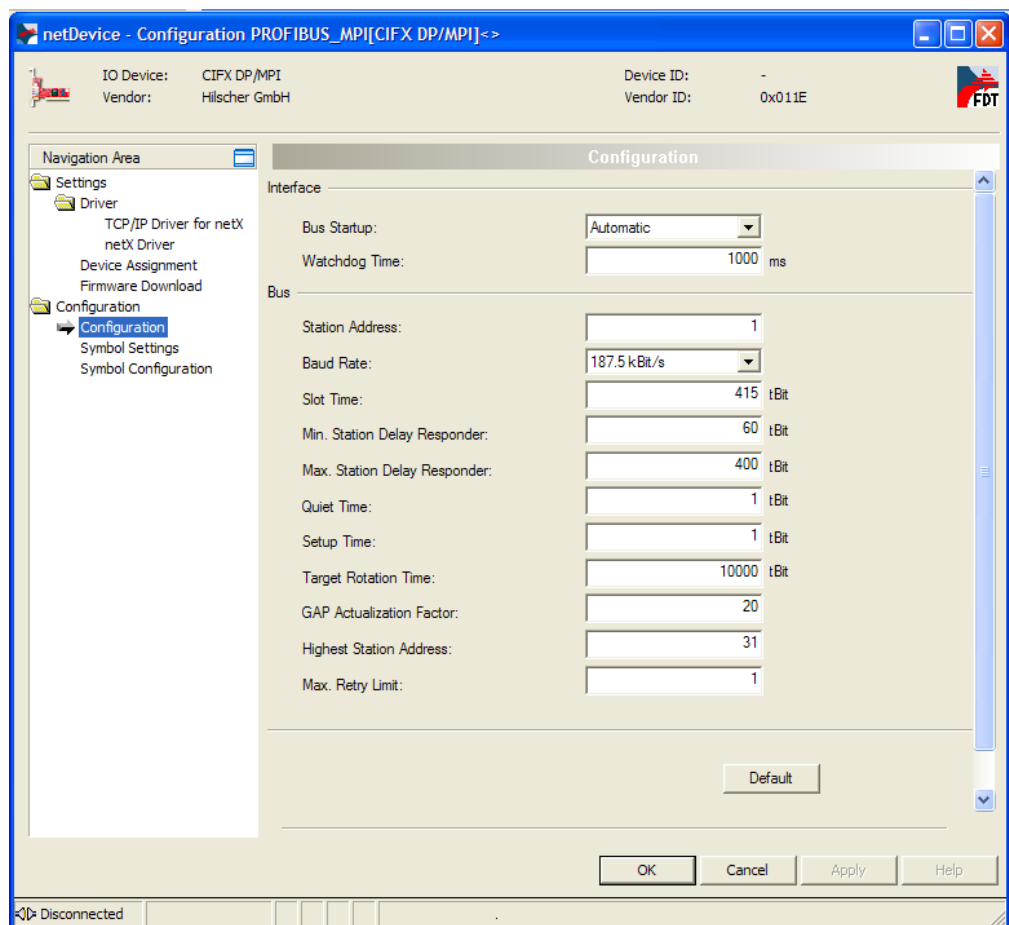


Operating Instruction Manual
DTM for Hilscher PROFIBUS MPI Devices
Configuration of Hilscher MPI Devices
V1.1000



Hilscher Gesellschaft für Systemautomation mbH

www.hilscher.com

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1 Introduction

1.1 About this Manual

This manual provides information on how you can configure the busparameters of a netX based PROFIBUS MPI device using the PROFIBUS MPI DTM and how you can download the new configuration to the device. Furthermore for projects with PLC-coupling you find in this manual how you can import and adjust a STEP7 signal configuration or how you can configure the signals without a STEP 7 project import, both by using the DTM. Also you can read here what information you can find on the diagnostic windows.

OPC Server and OPC Configuration Software

About the OPC server this manual provides only information that is directly related to the operation of the PROFIBUS MPI DTM.



If the PROFIBUS MPI DTM works as part of an OPC server, you will find all information necessary for you to operate the OPC configuration software and the OPC server in a separate manual. See section *Documentations* on page 13.

1.1.1 Descriptions of the Dialog Panes

The table below gives an overview for the individual dialog panes descriptions:

Section	Subsection	Page
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Table 1: Descriptions Dialog Panes

1.1.2 Online Help

The PROFIBUS MPI DTM contains an integrated online help facility.

- To open the online help, click on **Help** or press the **F1** key.

1.1.3 List of Revisions

Index	Date	Version	Chapter	Revision
4	17-02-27	1.1000	1.5.1	Section <i>Requirements</i> Internet access added, Windows 8.1 and Windwos 10 added.
5	18-02-14	1.1000	2.5.1, 3.2, 4.5, 6.2	Versioning information revised (title page and this section). Safety Message or warning added: Sections <i>Power Disconnect while downloading Firmware or Configuration</i> , <i>Safety Messages on Firmware or Configuration Download</i> , <i>Firmware Download</i> and <i>Download Configuration</i> . Safety communication in the document revised in general.

Table 2: List of Revisions

1.1.4 Note on Firmware Version

PROFIBUS MPI	2.4.x.x
--------------	---------

Table 3: Reference on Firmware Version

1.1.5 Conventions in this Manual

Notes, operation instructions and results of operation steps are marked as follows:

Notes



Important: <important note you must follow to avoid malfunction>



Note: <general note>



<note, where to find further information>

Operation Instructions

1. <instruction>
2. <instruction>

or

➤ <instruction>

Results

↪ <result>

Positions in Figures

The *Positions* ①, ②, ③ ... or a, b, c ... or A, B, C ... refer to the figure used in that section. If the numbers reference to a section outside the current section then a cross reference to that section and figure is indicated.

Language Convention

Instead of „PROFIBUS® MPI®“ in this manual the notation „PROFIBUS MPI“ is used.

Instead of „STEP®7“ in this manual the notation „STEP7“ is used.

1.2 Legal Notes

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1.4 Documentations

The following documentation overview gives information, for which items you can find further information in which manual.

Manual	Contents	Dokument-ID	File Name of the Document
Operating Instruction Manual SYCON.net	SYCON.net, Frame Application (<i>Operating Instruction Manual of the Frame Application</i>)	DOC040402OIXXDE	SYCONnet netFrame OI XX EN.pdf
	FDT, Container (<i>Operating Instruction Manual of netDevice and netProject</i>)	DOC040401OIXXDE	SYCONnet netDevice OI XX EN.pdf
	DTM for Hilscher PROFIBUS MPI Devices (<i>this Operating Instruction Manual</i>)	DOC110402OIXXDE	PROFIBUS MPI DTM OI XX EN.pdf
Operating Instruction Manual netOPC Configurator and OPC Server	Installation of the netOPC and OPC Server Software and configuration of the OPC Server	DOC100801OIXXDE	netOPC - Konfigurator und OPC Server OI XX DE.pdf
PROFIBUS MPI Protocol API Manual	Description of PROFIBUS MPI device Protocol API	DOC071001APIXXEN	Profibus MPI Protocol API XX EN.pdf

Table 4: Documentations



All these documents are available in Adobe Acrobat® Reader format (PDF) on the DVD delivered with your device underneath the directory **Documentation** or on the website www.hilscher.com.

1.5 About PROFIBUS MPI DTM

You can use the PROFIBUS MPI DTM to configure the PROFIBUS MPI device within a FDT Framework.

Using the PROFIBUS MPI DTM you can configure the bus parameters of a PROFIBUS MPI device and download them to the device. In many cases the PROFIBUS MPI DTM is a part of the OPC server.

For projects with direct PLC-coupling via PROFIBUS MPI you can import a STEP7 signal configuration in the PROFIBUS MPI DTM and adapt the configuration in the process data-editor or you can configure the signals, without a STEP 7 project import. The signal configuration is structured by the modules and contains the symbolic names assigned to the modules and signals. The signals required for the additional processing must be set in the process data-editor. The symbol configuration of the selected signals then is stored in a process data XML file to which the OPC server accesses during the management of the signal lists.

1.5.1 Requirements

System Requirements

- PC with 1 GHz processor or higher
- Windows® XP SP3,
Windows® Vista (32-Bit) SP2,
Windows® 7 (32-Bit and 64-Bit) SP1,
Windows® 8 (32-Bit and 64-Bit),
Windows® 8.1 (32-Bit and 64-Bit),
Windows® 10 (32-Bit and 64-Bit)
- Administrator privilege required for installation
- Internet Explorer 5.5 or higher
- RAM: min. 512 MByte, recommended 1024 MByte
- Graphic resolution: min. 1024 x 768 pixel
- Keyboard and Mouse
- Restriction: Touch screen is not supported.



Note: If the project file is used on a further PC,

- this PC must also comply with the above system requirements,
- the device description files of the devices used in the project must be imported into the configuration software SYCON.net on the new PC,
- and the DTMs of the devices used in the project must also be installed on that further PC.

Requirements PROFIBUS MPI DTM

To configure the PROFIBUS MPI device with the PROFIBUS MPI DTM the following requirements have to be accomplished:

- Completed hardware installation of a netX based DTM-compatible PROFIBUS MPI device, inclusive loaded firmware and loaded configuration file
- Installed FDT/DTM V 1.2 compliant frame application
- Loaded DTM in the Device Catalog of the FTD Framework



Note: If the PROFIBUS MPI DTM and the PROFIBUS MPI device are installed on the same PC, the **cifX Device Driver** must be installed on that PC, as you can connect the DTM to the device.



For more information to the hardware installation, please refer to the corresponding **User Manual** of your device.

To get information on how to order and to download the license to the device, please refer to section *Licenses* on page 85.

1.6 Dialog Structure PROFIBUS MPI DTM

The graphical user interface of the DTM is composed of different areas and elements listed hereafter:

1. A header area containing the **General Device Information**,
2. The **Navigation Area** (area on the left side),
3. The **Dialog Pane** (main area on the right side),
4. **OK, Cancel, Apply, Help**,
5. The **Status Line** containing information e. g. the online-state of the DTM.

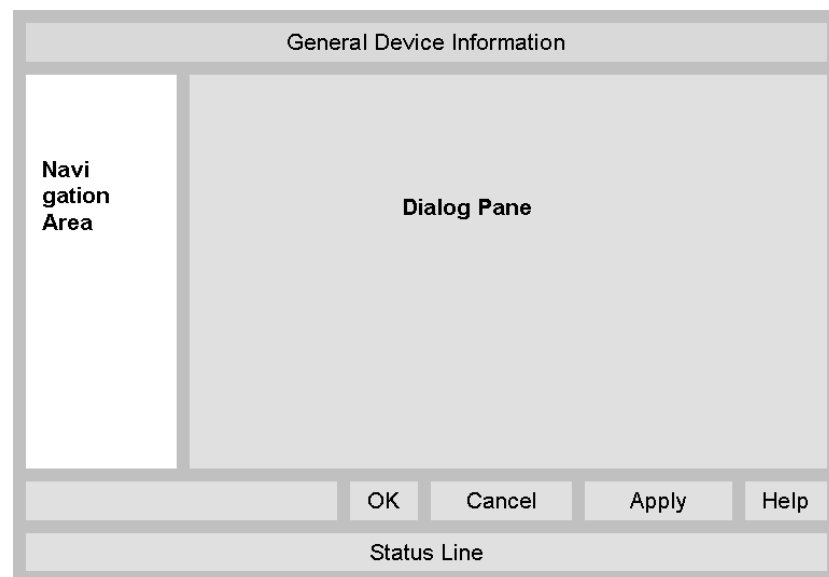


Figure 1: Dialog Structure of the PROFIBUS MPI DTM

1.6.1 General Device Information

Parameter	Meaning
IO Device	Name of the device
Vendor	Vendor name of the device
Device ID	Identification number of the device
Vendor ID	Identification number of the vendor

Table 5: General Device Information

1.6.2 Navigation Area

The **Navigation Area** contains folders and subfolders to open the dialog panes of the DTM.

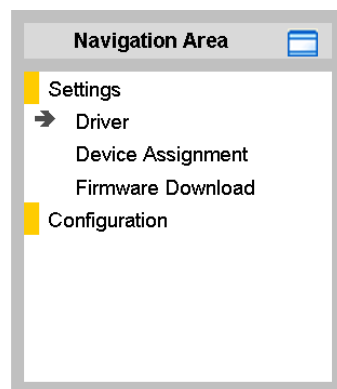


Figure 2: Navigation Area

- Select the required folder and subfolder.
- The corresponding Dialog pane is displayed.

Hide / display Navigation

	Hiding the navigation area (above right side).
Show navigation area	Opening the navigation area (below left side).

1.6.3 Dialog Panes

At the dialog pane the **Settings**, **Configuration**, **Diagnosis/Extended Diagnosis** or the **Tools** panes are opened via the corresponding folder in the navigation area.

Settings	
Driver	On the pane Driver you can select a driver from the driver list. For further information, refer to section <i>Driver</i> on page 34.
Device Assignment	On the pane Device Assignment you select the device and assign the device to the driver. For further information, refer to section <i>Device Assignment</i> on page 44.
Firmware Download	The dialog on the pane Firmware Download is used to load a new firmware into the device. A detailed description can be found in section <i>Firmware Download</i> on page 50.
Configuration	
Configuration	In the Configuration dialog you can configure the bus parameters of a PROFIBUS MPI device. For more information, see the section <i>Configuration</i> on page 60.
Symbol Settings	In the Symbol Settings dialog for the signal configuration of projects with PLC-coupling you can select and import a STEP 7 project. For more information, see section <i>Symbol Settings</i> on page 66.
Symbol Configuration (Process Data Editor)	As a process data-editor the Symbol Configuration dialog with the PDI Editor Table (PDI = Process Data Interface) is available. For projects with PLC-coupling you can customize here an imported STEP7 signal configuration or create the PLC signal configuration without prior import. For more information, see section <i>Symbol Configuration</i> on page 69.
Diagnosis	
Diagnosis/ Extended Diagnosis	At the Diagnosis panes diagnosis information can be read. For further information, refer to section <i>Overview Diagnosis</i> on page 99 or section <i>Overview Extended Diagnosis</i> on page 103.

Table 6: Overview Dialog Panes



Note: Accessing the **Diagnosis** panes of the PROFIBUS MPI DTM requires an online connection from the PROFIBUS MPI DTM to the PROFIBUS MPI DTM.



For further information, refer to section *Connecting/Disconnecting Device* on page 81.

1.6.4 OK, Cancel, Apply and Help

OK, Cancel, Apply and Help you can use as described hereafter.

	Meaning
OK	To confirm your latest settings, click OK . All changed values will be applied on the frame application database. <i>The dialog then closes.</i>
Cancel	To cancel your latest changes, click Cancel . Answer to the safety query Configuration data has been changed. Do you want to save the data? by Yes , No or Cancel . Yes: The changes are saved or the changed values are applied on the frame application database. <i>The dialog then closes.</i> No: The changes are <u>not</u> saved or the changed values are not applied on the frame application database. <i>The dialog then closes.</i> Cancel: <i>Back to the DTM.</i>
Apply	To confirm your latest settings, click Apply . All changed values will be applied on the frame application database. <i>The dialog remains opened.</i>
Help	To open the DTM online help, click Help .

Table 7: OK, Cancel, Apply and Help

1.6.5 Table Lines

In the DTM dialog pane table lines can be selected, inserted or deleted.

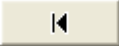





	Meaning
	To select the first line of a table use First Line .
	To select the previous line of a table use Previous Line .
	To select the next line of a table use Next Line .
	To select the last line of a table use Last Line .
	Create a new Line inserts new lines into the table.
	Delete selected Line deletes the selected line from the table.

Table 8: Selecting, inserting, deleting Table Line

1.6.6 Status Bar

The **Status Bar** displays information about the current state of the DTM. The current activity, e.g. download, is signaled graphically via icons in the status bar.

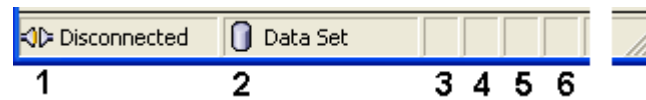
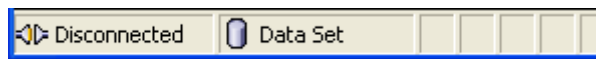


Figure 3: Status Bar – Status Fields 1 to 6

Status Field	Icon / Meaning	
1	DTM Connection States	
		Connected: Icon closed = Device is online
		Disconnected: Icon opened = Device is offline
2	Data Source States	
		Data set: The displayed data are read out from the instance data set (database).
		Device: The displayed data are read out from the device.
3	States of the instance Date Set	
		Valid Modified: Parameter is changed (not equal to data source).
4	Changes directly made on the Device	
		Load/configure diagnosis parameters: Diagnosis is activated.
6	Device Diagnosis Status	
		Save operation succeeded: The save operation has been successful. Further messages due to successful handling of device data.
		Firmware Download: Firmware Download is running
		Save operation failed: The save operation has failed. Further fail operation messages due to incorrect communication due to malfunction in the field device or its peripherals.

Table 9: Status Bar Icons [1]

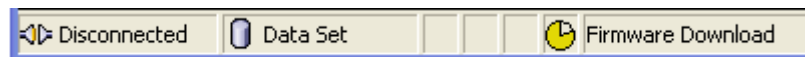
Offline State



Save operation succeeded



Firmware Download



Firmware Download successful



Online State and Diagnosis

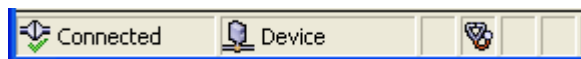


Figure 4: Status Bar Display Examples

2 Safety

2.1 General Note

The documentation in the form of a user manual, an operating instruction manual or other manual types, as well as the accompanying texts have been created for the use of the products by educated personnel. When using the products, all Safety Messages, Integrated Safety Messages, Property Damage Messages and all valid legal regulations must be obeyed. Technical knowledge is presumed. The user has to assure that all legal regulations are obeyed.

2.2 Intended Use

The PROFIBUS MPI Master DTM serves for configuration and diagnosis of PROFIBUS MPI Master devices.

2.3 Personnel Qualification

Personnel responsible for the application of the network system shall be aware of the system behavior and shall be trained in using the system.

2.4 Safety Instructions

To ensure your own personal safety and to avoid personal injury, you necessarily must read, understand, and comply with the safety instructions and safety messages in this manual before you install and operate your system.

For cases if both, personal injury as well as property damage (damage of equipment or device) may occur together, you find the safety instructions in this section.

2.4.1 Communication Stop during Firmware or Configuration Download

If you want to perform either a firmware update (as a download) or a configuration download, both via the PROFIBUS MPI DTM, be aware of the following:

- Together with the firmware download, an automated reset to the device is performed that will interrupt all network communication and all established connections will drop.
- If you download the configuration during bus operation, the communication between master and slaves is stopped.

Possible faulty System Operation

- An unpredictable and unexpected behavior of machines and plant components may cause personal injury and property damage.
 - Stop the application program, before starting the firmware update or before downloading the configuration.
 - Make sure that your equipment operates under conditions that prevent personal injury or property damage. All network devices should be placed in a fail-safe mode, before starting the firmware update or before downloading a configuration.

Loss of Device Parameters, Overwriting of Firmware

- Both the firmware download and the configuration download erase the configuration data base. The firmware download overwrites the existing firmware in the network device.
 - To complete the firmware update and to make the device operable again, re-load the configuration after the firmware update has been finished.

2.4.2 Mismatching System Configuration

Mismatching system configuration loaded into the device could result in faulty data mapping in the application program and thus unexpected equipment operation may cause personal injury or damage of equipment.

- In the device use only a configuration suitable for the system.

2.5 Property Damage

To avoid property damage and damage to your system or to your equipment, you necessarily must read, understand, and comply with the safety instructions and safety messages in this manual before you configure your system.

2.5.1 Power Disconnect while downloading Firmware or Configuration

If during the process of downloading a firmware or configuration

- the power supply to a PC with the software application is interrupted,
- or the power supply to the PROFIBUS MPI device is interrupted,
- or a reset to the device is done,

this may lead to the following consequences:

Loss of Device Parameters, Firmware Corruption

- The firmware download or the configuration download will be interrupted and remains incomplete.
- The firmware or the configuration database will be corrupted and device parameters will be lost.
- Device damage may occur as the device cannot be rebooted.

Whether these consequences occur depends on when the power disconnect occurs during the download.

Power Drop during write and delete accesses in the file system

The FAT file system in the netX firmware is subject to certain limitations in its operation. Write and delete accesses in the file system (firmware update, configuration download etc.) can destroy the FAT (File Allocation Table) if the accesses cannot be completed if the power drops. Without a proper FAT, a firmware may not be found and cannot be started.

Make sure that the power supply to the device is not interrupted during write and delete accesses in the file system (firmware update, configuration download, etc.).

2.5.2 Invalid Firmware

Loading invalid firmware files could render your device unusable.

- Only download firmware files to the device that are valid for this device.

Otherwise you might be forced to return your device for repair.

2.6 Labeling of Safety Messages

- The **Section Safety Messages** at the beginning of a chapter are pinpointed particularly and highlighted by a signal word according to the degree of endangerment. The type of danger is specified by the safety message text
- The **Integrated Safety Messages** within an instruction description are highlighted with a signal word according to the degree of endangerment. The kind of danger is specified exactly by the safety message text.





Signal Word	Meaning (International)	Meaning (USA)
 DANGER	Indicates a direct hazard with high risk, which will have a consequence of death or grievous bodily harm if it is not avoided.	Indicates a hazardous situation which if not avoided, will result in death or serious injury.
 WARNING	Indicates a possible hazard with medium risk, which will have a consequence of death or (grievous) bodily harm if it is not avoided.	Indicates a hazardous situation which if not avoided, could result in death or serious injury.
 CAUTION	Indicates a minor hazard with medium risk, which could have a consequence of minor or moderate bodily harm if it is not avoided.	Indicates a hazardous situation which if not avoided, may result in minor or moderate injury.
 NOTICE	Indicates a property damage message.	Indicates a property damage message.

Table 10: Signal Words



Note: The ANSI Z535.6 standard specifies in section 4.8: "Messages about hazards that could result in both, physical injury and property damage are considered safety messages, not property damage messages." Thus depending of the type of danger and its consequences, warning messages marked by a signal word DANGER, WARNING or CAUTION may include both, messages on physical injury and property damage.

In this document all Safety Instructions and Safety Messages are designed according both to the international used safety conventions as well as to the ANSI Z535.6 standard, refer to safety reference [S1].

In this document the signal words 'WARNING', 'CAUTION' and 'NOTICE' are used according to ANSI Z535.6 standard. The meaning given in ISO/IEC 26514 [S4] section '11.11 Contents of warnings and cautions' is not relevant in this manual.

2.7 References Safety

- [S1] ANSI Z535.6-2011 American National Standard for Product Safety Information in Product Manuals, Instructions, and Other Collateral Materials
- [S4] 26514-2010 - IEEE Standard for Adoption of ISO/IEC 26514:2008 Systems and Software Engineering--Requirements for Designers and Developers of User Documentation




3 Getting started



3.1 Configuration Steps




The following overview provides to you the step sequence on how to configure a netX based PROFIBUS MPI device with PROFIBUS MPI DTM as it is typical for many cases. Therefore you must configure the network and the PROFIBUS MPI bus parameters and for PLC-coupling via PROFIBUS MPI you must configure and select the signals. At this time it is presupposed that the hardware installation was done.

The overview lists all the steps in a compressed form. For detailed descriptions of each step refer to the sections noted in the column *For detailed information see section*.

#	Step	Short Description	For detailed information see section	Page
1	Load device catalog	Depending of the FDT Container: For netDevice: - select Network > Device Catalog , - select Reload Catalog .	(See Operating Instruction Manual netDevice and netProject)	-
2	Create new project / Open existing project	Depending of the frame application. For the configuration software: - select File > New or File > Open .	(See Operating Instruction Manual of the Frame Application)	-
3	Insert PROFIBUS MPI device into Network Configuration	Depending of the FDT Container: For netDevice: - in the Device Catalog under Gateway / Stand-Alone Slave click to the PROFIBUS MPI device, - and insert the device via drag and drop to the root line in the network view.	(See Operating Instruction Manual netDevice and netProject)	-
4	<i>Required for PLC-coupling:</i> Set Symbolic Name	In the FDT Container netDevice: - Set symbolic name for the PROFIBUS MPI device.	<i>Set Symbolic Name for PROFIBUS MPI Device (for PLC-Coupling)</i>	30
5	Open the PROFIBUS MPI DTM configuration dialog	Open the PROFIBUS MPI DTM configuration dialog. - Double click to the device icon of the MPI device. - The PROFIBUS MPI DTM configuration dialog is displayed.	-	-

#	Step	Short Description	For detailed information see section	Page
6	Verify or adapt Driver Settings	<p>In the PROFIBUS MPI DTM configuration dialog:</p> <ul style="list-style-type: none"> - select Settings > Driver.  <ul style="list-style-type: none"> • Note! For PC cards cifX the cifX Device Driver is preset as a default driver. For all the other Hilscher devices the netX Driver is preset as a default driver. Use the cifX Device Driver if the PROFIBUS MPI DTM is installed on the same PC as the PROFIBUS MPI device. • Use the netX Driver to establish a USB, Serial (RS232) or TCP/IP connection from the PROFIBUS MPI DTM to the PROFIBUS MPI device. • The 3SGateway Driver for netX (V3.x) is used only in relationship with CODESYS. <p>To search for devices you can check one or multiple drivers simultaneously.</p> <ul style="list-style-type: none"> - Verify that the default driver is checked. - If necessary, check another driver or multiple drivers. 	<i>Settings for Driver and Device Assignment and Driver</i>	32 34
7	Configure Driver	<p>If you use the netX Driver, you respectively must configure it.</p> <p>For netX Driver and communication via TCP/IP set the IP address of the device:</p> <ul style="list-style-type: none"> - Select Settings > Driver > netX Driver > TCP Connection. - Via  add an IP range. - Under IP Address enter the IP Address of the device or an IP range. - Click Save. <p>Adjust the driver parameters netX Driver USB/RS232 only if they differ from the default settings.</p>  <p>Note!</p> <ul style="list-style-type: none"> • The cifX Device Driver requires no configuration. • The configuration of the 3SGateway Driver for netX (V3.x) is carried out via the CODESYS surface. 	<i>Configuring netX Driver</i>	37
8	Assign PROFIBUS MPI device (with or without firmware)	<p>Assign PROFIBUS MPI the device to this driver.</p> <p>In the PROFIBUS MPI DTM configuration dialog:</p> <ul style="list-style-type: none"> - select Settings > Device Assignment, - select a PROFIBUS MPI device (with or without firmware), - therefore check the appropriate checkbox, - select Apply. 	<i>Selecting the Device (with or without firmware)</i>	47

#	Step	Short Description	For detailed information see section	Page
9	Select and download firmware	<p>If not yet a firmware was loaded to the device:</p> <ul style="list-style-type: none"> - Adhere to the necessary safety precautions to prevent personnel injury and property damage. <p>In the PROFIBUS MPI DTM configuration dialog:</p> <ul style="list-style-type: none"> - select Settings > Firmware Download, - select Browse.., - select a firmware file, - select Open, - select Download and Yes. 	<p><i>Safety Messages on Firmware or Configuration Download</i></p> <p><i>Firmware Download</i></p>	<p>29</p> <p>50</p>
10	Assign PROFIBUS MPI device once more (with firmware and system channel) <i>For repeated download this step is omitted.</i>	<p>In the PROFIBUS MPI DTM configuration dialog:</p> <ul style="list-style-type: none"> - select Settings > Device Assignment, - select Scan, - select the PROFIBUS MPI device (with loaded firmware), - therefore check the appropriate checkbox, - select Apply, - close the PROFIBUS MPI DTM configuration dialog via OK. 	<i>Selecting the Device once more (with Firmware)</i>	48
11	Configure PROFIBUS MPI Bus Parameters	<p>Configure the PROFIBUS MPI device.</p> <ul style="list-style-type: none"> - Double click to the PROFIBUS MPI device icon. - The PROFIBUS MPI DTM configuration dialog is displayed. <p>In the PROFIBUS MPI DTM configuration dialog:</p> <ul style="list-style-type: none"> - select Configuration > Configuration. - set the PROFIBUS MPI bus parameters. <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p> Note</p> <ul style="list-style-type: none"> - Set the Station Address specifically for the PROFIBUS MPI device. - The baud rate must be set necessarily. - A change of bus parameters can cause communication failure. </div> <ul style="list-style-type: none"> - Save the bus parameters and close the PROFIBUS MPI DTM configuration dialog via OK. <p>OR for projects with PLC-coupling:</p> <ul style="list-style-type: none"> - Save the bus settings via Apply. 	<p><i>Configuring PROFIBUS MPI Bus Parameters</i></p> <p><i>Configuration</i></p>	<p>59</p> <p>60</p>
12a	<p><i>For PLC-Coupling: Either</i></p> <p><i>Import and Customize the process data configuration</i></p>	<p>Configure the signals for PROFIBUS MPI <u>with</u> the STEP7 project:</p> <ul style="list-style-type: none"> - Select Configuration > Symbol Settings. - Check Use PLC Program. <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p> Important! All changes made in the Symbol Configuration dialog are lost when the STEP7 project is imported repeatedly (new-import) and the changes do not affect the function of the PLC in which the STEP7 program was loaded.</p> </div> <ul style="list-style-type: none"> - Select a STEP7 project via Browse.... - Import the project via Open. - Save the project via Apply. <p><i>Further see next page.</i></p>	<p><i>Import and customize a STEP7 Process Data Configuration (Overview),</i></p> <p><i>Import the STEP 7 Project</i></p>	<p>64,</p> <p>66</p>

#	Step	Short Description	For detailed information see section	Page
13a	<i>For PLC-Coupling:</i> Import and Customize the process data configuration (continued)	<p>Continues from the page before.</p> <ul style="list-style-type: none"> - Select Configuration > Symbol Configuration. <div>  Important! Under Station Address enter the <u>PLC station address</u>. The station address of the STEP7 project may not be used here. </div> <ul style="list-style-type: none"> - Respectively customize the signal configuration. 	Configure STEP7 Signals with the Process Data-Editor	69
13b	<i>Or</i> Create the process data configuration manually	<p>Configure the signals for PROFIBUS MPI <u>without</u> STEP7 project:</p> <ul style="list-style-type: none"> - Select Configuration > Symbol Settings.* - Remove the hook at Use PLC Program.* <p>*If an imported STEP7 project shall not be used.</p> <div>  Important! If you remove the hook Use PLC Program, any settings on the signal configurations made in the Symbol Configuration dialog will be lost. Thereby also any signal configurations in the OPC server will be lost. </div> <ul style="list-style-type: none"> - Select Configuration > Symbol Configuration. - Create in the Symbol Configuration dialog the signal configuration for the PROFIBUS MPI device. E. i., configure the modules and signals. <div>  Important! Under Station Address enter the <u>PLC station address</u>. It is not allowed to use the station address of the STEP7 project here. </div> <ul style="list-style-type: none"> - In the <u>first line</u> for <i>Device_1</i> enter the Station Address. - In the <u>second line</u> for <i>Module_1</i> select the Module Type. - In the <u>third line</u> for <i>Singal_1</i> configure Access, Memory area, Data Type, Offset and Bit-Number. - If necessary, add and configure additional modules and signals. 	<p>Creating a Process Data Configuration without STEP7 Project (Overview),</p> <p>Reset „Use PLC Program“</p> <p>Configure Signals without STEP 7 Project</p>	65, 68, 78
14	<i>For PLC-Coupling:</i> Select signals	<ul style="list-style-type: none"> - Under SCADA check all signals for the additional processing. 	(compare 13a or 13b)	
15	Close PROFIBUS MPI DTM configuration dialog	<ul style="list-style-type: none"> - Close the PROFIBUS MPI DTM configuration dialog via OK. 	-	-
16	Save project	<p>Depending of the frame application.</p> <p>For the configuration software:</p> <ul style="list-style-type: none"> - select File > Save. 	(See Operating Instruction Manual of the Frame Application)	-
17	<i>Only for project with PLC-Coupling:</i> Configure OPC Server	<p>This step must be performed elsewhere in the OPC configuration software.</p>	(See Operating Instruction Manual netOPC Configurator and OPC Server)	
18	Connect PROFIBUS MPI device	<p>Depending of the FDT Container.</p> <p>For netDevice:</p> <ul style="list-style-type: none"> - right click to the device icon of the PROFIBUS MPI device, - select Connect. 	Connecting/Disconnecting Device	81

#	Step	Short Description	For detailed information see section	Page
19	Download Configuration	<ul style="list-style-type: none"> - Adhere to the necessary safety precautions to prevent personnel injury and property damage. Depending of the FDT Container. For netDevice: <ul style="list-style-type: none"> - right click to the device icon of the PROFIBUS MPI, - select Download. 	<i>Safety Messages on Firmware or Configuration Download</i> <i>Download Configuration</i>	29 82
20	Diagnosis	Depending of the FDT Container. For netDevice: <ul style="list-style-type: none"> - right click to the device icon of the PROFIBUS MPI device, - select Diagnosis. - The PROFIBUS MPI DTM diagnosis dialog is displayed. (1) Check whether the communication is OK: Diagnosis > General Diagnosis > Device status "Communication" must be green! (2) "Communication" is not green: Use Diagnosis and Extended diagnosis for troubleshooting. - close the PROFIBUS MPI DTM diagnosis dialog via OK .	<i>Overview Diagnosis</i>	99
21	Disconnect	Depending of the FDT Container. For netDevice: <ul style="list-style-type: none"> - right click to the device icon of the PROFIBUS MPI device, - select Disconnect. 	<i>Connecting/Disconnecting Device</i>	81

Table 11: Getting started - Configuration Steps

3.2 Safety Messages on Firmware or Configuration Download

If you perform a firmware download or a configuration download via the PROFIBUS MPI Master DTM be aware of the following:

WARNING

Communication Stop caused by Firmware or Configuration Download

Initiating a firmware or configuration download process during bus operation will stop the communication and a subsequent plant stop may cause unpredictable and unexpected behavior of machines and plant components, possibly resulting in personal injury and damage to your equipment.

The firmware download overwrites the existing firmware. The communication stop may cause loss of device parameters and possible device damage may occur.

- Stop the application program, before you start the firmware or configuration download.
 - Make sure that all network devices are placed in a fail-safe condition.
-

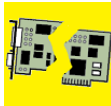
WARNING

Mismatching System Configuration

Mismatching system configuration loaded into the device could result in faulty data mapping in the application program and thus unexpected equipment operation may cause personal injury or damage of equipment.

- In the device use only a configuration suitable for the system.
-

NOTICE

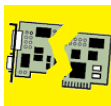


Power Disconnect while downloading Firmware or Configuration

If the power supply to the PC or device is interrupted while the firmware or configuration is being downloaded, the download will be aborted, the firmware may be corrupted, the device parameters may be lost, and the device may be damaged.

- During firmware or configuration download process do not interrupt the power supply to the PC, or to the device and do not perform a reset to the device!
-

NOTICE



Invalid Firmware

Loading invalid firmware files could render your device unusable.

- Only proceed with a firmware version valid for your device.
-

3.3 Set Symbolic Name for PROFIBUS MPI Device (for PLC-Coupling)

For projects with PLC coupling, you must make the identification of the OPC server configuration file. Therefore you must assign a symbolic name to the PROFIBUS MPI device, in the **netDevice** FDT container:

- Right click on the device icon and select in the context menu **Symbolic Name**.

➤ The **Change Symbolic Name** dialog is displayed.

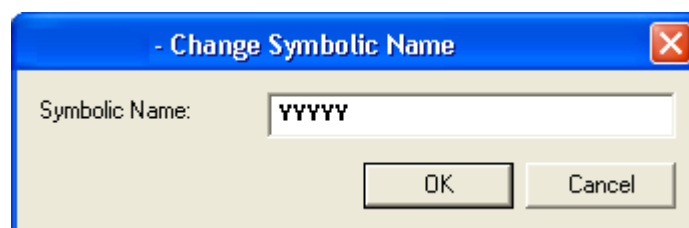


Figure 5: Change Symbolic Name

➤ Enter a symbolic name for the PROFIBUS MPI device.

➤ The symbolic name is displayed in the network configuration as an additional device name beneath the device description.

YYYYY [XXXX] <1> (#1)	← Device name in the network configuration
YYYYY	← Symbolic Name
[XXXX]	← Device Description
<1>	← Station Address
(#1)	← Network ID
	← Additional name for the device
	← Name of the device (not editable)
	← PROFIBUS MPI address of the device on the bus
	← Network address of the PROFIBUS MPI device



Information on this issue, see the operating instruction manual **netDevice** and **netProject**, which is also accessible online.

4 Settings

4.1 Overview Settings

Settings Dialog Panes

The table below gives an overview for the individual **Settings** dialog panes descriptions:

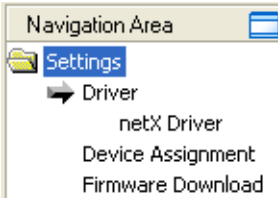
PROFIBUS MPI DTM	Folder Name / Section	Subsection	Manual Page
 <p>Navigation Area – Settings (Example) Additional drivers can be displayed.</p>	Driver		34
		Verify or adapt Driver Settings	34
		cifX Device Driver	36
		netX Driver	36
		Configuring netX Driver	37
	Device Assignment		44
		Scanning for Devices	44
		Scanning for all Devices or for suitable only	46
		Selecting the Device (with or without firmware)	47
		Selecting the Device once more (with Firmware)	48
	Firmware Download		50

Table 12: Descriptions of the Dialog Panes Settings



Note: To edit the **Settings** dialog panes you need *User Rights* for “Maintenance”.



Notice the descriptions in the section *Settings for Driver and Device Assignment* on page 32.

To access to the online help with the descriptions of the drivers:

- Select **Settings > Driver > [Name of the assigned driver]**.
- Press the **F1** key.

4.2 Settings for Driver and Device Assignment

The following steps are needed to establish a connection from the PROFIBUS MPI DTM to the PROFIBUS MPI device:

Verifying or adapting Driver Settings

Verify the Driver Settings and adapt them if necessary.

1. Open the DTM configuration dialog.
 - In the FDT container **netDevice** double click to the PROFIBUS MPI device icon.
2. Verify that the default driver is checked and respectively check another or multiple drivers.
 - Select **Settings > Driver**.



Note! For PC cards cifX the **cifX Device Driver** is preset as a default driver. For all the other Hilscher devices the **netX Driver** is preset as a default driver.

- Use the **cifX Device Driver** if the PROFIBUS MPI DTM is installed on the same PC as the PROFIBUS MPI device.
- Use the **netX Driver** to establish an USB, Serial (RS232) or TCP/IP connection from the PROFIBUS MPI DTM to the PROFIBUS MPI device.
- The **3SGateway Driver for netX (V3.x)** is used only in relationship with CODESYS.

To search for devices on the network you can check one or multiple drivers simultaneously.

- Verify that the default driver for your device is checked.
- If necessary, check another driver or multiple drivers.

Configuring Driver



Note!

- The **cifX Device Driver** requires no configuration.
- The configuration of the **3SGateway Driver for netX (V3.x)** is carried out via the CODESYS surface.

If you use the **netX Driver**, you respectively must configure it.

3. Configure the **netX Driver** if necessary.

For the driver **netXDriver** an individual driver dialog window can be opened where you can configure the driver.

- Select **Settings > Driver > netX Driver**.
- For netX Driver and communication via TCP/IP set the IP address of the device.

Adjust the driver parameters **netX Driver USB/RS232** only if they differ from the default settings.

Assigning the PROFIBUS MPI Device to the DTM

4. Scan for and select the devices (with or without firmware).
 - Select **Settings > Device Assignment**.
 - Under **Device selection** select *suitable only* or *all* and then **Scan**.
 - In the table check the required devices.
 - Select **Apply**.

Selecting and downloading the Firmware

5. If not yet a firmware was loaded to the device, select and download the firmware.
 - Select **Settings > Firmware Download**.
 - Select and download the firmware via **Download**.
 - Select **Apply**.
6. Scan for and select the devices (with firmware and defined system channel) once more.

For repeated download this step is omitted.

 - Select **Settings > Device Assignment**.
 - Select **Scan**.
 - In the table check the required device.
7. Close the DTM configuration dialog via **OK**.

Connecting the Device

8. In **netDevice** put a right-click on the PROFIBUS MPI device icon.
9. Select the **Connect** command from the context menu.
- In the network view the device description at the device icon of the PROFIBUS MPI device is displayed with a green colored background. The PROFIBUS MPI device now is connected to the PROFIBUS MPI DTM via an online connection.

Further Information



For descriptions about these steps refer to the sections following hereafter.

4.3 Driver

The **Driver** dialog pane displays the drivers to be used for a PROFIBUS MPI DTM to establish a device communication connection.



Note! A **default driver** is set in the configuration software.

Driver			
	Driver	Version	ID
<input checked="" type="checkbox"/>	CIFX Device Driver	1.101.1.9801	{368BEC5B-0E92-4C0E-B4A9-64F62AE7AAFA}
<input type="checkbox"/>	3SGateway Driver for netX (V3.x)	0.9.1.2	{787CD3A9-4CF6-4259-8E4D-109B6A6BEA91}
<input type="checkbox"/>	netX Driver	1.103.2.5183	{B54C8CC7-F333-4135-8405-6E12FC88EE62}

Figure 6: Default Driver, 'cifX Device Driver' for PC cards cifX

Parameter	Meaning
Driver	Name of the driver (for more details see descriptions hereafter)
Version	ODMV3 Version of the respective driver
ID	ID of the driver (driver identification)

Table 13: Driver Selection List Parameters

To establish a connection from the PROFIBUS MPI DTM to the PROFIBUS MPI device, verify if the default driver is checked and respectively check another driver or multiple drivers.

4.3.1 Verify or adapt Driver Settings

Proceed as follows:

1. Select **Settings > Driver** in the navigation area.
- The **Driver** dialog pane is displayed with the available drivers and the setting for the default driver.

Driver			
	Driver	Version	ID
<input checked="" type="checkbox"/>	CIFX Device Driver	1.101.1.9801	{368BEC5B-0E92-4C0E-B4A9-64F62AE7AAFA}
<input type="checkbox"/>	3SGateway Driver for netX (V3.x)	0.9.1.2	{787CD3A9-4CF6-4259-8E4D-109B6A6BEA91}
<input type="checkbox"/>	netX Driver	1.103.2.5183	{B54C8CC7-F333-4135-8405-6E12FC88EE62}

Figure 7: Default Driver, 'cifX Device Driver' for PC cards cifX (example)

Driver			
	Driver	Version	ID
<input type="checkbox"/>	CIFX Device Driver	1.101.1.9801	{368BEC5B-0E92-4C0E-B4A9-64F62AE7AAFA}
<input type="checkbox"/>	3SGateway Driver for netX (V3.x)	0.9.1.2	{787CD3A9-4CF6-4259-8E4D-109B6A6BEA91}
<input checked="" type="checkbox"/>	netX Driver	1.103.2.5183	{B54C8CC7-F333-4135-8405-6E12FC88EE62}

Figure 8: Default Driver, 'netX Driver' for Hilscher devices except for PC cards cifX (example)

2. Verify that the default driver is checked.
- Verify that the default driver for your device is checked.

Default Driver (Pre-settings in the Configuration Software): For PC cards cifX the **cifX Device Driver** is preset as a default driver. For all the other Hilscher devices the **netX Driver** is preset as a default driver.

3. Respectively check another driver.



Note! The driver used for the connection from the PROFIBUS MPI DTM to the PROFIBUS MPI device must be supported by the device and must be available for the device.

- Use the **cifX Device Driver** if the PROFIBUS MPI DTM is installed on the same PC as the PROFIBUS MPI device.
- Use the **netX Driver** to establish a USB, Serial (RS232) or TCP/IP connection from the PROFIBUS MPI DTM to the PROFIBUS MPI device.
- The **3SGateway Driver for netX (V3.x)** is used only in relationship with CODESYS. The version V3.x refers to the driver version defined by 3S-Smart Software Solutions GmbH.

➤ Check the checkbox for the driver in the selection list.

4. Respectively check multiple drivers.

To search for devices on the network you can check multiple drivers simultaneously.

Driver			
	Driver	Version	ID
<input checked="" type="checkbox"/>	CIFX Device Driver	1.101.1.9801	{368BEC5B-0E92-4C0E-B4A9-64F62AE7AAFA}
<input type="checkbox"/>	3SGateway Driver for netX (V3.x)	0.9.1.2	{787CD3A9-4CF6-4259-8E4D-109B6A6BEA91}
<input checked="" type="checkbox"/>	netX Driver	1.103.2.5183	{B54C8CC7-F333-4135-8405-6E12FC88EE62}

Figure 9: Manual Selection of multiple drivers (Example)

4.3.2 cifX Device Driver

In the PROFIBUS MPI-DTM for the **cifX Device Driver** no driver dialog pane is available, since for the **cifX Device Driver** no driver settings are required.

The **cifX Device Driver** will be used if the PROFIBUS MPI DTM is installed in the same PC as the PROFIBUS MPI device.



Note: To establish a connection from a DTM to a PROFIBUS MPI device via the **cifX Device Driver**, the **cifX Device Driver** must be installed and the driver must have access to the PROFIBUS MPI device.

4.3.3 netX Driver

The **netX Driver** is used to connect the DTM to the device via different connection types. The DTM communicates with the device via an USB connection, a serial (RS232) connection or a TCP/IP connection. The **netX Driver** establishes

- via the USB interface of the device and the USB port of the PC an USB connection to the device,
- via the RS232 interface of the device and the COM port of the PC a serial connection (RS232) to the device
- and via Ethernet a TCP/IP connection to the device.

To connect the DTM to the physical layer of the device the **netX Driver** software works in combination with the software components:

- “USB/COM connector” for the USB connection and for the serial connection (RS232) and
- “TCP/IP connector” for the Ethernet connection.

4.3.4 Configuring netX Driver

The following steps are required to configure the netX Driver:

USB/RS232 Connection

To set the driver parameters for an USB/RS232 connection note:




Note: Adjust the driver parameters netX Driver USB/RS232 only if they differ from the default settings. After saving the changed driver parameters, these parameters are used for the device assignment when scanning devices.

For setting the driver parameters for an USB connection or a serial connection:

1. Select **Settings > Driver > netX Driver > USB/RS232 Connection**.
 - Set the driver netX Driver USB/RS232 parameters.

TCP/IP Connection

For setting the driver parameters for a TCP/IP connection:

1. Select **Settings > Driver > netX Driver > TCP Connection**.
2. Set IP Address of the device:
 - Add an IP Range via **Select IP Range** .
3. Under **IP Range Configuration > IP Address** enter the IP Address of the device (**Use IP Range** is unchecked).

Or

4. Set IP Range:
 - Check **Use IP Range**.
 - Under **IP Range Configuration > IP Address** enter the start address (left side) and the ending address of the IP scanning range (right side).
 5. Click **Save**, to save the IP address or the IP range.
- After saving the changed driver parameters, these parameters are used for the device assignment when scanning devices.

4.3.5 netX Driver - USB/RS232 Connection

The communication from the DTM to the device via an **USB/RS232 Connection** is used when the DTM is installed on a PC and between the PC and the device

- an USB connection
- or a serial connection (RS232) exists.

The DTM accesses the device via the USB interface or via the RS232 interface. This requires either to connect an USB port of the PC to the USB interface of the device using an USB cable or to connect a physical COM port of the PC to the RS232 interface of the device via a serial cable.

The **netX Driver / USB/RS232 Connection** supports all physical and virtual COM ports available on the PC.

Via the RS232 interface or USB interface, the device is configured or diagnosis is performed.


4.3.5.1 Driver Parameters for netX Driver - USB/RS232 Connection

The settings of the driver parameters for the USB/RS232 connection are made via the **netX Driver / USB/RS232 Connection** configuration dialog.

- Open the **USB/RS232 Connection** dialog via navigation area **Settings > Driver > netX Driver**.

➤ The **USB/RS232 Connection** dialog is displayed:

Figure 10: netX Driver > USB/RS232 Connection

Parameter	Meaning	Range of Value / Default Value
Enable USB/RS232 Connector (Restart of ODM required)	checked: The netX Driver can communicate via the USB/RS232 interface. unchecked: The netX Driver can <u>not</u> communicate via the USB/RS232 interface. If the check mark for Enable USB/RS232 Connector is set or removed, then the ODM server must be restarted ¹ , to make the new setting valid. ¹ Restart the ODM server via the ODMV3 Tray Application : - In the foot line click on  using the right mouse key. - In the context menu select Service > Start .	checked, unchecked; Default: unchecked
Select Port	Depending on the COM ports (interfaces) available on the PC, they will be listed under Select Port .	COM 1 to COM N
Port Configuration		
Disable Port	checked: No connection. unchecked: The netX Driver tries to establish a connection using the configured USB/RS232 interface.	checked, unchecked (Default)
Baud rate	Transfer rate: number of bits per second. The device must support the baud rate.	9.6, 19.2, 38.4, 57.6 or 115.2 [kBit/s]; Default (RS232): 115.2 [kBit/s]

Parameter	Meaning	Range of Value / Default Value
Stop bits	Number of stop bits sent after the transfer of the send data for synchronization purposes to the receiver.	Stop bit: 1, 1.5, 2; Default (RS232): 1
Send Timeout	Maximum time before the transfer of the transmission data is canceled, when the send process fails, for example, because of the transfer buffer is full.	100 ... 60.000 [ms]; Default (RS232 and USB): 1000 ms
Reset Timeout	Maximum time for a device reset, including the re-initialization of the physical interface used for the communication.	100 ... 60.000 [ms]; Default (RS232 and USB): 5000 ms
Byte size	Number of bits per byte by byte specification	7 Bit, 8 Bit; Default (RS232): 8 Bit
Parity	In the error detection in data transmission using parity bits, "parity" describes the number of bits occupied with 1 in the transmitted information word. No Parity: no parity bit Odd Parity: The parity is "odd" if the number of bits occupied with 1 in the transmitted information word will be odd. Even parity: The parity is "even" if the number of bits occupied with 1 in the transmitted information word will be even. Mark Parity: if the parity bit is always 1, this will be named mark-parity (the bit does not contain any information). Space Parity: if the parity bit always 0, this will be named space-parity (the bit represents an empty space).	No Parity, Odd Parity, Even Parity, Mark Parity, Space Parity; Default (RS232): No Parity
Keep Alive Timeout	The "Keep Alive" mechanism is used to monitor whether the connection to the device is active. Connection errors are detected using a periodic heartbeat mechanism. The heartbeat mechanism will be initiated after the set time has elapsed if the communication has failed.	100 ... 60.000 [ms]; Default (RS232 and USB): 2000 ms
Restore	Resets all settings in the configuration dialog to the default values.	
Save	Saving all settings made in the configuration dialog netX Driver > Save USB/RS232 Connection , i. e. only for the selected connection type.	
Save All	Saving all settings made in the configuration dialog netX Driver , i. e. for all connection types.	

Table 14: Parameters netX Driver > USB/RS232 Connection

4.3.6 netX Driver - TCP/IP Connection

The communication from the DTM to the device via a **TCP/IP Connection** is used in the following two typical applications:

Application 1: The device has its own Ethernet interface. The DTM is installed on a PC and the TCP/IP connection is established from this PC to the stand-alone device. The IP address of the device is used.

Application 2: The device is installed in a remote PC. The DTM is installed on an additional PC and the TCP/IP connection is established from this PC to the remote PC. The IP address of the remote PC is used. For the TCP/IP connection is made, on the remote PC the cifX TCP/IP server must be started. The cifX TCP/IP server allows the remote access to the device via a TCP/IP connection.



Note: An exe file for the cifXTCP/IP server is provided on the product CD in the *Tools* directory.




Via the TCP/IP interface of the device or of the remote PC, the device is configured or diagnosis is performed.

4.3.6.1 Driver Parameters for netX Driver - TCP/IP Connection

The settings of the driver parameters for the TCP/IP connection are made via the **netX Driver / TCP Connection** configuration dialog.

- Open the **TCP Connection** dialog via navigation area **Settings > Driver > netX Driver**.
- The dialog **netX Driver** is displayed:
- Select **TCP Connection**.

Figure 11: netX Driver > TCP Connection

Parameter	Meaning	Range of Value / Default Value
Enable TCP Connector (Restart of ODM required)	<p>checked: The netX Driver can communicate via the TCP/IP interface.</p> <p>unchecked: The netX Driver can <u>not</u> communicate via the TCP/IP interface.</p> <p>If the check mark for Enable TCP Connector is set or removed, then the ODM server must be restarted¹, to make the new setting valid.</p> <p>¹ Restart the ODM server via the ODMV3 Tray Application:</p> <ul style="list-style-type: none"> - In the foot line click on  using the right mouse key. - In the context menu select Service > Start. 	checked, unchecked; Default: unchecked
Select IP Range	<p>Via Select IP Range already created IP ranges can be selected.</p> <p>Via  an additional IP range can be added.</p> <p>Via  an IP range can be deleted.</p>	

Parameter	Meaning	Range of Value / Default Value
Scan Timeout [ms]	With Scan Timeout can be set, how long to wait for a response while a connection is established.	10 ... 10000 [ms]; Default: 100 ms
IP Range Configuration		
Disable IP Range	checked: No connection. unchecked: The netX Driver tries to establish a connection using the configured TCP/IP interface.	checked, unchecked (Default)
IP Address (left)	Enter the IP address of the device, (if Use IP Range is not checked). Enter the start address of the IP scanning range, (if Use IP Range is checked).	valid IP address; Default: 192.168.1.1
Use IP Range	checked: An IP address range is used. unchecked: Only one IP address is used.	checked, unchecked; Default: unchecked
IP Address (right)	Enter the ending address of the IP scanning range, (only if Use IP Range is checked).	valid IP address; Default: 0.0.0.0
Address Count	Displays the scanning range address count, depending on the selected IP-start or IP-end address. (For this read the note given below.)	recommended: 10
TCP Port	Identifies the endpoint of a logical connection or addresses a specific endpoint on the device or PC.	0 - 65535; Default Hilscher device: 50111
Send Timeout [ms]	Maximum time before the transfer of the transmission data is canceled, when the send process fails, for example, because of the transfer buffer is full.	100 ... 60.000 [ms]; Default (TCP/IP): 1000 ms
Reset Timeout [ms]	Maximum time for a device reset, including the re-initialization of the physical interface used for the communication.	100 ... 60.000 [ms]; Default (TCP/IP): 2000 ms
Keep Alive Timeout [ms]	The "Keep Alive" mechanism is used to monitor whether the connection to the device is active. Connection errors are detected using a periodic heartbeat mechanism. The heartbeat mechanism will be initiated after the set time has elapsed if the communication has failed.	100 ... 60.000 [ms]; Default (TCP/IP): 2000 ms
Restore	Resets all settings in the configuration dialog to the default values.	
Save	Saving all settings made in the configuration dialog netX Driver > Save TCP/IP Connection , i. e. only for the selected connection type.	
Save All	Saving all settings made in the configuration dialog netX Driver , i. e. for all connection types.	

Table 15: Parameters netX Driver > TCP Connection



Note: Do not use large IP ranges in combination with a low scan timeout. Microsoft introduced in Windows® XP SP2 a limit of concurrent half-open outbound TCP/IP connections (connection attempts) to slow the spread of virus and malware from system to system. This limit makes it impossible to have more than 10 concurrent half-open outbound connections. Every further connection attempt is put in a queue and forced to wait. Due to this limitation a large IP range used in combination with a low scan timeout could prevent the connection establishment to a device.

4.4 Device Assignment



Note: In the **Device Assignment** dialog pane you first must assign the PROFIBUS MPI device to the PROFIBUS MPI DTM by checking the check box. This is essential to establish an online connection from the PROFIBUS MPI DTM to the PROFIBUS MPI device later, as described in section *Connecting/Disconnecting Device* on page 81.

Therefore in the **Device Assignment** dialog pane you scan for the PROFIBUS MPI device and select it.

If the device did not get a firmware or shall get a new firmware:

1. first you scan for the device (with or without firmware) and select the device,
2. then you download a firmware to the device and
3. subsequently you scan for the device (with firmware) once more and select the device again.

4.4.1 Scanning for Devices

1. Select **Settings > Device Assignment** in the navigation area.

➤ The dialog pane **Device Assignment** is displayed.

Device Assignment

Scan progress: 3/5 Devices (Current device: -)

Device selection: suitable only

	Device	Hardware Port 0/1/2/3	Slot number	Serial number	Driver	Channel Protocol	Access path
<input type="checkbox"/>	Device Cl*	-/-/PROFIBUS/-	1	20148	CIFX Device Driver	Undefined Undefined	...\cifX3_SYS

Access path:

Figure 12: Device Assignment - detected Devices (* The name of the device class is displayed.) – Example for a device without firmware

2. Under **Device Selection** select *suitable only*.
3. Select **Scan**, to start the scanning process.

➤ In the table all devices are displayed, which can be connected to the PROFIBUS MPI DTM via the preselected driver.



Note: For devices, which have been found via the **cifX Device Driver** in the column **Access path** the indication **...\cifX[0toN]_SYS** is displayed. This is correct, as long as a device did not get a firmware. After the firmware download has been completed, in the column **Access path** the indication **...\cifX[0toN]_Ch[0to3]** is displayed.

Parameter	Meaning	Range of Value / Default Value
Device selection	Selecting suitable only or all devices.	suitable only, all
Device	Device class of the PROFIBUS MPI devices.	
Hardware Port 0/1/2/3	Shows, which hardware is assigned to which communication interface.	
Slot number	Shows the Slot Number (Card ID) preset at the PC card cifX via the Rotary Switch Slot Number (Card ID) . The indication n/a means that no Slot-Number (Card ID) exists. This will occur if the PC card cifX is not equipped with a Rotary Switch Slot Number (Card ID) or for PC cards cifX equipped with a Rotary Switch Slot Number (Card ID) if the rotary switch is set to the value 0 (zero).	1 to 9, n/a
Serial number	Serial number of the device	
Driver	Name of the driver	
Channel Protocol	Shows, which firmware is loaded to which device channel. The data for the used channel consists of the protocol class and the communication class. a.) For devices without firmware: Undefined Undefined, b.) For devices with firmware: Protocol name corresponding to the used Firmware	
Access path (last column on the right)	Depending on the used driver in the column Access path different data to the device are displayed. For the cifX Device Driver the following data are displayed: a.) For devices without firmware: ...cifX[0toN]_SYS, b.) For devices with firmware: ...cifX[0toN]_Ch[0to3]. cifX[0toN] = Board number 0 to N Ch[0to3] = Channel number 0 to 3	Depending on the device and on the driver: board or channel number, IP address or COM interface
Access path (at the lower side of the dialog pane)	If in the table a device is checked, under Access path (at the lower side of the dialog pane) the driver identification or depending on the used driver additional data to the device will be displayed. For the cifX Device Driver the following data are displayed: a.) For devices without firmware: ...cifX[0toN]_SYS, b.) For devices with firmware: ...cifX[0toN]_Ch[0to3]. cifX[0toN] = Board number 0 to N Ch[0to3] = Channel number 0 to 3	driver identification (ID) depending on the device and on the driver: board or channel number, IP address or COM interface

Table 16: Parameters of the Device Assignment

4.4.1.1 Scanning for all Devices or for suitable only

all

1. Under **Device Selection** select *all*.
2. Select **Scan**.

Device Assignment							
Scan progress: 5/5 Devices (Current device: -)							
<div>Device selection: all</div>							<input type="button" value="Scan"/>
	Device	Hardware-Port 0/1/2/3	Slot number	Serial number	Driver	Channel Protocol	Access path
<input type="checkbox"/>	Device Cl.*	-/-/PROFIBUS/-	1	20148	CIFX Device Driver	Undefined Undefined	...\cifX3_SYS
<input type="checkbox"/>	Device Cl.*	-/-/DeviceNet/-	n/a	20027	CIFX Device Driver	Undefined Undefined	...\cifX1_SYS
<input type="checkbox"/>	Device Cl.*	-/-/-/-	n/a	20058	netX Driver	Undefined Undefined	...\192.168.1..
<input type="checkbox"/>	Device Cl.*	Ethernet/Ethernet/-/-	n/a	20288	CIFX Device Driver	Undefined Undefined	...\cifX2_SYS
<input type="checkbox"/>	Device Cl.*	-/-/CANopen/-	n/a	20022	CIFX Device Driver	Undefined Undefined	...\cifX0_SYS

Figure 13: Device Assignment - detected Devices (* The name of the device class is displayed.) Example for Devices without Firmware

- ⇒ In the table all devices are displayed, which are attainable in the network and which can be connected to a single DTM each via the preselected drivers.



Note: During a subsequent firmware download in the selection window **Select Firmware File** all files from the selected folder are displayed, under **Files of Type** „All Files (*.*)“ is displayed and the check box **Validate the selected firmware file.** is unchecked.

suitable only

1. Under **Device Selection** select *suitable only*.
2. Select **Scan**.

- ⇒ In the table all devices are displayed, which can be connected to the PROFIBUS MPI DTM via the preselected drivers.



Note: During a subsequent firmware download in the selection window **Select Firmware File** only firmware files from the selected folder are displayed, under **Files of Type** „Firmware Files (*.nxm)“ or „Firmware Files (*.nxf)“ is displayed and the check box **Validate the selected firmware file.** is checked.

4.4.2 Selecting the Device (with or without firmware)



Note: A connection with the PROFIBUS MPI DTM can only be established with one PROFIBUS MPI device.

To select the physical PROFIBUS MPI device (with or without firmware):

1. Check the appropriate device.

Device Assignment

Scan progress: 5/5 Devices (Current device: -)

Device selection: suitable only Scan

	Device	Hardware Port 0/1/2/3	Slot number	Serial number	Driver	Channel Protocol	Access path
<input checked="" type="checkbox"/>	Device Cl.*	-/-/PROFIBUS/-	1	20148	CIFX Device Driver	PROFIBUS Master	...\cifX3_SYS

Access path: {368BEC5B-0E92-4C0E-B4A9-64F62AE7AAFA}\cifX3_SYS

Figure 14: Device Assignment - Selecting the Device (* The name of the device class is displayed.) – Example for a device without firmware / one Device is selected

- Under **Access path** (below in the dialog pane) the access path to the device, e. g. the driver identification, or depending on the used driver additional access data of the device are displayed.

2. Select **Apply**, to apply the selection.



Note: Before an online connection from the PROFIBUS MPI DTM to the PROFIBUS MPI device can be established, a firmware must be loaded to the device and the device must be selected once more.



For further information refer to section to section *Firmware Download* on page 50 or to section *Selecting the Device once more (with Firmware)* on page 48.

4.4.3 Selecting the Device once more (with Firmware)



Note: For repeated download this step is omitted.

To select the PROFIBUS MPI device (with firmware and defined system channel) once more, proceed as described hereafter:

all

1. Under **Device Selection** select *all*.
2. Select **Scan**.
 - In the table all devices are displayed, which are attainable in the network and which can be connected to a DTM via the preselected drivers.
3. Check the appropriate device.

Device Assignment

Scan progress: 5/5 Devices (Current device: -)

Device selection: all Scan

	Device	Hardware-Port 0/1/2/3	Slot number	Serial number	Driver	Channel Protocol	Access path
<input checked="" type="checkbox"/>	Device Cl.*	-/-/PROFIBUS/-	1	20148	CIFX Device Driver	PROFIBUS-DP Master	...\cifX3_Ch0
<input type="checkbox"/>	Device Cl.*	-/-/DeviceNet/-	n/a	20027	CIFX Device Driver	DeviceNet Master	...\cifX1_Ch0
<input type="checkbox"/>	Device Cl.*	-/-/-/-	n/a	20058	netX Driver	Undefined Undefined	...\192.168....
<input type="checkbox"/>	Device Cl.*	Ethernet/Ethernet/-/-	n/a	20288	CIFX Device Driver	PROFINET IO Device	...\cifX2_Ch0
<input type="checkbox"/>	Device Cl.*	-/-/CANopen/-	n/a	20022	CIFX Device Driver	Undefined Undefined	...\cifX0_SYS

Access path: {368BEC5B-0E92-4C0E-B4A9-64F62AE7AAFA}\cifX3_Ch0

Figure 15: Device Assignment - Selecting the Device (* The name of the device class is displayed.) – Example for Devices with and without Firmware / one Device is selected



Note: After the firmware download has been completed, for the devices which have been detected via the **cifX Device Driver** the following data are displayed:

- In the column **Channel Protocol**: the data for the firmware for the used channel
- In the column **Access path** or under **Access path** (below in the dialog pane): the data: ...cifX[0toN]_Ch[0to3].
 cifX[0toN] = board number 0 to N
 Ch[0to3] = channel number 0 to 3

4. Select **Apply**, to apply the selection.
5. Or select **OK**, to apply the selection and to close the DTM interface dialog.
6. Connect the DTM to the device using the context menu (right mouse click).

Or:

suitable only

1. Under **Device Selection** select *suitable only*.
2. Select **Scan**.
- In the table all devices are displayed, which can be connected to the PROFIBUS MPI DTM via the preselected drivers.
3. Check the appropriate device.

Device Assignment

Scan progress: 5/5 Devices (Current device: -)

Device selection: suitable only Scan

	Device	Hardware Port 0/1/2/3	Slot number	Serial number	Driver	Channel Protocol	Access path
<input checked="" type="checkbox"/>	Device Cl*	-/-/PROFIBUS/-	1	20148	CIFX Device Driver	PROFIBUS-DP Master	...\cifX3_Ch0

Access path: {368BEC5B-0E92-4C0E-B4A9-64F62AE7AAFA}\cifX3_Ch0

Figure 16: Device Assignment - Selecting the Device (* The name of the device class is displayed.) – Example for a device with firmware / one Device is selected



Note: After the firmware download has been completed, for the devices which have been detected via the **cifX Device Driver** the following data are displayed:

- In the column **Channel Protocol**: the data for the firmware for the used channel
- In the column **Access path** or under **Access path** (below in the dialog pane): the data: ...\\cifX[0toN]_Ch[0to3].
cifX[0toN] = board number 0 to N
Ch[0to3] = channel number 0 to 3

4. Select **Apply**, to apply the selection.
5. Or select **OK**, to apply the selection and to close the DTM interface dialog.
6. Connect the DTM to the device using the context menu (right mouse click).



For further information how to establish an online connection from the PROFIBUS MPI DTM to the PROFIBUS MPI device, refer to section *Connecting/Disconnecting Device* on page 81.

4.5 Firmware Download

Using the **Firmware Download** dialog a firmware can be transferred to the device.



Note: Prior to the firmware download, you must select the driver and the PROFIBUS MPI device (with or without firmware) and the device must be assigned to the hardware.



For further information refer to section *Overview Settings* on page 31.

To load the firmware to the device:

1. In the navigation area select **Settings > Firmware Download**.

➤ The dialog **Firmware-Download** pane is displayed.

Figure 17: Firmware Download

Element	Meaning
Name	The path and name of the firmware file selected are displayed.
Version	The version and build version of the firmware file selected are displayed.
Browse...	Via 'Browse...' you can select the firmware file for the download.
Download	Via 'Download' you can download the firmware to the device.

Table 17: Parameter Firmware Download

➤ Select **Browse**.

Device is not assigned to the Hardware

If the device is not assigned to the Hardware, the error message 'The device is not assigned to the hardware!' is displayed:

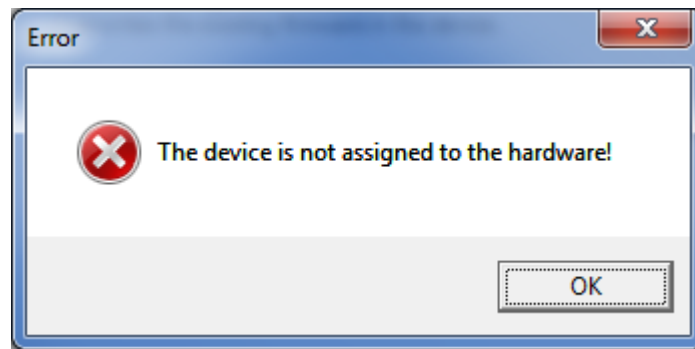


Figure 18: Error Message 'The device is not assigned to the hardware!'

- Click **OK** and select and assign the PROFIBUS MPI device as described in section *Device Assignment*.

Device is assigned to the Hardware

- The selection window **Select Firmware File** is displayed.
- Enlarge the selection window to view the columns **Hardware** and **Version**.

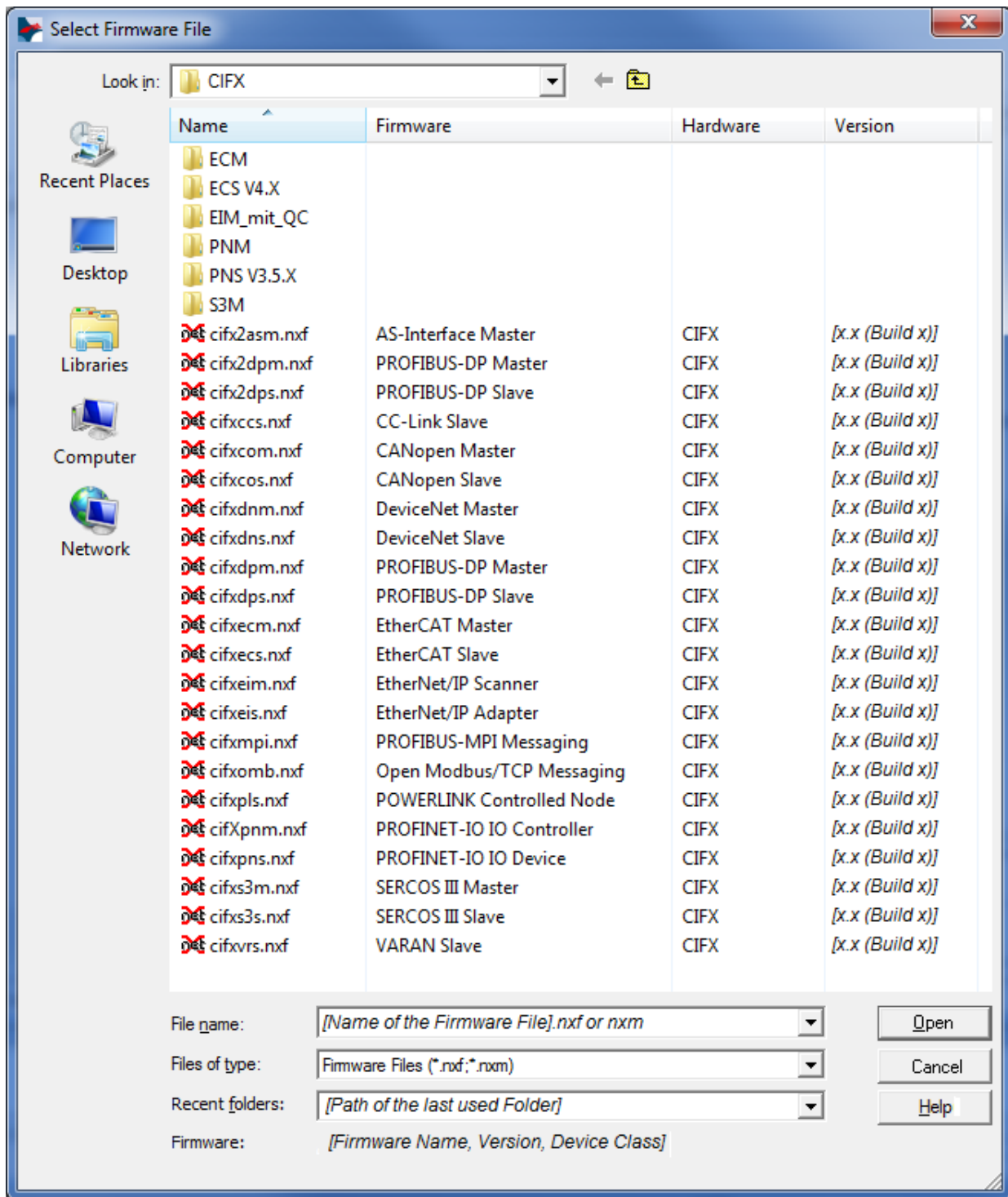


Figure 19: Window 'Select Firmware File' (Example CIFX)

Parameter	Meaning	Range of Value / Default Value
Column Name	File name of the firmware file To sort the entries of the window Select Firmware File by name click to the column head Name .	nxf, nxm
Column Firmware	Name of the firmware (consisting of the protocol name and protocol class)	
Column Hardware	Device class of the associated hardware	e. g. CIFX, COMX, COMX 51, NETJACK 10, NETJACK 50, NETJACK 51,

		NETJACK 100, NETTAP 50 (Gateway), NETTAP 100 (Gateway), NETBRICK 100 (Gateway)
Column Version	Firmware version	x.x (build x)
Tooltip	To view the tooltip information move with the mouse pointer over the selected firmware line. <div style="border: 1px solid gray; padding: 5px; width: fit-content;"> Type: Hilscher firmware file for netX-based targets (NXF) Size: 563 KB Date of change: 2013/03/26 11:10 </div>	
Files of Type	„All Files (*.*)“ if before in the Device Assignment pane under Device selection all was selected. „Firmware Files (*.nxm)“ or <i>Firmware Files (*.nxf)</i> if before in the Device Assignment pane under Device selection <i>suitable only</i> was selected.	All Files (*.*), Firmware Files (*.nxm), Firmware Files (*.nxf)
Recent folders	Path of the recently opened folder	
Firmware	As soon as the firmware file has been selected, under Firmware the name, the version and the build version as well as the device class for the selected firmware is displayed.	Name, Version, Build Version, Device Class for the selected firmware
Help	Button, to open the online help of the DTM.	

Table 18: Parameters Select Firmware File



Further descriptions to the selection window **Select Firmware File** are included in the context sensitive help (**F1** key) of the Microsoft Corporation.



Note: After in the **Device Assignment** pane under **Device selection** *all* or *suitable only* has been set, during a subsequent firmware download in the selection window **Select Firmware File** the following data are displayed or set:

(for list box entry →)	all	suitable only
In the selection window Select Firmware File :	all files from the selected folder	only firmware files from the selected folder
Under Files of Type *:	„All Files (*.*)“	„Firmware Files (*.nxm)“, „Firmware Files (*.nxf)“
Validation:	A restricted validation will be performed if the selected firmware is applied for the download.	A validation is made whether the firmware file is suitable for the PROFIBUS MPI DTM.

*These settings in the selection window **Select Firmware File** can also be changed manually.

3. In the selection window mark the firmware file to be loaded using the mouse.

➤ In the selection window under **Firmware** the name and the version of the firmware are displayed.

4. In the selection window select the **Open** button.

Validation

➤ A validation is made, whether the selected firmware file is suitable for the PROFIBUS MPI device.

Invalid Firmware

NOTICE

Invalid Firmware

Loading invalid firmware files could render your device unusable.

➤ Only proceed with a firmware version valid for your device.

➤ If a firmware file is selected, which is not valid for the assigned device, the request **Select Firmware File** will be displayed.
'Invalid firmware for assigned device!

[detailed explication]

Shall firmware file nevertheless be applied for the download?'



Figure 20: Request Select Firmware File - Example Invalid Firmware

➤ Answer to the request with **No** and select a valid firmware.

➤ The selection window is closed.

Valid Firmware

➤ The selection window is directly closed (without dialog).

5. Start firmware upgrade.

⚠ WARNING

Communication Stop caused by Firmware Update, faulty System Operation possible, Overwriting of Firmware or Loss of Device Parameters

Before you initiate a firmware download process, while the bus is still in operation status:

- Stop the application program.
- Make sure that all network devices are placed in a fail-safe condition.

NOTICE

Firmware Corruption or Loss of Parameters caused by Power Disconnect during Firmware Download

- During firmware download process, do not interrupt the power supply to the PC, or to the device and do not perform a reset to the device!
- In the dialog pane **Firmware Download** click to the **Download** button, to download the firmware.
- The request **Do you really want to download the firmware?** is displayed.

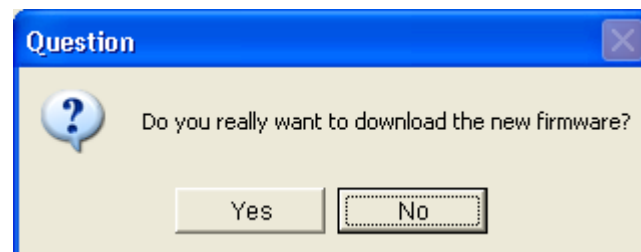


Figure 21: Request - Do you really want to download the firmware?

6. Click **Yes**.

- If you are sure, that you have selected the appropriate firmware file answer to the request with **Yes** otherwise with **No**.
- During the download a progress bar is displayed ('Download active, device performs initialization...'), in the status line a clock / green hook symbol is displayed and in the dialog pane **Firmware Download** Download is grayed out.

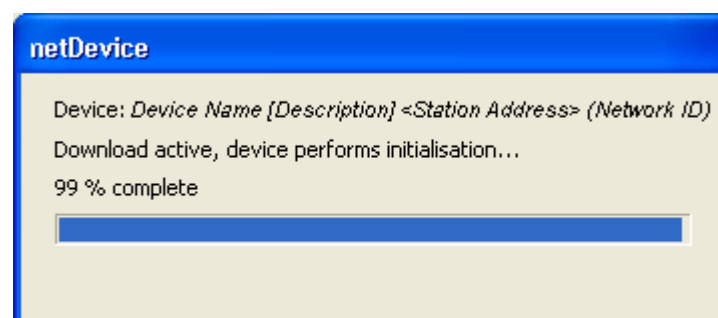


Figure 22: Firmware Download - Progress Bar

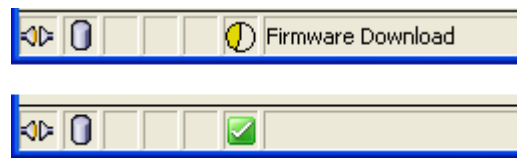


Figure 23: Clock Symbol and Hook Symbol green

- ⇒ In the **Firmware-Download** dialog pane the path and name as well as the version of the selected firmware file are displayed.

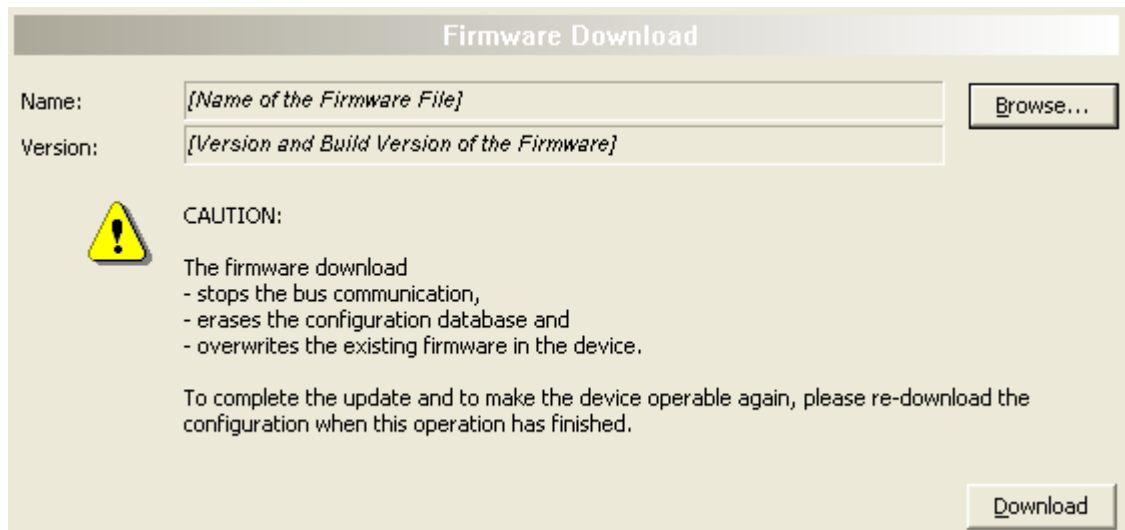


Figure 24: Firmware Download – Download

5 Configuration

5.1 Overview Configuration

Configuration Dialog Panes

The table below gives an overview for the **Configuration** dialog panes descriptions:

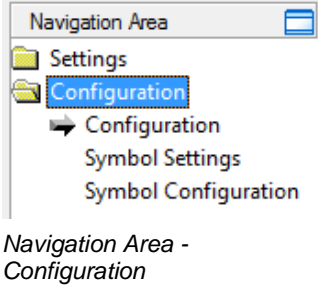
PROFIBUS MPI DTM	Descriptions of Steps	Folder Name / Section	Page
	Steps for 'Configuration'		58
	Configuring PROFIBUS MPI Bus Parameters		59
		<i>Configuration</i>	60
	Process Data Configuration (for PLC-Coupling)		64
	<ul style="list-style-type: none"> • <i>Import and customize a STEP7 Process Data Configuration</i> 		64
	<ul style="list-style-type: none"> • <i>Creating a Process Data Configuration without STEP7 Project</i> 		65
		<i>Symbol Settings</i>	66
		<i>Symbol Configuration</i>	69

Table 19: Descriptions of the Dialog Panes Configuration



Notice the descriptions in the section *Configuration Steps* on page 24.



Note: In order to transfer the configuration to the PROFIBUS MPI device, download the data of the configuration parameters in the PROFIBUS MPI device. See section *Download Configuration* on page 82.

5.2 Steps for 'Configuration'

To configure the PROFIBUS MPI device, you must configure the PROFIBUS MPI bus parameters and download them to the device.

If your project is coupled to a PLC via PROFIBUS MPI, you must also create the PLC signal configuration and set the signals for additional processing. Therefore you can import and customize a STEP 7 project in the PROFIBUS MPI DTM or alternatively configure the PLC signals without STEP7 import directly in the process data-editor of the DTM. In the process data-editor, you define all the PLC signals to which the OPC server will access later. The configuration of these signals then is provided for the additional processing in a process-data XML file.

Configure and download PROFIBUS MPI Busparameters

To configure the bus parameters of the PROFIBUS MPI device using the PROFIBUS MPI DTM, you must perform the following steps.

1. Configuration of the PROFIBUS MPI Bus Parameters.
2. Download of the PROFIBUS MPI Bus Parameters.

For PLC-Coupling: Signal Configuration with / without STEP7 Project

Import and configure STEP7 signals for PROFIBUS MPI:

1. Import the STEP 7 Project.
2. Configure STEP7 Signals with the Process Data-Editor.
3. Select signals for the additional processing.

Or:

Configure PLC signals for PROFIBUS MPI without STEP7 project:

1. Reset „Use PLC Program“.*
- * If an imported STEP7 project shall not be used.
2. Configure Signals without STEP 7 Project.
3. Select all signals for the additional processing.

Introducing Instructions Step by Step



See descriptions in the sections:

- Configuring PROFIBUS MPI Bus Parameters, page 59,
- Import and customize a STEP7 Process Data Configuration, page 64,
- Creating a Process Data Configuration without STEP7 Project, page65 .

5.3 Configuring PROFIBUS MPI Bus Parameters

The following steps are required to configure the parameters of the PROFIBUS MPI device using the PROFIBUS MPI DTM:

Configuration

1. Set the PROFIBUS MPI bus parameters.
 - Select **Configuration > Configuration** in the navigation area.



Note

- Set the Station Address specifically for the PROFIBUS MPI device.
- The baud rate must be set necessarily.
- A change of bus parameters can cause communication failure.

2. Save the Bus Settings.
 - Save the bus parameters and close the MPI DTM configuration dialog via **OK**.

OR for projects with PLC-coupling:

- Save the bus parameters via **Apply**.

Configuration Download to the PROFIBUS MPI Device

Adhere to the necessary safety precautions to prevent personnel injury and property damage.



Note: In order to transfer the configuration to the PROFIBUS MPI device, download the data of the configuration parameters in the PROFIBUS MPI device. See section *Download Configuration* on page 82.

Further Information



For more information refer to section *Configuration* on page 60 of this document.

5.4 Configuration

In the **Configuration** dialog you can configure the bus parameters of a PROFIBUS MPI device. The current PROFIBUS MPI bus parameters required for the communication with the PLC unit, you can access and set offline.



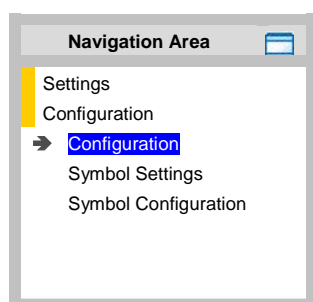
Note

- Set the Station Address specifically for the PROFIBUS MPI device.
- The baud rate must be set necessarily.
- A change of bus parameters can cause communication failure.

Changes of the bus parameters are transmitted only after downloading the configuration into the device. See section *Download Configuration* on page 82.

How to do

- Select **Configuration > Configuration** in the navigation area.



- In the **Configuration** dialog the current settings of the bus parameters (offline bus parameters) are displayed. Here you can adjust all parameters which are required for communicating with the PLC unit.

Configuration

Interface

① Bus Startup: Automatic

② Watchdog Time: 1000 ms

Bus

③ Station Address: 1

④ Baud Rate: 187.5 kBit/s

⑤ Slot Time: 415 tBit

⑥ Min. Station Delay Responder: 60 tBit

⑦ Max. Station Delay Responder: 400 tBit

⑧ Quiet Time: 1 tBit

⑨ Setup Time: 1 tBit

⑩ Target Rotation Time: 10000 tBit

⑪ GAP Actualization Factor: 20


⑫ Highest Station Address: 31

⑬ Max. Retry Limit: 1

Default

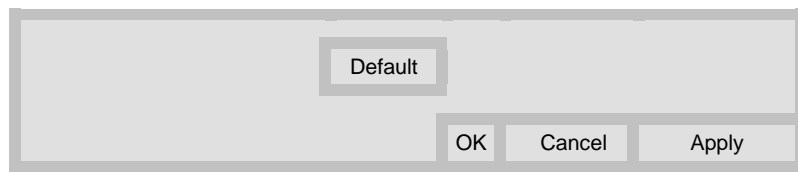
Figure 25: MPI Bus Configuration

- Set the configuration of the PROFIBUS MPI bus parameters.

Parameter	Meaning	Range of Value/ Value
Interface		
① Bus Startup	Communication start application controlled or automatic	Application controlled, Automatic (Default)
② Watchdog Time [ms]	Watchdog time within which the device watchdog must be retriggered from the application program while the application program monitoring is activated. When the watchdog time value is equal to 0 the application program monitoring is deactivated.	[0, 20 ... 65535] ms, Default = 1000 ms, 0 = Off
Bus		
③ Station Address	PROFIBUS MPI Address of the device.	0 ... 126, Default: 1
④ Baud Rate	PROFIBUS MPI Baud Rate Indicates the velocity of transmission: Number of bits per second. <div>  Important! <ul style="list-style-type: none"> - The Baud Rate setting is <u>mandatory</u>. - The option <i>Auto Detect</i> is only possible if the communication is initiated by another bus participant. </div>	9,6 kBit/s, 19,2 kBit/s, 31,25 kBit/s, 45,45 kBit/s, 93,75 kBit/s, 187,5 kBit/s, 500 kBit/s, 1,5 MBit/s, 3 MBit/s, 6 MBit/s, 12 MBit/s, Auto Detect, Default: 187,5 kBit/s

Parameter	Meaning	Range of Value/ Value
⑤ Slot Time	Slot Time (T_{SL}) 'Wait for receipt' – monitoring time of the Senders (Requestor) of telegram for the acknowledgement of the recipient (Responder). After expiration, a retry occurs in accordance with the value of 'Max. telegram retries'.	37 ... 16383 tBit, Default: 415 tBit
⑥ Min. Station Delay Responder	Minimum Station Delay of Responders (min T_{SDR}) This is the shortest time period that must elapse before a remote recipient (Responder) may send an acknowledgement of a received query telegram. The shortest time period between receipt of the last Bit of a telegram to the sending of the first Bit of a following telegram.	1 ... 1023 tBit, Default: 60 tBit
⑦ Max. Station Delay Responder	Maximum Station Delay of Responders (max T_{SDR}) This is the longest time period that must elapse before a Sender (Requestor) may send a further query telegram. Greatest time period between receipt of the last Bit of a telegram to the sending of the first Bit of a following telegram. The Sender (Requestor, Master) must wait at least for this time period after the sending of an unacknowledged telegram (e.g. Broadcast only) before a new telegram is sent.	1 ... 1023 tBit, Default: 400 tBit
⑧ Quiet Time	Quiet Time (T_{QUI}) This is the time delay that occurs for modulators (Modulator-trip time) and Repeaters (Repeater-switch time) for the change over from sending to receiving.	0 ... 127 tBit, Default: 1 tBit
⑨ Setup Time	Setup Time (T_{SET}) Minimum period "reaction time" between the receipt of an acknowledgement to the sending of a new query telegram (Reaction) by the Sender (Requestor).	1 ... 255 tBit, Default: 1 tBit
⑩ Target Rotation Time	Target Rotation Time (T_{TR}) Pre-set nominal Token cycling time within the Sender authorization (Token) will cycle around the ring. How much time still is available for sending data telegrams is dependent on the difference between the nominal and the actual token cycling time.	≥ 255 tBit, Default: 10000 tBit
⑪ GAP Actualization Factor	GAP Actualization Factor (G) Factor for determining after how many Token cycles an added participant is accepted into the Token ring. After expiry of the time period $G \cdot T_{TR}$, the Station searches to see whether a further participant wishes to be accepted into the logical ring.	1 ... 255, Default: 20
⑫ Highest Station Address	Highest Station Address (H_{SA}) Station address of the highest active (Master) station.	1 ... 126, Default: 31
⑬ Max. Retry Limit	Max number of telegram retries (Max_Retry_Limit) Maximum number of repetitions allowed for reaching a station.	1 ... 8, Default: 1
Bit times: All times for the Bus parameters are given in Bit times. The Bit time tBit is the result of the reciprocal of the Baud rate: $tBit = 1 / \text{Baud rate}$ (Baud rate in Bit/s) The conversion from milliseconds into a Bit time is shown in the following formula: Bit time = Time [milliseconds] * Baud rate		

Table 20: Parameters - PROFIBUS MPI

Default, Apply, OK, Cancel in the „Configuration” Dialog

- Reset the bus settings to their default value via **Default**.
- Or save the bus settings via **Apply**.
- The PROFIBUS MPI DTM configuration dialog remains opened.
- Or save the bus settings via **OK**.
- The PROFIBUS MPI DTM configuration dialog is closed.
- Or undo the bus settings via **Cancel**.
- The PROFIBUS MPI DTM configuration dialog is closed.

5.5 Process Data Configuration (for PLC-Coupling)

For projects with a PLC coupling, you can

- **either** import and customize the process data configuration as STEP7 project
- **or** you can create the process data configuration manually without STEP7 project.

5.5.1 Import and customize a STEP7 Process Data Configuration

Configure the signals for PROFIBUS MPI with the STEP7 project:



Important! All changes made in the **Symbol Configuration** dialog are lost when the STEP7 project is imported repeatedly (new-import) and the changes do not affect the function of the PLC in which the STEP7 program was loaded.

1. Select and import STEP7 project
 - Select **Configuration > Symbol Settings** in the navigation area.
 - In the **Symbol Settings** dialog check **General > Use PLC Program**.
 - Select a STEP7 project via **Browse....**
 - Import the project via **Open**.
 - Save the project via **Apply**.
2. Customize the imported STEP7 Signal Configuration.
 - Select **Configuration > Symbol Configuration** in the navigation area.



Important! Under **Station Address** enter the PLC station address. The station address of the STEP7 project may not be used here.

- Respectively customize the signal configuration.
3. Select the PLC signals for the additional processing.
 - Under **SCADA** check all signals for the additional processing.
 - Close the PROFIBUS MPI DTM configuration dialog via **OK**.



Further information you will find in the sections of this document as listed hereafter: *Import the STEP 7 Project* on page 66 and *Configure STEP7 Signals with the Process Data-Editor* on page 69.

5.5.2 Creating a Process Data Configuration without STEP7 Project

Configure the signals for PROFIBUS MPI without a STEP7 project.

1. Reset Import Settings (if set).
 - Select **Configuration > Symbol Settings** in the navigation area.*
 - Remove the hook under **Use PLC Program**.*

*If an imported STEP7 project shall not be used.



Important! If you remove the hook **Use PLC Program**, any settings on the signal configurations made in the **Symbol Configuration** dialog will be lost. Thereby also any signal configurations in the OPC server will be lost.

2. Create the signal configuration manually.
 - Select **Configuration > Symbol Settings** in the navigation area.
 - Create in the **Symbol Configuration** dialog the signal configuration for the PROFIBUS MPI device. E. i., configure the modules and signals.



Important! Under **Station Address** enter the PLC station address. It is not allowed to use the station address of the STEP7 project here.

- In the first line for *Device_1* enter the **Station Address**.
 - In the second line for *Module_1* select the **Module Type**.
 - In the third line for *Singal_1* configure **Access**, **Memory area**, **Data Type**, **Offset** and **Bit-Number**.
 - If necessary, add and configure additional modules and signals.
3. Select the PLC signals for the additional processing.
 - Under **SCADA** check all signals for the additional processing.
 - Close the PROFIBUS MPI DTM configuration dialog via **OK**.



Further information you will find in the sections of this document as listed hereafter: *Reset „Use PLC Program“* on page 68 and *Configure Signals without STEP 7 Project* on page 68.

5.6 Symbol Settings

In the **Symbol Settings** dialog you can select a STEP7 project file for the reason of data import (see section *Import the STEP 7 Project* on page 66).

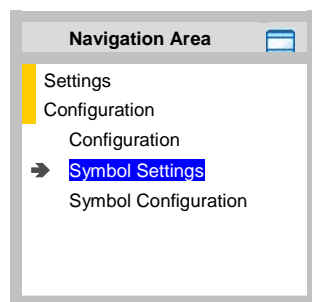
If no STEP 7 project shall be imported and if previously a STEP7 project has been imported that should not be used, these import setting must be reset (see section *Reset „Use PLC Program“* on page 68).

5.6.1 Import the STEP 7 Project

In a project with direct PLC-coupling via PROFIBUS MPI, the signals from the STEP7 project will be used for the additional processing.

How to proceed

- To import the STEP7 project file, select **Configuration > Symbol Settings** in the navigation area.



- In the **Symbol Settings** dialog click and check **Use PLC Program** ①.

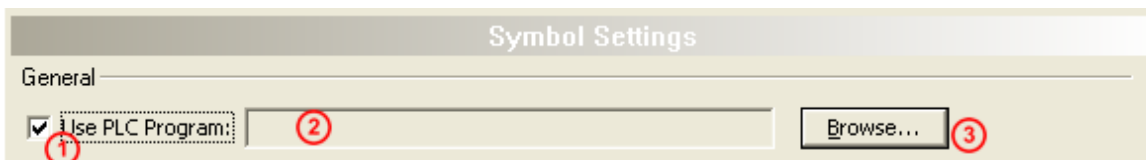


Figure 26: Browse STEP7 Project File to import it



Important! If you have made in the **Symbol Configuration** dialog the settings for the signal configuration, in the **Symbol Settings** dialog you may not uncheck **Use PLC Program**. Otherwise any settings on the signal configurations made will be lost. Thereby also any signal configurations in the OPC server will be lost.

- In the **Use PLC Program** ② field enter the directory path and the name for the STEP7 project file.

Or

- Click **Browse...** ③.

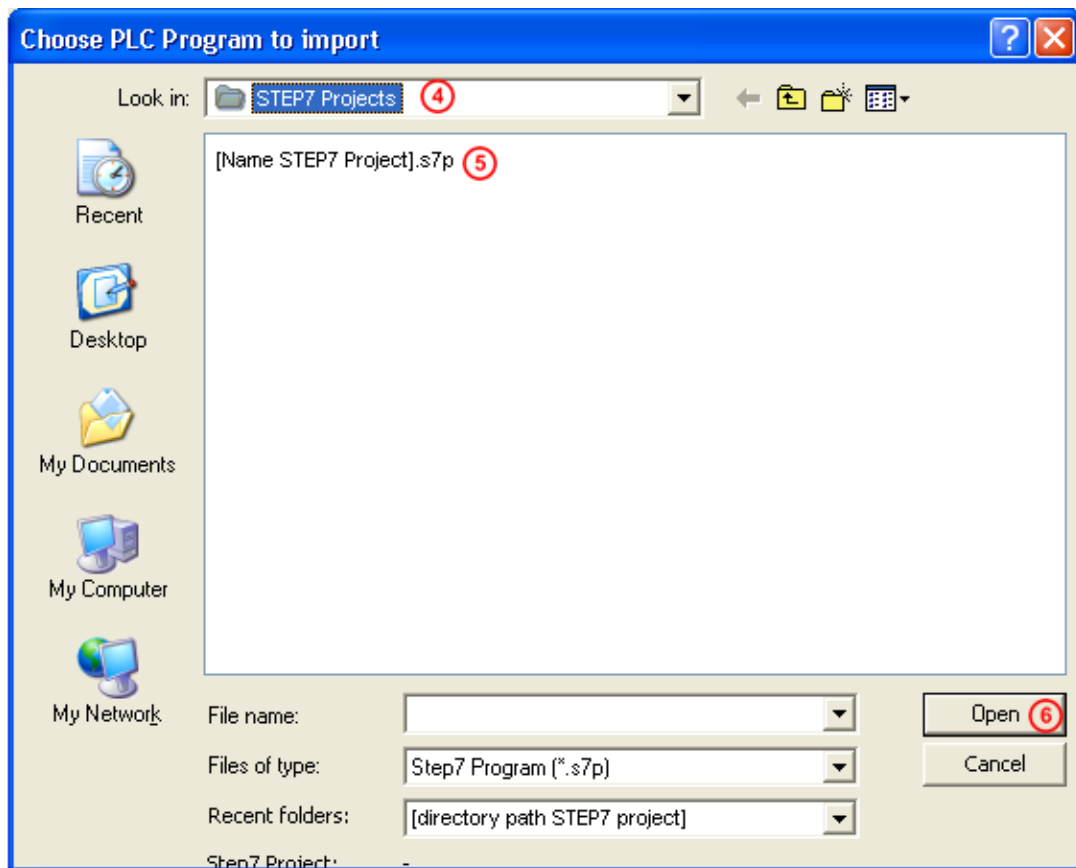


Figure 27: File Selection Dialog, select and open STEP7 Project File

- Select the STEP7 project file in the file selection dialog; see ④, ⑤.
- Click **Open** ⑥.
- The file selection dialog is closed and in the dialog **Symbol Settings** the name of the selected STEP7 project file is displayed ⑦.

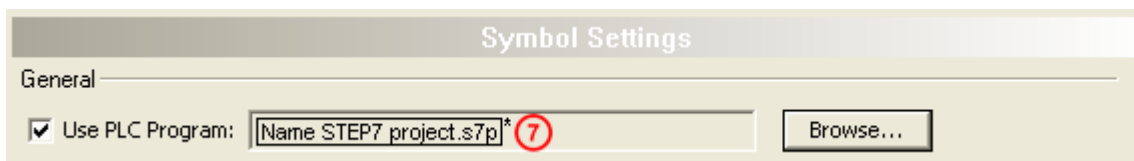


Figure 28: Import STEP7 Project

Default, Apply, OK, Cancel in the „Symbol Settings ” Dialog



- Import the STEP7 project data via **Apply**.
- The PROFIBUS MPI DTM configuration dialog remains opened.
- Or import the STEP7 project data via **OK**.
- The PROFIBUS MPI DTM configuration dialog is closed.
- Or undo the STEP7 project data via **Cancel**.
- The PROFIBUS MPI DTM configuration dialog is closed.

5.6.2 Reset „Use PLC Program“

You need to reset the import setting **Use PLC program** only, if you want to discard a signal configuration imported via a STEP 7 project file.



Important! If you uncheck **Use PLC Program**, all the configuration settings for signal configurations made in the **Symbol Configuration** dialog are lost. So all signal configurations in the OPC Server are lost.

How to proceed

- To reset the import settings **Configuration > Symbol Settings** in the navigation area.
- Click an uncheck **Use PLC Program** ①.

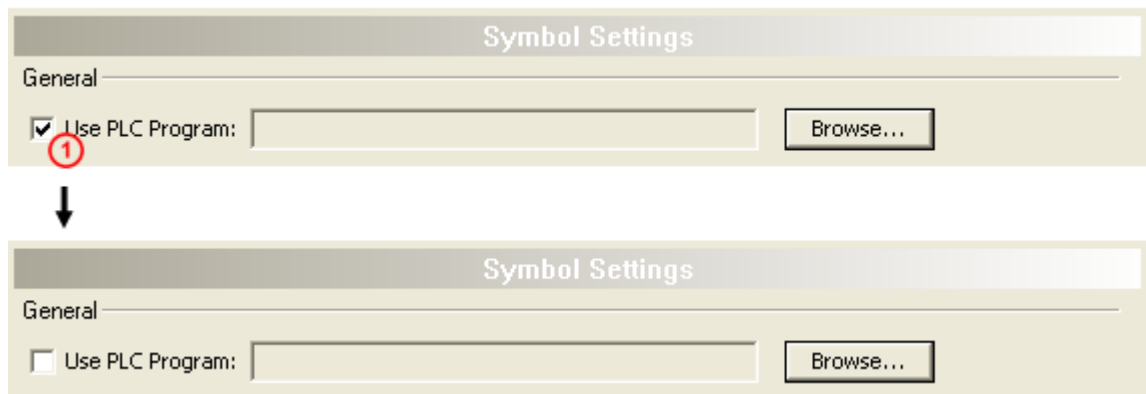
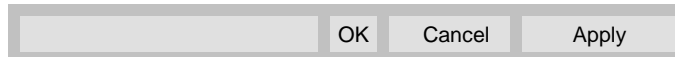


Figure 29: Reset „Use PLC Program“

Default, Apply, OK, Cancel in the „Symbol Settings ” Dialog



- Save the new-import settings via **Apply**.
 - The PROFIBUS MPI DTM configuration dialog remains opened.
- Or save the new-import settings via **OK**.
 - The PROFIBUS MPI DTM configuration dialog is closed.
- Or undo the new-import settings via **Cancel**.
 - The PROFIBUS MPI DTM configuration dialog is closed.

5.7 Symbol Configuration

For the data transfer from a PLC and for the process data configuration you can use the **Symbol Configuration** dialog in the PROFIBUS MPI DTM as an Editor (Process Data-Editor). The dialog enables a data transfer from a STEP7 project and additionally serves as process data interface for transferring data to an OPC client.

If you import the process data configuration of a STEP 7 project, the **PDI Editor Table** lists the on the PROFIBUS MPI device connected MPI-enabled device (mostly a SPS unit) and the on the device configured modules and the input signals and output signals. In the process data-editor you can alternatively configure a complete data transfer from a PLC, without a STEP7 project. Therefore you must manually configure the modules and input signals and output signals of the SPS unit. To the modules and measuring signals symbolic names can be assigned. Finally you must select in the process data-editor which signaling data must be available on the OPC server for the processing.

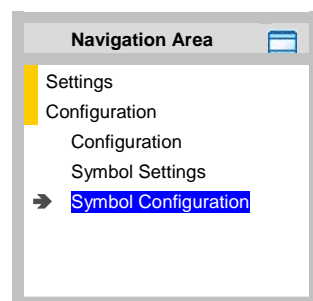
Detailed descriptions of the process data configuration can be found in sections *Configure STEP7 Signals with the Process Data-Editor* on page 69 and *Configure Signals without STEP 7 Project* on page 78.

5.7.1 Configure STEP7 Signals with the Process Data-Editor

For the data transfer from a PLC and to configure the PLC signals on the PROFIBUS MPI device via a STEP7 project, in the PROFIBUS MPI DTM you first need to import a STEP7 project file, as described in section *Import the STEP 7 Project* on page 66. Customize the imported signal configuration then in the process data-editor (**Symbol Configuration** dialog), as described below.

How to proceed in the Process Data-Editor

- Open the process data-editor via **Configuration > Symbol Configuration**.



- The **Symbol Configuration > PDI Editor Table** dialog is displayed.

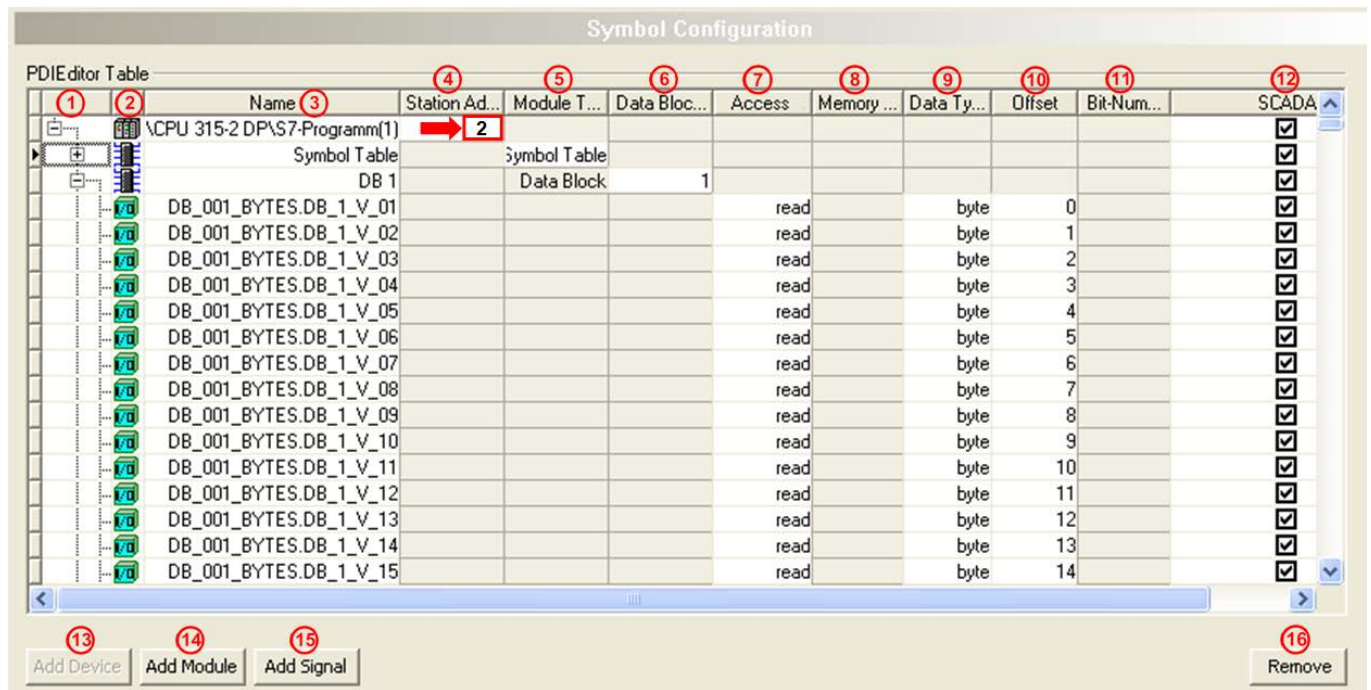





Figure 30: STEP7 Signal Configuration (Example)

PDI Editor Table	Meaning	Range of Value/ Value
① Tree Structure	Shows the structure of the „Devices“, „Modules“ and „Signals“.	
② Symbol	Symbol for „Device“ =  , „Module“ =  or „Signal“ = 	
③ Name	Editable name for the „Devices“, „Modules“ and „Signals“: With STEP7 import the names of the STEP7 program, of the symbol table or of the data block and the signal are displayed. Without import the default names <i>Device</i> , <i>Module</i> , <i>Signal</i> are displayed.	
④ Station Address	(only for devices) PLC address of the PROFIBUS MPI device ! Important! Here the <u>PLC station address</u> must be entered. The station address of the STEP7 project may not be used here.	1 ... 126
⑤ Module Type	(only for modules) Module type <i>Symbol Table</i> : The STEP7 symbol table is used. The S7 memory areas are valid. Module type <i>Data Block</i> : The data blocks DB1 , DB2 ... are used. The memory areas of the data blocks are valid.	<i>Symbol Table</i> , <i>Data Block</i>
⑥ Data Block Number	(only for modules) Number of the data block, (only editable if „Module Type“ = <i>Data Block</i>)	
⑦ Access	(only for signals) Indicates, if the OPC client can „read“, „write“ or „read/write“ the value of the signal..	<i>read</i> , <i>write</i> , <i>read_write</i>
⑧ Memory area	(only for signals) Memory areas of the PLC (S7); (can only be selected, if „Module Type“ = <i>Symbol Table</i>) Selectable memory areas: I = Input Q = Output M = Merker C = Counter T = Timer	<i>I</i> , <i>Q</i> , <i>M</i> , <i>C</i> , <i>T</i>
⑨ Data Type	(only for signals) Option for the data type of a signal. For the data type <i>bit</i> also the Bit-Number must be selected. Details on the STEP7 data types are listed in section <i>STEP7 Data Types</i> page 76.	<i>bit</i> , <i>byte</i> , <i>word</i> , <i>signed16</i> , <i>dword</i> , <i>signed32</i> , <i>real32</i> , <i>string</i>





PDI Editor Table	Meaning	Range of Value/ Value
⑩ Offset	(only for signals)  Important! "Offset" should never be without a value for a signal.	
⑪ Bit-Number	(only for signals) Exact addressing of a bit within a byte. (only editable if "Data Type" = bit)	
⑫ SCADA [Supervisory Control and Data Acquisition]	(only for signals) Option which module or signal data will be made available for processing at the OPC server. Alternatively single or all signals of a data block can be selected. The signals selected here are transmitted also to the item server of the PROFIBUS MPI device and must be considered when calculating the maximum number of transferable item server signals.	checked, unchecked
⑬ Add Device	Only enabled, if the device  was deleted. ➤ Then click on Add Device . ⇒ A <u>signal device (S7)</u> is added.	
⑭ Add Module	➤ First, click on the device  to configure. ➤ Then click Add Module . ⇒ A <u>new symbol table (one per device)</u> or a <u>new data block</u> is inserted at the end of the module list of the selected device.	
⑮ Add Signal	➤ Click on the first module  to be configured. ➤ Then click on Add Signal . ⇒ The <u>new signal</u> is added to the module at the end of its signal list.	
⑯ Remove	➤ First click to the signal object to remove (device, module, signal). ➤ Then click Remove . ⇒ The selected signal object is removed.	
Error Messages	Error messages of the process data-editor can be found in section <i>Error Messages of the Process Data Editor</i> on page 73 .	

Table 21: Explanations PDI Editor Table

- Under **Station Address** **④** enter the PLC Station Address.
- Respectively customize the signal configuration via **⑭ Add Module**, **⑮ Add Signal** and **⑯ Remove**, as described in section *Configure Signals without STEP 7 Project* on page 78.
- Under **SCADA** check the signals for the additional processing.

Further see next page.

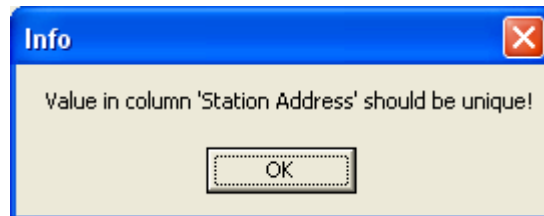
Default, Apply, OK, Cancel in the „Symbol Settings ” Dialog

- Save the new-import settings via **Apply**.
- ↻ The PROFIBUS MPI DTM configuration dialog remains opened.
- ↻ Or save the new-import settings via **OK**.
- ↻ The PROFIBUS MPI DTM configuration dialog is closed.
- Or undo the new-import settings via **Cancel**.
- The PROFIBUS MPI DTM configuration dialog is closed.

5.7.2 Error Messages of the Process Data Editor

The following error situations may occur when configuring using the Process Data-Editor:

1. **Input Error *Station Address*** ^④ (compare figure *STEP7 Signal Configuration (Example)* on page 70).
 - If an already used station address has been used as station address again, the following error message will appear:



Value in column „Station Address“ should be unique!

Figure 31: Error Message Box indicating a non-unique Station Address

- Click at **OK**.
- Enter in the **PDI Editor Table** under ***Station Address*** ^④ a unique value for the station address. This value must not have been used within the network configuration for any other device.

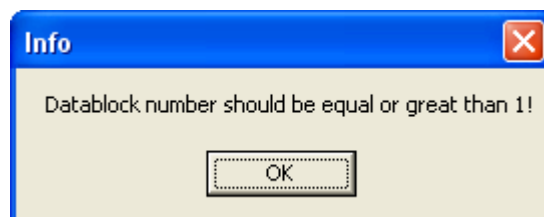
2. **Input Error *Data Block Number*** ^⑥ (compare figure *STEP7 Signal Configuration (Example)* on page 70).
 - If the input field of the data block number is empty, the following message box will be displayed:



Data Block Number should not be empty!

Figure 32: Error Message Box indicating an empty Data Block Number has been specified

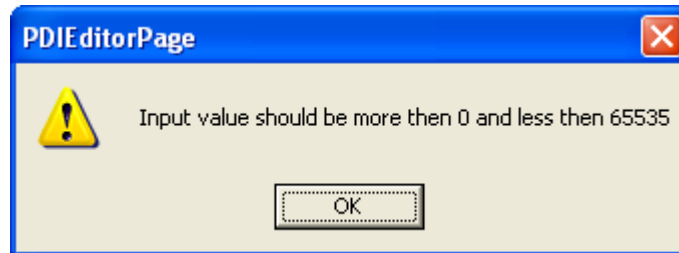
- Attempts to specify the value 0 for the data block number will cause issuing of this error message:



Data Block Number should be equal or greater than 1!

Figure 33: Error Message Box indicating a Data Block Number equal to 0

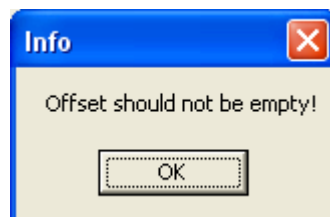
- Attempts to specify a negative value as data block number will be suppressed.
- Attempts to specify a value exceeding the allowed address range (0 to 65535) of the data block number will cause issuing of this error message:



**Input value
should be more
then 0 and less
then 65535**

Figure 34: Error Message Box indicating a Violation of the Range of Values allowed for the Data Block Number

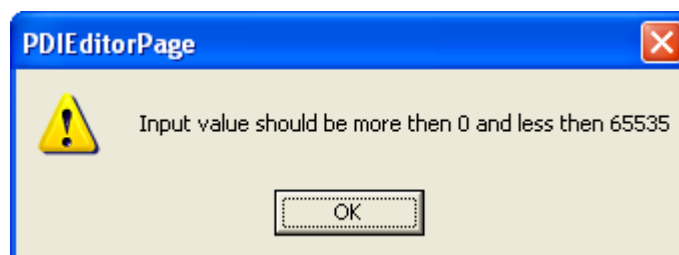
- Click at **OK**.
 - Specify in the **PDI Editor Table** under **Station Address** ④ for the station address a correct value of the defined range between 0 and 65535.
3. **Input error Offset** ⑩ (compare figure *STEP7 Signal Configuration (Example)* on page 70).
- If the input field of the offset is empty, the following message box will be displayed:



Offset should not be empty!

Figure 35: Error Message Box indicating an empty Offset Field

- Attempts to specify a negative value as Offset will be suppressed.
- Attempts to specify a value violating the allowed address range for Offset (0 to 65535) will cause issuing of this error message:



**Input value should
be more then 0
and less then
65535**

Figure 36: Error Message Box indicating a Violation of the Range of Values allowed for the Offset

5.7.3 Data Loss for New-Import, How to proceed for the Data Update

Note the following details to avoid data loss when working with process data-editor and to consider additional changes of data in a way that makes sense.

Take care, Changes can be lost when a New-Import is made



Important! All changes made in the **Symbol Configuration** dialog are lost when the STEP7 project is imported repeatedly (new-import)! Thereby also any signal configurations in the OPC server will be lost.

Changes made in the **Symbol Configuration** dialog do not affect the function of the PLC in which the STEP7 program was loaded.

How to handle in Case of additional Changes of the STEP7 Project

When changes are made to the imported STEP7 project, if the signal configuration in the process data editor and in the OPC server are completed, you must estimate on the basis of the expected effort, how you will include these changes into the OPC Server.

Therefore you have two options:

1. New-Import of the STEP7 Project.
This has the consequence that all signal configurations made previously will be lost.
2. Additional Configuration of the Changes in the STEP7 Project in the Configuration of the OPC Server using the Process Data-Editor.
The advantage: In the OPC Server all previously made signal configurations are preserved.

To make an additional manual change of the PLC signal configuration in the process data-editor, you have the same options as when you configure a complete data transfer from a PLC manually. Further details you find in section *Configure Signals without STEP 7 Project* on page 78..

5.7.4 STEP7 Data Types

5.7.4.1 Support of the Process Data Editor

In the process data-editor (**Symbol Configuration** dialog) data can be read from or written to the data blocks DB and from/to the symbol area of the PLC. The symbol area includes the areas:

- *Merker* (M, MB, MW, MD)
- *Counter* (C)
- *Timer* (T)
- *Input Area* (I)
- *Output Area* (O)

Simple STEP7 Data Types and Conversions

Data type	Description	Range of values Lower limit	Range of values Upper limit	PDI Data Type
<i>BOOL</i>	Data type for Boolean values. Data are each stored within a single bit. The range of possible values only contains the values TRUE and FALSE.	FALSE	TRUE	<i>Bit</i>
<i>BYTE</i>	Unsigned 8 bit integer data type	0	255	<i>Byte</i>
<i>WORD</i>	Unsigned 16 bit integer data type	0	65535	<i>Word</i>
<i>INT</i>	Signed 16 bit integer data type	-32768	32767	<i>Signed16</i>
<i>DWORD</i>	Unsigned 32 bit integer data type	0	$2^{32} - 1$	<i>DWord</i>
<i>DINT</i>	Signed 32 bit integer data type	-2^{31}	$2^{31} - 1$	<i>Signed32</i>
<i>REAL</i>	Signed 32 bit floating point data type with exponential representation	+/- 1.175495e-38	+/- 3.402823e+38	<i>Real32</i>
<i>CHAR</i>	8 bit character data type for storing single ASCII characters. Internal processing as being of type BYTE.	All ASCII characters allowed		<i>Byte</i>
<i>S5TIME</i>	Unsigned 16 bit data type for storage of the S7®-internal time in steps of 10 milliseconds. Internal processing as being of type WORD.	Valid time specification 0H_0M_0S_0MS	2H_46M_30S_0MS	<i>Word</i>
<i>DATE</i>	Unsigned 16 bit data type for storage of the IEC-time in steps of 1 day. Internal processing as being of type WORD.	Valid date 1990-1-1	2168-12-31	<i>Word</i>
<i>TIME</i>	Signed 32 bit data type for storage of the IEC-time in steps of 1 millisecond. Internal processing as being of type DWORD.	Valid time specification -24D_20H_31M_23S_648MS	24D_20H_31M_23S_647MS	<i>DWord</i>
<i>TIME_OF_DAY</i>	32 bit data type for storage of the clock time in steps of 1 millisecond. Internal processing as being of type DWORD.	Valid time of day 0:0:0.0	23:59:59.999	<i>DWord</i>

Table 22: Simple STEP7 Data Types / Conversions

Composite STEP7 Data Types

- ARRAY

This is a data type for a field, i.e. a group of elements of the same type.

- STRING

This is a data type for strings consisting of concatenated characters.

5.7.4.2 Unsupported Data Types

The following structured STEP7 data types are not supported in the process data-editor (**Symbol Configuration** dialog).

- STRUCT

This is a data type for structures of multiple elements consisting of usually different data types.

- DATE_AND_TIME

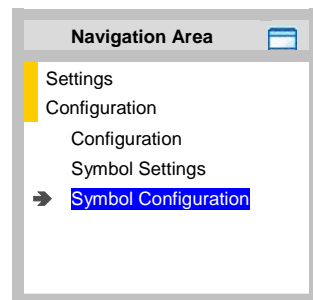
User-defined STEP7 data types and other data types not mentioned here are not supported in the process data-editor.

5.7.5 Configure Signals without STEP 7 Project

For the data transfer from a PLC and to configure the PLC signals on the PROFIBUS MPI device without a STEP7 project, you need to reset a previously-made import setting in the PROFIBUS MPI DTM as it is described in section *Reset „Use PLC Program“* on page 68. Then create the signal configuration in the process data-editor (**Symbol Configuration** dialog) manually as described below. A description of the process data-editor you find in the table *Explanations PDI Editor Table* on page 71.

How to proceed in the Process Data-Editor

- Open the process data-editor via **Configuration > Symbol Configuration**.



- The **Symbol Configuration > PDI Editor Table** dialog is displayed.

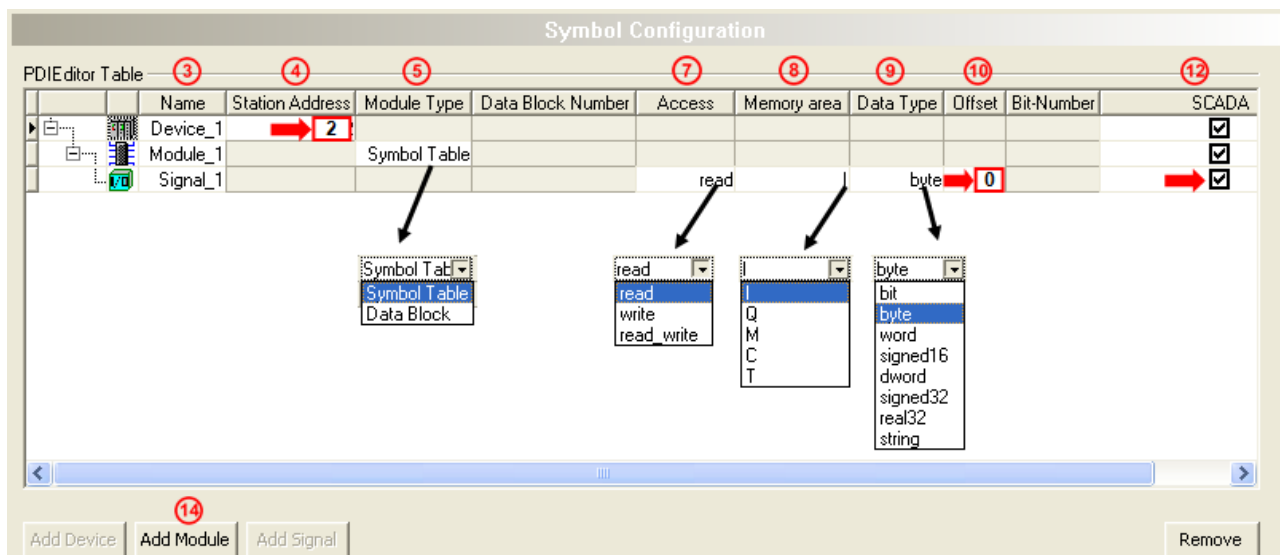


Figure 37: PLC Signal Configuration without STEP7 Project (1)

The **PDI Editor Table** shows the three standard entries for the PLC signal configuration of a PROFIBUS MPI communication

- *Device_1*,
- *Module_1* and
- *Signal_1*.

The first line for *Device_1* under **Station Address** ④ you must enter, which station address the PROFIBUS MPI device in the MPI network has.

The second line for *Module_1* contains under **Module Type** ⑤ the entry for a „*Symbol Table*“.

If you do not want to read data from the symbol table of the PLC, you can also assign the module type „*Data Block*“ to the entry *Modul_1*.

In the third line the *Singal_1* is entered.


For a signal from the symbol table of the PLC (module of the type *Symbol Table*) you need to make the configuration steps listed below:

1. **Access** ⑦ for write/read access to the signal
2. **Memory area** ⑧, areas I, Q, M, C, T of the PLC(S7)
3. **Data Type** ⑨ (bit, byte, word ...), for the signal characteristics, such as length, floating decimal point / fixed decimal point, signs, etc.
4. **Offset** ⑩ of the signal in the module of the type *Symbol Table* according to the STEP7 configuration (mandatory input)
5. **Bit-Number** ⑪ (only for the data type bit).
6. **SCADA** ⑫ must be checked, to provide the signal at the OPC server.


Please note also the descriptions in the table *Explanations PDI Editor Table* on page 71.

Add Device

Add Device ⑬ is only active, if the **PDI Editor Table** does not provide any device.

- To add a PLC , click **Add Device** ⑬.
- A new line with a device is added.

Add Module

- To add an additional module  (**Data Block**) to a device, you must select in the table the line of the device, to which you want to add the module.
- Then click **Add Module** ⑭.
- A new module is inserted at the lower end of the module list of the selected device.

If you have added a module with two signals, the PDI Editor Table looks like shown hereafter:

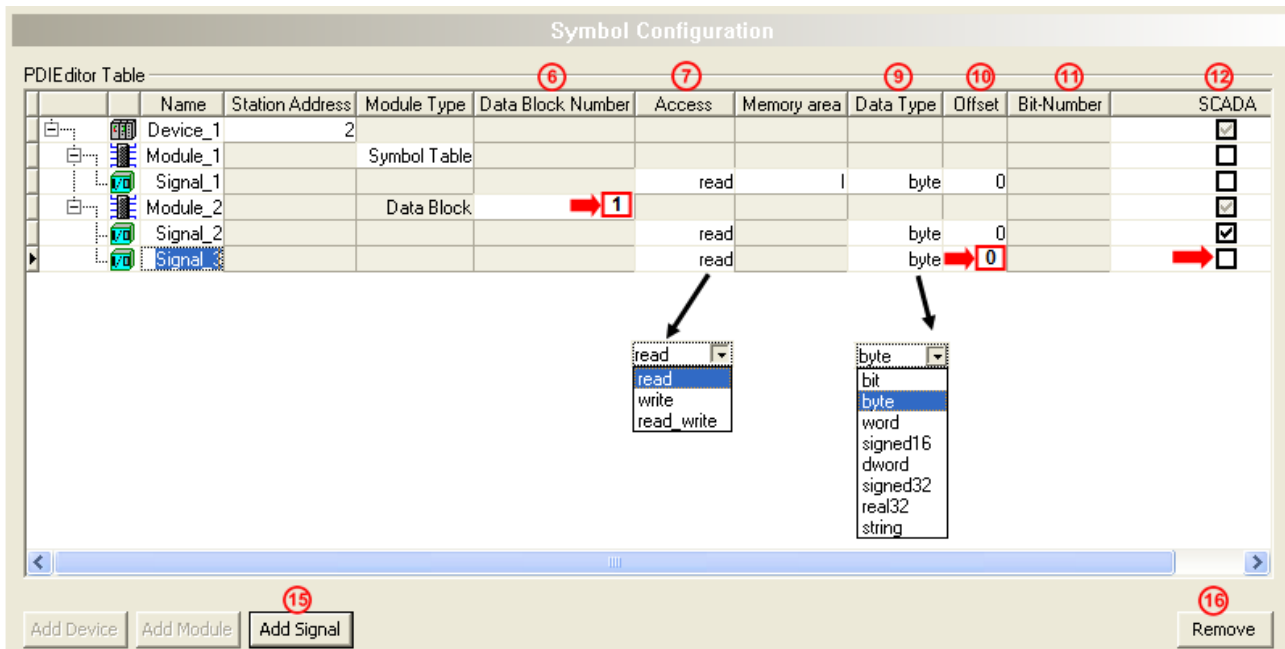


Figure 38: PLC Signal Configuration without STEP7 project (2)

- Enter for the new data block  (new module) in the column **(6)**, the data block number from the STEP7 project.

Configure Signal

For a signal from a module of the type *Data Block* you need to make the configuration steps listed below:

1. **Access (7)** for write/read access to the signal
2. **Data Type (9)** (bit, byte, word ...), for the signal characteristics, such as length, floating decimal point / fixed decimal point, signs, etc.
3. **Offset (10)** of the signal in the module of the type Data Block according to the STEP7 configuration (mandatory input)
4. **Bit-Number (11)** (only for the data type bit).
5. **SCADA (12)** must be checked, to provide the signal at the OPC server.

Add Signal

- To add a signal to a module, you must select in the table the line of the module, to which you want to add a signal.
- Then click **Add Signal (15)**.
- The signal is inserted at the lower end of the module's signal list.

In this way, you can add additional modules and signals to an already imported STEP7 project.

Remove Table Entries

- Mark the line of the table where the entry to remove is.
- Then click **Remove (16)**.

6 Online Functions

6.1 Connecting/Disconnecting Device



Note: Several PROFIBUS MPI DTM functions e. g. **Diagnosis** or the configuration download in the FDT Framework require an online connection from the PROFIBUS MPI DTM to the PROFIBUS MPI device.

Connecting Device

The following steps are needed to establish a connection from the PROFIBUS MPI DTM to a PROFIBUS MPI device:

Under **Settings** in the **Driver** pane:

1. Verify that the default driver is checked and respectively check another or multiple drivers.
2. Configure the driver if necessary.

Under **Settings** in the **Device Assignment** pane:

3. Scan for the devices (with or without firmware).
4. Select the device (with or without firmware) and apply the selection.



Before you download the firmware adhere to the necessary safety precautions to prevent personnel injury and property damage. For more refer to section *Safety Messages on Firmware or Configuration Download* on page 29.

Under **Settings** in the **Firmware Download** pane if not yet a firmware was loaded to the device:

5. Select and download the firmware.

Under **Settings** in the **Device Assignment** pane if not yet a firmware was loaded to the device:

6. Scan for the device (with firmware) once more.
7. Select the device (with firmware) once more.



An overview of the descriptions for these steps you find in the section *Overview Settings* on page 31.

8. In the DTM interface dialog select the **OK** button, to apply the selection and to close the DTM interface dialog.
9. Put a right-click on the PROFIBUS MPI device icon.
10. Select the **Connect** command from the context menu.

↗ The PROFIBUS MPI device now is connected to the PROFIBUS MPI DTM via an online connection. In the network view the device description at the device icon of the PROFIBUS MPI is displayed with a green colored background.

Disconnecting Device

To disconnect an online connection from the PROFIBUS MPI device to a PROFIBUS MPI DTM take the following steps:

1. In the DTM interface dialog select the **OK** button, to close the DTM interface dialog.
 2. Right-click on the PROFIBUS MPI device icon.
 3. Select the **Disconnect** command from the context menu.
- In the network view the device description at the device icon of the PROFIBUS MPI device is not any more displayed with a green colored background. Now the PROFIBUS MPI device is disconnected from the DTM.

6.2 Download Configuration

The device configuration is created *offline* in the DTM (application program). A download to the device is required, to transfer the configuration with the parameter data to the device.



Note: To download configuration parameter data to the PROFIBUS MPI device an online connection from the PROFIBUS MPI DTM to the PROFIBUS MPI device is required.

To transfer the configuration with the corresponding parameter data to the PROFIBUS MPI device you download the data to the PROFIBUS MPI device using the frame application of the configuration software.

Whether a device supports the **Download** function depends on the manufacturer. For **netDevice** the download is made via **Device > Download** or use the context menu with **Download**.

Further information



- Information on how to establish an online connection you can find in the *Connecting/Disconnecting Device* section on page 81.
- Information about whether your device supports the **Download** function you find in the device manual from the manufacturer.
- Information about the **Download** function in **netDevice** you find in the operating instruction manual **netDevice and netProject**, which is also accessible online.

Safety Precautions

If you plan to perform a configuration download via the PROFIBUS MPI DTM be aware of the following:

⚠ WARNING

Communication Stop due to Configuration Download, Faulty System Operation possible or Loss of Device Parameters

Before you initiate a configuration download process, while the bus is still in operation status:

- Stop the application program.
- Make sure that all network devices are placed in a fail-safe condition.

⚠ WARNING**Mismatching System Configuration,
faulty System or Device Operation possible**

- In the device use only a configuration suitable for the system.

NOTICE**Loss of Parameters caused by Power Disconnect during
Configuration Download**

- During configuration download process, do not interrupt the power supply to the PC, or to the device and do not perform a reset to the device!

For more see next page.

Download Steps

To transfer the configuration with the corresponding parameter data to the PROFIBUS MPI device you download the data using the frame application of the configuration software.

For netDevice the download is made via **Device > Download** or use the context menu with **Download**.

1. Select **Download** in the context menu of the device.

⇒ If the download is started as long as the Slave devices are connected to the Master device, the following message is displayed: 'If you attempt to download during bus operation, communication between Master and Slaves is stopped. Do you really want to download?'

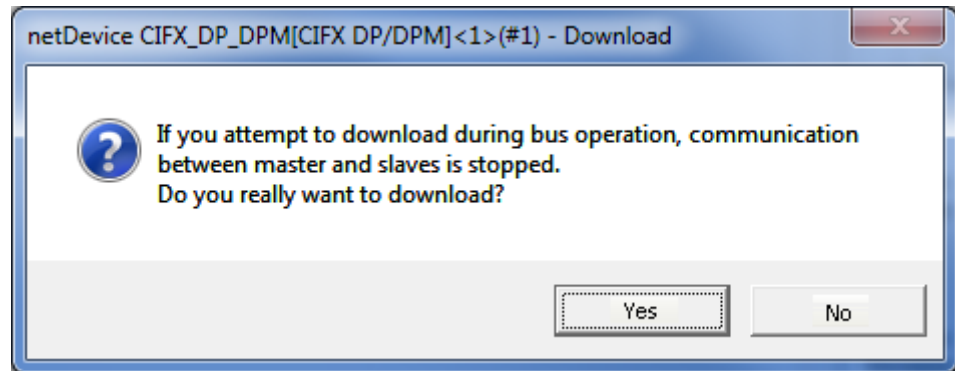


Figure 39: netDevice Message: Download



Important: If the communication between the Master and the Slave devices is stopped, the data exchange between the Master device and the Slave devices is stopped.

2. Click to **Yes** if you intend to download the configuration.

⇒ Then the current configuration in the application program is downloaded to the device.

3. Otherwise click to **No**.

6.3 Licenses

Using the license dialog, you can order licenses for **Master protocols** or **Utilities** and download them to your device.

6.3.1 Open License Dialog

You first open the **License** window.



Note: You first need to assign the Master device to the DTM. Only then, the device data and the licenses already present in the device are displayed in the **License** dialog.

How to proceed:

A.) Assigning the Master device to the DTM

1. Open the DTM configuration dialog.
 - In the FDT container **netDevice** double click to the device icon.
2. Select one or several drivers.
 - Select **Settings > Driver**.
 - Check the drivers.
3. Configure the driver if necessary.
 - Select **Settings > Driver > [Name of the assigned driver]**.
 - Configure the driver settings.
4. Scan for and select the devices.
 - Select **Settings > Device Assignment**.
 - Under **Device selection** select *suitable only* or *all* and then **Scan**.
 - In the table, check the required devices.
 - Select **Apply**.
5. Close the DTM configuration dialog via **OK**.



For details to the device assignment, refer to section *Device Assignment* in this manual.

B.) Open the License pane

- In the FDT container **netDevice** right click to the device icon.
- From the context menu select **Additional Functions > License**.
- The **License pane** opens.

6.3.2 License Dialog

In the **License**¹ pane you can:

- check, which licenses for Master protocols or Utilities are present in the device (Position ① in the figure below),
- order licenses (Positions ② to ⑪),
- transfer licenses to the device ⑫.

License Type

	Existing	Order
Master protocols		
One General Master License	NO	<input type="checkbox"/>
Two General Master Licenses	NO	<input type="checkbox"/>
PROFIBUS Master	YES	<input type="checkbox"/>
CANopen Master	YES	<input type="checkbox"/>
DeviceNet Master	YES	<input type="checkbox"/>
AS-Interface Master	YES	<input type="checkbox"/>
PROFINET IO RT Controller	YES	<input type="checkbox"/>

Request Form, please fill out

Name	Value
License type	User Single Device License
Manufacturer*	0x0001
Article number*	1251100
Serial number*	20007
Chiptype*	0x00000001
Step*	0x00000000
Romcode revision*	0x00000000

Fields marked with "*" are mandatory.

Buttons: ④ (dropdown), ⑤ (E-mail...), ⑥ (Print Fax Form...), ⑦ (Telephone...), ⑧ (Export License Request...), ⑨ (text field), ⑩ (text field), ⑪ (text field), ⑫ (Download License), Close, Help.

Figure 40: License Pane



Note: To display further entries under **License Type**, move the scroll box ① downwards or upwards. To display further entries under **Request Form, please fill out**, move the scroll box ② downwards or upwards.

¹ The title bar contains the notation of the **device description**:
Symbolic Name [Device Description] <Station Address> (#Network ID).

6.3.3 Which Licenses are present in the Device?

Check, which licenses are present in the device.

How to proceed:

- Open the **License** pane as described.

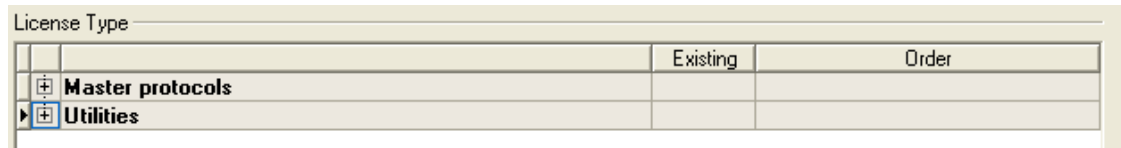


Figure 41: License Pane - License Type

- Under **License Type** click at **Master protocols**.

➤ The **Master protocols** overview opens:

	Existing	Order
One General Master License	NO	<input type="checkbox"/>
Two General Master Licenses	NO	<input type="checkbox"/>
PROFIBUS Master	YES	<input type="checkbox"/>
CANopen Master	YES	<input type="checkbox"/>
DeviceNet Master	YES	<input type="checkbox"/>
AS-Interface Master	YES	<input type="checkbox"/>
PROFINET I/O RT Controller	YES	<input type="checkbox"/>

Figure 42: License Pane – License Type / Master protocols

- Or click at **Utilities**.

➤ The **Utilities** overview opens:

	Existing	Order
OPC Server	NO	<input type="checkbox"/>
SYCON.net	NO	<input type="checkbox"/>
QVis Minimum Size	NO	<input type="checkbox"/>
QVis Standard Size	NO	<input type="checkbox"/>
QVis Maximum Size	NO	<input type="checkbox"/>
CoDeSys Minimum Size	NO	<input type="checkbox"/>

Figure 43: License Pane – License Type / Utilities

➤ The column **Existing** indicates which licenses are present in the device.

Yes = License is present in the device.

No = License is not present in the device.



Note: In newer versions of the present configuration software under **License Type** may be displayed additional licenses or other protocols that can be ordered later.

6.3.3.1 License for Master Protocols

One General Master License:

On the device maximally 1 communication protocol with master function can be implemented.

Two General Master Licenses:

On the device maximally 2 communication protocols with master function can be implemented.

The license includes the following Master protocols:

- AS-Interface Master
- CANopen Master
- DeviceNet Master
- EtherCat Master
- EtherNet/IP Scanner
- PROFIBUS Master
- PROFINET IO RT Controller
- Sercos Master

6.3.3.2 License for Utilities

- SYCON.net
- OPC Server
- QVis Minimum Size
- QVis Standard Size
- QVis Maximum Size
- CoDeSys Minimum Size
- CoDeSys Standard Size
- CoDeSys Maximum Size

For the utilities QVis and CoDeSys, only one license each may be chosen alternatively as:

- *Minimum Size,*
- *Standard Size or*
- *Maximum Size.*



6.3.4 How to order a License

To order a license, proceed as follows:

	<i>Refer to Section:</i>	<i>Page</i>
1. Open the license dialog.	<i>Open License Dialog</i>	85
2. Select the required licenses.	<i>Selecting License</i>	89
3. Enter the ordering data.	<i>Ordering Data</i>	90
4. Place your order.	<i>Ordering the License</i>	92

6.3.5 Selecting License(s)

You can select licenses for Master protocols and / or utilities.

1. Selecting license(s) for Master protocol(s):
 - Under **License Type** click  at **Master protocols** in the **License** pane.
 - Under **Order** check as many licenses must run simultaneously on your device:
One General Master License or
Two General Master Licenses.
2. And/or select license(s) for utility(utilities):
 - In the **License** pane under **License Type** click  at **Utilities**.
 - Under **Order** check the required utility(utilities) *(single or several)*²:
 - SYCON.net
 - OPC Server
 - QVis Minimum Size*
 - QVis Standard Size*
 - QVis Maximum Size*
 - CoDeSys Minimum Size**
 - CoDeSys Standard Size**
 - CoDeSys Maximum Size**

² For *) and **) minimum size, standard size or maximum size can be selected only as an alternative.

6.3.6 Ordering Data

1. Device Information

- The *Device Information* required for the order are read from the device and automatically filled in the order.

2. Ordering Data

Enter the *Ordering Data* into the **License** pane.

- Enter the **Data to manage the Order**.

6.3.6.1 Device Information (Ordering data read from the Device)

The following ordering data are read from the device and displayed in the **License** pane:

- Manufacturer
- Device number
- Serial number
- Chiptype
- Step (chip revision)
- Romcode revision
- Checksum (checksum of the device data)

- The gray fields under **Request Form, please fill out** contain the ordering data read from the device:

Request Form, please fill out

Name	Value
Manufacturer*	0x0001
Article number*	1251100
Serial number*	20007
Chiptype*	0x00000001
Step*	0x00000000
Romcode revision*	0x00000000
Checksum*	G

Fields marked with '*' are mandatory.

Figure 44: License Pane - Request Form, please fill out / Device Information

- These ordering data read out from the device are displayed automatically from the device.

6.3.6.2 Data to manage the Order (License Information)

For your order you must enter the following data to the **License** pane:

1. License Type (User Single Device License).

Name	Value
License type	User Single Device License

Figure 45: License Pane - Request Form, please fill out / License Type

- Select the license type under **Request Form, please fill out > Value**, (for future application, currently only *User Single Device License* can be selected).
- 2. Mandatory data to the order request (editable fields):
 - First Name
 - Surname
 - E Mail (address, to which the license download link shall be send.)
 - Telephone
 - Company
 - Address
 - Country
 - City, State, Zip

Name	Value
First name*	John
Surname*	Doe
E-Mail*	License@doe.com
Telephone*	0011223344-55
Fax	0011223344-100
Customer number	123456789
Company*	Doe Example LTD

Fields marked with '*' are mandatory.

Figure 46: License Pane - Request Form, please fill out / Mandatory data

- Enter all mandatory fields under **Request Form, please fill out > Value** (marked with*).
- 3. Additional order data, not mandatory (editable fields):
 - Fax
 - Customer Number
 - Order Number
 - Value added tax identification number
- Under **Request Form, please fill out > Value** enter all fields for the additional data, which are not mandatory.

6.3.7 Ordering the License

Place your order in the **License** pane. Therefore:



Figure 47: License Pane – Selecting the Subsidiary / Ordering / Contacts

1. Select the **Subsidiary** (4), to which the order shall be send.
2. Place the order:

- | | <i>Refer to Section:</i> | <i>Page</i> |
|---|---|-------------|
| • by E-Mail (5), | <i>Ordering the License <u>by E Mail</u></i> | 93 |
| • or by Fax (6)
or by Telephone (7), | <i>Ordering the License <u>by Fax or by Telephone</u></i> | 94 |
| • or in a File (8). | <i><u>Exporting License Request to a File</u></i> | 96 |
- The **Contact Data** of the selected subsidiary are displayed under Position (9), (10) and (11).

6.3.7.1 Ordering the License by E Mail

You can place your order by e-mail.



Figure 48: License Pane – placing the order by E-mail

- Click **E-mail...** 5.
- The order E-mail **License request** opens:

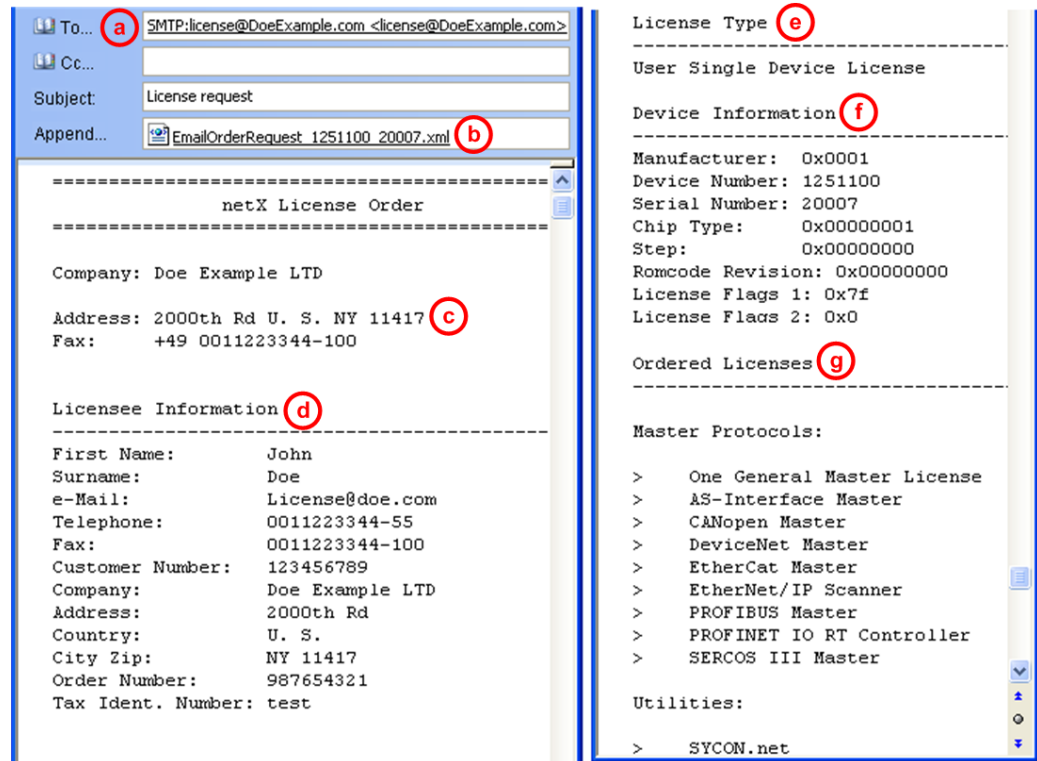


Figure 49: Example: Order E-Mail License request

- The order e-mail **License request** contains:
 - the **E-mail...** of the selected subsidiary a,
 - the automatically generated **XML file** b *EmailOrderRequest_[Devicenumbr]_[Serialnumber].xml* with a summary info of the **order information**,
 - the **Order Address** c,
 - the **License Information** d,
 - the **License Type** e,
 - the **Device Data** f,
 - the **ordered Licenses** g.
- Send the order e-mail **License request**.
- The order process is complete.

6.3.7.2 Ordering the License by Fax or by Telephone

You can place your order by Fax or by Telephone.



Figure 50: License Pane - placing the order by Fax or by Telephone

- Click **Print Fax Form** ⑥ or **Telephone...** ⑦.
- The summary of the ordering data *PrintOrderRequest_[Devicenum-ber]_[Serialnumber].html* is opened in a browser window.



Note: If your browser does not display the order data or the window **Move Element** or **Copy Element** are displayed, check the safety settings of your system.

netX License Order Form

Doe Example LTD
2000th Rd

NY 11417
U. S.
fax: +11223344-100

Licensee Information ④

<i>First Name:</i>	John
<i>Surname:</i>	Doe
<i>e-Mail:</i>	License@doe.com
<i>Telephone:</i>	0011223344-55
<i>Fax:</i>	0011223344-100
<i>Customer No:</i>	123456789
<i>Company:</i>	Doe Example LTD
<i>Address:</i>	2000th Rd
<i>Country:</i>	U. S.
<i>City Zip:</i>	NY 11417
<i>Order Number:</i>	987654321
<i>Tax Ident. Number:</i>	test

License Type ⑤

User Single Device License

Device Information ⑥

<i>Manufacturer:</i>	0x0001
<i>Device Number:</i>	1251100
<i>Serial Number:</i>	20007
<i>Chip Type:</i>	0x00000001
<i>Step:</i>	0x00000000
<i>Romcode Revision:</i>	0x00000000
<i>License Flags 1:</i>	0x7f
<i>License Flags 2:</i>	0x0

Ordered Licenses ⑧

Master Protocols

- One General Master License
- Sercos III Master

Utilities

- SYCON.net

Date: _____

Signature: _____

Figure 51: Example: Order Data Form *PrintOrderRequest*

- The order data form contains:
- the **Order Address** ^c,
- the **License Information** ^d,
- the **License Type** ^e,
- the **Device Data** ^f,
- the **ordered Licenses** ^g.
- Print the order data form, sign it and send it by Fax.



Figure 52: License Pane – Fax Number of the selected Subsidiary

- Use the Fax number ¹⁰, which is displayed after the subsidiary was selected in the **License** pane.

Or:

- Keep ready the order data form and communicate the order data via telephone.



Figure 53: License Pane – Telephone Number of the selected Subsidiary

- Use the telephone number ¹¹, which is displayed after the subsidiary was selected in the **License** pane.
- The order process is complete.

6.3.7.3 Exporting License Request to a File

If you are working on a process computer without an e-mail client, you can export your order information to a file, save the file to a removable disk and place your order manually via e-mail from a different PC.



Figure 54: License Pane - Ordering by exported File and E-Mail

- Click **Export License Request...** 8.
- The window **Browse For Folder** is displayed.
- Choose for or create a new folder on a removable disk.
- Save the automatically generated **XML file** *EmailOrderRequest_- [Devicenumber]_[Serialnumber].xml* with a summary info of the **order information** to this folder.
- Send this file from a PC with an e-mail client manually via e-mail.
- Therefore, use an e-mail address, which is displayed after the subsidiary was selected in the **License** pane (see Position 9 Figure *License Pane*).
- The order process is complete.

6.3.8 How to get the License and transfer it to the Device



Note: License files can only be delivered via e-mail. The e-mail contains a link to download the license file.

According to the license you ordered, you will receive an e-mail containing a **Link to download the License File**. This leads to a server PC on which the license file is provided. Using the received link you will have to save the license file on your PC and then transfer the license to your device. If your e-mail client is on another PC as your device, you must save your license file e. g. to an USB stick.

Steps how to proceed


1. Save the license file to a PC or a disk.
 - Click to the **Link to download the License File** in the e-mail.
 - Save the license file *.nxl to a PC or a removable disk.
2. Download the license file to the device.
 - Respectively connect the removable disk with the license file to the PC, which is connected to your device.
 - Click **Download License**  in the **License** pane in the configuration software.



Figure 55: License Pane - Download License

- The File selection window **Open** is displayed.
 - Therein select the license file *netX License Files (*.nxl)*.
 - Click **Open**.
 - The license file is transferred to the device.
 - After this the license is present in the device and is activated with the next device reset.
3. Activate Device Reset



Hint: To activate the license in the first device, a device reset is required.

- To check whether the license has been activated, follow the steps in section *Which Licenses are present in the Device?*

6.4 Start /Stop Communication

You can manually start or stop the communication at the PROFIBUS MPI network.

- **Start Communication** can be enabled if the communication was stopped before or if the configuration requires this (Controlled release of communication).
 - **Stop Communication** can be enabled if the communication was started.
- To start or to stop the communication, proceed as follows:

Start Communication

1. Connecting device:



Note: To start the communication of the device at the bus manually, an online connection from the PROFIBUS MPI DTM to the PROFIBUS MPI device is required. Further information can be found in the *Connecting/Disconnecting Device* section on page 81.

2. Select **Additional Functions > Service > Start Communication** from the context menu (right mouse click).
- ↗ The device communicates at the bus.

Stop Communication



Faulty System Operation possible, Overwriting of Firmware or Loss of Device Parameters

Before you stop the communication:

- Stop the application program.
 - Make sure that all network devices are placed in a fail-safe condition.
1. Select **Additional Functions > Service > Stop Communication** from the context menu (right mouse click).
- ↗ The communication of the device at the bus is stopped.

7 Diagnosis

7.1 Overview Diagnosis

The dialog **Diagnosis** serves to diagnose the device behavior and communication errors. For diagnosis the device must reside in online state.

Diagnosis Panes

The table below gives an overview for the individual **Diagnosis** dialog panes descriptions:

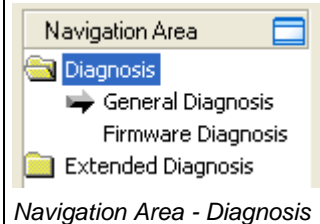
PROFIBUS MPI DTM	Folder Name / Section	Manual Page
	<i>General Diagnosis</i>	100
	<i>Firmware Diagnosis</i>	102

Table 23: Descriptions of the Diagnosis Panes



Online Connection to the Device

Note: Accessing the **Diagnosis** panes of the PROFIBUS MPI DTM requires an online connection from the PROFIBUS MPI DTM to the PROFIBUS MPI device. For further information refer to section *Connecting/Disconnecting Device* on page 81.

How to proceed

1. In the PROFIBUS MPI DTM diagnosis dialog check whether the communication is OK:

Diagnosis > General Diagnosis > Device status "Communication" must be green!

2. **"Communication"** is green: Open the **IO Monitor** and test the input or output data..
3. **"Communication"** is not green: Use **Diagnosis** and **Extended diagnosis** for troubleshooting.

Extended Diagnosis

The **Extended Diagnosis** helps to find communication and configuration errors, when default diagnosis fails. For further information refer to section *Overview Extended Diagnosis* on page 103.

7.2 General Diagnosis

Information regarding the Device State and other general diagnosis parameters are displayed in the **General Diagnosis** dialog.

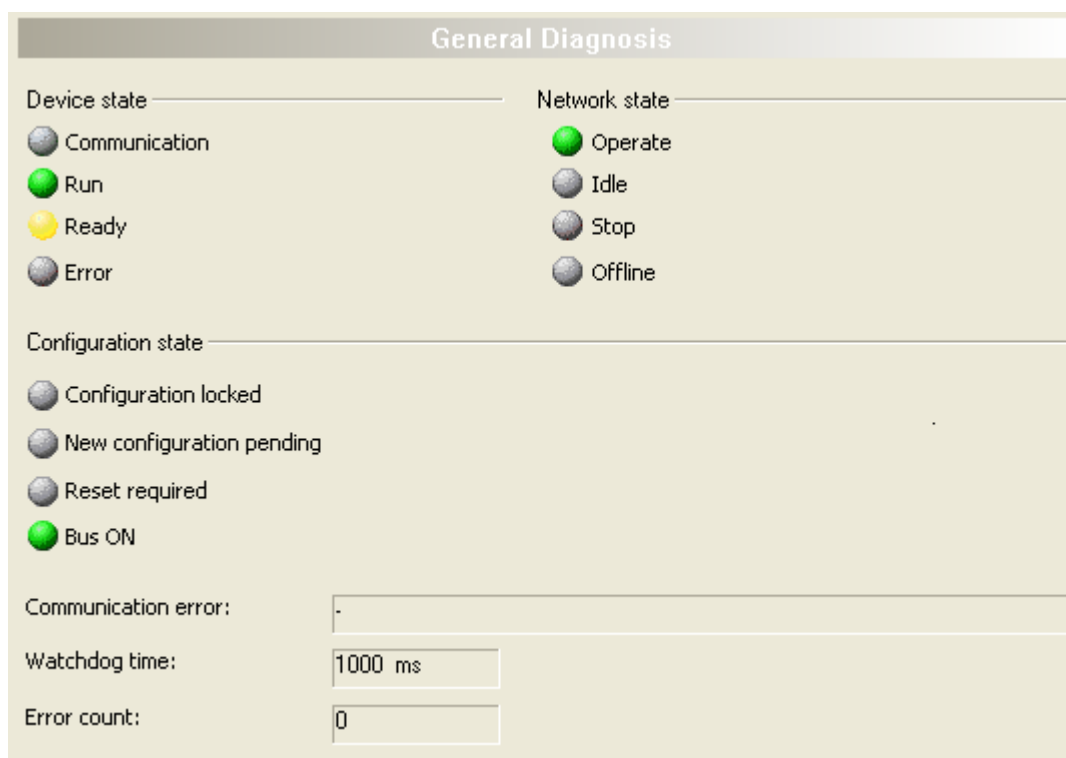














Figure 56: General Diagnosis

LED	Meaning	Color	State
Device State			
Communication	Shows whether the PROFIBUS MPI device executes the network communication.	 (green)	In COMMUNICATION state
		 (gray)	Not in COMMUNICATION state
Run	Shows whether the PROFIBUS MPI device has been configured correctly.	 (green)	Configuration OK
		 (gray)	Configuration not OK
Ready	Shows whether the PROFIBUS MPI device has been started correctly. The PROFIBUS MPI device waits for a configuration.	 (yellow)	Device READY
		 (gray)	Device not READY
Error	Shows whether the PROFIBUS MPI device records a device status error. For further information about the error characteristics and the number of counted errors refer to the extended diagnosis.	 (red)	ERROR
		 (gray)	No ERROR
Network State			
Operate	Shows whether the PROFIBUS MPI device is in data exchange. There is a cyclic data exchange at the PROFIBUS MPI network.	 (green)	In OPERATION state
		 (gray)	Not in OPERATION state
Idle	Shows whether the PROFIBUS MPI device is in idle state.	 (yellow)	In IDLE state
		 (gray)	Not in IDLE state













LED	Meaning	Color	State
Stop	Shows whether the PROFIBUS MPI device is in Stop state: There is no cyclic data exchange at the PROFIBUS MPI network. The PROFIBUS MPI device was stopped by the application program or it changed to the Stop state because of a bus error.	 (red)	In STOP state
		 (gray)	Not in STOP state
Offline	The PROFIBUS MPI device is offline as long as it does not have a valid configuration.	 (yellow)	In OFFLINE state
		 (gray)	Not in OFFLINE state
Configuration State			
Configuration locked	Shows whether the PROFIBUS MPI device configuration is locked, to avoid the configuration data are typed over.	 (yellow)	Configuration LOCKED
		 (gray)	Configuration not LOCKED
New Configuration pending	Shows whether a new PROFIBUS MPI device configuration is available.	 (yellow)	New Configuration pending
		 (gray)	No new Configuration pending
Reset required	Shows whether a firmware reset is required as a new PROFIBUS MPI device configuration has been loaded into the device.	 (yellow)	RESET required
		 (gray)	No RESET required
Bus ON	Shows whether the bus communication was started or stopped. I. e., whether the device is active on the bus or no bus communication to the device is possible and no response telegrams are sent.	 (green)	Bus ON
		 (gray)	Bus OFF

Table 24: Indication General Diagnosis

Parameter	Meaning
Communication Error	Shows the name of the communication error. If the cause of error is resolved, the value will be set to zero again.
Watchdog time	Shows the watchdog time in ms.
Error Count	This field holds the total number of errors detected since power-up, respectively after reset. The protocol stack counts all sorts of errors in this field no matter whether they were network related or caused internally.

Table 25: Parameter General Diagnosis

7.3 Firmware Diagnosis

In the dialog **Firmware Diagnosis** the current task information of the firmware is displayed.

Under **Firmware** or **Version** the name of the firmware and version (including the date) are indicated.

Firmware Diagnosis

Firmware:

PROFIBUS MPI

Version:

2.4.0 (Build 1)

Date:

23.2.2011

Task information:

Task	Name of task	Version	Priority	Description	State
0	RX_IDLE	1.0	63	RX IDLE Task.	Task Status ok. (0x00000000)
1	RX_TIMER	1.0	1	rcX Timer.	Task Status ok. (0x00000000)
2	RX_SYSTEM	1.16	8	Middleware System Task.	Task Status ok. (0x00000000)
3	DPM_COM0_SMBX	1.0	50	TLR-Router DPM.	Task Status ok. (0x00000000)
4	DPM_COM0_RMBX	1.0	51	TLR-Router DPM.	Task Status ok. (0x00000000)
5	TLR_TIMER	0.0	39	The task identifier is unknown.	Task Status ok. (0x00000000)
6	MARSHALLER	2.0	56	Marshaller: Main Task.	Task Status ok. (0x00000000)
7	PROFIBUS_DL	4.0	21	PROFIBUS Data Link Layer Ta...	Task Status ok. (0x00000000)
8	PROFIBUS_MPI	2.1	27	PROFIBUS MPI Task.	Task Status ok. (0x00000000)
9	PROFIBUS_MPI_AP	2.1	38	PROFIBUS MPI Application Task.	Task Status ok. (0x00000000)
10	PACKET_ROUTER	2.0	57	Marshaller: Packet Router Task.	Task Status ok. (0x00000000)

Figure 57: Firmware Diagnosis

Task Information:

The table **Task Information** is listing the task information of the single firmware tasks.

Column	Meaning
Task	Task number
Name of task	Name of the task
Version	Version number of the task
Prio	Priority of the task
Description	Description of the task
Status	Current status of the task

Table 26: Description Table Task Information

8 Extended Diagnosis

8.1 Overview Extended Diagnosis

The **Extended Diagnosis** of the PROFIBUS MPI DTM helps to find communication and configuration errors. Therefore it contains a list of diagnosis structures as online counter, states and parameters.

Dialog Panes “Extended Diagnosis”

The table below gives an overview for the **Extended Diagnosis** dialog panes descriptions:

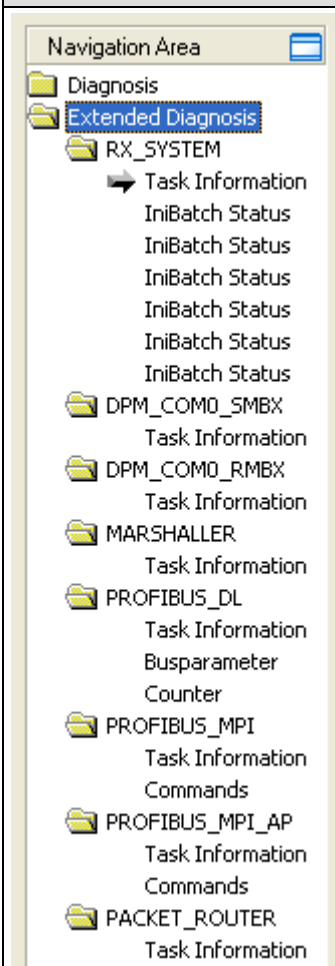
PROFIBUS MPI DTM	Folder Name	Dialog Pane	Manual Page
	RX-SYSTEM	Task Information	104
		IniBatch Status	105
	DPM_COMO_SMBX	Task Information	104
	DPM_COMO_RMBX	Task Information	104
	MARSHALLER	Task Information	104
	PROFIBUS_DL	Task Information	104
		PROFIBUS_DL/Busparameters	106
		PROFIBUS_DL/Counter	107
	PROFIBUS_MPI	PROFIBUS_MPI/Commands	108
		Task Information	104
	PROFIBUS_MPI_AP	PROFIBUS_MPI_AP/Commands	109
		Task Information	104
	PACKET_ROUTER	Task Information	104

Table 27: Descriptions of the Dialog Panes Extended Diagnosis PROFIBUS MPI

Online Connection to the Device



Note: Accessing the **Extended Diagnosis** dialog panes of the PROFIBUS MPI DTM requires an online connection from the PROFIBUS MPI DTM to the PROFIBUS MPI device. For further information refer to section *Connecting/Disconnecting Device* on page 81.

8.2 Task Information

Task Information	
Task states	
Name	Value
Identifier	
Major version	<i>[The displayed values depend from the corresponding task]</i>
Minor version	
Maximum Packet size	
Default Que	
Unique identifier	
Init result	

Figure 58: Extended Diagnosis > [Folder Name] > Task Information Example Display

Name	Description
Identifier	Identification number of the task
Major version	Task version, contains incompatible changes
Minor version	Task version, contains compatible changes
Maximum packet size	Maximum packet size, which the task sends
Default Queue	Queue handle, which is accessible via DPM by mailbox.
UUID	Unique user ID, 16 Byte indicator used for task identification and its affiliation e. g. to a stack (therein different identification data are coded in).
Init result	Error Code, 0= no Error The description of the error codes can be found in this manual or in the corresponding software reference manuals.

Table 28: Extended Diagnosis > [Folder Name] > Task Information

8.3 IniBatch Status

IniBatch-Status	
Task states	
Name	Value
Communication Channel	0
Current State	Error
IniBatch Result	No DBM file
OpenDbm Result	24975
SendPacket Result	0
Confirmation Result	0
Last Packet Number	0
Last Packet Command	0
Last Packet Length	0
Last Packet Destination	0

Figure 59: Extended Diagnosis > [Folder Name] > IniBatch Status Example Display

Name	Description
Communication Channel	Number of the communication channel used by the device.
Current State	Idle; IniBatch packets in progress; Retrying to send last packet; Error
IniBatch Result	Ok; No DBM file; No Packet table; No data set available; Data set is shorter than packet length; Packet Buffer is shorter than Packet length; Invalid packet destination; Logical queue not defined Send packet failed; Too many retries; Error in confirmation packet status
OpenDbm Result	Error when opening the IniBatch data base Under "OpenDbm Result" the error code is typed in, when "IniBatch Result" == "No DBM file" (1) is.
SendPacket Result	Error when sending a packet Under "SendPacket Result" the error code is typed in, when "IniBatch Result" == "send packet failed" (8) is.
Confirmation Result	Confirmation error when sending packets Under "Confirmation Result" the packet specific error code from the ulSta is typed in, when "IniBatch Result" == "Error in confirmation packet status" (10) is.
Last Packet Number	Value depends by the communication system.
Last Packet Command	Value depends by the communication system.
Last Packet Length	Value depends by the communication system.
Last Packet Destination	Value depends by the communication system.

Table 29: Extended Diagnosis > [Folder Name] > IniBatch Status

The task status "Confirmation Result" is bus specific. The other task statuses are rcx-related error codes.

8.4 PROFIBUS_DL/Busparameters

Under **Extended Diagnosis > PROFIBUS_DL> Busparameter** the values of the configured bus parameters active on the bus are displayed.

Busparameter	
Task states	
Name	Value
Station Address	1
Baudrate	187 Kbaud
Slot Time (tBit)	415
Min. Station Delay Time (tBit)	60
Max. Station Delay Time (tBit)	400
Quiet Time (tBit)	1
Setup Time (tBit)	1
Target Rotation Time (tBit)	10000
GAP Factor	20
Highest Station Address (HSA)	31
Max. Retry Limit:	1

Figure 60: Extended Diagnosis > PROFIBUS_DL> Busparameter

Parameter	Meaning	Range of Value/ Value
Station Address	PROFIBUS MPI Address of the device.	0 ... 126, Default: 1
Baudrate	PROFIBUS MPI Baud Rate Indicates the velocity of transmission: Number of bits per second.	9,6 kBit/s, 19,2 kBit/s, 31,25 kBit/s, 45,45 kBit/s, 93,75 kBit/s, 187,5 kBit/s, 500 kBit/s, 1,5 MBit/s, 3 MBit/s, 6 MBit/s, 12 MBit/s, Auto-Detect, Default: 187,5 kBit/s
Slot Time (tBit)	Slot Time (T_{SL})	37 ... 16383 tBit, Default: 415 tBit
Min. Station Delay Time (tBit)	Minimum Station Delay of Responders (min T_{SDR})	1 ... 1023 tBit, Default: 60 tBit
Max. Station Delay Time (tBit)	Maximum Station Delay of Responders (max T_{SDR})	1 ... 1023 tBit, Default: 400 tBit
Quiet Time (tBit)	Quiet Time (T_{QUI})	0 ... 127 tBit, Default: 1 tBit
Setup Time (tBit)	Setup Time (T_{SET})	1 ... 255 tBit, Default: 1 tBit
Target Rotation Time (tBit)	Target Rotation Time (T_{TR})	≥ 255 tBit, Default: 10000 tBit
GAP Factor	GAP Actualization Factor (G)	1 ... 255, Default: 20
Highest Station Address (HAS)	Highest Station Address (H_{SA}), Station address of the highest active (Master) station.	1 ... 126, Default: 31
Max. Retry Limit	Max number of telegram retries (Max_Retry_Limit)	1 ... 8, Default: 1

Table 30: Extended Diagnosis > PROFIBUS_DL> Busparameters

8.5 PROFIBUS_DL/Counter

Counter	
Task states	
Name	Value
Receive Frames	0
Transmit Frames	0
Transmit Error	0
Receive Error	0
Target Rotation Timeout	0

Figure 61: Extended Diagnosis > PROFIBUS_DL> Counter

The values of the counter **Receive Frames** and **Transmit Frames** show generally whether there is bus activity or not.

Name	Description
Receive Frames	Counter for number received frames
Transmit Frames	Counter for number transmitted frames
Transmit Error	Counter for number transmitted errors
Receive Error	Counter for number received errors
Target Rotation Timeout	Counter for number target rotation timeout

Table 31: Extended Diagnosis > PROFIBUS_DL> Counter

8.6 PROFIBUS_MPI/Commands

Commands	
Task states	
Name	Value
Cyclic ind.	4711
Unknown req./cnf.	0
Get packet failed	0
Send packet failed	0
Command pck. routed to Profibus DL	0
Initialization req.	1
Initialization cnf.	1
Transparent req.	0
Transparent cnf.	0
Read/Write Data Block req.	0
Read/Write Data Block cnf.	0
Read Operation state req.	0
Read Operation state cnf.	0
Read/Write Memory Block req.	0
Read/Write Memory Block cnf.	0
Read/Write I/O Area req.	0
Read/Write I/O Area cnf.	0
Read/Write Counter Area req.	0
Read/Write Counter Area cnf.	0
Read/Write Timer Area req.	0
Read/Write Timer Area cnf.	0
Disconnect Device req.	0
Disconnect Device cnf.	0
Disconnect All Device req.	0
Disconnect All Device cnf.	0
Set Bus Parameter req.	1
Set Bus Parameter cnf.	0
Close Socket req.	0
Close Socket cnf.	0
Multiple Read req.	0
Multiple Read cnf.	0
Multiple Write req.	0
Multiple Write cnf.	0
Get Info req.	4711
Get Info cnf.	4711

Figure 62: Extended Diagnosis > PROFIBUS_MPI > Commands (Example)

Name	Description
[Service]	Diagnosis counter: Indicates the services processed. (The services of the single packets are described in the PROFIBUS MPI Protocol API manual [4].)

Table 32: Extended Diagnosis > PROFIBUS_MPI > Commands

8.7 PROFIBUS_MPI_AP/Commands

Commands	
Task states	
Name	Value
Cyclic ind.	5799
Unknown req./cnf.	0
Get packet failed	0
Send packet failed	0
Command pck. routed to Profibus ...	0
Command pck. routed to Profibus DL	0
Set config req.	1
Set config cnf.	1
Set config req.	0
Set config cnf.	0

Figure 63: Extended Diagnosis > PROFIBUS_MPI_AP > Commands (Example)

Name	Description
[Service]	Diagnosis counter: Indicates the services processed. (The services of the single packets are described in the PROFIBUS MPI Protocol API manual [4].)

Table 33: Extended Diagnosis > PROFIBUS_MPI_AP > Commands

9 Error Codes

9.1 Error Code Definition

For COM based application, like the ODM Server and ODM drivers, a common error definition is used, similar to the Microsoft Windows® HRESULT definition.

Error Code Structure:

COM Errors are HRESULTs, which are 32 bit values using the following layout:

```

3 3 2 2 2 2 2 2 2 2 2 2 1 1 1 1 1 1 1 1 1 1
1 0 9 8 7 6 5 4 3 2 1 0 9 8 7 6 5 4 3 2 1 0
+---+---+-----+-----+
|Sev|C|R|   Facility   |           Code           |
+---+---+-----+-----+
```

where

Sev - is the severity code:

00 - Success

01 - Informational

10 - Warning

11 - Error

C - is the Customer code flag

R - is a reserved bit

Facility - is the facility code

Code - is the facility's status code

In this common error definition, several error code regions are already reserved by Windows® itself, the ODM and some other modules.

9.2 Overview Error Codes

Overview Error Codes	Range
General Hardware Errors RCX Operating System	<i>RCX General Task:</i> 0xC02B0001 to 0xC02B4D52
	<i>RCX Common Status & Errors Codes:</i> 0x00000000 to 0xC002000C
	<i>RCX Status & Error Codes:</i> 0x00000000 to 0xC0000008
ODM Server	<i>General ODM Error Codes:</i> 0x8004C700 to 0x8004C761
	<i>General ODM Driver Error Codes:</i> 0x8004C7A0 to 0x8004C7C2
ODM Drivers	<i>cifX Driver Specific ODM Error:</i> 0x8004C001 to 0x8004C0A4
cifX Device Driver and netX Driver	<i>Generic Error:</i> 0x800A0001 to 0x800A0017
	<i>Generic Driver Error:</i> 0x800B0001 to 0x800B0042
	<i>Generic Device Error:</i> 0x800C0010 to 0x800C0041
netX Driver	<i>CIFX API Transport:</i> 0x800D0001 to 0x800D0013
	<i>CIFX API Transport Header State Error:</i> 0x800E0001 to 0x800E000B
DBM	<i>ODM Error Codes:</i> 0xC004C810 to 0xC004C878

Table 34: Overview Error Codes and Ranges



The fieldbus specific error codes are described in the manuals of the corresponding protocol tasks.

9.3 General Hardware Error Codes

9.3.1 RCX General Task Errors

Error Code (Definition)	Value	Description
RCX_E_QUE_UNKNOWN	0xC02B0001	Unknown Queue
RCX_E_QUE_INDEX_UNKNOWN	0xC02B0002	Unknown Queue Index
RCX_E_TASK_UNKNOWN	0xC02B0003	Unknown Task
RCX_E_TASK_INDEX_UNKNOWN	0xC02B0004	Unknown Task Index
RCX_E_TASK_HANDLE_INVALID	0xC02B0005	Invalid Task Handle
RCX_E_TASK_INFO_IDX_UNKNOWN	0xC02B0006	Unknown Index
RCX_E_FILE_XFR_TYPE_INVALID	0xC02B0007	Invalid Transfer Type
RCX_E_FILE_REQUEST_INCORRECT	0xC02B0008	Invalid File Request
RCX_E_TASK_INVALID	0xC02B000E	Invalid Task
RCX_E_SEC_FAILED	0xC02B001D	Security EEPROM Access Failed
RCX_E_EEPROM_DISABLED	0xC02B001E	EEPROM Disabled
RCX_E_INVALID_EXT	0xC02B001F	Invalid Extension
RCX_E_SIZE_OUT_OF_RANGE	0xC02B0020	Block Size Out Of Range
RCX_E_INVALID_CHANNEL	0xC02B0021	Invalid Channel
RCX_E_INVALID_FILE_LEN	0xC02B0022	Invalid File Length
RCX_E_INVALID_CHAR_FOUND	0xC02B0023	Invalid Character Found
RCX_E_PACKET_OUT_OF_SEQ	0xC02B0024	Packet Out Of Sequence
RCX_E_SEC_NOT_ALLOWED	0xC02B0025	Not Allowed In Current State
RCX_E_SEC_INVALID_ZONE	0xC02B0026	Security EEPROM Invalid Zone
RCX_E_SEC_EEPROM_NOT_AVAIL	0xC02B0028	Security EEPROM Eeprom Not Available
RCX_E_SEC_INVALID_CHECKSUM	0xC02B0029	Security EEPROM Invalid Checksum
RCX_E_SEC_ZONE_NOT_WRITEABLE	0xC02B002A	Security EEPROM Zone Not Writeable
RCX_E_SEC_READ_FAILED	0xC02B002B	Security EEPROM Read Failed
RCX_E_SEC_WRITE_FAILED	0xC02B002C	Security EEPROM Write Failed
RCX_E_SEC_ACCESS_DENIED	0xC02B002D	Security EEPROM Access Denied
RCX_E_SEC_EEPROM_EMULATED	0xC02B002E	Security EEPROM Emulated
RCX_E_INVALID_BLOCK	0xC02B0038	Invalid Block
RCX_E_INVALID_STRUCT_NUMBER	0xC02B0039	Invalid Structure Number
RCX_E_INVALID_CHECKSUM	0xC02B4352	Invalid Checksum
RCX_E_CONFIG_LOCKED	0xC02B4B54	Configuration Locked
RCX_E_SEC_ZONE_NOT_READABLE	0xC02B4D52	Security EEPROM Zone Not Readable

Table 35: RCX General Task Errors

9.3.2 RCX Common Status & Errors Codes

Error Code (Definition)	Value	Description
RCX_S_OK	0x00000000	Success, Status Okay
RCX_E_FAIL	0xC0000001	Fail
RCX_E_UNEXPECTED	0xC0000002	Unexpected
RCX_E_OUTOFMEMORY	0xC0000003	Out Of Memory
RCX_E_UNKNOWN_COMMAND	0xC0000004	Unknown Command
RCX_E_UNKNOWN_DESTINATION	0xC0000005	Unknown Destination
RCX_E_UNKNOWN_DESTINATION_ID	0xC0000006	Unknown Destination ID
RCX_E_INVALID_PACKET_LEN	0xC0000007	Invalid Packet Length
RCX_E_INVALID_EXTENSION	0xC0000008	Invalid Extension
RCX_E_INVALID_PARAMETER	0xC0000009	Invalid Parameter
RCX_E_WATCHDOG_TIMEOUT	0xC000000C	Watchdog Timeout
RCX_E_INVALID_LIST_TYPE	0xC000000D	Invalid List Type
RCX_E_UNKNOWN_HANDLE	0xC000000E	Unknown Handle
RCX_E_PACKET_OUT_OF_SEQ	0xC000000F	Out Of Sequence
RCX_E_PACKET_OUT_OF_MEMORY	0xC0000010	Out Of Memory
RCX_E_QUE_PACKETDONE	0xC0000011	Queue Packet Done
RCX_E_QUE_SENDPACKET	0xC0000012	Queue Send Packet
RCX_E_POOL_PACKET_GET	0xC0000013	Pool Packet Get
RCX_E_POOL_GET_LOAD	0xC0000015	Pool Get Load
RCX_E_REQUEST_RUNNING	0xC000001A	Request Already Running
RCX_E_INIT_FAULT	0xC0000100	Initialization Fault
RCX_E_DATABASE_ACCESS_FAILED	0xC0000101	Database Access Failed
RCX_E_NOT_CONFIGURED	0xC0000119	Not Configured
RCX_E_CONFIGURATION_FAULT	0xC0000120	Configuration Fault
RCX_E_INCONSISTENT_DATA_SET	0xC0000121	Inconsistent Data Set
RCX_E_DATA_SET_MISMATCH	0xC0000122	Data Set Mismatch
RCX_E_INSUFFICIENT_LICENSE	0xC0000123	Insufficient License
RCX_E_PARAMETER_ERROR	0xC0000124	Parameter Error
RCX_E_INVALID_NETWORK_ADDRESS	0xC0000125	Invalid Network Address
RCX_E_NO_SECURITY_MEMORY	0xC0000126	No Security Memory
RCX_E_NETWORK_FAULT	0xC0000140	Network Fault
RCX_E_CONNECTION_CLOSED	0xC0000141	Connection Closed
RCX_E_CONNECTION_TIMEOUT	0xC0000142	Connection Timeout
RCX_E_LONELY_NETWORK	0xC0000143	Lonely Network
RCX_E_DUPLICATE_NODE	0xC0000144	Duplicate Node
RCX_E_CABLE_DISCONNECT	0xC0000145	Cable Disconnected
RCX_E_BUS_OFF	0xC0000180	Network Node Bus Off
RCX_E_CONFIG_LOCKED	0xC0000181	Configuration Locked
RCX_E_APPLICATION_NOT_READY	0xC0000182	Application Not Ready
RCX_E_TIMER_APPL_PACKET_SENT	0xC002000C	Timer App Packet Sent

Table 36: RCX Common Status & Errors Codes

9.3.3 RCX Status & Error Codes

Error Code (Definition)	Value	Description
RCX_S_OK	0x00000000	SUCCESS, STATUS OKAY
RCX_S_QUE_UNKNOWN	0xC02B0001	UNKNOWN QUEUE
RCX_S_QUE_INDEX_UNKNOWN	0xC02B0002	UNKNOWN QUEUE INDEX
RCX_S_TASK_UNKNOWN	0xC02B0003	UNKNOWN TASK
RCX_S_TASK_INDEX_UNKNOWN	0xC02B0004	UNKNOWN TASK INDEX
RCX_S_TASK_HANDLE_INVALID	0xC02B0005	INVALID TASK HANDLE
RCX_S_TASK_INFO_IDX_UNKNOWN	0xC02B0006	UNKNOWN INDEX
RCX_S_FILE_XFR_TYPE_INVALID	0xC02B0007	INVALID TRANSFER TYPE
RCX_S_FILE_REQUEST_INCORRECT	0xC02B0008	INVALID FILE REQUEST
RCX_S_UNKNOWN_DESTINATION	0xC0000005	UNKNOWN DESTINATION
RCX_S_UNKNOWN_DESTINATION_ID	0xC0000006	UNKNOWN DESTINATION ID
RCX_S_INVALID_LENGTH	0xC0000007	INVALID LENGTH
RCX_S_UNKNOWN_COMMAND	0xC0000004	UNKNOWN COMMAND
RCX_S_INVALID_EXTENSION	0xC0000008	INVALID EXTENSION

Table 37: RCX Status & Error Codes

9.3.3.1 RCX Status & Error Codes Slave State

Error Code (Definition)	Value	Description
RCX_SLAVE_STATE_UNDEFINED	0x00000000	UNDEFINED
RCX_SLAVE_STATE_OK	0x00000001	OK
RCX_SLAVE_STATE_FAILED	0x00000002	FAILED (at least one slave)

Table 38: RCX Status & Error Codes Slave State

9.4 ODM Error Codes

9.4.1 General ODM Error Codes

Error Code (Definition)	Value	Description
CODM3_E_INTERNALERROR	0x8004C700	Internal ODM Error
ODM3_E_DESCRIPTION_NOTFOUND	0x8004C701	Description not found in ODM database
CODM3_E_WRITEREGISTRY	0x8004C710	Error writing to the registry
CODM3_E_BAD_REGULAR_EXPRESSION	0x8004C711	Invalid regular expression
CODM3_E_COMCATEGORIE_MANAGER_FAILED	0x8004C712	Component Category Manager could not be instantiated
CODM3_E_COMCATEGORIE_ENUMERATION_FAILED	0x8004C713	Driver could not be enumerated by the Category Manager
CODM3_E_CREATE_LOCAL_BUFFER	0x8004C714	Error creating local buffers
CODM3_E_UNKNOWNHANDLE	0x8004C715	Unknown handle
CODM3_E_QUEUE_LIMIT_REACHED	0x8004C717	Queue size limit for connection reached
CODM3_E_DATASIZE_ZERO	0x8004C718	Zero data length passed
CODM3_E_INVALID_DATA	0x8004C719	Invalid data content
CODM3_E_INVALID_MODE	0x8004C71A	Invalid mode
CODM3_E_DATABASE_READ	0x8004C71B	Error reading database
CODM3_E_CREATE_DEVICE_THREAD	0x8004C750	Error creating device thread
CODM3_E_CREATE_DEVICE_THREAD_STOP_EVENT	0x8004C751	Error creating device thread stop event
CODM3_E_CLIENT_NOT_REGISTERED	0x8004C752	Client is not registered at the ODM
CODM3_E_NO_MORE_CLIENTS	0x8004C753	Maximum number of clients reached
CODM3_E_MAX_CLIENT_CONNECTIONS_REACHED	0x8004C754	Maximum number of client connections reached
CODM3_E_ENTRY_NOT_FOUND	0x8004C755	Driver/device not found
CODM3_E_DRIVER_NOT_FOUND	0x8004C757	The requested driver is unknown to the ODM
CODM3_E_DEVICE_ALREADY_LOCKED	0x8004C758	Device is locked by another process
CODM3_E_DEVICE_UNLOCKED_FAILED	0x8004C759	Device could not be unlocked, lock was set by another process
CODM3_E_DEVICE_LOCK_NECESSARY	0x8004C75A	Operation requires a device lock to be set
CODM3_E_DEVICE_SUBSCRIPTIONLIMIT	0x8004C75B	Maximum number of servers registered for this device reached
CODM3_E_DEVICE_NOTSUBSCRIBED	0x8004C75C	Process is not registered as a server on this device
CODM3_E_DEVICE_NO_MESSAGE	0x8004C75D	No message available
CODM3_E_TRANSFERTIMEOUT	0x8004C760	Message transfer timeout
CODM3_E_MESSAGE_INSERVICE	0x8004C761	Message in service

Table 39: ODM Error Codes - General ODM Error Codes

9.4.2 General ODM Driver Error Codes

Error Code (Definition)	Value	Description
CODM3_E_DRV_OPEN_DEVICE	0x8004C7A0	Packet type unsupported by driver
CODM3_E_DRV_INVALID_IDENTIFIER	0x8004C7A1	Invalid device identifier
CODM3_E_DRV_DEVICE_PARAMETERS_MISMATCH	0x8004C7A3	Parameters differ from requested device
CODM3_E_DRV_BROWSE_NO_DEVICES	0x8004C7A4	No devices found
CODM3_E_DRV_CREATE_DEVICE_INST	0x8004C7A5	Device instance could not be created
CODM3_E_DRV_DEVICE_NOMORE_TX	0x8004C7A6	Device connection limit reached
CODM3_E_DRV_DEVICE_DUPLICATE_TX	0x8004C7A7	Duplicate transmitter ID
CODM3_E_DRV_DEVICE_NOT_CONFIGURED	0x8004C7A8	Device is not configured
CODM3_E_DRV_DEVICE_COMMUNICATION	0x8004C7A9	Device communication error
CODM3_E_DRV_DEVICE_NO_MESSAGE	0x8004C7AA	No message available
CODM3_E_DRV_DEVICE_NOT_READY	0x8004C7AB	Device not ready
CODM3_E_DRV_INVALIDCONFIGURATION	0x8004C7AC	Invalid driver configuration
CODM3_E_DRV_DLINVALIDMODE	0x8004C7C0	Invalid download mode
CODM3_E_DRV_DLINPROGRESS	0x8004C7C1	Download is active
CODM3_E_DRV_ULINPROGRESS	0x8004C7C2	Upload is active

Table 40: ODM Error Codes - General ODM Driver Error Codes

9.4.3 cifX Driver Specific ODM Error Codes

cifX Driver Specific ODM Error Codes		
Error Code (Definition)	Value	Description
DRV_E_BOARD_NOT_INITIALIZED	0x8004C001	DRIVER Board not initialized
DRV_E_INIT_STATE_ERROR	0x8004C002	DRIVER Error in internal init state
DRV_E_READ_STATE_ERROR	0x8004C003	DRIVER Error in internal read state
DRV_E_CMD_ACTIVE	0x8004C004	DRIVER Command on this channel is active
DRV_E_PARAMETER_UNKNOWN	0x8004C005	DRIVER Unknown parameter in function
DRV_E_WRONG_DRIVER_VERSION	0x8004C006	DRIVER Version is incompatible with DLL
DRV_E_PCI_SET_CONFIG_MODE	0x8004C007	DRIVER Error during PCI set configuration mode
DRV_E_PCI_READ_DPM_LENGTH	0x8004C008	DRIVER Could not read PCI dual port memory length
DRV_E_PCI_SET_RUN_MODE	0x8004C009	DRIVER Error during PCI set run mode
DRV_E_DEV_DPM_ACCESS_ERROR	0x8004C00A	DEVICE Dual port ram not accessible(board not found)
DRV_E_DEV_NOT_READY	0x8004C00B	DEVICE Not ready (ready flag failed)
DRV_E_DEV_NOT_RUNNING	0x8004C00C	DEVICE Not running (running flag failed)
DRV_E_DEV_WATCHDOG_FAILED	0x8004C00D	DEVICE Watchdog test failed
DRV_E_DEV_OS_VERSION_ERROR	0x8004C00E	DEVICE Signals wrong OS version
DRV_E_DEV_SYSERR	0x8004C00F	DEVICE Error in dual port flags
DRV_E_DEV_MAILBOX_FULL	0x8004C010	DEVICE Send mailbox is full
DRV_E_DEV_PUT_TIMEOUT	0x8004C011	DEVICE PutMessage timeout
DRV_E_DEV_GET_TIMEOUT	0x8004C012	DEVICE GetMessage timeout
DRV_E_DEV_GET_NO_MESSAGE	0x8004C013	DEVICE No message available
DRV_E_DEV_RESET_TIMEOUT	0x8004C014	DEVICE RESET command timeout
DRV_E_DEV_NO_COM_FLAG	0x8004C015	DEVICE COM-flag not set. Check if Bus is running
DRV_E_DEV_EXCHANGE_FAILED	0x8004C016	DEVICE I/O data exchange failed
DRV_E_DEV_EXCHANGE_TIMEOUT	0x8004C017	DEVICE I/O data exchange timeout
DRV_E_DEV_COM_MODE_UNKNOWN	0x8004C018	DEVICE I/O data mode unknown
DRV_E_DEV_FUNCTION_FAILED	0x8004C019	DEVICE Function call failed
DRV_E_DEV_DPMSIZE_MISMATCH	0x8004C01A	DEVICE DPM size differs from configuration
DRV_E_DEV_STATE_MODE_UNKNOWN	0x8004C01B	DEVICE State mode unknown
DRV_E_DEV_HW_PORT_IS_USED	0x8004C01C	DEVICE Output port already in use
DRV_E_USR_OPEN_ERROR	0x8004C01E	USER Driver not opened (device driver not loaded)
DRV_E_USR_INIT_DRV_ERROR	0x8004C01F	USER Can't connect to device
DRV_E_USR_NOT_INITIALIZED	0x8004C020	USER Board not initialized (DevInitBoard not called)
DRV_E_USR_COMM_ERR	0x8004C021	USER IOCTL function failed
DRV_E_USR_DEV_NUMBER_INVALID	0x8004C022	USER Parameter DeviceNumber invalid
DRV_E_USR_INFO_AREA_INVALID	0x8004C023	USER Parameter InfoArea unknown
DRV_E_USR_NUMBER_INVALID	0x8004C024	USER Parameter Number invalid
DRV_E_USR_MODE_INVALID	0x8004C025	USER Parameter Mode invalid
DRV_E_USR_MSG_BUF_NULL_PTR	0x8004C026	USER NULL pointer assignment
DRV_E_USR_MSG_BUF_TOO_SHORT	0x8004C027	USER Message buffer too small

cifX Driver Specific ODM Error Codes		
Error Code (Definition)	Value	Description
DRV_E_USR_SIZE_INVALID	0x8004C028	USER Parameter Size invalid
DRV_E_USR_SIZE_ZERO	0x8004C02A	USER Parameter Size with zero length
DRV_E_USR_SIZE_TOO_LONG	0x8004C02B	USER Parameter Size too long
DRV_E_USR_DEV_PTR_NULL	0x8004C02C	USER Device address null pointer
DRV_E_USR_BUF_PTR_NULL	0x8004C02D	USER Pointer to buffer is a null pointer
DRV_E_USR_SENDSIZE_TOO_LONG	0x8004C02E	USER Parameter SendSize too large
DRV_E_USR_RECVSIZE_TOO_LONG	0x8004C02F	USER Parameter ReceiveSize too large
DRV_E_USR_SENDBUF_PTR_NULL	0x8004C030	USER Pointer to send buffer is a null pointer
DRV_E_USR_RECVBUF_PTR_NULL	0x8004C031	USER Pointer to receive buffer is a null pointer
DRV_E_DMA_INSUFF_MEM	0x8004C032	DMA Memory allocation error
DRV_E_DMA_TIMEOUT_CH4	0x8004C033	DMA Read I/O timeout
DRV_E_DMA_TIMEOUT_CH5	0x8004C034	DMA Write I/O timeout
DRV_E_DMA_TIMEOUT_CH6	0x8004C035	DMA PCI transfer timeout
DRV_E_DMA_TIMEOUT_CH7	0x8004C036	DMA Download timeout
DRV_E_DMA_DB_DOWN_FAIL	0x8004C037	DMA Database download failed
DRV_E_DMA_FW_DOWN_FAIL	0x8004C038	DMA Firmware download failed
DRV_E_CLEAR_DB_FAIL	0x8004C039	DMA Clear database on the device failed
DRV_E_DEV_NO_VIRTUAL_MEM	0x8004C03C	DMA USER Virtual memory not available
DRV_E_DEV_UNMAP_VIRTUAL_MEM	0x8004C03D	DMA USER Unmap virtual memory failed
DRV_E_GENERAL_ERROR	0x8004C046	DRIVER General error
DRV_E_DMA_ERROR	0x8004C047	DRIVER General DMA error
DRV_E_WDG_IO_ERROR	0x8004C048	DRIVER I/O WatchDog failed
DRV_E_WDG_DEV_ERROR	0x8004C049	DRIVER Device Watchdog failed
DRV_E_USR_DRIVER_UNKNOWN	0x8004C050	USER Driver unknown
DRV_E_USR_DEVICE_NAME_INVALID	0x8004C051	USER Device name invalid
DRV_E_USR_DEVICE_NAME_UNKNOWN	0x8004C052	USER Device name unknown
DRV_E_USR_DEVICE_FUNC_NOTIMPL	0x8004C053	USER Device function not implemented
DRV_E_USR_FILE_OPEN_FAILED	0x8004C064	USER File could not be opened
DRV_E_USR_FILE_SIZE_ZERO	0x8004C065	USER File size zero
DRV_E_USR_FILE_NO_MEMORY	0x8004C066	USER Not enough memory to load file
DRV_E_USR_FILE_READ_FAILED	0x8004C067	USER File read failed
DRV_E_USR_INVALID_FILETYPE	0x8004C068	USER File type invalid
DRV_E_USR_FILENAME_INVALID	0x8004C069	USER Invalid filename
DRV_E_FW_FILE_OPEN_FAILED	0x8004C06E	USER Firmware file could not be opened
DRV_E_FW_FILE_SIZE_ZERO	0x8004C06F	USER Not enough memory to load firmware file
DRV_E_FW_FILE_NO_MEMORY	0x8004C070	USER Not enough memory to load firmware file
DRV_E_FW_FILE_READ_FAILED	0x8004C071	USER Firmware file read failed
DRV_E_FW_INVALID_FILETYPE	0x8004C072	USER Firmware file type invalid
DRV_E_FW_FILENAME_INVALID	0x8004C073	USER Firmware file name not valid
DRV_E_FW_DOWNLOAD_ERROR	0x8004C074	USER Firmware file download error
DRV_E_FW_FILENAME_NOT_FOUND	0x8004C075	USER Firmware file not found in the internal table
DRV_E_FW_BOOTLOADER_ACTIVE	0x8004C076	USER Firmware file BOOTLOADER active

cifX Driver Specific ODM Error Codes		
Error Code (Definition)	Value	Description
DRV_E_FW_NO_FILE_PATH	0x8004C077	USER Firmware file no file path
DRV_E_CF_FILE_OPEN_FAILED	0x8004C078	USER Configuration file could not be opened
DRV_E_CF_FILE_SIZE_ZERO	0x8004C079	USER Configuration file size zero
DRV_E_CF_FILE_NO_MEMORY	0x8004C07A	USER Not enough memory to load configuration file
DRV_E_CF_FILE_READ_FAILED	0x8004C07B	USER Configuration file read failed
DRV_E_CF_INVALID_FILETYPE	0x8004C07C	USER Configuration file type invalid
DRV_E_CF_FILENAME_INVALID	0x8004C07D	USER Configuration file name not valid
DRV_E_CF_DOWNLOAD_ERROR	0x8004C07E	USER Configuration file download error
DRV_E_CF_FILE_NO_SEGMENT	0x8004C07F	USER No flash segment in the configuration file
DRV_E_CF_DIFFERS_FROM_DBM	0x8004C080	USER Configuration file differs from database
DRV_E_DBM_SIZE_ZERO	0x8004C083	USER Database size zero
DRV_E_DBM_NO_MEMORY	0x8004C084	USER Not enough memory to upload database
DRV_E_DBM_READ_FAILED	0x8004C085	USER Database read failed
DRV_E_DBM_NO_FLASH_SEGMENT	0x8004C086	USER Database segment unknown
DEV_E_CF_INVALID_DESCRIPTOR_VERSION	0x8004C096	CONFIG Version of the descriptor table invalid
DEV_E_CF_INVALID_INPUT_OFFSET	0x8004C097	CONFIG Input offset is invalid
DEV_E_CF_NO_INPUT_SIZE	0x8004C098	CONFIG Input size is 0
DEV_E_CF_MISMATCH_INPUT_SIZE	0x8004C099	CONFIG Input size does not match configuration
DEV_E_CF_INVALID_OUTPUT_OFFSET	0x8004C09A	CONFIG Invalid output offset
DEV_E_CF_NO_OUTPUT_SIZE	0x8004C09B	CONFIG Output size is 0
DEV_E_CF_MISMATCH_OUTPUT_SIZE	0x8004C09C	CONFIG Output size does not match configuration
DEV_E_CF_STN_NOT_CONFIGURED	0x8004C09D	CONFIG Station not configured
DEV_E_CF_CANNOT_GET_STN_CONFIG	0x8004C09E	CONFIG Cannot get the Station configuration
DEV_E_CF_MODULE_DEF_MISSING	0x8004C09F	CONFIG Module definition is missing
DEV_E_CF_MISMATCH_EMPTY_SLOT	0x8004C0A0	CONFIG Empty slot mismatch
DEV_E_CF_MISMATCH_INPUT_OFFSET	0x8004C0A1	CONFIG Input offset mismatch
DEV_E_CF_MISMATCH_OUTPUT_OFFSET	0x8004C0A2	CONFIG Output offset mismatch
DEV_E_CF_MISMATCH_DATA_TYPE	0x8004C0A3	CONFIG Data type mismatch
DEV_E_CF_MODULE_DEF_MISSING_NO_SI	0x8004C0A4	CONFIG Module definition is missing,(no Slot/Idx)

Table 41: cifX Driver Specific ODM Error Codes

9.5 Error Codes cifX Device Driver and netX Driver

9.5.1 Generic Error Codes

Error Code (Definition)	Value	Description
CIFX_INVALID_POINTER	0x800A0001L	Invalid pointer (NULL) passed to driver
CIFX_INVALID_BOARD	0x800A0002L	No board with the given nameindex available
CIFX_INVALID_CHANNEL	0x800A0003L	No channel with the given index available
CIFX_INVALID_HANDLE	0x800A0004L	Invalid handle passed to driver
CIFX_INVALID_PARAMETER	0x800A0005L	Invalid parameter
CIFX_INVALID_COMMAND	0x800A0006L	Invalid command
CIFX_INVALID_BUFFERSIZE	0x800A0007L	Invalid buffer size
CIFX_INVALID_ACCESS_SIZE	0x800A0008L	Invalid access size
CIFX_FUNCTION_FAILED	0x800A0009L	Function failed
CIFX_FILE_OPEN_FAILED	0x800A000AL	File could not be opened
CIFX_FILE_SIZE_ZERO	0x800A000BL	File size is zero
CIFX_FILE_LOAD_INSUFF_MEM	0x800A000CL	Insufficient memory to load file
CIFX_FILE_CHECKSUM_ERROR	0x800A000DL	File checksum compare failed
CIFX_FILE_READ_ERROR	0x800A000EL	Error reading from file
CIFX_FILE_TYPE_INVALID	0x800A000FL	Invalid file type
CIFX_FILE_NAME_INVALID	0x800A0010L	Invalid file name
CIFX_FUNCTION_NOT_AVAILABLE	0x800A0011L	Driver function not available
CIFX_BUFFER_TOO_SHORT	0x800A0012L	Given buffer is too short
CIFX_MEMORY_MAPPING_FAILED	0x800A0013L	Failed to map the memory
CIFX_NO_MORE_ENTRIES	0x800A0014L	No more entries available
CIFX_CALLBACK_MODE_UNKNOWN	0x800A0015L	Unkown callback handling mode
CIFX_CALLBACK_CREATE_EVENT_FAILED	0x800A0016L	Failed to create callback events
CIFX_CALLBACK_CREATE_RECV_BUFFER	0x800A0017L	Failed to create callback receive buffer

Table 42: Generic Error Codes

9.5.2 Generic Driver Error Codes

Error Code (Definition)	Value	Description
CIFX_DRV_NOT_INITIALIZED	0x800B0001L	Driver not initialized
CIFX_DRV_INIT_STATE_ERROR	0x800B0002L	Driver init state error
CIFX_DRV_READ_STATE_ERROR	0x800B0003L	Driver read state error
CIFX_DRV_CMD_ACTIVE	0x800B0004L	Command is active on device
CIFX_DRV_DOWNLOAD_FAILED	0x800B0005L	General error during download
CIFX_DRV_WRONG_DRIVER_VERSION	0x800B0006L	Wrong driver version
CIFX_DRV_DRIVER_NOT_LOADED	0x800B0030L	CIFx driver is not running
CIFX_DRV_INIT_ERROR	0x800B0031L	Failed to initialize the device
CIFX_DRV_CHANNEL_NOT_INITIALIZED	0x800B0032L	Channel not initialized (xOpenChannel not called)
CIFX_DRV_IO_CONTROL_FAILED	0x800B0033L	IOControl call failed
CIFX_DRV_NOT_OPENED(0x800B0034L	Driver was not opened
CIFX_DRV_DOWNLOAD_STORAGE_UNKN OWN	0x800B0040L	Unknown download storage type (RAMFLASH based) found
CIFX_DRV_DOWNLOAD_FW_WRONG_CHA NNEL	0x800B0041L	Channel number for a firmware download not supported
CIFX_DRV_DOWNLOAD_MODULE_NO_BAS EOS	0x800B0042L	Modules are not allowed without a Base OS firmware

Table 43: Generic Driver Error Codes

9.5.3 Generic Device Error Codes

Error Code (Definition)	Value	Description
CIFX_DEV_DPM_ACCESS_ERROR	0x800C0010L	Dual port memory not accessible (board not found)
CIFX_DEV_NOT_READY	0x800C0011L	Device not ready (ready flag failed)
CIFX_DEV_NOT_RUNNING	0x800C0012L	Device not running (running flag failed)
CIFX_DEV_WATCHDOG_FAILED	0x800C0013L	Watchdog test failed
CIFX_DEV_SYSERR	0x800C0015L	Error in handshake flags
CIFX_DEV_MAILBOX_FULL	0x800C0016L	Send mailbox is full
CIFX_DEV_PUT_TIMEOUT	0x800C0017L	Send packet timeout
CIFX_DEV_GET_TIMEOUT	0x800C0018L	Receive packet timeout
CIFX_DEV_GET_NO_PACKET	0x800C0019L	No packet available
CIFX_DEV_MAILBOX_TOO_SHORT	0x800C001AL	Mailbox too short
CIFX_DEV_RESET_TIMEOUT	0x800C0020L	Reset command timeout
CIFX_DEV_NO_COM_FLAG	0x800C0021L	COM-flag not set
CIFX_DEV_EXCHANGE_FAILED	0x800C0022L	IO data exchange failed
CIFX_DEV_EXCHANGE_TIMEOUT	0x800C0023L	IO data exchange timeout
CIFX_DEV_COM_MODE_UNKNOWN	0x800C0024L	Unknown IO exchange mode
CIFX_DEV_FUNCTION_FAILED	0x800C0025L	Device function failed
CIFX_DEV_DPMSIZE_MISMATCH	0x800C0026L	DPM size differs from configuration
CIFX_DEV_STATE_MODE_UNKNOWN	0x800C0027L	Unknown state mode
CIFX_DEV_HW_PORT_IS_USED	0x800C0028L	Device is still accessed
CIFX_DEV_CONFIG_LOCK_TIMEOUT	0x800C0029L	Configuration locking timeout
CIFX_DEV_CONFIG_UNLOCK_TIMEOUT	0x800C002AL	Configuration unlocking timeout
CIFX_DEV_HOST_STATE_SET_TIMEOUT	0x800C002BL	Set HOST state timeout
CIFX_DEV_HOST_STATE_CLEAR_TIMEOUT	0x800C002CL	Clear HOST state timeout
CIFX_DEV_INITIALIZATION_TIMEOUT	0x800C002DL	Timeout during channel initialization
CIFX_DEV_BUS_STATE_ON_TIMEOUT	0x800C002EL	Set Bus ON Timeout
CIFX_DEV_BUS_STATE_OFF_TIMEOUT	0x800C002FL	Set Bus OFF Timeout
CIFX_DEV_MODULE_ALREADY_RUNNING	0x800C0040L	Module already running
CIFX_DEV_MODULE_ALREADY_EXISTS	0x800C0041L	Module already exists

Table 44: Generic Device Error Codes

9.6 Error Codes netX Driver

9.6.1 CIFS API Transport Error Codes

Error Code (Definition)	Value	Description
CIFS_TRANSPORT_SEND_TIMEOUT	0x800D0001L	Time out while sending data
CIFS_TRANSPORT_RECV_TIMEOUT	0x800D0002L	Time out waiting for incoming data
CIFS_TRANSPORT_CONNECT	0x800D0003L	Unable to communicate to the device no answer
CIFS_TRANSPORT_ABORTED	0x800D0004L	Transfer has been aborted due to keep alive timeout or interface detachment
CIFS_CONNECTOR_FUNCTIONS_READ_ERROR	0x800D0010L	Error reading the connector functions from the DLL
CIFS_CONNECTOR_IDENTIFIER_TOO_LONG	0x800D0011L	Connector delivers an identifier longer than 6 characters
CIFS_CONNECTOR_IDENTIFIER_EMPTY	0x800D0012L	Connector delivers an empty identifier
CIFS_CONNECTOR_DUPLICATE_IDENTIFIER	0x800D0013L	Connector identifier already used

Table 45: CIFS API Transport Error Codes

9.6.2 CIFS API Transport Header State Error Codes

Error Code (Definition)	Value	Description
CIFS_TRANSPORT_ERROR_UNKNOWN	0x800E0001L	Unknown error code in transport header
CIFS_TRANSPORT_CHECKSUM_ERROR	0x800E0002L	CRC16 checksum failed
CIFS_TRANSPORT_LENGTH_INCOMPLETE	0x800E0003L	Transaction with incomplete length detected
CIFS_TRANSPORT_DATA_TYPE_UNKNOWN	0x800E0004L	Device does not support requested data type
CIFS_TRANSPORT_DEVICE_UNKNOWN	0x800E0005L	Device not available unknown
CIFS_TRANSPORT_CHANNEL_UNKNOWN	0x800E0006L	Channel not available unknown
CIFS_TRANSPORT_SEQUENCE	0x800E0007L	Sequence error detected
CIFS_TRANSPORT_BUFFER_OVERFLOW	0x800E0008L	Buffer overflow detected
CIFS_TRANSPORT_RESOURCE	0x800E0009L	Device signals out of resources
CIFS_TRANSPORT_KEEPALIVE	0x800E000AL	Device connection monitoring error (Keep alive)
CIFS_TRANSPORT_DATA_TOO_SHORT	0x800E000BL	Received transaction data too short

Table 46: CIFS API Transport Header State Error Codes

9.7 ODM Error Codes DBM V4

ODM Error Codes DBM V4		
Error Code (Definition)	Value	Description
CDBM_E_MD5_INVALID	0XC004C810	Checksum invalid
CDBM_E_INTERNALERROR	0XC004C811	Internal Error
CDBM_W_WRITEREGISTRY	0X8004C812	Error writing to the registry
CDBM_E_UNEXPECTED_VALUE_IN_OLD_HEADER_FORMAT	0XC004C813	Error in a file containing the old DBM Header format.
CDBM_E_CHECKSUM_INVALID	0XC004C814	The Checksum of the old Header is invalid
CDBM_E_DB_ALREADY_LOADED_FORMAT	0XC004C815	A database is already loaded
CDBM_E_NO_VALID_TRANSACTION	0XC004C816	No valid transaction handle given
CDBM_E_STD_STRUCT_ERROR	0XC004C817	An error occurred during validation of data
CDBM_E_UNSUPPORTED_DATA_TYPE_FORMAT	0XC004C818	Unsupported DataType
CDBM_W_CLASS_DELETED_FORMAT	0X8004C819 (Warning)	Using an Object which is marked as deleted
CDBM_W_CLIENT_DISCONNECTED	0X8004C81A (Warning)	A Client has already an outstanding connection to a Table. The connection is now destroyed.
CDBM_E_STRUCTURE_DEFINITION_INVALID	0XC004C81B	A structure definition of an Element in a Table is invalid
CDBM_E_NO_DATA_AVAILABLE	0XC004C81C	No data available for this operation
CDBM_E_NO_VALID_STRUCTURE	0XC004C81D	No valid structure available for this operation
CDBM_E_NO_TOGGLE_STRING_FOUND	0XC004C81E	No Toggle string found for this number
CDBM_E_ELEMENT_OUT_OF_RANGE	0XC004C81F	An element wasn't found in the Record of a Table
CDBM_E_ELEMENT_NOT_IN_TABLE	0XC004C820	The element is not part of the Table
CDBM_E_CANNOT_CONVERT_INTO_CLIENT_TYPE	0XC004C821	The data can't be converted into the Client type
CDBM_E_TRANSACTION_ALREADY_OPEN	0XC004C822	A transaction is already open. Please close this one first before opening a new one.
CDBM_I_OLD_WITHOUT_HEADER	0X4004C823 (Informational)	Use of an old DBM file Format without Header
CDBM_E_HR_FROM	0XC004C824	An HRESULT was received from a Subroutine
CDBM_E_PARAMETER	0XC004C825	A Parameter is invalid
CDBM_E_NOTIMPL	0XC004C826	Method is currently not implemented
CDBM_E_OUTOFMEMORY	0XC004C827	Out of memory
CDBM_E_NO_OPEN_TRANSACTION	0XC004C828	No transaction open
CDBM_E_NO_CONTENTS	0XC004C829	No contents available
CDBM_REC_NO_NOT_FOUND	0XC004C82A	Record not found
CDBM_STRUCTURE_ELEMENT_NOT_FOUND	0XC004C82B	Element of the Structure not found
CDBM_E_NO_MORE_RECORDS_IN_TABTYPE	0XC004C82C	Table type 3 can contain only one record
CDBM_E_WRITE	0XC004C82D	The data in the VARIANT must be given in a SafeArray
CDBM_E_WRITE_NO_PARRAY	0XC004C82E	The VARIANT contains no valid [parray] element

ODM Error Codes DBM V4		
Error Code (Definition)	Value	Description
CDBM_E_WRITE_CANT_ACCESS_DATA	0XC004C82F	Unable to access SafeArray Data in the VARIANT
CDBM_E_WRITE_DATA	0XC004C830	To write the data of this Element it must be given as a BSTR, or as an Array of VT_UI1/VT_I1
CDBM_E_WRITE_BSTR_E1	0XC004C831	The BSTR string must have an even length.
CDBM_E_WRITE_BSTR_E2	0XC004C832	The BSTR string must contain only hex digits (0..9 and a/A..f/F).
CDBM_E_WRITE_CANT_INTERPRET_ARRAY	0XC004C833	Unable to interpret data in the SafeArray.
CDBM_E_WRITE_VT_ERROR	0XC004C834	Data type in the SafeArray is not VT_UI1 or VT_I1.
CDBM_E_WRITE_LENGTH	0XC004C835	Data length is invalid for write operation of this type.
CDBM_WRITE_ELEMENT	0XC004C836	Element not found in the Record of the Table
CDBM_MIN_MAX_ERROR	0XC004C837	Can't write data because of min underflow or max overflow
CDBM_TABLE_EXIST	0XC004C838	Table already exist in the database
CDBM_MIN_MAX_INVALID	0XC004C839	The Min value is greater than the Max Value
CDBM_DEF_MIN_MAX_INVALID	0XC004C83A	The Default Value is not in the range between the Min value and the Max Value
CDBM_CANT_CHANGE_STRUCTURE_WHILE_RECORDS_EXIST	0XC004C83B	It's not allowed to change the structure while Records exist in the Table
CDBM_NEW_STRUCT_NEEDS_TYPE	0XC004C83C	In a newly added structure the data type must be set also
CDBM_VALUE_ERROR	0XC004C83D	Range error while validating a value
CDBM_DATATYPE_UNSUPPORTED_IN_RCS	0XC004C83E	The data type is unsupported in the RCS file format
CDBM_I_COUNT_OF_TABLES_EXCEEDS_RCS_RANGE	0X4004C83F (Informational)	The count of Tables exceeds the RCS range of Tables. This can cause problems if the file is downloaded to RCS Systems
CDBM_I_COUNT_OF_TABLES_EXCEEDS_OLDDBM_RANGE	0X4004C840 (Informational)	The count of Tables exceeds the DBM32.DLL range of Tables. This can cause problems if the file is used with older Tools using the DBM32.DLL
CDBM_UNSUPPORTED_DATATYPE_IN_RCS_MODE	0XC004C841	The Data type is not compatible with the old database format
CDBM_WRITE_UNSTRUCTURED_1	0XC004C842	The data of an unstructured record can only be written with the 'Write' Method not with 'WriteElement'.
CDBM_READ_UNSTRUCTURED_1	0XC004C843	The data of an unstructured record can only be read with the 'Read' Method not with 'ReadElement'
CDBM_WRITE_DATA_LENGTH_INVALID	0XC004C844	The given data length doesn't correspond with the expected data length.
CDBM_UNKNOWN_VIEW_MODE	0XC004C845	The View Mode is unknown.
CDBM_E_DIAG_TABLE	0XC004C846	It doesn't make much sense to add or delete records from a diagnostic table because those changes are never saved.

ODM Error Codes DBM V4		
Error Code (Definition)	Value	Description
CDBM_E_ADR_STRING_ERROR	0XC004C847	The given Address string doesn't fit the required format of this type where all address bytes must be in the range between 0 and FF
CDBM_ERROR_FROM_VAR_CHANGE_TYPE	0XC004C848	Function VariantChangeType return an error when trying to convert the Parameter
CDBM_E_MINERROR	0XC004C849	Error while comparing the Value with the lower range
CDBM_E_MAXERROR	0XC004C84A	Error while comparing the Value with the upper range
CDBM_E_RANGE_ERROR	0XC004C84B	Value out of Range
CDBM_E_TABLE_TYPE1	0XC004C84C	Table type 1 doesn't have a unique record length over all records
CDBM_E_TABLE_TYPE3_ADDREC	0XC004C84D	Table type 3 doesn't allow to insert more than one Record
CDBM_E_TABTYPE1	0XC004C84E	It's not allowed to insert more Records than structure definitions in Table Type 1
CDBM_E_TOGGLE_NOT_FOUND	0XC004C84F	Could not find the string for this value in the list of valid toggle strings
CDBM_E_TOGGLE_VALUE_IS_EMPTY_STRING	0XC004C850	The toggle string for this value is empty.
CDBM_VARIANT2BYTEARRAY_ERROR	0XC004C851	Error during conversion of Variant to byte array
CDBM_E_SET_ELEM_PROP_DEPENDENCY	0XC004C852	The Toggle Type needs also the additional string and the additional number entries in the Method
CDBM_E_TABTYPE1_REC_DOESNT_CORRESPOND_WITH_ELEMENT	0XC004C853	When reading the records of Table type 1 elementwise the record number must correspond with the element number
CDBM_TABTYPE1_NO_DATA_FOUND_FOR_RECORD	0XC004C854	When reading the records of Table type 1 and structure definitions are present it's assumed that for each structure element a corresponding record must exist
CDBM_E_TABTYPE1_WRITE_ELEMENT_NE_RECORD	0XC004C855	When writing the records of Table type 1 elementwise and structure definitions are present it's only allowed to write the corresponding element number in each record
CDBM_E_TABTYPE1_WRITE_ELEMENT_NOT_FOUND	0XC004C856	When writing the records of Table type 1 with an array and structure definitions are present it's assumed that a corresponding element number of this record exist
CDBM_I_TABLE_NAME_EXCEEDS_RCS_RANGE	0X4004C857 (Informational)	The Table name exceeds the maximum length of RCS compatible Table names
CDBM_W_CUT_STRING	0X8004C858 (Warning)	The string exceeds the maximum length and will be limited to the maximum length
CDBM_I_STRING_TOO_SHORT	0X4004C859 (Informational)	The string is below the minimum length. The minimum length will be reduced.
CDBM_I_STRING_TOO_LONG	0X4004C85A (Informational)	The string is exceeding the maximum. The maximum length will be extended.
CDBM_E_STRING_TOO_SHORT	0XC004C85B (Error)	The string is below the minimum length.
CDBM_E_STRING_TOO_LONG	0XC004C85C (Error)	The string is exceeding the maximum length

ODM Error Codes DBM V4		
Error Code (Definition)	Value	Description
CDBM_E_WRONG_TYPE_FOR_WRITE	0XC004C85D	Writing on the Element type with the given Data type is not implemented
CDBM_E_NO_APPEND_IN_STRUCTURED_RECORDS	0XC004C85E	Method IDbmRecord::AppendData is not allowed for structured records
CDBM_E_DATA_UNAVAILABLE	0XC004C85F	No data available
CDBM_E_CANT_CONVERT_INTO	0XC004C860	Unable to convert the value into the Element type
CDBM_E_DBM_FILE_OVERFLOW	0XC004C861	You try to write a RCS like database which needs too much bytes
CDBM_E_PW_ERROR	0XC004C862	Password not correct
CDBM_E_FILELENGTH_CORRUPT	0XC004C863	The file length doesn't correspond to the length given in the Header.
CDBM_E_STRUCT_TYPE	0XC004C864	Error in the file.
CDBM_E_MD5SUM_INVALID	0XC004C865	MD5 sum invalid
CDBM_E_STRUCT_LENGTH	0XC004C866	Error in the expected and given structure length at a specific offset in the file.
CDBM_E_APPEND	0XC004C867	Append of data is only allowed if the Record contains only one data field and the field type will support this
CDBM_APPEND_NOT_SUPPORTED	0XC004C868	Append of Data not supported by this filed type
CDBM_DATA_TYPE_APPEND_ERROR	0XC004C869	Can't append Data of this type.
CDBM_E_UNSTRUCTURED_TABLE_DOESNT_SUPPORT_LENGTH	0XC004C86A	A Table without structure information doesn't support a record length
CDBM_E_DISABLED_WHILE_TRANSACTION_IS_OPEN	0XC004C86B	The Method is disabled while a transaction is open. Please close this one first and call the Method again.
CDBM_E_UNABLE_TO_CALL_READ_ON_LINKED_LIST	0XC004C86C	The Method is disabled on a LinkedList type. Please use the IRecordCollection on this type.
CDBM_E_ELEMENT_HAS_NO_SUBSTRUCTURE	0XC004C86D	An Element from a Table has no substructure
CDBM_STRUCT_ERROR_FROM_VAR_CHANGE_TYPE	0XC004C86E	Error from calling VariantChangeType
CDBM_E_FOREIGNKEY_DEF	0XC004C86F	The definition of a FOREIGNKEY must contain the name of the related Table in the description and this Table must exist at this time
CDBM_E_FOREIGNKEY_REF_TAB	0XC004C870	The description of a FOREIGNKEY must refer to a Table of type 'eDbmTableTypeLinkedList'
CDBM_E_KEY	0XC004C871	To create a Record Collection with a KEY it's necessary to have the data type KEY at the first position in all Records of the searched Table
CDBM_E_KEY_TABLE_TYPE	0XC004C872	This Method needs a Table of type 'eDbmTableTypeLinkedList'
CDBM_DATATYPE_NOT_IMPLEMENTED	0XC004C873	This data type is currently not implemented
CDBM_INSERT_POS_NOT_FOUND	0XC004C874	The position of the Record where the new one should be inserted wasn't found
CDBM_E_INSERT_REC_QI	0XC004C875	Error during insertion of a Record
CDBM_E_TAB_PROP	0XC004C876	Invalid Property in Table
CDBM_E_KEY_NOT_FOUND	0XC004C877	The KEY wasn't found in the Table

ODM Error Codes DBM V4		
Error Code (Definition)	Value	Description
CDBM_E_KEY_INVALID	0XC004C878	The KEY is invalid for this operation

Table 47: ODM Error Codes DBM V4

10 Appendix

10.1 User Rights

User-rights are set within the FDT-container. Depending on the level the configuration is accessible by the user or read-only.

To access the **Settings**, **Configuration** and **Diagnosis** panes of the PROFIBUS MPI DTM you do not need special user rights. Also all users can select the decimal or hexadecimal Display mode or sort table entries.



Note: To edit, set or configure the parameters of the **Settings** and **Configuration** panes, you need user rights for *Maintenance*, for *Planning Engineer* or for *Administrator*.

The following tables give an overview of the user right groups and which user rights you need to configure the single parameters.

10.1.1 Settings

	Observer	Operator	Maintenance	Planning Engineer	Administrator
<i>Driver</i>	D	D	X	X	X
<i>Verify or adapt Driver Settings</i>	-	-	X	X	X
<i>Configuring netX Driver</i>	-	-	X	X	X
<i>Device Assignment</i>	D	D	X	X	X
<i>Scanning for Devices</i>	-	-	X	X	X
<i>Selecting the Device (with or without firmware)</i>	-	-	X	X	X
<i>Selecting the Device once more (with Firmware)</i>	-	-	X	X	X
<i>Firmware Download</i>	D	D	X	X	X

Table 48: Settings (D = Displaying, X = Editing, Configuring)

10.1.2 Configuration

	Observer	Operator	Maintenance	Planning Engineer	Administrator
<i>Configuration</i>	D	D	X	X	X
<i>Symbol Settings</i>	D	D	X	X	X
<i>Symbol Configuration</i>	D	D	X	X	X

Table 49: Configuration (D = Displaying, X = Editing, Configuring)

10.2 References

- [1] Device Type Manager (DTM) Style Guide, Version 1.0 ; FDT-JIG - Order No. <0001-0008-000>
- [2] IEC 61158 Third edition, 2003
- [3] „OLE for Process Control, Data Access Custom Interface Standard“, Version 2.05A, June 28 2002, OPC Specification for cyclic and acyclic OPC data communication
- [4] PROFIBUS MPI Protocol API Manual, Revision 4, Hilscher GmbH 2011

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10.5 Glossary

DTM

Device Type Manager

The Device Type Manager (DTM) is a software module with graphical user interface for the configuration and/or for diagnosis of devices.

FDT

Field Device Tool

FDT specifies an interface, in order to be able to use DTM (Device Type Manager) in different applications of different manufacturers.

Item-Server

The Item server is part of the PROFIBUS MPI device firmware. In the Item-server data collection is outsourced as part of the OPC-server functionality.

MPI

Multi Point Interface

The MPI is a proprietary interface of the SIMATIC® S7® series of PLCs. It is compatible to PROFIBUS and based on RS-485. It usually works with a transmission rate of 187.5 kBaud.

ODMV3

The Online-Data-Manager Version 3 (ODMV3) is an application interface. The ODMV3 works as a server, which can be run as an out-proc server or system service. Its task is to provide different applications (e. g. SYCON.net), access to multiple devices and even share one device amongst several applications.

OPC

OPC is the name for a technology for a manufacturer-independent software interface for accessing process data for a common data exchange between process hardware and Microsoft Windows® applications

The OPC specification defines a common and unified set of functions enabling data exchange based on symbolic addressing. The assignment of these symbols to the corresponding physical data is done by server-side configuration.

The OPC specification defines a Client/Server architecture; any clients and servers conforming to the specification (even those of various manufacturers) can be combined arbitrarily.

OPC is based on DCOM (Distributed Component Object Model = object-oriented system to "access a remote procedure") and thus uses all advantages of an object model for distributed applications: The access to the OPC server is only possible from an OPC client installed at the same PC as the OPC Server.

OPC is capable of multi-client operation: This means, multiple client applications such as visualizations, SCADA systems or similar ones may access one single server in parallel.

OPC = OLE for Process Control (OLE = Object Linking and Embedding. As the relevance of the OLE object system has decreased, now simply the name OPC is used, without referring to an abbreviation.

OPC-Server

OPC configuration software and application for the cyclic and acyclic OPC data handling inclusively the interfaces required. The OPC Server is based on the OPC DA 2.05a specification for cyclic and acyclic OPC data communication.

PDI

Process Data Interface

PLC

Programmable Logic Controller

A digitally programmed device for controlling a machine or facility.

SCADA

Supervisory Control and Data Acquisition

A concept for control and data acquisition of technical processes

Symbolic Addressing

Server-side assignment of symbolic names to the absolute addresses of the input signals and output signals for OPC.

Symbol Configuration

Server-side signal configuration for OPC, with assignment of symbolic names to the absolute addresses of the input signals and output signals.

STEP7

STEP®7

Programming language for the SIMATIC® S7® Series of PLCs.

10.6 Contacts

Headquarters

Germany

Hilscher Gesellschaft für
Systemautomation mbH
Rheinstrasse 15
65795 Hattersheim
Phone: +49 (0) 6190 9907-0
Fax: +49 (0) 6190 9907-50
E-Mail: info@hilscher.com

Support

Phone: +49 (0) 6190 9907-99
E-Mail: de.support@hilscher.com

Subsidiaries

China

Hilscher Systemautomation (Shanghai) Co. Ltd.
200010 Shanghai
Phone: +86 (0) 21-6355-5161
E-Mail: info@hilscher.cn

Support

Phone: +86 (0) 21-6355-5161
E-Mail: cn.support@hilscher.com

France

Hilscher France S.a.r.l.
69500 Bron
Phone: +33 (0) 4 72 37 98 40
E-Mail: info@hilscher.fr

Support

Phone: +33 (0) 4 72 37 98 40
E-Mail: fr.support@hilscher.com

India

Hilscher India Pvt. Ltd.
Pune, Delhi, Mumbai
Phone: +91 8888 750 777
E-Mail: info@hilscher.in

Italy

Hilscher Italia S.r.l.
20090 Vimodrone (MI)
Phone: +39 02 25007068
E-Mail: info@hilscher.it

Support

Phone: +39 02 25007068
E-Mail: it.support@hilscher.com

Japan

Hilscher Japan KK
Tokyo, 160-0022
Phone: +81 (0) 3-5362-0521
E-Mail: info@hilscher.jp

Support

Phone: +81 (0) 3-5362-0521
E-Mail: jp.support@hilscher.com

Korea

Hilscher Korea Inc.
Seongnam, Gyeonggi, 463-400
Phone: +82 (0) 31-789-3715
E-Mail: info@hilscher.kr

Switzerland

Hilscher Swiss GmbH
4500 Solothurn
Phone: +41 (0) 32 623 6633
E-Mail: info@hilscher.ch

Support

Phone: +49 (0) 6190 9907-99
E-Mail: ch.support@hilscher.com

USA

Hilscher North America, Inc.
Lisle, IL 60532
Phone: +1 630-505-5301
E-Mail: info@hilscher.us

Support

Phone: +1 630-505-5301
E-Mail: us.support@hilscher.com