



**Operating Instruction Manual**  
**DTM for Hilscher PROFINET IO-Devices**  
**Configuration of Hilscher Devices**

**Hilscher Gesellschaft für Systemautomation mbH**

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

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# 1 Introduction

## 1.1 Introduction About this Manual

This manual describes how to set up and configure PROFINET IO Devices, which are described with GSDML files. These devices can be configured by use of the PROFINET IO Device DTM within a FDT Framework.

### 1.1.1 Descriptions of the Dialog Panes

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

Section	Subsection	Page
<i>Settings</i>	<i>Overview Settings</i>	25
	<i>Driver</i>	26
	<i>Device Assignment</i>	36
	<i>Firmware Download</i>	43
<i>Configuration</i>	<i>Overview Configuration</i>	48
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	<i>Packet Monitor</i>	79
	<i>IO Monitor</i>	83

Table 1: Descriptions Dialog Pages

### 1.1.2 Online Help

The PROFINET IO Device DTM contains an integrated online help facility.

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

### 1.1.3 List of Revisions

In- dex	Date	Version	Component	Chapt er	Revision
1	07.03.06	0.9.1.0 1.0.0.0	PNIODevice.dll PNIODeviceGUI.ocx	all	created
2	18.10.06	0.9.2.0 0.9.2.0	PNIODevice.dll PNIODeviceGUI.ocx	1.2, 1.4, 1.6.1 1.6.3 2.1 2.2.2 2.2.3 2.3 3.1 3.2 3.3.4 4.1 5.1 5.2 5.3 6 7.1 8 9.1 9.2	Section ,Conventions in this Manual' actualized, Section ,Support' actualized, Section ,General Device Information' actualized, Section ,Dialog Panes' actualized, Section ,Overview Settings' actualized, Section ,Configuring Driver' actualized, Section ,cifX Device Driver' actualized, Section ,Device Assignment' actualized, Section ,Overview Configuration' actualized, Section ,General' actualized, Section ,Submodul Details' actualized, Section ,Overview Descriptions' actualized, Section ,Firmware Diagnosis' actualized, Section ,Overview Diagnosis' actualized, Section ,General Diagnosis' actualized, Chapter 'Extended Diagnosis' added, Section ,Connecting / Disconnecting Device' actualized, Chapter ,Error Numbers' added, Section ,User Rights' actualized, Section ,Contacts' actualized
3	28.03.08	0.9.2.1 0.9.2.0	PNIODevice.dll PNIODeviceGUI.ocx	All	Manufacturer and product names generalized.
4	14.04.08	1.0.0.0 1.0.0.0	PNIODevice.dll PNIODeviceGUI.ocx	6.3 7 9.4	Section ,General Diagnosis' actualized, Chapter 'Extended Diagnosis' actualized, Section , Status/Error Codes PROFINET IO Device' actualized,
5	15.05.08	1.0.0.2 1.0.0.1	PNIODevice.dll PNIODeviceGUI.ocx	3.4 4.5.1 8 9	Section ,Firmware Download' actualized. Section ,Display Mode, CSV Export' actualized, Chapter ,Additional Tools' added, Chapter ,Online Functions' adapted.
6	<b>26.09.08</b>	1.0.0.2 1.0.0.1	PNIODevice.dll PNIODeviceGUI.ocx	All 1 2 3 4 6.3 9.1 9.4 13.1	Manufacturer and product names generalized (completed), Chapter ,Introduction' actualized, Chapter 'Getting started' actualized, Chapter ,SETTINGS' actualized, Chapter 'Configuration' revised, Section ,General diagnosis' actualized, Section ,Connecting/Disconnecting Device' actualized, Section ,License' added, Section ,User Rights' revised.
7	04.02.09	1.0.2.3 1.0.2.0	PNIODevice.dll PNIODeviceGUI.ocx	2	Chapter 'Getting started' actualized.
8	30.08.10	1.6.x.x 1.0.x.x 1.6.x.x	PNIODevice.dll GSDMLComposer.dll PNIODeviceGUI.ocx	All, 3.2.4, 3.3, 7, 10	Revised, Section <i>netX Driver</i> added, Section <i>Device Assignment</i> actualized, Section , <i>Extended Diagnosis</i> ' actualized, Chapter <i>Error Codes</i> actualized and completed.

Table 2: List of Revisions

## 1.1.4 Conventions in this Manual

Operation instructions, a result of an operation step or notes are marked as follows:

### **Operation Instructions:**

➤ <instruction>

Or

1. <instruction>

2. <instruction>

### **Results:**

↪ <result>

### **Notes:**



**Important:** <important note>

---



**Note:** <note>

---



<note, were to find further information>

---



**Note:** The PROFINET IO specification defines the designations "Controller" instead of "Master" and "Device" instead of "Slave". In this manual "Controller" and "Device" are used with the PROFINET IO device or the DTM. In connection with general questions about the Master or the Slave functionality, the terms "Master" and "Slave" are used, as in the network configuration on the Master bus line or the „Stand-Alone-Slave“.

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## 1.3 About PROFINET IO Device DTM

You can use the PROFINET IO Device DTM to set up and configure PROFINET IO devices described with GSDML files within a FDT Framework.

### 1.3.1 Requirements

#### **System Requirements**

- Windows® 2000 and Windows® XP
- CD ROM drive
- Graphic resolution: min. 1024 x 768 pixel
- Keyboard and Mouse

#### **Requirements PROFINET IO Device DTM**

To configure a PROFINET IO Device device with a DTM the following requirements have to be accomplished:

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



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For more information to the hardware installation, please refer to the corresponding user manual of your device.

---

## 1.4 Dialog Structure of the PROFINET IO Device 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. The general buttons **OK**, **Cancel**, **Apply**, **Help**,
5. The **Status Line** containing information e. g. the online-state of the DTM.

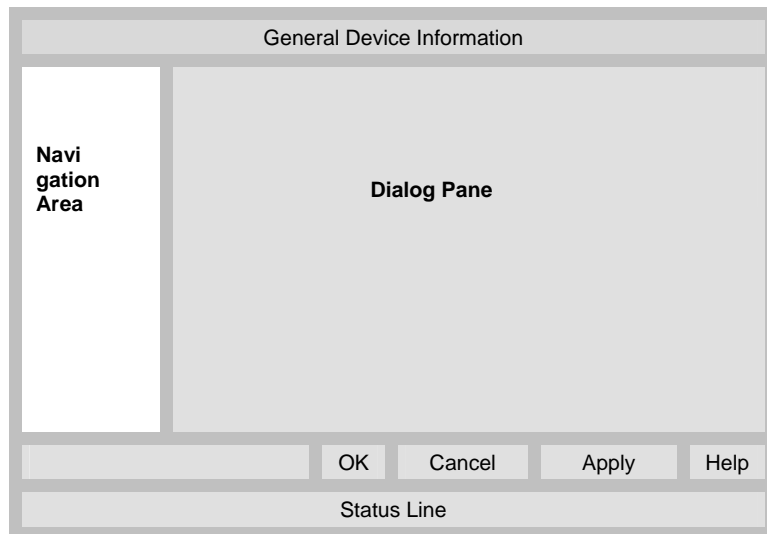


Figure 1: Dialog Structure of PROFINET IO Device DTM

## 1.4.1 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

## 1.4.2 Navigation Area

The **Navigation Area** at the left side of the dialog provides a tree structure to navigate through the panes of the DTM.

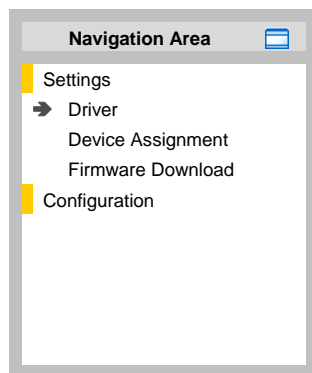


Figure 2: Navigation Area

- To access a DTM pane select the respective item of the navigation tree structure.

The **Navigation Area** can be hidden or it can be displayed again.



Control	Meaning
	Window button to hide the navigation area, (at the right side of the navigation title bar).
 Show navigation area	<b>Show navigation area</b> button to open the navigation area, (at the lower left corner of the dialog pane).

Table 4: Hide / display Navigation

### 1.4.3 Dialog Panes

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

Settings	
Driver	On the pane <b>Driver</b> you can select a driver from the driver list. For further information, refer to section <i>Driver</i> on page 26.
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 36.
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 43.
Configuration	
General	On the pane <b>General</b> PROFINET IO device information is displayed. For further information, refer to section <i>General</i> on page 49.
Modules	On the <b>Modules</b> pane modules, submodules and parameters can be selected or configured, which are read from the GSDML file. For further information, refer to section <i>Modules</i> on page 50.
Address Table	The <b>Address Table</b> shows a list of all dpram address used in the process data image. For further information, refer to section <i>Address Table</i> on page 57.
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 59.
Description	
Device	The <b>Device Info</b> pane contains the manufacturer information about the device. For further information, refer to section <i>Device Info</i> on page 62.
Module Info	The <b>Module Info</b> pane shows information for the available modules of this device. For further information, refer to section <i>Modul Info</i> on page 63 .
GSDML	By use of the <b>GSDML-Viewer</b> a GSDML file can be viewed and searched through. For further information, refer to section <i>GSDML Viewer</i> on page 64.
Diagnosis	
Diagnosis/ Extended Diagnosis	At the <b>Diagnosis</b> panes diagnosis information can be read. For further information, refer to section <i>Overview Diagnosis</i> on page 65 or section <i>Overview Extended Diagnosis</i> on page 70.
Additional Tools	
Packet Monitor/ IO Monitor	Under <b>Additional Tools</b> the Packet Monitor and the IO Monitor are provided for test and diagnosis purposes. For further information, refer to section <i>Packet Monitor</i> on page 79 or section <i>IO Monitor</i> on page 83.

Table 5: Overview Dialog Panes



**Note:** Accessing the **Diagnosis** panes of the PROFINET IO Device DTM requires an online connection from the PROFINET IO Device DTM to the PROFINET IO Device device.

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For further information, refer to section *Connecting/Disconnecting Device* on page 84.

---

## 1.4.4 Controls and Dialog Buttons

In this section, you will find general information on controls and buttons.

### 1.4.4.1 General Buttons

The table below explains the general buttons in the DTM user interface.

Button	Meaning
<b>OK</b>	To confirm your latest settings, click on the <b>OK</b> button. 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 on the <b>Cancel</b> button. 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 on the <b>Apply</b> button. 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 on the <b>Help</b> button.

Table 6: General Buttons

### 1.4.4.2 Table Line Buttons

- To select, create or delete a line in a table use the buttons shown in the table below.






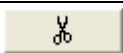
Button	Meaning
	To select the first line of a table use <b>First Line</b> .
	To select the previous line of a table use <b>Previous Line</b> .
	To select the next line of a table use <b>Next Line</b> .
	To select the last line of a table use <b>Last Line</b> .
	<b>Create a new Line</b> inserts new lines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

Table 7: Table Line – Buttons

### 1.4.4.3 Grid Control

Grid controls display table data. The data grid control enables control of multiple columns and rows of varying control types that may be used to capture and track incident properties.

#### Grid Control Types

Type	Meaning
Static	The grid data is static.
Edit	The grid data can be edited using built-in editors.
IP	The grid data cell to enter IP address
Close /Open (+/-)	Grid data view can be opened/closed via (+/-).
Drop Down	Grid cell contains drop down list.
Drop Down combo (with Edit)	Grid cell contains drop down list with edit control.

Table 8: Grid Control Types

### 1.4.4.4 Toggling Grid View

	Slot	Subslot	Name	Inherit	Updating Time [ms]	Watchdog Time [...]
▶ +	0		Device*	<input checked="" type="checkbox"/>	1	3
+	1		4 Bit Input	<input checked="" type="checkbox"/>	1	3
+	2		4 Bit Output	<input checked="" type="checkbox"/>	1	3

Figure 3: Grid Control (\* The Name of the device is displayed.)

- To open a subset in the grid control and to toggle the grid view, click on the + sign or press the space key.
- ⇒ The grid view is toggled.

	Slot	Subslot	Name	Inherit	Updating Time [ms]	Watchdog Time [...]
☐	0		Device*	<input checked="" type="checkbox"/>	1	3
	0	1	0x00000000	<input checked="" type="checkbox"/>	1	3
☐	1		4 Bit Input	<input checked="" type="checkbox"/>	1	3
	1	1	0x00000002	<input checked="" type="checkbox"/>	1	3
▶ ☐	2		4 Bit Output	<input checked="" type="checkbox"/>	1	3
	2	1	0x00000101	<input checked="" type="checkbox"/>	1	3

Figure 4: Grid Control - opened Subset Grid Control (\* The Name of the device is displayed.)

### 1.4.5 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.

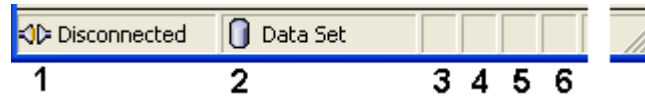


Figure 5: Status Bar – Status Fields 1 to 6

Status Field	Icon / Meaning
<b>1</b>	<b>DTM Connection States</b>
	<b>Connected:</b> Icon closed = Device is online
	<b>Disconnected:</b> Icon opened = Device is offline
<b>2</b>	<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.
<b>3</b>	<b>States of the instance Date Set</b>
	<b>Valid Modified:</b> Parameter is changed (not equal to data source).
<b>4</b>	<b>Changes directly made on the Device</b>
	Load/configure diagnosis parameters: Diagnosis is activated.
<b>6</b>	<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 9: Status Bar Icons [1]

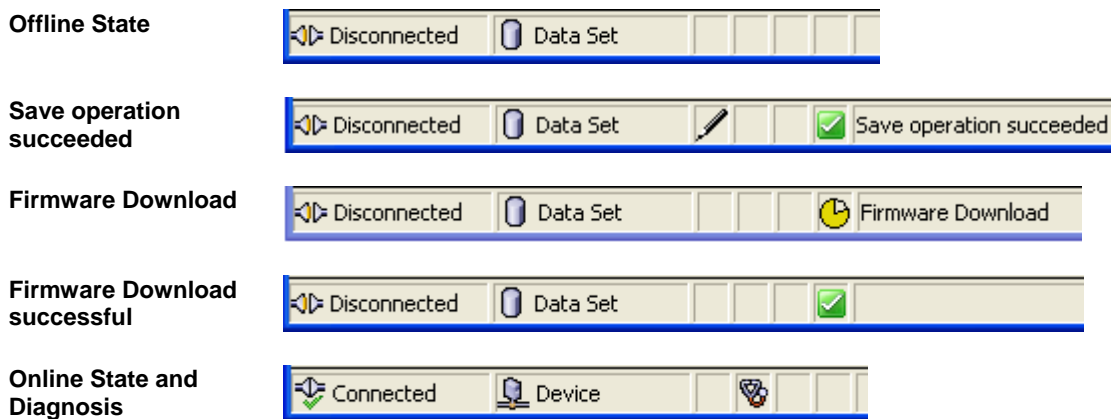


Figure 6: Status Bar Display Examples

## 2 Getting Started

### 2.1 Configuration Steps

The following tables describe the steps to configure a PROFIBUS-DP Device device with the PROFINET IO Device DTM for the two cases listed hereafter, as it is typical for many cases:

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

At this time it is presupposed that the hardware installation was done.


#### 2.1.1 Device 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 button <b>Reload Catalog</b> .	<i>(See User 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> .	<i>(See User Manual of the Frame Application)</i>	-
3	Insert Device into configuration	Depending of the FDT Container: For netDevice: - in the Device Catalog click to the Device, - and insert the Device via drag and drop <b>to the root line</b> in the network view.	<i>(See User Manual netDevice and netProject)</i>	-
4	Open the Device DTM configuration dialog	Open the Device DTM configuration dialog. - Double click to the device icon of the Device. - The Device DTM configuration dialog is displayed.	-	-
5	Select driver	In the Device DTM configuration dialog: - select <b>Settings &gt; Driver</b> , - select a driver, - therefore check the appropriate checkbox. - if necessary, configure the driver settings.	<i>Setting Driver and Selecting Device Driver</i>	23 26
6	Configure Driver	If necessary, configure the driver settings. For netX Driver and communication via TCP/IP set the IP address of the device: - Select <b>Settings &gt; Driver &gt; netX Driver &gt; TCP Connection</b> . - Via <input type="checkbox"/> 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>netX Driver</i>	<b>29</b>
7	Assign Device device (with or without firmware)	Assign the device to this driver. In the Device DTM configuration dialog: - select <b>Settings &gt; Device Assignment</b> , - select a Device device (with or without firmware), - therefore check the appropriate checkbox, - select the button <b>Apply</b> .	<i>Selecting the Device (with or without firmware)</i>	40
8	Select and download firmware	If not yet a firmware was loaded to the device. In the Device DTM configuration dialog: - select <b>Settings &gt; Firmware Download</b> , - select the button <b>Browse..</b> , - select a firmware file, - select the button <b>Open</b> , - select the buttons <b>Download</b> and <b>Yes</b> .	<i>Firmware Download</i>	43

#	Step	Short Description	For detailed information see section	Page
9	Assign Device device once more (with firmware)	In the Device DTM configuration dialog: <ul style="list-style-type: none"> <li>- select <b>Settings &gt; Device Assignment</b>,</li> <li>- select the button <b>Scan</b>,</li> <li>- select the Device device (with loaded firmware),</li> <li>- therefore check the appropriate checkbox,</li> <li>- select the button <b>Apply</b>,</li> <li>- close the Device DTM configuration dialog via the button <b>OK</b>.</li> </ul>	<i>Selecting the Device once more (with Firmware)</i>	41
10	Configure Device device	Configure the Device. <ul style="list-style-type: none"> <li>- Double click to the device icon of the Device.</li> <li>- The Device DTM configuration dialog is displayed.</li> </ul> In the Device DTM configuration dialog: <ul style="list-style-type: none"> <li>- select <b>Configuration &gt; Modules</b>,</li> <li>- configure the PROFINET IO device modules,</li> <li>- select <b>Configuration &gt; Device Settings</b>,</li> <li>- set the <b>Device Settings</b>.</li> <li>- close the Device DTM configuration dialog via the button <b>OK</b>.</li> </ul>	<i>Configuring Device Parameters</i>  <i>Modules</i>  <i>Device Settings</i>	24  50  59
11	Save project	Depending of the frame application. For the configuration software: <ul style="list-style-type: none"> <li>- select <b>File &gt; Save</b>.</li> </ul>	<i>(See User Manual of the Frame Application)</i>	-
12	Connect Device device	Depending of the FDT Container. For netDevice: <ul style="list-style-type: none"> <li>- right click to the device icon of the Device,</li> <li>- select context menu entry <b>Connect</b>.</li> </ul>	<i>Connecting/Disconnecting Device</i>	84
13	Download Configuration	Depending of the FDT Container. For netDevice: <ul style="list-style-type: none"> <li>- right click to the device icon of the Device,</li> <li>- select context menu entry <b>Download</b>.</li> </ul>	<i>Download Configuration</i>	85
14	Diagnosis	Depending of the FDT Container. For netDevice: <ul style="list-style-type: none"> <li>- right click to the device icon of the Device,</li> <li>- select context menu entry <b>Diagnosis</b>.</li> <li>- The Device DTM diagnosis dialog is displayed.</li> <li>- Continue with further device diagnosis,</li> <li>- close the Device DTM diagnosis dialog via the button <b>OK</b>.</li> </ul>	<i>Overview Diagnosis</i>	65
15	IO Monitor	Depending of the FDT Container: For netDevice: <ul style="list-style-type: none"> <li>- right click to the device icon of the Device,</li> <li>- select context menu entry <b>Diagnosis</b>,</li> <li>- select <b>Additional Tools &gt; IO Monitor</b>.</li> <li>- Check the input or output data.</li> </ul>	<i>IO Monitor</i>	83
16	Disconnect	Depending of the FDT Container. For netDevice: <ul style="list-style-type: none"> <li>- right click to the device icon of the Device,</li> <li>- select <b>context menu entry Disconnect</b>.</li> </ul>	<i>Connecting/Disconnecting Device</i>	84

Table 10: Getting Started - Configuration Steps (Device DTM at the Root-Line (Stand-Alone Slave))

## 2.1.2 Device 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 button <b>Reload Catalog</b> .	<i>(See User 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> .	<i>(See User Manual of the Frame Application)</i>	-
3	Insert Controller or Device into configuration	For netDevice: - in the Device Catalog click to the Controller, - 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 Device, - and insert the device via drag and drop <b>to the Controller bus line</b> in the network view.	<i>(See User Manual netDevice and netProject)</i>	-
4	Open the Device DTM configuration dialog	Open the Device DTM configuration dialog. - Double click to the device icon of the Device. - The Device DTM configuration dialog is displayed.	-	-
5	Select driver	In the Device DTM configuration dialog: - select <b>Settings &gt; Driver</b> , - select a driver, - therefore check the appropriate checkbox.	<i>Setting Driver and Selecting Device Driver</i>	23 26
6	Configure Driver	If necessary, configure the driver settings. For netX Driver and communication via TCP/IP 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>netX Driver</i>	<b>29</b>
7	Assign Device device (with or without firmware)	Assign the device to this driver. In the Device DTM configuration dialog: - select <b>Settings &gt; Device Assignment</b> , - select a Device device (with or without firmware), - therefore check the appropriate checkbox, - select the button <b>Apply</b> .	<i>Selecting the Device (with or without firmware)</i>	40
8	Select and download firmware	If not yet a firmware was loaded to the device. In the Device DTM configuration dialog: - select <b>Settings &gt; Firmware Download</b> , - select the button <b>Browse..</b> , - select a firmware file, - select the button <b>Open</b> , - select the buttons <b>Download</b> and <b>Yes</b> .	<i>Firmware Download</i>	43
9	Assign Device device once more (with firmware)	In the Device DTM configuration dialog: - select <b>Settings &gt; Device Assignment</b> , - select the button <b>Scan</b> , - select the Device device (with loaded firmware), - therefore check the appropriate checkbox, - select the button <b>Apply</b> , - close the Device DTM configuration dialog via the button <b>OK</b> .	<i>Selecting the Device once more (with Firmware)</i>	41

#	Step	Short Description	For detailed information see section	Page
9	Configure Device device	Configure the Device. - Double click to the device icon of the Device. - The Device DTM configuration dialog is displayed. In the Device DTM configuration dialog: - select <b>Configuration &gt; Modules</b> , - configure the PROFINET IO device modules, - select <b>Configuration &gt; Device Settings</b> , - set the <b>Device Settings</b> . - close the Device DTM configuration dialog via the button <b>OK</b> .	<i>Configuring Device Parameters</i>  <i>Modules</i>  <i>Device Settings</i>	24  50  59
10	Configure Controller device	Configure the Controller device via the PROFINET IO Controller DTM netX.	<i>(See User Manual DTM for PROFINET IO Controller devices)</i>	-
11	Save project	Depending of the frame application. For the configuration software: - select <b>File &gt; Save</b> .	<i>(See User Manual of the Frame Application)</i>	-
12	Connect Device device	Depending of the FDT Container. For netDevice: - right click to the device icon of the Device, - select context menu entry <b>Connect</b> .	<i>Connecting/Disconnecting Device</i>	84
13	Download Configuration	Depending of the FDT Container. For netDevice: - right click to the device icon of the Device, - select context menu entry <b>Download</b> .	<i>Download Configuration</i>	85
14	Diagnosis	Depending of the FDT Container. For netDevice: - right click to the device icon of the Device, - select context menu entry <b>Diagnosis</b> . - The Device DTM diagnosis dialog is displayed. - Continue with further device diagnosis, - close the Device DTM diagnosis dialog via the button <b>OK</b> .	<i>Overview Diagnosis</i>	<b>65</b>
15	IO Monitor	Depending of the FDT Container: For netDevice: - right click to the device icon of the Device, - select context menu entry <b>Diagnosis</b> , - select <b>Additional Tools &gt; IO Monitor</b> . - Check the input or output data.	<i>IO Monitor</i>	83
16	Disconnect	Depending of the FDT Container. For netDevice: - right click to the device icon of the Device, - select <b>context menu entry Disconnect</b> .	<i>Connecting/Disconnecting Device</i>	84

Table 11: Getting Started - Configuration Steps (Device DTM at the Master busline)

### 2.1.3 Setting Driver and Selecting Device

The following steps are needed to establish a connection from the PROFINET IO Device DTM to the PROFINET IO Device device:

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

1. Select one or several driver/s.
2. Configure the driver, if necessary.
- For netX Driver and communication via TCP/IP set the IP address of the device.

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

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

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 25.

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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 PROFINET IO Device device icon.
  10. Select the **Connect** command from the context menu.
- The PROFINET IO Device device now is connected to the PROFINET IO Device DTM via an online connection. In the network view the device description at the device icon of the Device is displayed with a green colored background.

## 2.1.4 Configuring Device Parameters

The following steps are needed to configure the device parameters using the PROFINET IO device DTM:

1. In the PROFINET IO-Controller DTM enter the station name and the IP settings of the PROFINET IO Device station.
2. Configure the modules of the PROFINET IO device.

Therefore you can add either modules or submodules to the configuration or you can change modules. Furthermore you can assign or change slot numbers.

➤ Select **Configuration > Modules** in the navigation area.

3. 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**.



For more information refer to the user manual *DTM for PROFINET IO-Controller devices*, to section *Modules* on page 50 and to section *Device Settings* on page 59.

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## 3 Settings

### 3.1 Overview Settings

#### Settings Dialog Panes

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

Section	Subsection	Page
<i>Driver</i>		26
	<i>Selecting the Driver</i>	26
	<i>Configuring the Driver</i>	27
	<i>netX Driver</i>	29
	<i>cifX Device Driver</i>	28
<i>Device Assignment</i>		36
	<i>Scanning for Devices</i>	37
	<i>Scanning for all Devices or for suitable only</i>	39
	<i>Selecting the Device (with or without firmware)</i>	40
	<i>Selecting the Device once more (with Firmware)</i>	41
<i>Firmware Download</i>		43

Table 12: Descriptions Settings

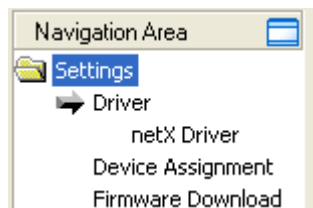


Figure 7: Navigation Area - Settings



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



Notice the descriptions in the section *Configuration Steps* on page 19.

## 3.2 Driver

The **Driver** dialog pane displays the driver/s to be used for a PROFINET IO Device DTM to device communication connection.

Driver			
	Driver	Version	ID
<input type="checkbox"/>	CIFX Device Driver	1.0.3.1	{368BEC5B-0E92-4C0E-B4A9-64F62AE7AAFA}
<input type="checkbox"/>	netX Driver	1.1.1.0	{B54C8CC7-F333-4135-8405-6E12FC88EE62}

Figure 8: Driver Selection List

Parameter	Meaning
Driver	Name of the driver
Version	Version of the driver
ID	ID of the driver (driver identification)

Table 13: Driver Selection List Parameters

### 3.2.1 Selecting the Driver

To establish a connection you need to select a driver first.



**Note:** Not all the drivers displayed necessarily support the device. The used driver must be supported by the device or must be available for the device.

To select the driver/s to be used:

1. Select **Settings > Driver** in the navigation area.
- The available drivers are listed on the **Driver** dialog pane.

Driver			
	Driver	Version	ID
<input type="checkbox"/>	CIFX Device Driver	1.0.3.1	{368BEC5B-0E92-4C0E-B4A9-64F62AE7AAFA}
<input type="checkbox"/>	netX Driver	1.1.1.0	{B54C8CC7-F333-4135-8405-6E12FC88EE62}

Figure 9: Driver Selection List - recognized or installed Drivers

2. Check the checkbox for the driver/s in the selection list.

Driver			
	Driver	Version	ID
<input checked="" type="checkbox"/>	CIFX Device Driver	1.0.3.1	{368BEC5B-0E92-4C0E-B4A9-64F62AE7AAFA}
<input type="checkbox"/>	netX Driver	1.1.1.0	{B54C8CC7-F333-4135-8405-6E12FC88EE62}

Figure 10: Driver Selection List - Driver/s selected

### 3.2.2 Configuring the Driver

All drivers for which you can access to an individual driver dialog pane are displayed in the navigation area under the **Driver** entry. In the driver dialog panes you can configure the driver settings.

For some drivers no individual driver dialog panes exist, since no driver settings are required, e. g. for the **cifX Device Driver**.



**Note:** At the driver dialog panes under **Settings > Driver** the driver settings can be configured.

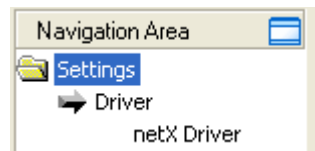


Figure 11: Navigation Area – Settings

To configure a driver:

1. Select **Settings > Driver > [Name of the assigned driver]**.
  - The corresponding driver dialog pane is displayed.
2. Configure the driver settings.
  - To get detailed information how to configure the single drivers, please refer to the corresponding description of the driver.



You can access to the single descriptions of the drivers as online help via the DTM user interface (**F1** key).

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

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

### 3.2.3 cifX Device Driver

In the PROFINET IO Device 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** is used, if the PROFINET IO Device DTM is installed in the same PC as the PROFINET IO Device device.



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

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### 3.2.4 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.

### 3.2.4.1 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 to the device via the USB interface or via the RS232 interface of the device. 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 at the PC.

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

### 3.2.4.2 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:

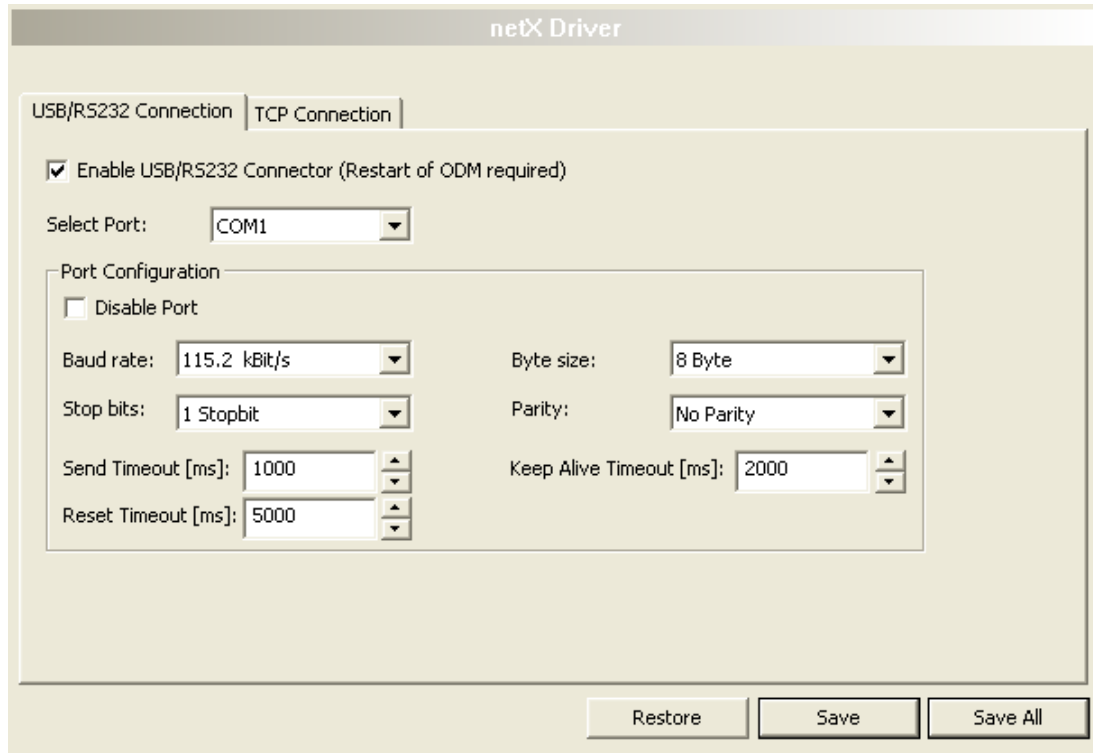



Figure 12: netX Driver > USB/RS232 Connection

Parameter	Meaning	Range of Value / Value
<b>Enable USB/RS232 Connector (Restart of ODM required)</b>	<p>checked: The netX Driver can communicate via the USB/RS232 interface.</p> <p>unchecked: The netX Driver can <u>not</u> communicate via the USB/RS232 interface.</p> <p>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.</p> <p><sup>1</sup> Restart the ODM server via the <b>ODMV3 Tray Application</b>:</p> <p>- In the foot line click to  using the right mouse key.</p> <p>- In the context menu select <b>Service &gt; Start</b>.</p>	checked, unchecked; Default: unchecked
<b>Select Port</b>	Depending which COM ports (interfaces) are 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>	<p>checked: No connection.</p> <p>unchecked: The netX Driver tries to establish a connection using the configured USB/RS232 interface.</p>	checked, unchecked (Default)
<b>Baud rate</b>	<p>Transfer rate: number of bits per second.</p> <p>The device must support the baud rate.</p>	9.6, 19.2, 38.4, 57.6 or 115.2 [kBit/s]; Default (RS232): 115.2 [kBit/s]

Parameter	Meaning	Range of Value / 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 [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 (RS232 and USB): 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 ... 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 is odd. Even parity: The parity is "even", if the number of bits occupied with 1 in the transmitted information word is even. Mark Parity: if the parity bit is always 1, this is named mark-parity (it contains no information). Space Parity: if the parity bit always 0, this is named space-parity (it is an empty space).	No Parity, Odd Parity, Even Parity, Mark Parity, Space Parity; Default (RS232): No Parity
<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 is 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 14: Parameters netX Driver &gt; USB/RS232 Connection

### 3.2.4.3 netX Driver - TCP/IP Connection

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

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

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



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

---

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

### 3.2.4.4 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**.

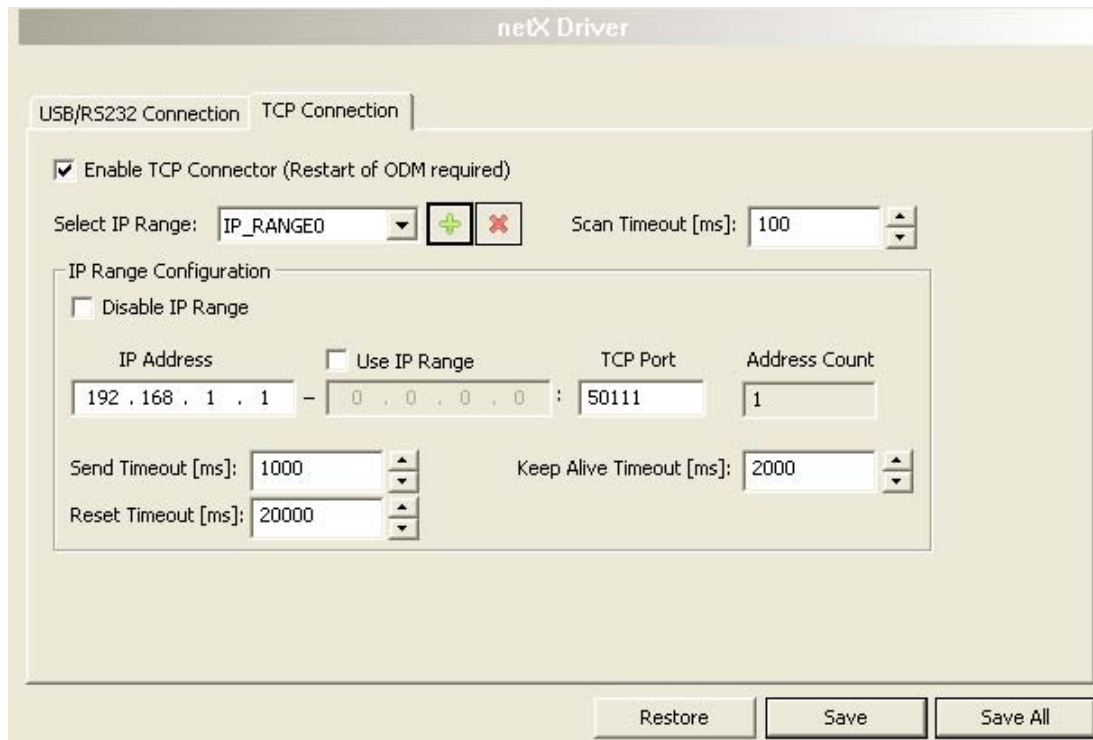





Figure 13: netX Driver > TCP Connection

Parameter	Meaning	Range of Value / 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> <p>- In the foot line click to  using the right mouse key.</p> <p>- In the context menu select <b>Service &gt; Start</b>.</p>	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>	
<b>Scan Timeout [ms]</b>	With the scan timeout can be set, how long to wait for a response during a connection is established.	10 ... 10000 [ms]; Default: 100 ms

Parameter	Meaning	Range of Value / Value
<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 ... 60.000 [ms]; Default (TCP/IP): 2000 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 is 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 15: 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.

### 3.3 Device Assignment



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**Note:** In the **Device Assignment** you first must assign the PROFINET IO Device device to the PROFINET IO Device DTM by checking the check box. This is essential to establish an online connection from the PROFINET IO Device DTM to the PROFINET IO Device device later, as described in section *Connecting/Disconnecting Device* on page 84.

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Therefore in the **Device Assignment** dialog pane you scan for the PROFINET IO Device 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/s (with or without firmware) and select it/them,
2. then you download a firmware to the device and
3. subsequently you scan for the device/s (with firmware) once more and select it/them again.

### 3.3.1 Scanning for Devices

1. Select **Settings > Device Assignment** in the navigation area.
- The dialog pane **Device Assignment** is displayed.

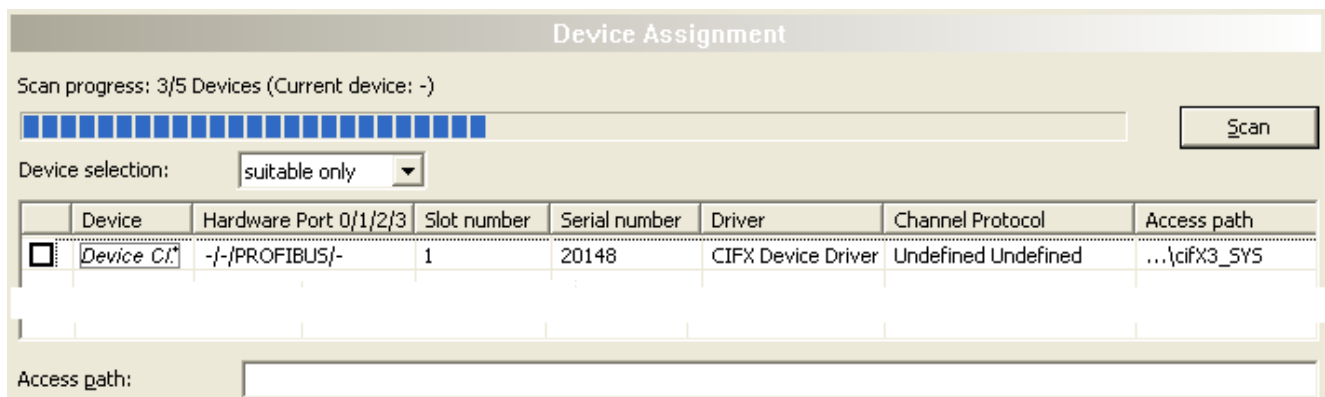


Figure 14: Device Assignment - detected Devices (\* The name of the device class is displayed.) – Example for a device without firmware

2. Select the list box entry **suitable only**.
3. Select the **Scan** button, to start the scanning process.
- Under **Device Selection** all devices are displayed, which can be connected to the PROFINET IO Device 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 / Value
Device selection	Selecting <b>suitable only</b> or <b>all</b> devices.	suitable only, all
Device	Device class of the PROFINET IO Device 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 cifX card via the <b>Rotary Switch Slot Number (Card ID)</b> . The indication <b>n/a</b> means, that no <b>Slot-Nummer (Karten-ID)</b> exists. This occurs, if the cifX card is not equipped with a <b>Rotary Switch Slot Number (Card ID)</b> or for cifX cards 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 (under Device selection 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: ...\ <b>cifX[0toN]_SYS</b> , b.) For devices with firmware: ...\ <b>cifX[0toN]_Ch[0to3]</b> .  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 under <b>Device selection</b> the check box for 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. For the <b>cifX Device Driver</b> the following data are displayed: a.) For devices without firmware: ...\ <b>cifX[0toN]_SYS</b> , b.) For devices with firmware: ...\ <b>cifX[0toN]_Ch[0to3]</b> .  cifX[0toN] = Board number 0 to N Ch[0to3] = Channel number 0 to 3	driver identification (ID) depending on the device and on the driver: board or channel number, IP address or COM interface

Table 16: Parameters of the Device Assignment

### 3.3.1.1 Scanning for all Devices or for suitable only

#### all

1. In the **Device Assignment** pane select the list box entry **all**.
2. Select the **Scan** button, to start the scanning process.

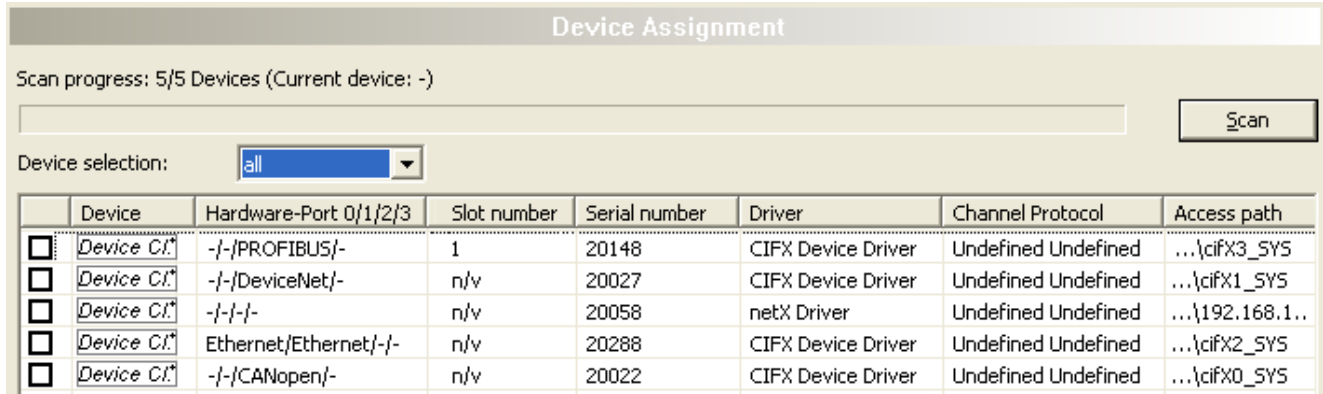


Figure 15: Device Assignment - detected Devices (\* The name of the device class is displayed.) Example for Devices without Firmware

- ↗ Under **Device Selection** 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. In the **Device Assignment** pane select the list box entry **suitable only**.
  2. Select the **Scan** button, to start the scanning process.
- ↗ Under **Device Selection** all devices are displayed, which can be connected to the PROFINET IO Device 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.

### 3.3.2 Selecting the Device (with or without firmware)



**Note:** A connection with the PROFINET IO Device DTM can only be established with one PROFINET IO Device device.

To select the physical PROFINET IO Device device (with or without firmware):

1. In the **Device Assignment** pane in the selection list **Device selection** check the check box for the 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 Master	... \cifX3_SYS

Access path: {368BEC5B-0E92-4C0E-B4A9-64F62AE7AAFA}\cifX3\_SYS

Figure 16: 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 the **Apply** button, to apply the selection.



**Note:** Before an online connection from the PROFINET IO Device DTM to the PROFINET IO Device 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 *Firmware Download* on page 43 or to section *Selecting the Device once more (with Firmware)* on page 41.

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

To select the PROFINET IO Device device (with firmware) once more, proceed as described hereafter:

#### all

1. In the pane **Device Assignment** select the list box entry **all**.
2. Select **Scan**.
- ↗ Under **Device Selection** all devices are displayed, which are attainable in the network and which can be connected to a DTM via the preselected drivers.
3. In the **Device Assignment** pane in the selection list **Device selection** check the check box for the 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/v	20027	CIFX Device Driver	DeviceNet Master	...\cifX1_Ch0
<input type="checkbox"/>	Device Cl.*	-/-/-/-	n/v	20058	netX Driver	Undefined Undefined	...\192.168....
<input type="checkbox"/>	Device Cl.*	Ethernet/Ethernet/-/-	n/v	20288	CIFX Device Driver	PROFINET IO Device	...\cifX2_Ch0
<input type="checkbox"/>	Device Cl.*	-/-/CANopen/-	n/v	20022	CIFX Device Driver	Undefined Undefined	...\cifX0_SYS

Access path: {368BEC5B-0E92-4C0E-B4A9-64F62AE7AAFA}\cifX3\_Ch0

Figure 17: 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 the **Apply** button, to apply the selection.
5. Or select the **OK** button, 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. In the pane **Device Assignment** select the list box entry **suitable only**.
2. Select **Scan**.
- ↗ Under **Device Selection** all devices are displayed, which can be connected to the PROFINET IO Device DTM via the preselected drivers.
3. In the **Device Assignment** pane in the selection list **Device selection** check the check box for the 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

Access path: {368BEC5B-0E92-4C0E-B4A9-64F62AE7AAFA}\cifX3\_Ch0

Figure 18: 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 the **Apply** button, to apply the selection.
5. Or select the **OK** button, 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 PROFINET IO Device DTM to the PROFINET IO Device device, refer to section *Connecting/Disconnecting Device* on page 84.

## 3.4 Firmware Download

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



**CAUTION!** The firmware download

- Stops the bus communication,
- erases the configuration data base and
- overwrites the existing firmware in the device.

To complete the update and to make the device operable again, please re-download the configuration when this operation has finished.



**Note:** Prior to the firmware download, you must select the driver and the Device device (with or without firmware).



For further information refer to section *Overview Settings* on page 25.

To load the firmware to the device:

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

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

Figure 19: Firmware Download

Parameter	Meaning
Name	Name of the Firmware
Version	Version and Build Version of the Firmware
Browse...	Button to select the firmware file.
Download	Button to download the firmware.

Table 17: Parameter Firmware Download

2. Select **Browse**.

➤ The selection window **Select Firmware File** is displayed.

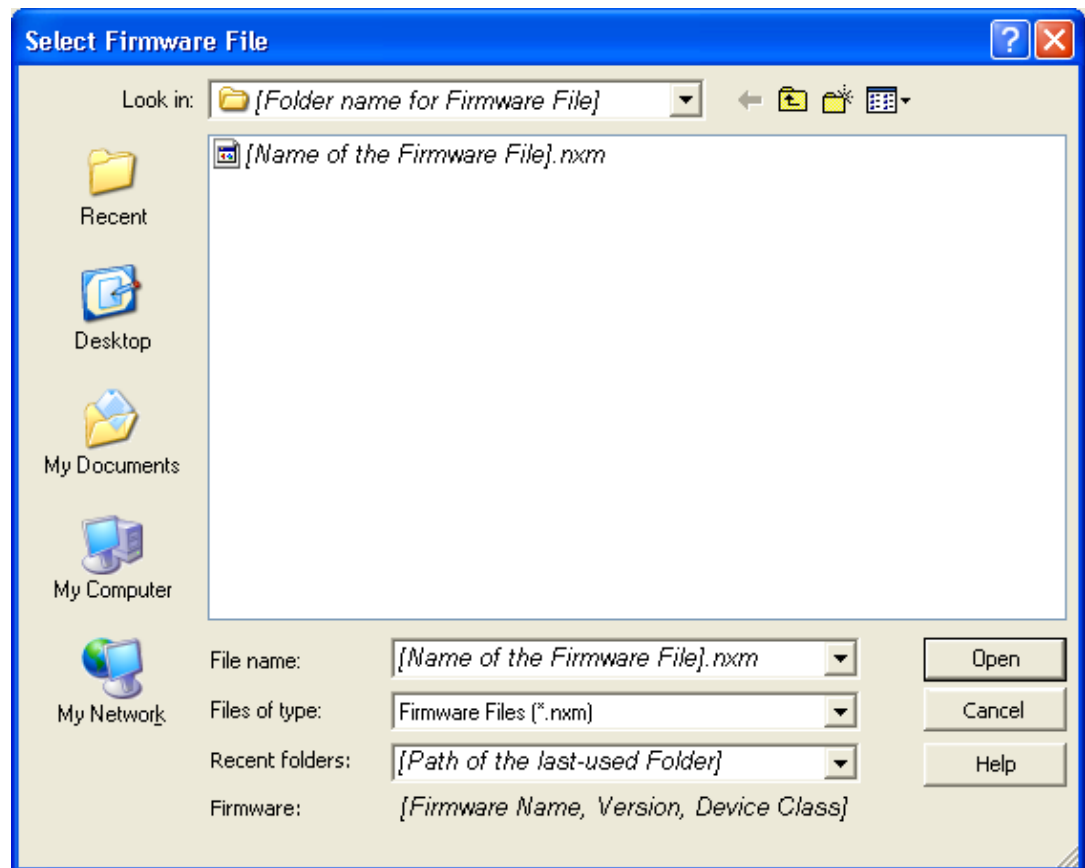


Figure 20: Selection Window Select Firmware File

Parameter	Meaning	Range of Value / Value
Files of Type	„All Files (*.*)“, if before in the <b>Device Assignment</b> pane the list box entry <b>all</b> has been selected. „Firmware Files (*.nxm)“ or Firmware Files (*.nxf), if before in the <b>Device Assignment</b> pane the list box entry <b>suitable only</b> has been selected.	All Files (*.*), Firmware Files (*.nxm), Firmware Files (*.nxf)
Recent folder	Path of the recently opened folder	
Firmware	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
Help	Button, to open the online help of the DTM.	

Table 18: Parameters Select Firmware File



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



**Note:** After in the **Device Assignment** pane the list box entry **all/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 →)	<b>all</b>	<b>suitable only</b>
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:	There is a restricted validation, if the selected firmware is applied for the download.	A validation is made, if the firmware file is suitable for the PROFINET IO Device DTM.

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

3. In the selection window mark the firmware file to be loaded using the mouse.
- ↻ In the selection window under **Firmware** the name and the version of the firmware are displayed.
4. In the selection window select the **Open** button.
- ↻ A validation is made, if the selected firmware file is suitable for the PROFINET IO Device DTM.
- ↻ In the dialog pane **Firmware Download** during the validation **Download** is grayed out.
- ↻ The selection window is closed.
5. In the dialog pane **Firmware Download** click to the **Download** button, to download the firmware.

Firmware is not valid for the selected device

- ↻ If a firmware file is selected, which is not valid for the assigned device, the request **Select Firmware File** is displayed.



Figure 21: Request Select Firmware File - Example

- Answer to the request with **No**.

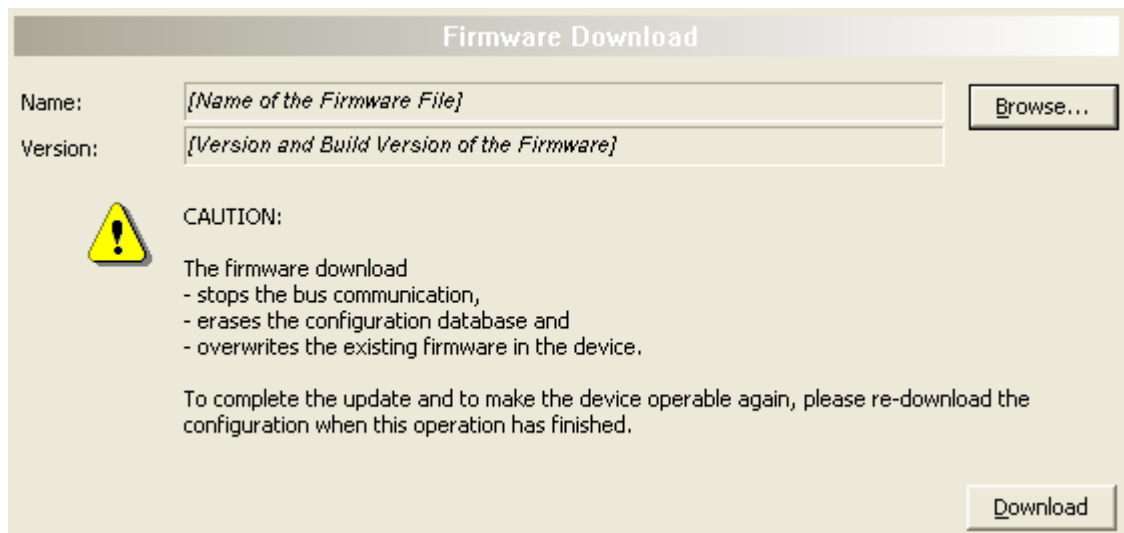


Figure 22: Firmware Download – Download

⇒ The request **Do you really want to download the firmware?** is displayed.

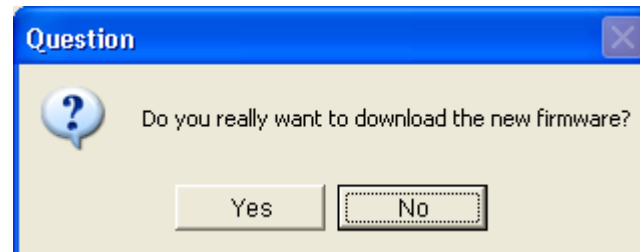


Figure 23: Firmware-Download – Question

6. Select the **Yes** button.

- During the download a progress bar is displayed, in the status line a clock / green hook symbol is displayed and **Download** is grayed out.

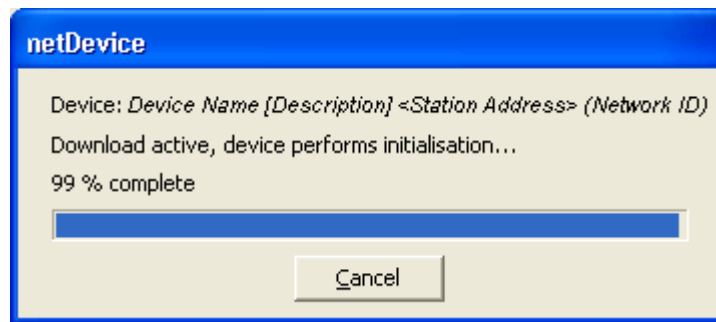


Figure 24: Clock Symbol and Hook Symbol green

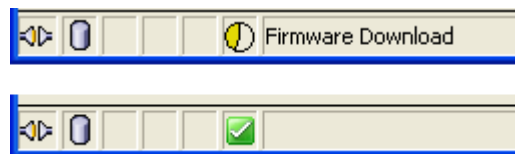


Figure 25: Firmware Download - Progress Bar

- If necessary, cancel the download via **Cancel**.

## 4 Configuration

### 4.1 Overview Configuration

#### Configuration Dialog Panes

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

Section	Page
<i>General</i>	<i>49</i>
<i>Address Table</i>	<i>57</i>
<i>Modules</i>	<i>50</i>
<i>Device Settings</i>	<i>59</i>

Table 19: Descriptions of the Configuration Dialog Panes

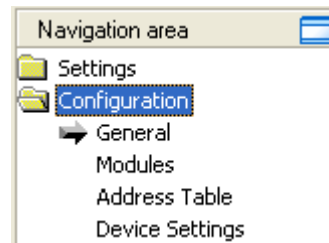


Figure 26: Navigation Area - Configuration



Notice the descriptions in the section *Configuration Steps* on page 19.

## 4.2 General

The **General** dialog pane shows the **Name of Station** of the PROFINET IO device and its IP settings. These values are set in the PROFINET IO Controller.

To access to the **General** dialog pane:

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

Figure 27: Configuration > General

Parameter	Meaning
Name of Station	Network name of the PROFINET IO device station. (1 - 240 characters). The name of station is set in the PROFINET IO Controller DTM. Here it is only displayed. The PROFINET IO Controller uses the name of station to identify the PROFINET IO Device via the PROFINET network and to build up communication. The name of station displayed here must match with the name of station set in the PROFINET IO Device. The name of station must be explicit in the PROFINET network.
Description	Symbolic Name of the PROFINET IO Device station.
IP Settings of the PROFINET IO Device station	
IP Address	The IP address of the PROFINET IO Device station is set in the PROFINET IO Controller DTM. Here it is only displayed. The PROFINET IO Controller device transmits the IP address of the PROFINET IO Device during startup via the PROFINET network to the PROFINET IO Device and thereby configures the PROFINET IO Device.
Network Mask	The Network mask of the PROFINET IO Device station is set in the PROFINET IO Controller DTM. Here it is only displayed. The PROFINET IO Controller device transmits the Network mask of the PROFINET IO Device during startup via the PROFINET network to the PROFINET IO Device and thereby configures the PROFINET IO Device.
Gateway Address	The Gateway address of the PROFINET IO Device station is set in the PROFINET IO Controller DTM. Here it is only displayed. The PROFINET IO Controller device transmits the Gateway address of the PROFINET IO Device during startup via the PROFINET network to the PROFINET IO Device and thereby configures the PROFINET IO Device.

Table 20: General Pane Parameters

### 4.3 Modules

On the **Modules** pane the configured modules of a PROFINET IO device are displayed. To configure the modules:

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

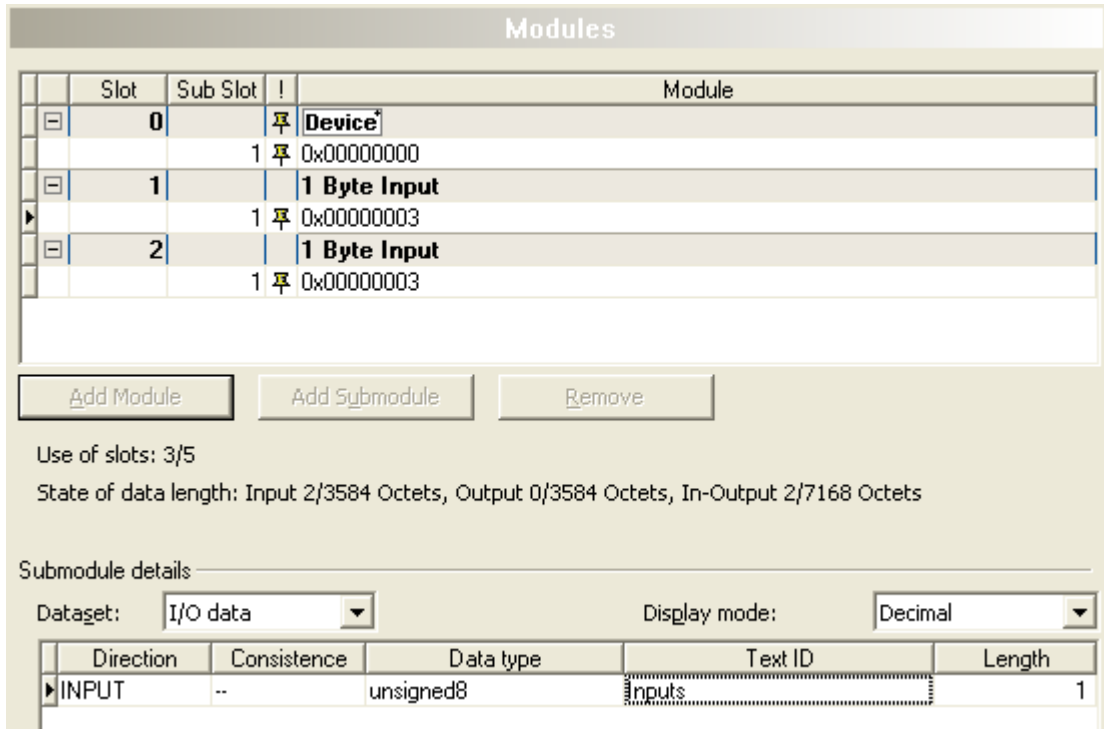


Figure 28: Configuration > Modules Pane (\* The Name of the device is displayed.)

### 4.3.1 Modules Table

The modules table allows to configure the modules of a PROFINET IO device. I. e., modules or submodules can be added, changed or removed.

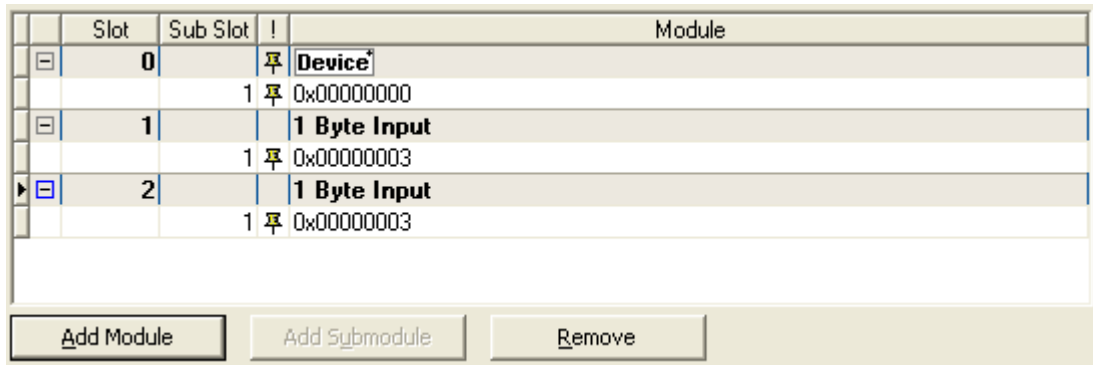


Figure 29: Configuration > Modules Table (\* The Name of the device is displayed.)





Parameter	Meaning
Slot	Shows the current <b>Slot</b> number assigned to a module. When clicking the slot field, the automatically updated drop-down-list of the free and allowed <b>Slot</b> numbers is displayed. By changing the slot number, the sequence of the modules can be changed.
Sub Slot	Shows the current <b>Sub Slot</b> assigned to a submodule. When clicking the sub slot field, the automatically updated drop-down-list of the free and allowed <b>Sub Slot</b> numbers is displayed. By changing the slot number, the sequence of the modules can be changed.
!	Slot icon tag: indicates the usage of the (sub-)module.
	🔒: Slot number, subslot number and module name are <u>not</u> changeable.
	no icon: Slot number, subslot number and module name are changeable.
Module	Module name as defined in the GSDML file.
'Add Module' Button	Use the <b>Add Module</b> button to add a module to the device configuration below the current line  .
'Add Submodule' Button	Use the <b>Add Submodule</b> button to add a submodule to the selected module of the device configuration below the current line  .
'Remove' Button	Use the <b>Remove</b> button to remove the selected (sub-)module from the configuration below the current line  .
	The arrow symbol shows the current line in the table. This line is the reference for the buttons <b>Add Module</b> , <b>Add Submodule</b> and <b>Remove</b> .

Table 21: Modules Pane Parameters

## 4.3.2 Configure Modules

To configure the modules of a PROFINET IO device, first consider the following description on how to proceed:



---

**Note:** For devices with GSDML XML schema version = 1.0, every module has one submodule assigned. No additional submodules can be added, and the assigned submodule can not be removed. For devices with GSDML XML version = 2.0, you can configure the submodules, and these submodules can be added or removed from the corresponding module.

---

Modules description in GSDML file differentiates between *fixed in slot*, *used in slot* and *allowed in slot* modules. *Fixed in slot* and *used in slot* modules are automatically configured, *allowed in slot* modules can be configured.

### 4.3.2.1 1. Adding Modules or Submodules to the Configuration

To add additional available modules or submodules:

1. Select the line to insert a module or submodule.
2. Click the Add Module or Add Submodule button.
- ⇒ Starting from the selected line, additional modules or submodules are added at the next free slot or sub slot.
3. Click the **Apply** or **OK** button to confirm your changes, or cancel to skip.

### 4.3.2.2 2. Changing Modules Configuration / remove Module

If you want to change the configuration, follow these steps.

1. Select the line of the module or submodule.
  2. Open the modules' drop-down list.
- The modules' drop-down list shows all available modules or submodules for the respective slot.

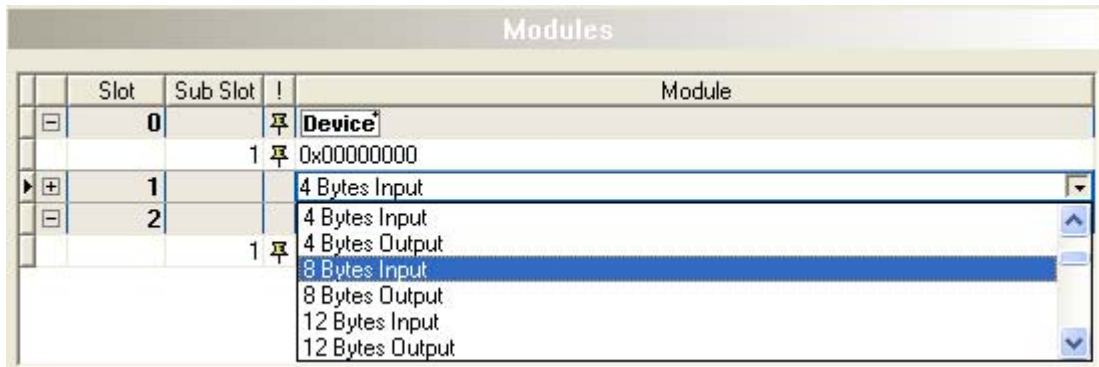


Figure 30: Changing Modules using Drop-Down Control (\* The Name of the device is displayed.)



**Note:** If no appropriate and allowed modules or submodules are displayed in the modules' drop-down list of a slot, then only to the following next free slot modules or submodules can be added .

3. Select the next available and allowed module or submodule.
4. Click on the **Apply** or **OK** button to confirm your changes, or cancel to skip.


To remove modules or submodules:

- Use the Remove button or **DELETE** key to remove the selected module or submodule from the configuration.

*Fixed in slot* modules can not be removed.

### 4.3.2.3 3. Changing Slots



**Note:** Slot or sub slot numbers for  *fixed in slot* modules or submodules can not be changed.

To change the **Slot** or **SubSlot** numbers of a configured module or submodule:

1. Select the cell of the available slot/sub slot to be changed.
- ↗ The drop-down list shows all free and allowed slots or sub slots of the module or submodule.





	Slot	Sub Slot	!	Module
	0			Device*
		1		0x00000000
	1			1 Byte Input
		1		0x00000003
	2			1 Byte Input
		1		0x00000003

Figure 31: Assigning (Sub) Slots to Modules using Drop-Down Control (\* The Name of the device is displayed.)

2. Select the desired slot/sub slot number.
3. Click on the **Apply** or **OK** button to confirm your changes, or cancel to skip.

### 4.3.3 Configuration Info

Use of slots: 3/245  
 State of data length: Input 4/5760 Octets, Output 4/5760 Octets, In-Output 8/11520 Octets

*Figure 32: Configuration > Modules - Configuration Info*

The configuration is validated regarding the maximum number of input/output bytes and modules.

Parameter	Meaning
Use of slots:	Number of configured modules / max. allowed modules.
State of data length:	Indicates state of data. Input: Current number of input data / max. allowed number of input data. Output: Current number of output data / max. allowed number of output data. In-/Output: Current number of input/output data / max. allowed number of input/output data.

*Table 22: Modules Pane Parameters - Configuration Info*

### 4.3.4 Submodules Details

The **Submodule details** configuration area displays the details of the current selected module.

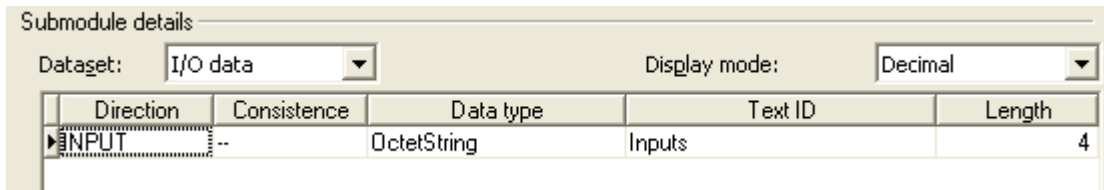


Figure 33: Configuration > Modules - Submodules Details > Dataset: I/O data

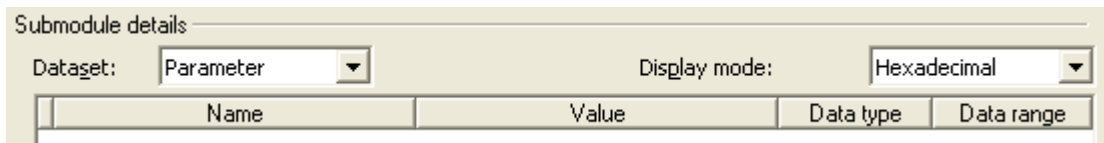


Figure 34: Configuration > Modules - Submodules Details > Dataset: Parameter

Parameter	Meaning
Dataset	Displayed dataset: I/O data or Parameter
Display mode	Under <b>Display Mode</b> the display mode of the module configuration data is predefined decimally or hex decimally.
<b>Dataset: I/O data</b>	
Direction	Input/output direction of the PROFINET IO-Data
Consistence	Specifies the input characteristics of a submodule. By default the data are transmitted coherently. [2]
Data type	Defines the data type of the data signal. [2]
Text ID	Text ID of the submodule from the GSDML file.
Length	Length of IO-Data.
<b>Dataset: Parameter</b>	
Name	Defines the name of the parameter.
Value	Indicates the value of the parameter.
Datatype	Defines the datatype of the parameter.
Data range	Defines the range of the parameter value.

Table 23: Modules Pane Parameters - Submodules Details

## 4.4 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 PROFINET IO device.

To edit the address data:

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

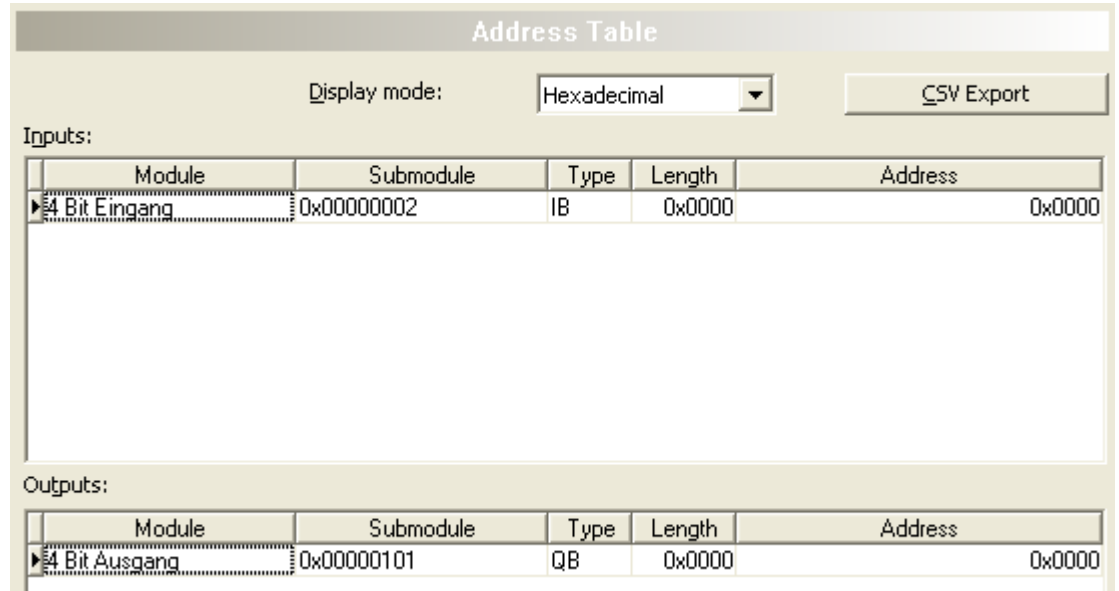


Figure 35: Configuration > Address Table

## 4.4.1 Explanation of the Parameter

Parameter	Meaning	Range of Value / Value
Name of Station	Networkname of the PROFINET IO device station.	1 - 240 characters
Module	Module name	
Submodule	Submodule name	
Type	Data type (QB,QW,IB, IW)	
Length	Length of the Module / Submodule in Bytes.	
Address	Data offset address.	

Table 24: Address Table Pane Parameters - Inputs / Outputs

## 4.4.2 Display Mode, CSV Export

### Display Mode

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



Figure 36: 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 by **Name of Station** or by **Address**, click on the respective column header.

## 4.5 Device Settings

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



Information about the download you find in section *Download Configuration* on page 85.

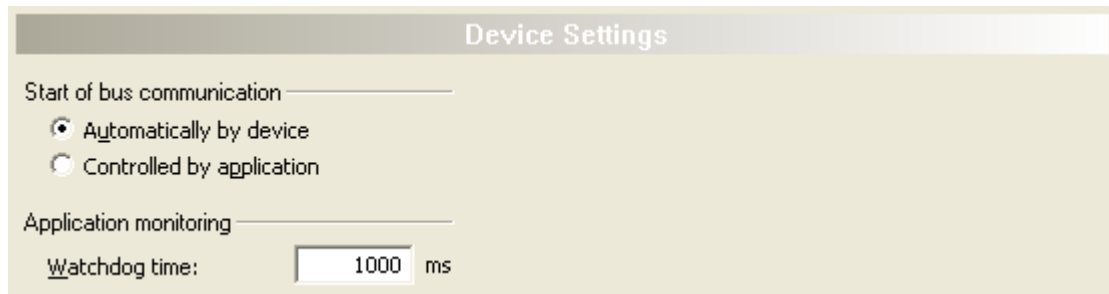


Figure 37: Configuration > Device Settings

The following adjustments can be made here:

- Start of bus communication
- Application monitoring



**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.

### 4.5.1 Start of Bus Communication

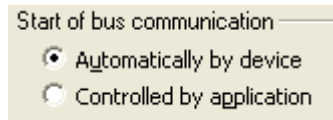


Figure 38: Device Settings > Start of Bus Communication

If **Controlled by application** is selected, the PROFINET IO device starts with the data exchange on the bus after the initializing has been ended.

When **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.

### 4.5.2 Application Monitoring

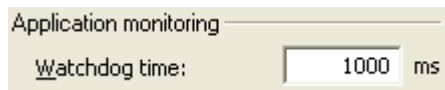


Figure 39: Device Settings > User Program Monitoring

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

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 25: 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 Description

### 5.1 Overview Description

#### Description Dialog Panes

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

Subsection	Page
<i>Device Info</i>	<b>62</b>
<i>Modul Info</i>	63
<i>GSDML Viewer</i>	<b>64</b>

Table 26: Descriptions of the Description Panes

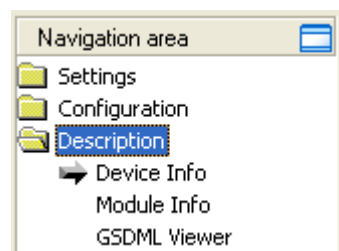


Figure 40: Navigation Area - Description

## 5.2 Device Info

The **Device Info** pane displays manufacturer information about the device, which is defined in the GSDML file.

Name	Value
Main family	Attribute of the GSDML family element. It contains the assignment of the device to a function class.  One of the following values are allowed: General Drives, Switching devices, I/O, Valves, Controllers, HMI, Encoders, NC/RC, Gateway, Programmable Logic Controllers, Ident systems, PROFIBUS PA Profile, Network Components Sensors.
Product family	Attribute of the GSDML family element. It contains the vendor specific assignment of the device to a product family. In addition to the main family a device can be assigned to a vendor specific product family.
DAP vendor name	Attribute of the GSDML ModuleInfo/VendorName element. The VendorName element contains the name of the device vendor.  The device access point (DAP) is a module of the GSDML to describe the device parameters device specific. The device access point object contains most of the device related keywords.
DAP hardware release	Attribute of the GSDML ModuleInfo/HardwareRelease element. The HardwareRelease element contains the hardware release of the DAP.
DAP software release	Attribute of the GSDML ModuleInfo/SoftwareRelease element. The SoftwareRelease element contains the software release of the DAP.
Extended address assignment	Attribute of the GSDML DeviceAccessPointItem element. It depends from the protocol for the assignment of the IP addresses supported by the DAP. Default: "false", for the Discovery and Configuration (DCP), "true" for the Dynamic Host Configuration Protocol (DHCP)
Physical slots	Attribute of the GSDML DeviceAccessPointItem element. This list describes which slots are supported by the DAP. The Slotnumber of the DAP itself shall be part of the list.
Max. IO data length	Attribute of the GSDML DeviceAccessPointItem IOConfigData element. It contains the maximum length of the output and input data in octets. MaxDataLength shall not be less than the highest value of MaxInputLength or MaxOutputLength. It shall not be greater than the sum of MaxInputLength and MaxOutputLength. If this keyword is not provided, the maximum length is the sum of MaxInputLength and MaxOutputLength.
Max. input data length	Attribute of the GSDML DeviceAccessPointItem IOConfigData element. It contains the maximum length of the data in octets which can be transferred from the IO Device to the IO Controller. This length is defined by the sum of the input data of all used submodules, the corresponding IO producer status and the IO consumer status of the used output submodules.
Max. output data length	Attribute of the GSDML DeviceAccessPointItem IOConfigData element. It contains the maximum length of the data in octets which can be transferred from the IO Controller to the IO Device. This length is defined by the sum of the output data of all used submodules, the corresponding IO producer status and the IO consumer status of the used input submodules.
Info text	GSDML ModuleInfo/InfoText element. This element contains human readable additional text information about the device.

Table 27: Device Info

## 5.3 Modul Info

On the **Module Info** pane the **Select module** drop-down list displays all available modules described in the GSDML file.

In the table below the corresponding information for the current selection (Vendor ID, Main family, ... ) is displayed.

Control	Meaning
Select module	Drop-down list, displays all available modules described in the GSDML file. In the table below the corresponding information for the current selection is displayed.
Name	Value
Vendor ID	Identification number of the vendor.
Main family	Attribute of the GSDML family element. It contains the assignment of the device to a function class. One of the following values are allowed: General Drives, Switching devices, I/O, Valves, Controllers, HMI, Encoders, NC/RC, Gateway, Programmable Logic Controllers, Ident systems, PROFIBUS PA Profile, Network Components Sensors.
Product family	Attribute of the GSDML family element. It contains the vendor specific assignment of the device to a product family. In addition to the main family a device can be assigned to a vendor specific product family.
Modules identifier	Identification number of the module.
Order number	GSDML ModuleInfo/OrderNumber element. It contains the order number of a module.
Hardware release	GSDML ModuleInfo/HardwareRelease element. It contains the hardware release of a module.
Software release	GSDML ModuleInfo/SoftwareRelease element. It contains the software release of a module.
Info text	GSDML ModuleInfo/InfoText element. This element contains human readable additional text information about the module.

Table 28: Module Information

## 5.4 GSDML Viewer

The **GSDML Viewer** displays the content of the GSDML file of the device in HTML style in a text view.

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

In the GSDML Viewer window the entries show the GSDML file in text format.

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

*Table 29: Device Description – GSDML Viewer*

## 6 Diagnosis

### 6.1 Overview Diagnosis

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

The **Extended Diagnosis** helps to find communication and configuration errors, when default diagnosis fails.



For further information to the **Extended Diagnosis** refer to section *Overview Extended Diagnosis* on page 70.

#### Diagnosis Panes

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

Section	Page
<i>Firmware Diagnosis</i>	66
<i>General Diagnosis</i>	67

Table 30: Descriptions of the Diagnosis Panes



**Note:** Accessing the **Diagnosis** panes of the PROFINET IO Device DTM requires an online connection from the PROFINET IO Device DTM to the PROFINET IO Device device.



For further information, refer to section *Connecting/Disconnecting Device* on page 84.

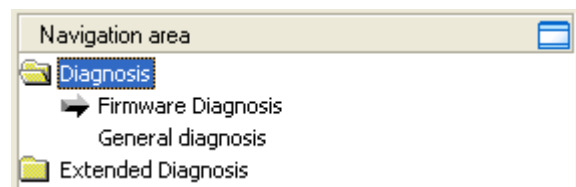


Figure 41: Navigation Area - Diagnosis

## 6.2 Firmware Diagnosis

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

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

Task	Name of t...	Version	Pri...	Description	State
0	RX_IDLE	0.0	63	The task identif...	Task Status ok. (0x00000000)
1	RX_TIMER	0.0	1	The task identif...	Task Status ok. (0x00000000)
2	RX_SYSTEM	1.16	42	Middleware Sys...	Task Status ok. (0x00000000)
3	DPM_COM...	1.0	50	TLR-Router DPM.	Task Status ok. (0x00000000)
4	DPM_COM...	1.0	51	TLR-Router DPM.	Task Status ok. (0x00000000)
5	TLR_TIMER	0.0	21	The task identif...	Task Status ok. (0x00000000)
6	TCP_UDP	2.4	35	TCPUDP task (...	Task Status ok. (0x00000000)
7	PNS_IF	1.1	34	PROFINET IO-...	Task Status ok. (0x00000000)
8	OsSockPrc	0.1	32	PROFINET IO-...	Task Status ok. (0x00000000)
9	OsSockHlp	0.0	39	The task identif...	Task Status ok. (0x00000000)
10	Pnio_Edd_...	0.0	22	The task identif...	Task Status ok. (0x00000000)
11	Pnio_Edd_...	0.0	23	The task identif...	Task Status ok. (0x00000000)
12	Pnio_Pnio3	0.0	24	The task identif...	Task Status ok. (0x00000000)
13	Pnio_Pnio4	0.0	25	The task identif...	Task Status ok. (0x00000000)
14	Pnio_Pnio5	0.0	26	The task identif...	Task Status ok. (0x00000000)
15	Pnio_Pnio6	0.0	27	The task identif...	Task Status ok. (0x00000000)
16	Pnio_Pnio7	0.0	28	The task identif...	Task Status ok. (0x00000000)
17	Pnio_Pnio8	0.0	30	The task identif...	Task Status ok. (0x00000000)
18	Pnio_Pnio9	0.0	31	The task identif...	Task Status ok. (0x00000000)
19	Pnio_Api2	0.0	29	The task identif...	Task Status ok. (0x00000000)
20	Pnio_Post	0.0	33	The task identif...	Task Status ok. (0x00000000)

Figure 42: Firmware Diagnosis (\*The name of the Firmware is displayed.)

### 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 of the task
Prio	Priority of the task
Description	Description of the task
Status	Status of the task

Table 31: Description Table Task Information

## 6.3 General Diagnosis

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

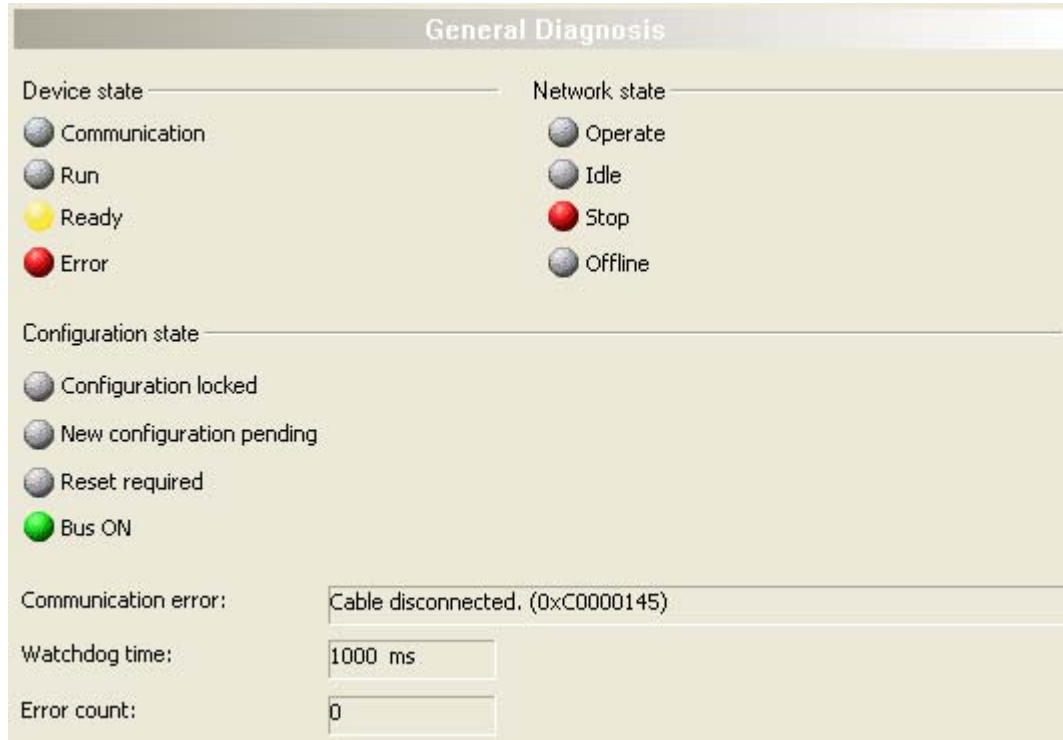


Figure 43: General Diagnosis

























LED	Meaning	Color	State
<b>Device State</b>			
<b>Communicating</b>	Shows whether the PROFINET IO device executes the network communication.	 (green)	COMMUNICATING
		 (gray)	Not COMMUNICATING
<b>Run</b>	Shows whether the PROFINET IO device has been configured correctly.	 (green)	Configuration OK
		 (gray)	Configuration not OK
<b>Ready</b>	Shows whether the PROFINET IO device has been started correctly. The PROFINET IO device waits for a configuration.	 (yellow)	Device READY
		 (gray)	Device not READY
<b>Error</b>	Shows whether the PROFINET IO 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
<b>Network State</b>			
<b>Operate</b>	Shows whether the PROFINET IO device is in data exchange. In a cyclic data exchange the input data or the output data of the PROFINET IO Device are transmitted to the PROFINET IO Controller.	 (green)	In OPERATION state
		 (gray)	Not in OPERATION state
<b>Idle</b>	Shows whether the PROFINET IO device is in idle state.	 (yellow)	In IDLE state
		 (gray)	Not in IDLE state
<b>Stop</b>	Shows whether the PROFINET IO device is in Stop state: There is no cyclic data exchange at the PROFINET IO network. The PROFINET IO 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
<b>Offline</b>	The PROFINET IO Device is offline as long as it does not have a valid configuration.	 (yellow)	In OFFLINE state
		 (gray)	Not in OFFLINE state
<b>Configuration State</b>			
<b>Configuration locked</b>	Shows whether the PROFINET IO device configuration is locked, to avoid the configuration data are typed over.	 (yellow)	Configuration LOCKED
		 (gray)	Configuration not LOCKED
<b>New Configuration pending</b>	Shows whether a new PROFINET IO device configuration is available.	 (yellow)	New Configuration pending
		 (gray)	No new Configuration pending
<b>Reset required</b>	Shows whether a firmware reset is required as a new PROFINET IO device configuration has been loaded into the device.	 (yellow)	RESET required
		 (gray)	No RESET required
<b>Bus ON</b>	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 message text of the communication error. If the cause of the current error is resolved, „ – “ is displayed.
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 if they were network related or caused internally.

Table 33: Parameter General Diagnosis



## 7.2 Task Information

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

Figure 44: Extended Diagnosis > [Folder Name] > Task Information Beispieldarstellung

Name	Description
Identifier	Identification number of the task
Major version	Task version, contains incompatible changes
Minor version	Task version, contains compatible changes
Maximum package size	Maximum package 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 35: Extended Diagnosis > [Folder Name] > Task Information

### 7.3 IniBatch-Status

IniBatch-Status	
Task-Status	
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 45: Extended Diagnosis > [Folder Name] > IniBatch-Status Display

Name	Description
Communication Channel	Number of the communication channel used by the device.
Current State	0 =Idle; 1 =IniBatch packets in progress; 2 =Retrying to send last packet; 3 = Error
IniBatch Result	0 = Ok; 1 = No DBM file; 2 = No Packet table; 3 = No data set available; 4 = Data set is shorter than packet length; 5 = Packet Buffer is shorter than Packet length; 6 = Invalid packet destination; 7 = Logical queue not defined 8 = Send packet failed; 9 = Too many retries; 10 = 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 package 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 36: Extended Diagnosis > [Folder Name] > IniBatch-Status

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

## 7.4 TCP\_UDP

### 7.4.1 IP Information

IP Information	
Task states	
Name	Value
Task State	3
Error Counter	2
Last Error	0xC00800D2
IP Address	0.0.0.0
Net Mask	0.0.0.0
Gateway	0.0.0.0

Figure 46: Extended Diagnosis > TCP\_UDP > IP-Information

Name	Description
Task State	Actual state of the protocol process: 0 = Task not initialized 1 = Task is running 2 = Task initialized 3 = Initialization error
Error Counter	Counter for errors
Last Error	Last occurred error (Description see appropriate manual)
IP Address	IP address of the PROFINET IO Device station.
Net Mask	Network mask of the PROFINET IO Device station.
Gateway	Gateway address of the PROFINET IO Device station.

Table 37: Extended Diagnosis > TCP\_UDP > IP-Information

### 7.4.2 IP Packet Counter

IP Packet Counter	
Task states	
Name	Value
Packet Recv TCP	0
Packet Recv UDP	0
Packet Recv ICMP	0
Packet Recv IP Header Err	0
Packet Recv ARP	0
Packet Recv Unknown	0

Figure 47: Extended Diagnosis > TCP\_UDP > Packet Counter

Name	Description
Packet Recv TCP	Counter for received TCP packets
Packet Recv UDP	Counter for received UDP packets
Packet Recv ICMP	Counter for received ICMP packets
Packet Recv IP Header Err	Counter for received IP packets with errors
Packet Recv ARP	Counter for received ARP packets
Packet Recv Unknown	Counter for received packets of an unknown type

Table 38: Extended Diagnosis > TCP\_UDP > Packet Counter

### 7.4.3 IP Code Diagnosis

IP Code Diag	
Task states	
Name	Value
Information Count	0
Warning Count	0
Error Count	0
Severity Level	None
Code	0
Parameter	0
Module	
Line Number	0

Figure 48: Extended Diagnosis > TCP\_UDP > IP Code Diagnosis

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

Table 39: Extended Diagnosis > TCP\_UDP > IP Code Diagnosis

### 7.4.4 TCP\_UDP Information

TCP_UDP Information	
Task states	
Name	Value
Task State	3
Error Counter	2
Last Error	0xC0080032

Figure 49: Extended Diagnosis > TCP\_UDP > TCP\_UDP Information

Name	Description
Task State	Actual state of the protocol process: 0 = Task not initialized 1 = Task is running 2 = Task initialized 3 = Initialization error
Error Count	Counter for errors
Last Error	Last occurred error (Description see appropriate manual)

Table 40: Extended Diagnosis > TCP\_UDP > TCP\_UDP Information

### 7.4.5 TCP\_UDP Code Diagnosis

TCP_UDP Code Diag	
Task states	
Name	Value
Information Count	0
Warning Count	0
Error Count	0
Severity Level	None
Code	0
Parameter	0
Module	
Line Number	0

Figure 50: Extended Diagnosis > TCP\_UDP > TCP\_UDP Code Diagnosis

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

Table 41: Extended Diagnosis > TCP\_UDP > TCP\_UDP Code Diagnosis

## 7.5 PNS\_IF

### 7.5.1 PROFINET Stack State

PROFINET Stack State	
Task states	
Name	Value
Summary	0x7F
Device Information is set	true
PROFINET Stack is started	true
Device Instance is opened	true
API is added	true
Module 0 is plugged	true
Module 0 and Submodule 1 ...	true
Network Communication is ...	true
Network Communication is ...	false
Last Error Code of PROFIN...	0x00000000
Last Error Code of RCX/API...	Cable disconnected.
Configuration State	Configured with DBM Files
Link State	No Physical Link

Figure 51: Extended Diagnosis > PNS\_IF > PROFINET Stack State

Name	Description
Summary	Summary of the PROFINET IO stack status
Device information is set	Manufacturer information about the device, which is defined in the GSDML file.
PROFINET stack is started	Status of the PROFINET IO stack: started
Device instance is opened	Device instance of the PROFINET IO stack: opened
API is added	API of the PROFINET IO stack: opened
Module 0 is plugged	Module 0 of the PROFINET IO stack: plugged
Module 0 and Submodule 1 are plugged	Module 0 and Submodule 1 of the PROFINET IO stack: plugged
Network Communication is allowed	Network Communication: allowed
Network Communication is enabled	Network Communication: enabled
Last Error Code of PROFINET Stack	Last occurred error of the PROFINET IO stack
Last Error Code of RCX/API Task	Last occurred error of the RCX/API task
Configuration State	Configuration of the PROFINET IO stack
Link State	State of the physical network connection of the PROFINET IO stack

Table 42: Extended Diagnosis > PNS\_IF > PROFINET Stack State

## 7.5.2 Station Description

Station Description	
Task states	
Name	Value
Station name	cifxrepns
Station type	PNS
IP Address	0.0.0.0
Network mask	0.0.0.0
Gateway address	0.0.0.0
New configuration is available	0x00
New station name	no
Save Station name remane...	no
New station type	no
Save Station type remanently	no
New IP configuration	no
Save IP configuration rema...	no

Figure 52: Extended Diagnosis > PNS\_IF > Station Description

Name	Description
Station name	The <b>Station name</b> contains the name of the station provided by engineering.
Station type	The <b>Station type</b> contains the type of the station provided by manufacturer of the device.
IP Address	Valid IP address for the device
Network mask	Valid Network mask for the device
Gateway address	Valid Gateway address for the device
New configuration is available	From the following parameters at least one has changed: Station name, station type, IP configuration.
New station name	Station name has changed.
Save Station name remanently	The new station name shall be stored remanently.
New station type	Station type has changed.
Save Station type remanently	The new station type shall be stored remanently.
New IP configuration	IP configuration has changed.
Save IP configuration remanently	The new IP configuration shall be stored remanently.

Table 43: Extended Diagnosis > PNS\_IF > Station Description

## 8 Additional Tools

### 8.1 Overview Additional Tools

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

#### **Additional Tools Panes**

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

Section	Page
<i>Packet Monitor</i>	79
<i>IO Monitor</i>	83

Table 44: Descriptions of the Diagnosis Panes



**Note:** Accessing the **Additional Tools** panes of the PROFINET IO Device DTM requires an online connection from the PROFINET IO Device DTM to the PROFINET IO Device device.



For further information, refer to section *Connecting/Disconnecting Device* on page 84.

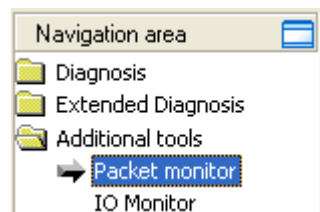


Figure 53: Navigation Area - Additional Tools

## 8.2 Packet Monitor

The **Packet Monitor** serves for test and diagnosis purposes. Packets, i.e. messages can be sent once or cyclically to the connected device controlled by the user and packets received can be displayed.

The minimum packet size amounts 40 Byte for the packet header. The sending and reception data are added.

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

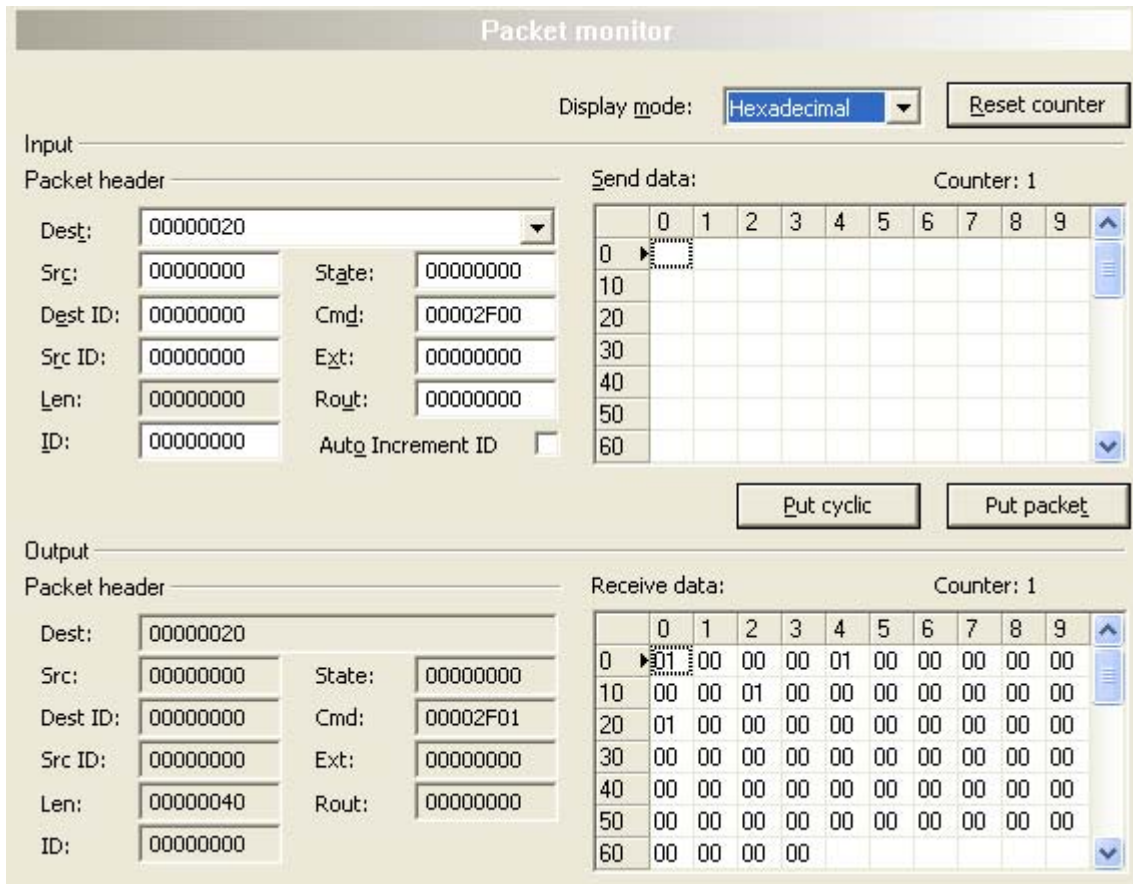


Figure 54: Packet Monitor

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

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

## 8.2.1 Packet Header

The packet header of the send or the reception packets contains the elements described in the following table.

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

*Table 45: Descriptions Packet Header*

## 8.2.2 Sending Packet

The screenshot shows a software interface for configuring packet sending. It is divided into two main sections: 'Packet header' and 'Send data'.

**Packet header section:**

- Dest: 00000001
- Src: 00000000
- Dest ID: 00000000
- Src ID: 00000000
- Len: 00000012
- ID: 00000001
- State: 00000000
- Cmd: 00002F00
- Ext: 00000000
- Royn: 00000000
- Auto Increment ID:

**Send data section:**

Send data: Counter: 0

	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			
20										
30										
40										
50										
60										

Buttons: Put cyclic, Put packet

Figure 55: Packet Header and Send Data

### Packet Header

The **Packet Header** shows the elements of the packet header of the sending packet, which is transmitted from the application (configuration software) to the mailbox of the device.



For further information refer to section *Packet Header* on page 80.

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

- Enter the values for the elements of the packet header.

### Send Data

- Under **Send Data** enter the send data of the packet, which shall be transmitted from the application (configuration software) to the mailbox of the device.

### Sending Packets once or cyclic

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

## 8.2.3 Receiving Packet

Output

Packet header

Dest: 00000001

Src: 00000000 State: C0000001

Dest ID: 00000000 Cmd: 00002F01

Src ID: 00000000 Ext: 00000000

Len: 00000012 Rout: 00000000

ID: 0000003E

Receive data: Counter: 0

	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 56: Packet Header and Receive Data

### Packet Header

The **Packet Header** shows the elements of the packet header of the receiving packet, which is transmitted back from the device to the application (configuration software).



For further information refer to section *Packet Header* on page 80.

### Receive Data

The **Receive Data** area shows the receive data of the packet, which is transmitted back from the device to the application (configuration software).

## 8.3 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.

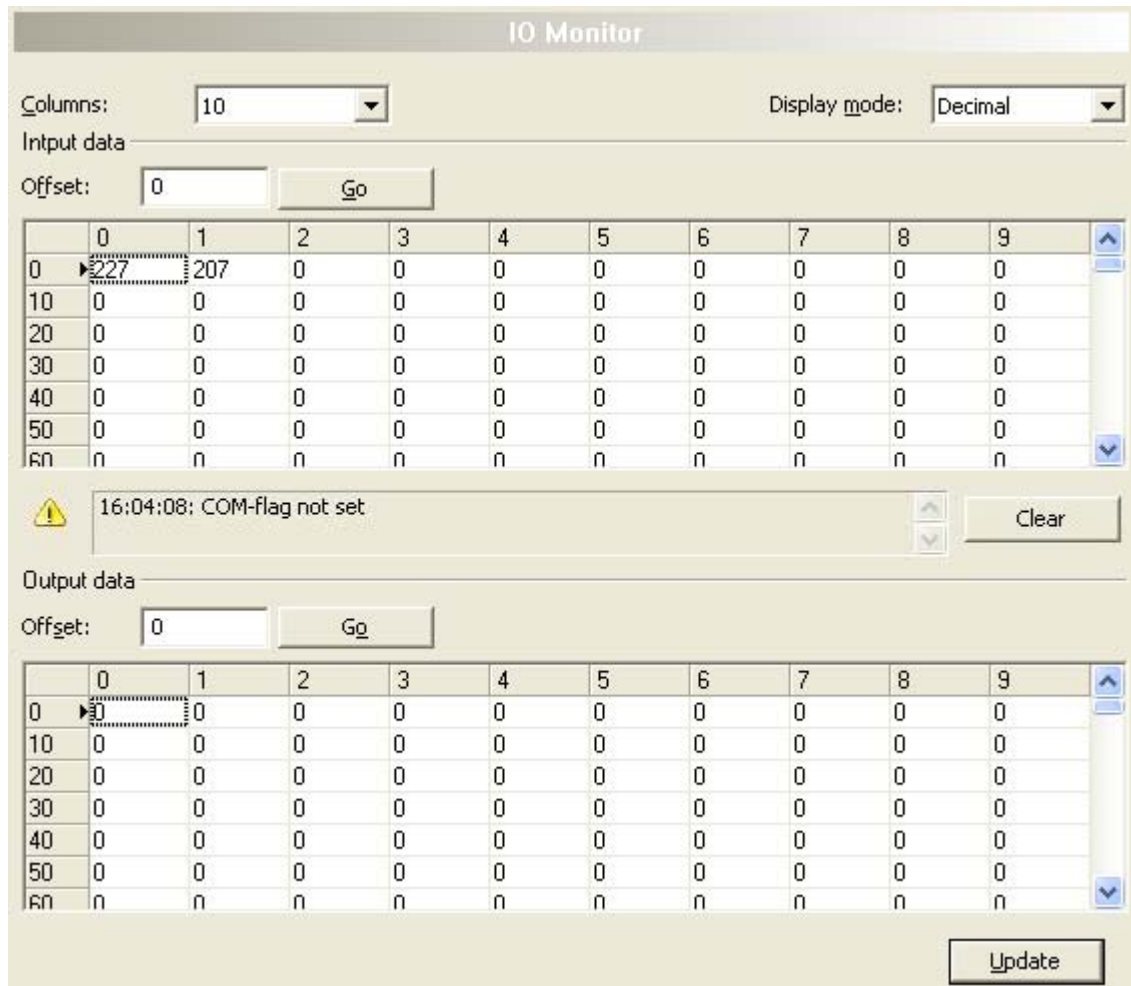


Figure 57: IO Monitor

**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.

**Clear** clears displayed error messages.

- 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.

## 9 Online Functions

### 9.1 Connecting/Disconnecting Device



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

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#### Connecting Device

The following steps are needed to establish a connection from the PROFINET IO Device DTM to a PROFINET IO Device device:

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

1. Select one or several driver/s.
2. Configure the driver, if necessary.

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

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

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.



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An overview of the descriptions for these steps you find in the section *Overview Settings* on page 25.

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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 PROFINET IO Device device icon.
  10. Select the **Connect** command from the context menu.
- The PROFINET IO Device device now is connected to the PROFINET IO Device DTM via an online connection. In the network view the device description at the device icon of the Device is displayed with a green colored background.

### **Disconnecting Device**

To disconnect an online connection from the PROFINET IO Device device to a PROFINET IO Device 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 PROFINET IO Device device icon.
  3. Select the **Disconnect** command from the context menu.
- Now the PROFINET IO Device device is disconnected from the DTM.

## **9.2 Download Configuration**



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**Note:** To download configuration parameter data to the PROFINET IO Device device an online connection from the PROFINET IO Device DTM to the PROFINET IO Device device is required.

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Further information can be found in the *Connecting/Disconnecting Device* section on page 84.

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To transfer the configuration with the corresponding parameter data to the PROFINET IO Device device you download the data to it using the frame application of the configuration software.

## 9.3 Start /Stop Communication

You can manually start or stop the communication between a PROFINET IO Controller device and PROFINET IO Device devices.

- **Start Communication** is enabled, if the communication has been stopped before or if the configuration requires this (Controlled release of communication).
- **Stop Communication** is enabled, if the communication has been started.

To start or to stop the communication, proceed as follows:

### Start Communication

1. Connecting Device:



---

**Note:** To start the communication of the device at the bus manually, an online connection from the PROFINET IO Device DTM to the PROFINET IO Device device is required.

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Further information can be found in the *Connecting/Disconnecting Device* section on page 84.

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2. Select **Additional Functions > Service > Start Communication** from the context menu (right mouse click).

⇒ The device communicates at the bus.

### Stop Communication

1. Select **Additional Functions > Service > Stop Communication** from the context menu (right mouse click).

⇒ The communication of the device at the bus is stopped.

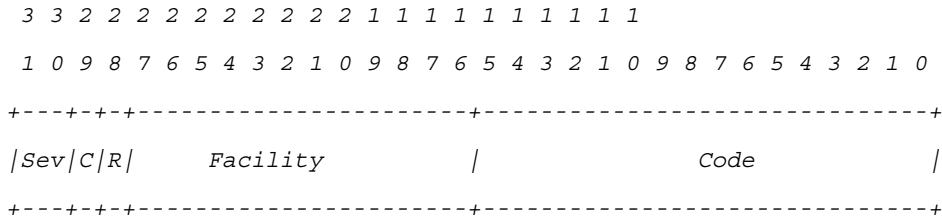
# 10 Error Codes

## 10.1 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:



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.

## 10.2 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
PROFINET IO Device / Status /Error Codes	<i>Status /Error Codes PROFINET IO Device:</i> 0x00000000 to 0xC030007CL
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 46: Overview Error Codes and Ranges



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

## 10.3 General Hardware Error Codes

### 10.3.1 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 47: RCX General Task Errors

### 10.3.2 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_SENDBUFFER	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 48: RCX Common Status & Errors Codes

### 10.3.3 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 49: RCX Status & Error Codes

#### 10.3.3.1 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 50: RCX Status & Error Codes Slave State

## 10.4 Status /Error Codes PROFINET IO Device

### 10.4.1 Packet Status/Error

Packet Status/Error Codes		
Fehlercode (Definition)	Wert	Beschreibung
TLR_S_OK	0x00000000	Status ok.
TLR_E_PNS_IF_COMMAND_INVALID	0xC0300001	Invalid command.
TLR_E_PNS_IF_OS_INIT_FAILED	0xC0300002	Initialization of PNS Operating system adaptation failed.
TLR_E_PNS_IF_SET_INIT_IP_FAILED	0xC0300003	Initialization of PNS IP address failed.
TLR_E_PNS_IF_PNIO_SETUP_FAILED	0xC0300004	PROFINET IO-Device Setup failed.
TLR_E_PNS_IF_DEVICE_INFO_ALREADY_SET	0xC0300005	Device information set already.
TLR_E_PNS_IF_SET_DEVICE_INFO_FAILED	0xC0300006	Setting of device information failed.
TLR_E_PNS_IF_NO_DEVICE_SETUP	0xC0300007	PROFINET IO-Device stack is not initialized. Send PNS_IF_SET_DEVICEINFO_CNF before PNS_IF_OPEN_DEVICE_CNF
TLR_E_PNS_IF_DEVICE_OPEN_FAILED	0xC0300008	Opening a device instance failed.
TLR_E_PNS_IF_NO_DEVICE_INSTANCE	0xC0300009	No device instance open.
TLR_E_PNS_IF_SET_APPL_READY_FAILED	0xC0300010	Command PNS_IF_SET_APPL_READY_CNF failed.
TLR_E_PNS_IF_PLUG_MODULE_FAILED	0xC030000A	Plugging a module failed.
TLR_E_PNS_IF_PLUG_SUBMODULE_FAILED	0xC030000B	Plugging a submodule failed.
TLR_E_PNS_IF_DEVICE_START_FAILED	0xC030000C	Start of PROFINET IO-Device failed.
TLR_E_PNS_IF_EDD_ENABLE_FAILED	0xC030000D	Start of network communication failed.
TLR_E_PNS_IF_ALLOC_MNGMNT_BUFFER_FAILED	0xC030000E	Allocation of a device instance management buffer failed.
TLR_E_PNS_IF_DEVICE_HANDLE_NULL	0xC030000F	Given device handle is NULL.
TLR_E_PNS_IF_SET_DEVSTATE_FAILED	0xC0300011	Command PNS_IF_SET_DEVSTATE_CNF failed.
TLR_E_PNS_IF_PULL_SUBMODULE_FAILED	0xC0300012	Pulling the submodule failed.
TLR_E_PNS_IF_PULL_MODULE_FAILED	0xC0300013	Pulling the module failed.
TLR_E_PNS_IF_WRONG_DEST_ID	0xC0300014	Destination ID in command invalid.
TLR_E_PNS_IF_DEVICE_HANDLE_INVALID	0xC0300015	Device Handle in command invalid.
TLR_E_PNS_IF_CALLBACK_TIMEOUT	0xC0300016	PNS stack callback timeout.
TLR_E_PNS_IF_PACKET_POOL_EMPTY	0xC0300017	PNS_IF packet pool empty.
TLR_E_PNS_IF_ADD_API_FAILED	0xC0300018	Command PNS_IF_ADD_API_CNF failed.
TLR_E_PNS_IF_SET_SUB_STATE_FAILED	0xC0300019	Setting submodule state failed.
TLR_E_PNS_NO_NW_DBM_ERROR	0xC030001A	No network configuration DBM-file.
TLR_E_PNS_IF_NW_SETUP_TABLE_ERROR	0xC030001B	Error during reading the "SETUP" table of the network configuration DBM-file
TLR_E_PNS_IF_CFG_SETUP_TABLE_ERROR	0xC030001C	Error during reading the "SETUP" table of the PNIO configuration DBM-file .
TLR_E_PNS_NO_CFG_DBM_ERROR	0xC030001D	No PNIO configuration DBM-file.
TLR_E_PNS_IF_DBM_DATASET_ERROR	0xC030001E	Error getting dataset pointer.
TLR_E_PNS_IF_SETUP_EX_TABLE_ERROR	0xC030001F	Error getting dataset pointer(SETUP_EX table).
TLR_E_PNS_IF_AP_TABLE_ERROR	0xC0300020	Error getting either dataset pointer or number of datasets(AP table).
TLR_E_PNS_IF_MODULES_TABLE_ERROR	0xC0300021	Error getting either dataset pointer or number of datasets(MODULE table).

Packet Status/Error Codes		
Fehlercode (Definition)	Wert	Beschreibung
TLR_E_PNS_IF_SUBMODULES_TABLE_ERROR	0xC0300022	Error getting either dataset pointer or number of datasets(SUBMODULE table).
TLR_E_PNS_IF_PNIO_SETUP_ERROR	0xC0300023	Error setting up PNIO configuration(PNIO_setup)
TLR_E_PNS_MODULES_GET_REC	0xC0300024	Error getting record of "MODULES" linked table.
TLR_E_PNS_SUBMODULES_GET_REC	0xC0300025	Error getting record of "SUBMODULES" linked table.
TLR_E_PNS_IF_PNS_MODULE_ID_TABLE_ERROR	0xC0300026	Error accessing "PNS_MODULE_ID" table or table record error.
TLR_E_PNS_IF_SIGNALS_TABLE_ERROR	0xC0300027	Error accessing "SIGNALS" table or table record error.
TLR_E_PNS_IF_MODULES_IO_TABLE_ERROR	0xC0300028	Error accessing "MODULES_IO" table or table record error.
TLR_E_PNS_IF_CHANNEL_SETTING_TABLE_ERROR	0xC0300029	Error accessing "CHANNEL_SETTING" table or table record error.
TLR_E_PNS_IF_WRITE_DBM	0xC030002A	Error writing DBM-file.
TLR_E_PNS_IF_DPM_CONFIG	0xC030002B	No basic DPM configuration.
TLR_E_PNS_IF_WATCHDOG	0xC030002C	Application did not trigger the watchdog.
TLR_E_PNS_IF_SIGNALS_SUBMODULES	0xC030002D	Data length in "SIGNALS" table does not correspond to that in "SUBMODULES" table.
TLR_E_PNS_IF_READ_DPM_SUBAREA	0xC030002E	Failed to read DPM subarea.
TLR_E_PNS_IF_MOD_0_NOT_SUB_1	0xC030002F	Module 0 may only have submodule 1. And the data length should be 0.
TLR_E_PNS_IF_SIGNALS_LENGTH	0xC0300030	Length of I/O signals is bigger then the size of DPM subarea.
TLR_E_PNS_IF_SUB_TRANSFER_DIRECTION	0xC0300031	A submodule can not have input and outputs at the same time.
TLR_E_PNS_IF_FORMAT_PNVOLUME	0xC0300032	Error while formatting PNVOLUME.
TLR_E_PNS_IF_MOUNT_PNVOLUME	0xC0300033	Error while mounting PNVOLUME.
TLR_E_PNS_IF_INIT_REMOTE	0xC0300034	Error during initialization of the remote resources of the stack.
TLR_E_PNS_IF_WARMSTART_CONFIG_REDUNDANT	0xC0300035	Warmstart parameters are redundant. The stack was configured with DBM or packets.
TLR_E_PNS_IF_WARMSTART_PARAMETER	0xC0300036	Incorrect warmstart parameter(s).
TLR_E_PNS_IF_SET_APPL_STATE_READY	0xC0300037	PNIO_set_appl_state_ready() returns error.
TLR_E_PNS_IF_SET_DEV_STATE	0xC0300038	PNIO_set_dev_state() returns error.
TLR_E_PNS_IF_PROCESS_ALARM_SEND	0xC0300039	PNIO_process_alarm_send() returns error.
TLR_E_PNS_IF_RET_OF_SUB_ALARM_SEND	0xC030003A	PNIO_ret_of_sub_alarm_send () returns error.
TLR_E_PNS_IF_DIAG_ALARM_SEND	0xC030003B	PNIO_diag_alarm_send() returns error.
TLR_E_PNS_IF_PNIO_DIAG_GENERIC_ADD	0xC030003C	PNIO_diag_generic_add() returns error.
TLR_E_PNS_IF_DIAG_GENERIC_REMOVE	0xC030003D	PNIO_diag_generic_remove() returns error.
TLR_E_PNS_IF_DIAG_CHANNEL_ADD	0xC030003E	PNIO_diag_channel_add() returns error.
TLR_E_PNS_IF_DIAG_CHANNEL_REMOVE	0xC030003F	PNIO_diag_channel_remove() returns error.
TLR_E_PNS_IF_EXT_DIAG_CHANNEL_ADD	0xC0300040	PNIO_ext_diag_channel_add() returns error.

Packet Status/Error Codes		
Fehlercode (Definition)	Wert	Beschreibung
TLR_E_PNS_IF_EXT_DIAG_CHANNEL_REMOVE	0xC0300041	PNIO_ext_diag_channel_remove() returns error.
TLR_E_PNS_IF_STATION_NAME_LEN	0xC0300042	Parameter station name length is incorrect.
TLR_E_PNS_IF_STATION_NAME	0xC0300043	Parameter station name is incorrect.
TLR_E_PNS_IF_STATION_TYPE_LEN	0xC0300044	Parameter station type length is incorrect.
TLR_E_PNS_IF_DEVICE_TYPE	0xC0300045	Parameter device type is incorrect.
TLR_E_PNS_IF_ORDER_ID	0xC0300046	Parameter order id is incorrect.
TLR_E_PNS_IF_INPUT_STATUS	0xC0300047	Parameter input data status bytes length is incorrect.
TLR_E_PNS_IF_OUTPUT_STATUS	0xC0300048	Parameter output data status bytes length is incorrect.
TLR_E_PNS_IF_WATCHDOG_PARAMETER	0xC0300049	Parameter watchdog timing is incorrect ( must be < 0xFFFF ).
TLR_E_PNS_IF_OUT_UPDATE	0xC030004A	Parameter output data update timing is incorrect.
TLR_E_PNS_IF_IN_UPDATE	0xC030004B	Parameter input data update timing is incorrect.
TLR_E_PNS_IF_IN_SIZE	0xC030004C	Parameter input memory area size is incorrect.
TLR_E_PNS_IF_OUT_SIZE	0xC030004D	Parameter output memory area size is incorrect.
TLR_E_PNS_IF_GLOBAL_RESOURCES	0xC030004E	Unable to allocate memory for global access to local resources.
PNS_IF_DYNAMIC_CFG_PCK	0xC030004F	Unable to allocate memory for dynamic configuration packet.
TLR_E_PNS_IF_DEVICE_STOP	0xC0300050	Unable to stop device.
TLR_E_PNS_IF_DEVICE_ID	0xC0300051	Parameter device id is incorrect.
TLR_E_PNS_IF_VENDOR_ID	0xC0300052	Parameter vendor id is incorrect.
TLR_E_PNS_IF_SYS_START	0xC0300053	Parameter system start is incorrect.
TLR_E_PNS_IF_DYN_CFG_IO_LENGTH	0xC0300054	The length of IO data expected by the controller exceeds the limit specified in warmstart parameters.
TLR_E_PNS_IF_DYN_CFG_MOD_NUM	0xC0300055	The count of the IO modules expected by the controller exceeds the supported by the stack count.
TLR_E_PNS_IF_ACCESS_LOCAL_RSC	0xC0300056	No global access to local resources.
TLR_E_PNS_IF_PULL_PLUG	0xC0300057	Plugging and pulling modules during creation of communication is not allowed.
TLR_E_PNS_IF_AR_NUM	0xC0300058	Maximum number of ARs is 1.
TLR_E_PNS_IF_API_NUM	0xC0300059	Only API = 0 is supported.
TLR_E_PNS_IF_ALREADY_OPEN	0xC030005A	Device is already opened.
TLR_E_PNS_IF_API_ADDED	0xC030005B	Application is already added.
TLR_E_PNS_IF_CONFIG_MODE	0xC030005C	Configuration modes should not be mixed ( DBM-files,application,warmstart message ).
TLR_E_PNS_IF_UNK_LED_MODE	0xC030005D	Unknown LED mode.
TLR_E_PNS_IF_PHYSICAL_LINK	0xC030005E	Physical link is less then 100 Mbit.
TLR_E_PNS_IF_MAX_SLOT_SUBSLOT	0xC030005F	Number of slots or subslots too big.
TLR_E_PNS_IF_AR_REASON_MEM	0xC0300060	Out of memory. Communication error.
TLR_E_PNS_IF_AR_REASON_FRAME	0xC0300061	Add provider or consumer failed. Communication error.
TLR_E_PNS_IF_AR_REASON_MISS	0xC0300062	Miss (consumer). Communication error.

Packet Status/Error Codes		
Fehlercode (Definition)	Wert	Beschreibung
TLR_E_PNS_IF_AR_REASON_TIMER	0xC0300063	CMI timeout. Communication error.
TLR_E_PNS_IF_AR_REASON_ALARM	0xC0300064	Alarm-open failed. Communication error.
TLR_E_PNS_IF_AR_REASON_ALSND	0xC0300065	Alarm-send.cnf(-). Communication error.
TLR_E_PNS_IF_AR_REASON_ALACK	0xC0300066	Alarm-ack-send.cnf(-). Communication error.
TLR_E_PNS_IF_AR_REASON_ALLEN	0xC0300067	Alarm-data too long. Communication error.
TLR_E_PNS_IF_AR_REASON_ASRT	0xC0300068	Alarm.ind(err). Communication error.
TLR_E_PNS_IF_AR_REASON_RPC	0xC0300069	RPC-client call.cnf(-). Communication error.
TLR_E_PNS_IF_AR_REASON_ABORT	0xC030006A	AR-abort.req. Communication error.
TLR_E_PNS_IF_AR_REASON_RERUN	0xC030006B	Re-run aborts existing. Communication error.
TLR_E_PNS_IF_AR_REASON_REL	0xC030006C	Got release indication. Communication error.
TLR_E_PNS_IF_AR_REASON_PAS	0xC030006D	Device passivated. Communication error.
TLR_E_PNS_IF_AR_REASON_RMV	0xC030006E	Device/ar removed. Communication error.
TLR_E_PNS_IF_AR_REASON_PROT	0xC030006F	Protocol violation. Communication error.
TLR_E_PNS_IF_AR_REASON_NARE	0xC0300070	NARE error. Communication error.
TLR_E_PNS_IF_AR_REASON_BIND	0xC0300071	RPC-Bind error. Communication error.
TLR_E_PNS_IF_AR_REASON_CONNECT	0xC0300072	RPC-Connect error. Communication error.
TLR_E_PNS_IF_AR_REASON_READ	0xC0300073	RPC-Read error. Communication error.
TLR_E_PNS_IF_AR_REASON_WRITE	0xC0300074	RPC-Write error. Communication error.
TLR_E_PNS_IF_AR_REASON_CONTROL	0xC0300075	RPC-Control error. Communication error.
TLR_E_PNS_IF_AR_REASON_UNKNOWN	0xC0300076	Unknown. Communication error.
TLR_E_PNS_IF_INIT_WATCHDOG	0xC0300077	Watchdog initialization failed.
TLR_E_PNS_IF_NO_PHYSICAL_LINK	0xC0300078	The device is not connected to a network.
TLR_DPM_CYCLIC_IO_RW	0xC0300079	Failed to copy from/ to DPM the cyclic data.
TLR_E_PNS_IF_SUBMODULE	0xC030007A	Wrong submodule number.
TLR_E_PNS_IF_MODULE	0xC030007B	Wrong module number.
TLR_E_PNS_IF_NO_AR	0xC030007C	The AR was closed or the AR handle is not valid.
PNS_IF_WRITE_REC_RES_TIMEOUT	0xC030007D	The timeout while waiting a response to write_record_indication has been reached
PNS_IF_UNREGISTERED_SENDER	0xC030007E	The sender of the request is not registered with request PNS_IF_REGISTER_AP_CNF
TLR_E_PNS_IF_RECORD_HANDLE_INVALID	0xC030007F	Unknown record handle
TLR_E_PNS_IF_REGISTER_AP	0xC0300080	Error during processing request PNS_IF_REGISTER_AP_CNF
TLR_E_PNS_IF_UNREGISTER_AP	0xC0300081	Error during processing request PNS_IF_UNREGISTER_AP_CNF
TLR_E_PNS_IF_CONFIG_DIFFER	0xC0300082	The Must-configuration differs from Is-configuration.
TLR_E_PNS_IF_NO_COMMUNICATION	0xC0300083	No communication processing.
TLR_E_PNS_IF_BAD_PARAMETER	0xC0300084	At least one parameter in a packet was wrong or/and did not meet the requirements.

Packet Status/Error Codes		
Fehlercode (Definition)	Wert	Beschreibung
TLR_E_PNS_IF_AREA_OVERFLOW	0xC0300085	Input or Output data requires more space than available.
TLR_E_PNS_IF_WRM_PCK_SAVE	0xC0300086	Saving Warmstart Configuration for later use was not successful.
TLR_E_PNS_IF_AR_REASON_PULLPLUG	0xC0300087	AR error. Pull and Plug are forbidden after check.rsp and before in-data.ind.
TLR_E_PNS_IF_AR_REASON_AP_RMV	0xC0300088	AR error. AP has been removed.
TLR_E_PNS_IF_AR_REASON_LNK_DWN	0xC0300089	AR error. Link "down".
TLR_E_PNS_IF_AR_REASON_MMAC	0xC030008A	AR error. Could not register multicast-MAC.
TLR_E_PNS_IF_AR_REASON_SYNC	0xC030008B	AR error. Not synchronised (Cannot start companion-AR).
TLR_E_PNS_IF_AR_REASON_TOPO	0xC030008C	AR error. Wrong topology (Cannot start companion-AR).
TLR_E_PNS_IF_AR_REASON_DCP_NAME	0xC030008D	AR error. DCP. Station Name changed.
TLR_E_PNS_IF_AR_REASON_DCP_RESET	0xC030008E	AR error. DCP. Reset to factory-settings.
TLR_E_PNS_IF_AR_REASON_PRM	0xC030008F	AR error. Cannot start companion-AR because a 0x8ipp submodule in the first AR /has appl-ready-pending/ is locked/ is wrong or pulled/ .
TLR_E_PNS_IF_PACKET_MNGMNT	0xC0300090	Packet management error.
TLR_E_PNS_IF_WRONG_API_NUM	0xC0300091	Wrong API number.
TLR_E_PNS_IF_WRONG_MODULE_ID	0xC0300092	A wrong module ID has been specified.

Table 51: Status /Error Codes PROFINET IO Device

## 10.5 ODM Error Codes

### 10.5.1 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 52: ODM Error Codes - General ODM Error Codes

## 10.5.2 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 53: ODM Error Codes - General ODM Driver Error Codes

### 10.5.3 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

<b>cifX Driver Specific ODM Error Codes</b>		
<b>Error Code (Definition)</b>	<b>Value</b>	<b>Description</b>
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

<b>cifX Driver Specific ODM Error Codes</b>		
<b>Error Code (Definition)</b>	<b>Value</b>	<b>Description</b>
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 54: cifX Driver Specific ODM Error Codes

## 10.6 Error Codes cifX Device Driver and netX Driver

### 10.6.1 Generic Error Codes

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

Table 55: Generic Error Codes

## 10.6.2 Generic Driver Error Codes

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

Table 56: Generic Driver Error Codes

### 10.6.3 Generic Device Error Codes

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

Table 57: Generic Device Error Codes

## 10.7 Error Codes netX Driver

### 10.7.1 CIFX API Transport Error Codes

Error Code (Definition)	Value	Description
CIFX_TRANSPORT_SEND_TIMEOUT	0x800D0001L	Time out while sending data
CIFX_TRANSPORT_RECV_TIMEOUT	0x800D0002L	Time out waiting for incoming data
CIFX_TRANSPORT_CONNECT	0x800D0003L	Unable to communicate to the device no answer
CIFX_TRANSPORT_ABORTED	0x800D0004L	Transfer has been aborted due to keep alive timeout or interface detachment
CIFX_CONNECTOR_FUNCTIONS_READ_ERROR	0x800D0010L	Error reading the connector functions from the DLL
CIFX_CONNECTOR_IDENTIFIER_TOO_LONG	0x800D0011L	Connector delivers an identifier longer than 6 characters
CIFX_CONNECTOR_IDENTIFIER_EMPTY	0x800D0012L	Connector delivers an empty identifier
CIFX_CONNECTOR_DUPLICATE_IDENTIFIER	0x800D0013L	Connector identifier already used

Table 58: CIFX API Transport Error Codes

### 10.7.2 CIFX API Transport Header State Error Codes

Error Code (Definition)	Value	Description
CIFX_TRANSPORT_ERROR_UNKNOWN	0x800E0001L	Unknown error code in transport header
CIFX_TRANSPORT_CHECKSUM_ERROR	0x800E0002L	CRC16 checksum failed
CIFX_TRANSPORT_LENGTH_INCOMPLETE	0x800E0003L	Transaction with incomplete length detected
CIFX_TRANSPORT_DATA_TYPE_UNKNOWN	0x800E0004L	Device does not support requested data type
CIFX_TRANSPORT_DEVICE_UNKNOWN	0x800E0005L	Device not available unknown
CIFX_TRANSPORT_CHANNEL_UNKNOWN	0x800E0006L	Channel not available unknown
CIFX_TRANSPORT_SEQUENCE	0x800E0007L	Sequence error detected
CIFX_TRANSPORT_BUFFER_OVERFLOW	0x800E0008L	Buffer overflow detected
CIFX_TRANSPORT_RESOURCE	0x800E0009L	Device signals out of resources
CIFX_TRANSPORT_KEEPA_LIVE	0x800E000AL	Device connection monitoring error (Keep alive)
CIFX_TRANSPORT_DATA_TOO_SHORT	0x800E000BL	Received transaction data too short

Table 59: CIFX API Transport Header State Error Codes

## 10.8 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

<b>ODM Error Codes DBM V4</b>		
<b>Error Code (Definition)</b>	<b>Value</b>	<b>Description</b>
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

<b>ODM Error Codes DBM V4</b>		
<b>Error Code (Definition)</b>	<b>Value</b>	<b>Description</b>
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

<b>ODM Error Codes DBM V4</b>		
<b>Error Code (Definition)</b>	<b>Value</b>	<b>Description</b>
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 60: ODM Error Codes DBM V4

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## 12 Glossary

### DCP

Discovery and Configuration Protocol.

### DNS

Domain Name Service.

### DTM

Device Type Manager.

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

### 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.

### GSDML

GSDML = General Station Description Markup Language.

### Module

Hardware or logical component of a physical device.

### Name of Station

The **Name of Station** is defined by the DNS compatible device name in the GSDML file. It can be modified according to the DNS name specification. If the PROFINET IO device does use the name baptism the **Name of Station** is set by the PROFINET IO device.

### PROFINET IO-Controller

A PROFINET control unit responsible for the defined run-up of an I/O subsystem and the cyclic or acyclic data exchange.

### PROFINET IO Device

A PROFINET field device that cyclically receives output data from its IO-Controller and responds with its input data.

### Slot

Address of a structural unit within a PROFINET IO device.

### Subslot

Subslot address of a structural unit within a slot.

### Submodule

Hardware or logical component of a module.

## 13 Appendix

### 13.1 User Rights

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

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



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

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

#### 13.1.1 Settings

	Observer	Operator	Maintenance	Planning Engineer	Administrator
<i>Driver</i>	D	D	X	X	X
<i>Selecting the Driver</i>	-	-	X	X	X
<i>Configuring the 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 61: Settings (D = Displaying, X = Editing, Configuring)

#### 13.1.2 Configuration

	Observer	Operator	Maintenance	Planning Engineer	Administrator
<i>General</i>	D	D	X	X	X
<i>Modules</i>	D	D	X	X	X
<i>Address Table</i>	D	D	X	X	X
<i>Device Settings</i>	D	D	X	X	X

Table 62: Configuration (D = Displaying, X = Editing, Configuring)

## 13.2 References

- [1] Device Type Manager (DTM) Style Guide, Version 1.0 ; FDT-JIG - Order No. <0001-0008-000>
- [2] GSDML Specification for PROFINET IO, Version 2.10 August 2006, Order No: 2.352, PROFIBUS Nutzerorganisation e.V., Karlsruhe
- [3] PROFINET IO-Device; Protocol API (Hilscher), Revision 14

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