



See the Big Picture



# ibaPDA-Interface-Codesys-Xplorer

PLC-Xplorer Data Interface to CODESYS Systems

Manual

Issue 1.1

**Measurement Systems  
for Industry and Energy**

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The current version is available for download on our web site <http://www.iba-ag.com>.

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## Table of Contents

<b>1</b>	<b>About this Manual .....</b>	<b>2</b>
1.1	Target group and previous knowledge .....	2
1.2	Notations .....	2
1.3	Used symbols .....	3
<b>2</b>	<b>System requirements.....</b>	<b>4</b>
<b>3</b>	<b>PLC-Xplorer data interface .....</b>	<b>6</b>
3.1	General information .....	6
3.2	System topologies .....	6
3.3	Configuration and engineering CODESYS.....	6
3.4	Configuration and engineering ibaPDA .....	7
3.4.1	Interface settings .....	7
3.4.2	Adding a module.....	8
3.4.3	General module settings .....	8
3.4.4	Connection settings .....	9
3.4.4.1	Codesys V2 connection parameters .....	10
3.4.4.2	Codesys V3 connection parameters .....	11
3.4.4.3	Connection setup.....	12
3.4.5	Signal configuration .....	14
3.4.6	Module diagnostics .....	16
<b>4</b>	<b>Diagnostics.....</b>	<b>17</b>
4.1	License .....	17
4.2	Log files .....	17
4.3	Connection diagnostics with PING .....	18
4.4	Connection table.....	19
4.5	Module diagnostics .....	19
<b>5</b>	<b>Appendix.....</b>	<b>20</b>
5.1	Link parameter Overview .....	20
5.2	Example CODESYS PLCWinNT V2.4 .....	21
5.2.1	Communication setting .....	21
5.2.2	Create symbols.....	22
5.2.3	Connection establishment in ibaPDA .....	23
5.3	Example ABB AC500 (CPU PM551-TP-ETH) .....	25
5.3.1	Communication setting .....	25
5.3.2	Create symbols.....	25
5.3.3	Connection establishment in ibaPDA .....	26
5.4	Example CODESYS Control Win V3.....	27
5.4.1	Communication setting .....	27
5.4.2	Symbols in CODESYS V3 .....	27
5.4.3	Connection establishment in ibaPDA .....	28
<b>6</b>	<b>Support and contact .....</b>	<b>30</b>

# 1 About this Manual

This documentation contains a comprehensive description of the *ibaPDA-Interface-Codesys-Xplorer* individual PLC-Xplorer data interface.

This documentation is a supplement to the *ibaPDA* manual. Information about all the other characteristics and functions of *ibaPDA* may 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-Codesys-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 control 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:

- From an electric shock!
  - Due to the improper handling of software products which are coupled to input and output procedures with control function!
- 

---

** WARNING**

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

---

---

** CAUTION**

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

---



---

**Note**

A note specifies special requirements or actions to be observed.

---



---

**Important note**

Note if some special features must be observed, for example exceptions from the rule.

---



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**Tip**

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

---



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**Other documentation**

Reference to additional documentation or further reading.

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**Example**

Configuration and application examples for a better understanding

---

## 2 System requirements

The following system requirements are to be met for using the *Codesys-Xplorer* data interface:

- ❑ ibaPDA V6.33 or higher
- ❑ Basic license for *ibaPDA* + license for *ibaPDA-Interface-PLC-Xplorer* or *ibaPDA-Interface-Codesys-Xplorer*
- ❑ For more than 16 connections you need additional *one-step-up-Interface-Codesys-Xplorer* licences for each additional 16 connections.



---

### Note

The license *ibaPDA-Interface-PLC-Xplorer* contains, among others, the license for the interface *Codesys-Xplorer*

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- ❑ Controller (PLC) with CODESYS V2 or CODESYS V3.  
Systems tested so far:
  - 3S CODESYS SP PLC WinNT V2.4
  - 3S CODESYS SP RTE
  - 3S CODESYS Control Win V3
  - ABB AC500 CPU PM554-TP-ETH
  - Danieli HiPAC
  - ELAU Standard CPU
  - ELAU PacDrive C600
  - ifm CR1051
  - Schneider Electric LMC 101C
  - Schneider Electric M258
  - WAGO 750-841
  - WAGO 750-880
  - WAGO 750-881

For further requirements for the used computer hardware and the supported operating systems, please refer to the ibaPDA documentation.

License information

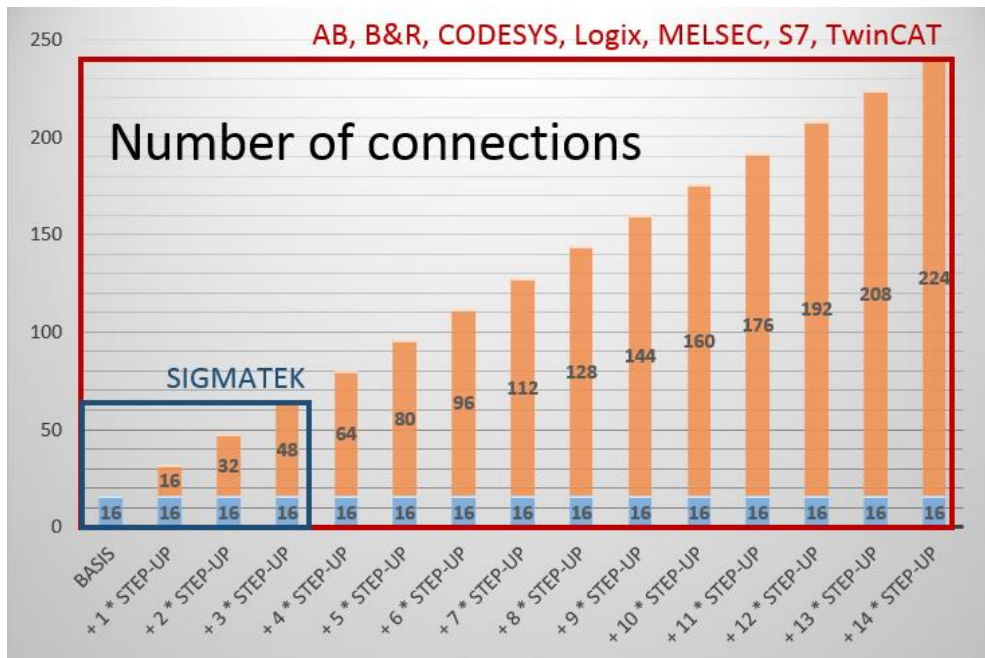
Order no.	Product name	Description
31.001.042	ibaPDA-Interface-PLC-Xplorer	Extension license for an ibaPDA system adding the data interfaces: + S7-Xplorer (interface to SIMATIC S7) + Codesys-Xplorer (interface to CODESYS) + AB-Xplorer (interface to Allen-Bradley) + Sigmatek-Xplorer (interface to SIGMATEK)
31.000.002	ibaPDA-Interface-Codesys-Xplorer	Extension license for an ibaPDA system adding the data interface: + Codesys-Xplorer (interface to CODESYS)
31.100.002	one-step-up-Interface-Codesys-Xplorer	Extension license for 16 further Codesys-Xplorer-connections, a maximum of 14 permissible

Table 1: Available Codesys-Xplorer licenses, as at ibaPDA-V6.34.0



Note

The license for individual data interfaces can be enabled multiple times on one dongle, so that it is possible to use more than 16 connections per interface. To this end, you can purchase the *one-step-up-...* extension licenses separately for each interface. Up to 16 further connections to PLCs can be established on each *one-step-up*-license. Up to 240 connections can be configured and used per data interface with the multiple purchase or multiple release of these licenses (up to 15 in total). Exception of SIGMATEK: here, only up to 4 licenses (64 connections) can be activated.



You have to take into consideration the limitation of the number of signals by the *ibaPDA* base license.

## 3 PLC-Xplorer data interface

### 3.1 General information

The Codesys-Xplorer interface is suitable for acquiring measured data from a CODESYS controller by TCP/IP via standard NICs. Access thereby is transparent for the controller. A separate configuring and programming of the control system is not necessary.

The selection of the signals to be measured is hereby comfortably carried out by means of symbolic names supported by the *ibaPDA* symbol browser. This enables the access to all defined symbols of the linked CODESYS project.

### 3.2 System topologies

The connections to the controllers can be established via standard Ethernet interfaces of the computer.

For the operation, no further software is necessary.



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**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 CODESYS

No particular configuration and programming is required on the controller side as a matter of principle. In particular, it is not necessary to call any program modules.


The access to the data of the controller is carried out via symbolic addresses. These are imported from the controller or from the project file.

For the creation of the symbols several actions must be carried out.

➤ Therefore, see examples in the *Appendix*, Page 20.



### 3.4 Configuration and engineering ibaPDA

Open the I/O manager, e. g. from the tool bar .

If all system requirements are fulfilled (see chapter *System requirements*, Page 4) the interface „Codesys-Xplorer“ is displayed in the signal tree.

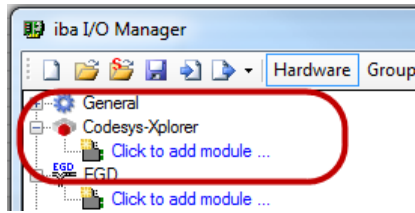


Figure 1: Interface in the I/O manager

#### 3.4.1 Interface settings

The interface itself has the following functions and configuration possibilities:

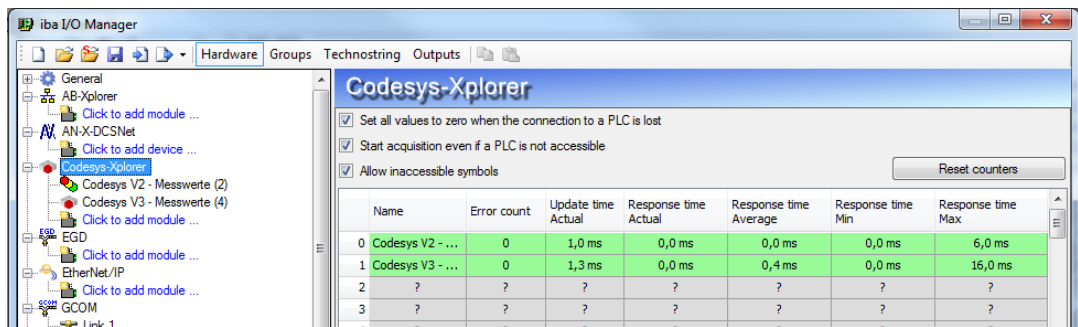


Figure 2: General interface settings

- Set all values to zero when the connection to a PLC is lost

If enabled, all measured values of the PLC are set to zero as soon as the connection is lost. If this option is disabled, ibaPDA will keep the last valid measured data in memory at the time the connection was lost.

- Start acquisition even if a PLC is not accessible

If this option is enabled, the acquisition will start even if the controller is not accessible. In case of an error, a warning is indicated in the validation dialog. If the system has been started without a connection to the controller, ibaPDA will periodically try to connect to the PLC.

- Allow inaccessible symbols

Enable this option if you wish to start acquisition even if symbols are not accessible. The inaccessible symbols are issued as warnings in the validation dialog. This can only occur if the address book is not updated!

Measurement will not start when inaccessible symbols are present if you do not enable this option.

- Connection table

The table shows the cycle times of the individual connections during data measurement. To reset the calculated times and error counters to zero, simply click on the <Reset counters> button.

➤ Refer also to chapter *Connection table*, Page 19.

### 3.4.2 Adding a module

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

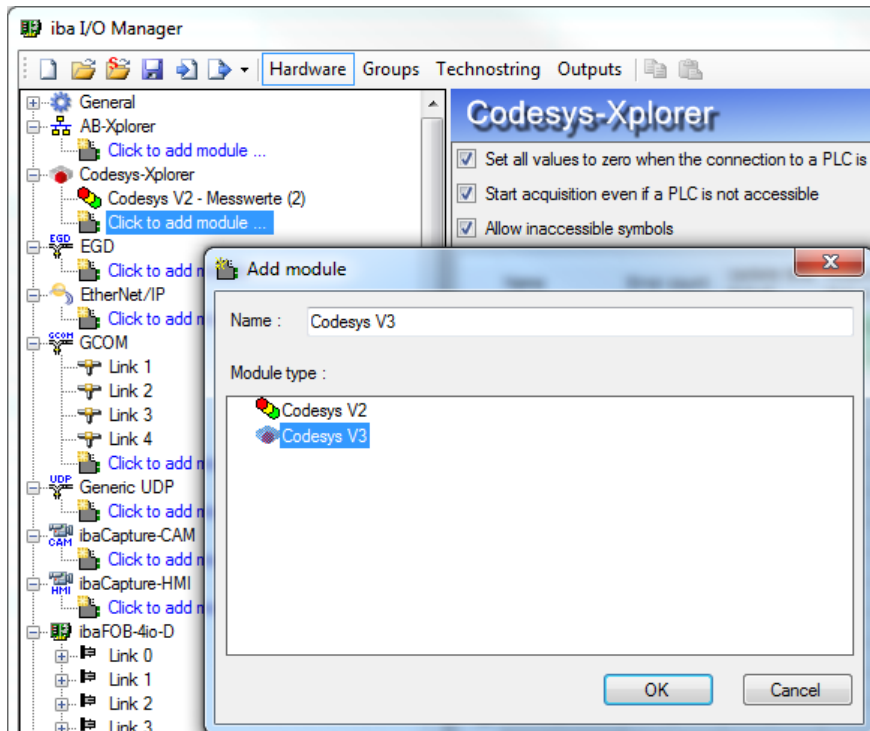


Figure 3: Add modules

### 3.4.3 General module settings

All modules have the following common settings.

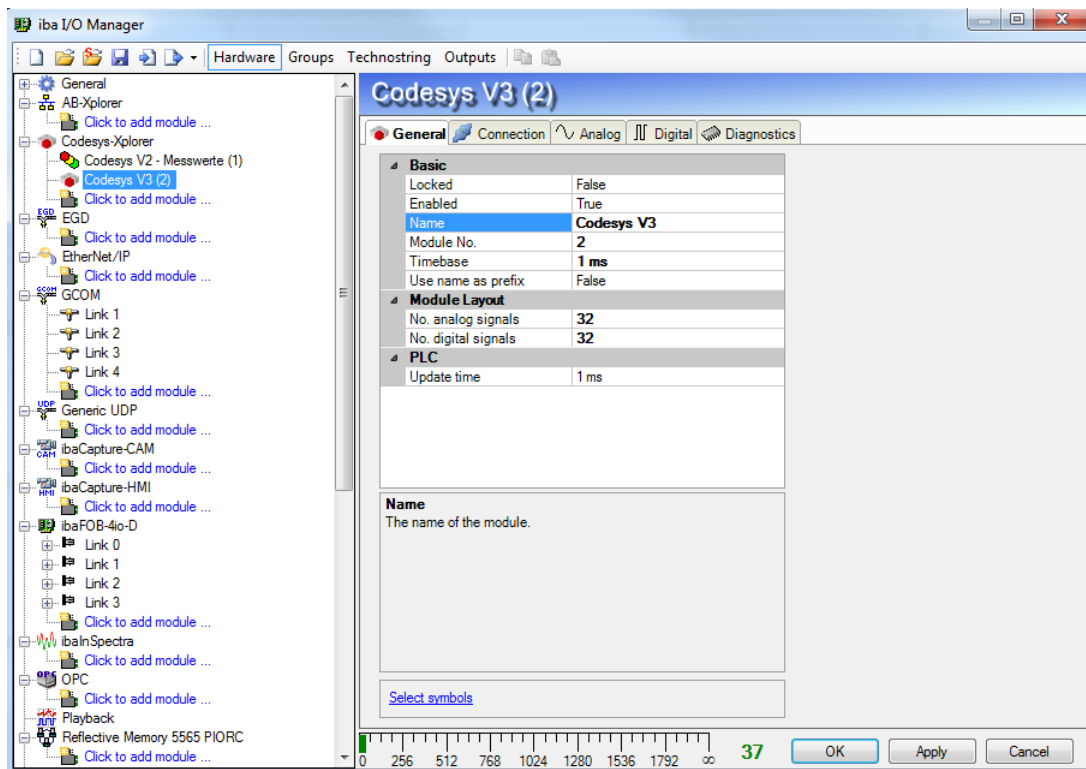


Figure 4: General module settings

### Basic settings

Locked

A module can be locked to prevent inadvertent or unauthorized modification of the module settings.

Enabled

Disabled modules are excluded from signal acquisition.

Name

The plain text name should be entered here as the module designation.

Module No.

Internal reference number of the module. This number determines the order of the modules in the signal trees of *ibaPDA* client and *ibaAnalyzer*.

Timebase

All signals of the module will be sampled on this time base.

Use name as prefix

Puts the module name in front of the signal name.

### Module layout

Number of analog and digital signals

Defines the number of configurable analog and digital signals in the signal tables. The default value is 32 for each. You can change the number. The maximum value is 1000.

### PLC

Update time

Indicates the default update time when the data will be requested from the CPU.

### Link “Select symbols”

Click on this link after the connection has been successfully established in order to configure the signals to be measured.

➤ For more information, see chapter *Signal configuration*, page 14

## 3.4.4 Connection settings

In the *Connection* tab the connection of the module to the controller is configured.

The connection settings differ according to the CODESYS version.

### 3.4.4.1 Codesys V2 connection parameters

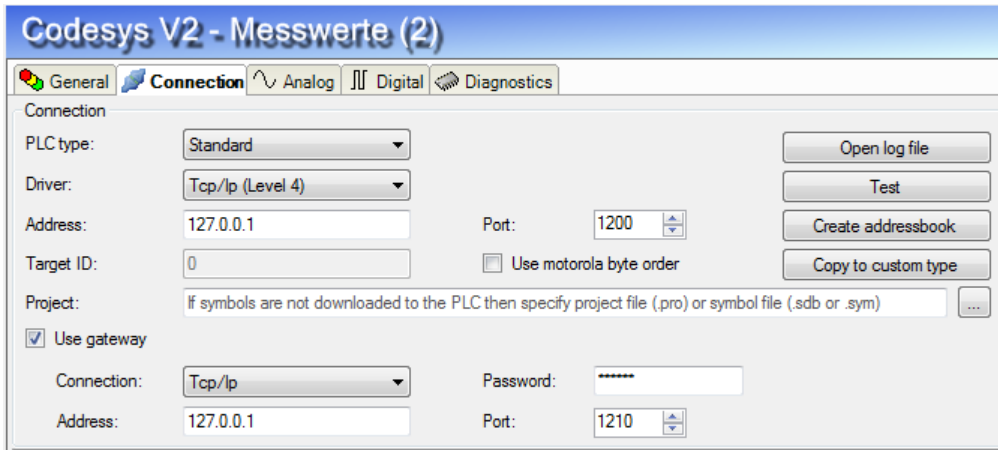


Figure 5: CODESYS V2 - connection settings

#### Enter connection parameter

For the connection establishment, the PLC type is to be entered at first and, depending on this, some other parameters. The PLC type must be selected from a dropdown box:

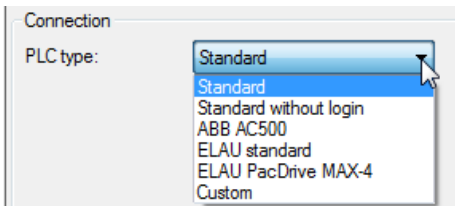


Figure 6: CODESYS V2 - controller types

#### □ PLC type: standard

This type can be used for the most of the controllers. It depends on the control system which TCP/IP driver has to be used.

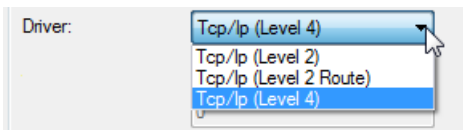


Figure 7: CODESYS V2 - driver types

Additionally, enter the IP address, port number (preset is 1200) and the byte order of the controller.

For the driver type "Tcp/Ip (Level 2 Route)" you have to additionally enter the target ID of the controller. Address and port number refer to the control system which functions as router.

#### □ PLC type: Standard without application

As standard, except that ibaPDA does not try to log in the controller.

#### □ PLC type: ABB AC500

Parameter for the connection with the ABB AC500 controller. The set is identical with the standard parameters. Except: the port is preset with 1201 and the Motorola byte order is applied.

#### □ PLC type: ELAU standard

Parameter for the ELAU standard controller.

The driver type and the byte order are internally defined.

The port is preset with 5000.

- PLC type: ELAU PacDrive MAX-4

As ELAU standard, the difference is that the entry of the hardware version is necessary (preset: 1100)

- PLC type: user

This PLC type can be used to test a connection to a new PLC.

➤ For further information, please see section *Connection setup*, Page 12

### Use gateway

If the controller and the *ibaPDA* computer are not in the same subnet but are only able to communicate via a gateway, please activate this option. The CODESYS gateway server may be an example of such a gateway which can be reached locally or remote.

Additional input fields appear:

- Selection box "Connection" with the alternatives TCP/IP and local
- In case of "TCP/IP", IP address, port number, and if required, a password of the gateway server have to be entered.
- In case of "Local" a password has to be entered, if required. The fields for address and port are deactivated.

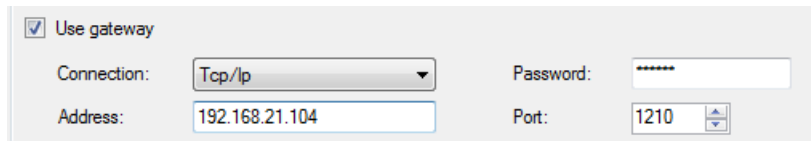


Figure 8: CODESYS V2 - gateway settings

### 3.4.4.2 Codesys V3 connection parameters

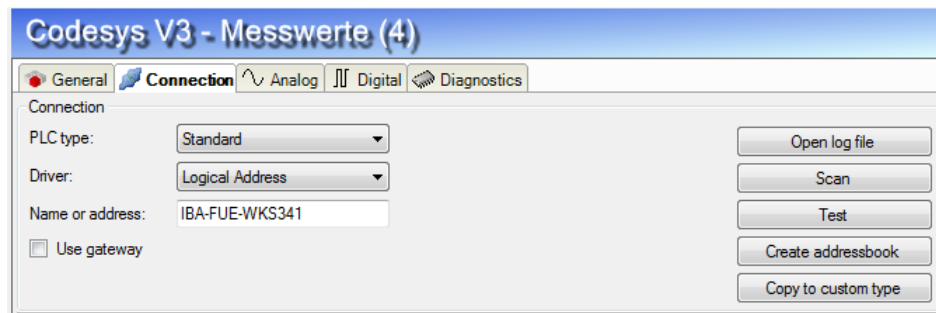


Figure 9: CODESYS V3 - connection settings

For CODESYS V3, only the PLC types "standard" and "user" are available.

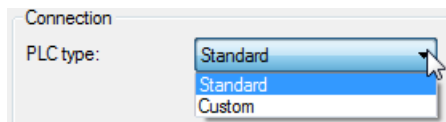


Figure 10: CODESYS V3 - controller types

- PLC type: standard

This type can be used for the most of the controllers.

For the driver "Logical Address", you can either enter the device name or the device address.



### Note

You can search for all accessible controllers by clicking on the <Scan> button. The controllers with device name and device address are displayed as result.

For the driver “CmpBlkDrvTcp”, you have to enter the IP address of the controller in the usual form. e.g. "192.168.21.121", it is additionally required to indicate the port number 11740.

PLC type: user

The “user” type allows to define the connection parameters by itself. The procedure is the same as under CODESYS V2.

➤ For further information, please see section *Connection setup*, Page 12

### Use gateway

If the controller and the *ibaPDA* computer are not in the same network but are only able to communicate via a gateway, please enable this option. The CODESYS gateway server may be an example of such a gateway which can be accessed locally or remote.

Additional input fields appear:

- Check box "Connection" with the alternatives TCP/IP and local
- For “TCP/IP” IP address, port number of the gateway server have to be entered.
- For “Local” you have nothing to enter. The fields for address and port are deactivated.

Figure 11: CODESYS V3 - Gateway settings

### 3.4.4.3 Connection setup

The following buttons are available for establishing and testing of the connection to the controller:



Figure 12: CODESYS V2 (left) and CODESYS V3 (right) - establishment of the connection

Open log file

The log file entries created during the establishment of the connection are shown in the standard editor.

### Search (only for CODESYS V3)

The network is scanned for installed CODESYS V3 applications.

Some characteristics of the controller are shown. A connection will be established by clicking on the hyperlinks *device name* or *device address* (identical with button <Test>).

### Test

With the set link parameters (see below), it will be tried to establish the connection to the controller. In case of success,

- the data of the controller will be shown,
- the link settings will be stored in a file '**modulename**' .INI in the folder "...\iba\ibaPDA\Server\Codesys",
- the symbols, if they exist in the controller, are loaded and created as address book in the folder "...\iba\ibaPDA\Server\Codesys\Addressbooks".

```

SPS ist verbunden
Symbole geladen
Symbole verifiziert
Adressbuch ist aktuell (40 symbols)
SPS-Status:      RUN
Geladenes Projekt:
ID:              111841
Name:            Messwerte
Beschreibung:
Autor:           dk
Version:         1.2
Letzte Änderung: 17.09.2014 12:10:56
Projektdatei:    Messwerte.pro
  
```

Figure 13: CODESYS V2 - connection data

### Create address book

The symbols, if they exist in the controller, are loaded and created as address book in the folder "...\iba\ibaPDA\Server\Codesys\Addressbooks".

Only for CODESYS V2:

If the symbols do not exist in the controller, the project file (.pro) or symbol file (.sdb or .sym) must be entered in the field "Project".

### Copy to custom type

A copy of the current connection settings is shown as user type. You can then change parameters, to create a connection to a new PLC type.

Using the button <Save configuration file> you can save the modified parameters under any desired name and you can reload it using the button <Load configuration file>.

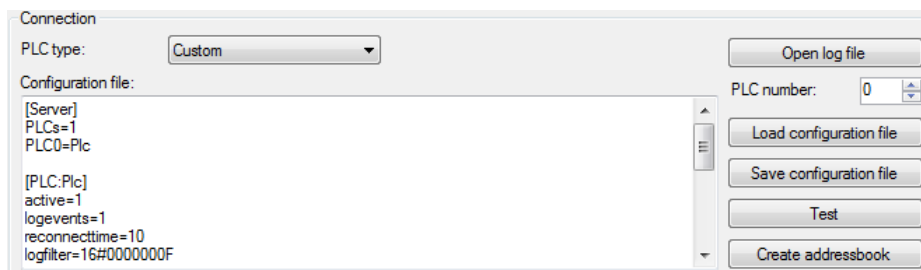


Figure 14: Customized PLC type

### 3.4.5 Signal configuration

In the *Analog* and *Digital* tabs the variables to be measured are configured.

The length of the signal tables, i.e. the number of signals per table, are defined in the general module settings, module layout (see *General module settings*, Page 8).



#### Note

Observe the maximum number of signals permitted by your licence.



#### 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.

### Selection of the signals to be measured

You have two options to select the signals to be measured:

- 1 In the *Analog* and/or *Digital* tab in the *Symbol* column:

By clicking on the *Symbol* field, the icon  will be shown. A click on the icon opens the symbol browser:

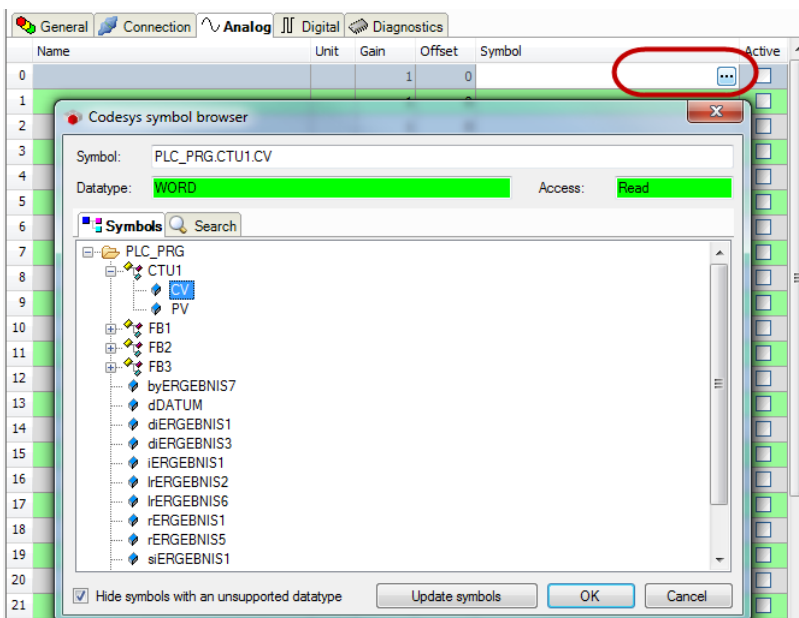


Figure 15: Symbol browser

- Only the analog and/or digital values are visible, depending on in which tab the browser is activated.
- By double-clicking or <OK> you enter the marked variable in the signal table and the browser is closed.



- By means of the *Select symbols* hyperlink in the tab *General*.  
A click on the hyperlink opens the symbol browser:

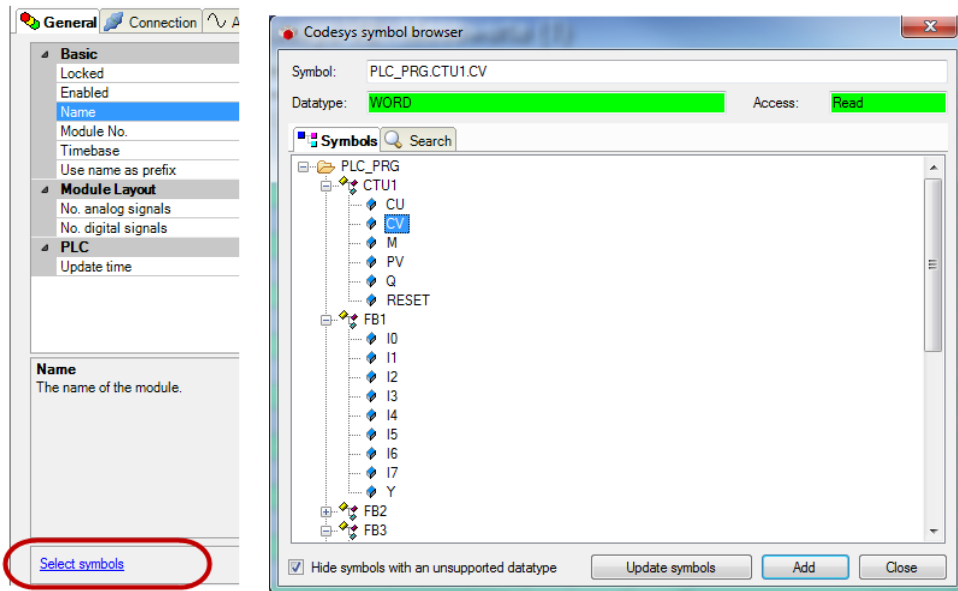


Figure 16: Symbol browser

- Analog values as well as digital values are visible.
- By double clicking or <Add> you enter the marked variable in the current line of the analog and/or digital table.  
The marking in the symbol browser goes to the next variable and the marking in the signal table goes to the next line.
- Now, the browser is closed by <Close>.



**Note**

You can hide all unsupported datatypes by checking the "Hide symbols with an unsupported datatype" checkbox. Not supported are the types LINT and ULINT, and all not numerical data types (STRING, DATE etc.)

**Description of the tables**

The variables are entered in the *Symbol* column of the signal table with the designation "Application.Program.Module.Connection". Simultaneously, the designation is also entered in the column *Name*. You can edit subsequently and eventually indicate comments, units and conversion factors.

Codesys V3 - Messwerte (4)						
General Connection Analog Digital Diagnostics						
	Name	Unit	Gain	Offset	Symbol	Active
0	Application.PLC_PRG.CTU1.CV		1	0	Application.PLC_PRG.CTU1.CV	<input checked="" type="checkbox"/>
1	Application.PLC_PRG.FB1.Y		1	0	Application.PLC_PRG.FB1.Y	<input checked="" type="checkbox"/>
2	Application.PLC_PRG.FB2.XH		1	0	Application.PLC_PRG.FB2.XH	<input checked="" type="checkbox"/>
3	Application.PLC_PRG.FB2.XL		1	0	Application.PLC_PRG.FB2.XL	<input checked="" type="checkbox"/>
4	Application.PLC_PRG.FB2.Y		1	0	Application.PLC_PRG.FB2.Y	<input checked="" type="checkbox"/>
5	Application.PLC_PRG.FB3.X1		1	0	Application.PLC_PRG.FB3.X1	<input checked="" type="checkbox"/>

Figure 17: Signal table Analog

You can configure the columns of the table as necessary, e.g. skip the columns *Gain* and *Offset*. See also the description in the *ibaPDA* manual.

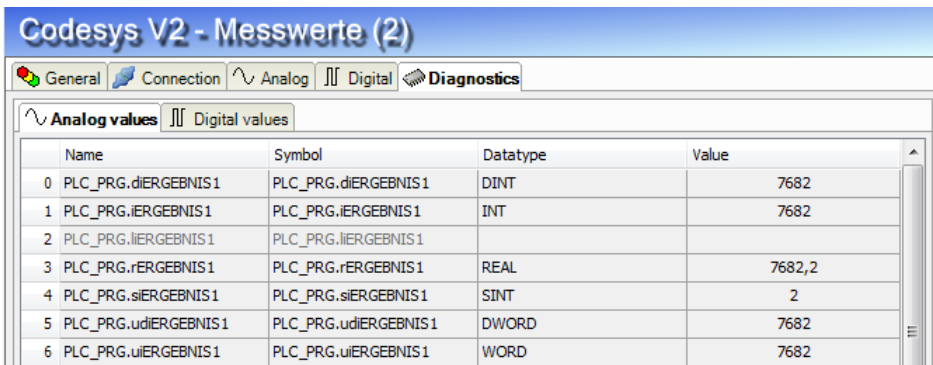
Having filled the signal tables, you start the acquisition with <Apply> or <OK>. After a successful start you can verify the current values within the I/O manager in the *Diagnostics* tab (see *Module diagnostics*, Page 16).

After closing the I/O manager, you can display the current values in different graphical representations, e.g. in trend graphs or in numerical displays.

You can find further explanatory notes in the *ibaPDA* manual.

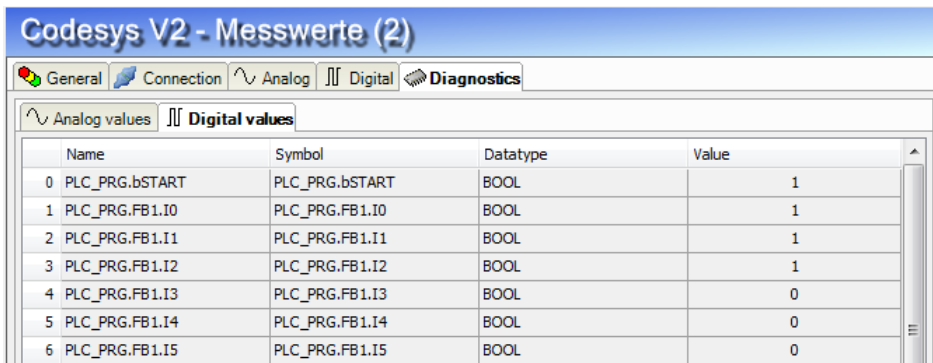
### 3.4.6 Module diagnostics

In the *Diagnostics* tab, all configured operands are listed in a table with their data type and the current actual value.



	Name	Symbol	Datatype	Value
0	PLC_PRG.dIERGEBNIS1	PLC_PRG.dIERGEBNIS1	DINT	7682
1	PLC_PRG.iERGEBNIS1	PLC_PRG.iERGEBNIS1	INT	7682
2	PLC_PRG.liERGEBNIS1	PLC_PRG.liERGEBNIS1		
3	PLC_PRG.rERGEBNIS1	PLC_PRG.rERGEBNIS1	REAL	7682,2
4	PLC_PRG.siERGEBNIS1	PLC_PRG.siERGEBNIS1	SINT	2
5	PLC_PRG.udIERGEBNIS1	PLC_PRG.udIERGEBNIS1	DWORD	7682
6	PLC_PRG.uiERGEBNIS1	PLC_PRG.uiERGEBNIS1	WORD	7682

Figure 18: Module diagnostics analog values



	Name	Symbol	Datatype	Value
0	PLC_PRG.bSTART	PLC_PRG.bSTART	BOOL	1
1	PLC_PRG.FB1.I0	PLC_PRG.FB1.I0	BOOL	1
2	PLC_PRG.FB1.I1	PLC_PRG.FB1.I1	BOOL	1
3	PLC_PRG.FB1.I2	PLC_PRG.FB1.I2	BOOL	1
4	PLC_PRG.FB1.I3	PLC_PRG.FB1.I3	BOOL	0
5	PLC_PRG.FB1.I4	PLC_PRG.FB1.I4	BOOL	0
6	PLC_PRG.FB1.I5	PLC_PRG.FB1.I5	BOOL	0

Figure 19: Module diagnostics digital values

## 4 Diagnostics

### 4.1 License

If the "Codesys-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* service status application whether your license "Interface Codesys-Xplorer" has been properly recognised. The number of licensed connections is indicated in brackets.



Figure 20: License displayed in the *ibaPDA* I/O manager, example of the Codesys-Xplorer license

### 4.2 Log files

For many interfaces, there is an <Open log file> button in the specific interface overview in the I/O Manager.

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

In the file system on the harddisk, 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` (EtherNet/IP connections log)
- `AbEthLog.txt` (log of Allen-Bradley Ethernet 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.

```
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>
```

Figure 21: PING successful

With not existing connection you receive error messages.

```
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.
Reply from 192.168.21.104: Destination host unreachable.
Reply from 192.168.21.104: Destination host unreachable.
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>_
```

Figure 22: PING unsuccessful.

## 4.4 Connection table

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

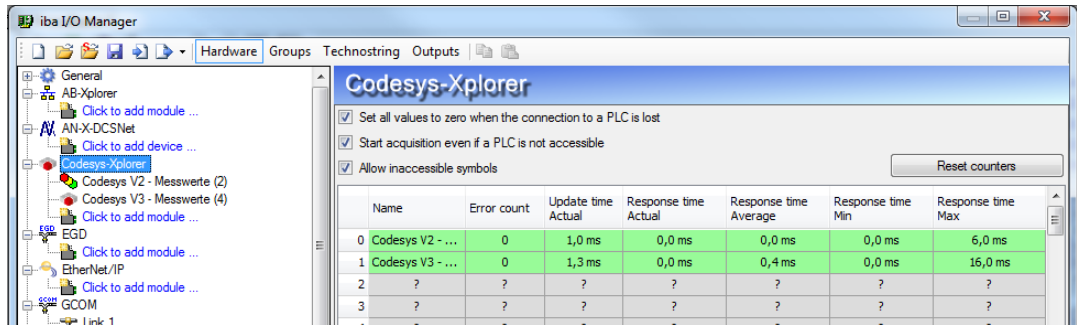


Figure 23: Connection table, example for Codesys-Xplorer

The table shows the cycle times of the different connections during the data acquisition. 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.
Yellow	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: Meaning of background colors

## 4.5 Module diagnostics

You will find another diagnostic aid with a tabular display of the actual analog and digital values and the data types on the *Diagnostics* tab of each Xplorer module.

➤ For further information see *Module diagnostics*, Page 16

## 5 Appendix

### 5.1 Link parameter Overview

The following table shows the necessary connection parameters for the to date tested controllers:

Controller	CODESYS version	PLC type, Driver	Port	Note
3S CODESYS SP PLCWinNT V2.4	V2.3	Standard, TCP/IP (Level 4)	1200	
3S CODESYS SP RTE	V2.3	Standard, TCP/IP (Level 4)	1200	
WAGO 750-841	V2.3	Standard, TCP/IP (Level 2)	2455	Symbols were not stored in PLC but read directly from SDB file.
WAGO 750-880	V2.3	Standard, TCP/IP (Level 2)	2455	Symbols were not stored in PLC but read directly from SDB file.
WAGO 750-881	V2.3	Standard, TCP/IP (Level 2)	2455	Symbols were not stored in PLC but read directly from SDB file.
ELAU PacDrive C600	V2.3	ELAU Standard	5000	PLC Status can't be read out
Danieli HiPAC	V2.3	Standard, TCP/IP (Level 4)	1200	
ABB AC500 PM554-TP-ETH	V2.3	ABB AC500, TCP/IP (Level 4)	1201	
ifm CR1051	V2.3	Standard without application TCP/IP (Level 4)	1200	Symbols were not stored in PLC but read directly from SDB file.
3S CODESYS Control Win V3	V3	Standard, Logical address	-	
Schneider Electric LMC 101C	V3	Standard, Logical address	-	
Schneider Electric M258	V3	Standard, Logical address	-	
Bosch-Rexroth L40	V2.3	Standard, TCP/IP (Level 2 Route)	1200	
Eckelmann ENC66c	V2.3	Standard, TCP/IP (Level 2)	1200	

Table 3: Connection parameter of different controllers

## 5.2 Example CODESYS PLCWinNT V2.4

The access to the controllers with CODESYS V2 is carried out via Ethernet. Therefore, you have to define the communication interface by means of your CODESYS software.

### 5.2.1 Communication setting

You will find the settings in the CODESYS software under *Online - Communication Parameters...*:

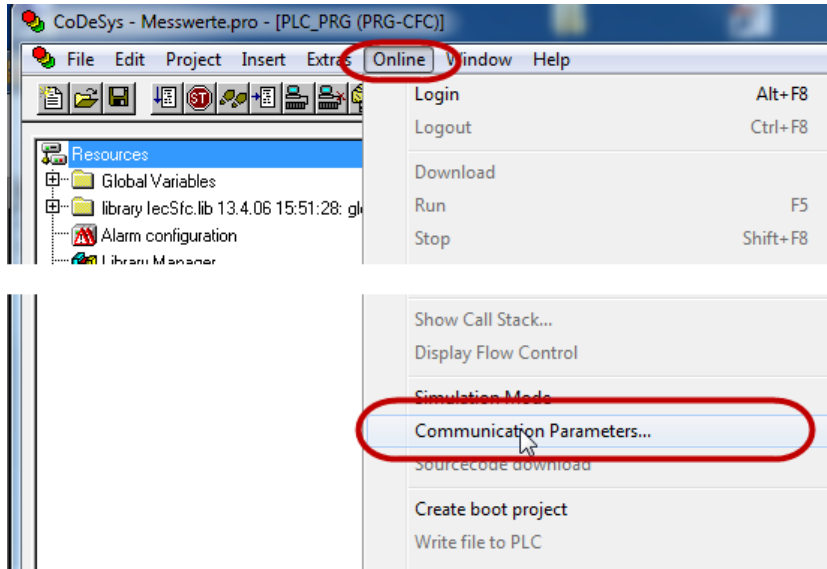


Figure 24: CODESYS V2 - Call up communication parameters

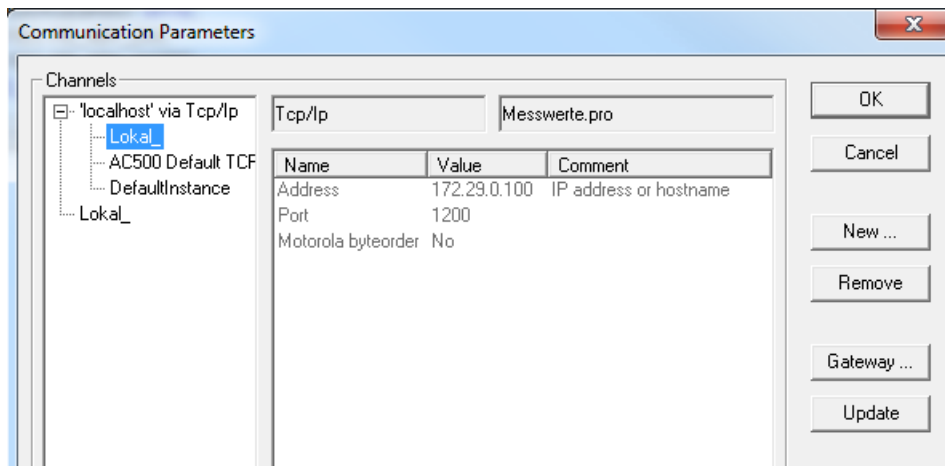
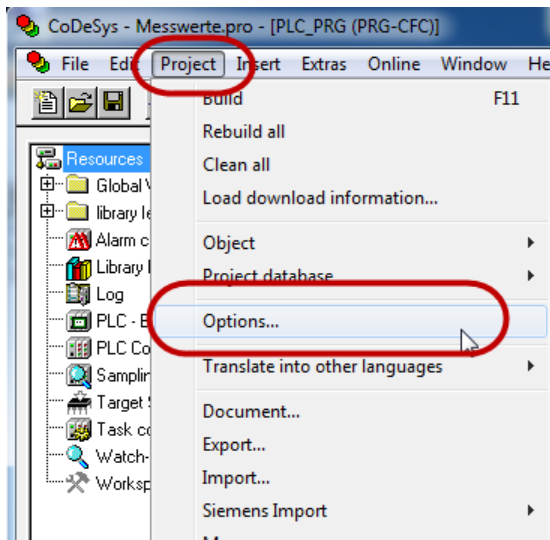


Figure 25: CODESYS V2 - connection settings toPLCWinNT V2.4

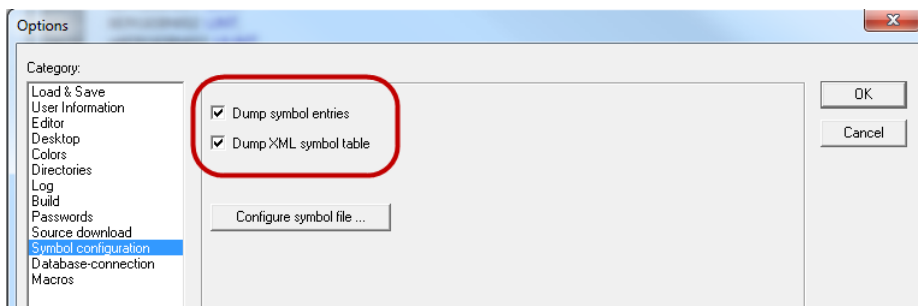
## 5.2.2 Create symbols

For creating the symbols on the controller the following steps are necessary:

1. Select *Project - Options...* in the opened project...



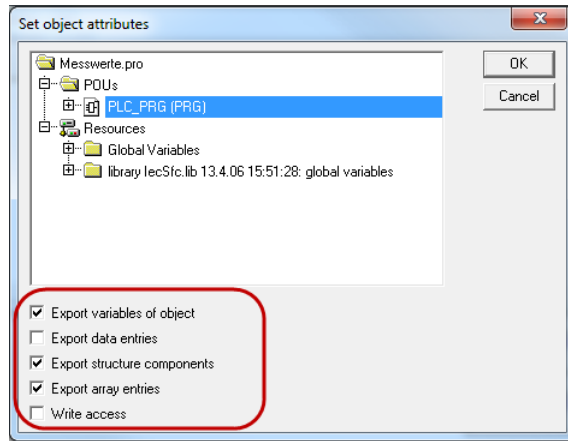
2. In the category "Symbol configuration" activate the options
  - "Dump symbol entries" and
  - "Dump XML symbol table"
 and then click on the button <Configure symbol file...>



3. There, you mark the areas (modules, tasks or libraries) from which you want to create the symbols. Normally, it is sufficient selecting the user programs. The following selection fields have to be set:
  - "Variables of the object",
  - "Structure components", if you want to measure elements of structures,
  - "Field components", if you want to measure elements of arrays.

Take care that the selection field is available (not highlighted in grey).





4. Close the dialog, completely compile the project and download the project into the controller.

### 5.2.3 Connection establishment in ibaPDA

You will find the connection data in the *Connection* tab, if you mark the module *CODESYS V2* in the interface tree view.

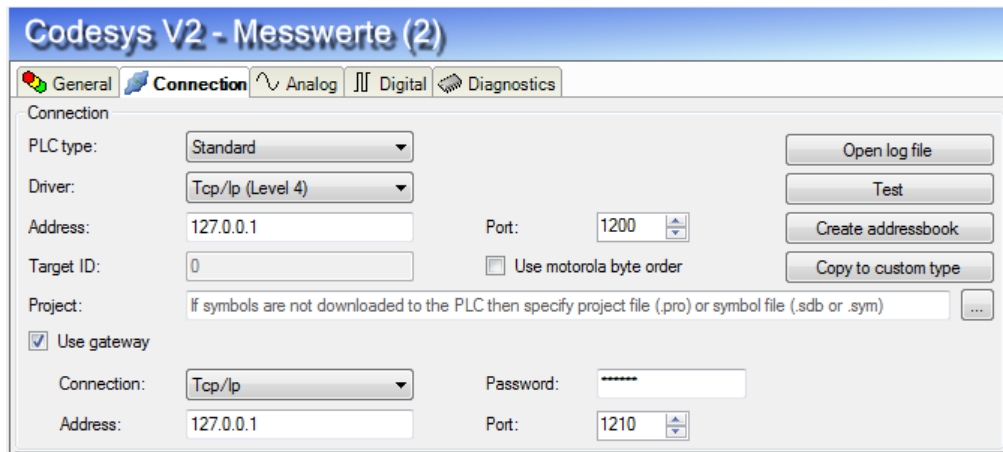


Figure 26: ibaPDA – Link Settings to CODESYS PLCWinNT V2.4

For the connection to the runtime system PLCWinNT V2.4 you have to set the following data:

- PLC type: Standard
- Driver: TCP/IP (Level 4)
- Address: IP address of the computer where the PLCWinNT runs
- Port no: 1200
- Target ID: Inactive
- Motorola byte order: Disabled

By clicking on the <Test> button, the connection to the controller will be established and the following result is displayed:

```
SPS ist verbunden
Symbole geladen
Symbole verifiziert
Adressbuch ist aktuell (40 symbols)

SPS-Status:      RUN
Geladenes Projekt:
ID:              111841
Name:            Messwerte
Beschreibung:
Autor:           dk
Version:         1.2
Letzte Änderung: 17.09.2014 12:10:56
Projektdatei:    Messwerte.pro
```

Figure 27: CODESYS PLCWinNT V2.4 - project data



### Further documentation

The example is based on the project *Measured values.pro* on the DVD "iba Software & Manuals".

Path:

"\04\_Libraries\_and\_Examples\71\_ibaPDA-Interface-CODESYS-Xplorer\Codesys\_PLC WinNT\_V2\_4\"

### 5.3 Example ABB AC500 (CPU PM551-TP-ETH)

#### 5.3.1 Communication setting

Open the CODESYS project via the ABB Control Builder Plus. You will find the settings in the CODESYS software under *Online - Communication parameters...*:

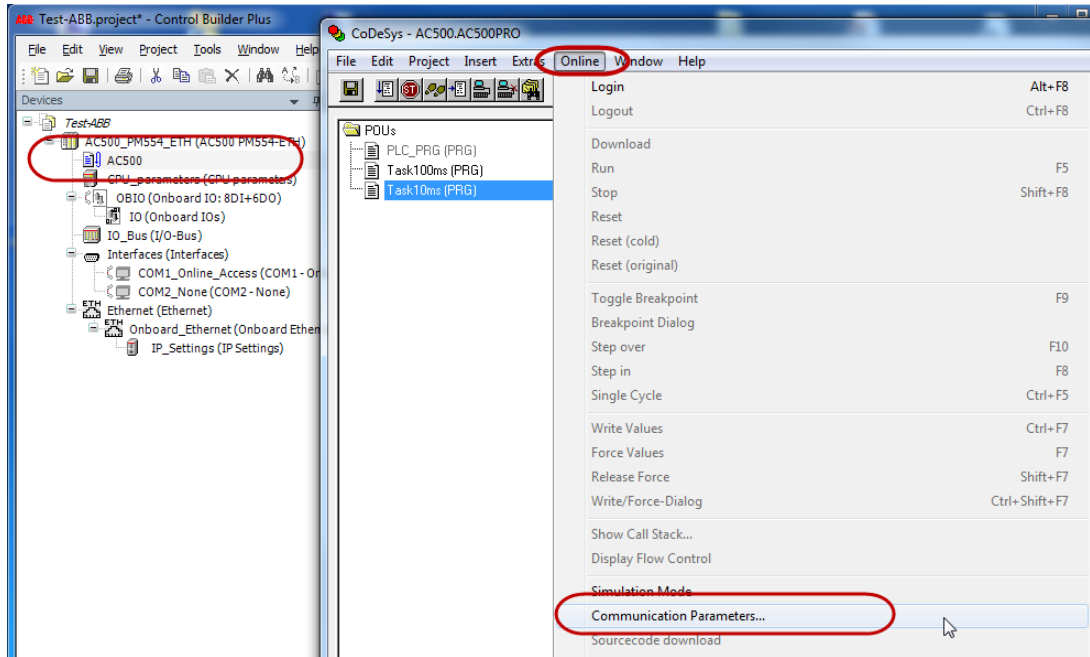


Figure 28: ABB AC500 - Call up communication parameters

Enter the IP address of the controller under channel AC500:

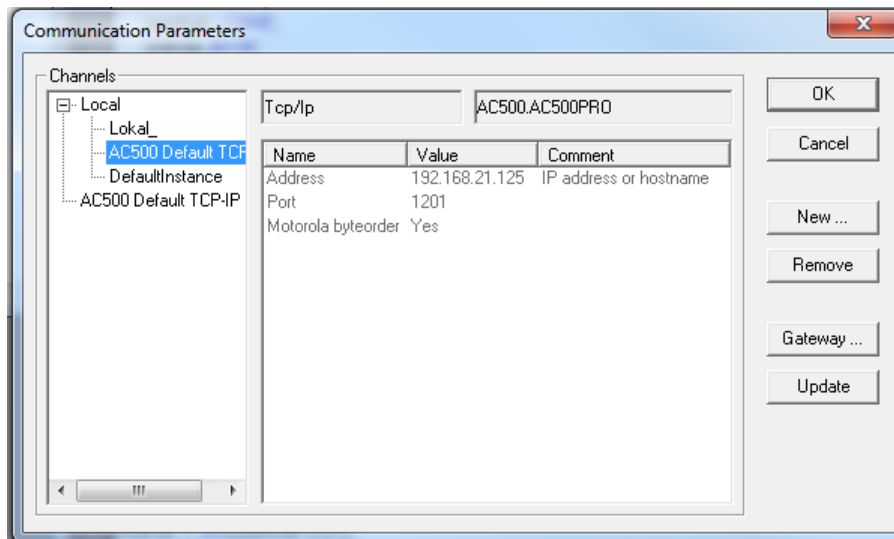


Figure 29: CODESYS V2 - Connection settings to ABB AC500

#### 5.3.2 Create symbols

➔ See chapter *Create symbols*, Page 21.

### 5.3.3 Connection establishment in ibaPDA

You will find the connection data in the *Connection* tab, if you mark the module *CODESYS V2* in the interface tree view.

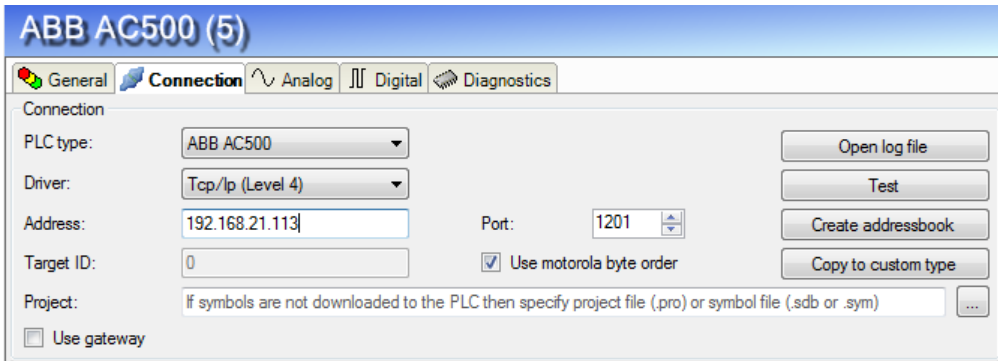


Figure 30: ibaPDA - Connection settings to ABB AC500

For the connection to the runtime system ABB ACS500 (PM554-ETH) you have to set the following data:

- PLC type: ABB AC500
- Driver: TCP/IP (Level 4)
- Address: IP address of the controller, e.g. 192.168.21.125, if ibaPDA is in the same subnet as ACS500.  
If ACS500 is in another network segment, enable “Use gateway” and there, enter the IP address of the gateway server.
- Port: 1201
- Target-ID: inactive
- Motorola byte order: enabled

By clicking on the button <Test> the connection to the controller will be established and the following result will be displayed:

```
SPS ist verbunden
Symbole geladen
Symbole verifiziert
Adressbuch ist aktuell (290 symbols)

SPS-Status:      RUN
Geladenes Projekt:
ID:              92212
Name:
Beschreibung:
Autor:
Version:
Letzte Änderung: 05.09.2014 15:56:43
Projektdatei:    AC500.AC500PRO
```

Figure 31: ABB AC500 - project data



#### Further documentation

The example is based on the project *Test ABB.pro* on the DVD “iba Software & Manuals”.

Path:

“\04\_Libraries\_and\_Examples\71\_ibaPDA-Interface-CODESYS-Xplorer\ABB\_AC500\”

## 5.4 Example CODESYS Control Win V3

The access to the controllers with CODESYS V3 is carried out via Ethernet. Therefore, you have to define the communication interface by means of your CODESYS software.

### 5.4.1 Communication setting

In the Register *Device - Communication Settings - Scan networks* you can scan the network for CODESYS V3 runtime systems. The selected device will be loaded by double click.

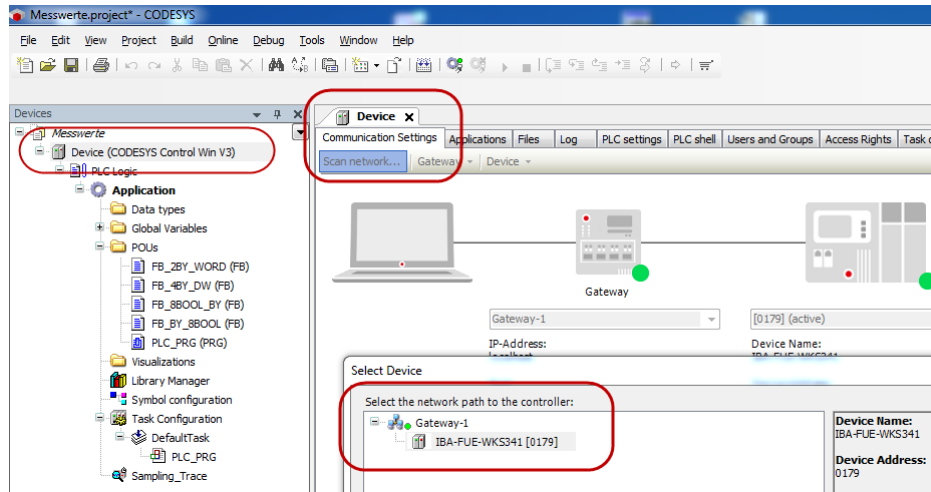


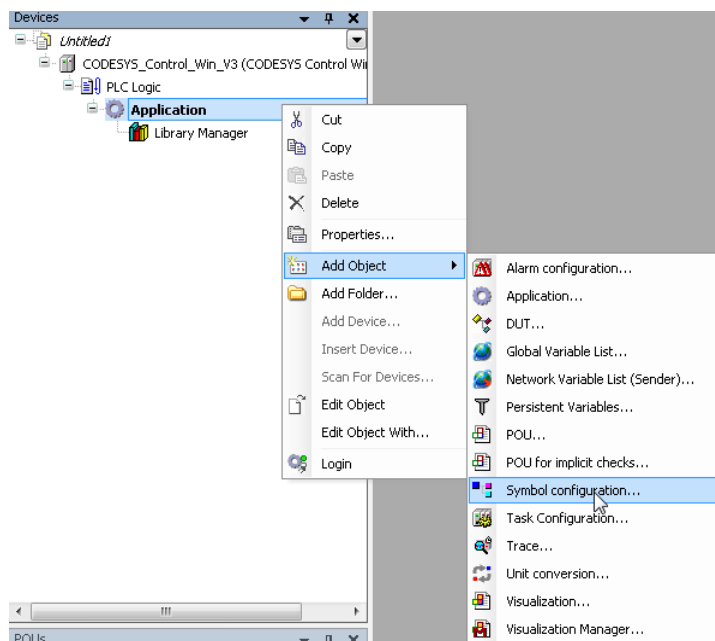
Figure 32: CODESYS V3 - Link settings to Control Win V3

### 5.4.2 Symbols in CODESYS V3

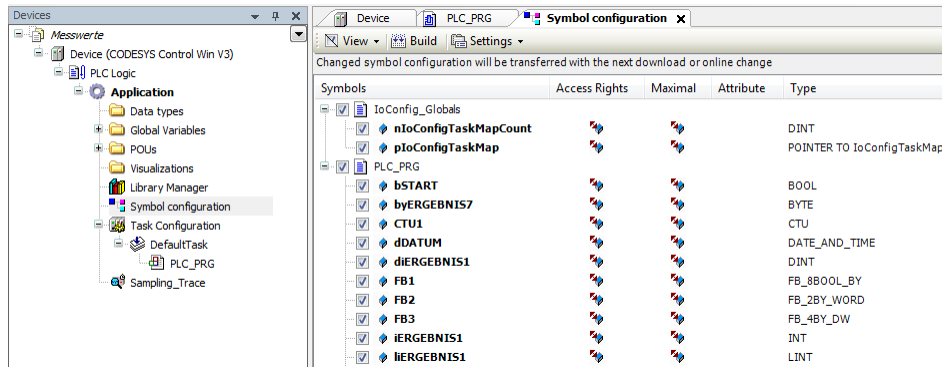
The access to the data of the controller is carried out via symbolic addresses. These are imported from the controller.

For creating the symbols the following steps are necessary:

1. Add the object *Symbol configuration* to your application



2. Select the variables, you want to measure.



3. Close the dialogs, compile the project completely and download the project to the controller.

### 5.4.3 Connection establishment in ibaPDA

You will find the connection data in the *Connection* tab, if you mark the module *CODESYS V3* in the interface tree view.

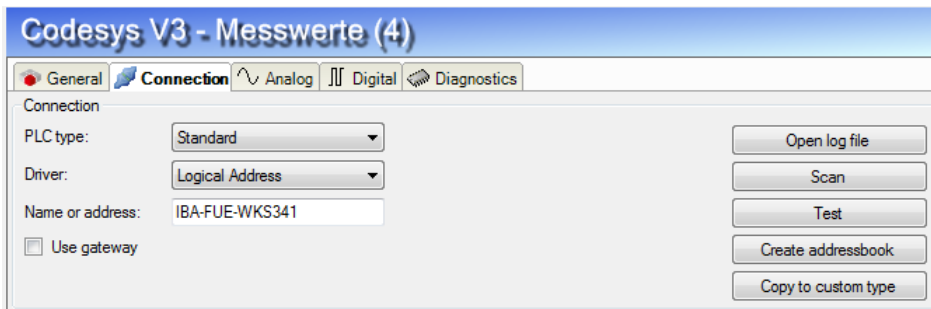


Figure 33: ibaPDA - Connection settings to Control Win V3

For a connection to the runtime system CODESYS Control Win V3 you have to set the following data:

- PLC type: standard
- Driver: Logical Address

By clicking on the button <Scan> the network will be scanned for a CODESYS V3 runtime system.



### Tip

If no controller can be found, the controller is eventually in another network segment. Enable the option "Use gateway", enter the IP address of the gateway server and click once again on <Scan>.

In case of success the found controllers are listed:

```

Start Netzwerk scannen...
SPS 1:
Gerätename:      IBA-FUE-WKS341
Geräteadresse:   0000.0064.9178
Ziel-ID:         1
Ziel-Version:    3.5.4.40
Ziel-Hersteller: 3S - Smart Software Solutions GmbH
Ziel-Name:       CODESYS Control Win V3
Ziel-Typ:        4096

Netzwerk-Scan erfolgreich beendet
  
```

Figure 34: CODESYS V3 - Search result

By clicking on the hyperlink *Device name* (here in the example IBA-FUE-WKS341) or *Device Address* (here 0000.0064.9179) the connection to the controller is established and the following result is shown:

```

Symbole geladen
Symbole verifiziert
Adressbuch ist aktuell (45 symbols)

Gerätename:      IBA-FUE-WKS341
Geräteadresse:   0000.0064.9178
Ziel-ID:         1
Ziel-Version:    3.5.4.40
Ziel-Hersteller: 3S - Smart Software Solutions GmbH
Ziel-Name:       CODESYS Control Win V3

Anwendungen:    1
Anwendung 1:
  Name:          Application
  Projekt:       Messwerte
  Version:
  Letzte Änderung: 19.08.2014 19:44:01
  Autor:         dk
  Beschreibung:  CODESYS V3.5 SP4 Patch 4
  Profil:
  Status:        RUN
  
```

Figure 35: CODESYS V3 - Connection data to CODESYS Control Win V3



### Further documentation

The example is based on the project *Measured values.project* on the on the DVD "iba Software & Manuals".

Path:

"\04\_Libraries\_and\_Examples\71\_ibaPDA-Interface-CODESYS-Xplorer\Control\_Win\_V3\"

## 6 Support and contact

### Support

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### Note

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

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### Contact

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