Configuration guideline

Explaining the differences in configuration for the two EDS files in this ZIP package

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1 Background

In Automation Studio DTM, for Ethernet/IP connection, you can choose between RT transfer format "Connection is pure data and is modeless" and "32-bit run/idle header". Since it´s not possible to change this setting online in the EDS configuration(in 3rd party environment), we provide two EDS files. One with RT transfer format "Connection is pure data and is modeless" and one with RT transfer format "32-bit run/idle header".
Depending on your desired configuration, you have to use the corresponding EDS file.
The necessary steps about import and configuration are mentioned in chapter 2 and 3.

1.1 Real Time Transfer Format

Every connection has a pre-defined Real Time Format, which is the format of the data in the O→T(Originator to Target) and T→O(Target to Originator) direction. What Real Time Format shall be used is not specified in the Forward_Open(CIP message to establish connection with the target device), but in the [Connection Manager] section of the EDS file. Although the Real Time Format is not provided in the *Forward_Open* frame, it still has influence on the connection sizes within the network connection parameters.

The following Real Time Formats are available:
- 32-Bit Header Format   (includes run/idle notification)
- Modeless Format   (no run/idle notification)

1.2 32-Bit Header Format

The 32 bit real time format header includes 0-n bytes of application data prefixed with 32 bits of header. The 32-bit field is added to packets flowing in the O→T or T→O direction.
In O→T direction it contains several bits of status info. Of primary interest is the least significant bit, which reflects the mode of the connection originator. When this bit is set it means the originator is in Run mode, actively controlling I/O. When cleared this indicates that the originator is in Idle mode, not actively controlling the I/O. Run/Idle is not counted as part of the configured data size in the EDS Connection Manager section. It is counted in the FwdOpen Message O→T and T→O sizes however.

The 32-bit real time header format prefixed to the real-time data shall be the following form:

Bits 4-32	Bits 2-3	Bit 1	Bit 0
Reserved	ROO	COO	Run/Idle

The run/idle flag (bit 0) shall be set (1 = RUN) to indicate that the following data shall be sent to the target application. It shall be clear (0 = IDLE) to indicate that the idle event shall be sent to the target application. This bit is handled by the EtherNet/IP Stack. No manual intervention necessary.
The ROO and COO fields (bits 1-3) are used for the connection application type "Redundant Owner" which is not supported by the Hilscher EtherNet/IP Stack.
The 2 bytes sequence count value is calculated by the EtherNet/IP Stack as well.

A class 0 32-bit header real time packet format is:

32-bit real time header	0-n bytes of application data

A class 1 32-bit header real time packet format is:

2 bytes sequence count	32-bit real time header	0-n bytes of application data

Transport class 1 is used in X20cIF10D3-1

1.3 Modeless Format

The modeless real time format may include 0-n bytes of application data and there is no run/idle notification included with this real time format.
The 2 bytes sequence count value is calculated by the EtherNet/IP Stack.

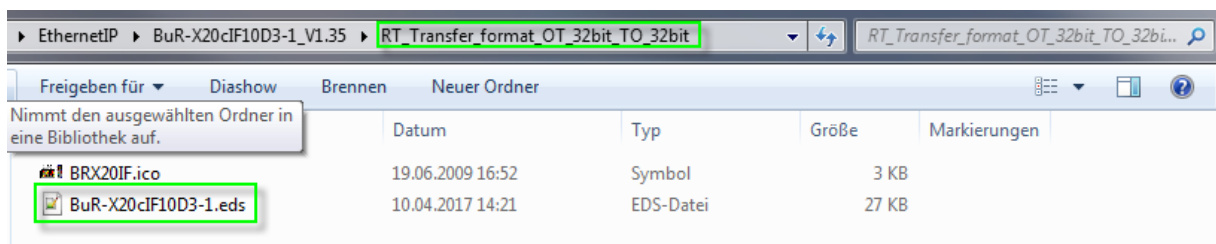A class 0 modeless real time packet format is:

0-n bytes of application data

A class 1 modeless real time packet format is:

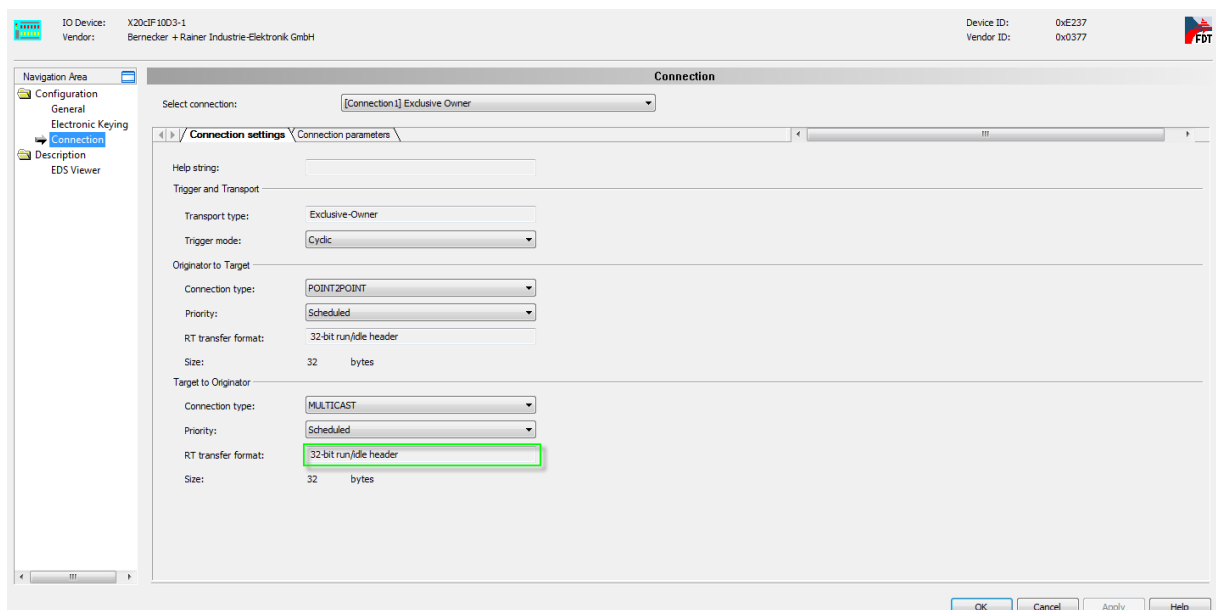| 2 bytes sequence count	0-n bytes of application data

Transport class 1 is used in X20cIF10D3-1

2 RT_Transfer_format_O→T_32bit_T→O_32bit
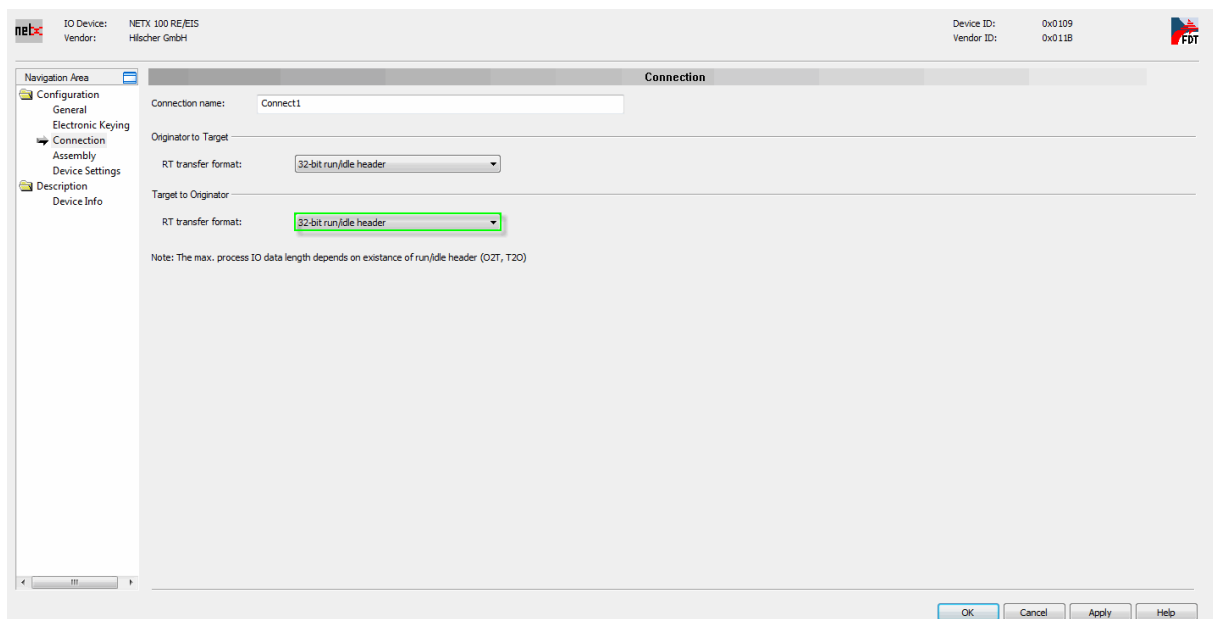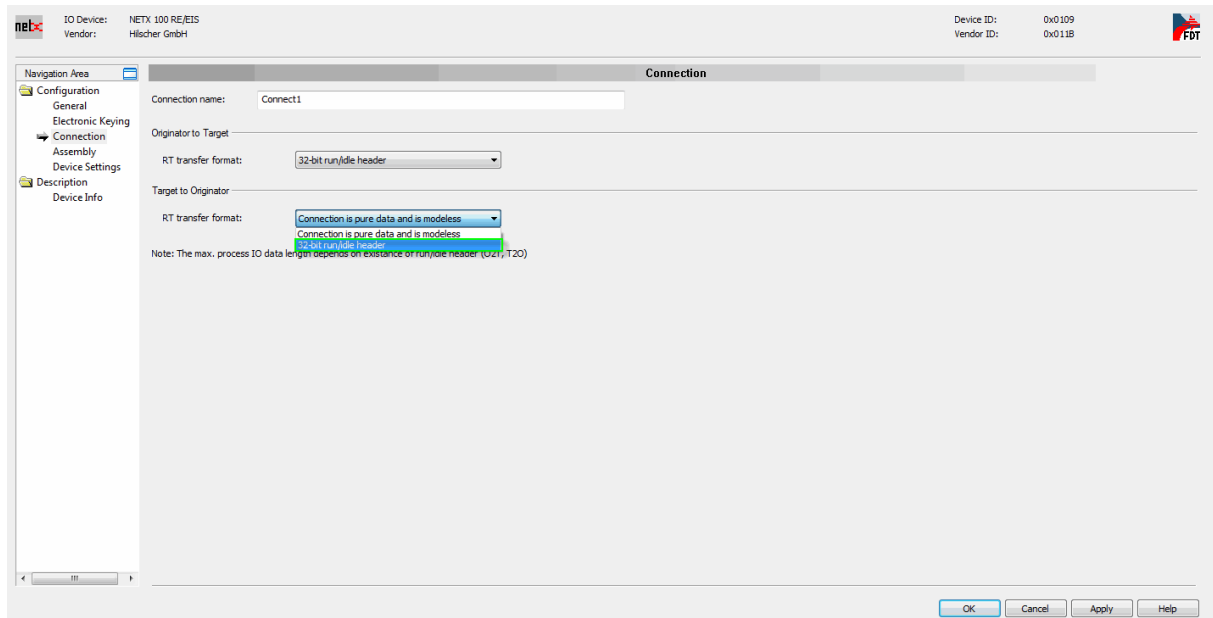
- Import the correct EDS file

- "32-bit run/idle header" is selected for "Target to Originator" RT transfer format in the EDS configuration (import of EDS in 3rd party environment or in this case: Automation Studio).
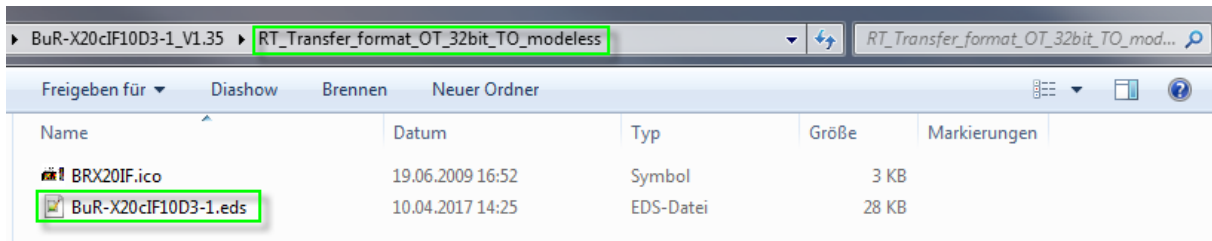
- Since "Connection is pure data and is modeless" is the default setting in the DTM configuration for the "Target to Originator" communication, this value has to be changed to "32-bit run/idle header". After this change in the DTM, the RT transfer format matches between EDS file and DTM configuration in B&R Automation Studio.
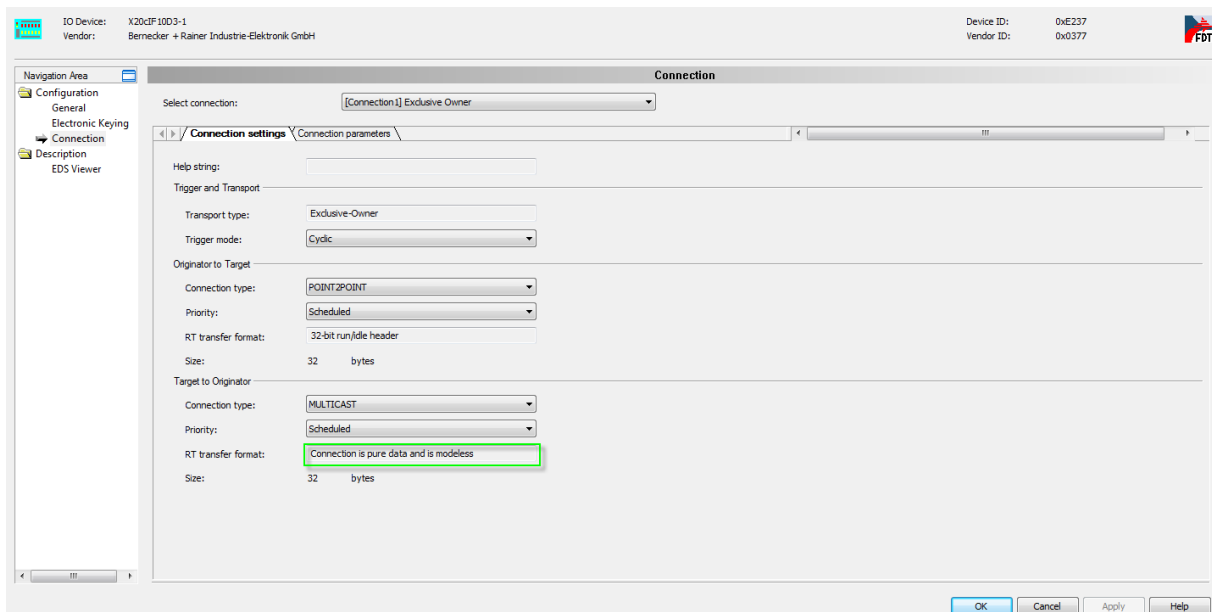
3 RT_Transfer_format_O→T_32bit_T→O_modeless

- Import the correct EDS file

- "Connection is pure data and is modeless" is selected for "Target to Originator" RT transfer format in the EDS configuration (import of EDS in 3rd party environment or in this case: Automation Studio).

- Since "Connection is pure data and is modeless" is the default setting in the DTM configuration for the "Target to Originator" communication, nothing has to be changed here. The RT transfer format matches between EDS file and DTM configuration in B&R Automation Studio.