



Operating Instruction Manual
Generic Slave DTM for CANopen Slave Devices
Configuration of CANopen Slave Devices

Hilscher Gesellschaft für Systemautomation mbH

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Table of Contents

1	INTRODUCTION.....	4
1.1	About this Manual	4
1.1.1	Online Help.....	4
1.1.2	List of Revisions	5
1.1.3	Conventions in this Manual	6
1.2	Legal Notes.....	7
1.2.1	Copyright	7
1.2.2	Important Notes.....	7
1.2.3	Exclusion of Liability	8
1.2.4	Warranty	8
1.2.5	Export Regulations	9
1.2.6	Registered Trademarks.....	9
1.3	About Generic CANopen Slave DTM	10
1.3.1	Requirements	10
1.4	Dialog Structure of the Generic CANopen Slave DTM	11
1.4.1	General Device Information.....	12
1.4.2	Navigation Area.....	12
1.4.3	Dialog Panes	13
1.4.4	OK, Cancel, Apply and Help.....	14
1.4.5	Table Lines	14
1.4.6	Status Bar.....	15
2	GETTING STARTED AND INSTRUCTIONS STEP BY STEP	16
2.1	Configuration Steps	16
2.2	Configuring Device Parameters.....	17
3	CONFIGURATION	18
3.1	Overview Configuration	18
3.2	General Settings	19
3.3	Special Function Objects	20
3.4	Object Dictionary	22
3.5	Process Data Objects	25
3.5.1	PDO Properties	25
3.5.2	PDO Mapping.....	28
4	DEVICE DESCRIPTION	30
4.1	Overview Device Description.....	30
4.2	Device Info.....	31
4.3	EDS Viewer	32
5	LISTS	33

5.1	List of Figures	33
5.2	List of Tables	34
6	GLOSSARY	35
7	APPENDIX	36
7.1	COB-ID (Predefined Connection Set)	36
7.2	User Rights	37
7.2.1	Configuration	38
7.3	References	40
7.4	Contacts	41

1 Introduction

1.1 About this Manual

This manual describes how to configure CANopen Slave devices, which are described with EDS files. These devices can be configured by use of the Generic CANopen Slave DTM within a FDT Framework.

Dialog Panes

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

Section	Subsection	Manual Page
<i>Configuration</i>	<i>General Settings</i>	19
	<i>Special Function Objects</i>	20
	<i>Object Dictionary</i>	22
	<i>Process Data Objects</i>	25
	<i>PDO Properties</i>	25
	<i>PDO Mapping</i>	28
<i>Device Description</i>	<i>Device Info</i>	28
	<i>EDS Viewer</i>	32

Table 1: Descriptions Dialog Panes

1.1.1 Online Help

The Generic CANopen Slave DTM contains an integrated online help facility.

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

1.1.2 List of Revisions

Index	Date	Version	Component	Chapter	Revisions
1	20.02.06	-	-	Alle	created
2	08.05.07	1.0.3.0 1.0.1.2	CANopenGenSlave DTM.dllCOGeneric SlaveDtmGui.ocx	1 2.1 2.3 3.1 4.2 4.3 4.4	Chapter 'Introduction' actualized, Section 'Overview Configuration' actualized, Section 'Special Function Objects' actualized, Section 'Overview Device Description' actualized, Section 'User Rights' actualized, Section 'Contact' added Section 'References' added
3	20.11.08	1.0.4.0 1.0.5.0	CANopenGenSlave DTM.dllCOGeneric SlaveDtmGui.ocx	Alle 1 2 7.2	Manufacturer and product names generalized (completed), Chapter 'Introduction' revised, Chapter 'Getting started' added Section 'User Rights' revised,
4	15.04.09 20.06.11	1.0.5.0 1.0.5.0 1.6.x.x 1.6.x.x	CANopenGenSlave DTM.dllCOGeneric SlaveDtmGui.ocx CANopenGenSlave DTM.dll, COGenericSlaveDt mGui.ocx	1.4.5 1.3.1	Section "Station Bar" actualized. Section <i>Requirements</i> actualized

1.1.3 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

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CANopen® is a registered trademark of CAN in AUTOMATION - International Users and Manufacturers Group e.V (CiA), Nürnberg.

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1.3 About Generic CANopen Slave DTM

You can use the Generic CANopen Slave DTM to configure CANopen Slave devices described with EDS files within a FDT Framework.

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

1.3.1 Requirements

System Requirements

- PC with 1 GHz processor or higher
- Windows® 2000, Windows® XP, Windows® Vista (32 bit), Windows® 7 (32 bit) or Windows® 7 (64 bit)
- Internet Explorer 5.5 or higher
- RAM: min. 512 MByte, recommended 1024 MByte
- Graphic resolution: min. 1024 x 768 pixel
- Keyboard and Mouse



Note: If the project file is saved and opened again or it is used on another PC, the system requirements need to match. Particularly the DTM need to be installed on the used PC.

Requirements Generic CANopen Slave DTM

Requirements for working with a Generic CANopen Slave DTM are:

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

Loading EDS files

To work with the Generic CANopen Slave DTM, the EDS file of the used device must be copied into the EDS folder of the corresponding 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 Generic CANopen 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 DTM.

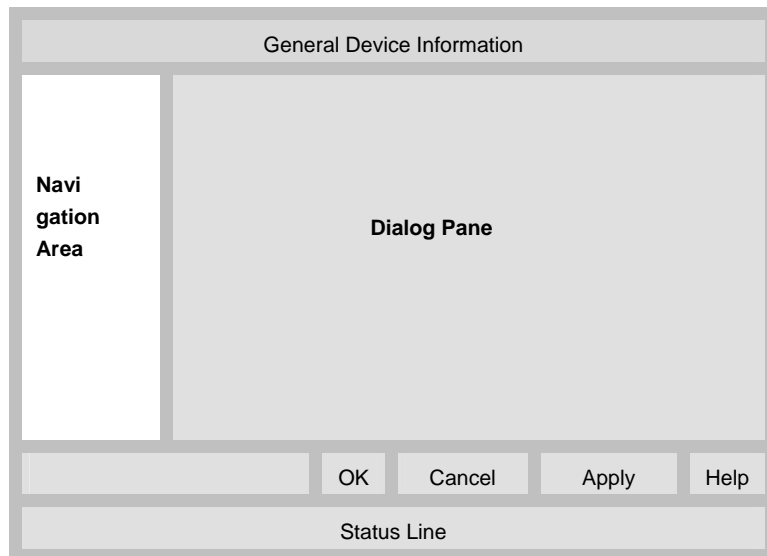


Figure 1: Dialog Structure of the Generic CANopen Slave DTM

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 2: General Device Information

1.4.2 Navigation Area

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

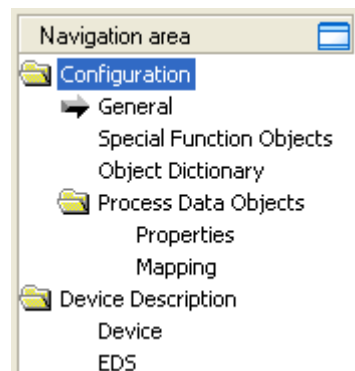




Figure 2: Navigation Area

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

Hide / display Navigation

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

1.4.3 Dialog Panes

At the dialog pane the **Settings** or **Device Description** panes are opened via the corresponding folder in the navigation area.

Configuration	
General	The dialog General Settings displays EDS file data. For further information see section <i>General Settings</i> on page 19.
Special Function Objects	The dialog Special Function Objects displays data of the synchronization, time stamp and emergency telegram. For further information see section <i>Special Function Objects</i> on page 20.
Object Dictionary	The dialog Object Dictionary represents the object dictionary of the device. The display shows data read out from the EDS file. For further information see section <i>Object Dictionary</i> on page 22.
Process Data Objects	
PDO Properties	In the dialog PDO Properties the transmit and the receive PDOs are displayed. For further information see section <i>PDO Properties</i> on page 25.
PDO Mapping	The dialog PDO Mapping permits to map the contents of a PDO. For further information see section <i>PDO Mapping</i> on page 28.
Device Description	
Device	The Device Info pane contains the manufacturer information about the device. For further information see section <i>Device Info</i> on page 28.
EDS	By use of the EDS-Viewer an EDS file can be viewed and searched through. For further information see section <i>EDS Viewer</i> on page 32.

Table 3: Overview Dialog Panes

1.4.4 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

1.4.5 Table Lines

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

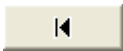





	Meaning
	To select the first line of a table use First Line .
	To select the previous line of a table use Previous Line .
	To select the next line of a table use Next Line .
	To select the last line of a table use Last Line .
	Create a new Line inserts new lines into the table.
	Delete selected Line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

Table 5: Selecting, inserting, deleting Table Line

1.4.6 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.

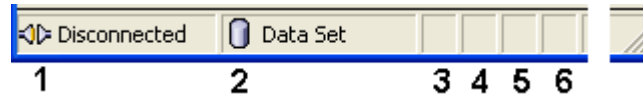


Figure 3: Status Bar – Status Fields 1 to 6

Status Field	Icon / Meaning	
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).

Table 6: Status Bar Icons [1]

Offline State

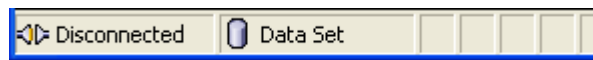


Figure 4: Status Bar Display Example

2 Getting started and Instructions Step by Step

2.1 Configuration Steps

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

#	Step	Short Description	For detailed information see section	Page
1	Add CANopen Slave in the Device Catalog	Add the Device in the Device Catalog by importing the device description file to the Device Catalog. Depending of the FDT Container. For netDevice: - Network > Import Device Descriptions.	<i>(See User Manual netDevice and netProject)</i>	-
2	Load device catalog	Depending of the FDT Container: For netDevice: - select Network > Device Catalog, - select button Reload Catalog.	<i>(See User Manual netDevice and netProject)</i>	-
3	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>	-
4	Insert Controller or Device 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 to the line in the network view, - in the Device Catalog click to the Device, - and insert the device via drag and drop to the Controller bus line in the network view.	<i>(See User Manual of the Frame Application)</i>	-
5	Configure Device	Configure the Device. - Double click to the device icon of the Device. - The Generic Device DTM configuration dialog is displayed. In the Generic Device DTM configuration dialog: - select Configuration > Object Dictionary, - define the object filters, - select Configuration > Process Data Objects > PDO Properties, - configure the PDO to be used for the communication, - select Configuration > Process Data Objects > PDO Mapping, - configure the list of the mappable or the list of the mapped objects each, - close the Generic Device DTM configuration dialog via the button OK.	<i>Configuring Device Parameters</i> <i>Object Dictionary</i> <i>PDO Properties</i> <i>PDO Mapping</i>	17 22 25 28
6	Configuration Steps Controller device	Configure the Controller device via CANopen Master DTM.	<i>(See User Manual DTM for CANopen Master devices)</i>	-
7	Save project	Depending of the frame application. For the configuration software: - select File > Save.	<i>(See User Manual of the Frame Application)</i>	-

Table 7: Getting started - Configuration Steps



For information to further steps as **Download Configuration** or **Diagnosis**, refer to the user manual *DTM for CANopen Master devices*.

2.2 Configuring Device Parameters

The following steps are needed to configure the device parameters using the Generic CANopen Slave DTM:

1. Define the object filters.
 - Select **Configuration > Object Dictionary** in the navigation area.
2. Configure the PDO.
 - Select **Configuration > Process Data Objects > PDO Properties** in the navigation area.
 - Configure the PDO to be used for the communication.
3. Configure the PDO Mapping.
 - Select **Configuration > Process Data Objects > PDO Mapping** in the navigation area.
 - Configure the list of the mappable or the list of the mapped objects each.



For more information refer to section *Object Dictionary* on page 22, *PDO Properties* on page 25 and *PDO Mapping* on page 28.

3 Configuration

3.1 Overview Configuration

Configuration Dialog Panes



Note: Access to the configuration panes is enabled without requirement of user rights. However for editing certain user rights are required. Further information can be found in section and *User Rights* on page 37.

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

Section	Subsection	Page
Configuration	General Settings	19
	Special Function Objects	20
	Object Dictionary	22
	Process Data Objects	25
	PDO Properties	25
	PDO Mapping	28

Table 8: Descriptions of the Configuration Dialog Panes

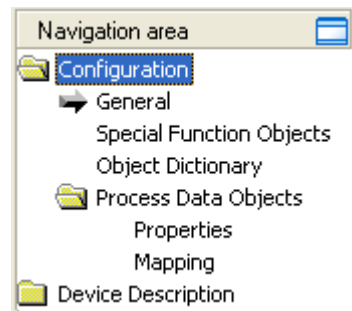


Figure 5: Navigation Area - Configuration

3.2 General Settings

The dialog **General Settings** displays EDS file data:

Figure 6: General Settings

Parameter	Meaning	Range of Values / Value
Node ID	The Node ID (address) is required to address the device at the bus and must be unique within the CANopen network. Therefore it is not allowed to use this number twice in the same network and must match with the set Node address of the device. Otherwise it is not possible for the Master to build up a communication to this device.	1 ... 127
Device Profile and Device Type	Because of the information of the Device Profile and the Device Type during start of communication, the Master can read out the Object 1000H from the Node and compare it with these data. Each CANopen Node has a mandatory Object 1000H, which must be present in the object directory. This object is named Device Type . The Device Type also includes the information about the Device Profile . The Master reads out the Object 1000H from the Node when starting up the CANopen bus and compares the entries, which are made in the two available fields Device Profile and Device Type . If the Device Profile and the Device Type do not comply, the Master reports a parameterization error and does not establish a process data transfer to the Node. The examination can be also deactivated.	Value read out from the EDS file
Device Name, Hard and Software Version	Displayed manufacturer data read out from the EDS file.	Value read out from the EDS file

Table 9: General Settings

3.3 Special Function Objects

The dialogue **Special Function Objects** displays data of the synchronization, time stamp and emergency telegram, which are adjusted in the Master DTM and can not be edited here. These parameters can be changed via the CANopen Master DTM.

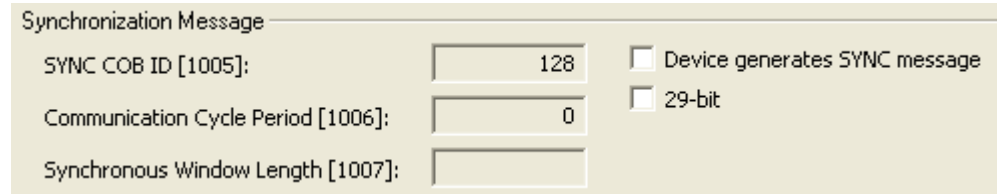


Figure 7: Special Function Objects - Synchronization Telegram

Parameter	Meaning
Synchroni- zation Message	A PDO in CANopen can be configured in Event Driven mode or Cyclic Transmission. Both kinds of transmission types can be synchronized to a special synchronization message which is sent by the master in defined time intervals.
SYNC COB- ID [1005]	The SYNC COB-ID is assigned by the master and cannot be edited here. It can be changed only by the CANopen Master DTM. The SYNC COB ID specifies the Identifier of the synchronization telegram. If the communication cycle period is not equal to zero, the transmission of the SYNC telegram is activated. If the field Device generates SYNC message is marked, the device produces the synchronisation message. If the field is 29-bit is marked, the 29-bit CAN ID of the CAN ID extended frame is valid.
Communi- cation Cycle Period [1006]	The Communication Cycle Period is assigned by the Master and cannot be edited here. It can be changed only by the CANopen Master DTM. The Communication Cycle Period specifies the time for the interval for the transmission the SYNC telegram.
Synchronous Window Length [1007]	The Synchronous Window Length is assigned by the master and cannot be edited here. It can be changed only by the CANopen Master DTM. The Synchronous Window Length specifies the length of the time window for synchronous PDO (process data objects).

Table 10: Special Function Objects - Synchronization Telegram

TimeStamp Message

TIME COB ID [1012]: Device consumes TIME message
 Device produces TIME message
 29-bit

Figure 8: Special Function Objects - Time Stamp Message

Parameter	Meaning
Time Stamp Message	For transmission of time data.
TIME COB-ID [1012]	<p>The TIME COB ID is assigned by the Master and cannot be edited here. It can be changed only by the CANopen Master DTM.</p> <p>The TIME COB ID specifies the COB ID of the time stamp object.</p> <p>If the field Device consumes TIME message is marked, the device consumes the time stamp message.</p> <p>If the field Device produces TIME message is marked, the device produces the time stamp message.</p> <p>If the field is 29-bit is marked, the 29-bit CAN ID of the CAN ID extended frame is valid.</p>

Table 11: Special Function Objects - Time Stamp Message

Emergency Message

EMCY COB ID [1014]: EMCY exists
 29-bit

Figure 9: Special Function Objects - Emergency Message

Parameter	Meaning
Emergency-Telegram	Emergency telegrams are sent by the Node when a node internal event occurs. The CANopen Master can buffer maximally 5 Emergency telegrams.
EMCY COB-ID [1014]	<p>If EMCY COB ID is activated, the CANopen Master can receive EMCY (Emergency) telegrams.</p> <p>The EMCY COB ID is assigned by the Master and cannot be edited here. It can be changed only by the CANopen Master DTM. The EMCY COB ID specifies the COB ID of the Emergency telegram.</p> <p>If the field is 29-bit is marked, the 29-bit CAN ID of the CAN ID extended frame is valid.</p>

Table 12: Special Function Objects - Emergency Message

3.4 Object Dictionary

The dialog **Object Dictionary** represents the object dictionary of the device. The display shows data read out from the EDS file.

By means of filters in the table **Object Configuration** lists with configured and/or not configured objects can be displayed. A search function allows searching for a special object within the lists.



Figure 10: Object Dictionary - Filter Object Configuration

Parameter	Meaning	Range of Values / Value
Area	Via Area a filtered object dictionary area can be selected, which is displayed in the table Object Configuration . If All is selected, in the table Object Configuration all objects are displayed, which are defined in the EDS file.	All 0x1000 ... 0x11FF 0x1200 ... 0x 13FF 0x1400 ... 0x1FFF 0x2000 ... 0x5FFF 0x6000 ... 0x9FFF 0xA000 ... 0xFFFF
Status	Via Status it is possible to specify whether in the table Object Configuration all objects, only the configured objects or only the not configured objects of the selected range are to be displayed. Only the objects configured are relevant for data exchange.	All configured not configured
Object	In the searching field Object the object index and/or the object index and subindex of a certain object can be entered. If the arrow button -> Go is clicked, the searched object (if available) is displayed in the upper line of the table Object Configuration . To enter an object index with subindex a dot is used. Example: 1400.01	Min: 0000 Max: FFFF

Table 13: Object Dictionary - Filter Object Configuration

The objects read out from the EDS file are displayed in the table **Object Configuration**. For better readability for objects with subindex a heading (object index without subindex) is displayed.

Object configuration:

Configure	Index.Subindex	Name	Access
<input type="checkbox"/>	0x1000	MKr Device Type	RO
<input type="checkbox"/>	0x1001	MKr Error Register	RO
<input type="checkbox"/>	0x100B	Node-ID	RO
<input checked="" type="checkbox"/>	0x100C	Guard Time	RW
<input checked="" type="checkbox"/>	0x100D	Life Time Factor	RW
<input checked="" type="checkbox"/>	0x100E	COB-ID Guarding-Protocol	RW
<input checked="" type="checkbox"/>	0x1014	COB-ID Emergency Message	RW
0x1016		Consumer Heartbeat Time	
<input type="checkbox"/>	0x1016.00	Number of entries	RO
<input checked="" type="checkbox"/>	0x1016.01	MKr Consumer Heartbeat Time 1	RW
<input type="checkbox"/>	0x1016.02	MKr Consumer Heartbeat Time 2	RW
<input checked="" type="checkbox"/>	0x1016.03	Consumer Heartbeat Time 3	RW
<input checked="" type="checkbox"/>	0x1016.04	Consumer Heartbeat Time 4	RW
<input checked="" type="checkbox"/>	0x1016.05	Consumer Heartbeat Time 5	RW
<input checked="" type="checkbox"/>	0x1016.06	Consumer Heartbeat Time 6	RW
<input checked="" type="checkbox"/>	0x1016.07	Consumer Heartbeat Time 7	RW
<input checked="" type="checkbox"/>	0x1016.08	Consumer Heartbeat Time 8	RW

Figure 11: Object Dictionary - Object Configuration

Parameter	Meaning	Range of Values / Value
Configure	In the table Object Configuration the activated PDOs in the associated check box Activating are marked with a hook. The check boxes of the PDOs which are not configured are not marked.	activated deactivated
Index. Subindex	All objects are addressed in the object index and the corresponding subindex, which are defined by the EDS file.	Object index 0x1000 ... 0xFFFF Sub index 0x00 ... 0xFF
Name	Symbolic name of the object, which is defined by the EDS file.	From EDS file
Access	Gives the access right of the object, which is defined by the EDS file.	RO = read only (read) RW = read, write (read, write) WO = write only (write)

Table 14: Object Dictionary - Object Configuration

If in the table **Object Configuration** a line is clicked by the cursor, the selected object, the current value, the default value, the data type, the minimum and maximum value are displayed in the fields below the table. By **Display mode** data display can be chosen in decimal or in hexadecimal mode.

Selected object:	01000 MKr Device Type		
Display mode:	Decimal	Data type:	UNSIGNED32
Current value:	0	Min:	0
Default:	0	Max:	4294967295

Figure 12: Object Dictionary - Data selected Object

Parameter	Meaning	Range of Value
Selected Object	In the display field Selected Object the object index, the subindex and the name of the selected object are indicated. These data are defined by the EDS file.	
Display Mode	By selection of the Display Mode decimal and/or hexadecimal from the list field the values are displayed in decimal and/or hexadecimal mode.	<u>Hexadecimal</u> Decimal
Current Value	In the input field Current Value a value can be assigned to the selected object.	
Default, Data Type, Min/Max	In the display fields Default, Data Type and/or Min/Max the default value defined in the EDS file, the data type and/or the minimum and maximum value for the object is indicated. The values Min. and Max. are displayed in decimal mode by default.	

Table 15: Object Dictionary - Data selected Object

3.5 Process Data Objects

3.5.1 PDO Properties

In the dialog **PDO Properties** the transmit and the receive PDOs are displayed. By the list field **PDO Type** the display can be changed from transmit PDOs (TPDO) to receive PDOs (RPDO) and vice versa.



Figure 13: Process Data Objects > PDO Properties - PDO Type

The PDOs supported by the node are read out of the EDS file and displayed in the table **PDO Configuration**. The PDOs to be used for the communication can be specified i.e. configured in this window.

PDO configuration:

Configure	Index	PDO name
<input checked="" type="checkbox"/>	1400	RxPDO01 parameter
<input checked="" type="checkbox"/>	1401	RxPDO02 parameter
<input checked="" type="checkbox"/>	1402	RxPDO03 parameter
<input checked="" type="checkbox"/>	1403	RxPDO04 parameter
<input type="checkbox"/>	1404	RxPDO05 parameter
<input type="checkbox"/>	1405	RxPDO06 parameter
<input type="checkbox"/>	1406	RxPDO07 parameter
<input type="checkbox"/>	1407	RxPDO08 parameter
<input type="checkbox"/>	1408	RxPDO09 parameter
<input type="checkbox"/>	1409	RxPDO10 parameter
<input type="checkbox"/>	140A	RxPDO11 parameter
<input type="checkbox"/>	140B	RxPDO12 parameter
<input type="checkbox"/>	140C	RxPDO13 parameter
<input type="checkbox"/>	140D	RxPDO14 parameter
<input type="checkbox"/>	140E	RxPDO15 parameter

Figure 14: Process Data Objects > PDO Properties - PDO Configuration

Parameter	Meaning	Range of Values / Value
PDO Type	Filter function for the table PDO Configuration as - Transmit PDOs - TPDO = Transmit PDO or as - Receive PDOs - RPDO = Receive PDO. Transmit PDOs are sent by the node and are input data of the Master. Receive PDOs are output data of the Master and are received from the node.	TPDO RPDO
Configure	By activating/configuring of a PDO the PDO is used for the communication. The corresponding parameter values are part of the master configuration. During initialization the master transfers these parameters automatically into the node (default behavior). Note: <i>The transmission of the parameters during the initialization phase can also be deactivated and/or become deactivated. I.e., the node uses parameters, which can be different from the parameters set here.</i>	configured not configured
Index	Object Index of the Process data object (PDO)	0x1400 ... 0x15FF 0x1800 ... 0x19FF
PDO Name	Here RxPDO name and/or TxPDO name is indicated. These are defined in the EDS file.	

Table 16: Process Data Objects > PDO Properties - PDO Configuration (examine)

Each process data object (PDO) has characteristics. These are displayed below the table.

Figure 15: Process Data Objects > PDO Properties - Data selected Object

Parameter	Meaning	Range of Values / Value
COB-ID	In this field the CAN telegram identifier is displayed.	0 ... 2047
Transmission Type	<p>For the transmit and/or receive PDOs different transmission types are possible. For a PDO in CANopen event driven, synchronous or asynchronous transmission can be configured. Transmission types can be synchronized to the synchronization message SYNC for example, which is sent by the master in defined time intervals.</p> <p>Synchronous means that the transmission of the PDO is related to the SYNC message.</p> <p>Asynchronous means that the transmission of the PDO is not related to the SYNC message and can be done at any time.</p> <p>Note: The support of the different transmission types is manufacturer and device dependent. For CANopen the support of individual and/or all transmission types is not required. Whether a device supports the desired transmission type, must be reread and/or examined in the technical manual of the used device, if necessary.</p>	0 ... 255 synchronous acyclic (0) synchronous cyclic (1-240) synchronous RTR (252) asynchronous RTR (253) Event driven, profile specific (254) Event driven, manufacturer specific (255)
Transmission Factor	<p>For synchronous TPDOs for the transmission type synchronous cyclic (1-240) another factor is to be set, to which SYNC telegram the data transmission refers.</p> <p>A transmission factor of 1 means that the message will be transferred with each SYNC telegram. A transmission factor of n means that the message will be transferred with each n-th SYNC telegram. Asynchronous TPDOs are not transferred in a temporal correlation with a SYNC.</p>	
Inhibit Time	The Inhibit Timer (if supported) describes the time interval, which at least must be waited between the transmissions of two equal telegrams. Thus a too frequent transmission of the same telegram is suppressed.	
Event Timer	<p>The Event Timer (if supported) is possible only for TPDO transmission types 254 and 255.</p> <p>The expiration of the timer is used in the node as event, in order to send the TPDO. Manufacturer and/or device-specifically also an application event can activate the sending of the TPDOs and reset the Event Timer.</p>	TPDO 254, 255

Table 17: Process Data Objects > PDO Properties - Data selected Object

3.5.2 PDO Mapping

The dialog **PDO Mapping** permits to map the contents of a PDO.

By use of the **Filter PDO type** field in the table **Mappable Objects** the receive PDOs (RPDO) or alternatively the transmit PDOs (TPDO) can be displayed.



Figure 16: Process Data Objects > PDO Mapping - Filter PDO Type

In the list field **Object Dictionary Area** an object dictionary area can be preselected.



Figure 17: Process Data Objects > PDO Mapping - Object Dictionary Area

The mappable objects appropriate to the preselection are listed in the table **Mappable Objects**.

Index.Subindex	Parameter	Length	Access
02200	Digital Byte Outputs		
02200.01	Output Byte 1	8	WO
02200.02	Output Byte 2	8	WO
02200.03	Output Byte 3	8	WO
02200.04	Output Byte 4	8	WO
02200.05	Output Byte 5	8	WO
02200.06	Output Byte 6	8	WO
02200.07	Output Byte 7	8	WO

Figure 18: Process Data Objects > PDO Mapping - Mappable Objects

Parameter	Meaning	Range of Value
Object Dictionary Area	Object dictionary filter range.	All 0x1000 ... 0x11FF 0x1200 ... 0x 13FF 0x1400 ... 0x1FFF 0x2000 ... 0x5FFF 0x6000 ... 0x9FFF 0xA000 ... 0xFFFF
Mappable Objects	List of the mappable objects.	from EDS file
Index. Subindex	All objects are addressed in the object index and if necessary in the corresponding subindexes, which are defined by the EDS file.	0x1000 ... 0xFFFF as well as 0 ... 0xFF
Parameter	Name of the object from the EDS file.	from EDS file
Length	The length of the PDOs in bytes.	
Access	Gives the access rights of the process data objects, which are defined by the EDS file.	rw = read, write

Table 18: Process Data Objects > PDO Mapping - Mappable Objects

In the list field **PDO Contents Mapping for** the PDO is selected, the PDO contents to be displayed.



Figure 19: Process Data Objects > PDO Mapping - Filter Mapped Objects

The mapped objects appropriate to the preselection are listed in the table **Mapped Objects**.

Mapped objects:

Index	Subindex	Parameter	Length
02200	01	Output Byte 1	8
02200	02	Output Byte 2	8
02200	03	Output Byte 3	8
02200	04	Output Byte 4	8
02200	05	Output Byte 5	8
02200	06	Output Byte 6	8
02200	07	Output Byte 7	8
02200	08	Output Byte 8	8

Figure 20: Process Data Objects > PDO Mapping - Mapped Objects

Parameter	Meaning	Range of Value
PDO Contents Mapping for	The PDO list field PDO Contents Mapping for contains all configured PDOs of the pane PDO Properties. The objects responsible for data exchange (max. 8 byte/PDO) are assigned to the PDOs.	
Filter PDO Type	The mapping is proceeded separately for the RPDOs and/or the TPDOs.	RPDO TPDO
Mapped Objects	The table Mapped Objects contains only configured objects and always corresponds in the PDO list field PDO Contents Mapping for selected PDOs.	
Index. Subindex	All objects are addressed in the object index and if necessary in the corresponding subindexes, which are defined by the EDS file.	0x1000 ... 0xFFFF as well as 0 ... 0xFF
Parameter	Name of the parameter from the EDS file.	from EDS file
Length	The Length specifies the length of the PDOs.	

Table 19: Process Data Objects > PDO Mapping - Mapped Objects

To change the object sequence in the table **Mapped Objects** more easily, shifting buttons are available: move completely above, above, down and completely down.

4 Device Description

4.1 Overview Device Description

Descriptions of “Device Description”

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

Section	Subsection	Page
Device Description	Device Info	28
	EDS Viewer	32

Table 20: Descriptions of the Dialog Panes Device Description

Device Description Dialog Panes

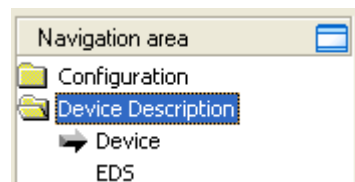


Figure 21: Navigation Area - Device Description

4.2 Device Info

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

Parameter	Meaning
Vendor Name	Name of the device manufacturer
Vendor ID	Identification number of the manufacturer
Product name	Name of the device as specified by the manufacturer
Product number	Number of the Device as specified by the manufacturer
Revision number	Hardware reference of the device as specified by the manufacturer
Order Code	Order Code of the device as specified by the manufacturer

Table 21: Device Information

4.3 EDS Viewer

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

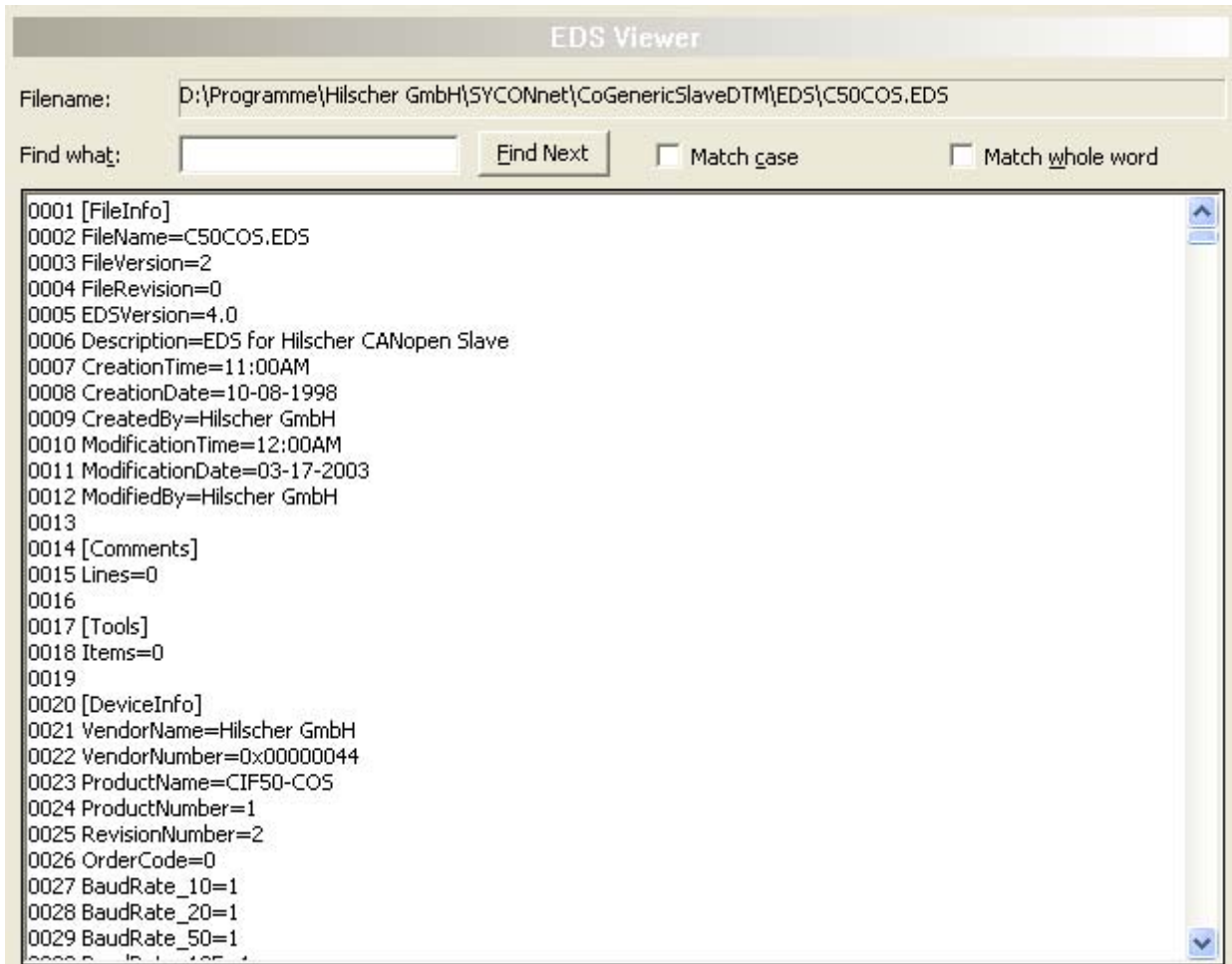


Figure 22: Device Description – EDS

On the left side, the line number is displayed for simple overview, the further entries show the EDS file in text format.

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

5 Lists

5.1 List of Figures

Figure 1: Dialog Structure of the Generic CANopen Slave DTM	11
Figure 2: Navigation Area	12
Figure 3: Status Bar – Status Fields 1 to 6	15
Figure 4: Status Bar Display Example	15
Figure 5: Navigation Area - Configuration	18
Figure 6: General Settings	19
Figure 7: Special Function Objects - Synchronization Telegram	20
Figure 8: Special Function Objects - Time Stamp Message	21
Figure 9: Special Function Objects - Emergency Message	21
Figure 10: Object Dictionary - Filter Object Configuration	22
Figure 11: Object Dictionary - Object Configuration	23
Figure 12: Object Dictionary - Data selected Object	24
Figure 13: Process Data Objects > PDO Properties - PDO Type	25
Figure 14: Process Data Objects > PDO Properties - PDO Configuration	25
Figure 15: Process Data Objects > PDO Properties - Data selected Object	27
Figure 16: Process Data Objects > PDO Mapping - Filter PDO Type	28
Figure 17: Process Data Objects > PDO Mapping - Object Dictionary Area	28
Figure 18: Process Data Objects > PDO Mapping - Mappable Objects	28
Figure 19: Process Data Objects > PDO Mapping - Filter Mapped Objects	29
Figure 20: Process Data Objects > PDO Mapping - Mapped Objects	29
Figure 21: Navigation Area - Device Description	30
Figure 22: Device Description – EDS	32

5.2 List of Tables

Table 1: Descriptions Dialog Panes	4
Table 2: General Device Information	12
Table 3: Overview Dialog Panes	13
Table 4: OK, Cancel, Apply and Help	14
Table 5: Selecting, inserting, deleting Table Line	14
Table 6: Status Bar Icons [1]	15
Table 7: Getting started - Configuration Steps	16
Table 8: Descriptions of the Configuration Dialog Panes	18
Table 9: General Settings	19
Table 10: Special Function Objects - Synchronization Telegram	20
Table 11: Special Function Objects - Time Stamp Message	21
Table 12: Special Function Objects - Emergency Message	21
Table 13: Object Dictionary - Filter Object Configuration	22
Table 14: Object Dictionary - Object Configuration	23
Table 15: Object Dictionary - Data selected Object	24
Table 16: Process Data Objects > PDO Properties - PDO Configuration (examine)	26
Table 17: Process Data Objects > PDO Properties - Data selected Object	27
Table 18: Process Data Objects > PDO Mapping - Mappable Objects	28
Table 19: Process Data Objects > PDO Mapping - Mapped Objects	29
Table 20: Descriptions of the Dialog Panes Device Description	30
Table 21: Device Information	31
Table 22: COB ID - Broadcast Objects	36
Table 23: COB ID - Peer-to-Peer Objects	36
Table 24: User Rights - General Settings (D = Displaying, X = Editing, Configuring)	38
Table 25: User Rights - Special Function Objects (D = Displaying, X = Editing, Configuring)	38
Table 26: User Rights - Object Dictionary (D = Displaying, X = Editing, Configuring)	39
Table 27: User Rights - PDO Properties (D = Displaying, X = Editing, Configuring)	39
Table 28: User Rights - PDO Mapping Pane (D = Displaying, X = Editing, Configuring)	40

6 Glossary

DTM

Device Type Manager

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

EDS

An Electronic Data Sheet (EDS) provides information necessary to access and alter the configurable parameters of a device. An Electronic Data Sheet (EDS) is an external file that contains information about configurable attributes for the device, including object addresses of each parameter. The application objects in a device represent the destination addresses for configuration data. These addresses are encoded in the EDS.

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.

COB-ID

Communication Object Identifier. Identifier of the CAN telegram.

7 Appendix

7.1 COB-ID (Predefined Connection Set)

COB ID stands for communication object identifier. This is the 11 bit covering telegram identifier of a CAN telegram. Thereby the upper 4 bits (bit 11 to 8) are the function identifier and the lower 7 bits (bit 7 to bits 0) the bus address of the node.

Broadcast Objects:

Object	Function Code	COB ID hex	COB ID dec	Index in the Object Dictionary
NMT	0000	00H	0	-
SYNC	0001	80H	128	1005H, 1006H, 1007H
TIME STAMP	0010	100H	256	1012H, 1013H

Table 22: COB ID - Broadcast Objects

Peer-to-Peer Objects:

Objects	Function Code	COB ID hex	COB ID dec	Index in the Object Dictionary
Emergency	0001	81H-FFH	129-255	1014H, 1015H
PDO 1 (tx)	0011	181H-1FFH	385-511	1800H (1A00H)
PDO 1 (rx)	0100	201H-27FH	513-639	1400H (1600H)
PDO 2 (tx)	0101	281H-2FFH	641-767	1801H (1A01H)
PDO 2 (rx)	0110	301H-37FH	769-895	1401H (1601H)
PDO 3 (tx)	0111	381H-3FFH	897-1023	1802H (1A02H)
PDO 3 (rx)	1000	401H-47FH	1025-1151	1402H (1602H)
PDO 4 (tx)	1001	481H-4FFH	1153-1279	1803H (1A03H)
PDO 4 (rx)	1010	501H-57FH	1281-1407	1403H (1603H)
SDO (tx)	1011	581H-5FFH	1409-1535	1200H
SDO (rx)	1100	601H-67FH	1537-1663	1200H
NMT Error Control	1110	701H-77FH	1793-1919	1016H, 1017H

Table 23: COB ID - Peer-to-Peer Objects

7.2 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 **Configuration** and **Device Description** panes of the Generic CANopen Slave DTM you do not need special user rights.



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 **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.

7.2.1 Configuration

General Settings

	Observer	Operator	Maintenance	Planning Engineer	Administrator
General Settings	X	X	X	X	X
All values in controls	D	D	D	D	D

Table 24: User Rights - General Settings (D = Displaying, X = Editing, Configuring)

Special Function Objects

	Observer	Operator	Maintenance	Planning Engineer	Administrator
Special Function Objects	X	X	X	X	X
Synchronization Message					
SYNC COB ID [1005]	D	D	D	D	D
Communication Cycle Period [1006]	D	D	D	D	D
Synchronous Window Length [1007]	D	D	D	D	D
Device generates SYNC message	D	D	X	X	X
29-bit	D	D	X	X	X
TimeStamp Message					
TIME COB ID [1012]	D	D	D	D	D
Device consumes TIME message	D	D	X	X	X
Device produces TIME message	D	D	X	X	X
29-bit	D	D	X	X	X
Emergency Message					
EMCY COB ID [1014]	D	D	D	D	D
EMCY exists	D	D	X	X	X
29-bit	D	D	X	X	X

Table 25: User Rights - Special Function Objects (D = Displaying, X = Editing, Configuring)

Object Dictionary

	Observer	Operator	Maintenance	Planning Engineer	Administrator
Object Dictionary	X	X	X	X	X
Area	X	X	X	X	X
Status	X	X	X	X	X
Object	X	X	X	X	X
Go	X	X	X	X	X
Object configuration					
Configure	D	D	X	X	X
Index.Subindex	D	D	D	D	D
Name	D	D	D	D	D
Access	D	D	D	D	D
Selected object	D	D	D	D	D
Display mode	D	D	D	D	D
Current value	D	D	D	D	D
Default	D	D	X	X	X
Data type	D	D	X	X	X
Min	D	D	D	D	D
Max	D	D	D	D	D

Table 26: User Rights - Object Dictionary (D = Displaying, X = Editing, Configuring)

PDO Properties

	Observer	Operator	Maintenance	Planning Engineer	Administrator
PDO Properties	X	X	X	X	X
PDO type	X	X	X	X	X
PDO configuration					
Configure	D	D	X	X	X
Index	X	X	X	X	X
PDO name	D	D	D	D	D
COB ID	D	D	D	D	D
PDO exists	D	D	X	X	X
RTR allowed	D	D	X	X	X
29-bit	D	D	X	X	X
Transmission type	D	D	X	X	X
Transmission rate	D	D	X	X	X
Inhibit time	D	D	X	X	X
Event timer	D	D	X	X	X

Table 27: User Rights - PDO Properties (D = Displaying, X = Editing, Configuring)

PDO Mapping Pane

	Observer	Operator	Maintenance	Planning Engineer	Administrator
PDO Mapping	X	X	X	X	X
Filter PDO type	X	X	X	X	X
Object Dictionary Area	X	X	X	X	X
Mappable objects					
Index.Subindex	D	D	D	D	D
Parameter	D	D	D	D	D
Length	D	D	D	D	D
Access	D	D	D	D	D
PDO Contents Mapping for	X	X	X	X	X
Mapped objects					
Index	D	D	D	D	D
Subindex	D	D	D	D	D
Parameter	D	D	D	D	D
Length	D	D	D	D	D
Button bar	D	D	X	X	X

Table 28: User Rights - PDO Mapping Pane (D = Displaying, X = Editing, Configuring)

7.3 References

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

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