TechTip: Particular aspects when configuring PLC devices with device description files

Identification of the PLC devices for the PLC bus data exchange is carried out both in EPLAN and in the PLC configuration program and is effected either by means of the PLC type designation or by specifying a device description file (GSD / GSDML / EDS file). A device description file contains device information that is not contained in the default hardware catalog of a manufacturer.

Often PLC devices contain integrated modules. This means that for the description by means of a device description file such a PLC device is combined from two or more modules with their own indexes in the device description file.

This TechTip helps you in configuring PLC devices of this type in EPLAN to be able to perform a PLC bus data exchange.

How do I recognize a PLC device with integrated modules?

EPLAN does not evaluate the content of device description files and can therefore not recognize the PLC devices mentioned above.
What can help us are the PLC configuration programs as is shown below using the examples of AML data that were exported from SIEMENS TIA Portal.

Configuration suggestion in EPLAN

A PLC configuration program cannot recognize on the basis of the structure of the device description file that it is a single device. For this reason two (apparently) independent devices are exported.

During the data import EPLAN cannot detect the relationship between the devices from the AML file. Therefore two devices are always created during the import.

Both devices are configured as independent devices in EPLAN:

- The main device is configured as a separate head station (one head station is **Rack**, the **Bus coupler / head station** check box is activated) and has the bus ports.
- A separate PLC box is integrated for the module. It is placed on the head station (**PLC card is placed on rack ID**).
- The integrated module does not have an own part number.

Advantages:

- The required structure data can be stored at the integrated module, for example:
  - **PLC card is placed on rack ID**
  - **Position (slot / module)**
  - **Device description: File name** and **Device description: Index in file**
- An import in EPLAN is also possible without parts data.

Disadvantage:

- The integrated module has its own DT although it is not a real device.

Note on the examples:

The indexes of the device description files additionally serve for the specification of a context in the AML file. This context is automatically detected / supplemented by EPLAN during the import and does not have to be explicitly specified in EPLAN during the configuration:

- /D (Device)
- /R (Rack)
- /DAP (Device Access Point)
- /M (Module)

Example 1: X67 PROFINET field bus coupler of B&R

The device is modeled in SIEMENS TIA Portal by means of the device description file and is exported into an AML file.
Afterwards the specification <GSD> stands for the used device description file "GSD:GSDML-V2.25-BR-X67BCE321.L12-20160415.XML".

Structure of the AML file:

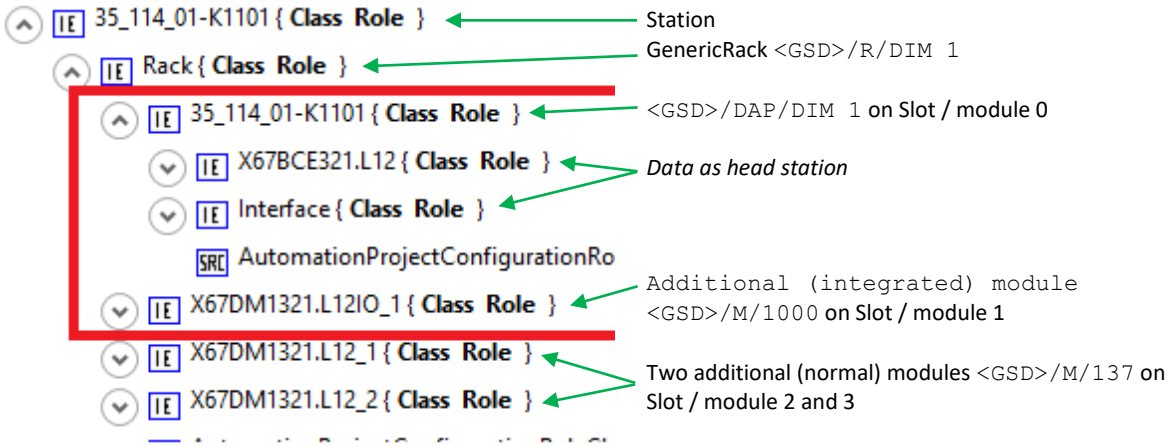


Table view of the PLC data in the AML file:

Row				Slot / module	TypeIdentifier	
1	Station				<GSD>/D	
2		Rack			<GSD>/R/DIM 1	
3			Head module	0	<GSD>/DAP/DIM 1	→ This is a PLC device
7			Module L12IO_1	1	<GSD>/M/1000	
8			Module L12_1	2	<GSD>/M/137	
9			Module L12_2	3	<GSD>/M/137	

The following exist here:

- A head station (Head Module) [Row 3]
- The integrated module [Row 7]
- Two additional modules [Row 8 and 9]

The following data has to be entered at the individual PLC boxes according to the configuration suggestion:

Row	Rack	Is placed on the rack	Position (slot / module)	Device description: Index in file	Bus coupler / head station
3	0			DIM 1	☒
7		0	1	1000	☐
8		0	2	137	☐
9		0	3	137	☐

Data of the main device (Row 3) in the parts management:

Tab Function templates:

Function definition	Bus system	Plug designation
PLC box	Other bus systems	
Network / bus cable connection point, general	Ethernet	P1
Network / bus cable connection point, general	Ethernet	P2

For the bus ports the **Bus interface: Name** property has to be specified during the configuration (for example x1). The first bus port is also to be identified as **Bus interface: Main bus port**: This bus port has all relevant bus data (for example **Physical network: Bus ID / item number**).

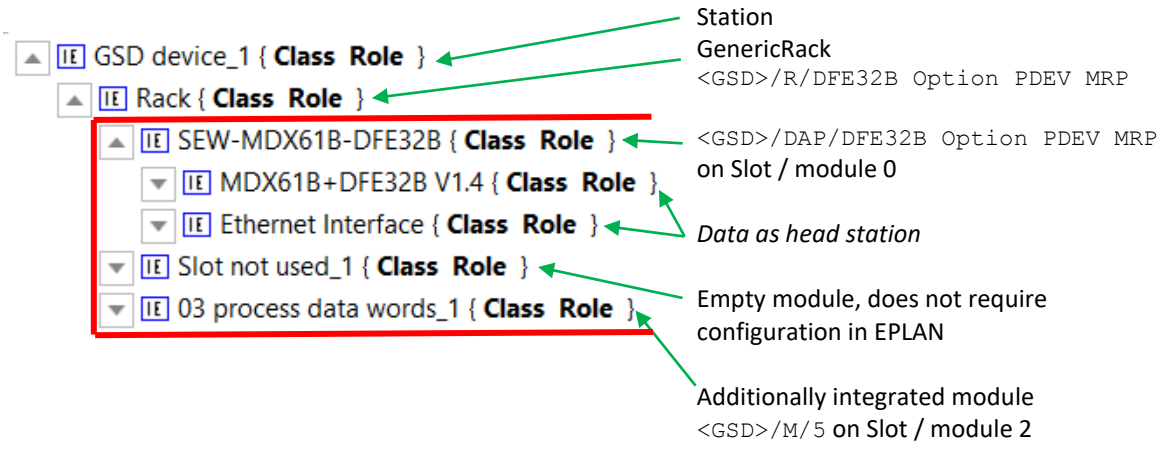
Tab Properties:

Property	Value
Device description: File name	GSDML-V2.25-BR-X67BCE321.L12-20160415.XML
Devicedescription: Index in file	DIM 1
Object description	BCE321.L12
PLC station type	X67
Bus coupler / head station	☒

Example 2: Frequency inverter of SEW

The device is modeled in SIEMENS TIA Portal by means of the device description file and is exported into an AML file.
Afterwards the specification <GSD> stands for the used device description file "GSD:GSDML-V2.25-DFE-DFS-2Ports-20150902.XML".

Structure of the AML file:



Tabular view of the PLC data of the AML file:

Row				Slot / module	TypeIdentifier	
1	Station				<GSD>/D	
2		Rack			<GSD>/R/DFE32B Option PDEV MRP	
3			Head module	0	<GSD>/DAP/DFE32B Option PDEV MRP	→ This is a PLC device
6			Slot not used	1		
7			PD Channel	2	<GSD>/M/5	

***PD** Channel* is the module here for transferring the **P**rocess **D**ata, the index (here: 5) depends on the used module.

The following exist here:

- A head station (Head Module) [Row 3]
- The integrated module [Row 7]
- An unused (empty) module [Row 6] that is not configured in EPLAN.

The following data has to be entered at the individual PLC boxes according to the configuration suggestion:

Row	Rack	Is placed on the rack	Position (slot / module)	Device description: Index in file	Bus coupler / head station
3	0		0	DFE32B Option PDEV MRP	☒
6	*Is not configured*				
7		0	2	5	☐

Depending on the process data module (PD Channel) used the associated index is specified in the device description file.

Data of the main device (Row 3) in the parts management:

Tab Function templates:

Function definition	Bus system	Plug designation
PLC box	Other bus systems	
Network / bus cable connection point, general	Ethernet	P1 R
Network / bus cable connection point, general	Ethernet	P2 R

For the bus ports the **Bus interface: Name** property has to be specified during the configuration (for example x1). The first bus port is also to be identified as **Bus interface: Main bus port**: This bus port has all relevant bus data (for example **Physical network: Bus ID / item number**).

Tab Properties:

Property	Value
Device description: File name	GSDML-V2.25-DFE-DFS-2Ports-20150902.XML
Device description: Index in file	DFE32B Option PDEV MRP
Object description	Frequency inverter SEW
PLC station type	SEW
Bus coupler / head station	☒