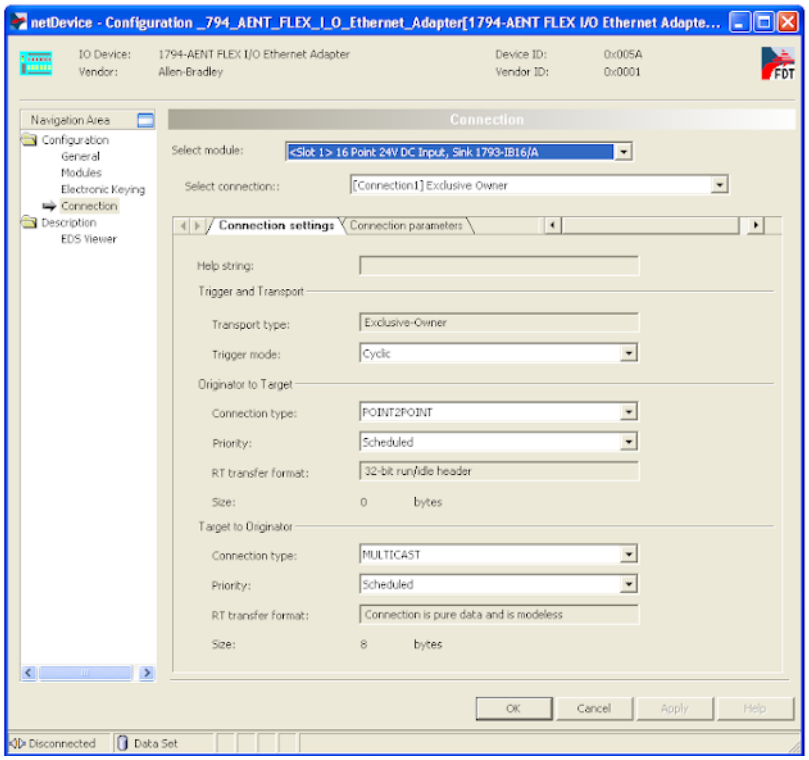
Operating instruction manual

Generic, modular generic DTM from EDS file for non-modular and modular EtherNet/IP Adapter devices

Configuration of EtherNet/IP Adapter devices

V1.1000



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1 Introduction

1.1 About this manual

Read in this manual, how to use the **generic - modular generic EDS EtherNet/IP Adapter DTM** to configure within a FDT Framework the device parameters of a non-modular EtherNet/IP Adapter device or of a modular EtherNet/IP Adapter device, which are described with EDS files. To perform the configuration procedure the generic - modular generic EDS EtherNet/IP Adapter DTM is inserted in a network project to the Master busline of an EtherNet/IP Scanner DTM. The User Interface of the DTM looks for the

- **non-modular** EtherNet/IP Adapter devices from an EDS file like an **generic EDS EtherNet/IP Adapter DTM**

and for the

- **modular** EtherNet/IP Adapter devices from an EDS file like an **modular generic EDS EtherNet/IP Adapter DTM**.

1.1.1 Online help

The generic, modular generic EDS EtherNet/IP Adapter DTM contains an integrated online help.

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

1.1.2 List of revisions

Index	Date	Version	Component	Changes
7	2023-01-26	1.1000 1.1000	ENIPGenEDSAdapterDTM.dll ENIPGenEDSAdapterGUI.ocx	Document revised.

Table 1: List of revisions

1.2 Overview use cases

In the table below you find an overview of the applicable use cases.

Use case	Description	Chapter, section
Device start up	• Creating project configuration	*Create project configuration* [▷ page 12]
Configuring device parameters	• General device settings • Module configuration • Electronic Keying • Connection	*General* [▷ page 16] *Modules (modular DTM)* [▷ page 17] *Electronic Keying* [▷ page 19] *Connection* [▷ page 21]
Descriptions	• EDS viewer	*EDS viewer* [▷ page 28]
User rights	Definition of access rights	*User rights* [▷ page 29]

Table 2: Overview use cases

1.3 System requirements

- PC with 1 GHz processor or higher
- Windows® XP SP3,
  Windows® Vista (32-Bit) SP2,
  Windows® 7 (32-Bit and 64-Bit) SP1,
  Windows® 8 (32-Bit and 64-Bit),
  Windows® 8.1 (32-Bit and 64-Bit),
  Windows® 10 (32-Bit and 64-Bit)
- Administrator privilege required for installation
- Internet Explorer 5.5 or higher
- RAM: min. 512 MByte, recommended 1024 MByte
- Graphic resolution: min. 1024 x 768 pixel
- Keyboard and Mouse
- Restriction: Touch screen is not supported.

Note:
If the project file is used on a further PC,
- this PC must also comply with the above system requirements,
- the device description files of the devices used in the project must be imported into the configuration software SYCON.net on the new PC,
- and the DTMs of the devices used in the project must also be installed on that further PC.

1.4 About the generic EtherNet/IP Adapter DTM from EDS file

You can use the **generic - modular generic EDS EtherNet/IP Adapter DTM** to configure within a FDT Framework the device parameters of a non-modular EtherNet/IP Adapter device or of a modular EtherNet/IP Adapter device, which are described with EDS files.

To perform the configuration insert the **generic - modular generic EDS EtherNet/IP Adapter DTM** in the network project to the Master busline of the EtherNet/IP Scanner DTM.

1.5 DTM dialog structure

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

1. A header area containing the **General device information**,
2. the **Navigation area** (area on the left side),
3. The **Dialog pane** (main area on the right side),
4. **OK**, **Cancel**, **Apply**, **Help**,
5. The **Status line** containing information e. g. the online-state of the DTM.

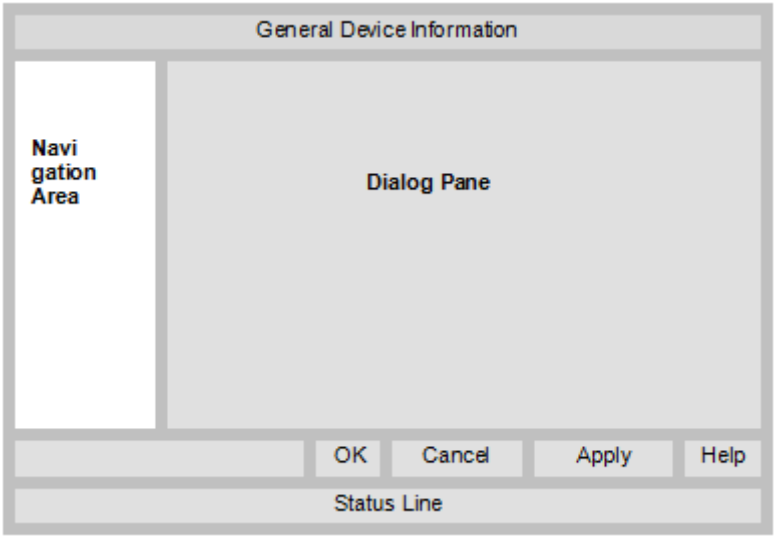


Figure 1: Dialog structure EtherNet/IP Scanner DTM

1.5.1 General device information

Parameter	Description
IO device	Device name
Vendor	Vendor name of he device
Device ID	Identification number of the device
Vendor ID	Identification number of the vendor

Table 3: General device information

1.5.2 Navigation area

In the navigation area, you can select the individual dialog panes via the folder structure of the DTM.

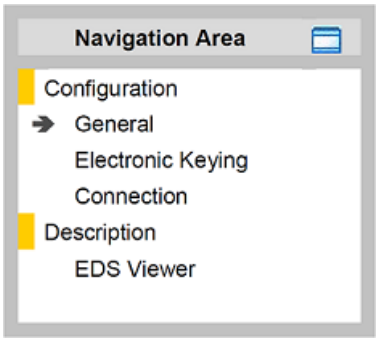


Figure 2: Navigation area

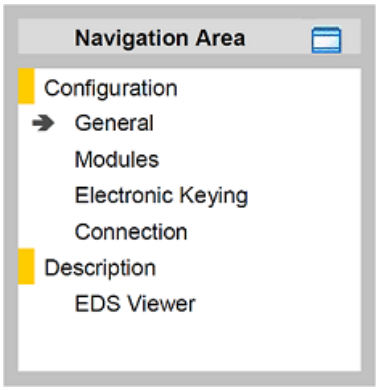


Figure 3: Navigation area (modular DTM)

➢ Select the required folder and subfolder.

⇨ The corresponding dialog pane appears.

➢ Click , to hide or to open the navigation area.

1.5.3 Dialog pane

In the dialog pane area, the different windows of the DTM appear only with displayed information or for required setting steps. You call up the respective windows via the associated folder in the navigation area.

1.5.4 OK, Cancel, Apply, Help,

In the configuration software SYCON.net the following is valid:

	Description
OK	To confirm your latest settings, click **OK**. All changed values will be applied on the frame application database. The dialog then closes.
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. The dialog then closes. • **No**: The changes are *not* saved or the changed values are *not* applied on the frame application database. The dialog then closes. • **Cancel**: Back to the DTM.
Apply	To confirm your latest settings, click **Apply**. All changed values will be applied on the frame application database. The dialog remains opened.
Help	To open the DTM online help, click **Help**.

Table 4: OK, Cancel, Apply, Help

1.5.5 Status bar

In the status bar, graphical icons display the current DTM state (e. g., connection status, or other activities).

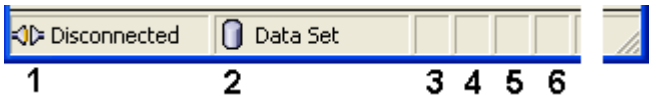


Figure 4: Status bar – status fields 1 to 6

Status field	Icon / description	
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 is read out from the instance data set (database).
		**Device**: The displayed data is read out from the device.
3	**States of the instance date set**	
		**Valid Modified**: Parameter is changed (not equal to data source).

Table 5: Status bar icons [1]

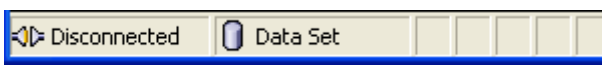
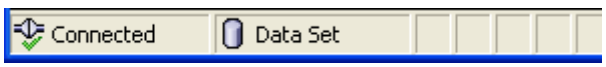
Offline state	
Online state	

Table 6: Status bar, display examples

2 Safety

2.1 General note

The documentation in the form of a user manual, an operating instruction manual or other manual types, as well as the accompanying texts, have been created for the use of the products by qualified personnel. When using the products, all Safety Messages, Integrated Safety Messages, Property Damage Messages and all valid legal regulations must be obeyed. Technical knowledge is presumed. The user has to assure that all legal regulations are obeyed.

2.2 Intended use

The modular generic EtherNet/IP Adapter DTM from EDS files is used to configure non-modular and modular EtherNet/IP Adapter devices.

2.3 Personnel qualification

Personnel responsible for the application of the network system shall be aware of the system behavior and shall be trained in using the system.

3 Device start up

3.1 Configuration steps for non-modular adapter devices

The following table describes the steps to configure a **non-modular** EtherNet/IP Adapter device with the generic EDS EtherNet/IP Adapter DTM, as it is typical for many cases. At this time, it is presupposed that the EtherNetIP Scanner DTM installation was already done.

The overview lists all the steps in a compressed form. For detailed descriptions of each step refer to the sections noted in the column For detailed information see section.

Step	Brief description	Further information
Add non-modular EtherNet/IP Adapter device to device catalog	- Open configuration software SYCON.net. - **Network** > **Import device descriptions**. - Import the device description.	Section *Create project configuration* [page 12], or operating instruction manual “SYCON.net” and operating instruction manual “netDevice and netProject”
Load device catalog	- Select **Network > Device catalog**, - **Reload catalog**.	
Create / open project	- Select **File > New** or **File > Open**.	
Insert the master device and the adapter device and into configuration	- In the **Device catalog**, select the master device and insert the device via drag & drop **to the line** in the network view. - In the **Device catalog**, select the adapter device and insert the device via drag and drop **to the master bus line** in the network view.	
Configure non-modular EtherNet/IP Adapter device	- Select **Configuration** > **Electronic Keying**. - Define the method and configure the parameters for electronic keying. - Select **Configuration** > **Connection**. - Select the connection. - Configure the **Connection settings**. - Configure the **Connection parameters**. I.e., check or adjust the parameter values for the instance ID (depending on the EDS file), as well as for format and length. - Close the dialog via **OK**.	*Electronic Keying* [page 19] *Connection* [page 21]
Configure master device	Configure the master device via the EtherNet/IP Scanner DTM netX.	Operating instruction manual of the DTM
Save project	- Select **File** > **Save**.	Operating instruction manual “SYCON.net”

Table 7: Getting started – Configuration steps

3.2 Configuration steps for modular adapter devices

The following table describes the steps to configure a **modular** EtherNet/IP Adapter device with the generic EDS EtherNet/IP Adapter DTM, as it is typical for many cases. At this time, it is presupposed that the EtherNetIP Scanner DTM installation was already done.

The overview lists all the steps in a compressed form. For detailed descriptions of each step refer to the sections noted in the column For detailed information see section.

Step	Brief description	Further information
Add non-modular EtherNet/IP Adapter device to device catalog	- Open configuration software SYCON.net. - **Network** > **Import device descriptions**. - Import the device description.	Section *Create project configuration* [page 12], or operating instruction manual “SYCON.net” and operating instruction manual “netDevice and netProject”
Load device catalog	- Select **Network > Device catalog**, - **Reload catalog**.	
Create / open project	- Select **File > New** or **File > Open**.	
Insert the master device and the adapter device and into configuration	- In the **Device catalog**, select the master device and insert the device via drag & drop **to the line** in the network view. - In the **Device catalog**, select the adapter device and insert the device via drag and drop **to the master bus line** in the network view.	
Configure modular EtherNet/IP Adapter device	- Select **Configuration** > **Modules**. - Select the chassis and add a module. - Set the slot number and the module name. - Add and configure all required modules. **Note**! For identical adapter modules create the module configuration for keying and connection first *once* and then paste it several times via **Copy module** and **Paste module**. For each module: - Select **Configuration** > **Electronic Keying**. - Select the module. - Define the method and configure the parameters for electronic keying. - Select **Configuration** > **Connection**. - Select the module and the connection. - Configure the **Connection settings**. - Configure the **Connection parameters**. I.e., check or adjust the parameter values for the instance ID (depending on the EDS file), as well as for format and length. - Close the dialog via **OK**.	*Modules (modular DTM)* [page 17] *Electronic Keying* [page 19] *Connection* [page 21]
Configure master device	Configure the master device via the EtherNet/IP Scanner DTM netX.	Operating instruction manual of the DTM
Save project	- Select **File** > **Save**.	Operating instruction manual “SYCON.net”

Table 8: Getting started – Configuration steps

3.3 Create project configuration

1. Complete the adapter device in the device catalog.
   - ➢ Select **Network** > **Import device descriptions**.
   - ➢ Import the device description file.
2. Load device catalog
   - ➢ Select **Network** > **Device catalog**.
   - ➢ Select **Reload catalog**.
3. Create or open a project.
   - ➢ Create new project / open existing project:
   - ➢ Select **File** > **New** or **File** > **Open**.
4. Insert adapter device to the configuration.
   - ➢ In the device catalog, select the master device, and insert it via drag and drop **to the line** in the network view.
   - ➢ In the device catalog, under **Slave**, select the adapter device.
   - ➢ Insert the adapter device via drag and drop **to the master bus line**.

Notes

Note:
In order to select the desired device in the device catalog, note the details about the DTM and the device at the bottom of the device catalog window. When sorting by fieldbus, several devices with the same name from different vendors can be displayed.

For further information, see operating instruction manual "SYCON.net" or "netDevice and netProject".

4 Configuration

4.1 Overview configure device parameters

The following dialog panes serve to configure a non-modular or modular EtherNet/IP Adapter device:

- The **General** dialog pane shows the current description and the IP address to the device.
- For modular EtherNet/IP Adapter devices, the **Module** dialog pane includes the configuration options: Select chassis, add module, set slot number and module name.
- The **Electronic Keying** dialog pane allows selecting the method and configuring the parameters for electronic keying.
- In the **Connection** dialog pane is for connection parameterization (for modular EtherNet/IP Adapter devices per connection).

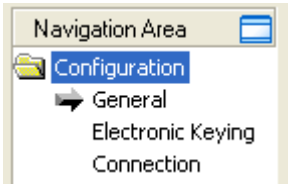


Figure 5: Navigation Area - Configuration (generic EDS EtherNet/IP Adapter DTM)

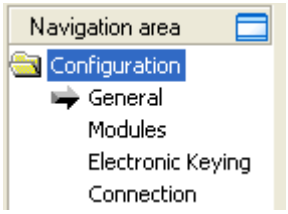


Figure 6: Navigation Area - Configuration (modular generic EDS EtherNet/IP Adapter DTM)

Note:
To edit the dialog panes under **Configuration**, you need the user rights for "Maintenance".

For more information on configuration, refer to the sections *General* [page 16], *Modules (modular DTM)* [page 17], *Electronic Keying* [page 19] and *Connection* [page 21].

4.2 Configuring Parameters of the non-modular Adapter Device

The following steps are required to configure the parameters of the non-modular EtherNet/IP Adapter device using the generic EDS EtherNet/IP Adapter DTM:

1. Select the “Keying Method” and configure the keying parameters if necessary.
   - ➢ Open the generic EDS EtherNet/IP Adapter DTM configuration dialog via a double click to the device icon of the Adapter.
   - ➢ Select **Configuration** > **Electronic Keying** in the navigation area.
   - ➢ Select the “Keying Method”,

   and
   - ➢ configure the keying parameters if necessary.
   - ➢ In general the default value „No Keying“ can be used.
2. Configure the connection.
   - ➢ Select **Configuration** > **Connection** the navigation area.
   - ➢ Make the “Connection settings”.

   In general, the default values can be used.
   - ➢ Configure the “Connection parameters”.
   - Depending by the EDS file adapt the parameter value for the **Instance ID**,
   - Adapt the parameter value for the **Format**,
   - Adapt the parameter value for the **Length**.

   Note:
   When making the configuration of the Connection parameters check each entry whether it must be changed.

   - ➢ Click **OK** in order to close the generic EDS EtherNet/IP Adapter DTM configuration dialog and to store your configuration.

For more information, refer to section *Electronic Keying* [page 19] and to section *Connection* [page 21].

4.3 Configuring Parameters of the modular Adapter Device

The following steps are required to configure the parameters of the modular EtherNet/IP Adapter device using the generic EDS EtherNet/IP Adapter DTM.

For a modular EtherNet/IP Adapter device, you must create the module configuration for keying and connection for each module. For identic adapter modules you can create the module configuration for keying and for the connect once, and then copy and paste it multiple times.

1. Configure the modules of the modular EtherNet/IP Adapter.
   - ➢ Open the generic EDS EtherNet/IP Adapter DTM configuration dialog via a double click to the device icon of the Adapter.
   - ➢ Select **Configuration** > **Modules** in the navigation area.

- ➢ Select the chassis.
- ➢ Add a module.
- ➢ Set the **Slot number** and the **Module name**.

Note:
For identic adapter modules create the module configuration for keying and connection first once and then copy and paste it via **Copy module** / **Paste module**.

For each Module:

For modular EtherNet/IP Adapter devices, you must perform the configuration for keying and connection for each module.

2. Select the “Keying Method” and configure the keying parameters if necessary.
   - ➢ Open the generic EDS EtherNet/IP Adapter DTM configuration dialog via a double click to the device icon of the Adapter.
   - ➢ Select **Configuration** > **Electronic Keying** in the navigation area.
   - ➢ Select the module via **Select Module**.
   - ➢ Select the “Keying Method”,

   and
   - ➢ configure the keying parameters if necessary.
   - ➢ In general the default value „No Keying“ can be used.
3. Configure the connection.
   - ➢ Select **Configuration** > **Connection** the navigation area.
   - ➢ Select the module via **Select Module**.
   - ➢ Make the “Connection settings”.

   In general, the default values can be used.
   - ➢ Configure the “Connection parameters”.
   - Depending by the EDS file adapt the parameter value for the **Instance ID**,
   - Adapt the parameter value for the **Format**,
   - Adapt the parameter value for the **Length**.

   Note:
   When making the configuration of the Connection parameters check each entry whether it must be changed.

   - ➢ Click **OK** in order to close the generic EDS EtherNet/IP Adapter DTM configuration dialog and to store your configuration.

   For more information, refer to section *Modules (modular DTM)* [page 17], to section *Electronic Keying* [page 19] and to section *Connection* [page 21].

4.4 General

The **General** dialog pane shows the **Description** of the EtherNet/IP Adapter device. The **IP Address** is set by the EtherNet/IP Scanner DTM.

To show the current device settings:

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

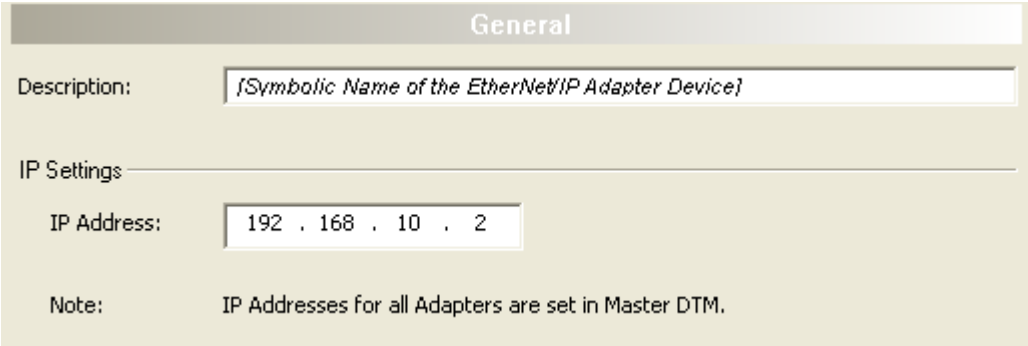


Figure 7: Configuration > General

Parameter	Description	Value / rang of value
Description	Symbolic Name of the EtherNet/IP Adapter device.	Character string
IP Settings of the EtherNet/IP Adapter device		
IP address	The IP address of the EtherNet/IP Adapter device is set in the EtherNet/IP Scanner DTM. Here it is only displayed. The EtherNet/IP Scanner device transmits the IP address of the EtherNet/IP Adapter during startup via the EtherNet/IP network to the EtherNet/IP Adapter and thereby configures the EtherNet/IP Adapter.	Valid IP address

Table 9: General pane parameters

4.5 Modules (modular DTM)

In the modular generic EDS EtherNet/IP Adapter DTM at the **Modules** pane the modules of the modular EtherNet/IP Adapter can be configured.

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

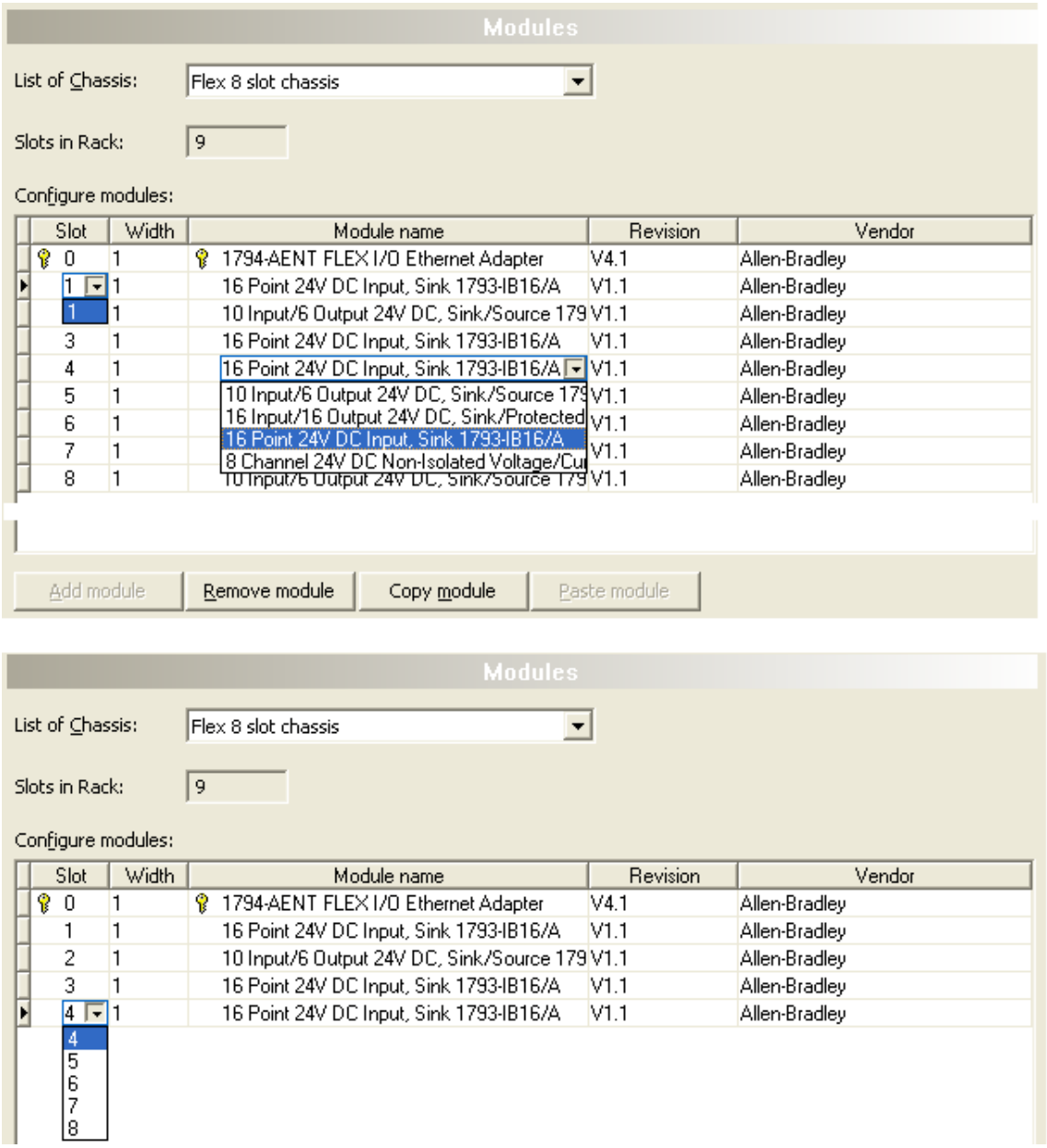


Figure 8: Configuration > Modules (modular DTM, example)

The top window **Modules** displays for the chassis selected the maximum possible number of inserted modules. The **Module name** can be chosen from a list. In the bottom window some modules are deleted. Under **Slot** the non-configured slots can be selected.

Parameter	Description
List of Chassis	Displays the chassis which can be selected.
Slots in Rack	The total number of slots in rack depends by the selected chassis. By the number of slots in rack the number of modules which can be added to a device configuration is fixed.
Configure modules	
Slot (editable)	Shows the current **Slot** number assigned to a module. When clicking the slot field, the drop-down-list of the **Slot** numbers is displayed.
	Slot numbers marked by the key symbol can not be edited.
Width	Width of the module
Module name (editable)	Textual modul name
	Module names marked by the key symbol can not be edited.
Revision	Revision of the EDS file for the module
Vendor	Vendor name of the EDS file for the module
'Add module'	Use **Add module** to add a module to the device configuration.
'Remove module'	Use **Remove module** to remove the selected module from the configuration.
'Copy module'	Use **Copy module** to copy the selected module.
‘Paste module'	Use **Paste module** to paste the copied module to the device configuration.

Table 10: Modules parameters

Further configuration steps:

- Select the chassis.
- Add a module.
- Set the **Slot number** and the **Module name**.

For a modular EtherNet/IP Adapter device, you must create the module configuration for keying and connection for each module.

Note:
For identic adapter modules create the module configuration for keying and connection first *once* and then copy and paste it via **Copy module** / **Paste module**.

4.6 Electronic Keying

The concept of **Electronic Keying** was introduced by Allen-Bradley, RA. EtherNet/IP Scanner implements compatible concept.

A set of attributes of an EtherNet/IP Adapter can be regarded as its electronic identity which can be used to differentiate adapters based on these attributes. EtherNet/IP scanner employs this electronic identity to build an **Electronic Key** and uses it to verify that an adapter connected to the network is the expected one. **Electronic Keying** allows flexible online validation of adapters, provides a method for reliable network configuration.

Attributes of the electronic identity that can be used in keying are as follows: Minor Revision, Major Revision, Product Code, Product Type and Vendor ID.

➢ Select **Configuration** > **Electronic Keying** in the navigation area.

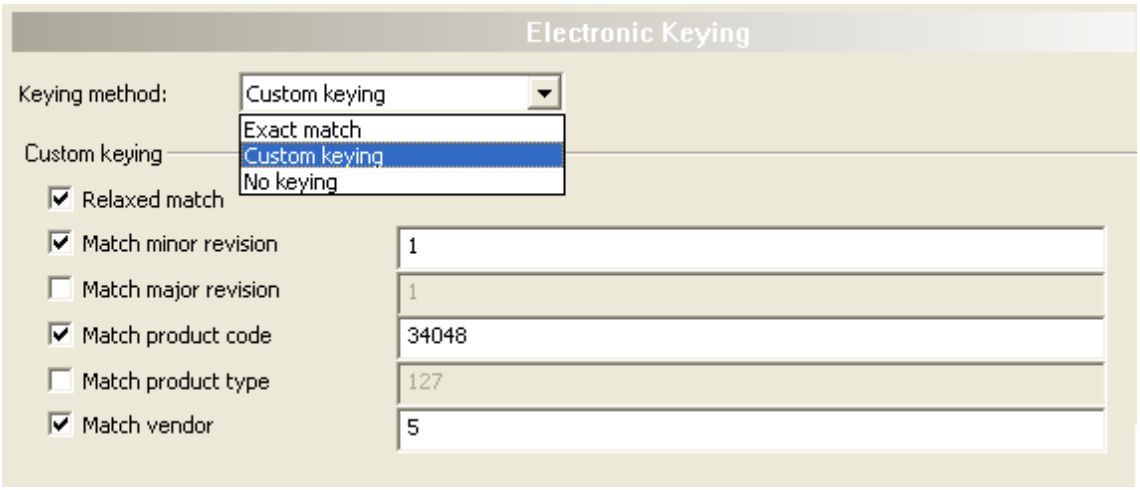


Figure 9: Configuration > Electronic Keying (example)

modular generic EtherNet/IP Adapter DTM:

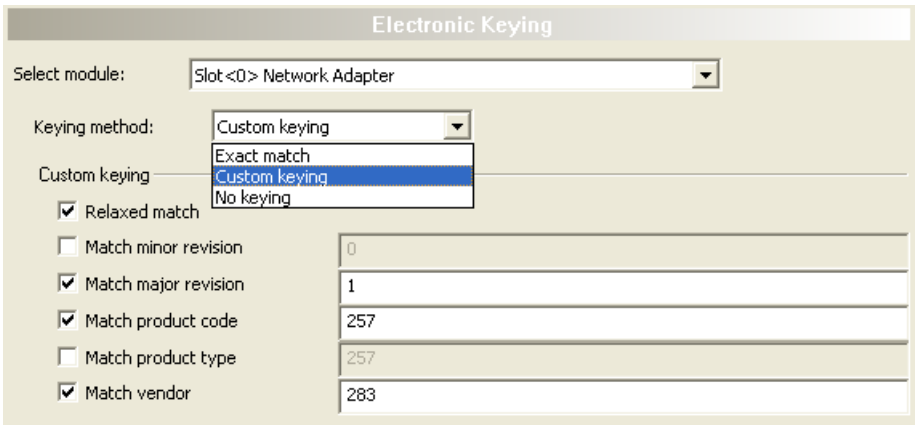


Figure 10: Configuration > Electronic Keying (example, modular DTM)

➢ Select a module (only for modular Adapter devices).

Action	Description
Select module (modular DTM only)	For modular EtherNet/IP Adapter first in the modular generic EtherNet/IP Adapter DTM a module must be selected to allow parameterizing the electronic keying parameters.

Table 11: Electronic Keying > Select module (only for modular Adapter devices)

➢ Select a **Keying method**.

For modular EtherNet/IP Adapter devices, you must set the keying method for each module.

Method	Description
Exact match	To validate an EtherNet/IP adapter connected to the network all attributes for the electronic identity must correspond to the attributes of an expected device.
Custom keying	To validate an EtherNet/IP adapter connected to the network all attributes must correspond to the configured keying.
No keying	No validation of the device identity.

Table 12: Electronic Keying > Keying method

In general the default value „No keying“ can be used.

For Custom keying:

➢ Select **Custom keying** and configure the keying attributes.

Parameter	Description
Relaxed Match	If checked: Restricted validation of the electronic identity for devices. To indicate relaxed match to an adapter, the scanner sets bit 7 in major revision.
Minor Revision	If checked: For electronic keying consistency to minor revision is relevant and gets verified.
Major Revision	If checked: For electronic keying consistency to major revision is relevant and gets verified.
Product Code	If checked: For electronic keying consistency to product code is relevant and gets verified.
Product Type	If checked: For electronic keying consistency to product type is relevant and gets verified.
Vendor	If checked: For electronic keying consistency to vendor ID is relevant and gets verified.

Table 13: Electronic Keying > Custom keying

4.7 Connection

At the **Connection** pane the connection can be parameterized. For modular EtherNet/IP Adapter devices you must parameterize the connection for each module.

4.7.1 Select connection

- Open **Configuration > Connection.**
- Under **Select connection,** select a connection.

Selection	Description	Range of Value / Value
Select connection	**„Select Connection" contains the connections with the name from the EDS file.**	**[Connection1] + name from EDS, [ConnectionN] + name from EDS, (N = 1, 2, … 65535), Default: [Connection1] + name from EDS**

Table 14: Select connection

4.7.2 Connection settings

- Select the **Connection settings**.

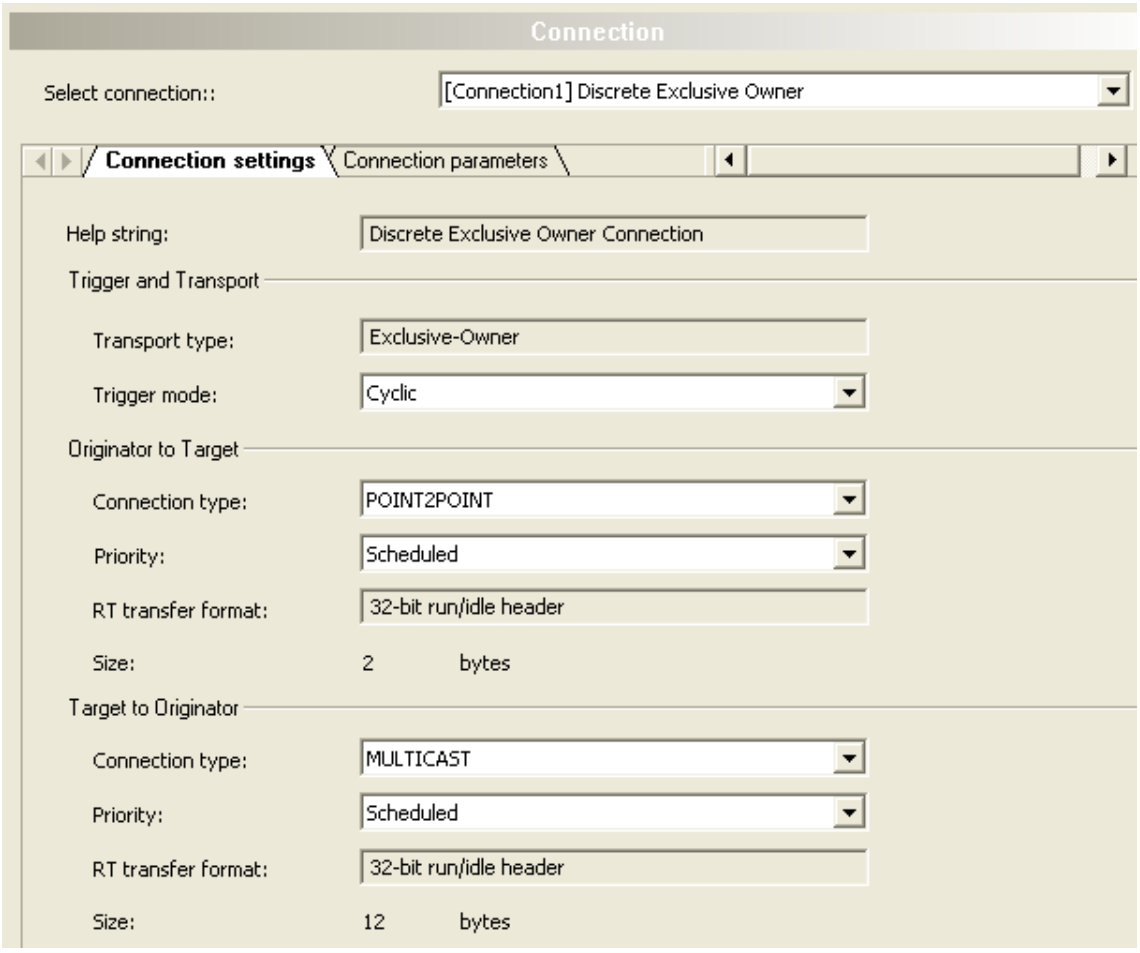


Figure 11: Connection settings (example)

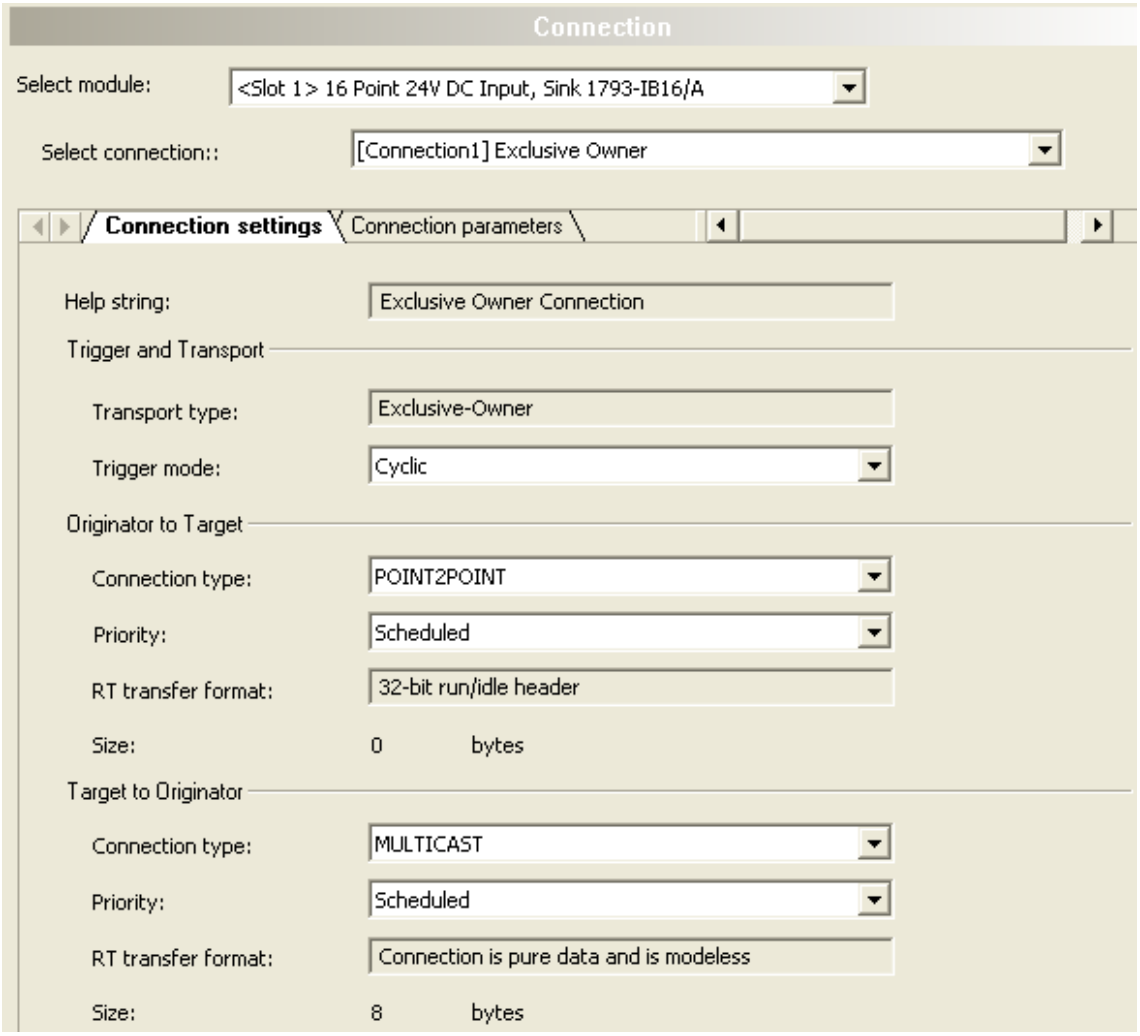


Figure 12: Connection settings (example modular DTM)

Parameter	Description	Range of value / value
Help string	“Help String” is a textual information note from the EDS file, which can be added for “help string”.	
Trigger and Transport		
Transport type	Under “Transport type”, only one transport type can be set.	Listen-Only, Input-Only, Exclusive-Owner, Redundant-Owner
Trigger mode	For „Trigger Mode“ only “Cyclic” trigger mode is supported. Not supported are the trigger-mode “event” and the trigger-mode “application”.	Cyclic
Originator to Target: Connection settings for the connection from the Originator to the Target: O->T		
Connection type	The “Connection type” is the connection type used to transfer the output data from the originator to the target, i. e. from the Scanner to the Adapter.	POINT2POINT, MULTICAST, NULL
Priority	For “Priority” only the priority “Scheduled” is supported. The values “High” and “Low” are not supported.	Scheduled
RT transfer format	“RT transfer format” is the real time transfer format for the output data.	Connection is pure data and is modeless, Use zero data length to indicate idle mode, Heartbeat, 32-bit run/idle header, Safety

Parameter	Description	Range of value / value
Size	“Size” is the size of the output data sent from the Scanner to the Adapter in Bytes. The size may be a fixed value or be defined by a parameter under **Connection parameters > O->T > Size > Parameter value**.	For “fixed size” no range is defined or the range is defined by the min. value and the max. value of a parameter.
Target to Originator: Connection settings for the connection from the Target to the Originator: T->O		
Connection type	The “Connection type” is the connection type used to transfer the input data from the target to the originator, i. e. from the Adapter to the Scanner.	POINT2POINT, MULTICAST, NULL
Priority	For “Priority”, only the priority “Scheduled” is supported. The values “High” and “Low” are not supported.	Scheduled
RT transfer format	“RT transfer format” is the real time transfer format for the input data.	Connection is pure data and is modeless, Use zero data length to indicate idle mode, Heartbeat, 32-bit run/idle header, Safety
Size	“Size” is the size of the input data sent from the Adapter to the Scanner in Bytes. The size may be a fixed value or be defined by a parameter under **Connection parameters > T-> O > Size > Parameter value**.	For “fixed size”, no range is defined or the range is defined by the min. value and the max. value of a parameter.

Table 15: Parameter Verbindungseinstellungen

Note:

Run/Idle Mode for Realtime Transfer Format: The Run/Idle header is a 32-bit field, added to packets flowing in the O->T or T->O direction. In O->T direction the run/idle field contains several bits of status information. Of primary interest is the “least significant bit”, which reflects the mode of the connection originator. If the “least significant bit” is set, the originator is in Run mode, actively monitoring the inputs and the outputs. If the “least significant bit” is cleared the originator is in Idle mode, without monitoring the inputs and the outputs. The run/idle field is not counted as part of the configured data size in the EDS Connection Manager section. The run/idle field is counted in the FwdOpen Message O->T and in the FwdOpen Message T->O sizes however.

4.7.3 Connection parameters

➢ Select **Connection parameters**.

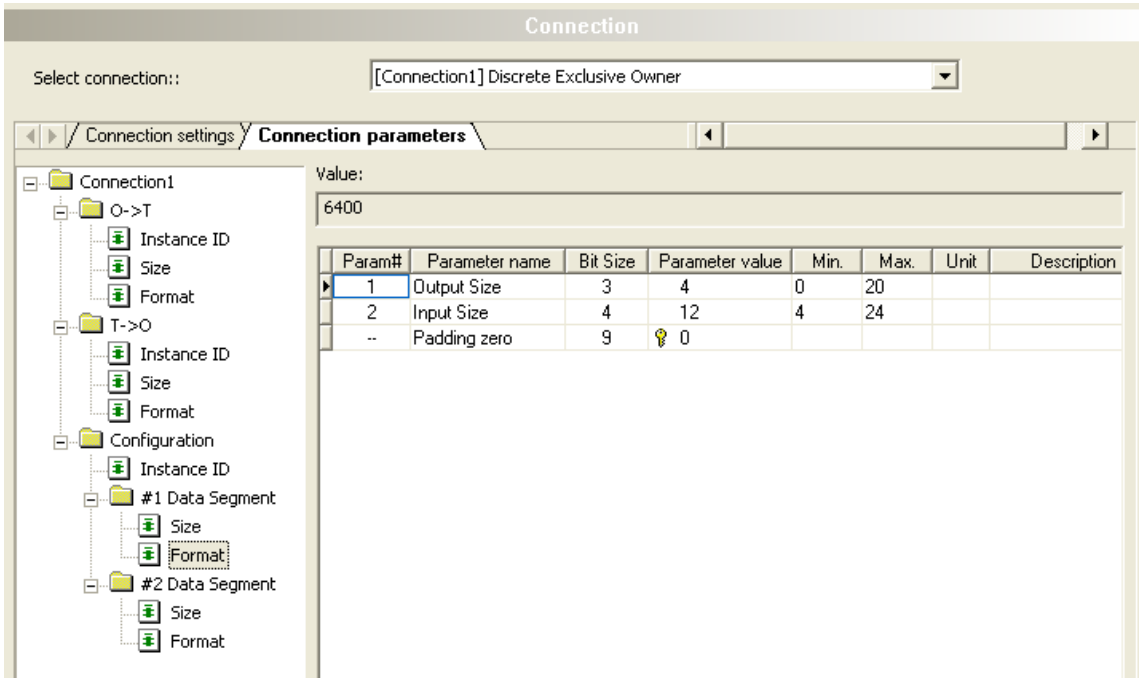


Figure 13: Connection parameters (example)

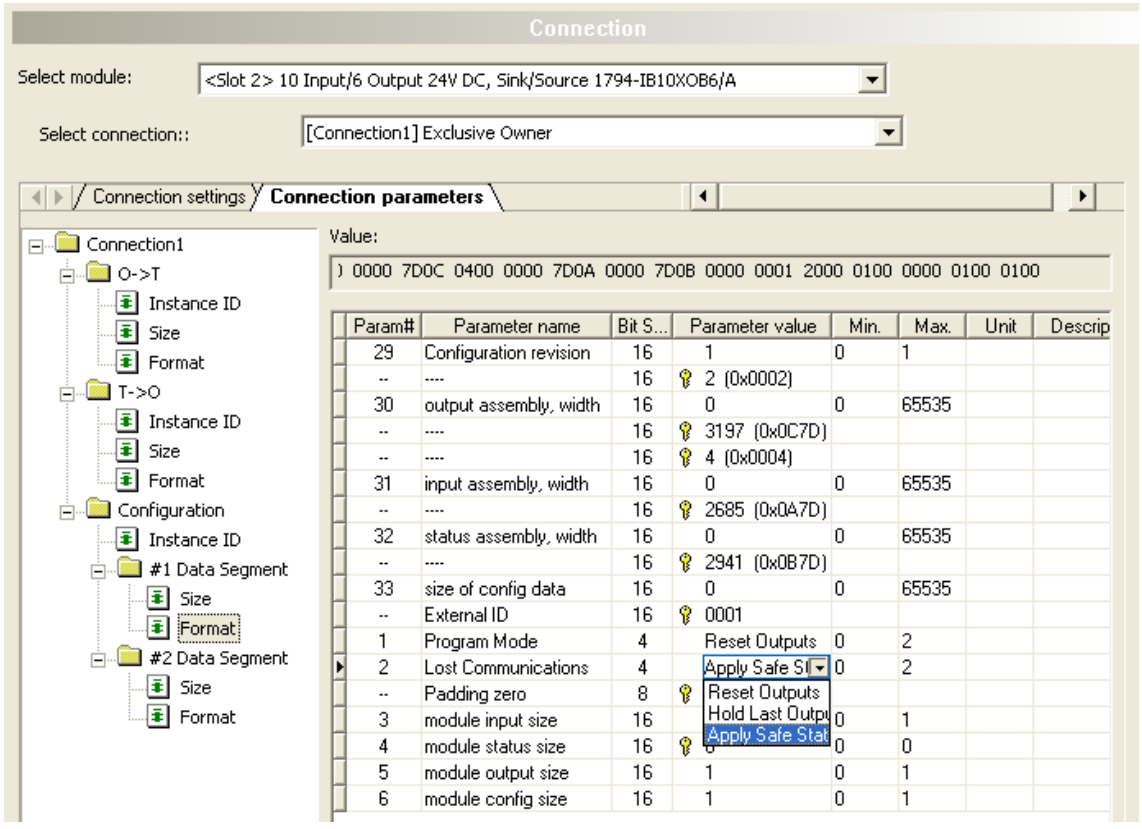


Figure 14: Connection parameters (example, modular DTM)

➢ Select in the tree structure (left side) the director for the connection parameters; for example:

- For **O->T** or **T->O**: each **Instance ID**, **Size** or **Format**

Alternatively, depending by EDS also:

- For **Configuration**: **Instance ID** or **#1 Data segment** or **#2 Data segment** each with **Size** or **Format**

➢ Configure the connection parameters.

- Depending by the EDS file adapt the parameter value for the **Instance ID**,
- Adapt the parameter value for the **Format**,
- Adapt the parameter value for the **Length**.

Note:
When making the configuration of the connection parameters check each entry whether it must be changed.

In general, the default values can be used.

Detailed descriptions on the parameters you find in the subsequent given table.

Parameter	Description	Range of Value / Value
Tree structure (left side)		
Connection [*No°*]	"Connection" is the supported connection.	Connection1 to Connection N, (N = 1, 2, … 65535),
O->T: For the connection from the Originator to the Target: O->T [=Originator to Target]		
Instance ID	“Instance ID” is the assembly instance ID of the consumer connection point.	1-255
Size	“Size” is the size of the output data sent from the Scanner to the Adapter in Bytes. The size may be a fixed value or can be defined by a parameter in the configuration dialog. **Note:** If the size is defined as 0 in the EDS file, the “O->T” entry and its children entries will not be shown in the tree structure .	For “fixed size” no range is defined or the range is defined by the min. value and the max. value of a parameter.
Format	“Format” defines the structure of the consumer buffer for this connection.	
T->O: For the connection from the Target to the Originator: T->O [=Target to Originator]		
Instance ID	“Instance ID” is the assembly instance ID of the producer connection point.	1-255
Size	“Size” is the size of the input data sent from the Adapter to the Scanner in Bytes. The size may be a fixed value or can be defined by a parameter in the configuration dialog. **Note:** If the size is defined as 0 in the EDS file, the “T->O” entry and its children entries will not be shown in the tree structure.	For “fixed size” no range is defined or the range is defined by the min. value and the max. value of a parameter.
Format	“Format” defines the structure of the producer buffer for this connection.	
Configuration: For the optional configuration data segment		
Instance ID	“Instance ID” is the assembly instance ID of the configuration. **Note:** If the both sizes of the #1 data segment and the #2 data segment are defined as 0 in the EDS file, the “configuration” entry and its children entries will not be shown in the tree structure.	1-255
#1 Data Segment: For the optional data segment #1		
Size	“Size” is the size of the configuration data segment #1 in Bytes. The size may be a fixed value or can be defined by a parameter in the configuration dialog. **Note:** If the size of the #1 data segment is defined as 0 in the EDS file, the configuration entry and its children entries will not be shown in the tree structure .	For “fixed size” no range is defined or the range is defined by the min. value and the max. value of a parameter.
Format	“Format” is the format of the data segment #1. Format defines the structure and the value of the configuration data segment #1 buffer. The format may contain a list of parameters. The user can set the values in the configuration dialog to get different settings. For example he can define the types and ranges of signals, specify the output state during a communication fault etc.	

Parameter	Description	Range of Value / Value
#2 Data Segment: For the optional data segment #2		
Size	“Size” is the size of the configuration data segment #2 in Bytes. The size may be a fixed value or can be defined by a parameter in the configuration dialog. **Note:** If the size of the #2 data segment is defined as 0 in the EDS file, the “configuration” entry and its children entries will not be shown in the tree structure.	For “fixed size” no range is defined or the range is defined by the min. value and the max. value of a parameter.
Format	“Format” is the format of the data segment #2. “Format” defines the structure and the value of the configuration data segment #2 buffer. The format may contain a list of parameters. The user can set the values in the configuration dialog to get different settings. For example he can define the types and ranges of signals, specify the output state during a communication fault etc.	
Dialog window (right side)		
Value	“Value” is the value for the selected Instance ID, Size or Format in the tree structure.	
Param#	Param# is the number of the parameter from the EDS file.	N = 1, 2, … 65535
Parameter name	“Parameter name” is the textual parameter name from the EDS file.	
Bit size	“Bit size” is the used parameter length in the data buffer in Bit.	
Parameter value (editable)	“Parameter value” is the value of the parameter. The parameter value can be entered as a numerical value or can be picked from a selection list.	
	Parameter values marked by the key symbol can not be edited.	
Min. value **Max. value**	“Min. value” is the minimum parameter value. “Max. value” is the maximum parameter value.	
Unit	Unit is the textual displayed unit from the EDS file.	
Description	Description is the textual help string from the EDS file.	

Table 16: Parameters Connection parameters (example)

Note:

Note for O->T, T->O and for Configuration: If the “Format” field and the “Size” field are not empty and if the “Size” field is smaller than the “Format” field, the least significant bytes of the “Format” field shall be used. If the “Format” field and the “Size” field are not empty and if the “Size” field is larger than the “Format” field, the entire “Format” field shall be followed by zero pads to extend the “Format” field to the size of the “Size” field.

4.7.3.1 Support for EPATH alignment

The option “Support for 16-bit and 32-bit EPATH alignment” is used to be able to select the 32-bit alignment that matches the configuration if necessary. The 16-Bit alignment conforms to the default setting.

Requirement: Only if the EDS file includes the “Configuration” element, the “EPATH alignment” option is available and accessible.

- ➢ To open the “Connection parameters” pane including the ”EPATH alignment” support, select **Connection parameters**.
- ➢ Select in the tree structure (left side) **Configuration**.

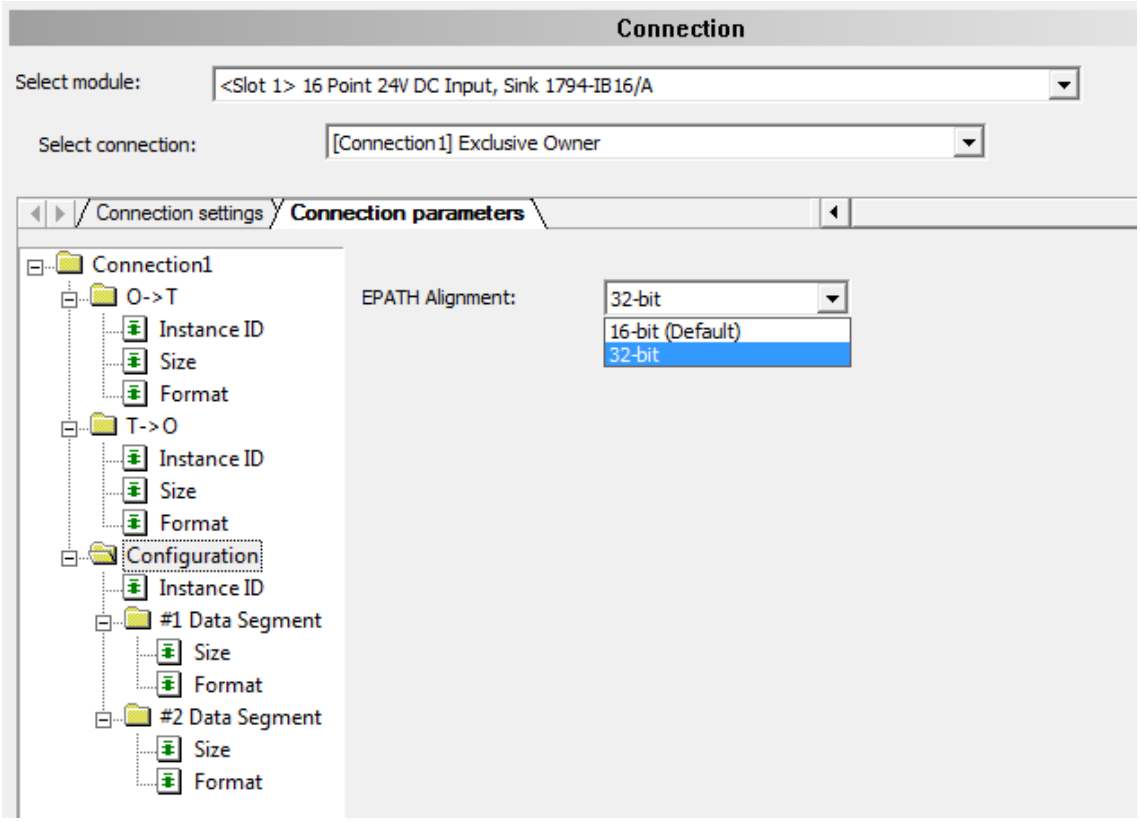


Figure 15: Connection parameters / EPATH alignment (example)

Parameter	Description	Range of Value / Value
EPATH alignment	For modules with a 32-bit alignment more padding bits (zeros) are required than for default 16-bit alignment. The data length including padding corresponds with 16- or 32-bit always to a value from the series: - 16-bit: 2, 4, **6**, 8 bit ... - 32-bit: 4, **8**, 12, 16 bits ... Example Padding (Zeros) at - 16-bit: Packing (data) 5 bit + padding (zero) 1 bit = **6** bits - 32-bit: Packing (data) 5 bit + padding (zero) 3 bits = **8** bits	16-Bit (Default), 32-Bit

Table 17: Parameters Connection parameters / EPATH alignment (example)

Note:
For all other descriptions of the dialog pane “Connection parameters” (with support for 16- or 32-bit EPATH alignment), see section *Connection parameters* [page 24].

5 Description

5.1 EDS viewer

The “EDS viewer” displays the content of the EDS file of the device in HTML style in a text view.

- Under “Filename” the file directory path and the file name of the displayed EDS file are displayed.
- „Find what” offers a search feature to search for text contents within the text of the EDS file.

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

Parameter	Description
Filename	File directory path and the file name of the displayed EDS file.
Find what	Place to enter text to search for text contents within the text of the EDS file.
Find Next	Continue search.
Match case	Search option
Match whole word	Search option

Table 18: Device description – EDS viewer

6 Appendix

6.1 References

[1] FDT Joint Interest Group (www.fdt-jig.org, FDT-JIG Working Group): Device Type Manager (DTM) Style Guide, Version 1.0; FDT-JIG - Order No. <0001-0008-000>, English, 2005.

[2] Hilscher Gesellschaft für Systemautomation mbH: Protocol API, EtherNetIP Adapter, V 2.7.x.x, Protocol API Manual, Revision 12, DOC060301API12EN, English, 2013-09.

[3] ODVA Inc.: THE CIP NETWORKS LIBRARY, Volume 1, Common Industrial Protocol, Edition 3.8, English, 2010-04.

6.2 User rights

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

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

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

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

6.2.1 Configuration, descriptions

	Observer	Operator	Maintenance	Planning engineer	Adminis-trator
Configuration					
General [page 16]	D	D	X	X	X
Modules (modular DTM) [page 17]					
Electronic Keying [page 19]	D	D	X	X	X
Connection [page 21]	D	D	X	X	X
Descriptions					
EDS viewer [page 28]	D	D	X	X	X

Table 19: User rights configuration, descriptions (D = displaying, X = editing, configuring)

6.3 Conventions in this manual

Instructions

1. Operation purpose
2. Operation purpose
   ➢ Instruction

Results

Intermediate result

Final result

Signs

Sign	Note
	General note
	Important note that must be followed to prevent malfunctions.
	Reference to further information

Table 20: Signs

6.4 Legal notes

Copyright

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- Nuclear fission processes in nuclear power plants;
- Medical devices used for life support and
- Vehicle control systems used in passenger transport

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Glossary

Adapter	Type of device that is configured by the Scanner (Master) and which then performs the communication
DTM	Device Type Manager: Software module with graphical user interface for the configuration and/or for diagnosis of devices
EDS	Electronic Data Sheet: external ASCII text file that provides information necessary to access and alter the configurable parameters of a device. The file contains information about the configurable attributes of the device, including object addresses of each parameter. The application objects in a device represent the destination addresses for the configuration data. These addresses are encoded in the EDS.
EPATH	Encoded Path: Data type in the context of the Common Industrial Protocol. A path can be represented in two different formats, as Padded EPATH and as Packed EPATH.
EtherNet/IP	Communication system for industrial Ethernet designed and developed by Rockwell that uses the CIP (common industrial protocol)
EtherNet/IP Adapter	Exchanges real-time I/O data with a Scanner Class product and does not initiate connections on its own
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

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