



**Operating Instruction Manual**  
**DTM for Hilscher PROFIBUS DP Slave Device**  
**Configuration of Hilscher Slave Devices**  
**V1.1100**

**Hilscher Gesellschaft für Systemautomation mbH**

**[www.hilscher.com](http://www.hilscher.com)**

DOC091001OI13EN | Revision 13 | English | 2020-01 | Released | Public

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# 1 Introduction

## 1.1 About this Manual

This manual provides information on how to set and configure the device parameters of a netX based PROFIBUS DP Slave device (PROFIBUS DPV0 or PROFIBUS DPV1) within a FDT Framework using the PROFIBUS DP Slave DTM, and what can be read from the diagnosis panes.

In network project the PROFIBUS DP Slave DTM can be dropped:

- to the root line (Stand-Alone Slave),
- or to the Master busline of a PROFIBUS DP Master DTM.



---

**Note:** This manual edition first provides information for the case if the PROFIBUS DP Slave DTM is dropped to the root line (Stand-Alone Slave) and in addition important information for the case if the PROFIBUS DP Slave DTM is dropped to the Master busline of a PROFIBUS DP Master DTM.

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### 1.1.1 Descriptions of the Dialog Panes

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

Section	Subsection	Manual Page
<i>Settings</i>	<i>Overview Settings</i>	32
	<i>Driver</i>	35
	<i>Device Assignment</i>	45
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Table 1: Descriptions Dialog Panes

### 1.1.2 Online Help

The PROFIBUS DP Slave DTM contains an integrated online help.

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

➤

### 1.1.3 List of Revisions

Index	Date	Version	Chapter	Revision
13	20-02-28	1.1100	5.5	Section <i>Signal Configuration</i> updated.

Table 2: List of Revisions

## 1.1.4 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.



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## 1.4 About PROFIBUS DP Slave DTM

You can use the PROFIBUS DP Slave DTM to configure PROFIBUS DP Slave devices within a FDT Framework and to view the device diagnosis.

In a network project the PROFIBUS DP Slave DTM can be dropped:

- to the root line (Stand-Alone Slave),
- or to the Master busline of a PROFIBUS DP Master DTM.

### **Slave DTM at the Root-Line (Stand-Alone Slave)**

Insert the PROFIBUS DP Slave DTM to the root busline if you intend to configure only one single PROFIBUS DP Slave device.

### **Slave DTM at the Master Busline**

Insert the PROFIBUS DP Slave DTM to the Master busline of the PROFIBUS DP Master DTM if within the network project the Slave device and the Master device are used, i. e. if you intend to configure the Slave device and the Master device.

### **2-Channel Devices**



**Important:** For a 2-channel device consecutively channel 1 or channel 2 must be assigned to the DTM and each must be configured individually.

## 1.4.1 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 another PC,

- the other PC must also comply to these system requirements,
- the device description files of the devices used in the project must be imported to the configuration software SYCON.net on the other PC,
- respectively the DTMs of the devices used in the project must be installed on the other PC.

### Requirements PROFIBUS DP Slave DTM

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

- Completed hardware installation of a netX based DTM-compatible PROFIBUS DP Slave device, inclusive loaded firmware and loaded configuration file
- Installed FDT/DTM V 1.2 compliant frame application
- Installed PROFIBUS DP Master DTM (If Slave DTM is dropped to the Master busline.)
- Loaded DTM in the Device Catalog of the FTD Framework



**Note:** If the PROFIBUS DP Slave DTM and the PROFIBUS DP Slave 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.

## 1.5 Dialog Structure of the PROFIBUS DP Slave 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.

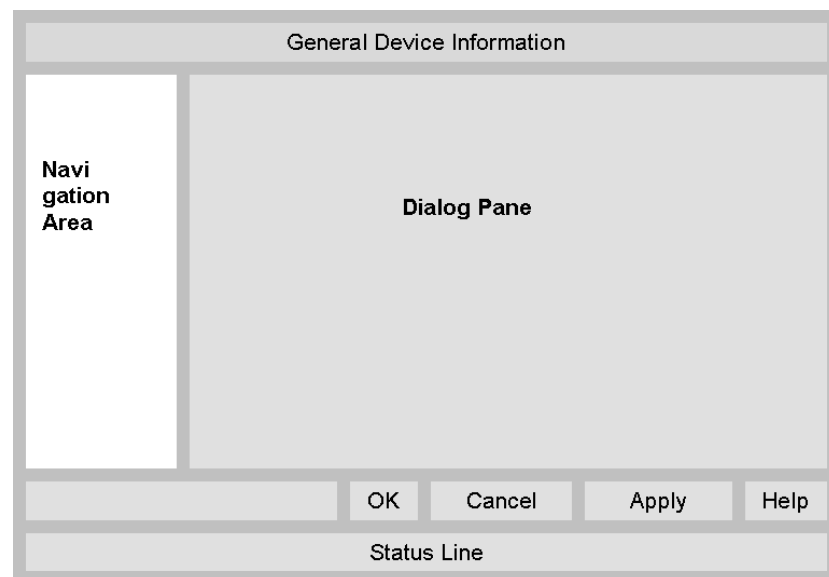


Figure 1: Dialog Structure of the PROFIBUS DP Slave DTM

## 1.5.1 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 3: General Device Information

## 1.5.2 Navigation Area

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

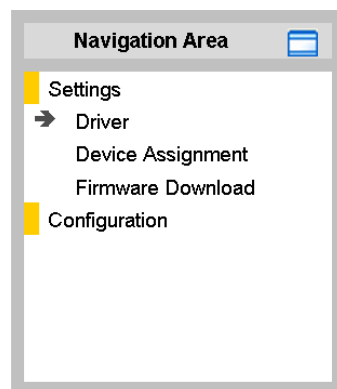


Figure 2: Navigation Area

- 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).



### 1.5.3 Dialog Panes

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

Settings	
Driver	To establish a connection from the PROFIBUS DP Slave DTM to the PROFIBUS DP Slave device, on the pane <b>Driver</b> you can verify if the default driver is checked and respectively check another driver or multiple drivers. For further information, refer to section <i>Driver</i> on page 35.
Device Assignment	On the pane <b>Device Assignment</b> you select the device and assign the device to the driver. For further information, refer to section <i>Device Assignment</i> on page 45.
Firmware Download	The dialog on the pane <b>Firmware Download</b> is used to load a new firmware into the device. A detailed description can be found in section <i>Firmware Download</i> on page 51.
Configuration	
General	At the pane <b>General</b> the actual Station Address of the Slave device is set or displayed. Further information to this you find in section <i>General</i> on page 62.
Modules	At the <b>Modules</b> pane modules can be selected or assigned and configured. Further information to this you find in section <i>Modules</i> on page 64.
Signal-Configuration	In the <b>Signal Configuration</b> pane the data structure of the input and output data for the signal assignment is determined. For further information see section <i>Signal Configuration</i> on page 67.
Parameters	The <b>Parameters</b> pane allows it to change the parameter settings of the modules. A detailed description you find in section <i>Parameters</i> on page 73.
Groups	<i>This configuration parameter has meaning only for „Slave DTM at the Master bus line“.</i> At the pane <b>Groups</b> the single Slaves devices can be assigned to up to eight different, after a Master was arranged. Further information to this you find in section <i>Groups</i> on page 74.
Extensions	<i>This configuration parameter has meaning only for „Slave DTM at the Master bus line“.</i> The <b>Extensions</b> pane contains adjustment possibilities for the extension parameters: Auto Clear, Fail Safe Behavior, Configuration Data Convention, Error on Cyclic Data Exchange and Diagnosis update delay. Further information to this you find in section <i>Extensions</i> on page 75.
DPV1	<i>This configuration parameter has meaning only for „Slave DTM at the Master bus line“.</i> The <b>DPV1</b> pane gives access to the DPV1 functions for an acyclic data exchange and to the functions read write and alarm handling. Information to this you find in section <i>DPV1</i> on page 77.
Address Table	The <b>Address Table</b> shows a list of all dpram addresses used in the process data image. For further information, refer to section <i>Address Table</i> on page 79.
Device Settings	At the <b>Device Settings</b> pane device related settings can be made. For further information, refer to section <i>Device Settings</i> on page 81.
Device Description	
Device	The <b>Device Info</b> pane contains the manufacturer information about the device. Further information to this you find in section <i>Device</i> on page 87.
GSD	By use of the <b>GSD-Viewer</b> a GSD file can be searched through. Further information to this you find in section <i>GSD</i> on page 87.
Diagnosis	
Diagnosis/ Extended Diagnosis	At the <b>Diagnosis</b> panes information can be read for troubleshooting. For further information, refer to section <i>Overview Diagnosis</i> on page 96.
Tools	
Packet Monitor/ IO Monitor	Under <b>Tools</b> the <b>Packet Monitor</b> and the <b>IO Monitor</b> are provided for test and diagnosis purposes. For further information, refer to section <i>Packet Monitor</i> on page 111 or section <i>IO Monitor</i> on page 119.

Table 4: Overview Dialog Panes



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



For further information, refer to section *Connecting/Disconnecting Device* on page 88.

## 1.5.4 OK, Cancel, Apply and Help

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

	Meaning
<b>OK</b>	To confirm your latest settings, click <b>OK</b> . All changed values will be applied on the frame application database. <i>The dialog then closes.</i>
<b>Cancel</b>	To cancel your latest changes, click <b>Cancel</b> . Answer to the safety query <b>Configuration data has been changed. Do you want to save the data?</b> by <b>Yes</b> , <b>No</b> or <b>Cancel</b> . <b>Yes:</b> The changes are saved or the changed values are applied on the frame application database. <i>The dialog then closes.</i> <b>No:</b> 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> <b>Cancel:</b> <i>Back to the DTM.</i>
<b>Apply</b>	To confirm your latest settings, click <b>Apply</b> . All changed values will be applied on the frame application database. <i>The dialog remains opened.</i>
<b>Help</b>	To open the DTM online help, click <b>Help</b> .

Table 5: OK, Cancel, Apply and Help

## 1.5.5 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.

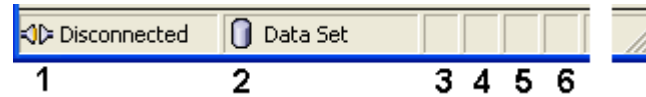
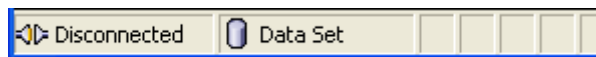


Figure 3: Status Bar – Status Fields 1 to 6

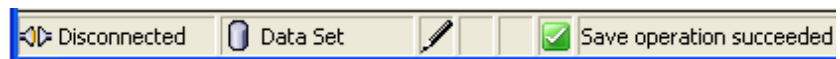
Status Field	Icon / Meaning	
1	<b>DTM Connection States</b>	
		<b>Connected:</b> Icon closed = Device is online
		<b>Disconnected:</b> Icon opened = Device is offline
2	<b>Data Source States</b>	
		<b>Data set:</b> The displayed data are read out from the instance data set (database).
		<b>Device:</b>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

Table 6: Status Bar Icons [1]

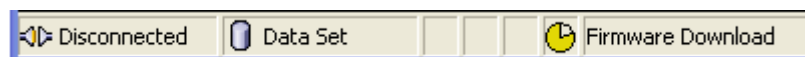
Offline State



Save operation succeeded



Firmware Download



Firmware Download successful



Online State and Diagnosis

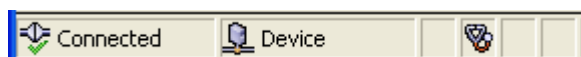


Figure 4: Status Bar Display Examples

## **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 DP Master DTM serves for configuration and diagnosis of PROFIBUS DP 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 DP Slave 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 DP Slave device is interrupted,
- or a reset to the device is performed,

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)
 <b>DANGER</b>	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.
 <b>WARNING</b>	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.
 <b>CAUTION</b>	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.
 <b>NOTICE</b>	Indicates a property damage message.	Indicates a property damage message.

Table 7: 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 DP Slave device with PROFIBUS DP Slave DTM as it is typical for many cases. 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*.

The following two cases are considered:


- Slave DTM at the Root-Line (Stand-Alone Slave)
- and Slave DTM at the Master busline.

#### 2-Channel Devices






**Important:** For a 2-channel device consecutively channel 1 or channel 2 must be assigned to the DTM and each must be configured individually.

#### 3.1.1 Slave DTM at the Root-Line (Stand-Alone Slave)

#	Step	Short Description	For detailed information see section	Page
1	Load device catalog	Depending of the FDT Container: For netDevice: - select <b>Network &gt; Device Catalog</b> , - select <b>Reload Catalog</b> .	(See <i>Operating Instruction Manual netDevice and netProject</i> )	-
2	Create new project / Open existing project	Depending of the frame application. For the configuration software: - select <b>File &gt; New</b> or <b>File &gt; Open</b> .	(See <i>Operating Instruction Manual of the Frame Application</i> )	-
3	Insert Slave into configuration	Depending of the FDT Container: For netDevice: - in the Device Catalog under <b>Gateway / Stand-Alone Slave</b> click to the Slave, - and insert the Slave via drag and drop <b>to the root line</b> in the network view.   <b>Note!</b> You can select both a device PROFIBUS DPV0 (with cyclic communication) as well as a device PROFIBUS DPV1 (with cyclic and acyclic communication).	(See <i>Operating Instruction Manual netDevice and netProject</i> )	-
4	Open the Slave DTM configuration dialog	Open the Slave DTM configuration dialog. - Double click to the device icon of the Slave. - The Slave DTM configuration dialog is displayed.	-	-






#	Step	Short Description	For detailed information see section	Page
5	Verify or adapt Driver Settings	<p>In the Slave DTM configuration dialog: - select <b>Settings &gt; Driver</b>.</p>	<i>Settings for Driver and Device Assignment and Driver</i>	33
		<p> • <b>Note!</b> For PC cards cifX the <b>cifX Device Driver</b> is preset as a default driver. For all the other Hilscher devices the <b>netX Driver</b> is preset as a default driver. Use the <b>cifX Device Driver</b> if the PROFIBUS DP Slave DTM is installed on the same PC as the PROFIBUS DP Slave device.</p> <ul style="list-style-type: none"> <li>• Use the <b>netX Driver</b> to establish a USB, Serial (RS232) or TCP/IP connection from the PROFIBUS DP Slave DTM to the PROFIBUS DP Slave device.</li> <li>• The <b>3SGateway Driver for netX (V3.x)</b> is used only in relationship with CODESYS.</li> </ul> <p>To search for devices you can check one or multiple drivers simultaneously.</p> <p>- Verify that the default driver is checked. - If necessary, check another driver or multiple drivers.</p>		35
6	Configure Driver	<p>If you use the <b>netX Driver</b>, you respectively must configure it.</p> <p>For <b>netX Driver and communication via TCP/IP</b> set the IP address of the device: - Select <b>Settings &gt; Driver &gt; netX Driver &gt; TCP Connection</b>. - Via  add an IP range. - Under <b>IP Address</b> enter the IP Address of the device or an IP range. - Click <b>Save</b>.</p> <p>Adjust the driver parameters <b>netX Driver USB/RS232</b> only if they differ from the default settings.</p> <p> <b>Note!</b></p> <ul style="list-style-type: none"> <li>• The <b>cifX Device Driver</b> requires no configuration.</li> <li>• The configuration of the <b>3SGateway Driver for netX (V3.x)</b> is carried out via the CODESYS surface.</li> </ul>	<i>Configuring netX Driver</i>	38
7	Assign Slave device (with or without firmware)	<p>Assign the device to this driver.</p> <p>In the Slave DTM configuration dialog: - select <b>Settings &gt; Device Assignment</b>, - select a Slave device (with or without firmware), - therefore check the appropriate checkbox, - select <b>Apply</b>.</p>	<i>Selecting the Device (with or without firmware)</i>	48
8	Select and download firmware	<p>If not yet a firmware was loaded to the device: - Adhere to the necessary safety precautions to prevent personnel injury and property damage.</p> <p>In the Slave DTM configuration dialog: - select <b>Settings &gt; Firmware Download</b>, - select <b>Browse...</b>, - select a firmware file, - select <b>Open</b>, - select <b>Download</b> and <b>Yes</b>.</p>	<i>Safety Messages on Firmware or Configuration Download</i>	31
			<i>Firmware Download</i>	51


#	Step	Short Description	For detailed information see section	Page
9	Assign Slave device once more (with firmware and system channel) <i>For repeated download this step is omitted.</i>	In the Slave DTM configuration dialog: - select <b>Settings &gt; Device Assignment</b> , - select <b>Scan</b> , - select the Slave device (with loaded firmware and defined system channel), - therefore check the appropriate checkbox, - select <b>Apply</b> , - close the Slave DTM configuration dialog via <b>OK</b> .	<i>Selecting the Device once more (with Firmware)</i>	49
10	Configure Slave device	Configure the Slave device. - Double click to the device icon of the Slave. - The Slave DTM configuration dialog is displayed. In the Slave DTM configuration dialog: - select <b>Configuration &gt; General</b> , - set the Watchdog control and Interval, - select <b>Configuration &gt; Modules</b> , - configure the Modules of the Slave, - select <b>Configuration &gt; Signal Configuration</b> , - proceed the signal configuration, - select <b>Configuration &gt; Parameter</b> , - set the module Parameters, - select <b>Configuration &gt; Device Settings</b> , - set the Device Settings. - close the Slave DTM configuration dialog via <b>OK</b> .	<i>Configuring Slave Parameter</i>  <i>General</i>  <i>Modules</i>  <i>Signal Configuration</i>  <i>Parameters</i>  <i>Device Settings</i>	58  62  64  67  73  81
11	Save project	Depending of the frame application. For the configuration software: - select <b>File &gt; Save</b> .	<i>(See Operating Instruction Manual of the Frame Application)</i>	-
12	Connect Slave device	Depending of the FDT Container. For netDevice: - right click to the device icon of the Slave, - select <b>Connect</b> .	<i>Connecting/Disconnecting Device</i>	88
13	Download Configuration	- Adhere to the necessary safety precautions to prevent personnel injury and property damage. Depending of the FDT Container. For netDevice: - right click to the device icon of the Slave, - select <b>Download</b> .	<i>Safety Messages on Firmware or Configuration Download</i>  <i>Download Configuration</i>	31  94
14	Diagnosis	Depending of the FDT Container. For netDevice: - right click to the device icon of the Slave, - select <b>Diagnosis</b> . - The Slave DTM diagnosis dialog is displayed. (1) Check whether the communication is OK: <b>Diagnosis &gt; General Diagnosis &gt; Device status "Communication"</b> must be green! (2) <b>"Communication"</b> is green: Open the IO Monitor and test the input or output data. (3) <b>"Communication"</b> is not green: Use Diagnosis and Extended diagnosis for troubleshooting. - close the Slave DTM diagnosis dialog via <b>OK</b> .	<i>Overview Diagnosis</i>	96
15	IO Monitor	Depending of the FDT Container: For netDevice: - right click to the device icon of the Slave, - select <b>Diagnosis</b> , - select <b>Tools &gt; IO Monitor</b> . - Check the input or output data, - close the IO Monitor dialog via <b>OK</b> .	<i>IO Monitor</i>	119

#	Step	Short Description	For detailed information see section	Page
16	Disconnect	Depending of the FDT Container. For netDevice: - right click to the device icon of the Slave, - select <b>Disconnect</b> .	<i>Connecting/Disconnecting Device</i>	88

Table 8: Getting started - Configuration Steps (Slave DTM at the Root-Line (Stand-Alone Slave))

### 3.1.2 Slave DTM at the Master busline

#	Step	Short Description	For detailed information see section	Page
1	Load device catalog	Depending of the FDT Container: For netDevice: - select <b>Network &gt; Device Catalog</b> , - select <b>Reload Catalog</b> .	(See <i>Operating Instruction Manual netDevice and netProject</i> )	-
2	Create new project / Open existing project	Depending of the frame application. For the configuration software: - select <b>File &gt; New</b> or <b>File &gt; Open</b> .	(See <i>Operating Instruction Manual of the Frame Application</i> )	-
3	Insert Master or Slave into configuration	For netDevice: - in the Device Catalog click to the Master, - and insert the device via drag and drop <b>to the root line</b> in the network view, - in the Device Catalog click to the Slave, - and insert the device via drag and drop <b>to the Master bus line</b> in the network view.   <b>Note!</b> You can select both a device PROFIBUS DPV0 (with cyclic communication) as well as a device PROFIBUS DPV1 (with cyclic and acyclic communication).	(See <i>Operating Instruction Manual netDevice and netProject</i> )	-
4	Open the Slave DTM configuration dialog	Open the Slave DTM configuration dialog. - Double click to the device icon of the Slave. - The Slave DTM configuration dialog is displayed.	-	-
5	Verify or adapt Driver Settings	In the Slave DTM configuration dialog: - select <b>Settings &gt; Driver</b> .   <ul style="list-style-type: none"> <li>• <b>Note!</b> For PC cards cifX the <b>cifX Device Driver</b> is preset as a default driver. For all the other Hilscher devices the <b>netX Driver</b> is preset as a default driver. Use the <b>cifX Device Driver</b> if the PROFIBUS DP Slave DTM is installed on the same PC as the PROFIBUS DP Slave device.</li> <li>• Use the <b>netX Driver</b> to establish a USB, Serial (RS232) or TCP/IP connection from the PROFIBUS DP Slave DTM to the PROFIBUS DP Slave device.</li> <li>• The <b>3SGateway Driver for netX (V3.x)</b> is used only in relationship with CODESYS.</li> </ul> <p>To search for devices you can check one or multiple drivers simultaneously.</p> <ul style="list-style-type: none"> <li>- Verify that the default driver is checked.</li> <li>- If necessary, check another driver or multiple drivers.</li> </ul>	<i>Settings for Driver and Device Assignment and Driver</i>	33 35
6	Configure Driver	If you use the <b>netX Driver</b> , you respectively must configure it.  For <b>netX Driver and communication via TCP/IP</b> set the IP address of the device: - Select <b>Settings &gt; Driver &gt; netX Driver &gt; TCP Connection</b> . - Via  add an IP range. - Under <b>IP Address</b> enter the IP Address of the device or an IP range. - Click <b>Save</b> .	<i>Configuring netX Driver</i>	38

#	Step	Short Description	For detailed information see section	Page
6	Configure Driver (continued)	<p>Adjust the driver parameters <b>netX Driver USB/RS232</b> only if they differ from the default settings.</p>  <p><b>Note!</b></p> <ul style="list-style-type: none"> <li>• The <b>cifX Device Driver</b> requires no configuration.</li> <li>• The configuration of the <b>3SGateway Driver for netX (V3.x)</b> is carried out via the CODESYS surface.</li> </ul>	<i>Configuring netX Driver</i>	38
7	Assign Slave device (with or without firmware)	<p>Assign the device to this driver.</p> <p>In the Slave DTM configuration dialog:</p> <ul style="list-style-type: none"> <li>- select <b>Settings &gt; Device Assignment</b>,</li> <li>- select a Slave device (with or without firmware),</li> <li>- therefore check the appropriate checkbox,</li> <li>- select <b>Apply</b>.</li> </ul>	<i>Selecting the Device (with or without firmware)</i>	48
8	Select and download firmware	<p>If not yet a firmware was loaded to the device:</p> <ul style="list-style-type: none"> <li>- Adhere to the necessary safety precautions to prevent personnel injury and property damage.</li> </ul> <p>In the Slave DTM configuration dialog:</p> <ul style="list-style-type: none"> <li>- select <b>Settings &gt; Firmware Download</b>,</li> <li>- select <b>Browse...</b>,</li> <li>- select a firmware file,</li> <li>- select <b>Open</b>,</li> <li>- select <b>Download</b> and <b>Yes</b>.</li> </ul>	<i>Safety Messages on Firmware or Configuration Download</i>  <i>Firmware Download</i>	31  51
9	Assign Slave device once more (with firmware and system channel) <i>For repeated download this step is omitted.</i>	<p>In the Slave DTM configuration dialog:</p> <ul style="list-style-type: none"> <li>- select <b>Settings &gt; Device Assignment</b>,</li> <li>- select <b>Scan</b>,</li> <li>- select the Slave device (with loaded firmware and defined system channel),</li> <li>- therefore check the appropriate checkbox,</li> <li>- select <b>Apply</b>,</li> <li>- close the Slave DTM configuration dialog via <b>OK</b>.</li> </ul>	<i>Selecting the Device once more (with Firmware)</i>	49
10	Configure Slave device	<p>Configure the Slave device.</p> <ul style="list-style-type: none"> <li>- Double click to the device icon of the Slave.</li> <li>- The Slave DTM configuration dialog is displayed.</li> </ul> <p>In the Slave DTM configuration dialog:</p> <ul style="list-style-type: none"> <li>- select <b>Configuration &gt; General</b>,</li> <li>- set the Watchdog control and Interval,</li> <li>- select <b>Configuration &gt; Modules</b>,</li> <li>- configure the Modules of the Slave,</li> <li>- select <b>Configuration &gt; Signal Configuration</b>,</li> <li>- proceed the signal configuration,</li> <li>- select <b>Configuration &gt; Parameter</b>,</li> <li>- set the module parameters,</li> <li>- select <b>Configuration &gt; Groups</b>,</li> <li>- assign the Slave to a group,</li> <li>- select <b>Configuration &gt; Extensions</b>,</li> <li>- set the Extension parameters,</li> <li>- select <b>Configuration &gt; DPV1</b>,</li> <li>- configure the <b>DPV1</b> functions,</li> <li>- select <b>Configuration &gt; Device Settings</b>,</li> <li>- set the Device Settings.</li> <li>- close the Slave DTM configuration dialog via <b>OK</b>.</li> </ul> <p>For the option <b>Device-Settings &gt; Configuration Data Flag &gt; Configuration from Master</b> the Slave configuration parameters are sent to the Master DTM which transfers them to the Master device.</p>	<i>Configuring Slave Parameter</i>  <i>General</i>  <i>Modules</i>  <i>Signal Configuration</i>  <i>Parameters</i>  <i>Groups</i>  <i>Extensions</i>  <i>DPV1</i>  <i>Device Settings</i>	58  62  64  67  73  74  75  77  81
11	Configure Master device	Configure the Master device via the PROFIBUS DP Master DTM netX.	<i>(See Operating Instruction Manual DTM for PROFIBUS DP Master devices)</i>	-

#	Step	Short Description	For detailed information see section	Page
12	Save project	Depending of the frame application. For the configuration software: - select <b>File &gt; Save</b> .	<i>(See Operating Instruction Manual of the Frame Application)</i>	-
13	Connect Slave device	Depending of the FDT Container. For netDevice: - right click to the device icon of the Slave, - select <b>Connect</b> .	<i>Connecting/Disconnecting Device</i>	88
14	Download Configuration	- Adhere to the necessary safety precautions to prevent personnel injury and property damage. Depending of the FDT Container. For netDevice: - right click to the device icon of the Slave, - select <b>Download</b> .	<i>Safety Messages on Firmware or Configuration Download</i>  <i>Download Configuration</i>	31  94
15	Diagnosis	Depending of the FDT Container. For netDevice: - right click to the device icon of the Slave, - select <b>Diagnosis</b> . - The Slave DTM diagnosis dialog is displayed. (1) Check whether the communication is OK: <b>Diagnosis &gt; General Diagnosis &gt; Device status "Communication"</b> must be green! (2) „ <b>Communication</b> “ is green: Open the IO Monitor and test the input or output data. (3) „ <b>Communication</b> “ is not green: Use Diagnosis and Extended diagnosis for troubleshooting. - close the Slave DTM diagnosis dialog via <b>OK</b> .	<i>Overview Diagnosis</i>	96
16	IO Monitor	Depending of the FDT Container: For netDevice: - right click to the device icon of the Slave, - select <b>Diagnosis</b> , - select <b>Tools &gt; IO Monitor</b> . - Check the input or output data, - close the IO Monitor dialog via <b>OK</b> .	<i>IO Monitor</i>	119
17	Disconnect	Depending of the FDT Container. For netDevice: - right click to the device icon of the Slave, - select <b>Disconnect</b> .	<i>Connecting/Disconnecting Device</i>	88

Table 9: Getting started - Configuration Steps (Slave DTM at the Master busline)

## 3.2 Safety Messages on Firmware or Configuration Download

If you perform a firmware download or a configuration download via the PROFIBUS DP Slave 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**

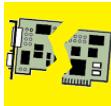
#### **Mismatching System Configuration**

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**



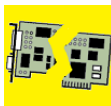
#### **Power Disconnect while downloading Firmware or Configuration**

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.

## 4 Settings

### 4.1 Overview Settings

#### Settings Dialog Panes

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

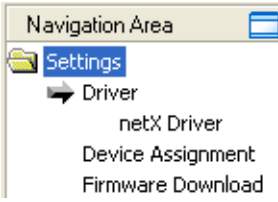
PROFIBUS DP Slave DTM	Folder Name / Section	Subsection	Manual Page
 <p>Navigation Area – Settings (Example)</p> <p>Additional drivers can be displayed.</p>	Driver		35
		Verify or adapt Driver Settings	35
		cifX Device Driver	37
		netX Driver	37
		Configuring netX Driver	38
	Device Assignment		45
		Scanning for Devices	45
		Scanning for all Devices or for suitable only	47
		Selecting the Device (with or without firmware)	48
		Selecting the Device once more (with Firmware)	49
	Firmware Download		51

Table 10: 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 33.

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



**Important:** For a 2-channel device consecutively channel 1 or channel 2 must be assigned to the DTM.

The following steps are needed to establish a connection from the PROFIBUS DP Slave DTM to the PROFIBUS DP Slave 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 DP Slave 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 DP Slave DTM is installed on the same PC as the PROFIBUS DP Slave device.
- Use the **netX Driver** to establish an USB, Serial (RS232) or TCP/IP connection from the PROFIBUS DP Slave DTM to the PROFIBUS DP Slave 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 Slave 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 DP Slave device icon.
9. Select the **Connect** command from the context menu.
- In the network view the device description at the device icon of the Slave is displayed with a green colored background. The PROFIBUS DP Slave device now is connected to the PROFIBUS DP Slave 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 DP Slave 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 5: 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 11: Driver Selection List Parameters

To establish a connection from the PROFIBUS DP Slave DTM to the PROFIBUS DP Slave 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 6: 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 7: 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 DP Slave DTM to the PROFIBUS DP Slave device must be supported by the device and must be available for the device.

- Use the **cifX Device Driver** if the PROFIBUS DP Slave DTM is installed on the same PC as the PROFIBUS DP Slave device.
- Use the **netX Driver** to establish a USB, Serial (RS232) or TCP/IP connection from the PROFIBUS DP Slave DTM to the PROFIBUS DP Slave 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 8: Manual Selection of multiple drivers (Example)

### 4.3.2 cifX Device Driver

In the PROFIBUS DP Slave-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 DP Slave DTM is installed in the same PC as the PROFIBUS DP Slave device.



**Note:** To establish a connection from a DTM to a Slave device via the **cifX Device Driver**, the **cifX Device Driver** must be installed and the driver must have access to the Slave 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 9: netX Driver > USB/RS232 Connection

Parameter	Meaning	Range of Value / Default Value
<b>Enable USB/RS232 Connector (Restart of ODM required)</b>	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 <b>Enable USB/RS232 Connector</b> is set or removed, then the ODM server must be restarted <sup>1</sup> , to make the new setting valid.  <sup>1</sup> Restart the ODM server via the <b>ODMV3 Tray Application</b> : - In the foot line click on  using the right mouse key. - In the context menu select <b>Service &gt; Start</b> .	checked, unchecked; Default: unchecked
<b>Select Port</b>	Depending on the COM ports (interfaces) available on the PC, they will be listed under <b>Select Port</b> .	COM 1 to COM N
<b>Port Configuration</b>		
<b>Disable Port</b>	checked: No connection. unchecked: The netX Driver tries to establish a connection using the configured USB/RS232 interface.	checked, unchecked (Default)
<b>Baud rate</b>	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
<b>Stop bits</b>	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
<b>Send Timeout</b>	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
<b>Reset Timeout</b>	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
<b>Byte size</b>	Number of bits per byte by byte specification	7 Bit, 8 Bit; Default (RS232): 8 Bit
<b>Parity</b>	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
<b>Keep Alive Timeout</b>	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
<b>Restore</b>	Resets all settings in the configuration dialog to the default values.	
<b>Save</b>	Saving all settings made in the configuration dialog <b>netX Driver &gt; Save USB/RS232 Connection</b> , i. e. only for the selected connection type.	
<b>Save All</b>	Saving all settings made in the configuration dialog <b>netX Driver</b> , i. e. for all connection types.	

Table 12: Parameters netX Driver &gt; 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.



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

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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**.

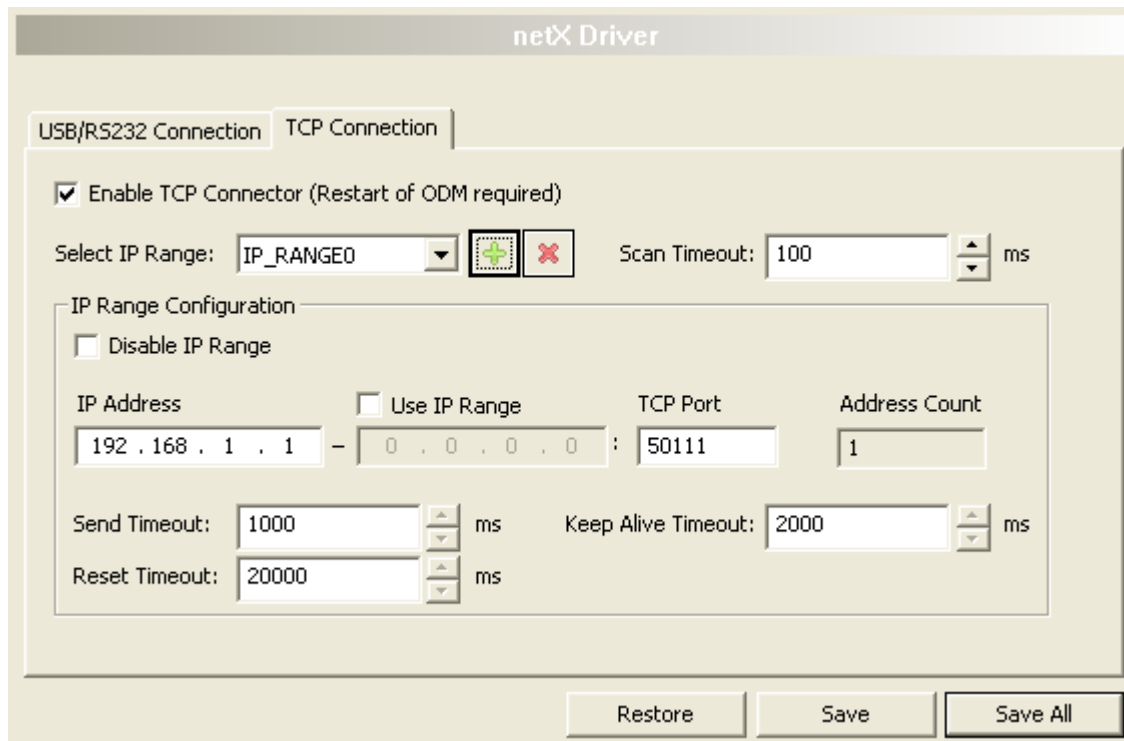





Figure 10: netX Driver > TCP Connection

Parameter	Meaning	Range of Value / Default Value
<b>Enable TCP Connector (Restart of ODM required)</b>	<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 <b>Enable TCP Connector</b> is set or removed, then the ODM server must be restarted<sup>1</sup>, to make the new setting valid.</p> <p><sup>1</sup> Restart the ODM server via the <b>ODMV3 Tray Application</b>:</p> <ul style="list-style-type: none"> <li>- In the foot line click on  using the right mouse key.</li> <li>- In the context menu select <b>Service &gt; Start</b>.</li> </ul>	checked, unchecked; Default: unchecked
<b>Select IP Range</b>	<p>Via <b>Select IP Range</b> 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
<b>Scan Timeout [ms]</b>	With <b>Scan Timeout</b> can be set, how long to wait for a response while a connection is established.	10 ... 10,000 [ms]; Default: 100 ms
<b>IP Range Configuration</b>		
<b>Disable IP Range</b>	checked: No connection. unchecked: The netX Driver tries to establish a connection using the configured TCP/IP interface.	checked, unchecked (Default)
<b>IP Address (left)</b>	Enter the IP address of the device, (if <b>Use IP Range</b> is not checked). Enter the start address of the IP scanning range, (if <b>Use IP Range</b> is checked).	valid IP address; Default: 192.168.1.1
<b>Use IP Range</b>	checked: An IP address range is used. unchecked: Only one IP address is used.	checked, unchecked; Default: unchecked
<b>IP Address (right)</b>	Enter the ending address of the IP scanning range, (only if <b>Use IP Range</b> is checked).	valid IP address; Default: 0.0.0.0
<b>Address Count</b>	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
<b>TCP Port</b>	Identifies the endpoint of a logical connection or addresses a specific endpoint on the device or PC.	0 – 65535; Default Hilscher device: 50111
<b>Send Timeout [ms]</b>	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
<b>Reset Timeout [ms]</b>	Maximum time for a device reset, including the re-initialization of the physical interface used for the communication.	100 ... 99,999 [ms]; Default (TCP/IP): 20.000 ms
<b>Keep Alive Timeout [ms]</b>	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
<b>Restore</b>	Resets all settings in the configuration dialog to the default values.	
<b>Save</b>	Saving all settings made in the configuration dialog <b>netX Driver &gt; Save TCP/IP Connection</b> , i. e. only for the selected connection type.	
<b>Save All</b>	Saving all settings made in the configuration dialog <b>netX Driver</b> , i. e. for all connection types.	

Table 13: Parameters netX Driver &gt; 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 DP Slave device to the PROFIBUS DP Slave DTM by checking the check box. This is essential to establish an online connection from the PROFIBUS DP Slave DTM to the PROFIBUS DP Slave device later, as described in section *Connecting/Disconnecting Device* on page 88.

Therefore in the **Device Assignment** dialog pane you scan for the PROFIBUS DP Slave 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.



**Important:** For a 2-channel device consecutively channel 1 or channel 2 must be assigned to the DTM.

### 4.4.1 Scanning for Devices

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

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

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

Figure 11: 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 DP Slave 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 <b>suitable only</b> or <b>all</b> devices.	suitable only, all
Device	Device class of the PROFIBUS DP Slave devices.	
Hardware Port 0/1/2/3	Shows, which hardware is assigned to which communication interface.	
Slot number	Shows the <b>Slot Number (Card ID)</b> preset at the PC card cifX via the <b>Rotary Switch Slot Number (Card ID)</b> .  The indication <b>n/a</b> means that no <b>Slot-Number (Card ID)</b> exists. This will occur if the PC card cifX is not equipped with a <b>Rotary Switch Slot Number (Card ID)</b> or for PC cards cifX equipped with a <b>Rotary Switch Slot Number (Card ID)</b> 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 <b>Access path</b> different data to the device are displayed.  For the <b>cifX Device Driver</b> 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 <b>Access path</b> (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 <b>cifX Device Driver</b> 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 14: 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: -)							
Device selection: <span>all</span>							<span>Scan</span>
	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 12: 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 DP Slave 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 DP Slave DTM can only be established with one PROFIBUS DP Slave device.

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

1. Check the appropriate device.

Device Assignment

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

Device selection:

	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 13: 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 DP Slave DTM to the PROFIBUS DP Slave 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 51 or to section *Selecting the Device once more (with Firmware)* on page 49.



### 4.4.3 Selecting the Device once more (with Firmware)



**Note:** For repeated download this step is omitted.

To select the PROFIBUS DP Slave 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	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 14: 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 DP Slave 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 15: 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 DP Slave DTM to the PROFIBUS DP Slave device, refer to section *Connecting/Disconnecting Device* on page 88.

## 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 Slave device (with or without firmware) and the device must be assigned to the hardware. For further information refer to section *Overview Settings* on page 32.

To load the firmware to the device:

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

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

Figure 16: 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 15: 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:

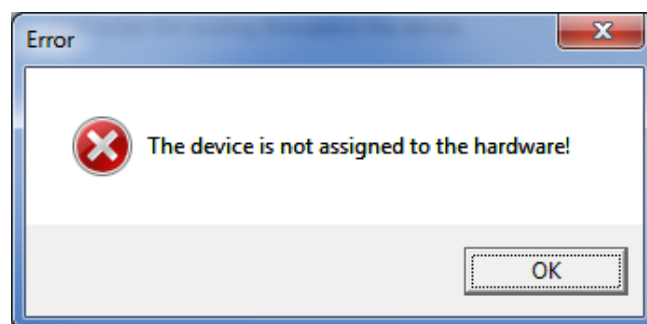


Figure 17: Error Message 'The device is not assigned to the hardware!'

- Click **OK** and select and assign the Slave 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**.

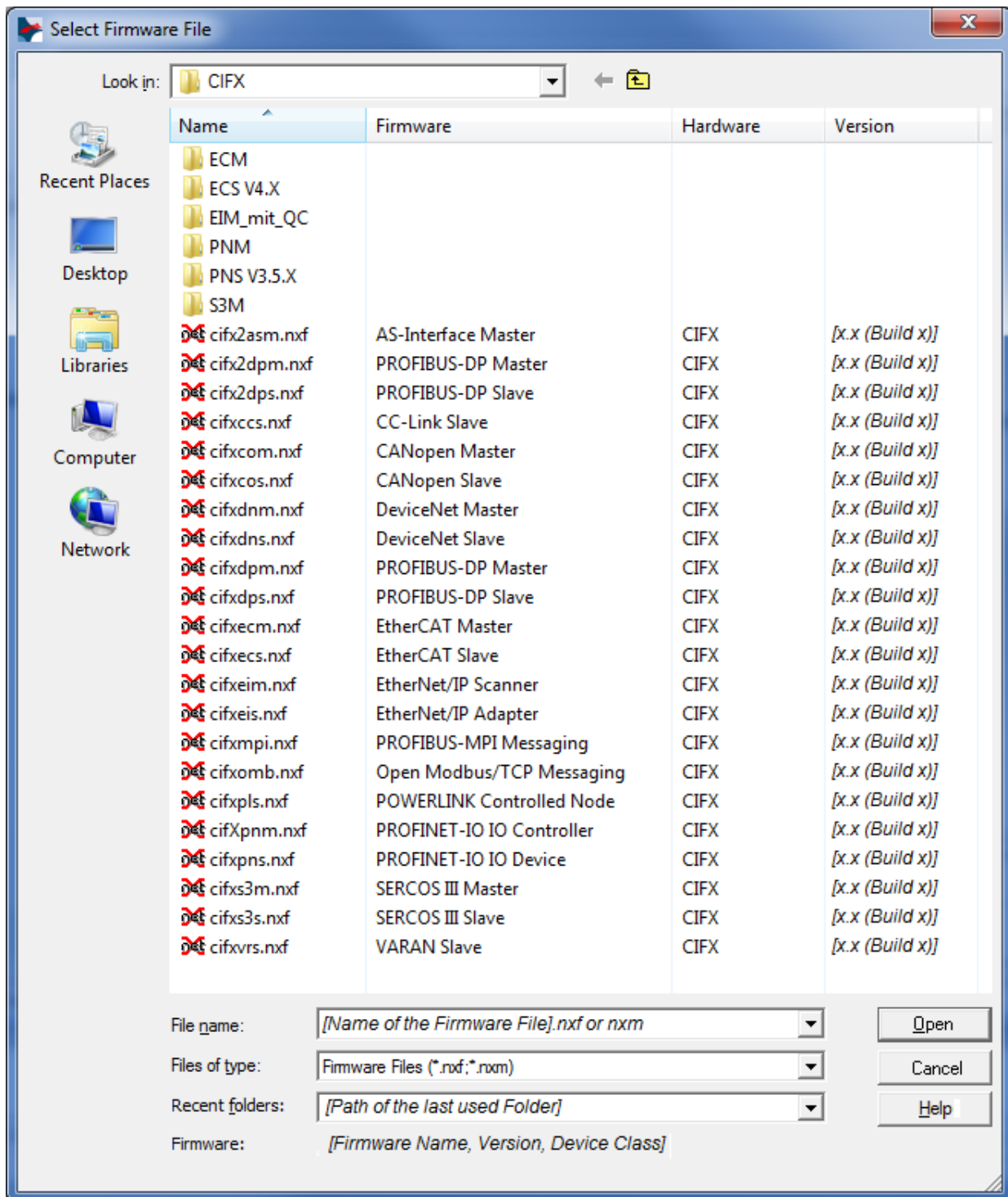


Figure 18: Window 'Select Firmware File' (Example CIFX)


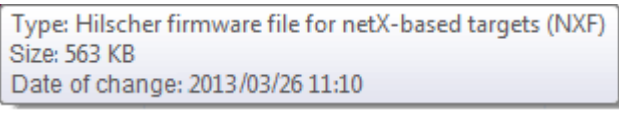
Parameter	Meaning	Range of Value / Default Value
Column <b>Name</b>	File name of the firmware file To sort the entries of the window <b>Select Firmware File</b> by name click to the column head  .	nxf, nxm
Column <b>Firmware</b>	Name of the firmware (consisting of the protocol name and protocol class)	
Column <b>Hardware</b>	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 <b>Version</b>	Firmware version	x.x (build x)
<b>Tooltip</b>	To view the tooltip information move with the mouse pointer over the selected firmware line. 	
<b>Files of Type</b>	„All Files (*.*)“ if before in the <b>Device Assignment</b> pane under <b>Device selection</b> <i>all</i> was selected. „Firmware Files (*.nxm)“ or <i>Firmware Files (*.nxf)</i> if before in the <b>Device Assignment</b> pane under <b>Device selection</b> <i>suitable only</i> was selected.	All Files (*.*), Firmware Files (*.nxm), Firmware Files (*.nxf)
<b>Recent folders</b>	Path of the recently opened folder	
<b>Firmware</b>	As soon as the firmware file has been selected, under <b>Firmware</b> 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
<b>Help</b>	Button, to open the online help of the DTM.	

Table 16: 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 <b>Select Firmware File</b> :	all files from the selected folder	only firmware files from the selected folder
Under <b>Files of Type</b> *:	„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 DP Slave DTM.

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

- 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 DP Slave 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 19: 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.

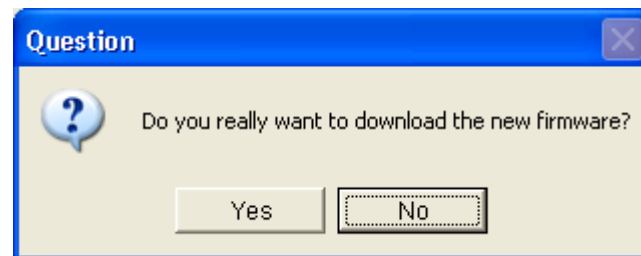


Figure 20: Request - Do you really want to download the firmware?

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.

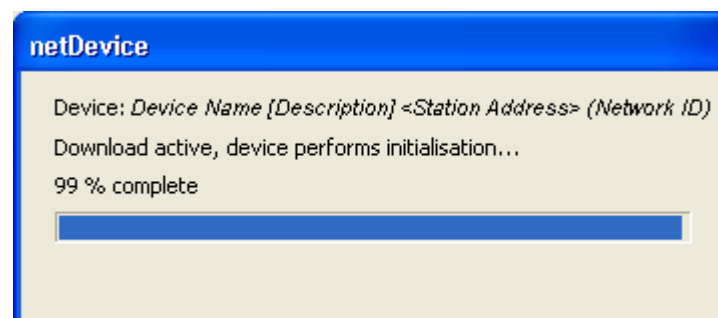


Figure 21: Firmware Download - Progress Bar

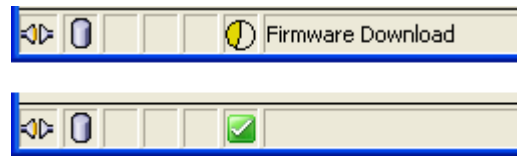


Figure 22: Clock Symbol and Hook Symbol green

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

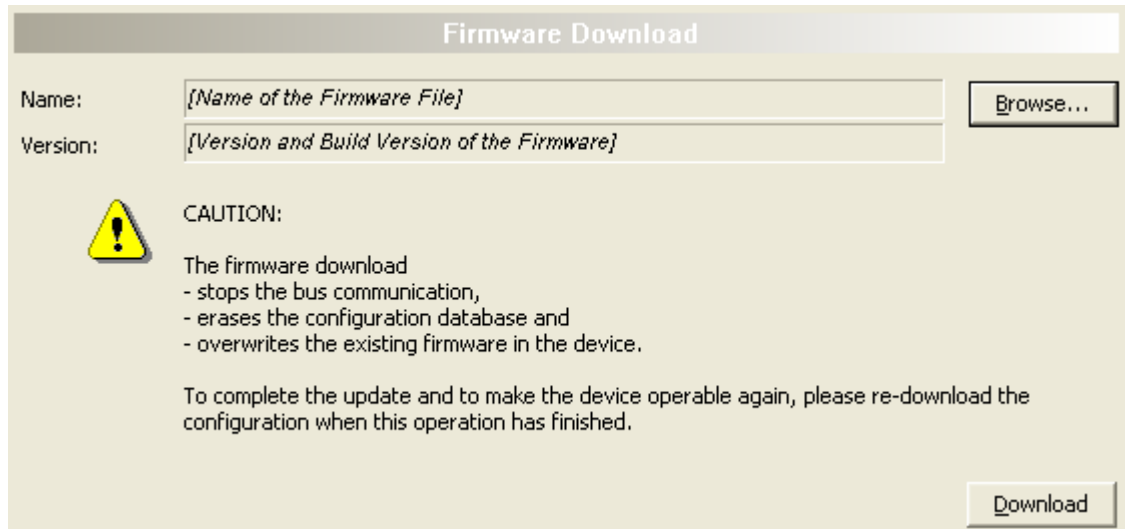


Figure 23: Firmware Download – Download



## 5 Configuration

### 5.1 Overview Configuration

#### Configuration Dialog Panes

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

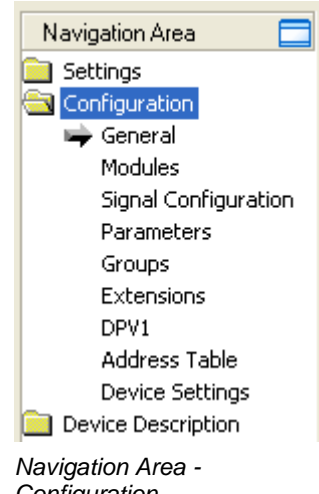
PROFIBUS DP Slave DTM	Folder Name / Section	Subsection	Page
	<i>General</i>		62
	<i>Modules</i>		64
	<i>Signal Configuration</i>		67
	<i>Parameters</i>		73
	<i>Groups</i>		74
	<i>Extensions</i>		75
	<i>DPV1</i>		77
	<i>Address Table</i>		79
	<i>Device Settings</i>	<i>Start of Bus Communication</i>	82
		<i>Application Monitoring</i>	82
		<i>Configuration Data Flag</i>	83
		<i>Process Image Storage Format</i>	85

Table 17: 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 DP Slave device, download the data of the configuration parameters in the PROFIBUS DP Slave device. See section *Download Configuration* on page 94.

## 5.2 Configuring Slave Parameters



**Important:** For a 2-channel device consecutively channel 1 or channel 2 each must be configured individually.

The steps provided in the following two sections are alternatively required for the two cases listed hereafter, to configure the parameters of the PROFIBUS DP Slave device using the PROFIBUS DP Slave DTM:

- Slave DTM at the Root-Line (Stand-Alone Slave)
- and Slave DTM at the Master busline.

### 5.2.1 Slave DTM at the Root-Line (Stand-Alone Slave)

If in the network project the PROFIBUS DP Slave DTM is dropped to the root busline, proceed as follows:

#### General

1. Set the **Station Address** of the Slave device:
  - Select **Configuration > General** in the navigation area.

#### Modules

2. Configure the **Modules** of the Slave:
  - Select **Configuration > Modules** in the navigation area.

#### Signal Configuration

3. Proceed the **Signal Configuration**:
  - Select **Configuration > Signal Configuration** in the navigation area.

#### Parameters

4. Set the module **Parameters**:
  - Select **Configuration > Parameters** in the navigation area.

#### Device Settings

5. Set the Device Settings:
  - Select **Configuration > Device Settings** in the navigation area.
  - Under **Start of Bus Communication** > select **Automatically by device** or **Controlled by application** option.
  - Under **Application Monitoring** > set **Watchdog time**.
  - Under **Configuration Data Flag** > select **Fixed Configuration** or **Configuration from Master** option.

*For more see next page.*



**Important:** For the option **Configuration from Master** the Slave device uses the configuration, which the Master device sends via PROFIBUS to the Slave device. The configuration steps:

- Configure Slave Modules and
- Set Module Parameters

can be used for the default configuration or are to be omitted.

But the Slave device firmware and the host application must support the configuration mode **Configuration from Master** and must verify the Module Parameters and the Module Configuration. If the Slave device firmware and the host application do not support the configuration mode **Configuration from Master** or they reject the Module Parameters and the Module Configuration, then a cyclic communication between the Slave device and the Master is not established.

---

### **Close Slave DTM Configuration Dialog**

6. Click **OK** in order to close the Slave DTM configuration dialog and to store your configuration.

### **Configuration Download to the PROFIBUS DP Slave Device**

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



**Note:** In order to transfer the configuration to the PROFIBUS DP Slave device, download the data of the configuration parameters in the PROFIBUS DP Slave device. See section *Download Configuration* on page 94.

---

### **Further Information**



For more information refer to the sections hereafter.

## 5.2.2 Slave DTM at the Master busline

If in the network project the PROFIBUS DP Slave DTM is dropped to the Master busline of the PROFIBUS DP Master DTM:

### General

1. Set the Watchdog control and Interval:
  - Select **Configuration > General** in the navigation area.

### Modules

2. Configure the **Modules** of the Slave:
  - Select **Configuration > Modules** in the navigation area.

### Signal Configuration

3. Proceed the **Signal Configuration**:
  - Select **Configuration > Signal Configuration** in the navigation area.

### Parameters

4. Set the module **Parameters**:
  - Select **Configuration > Parameter** in the navigation area.

### Groups

5. Assign the Slave to a group:
  - Select **Configuration > Groups** in the navigation area.

### Extensions

6. Set the **Extensions** parameters:
  - Select **Configuration > Extensions** in the navigation area.

### DPV1

7. Configure the **DPV1** functions:
  - Select **Configuration > DPV1** in the navigation area.

*For more see next page.*

### **Device Settings**

8. Set the Device Settings:

- Select **Configuration > Device Settings** in the navigation area.
- Under **Start of Bus Communication** > select **Automatically by device** or **Controlled by application** option.
- Under **Application Monitoring** > set **Watchdog time**.
- Under **Configuration Data Flag** > select **Fixed Configuration** or **Configuration from Master** option.

For the option **Device-Settings > Configuration Data Flag > Configuration from Master** the Slave configuration parameters are sent to the Master DTM which transfers them to the Master device.

### **Close Slave DTM Configuration Dialog**

9. Click **OK** in order to close the Slave DTM configuration dialog and to store your configuration.

### **Configuration Download to the PROFIBUS DP Slave Device**

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



**Note:** In order to transfer the configuration to the PROFIBUS DP Slave device, download the data of the configuration parameters in the PROFIBUS DP Slave device. See section *Download Configuration* on page 94.

### **Further Information**

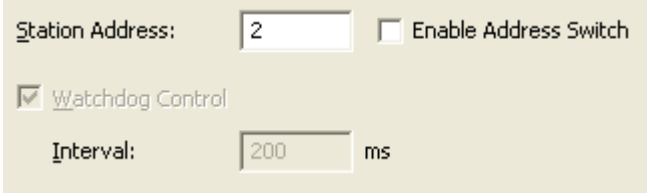


For more information refer to the sections hereafter.

## 5.3 General

### 5.3.1 Slave DTM at the Root-Line (Stand-Alone Slave)

If you configure the PROFIBUS DP Slave device as a Stand-Alone Slave and therefore drop the PROFIBUS DP Slave DTM in the network project to the root busline, the pane **Configuration > General** is displayed as shown in the following figure.



Station Address:  ☐ Enable Address Switch

☒ Watchdog Control

Interval:  ms

Figure 24: Configuration > General (Slave DTM at the Root-Line (Stand-Alone Slave))

If you configure the PROFIBUS DP Slave device as a Stand-Alone Slave you can set the **Station Address** of the PROFIBUS DP Slave device in the pane **Configuration > General**.

Via **Enable Address Switch** you can determine whether the station address is set using the configuration software or on the address switch on the device. E. g. if you check **Enable Address Switch**, then you must set the station address at the address switch on the device.



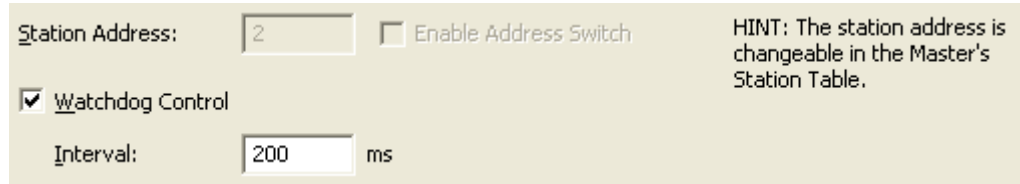
**Note:** The setting **Enable Address Switch** can only be used for COMX 10XX-DPS/DPS.



**Note:** If in the network project the PROFIBUS DP Slave DTM is dropped to the root busline (Stand-Alone Slave), the parameters **Watchdog control** and **Interval** are irrelevant.

### 5.3.2 Slave DTM at the Master busline

If you configure the PROFIBUS DP Slave device via the PROFIBUS DP Master device and therefore drop the PROFIBUS DP Slave DTM in the network project to the Master busline of the PROFIBUS DP Master DTM, the pane **Configuration > General** is displayed as shown in the following figure.



Station Address:  ☐ Enable Address Switch

☒ Watchdog Control

Interval:  ms

HINT: The station address is changeable in the Master's Station Table.

Figure 25: Configuration > General (Slave DTM at the Master Busline)

If you configure the PROFIBUS DP Slave device via the PROFIBUS DP Master device the current **Station Address** of the PROFIBUS DP Slave device is displayed in the **Configuration > General** pane. You can set the station address of the PROFIBUS DP Slave device in the configuration of the PROFIBUS DP Master device.

Furthermore with this approach the setting **Watchdog control** activates or deactivates in the PROFIBUS DP Slave device the monitoring of communication errors to the assigned PROFIBUS DP Master device. E. g. if the PROFIBUS DP Slave device detects an interruption of an already operational communication, defined by the Watchdog time, then the PROFIBUS DP Slave device sets the outputs into the secure condition.



**Note:** If the monitoring by means of the **Watchdog control** has been deactivated, there is the possibility, that the PROFIBUS DP Slave device does not set its outputs into a safe state, even though the communication has been interrupted.

In the field **Interval** you can set the monitoring time of the selected PROFIBUS DP Slave device.



**Note:**

- If the monitoring time chosen is too short for a low baud rate, there is the possibility, that the PROFIBUS DP Slave device will set its outputs into the safe state.
- If the monitoring time chosen is too long for a low baud rate, there is the possibility, that if an interruption occurs, the PROFIBUS DP Slave device will take a long time to set its outputs into the safe state.

## 5.4 Modules



**Important:** For the option **Device-Settings > Configuration Data Flag > Configuration from Master** and if in the network project the PROFIBUS DP Slave DTM is dropped to the root busline (Stand-Alone Slave), the Slave device uses the configuration, which the Master device sends via PROFIBUS to the Slave device and the configuration step: „Configure Slave Modules“ can be used for the default configuration or is to be omitted.

At the pane **Modules** modules can be selected or assigned and configured.

**Modules**

Available Modules:

Module name	Module Configuration Identifier
9440/12-01-11 CPM Z1 24V	0x00
9440/12-01-11 CPM Z1 24V Red.	0x30
9440/22-01-21 CPM Z1 230V	0x00
9440/22-01-21 CPM Z1 230V Red.	0x30
9440/15-01-11 CPM Z2 24V	0x00
9440/15-01-11 CPM Z2 24V Red.	0x30
9460/12-08-11 AIM 4/8 Exi	0x42,0x47,0x30,0x03
9461/12-08-11 AIMH 8 2w Exi	0x42,0x47,0x30,0x05

Configured Modules:

Slot	Module name	Module Configuration Identifier
1	9440/15-01-11 CPM Zone 2	0x00
2	9460/12-08-11 AIM 4/8 Exi	0x42,0x47,0x30,0x03
3	9475/12-08-61 DOM 8 Exi3	0x82,0x00,0x20,0x18
4	9470/22-16-11 DIM 16 NamExi	0x42,0x83,0x11,0x0d

Length of input/output data: 21 bytes (max. 194 bytes)

Length of input data: 20 bytes (max. 113 bytes)

Length of output data: 1 bytes (max. 81 bytes)

Number of modules: 4 (max. 17)

Figure 26: Configuration > Modules

There are two kinds of Slaves (Slave devices). A **simple Slave** has a fixed data length. The data length of a **modular Slave** is configurable. The selection list **Available Modules** shows all possible modules of the Slave.

- **Module Configuration of a simple Slave**

In the case of a simple Slave, one module is shown and it is copied automatically into the list Configured Modules.

- **Module Configuration of a modular Slave**

In case of a modular Slave, the user has to select the required modules manually.



If a module consists of several sub-modules, all Identifier of the sub modules are displayed in the column **Module Configuration Identifier** in the same row.

A description of the Module Configuration Identifier you find in section *Identifier Bytes* on page 138.

The **Slot** column shows a sequential number for modules.

### 5.4.1 Configuration of the Modules of a Slave

For configuration of the modules of a Slave (selection of the modules), proceed as follows:

1. Add all the required modules from the **Available Modules** selection list to the **Configured Modules** list. To know how to append or to insert the modules refer to section *Appending or inserting available Modules* on page 66.

The sequence of the modules in the list **Configured Modules** is important and must match with the sequence which exists in the Slave. Typically, the sequence is the actual physical sequence. There are Slaves to which this rule does not apply and where for example first analogue modules and then digital modules must be entered, independent of their actual sequence.

For further information about the modules of the used Slave see the manual of the device manufacturer.



---

**Note:** If the Slave device has only one module, this module is taken over automatically in the table **Configured Modules** and can not be deleted.

---

2. Click on **OK** to confirm your selection. If the selection should not be taken over, click **Cancel**.

## 5.4.2 Appending or inserting available Modules

You can append or insert one or several modules to the list **Configured Modules**.



**Note:** A multiselection is possible. Therefore click in the list **Available Modules** on several modules while holding the SHIFT key.

### Appending Modules

- Under **Available Modules** click on one or several modules and click on **Append**.
- Or double click on these modules.
- The modules appear at the lower end of the list **Configured Modules**.

### Inserting Modules

- Under **Available Modules** click on one or several modules.
- Under **Configured Modules** click to the module before which the additional modules shall be inserted.
- Click **Insert**.
- The modules appear in the list **Configured Modules** before the selected module.

## 5.4.3 Remove configured Modules

From the **Configured Modules** list you can remove single modules.

- Therefore click under **Configured Modules** to the module you wish to remove from the list.
- Click **Remove**.
- The module is removed from the **Configured Modules** list.

## 5.5 Signal Configuration

With the PROFIBUS DP slave, **modules** are defined at fieldbus level to configure the process data to be transmitted via the bus, with the amount of data transmitted.

The application requires the information on the meaning and data type of the input and output data specified via the **signals**.



**Important:** First configure the modules for the input and output data in the **Modules** dialog pane. Each module contains information about length and direction (In / Out). Only carry out the steps for signal configuration afterwards.

In the **Signal Configuration** dialog you can define the data structure of the input or output data of your device and define the I/O data for your application

- assign data types,
- assign names or signal names, and
- define data structures.

The aim is to create a suitable signal configuration, which subsequently enables easy identification of the transmitted input and output data. This requires a structuring of the input and output data according to signals and the configuration of signal names or data types suitable for the individual application cases.

### Signal names

The names assigned by default by the configuration software for the signals distinguish between input and output signals. You can replace these general names with suitable designations, such as "Setpoint" or "Status".

### Merging or splitting signals

You can merge or split signals or data types by configuring the data type and the number of signals.

For example you can specify that 4 bytes of input data together match with 1 input signal of the data type ,UNSIGNED32'.

#### **4 Byte (input) = 1 ,UNSIGNED32' (input)**

The GSD file for your device includes the definition of the identifier bytes specified by the PROFIBUS DP standard and contains the data types BYTE and WORD, which are displayed in the signal configuration. For the shown example 4 ,BYTE' input data correspond to 1 signal of the data type ,UNSIGNED32'. That is to say, on the lower level the transmitted bytes are set, whereas on the level above it is set how the data are used and interpreted.

To identify split data types, the configuration software assigns appropriate suffixes to the signal names, which depend on the selected new data type, for example \_Byte\_0, \_Byte\_4 ... or \_Bit\_1, \_Bit\_2 ...

## 5.5.1 Signal Configuration Pane

- Select **Configuration > Signal Configuration** in the navigation area.
- The dialog pane **Signal Configuration** is displayed.

Slot	Name	Module Type
Slot 1	1 Byte Out	1 Byte Out
	Name	Type
	Output_1	byte
	Offset	0
Slot 2	1 Byte In	1 Byte In

Figure 27: Signal Configuration Pane

Parameter	Description	Range of Value/ Value
Slot	Slot 1 for the first configured module, slot 2 for the second configured module, etc.	Slot1, Slot2, ...
Name	Names of the configured modules of the PROFIBUS DP slave, by which the lengths of the input and output data are defined.	Module name from the used GSD file.
Module Type		
Signal level		
Name	Name of the input or output signal that can be set here. The configuration software assigns names by default: Output_1, Output_2, ... bzw. Input_1, Input_2 ...	String
Type	Data type of the input or output signal (depending on the configured size of the I/O data).	bit, byte, signed8, unsigned8, word, signed16/24, unsigned16/24, dword, signed32/40/48/56, unsigned32/40/48/56, lword, signed64, unsigned64, real32, real64
Offset	Offset of the input or output signal, related to the data in the input or output data memory of the slave.	

Table 18: Explanations Signal Configuration Pane

## 5.5.2 Create Signal Configuration

In the **Signal Configuration** pane, you can edit the signal configuration in the lower table.

### Edit Signal

- Right-click on the signal to be configured to open the context menu.

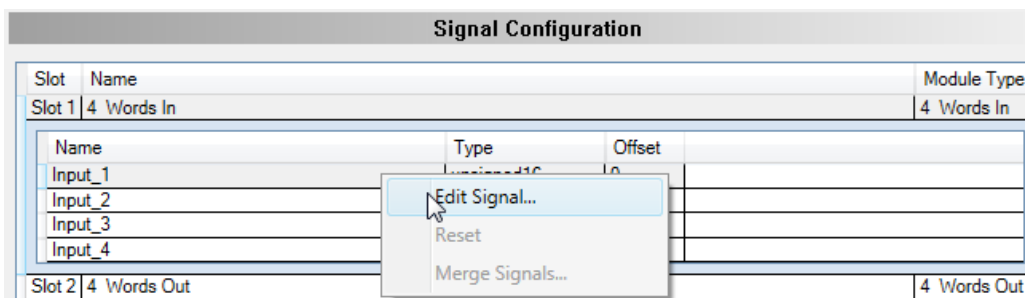


Figure 28: Edit Signal

- Click **Edit Signal**.
- The **Edit Signal** dialog pane is opened.

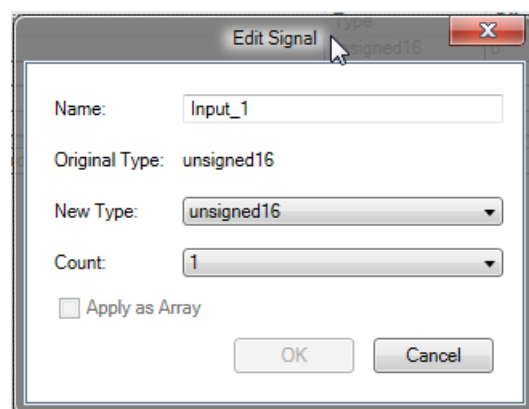


Figure 29: Edit Signal Dialog Pane

Parameter	Description	Range of Value/ Value
<b>Name</b>	Here you can edit the signal name.	String
<b>Original Type</b>	Input or output signal data type preconfigured by the configuration software or by the user.	
<b>New Type</b>	Here you can edit the new data type for the input or output signal. Only permitted data types are displayed in the selection list.	bit, byte, signed8, unsigned8, word, signed16/24, unsigned16/24, dword, signed32/40/48/56, unsigned32/40/48/56, lword, signed64, unsigned64, real32, real64
<b>Count</b>	Here you can set the number of signals with the data type "New Type".	
<b>Apply as Array</b>	If checked, the signal is displayed as an array. If unchecked, the individual signals are displayed.	Checked, unchecked, Default: checked

Table 19: Explanations Edit Signal Dialog Pane

- In the field **Name** edit the signal name.
- Use **New Type** to define the new data type or **Count** to define the number of signals.

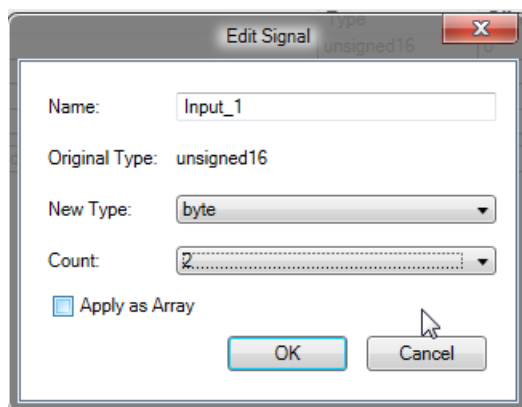


Figure 30: Edit Signal (Example)

- Click **OK**.
- When splitting signals, the configuration software assigns suitable standard suffixes to the signal name to identify the subordinate signals.

Signal Configuration			
Slot	Name	Module Type	
Slot 1	4 Words In	4 Words In	
Name	Type	Offset	
Input_1	unsigned16	0	
Input_1_Byte_0	byte	0	
Input_1_Byte_1	byte	1	
Input_2	unsigned16	2	
Input_3	unsigned16	4	
Input_4	unsigned16	6	
Slot 2	4 Words Out	4 Words Out	

Figure 31: Signal Input\_1 split (Example)

- You can further split already split signals.

Signal Configuration			
Slot	Name	Module Type	
Slot 1	4 Words In	4 Words In	
Name	Type	Offset	
Input_1	unsigned16	0	
Input_1_Byte_0_Byte_0_Bit_0	bit	0.0	
Input_1_Byte_0_Byte_0_Bit_1	bit	0.1	
Input_1_Byte_0_Byte_0_Bit_2	bit	0.2	
Input_1_Byte_0_Byte_0_Bit_3	bit	0.3	
Input_1_Byte_0_Byte_0_Bit_4	bit	0.4	
Input_1_Byte_0_Byte_0_Bit_5	bit	0.5	
Input_1_Byte_0_Byte_0_Bit_6	bit	0.6	
Input_1_Byte_0_Byte_0_Bit_7	bit	0.7	
Input_1_Byte_1	byte	1	
Input_2	unsigned16	2	
Input_3	unsigned16	4	
Input_4	unsigned16	6	
Slot 2	4 Words Out	4 Words Out	

Figure 32: Signal Input\_1\_Byte\_0 split again (Example)

- Click **Apply** to save the created configuration.

## Reset



**Note:** As long as you have not applied the created signal configuration, you can undo the steps you have taken by clicking **Reset**.

- Right-click on the configured signal to open the context menu.

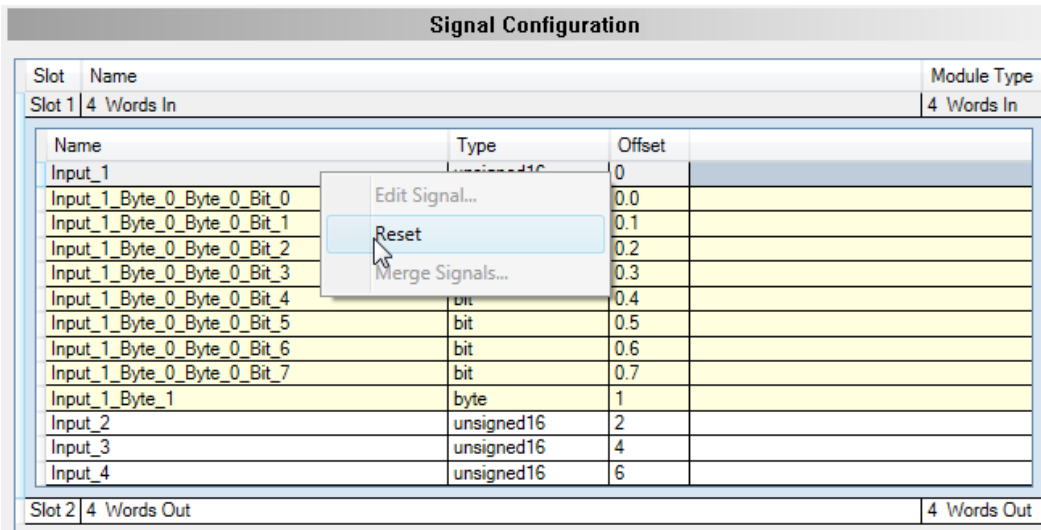


Figure 33: Reset

- Click **Reset**.
- The created signal configuration with a splitting of a signal is undone.

## Merge Signals

- First, confirm a signal splitting with **Apply**.
- Then press **Shift** and mark the signals to be merged with the mouse pointer.
- Open the context menu by right-clicking on the marked signals.

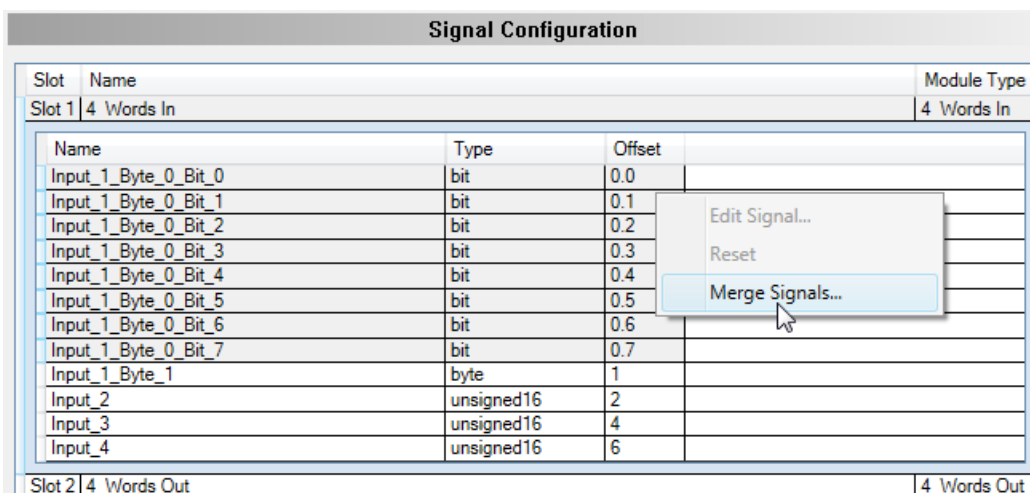


Figure 34: Merge Signals

- Click **Merge Signals**.
- The dialog pane **Merge Signals** opens.

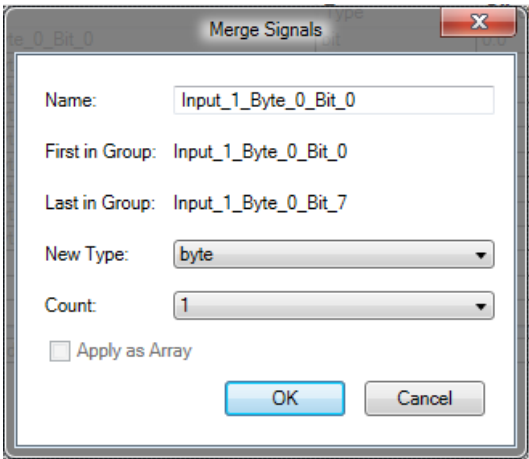


Figure 35: Dialog Pane Merge Signals

Parameter	Description	Range of Value/ Value
<b>Name</b>	Here you can edit the signal name. The name displayed here contains the suffix assigned by the configuration software, example "_Bit_0" or "_Byte_0_Bit_0".	String
<b>First in Group</b>	Shows the name of the first signal from which the merge will start.	
<b>Last in Group</b>	Shows the name of the last signal up to which the merge is performed.	
<b>New Type</b>	Here you can edit the new data type for the input or output signal. Only permitted data types are displayed in the selection list.	bit, byte, signed8, unsigned8, word, signed16/24, unsigned16/24, dword, signed32/40/48/56, unsigned32/40/48/56, lword, signed64, unsigned64, real32, real64
<b>Count</b>	Shows the number of data types of the merged signal, which you can adjust here.	
<b>Apply as Array</b>	An array is formed when merging.	Allways checked

Table 20: Explanations Merge Signals Dialog Pane

- For the signals that you want to merge, specify the name via **Name**, the data type via **New Type** or the number of data types of the merged signal via **Count**.
- Click **OK**.
- The signals are merged.
- Click **Apply** to save the created configuration.



## 5.6 Parameters



**Important:** For the option **Device-Settings > Configuration Data Flag > Configuration from Master** and if in the network project the PROFIBUS DP Slave DTM is dropped to the root busline (Stand-Alone Slave), the Slave device uses the configuration, which the Master device sends via PROFIBUS to the Slave device and the configuration step: „Set Module Parameters“ can be used for the default configuration or is to be omitted. The parameters of the window **Parameters** are relevant if the Slave device DTM icon is dropped to the Master bus line, as these parameters then are transferred to the PROFIBUS DP Master DTM and thus the Master is configured.

The pane **Parameters** allows it to change the parameter settings of the modules.

Name	Value
timeout output modules (x100ms)	0x01
signal diagnosis	ON
IS1 CPM redundant	No

Figure 36: Configuration > Parameters

If default parameters are available in the GSD file of the Slave, they are automatically inserted.

Some of the DP Slave devices require further Parameter data, for instance in order to change a measuring limit or a value range. This type of data is manufacturer and slave specific. The meaning of the parameters is determined by the device manufacturer. The explanations can be taken from the manufacturers' manual.

- **Module**

In the Module field the module which should be displayed has to be selected. The modules have to be assigned in the Configuration before (see section *Modules* on page 64).

- **Parameter and Value**

The Values of the Parameters can be changed by making a double click on the parameter.

The meaning of the single Parameters can be found in the manual of the device manufacturer.

Name	Value
timeout output modules (x100ms)	0x01
signal diagnosis	ON
IS1 CPM redundant	No

Figure 37: Change Parameter Values

The representation of the parameter values is by default in hexadecimal. If under **Display Mode** the entry 'Decimal' is selected, the representation of the values changes into the decimal representation.

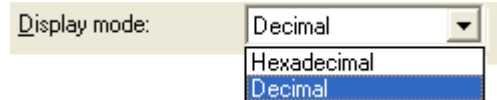


Figure 38: Hexadecimal and decimal Representation of the Parameter Values

## 5.7 Groups



**Important:** If in the network project the PROFIBUS DP Slave DTM is dropped to the root busline (Stand-Alone Slave), the dialog pane **Groups** is irrelevant.

The parameters of the window **Groups** are relevant if the Slave device DTM icon is dropped to the Master bus line, as these parameters then are transferred to the PROFIBUS DP Master DTM and thus the Master is configured.

After a Master was arranged, the single Slaves devices can be assigned to up to eight different **Groups**.

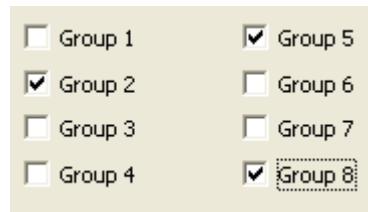


Figure 39: Configuration > Groups

The assignment of the actual Slave device to one or more groups takes place by enabling the group respectively groups with the desired characteristics.

The selected group membership is transferred to the Slave device during its start-up sequence. The group membership acts as a filter for the Sync and Freeze global commands. These are output as Broadcast telegrams in order to synchronize the input and output data of several Slaves. Only the Slaves in whose group these commands have been assigned react on it.

## 5.8 Extensions



**Important!** If in the network project the PROFIBUS DP Slave DTM is dropped to the root busline (Stand-Alone Slave), the dialog pane **Extensions** is irrelevant.

The parameters of the window **Extensions** are relevant if the Slave device DTM icon is dropped to the Master bus line, as these parameters then are transferred to the PROFIBUS DP Master DTM and thus the Master is configured.

The **Extensions** pane contains adjustment possibilities for the extension parameters: Auto Clear, Fail Safe Behavior, Configuration Data Convention, Error on Cyclic Data Exchange and Diagnosis update delay.

Figure 40: Configuration > Extensions

Setting	Description	Range of Value/ Value
Auto Clear	<p>The setting <b>Auto Clear</b> activates or respectively deactivated the Auto Clear Function of the actual Slave. This function can only be used, if the <u>global Auto Clear is activated in the Master</u>. The setting of the global Auto Clear is typically configured in the Bus Parameters of the Master.</p> <p>If no data exchange occurs to at least one Slave (Process Auto Clear) or an existing data exchange takes place after the expiration of a monitoring time, then the Master leaves the data exchange and sets the outputs of <b>all</b> assigned DP Slaves into a secure condition.</p> <p>If the setting <b>Ignore Auto Clear</b> is selected, the Master tries to stay in the data exchange with the other Slaves.</p>	Process Auto Clear, Ignore Auto Clear, Default: Process Auto Clear

Setting	Description	Range of Value/ Value
Fail Safe Behavior	<p>The setting for <b>Fail Safe Behavior</b> is read from the GSD file and is a fixed setting. The user can select between both options only if the Slave supports them. Depending by which pre-settings are contained in the GSD file, the <b>Fail Safe Behavior</b> mode can get the following settings:</p> <ol style="list-style-type: none"> <li>1. <b>Slave receives zero data in Clear Mode</b> (fixed setting)</li> <li>2. <b>Slave receives no data in Clear Mode</b> (fixed setting)</li> <li>3. the user can select between <ul style="list-style-type: none"> <li>- <b>Slave receives zero data in Clear Mode</b></li> <li>- <b>Slave receives no data in Clear Mode</b> (Default).</li> </ul> </li> </ol> <p>The <b>Fail Safe Behavior</b> mode indicates to the Master that the affected Slave is working in a so-called Fail_safe mode.</p> <p>If the Fail Safe mode is activated (setting <b>Slave receives zero data in Clear Mode</b>), in the CLEAR state the Slave will receive output data of the length zero instead of the zero output data.</p> <p>Based on this method (setting <b>Slave receives zero data in Clear Mode</b>), the Slave immediately recognizes that the Master is in the CLEAR condition even if a previous CLEAR command had been destroyed on the Bus.</p>	<p>Slave receives zero data in Clear Mode, Slave receives no data in Clear Mode, Default: The setting for <b>Fail Safe Behavior</b> is read from the GSD file. ('Slave receives no data in Clear Mode' = default if the Slave supports both functions.)</p>
Configuration Data Convention	<p>The <b>Configuration Data Convention</b> determines whether the configuration data is interpreted according to <b>EN 50170</b> (supported) or additional configuration data according to PROFIBUS <b>DPV1</b> extension is used (not supported).</p>	<p>DPV1 compliant, EN 50170 compliant, Default: EN 50170 compliant</p>
Error on Cyclic Data Exchange	<p>If <b>Continue connecting to slave on failure</b> is selected, the Master remains in the state DATA_EXCHANGE and holds the connection to the Slave, although the Slave does not respond and the Master does not receive the response from the Slave.</p> <p>If <b>Do not try to connect to slave on failure</b> is selected, the Master does not remain in the DATA_EXCHANGE condition for the affected Slave if the Slave has been recognized as incorrect, but breaks off the connection to the Slave.</p>	<p>Continue connecting to slave on failure, Do not try to connect to slave on failure, Default: 'Do not try to connect to slave on failure'</p>
Diagnosis update delay	<p>Some Slave devices which are newer require more time for the consistency testing for the processing of the SET_PRM parameterizing telegrams.</p> <p>In this case the standard diagnosis cycle is not sufficient after the parameterizing phase, to detect the disposition of the Slave for the DATA_EXCHANGE.</p> <p>With the diagnosis delay, the number of diagnosis cycles is advanced after the parameterizing phase, which is the maximum that the Master waits for this disposition, before it starts a new parameterizing.</p> <p>The value range is 0..255.</p>	<p>3 bus cycles</p>

Table 21: Configuration &gt; Extensions

## 5.9 DPV1



**Important:** If in the network project the PROFIBUS DP Slave DTM is dropped to the root busline (Stand-Alone Slave), the dialog pane **DPV1** is irrelevant.

The parameters of the window **DPV1** are relevant if the Slave device DTM icon is dropped to the Master bus line, as these parameters then are transferred to the PROFIBUS DP Master DTM and thus the Master is configured.

DPV1 serves for an acyclic data exchange and supports the functions read write and alarm handling.



**Note:** DPV1 functions can only be used and configured if the used DP Master supports DPV1 functions.

### Enable DPV1

Figure 41: Configuration > DPV1 > Enable DPV1

The option **Enable DPV1** has to be enabled, to activate DPV1. All setting possibilities concerning DPV1 are grayed out before activating.



**Note:** In case of Slave devices which do not support DPV1, the **Enable DPV1** field is grayed out and can not be selected for this Slaves.

The **Max. channel data length** determines the maximum length of the DPV1 Alarm telegrams. The Slave will arrange its buffer size for the concerning number of data.

The **Max. alarm PDU length** determines the maximum quantity of active alarms.

### Alarms

Figure 42: Configuration > DPV1 > Alarms

The **Alarm mode** defines the maximum number of possible active alarms: 1 alarm of each type respectively 2, 4, 8, 12, 16, 24 or 32 alarms in total.

The following alarms can be activated or deactivated by selecting it or not.

- Pull Plug alarm (module pulled),
- Process alarm,
- Diagnosis alarm,
- Manufacturer specific alarm,
- Status alarm and
- Update alarm.

### **Extra Alarm SAP**

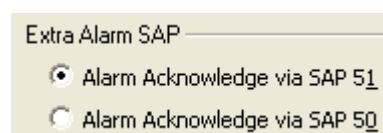


Figure 43: Configuration > DPV1 > Extra Alarm SAP

It the field **Extra Alarm SAP** it is set if the DPV1 Master acknowledges an alarm to the DPV1 Salve via **SAP 51** or **SAP 50**.

Setting	Description	Range of Value/ Value
Extra Alarm SAP	<p><b>SAP 51</b> The PROFIBUS DPV1 Master acknowledges alarms via SAP 51.</p> <p>The Master uses SAP 51 for DPV1 read/write and for the alarm acknowledge to this Slave device.</p> <p><b>SAP 50</b> The PROFIBUS DPV1 Master acknowledges alarms via SAP 50.</p> <p>The Master uses SAP 50 for the alarm acknowledge to this Slave. However, the Master still uses SAP 51 for DPV1 read/write services.</p> <p>This setting may cause a higher performance because SAP 50 is used exclusively for the alarm acknowledge and can not be delayed by a running DPV1 read/write service.</p> <p>To use this feature requires that the Slave supports it. This information is part of the GSD file.</p>	<p>Alarm Acknowledge via SAP 51, Alarm Acknowledge via SAP 50,</p> <p>Default: Alarm Acknowledge via SAP 51 51 is set if GSD file does not provide the default SAP. Otherwise the default SAP is read from the GSD file:</p> <ul style="list-style-type: none"> <li>- If GSD file delivers SAP 50, this value is used.</li> <li>- If GSD file delivers SAP 51, this value is used.</li> </ul>

Table 22: Configuration > DPV1 > Extra Alarm SAP

## 5.10 Address Table

The **Address Table** dialog pane shows a list of all addresses used in the process data image. The displayed addresses refer to the used PROFIBUS DP.

To configure the address data:

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

The screenshot shows the 'Address Table' dialog pane. At the top, there is a 'Display mode:' dropdown set to 'Hexadecimal' and a 'CSV Export' button. Below this, the 'Inputs:' section contains a table with 4 columns: Module, Type, Length, and Address. It lists two entries: '2 Words In' at address 0x0000 and '2 Words In' at address 0x0004, both of type 'Word' and length 0x0004. The 'Outputs:' section contains a similar table with two entries: '2 Bytes Out' at address 0x0000 and '2 Bytes Out' at address 0x0002, both of type 'Byte' and length 0x0002.

Address Table			
Display mode:		Hexadecimal	CSV Export
<b>Inputs:</b>			
Module	Type	Length	Address
2 Words In	Word	0x0004	0x0000
2 Words In	Word	0x0004	0x0004
<b>Outputs:</b>			
Module	Type	Length	Address
2 Bytes Out	Byte	0x0002	0x0000
2 Bytes Out	Byte	0x0002	0x0002

Figure 44: Configuration > Address Table (In the Figure shown here, in the column Device or Name example devices are displayed.)

### 5.10.1 Description of the Parameters

Parameter	Meaning
Module	Name of the module according GSD
Type	Input data type or output data type
Length	Number of the Signals included (IB, QB, IW or QW)
Address	Output data offset address or input data offset address

Table 23: Address Table Pane Parameters - Inputs / Outputs

## 5.10.2 Display Mode, CSV Export

### Display Mode

- Use the **Display Mode** drop-down list to select data display mode decimal or hexadecimal.

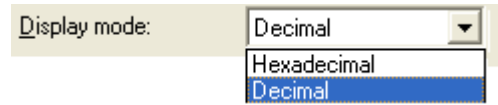


Figure 45: Configuration > Address Table - Display Mode

### CSV Export

The **CSV Export** option allows to export input- and output addresses as CSV file (CSV = comma separated value). Therefore:

- Click to the **CSV Export** button.
- A file saving dialog opens.
- Save the data as \*.CSV file.

You can open the generated data by means of a spreadsheet application.

### Sort Addresses

- To sort the address data, click on the respective column header.



## 5.11 Device Settings

At the **Device Settings** pane device related settings can be made. These settings are assigned after a download of the configuration.



Information about the download you find in section *Download Configuration* on page 94).



Information about the download you find in section *Download Configuration* on page 94).

**Device Settings**

Start of bus communication ☒ Automatically by device ☐ Controlled by application

Process image storage format ☒ Big Endian (MSB first) ☐ Little Endian (LSB first)

Application monitoring

Watchdog time:  ms

Configuration data flag ☒ Fixed configuration ☐ Configuration from master

Figure 46: Configuration > Device Settings



**Note:** The setting options at the dialog pane **Device Settings** for client specific variants of the configuration software can differ from the setting options displayed here.

### 5.11.1 Start of Bus Communication

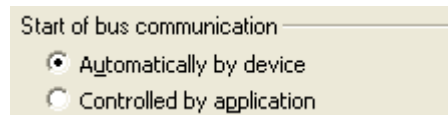


Figure 47: Device Settings > Start of Bus Communication

If **Automatically by device** is selected, the PROFIBUS DP Slave device starts with the data exchange on the bus after the initialization has been ended.

If **Controlled by application** is selected, the application program must activate the data exchange on the bus.



**Note:** The setting options under **Start of Bus Communication** for client specific variants of the configuration software can differ from the setting options displayed here.

### 5.11.2 Application Monitoring

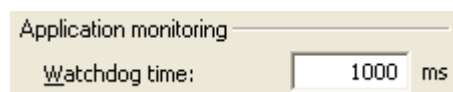


Figure 48: Device Settings > Application Monitoring

The **Watchdog time** determines the time within which the device watchdog must be re-triggered from the application program while the application program monitoring is activated. When the watchdog time value is equal to 0 the watchdog is deactivated and the application program monitoring is deactivated too.

The permissible range of values of the watchdog time is 20 to 65535. By default the watchdog time value equals to 1000 ms.

Watchdog time	Range of Value / Value
Permissible range of values	20 ... 65535 ms
Default	1000 ms
The software watchdog is deactivated.	0 ms

Table 24: Range of Value / Value for the Watchdog time



**Note:** The setting options under **Application Monitoring** for client specific variants of the configuration software can differ from the setting options displayed here.

### 5.11.3 Configuration Data Flag

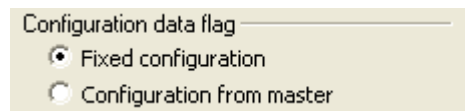


Figure 49: Device Settings > Configuration Data Flag

Parameter	Meaning	Range of Values / Value
Fixed Configuration	The Slave device works with the configuration created in the Slave DTM.	Default setting
Configuration from Master	<p>The Slave device takes over the configuration from the Master during the connection is established.</p> <p>But the Slave device firmware and the host application must support the configuration mode <b>Configuration from Master</b> and must verify the Module Parameters and the Module Configuration.</p> <p>If the Slave device firmware and the host application do not support the configuration mode <b>Configuration from Master</b> or they reject the Module Parameters and the Module Configuration, then a cyclic communication between the Slave device and the Master is not established.</p>	

Table 25: Device Settings > Configuration Data Flag

#### Configuration from Master



For further information to the setting **Configuration Data Flag > Configuration from Master** refer to the *PROFIBUS DP Slave Protocol API Manual [2]* (PROFIBUS DP Slave Protocol API.pdf), especially to section 6.1.3 *PROFIBUS\_APS\_CHECK\_USER\_PRM\_IND/RES - Check User Parameter Data* and 6.1.4 *PROFIBUS\_APS\_CHECK\_CFG\_IND/RES - Check Configuration Data*.

This document is available on the CD delivered with the device underneath the directory **Documentation**, in Adobe Acrobat® Reader format (PDF).

### 5.11.3.1 Configuration Parameters Flow

The following diagram explains the configuration parameters flow from the DTM configuration tool to the hardware devices:

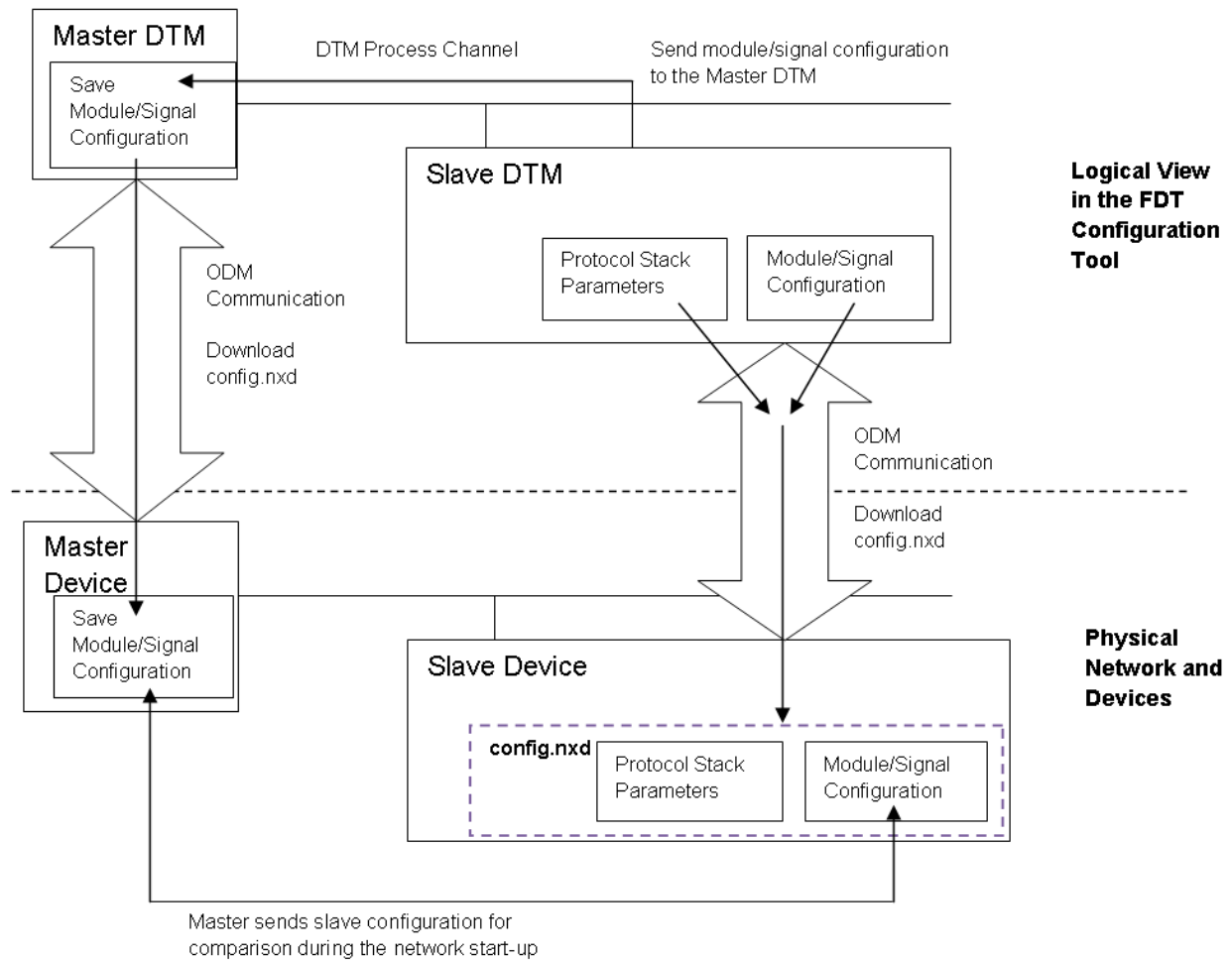


Figure 50: Network Logical/Physical View Diagram

### 5.11.4 Process Image Storage Format

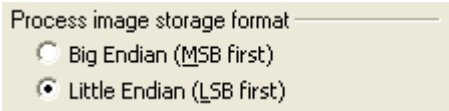


Figure 51: Device Settings > Process Image Storage Format

The **Process Image Storage Format** determines how the data words are stored in the process image.

For the data type Word it is possible to choose **Big Endian** or **Little Endian**.

Storage format (word module)	
Big Endian	<b>MSB/LSB</b> = higher/lower = Motorola format = Big Endian
Little Endian	<b>LSB/MSB</b> = lower/higher = Intel format = Little Endian

Table 26: Master Settings Pane Parameters - Process Image Storage Format



**Note:** The setting options under **Process Image Storage Format** for client specific variants of the configuration software can differ from the setting options displayed here.

# 6 Device Description

## 6.1 About Device Description

**Dialog Panes “Device Description”**

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


PROFIBUS DP Slave DTM	Folder Name / Section	Page
 <i>Navigation Area - Description</i>	<i>Device</i>	87
	<i>GSD</i>	87

Table 27: Descriptions of the Dialog Panes Device Description

## 6.2 Device

The **Device Info** dialog contains manufacturer information about the device, which is defined in the GSD file. The following information is indicated:

Parameter	Meaning
Vendor name	Vendor name of the device
Product name	Name of the device
Ident. number	Identification number of the device
Revision	Hardware reference

Table 28: General Device Information

## 6.3 GSD

The **GSD Viewer** shows the content of the GSD file in a text view.

Under **Filename** the file directory path and the file name of the displayed GSD file is displayed. **Find what** offers a search feature to search for text contents within the text of the GSD file.

In the GSD Viewer window on the left side, the line number is displayed for simple overview, the further entries show the GSD file in text format.

Parameter	Meaning
Filename	File directory path and the file name of the displayed GSD file.
Find what	Search feature to search for text contents within the text of the GSD file.
Match case	Search option
Match whole word	Search option

Table 29: Device Description – GSD Viewer

## 7 Online Functions

### 7.1 Connecting/Disconnecting Device



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

#### Connecting Device

The following steps are needed to establish a connection from the PROFIBUS DP Slave DTM to a PROFIBUS DP Slave 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 31.

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 32.

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 DP Slave device icon.
10. Select the **Connect** command from the context menu.

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



### **Disconnecting Device**

To disconnect an online connection from the PROFIBUS DP Slave device to a PROFIBUS DP Slave 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 DP Slave device icon.
  3. Select the **Disconnect** command from the context menu.
- ⇒ In the network view the device description at the device icon of the Slave is not any more displayed with a green colored background. Now the PROFIBUS DP Slave device is disconnected from the DTM.



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**Important:** For a 2-channel device channel 1 or channel 2 each must be connected to the DTM separately.

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## 7.2 Upload

Using the **Upload** function of the PROFIBUS DP Slave DTM, you can upload the configuration of a PROFIBUS DP Slave device via the PROFIBUS DP Master device and the PROFIBUS DP Master DTM to the PROFIBUS DP Slave DTM and then generate the module configuration. Then you must download the changed configuration of the PROFIBUS DP Slave device via **Download** to the PROFIBUS DP Master device.

### Steps for Upload and Download

1. Upload the PROFIBUS DP Slave device configuration and generate the module configuration.

- In netDevice: right-click on the device symbol of the PROFIBUS DP Slave DTM.
- Select **Upload** from the context menu.
- ↻ If in the PROFIBUS DP Slave DTM already a module configuration is present, the dialog **Question – Upload function will overwrite any existing module configuration. Do you wish to proceed?** is displayed.
- To proceed the upload, select **Yes**.
- ↻ The dialog **Devices Symbolic Name of the Device [Device Description] <Device Address> Starting Upload ...** appears. The dialog shows the progress of the upload process. (Depending on the manufacturer of the respective device, also a dialog with some slight deviations from this one may be displayed.)
- ↻ Additionally you are asked whether the module configuration of the PROFIBUS DP Slave device should be generated.
- Answer the query by **Yes**.
- ↻ The current configuration of the PROFIBUS DP Slave device is uploaded via the PROFIBUS DP Master device and the PROFIBUS DP Master DTM to the PROFIBUS DP Slave DTM.
- ↻ The success of the upload procedure is reported in the output window.



**Note:** If a module identifier conflict occurs when scanning the module configuration, the **Upload** dialog appears, where occurred conflicts are displayed in red. For information to resolve identified module identifier conflicts refer to section *Resolving Module Identifier Conflicts* on page 91.

2. Download the current configuration of the PROFIBUS DP Slave device to the PROFIBUS DP Master device.

- In netDevice: right-click on the device symbol of the PROFIBUS DP Master DTM.
- Select **Download** from the context menu.

## 7.2.1 Resolving Module Identifier Conflicts

### 7.2.1.1 Upload Dialog

The **Upload** pane will be displayed only if modules are detected, which show a module identifier conflict, i. e., modules which have the same module identifier and not a unique one each. These modules then are listed under **Configured Modules** marked in red.

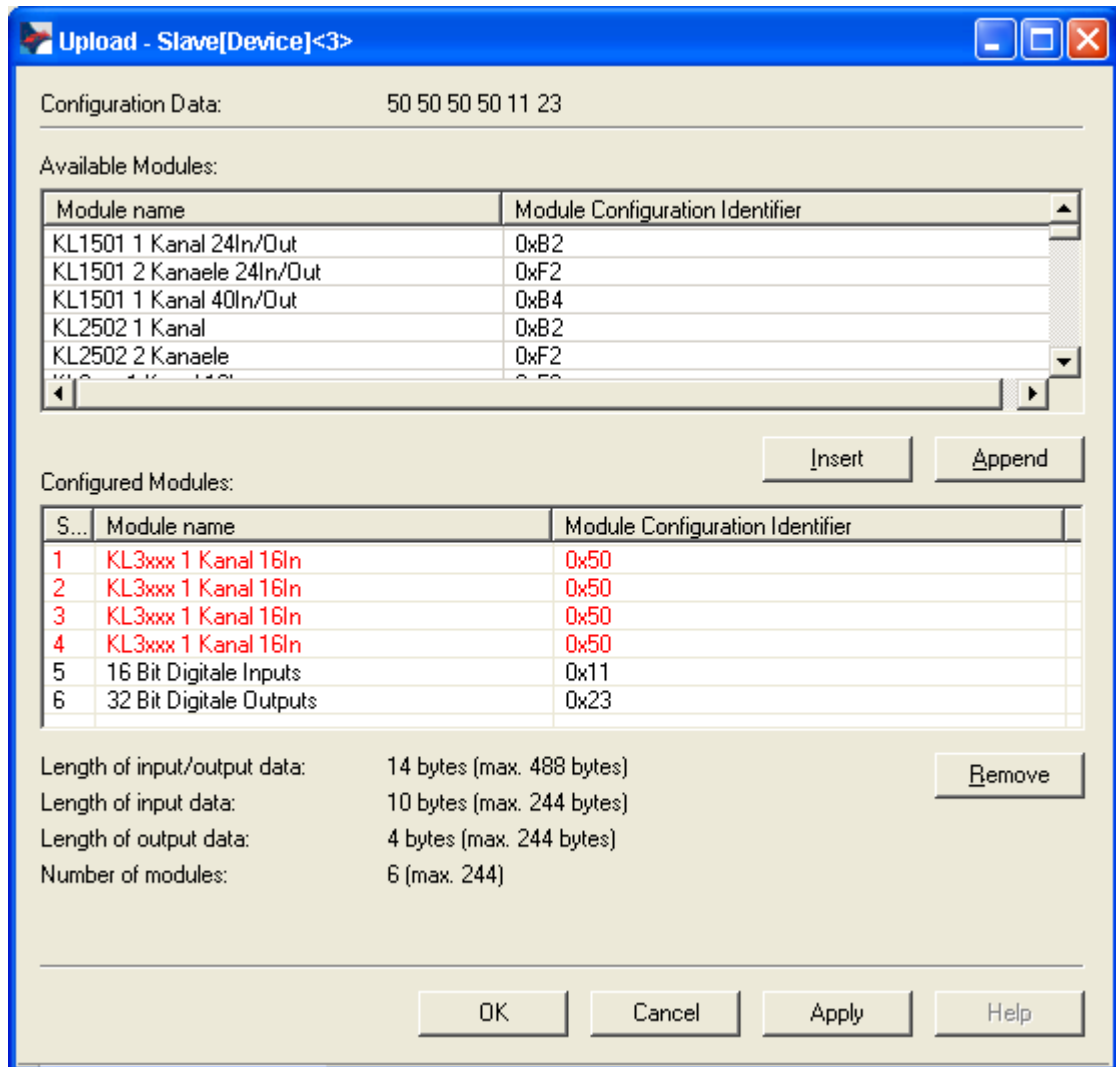


Figure 52: > Upload

Column	Description
<b>Configuration Data</b>	Shows the scanned module configuration (sequence of the module configuration identifier).
<b>Available Modules</b>	Shows all possible modules of the Slave. A simple Slave has a fixed data length. The data length of a modular Slave is configurable.
<b>Configured Modules</b>	In the case of a simple Slave, one module is displayed here. In case of a modular Slave, the scanned module configuration is displayed here.
<b>Module name</b>	Shows the name of the available respectively of the configured modules.
<b>Module Configuration Identifier</b>	Shows all identifier of the sub modules in the same row. For more information refer to the Operating Instruction Manual of the Slave DTM.
<b>Slot</b>	Shows a sequential number for modules.

Table 30: Upload

### 7.2.1.2 Module Identifier Conflicts

During the upload detected module identifier conflicts are displayed in the **Upload** dialog marked in red. This allows the user to clarify whether the scanned module configuration of a Slave corresponds to the actual physical module sequence in the Slave device or not. The user must replace scanned modules indicating a conflict using **Remove**, **Insert** or **Append**.

### 7.2.1.3 Resolving Module Identifier Conflicts

If the module configuration of a Slave device is indicated with a conflict, you must check and manually adapt this scanned module configuration.



**Note:** The sequence of the modules in the list **Configured Modules** is important and must match with the sequence which exists in the Slave. Typically, the sequence is the actual physical sequence. There are Slaves to which this rule does not apply and where for example first analogue modules and then digital modules must be entered, independent of their actual sequence.

If the Slave device has only one module, this module is taken over automatically in the table **Configured Modules** and can not be deleted.



For further information about the modules of the used Slave see the manual of the device manufacturer.

1. Check if the scanned module configuration of a Slave corresponds to the actual physical module sequence in the Slave device or not.
2. Replace scanned modules which do not correspond to the physical module sequence using the **Remove**, **Insert** or **Append** buttons:
  - Delete these scanned modules from the list **Configured Modules** using the **Remove** button.
  - Then Insert the required modules from the selection list **Available Modules** into the list **Configured Modules**.

You can append or insert one or several modules to the list **Configured Modules**.



**Note:** A multiselection is possible. Therefore click in the list **Available Modules** on several modules while holding the SHIFT key.

- Appending Modules
  - Under **Available Modules** click on one or several modules and click on **Append**.
  - Or double click on these modules.
  - The modules appear at the lower end of the list **Configured Modules**.

- Inserting Modules
  - Under **Available Modules** click on one or several modules.
  - Under **Configured Modules** click to the module before which the additional modules shall be inserted.
  - Click **Insert**.
  - The modules appear in the list **Configured Modules** before the selected module.
  - Click on **OK** to confirm your selection. If the selection should not be taken over, click the **Cancel** button.

## 7.3 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 DP Slave device an online connection from the PROFIBUS DP Slave DTM to the PROFIBUS DP Slave device is required. Further information can be found in the *Connecting/Disconnecting Device* section on page 88.

### **Safety Precautions**

If you plan to perform a configuration download via the PROFIBUS DP Slave 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 DP Slave 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?'

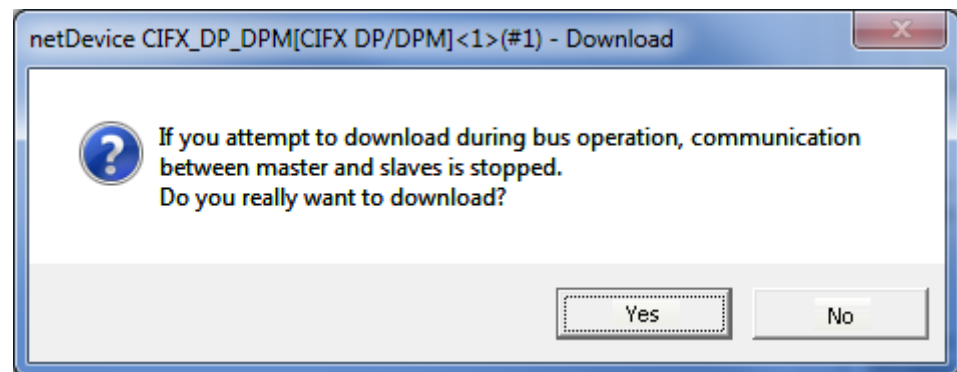


Figure 53: netDevice Message: Download



**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**.

## 8 Diagnosis

### 8.1 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:

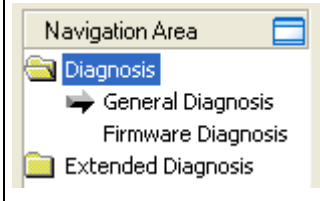
PROFIBUS DP Slave DTM	Folder Name / Section	Manual Page
 Navigation Area - Diagnosis	General Diagnosis	97
	Firmware Diagnosis	99

Table 31: Descriptions of the Diagnosis Panes

#### Online Connection to the Device



**Note:** Accessing the **Diagnosis** panes of the PROFIBUS DP Slave DTM requires an online connection from the PROFIBUS DP Slave DTM to the PROFIBUS DP Slave device. For further information refer to section *Connecting/Disconnecting Device* on page 88.



**Important:** For a 2-channel device channel 1 or channel 2 each must be connected to the DTM separately.

#### How to proceed

1. In the Slave 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 100.



## 8.2 General Diagnosis

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

**General Diagnosis**

**Device state**

- ☐ Communication
- ☒ Run
- ☐ Ready
- ☐ Error

**Network state**

- ☒ Operate
- ☐ Idle
- ☐ Stop
- ☐ Offline

**Configuration state**













- ☐ Configuration locked
- ☐ New configuration pending
- ☐ Reset required
- ☒ Bus ON

Communication error:

Watchdog time:

Error count:

Figure 54: General Diagnosis

LED	Meaning	Color	State
Device State			
Communication	Shows whether the PROFIBUS DP device executes the network communication.	 (green)	In COMMUNICATION state
		 (gray)	Not in COMMUNICATION state
Run	Shows whether the PROFIBUS DP device has been configured correctly.	 (green)	Configuration OK
		 (gray)	Configuration not OK
Ready	Shows whether the PROFIBUS DP device has been started correctly. The PROFIBUS DP device waits for a configuration.	 (yellow)	Device READY
		 (gray)	Device not READY
Error	Shows whether the PROFIBUS DP 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 DP device is in data exchange. In a cyclic data exchange the input data or the output data of the PROFIBUS DP Slave are transmitted to the PROFIBUS DP Master.	 (green)	In OPERATION state
		 (gray)	Not in OPERATION state
Idle	Shows whether the PROFIBUS DP device is in idle state.	 (yellow)	In IDLE state
		 (gray)	Not in IDLE state













LED	Meaning	Color	State
Stop	Shows whether the PROFIBUS DP device is in Stop state: There is no cyclic data exchange at the PROFIBUS network. The PROFIBUS DP 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 DP Slave 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 DP 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 DP 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 DP 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 32: 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 33: Parameter General Diagnosis

## 8.3 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 DP Slave

Version:

2.4.7 (Build 5)

Date:

14.3.2012

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	43	Middleware System Task.	Task Status ok. (0x00000000)
3	DPM_COMO_S...	1.0	50	TLR-Router DPM.	Task Status ok. (0x00000000)
4	DPM_COMO_R...	1.0	51	TLR-Router DPM.	Task Status ok. (0x00000000)
5	TLR_TIMER	0.0	27	The task identifier is unknown.	Task Status ok. (0x00000000)
6	PROFIBUS_DL	4.0	40	PROFIBUS Data Link Layer T...	Task Status ok. (0x00000000)
7	PROFIBUS_FSP...	1.0	41	PROFIBUS Slave Fieldbus Ser...	Task Status ok. (0x00000000)
8	PROFIBUS_APS	1.0	42	PROFIBUS Slave Application ...	Task Status ok. (0x00000000)
9	MARSHALLER	2.0	56	Marshaller: Main Task.	Task Status ok. (0x00000000)
10	PACKET_ROUTER	2.0	57	Marshaller: Packet Router Task.	Task Status ok. (0x00000000)

Figure 55: Firmware Diagnosis (Example)

### 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 34: Description Table Task Information

## 9 Extended Diagnosis

### 9.1 Overview Extended Diagnosis

The **Extended Diagnosis** of the PROFIBUS DP Slave 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:

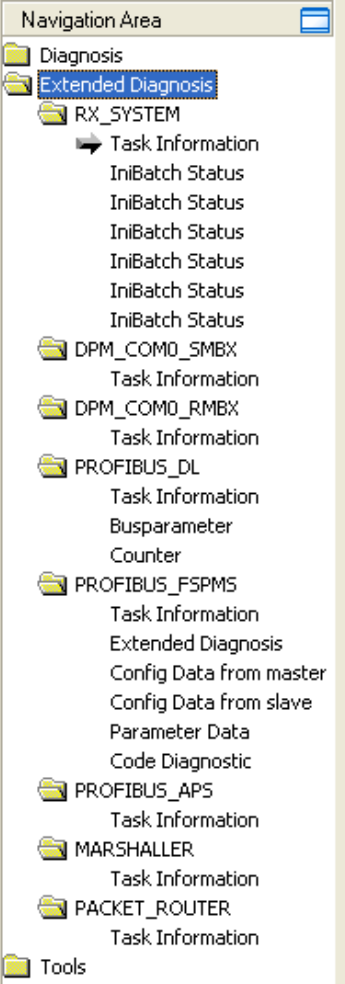
PROFIBUS DP Slave DTM	Folder Name in the Navigation Area	Subsection	Page
 <p>Navigation Area - Extended Diagnosis</p>	RX-SYSTEM	Task Information	101
		IniBatch Status	102
	DPM_COMO_SMBX□	Task Information	101
	DPM_COMO_RMBX□	Task Information	101
	PROFIBUS_DL	Task Information	101
		Busparameters	103
		Counter	105
	PROFIBUS_FSPMS	Task Information	101
		Extended Diagnosis	106
		Config Data from Master	107
		Config Data from Slave	107
		Parameter Data	108
	PROFIBUS_APS	Code Diagnostic	109
		Task Information	101
	MARSHALLER	Task Information	101
	PACKET_ROUTER	Task Information	101

Table 35: Descriptions of the Dialog Panes Extended Diagnosis

#### Online Connection to the Device



**Note:** Accessing the **Extended Diagnosis** dialog panes of the PROFIBUS DP Slave DTM requires an online connection from the PROFIBUS DP Slave DTM to the PROFIBUS DP Slave device. For further information refer to section *Connecting/Disconnecting Device* on page 88.

## 9.2 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 56: 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 36: Extended Diagnosis > [Folder Name] > Task Information

## 9.3 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 57: 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 37: Extended Diagnosis > [Folder Name] > IniBatch Status

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

## 9.4 PROFIBUS\_DL

### 9.4.1 Busparameters

Under **Extended Diagnosis > PROFIBUS\_DL > Busparameter** the values of the configured bus parameters are displayed which are active at the bus.

Busparameter	
Task states	
Name	Value
Station Address	1
Baudrate	93.75 Kbaud
Slot Time (tBit)	4095
Min. Station Delay Time (tBit)	22
Max. Station Delay Time (tBit)	1000
Quiet Time (tBit)	0
Setup Time (tBit)	150
Target Rotation Time (tBit)	24307
GAP Factor	10
Highest Station Address (HSA)	126
Max. Retry Limit:	1

Figure 58: Extended Diagnosis > PROFIBUS\_DL > Busparameter

Bus Parameters	Meaning		
Station Address	The Station Address is the individual device address of the Master device on the bus. Value range: 0 .. 125		
Baud Rate	The <b>Baud Rate</b> is the data transfer speed: number of Bits per second.  The <b>Baud Rate</b> must be set to be the same for all devices on the bus. The result of changing the Baud rate is that all other parameters must be re-calculated.		
	Baud Rate	Bit time (t <sub>Bit</sub> )	Max cable length (type A)
	9,6 kBit/s	104,2 us	1200 m
	19,2 kBit/s	52,1 us	1200 m
	31,25 kBit/s	32 us	1200 m
	45,45 kBit/s	22 us	1200 m
	93,75 kBit/s	10,7 us	1200 m
	187,5 kBit/s	5,3 us	1000 m
	500 kBit/s	2 us	400 m
	<b>1500 kBit/s</b>	666,7 ns	200 m
3000 kBit/s	333,3 ns	100 m	
6000 kBit/s	166,7 ns	100 m	
12000 kBit/s	83,3 ns	100 m	
Slot time (tBit)	'Wait for receipt' – Monitoring time of the sender (Requestor) of telegram for the acknowledgement of the recipient (Responder). After expiration, a retry occurs in accordance with the value of 'Max. telegram retries'.  Value range: 37 .. 16383 (The default value depends from the baud rate.)		
Min. Station Delay Time (tBit)	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 the reception of the last Bit of a telegram to the sending of the first Bit of a following telegram.  Value range: 1 .. <b>11</b> . 65535		
Max. Station Delay Time (tBit)	This is the longest time period that must elapse before a Sender (Requestor) may send a further query telegram. Greatest time period between the reception 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.  Value range: 1 .. 65535 (The default value depends from the baud rate.)		

Bus Parameters	Meaning
<b>Quiet Time</b> (tBit)	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. Value range: 0 .. 127 (The default value depends from the baud rate.)
<b>Setup Time</b> (tBit)	Minimum period "reaction time" between the receipt of an acknowledgement to the sending of a new query telegram (Reaction) by the Sender (Requestor). Value range: 1 .. 255 (The default value depends from the baud rate.)
<b>Target Rotation Time</b> (tBit)	Pre-set nominal Token cycling time within the Sender authorization (Token) will cycle around the ring. How much time the Master still has available for sending data telegrams to the Slaves is dependent on the difference between the nominal and the actual token cycling time.  The <b>Target rotation time (<math>T_{TR}</math>)</b> is shown in Bit times (tBit) like the other Bus Parameters. Below the displayed Bit time, the <b>Target rotation time</b> is also displayed in milliseconds (ms).  Value range: 1 .. $2^{24}-1$ (=16.777.215) (The default value depends on the number of Slaves attached to the Master and their module configuration)
<b>GAP Factor</b>	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. Value range: 0 .. <b>10</b> .. 255
<b>Highest Station Address (HSA)</b>	The <b>Highest Station Address</b> is the highest bus address up to which a Master searches for another Master at the bus in order to pass on the Token. This station address must on no account be smaller than the Master station address. Value range: 1 .. <b>126</b>
<b>Max. Retry Limit</b>	Maximum number of repeats in order to reach a Station. Value range: 1 .. 15 (The default value depends from the baud rate.)

Table 38: Extended Diagnosis &gt; PROFIBUS\_DL &gt; Busparameter



9.4.2 Counter

Counter	
Task states	
Name	Value
Receive Frames	7592
Transmit Frames	22555
Transmit Error	0
Receive Error	0
Target Rotation Timeout	0

Figure 59: 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 39: Extended Diagnosis > PROFIBUS\_DL > Counter

## 9.5 PROFIBUS\_FSPMS

### 9.5.1 Extended Diagnosis

Extended Diagnosis	
Task states	
Name	Value
Node ID	0
Ident Number	0
Baud Rate	9,6k
Output Length	0
Input Length	0

Figure 60: Extended Diagnosis > PROFIBUS\_FSPMS > Extended Diagnosis

Name	Description	
Node ID	PROFIBUS address of the device, Range of value: 0 ... 125	
Ident Number	PROFIBUS Identification Number, Range of value: 0 ... 65535, Default: 0x0A12	
Baud Rate	9,6 kBit/s 19,2 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 31,25 kBit/s 45,45 kBit/s Auto detect
Output Length	Number of the output bytes Range of value: 0 ... 244	
Input Length	Number of the input bytes Range of value: 0 ... 244	

Table 40: Extended Diagnosis > PROFIBUS\_FSPMS > Extended Diagnosis

## 9.5.2 Config Data from Master

Config Data from master	
Task states	
Name	Value
Configuration Data Length	2
Configuration Data	0:147 1:163 2:0 3:0 4:0 5:0 6:0 7:0 8:0 9:0 10:0 11:0 12:0 13:0 14:0 ...

Figure 61: Extended Diagnosis > PROFIBUS\_FSPMS > Config Data from Master

Name	Description
Configuration Data Length	Number of the configuration data in byte Describes how many bytes of the configuration data are valid.
Configuration Data	Left value: numbering of every configuration data byte Right value: value of the respective configuration data byte

Table 41: Extended Diagnosis > PROFIBUS\_FSPMS > Config Data from Master



**Note:** To view the **Value** column completely, double click to the right border of the column head. Move to the left or the right column side using the scroll bar.

## 9.5.3 Config Data from Slave

Config Data from slave	
Task states	
Name	Value
Configuration Data Length	2
Configuration Data	0:147 1:163 2:0 3:0 4:0 5:0 6:0 7:0 8:0 9:0 10:0 11:0 12:0 13:0 14:0 ...

Figure 62: Extended Diagnosis > PROFIBUS\_FSPMS > Config Data from Slave

Name	Description
Configuration Data Length	Number of the configuration data in byte Describes how many bytes of the configuration data are valid.
Configuration Data	Left value: numbering of every configuration data byte Right value: value of the respective configuration data byte

Table 42: Extended Diagnosis > PROFIBUS\_FSPMS > Config Data from Slave



**Note:** To view the **Value** column completely, double click to the right border of the column head. Move to the left or the right column side using the scroll bar.

9.5.4 Parameter Data

Parameter Data	
Task states	
Name	Value
Parameter Data Length	0
Parameter Data	0:0 1:0 2:0 3:0 4:0 5:0 6:0 7:0 8:0 9:0 10:0 11:0 12:0 13:0 14:0 1...

Figure 63: Extended Diagnosis > PROFIBUS\_FSPMS > Parameter Data

Name	Description
Parameter Data Length	Number of the parameter data in byte Describes how many bytes of the parameter data are valid.
Parameter Data	Left value: numbering of every parameter data byte Right value: value of the respective parameter data byte

Table 43: Extended Diagnosis > PROFIBUS\_FSPMS > Parameter Data



**Note:** To view the **Value** column completely, double click to the right border of the column head. Move to the left or the right column side using the scroll bar.

## 9.5.5 Code Diagnostic

Code Diagnostic	
Task states	
Name	Value
Info Counter	0
Warning Counter	0
Error Counter	0
Diagnostic Level	0
Diagnostic Code	0x00000000
Additional Info	0x00000000
Code Line	0
Module	

Figure 64: Extended Diagnosis > PROFIBUS\_FSPMS > Code Diagnostic

Name	Description
Info Counter	Counter for information reports
Warning Counter	Counter for warning reports
Error Counter	Counter for errors
Diagnostic Level	Level of the last occurred error
Diagnostic Code	Code of the last occurred error
Additional Info	Additional information to the error
Code Line	Line number inside the software module
Module	Software module

Table 44: Extended Diagnosis > PROFIBUS\_FSPMS > Code Diagnostic

# 10 Tools

## 10.1 Overview Tools

Under **Tools** the Packet Monitor and the IO Monitor are provided for test and diagnosis purposes.

### Tools Panes

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

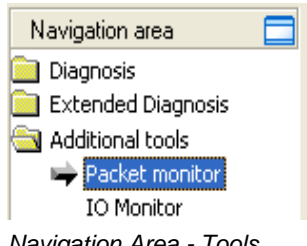
PROFIBUS DP Slave DTM	Folder Name / Section	Manual Page
	Packet Monitor	111
	IO Monitor	119

Table 45: Descriptions of the Diagnosis Panes

### Online Connection to the Device



**Note:** Accessing the **Tools** dialog panes of the PROFIBUS DP Slave DTM requires an online connection from the PROFIBUS DP Slave DTM to the PROFIBUS DP Slave device. For further information refer to section *Connecting/Disconnecting Device* on page 88.

## 10.2 Packet Monitor

The **Packet Monitor** serves for test and diagnosis purposes.

Data packets, i. e. messages are self-contained blocks of defined data length. The packets are used to communicate with the firmware and they are exchanged between the application (configuration software) and the firmware in the device. Packets can be sent once or cyclically to the connected device controlled by the user and packets received can be displayed.

Data packets comprise from a **Packet Header** and the **Send Data** or from a **Packet Header** and the **Receive Data**. The packet header can be evaluated by the receiver of the packet and contain the sender and receiver address, the data length, an ID number, status and error messages and the command or response code. The minimum packet size amounts 40 Byte for the packet header. The sending and receiving data are added.



For further information to the packet description refer to the *Protocol API Manual*.

- Open the **Packet Monitor** via **Tools > Packet Monitor**.

Figure 65: Packet Monitor

**Display Mode** switches the representation of the send and reception data between decimal and hexadecimal.

- Select **Reset Counter** to reset the packet counter.

## 10.2.1 Sending Packet

The screenshot shows a 'Send' dialog box with two main sections: 'Packet header' and 'Send data'.

**Packet header:**

- Dest: 00000001 (dropdown)
- Src: 00000000
- State: 00000000
- Dest ID: 00000000
- Cmd: 00002F00
- Src ID: 00000000
- Ext: 00000000
- Len: 00000012
- Rout: 00000000
- ID: 00000001
- Auto Increment ID: ☒

**Send data:**

Counter: 0

	0	1	2	3	4	5	6	7	8	9
0										
10										
20										
30										
40										
50										
60										

Buttons: Put cyclic, Put packet

Figure 66: Send > Packet Header and Send Data

### Packet Header

Under **Send > Packet Header** the elements of the packet header of the sending packet are displayed, which is transmitted from the application (configuration software) to the device. The packet header of the sending packets contain the elements described in the following table.

Element		Description
<b>Dest</b>	Destination Queue Handle	Contains the identifier of the receiver for the packet (destination task queue of the firmware).
<b>Src</b>	Source Queue Handle	Contains the identifier of the sender of the packet (sending task).
<b>Dest ID</b>	Destination Queue Reference	Contains an identifier for the receiver of unsolicited sent packets from the firmware to the application (configuration software).
<b>Src ID</b>	Source Queue Reference	Contains an identifier of the sender.
<b>Len</b>	Packet Data Length (in Bytes)	Length of the send respectively receive data.
<b>ID</b>	Packet Identification As Unique Number	Identifies identical data packets among each other.
<b>State</b>	Status / Error Code	Transmits status or error codes to the packet sender.
<b>Cmd</b>	Command / Response Code	Command or respond code.
<b>Ext</b>	Extension	Field for extensions (reserved).
<b>Rout</b>	Routing Information	Internal value of the firmware.

Table 46: Descriptions Packet Header

- Under **Dest** select the receiver (*destination task queue*).
- Under **Cmd** select the command identification (*Request*).

**Auto Increment ID** is an increment for the identifier of the data packets and increments the ID by 1 for each newly sent packet.

### Send Data

- Under **Send > Send data** enter the send data of the packet, which shall be transmitted from the application (configuration software) to the mailbox of the device. The meaning of the transmitted data depends on the command or response code.



### **Sending Packets once or cyclic**

- To send packet once, select **Put packet**.
- To send packet cyclic, select **Put cyclic**.

## **10.2.2 Receiving Packet**

The screenshot shows a software interface for receiving packets. On the left, under the 'Receive' tab, is the 'Packet header' section with the following fields:

- Dest: 00000001
- Src: 00000000
- Dest ID: 00000000
- Src ID: 00000000
- Len: 00000012
- ID: 0000003E
- State: 00000000
- Cmd: 00002F01
- Ext: 00000000
- Rout: 00000000

On the right, under the 'Receive data' section, there is a 'Counter: 0' and a table of data bytes. The table has columns numbered 0 to 9 and rows numbered 0 to 60. The data shown is:

	0	1	2	3	4	5	6	7	8	9
0	00	00	00	00	00	00	00	00	00	04
10	00	00	01	00	01	00	00	00		
20										
30										
40										
50										
60										

Figure 67: Packet Header and Receive Data

### **Packet Header**

Under **Receive > Packet Header** the elements of the packet header of the receiving packet are displayed, which are transmitted back from the device to the application (configuration software). The packet header of the receiving packets contain the elements described in the following table.

Element		Description
<b>Dest</b>	Destination Queue Handle	Contains the identifier of the receiver for the packet (destination task queue of the firmware).
<b>Src</b>	Source Queue Handle	Contains the identifier of the sender of the packet (sending task).
<b>Dest ID</b>	Destination Queue Reference	Contains an identifier for the receiver of unsolicited sent packets from the firmware to the application (configuration software).
<b>Src ID</b>	Source Queue Reference	Contains an identifier of the sender.
<b>Len</b>	Packet Data Length (in Bytes)	Length of the send respectively receive data.
<b>ID</b>	Packet Identification As Unique Number	Identifies identical data packets among each other.
<b>State</b>	Status / Error Code	Transmits status or error codes to the packet sender.
<b>Cmd</b>	Command / Response Code	Command or respond code.
<b>Ext</b>	Extension	Field for extensions (reserved).
<b>Rout</b>	Routing Information	Internal value of the firmware.

Table 47: Descriptions Packet Header

### **Receive Data**

Under **Receive > Receive Data** the receiving data of the packet, which is transmitted back from the device to the application (configuration software) are displayed.

### 10.2.3 Example – „Get DPM I/O Information“

To read data from a Slave device via „Get DPM I/O Information Request“ using the packet monitor, you must proceed as described below. The single steps are explained with help of sample data.



For more information on the steps under **Settings** and **Configuration** refer to the corresponding chapters in this manual.

#### Requirements

The function „Get DPM I/O Information Request“ can only be used if:

- The used Slave device supports the „Get DPM I/O Information Request“ function.
- The used Slave device is operational.

#### How to proceed

1. In the Slave DTM under **Settings**:

- Select the cifX device driver and assign the Slave device.

Alternative to the connection via the cifX device driver via the netX driver an USB, serial or TCP connection can be used.

#### Packet Description Read Request

Structure Information				
Area	Variable	Type	Value / Range	Description
tHead	Structure Information			
A	ulDest	UINT32	0x00000020	Destination Queue Handle CHANNEL
	ulSrc	UINT32	X	Source Queue Handle
	ulDestId	UINT32	0x00000000	Destination Queue Reference
	ulSrcId	UINT32	Y	Source Queue Reference
	ulLen	UINT32	0	Packet Data Length (in Bytes)
	ulId	UINT32	Any	Packet Identification as Unique Number
	ulSta	UINT32	0x00000000	Status
C	ulCmd	UINT32	0x00002F0C	Command Get I/O Data Information
	ulExt	UINT32	0x00000000	Reserved
	ulRout	UINT32	0x00000000	Routing Information

Figure 68: Packet Description GET DPM IO INFO REQUEST



Further information on the packet description for this example are comprised in the *Dual Port Memory Manual*, in section *Get DPM IO Info Request* (e. g. Revision 09 of the Manual, in section 5.3.1).

1. Open Packet Monitor.
- **Tools > Packet Monitor.**
2. Enter data for Packet header.

### Send > Packet header

- Under **Dest** enter or select the receiver.
- Under **Cmd** enter the read command identification.

	<i>Sample Data</i>	
<b>(A) Receiver</b>	0x20	(Destination Queue Handle)
<b>(C) Read Command Identification</b>	00002F0C	GET DPM IO INFO <b>REQUEST</b> (Request)

Send

Packet header

Dest: **(A)** 00000020

Src: 00000000 State: 00000000

Dest ID: 00000000 Cmd: **(C)** 00002F0C

Src ID: 00000000 Ext: 00000000

Len: 00000000 Rout: 00000000

ID: 00000002 Auto Increment ID ☐

Figure 69: Example - Reading data via „Get DPM IO Info“ – Send > Packet header

### Send > Send Data

Send data: Counter: 1

	00	01	02	03	04	05	06	07	08	09
0000										
000A										
0014										
001E										
0028										
0032										
003C										

Put cyclic Put packet

Figure 70: Example - Read data via „Get DPM IO Info“ - Send > Send Data

**Note:** Entering send data is not required for the **Get DPM I/O Information** packet.

### 3. Sending/Receiving Packets.

➤ To send packet once, select **Put packet**.

➤ The entered values are sent from the packet monitor to the connected Slave device and received packets are displayed.

### Packet Description Read Confirmation

Structure Information				
Area	Variable	Type	Value / Range	Description
tHead	Structure Information			
Ⓐ	ulDest	UINT32	From Request	Destination Queue Handle
	ulSrc	UINT32	From Request	Source Queue Handle
	ulDestId	UINT32	From Request	Destination Queue Reference
	ulSrcId	UINT32	From Request	Source Queue Reference
	ulLen	UINT32	4+(20 x n) 0	Packet Data Length (in Bytes) If ulSta = RCX_S_OK Otherwise
	ulId	UINT32	From Request	Packet Identification as Unique Number
	ulSta	UINT32	See Below	Status / Error Code see Section 6
Ⓒ	ulCmd	UINT32	0x00002F0D	Confirmation Get I/O Data Information
	ulExt	UINT32	0x00000000 0x00000080 0x000000C0 0x00000040	Extension No Sequenced Packet First Packet of Sequence Sequenced Packet Last Packet of Sequence
	ulRout	UINT32	Z	Routing Information, Don't Care, Don't Use
tData	Structure Information			
Ⓓ	ulNumIOBlock Info	UINT32	0 ... 10	Number n of Block Definitions Below
	tIoBlock[n]	Array of Structure		I/O Block Definition Structure(s) RCX_DPM_IO_BLOCK_INFO

### Packet Structure Reference

```

/* GET DPM I/O INFORMATION CONFIRMATION */
#define RCX_GET_DPM_IO_INFO_CNF          RCX_GET_DPM_IO_INFO_REQ+1

typedef struct RCX_DPM_IO_BLOCK_INFO_Ttag
{
    UINT32  ulSubblockIndex; /* index of sub block */
    UINT32  ulType;          /* type of sub block */
    UINT16  usFlags;         /* flags of the sub block */
    UINT16  usReserved;      /* reserved */
    UINT32  ulOffset;        /* offset of I/O data in bytes */
    UINT32  ulLength;        /* length of I/O data in bytes */
} RCX_DPM_IO_BLOCK_INFO_T;

```

Figure 71: Packet Description GET DPM IO INFO CONFIRMATION



Further information on the packet description for this example are comprised in the *Dual Port Memory Manual*, in section *Get DPM IO Info Confirmation* (e. g. Revision 09 of the Manual, in section 5.3.2.) .

## 4. Evaluate received packet.

**Receive > Packet header**

➤ Under **Dest** the receiver is displayed.

➤ Under **State** the status code or possibly an error code is displayed.



All status and error codes are either to be found in this handbook via the section *Overview Error Codes* auf Seite 121, in the *Dual Port Memory Manual* or in the *DeviceNet Slave Protocol API Manual*.

➤ Under **Cmd** the response identification read request is displayed.

Receive	
Packet header	
Dest:	A 00000020
Src:	00000000
State:	B 00000000
Dest ID:	00000000
Cmd:	C 00002F0D
Src ID:	00000000
Ext:	00000000
Len:	0000002C
Rout:	00000000
ID:	00000002

Figure 72: Example - Reading data via „Get DPM IO Info“ – Receive > Packet header

	Sample Data	
A Receiver	0x20	(Destination Queue Handle)
B State	00000000	indicates that the read request could be executed without error. If during the execution of the read request an error was detected, an error code is displayed.
C Response Identification Read Request	00002F0D	GET DPM IO INFO CONFIRMAITON (Confirmation)

**Receive > Receive data**

➤ Under **Receive data** the data of the receive packet are displayed.

Receive data: Counter: 1

	00	01	02	03	04	05	06	07	08	09
0000	02	00	D	00	00	00	F	00	02	G
000A	00	G	00	01	H	00	00	I	00	00
0014	20	00	L	00	00	00	F	00	02	G
001E	00	G	00	02	H	00	00	I	00	00
0028	20	00	L	00						
0032										
003C										

Figure 73: Example - Reading data via „Get DPM IO Info“ – Receive > Receive data

		Range of Value	Sample Data	
<b>D</b>	<b>Num IO Block</b> (Number n of Block Definitions Below)	0 ... 10	02 00 00 00*	
<b>E</b>	<b>IO Block[n]</b> (I/O Block Definition Structure(s) RCX_DPM_IO_BLOCK_INFO)		<i>Block 0 (IN DPM)</i>	<i>Block 1 (OUT DPM)</i>
<b>F</b>	<b>SubblockIndex</b> (index of sub block)		00 00 00 00*	00 00 00 00*
<b>G</b>	<b>Type</b> (type of sub block)	0 ... $2^{32}-1$	02 00 00 00*	02 00 00 00*
<b>H</b>	<b>Flags</b> (flags of the sub block)	0 ... 65535	01 00*	02 00*
<b>I</b>	Reserved	0 ... 65535	00 00*	00 00*
<b>K</b>	<b>Offset</b> (offset of I/O data in bytes)	0 ... $2^{32}-1$	00 00 00 00*	00 00 00 00*
<b>L</b>	<b>Length</b> (length of I/O data in bytes)	0 ... $2^{32}-1$	20 00 00 00*	20 00 00 00*
		(UINT32 = 4 Bytes)	*Intel format, e. g. LSB first;	

➤ The **L** description shows, that the Slave device is configured with 32 Byte input data and 32 Byte output data.

## 10.3 IO Monitor

The **IO Monitor** serves for test and diagnosis purposes. It provides to view data of the process data image and to change output data easily. The display is always in a Byte manner.



**Note:** Only change and write output data if you know that no plant disturbances are caused by this. All output data written by the IO Monitor are transmitted at the bus and have effect on subordinate drives, IO etc.

**IO Monitor**

Columns: 10 Display mode: Decimal

Input data

Offset: 0 Go

	0	1	2	3	4	5	6	7	8	9
0	227	207	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0
40	0	0	0	0	0	0	0	0	0	0
50	0	0	0	0	0	0	0	0	0	0
60	n	n	n	n	n	n	n	n	n	n

Output data

Offset: 0 Go

	0	1	2	3	4	5	6	7	8	9
0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0
40	0	0	0	0	0	0	0	0	0	0
50	0	0	0	0	0	0	0	0	0	0
60	n	n	n	n	n	n	n	n	n	n

Update

Figure 74: IO Monitor

**Columns** switches the number of columns.

**Display mode** switches the representation of the input and output data between decimal and hexadecimal.

**Offset / Go** moves the indication of the data to the entered offset value.

➤ Enter the output value and select **Update**.

➤ Always the data of the process image are displayed, also when these Bytes have not been reserved by the configuration.

# 11 Error Codes

## 11.1 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.



## 11.2 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 &amp; Errors Codes:</i> 0x00000000 to 0xC002000C
	<i>RCX Status &amp; 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 bis 0x800A0017
	<i>Generic Driver Error:</i> 0x800B0001 bis 0x800B0042
	<i>Generic Device Error:</i> 0x800C0010 bis 0x800C0041
netX Driver	<i>CIFX API Transport:</i> 0x800D0001 bis 0x800D0013
	<i>CIFX API Transport Header State Error:</i> 0x800E0001 bis 0x800E000B
DBM	<i>ODM Error Codes:</i> 0xC004C810 to 0xC004C878

Table 48: Overview Error Codes and Ranges



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

## 11.3 General Hardware Error Codes

### 11.3.1 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 49: RCX General Task Errors

### 11.3.2 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 50: RCX Common Status & Errors Codes

### 11.3.3 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 51: RCX Status & Error Codes

#### 11.3.3.1 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 52: RCX Status & Error Codes Slave State

## 11.4 ODM Error Codes

### 11.4.1 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 53: ODM Error Codes - General ODM Error Codes

## 11.4.2 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 54: ODM Error Codes - General ODM Driver Error Codes

### 11.4.3 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 55: cifX Driver Specific ODM Error Codes

## 11.5 Error Codes cifX Device Driver and netX Driver

### 11.5.1 Generic Error Codes

Error Code (Definition)	Value	Description
CIFX_INVALID_POINTER	0x800A0001	Invalid pointer (NULL) passed to driver
CIFX_INVALID_BOARD	0x800A0002	No board with the given nameindex available
CIFX_INVALID_CHANNEL	0x800A0003	No channel with the given index available
CIFX_INVALID_HANDLE	0x800A0004	Invalid handle passed to driver
CIFX_INVALID_PARAMETER	0x800A0005	Invalid parameter
CIFX_INVALID_COMMAND	0x800A0006	Invalid command
CIFX_INVALID_BUFFERSIZE	0x800A0007	Invalid buffer size
CIFX_INVALID_ACCESS_SIZE	0x800A0008	Invalid access size
CIFX_FUNCTION_FAILED	0x800A0009	Function failed
CIFX_FILE_OPEN_FAILED	0x800A000A	File could not be opened
CIFX_FILE_SIZE_ZERO	0x800A000B	File size is zero
CIFX_FILE_LOAD_INSUFF_MEM	0x800A000C	Insufficient memory to load file
CIFX_FILE_CHECKSUM_ERROR	0x800A000D	File checksum compare failed
CIFX_FILE_READ_ERROR	0x800A000E	Error reading from file
CIFX_FILE_TYPE_INVALID	0x800A000F	Invalid file type
CIFX_FILE_NAME_INVALID	0x800A0010	Invalid file name
CIFX_FUNCTION_NOT_AVAILABLE	0x800A0011	Driver function not available
CIFX_BUFFER_TOO_SHORT	0x800A0012	Given buffer is too short
CIFX_MEMORY_MAPPING_FAILED	0x800A0013	Failed to map the memory
CIFX_NO_MORE_ENTRIES	0x800A0014	No more entries available
CIFX_CALLBACK_MODE_UNKNOWN	0x800A0015	Unkown callback handling mode
CIFX_CALLBACK_CREATE_EVENT_FAILED	0x800A0016	Failed to create callback events
CIFX_CALLBACK_CREATE_RECV_BUFFER	0x800A0017	Failed to create callback receive buffer

Table 56: Generic Error Codes

## 11.5.2 Generic Driver Error Codes

Error Code (Definition)	Value	Description
CIFX_DRV_NOT_INITIALIZED	0x800B0001	Driver not initialized
CIFX_DRV_INIT_STATE_ERROR	0x800B0002	Driver init state error
CIFX_DRV_READ_STATE_ERROR	0x800B0003	Driver read state error
CIFX_DRV_CMD_ACTIVE	0x800B0004	Command is active on device
CIFX_DRV_DOWNLOAD_FAILED	0x800B0005	General error during download
CIFX_DRV_WRONG_DRIVER_VERSION	0x800B0006	Wrong driver version
CIFX_DRV_DRIVER_NOT_LOADED	0x800B0030	CIFx driver is not running
CIFX_DRV_INIT_ERROR	0x800B0031	Failed to initialize the device
CIFX_DRV_CHANNEL_NOT_INITIALIZED	0x800B0032	Channel not initialized (xOpenChannel not called)
CIFX_DRV_IO_CONTROL_FAILED	0x800B0033	IOControl call failed
CIFX_DRV_NOT_OPENED(	0x800B0034	Driver was not opened
CIFX_DRV_DOWNLOAD_STORAGE_UNKNOWN	0x800B0040	Unknown download storage type (RAMFLASH based) found
CIFX_DRV_DOWNLOAD_FW_WRONG_CHANNEL	0x800B0041	Channel number for a firmware download not supported
CIFX_DRV_DOWNLOAD_MODULE_NO_BASEOS	0x800B0042	Modules are not allowed without a Base OS firmware

Table 57: Generic Driver Error Codes

### 11.5.3 Generic Device Error Codes

Error Code (Definition)	Value	Description
CIFX_DEV_DPM_ACCESS_ERROR	0x800C0010	Dual port memory not accessible (board not found)
CIFX_DEV_NOT_READY	0x800C0011	Device not ready (ready flag failed)
CIFX_DEV_NOT_RUNNING	0x800C0012	Device not running (running flag failed)
CIFX_DEV_WATCHDOG_FAILED	0x800C0013	Watchdog test failed
CIFX_DEV_SYSERR	0x800C0015	Error in handshake flags
CIFX_DEV_MAILBOX_FULL	0x800C0016	Send mailbox is full
CIFX_DEV_PUT_TIMEOUT	0x800C0017	Send packet timeout
CIFX_DEV_GET_TIMEOUT	0x800C0018	Receive packet timeout
CIFX_DEV_GET_NO_PACKET	0x800C0019	No packet available
CIFX_DEV_MAILBOX_TOO_SHORT	0x800C001A	Mailbox too short
CIFX_DEV_RESET_TIMEOUT	0x800C0020	Reset command timeout
CIFX_DEV_NO_COM_FLAG	0x800C0021	COM-flag not set
CIFX_DEV_EXCHANGE_FAILED	0x800C0022	IO data exchange failed
CIFX_DEV_EXCHANGE_TIMEOUT	0x800C0023	IO data exchange timeout
CIFX_DEV_COM_MODE_UNKNOWN	0x800C0024	Unknown IO exchange mode
CIFX_DEV_FUNCTION_FAILED	0x800C0025	Device function failed
CIFX_DEV_DPMSIZE_MISMATCH	0x800C0026	DPM size differs from configuration
CIFX_DEV_STATE_MODE_UNKNOWN	0x800C0027	Unknown state mode
CIFX_DEV_HW_PORT_IS_USED	0x800C0028	Device is still accessed
CIFX_DEV_CONFIG_LOCK_TIMEOUT	0x800C0029	Configuration locking timeout
CIFX_DEV_CONFIG_UNLOCK_TIMEOUT	0x800C002A	Configuration unlocking timeout
CIFX_DEV_HOST_STATE_SET_TIMEOUT	0x800C002B	Set HOST state timeout
CIFX_DEV_HOST_STATE_CLEAR_TIMEOUT	0x800C002C	Clear HOST state timeout
CIFX_DEV_INITIALIZATION_TIMEOUT	0x800C002D	Timeout during channel initialization
CIFX_DEV_BUS_STATE_ON_TIMEOUT	0x800C002E	Set Bus ON Timeout
CIFX_DEV_BUS_STATE_OFF_TIMEOUT	0x800C002F	Set Bus OFF Timeout
CIFX_DEV_MODULE_ALREADY_RUNNING	0x800C0040	Module already running
CIFX_DEV_MODULE_ALREADY_EXISTS	0x800C0041	Module already exists

Table 58: Generic Device Error Codes

## 11.6 Error Codes netX Driver

### 11.6.1 CIFS API Transport Error Codes

Error Code (Definition)	Value	Description
CIFS_TRANSPORT_SEND_TIMEOUT	0x800D0001	Time out while sending data
CIFS_TRANSPORT_RECV_TIMEOUT	0x800D0002	Time out waiting for incoming data
CIFS_TRANSPORT_CONNECT	0x800D0003	Unable to communicate to the device no answer
CIFS_TRANSPORT_ABORTED	0x800D0004	Transfer has been aborted due to keep alive timeout or interface detachment
CIFS_CONNECTOR_FUNCTIONS_READ_ERROR	0x800D0010	Error reading the connector functions from the DLL
CIFS_CONNECTOR_IDENTIFIER_TOO_LONG	0x800D0011	Connector delivers an identifier longer than 6 characters
CIFS_CONNECTOR_IDENTIFIER_EMPTY	0x800D0012	Connector delivers an empty identifier
CIFS_CONNECTOR_DUPLICATE_IDENTIFIER	0x800D0013	Connector identifier already used

Table 59: CIFS API Transport Error Codes

### 11.6.2 CIFS API Transport Header State Error Codes

Error Code (Definition)	Value	Description
CIFS_TRANSPORT_ERROR_UNKNOWN	0x800E0001	Unknown error code in transport header
CIFS_TRANSPORT_CHECKSUM_ERROR	0x800E0002	CRC16 checksum failed
CIFS_TRANSPORT_LENGTH_INCOMPLETE	0x800E0003	Transaction with incomplete length detected
CIFS_TRANSPORT_DATA_TYPE_UNKNOWN	0x800E0004	Device does not support requested data type
CIFS_TRANSPORT_DEVICE_UNKNOWN	0x800E0005	Device not available unknown
CIFS_TRANSPORT_CHANNEL_UNKNOWN	0x800E0006	Channel not available unknown
CIFS_TRANSPORT_SEQUENCE	0x800E0007	Sequence error detected
CIFS_TRANSPORT_BUFFER_OVERFLOW	0x800E0008	Buffer overflow detected
CIFS_TRANSPORT_RESOURCE	0x800E0009	Device signals out of resources
CIFS_TRANSPORT_KEEPA_LIVE	0x800E000A	Device connection monitoring error (Keep alive)
CIFS_TRANSPORT_DATA_TOO_SHORT	0x800E000B	Received transaction data too short

Table 60: CIFS API Transport Header State Error Codes

## 11.7 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.
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

ODM Error Codes DBM V4		
Error Code (Definition)	Value	Description
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
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



ODM Error Codes DBM V4		
Error Code (Definition)	Value	Description
CDBM_E_DATA_UNAVAILABLE	0XC004C85F	No data available
CDBM_E_CANT_CONVERT_INT	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
CDBM_E_KEY_INVALID	0XC004C878	The KEY is invalid for this operation

Table 61: ODM Error Codes DBM V4

## 12 Appendix

### 12.1 Identifier Bytes

In the configuration telegram identifier bytes are used. The meaning of them is specified in the PROFIBUS specification.

The following table is an overview.

	Value		Meaning			
GIF/SIF	0x00	00	free place			
	0x01-0x0F	01-15	see SIF			
GIF	0x10-0x1F	16-31	1-16	Byte	Input	Consistency over Byte
GIF	0x20-0x2F	32-47	1-16	Byte	Output	Consistency over Byte
GIF	0x30-0x3F	48-63	1-16	Byte	Input/Output	Consistency over Byte
	0x40-0x4F	64-79	see SIF			
GIF	0x50-0x5F	80-95	1-16	Word	Input	Consistency over Word
GIF	0x60-0x6F	96-111	1-16	Word	Output	Consistency over Word
GIF	0x70-0x7F	112-127	1-16	Word		Consistency over Word
	0x80-0x8F	128-143	see SIF			
GIF	0x90-0x9F	144-159	1-16	Byte	Input	Consistency over whole length
GIF	0xA0-0xAF	160-175	1-16	Byte	Output	Consistency over whole length
GIF	0xB0-0xBF	176-191	1-16	Byte		Consistency over whole length
	0xC0-0xCF	192-207	see SIF			
GIF	0xD0-0xDF	208-223	1-16	Word	Input	Consistency over whole length
GIF	0xE0-0xEF	224-239	1-16	Word	Output	Consistency over whole length
GIF	0xF0-0xFF	240-255	1-16	Word		Consistency over whole length

Table 62: Identifier bytes (overview)

#### 12.1.1 Identifier Bytes (General Identifier Format GIF)

For the identifier bytes in general identifier format the following table shows the meaning.

MSB				LSB				Meaning
7	6	5	4	3	2	1	0	
				Bit 3 to 0: Length				0000 = 1 Byte or 1 Word
								0001 = 2 Byte or 2 Word
								...
								1111 = 16 Byte or 16 Word
				Bit 5 and 4: Input/Output				00 = special identifier format (SIF)
								01 = Input
								10 = Output
								11 = Input and Output
				Bit 6: Format				0 = Byte
								1 = Word
				Bit 7: Consistency over				0 = Byte or Word
								1 = whole length

Table 63: Identifier Bytes (General Identifier Byte Format GIF)

	Value		Meaning			
GIF/SIF	0x00	00	Free place			
SIF	0x01 – 0x0F		see SIF			
GIF	0x10	16	1	Byte	Input	Consistency over Byte
GIF	0x11	17	2	Byte	Input	Consistency over Byte
GIF	...	...	...	Byte	Input	Consistency over Byte
GIF	0x1F	31	16	Byte	Input	Consistency over Byte
GIF	0x20	32	1	Byte	Output	Consistency over Byte
GIF	0x21	33	2	Byte	Output	Consistency over Byte
GIF	...	...	...	Byte	Output	Consistency over Byte
GIF	0x2F	47	16	Byte	Output	Consistency over Byte
GIF	0x30	48	1	Byte	Input/Output	Consistency over Byte
GIF	0x31	49	2	Byte	Input/Output	Consistency over Byte
GIF	...	...	...	Byte	Input/Output	Consistency over Byte
GIF	0x3F	63	16	Byte	Input/Output	Consistency over Byte
SIF	0x40 – 0x4F		see SIF			
GIF	0x50	80	1	Word	Input	Consistency over Word
GIF	0x51	81	2	Word	Input	Consistency over Word
GIF	...	...	...	Word	Input	Consistency over Word
GIF	0x5F	95	16	Word	Input	Consistency over Word
GIF	0x60	96	1	Word	Output	Consistency over Word
GIF	0x61	97	2	Word	Output	Consistency over Word
GIF	...	...	...	Word	Output	Consistency over Word
GIF	0x6F	111	16	Word	Output	Consistency over Word
GIF	0x70	112	1	Word	Input/Output	Consistency over Word
GIF	0x71	113	2	Word	Input/Output	Consistency over Word
GIF	...	...	...	Word	Input/Output	Consistency over Word
GIF	0x7F	127	16	Word	Input/Output	Consistency over Word
SIF	0x80 – 0x8F		see SIF			
GIF	0x90	144	1	Byte	Input	Consistency over whole length
GIF	0x91	145	2	Byte	Input	Consistency over whole length
GIF	...	...	...	Byte	Input	Consistency over whole length
GIF	0x9F	159	16	Byte	Input	Consistency over whole length

Table 64: Identifier Bytes 0x10 .. 0x3F, 0x50 .. 0x7F, 0x90 .. 0x9F (GIF)

	Value		Meaning			
GIF	0xA0	160	1	Byte	Output	Consistency over whole length
GIF	0xA1	161	2	Byte	Output	Consistency over whole length
GIF	...	...	...	Byte	Output	Consistency over whole length
GIF	0xAF	175	16	Byte	Output	Consistency over whole length
GIF	0xB0	176	1	Byte	Input/Output	Consistency over whole length
GIF	0xB1	177	2	Byte	Input/Output	Consistency over whole length
GIF	...	...	...	Byte	Input/Output	Consistency over whole length
GIF	0xBF	191	16	Byte	Input/Output	Consistency over whole length
SIF	0xC0 – 0xCF		see SIF			
GIF	0xD0	208	1	Word	Input	Consistency over whole length
GIF	0xD1	209	2	Word	Input	Consistency over whole length
GIF	...	...	...	Word	Input	Consistency over whole length
GIF	0xDF	223	16	Word	Input	Consistency over whole length
GIF	0xE0	224	1	Word	Output	Consistency over whole length
GIF	0xE1	225	2	Word	Output	Consistency over whole length
GIF	...	...	...	Word	Output	Consistency over whole length
GIF	0xEF	239	16	Word	Output	Consistency over whole length
GIF	0xF0	240	1	Word	Input/Output	Consistency over whole length
GIF	0xF1	241	2	Word	Input/Output	Consistency over whole length
GIF	...	...	...	Word	Input/Output	Consistency over whole length
GIF	0xFF	255	16	Word	Input/Output	Consistency over whole length

Table 65: Identifier Bytes 0xA0 .. 0xBF, 0xD0 .. 0xFF (GIF)

## 12.1.2 Special Identifier Byte Format (SIF)

The special identifier byte format (SIF) is an extension of the general identifier byte format and offers more flexibility. Also manufacturer specific information can be used with it.

MSB				LSB				Meaning
7	6	5	4	3	2	1	0	
				Bit 0 to 3: Length of manufacturer specific data according to the length byte for In- and/or Output  In case of DDLM_Chk_Cfg: 0000 = no manufacturer specific data follow 0001 = 1 manufacturer specific data follow ... 1110 = 14 manufacturer specific data follow 1111 = no manufacturer specific data follow  In case of DDLM_Get_Cfg: 0000 = no manufacturer specific data follow 0001 = 1 manufacturer specific data follow ... 1110 = 14 manufacturer specific data follow 1111 = not allowed				
				Bit 5 and 4: solid 00 = solid				
				Bit 7 and 6: Input/Output 00 = free place 01 = a length byte for Input follows 10 = a length byte for Output follows 11 = a length byte for Input and Output follows				

Table 66: Special Identifier Format (SIF)

### Length Byte

MSB				LSB				Meaning
7	6	5	4	3	2	1	0	
				Bit 0 to 5: Length 000000 = 1 Byte or 1 Word 000001 = 2 Byte or 2 Word ... 111111 = 64 Byte or 64 Word				
				Bit 6: Format 0 = Byte 1 = Word				
				Bit 7: Consistency over 0 = Byte or Word (element) 1 = whole length				

Table 67: Length Byte of the SIF

	Value		Meaning
GIF/SIF	0x00	00	free place
GIF	0x01 – 0x0E	01 – 14	free place and 1-14 manufacturer specific data
GIF	0x0F	15	free place and no manufacturer specific data
GIF	0x40	64	1 length byte Input
GIF	0x41 – 0x4E	65 – 78	1 length byte Input and 1-14 manufacturer specific data
GIF	0x4F	79	1 length byte Input and no manufacturer specific data
GIF	0x80	128	1 length byte Output
GIF	0x81 – 0x8E	129 – 142	1 length byte Output 1 and 1-14 manufacturer specific data
GIF	0x8F	143	1 length byte Output 1 and no manufacturer specific data
GIF	0xC0	192	1 length byte Output and 1 length byte Input
GIF	0xC1 – 0xCE	193 – 206	1 length byte Output, 1 length Input byte and 1-14 manufacturer specific data
GIF	0xCF	207	1 length byte Output, 1 length Input byte and no manufacturer specific data

Table 68: Special Identifier bytes 0x01 .. 0x0F, 0x40 .. 0x4F, 0x80 .. 0x8F, 0xC0 .. 0xCF (SIF)

#### Length Byte

Value		Meaning		
0x00 – 0x3F	00-63	1-64	Byte	Consistency over Byte
0x40 – 0x7F	64-127	1-64	Word	Consistency over Word
0x80 – 0xBF	129-191	1-64	Byte	Consistency over whole length
0xC0 – 0xFF	193-255	1-64	Word	Consistency over whole length

Table 69: Length byte of the special identifiers (SIF)

## 12.2 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**, **Device Description** and **Diagnosis** panes of the PROFIBUS DP Slave 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 **Device Description** panes do not contain any editable elements. The indicated values in are only for information purposes.

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

### 12.2.1 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 70: Settings (D = Displaying, X = Editing, Configuring)

### 12.2.2 Configuration

	Observer	Operator	Maintenance	Planning Engineer	Administrator
<i>General</i>	D	D	X	X	X
<i>Modules</i>	D	D	X	X	X
<i>Signal Configuration</i>	D	D	X	X	X
<i>Parameters</i>	D	D	X	X	X
<i>Groups</i>	D	D	X	X	X
<i>Extensions</i>	D	D	X	X	X
<i>DPV1</i>	D	D	X	X	X
<i>Address Table</i>	D	D	X	X	X
<i>Device Settings</i>	D	D	X	X	X

Table 71: Configuration (D = Displaying, X = Editing, Configuring)

## 12.3 References

- [1] Device Type Manager (DTM) Style Guide, Version 1.0 ; FDT-JIG - Order No. <0001-0008-000>
- [2] PROFIBUS DP Slave Protocol API Manual, Revision 19, Hilscher GmbH 2017

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## 12.6 Glossary

### Data Packets

Data packets, i. e. messages are self-contained blocks of defined data length. The packets are used to communicate with the firmware and they are exchanged between the application (configuration software) and the firmware in the device. Using the configuration software feature *Packet Monitor* Packets can be sent once or cyclically to the connected device controlled by the user and packets received can be displayed.

Data packets comprise from a **Packet Header** and the **Send Data** or from a **Packet Header** and the **Receive Data**. The packet header can be evaluated by the receiver of the packet and contain the sender and receiver address, the data length, an ID number, status and error messages and the command or response code. The minimum packet size amounts 40 Byte for the packet header. The sending and receiving data are added.

### DPV0

PROFIBUS DP with cyclic communication

### DPV1

PROFIBUS DP with acyclic communication

### 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.

### Freeze

After receiving the control command FREEZE, the DP-Slave freezes the actual state of the Inputs and transmits them cyclically to the DP-Master. After each new control command FREEZE, the Slave freezes the state of the Inputs again. The actual Input data are not transmitted cyclically from the DP-Slave to the DP-Master until the DP-Master sends the control

command UNFREEZE. The DP-Slave has to be assigned to a group for the control command FREEZE in the configuration.

## **GSD**

GSD = General Station Description

The 'General Station Description' describe the characteristics of a device type in a stipulated format. The GSD are created individually for each device type. And they are allocated in form of a GSD file for the user by the manufacturer of the device.

The project system can read in and consider the GSD for any PROFIBUS DP device automatically because of the pegged file format during the configuration of the bus system.

## **Master**

PROFIBUS DP Master devices initiate the data traffic on the bus. In the PROFIBUS protocol Master devices are called active participants. A master may send messages without external request.

## **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.

## **Slave**

Slave devices are peripheral devices, like for example I/O devices or drives. Slave devices are also called passive participants. They do not receive the bus access authorization. That means, they may only accept received messages from the Master or send a message to the Master after enquiry of the Master.

## **Sync**

With the control command SYNC the DP-Master arranges the DP-Slave, that the DP-Slave freezes the states of the Outputs on the actual value. During the following telegrams the DP-Slave saves the Output data in each case, which it has save as Output data. The Outputs are first updated cyclically until the DP-Master sends the control command UNSYNC. The DP-Slave has to be assigned to a group for the control command SYNC in the configuration.

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