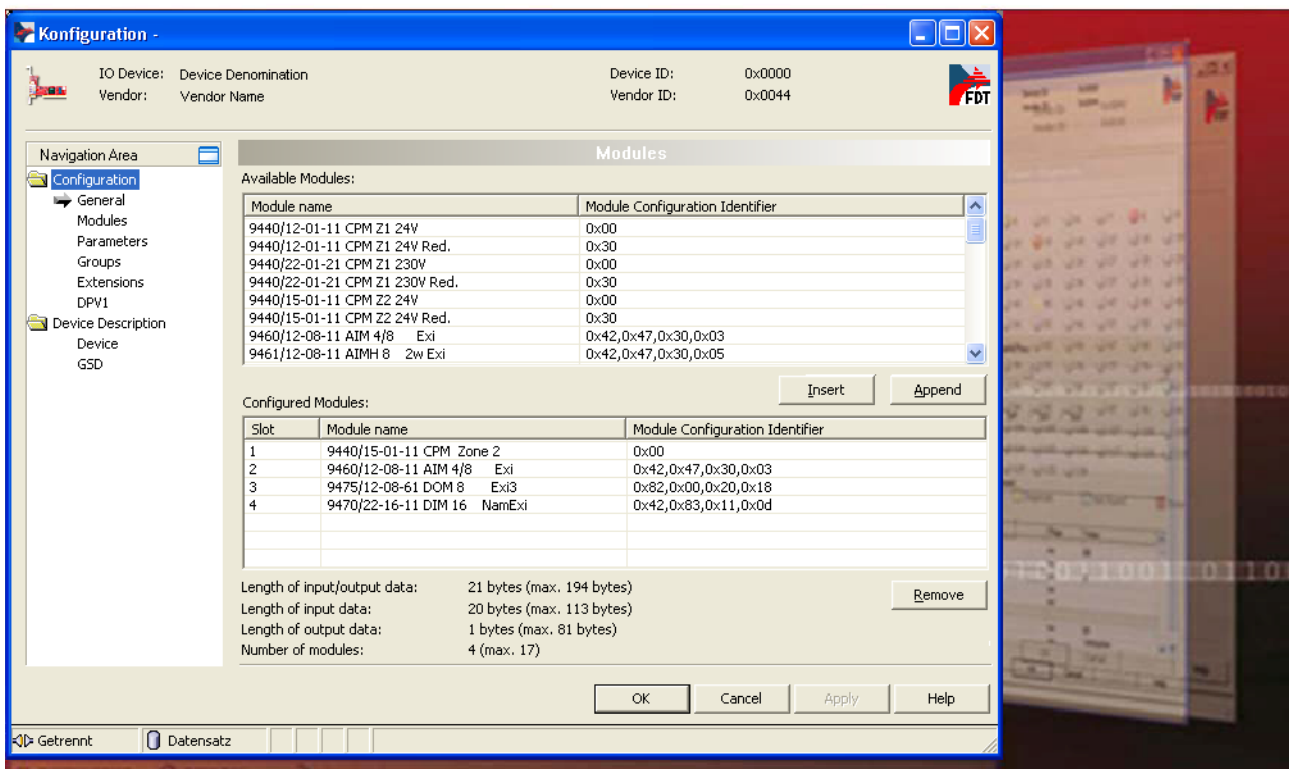


**Operating Instruction Manual**  
**Generic Slave DTM for PROFIBUS DP Slave Devices**  
**Configuration of PROFIBUS-DP Slave Devices**

The screenshot shows the 'Konfiguration' window with the following details:

IO Device: Device Denomination      Device ID: 0x0000  
 Vendor: Vendor Name                  Vendor ID: 0x0044

**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

Buttons: Insert, Append

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

Buttons: Remove

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)

Buttons: OK, Cancel, Apply, Help

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# 1 Introduction

## 1.1 About this Manual

This manual describes how to configure PROFIBUS DP Slave devices (PROFIBUS DPV0 and DPV1), which are described with GSD files. These devices can be configured by use of the PROFIBUS DP generic Slave DTM within a FDT Framework.

### 1.1.1 Descriptions of the Dialog Panes

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

Section	Subsection	Manual Page
<i>Configuration</i>	<i>General</i>	19
	<i>Modules</i>	20
	<i>Parameter</i>	23
	<i>Groups</i>	24
	<i>Extensions</i>	25
	<i>DPV1</i>	26
<i>Device Description</i>	<i>Device</i>	29
	<i>GSD</i>	29
<i>Diagnosis</i>	<i>Diagnosis</i>	31
	<i>Extended Diagnosis</i>	33

Table 1: Descriptions Dialog Panes

### 1.1.2 Online Help

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

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

### 1.1.3 List of Revisions

Index	Date	Version	Component	Chapter	Revision
3	29.10.03	1.000	PROFIBUS Generic Slave DTM	all 2.5 2.6 5.1 5.2	revised Section 'Extension' created Section 'DPV1' created (Extended to 32 Alarms) Section 'DP Slave Diagnostic' created Section 'Identifier Bytes' created
4	15.02.06	2.0.0.4	PBGenSlave DTM.dll	1, 2, 3, 4, 5	actualized
5	07.05.07	2.0.1.3 2.0.1.6	PBGenSlave DTM.dll PBGenSlave GUI.ocx	1 2.1 3.1 4.1 5 6.3 6.4 6.5	Chapter 'Introduction' actualized, Section 'Overview Configuration' actualized, Section 'Overview Device Description' actualized, Section 'Overview Diagnosis' actualized, Chapter 'Online to the Device' actualized, Section 'User Rights' actualized, Section 'Contact' added, Section 'References' added
6	20.03.08	2.0.1.3 2.0.1.7	PBGenSlave DTM.dll PBGenSlave GUI.ocx	all	Manufacturer and product names generalized.
7	11.06.08	2.0.1.6 2.0.1.7	PBGenSlave DTM.dll PBGenSlave GUI.ocx	2.2	Section 'General' actualized.
8	13.06.08	2.0.1.6 2.0.1.7	PBGenSlave DTM.dll PBGenSlave GUI.ocx	1, 2, 4	Chapter 'Introduction' actualized, Chapter 'Getting started' added, Chapter 'Diagnosis' actualized.
9	25.11.08	2.0.2.0 2.0.3.0	PBGenSlave DTM.dll PBGenSlave GUI.ocx	All 1 2 6 7.3	Manufacturer and product names generalized (completed), Chapter 'Introduction' revised, Chapter 'Getting started' added, Chapter 'Online Functions' revised, Section 'User Rights' revised,
10	09.03.10	2.0004, 2.0004	PBGenSlave DTM.dll PBGenSlave GUI.ocx	1.4.5, 6.2	Section ' <i>Status Bar</i> ' revised, Section ' <i>Upload</i> ' added.
11	14.06.11	2.7.x.x	PBGenSlave DTM.dll PBGenSlave GUI.ocx	1.3.1, 3.6	Section <i>Requirements</i> actualized. Section <i>Extensions</i> Fail-Safe Behaviour actualized.

Table 2: List of Revisions

## 1.1.4 Conventions in this Manual

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

### **Operation Instructions:**

➤ <instruction>

Or

1. <instruction>

2. <instruction>

### **Results:**

↪ <result>

### **Notes:**



**Important:** <important note>

---



**Note:** <note>

---



<note, were to find further information>

---

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## 1.3 About PROFIBUS DP Generic Slave DTM

You can use the PROFIBUS DP generic Slave DTM to configure PROFIBUS DP Slave described with GSD files within a FDT Framework.

The information necessary for the configuration of the PROFIBUS DP Slave devices is stored within the PROFIBUS DP Master device when using the PROFIBUS Generic Slave DTM and thus the Master is configured.

### 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 Generic Slave DTM

Requirements for working with a generic PROFIBUS Device DTM are:

- Installed FDT/DTM V 1.2 compliant frame application
- Installed PROFIBUS DP Master DTM
- GSD files of the devices to be configured
- The DTM must be loaded to the device catalog.

#### Loading GSD Files

To work with the PROFIBUS DP Generic Slave DTM, the GSD file of the used device must be copied into the GSD folder of the DTM. This folder is located in the application data directory (All Users) of the configuration software.



For further information refer to section *Configuration Steps* on page 16, under step 1 and 2.

## 1.4 Dialog Structure of the PROFIBUS DP Generic 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. The general buttons **OK**, **Cancel**, **Apply**, **Help**,
5. The **Status Line** containing information e. g. the online-state of the utility.

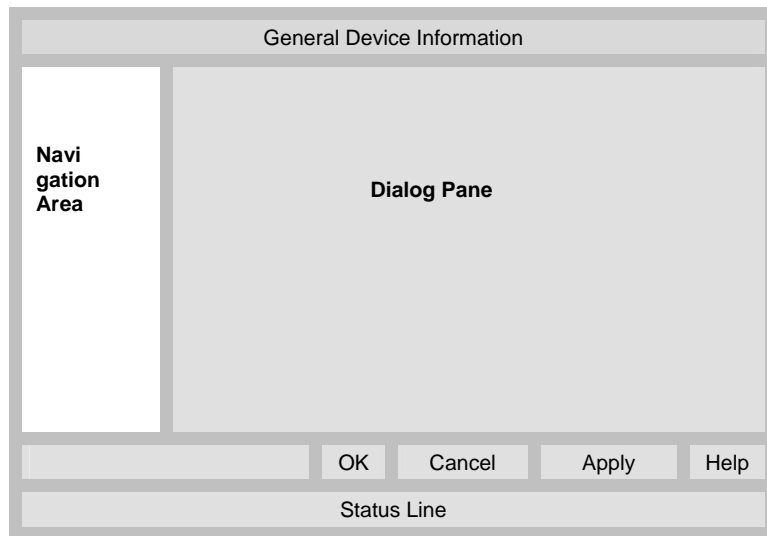


Figure 1: Dialog Structure of the PROFIBUS DP Generic Slave DTM

## 1.4.1 General Device Information

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

Table 3: General Device Information

## 1.4.2 Navigation Area

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

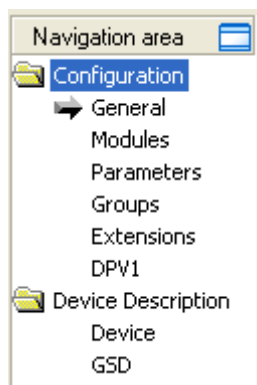




Figure 2: Navigation Area

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

### Hide / display Navigation

	Hiding the navigation area (above right side).
	<b>Opening</b> the navigation area (below left side).

### 1.4.3 Dialog Panes

Configuration	
General	At the pane <b>General</b> the actual <b>Station Address</b> of the Slave device is displayed and can be changed if necessary. Further information to this you find in section <i>General</i> on page 19.
Modules	At the <b>Modules</b> pane modules can be selected or assigned and configured. Further information to this you find in section <i>Modules</i> on page 20.
Parameters	The <b>Parameter</b> pane allows it to change the parameter settings of the modules. A detailed description you find in section <i>Parameter</i> on page 23.
Groups	At the pane <b>Groups</b> the single Slaves devices can be assigned to up to eight different, after a Master was arranged. Further information to this you find in section <i>Groups</i> on page 24.
Extensions	The <b>Extensions</b> pane contains adjustment possibilities for the extension parameters: Auto Clear, Fail Safe Behavior, Configuration Data Convention, Error on Cyclic Data Exchange and Diagnosis update delay. Further information to this you find in section <i>Extensions</i> on page 25.
DPV1	The <b>DPV1</b> pane gives access to the DPV1 functions for an acyclic data exchange and to the functions read write and alarm handling. information to this you find in section <i>DPV1</i> on page 26.
Device Description	
Device	The <b>Device Info</b> pane contains the manufacturer information about the device. Further information to this you find in section <i>Device</i> on page 29.
GSD	By use of the <b>GSD-Viewer</b> a GSD file can be searched through. Further information to this you find in section <i>GSD</i> on page 29.
Diagnosis	
Diagnosis/ Extended Diagnosis	At the <b>Diagnosis</b> panes diagnosis information can be read. For further information, refer to section <i>Overview Diagnosis</i> on page 30.

Table 4: Overview Dialog Panes



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



For further information, refer to section *Connecting/Disconnecting Device* on page 35.

## 1.4.4 Controls and Dialog Buttons

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

### 1.4.4.1 General Buttons

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

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

Table 5: General Buttons

### 1.4.4.2 Table Line Buttons

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






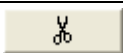
Button	Meaning
	To select the first line of a table use <b>First Line</b> .
	To select the previous line of a table use <b>Previous Line</b> .
	To select the next line of a table use <b>Next Line</b> .
	To select the last line of a table use <b>Last Line</b> .
	<b>Create a new Line</b> inserts new lines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

Table 6: Table Line – Buttons

## 1.4.5 Status Bar

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

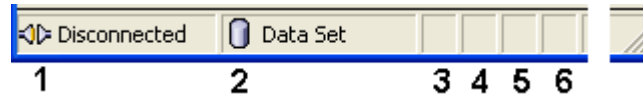


Figure 3: Status Bar – Status Fields 1 to 6

Status Field	Icon / Meaning	
<b>1</b>	<b>DTM Connection States</b>	
		<b>Connected:</b> Icon closed = Device is online
		<b>Disconnected:</b> Icon opened = Device is offline
<b>2</b>	<b>Data Source States</b>	
		<b>Data set:</b> The displayed data are read out from the instance data set (database).
		<b>Device:</b> The displayed data are read out from the device.
<b>3</b>	<b>States of the instance Date Set</b>	
		<b>Valid Modified:</b> Parameter is changed (not equal to data source).

Table 7: Status Bar Icons [1]

Offline State

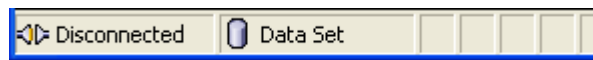


Figure 4: Status Bar Display Example

## 2 Getting started and Instructions Step by Step

### 2.1 Configuration Steps

The following table describes the steps to configure a PROFIBUS DP Slave device with the PROFIBUS DP generic Slave DTM as it is typical for many cases. At this time it is presupposed that the PROFIBUS DP Master DTM installation was already done.

#	Step	Short Description	For detailed information see section	Page
1	Add PROFIBUS DP Slave in the Device Catalog	Add the Slave in the Device Catalog by importing the device description file to the Device Catalog. Depending of the FDT Container. For netDevice: - <b>Network &gt; Import Device Descriptions.</b>	(See User Manual netDevice and netProject)	-
2	Load device catalog	Depending of the FDT Container. For netDevice: - select <b>Network &gt; Device Catalog,</b> - select button <b>Reload Catalog.</b>	(See User Manual netDevice and netProject)	-
3	Create new project / Open existing project	Depending of the frame application. For the configuration software: - select <b>File &gt; New</b> or <b>File &gt; Open.</b>	(See User Manual of the Frame Application)	-
4	Insert Master or Slave into configuration	Depending of the FDT Container: For netDevice: - in the Device Catalog click to the Controller, - and insert the device via drag and drop <b>to the line</b> in the network view, - in the Device Catalog click to the Slave, - and insert the device via drag and drop <b>to the Controller bus line</b> in the network view.	-	-
5	Configure Slave	Configure the Slave device. - Double click to the device icon of the Slave. - The Slave DTM configuration dialog is displayed. In the Slave DTM configuration dialog: - select <b>Configuration &gt;General,</b> - set the Watchdog control and Interval, - select <b>Configuration &gt;Modules,</b> - configure the Modules of the Slave, - select <b>Configuration &gt;Parameter,</b> - set the module Parameters, - Select <b>Configuration &gt; Group,</b> - assign the Slave to a group, - select <b>Configuration &gt; Extensions,</b> - set the Extension parameters, - select <b>Configuration &gt; DPV1,</b> - configure the <b>DPV1</b> functions, - close the Slave DTM configuration dialog via the button <b>OK.</b>	<i>Configuring Slave Parameter</i>  <i>General</i> <i>Modules</i> <i>Parameter</i> <i>Groups</i> <i>Extensions</i> <i>DPV1</i>	17  19 20 23 24 25 26
6	Configuration Steps Master device	Configure the Master device via PROFIBUS DP Master DTM.	(See User Manual DTM for PROFIBUS DP Master devices)	-
7	Save project	Depending of the frame application. For the configuration software: - select <b>File &gt; Save.</b>	(See User Manual of the Frame Application)	-

Table 8: Getting started - Configuration Steps



For information to further steps as **Diagnosis**, refer to the user manual *DTM for PROFIBUS DP Master devices*.

## 2.2 Configuring Slave Parameters

The following steps are needed to set the Slave device parameters using the PROFIBUS DP generic Slave 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.



For more information refer to section *General* on page 19, to section *Modules* on page 20, to section *Parameter* on page 23, to section *Groups* on page 24, to section *Extensions* on page 25 and to section *DPV1* on page 26.

---

### 3 Configuration

#### 3.1 Overview Configuration

**Dialog Panes “Configuration”**

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

Section	Subsection	Page
<i>Configuration</i>	<i>General</i>	19
	<i>Modules</i>	20
	<i>Parameter</i>	23
	<i>Groups</i>	24
	<i>Extensions</i>	25
	<i>DPV1</i>	26

Table 9: Descriptions of the Dialog Panes Configuration

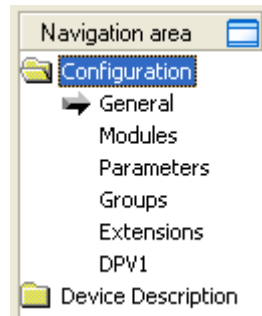
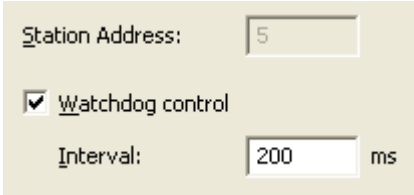


Figure 5: Navigation Area - Configuration

## 3.2 General



The screenshot shows a configuration window with a light beige background. It contains three fields: 'Station Address:' with a text box containing the number '5', a checked checkbox labeled 'Watchdog control', and 'Interval:' with a text box containing '200' and the unit 'ms' to its right.

Figure 6: Configuration > General

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. 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.

### 3.3 Modules

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

The screenshot shows a software interface titled "Modules". It is divided into two main sections: "Available Modules" and "Configured Modules".

**Available Modules:** A table with two columns: "Module name" and "Module Configuration Identifier".

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

Below this table are two buttons: "Insert" and "Append".

**Configured Modules:** A table with three columns: "Slot", "Module name", and "Module Configuration Identifier".

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

Below this table are statistics and a "Remove" button:

- 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 7: 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 50.

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

### 3.3.1 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 22.

The sequence of the modules in the list **Configured Modules** is important and must match with the sequence which exists in the Master. 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 the **OK** button to confirm your selection. If the selection should not be taken over, click the **Cancel** button.

### 3.3.2 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 <b>Available Modules</b> and with a double click on this module it appears as last module in the list <b>Configured Modules</b> .
'Insert' Button	Select a module by clicking on it in the list <b>Available Modules</b> . With a mouse click on the <b>Insert</b> button, this module appears in the list <b>Configured Modules</b> in the actually selected slot.
'Append' Button	Select a module by clicking on it in the list <b>Available Modules</b> . With a mouse click on the <b>Append</b> button, the selected module is appended as <u>last module</u> in the list <b>Configured Modules</b> .

Table 10: 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**.

### 3.3.3 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 <b>Configured Modules</b> . With a mouse click on the <b>Delete</b> button the selected module will be deleted from the list <b>Configured Modules</b> .

Table 11: Delete Configured Modules

### 3.4 Parameter

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

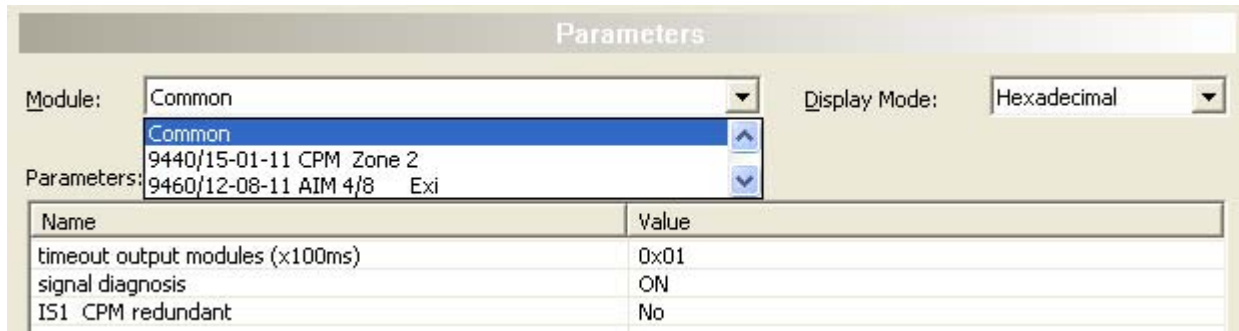


Figure 8: Configuration > Parameter

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 20).

- **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.

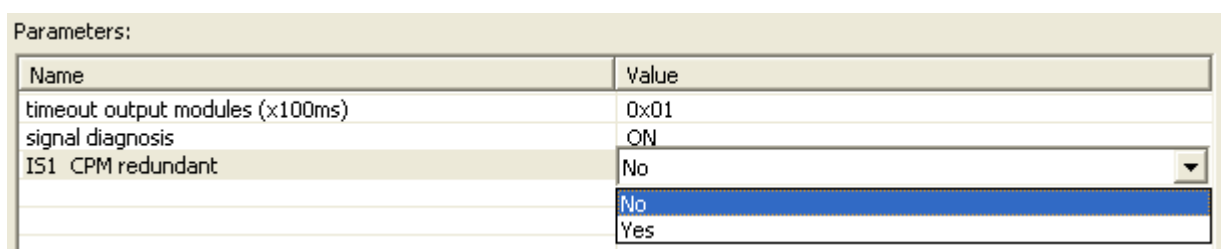


Figure 9: Change Parameter Values

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.

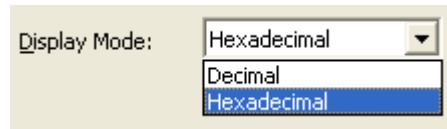


Figure 10: Decimal Representation of the Parameter Values

### 3.5 Groups

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

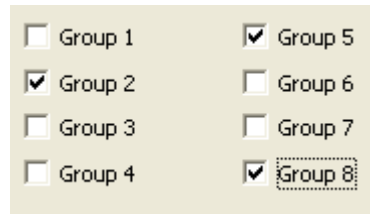


Figure 11: Configuration > Groups

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.

### 3.6 Extensions

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.

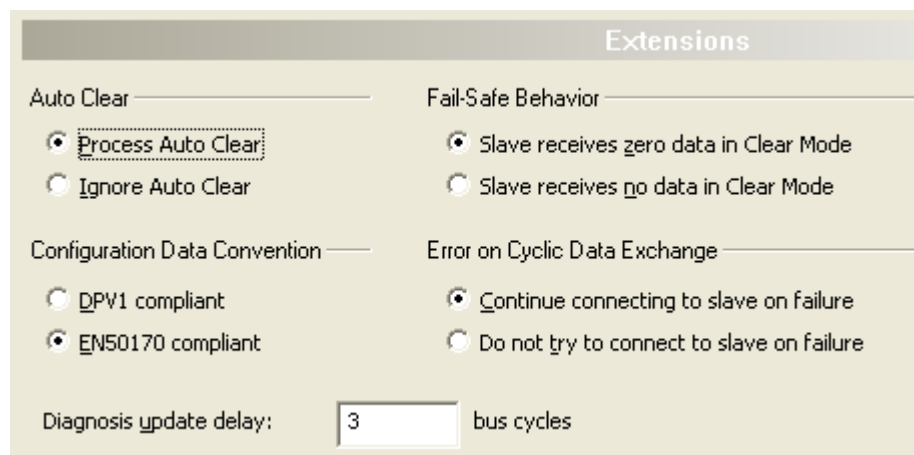


Figure 12: Configuration > Extensions

Setting	Description
Auto Clear	<p>The setting <b>Auto Clear</b> activates or respectively deactivated the Auto Clear Function of the actual Slave. This function can only be used, if the <u>global Auto Clear is activated in the Master</u>. The setting of the global Auto Clear is typically configured in the Bus Parameters of the Master.</p> <p>If no data exchange occurs to at least one Slave (Process Auto Clear) or an existing data exchange takes place after the expiration of a monitoring time, then the Master leaves the data exchange and sets the outputs of <b>all</b> assigned DP Slaves into a secure condition.</p> <p>If the setting <b>Ignore Auto Clear</b> is selected, the Master tries to stay in the data exchange with the other Slaves.</p>
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 <b>Configuration Data Convention</b> determines whether the configuration data are interpreted according to <b>EN 50170</b> or <b>DPV1</b>.</p>
Error on Cyclic Data Exchange	<p>If the option <b>Continue if Slave not responding</b> is selected, the Master remains in the state DATA_EXCHANGE and holds the connection to the Slave.</p> <p>When <b>Abort if Slave not responding</b> 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>
Diagnosis update delay	<p>Some Slave devices which are newer require more time for the consistency testing for the processing of the SET_PRM parameterizing telegrams.</p> <p>In this case the standard diagnosis cycle is not sufficient after the parameterizing phase, to detect the disposition of the Slave for the DATA_EXCHANGE.</p> <p>With the diagnosis delay, the number of diagnosis cycles is advanced after the parameterizing phase, which is the maximum that the Master waits for this disposition, before it starts a new parameterizing.</p> <p>The value range is 0..255.</p>

Table 12: Configuration > Extensions

### 3.7 DPV1

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 13: 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

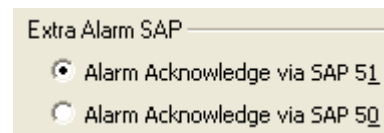
Figure 14: Configuration > DPV1 > Alarms

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 15: 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 Device Description

### 4.1 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>	29
	<i>GSD</i>	29

Table 13: Descriptions of the Dialog Panes Device Description

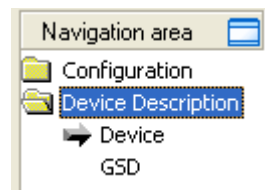


Figure 16: Navigation Area - Device Description

## 4.2 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 14: General Device Information

## 4.3 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 15: Device Description – GSD Viewer

# 5 Diagnosis

## 5.1 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.

### Dialog Panes “Diagnosis”

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

Section	Subsection	Page
<i>Diagnosis</i>	<i>Diagnosis</i>	31
	<i>Extended Diagnosis</i>	33

Table 16: Descriptions of the Diagnosis Panes



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



For further information, refer to section *Connecting/Disconnecting Device* on page 35.

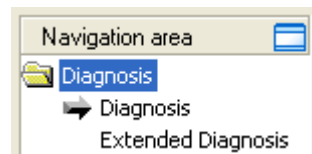


Figure 17: Navigation Area - Diagnosis

## 5.2 Diagnosis

Detailed information about the diagnosis of a DP Slave device you find in section *DP Slave Diagnosis* on page 43.

The diagnosis information of a DP Slave can be 6 to 244 bytes. The first 6 bytes are standard Diagnosis information (specification). The meaning of these 6 bytes is according to the PROFIBUS specification and contains the **Station Status**, the **Assigned Master Address** and the **Device internal Ident Number** of the Slave.

The Extended Device Diagnosis starts at the 7th Byte. It is manufacturer specific and can contain, station related diagnosis, module related diagnosis and/or channel related diagnosis.

The range of the displayed diagnosis bytes can be restricted by the used DP Master.

The following figure shows the analysis of the first 6 byte of the standard diagnosis.

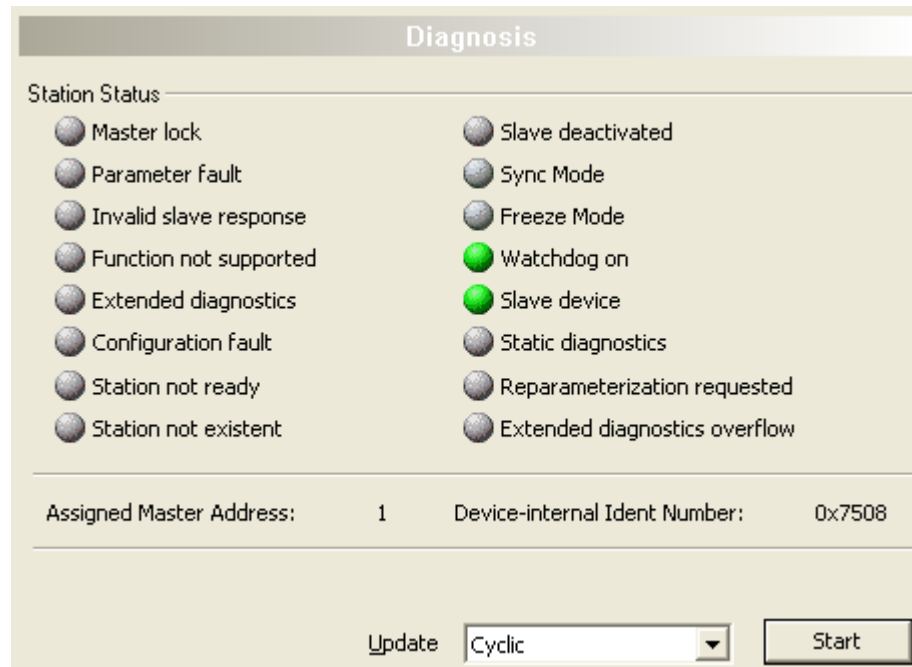


Figure 18: Diagnosis

Diagnosis	Description
Station Status	The Station Status 1, 2 and 3 in detail are described in section <i>Station Status of the Slave Diagnosis</i> on page 43.
Assigned Master Address	At <b>Assigned Master Address</b> the address of the master is shown, that has parameterized and configured this Slave. The value 255 displays, that the Slave is not parameterized or configured yet or that the received parameter information and configuration information are rejected because of an error.
Device internal Ident Number	In the field <b>Device internal Ident Number</b> the (real) ident number of the used Slave is displayed. If the <b>Device internal Number</b> shows the value 0000, the master still has no connection via the PROFIBUS to the DP Slave.
Update	Actualizes the displayed diagnosis states.

Table 17: Diagnosis



**Note:** The **Device internal Ident Number** has to agree with the **Ident Number of the GSD file** (see section *General Device Information* on page 12 ). When they are different the reason could be that the wrong GSD file is used or a wrong DP Slave was connected to the PROFIBUS.

## 5.2.1 Update

The diagnosis information can be updated or actualized cyclic or one-time.

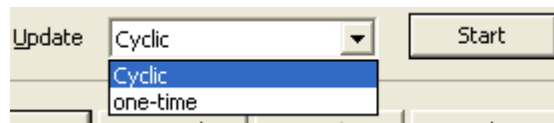


Figure 19: Diagnosis - Update

Updating the diagnosis information cyclical:

- Under **Update** select Cyclic.
- Select the button **Start**.
- ⇒ The display of the diagnosis information is updated or actualized cyclical.
- To stop the cyclic update, select the button **Stop**.

Updating the diagnosis information one-time:

- Under **Update** select one-time.
- Select the button **Start**.
- ⇒ The diagnosis information are updated or actualized one-time.



A detailed description about the device related, identifier related and channel related diagnosis can be found in the sections given in the following table:

Diagnosis	Section	Page
Device related diagnosis	<i>Device Related Diagnosis</i>	46
Identifier related diagnosis	<i>Identifier Related (Module) Diagnosis</i>	47
Channel related diagnosis	<i>Channel Related Diagnosis</i>	48

Table 18: Extended Diagnosis



**Note:** An analysis of the extended device diagnosis can only take place, if texts are provided for the analysis in the GSD by the device manufacturer.

### 5.3.1 Update

The diagnosis information can be updated or actualized cyclic or one-time.

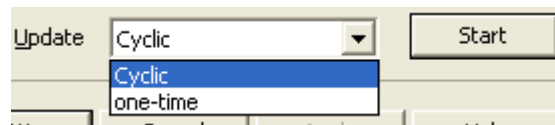


Figure 21: Diagnosis - Update

Updating the diagnosis information cyclical:

- Under **Update** select Cyclic.
- Select the button **Start**.
- ⇒ The display of the diagnosis information is updated or actualized cyclical.
- To stop the cyclic update, select the button **Stop**.

Updating the diagnosis information one-time:

- Under **Update** select one-time.
- Select the button **Start**.
- ⇒ The diagnosis information are updated or actualized one-time.

## 6 Online Functions

### 6.1 Connecting/Disconnecting Device



---

**Note:** To access to the **diagnosis** panes and to use the diagnosis, requires an online connection from the PROFIBUS DP generic Slave DTM to the PROFIBUS DP Master DTM. This online connection can only be built up if a driver is assigned to the PROFIBUS DP Master device.

---



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For information on how to select a driver, to scan for a device and to select it in the Master DTM dialog, refer to the user manual *DTM for PROFIBUS DP Master devices*.

---

#### Connecting Device

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

1. In the Master DTM dialog select a driver and configure it, scan for the device and select it and select and download the firmware.
  2. Close the user dialog of the PROFIBUS DP Master DTM via the **OK** button.
  3. Put a right-click on the device icon of the generic PROFIBUS DP Slave.
  4. Select the **Connect** command from the context menu (right mouse button).
- ⇒ The PROFIBUS DP generic Slave DTM now is connected to the PROFIBUS DP Master DTM via an online connection. In the network view the device description at the device icon is displayed with a green colored background.

#### Disconnecting Device

The following steps are needed to disconnect an online connection from the PROFIBUS DP generic Slave DTM to the PROFIBUS DP Master DTM:

1. Close the user dialog of the PROFIBUS DP generic Slave DTM via the **OK** button.
  2. Right-click on the device icon of the generic PROFIBUS DP Slave.
  3. Select the **Disconnect** command from the context menu (right mouse button).
- ⇒ The online connection from the PROFIBUS DP generic Slave DTM to the PROFIBUS DP Master DTM is disconnected. In the network view the device description is displayed not any more with a green colored background.

## 6.2 Upload

The **Upload** function of the PROFIBUS generic Slave DTM allows to upload parameter data from the Slave device into the PROFIBUS generic Slave DTM.

Proceeding the upload:

1. In the DTM interface dialog select **OK**, to close the DTM interface dialog.
  2. Put a right-click on the PROFIBUS generic Slave DTM icon.
  3. Select the **Upload** command from the context menu.
- ↻ If in the PROFIBUS generic Slave DTM already a module configuration is present, the dialog **Question – Upload function will overwrite any existing module configuration. Do you wish to proceed?** is displayed.
- To proceed the upload, select **Yes**.

### 6.2.1 Module Identifier Conflicts

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

## 6.2.2 Upload Pane

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

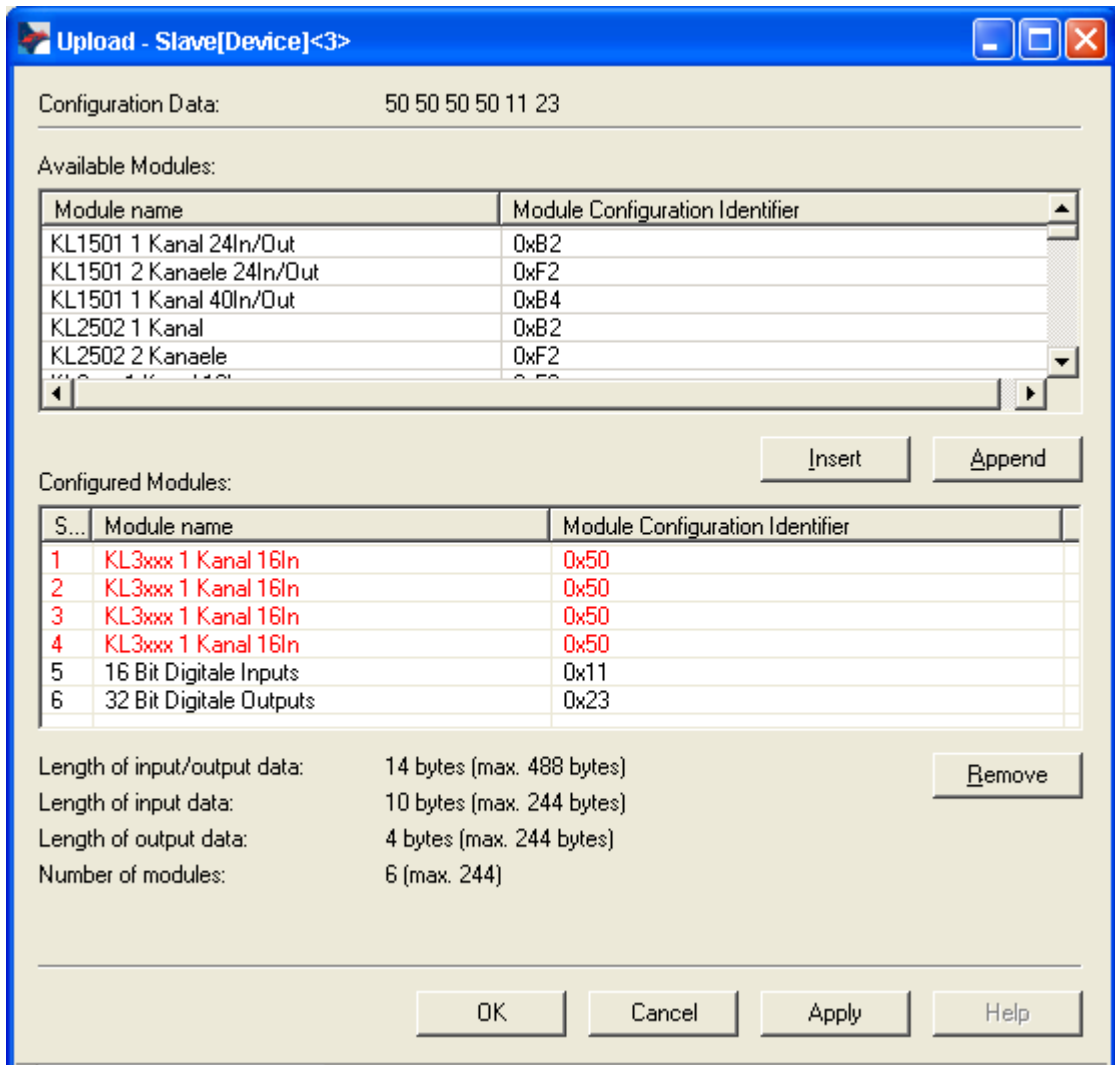


Figure 22: Upload

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

Table 19: Upload

### 6.2.3 Adapting a scanned Module Configuration with a Conflict

If the module configuration of a Slave device is indicated with a conflict, check and manually adapt this scanned module configuration. Therefore proceed as follows:

1. Regard the following note:



---

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

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

---



---

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

---

2. Check, if the scanned module configuration of a Slave corresponds to the actual physical module sequence in the Slave device or not.
3. Replace scanned modules which do not correspond to the physical module sequence using the **Remove**, **Insert** or **Append** buttons:
  - Delete these modules from the list **Configured Modules** using the **Remove** button.
  - Then Insert the required modules from the selection list **Available Modules** into the list **Configured Modules**. There are several possibilities to select available modules. This is described in section *Select Available Modules* on page 22.
  - Click on the **OK** button to confirm your selection. If the selection should not be taken over, click the **Cancel** button.

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## 8 Glossary

### 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.

### 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.

### 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.

**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.,

## 9 Appendix

### 9.1 DP Slave Diagnosis

A PROFIBUS DP Master can read out diagnosis information of a DP Slave. The diagnosis telegram contains standard diagnosis and as the case maybe extended diagnosis.

<b>Standard Diagnostic 6 Byte</b>	<b>Extended Diagnostic (if available)</b>
---------------------------------------	---

Table 20: DP Slave Diagnosis

The **Standard Diagnosis** of the first 6 Byte for DP Slave devices is described in section *Station Status of the Slave Diagnosis* on page 43.

If an **Extended Diagnosis** is available for this device, you find a description in section *Extended Slave Device Diagnosis* on page 46.

#### 9.1.1 Station Status of the Slave Diagnosis

##### 9.1.1.1 The meaning of Station Status 1

Station-Status 1	Set by	Meaning and Remedy
Master lock (Bit 7)	Master	<p><b>Meaning:</b> The Slave has already been parameterized by another Master and is locked in its access.</p> <p><b>Remedy:</b> This is security mechanism of PROFIBUS DP. First clarify which master should have access to this Slave. Then add this Slave to the configuration of the master that should have access to this Slave and remove this Slave from the configuration of the other master.</p>
Parameter fault (Bit 6)	Slave	<p><b>Meaning:</b> This bit is set by the Slave automatically, when the parameters sent by the Master are containing wrong or insufficient data. On every received parameter telegram the Slave executes a check routine on the whole parameter telegram. If the Slave detects a faulty parameter value or illegal data during its check, it will report the <b>Parameter fault</b>. During the check routine the Slave compares its ident number with the one sent by Master.</p> <p><b>Remedy:</b> So if the Slave reports this error, first compare the <b>Device internal Number</b> with the <b>GSD Ident Number</b>. If they are different, either a wrong GSD file is used or a wrong device was connected to the bus. If this two Ident numbers are the same, check the parameter data</p>
Invalid Slave response (Bit 5)	Master	<p><b>Meaning:</b> This bit is set by the Master, when the Master receives an invalid answer from the Slave. So the physical contact to the Slave works principally, but the logical answer was not understood.</p> <p><b>Remedy:</b> An error at the physical transmission line could have appeared like twisted cable, missing bus termination or missing shield connection.</p> <p>Use standardized DP Slave.</p> <p>This also can happen, for example if a PROFIBUS-FMS Slave is connected to the DP-Master instead of a DP Slave. So the Slave does not understand the DP-Telegram and rejects it. It's handled as 'Invalid Slave Response'.</p>

Table 21: PROFIBUS DP Diagnosis Station state 1 (Bit 7 to 5)

Station-Status 1	Set by	Meaning and Remedy
Function not supported (Bit 4)	Slave	<p><b>Meaning:</b> This bit is set by the Slave, when a function should be performed which is not supported. Newer releases of Slave stations normally support the Sync and Freeze-Mode for I/O data. This is fixed in the GSD-File and read out by SyCon and sent to the Slave in the parameter telegram.</p> <p><b>Remedy:</b> If this error occurs the GSD-File declares at least one of these commands as supported, but the Slave does not. In this case contact the manufacturer of the Slave device for the right GSD-File for the used Slave.</p>
Extended Diagnosis (Bit 3)	Slave	<p><b>Meaning:</b> This bit is set by the Slave, if extended diagnosis data are a read out. Extended diagnosis data is optionally and normally used by a Slave to hand out manufacturer specific diagnosis information.</p> <p><b>Remedy:</b> Click on the button <b>Extended Diagnosis</b> to get a Hex-dump of the diagnosis data and read about their <u>meaning in the manual of the manufacturer</u>. If the GSD-File contains information about the Extended Device Diagnosis it can be analyzed with the DTM.</p>
Configuration fault (Bit 2)	Slave	<p><b>Meaning:</b> During the PROFIBUS DP startup procedure the Slave compares its internal I/O configuration with the configuration of the Master. If the Slave detects differences it will report a configuration error. That means that the Master has another I/O module constellation as the Slave.</p> <p><b>Remedy:</b> So first compare visually all configured I/O modules in the configuration data of SyCon for this Slave with its real physical constellation. Note that the order of the module has to agree. Some Slaves need virtual I/O modules to be configured first or empty slot modules to get an even number of modules to run. This Slave specific I/O module behavior has to be written down in the Slave documentation because it can not be read out from the GSD file. Please read the configuration notes of the manufacturer.</p>
Station not ready (Bit 1)	Slave	<p><b>Meaning:</b> The DP Slave is still not ready for the data exchange.</p> <p><b>Remedy:</b> When or at which event the Slave sets this bit is not defined in the specification. That means it can have several Slave specific reasons. Usually the bit is set in combination with one the other fault bits.</p> <p>Check especially the parameter and the configuration. Often the report <b>Station not ready</b> results in case of parameter fault or configuration faults.</p> <p>It is possible that the supply voltage at the Slave was just first switched on. Wait until the device is initialized.</p>
Station not existent (Bit 0)	Master	<p><b>Meaning:</b> This bit is set by the Master automatically, if this Slave does not answer or is not reachable on the bus.</p> <p><b>Remedy:</b> Please check your PROFIBUS cable. Both signal wires need to be connected correctly between all devices. In addition the connectors at the end of the cable need to be provided with termination resistors.</p> <p>Check that the device is connected to the bus cable.</p> <p>Check the power supply at the Slave device.</p> <p>Compare the station address at the Slave with the configuration of the Master.</p> <p>Check, if the Slave supports the configured baud rate. Some Slaves only work with up to 1.5 Mbaud or need to be set for a PROFIBUS DP conform behavior.</p> <p>Check the intermediated LWL (optical) connector's converters and repeaters.</p>

Table 22: PROFIBUS DP Diagnosis Station state 1 (Bit 4 to 0)

### 9.1.1.2 The meaning of Station State 2

Station-Status 2	Set by DP	Meaning
Slave deactivated (Bit 7)	Master	This bit is set by the Master, if the Slave in its parameter set is marked as inactive, so that it is taken out from the cyclic I/O exchange.
Reserved (Bit 6)	-	-
Sync Mode (Bit 5)	Slave	This bit is set by the Slave, when it has received the Sync control command.
Freeze Mode (Bit 4)	Slave	This bit is set by the Slave, when is has received the Freeze control command.
Watchdog on (Bit 3)	Slave	This bit is set by the DP-Slave, when its Watchdog control is active to supervise its corresponding Master connection.
Slave device (Bit 2)	Slave	This bit is always set by the Slave.
Static Diagnosis (Bit 1)	Slave	The Slave sets this bit to indicate the Master to be not operative because of a general error. Typically the DP Slave is not ready for an I/O data transfer. In a case of a set Static Diagnosis bit the Master has to collect diagnosis information as long as this bit is active. On which events or at what time this bit can be set by a Slave device, is not defined in the norm description and can not be mentioned here.
Parameterization request (Bit 0)	Slave	The Slave sets this bit to force the Master system to do a new parameterization. This bit is set as long as new parameterization must be performed. In case of this error you should compare firstly the <b>Device internal Ident Number</b> with the <b>GSD ident number</b> in this window. This numbers need to be the same. Furthermore you have to check the parameter data.

Table 23: PROFIBUS DP Diagnosis Station State 2

### 9.1.1.3 The meaning of Station State 3

Station-Status 3	Set by	Meaning
Extended diagnosis overflow (Bit 7)	Master Slave	This bit is set, if there is more extended diagnosis information to report to the Master than can be given to the Master in one diagnosis telegram. The DP-Slave sets this bit for example if there is more diagnosis channel information than the Slave can hold down in its diagnosis buffer.
Reserved (Bit 6 to 0)	-	-

Table 24: PROFIBUS DP Diagnosis Station State 3

### 9.1.1.4 Master Address

This byte of the standard diagnosis shows the address of the DP Master which has parameterized the DP Slave and which has read and write access to the DP Slave. The value 255 (FFH) displays that the DP Slave was not parameterized or faulty parameterized by the DP Master.

### 9.1.1.5 Ident Number

The Ident Number is the manufacturer code of the DP Slave device.

## 9.1.2 Extended Slave Device Diagnosis

### 9.1.2.1 Device Related Diagnosis

This extended diagnosis is referred to the device. The length of the device related diagnosis comprises min 2 to max 63 bytes.

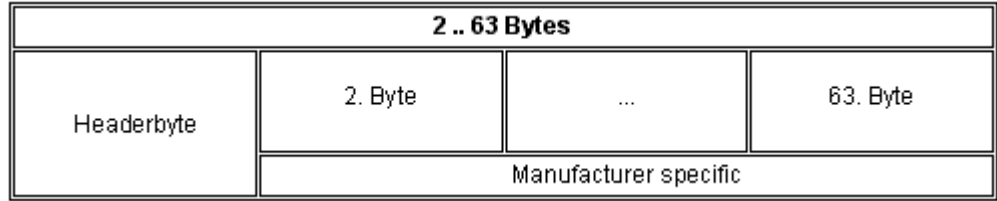


Table 25: Device Related Diagnosis

The meaning of the Headerbyte is shown in the following table. The meaning of the following 1 to max. 62 diagnosis bytes is fixed by the device manufacturer. For further analysis the ident number and the device description of the manufacturer are necessary.

<b>MSB</b>							<b>LSB</b>	<b>Meaning</b>
7	6	5	4	3	2	1	0	
Block length in bytes including header byte 2 to header byte 63								
Bit 7, Bit 6 fixed to 00								

Table 26: Device Related Diagnosis (Headerbyte)

### 9.1.2.2 Identifier Related (Module) Diagnosis

This extended diagnosis is referred to the module (identifier byte). The length of the identifier related diagnosis comprises min 2 to max 63 bytes.

2 .. 63 Bytes					
<b>Headerbyte</b>	<b>7 .. 0</b>	<b>15 .. 8</b>	<b>23 .. 16</b>	<b>31 .. 24</b>	<b>...</b>

Table 27: Identifier Related (Module) Diagnosis

For each used identifier byte at the configuration one bit is reserved. It is padded to byte limits. The bits which are not configured are set to zero. A set bit means there is diagnosis for this module (identifier byte).

#### Header Byte

MSB							LSB	Meaning
7	6	5	4	3	2	1	0	
								Block length in bytes including header byte 2 to header byte 63
								Bit 7, Bit 6 fixed to 00

Table 28: Identifier Related (Module) Diagnosis (Headerbyte)

#### Bit structure for identifier related diagnosis

MSB							LSB	Meaning
7	6	5	4	3	2	1	0	
								Identifier byte 0 has diagnostic
								Identifier byte 1 has diagnostic
								...
								Identifier byte 7 has diagnostic

Table 29: Identifier Related (Module) Diagnosis (Bit structure)

### 9.1.2.3 Channel Related Diagnosis

This extended diagnosis is referred to a channel.

<b>Byte 1</b> <b>Identifier Number</b>	<b>Byte 2</b> <b>Channel Number</b>	<b>Byte 3</b> <b>Type of Diagnostic</b>
---	--	--

Table 30: Channel Related Diagnosis

The length per entry is 3 bytes. In this block the diagnosed channels and the diagnosis reason are entered in turn. Several blocks with channel related diagnosis can appear.

#### **Byte 1: Identifier Number**

MSB							LSB	Meaning
7	6	5	4	3	2	1	0	
Identifier Number 0 to 63								
Bit 7, Bit 6 fixed to 00								

Table 31: Byte 1: Identifier Number

#### **Byte 2: Channel Number**

MSB							LSB	Meaning
7	6	5	4	3	2	1	0	
Channel Number 0 to 63								
Input / Output								
00 reserved								
01 Input								
10 Output								
11 Input / Output								

Table 32: Byte 2: Channel Number

For identifier bytes which contain both input and output, the direction of the diagnosed channel is indicated in bit 7 and bit 6 of the channel number.

**Byte 3: Type of Diagnosis**

MSB				LSB				Meaning
7	6	5	4	3	2	1	0	
								Error Type (described in the following table)
								Channel Type
								000 reserved
								001 Bit
								010 2 Bit
								011 4 Bit
								100 Byte
								101 Word
								110 2 Words
								111 reserved

Table 33: Byte 3: Type of Diagnosis

Error Type	Description
0	reserved
1	short circuit
2	undervoltage
3	overvoltage
4	overload
5	overtemperature
6	line break
7	upper limit value exceeded
8	lower limit value exceeded
9	error
10	reserved
...	...
15	reserved
16	manufacturer specific
...	...
31	manufacturer specific

Table 34: Error Type

## 9.2 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 35: Identifier bytes (overview)

### 9.2.1 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 36: 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 37: 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 38: Identifier Bytes 0xA0 .. 0xBF, 0xD0 .. 0xFF (GIF)

### 9.2.2 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 39: 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 40: 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 41: 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 42: Length byte of the special identifiers (SIF)*

## 9.3 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 **Configuration**, **Device Description** and **Diagnosis** panes of the PROFIBUS DP generic 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 **Configuration** panes, you need user rights for *Maintenance*, for *Planning Engineer* or for *Administrator*.

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

### 9.3.1 Configuration

	Observer	Operator	Maintenance	Planning Engineer	Administrator
<i>General</i>	D	D	X	X	X
<i>Modules</i>	D	D	X	X	X
<i>Parameter</i>	D	D	X	X	X
<i>Groups</i>	D	D	X	X	X
<i>Extensions</i>	D	D	X	X	X
<i>DPV1</i>	D	D	X	X	X

Table 43: Configuration (D = Displaying, X = Editing, Configuring)

## 9.4 References

- [1] Device Type Manager (DTM) Style Guide, Version 1.0 ; FDT-JIG - Order No. <0001-0008-000>

## 9.5 Contacts

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