



Operating Instruction Manual
DTM for Hilscher PROFIBUS DP Slave Device
Configuration of Hilscher Slave Devices

Hilscher Gesellschaft für Systemautomation mbH

www.hilscher.com

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1 Introduction

1.1 About this Manual

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

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

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



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

1.1.1 Descriptions of the Dialog Panes

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

| Section | Subsection | Manual Page |
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| <i>Settings</i> | <i>Overview Settings</i> | 27 |
| | <i>Driver</i> | 28 |
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Table 1: Descriptions Dialog Panes

1.1.2 Online Help

The PROFIBUS DP Slave DTM contains an integrated online help facility.

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

1.1.3 List of Revisions

| Index | Date | Version | Component | Chapter | Revision |
|-------|----------|-----------------------|----------------------------------|-------------------------|---|
| 1 | 05.10.09 | 1.0.0.4740 2.0.4.0 | PBSlaveDTM.dll PBSlaveGUI.ocx | All | created |
| 2 | 12.08.10 | 1.1.x.x 1.1.x.x | PBSlaveDTM.dll PBSlaveGUI.ocx | 3.2.4, 3.3, 10 | Section <i>netX Driver</i> added, Section <i>Device Assignment</i> actualized, Chapter <i>Error Codes</i> actualized and completed. |
| 3 | 12.10.10 | 1.1.x.x 1.1.x.x | PBSlaveDTM.dll PBSlaveGUI.ocx | 8.2 | Section <i>Packet Monitor</i> actualized. |
| 4 | 19.10.10 | 1.1.x.x 1.1.x.x | PBSlaveDTM.dll PBSlaveGUI.ocx | 8.2 | Section <i>Packet Monitor</i> actualized. |
| 5 | 02.02.11 | - | - | - | Revised (Orthography) |
| 6 | 14.06.11 | 1.3.x.x 1.3.x.x | PBSlaveDTM.dll PBSlaveGUI.ocx | 1.3.1, 4.6, 4.9.4 | Section <i>Requirements</i> actualized. Section <i>Extensions Fail-Safe Behaviour</i> actualized, Section <i>Process Image Storage Format</i> added. |

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>

1.2 Legal Notes

1.2.1 Copyright

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1.3 About PROFIBUS DP Slave DTM

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

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

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

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

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

Slave DTM at the Master busline

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

1.3.1 Requirements

System Requirements

- PC mit 1 GHz Prozessor oder höher
- Windows® 2000, Windows® XP, Windows® Vista (32-Bit), Windows® 7 (32-Bit) oder Windows® 7 (64-Bit)
- Internet Explorer 5.5 oder höher
- RAM: mind. 512 MByte, empfohlen 1024 MByte
- Auflösung: mind. 1024 x 768 Bildpunkte
- Tastatur und Maus



Hinweis: Wird eine Projektdatei gespeichert und wieder geöffnet oder auf einem anderen PC verwendet, müssen die Systemvoraussetzungen übereinstimmen. Insbesondere ist es notwendig, dass die DTMs ebenfalls auf dem verwendeten PC installiert sind.

Requirements PROFIBUS DP Slave DTM

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

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



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

1.3 Dialog Structure of the PROFIBUS DP Slave DTM

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

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

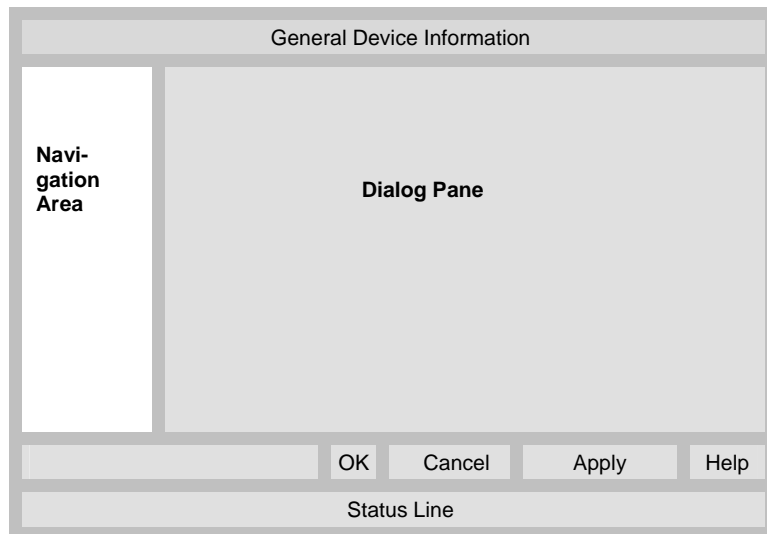


Figure 1: Dialog Structure of the PROFIBUS DP Slave DTM

1.3.1 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 2: General Device Information

1.3.2 Navigation Area

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

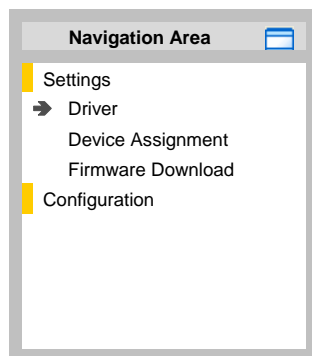




Figure 2: Navigation Area

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

Hide / display Navigation

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

1.3.3 Dialog Panes

| Settings | |
|----------------------------------|---|
| Driver | On the pane Driver you can select a driver from the driver list. For further information, refer to section <i>Driver</i> on page 28. |
| Device Assignment | On the pane Device Assignment you select the device and assign the device to the driver. For further information, refer to section <i>Device Assignment</i> on page 38. |
| Firmware Download | The dialog on the pane Firmware Download is used to load a new firmware into the device. A detailed description can be found in section <i>Firmware Download</i> on page 45. |
| Configuration | |
| General | At the pane General the actual Station Address of the Slave device is set or displayed. Further information to this you find in section <i>General</i> on page 51. |
| Modules | At the Modules pane modules can be selected or assigned and configured. Further information to this you find in section <i>Modules</i> on page 53. |
| Parameters | The Parameter pane allows it to change the parameter settings of the modules. A detailed description you find in section <i>Parameter</i> on page 56. |
| Groups | <i>This configuration parameter has meaning only for „Slave DTM at the Master bus line“.</i> At the pane Groups the single Slaves devices can be assigned to up to eight different, after a Master was arranged. Further information to this you find in section <i>Groups</i> on page 58. |
| Extensions | <i>This configuration parameter has meaning only for „Slave DTM at the Master bus line“.</i> The Extensions pane contains adjustment possibilities for the extension parameters: Auto Clear, Fail Safe Behavior, Configuration Data Convention, Error on Cyclic Data Exchange and Diagnosis update delay. Further information to this you find in section <i>Extensions</i> on page 59. |
| DPV1 | <i>This configuration parameter has meaning only for „Slave DTM at the Master bus line“.</i> The DPV1 pane gives access to the DPV1 functions for an acyclic data exchange and to the functions read write and alarm handling. Information to this you find in section <i>DPV1</i> on page 61. |
| Address Table | The Address Table shows a list of all dpram addresses used in the process data image. For further information, refer to section <i>Address Table</i> on page 63. |
| Device Settings | At the Device Settings pane device related settings can be made. For further information, refer to section <i>Device Settings</i> on page 65. |
| Device Description | |
| Device | The Device Info pane contains the manufacturer information about the device. Further information to this you find in section <i>Device</i> on page 71. |
| GSD | By use of the GSD-Viewer a GSD file can be searched through. Further information to this you find in section <i>GSD</i> on page 71. |
| Diagnosis | |
| Diagnosis/ Extended Diagnosis | At the Diagnosis panes diagnosis information can be read. For further information, refer to section <i>Overview Diagnosis</i> on page 72. |
| Tools | |
| Packet Monitor/ IO Monitor | Under Tools 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 88 or section <i>IO Monitor</i> on page 97. |

Table 3: Overview Dialog Panes



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



For further information, refer to section *Connecting/Disconnecting Device* on page 98.

1.3.4 OK, Cancel, Apply and Help

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

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

Table 4: OK, Cancel, Apply and Help

1.3.5 Table Lines

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

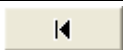


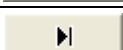


| | Meaning |
|---|---|
|  | To select the first line of a table use First Line . |
|  | To select the previous line of a table use Previous Line . |
|  | To select the next line of a table use Next Line . |
|  | To select the last line of a table use Last Line . |
|  | Create a new Line inserts new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

Table 5: Selecting, inserting, deleting Table Line

1.3.6 Status Bar

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

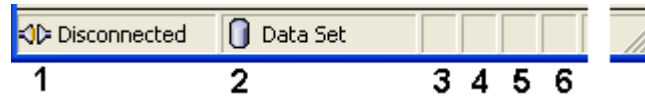


Figure 3: Status Bar – Status Fields 1 to 6

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

Table 6: Status Bar Icons [1]

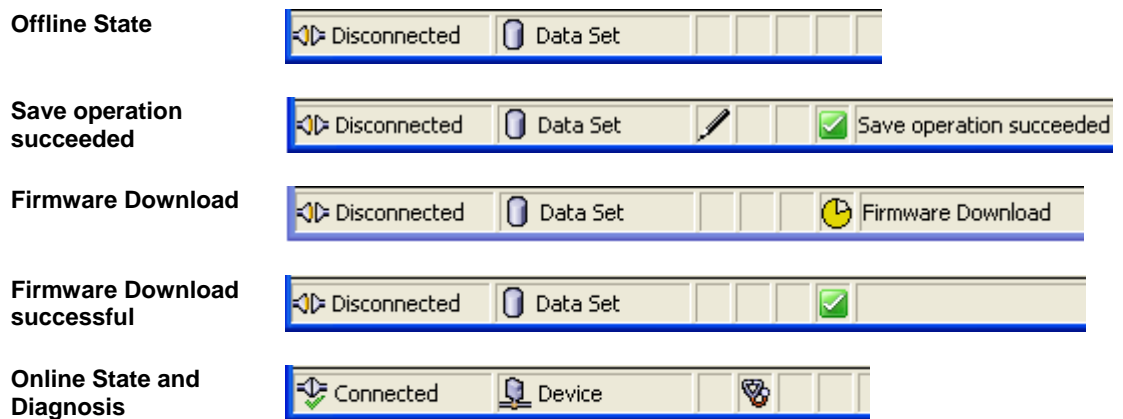


Figure 4: Status Bar Display Examples

2 Getting started and Instructions Step by Step


2.1 Overview Configuration Steps

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

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

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


2.1.1 Slave DTM at the Root-Line (Stand-Alone Slave)

| # | Step | Short Description | For detailed information see section | Page |
|---|--|--|---|-----------|
| 1 | Load device catalog | Depending of the FDT Container: For netDevice: - select Network > Device Catalog , - select Reload Catalog . | (See User Manual netDevice and netProject) | - |
| 2 | Create new project / Open existing project | Depending of the frame application. For the configuration software: - select File > New or File > Open . | (See User Manual of the Frame Application) | - |
| 3 | Insert Slave into configuration | Depending of the FDT Container: For netDevice: - in the Device Catalog click to the Slave, - and insert the Slave via drag and drop to the root line in the network view. | (See User Manual netDevice and netProject) | - |
| 4 | Open the Slave DTM configuration dialog | Open the Slave DTM configuration dialog. - Double click to the device icon of the Slave. - The Slave DTM configuration dialog is displayed. | - | - |
| 5 | Select driver | In the Slave DTM configuration dialog: - select Settings > Driver , - select a driver, - therefore check the appropriate checkbox. - if necessary, configure the driver settings. | <i>Setting Driver and Selecting Device</i> <i>Driver</i> | 23 28 |
| 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 Settings > Driver > netX Driver > TCP Connection . - Via  add an IP range. - Under IP Address enter the IP Address of the device or an IP range. - Click Save . | <i>netX Driver</i> | 31 |
| 7 | Assign Slave device (with or without firmware) | Assign the device to this driver. In the Slave DTM configuration dialog: - select Settings > Device Assignment , - select a Slave device (with or without firmware), - therefore check the appropriate checkbox, - select Apply . | <i>Selecting the Device (with or without firmware)</i> | 42 |
| 8 | Select and download firmware | If not yet a firmware was loaded to the device. In the Slave DTM configuration dialog: - select Settings > Firmware Download , - select Browse.. , - select a firmware file, - select Open , - select Download and Yes . | <i>Firmware Download</i> | 45 |

| # | Step | Short Description | For detailed information see section | Page |
|----|--|--|--|--------------------------------|
| 8 | Assign Slave device once more (with firmware) | In the Slave DTM configuration dialog: - select Settings > Device Assignment , - select Scan , | <i>Selecting the Device once more (with Firmware)</i> | 43 |
| 9 | Assign Slave device once more (with firmware) (continued) | - select the Slave device (with loaded firmware), - therefore check the appropriate checkbox, - select Apply , - close the Slave DTM configuration dialog via OK . | <i>Selecting the Device once more (with Firmware)</i> | 43 |
| 10 | Configure Slave device | Configure the Slave device. - Double click to the device icon of the Slave. - The Slave DTM configuration dialog is displayed. In the Slave DTM configuration dialog: - select Configuration >General , - set the Watchdog control and Interval, - select Configuration >Modules , - configure the Modules of the Slave, - select Configuration >Parameter , - set the module Parameters, - select Configuration > Device Settings , - set the Device Settings. - close the Slave DTM configuration dialog via OK . | <i>Configuring Slave Parameter</i> <i>General</i> <i>Modules</i> <i>Parameter</i> <i>Device Settings</i> | 24 51 53 56 65 |
| 11 | Save project | Depending of the frame application. For the configuration software: - select File > Save . | <i>(See User Manual of the Frame Application)</i> | - |
| 12 | Connect Slave device | Depending of the FDT Container. For netDevice: - right click to the device icon of the Slave, - select Connect . | <i>Connecting/Disconnecting Device</i> | 98 |
| 13 | Download Configuration | Depending of the FDT Container. For netDevice: - right click to the device icon of the Slave, - select Download . | <i>Download Configuration</i> | 100 |
| 14 | Diagnosis | Depending of the FDT Container. For netDevice: - right click to the device icon of the Slave, - select Diagnosis . - The Slave DTM diagnosis dialog is displayed. - Continue with further device diagnosis, - close the Slave DTM diagnosis dialog via OK . | <i>Overview Diagnosis</i> | 72 |
| 15 | IO Monitor | Depending of the FDT Container: For netDevice: - right click to the device icon of the Slave, - select Diagnosis , - select Tools > IO Monitor . - Check the input or output data, - close the IO Monitor dialog via OK . | <i>IO Monitor</i> | 97 |
| 16 | Disconnect | Depending of the FDT Container. For netDevice: - right click to the device icon of the Slave, - select Disconnect . | <i>Connecting/Disconnecting Device</i> | 98 |

Table 7: Getting started - Configuration Steps (Slave DTM at the Root-Line (Stand-Alone Slave))

2.1.2 Slave DTM at the Master busline

| # | Step | Short Description | For detailed information see section | Page |
|---|--|--|--|----------|
| 1 | Load device catalog | Depending of the FDT Container: For netDevice: - select Network > Device Catalog , - select Reload Catalog . | <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 File > New or File > Open . | <i>(See User Manual of the Frame Application)</i> | - |
| 3 | Insert Master or Slave into configuration | For netDevice: - in the Device Catalog click to the Master, - and insert the device via drag and drop to the root line in the network view, - in the Device Catalog click to the Slave, - and insert the device via drag and drop to the Master bus line in the network view. | <i>(See User Manual netDevice and netProject)</i> | - |
| 4 | Open the Slave DTM configuration dialog | Open the Slave DTM configuration dialog. - Double click to the device icon of the Slave. - The Slave DTM configuration dialog is displayed. | - | - |
| 5 | Select driver | In the Slave DTM configuration dialog: - select Settings > Driver , - select a driver, - therefore check the appropriate checkbox. | <i>Setting Driver and Selecting Device Driver</i> | 23 28 |
| 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 Settings > Driver > netX Driver > TCP Connection . - Via  add an IP range. - Under IP Address enter the IP Address of the device or an IP range. - Click Save . | <i>netX Driver</i> | 31 |
| 7 | Assign Slave device (with or without firmware) | Assign the device to this driver. In the Slave DTM configuration dialog: - select Settings > Device Assignment , - select a Slave device (with or without firmware), - therefore check the appropriate checkbox, - select Apply . | <i>Selecting the Device (with or without firmware)</i> | 42 |
| 8 | Select and download firmware | If not yet a firmware was loaded to the device. In the Slave DTM configuration dialog: - select Settings > Firmware Download , - select Browse... , - select a firmware file, - select Open , - select Download and Yes . | <i>Firmware Download</i> | 45 |
| 9 | Assign Slave device once more (with firmware) | In the Slave DTM configuration dialog: - select Settings > Device Assignment , - select Scan , - select the Slave device (with loaded firmware), - therefore check the appropriate checkbox, - select Apply , - close the Slave DTM configuration dialog via OK . | <i>Selecting the Device once more (with Firmware)</i> | 43 |

| # | Step | Short Description | For detailed information see section | Page |
|----|------------------------------------|---|--|--------------------------|
| 9 | Configure Slave device | Configure the Slave device. - Double click to the device icon of the Slave. - The Slave DTM configuration dialog is displayed. In the Slave DTM configuration dialog: - select Configuration >General , - set the Watchdog control and Interval, - select Configuration >Modules , - configure the Modules of the Slave, - select Configuration >Parameter , - set the module parameters, | <i>Configuring Slave Parameter</i> <i>General</i> <i>Modules</i> <i>Parameter</i> | 24 51 53 56 |
| 10 | Configure Slave device (continued) | - Select Configuration > Group , - assign the Slave to a group, - select Configuration > Extensions , - set the Extension parameters, - select Configuration > DPV1 , - configure the DPV1 functions, - select Configuration > Device Settings , - set the Device Settings. - close the Slave DTM configuration dialog via OK . For the option Device-Settings > Configuration Data Flag > Configuration from Master the Slave configuration parameters are sent to the Master DTM which transfers them to the Master device. | <i>Groups</i> <i>Extensions</i> <i>DPV1</i> <i>Device Settings</i> | 58 59 61 65 |
| 11 | Configure Master device | Configure the Master device via the PROFIBUS DP Master DTM netX. | <i>(See User Manual DTM for PROFIBUS DP Master devices)</i> | - |
| 12 | Save project | Depending of the frame application. For the configuration software: - select File > Save . | <i>(See User Manual of the Frame Application)</i> | - |
| 13 | Connect Slave device | Depending of the FDT Container. For netDevice: - right click to the device icon of the Slave, - select Connect . | <i>Connecting/Disconnecting Device</i> | 98 |
| 14 | Download Configuration | Depending of the FDT Container. For netDevice: - right click to the device icon of the Slave, - select Download . | <i>Download Configuration</i> | 100 |
| 15 | Diagnosis | Depending of the FDT Container. For netDevice: - right click to the device icon of the Slave, - select Diagnosis . - The Slave DTM diagnosis dialog is displayed. - Continue with further device diagnosis, - close the Slave DTM diagnosis dialog via OK . | <i>Overview Diagnosis</i> | 72 |
| 16 | IO Monitor | Depending of the FDT Container: For netDevice: - right click to the device icon of the Slave, - select Diagnosis , - select Tools > IO Monitor . - Check the input or output data, - close the IO Monitor dialog via OK . | <i>IO Monitor</i> | 97 |
| 17 | Disconnect | Depending of the FDT Container. For netDevice: - right click to the device icon of the Slave, - select Disconnect . | <i>Connecting/Disconnecting Device</i> | 98 |

Table 8: Getting started - Configuration Steps (Slave DTM at the Master busline)

2.2 Setting Driver and Selecting Device

The following steps are needed to establish a connection from the PROFIBUS DP Slave DTM to the PROFIBUS DP Slave 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 27.

8. In the DTM interface dialog select the **OK** button, to apply the selection and to close the DTM interface dialog.
 9. Put a right-click on the PROFIBUS DP Slave device icon.
 10. Select the **Connect** command from the context menu.
- The PROFIBUS DP Slave device now is connected to the PROFIBUS DP Slave DTM via an online connection. In the network view the device description at the device icon of the Slave is displayed with a green colored background.

2.3 Configuring Slave Parameters

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

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

2.3.1 Slave DTM at the Root-Line (Stand-Alone Slave)

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

1. Set the **Station Address** of the Slave device:
 - Select **Configuration > General** in the navigation area.
2. Configure the **Modules** of the Slave:
 - Select **Configuration > Modules** in the navigation area.
3. Set the module **Parameters**:
 - Select **Configuration > Parameter** in the navigation area.
4. Set the Device Settings:
 - Select **Configuration > Device Settings** in the navigation area.

Under **Start of Bus Communication**:

- Select **Automatically by device** or **Controlled by application** option.

Under **Application Monitoring**:

- Set **Watchdog time**.

Under **Configuration Data Flag**:

- Select **Fixed Configuration** or **Configuration from Master** option.



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

- Configure Slave Modules and
- Set Module Parameters

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

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



Note: In order to transfer the configuration to the PROFIBUS DP Slave device, download the data of the configuration parameters in the PROFIBUS DP Slave device. See section *Download Configuration* on page 100.

2.3.2 Slave DTM at the Master busline

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

1. Set the Watchdog control and Interval:
 - Select **Configuration > General** in the navigation area.
2. Configure the **Modules** of the Slave:
 - Select **Configuration > Modules** in the navigation area.
3. Set the module **Parameters**:
 - Select **Configuration > Parameter** in the navigation area.
4. Assign the Slave to a group:
 - Select **Configuration > Group** in the navigation area.
5. Set the **Extension** parameters:
 - Select **Configuration > Extensions** in the navigation area.
6. Configure the **DPV1** functions:
 - Select **Configuration > DPV1** in the navigation area.
7. Set the Device Settings:
 - Select **Configuration > Device Settings** in the navigation area.

Under **Start of Bus Communication**:

- Select **Automatically by device** or **Controlled by application** option.

Under **Application Monitoring**:

- Set **Watchdog time**.

Under **Configuration Data Flag**:

- Select **Fixed Configuration** or **Configuration from Master** option.

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



Note: In order to transfer the configuration to the PROFIBUS DP Slave device, download the data of the configuration parameters in the PROFIBUS DP Slave device. See section *Download Configuration* on page 100.

2.3.3 Further Information



For more information refer to section *General* on page 51, to section *Modules* on page 53, to section *Parameter* on page 56, to section *Groups* on page 58, to section *Extensions* on page 59 and to section *DPV1* on page 61 and to section *Device Settings* on page 65 of this document.

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 |
|-------------------|---|------|
| Driver | | 28 |
| | Selecting the Driver | 28 |
| | Configuring the Driver | 29 |
| | cifX Device Driver | 30 |
| | netX Driver | 31 |
| Device Assignment | | 38 |
| | Scanning for Devices | 39 |
| | Scanning for all Devices or for suitable only | 41 |
| | Selecting the Device (with or without firmware) | 42 |
| | Selecting the Device once more (with Firmware) | 43 |
| Firmware Download | | 45 |

Table 9: Descriptions Settings

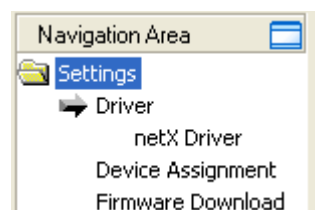


Figure 5: Navigation Area - Settings



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



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

3.2 Driver

The **Driver** dialog pane displays the driver/s to be used for a PROFIBUS DP Slave 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 6: Driver Selection List

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

Table 10: 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 7: 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 8: 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.

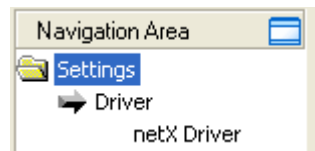


Figure 9: Navigation Area – Settings

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

The **cifX Device Driver** is used, if the PROFIBUS DP Slave DTM is installed in the same PC as the PROFIBUS DP Slave device.



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

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:

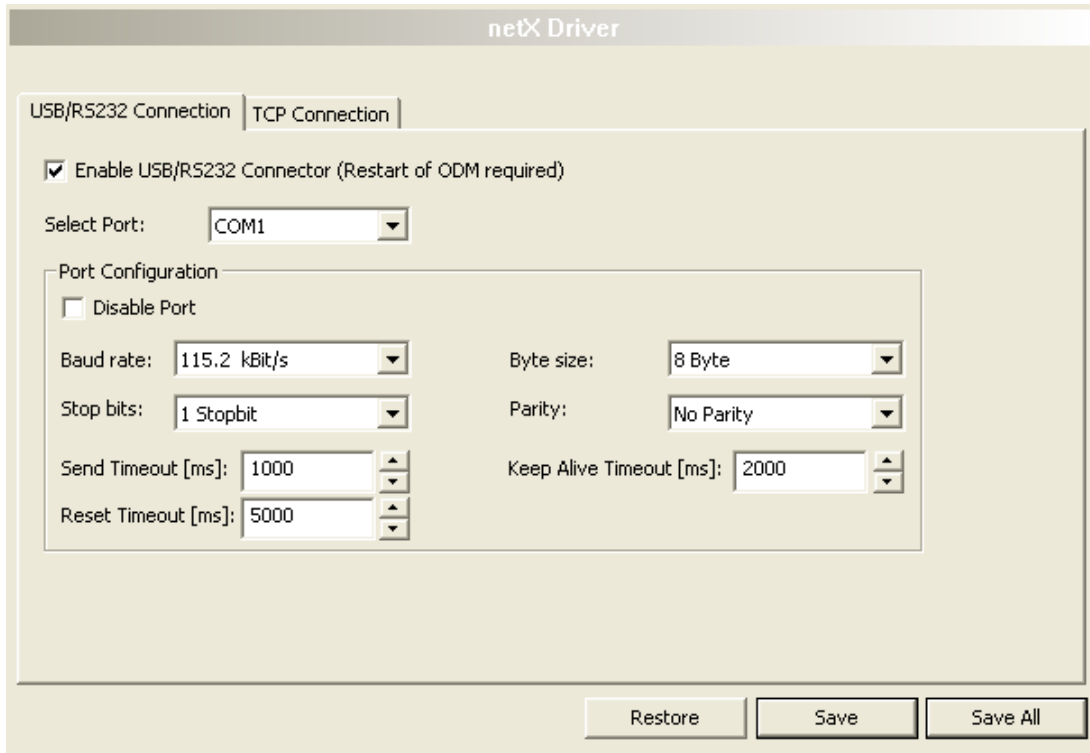



Figure 10: netX Driver > USB/RS232 Connection

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

| Parameter | Meaning | Range of Value / Value |
|--------------------------------|--|---|
| Stop bits | Number of stop bits sent after the transfer of the send data for synchronization purposes to the receiver. | Stop bit: 1, 1.5, 2; Default (RS232): 1 |
| Send Timeout [ms] | Maximum time before the transfer of the transmission data is canceled, when the send process fails, for example, because of the transfer buffer is full. | 100 ... 60.000 [ms]; Default (RS232 and USB): 1000 ms |
| Reset Timeout [ms] | Maximum time for a device reset, including the re-initialization of the physical interface used for the communication. | 100 ... 60.000 [ms]; Default (RS232 and USB): 5000 ms |
| Byte size | Number of bits per byte by byte specification | 7 Bit, 8 Bit; Default (RS232): 8 Bit |
| Parity | In the error detection in data transmission using parity bits, "parity" describes the number of bits occupied with 1 in the transmitted information word. No Parity: no parity bit Odd Parity: The parity is "odd ", if the number of bits occupied with 1 in the transmitted information word 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 |
| Keep Alive Timeout [ms] | The "Keep Alive" mechanism is used to monitor whether the connection to the device is active. Connection errors are detected using a periodic heartbeat mechanism. The heartbeat mechanism is initiated after the set time has elapsed, if the communication has failed. | 100 ... 60.000 [ms]; Default (RS232 and USB): 2000 ms |
| Restore | Resets all settings in the configuration dialog to the default values. | |
| Save | Saving all settings made in the configuration dialog netX Driver > Save USB/RS232 Connection , i. e. only for the selected connection type. | |
| Save All | Saving all settings made in the configuration dialog netX Driver , i. e. for all connection types. | |

Table 11: Parameters netX Driver > 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**.

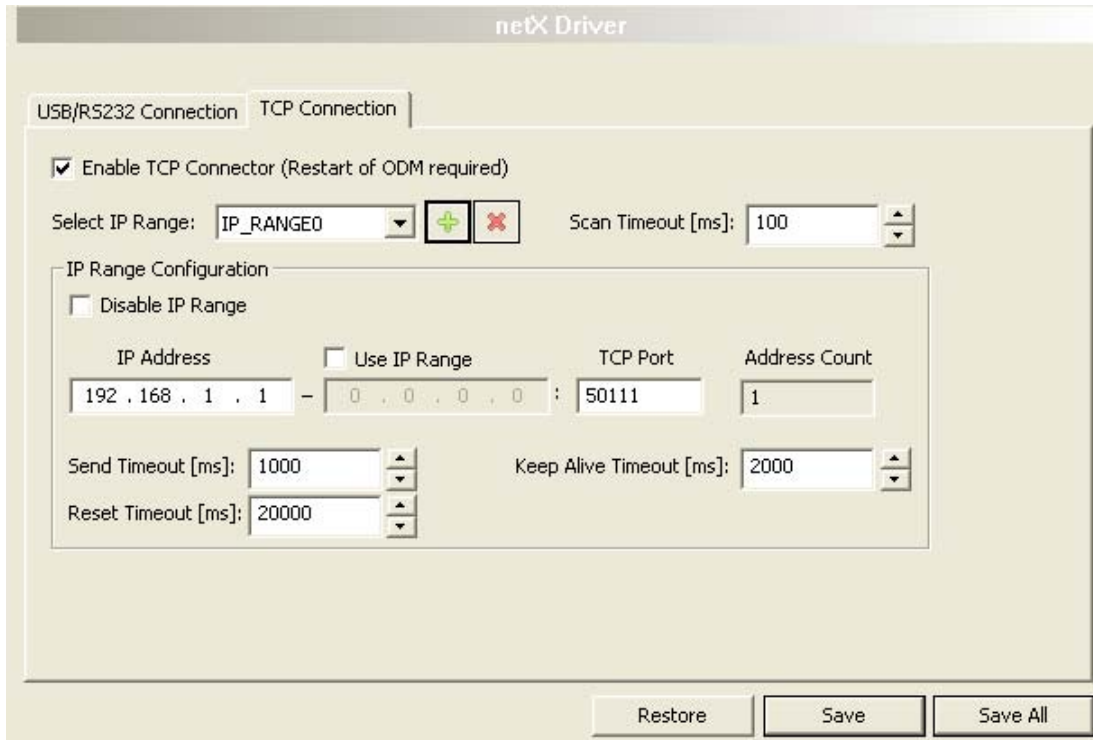





Figure 11: netX Driver > TCP Connection

| Parameter | Meaning | Range of Value / Value |
|---|--|--|
| Enable TCP Connector (Restart of ODM required) | <p>checked: The netX Driver can communicate via the TCP/IP interface.</p> <p>unchecked: The netX Driver can <u>not</u> communicate via the TCP/IP interface.</p> <p>If the check mark for Enable TCP Connector is set or removed, then the ODM server must be restarted¹, to make the new setting valid.</p> <p>_____</p> <p>¹ Restart the ODM server via the ODMV3 Tray Application:</p> <p>- In the foot line click to  using the right mouse key.</p> <p>- In the context menu select Service > Start.</p> | checked, unchecked; Default: unchecked |
| Select IP Range | <p>Via Select IP Range already created IP ranges can be selected.</p> <p>Via  an additional IP range can be added.</p> <p>Via  an IP range can be deleted.</p> | |
| Scan Timeout [ms] | 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 |
|--------------------------------|--|--|
| IP Range Configuration | | |
| Disable IP Range | checked: No connection. unchecked: The netX Driver tries to establish a connection using the configured TCP/IP interface. | checked, unchecked (Default) |
| IP Address (left) | Enter the IP address of the device, (if Use IP Range is not checked). Enter the start address of the IP scanning range, (if Use IP Range is checked). | valid IP address; Default: 192.168.1.1 |
| Use IP Range | checked: An IP address range is used. unchecked: Only one IP address is used. | checked, unchecked; Default: unchecked |
| IP Address (right) | Enter the ending address of the IP scanning range, (only if Use IP Range is checked). | valid IP address; Default: 0.0.0.0 |
| Address Count | Displays the scanning range address count, depending on the selected IP-start or IP-end address. (For this read the note given below.) | recommended: 10 |
| TCP Port | Identifies the endpoint of a logical connection or addresses a specific endpoint on the device or PC. | 0 - 65535; Default Hilscher device: 50111 |
| Send Timeout [ms] | Maximum time before the transfer of the transmission data is canceled, when the send process fails, for example, because of the transfer buffer is full. | 100 ... 60.000 [ms]; Default (TCP/IP): 1000 ms |
| Reset Timeout [ms] | Maximum time for a device reset, including the re-initialization of the physical interface used for the communication. | 100 ... 60.000 [ms]; Default (TCP/IP): 2000 ms |
| Keep Alive Timeout [ms] | The "Keep Alive" mechanism is used to monitor whether the connection to the device is active. Connection errors are detected using a periodic heartbeat mechanism. The heartbeat mechanism is initiated after the set time has elapsed, if the communication has failed. | 100 ... 60.000 [ms]; Default (TCP/IP): 2000 ms |
| Restore | Resets all settings in the configuration dialog to the default values. | |
| Save | Saving all settings made in the configuration dialog netX Driver > Save TCP/IP Connection , i. e. only for the selected connection type. | |
| Save All | Saving all settings made in the configuration dialog netX Driver , i. e. for all connection types. | |

Table 12: Parameters netX Driver > TCP Connection



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

3.3 Device Assignment



Note: In the **Device Assignment** you first must assign the PROFIBUS DP Slave device to the PROFIBUS DP Slave DTM by checking the check box. This is essential to establish an online connection from the PROFIBUS DP Slave DTM to the PROFIBUS DP Slave device later, as described in section *Connecting/Disconnecting Device* on page 98.

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

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

1. first you scan for the device/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.

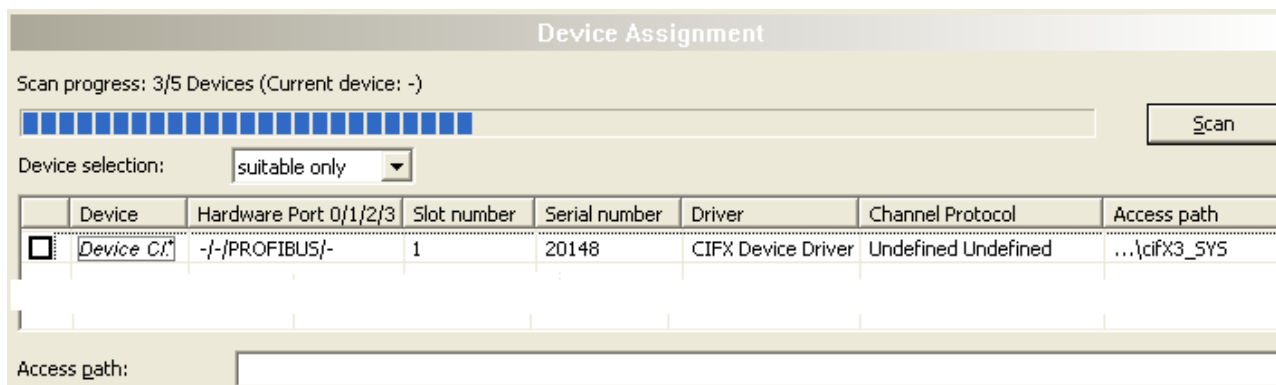


Figure 12: Device Assignment - detected Devices (* The name of the device class is displayed.) – Example for a device without firmware

2. Under **Device Selection** select *suitable only*.
3. Select **Scan**, to start the scanning process.
 ↗ In the table all devices are displayed, which can be connected to the PROFIBUS DP Slave DTM via the preselected driver.



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

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

Table 13: Parameters of the Device Assignment

3.3.1.1 Scanning for all Devices or for suitable only

all

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

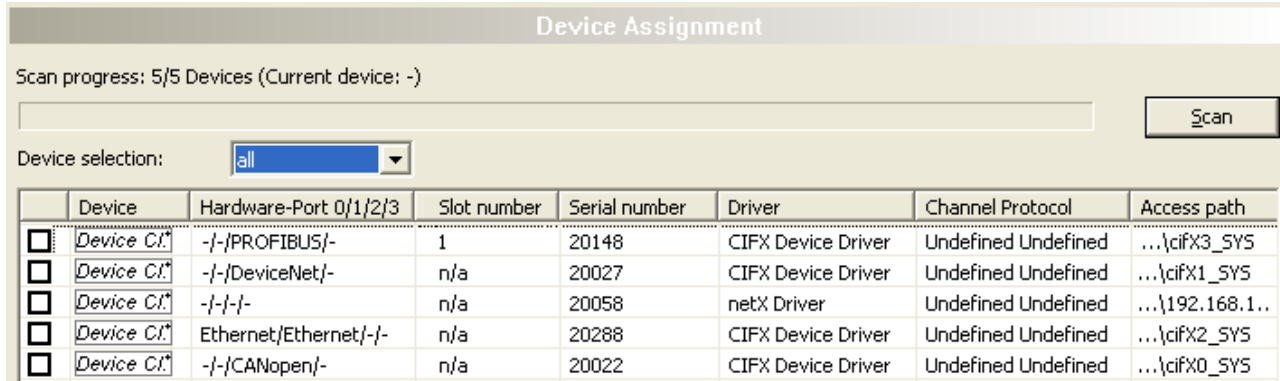


Figure 13: Device Assignment - detected Devices (* The name of the device class is displayed.) Example for Devices without Firmware

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



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

suitable only

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

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



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

3.3.2 Selecting the Device (with or without firmware)



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

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

1. Check the appropriate device.

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

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

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

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

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



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



For further information refer to section *Firmware Download* on page 45 or to section *Selecting the Device once more (with Firmware)* on page 43.

3.3.3 Selecting the Device once more (with Firmware)

To select the PROFIBUS DP Slave device (with firmware) once more, proceed as described hereafter:

all

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

Device Assignment

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

Device selection: all

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

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

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



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

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

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

Or:

suitable only

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

Device Assignment

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

Device selection: suitable only

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

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

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



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

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

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



For further information how to establish an online connection from the PROFIBUS DP Slave DTM to the PROFIBUS DP Slave device, refer to section *Connecting/Disconnecting Device* on page 98.

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 Slave device (with or without firmware).



For further information refer to section *Overview Settings* on page 27.

To load the firmware to the device:

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

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

Figure 17: Firmware Download

| 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 14: Parameter Firmware Download

2. Select **Browse**.

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

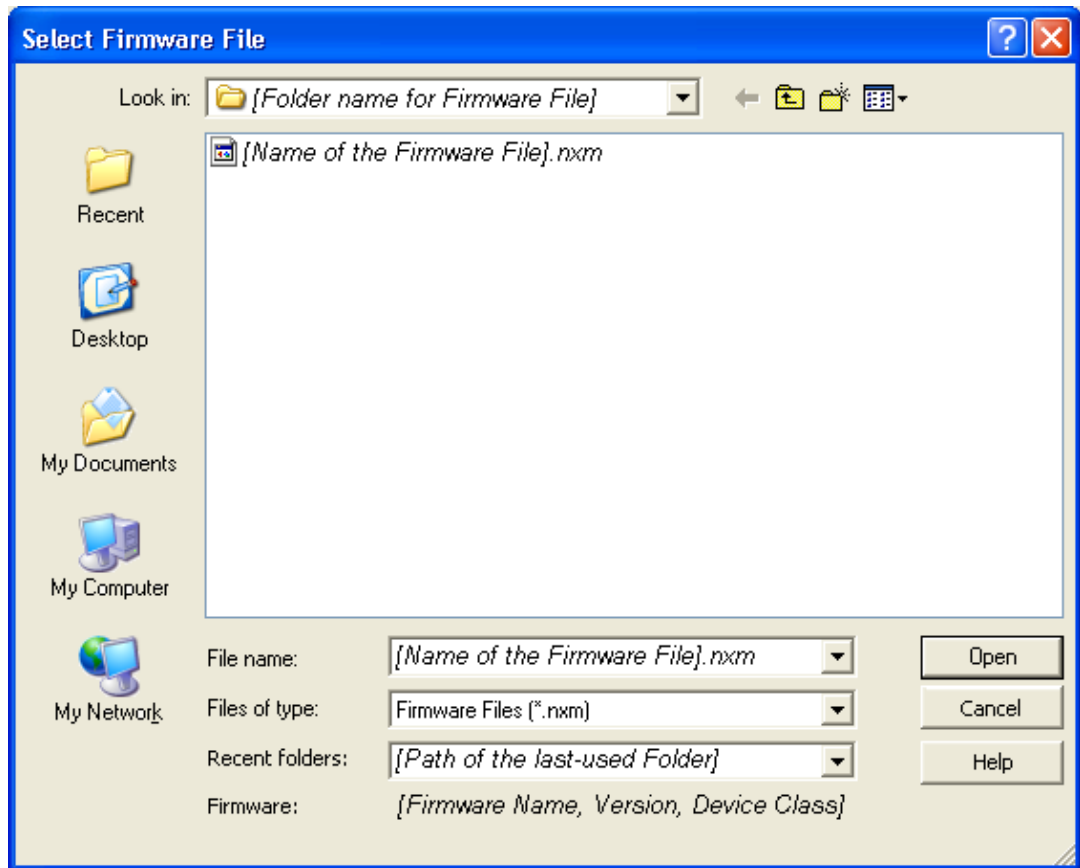


Figure 18: Selection Window Select Firmware File

| Parameter | Meaning | Range of Value / Value |
|---------------|--|---|
| Files of Type | „All Files (*.*)“, if before in the Device Assignment pane under Device selection all has been selected. „ Firmware Files (*.nxm)“ or <i>Firmware Files (*.nxf)</i> , if before in the Device Assignment pane under Device selection suitable only 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 Firmware the name, the version and the build version as well as the device class for the selected firmware is displayed. | Name, Version, Build Version, Device Class for the selected firmware |
| Help | Button, to open the online help of the DTM. | |

Table 15: Parameters Select Firmware File



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



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

| (for list box entry →) | all | suitable only |
|---|---|---|
| In the selection window Select Firmware File : | all files from the selected folder | only firmware files from the selected folder |
| Under Files of Type* : | „All Files (*.*)“ | „Firmware Files (*.nxm)“, „Firmware Files (*.nxf)“ |
| Validation: | 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 PROFIBUS DP Slave 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 PROFIBUS DP Slave 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 19: Request Select Firmware File - Example

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

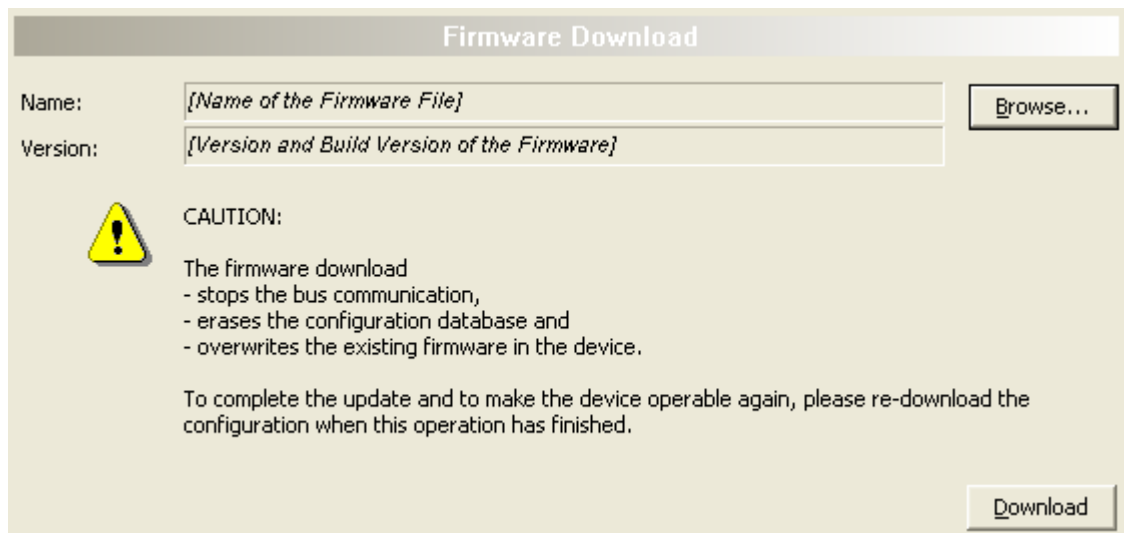


Figure 20: Firmware Download – Download

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

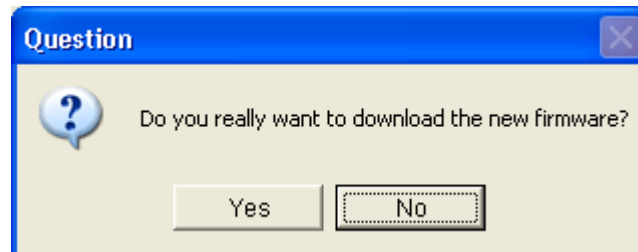


Figure 21: Firmware-Download – Question)

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.

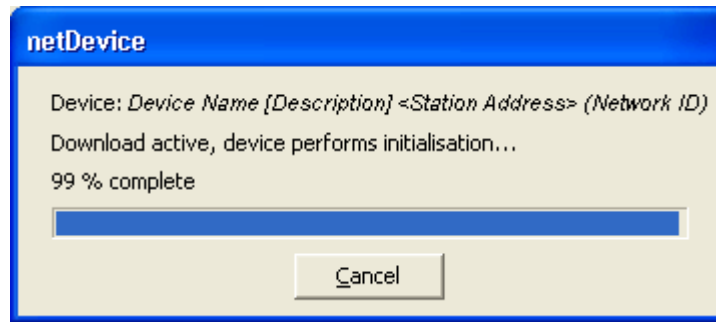


Figure 22: Clock Symbol and Hook Symbol green

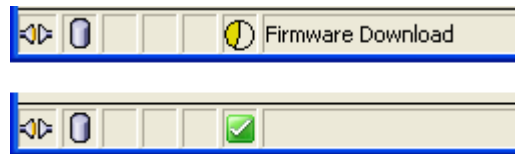


Figure 23: Firmware Download - Progress Bar

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

4 Configuration

4.1 Overview Configuration

Dialog Panes “Configuration”

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

| Section | Subsection | Page |
|------------------------|-------------------------------------|------|
| <i>General</i> | | 51 |
| <i>Modules</i> | | 53 |
| <i>Parameter</i> | | 56 |
| <i>Groups</i> | | 58 |
| <i>Extensions</i> | | 59 |
| <i>DPV1</i> | | 61 |
| <i>Address Table</i> | | 63 |
| <i>Device Settings</i> | <i>Start of Bus Communication</i> | 66 |
| | <i>Application Monitoring</i> | 66 |
| | <i>Configuration Data Flag</i> | 67 |
| | <i>Process Image Storage Format</i> | 69 |

Table 16: Dialog Panes Configuration

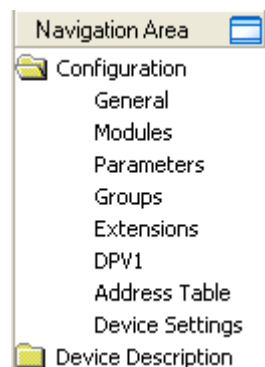


Figure 24: Navigation Area - Configuration



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

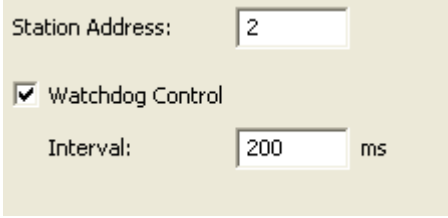


Note: In order to transfer the configuration to the PROFIBUS DP Slave device, download the data of the configuration parameters in the PROFIBUS DP Slave device. See section *Download Configuration* on page 100.

4.2 General

4.2.1 Slave DTM at the Root-Line (Stand-Alone Slave)

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



Station Address:

Watchdog Control

Interval: ms

Figure 25: Configuration > General (Slave DTM at the Root-Line (Stand-Alone Slave))

At the pane **Configuration > General** the **Station Address** of the Slave device must be set.



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

4.2.2 Slave DTM at the Master busline

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

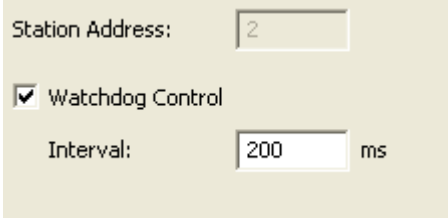


Figure 26: Configuration > General (Slave DTM at the Master busline)

At the pane **Configuration > General** the actual **Station Address** of the Slave device is displayed. The station address is set in the Master configuration.

The setting **Watchdog control** activates or deactivates in the Slave the monitoring of communication errors to the assigned DP Master (only if the Slave is configured via the Master device). If the DP Slave detects an interruption of an already operational communication, defined by the Watchdog time, then the Slave sets the outputs into the secure condition.



Note: When the monitoring by means of the **Watchdog control** has been deactivated, it is possible that the outputs are not set into a safe state by the Slave, even though the communication has been interrupted.

In the field **Interval** the monitoring time of the selected Slave device is set. If the time chosen for this is too short for a low baud rate, then it is possible that the Slave will set its outputs into the safe state. If the time chosen is too long, it is possible that if an interruption occurs, the Slave will take a long time to set its outputs into the safe state.

4.3 Modules



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

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

Modules

Available Modules:

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

Configured Modules:

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

Length of input/output data: 21 bytes (max. 194 bytes)
 Length of input data: 20 bytes (max. 113 bytes)
 Length of output data: 1 bytes (max. 81 bytes)
 Number of modules: 4 (max. 17)

Figure 27: Configuration > Modules

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

- **Module Configuration of a simple Slave**

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

- **Module Configuration of a modular Slave**

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

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

A description of the Module Configuration Identifier you find in section *Identifier Bytes* on page 119.

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

4.3.1 Configuration of the Modules of a Slave

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

1. Insert all the required modules from the selection list **Available Modules** into the list **Configured Modules**. There are several possibilities to select available modules. This is described in section *Select Available Modules* on page 55.

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

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



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

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

4.3.2 Select Available Modules

There are several possibilities to select an available module and insert it in the list **Configured Modules**:

| Possibility | Procedure |
|----------------------------------|--|
| Double Click on available Module | Select a module by clicking on it in the list Available Modules and with a double click on this module it appears as last module in the list Configured Modules . |
| 'Insert' Button | Select a module by clicking on it in the list Available Modules . With a mouse click on the Insert button, this module appears in the list Configured Modules in the actually selected slot. |
| 'Append' Button | Select a module by clicking on it in the list Available Modules . With a mouse click on the Append button, the selected module is appended as <u>last module</u> in the list Configured Modules . |

Table 17: Select Available Modules



Note: A multiselection is possible. That means several modules can be selected in the list **Available Modules** by holding the SHIFT key and inserted in the list **Configured Modules**.

4.3.3 Delete Configured Modules

To delete a configured module from the list **Configured Modules**, there is the following possibility:

| Button | Procedure |
|----------|---|
| 'Delete' | Select a module by clicking on it in the list Configured Modules . With a mouse click on Delete the selected module will be deleted from the list Configured Modules . |

Table 18: Delete Configured Modules

4.4 Parameters



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

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

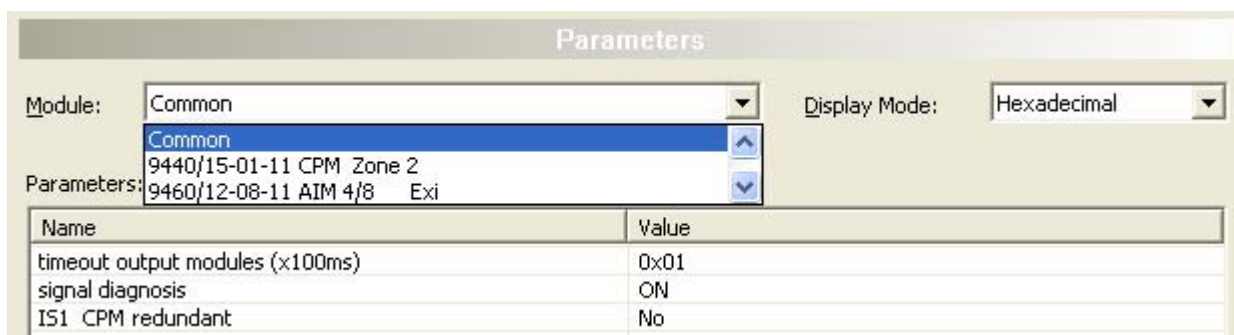


Figure 28: Configuration > Parameter

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

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

- **Module**

In the Module field the module which should be displayed has to be selected. The modules have to be assigned in the Configuration before (see section *Modules* on page 53).

- **Parameter and Value**

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

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

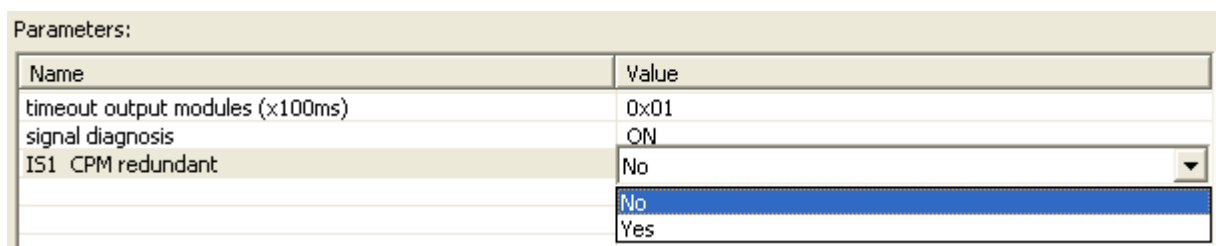


Figure 29: Change Parameter Values

The **Representation** of the parameter values is by default in hexadecimal representation. If in the drop down list **Display Mode** the item 'Decimal' is selected, the representation changes into the decimal representation.

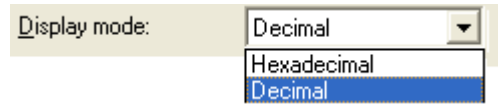


Figure 30: Decimal Representation of the Parameter Values

4.5 Groups



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

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

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

| | |
|---|---|
| <input type="checkbox"/> Group 1 | <input checked="" type="checkbox"/> Group 5 |
| <input checked="" type="checkbox"/> Group 2 | <input type="checkbox"/> Group 6 |
| <input type="checkbox"/> Group 3 | <input type="checkbox"/> Group 7 |
| <input type="checkbox"/> Group 4 | <input checked="" type="checkbox"/> Group 8 |

Figure 31: Configuration > Groups

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

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

4.6 Extensions



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

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

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

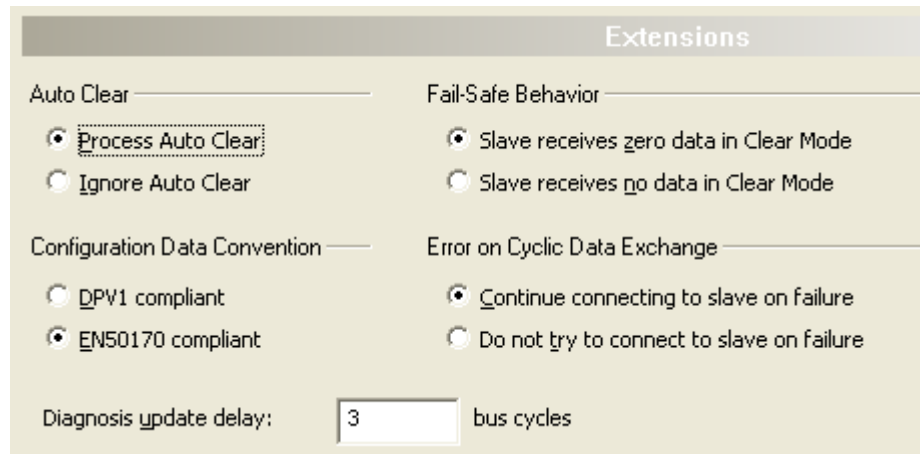


Figure 32: Configuration > Extensions

| Setting | Description |
|-------------------------------|---|
| Auto Clear | <p>The setting Auto Clear activates or respectively deactivated the Auto Clear Function of the actual Slave. This function can only be used, if the <u>global Auto Clear is activated in the Master</u>. The setting of the global Auto Clear is typically configured in the Bus Parameters of the Master.</p> <p>If no data exchange occurs to at least one Slave (Process Auto Clear) or an existing data exchange takes place after the expiration of a monitoring time, then the Master leaves the data exchange and sets the outputs of all assigned DP Slaves into a secure condition.</p> <p>If the setting Ignore Auto Clear is selected, the Master tries to stay in the data exchange with the other Slaves.</p> |
| Fail Safe Behavior | <p>This mode indicates to the Master that the affected Slave is working in a so-called Fail_Safe mode.</p> <p>If the Fail Safe mode is activated, in the CLEAR state the Slave will receive output data of the length zero instead of the zero output data.</p> <p>On the basis of this process, the Slave immediately recognizes that the Master is in the CLEAR condition even if a previous CLEAR command was destroyed on the Bus.</p> |
| Configuration Data Convention | <p>The Configuration Data Convention determines whether the configuration data are interpreted according to EN 50170 or DPV1.</p> |
| Error on Cyclic Data Exchange | <p>If the option Continue if Slave not responding is selected, the Master remains in the state DATA_EXCHANGE and holds the connection to the Slave.</p> <p>When Abort if Slave not responding is chosen, the Master does not remain in the DATA_EXCHANGE condition for the affected Slave if the Slave has been recognized as incorrect, but breaks off the connection to the Slave.</p> |

| Setting | Description |
|------------------------|--|
| Diagnosis update delay | <p>Some Slave devices which are newer require more time for the consistency testing for the processing of the SET_PRM parameter zing telegrams.</p> <p>In this case the standard diagnosis cycle is not sufficient after the parameterizing phase, to detect the disposition of the Slave for the DATA_EXCHANGE.</p> <p>With the diagnosis delay, the number of diagnosis cycles is advanced after the parameterizing phase, which is the maximum that the Master waits for this disposition, before it starts a new parameterizing.</p> <p>The value range is 0..255.</p> |

Table 19: Configuration > Extensions

4.7 DPV1



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

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

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



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

Enable DPV1

Figure 33: Configuration > DPV1 > Enable DPV1

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



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

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

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

Alarms

Figure 34: Configuration > DPV1 > Alarms

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

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

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

Extra Alarm SAP

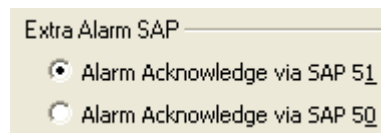


Figure 35: Configuration > DPV1 > Extra Alarm SAP

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

4.8 Address Table

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

To configure the address data:

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

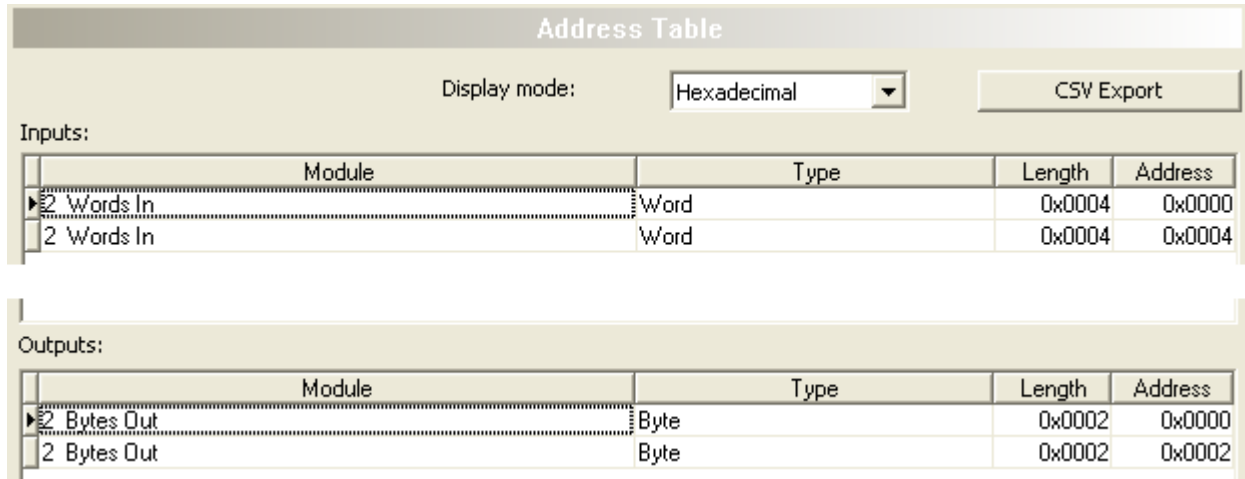


Figure 36: Configuration > Address Table (In the Figure shown here, in the column Device or Name example devices are displayed.)

4.8.1 Description of the Parameters

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

Table 20: Address Table Pane Parameters - Inputs / Outputs

4.8.2 Display Mode, CSV Export

Display Mode

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

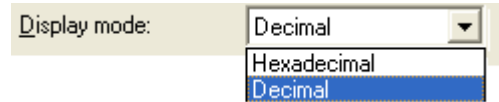


Figure 37: Configuration > Address Table - Display Mode

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.

4.9 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 100.

A screenshot of the 'Device Settings' dialog box. The title bar reads 'Device Settings'. The dialog is divided into several sections: 'Start of bus communication' with radio buttons for 'Automatically by device' (selected) and 'Controlled by application'; 'Process image storage format' with radio buttons for 'Big Endian (MSB first)' (selected) and 'Little Endian (LSB first)'; 'Application monitoring' with a 'Watchdog time' input field set to '1000 ms'; and 'Configuration data flag' with radio buttons for 'Fixed configuration' (selected) and 'Configuration from master'.

Figure 38: Configuration > Device Settings



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

4.9.1 Start of Bus Communication

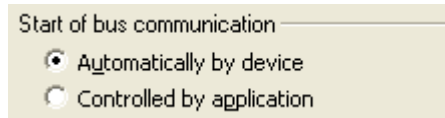


Figure 39: Device Settings > Start of Bus Communication

If **Automatically by device** is selected, the PROFIBUS DP Master 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.

4.9.2 Application Monitoring

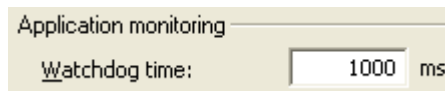


Figure 40: Device Settings > Application Monitoring

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

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

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

Table 21: 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.

4.9.3 Configuration Data Flag

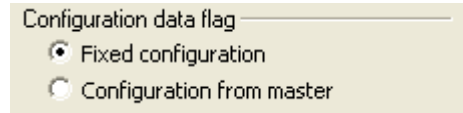


Figure 41: Device Settings > Configuration Data Flag

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

Table 22: Device Settings > Configuration Data Flag

Configuration from Master



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

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

4.9.3.1 Configuration Parameters Flow

The following diagram explains the configuration parameters flow from the configuration tools DTMs to the hardware devices:

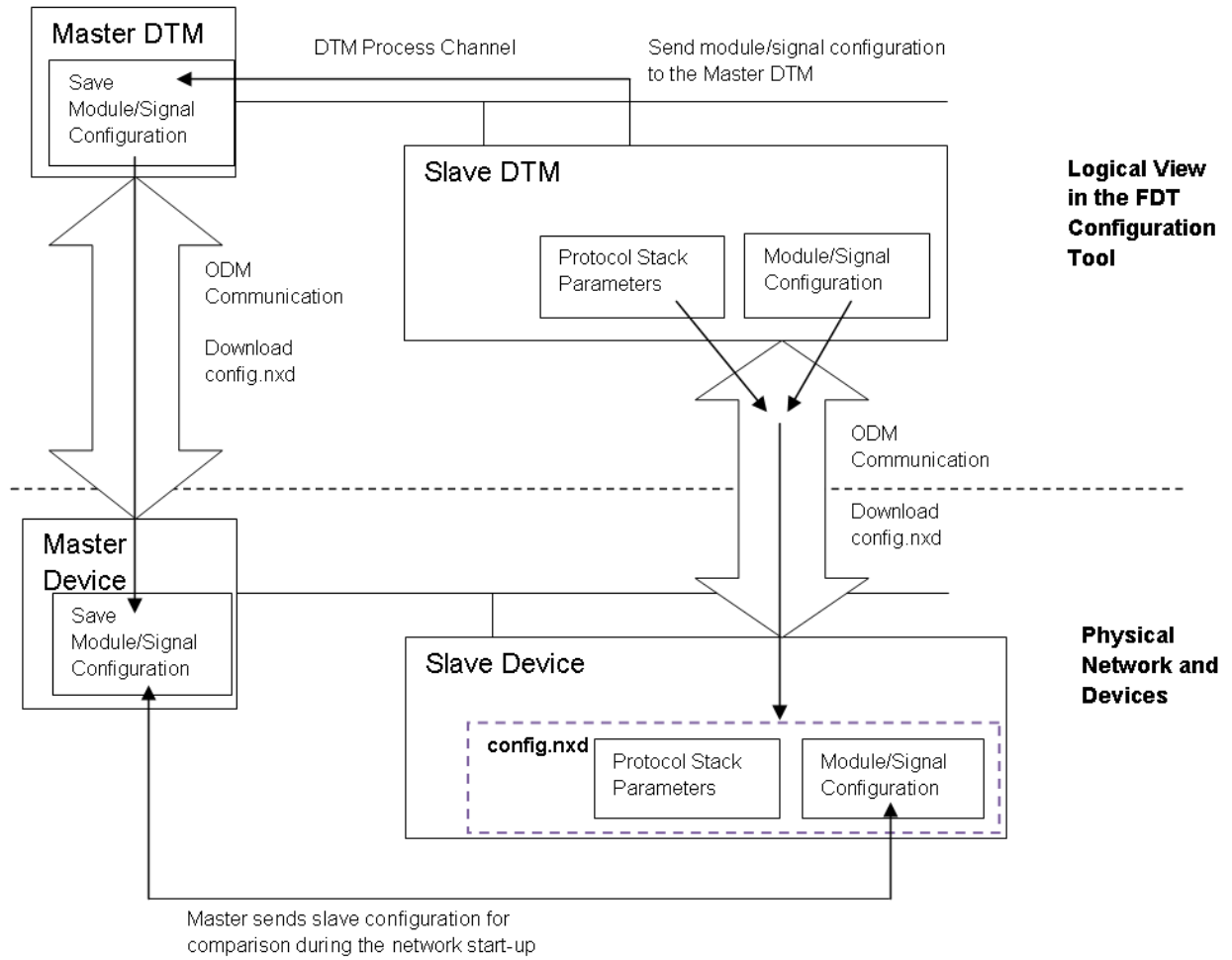


Figure 42: Network Logical/Physical View Diagram

4.9.4 Process Image Storage Format

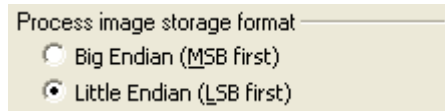


Figure 43: Master Settings > Process Image Storage Format

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

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

| Storage format (word module) | |
|------------------------------|--|
| Big Endian | MSB/LSB = higher/lower = Motorola format = Big Endian |
| Little Endian | LSB/MSB = lower/higher = Intel format = Little Endian |

Table 23: Master Settings Pane Parameters - Process Image Storage Format



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

5 Device Description

5.1 About Device Description

Dialog Panes “Device Description”

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

| Section | Subsection | Page |
|---------------------------|---------------|-----------|
| <i>Device Description</i> | <i>Device</i> | <i>71</i> |
| | <i>GSD</i> | <i>71</i> |

Table 24: Descriptions of the Dialog Panes Device Description

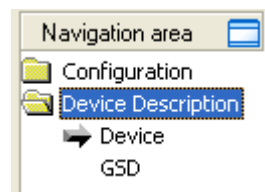


Figure 44: Navigation Area - Device Description

5.2 Device

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

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

Table 25: General Device Information

5.3 GSD

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

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

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

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

Table 26: Device Description – GSD 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 77.

Dialog Panes “Diagnosis”

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

| Section | Page |
|---------------------------|------|
| <i>General Diagnosis</i> | 73 |
| <i>Firmware Diagnosis</i> | 76 |

Table 27: Descriptions of the Diagnosis Panes



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



For further information, refer to section *Connecting/Disconnecting Device* on page 98.

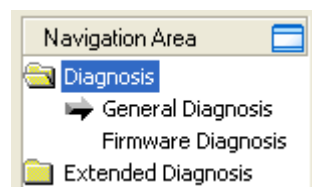


Figure 45: Navigation Area - Diagnosis

6.2 General Diagnosis

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

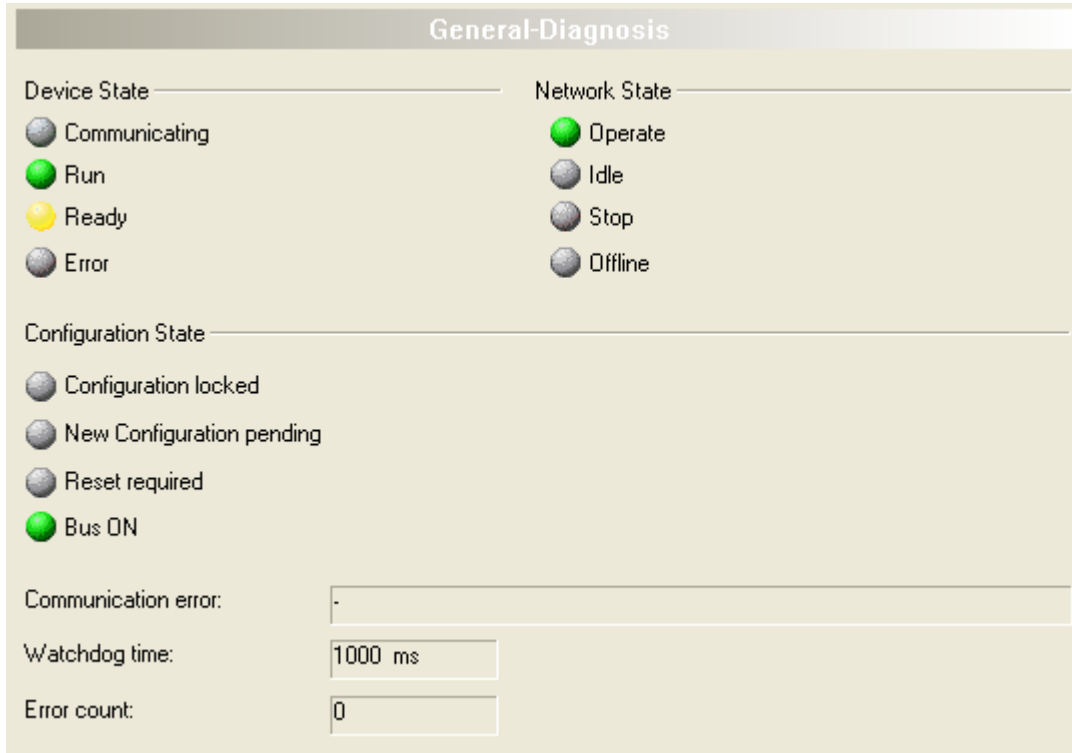


Figure 46: General Diagnosis

























| LED | Meaning | Color | State |
|----------------------------------|--|---|------------------------------|
| Device State | | | |
| Communicating | Shows whether the PROFIBUS device executes the network communication. |  (green) | COMMUNICATING |
| | |  (gray) | Not COMMUNICATING |
| Run | Shows whether the PROFIBUS device has been configured correctly. |  (green) | Configuration OK |
| | |  (gray) | Configuration not OK |
| Ready | Shows whether the PROFIBUS device has been started correctly. The PROFIBUS device waits for a configuration. |  (yellow) | Device READY |
| | |  (gray) | Device not READY |
| Error | Shows whether the PROFIBUS device records a device status error. For further information about the error characteristics and the number of counted errors refer to the extended diagnosis. |  (red) | ERROR |
| | |  (gray) | No ERROR |
| Network State | | | |
| Operate | Shows whether the PROFIBUS device is in data exchange. In a cyclic data exchange the input data or the output data of the PROFIBUS DP Slave are transmitted to the PROFIBUS DP Master. |  (green) | In OPERATION state |
| | |  (gray) | Not in OPERATION state |
| Idle | Shows whether the PROFIBUS device is in idle state. |  (yellow) | In IDLE state |
| | |  (gray) | Not in IDLE state |
| Stop | Shows whether the PROFIBUS device is in Stop state: There is no cyclic data exchange at the PROFIBUS network. The PROFIBUS device was stopped by the application program or it changed to the Stop state because of a bus error. |  (red) | In STOP state |
| | |  (gray) | Not in STOP state |
| Offline | The PROFIBUS DP Slave is offline as long as it does not have a valid configuration. |  (yellow) | In OFFLINE state |
| | |  (gray) | Not in OFFLINE state |
| Configuration State | | | |
| Configuration locked | Shows whether the PROFIBUS device configuration is locked, to avoid the configuration data are typed over. |  (yellow) | Configuration LOCKED |
| | |  (gray) | Configuration not LOCKED |
| New Configuration pending | Shows whether a new PROFIBUS device configuration is available. |  (yellow) | New Configuration pending |
| | |  (gray) | No new Configuration pending |
| Reset required | Shows whether a firmware reset is required as a new PROFIBUS device configuration has been loaded into the device. |  (yellow) | RESET required |
| | |  (gray) | No RESET required |
| Bus ON | Shows whether the bus communication was started or stopped. I. e., whether the device is active on the bus or no bus communication to the device is possible and no response telegrams are sent. |  (green) | Bus ON |
| | |  (gray) | Bus OFF |

Table 28: 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 29: Parameter General Diagnosis

6.3 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.

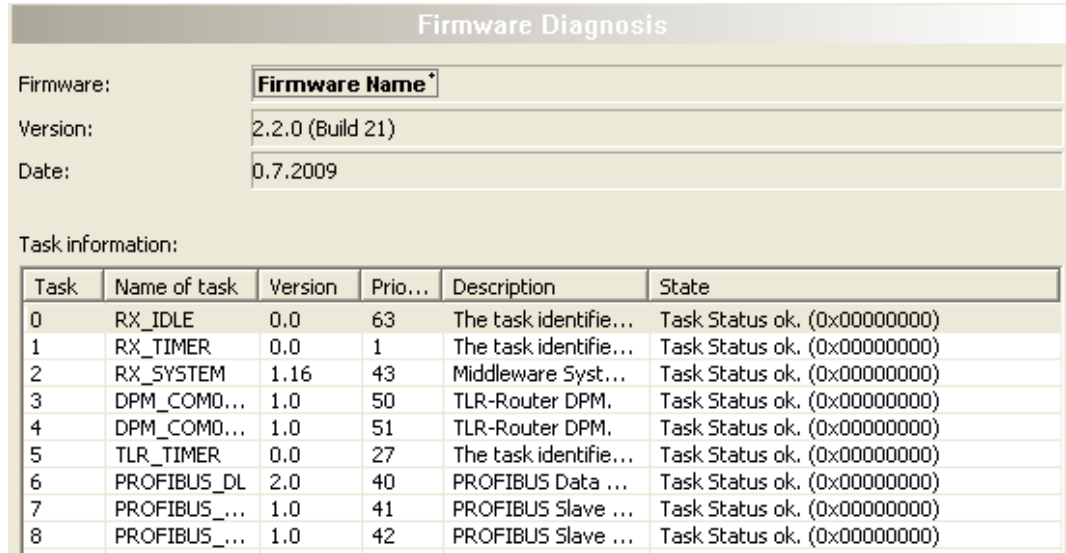


Figure 47: Firmware Diagnosis (*The name of the Firmware is displayed.)

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 30: Description Table Task Information

7 Extended Diagnosis

7.1 Overview Extended Diagnosis

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

Dialog Panes “Extended Diagnosis”

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

| Navigation Area | Folder Name in the Navigation Area | Dialog Pane | Page |
|-----------------|------------------------------------|--------------------|------|
| | RX-SYSTEM | Task Information | 78 |
| | | IniBatch Status | 79 |
| | DPM_COMO_SMBX | Task Information | 78 |
| | DPM_COMO_RMBX | Task Information | 78 |
| | PROFIBUS_DL | Task Information | 78 |
| | | Busparameter | 80 |
| | | Counter | 82 |
| | PROFIBUS_DL | Task Information | 78 |
| | | Extended Diagnosis | 83 |
| | | Config Data | 84 |
| | | Parameter Data | 85 |
| | | Code Diagnosis | 86 |
| | PROFIBUS_APS | Task Information | 78 |

Table 31: Descriptions of the Dialog Panes Extended Diagnosis



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



For further information, refer to section *Connecting/Disconnecting Device* on page 98.

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

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

Table 32: 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 49: Extended Diagnosis > [Folder Name] > IniBatch Status Example 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 packet specific error code from the ulSta is typed in, when "IniBatch Result " == "Error in confirmation packet status" (10) is. |
| Last Packet Number | Value depends by the communication system. |
| Last Packet Command | Value depends by the communication system. |
| Last Packet Length | Value depends by the communication system. |
| Last Packet Destination | Value depends by the communication system. |

Table 33: 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 PROFIBUS_DL

7.4.1 Busparameter

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

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

Figure 50: Extended Diagnosis > PROFIBUS_DL > Busparameter

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

| Bus Parameters | Meaning |
|--------------------------------------|---|
| Quiet Time (tBit) | This is the time delay that occurs for modulators (Modulator-trip time) and Repeaters (Repeater-switch time) for the change over from sending to receiving. Value range: 0 .. 127 (The default value depends from the baud rate.) |
| Setup Time (tBit) | Minimum period "reaction time" between the receipt of an acknowledgement to the sending of a new query telegram (Reaction) by the Sender (Requestor). Value range: 0 .. 255 (The default value depends from the baud rate.) |
| Target Rotation Time (tBit) | Pre-set nominal Token cycling time within the Sender authorization (Token) will cycle around the ring. How much time the Master still has available for sending data telegrams to the Slaves is dependent on the difference between the nominal and the actual token cycling time. The Target rotation time (T_{TR}) is shown in Bit times (tBit) like the other Bus Parameters. Below the displayed Bit time, the Target rotation time is also displayed in milliseconds (ms). Value range: 1 .. 2 ²⁴ -1 (=16.777.215) (The default value depends on the number of Slaves attached to the Master and their module configuration) |
| GAP Factor | Factor for determining after how many Token cycles an added participant is accepted into the Token ring. After expiry of the time period G*T _{TR} , the Station searches to see whether a further participant wishes to be accepted into the logical ring. Value range: 0 .. 10 .. 255 |
| Highest Station Address (HSA) | The Highest Station Address is the highest bus address up to which a Master searches for another Master at the bus in order to pass on the Token. This station address must on no account be smaller than the Master station address. Value range: 1 .. 126 |
| Max. Retry Limit | Maximum number of repeats in order to reach a Station. Value range: 1 .. 15 (The default value depends from the baud rate.) |

Table 34: Extended Diagnosis > PROFIBUS_DL > Busparameter

7.4.2 Counter

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

Figure 51: Extended Diagnosis > PROFIBUS_DL > Counter

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

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

Table 35: Extended Diagnosis > PROFIBUS_DL > Counter

7.5 PROFIBUS_FSPMS

7.5.1 Extended Diagnosis

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

Figure 52: Extended Diagnosis > PROFIBUS_FSPMS > Extended Diagnosis

| Name | Description | | | | | | | | | | | | |
|---------------|--|------------|----------|-------------|----------|--------------|-----------|--------------|--------------|------------|--------------|------------|-------------|
| Node ID | PROFIBUS address of the device, Range of value: 0 ... 125 | | | | | | | | | | | | |
| Ident Number | PROFIBUS Identification Number, Range of value: 0 ... 65535, Default: 0x0A12 | | | | | | | | | | | | |
| Baud Rate | <table border="0"> <tr> <td>9,6 kBit/s</td> <td>3 MBit/s</td> </tr> <tr> <td>19,2 kBit/s</td> <td>6 MBit/s</td> </tr> <tr> <td>93,75 kBit/s</td> <td>12 MBit/s</td> </tr> <tr> <td>187,5 kBit/s</td> <td>31,25 kBit/s</td> </tr> <tr> <td>500 kBit/s</td> <td>45,45 kBit/s</td> </tr> <tr> <td>1,5 MBit/s</td> <td>Auto detect</td> </tr> </table> | 9,6 kBit/s | 3 MBit/s | 19,2 kBit/s | 6 MBit/s | 93,75 kBit/s | 12 MBit/s | 187,5 kBit/s | 31,25 kBit/s | 500 kBit/s | 45,45 kBit/s | 1,5 MBit/s | Auto detect |
| 9,6 kBit/s | 3 MBit/s | | | | | | | | | | | | |
| 19,2 kBit/s | 6 MBit/s | | | | | | | | | | | | |
| 93,75 kBit/s | 12 MBit/s | | | | | | | | | | | | |
| 187,5 kBit/s | 31,25 kBit/s | | | | | | | | | | | | |
| 500 kBit/s | 45,45 kBit/s | | | | | | | | | | | | |
| 1,5 MBit/s | Auto detect | | | | | | | | | | | | |
| Output Length | Number of the output bytes Range of value: 0 ... 244 | | | | | | | | | | | | |
| Input Length | Number of the input bytes Range of value: 0 ... 244 | | | | | | | | | | | | |

Table 36: Extended Diagnosis > PROFIBUS_FSPMS > Extended Diagnosis

7.5.2 Config Data

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

Figure 53: Extended Diagnosis > PROFIBUS_FSPMS > Config Data

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

Table 37: Extended Diagnosis > PROFIBUS_FSPMS > Config Data



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

7.5.3 Parameter Data

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

Figure 54: Extended Diagnosis > PROFIBUS_FSPMS > Parameter Data

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

Table 38: Extended Diagnosis > PROFIBUS_FSPMS > Parameter Data



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

7.5.4 Code Diagnosis

| Code Diagnosis | |
|-----------------|---|
| Task states | |
| Name | Value |
| Info counter | |
| Warning counter | |
| Error counter | [The displayed values depend from the corresponding task] |
| Error level | |
| Error code | |
| Parameter | |
| Line number | |
| Module | |

Figure 55: Extended Diagnosis > PROFIBUS_FSPMS > Code Diagnosis

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

Table 39: Extended Diagnosis > PROFIBUS_FSPMS > Code Diagnosis

8 Tools

8.1 Overview Tools

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

Tools Panes

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

| Section | Page |
|-----------------------|------|
| <i>Packet Monitor</i> | 88 |
| <i>IO Monitor</i> | 97 |

Table 40: Descriptions of the Diagnosis Panes



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



For further information, refer to section *Connecting/Disconnecting Device* on page 98.

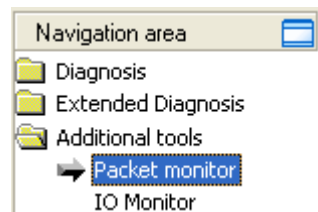


Figure 56: Navigation Area - Tools

8.2 Packet Monitor

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

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

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



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

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

Figure 57: 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 Sending Packet

The screenshot shows the 'Send' dialog box with the following fields and values:

- Packet header:**
 - Dest: 00000001
 - Src: 00000000
 - Dest ID: 00000000
 - Src ID: 00000000
 - Len: 00000012
 - ID: 00000001
 - State: 00000000
 - Cmd: 00002F00
 - Ext: 00000000
 - Rout: 00000000
 - Auto Increment ID:
- Send data:** Counter: 0
- Buttons:** Put cyclic, Put packet

Figure 58: Send > Packet Header and Send Data

Packet Header

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

| Element | | Description |
|----------------|--|--|
| Dest | Destination Queue Handle | Contains the identifier of the receiver for the packet (destination task queue of the firmware). |
| Src | Source Queue Handle | Contains the identifier of the sender of the packet (sending task). |
| Dest ID | Destination Queue Reference | Contains an identifier for the receiver of unsolicited sent packets from the firmware to the application (configuration software). |
| Src ID | Source Queue Reference | Contains an identifier of the sender. |
| Len | Packet Data Length (in Bytes) | Length of the send respectively 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 Code | Command or respond code. |
| Ext | Extension | Field for extensions (reserved). |
| Rout | Routing Information | Internal value of the firmware. |

Table 41: Descriptions Packet Header

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

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

Send Data

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

Sending Packets once or cyclic

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

8.2.2 Receiving Packet

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

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

On the right, under 'Receive data:', there is a grid with columns 0-9 and a 'Counter: 0' label. The data is as follows:

| | 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 59: Packet Header and Receive Data

Packet Header

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

| Element | | Description |
|----------------|--|--|
| Dest | Destination Queue Handle | Contains the identifier of the receiver for the packet (destination task queue of the firmware). |
| Src | Source Queue Handle | Contains the identifier of the sender of the packet (sending task). |
| Dest ID | Destination Queue Reference | Contains an identifier for the receiver of unsolicited sent packets from the firmware to the application (configuration software). |
| Src ID | Source Queue Reference | Contains an identifier of the sender. |
| Len | Packet Data Length (in Bytes) | Length of the send respectively 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 Code | Command or respond code. |
| Ext | Extension | Field for extensions (reserved). |
| Rout | Routing Information | Internal value of the firmware. |

Table 42: Descriptions Packet Header

Receive Data

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

8.2.3 Example – „Get DPM I/O Information“

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



For more information on the steps under **Settings** and **Configuration** refer to the corresponding chapters in this manual. Required information is easy to find via the overview in the section *Overview Configuration Steps* on page 19.

Requirements

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

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

How to proceed

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

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

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

Packet Description Read Request

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

Figure 60: Packet Description GET DPM IO INFO REQUEST



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

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

Send > Packet header

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

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

Send

Packet header

Dest: **(A)** 00000020

Src: 00000000 State: 00000000

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

Src ID: 00000000 Ext: 00000000

Len: 00000000 Rout: 00000000

ID: 00000002 Auto Increment ID

Figure 61: Example - Reading data via „Get DPM IO Info“ – Send > Packet header

Send > Send Data

Send data: Counter: 1

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

Put cyclic Put packet

Figure 62: Example - Read data via „Get DPM IO Info“ - Send > Send Data

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

3. Sending/Receiving Packets.

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

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

Packet Description Read Confirmation

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

Packet Structure Reference

```

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

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

```

Figure 63: Packet Description GET DPM IO INFO CONFIRMATION



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

4. Evaluate received packet.

Receive > Packet header

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

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



All status and error codes are either to be found in this handbook via the section *Overview Error Codes* auf Seite 102, in the *Dual Port Memory Manual* or in the *DeviceNet Slave Protocol API Manual*.

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

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

Figure 64: Example - Reading data via „Get DPM IO Info“ – Receive > Packet header

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

Receive > Receive data

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

| Receive data: | Counter: 1 | | | | | | | | | |
|---------------|------------|-------------|-------------|-------------|----|-------------|-------------|----|-------------|-------------|
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 |
| 0000 | 02 | 00 | D 00 | 00 | 00 | 00 | F 00 | 00 | 02 | G 00 |
| 0004 | 00 | G 00 | 01 | H 00 | 00 | I 00 | 00 | 00 | K 00 | 00 |
| 0014 | 20 | 00 | L 00 | 00 | 00 | 00 | F 00 | 00 | 02 | G 00 |
| 001E | 00 | G 00 | 02 | H 00 | 00 | I 00 | 00 | 00 | K 00 | 00 |
| 0028 | 20 | 00 | L 00 | 00 | | | | | | |
| 0032 | | | | | | | | | | |
| 003C | | | | | | | | | | |

Figure 65: Example - Reading data via „Get DPM IO Info“ – Receive > Receive data

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

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

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.

IO Monitor

Columns: 10 Display mode: Decimal

Input data

Offset: 0 Go

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

16:04:08: COM-flag not set Clear

Output data

Offset: 0 Go

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

Update

Figure 66: 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



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

Connecting Device

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

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

1. 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.



An overview of the descriptions for these steps you find in the section *Overview Settings* on page 27.

8. In the DTM interface dialog select the **OK** button, to apply the selection and to close the DTM interface dialog.
 9. Put a right-click on the PROFIBUS DP Slave device icon.
 10. Select the **Connect** command from the context menu.
- ⇒ The PROFIBUS DP Slave device now is connected to the PROFIBUS DP Slave DTM via an online connection. In the network view the device description at the device icon of the Slave is displayed with a green colored background.

Disconnecting Device

To disconnect an online connection from the PROFIBUS DP Slave device to the PROFIBUS DP Slave DTM take the following steps:

1. In the DTM interface dialog select the **OK** button, to close the DTM interface dialog.
 2. Right-click on the PROFIBUS DP Slave device icon.
 3. Select the **Disconnect** command from the context menu.
- Now the PROFIBUS DP Slave device is disconnected from the PROFIBUS DP Slave DTM.

9.2 Download Configuration



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



For further information, refer to section *Connecting/Disconnecting Device* on page 98.

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

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:

```

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

```

where

Sev - is the severity code:

00 - Success

01 - Informational

10 - Warning

11 - Error

C - is the Customer code flag

R - is a reserved bit

Facility - is the facility code

Code - is the facility's status code

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

10.2 Overview Error Codes

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

Table 43: Overview Error Codes and Ranges



The 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 44: 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_SENDPACKET | 0xC0000012 | Queue Send Packet |
| RCX_E_POOL_PACKET_GET | 0xC0000013 | Pool Packet Get |
| RCX_E_POOL_GET_LOAD | 0xC0000015 | Pool Get Load |
| RCX_E_REQUEST_RUNNING | 0xC000001A | Request Already Running |
| RCX_E_INIT_FAULT | 0xC0000100 | Initialization Fault |
| RCX_E_DATABASE_ACCESS_FAILED | 0xC0000101 | Database Access Failed |
| RCX_E_NOT_CONFIGURED | 0xC0000119 | Not Configured |
| RCX_E_CONFIGURATION_FAULT | 0xC0000120 | Configuration Fault |
| RCX_E_INCONSISTENT_DATA_SET | 0xC0000121 | Inconsistent Data Set |
| RCX_E_DATA_SET_MISMATCH | 0xC0000122 | Data Set Mismatch |
| RCX_E_INSUFFICIENT_LICENSE | 0xC0000123 | Insufficient License |
| RCX_E_PARAMETER_ERROR | 0xC0000124 | Parameter Error |
| RCX_E_INVALID_NETWORK_ADDRESS | 0xC0000125 | Invalid Network Address |
| RCX_E_NO_SECURITY_MEMORY | 0xC0000126 | No Security Memory |
| RCX_E_NETWORK_FAULT | 0xC0000140 | Network Fault |
| RCX_E_CONNECTION_CLOSED | 0xC0000141 | Connection Closed |
| RCX_E_CONNECTION_TIMEOUT | 0xC0000142 | Connection Timeout |
| RCX_E_LONELY_NETWORK | 0xC0000143 | Lonely Network |
| RCX_E_DUPLICATE_NODE | 0xC0000144 | Duplicate Node |
| RCX_E_CABLE_DISCONNECT | 0xC0000145 | Cable Disconnected |
| RCX_E_BUS_OFF | 0xC0000180 | Network Node Bus Off |
| RCX_E_CONFIG_LOCKED | 0xC0000181 | Configuration Locked |
| RCX_E_APPLICATION_NOT_READY | 0xC0000182 | Application Not Ready |
| RCX_E_TIMER_APPL_PACKET_SENT | 0xC002000C | Timer App Packet Sent |

Table 45: 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 46: 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 47: RCX Status & Error Codes Slave State

10.4 ODM Error Codes

10.4.1 General ODM Error Codes

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

Table 48: ODM Error Codes - General ODM Error Codes

10.4.2 General ODM Driver Error Codes

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

Table 49: ODM Error Codes - General ODM Driver Error Codes

10.4.3 cifX Driver Specific ODM Error Codes

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

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

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

Table 50: cifX Driver Specific ODM Error Codes

10.5 Error Codes cifX Device Driver and netX Driver

10.5.1 Generic Error Codes

| Error Code (Definition) | Value | Description |
|-----------------------------------|-------------|---|
| CIFX_INVALID_POINTER | 0x800A0001L | Invalid pointer (NULL) passed to driver |
| CIFX_INVALID_BOARD | 0x800A0002L | No board with the given nameindex available |
| CIFX_INVALID_CHANNEL | 0x800A0003L | No channel with the given index available |
| CIFX_INVALID_HANDLE | 0x800A0004L | Invalid handle passed to driver |
| CIFX_INVALID_PARAMETER | 0x800A0005L | Invalid parameter |
| CIFX_INVALID_COMMAND | 0x800A0006L | Invalid command |
| CIFX_INVALID_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 51: Generic Error Codes

10.5.2 Generic Driver Error Codes

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

Table 52: Generic Driver Error Codes

10.5.3 Generic Device Error Codes

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

Table 53: Generic Device Error Codes

10.6 Error Codes netX Driver

10.6.1 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 54: CIFX API Transport Error Codes

10.6.2 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 55: CIFX API Transport Header State Error Codes

10.7 ODM Error Codes DBM V4

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

| ODM Error Codes DBM V4 | | |
|--|-------------------------------|---|
| Error Code (Definition) | Value | Description |
| CDBM_E_WRITE_CANT_ACCESS_DATA | 0XC004C82F | Unable to access SafeArray Data in the VARIANT |
| CDBM_E_WRITE_DATA | 0XC004C830 | To write the data of this Element it must be given as a BSTR, or as an Array of VT_UI1/VT_I1 |
| CDBM_E_WRITE_BSTR_E1 | 0XC004C831 | The BSTR string must have an even length. |
| CDBM_E_WRITE_BSTR_E2 | 0XC004C832 | The BSTR string must contain only hex digits (0..9 and a/A..f/F). |
| CDBM_E_WRITE_CANT_INTERPRET_ARRAY | 0XC004C833 | Unable to interpret data in the SafeArray. |
| CDBM_E_WRITE_VT_ERROR | 0XC004C834 | Data type in the SafeArray is not VT_UI1 or VT_I1. |
| CDBM_E_WRITE_LENGTH | 0XC004C835 | Data length is invalid for write operation of this type. |
| CDBM_WRITE_ELEMENT | 0XC004C836 | Element not found in the Record of the Table |
| CDBM_MIN_MAX_ERROR | 0XC004C837 | Can't write data because of min underflow or max overflow |
| CDBM_TABLE_EXIST | 0XC004C838 | Table already exist in the database |
| CDBM_MIN_MAX_INVALID | 0XC004C839 | The Min value is greater than the Max Value |
| CDBM_DEF_MIN_MAX_INVALID | 0XC004C83A | The Default Value is not in the range between the Min value and the Max Value |
| CDBM_CANT_CHANGE_STRUCTURE_WHILE_RECORDS_EXIST | 0XC004C83B | It's not allowed to change the structure while Records exist in the Table |
| CDBM_NEW_STRUCT_NEEDS_TYPE | 0XC004C83C | In a newly added structure the data type must be set also |
| CDBM_VALUE_ERROR | 0XC004C83D | Range error while validating a value |
| CDBM_DATATYPE_UNSUPPORTED_IN_RCS | 0XC004C83E | The data type is unsupported in the RCS file format |
| CDBM_I_COUNT_OF_TABLES_EXCEEDS_RCS_RANGE | 0X4004C83F (Informational) | The count of Tables exceeds the RCS range of Tables. This can cause problems if the file is downloaded to RCS Systems |
| CDBM_I_COUNT_OF_TABLES_EXCEEDS_OLDDBM_RANGE | 0X4004C840 (Informational) | The count of Tables exceeds the DBM32.DLL range of Tables. This can cause problems if the file is used with older Tools using the DBM32.DLL |
| CDBM_UNSUPPORTED_DATATYPE_IN_RCS_MODE | 0XC004C841 | The Data type is not compatible with the old database format |
| CDBM_WRITE_UNSTRUCTURED_1 | 0XC004C842 | The data of an unstructured record can only be written with the 'Write' Method not with 'WriteElement'. |
| CDBM_READ_UNSTRUCTURED_1 | 0XC004C843 | The data of an unstructured record can only be read with the 'Read' Method not with 'ReadElement' |
| CDBM_WRITE_DATA_LENGTH_INVALID | 0XC004C844 | The given data length doesn't correspond with the expected data length. |
| CDBM_UNKNOWN_VIEW_MODE | 0XC004C845 | The View Mode is unknown. |
| CDBM_E_DIAG_TABLE | 0XC004C846 | It doesn't make much sense to add or delete records from a diagnostic table because those changes are never saved. |
| CDBM_E_ADR_STRING_ERROR | 0XC004C847 | The given Address string doesn't fit the required format of this type where all address bytes must be in the range between 0 and FF |

| ODM Error Codes DBM V4 | | |
|--|-------------------------------|---|
| Error Code (Definition) | Value | Description |
| CDBM_ERROR_FROM_VAR_CHANGE_TYPE | 0XC004C848 | Function VariantChangeType return an error when trying to convert the Parameter |
| CDBM_E_MINERROR | 0XC004C849 | Error while comparing the Value with the lower range |
| CDBM_E_MAXERROR | 0XC004C84A | Error while comparing the Value with the upper range |
| CDBM_E_RANGE_ERROR | 0XC004C84B | Value out of Range |
| CDBM_E_TABLE_TYPE1 | 0XC004C84C | Table type 1 doesn't have a unique record length over all records |
| CDBM_E_TABLE_TYPE3_ADDREC | 0XC004C84D | Table type 3 doesn't allow to insert more than one Record |
| CDBM_E_TABTYPE1 | 0XC004C84E | It's not allowed to insert more Records than structure definitions in Table Type 1 |
| CDBM_E_TOGGLE_NOT_FOUND | 0XC004C84F | Could not find the string for this value in the list of valid toggle strings |
| CDBM_E_TOGGLE_VALUE_IS_EMPTY_STRING | 0XC004C850 | The toggle string for this value is empty. |
| CDBM_VARIANT2BYTEARRAY_ERROR | 0XC004C851 | Error during conversion of Variant to byte array |
| CDBM_E_SET_ELEM_PROP_DEPENDENCY | 0XC004C852 | The Toggle Type needs also the additional string and the additional number entries in the Method |
| CDBM_E_TABTYPE1_REC_DOESNT_CORRESPOND_WITH_ELEMENT | 0XC004C853 | When reading the records of Table type 1 elementwise the record number must correspond with the element number |
| CDBM_TABTYPE1_NO_DATA_FOUND_FOR_RECORD | 0XC004C854 | When reading the records of Table type 1 and structure definitions are present it's assumed that for each structure element a corresponding record must exist |
| CDBM_E_TABTYPE1_WRITE_ELEMENT_NE_RECORD | 0XC004C855 | When writing the records of Table type 1 elementwise and structure definitions are present it's only allowed to write the corresponding element number in each record |
| CDBM_E_TABTYPE1_WRITE_ELEMENT_NOT_FOUND | 0XC004C856 | When writing the records of Table type 1 with an array and structure definitions are present it's assumed that a corresponding element number of this record exist |
| CDBM_I_TABLE_NAME_EXCEEDS_RCS_RANGE | 0X4004C857 (Informational) | The Table name exceeds the maximum length of RCS compatible Table names |
| CDBM_W_CUT_STRING | 0X8004C858 (Warning) | The string exceeds the maximum length and will be limited to the maximum length |
| CDBM_I_STRING_TOO_SHORT | 0X4004C859 (Informational) | The string is below the minimum length. The minimum length will be reduced. |
| CDBM_I_STRING_TOO_LONG | 0X4004C85A (Informational) | The string is exceeding the maximum. The maximum length will be extended. |
| CDBM_E_STRING_TOO_SHORT | 0XC004C85B (Error) | The string is below the minimum length. |
| CDBM_E_STRING_TOO_LONG | 0XC004C85C (Error) | The string is exceeding the maximum length |
| CDBM_E_WRONG_TYPE_FOR_WRITE | 0XC004C85D | Writing on the Element type with the given Data type is not implemented |
| CDBM_E_NO_APPEND_IN_STRUCTURED_RECORDS | 0XC004C85E | Method IDbmRecord::AppendData is not allowed for structured records |

| ODM Error Codes DBM V4 | | |
|---|--------------|--|
| Error Code (Definition) | Value | Description |
| CDBM_E_DATA_UNAVAILABLE | 0XC004C85F | No data available |
| CDBM_E_CANT_CONVERT_INT | 0XC004C860 | Unable to convert the value into the Element type |
| CDBM_E_DBM_FILE_OVERFLOW | 0XC004C861 | You try to write a RCS like database which needs too much bytes |
| CDBM_E_PW_ERROR | 0XC004C862 | Password not correct |
| CDBM_E_FILELENGTH_CORRUPT | 0XC004C863 | The file length doesn't correspond to the length given in the Header. |
| CDBM_E_STRUCT_TYPE | 0XC004C864 | Error in the file. |
| CDBM_E_MD5SUM_INVALID | 0XC004C865 | MD5 sum invalid |
| CDBM_E_STRUCT_LENGTH | 0XC004C866 | Error in the expected and given structure length at a specific offset in the file. |
| CDBM_E_APPEND | 0XC004C867 | Append of data is only allowed if the Record contains only one data field and the field type will support this |
| CDBM_APPEND_NOT_SUPPORTED | 0XC004C868 | Append of Data not supported by this filed type |
| CDBM_DATA_TYPE_APPEND_ERROR | 0XC004C869 | Can't append Data of this type. |
| CDBM_E_UNSTRUCTURED_TABLE_DOESNT_SUPPORT_LENGTH | 0XC004C86A | A Table without structure information doesn't support a record length |
| CDBM_E_DISABLED_WHILE_TRANSACTION_IS_OPEN | 0XC004C86B | The Method is disabled while a transaction is open. Please close this one first and call the Method again. |
| CDBM_E_UNABLE_TO_CALL_READ_ON_LINKED_LIST | 0XC004C86C | The Method is disabled on a LinkedList type. Please use the IRecordCollection on this type. |
| CDBM_E_ELEMENT_HAS_NO_SUBSTRUCTURE | 0XC004C86D | An Element from a Table has no substructure |
| CDBM_STRUCT_ERROR_FROM_VAR_CHANGE_TYPE | 0XC004C86E | Error from calling VariantChangeType |
| CDBM_E_FOREIGNKEY_DEF | 0XC004C86F | The definition of a FOREIGNKEY must contain the name of the related Table in the description and this Table must exist at this time |
| CDBM_E_FOREIGNKEY_REF_TAB | 0XC004C870 | The description of a FOREIGNKEY must refer to a Table of type 'eDbmTableTypeLinkedList' |
| CDBM_E_KEY | 0XC004C871 | To create a Record Collection with a KEY it's necessary to have the data type KEY at the first position in all Records of the searched Table |
| CDBM_E_KEY_TABLE_TYPE | 0XC004C872 | This Method needs a Table of type 'eDbmTableTypeLinkedList' |
| CDBM_DATATYPE_NOT_IMPLEMENTED | 0XC004C873 | This data type is currently not implemented |
| CDBM_INSERT_POS_NOT_FOUND | 0XC004C874 | The position of the Record where the new one should be inserted wasn't found |
| CDBM_E_INSERT_REC_QI | 0XC004C875 | Error during insertion of a Record |
| CDBM_E_TAB_PROP | 0XC004C876 | Invalid Property in Table |
| CDBM_E_KEY_NOT_FOUND | 0XC004C877 | The KEY wasn't found in the Table |
| CDBM_E_KEY_INVALID | 0XC004C878 | The KEY is invalid for this operation |

Table 56: ODM Error Codes DBM V4

11 Appendix

11.1 Identifier Bytes

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

The following table is an overview.

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

Table 57: Identifier bytes (overview)

11.1.1 Identifier Bytes (General Identifier Format GIF)

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

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

Table 58: Identifier Bytes (General Identifier Byte Format GIF)

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

Table 59: Identifier Bytes 0x10 .. 0x3F, 0x50 .. 0x7F, 0x90 .. 0x9F (GIF)

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

Table 60: Identifier Bytes 0xA0 .. 0xBF, 0xD0 .. 0xFF (GIF)

11.1.2 Special Identifier Byte Format (SIF)

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

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

Table 61: Special Identifier Format (SIF)

Length Byte

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

Table 62: Length Byte of the SIF

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

Table 63: Special Identifier bytes 0x01 .. 0x0F, 0x40 .. 0x4F, 0x80 .. 0x8F, 0xC0 .. 0xCF (SIF)

Length Byte

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

Table 64: Length byte of the special identifiers (SIF)

11.2 User Rights

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

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



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

The **Device Description** panes do not contain any editable elements. The indicated values in are only for information purposes.

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

11.2.1 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 65: Settings (D = Displaying, X = Editing, Configuring)

11.2.2 Configuration

| | Observer | Operator | Maintenance | Planning Engineer | Administrator |
|-----------------|----------|----------|-------------|-------------------|---------------|
| General | D | D | X | X | X |
| Modules | D | D | X | X | X |
| Parameter | D | D | X | X | X |
| Groups | D | D | X | X | X |
| Extensions | D | D | X | X | X |
| DPV1 | D | D | X | X | X |
| Address Table | D | D | X | X | X |
| Device Settings | D | D | X | X | X |

Table 66: Configuration (D = Displaying, X = Editing, Configuring)

11.3 References

- [1] Device Type Manager (DTM) Style Guide, Version 1.0 ; FDT-JIG - Order No. <0001-0008-000>
- [2] PROFIBUS DP Slave Protocol API Manual, Rev. 009

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13 Glossary

Data Packets

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

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

DPV0

PROFIBUS DP with cyclic communication

DPV1

PROFIBUS DP with acyclic communication

DTM

Device Type Manager

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

FDT

Field Device Tool

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

Freeze

After receiving the control command FREEZE, the DP-Slave freezes the actual state of the Inputs and transmits them cyclically to the DP-Master. After each new control command FREEZE, the Slave freezes the state of the Inputs again. The actual Input data are not transmitted cyclically from the DP-Slave to the DP-Master until the DP-Master sends the control command UNFREEZE. The DP-Slave has to be assigned to a group for the control command FREEZE in the configuration.

GSD

GSD = General Station Description

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

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

Master

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

Slave

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

Sync

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

13.1 Contacts

Headquarters

Germany

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

Support

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

Subsidiaries

China

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

Support

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

France

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

Support

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

India

Hilscher India Pvt. Ltd.
New Delhi - 110 025
Phone: +91 11 40515640
E-Mail: info@hilscher.in

Italy

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

Support

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

Japan

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

Support

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

Korea

Hilscher Korea Inc.
Suwon, 443-734
Phone: +82 (0) 31-695-5515
E-Mail: info@hilscher.kr

Switzerland

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

Support

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

USA

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

Support

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