



# ibaPDA-Interface-SIMOTION-Xplorer

## Data Interface to Siemens SIMOTION Drives

Manual  
Issue 1.2

Measurement Systems for Industry and Energy  
[www.iba-ag.com](http://www.iba-ag.com)

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## Manufacturer

iba AG  
Koenigswarterstr. 44  
90762 Fuerth  
Germany

## Contacts

Main office +49 911 97282-0  
Fax +49 911 97282-33  
Support +49 911 97282-14  
Engineering +49 911 97282-13  
E-mail [iba@iba-ag.com](mailto:iba@iba-ag.com)  
Web [www.iba-ag.com](http://www.iba-ag.com)

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The current version is available for download on our web site [www.iba-ag.com](http://www.iba-ag.com).

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# 1 About this Manual

This document describes the function and application of the software interface

*ibaPDA-Interface-SIMOTION-Xplorer*

This documentation is a supplement to the *ibaPDA* manual. Information about all the other characteristics and functions of *ibaPDA* can be found in the *ibaPDA* manual or in the online help.

## 1.1 Target group and previous knowledge

This documentation addresses qualified professionals, who are familiar with handling electrical and electronic modules as well as communication and measurement technology. A person is regarded as a professional if he/she is capable of assessing the work assigned to him/her and recognizing possible risks on the basis of his/her specialist training, knowledge and experience and knowledge of the standard regulations.

This documentation in particular addresses persons, who are concerned with the configuration, test, commissioning or maintenance of Programmable Logic Controllers of the supported products. For the handling of *ibaPDA-Interface-SIMOTION-Xplorer* the following basic knowledge is required and/or useful:

- Windows operating system
- Basic knowledge of *ibaPDA*
- Knowledge of configuration and operation of the relevant drive system

## 1.2 Notations

In this manual, the following notations are used:

Action	Notation
Menu command	Menu <i>Logic diagram</i>
Calling the menu command	<i>Step 1 – Step 2 – Step 3 – Step x</i> Example: Select the menu <i>Logic diagram - Add - New function block</i> .
Keys	<Key name> Example: <Alt>; <F1>
Press the keys simultaneously	<Key name> + <Key name> Example: <Alt> + <Ctrl>
Buttons	<Key name> Example: <OK>; <Cancel>
File names, paths	"Filename", "Path" Example: "Test.doc"

## 1.3 Used symbols

If safety instructions or other notes are used in this manual, they mean:

---

### Danger!



The non-observance of this safety information may result in an imminent risk of death or severe injury:

- Observe the specified measures.

---

### Warning!



The non-observance of this safety information may result in a potential risk of death or severe injury!

- Observe the specified measures.

---

### Caution!



The non-observance of this safety information may result in a potential risk of injury or material damage!

- Observe the specified measures

---

### Note



A note specifies special requirements or actions to be observed.

---

### Tip



Tip or example as a helpful note or insider tip to make the work a little bit easier.

---

### Other documentation



Reference to additional documentation or further reading.

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## 2 System requirements SIMOTION-Xplorer

The following system requirements are necessary for the use of the SIMOTION-Xplorer data interface:

- ibaPDA v6.38 or higher
- Basic license for *ibaPDA* + license for *ibaPDA-Drive-Xplorer* or *ibaPDA-Interface-SIMOTION-Xplorer*
- For more than 32 SIMOTION drives, you need additional *one-step-up-Interface-SIMOTION-Xplorer* licenses
- Siemens SIMOTION drive
- Commissioning tool Siemens SIMOTION SCOUT

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### Other documentation



For more prerequisites concerning the used PC hardware and the supported operating systems, please see the *ibaPDA* documentation.

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### System constraints

The following technical constraints apply:

The number of S7-, SINAMICS-, SIMOTION- or SINUMERIK-Xplorer connections is limited to 240. TCP and PC/CP connections of the SINAMICS-, SIMOTION- and SINUMERIK-Xplorer are evaluated differently. A SINAMICS-, SIMOTION- or SINUMERIK-Xplorer connection over TCP only counts 1/16. A PC/CP connection is calculated in full.

This means:

Number of S7 connections

- + number of SINAMICS-Xplorer TCP connections not routed / 16 <sup>1)</sup>
  - + number of SIMOTION-Xplorer TCP connections not routed / 16 <sup>1)</sup>
  - + number of SINUMERIK-Xplorer TCP connections not routed / 16 <sup>1)</sup>
  - + number of SINAMICS-Xplorer TCP connections routed
  - + number of SIMOTION-Xplorer TCP connections routed
  - + Number of SINAMICS-Xplorer PC/CP connections
  - + Number of SIMOTION-Xplorer PC/CP connections
  - + Number of SINUMERIK-Xplorer PC/CP connections
- <=240!

<sup>1)</sup> Only active connections are taken into account. The division must always be rounded to the next larger number (“one connection resource per started 16 connections”).

Access to the SINAMICS Control Units which are integrated in the SIMOTION controls is not supported.

### License information

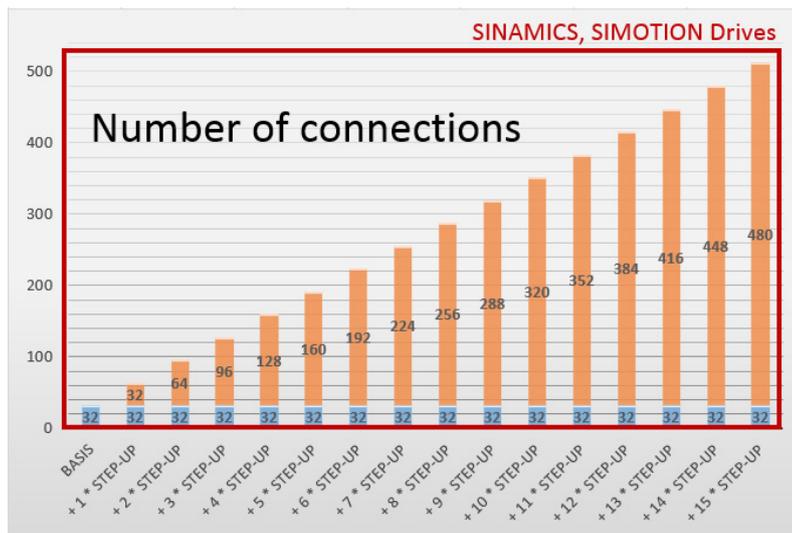
Order no.	Product name	Product description
31.000031	ibaPDA-Interface-SIMOTION-Xplorer	Extension license for an ibaPDA-System adding the data interface: + SIMOTION-Xplorer (interface for up to 32 SIMOTION-drives)
31.100031	one-step-up-Interface-SIMOTION-Xplorer	Extension license for 32 further SIMOTION-drives (maximum of 15)

Table 1: Available SIMOTION-Xplorer-Licenses, as of ibaPDA-V6.38.0

### Note



If you want to use more than 32 data connections on one interface, you need *one-step-up-...* extension licenses. Up to 32 further connections to drives can be established on each *one-step-up-license*. Up to 512 connections can be configured and used per data interface with the multiple purchase or multiple release of these licenses (up to 15 in total).



Consider the limitation of the number of signals by the *ibaPDA* base license

## 3 Data Interface SIMOTION-Xplorer

### 3.1 General information

The SIMOTION-Xplorer interface is suitable for the acquisition of measurement data of SIMOTION frequency converters via Ethernet using the standard network interface cards as well as Profibus via SIMATIC NET interface cards. Access thereby is transparent for the drive controller. Separate engineering and programming is not necessary.

The signals to be measured can be selected based on address books in the symbol browser of the *ibaPDA I/O* manager.

### 3.2 System topologies

The connections to the SIMOTION drives can be established via standard interfaces of the computer or corresponding CP modules.

Additional Siemens software (e.g. SIMATIC NET or SIMATIC STEP 7 or SIMOTION SCOUT) is needed for operation, in case the connection to the control system is established via a SIMATIC NET communication card (CP) in the computer to an integrated Ethernet interface of the CPU (if available) or to a CP module in the PLC.

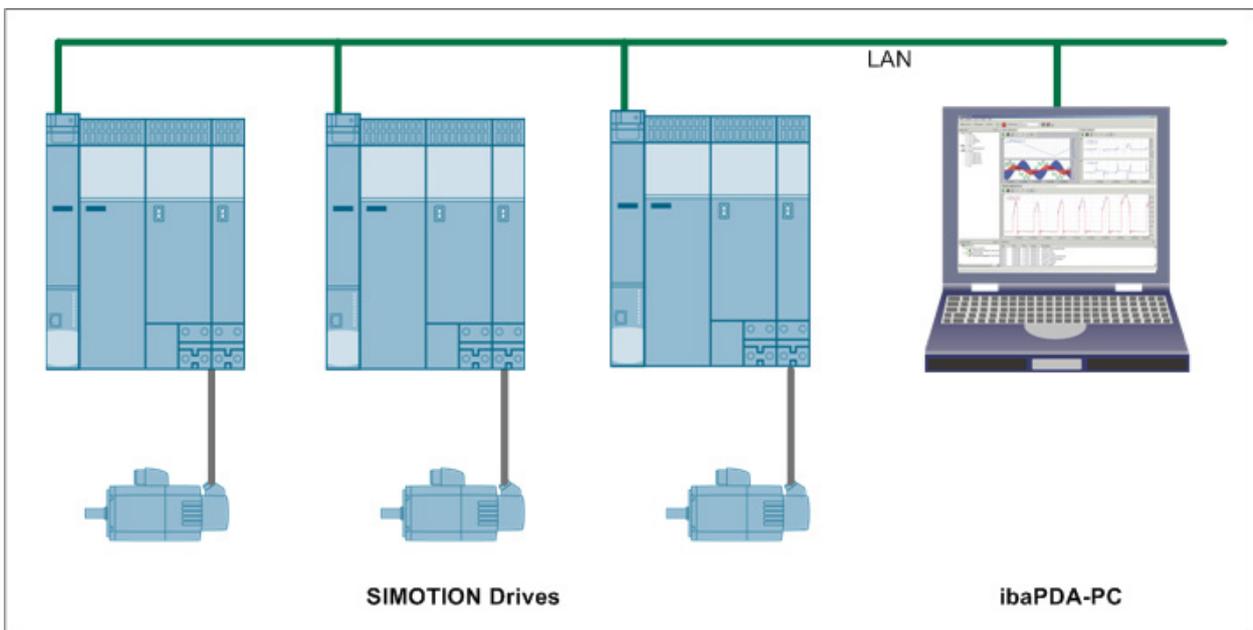


Fig. 1: Example of a topology for SIMOTION connections

#### Note



It is recommended carrying out the TCP/IP communication on a separate network segment to exclude a mutual influence by other network components.

### 3.3 Configuration and engineering SIMOTION

In principle, no specific engineering and programming is necessary on the drive side.

You have to export one so called STI file (see ↗ *Address books*, page 18) using the SIMOTION configuration software, e.g. Siemens SCOUT. Only then, you can configure in *ibaPDA* the signals to be measured and the symbols from the drives. *ibaPDA* needs the STI file in order to create an address book with the signals from the drive.

When using the *PC/CP* connection mode, you have to configure a suitable access point in the SIMATIC PG/PC interface of the *ibaPDA* computer.

### 3.4 Configuration & engineering ibaPDA

Open the I/O manager, e.g. with the toolbar .

If all the system requirements are met, (see ↗ *System requirements SIMOTION-Xplorer*, page 7), the "SIMOTION-Xplorer" interface will be displayed in the signal tree.

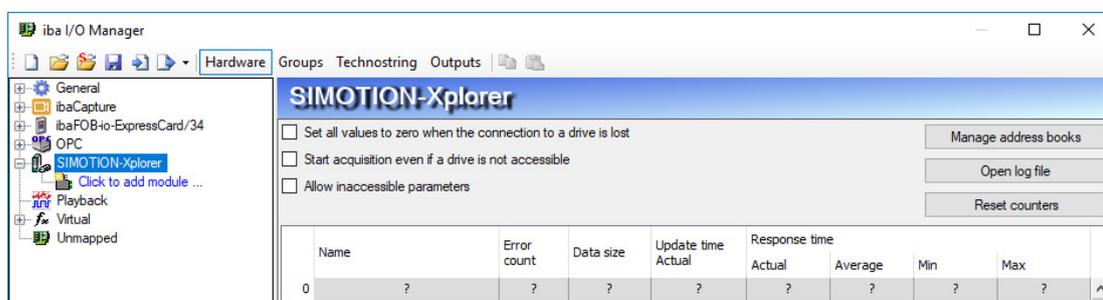


Fig. 2: Interface in the I/O manager

#### 3.4.1 General interface settings

The interface itself has the following functions and configuration options:

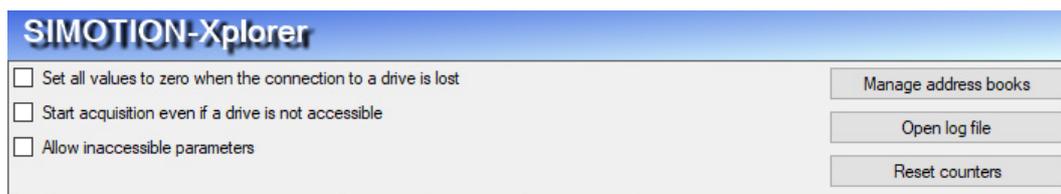


Fig. 3: General interface settings

#### Set all values to zero when the connection to a drive is lost

If this option is enabled, all measured values of a drive are reset to 0 as soon as the connection gets lost.

#### Start acquisition even if a drive is not accessible

If this option is enabled, the acquisition will start even if a drive is not accessible. Instead of an error, a warning is indicated in the validation dialog. If the system was started without a connection to the drive, *ibaPDA* will periodically attempt to connect to the drive.

### Allow inaccessible parameters

Enable this option to start the acquisition even if no drive parameters are accessible. The inaccessible operands are indicated as a warning in the validation dialog.

### Manage address books

With this button, you get to the dialog for creating and managing address books. For configuring the measurement signals from the drives, you need to have a valid address book.

For more information, see [➤ Address books](#), page 18

### Open log file

If connections to the drives have been established, all connection-specific actions are recorded in a text file. With this button, you can open and have a look at this file. In the file system on the harddisk, you will find the log files in the program path of the *ibaPDA* server (...Programs(x86)\iba\ibaPDA\Server\Log\). The file name of the current log file is SIMOTIONLog.txt, the name of the archived log files is SIMOTIONLog\_yyyy\_mm\_dd\_hh\_mm\_ss.txt.

### Reset counter

Resets the counter as well as the response times in the connection table to zero.

### Connection table

The table shows the counters as well as the response times of the individual connections during data measurement.

For more details, see [➤ Connection table](#), page 23.

## 3.4.2 Add module

Add a module by clicking below the interface. Select the desired module type and click on <OK>.

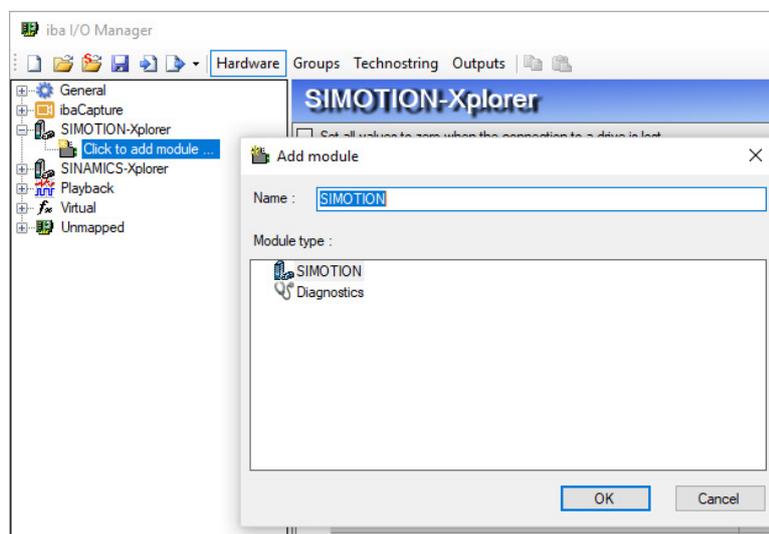


Fig. 4: Add module

### 3.4.3 General module settings

All modules have the following settings in common:

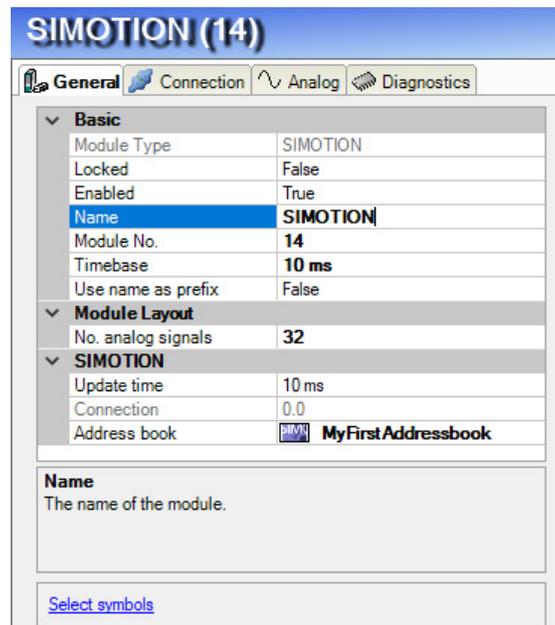


Fig. 5: General module settings

#### Basic settings

##### Module type (read only)

Display of the module type

##### Locked

A module can be locked for preventing accidental or unauthorized changes of the module settings.

##### Enabled

Disabled modules are excluded from signal acquisition.

##### Name

Here, the clear text name of the module designation has to be entered.

##### Module No.

Internal reference number of the module. This number serves to identify signals uniquely, e.g. in expressions and *ibaAnalyzer*.

##### Time base

All signals of this module are acquired with this timebase.

##### Use name as prefix

Puts the module name in front of the signal name.

## Module layout

### No. of analog signals

Defines the number of configurable analog signals in the signal tables. The predefined value is 32. You can change the number. 1000 is the maximum value.

---

#### Note



Observe the maximum number of signals permitted by your basic license for ibaPDA.

---

#### Note



Take into consideration that the number of signals, which are read by a CPU, influences the minimum achievable update cycle. The more signals acquired, the longer the achievable update time.

## SIMOTION

### Update time

Indicates the target update time when the data will be requested from the drive. If the drive needs more time for transferring the data, the real current update time may be higher than the set value in course of the measurement. In the connection table you can check the real updating time of the data.

### Connection (read only)

Connection ID that is used to access the drive.

### Address book

Select the appropriate address book for the drive. Only then, you can configure the signals to be measured. If there is no address book available in the drop down list, you first have to create an address book. You can create an address book using the "Create address book..." command in the drop down list or in the I/O manger under *General - Address books - SIMOTION tab*.

For more information concerning the creation of address books, see [➤ Address books](#), page 18

### "Select symbols" link

After having created the address book, click on this link. Here, you can open the symbol browser and configure the measurement signals.

For more information, see [➤ Signal configuration](#), page 16

### 3.4.4 Connection settings

The connection of the module to the drive is configured in the *Connection* tab.

You can choose between the TCP/IP and PC/CP connection modes.

#### 3.4.4.1 Connection mode TCP/IP

This mode activates a connection via the standard network interface of the PC.

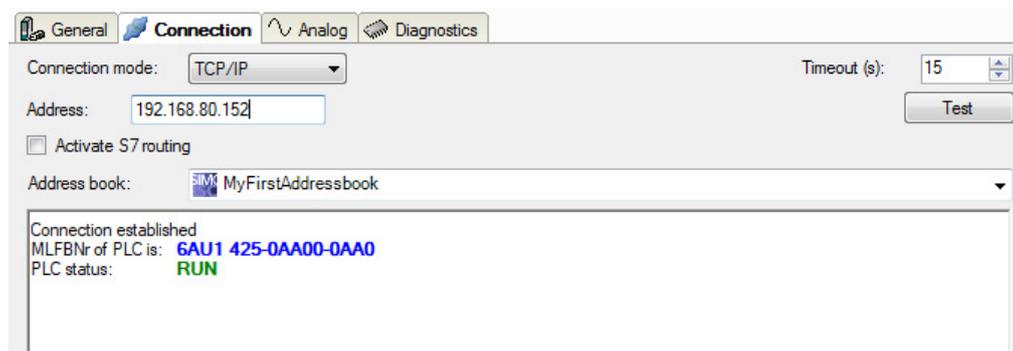


Fig. 6: Connection configuration TCP/IP

#### Connection mode

Selection of the TCP/IP connection mode.

#### Timeout

Timeout of the connection

#### Address

IP address of the drive.

You can determine this value by accessing the running drive configuration of SIMOTION, e.g. with Siemens SIMOTION SCOUT.

#### Activate S7 Routing

Enable this option, in case the SIMOTION CPU and the ibaPDA PC are not running on the same network, but only can communicate via a Gateway supporting the S7 Routing. Such a Gateway may e.g. be an IE/PB Link which allows the user to access an S7 CPU without an Ethernet connection. There will be displayed two additional entry fields:

- Address of the device with Gateway function: Enter the address of the Gateway:
- S7 subnet ID of the target net: Enter the subnet ID from STEP 7 NetPro

For more information about S7 Routing, see [➔ S7 routing, page 32](#)

#### Address book

Address book with the signals of the drive

This setting is the same as the address book setting on the *General* tab of the module. Here, you can also select the settings.

#### Test

Performs a connection test to the drive. Available diagnostic data will be displayed, e.g. MLFBNr. of the controller and its status.

---

**Note**

**Port 102** in the firewall must be released for the communication with the CPU for signal request.

---

### 3.4.4.2 Connection mode PC/CP

This mode activates a connection over the interface card of the PC, which is configured using SIMATIC Net.

The interfaces configured in SIMATIC Net can be used, e. g.:

- PROFIBUS (CP5611)

---

**Note**

If you want to use this connection type, the Siemens software SIMATIC Net (e.g. SIMATIC Manager or Softnet) has to be installed. When using the modules CP55..., CP56..., the installation of the device drivers will be sufficient.

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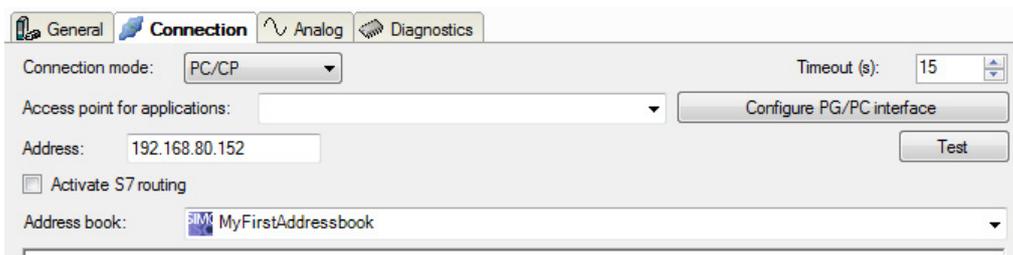


Fig. 7: Connection configuration PC/CP

**Connection mode**

Selection of the PC/CP connection mode

**Timeout**

Timeout of the connection

**Access point for applications**

Selection of the access point that is to be used.

For notes on how to create and adapt an access point, see [➤ Setting PG/PC interface / defining new access point](#), page 28

---

**Note**

The access points that are available under SIMATIC Net are configured by Siemens using the tool "PG/PC interface settings".

For the connection of ibaPDA-Interface-SIMOTION-Xplorer to SIMOTION drives via PC/CP connections, we generally recommend setting a specific access point for ibaPDA when ibaPDA-Interface-SIMOTION-Xplorer and SIMATIC Manager run on the same computer. With an own access point, there is no longer the risk that the access for ibaPDA-Interface-SIMOTION-Xplorer will be disturbed in case the standard access point is changed in the SIMATIC Manager.

---

**Configure PG/PC interface**

Opens the dialog box for setting the PG/PC interface of SIMATIC STEP 7

**Address**

IP address of the drive.

You can determine this value by accessing the running drive configuration of SIMOTION, e.g. with Siemens SIMOTION SCOUT.

**Activate S7 Routing**

Enabling S7 Routing (see TCP/IP connection mode).

**Address book**

Address book with the signals of the drive. This setting equals the address book settings on the *General* tab of the module. Here, you can also select the settings..

**Test**

Connection test to the drive and available diagnostic data are displayed.

### 3.4.5 Signal configuration

The signals you want to acquire are selected in the I/O manger using the SIMOTION symbol browser. As a prerequisite, you have to create a suitable address book and assign it to the module. On the *Analog* tab of the module, you can configure the signals that are to be read from the SIMOTION drive. For opening the symbol browser, click on the little browser button (...) in the *Symbol* column. All available signals are displayed on the *Symbols* tab of the dialog. Mark the desired signal and click on <OK>. Now, the signal is being entered in the row of the signal table that you used for opening the symbol browser. As an option, you can open the symbol browser via the "Select symbols" link. You find this link on the bottom on the *General* tab of the the module. If you then select signals, these signals are entered automatically in the next free row of the signal table.

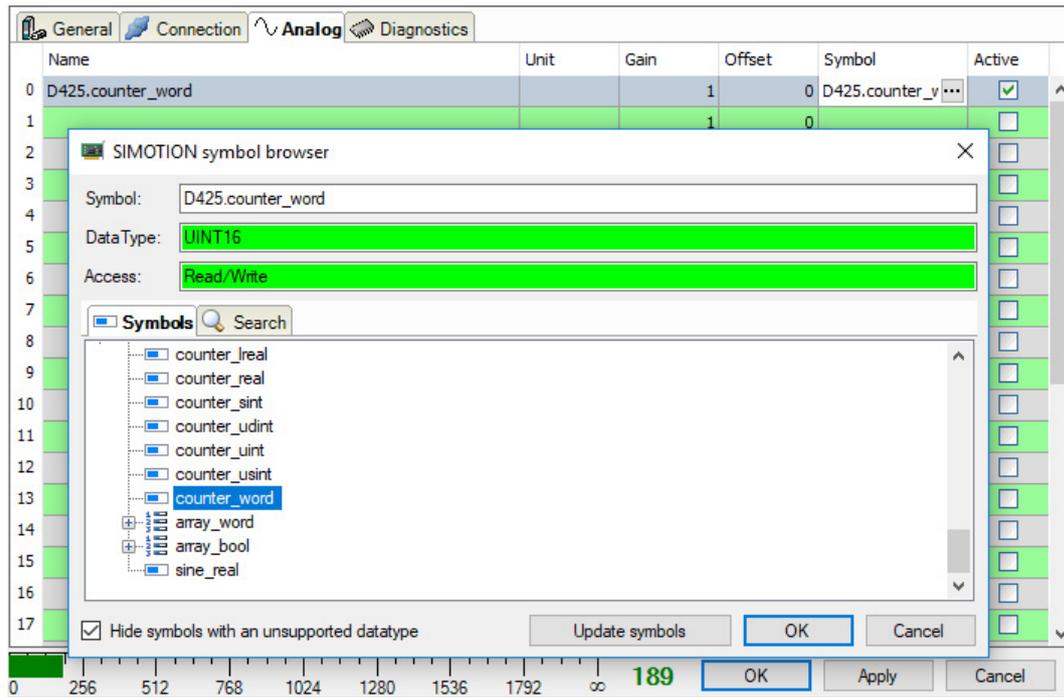


Fig. 8: Signal table for analog signals

By means of the *Search* tab, you can search for symbols with their name. The tree with the search results works exactly the way as the whole symbol tree.

**Note**



Clicking the checkbox “Hide symbols with an unsupported datatype” you can hide file types which are not supported.

Also the data type and the access type are displayed in the browser.

**Note**



For technical reasons, digital signals are transmitted as analog signals.

### 3.4.6 Address books

The address books for SIMOTION controllers can be created and managed across modules. Using the same address book in more than one module is permitted.

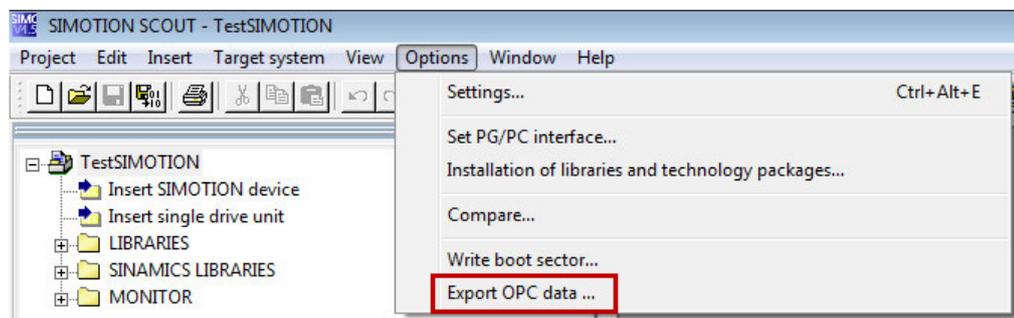
#### Note



The SIMOTION address books are based on the so called STI files. Initially, these files have to be exported using the SIMOTION configuration software, e.g. Siemens SCOUT. Whenever you export the SIMOTION configuration to an STI file, make sure that you have enabled the “Arrays with single elements” option.

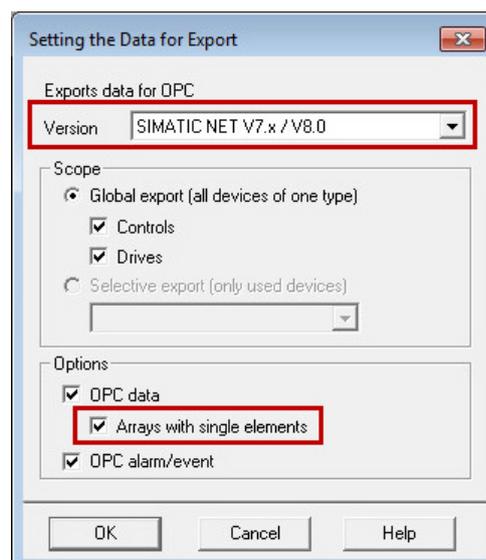
#### Create an STI file, example using SIMOTION SCOUT

Select the *Export OPC data...* command in the *Options* menu of SIMOTION SCOUT.



Now, the configuration dialog for the data you want to export will be opened.

Select the *SIMATIC NET V7.x / V8.0* version in this dialog and enable the option *Arrays with single elements*.



Close the dialog with <OK>. Now, the STI file will be created.

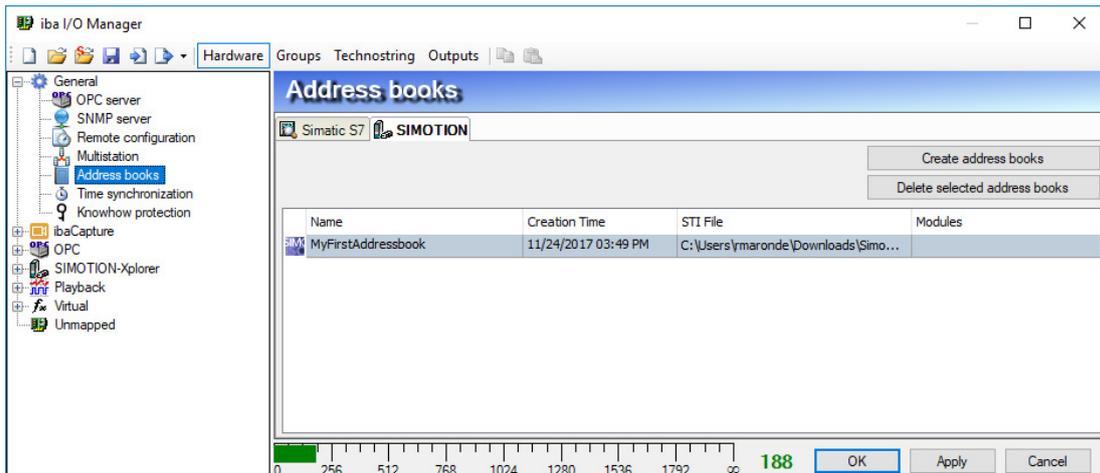


Fig. 9: Dialog for managing address books

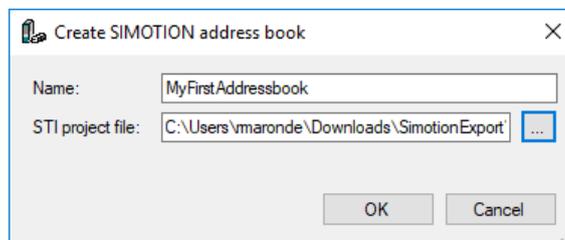
In case the *ibaPDA-Interface-SIMOTION-Xplorer* license is available, you will see the SIMOTION tab in the dialog for address book management (*I/O-Manager General - Address books*). Here, all available address books are displayed in a list. You can create new address books and delete existing address books.

For all address books available in *ibaPDA*, name, date of creation and path of the STI file and the modules using the address book are displayed.

You can also access this dialog via the SIMOTION overview of connections (button <Manage address books>).

### Creating an address book

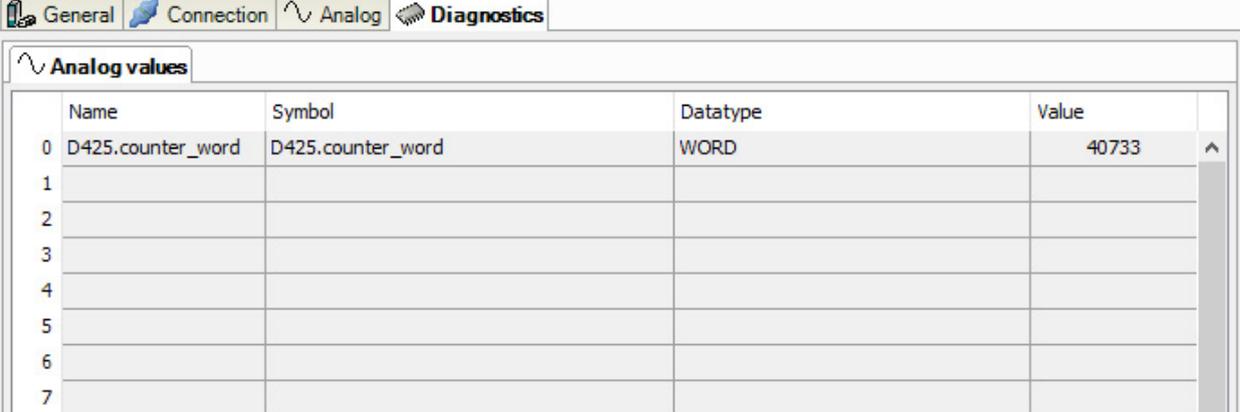
1. Click on the <Create address books> button.



2. Enter a name for the address book.
3. Enter the complete path and file name of the STI project file you want to use for creating the address book. You can also browse for the path and the file name.
4. For finally creating the address book, click on <OK>.

### 3.4.7 Module diagnostics

You will find a tabular display of the configured parameters and the data types on the *Diagnostics* tab.



The screenshot shows the SIMOTION-Xplorer interface with the 'Diagnostics' tab selected. Below the tab, there is a sub-tab labeled 'Analog values'. A table displays the following data:

	Name	Symbol	Datatype	Value	
0	D425.counter_word	D425.counter_word	WORD	40733	▲
1					
2					
3					
4					
5					
6					
7					

Fig. 10: Module diagnostics, example for analog values

## 4 Diagnostics

### 4.1 License

If the "SIMOTION-Xplorer" interface is not displayed in the signal tree, you can either check in *ibaPDA* under *General - Settings - License info* in the I/O manager or in the *ibaPDA* server status application whether your license "Interface SIMOTION Xplorer" has been properly recognized. The number of licensed connections is indicated in brackets.



Fig. 11: License displayed in the ibaPDA I/O manager, example of the SIMOTION-Xplorer license.

### 4.2 Log files

If connections to target platforms or clients have been established, all connection-specific actions are logged in a text file. You can open this (current) file and, e.g., scan it for indications of possible connection problems.

The log file can be opened via the button <Open log file>. The button is available in the I/O Manager:

- for many interfaces in the respective interface overview
- for integrated servers (e.g. OPC UA server) in the *Diagnostics* tab.

In the file system on the hard drive, you will find the log files in the program path of the *ibaPDA* server (...\\Programs\\iba\\ibaPDA\\Server\\Log\\). The file names of the log files include the name or abbreviation of the interface type.

Files named `interface.txt` are always the current log files. Files named `Interface_yyyy_mm_dd_hh_mm_ss.txt` are archived log files.

Examples:

- `ethernetipLog.txt` (log of EtherNet/IP connections)
- `AbEthLog.txt` (log of Allen-Bradley Ethernet connections)
- `OpcUAServerLog.txt` (log of OPC UA server connections)

## 4.3 Connection diagnostics with PING

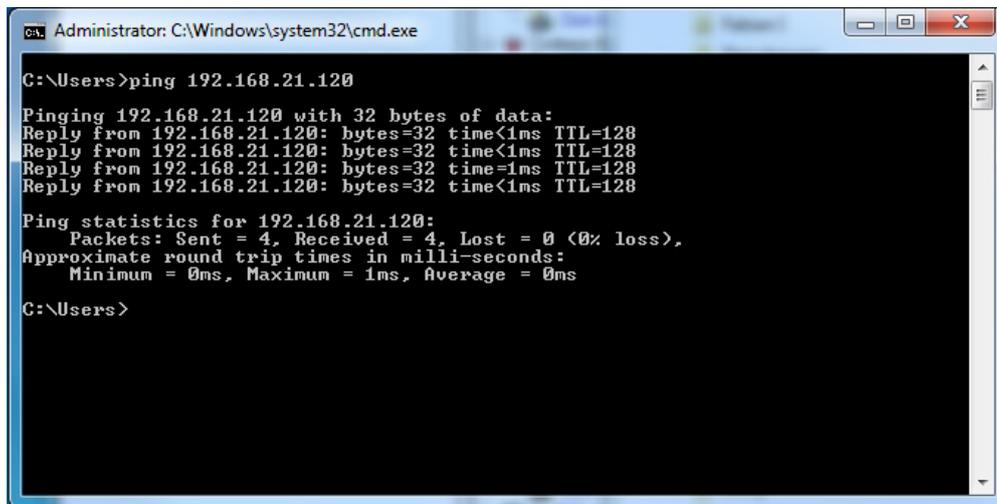
PING is a system command with which you can check if a certain communication partner can be reached in an IP network.

Open a Windows command prompt.



Enter the command “ping” followed by the IP address of the communication partner and press <ENTER>.

With an existing connection you receive several replies.

A screenshot of a Windows command prompt window titled 'Administrator: C:\Windows\system32\cmd.exe'. The prompt shows the command 'C:\Users>ping 192.168.21.120' and its output. The output indicates a successful ping with 32 bytes of data, 4 packets sent and received, and 0% loss. The round trip times are all less than 1ms.

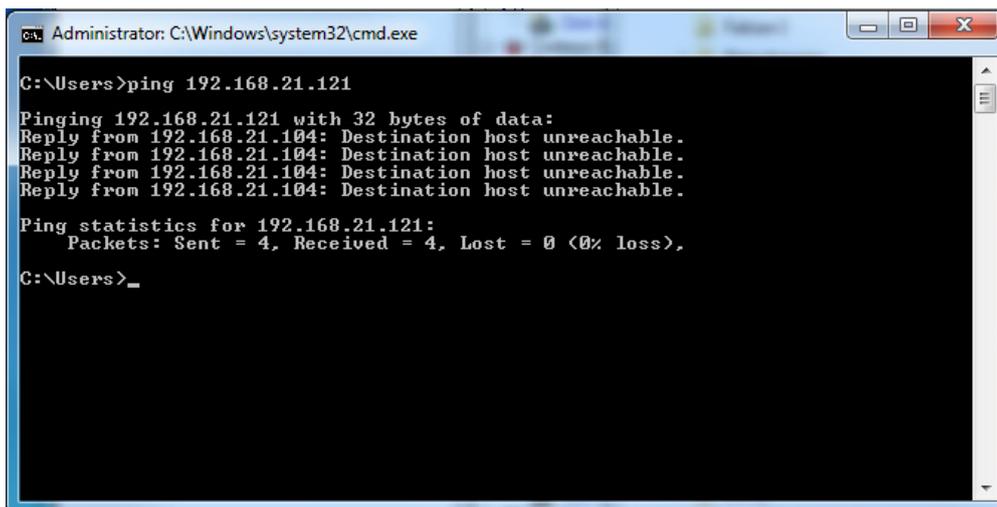
```
Administrator: C:\Windows\system32\cmd.exe
C:\Users>ping 192.168.21.120
Pinging 192.168.21.120 with 32 bytes of data:
Reply from 192.168.21.120: bytes=32 time<1ms TTL=128
Reply from 192.168.21.120: bytes=32 time<1ms TTL=128
Reply from 192.168.21.120: bytes=32 time=1ms TTL=128
Reply from 192.168.21.120: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.21.120:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\Users>
```

Fig. 12: PING successful

With no existing connection you receive error messages.

A screenshot of a Windows command prompt window titled 'Administrator: C:\Windows\system32\cmd.exe'. The prompt shows the command 'C:\Users>ping 192.168.21.121' and its output. The output indicates that the destination host is unreachable for all four packets sent.

```
Administrator: C:\Windows\system32\cmd.exe
C:\Users>ping 192.168.21.121
Pinging 192.168.21.121 with 32 bytes of data:
Reply from 192.168.21.104: Destination host unreachable.

Ping statistics for 192.168.21.121:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),

C:\Users>_
```

Fig. 13: PING unsuccessful

### 4.4 Connection table

For every Drive-Xplorer interface there is a table available in the I/O manager which shows the status of each connection. Each row represents one connection.

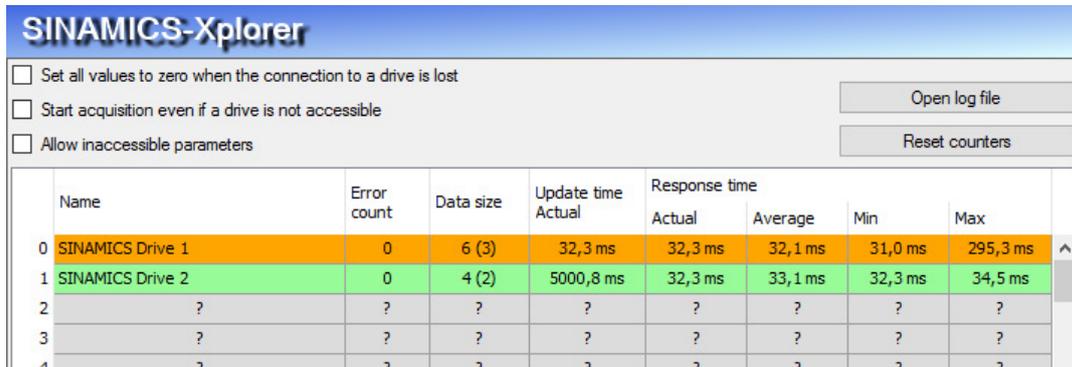


Fig. 14: Connection table, example for SINAMICS-Xplorer

The columns display different values, depending on the type of the interface. The connected target systems (controllers) are identified by their name or IP address in the first (left) column.

The table shows the cycle times and error counters of the different connections during the data acquisition. In the *Data size* column, the number of requested bytes and - in brackets and for support purposes - the number of Request telegrams are displayed.

Click the <Reset counters> button to reset the error counters and the calculation of the response times.

Additional information is provided by the background color of the table rows:

Color	Meaning
Green	The connection is OK and the data are read.
Orange	The connection is OK, however the data update is slower than the configured update time.
Red	The connection has failed.
Grey	No connection configured.

Table 2: Background colors of the connection table

### 4.5 Diagnosis on modular level

An additional diagnostic aid with a scheduler display of analog and digital actual values as well as the file format can be found in the tab "Diagnosis" of each Xplorer module.

For further information see ↗ *Module diagnostics*, page 20

## 4.6 Diagnostic modules

Diagnostic modules are available for most Ethernet based interfaces and Xplorer interfaces. Using a diagnostic module, information from the diagnostic displays (e. g. diagnostic tabs and connection tables of an interface) can be acquired as signals.

A diagnostic module is always assigned to a data acquisition module of the same interface and supplies its connection information. By using a diagnostic module you can record and analyze the diagnostic information continuously in the *ibaPDA* system.

Diagnostic modules do not consume any license connections, since they do not establish their own connection, but refer to another module.

Example for the use of diagnostic modules:

- A notification can be generated, whenever the error counter of a communication connection exceeds a certain value or the connection gets lost.
- In case of a disturbance, the current response times in the telegram traffic may be documented in an incident report.
- The connection status can be visualized in *ibaQPanel*.
- You can forward diagnostic information via the SNMP server integrated in *ibaPDA* or via OPC DA/UA server to superordinate monitoring systems like network management tools.

In case the diagnostic module is available for an interface, a "Diagnostics" module type is shown in the "Add module" dialog.

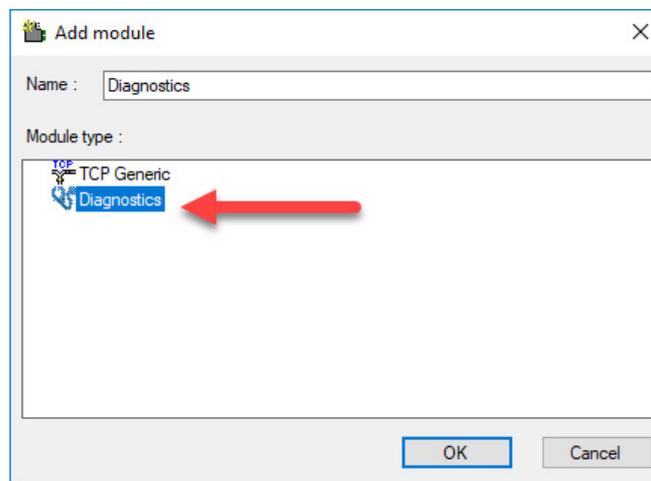


Fig. 15: Add diagnostic module, example Generic TCP

### Module settings diagnostic module

For a diagnostic module, you can make the following settings:

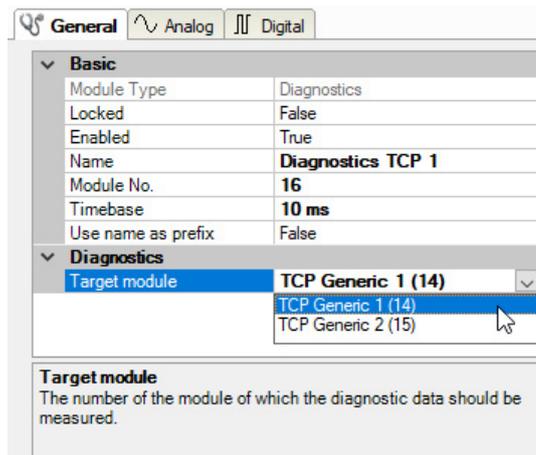


Fig. 16: Module settings diagnostic module, example TCP Generic

The basic settings of a diagnostic module equal those of other modules.

There is only one setting which is specific for the diagnostic module: the target module.

By selecting the target module, you assign the diagnostic module to the module on which you want to acquire information about the connection. You can select the supported modules of this interface in the drop down list of the setting. You can assign exactly one data acquisition module to each diagnostic module. When having selected a module, the available diagnostic signals are immediately added to the *Analog* and *Digital* tabs. It depends on the type of interface, which signals exactly are added.

General Analog Digital						
Name	Unit	Gain	Offset	Active	Actual	
0 IP address (part 1)			1	0	<input checked="" type="checkbox"/>	
1 IP address (part 2)			1	0	<input checked="" type="checkbox"/>	
2 IP address (part 3)			1	0	<input checked="" type="checkbox"/>	
3 IP address (part 4)			1	0	<input checked="" type="checkbox"/>	
4 Port			1	0	<input checked="" type="checkbox"/>	
5 Message counter			1	0	<input checked="" type="checkbox"/>	
6 Incomplete errors			1	0	<input checked="" type="checkbox"/>	
7 Packet size (actual)	bytes		1	0	<input checked="" type="checkbox"/>	
8 Packet size (max)	bytes		1	0	<input checked="" type="checkbox"/>	
9 Time between data (actual)	ms		1	0	<input checked="" type="checkbox"/>	
10 Time between data (min)	ms		1	0	<input checked="" type="checkbox"/>	
11 Time between data (max)	ms		1	0	<input checked="" type="checkbox"/>	

Fig. 17: Example: Analog values of a diagnostic module for a TCP Generic module

For example, the IP (v4-) address of a TCP Generic module (see fig. above) will always be split into 4 parts derived from the dot-decimal notation, for better reading. Also other values are being determined, as there are port number, counters for telegrams and errors, data sizes and telegram cycle times.

General			Analog			Digital		
Name			Active		Actual			
0	Active connection mode		<input checked="" type="checkbox"/>					
1	Invalid packet		<input checked="" type="checkbox"/>					
2	Connecting		<input checked="" type="checkbox"/>					
3	Connected		<input checked="" type="checkbox"/>					

Fig. 18: Example: Digital values of a diagnostic module for a TCP Generic module

## 4.7 Connection diagnostics by means of PG/PC interface

By means of the diagnostic function of the PG/PC interface, the functionality and connection configuration can be tested.

For this purpose, open the PG/PC interface.

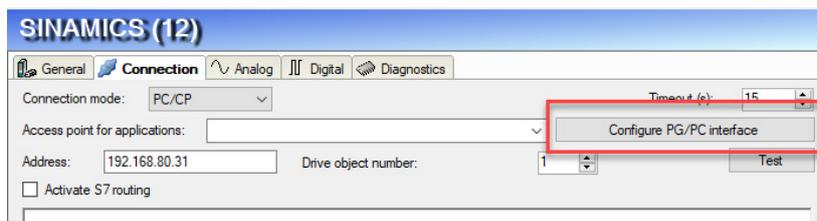


Fig. 19: Configuring PG/PC interface, Example SIMOTION-Xplorer

Open the diagnostics dialog.

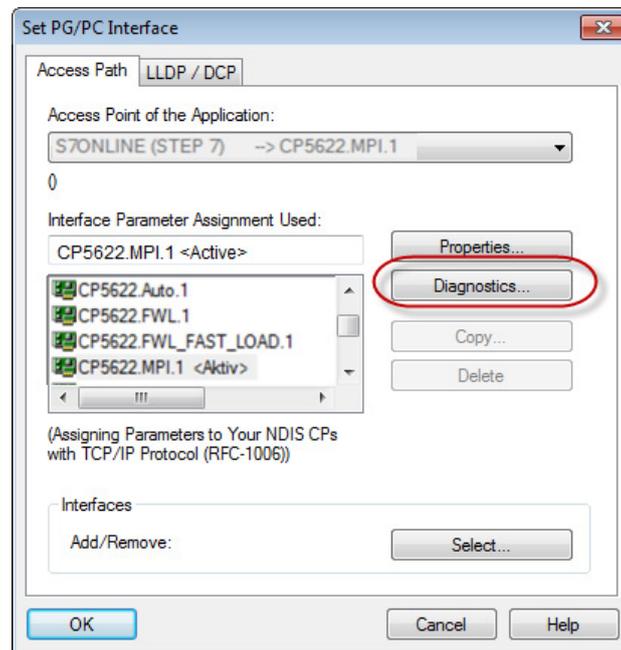


Fig. 20: Open Diagnostics

The following figure shows an example of a diagnostics of a SIMATIC Net CP5622 (Profibus).

By clicking <Test>, a network diagnostics will be started.

By clicking on the button <Read>, an availability check of the bus devices will be started.

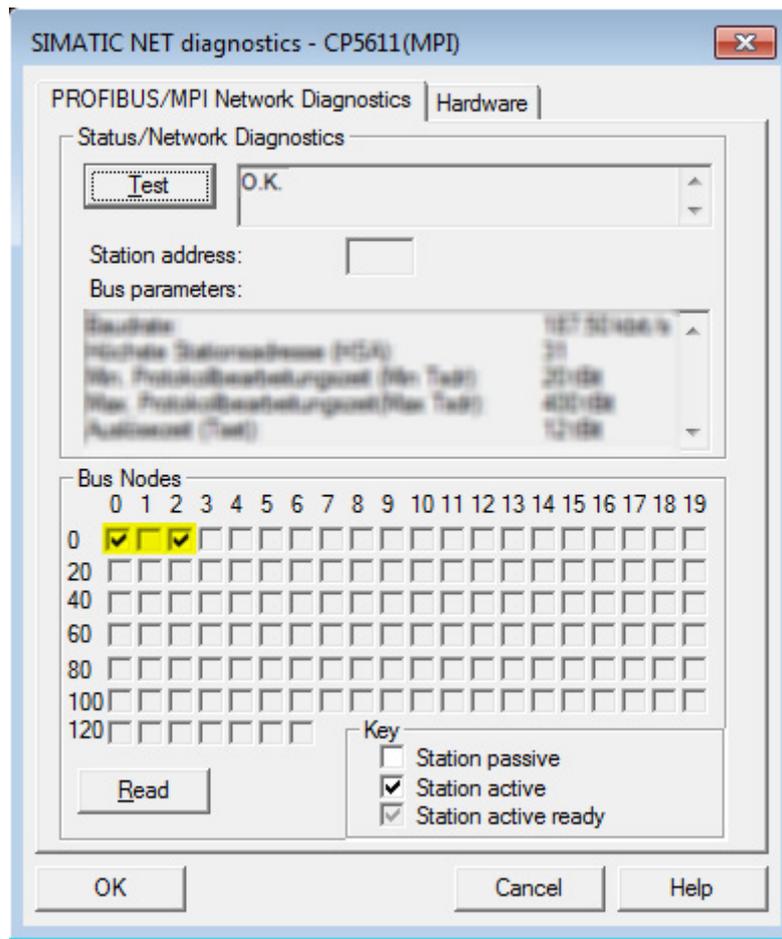


Fig. 21: SIMATIC NET diagnostics

In this example, one active station was found on the address 0 and 2 each.

## 5 Appendix

### 5.1 Setting PG/PC interface / defining new access point

Example of *ibaPDA-Interface-S7-Xplorer*.

*ibaPDA-Interface-SIMOTION-Xplorer* only supports PROFIBUS!

*ibaPDA* cannot establish a connection to a S7-CPU, if the parametrization "AUTO" for an access point (MPI-adapter or CP) has been set in the SIMATIC Manager. There are 2 possible remedies:

#### Changing the interface with remaining access point name

Change interface in the SIMATIC Manager e.g. from "CP5622 (AUTO)" to "CP5622 (MPI)" or "CP5622 (PROFIBUS)".

Disadvantage of this method: If the setting of the access point will be changed again in the SIMATIC Manager, the measurement does no longer work because *ibaPDA* no longer has any access.

#### Adding a special access point for *ibaPDA*

To avoid conflicts with the setting of SIMATIC Manager and *ibaPDA* when both programs run on the same computer, a new access point should be defined.

There is the <Configure PG/PC interface> button in the dialog window of the PC/CP module. It can be used to open the dialog for configuring the PG/PC interface.

The setting for the SIMATIC Manager will also be changed.

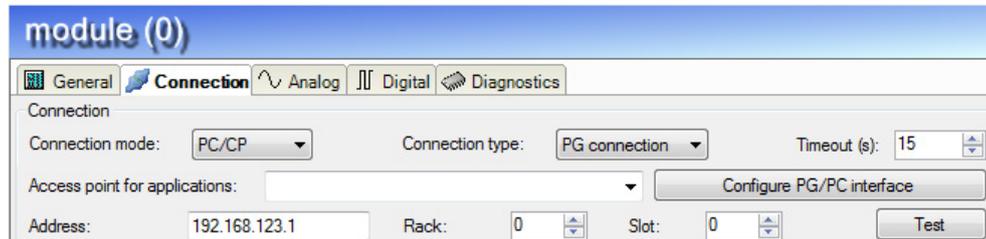
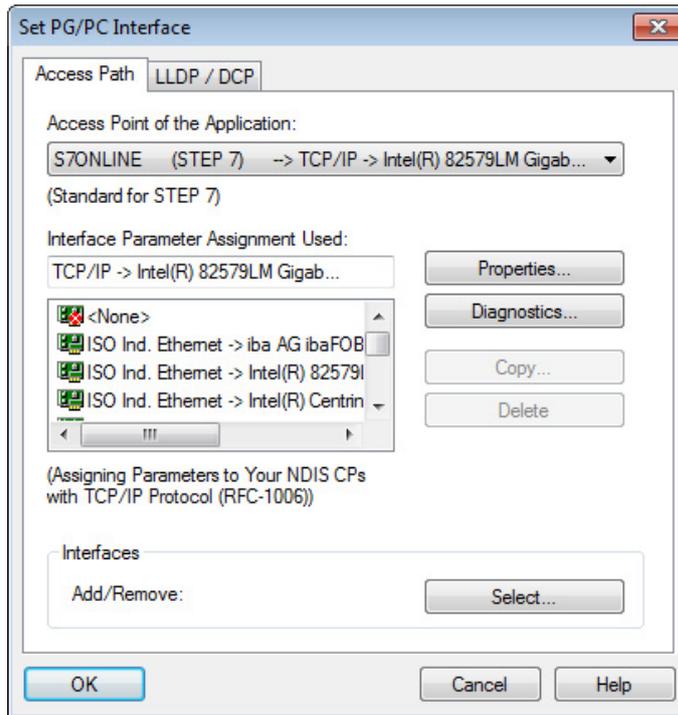


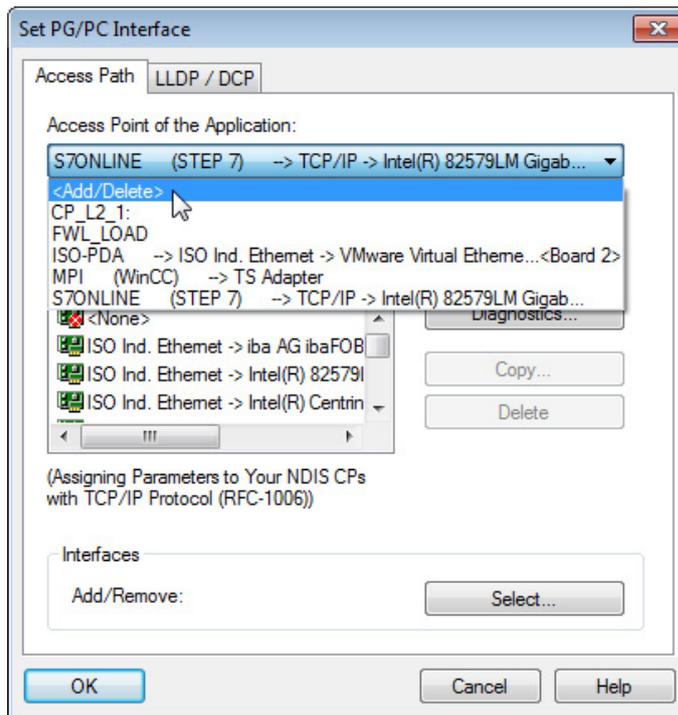
Fig. 22: Open PG/PC interface

#### Procedure

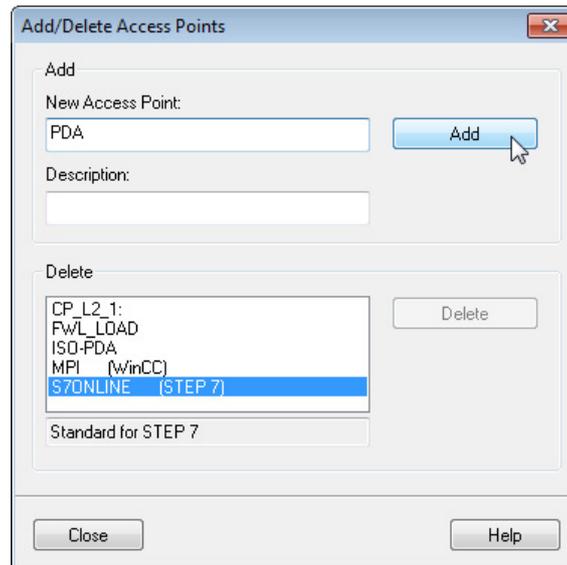
1. Open the dialog box with the <Configure PG/PC interface> button.



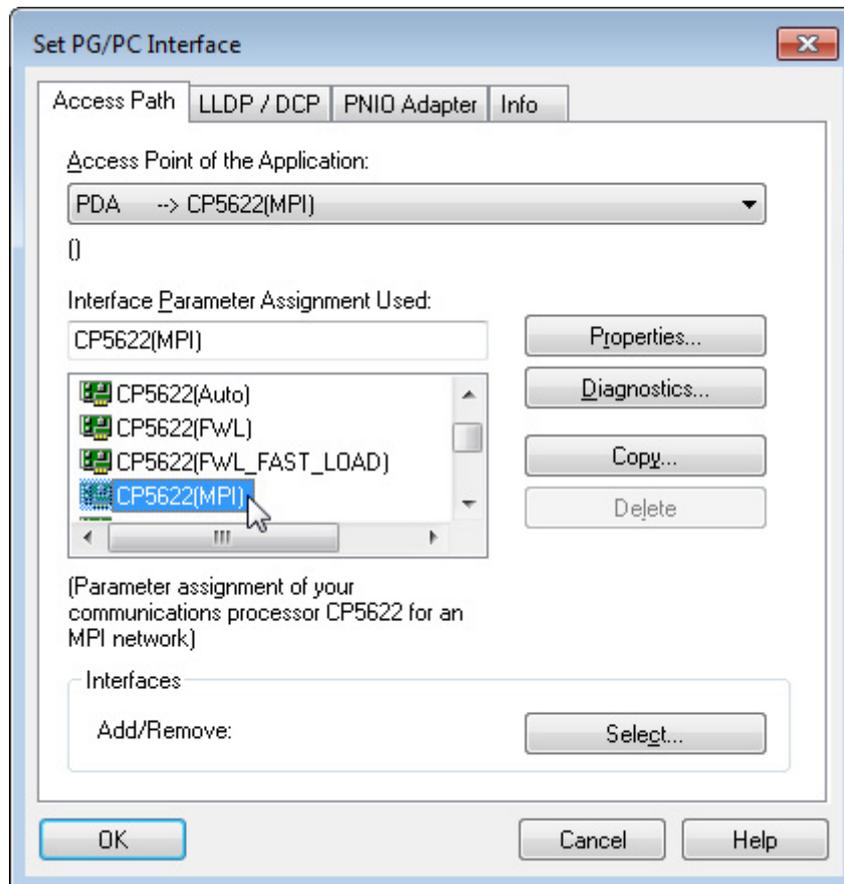
2. Select the row <Add/Delete> under "Access Point of the Application".



3. Define a new access point; enter a name, e.g. PDA and optionally a description for a better understanding, click on <Add> and <Close>.



4. Add an interface to the access point, e.g. "CP5622.MPI.1" and exit with <OK>.



The newly defined access (e.g. PDA --> CP5622.MPI.1) is displayed subsequently in the connection dialog of *ibaPDA* under "Access points for applications".

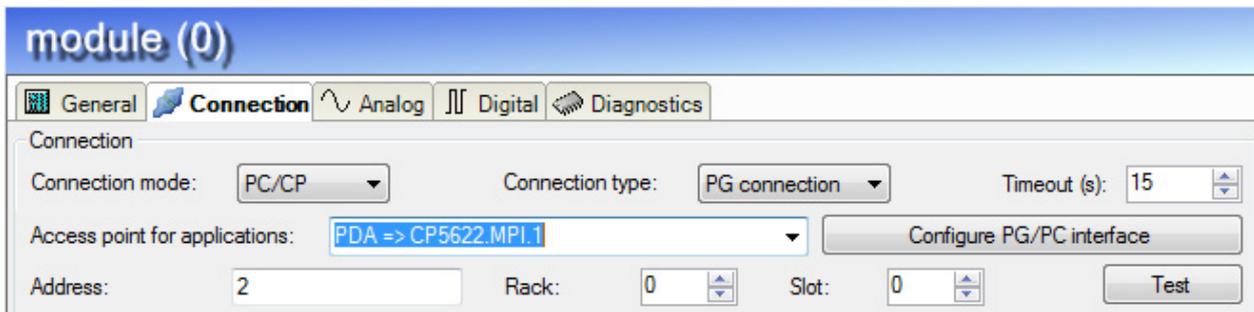


Fig. 23: Set access point

## 5.2 S7 routing

S7 routing is defined as the possibility to use S7 controls as router to access secondary target systems, i.e. controls or drives, which are in different subnets. This also includes changing the bus system (Ethernet / PROFIBUS / MPI).

### 5.2.1 Routing from Ethernet to Ethernet

Please do not mix up the “S7 Routing” function with “IP Routing”.

The following constellation will make this clear:

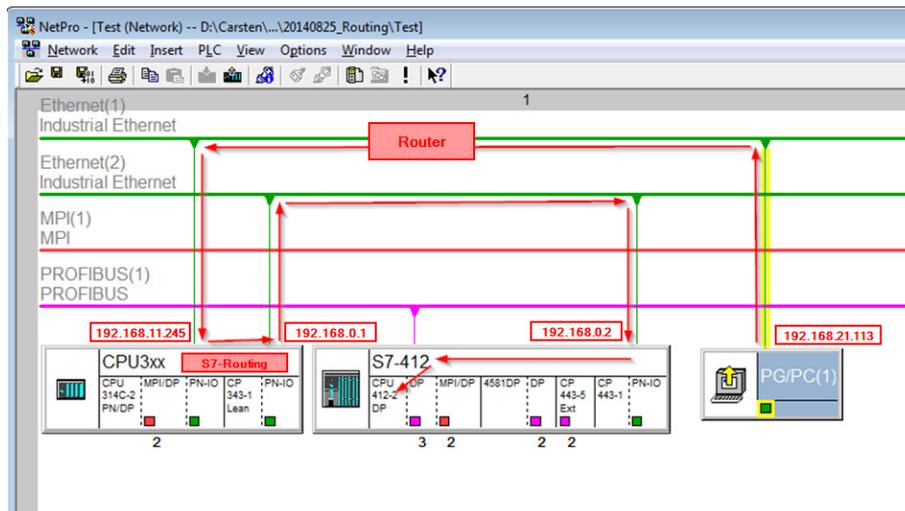


Fig. 24: S7 Routing, example system topology

We want to access the CPU412 controller from the engineering PC (also with *ibaPDA*). The computer and the controller are not directly connected via a common network/bus. We want to run the connection over the CPU314C controller. “Passing” the communication in this controller is called “S7 Routing”.

In our example, engineering PC and CPU314C are also located in two different (logic) subnets. You need an (IP-) Router for establishing a communication connection. This is completely independent of the “S7 Routing” function and should not be confounded with it.

#### 5.2.1.1 Configuration of STEP 7/ NetPro

The following configuration steps are required to be able to access the secondary CPU412 control with the SIMATIC STEP 7 programming software. These are not required for using *ibaPDA*.

Inserting a PG/PC station:

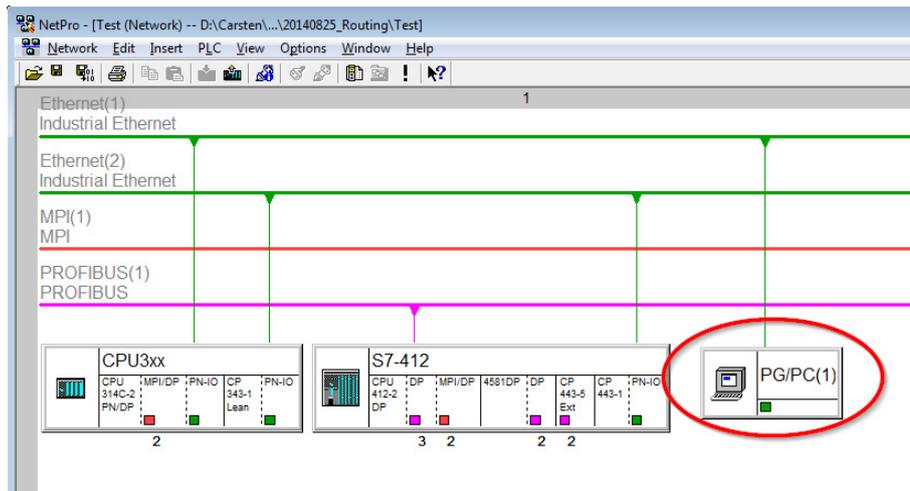


Fig. 25: NetPro configuration

Assigning an interface (network interface card):

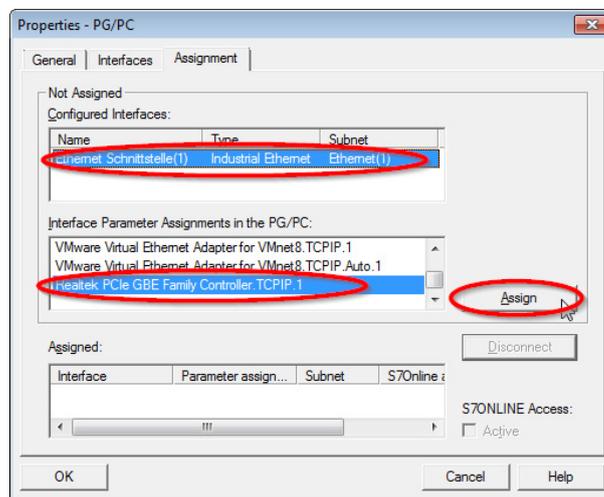


Fig. 26: PG/PC interface assigned

Result:

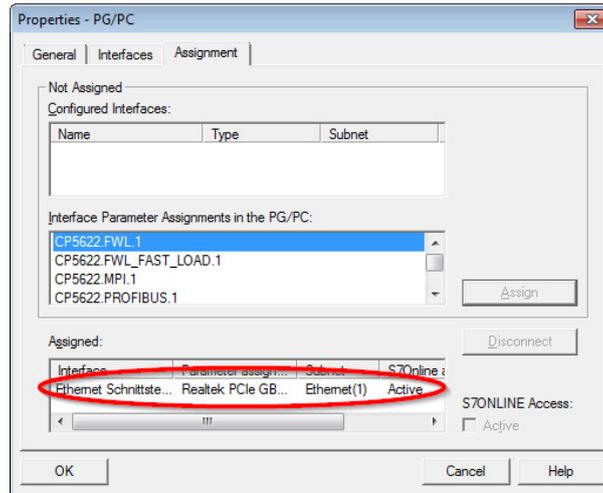


Fig. 27: Interface assigned

The connection line of PG/PC to the network should be highlighted yellow now.

The following figure shows the communication channel using arrows (these are not shown in SIMATIC NetPro).

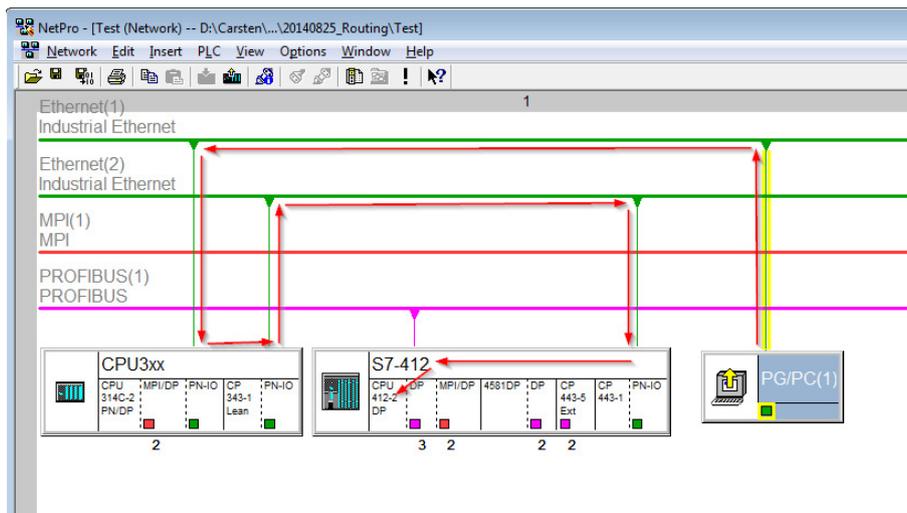


Fig. 28: Communication channel

Finally, load all hardware configurations and connection data from NetPro.

### 5.2.1.2 ibaPDA configuration

The following entries have to be made:

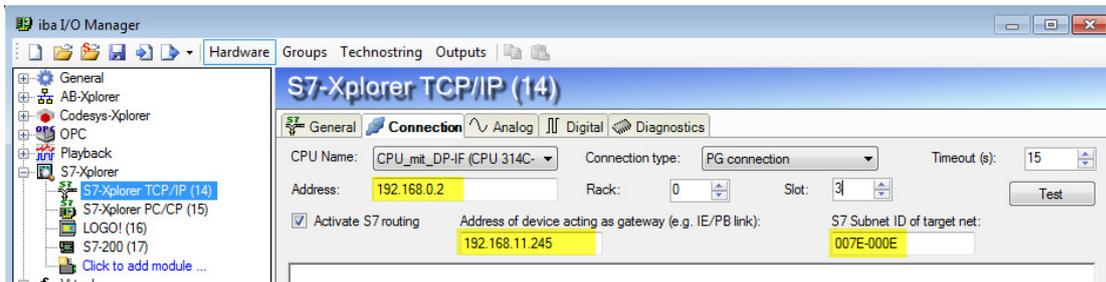


Fig. 29: Enable S7 routing

#### Activate S7 routing

Enable to use S7 routing

#### Address

Address of the target control (here CPU412)

#### Address of device acting as gateway

Enter address of the gateway (here CPU314C)

#### S7 subnet ID of target net

Enter subnet ID from STEP 7 NetPro

You can identify the S7 subnet ID in NetPro. For doing so, right-click on the secondary bus system and open the "Properties".

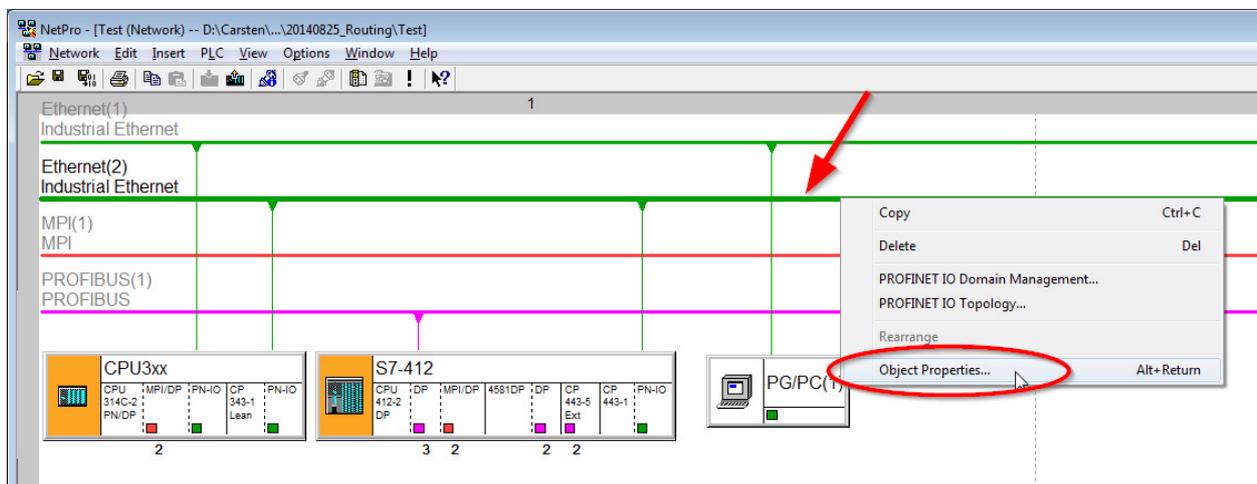


Fig. 30: Determine S7 subnet ID

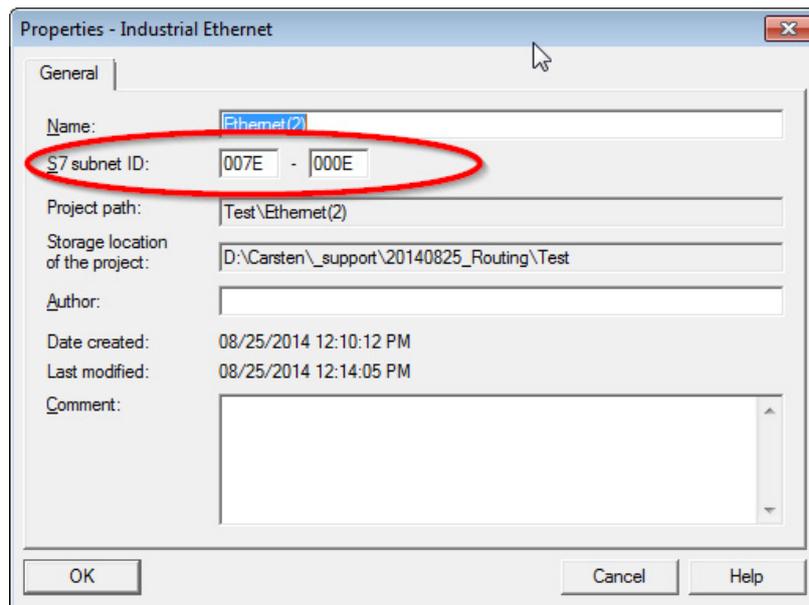


Fig. 31: S7 subnet ID

## 5.2.2 Routing from Ethernet to PROFIBUS

We want to implement the following way of access:

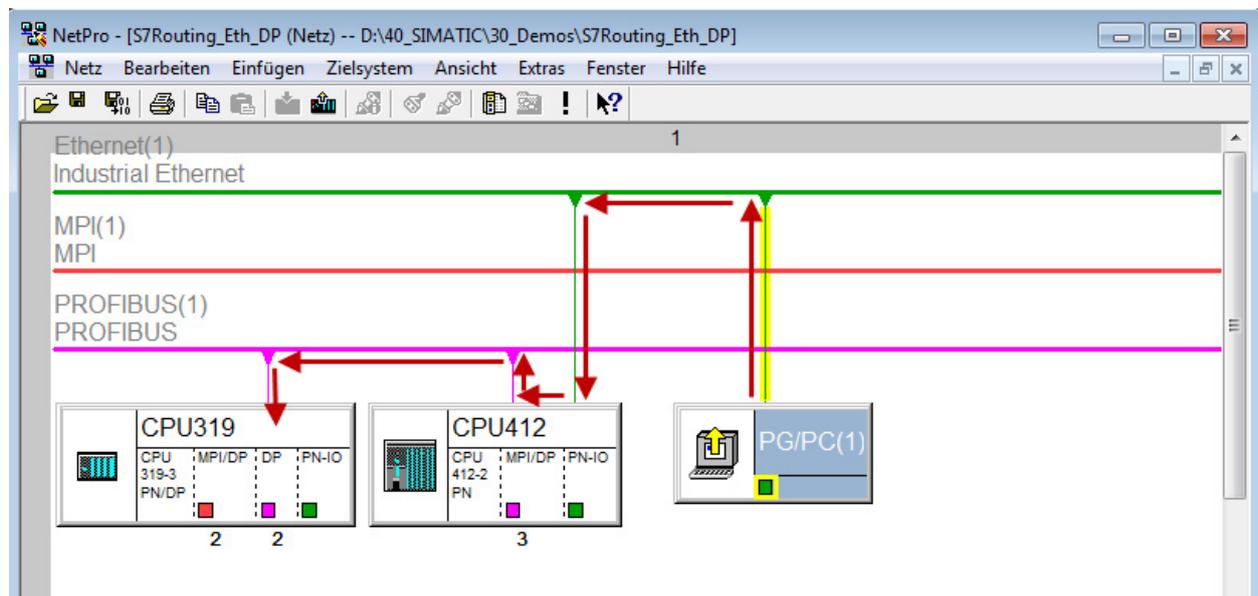


Fig. 32: S7 Routing, example system topology Ethernet PROFIBUS

We want to access the CPU319 controller from the engineering PC (also with *ibaPDA*). The computer and the controller are not directly connected via a common network/bus. We want to run the connection over the CPU412 controller. “Passing” the communication in this controller is called “S7 Routing”.

### 5.2.2.1 Configuration STEP 7/ NetPro

The following configuration steps are exclusively required for accessing the subordinate controller CPU319 via the SIMATIC STEP 7 programming software. For using *ibaPDA*, these configuration steps are not required. Adding a PG/PC station:

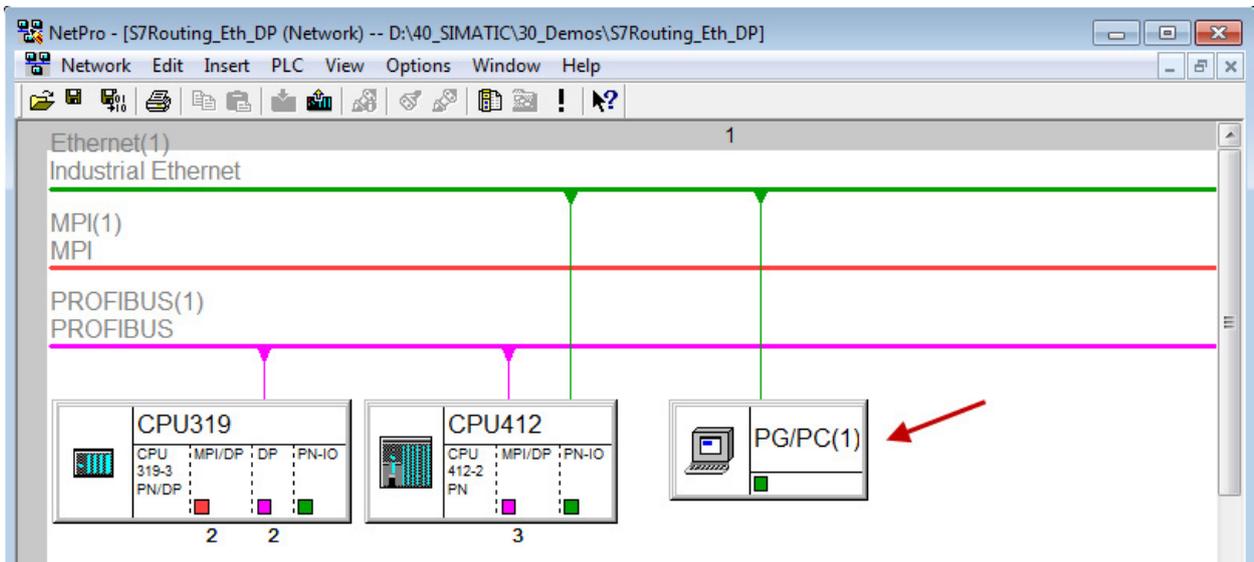


Fig. 33: Configuration NetPro

Assigning an interface (network card):

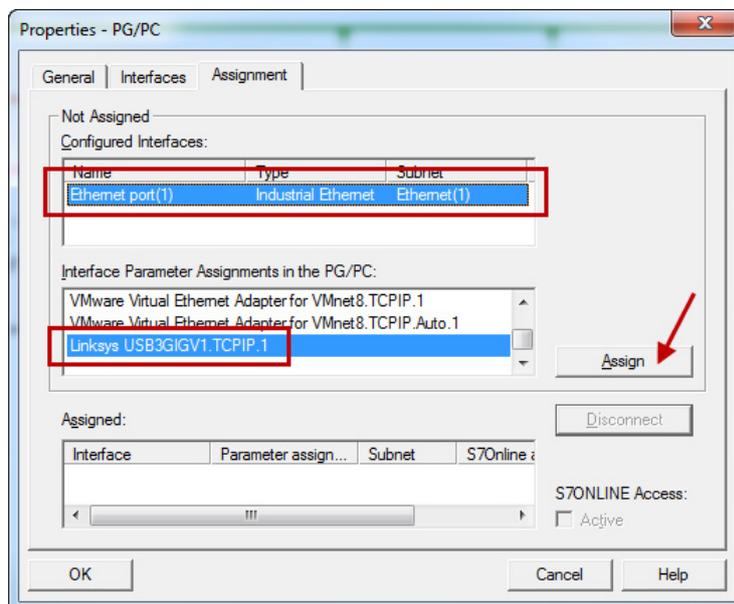


Fig. 34: Assign PG/PC interface

Result:

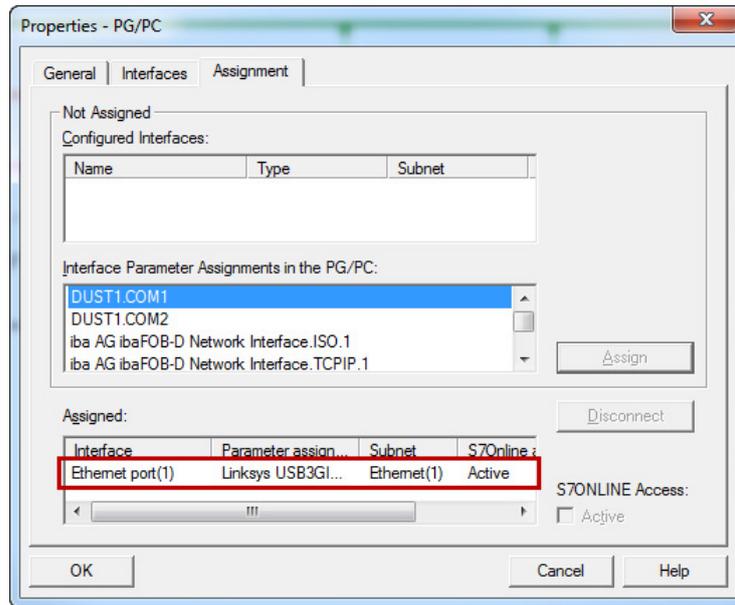


Fig. 35: Interface has been assigned

Now, the connection line from PG/PC to the network has to be marked in yellow. In the following figure, the communication path is shown using arrows (these are not displayed in SIMATIC NetPro).

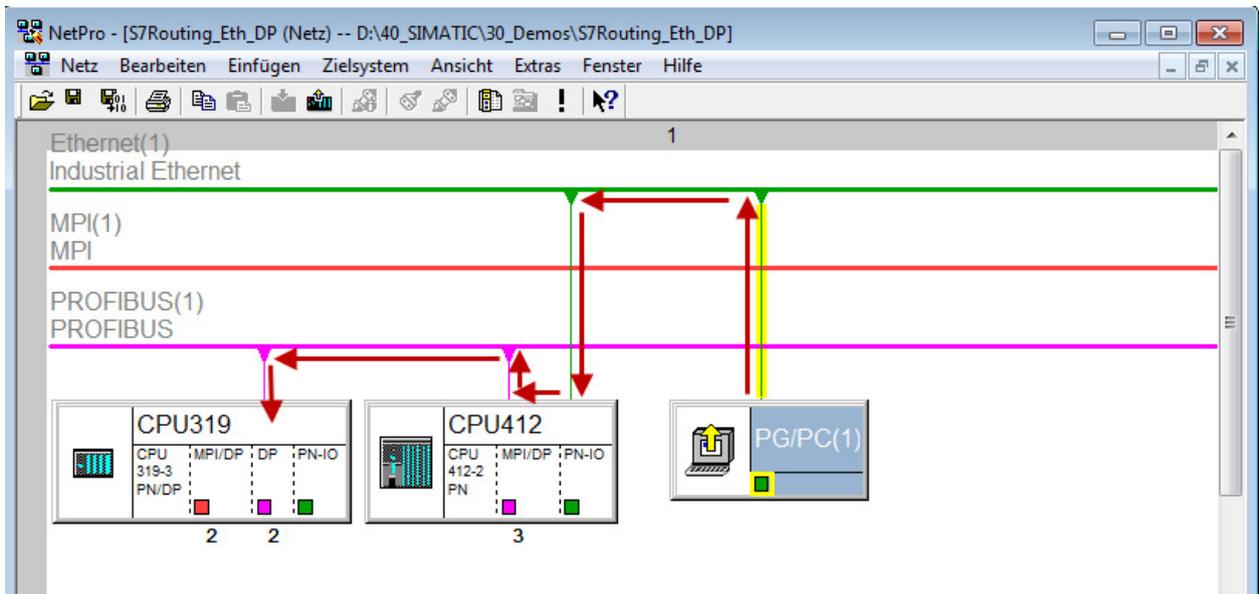


Fig. 36: Communication path

Finally, all HW configurations and connection data are loaded from NetPro.

### 5.2.2.2 ibaPDA configuration

The following entries have to be made:

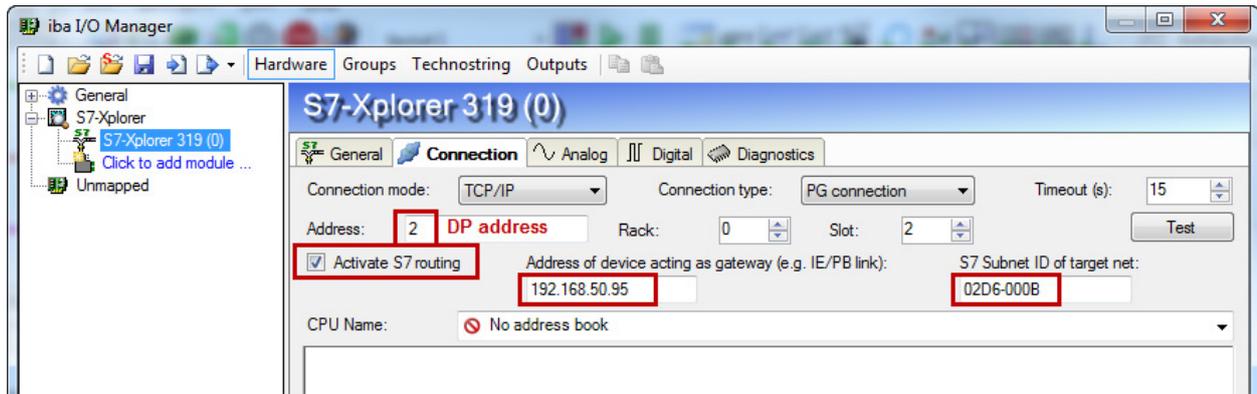


Fig. 37: Enable S7 routing

#### Activate S7 routing

Enable to use S7 routing

#### Address

Address of the target control (here CPU319)

#### Address of device acting as gateway

Enter address of the gateway (here CPU412)

#### S7 subnet ID of target net

Enter subnet ID from STEP 7 NetPro

You can identify the S7 subnet ID in NetPro. For doing so, right-click on the secondary bus system and open the “Properties”.

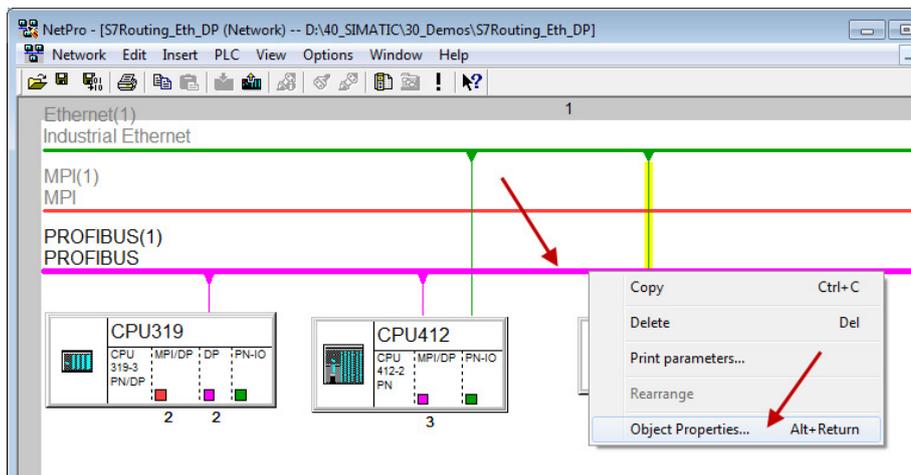


Fig. 38: Determine S7 subnet ID

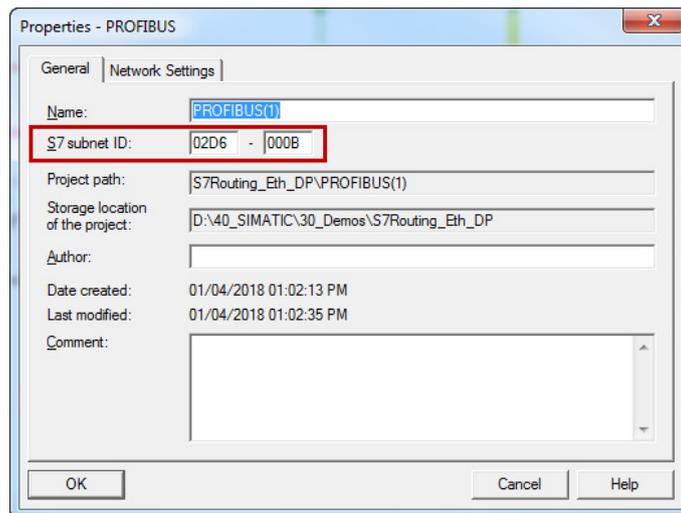


Fig. 39: S7 subnet ID

## Reference



For more information about the S7-Routing, please see:

Which modules support the "S7 Routing" function in S7 subnets?

<http://support.automation.siemens.com/ww/view/en/584459>

Which requirements must be fulfilled and what do I have to observe if I want to execute routing? <https://support.industry.siemens.com/cs/ww/de/view/2383206>

How do you enable cross-project S7 Routing in the TIA Portal and in STEP 7 V5.x?

<https://support.industry.siemens.com/cs/ww/en/view/109474569>

## 6 Support and contact

### Support

Phone: +49 911 97282-14  
Fax: +49 911 97282-33  
Email: support@iba-ag.com

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#### Note



If you require support, indicate the serial number (iba-S/N) of the product or the license number.

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### Contact

#### Headquarters

iba AG  
Koenigswarterstrasse 44  
90762 Fuerth  
Germany

Phone: +49 911 97282-0  
Fax: +49 911 97282-33  
Email: iba@iba-ag.com

#### Mailing address

iba AG  
Postbox 1828  
D-90708 Fuerth, Germany

#### Delivery address

iba AG  
Gebhardtstrasse 10  
90762 Fuerth, Germany

#### Regional and Worldwide

For contact data of your regional iba office or representative please refer to our web site

**[www.iba-ag.com](http://www.iba-ag.com)**.