TechTip: How do I manage the I/O connection points

Identification of the PLC devices for the PLC data exchange is effected both in Eplan and in the PLC configuration program either by means of the PLC type designation or by specifying a device description file (GSD file / GSDML / EDS file). A device description file contains device information that is not contained in the default hardware catalog of a manufacturer. This file is always bound to the network standard used. Meaning that a GSD file can always only describe PROFIBUS devices and a GSDML file can only describe PROFINET devices.

Gateways are used to combine different bus systems within a configuration project. The gateways are managed in Eplan as PLC devices and are known to the PLC configuration program either through the PLC type designation or through the device description file.

The special feature of the gateways is that the terminal devices connected to the gateway do not have device description files. Therefore the terminal devices cannot be made known to the PLC configuration program.

The gateway thus takes on the role of managing the address spaces and the symbolic addresses of the terminal devices.

Configuration suggestion in Eplan

Basic information on devices that are identified via a device description file is also available in the TechTip "**TechTip-Configuring-PLC-devices-with-device-description-files**".

Configuring in Eplan is always oriented to the actual hardware. However, the address management must be carried out additionally in the gateway. The start addresses and, if required, the data lengths must be entered here. Depending on the gateway, further PLC boxes (virtual modules) which are then plugged on the gateway are required for this purpose. The corresponding details are available in the manufacturer's documentation.

Example: AS-i Gateway BWU2919 by Bihl+Wiedemann

The device is modeled in the PLC configuration program by means of the device description file and is exported into an AML file.
In the following section the specification `<GSD>` stands for the device description file used "GSDML-V2.25-BIHL UND WIEDEMANN-ASI GATEWAY BW2919-20151127.XML".
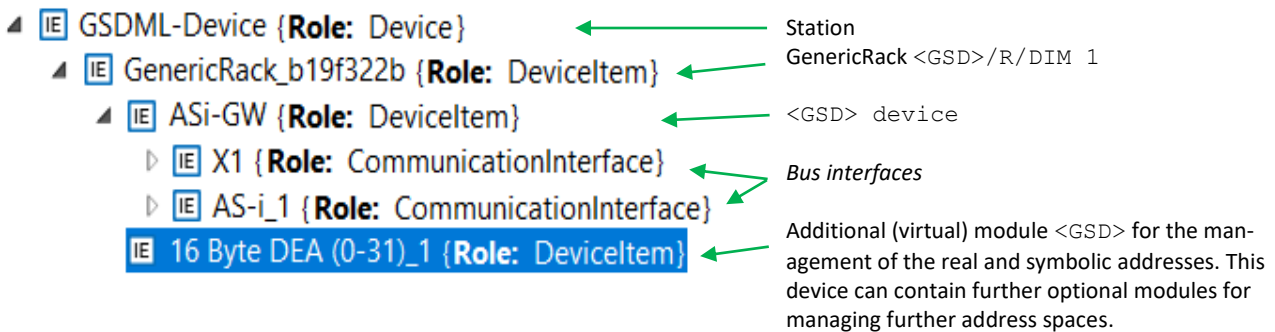
Structure of the AS-i gateway in the AML file:

Table view of the PLC data in the AML file:

Row				Slot / module	TypeIdentifier	
1	Station				`<GSD>/D`	
2		Rack			`<GSD>/R/DAP 3`	
3			Head module	0	`<GSD>/DAP/DAP 3`	→ This is a PLC device
6			16 byte DEA (0-31)_1	1	`<GSD>/M/IDM_1_16`	Virtual device for digital I/O

The following exist here:

- A head station (Head Module) [Row 3]
- A further module for managing an address space [Row 6]

The device can contain further modules that are used for the management of further address spaces.

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			DAP 3	☒
6		0	1	IDM_1_16	☐

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

Tab Function templates:

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

During the configuration the **Bus interface: Name** property has to be specified for the two Ethernet bus ports (for example X1). The first bus port must furthermore be identified as the **Bus interface: Main bus port**. This bus port contains all the relevant bus data (for example **Physical network: Bus ID / item number**).

The **Bus interface: Name** and **Bus interface: Main bus port** properties are not filled for the ASI bus port.

Tab Properties:

Property	Value
Device description: File name	GSDML-V2.25-BIHL UND WIEDEMANN-ASI GATEWAY BW2919-20151127.XML
Device description: Index in file	DAP 3
Bus coupler / head station	☒

The virtual module "16 Byte DEA (0-31)_1" used in this example is one of several modules that are also defined by the device description file. The PLC configuration program helps here in determining which modules are available.

In the concrete case the module is responsible for the management of the digital inputs and outputs with a maximum address space of 32 bytes.