

BALLUFF

GSD-Handling Description

IO-Link Device Parametrization

GSD for BNI-PNT-5xx-x0x-x0xx

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1 INTRODUCTION

1.1 General Data

GSD Name:	GSDML-V2.34-Balluff-BNI-PNT-5xx-x0x-x0xx-20190301.xml
IO-Link Master:	BNI PNT-508-105-Z015 (BNI005H), BNI PNT-507-005-Z040 (BNI0092)
Hardware Version:	as of 6
Firmware Version:	as of 3.3.1
Software Version:	as of TIA Portal V14 as of Step7 Classic v5.5 Update 4
Parameter:	32 ISDU Parameter are available for each IO-Link I/O module, 32 Byte ISDU data can be transferred in each of these Parameter.

1.2 Process description

Connected IO-Link devices shall be parameterized by the IO-Link Master during the CPU start-up. The so-called startup parametrization is carried out.

This means, that the connected IO-Link device is reloaded with the parameters from the hardware configuration every time the CPU is restarted or after plugging in.

The parameters are entered generically and are not linked to any IODD or description file. Therefore, all IO-Link devices can be parameterized on the Balluff IO-Link Master independent of the manufacturer.

It is necessary to enter the desired functions via ISDU index, ISDU sub-index, ISDU length and ISDU Data. That can usually be found in the chapter "IO-Link" of the corresponding manual.

IMPORTANT

Data must be entered in the correct format!

ISDU index / sub-index / length must be entered in decimal format.

ISDU Data must be entered in hexadecimal format.

In order to ensure that the correct data is transferred to the correct IO-Link device, the device validation shall be switched on! (Compatible)

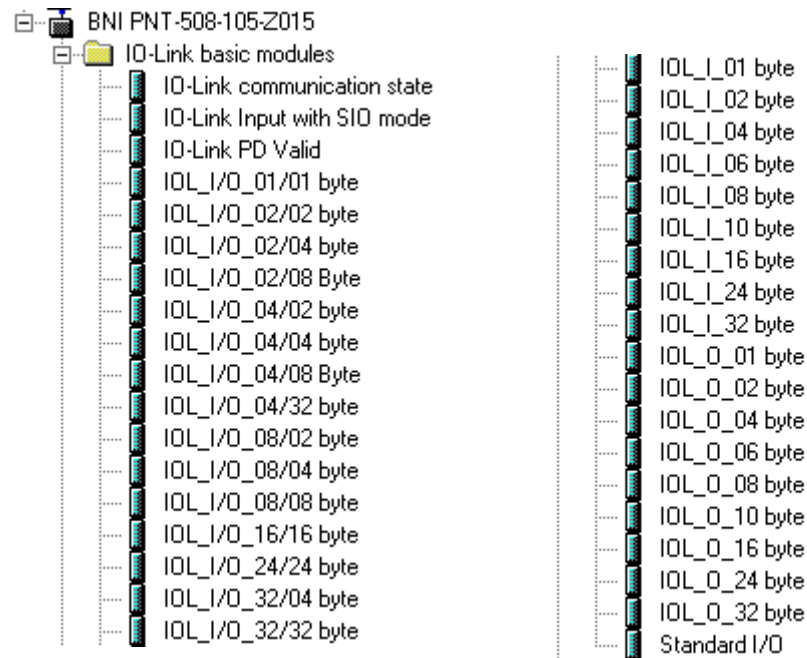
IMPORTANT

If the validation is not switched on, it can happen in case of wiring errors that an IO-Link device gets an incorrect data record and possibly the system / device is damaged!

2 HARDWARE CONFIGURATION

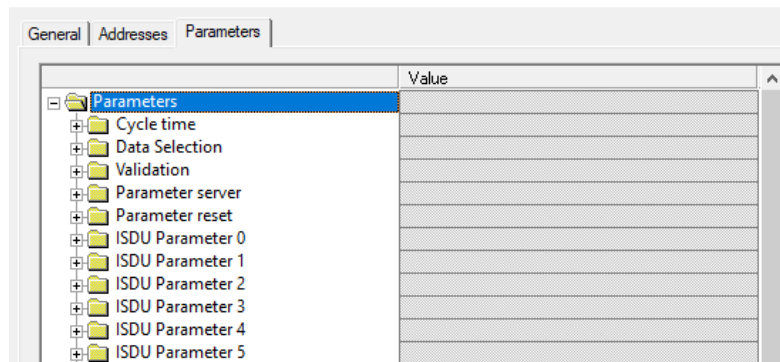
2.1 Setup in the Hardware Configuration Step7 Classic

The appropriate IO-Link Basic I/O module for the IO-Link device is inserted into the desired slot (port) from the device catalog.



By double-clicking, the ISDU structure is now displayed under the Parameters tab.

Properties - IOL_I/O_02/02 byte - (R-/S2)



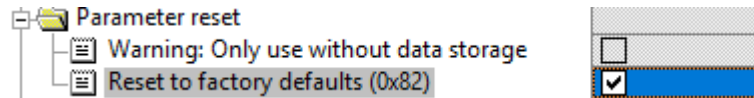
As already mentioned, the validation must be used to avoid inadvertent incorrect parametrization! Values must also be in decimal format!

Validation	
Validation mode	compatible
Vendor ID 0	3
Vendor ID 1	120
Device ID 0	5
Device ID 1	10
Device ID 2	1
Serial Number	

GSD-HANDLING DESCRIPTION

It is possible and advisable at the beginning to perform a factory reset of the IO-Link device.

With that any existing parameters in the factory settings are reset and only the required parameters are changed.



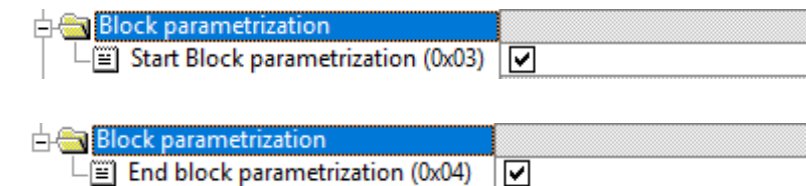
IMPORTANT

It is necessary that the connected IO-Link device also supports this system command!

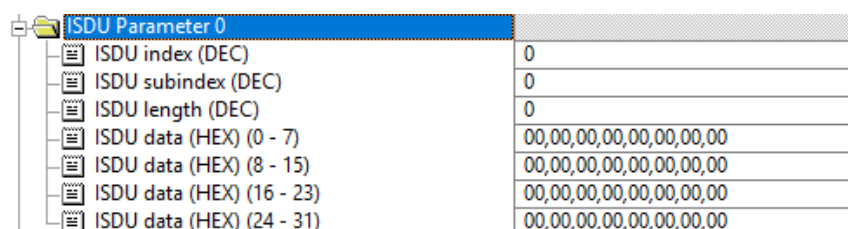
Data storage must be deactivated when using this parametrization!

During the block parametrization, all IO-Link parameter data are transferred to the device at once. To do this, both checkboxes must be activated at the beginning and end.

That is used e.g. for sensors with switching and reset points. This function can be deactivated for normal sensor/actuators hubs.



The ISDU Parameter there is no a ruling and it can be realized at will, but for reasons of clarity it is advisable to enter the indexes in ascending order.



NOTE

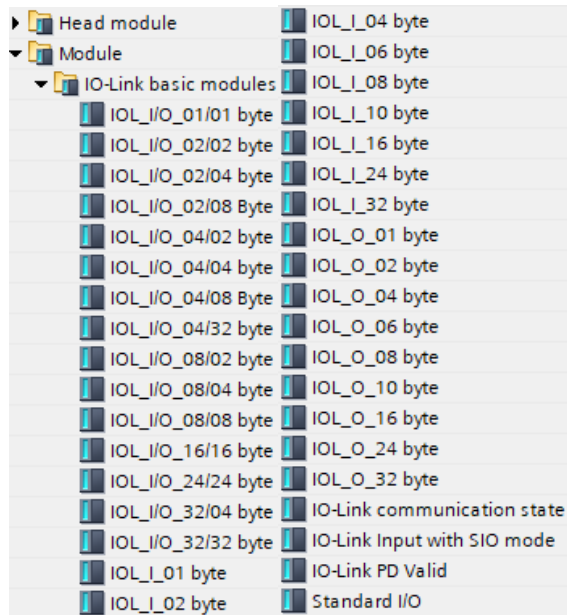
If a "0" is entered in an ISDU Parameter with ISDU length, this parameter is skipped. Thus it is possible to create an entire parameter list and to determine by the length whether the parameter is changed or not!

If several devices of the same type are connected to the Balluff IO-Link Master, e.g. the first device can be completely parameterized in the Hardware Configuration. Then this module can be copied to another slot (port) with all parameters using „CTRL + C“ and „CTRL + V“.

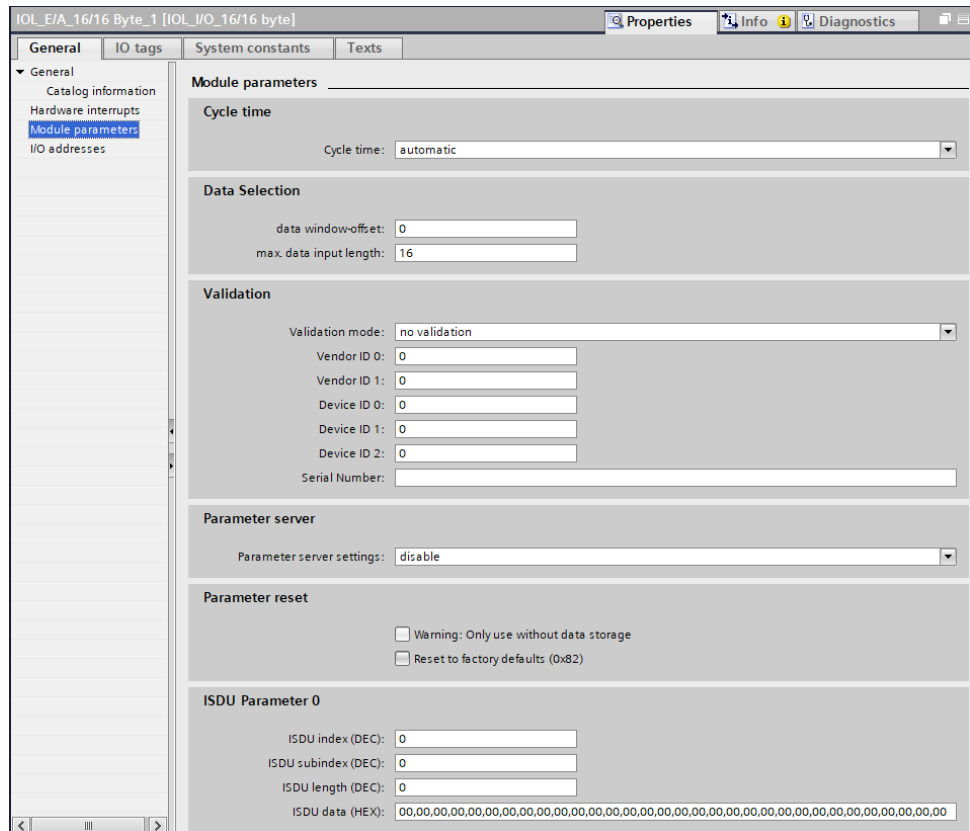
Port 0	Parameter set 1		20...21	20...21
Port 1	Copy of Parameter set 1		30...31	30...31

2.2 Setup in the Hardware Configuration TIA Portal V1x

The appropriate IO-Link Basic I/O module for the IO-Link device is inserted into the desired slot (port) from the device catalog.

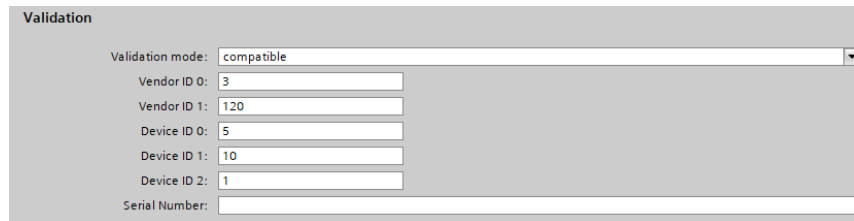


The ISDU structure is now displayed under the Properties tab.



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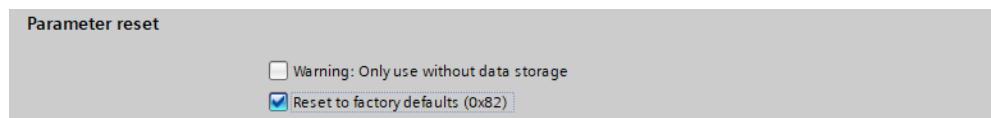
As already mentioned, the validation must be used to avoid an accidental wrong parametrization! Values in decimal format!



The 'Validation' form contains the following fields:

- Validation mode: compatible (dropdown menu)
- Vendor ID 0: 3 (text input)
- Vendor ID 1: 120 (text input)
- Device ID 0: 5 (text input)
- Device ID 1: 10 (text input)
- Device ID 2: 1 (text input)
- Serial Number: (empty text input)

It is possible and advisable at the beginning to perform a factory reset of the IO-Link device. Any existing parameters in the factory settings are reset and only the required parameters are changed.



The 'Parameter reset' form contains the following options:

- ☐ Warning: Only use without data storage
- ☒ Reset to factory defaults (0x82)

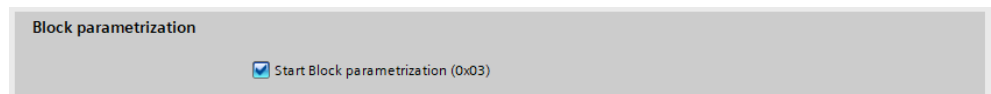
IMPORTANT

It is necessary that the connected IO-Link device also supports this system command!

Data storage must be deactivated when using this parametrization!

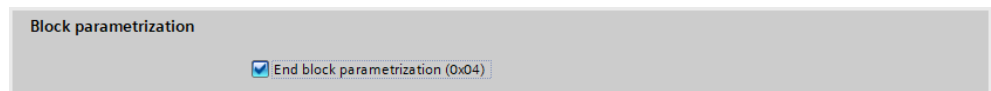
During the block parametrization, all IO-Link parameter data are transferred to the device at once. To do this, both checkboxes must be activated at the beginning and end.

That is used e.g. for sensors with switching and reset points. This function can be deactivated for normal sensor/actuators hubs.



The 'Block parametrization' form contains the following option:

- ☒ Start Block parametrization (0x03)



The 'Block parametrization' form contains the following option:

- ☒ End block parametrization (0x04)

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Concerning the ISDU Parameter sequence there is not a ruling and it can be realized at will, but for reasons of clarity it is advisable to enter the indexes in ascending order.

[illegible]

NOTE

If a "0" is entered in an ISDU Parameter with ISDU length, this parameter is skipped. Thus it is possible to create an entire parameter list and to determine by the length whether the parameter is changed or not!

If several devices of the same type are connected to the Balluff IO-Link Master, e.g. the first device can be completely parameterized in the Hardware Configuration. Then this module can be copied to another slot (port) with all parameters using „CTRL + C“ and „CTRL + V“.

Parameter set 1	0	Port 0	10...11	10...11	IOL_I/O_02/02 byte
Copy of Parameter set 1	0	Port 1	20...21	20...21	IOL_I/O_02/02 byte

2.3 Use with IO-Link inductive coupler transmission systems (BIC)

If BIC systems are used, it must be checked in advance whether the start-up time is enough. The parameter download extends the time until the IO-Link device switches to data exchange with the controller.

In fast processes, this additional time can be significant and lead to time problems.

Therefore it is advisable to edit only the absolutely parameters and generally not to transfer all parameters to the IO-Link device.

GSD-HANDLING DESCRIPTION

3 HISTORY

Version	Description	Modified by	Date
1.0	Created	L.Fischer / M. Solano	08.2019
2.0	Extended	L.Fischer / M. Solano	05.2020

4 DISCLAIMER

The description available here is free of charge and a general application example. This description is intended to support the programming and project engineering of PLC applications and to provide possible solutions.

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