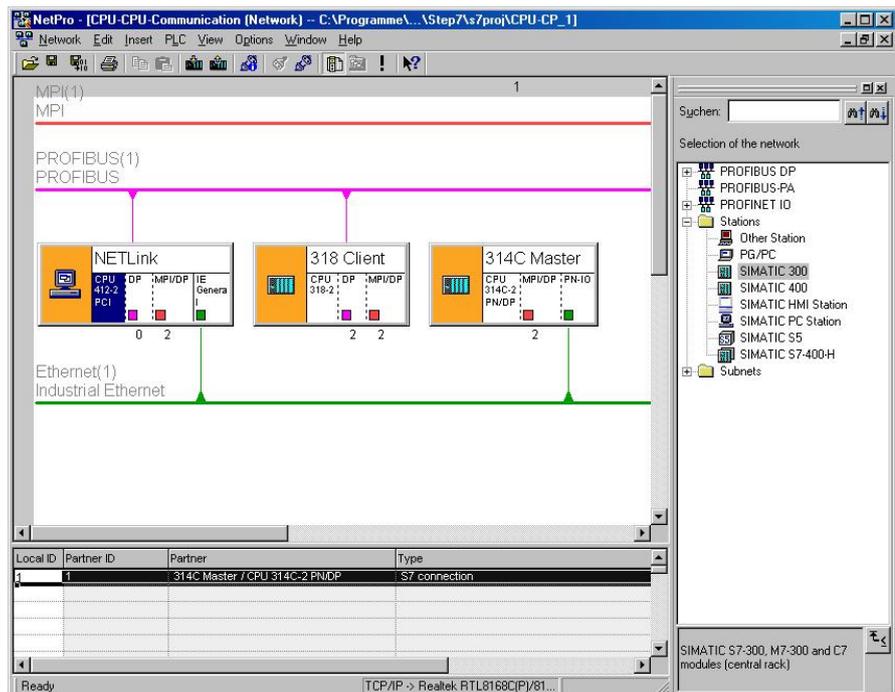
- Now that you have created the stations, you can go ahead and configure an S7 connection between the Ethernet CPU and the NETLink® unit in NetPro.



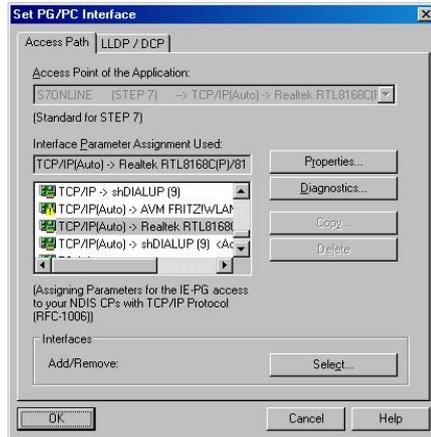
The Properties dialog box for the S7 connection (“General” tab) shows the value that must be declared for the input parameter when calling the FB14 and FB15 communication blocks.



7. Once you are done, save and compile the project.



8. Communications in the PG/PC interface must be managed by the local network adapter.

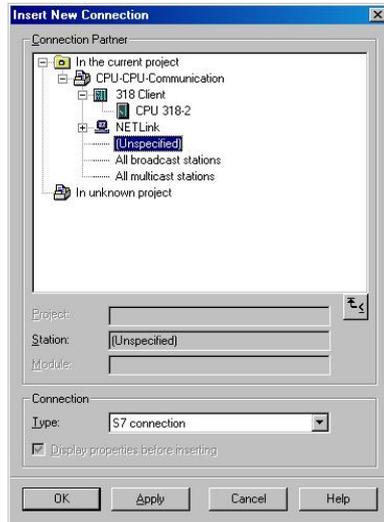


*Do not transfer the NETLink® station's hardware configuration to the NETLink® unit!*

The last step is to transfer the hardware configurations to the corresponding CPUs. Once you are done, you will be able to use CPU-to-CPU communications from STEP 7.

## 9 Unspecified Connection

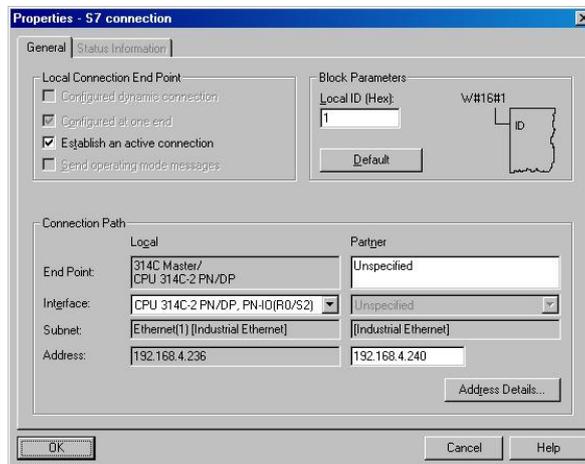
If you want to communicate with multiple CPUs that do not have an Ethernet port or that are not configured in the same STEP 7 project as the S7-300 station, you will have to use NetPro to configure an unspecified outgoing S7 connection that starts at the CPU with the Ethernet port.



When configuring the S7 connection, make sure that the right IP address is being assigned. Enter the NETLink® adapter's IP address as the "Partner's" IP address.



*The NETLink adapter's IP address must fall within the same range as the Ethernet CPU's IP address.*



In addition, make sure the correct “Rack / Slot” and “Connection Resource” is assigned.

The purpose of these parameters is to enable the communicating stations to identify each other uniquely.



*The slot value is the same as the CPU MPI/PROFIBUS address to which the “PUT” and “GET” methods are applied.*

For more information on the relevant block calls and functionalities, please refer to the corresponding Siemens documentation (see the list of references at the end).

## 10 Example project (CP-CPU\_P.zip)

FC1 : PUT-GET Funktion

```
PUT = WRITE -> FB15
GET = READ  -> FB14
```

Network 1: Title:

```
WRITE (FB 15)
```

```
AN   M   14.0           // if READ is active do nothing
A    M   14.1
S    M   15.0

CALL  "PUT" , "PUT-DB"
REQ   :=M15.0           // request mark
ID    :=W#16#1         // "LOCAL ID" (from NetPro)
DONE  :=M15.1         // 0 = in Progress or not started yet; 1 = successful
ERROR :=M15.2         // 0 = no error; 1 = error occurred
STATUS:=MW116         // explicit error code
ADDR_1:=P#DB1.DBX 0.0 BYTE 50 // destination for Data-Transfair = DB1, Index 0, Length 50
SD_1  :="Data-DB".Data_Write // P#DB100.DBX50.0 -> data to write in Slave CPU

A    M   15.1           // if successful Transfer then reset REQ-mark
AN   M   15.2
R    M   15.0
```

In Network 1 of FC1 the FB for the write-process from the master CPU to the remote CPU is being called and filled with the corresponding input-variables.

Network 2: Title:

```
READ (FB 14)
```

```
AN   M   15.0           // if WRITE do nothing
A    M   15.1
S    M   14.0

CALL  "GET" , "GET-DB"
REQ   :=M14.0           // request mark
ID    :=W#16#1         // "LOCAL ID" (from NetPro)
NDR   :=M14.1         // 1 = successful; 0 = in Progress or not started yet
ERROR :=M14.2         // 0 = no error; 1 = error occurred during progress
STATUS:=MW114         // explicit error-code
ADDR_1:=P#DB1.DBX 50.0 BYTE 50 // destination for read from Slave CPU, Index = 50, length=50
RD_1  :="Data-DB".Data_Read // P#DB100.DBX0.0 -> data to store Master CPU into DB14

A    M   14.1           // if successful then reset REQ-mark
AN   M   14.2
R    M   14.0

BEU
```

In Network 2 of FC1 the FB for the read-process from the remote CPU to the master CPU is being called and also filled with the necessary input-variables.



To guarantee the full functioning of the example-program, the hardware-configurations of each station must be modified (CPU-type, IP-addresses, etc.)! When the request for deleting the S7-program pops up, it has to be answered with "No". The S7-program now needs to be transferred into your CPU but without the original system data. Also the S7-connection has to be created new as it is being described in chapter 8 under step 6.

## 11 Troubleshooting

The points described here show some typical errors that can occur when using the “RFC 1006” function.

Please also refer to the descriptions for troubleshooting in the accordant NETLink® manual!

If a problem is not described here and this manual does not provide any information on how to remedy it, the support service of Systeme Helmholtz GmbH will gladly help you to solve the problem.

**Q:** In what areas of a S7-200 CPU is an access for CPU-to-CPU communication possible?

**A:** The access is only to general S7 areas such as I/O/M/DBs possible, not SMB or other S7-200-specific contents.

**Q:** What additional settings are required in the connected communication partners?

**A:** The connected NETLink® adapters independently recognize the type of the CPU and adjust the required communication protocols on the MPI / PPI / PROFIBUS side accordingly.

**Q:** I changed the values in the example and transfer them into the CPU but the CPU-to-CPU communication is not working.

**A:** It is possible that only the initial value in the data block was edited. But the current value is the relevant value! This value can only be changed in the data view. The LAD/STL/FBD editor also contains the menu command “*Process/Initialize data block,*” so that all values in the initial value column can be transferred to the actual value column.

**Q:** The local NETLink® adapter is not establishing a connection to the RFC1006 partner. Only the POWER and ACTIVE / ONLINE LEDs light up. The DATA LED does not light up.

**A:** To verify the problem, communications diagnostics can be started on the Web interface of the NETLink®. To do this, open the status page of your adapter in your Web browser. In the lower area, you will find the “*Diagnostic Page*” button. Watch the outputs in this window for all relevant processes. Any inoperability is shown there immediately

**Q:** Which devices support CPU-to-CPU communication on the remote side?

**A:** All adapters of the NETLink® PRO product range are suitable. The following devices can also be used:

- All communications adapters that support the RFC1006 (ISO on top of TCP) protocol
- A PLC with an Ethernet connection.  
Requirements: RFC1006 communication is activated.  
Note: The remote MPI address of the CPU is always 2 (the CPU is already uniquely identified by its IP address).



*A firmware update on the NETLink WLAN must always be performed via the network socket.*

- CP343.

**Q:** How is a firmware update performed in a NETLink<sup>®</sup> adapter?

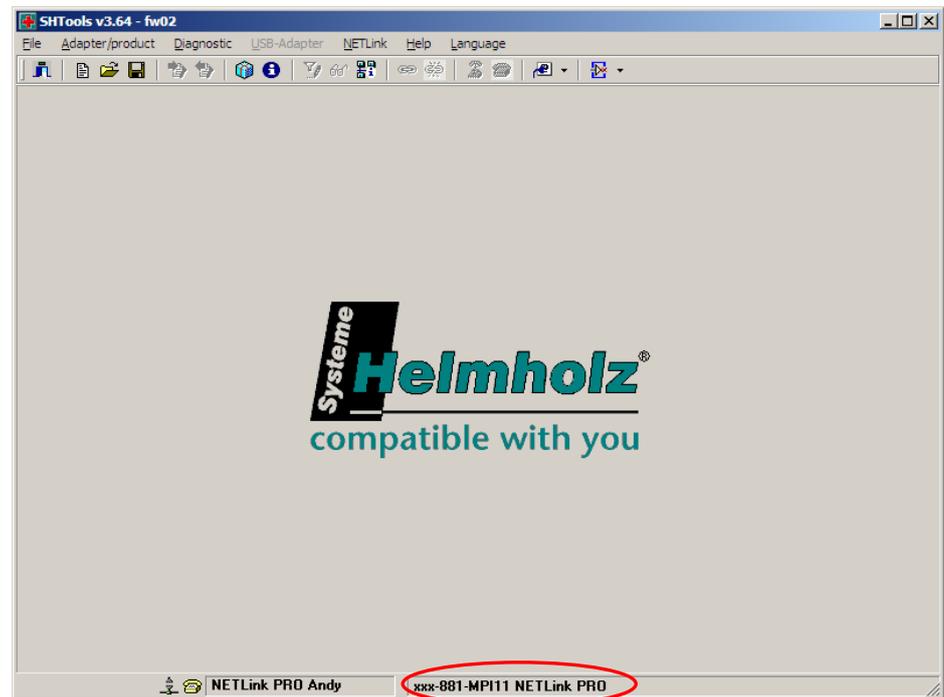
**A:** The following steps must be performed:

1) Download the up-to-date “SHTools” software from the Systeme Helmholtz web site:

- [www.helmholz.com](http://www.helmholz.com) -> Download -> NETLink<sup>®</sup>-PRO (or analog NETLink<sup>®</sup> Ethernet gateway)

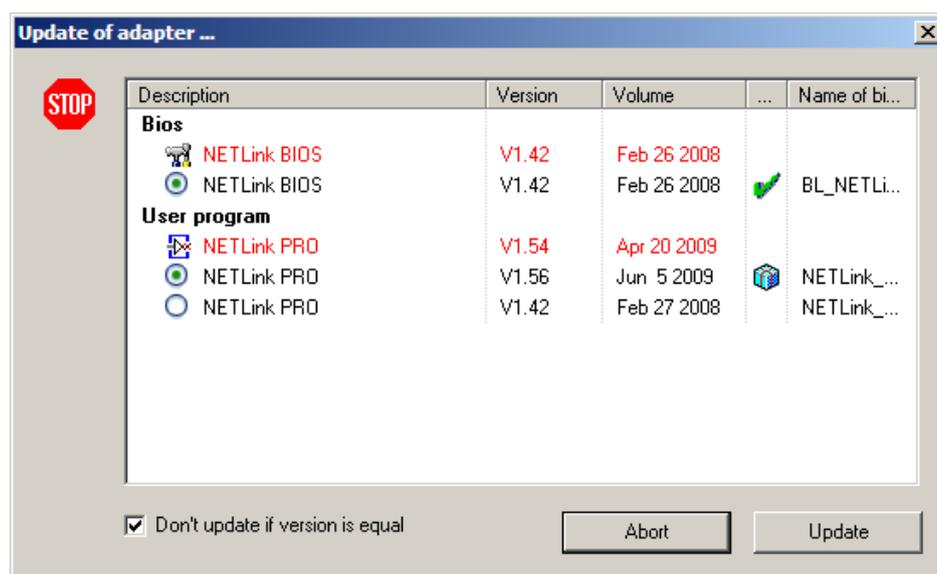
and install this on your computer.

2) After “SHTools” has been started, make sure that the appropriate NETLink<sup>®</sup> product is activated on the status bar



If there appear another product, so simply press the right mouse button over the status bar and select the product based on its name and order number in the dialog box that then opens.

3) After you have pressed the “Adapter->Update adapter” menu, the dialog box shown below appears (example):



To perform an update from a firmware version lower than V1.42 to a version higher than V1.42, it is first necessary to update to version 1.42 as an intermediate step.

After that, an update to all higher versions can be performed in a further step.

**Q:** Why do I get an address conflict when trying to communicate via Step 7 with the RFC 1006 mode activated even though the station-related address has been adapted in the driver?

**A:** You have probably changed your own address in the Web interface (default =0). The NETLink® automatically tries to go online with this address on the bus in RFC mode. Conflicts will occur if another node uses the same address. In this case, the altered entry in Step 7 is ignored. Check the status of the active stations in the Web interface.

**Q:** My adapter can't go online. Why?

**A:** Is the online LED on the adapter on? If not, check the BUS parameters with which the adapter is to go online via RFC1006. You will find the parameters in the Web interface in section “*Configuration.*”

**Q:** What must I observe when calling your technical support?

**A:** Please have all relevant data of your system constellation with the connected stations and program modules at hand when you contact technical support at Systeme Helmholtz GmbH.

## 12 List of Sources

You can download all NETLink<sup>®</sup> manuals for free in German and English language at  
<http://www.helmholz.de>.

Link to Siemens reference manual „System and Standard functions for S7-300/400 Part 1/2" German  
<http://support.automation.siemens.com/WW/view/de/1214574>

Link to Siemens reference manual “System and Standard functions for S7-300/400 Part 1/2" English  
<http://support.automation.siemens.com/WW/view/de/1214574/0/en>

Link to Siemens example program for S7 basic communication  
<http://support.automation.siemens.com/WW/view/de/23548936>

Link to Siemens sample program with communication blocks FB14 and FB15:  
<http://support.automation.siemens.com/WW/llisapi.dll?func=cslib.csinfo&objId=23378099&load=treecontent&lang=de&siteid=cseus&aktprim=0&objaction=csview&extranet=standard&viewreg=WW>