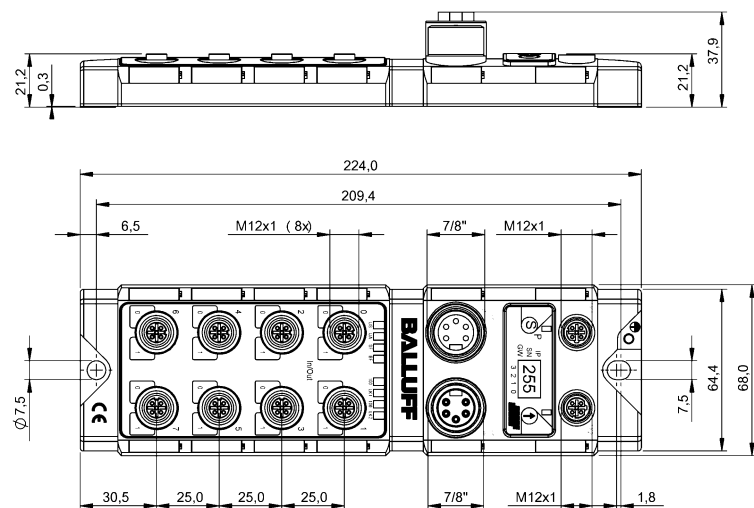




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1 Notes

1.1. About this guide	The BNI PNT-... serves as a decentralized input and output module for connecting to an ProfiNet™ network.												
1.2. Structure of the guide	The guide is organized so that the chapters build on one another Chapter 2: Basic safety information Chapter 3: Getting started Chapter 4: Technical data Chapter 5: Integration Chapter 6: Webserver Chapter 7: Appendix												
1.3. Typographical Conventions	The following typographical conventions are used in this Guide.												
Enumerations	Enumerations are shown in list form with bullet points. • Entry 1, • Entry 2.												
Actions	Action instructions are indicated by a preceding triangle. The result of an action is indicated by an arrow. ➤ Action instruction 1. ↪ Action result. ➤ Action instruction 2. Procedures can also be shown as numbers in brackets. (1) Step no. 1 (2) Step no. 2 (3)												
Syntax	Numbers: Decimal numbers are shown without additional indicators (e.g. 123), Hexadecimal numbers are shown with the additional indicator hex (e.g. 00_{hex}) or with the prefix "0x" (e.g. 0x00)												
Cross-references													
1.4. Symbols	 Note tip This symbol indicates general notes.  Note This symbol indicates a security notice which must be observed.												
1.5. Abbreviations	<table> <tr> <td>BNI</td><td>Balluff Network Interface</td></tr> <tr> <td>I</td><td>Standard input port</td></tr> <tr> <td>PNT</td><td>ProfiNet™</td></tr> <tr> <td>EMC</td><td>Electromagnetic Compatibility</td></tr> <tr> <td>FE</td><td>Function ground</td></tr> <tr> <td>O</td><td>Standard output port</td></tr> </table>	BNI	Balluff Network Interface	I	Standard input port	PNT	ProfiNet™	EMC	Electromagnetic Compatibility	FE	Function ground	O	Standard output port
BNI	Balluff Network Interface												
I	Standard input port												
PNT	ProfiNet™												
EMC	Electromagnetic Compatibility												
FE	Function ground												
O	Standard output port												

2 Safety

2.1. Intended use

This guide describes The BNI PNT-... serves as a decentralized input and output module for connecting to an ProfiNet™ network.

2.2. General safety notes

Installation and startup are to be performed only by trained specialists. Any damage resulting from unauthorized manipulation or improper use voids the manufacturer's guarantee and warranty.

The device is in accordance with EMC Class A. Such equipment may generate RF noise.

The operator must take precautionary measures accordingly.

The device must be powered only using an approved power supply (see chapter 4 "Technical data"). Only approved cable may be used.

Operating and testing

The operator is responsible for observing local prevailing safety regulations.

When defects and non-clearable faults in the device occur, take it out of service and secure against unauthorized use.

Approved use is ensured only when the housing is fully installed.

2.3. Meaning of the warnings

Note!



The pictogram used with word "Caution" warns of a possible hazardous situation affecting the health of persons or equipment damage. Ignoring these warnings can result in injury or equipment damage.

Always observe the described measures for preventing this danger.

3 Getting Started

3.1. Module overview

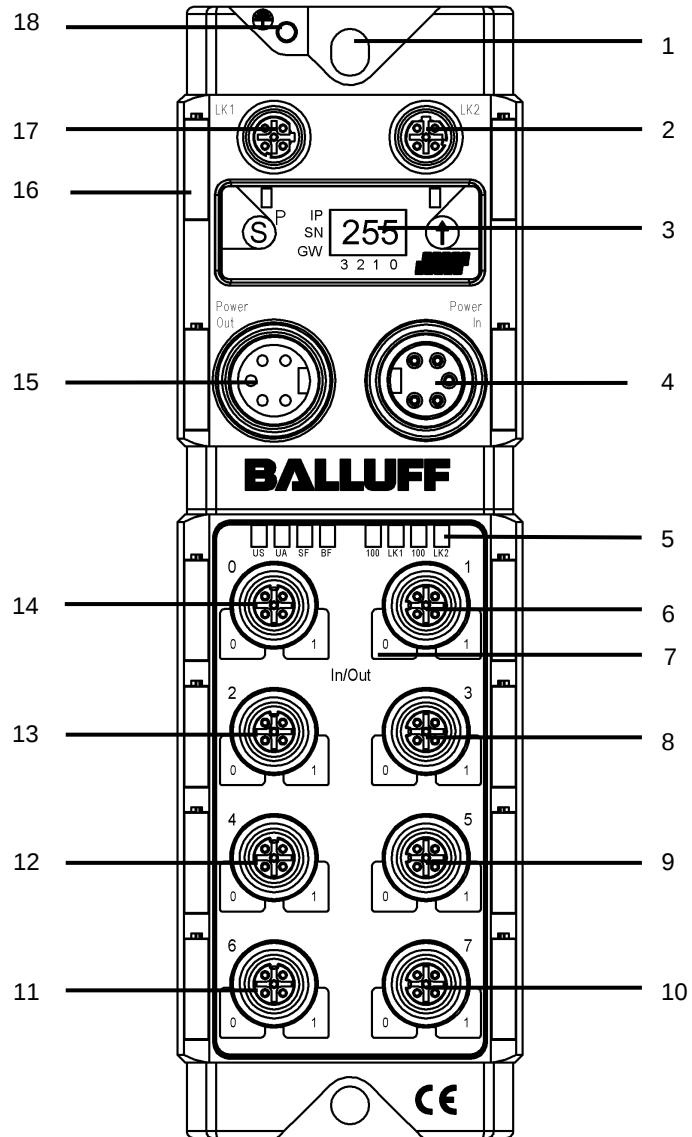


Figure 1 – Overview BNI PNT-xxx-105-Z015

- | | | | |
|----|------------------------------------|----|----------------------|
| 1 | Mounting hole | 11 | Port 6 |
| 2 | PROFINET™ port 2 | 12 | Port 4 |
| 3 | Display | 13 | Port 2 |
| 4 | Power Supply In | 14 | Port 0 |
| 5 | Status LED: Communication / Module | 15 | Power Supply Out |
| 6 | Port 1 | 16 | Label |
| 7 | Pin/Port LED: Signal status | 17 | PROFINET™ port 1 |
| 8 | Port 3 | 18 | Grounding connection |
| 9 | Port 5 | | |
| 10 | Port 7 | | |

3 Getting Started

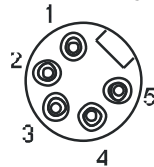
3.2. Mechanical connection

The module is attached using 2 M6 screws and 2 washers.
Isolation pad as accessory available

3.3. Electrical connection

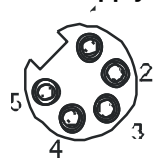
Power Supply

Power supply "IN" (7/8", male)



Pin	Function	Description
1	GND actuator power supply	0 V
2	GND Bus- / Sensor power supply	0 V
3	Function ground	FE
4	Bus- / Sensor power supply	+24 V
5	Actuator power supply	+24 V

Power supply "OUT" (7/8" female)



Pin	Function	Description
1	GND actuator power supply	0 V
2	GND Bus- / Sensor power supply	0 V
3	Function ground	FE
4	Bus- / Sensor power supply	+24 V
5	Actuator power supply	+24 V

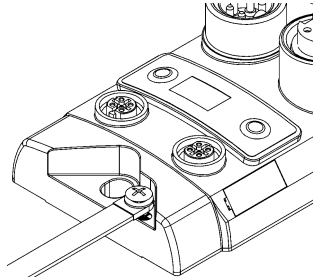


Note

Provide sensor/bus power and actuator power from separate power sources if possible.

Total current <9A per Pin. The total current of all modules may not exceed 9A even when daisy chaining the actuator supply.

Grounding

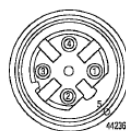


Note!

The FE connection from the housing to the machine must be low-impedance and kept as short as possible.

PROFINET Interface

M12, D-coded, female



Pin	Function
1	Tx+
2	Rx+
3	Tx-
4	Rx-



Note!

Unused I/O port socket must be fitted with cover caps to ensure IP67 protection rating.

3 Getting Started

I/O-Port



Pin	Function		
	Input/Output	Output	Input
1	+24V, 200mA	n.c.	+24V, 200mA
2	Input / Output	n.c.	Input
3	GND	GND	GND
4	Input / Output	Output	Input
5	FE	FE	FE



Note!

For the digital sensor inputs follow the input guideline per EN61131-2, type 2.



Note!

Each output serves a maximum current of 2,0 amperes. Total current of the module has to be lower than 4 amperes per Pin.



Note!

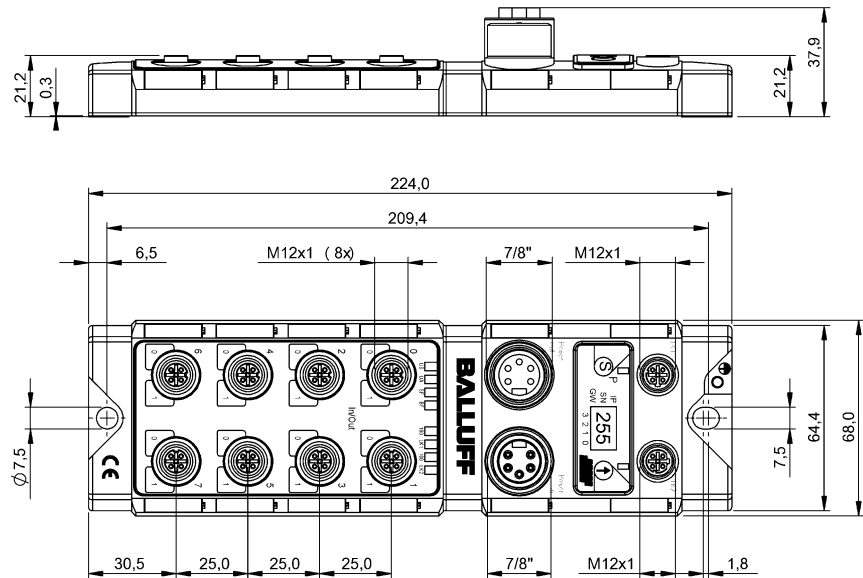
Unused I/O port socket must be fitted with cover caps to ensure IP67 protection rating.

Port

	Port	
	0-3	4-7
BNI PNT-104-105-Z015	Input	
BNI PNT-202-105-Z015	Output	
BNI PNT-302-105-Z015	Input / Output	
BNI PNT-305-105-Z015	Input	Output

4 Technical data

4.1. Dimensions



4.2. Mechanical data

Housing material	Die case zinc, matt nickel plated
Enclosure rating per IEC 60529	IP 67 (only when plugged-in and threaded-in)
Supply voltage	7/8" 5-pin (male and female)
Input ports / Output ports	M12, A-coded (8 x female)
Dimensions (W x H x D in mm)	68 x 224 x 37.9
Mounting type	2-hole screw mount
Ground strap attachment	M4
Weight	Approx. 670 gr.

4.3. Operating conditions

Operating temperature T _a	-5 °C ... 70 °C
Storage temperature	-25 °C ... 70 °C
EMC	
- EN 61000-4-2/3/4/5/6	- Severity level 2B/3A/4B/2B/3A
- EN 55011	- Gr.1, CL. B
Shock/vibration	EN 60068-2-6, EN 60068-2-27 EN 60068-2-29, EN 60068-2-64

4.4. Electrical data

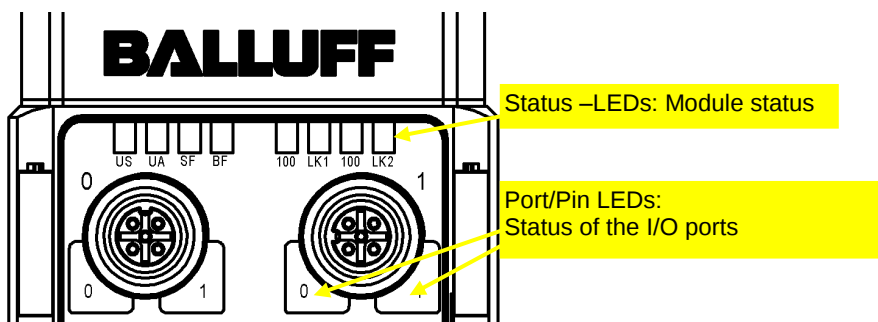
Supply voltage	18...30.2 V DC, per EN 61131-2
Ripple	<1%
No-load current at 24 V	130 mA

4 Technical data

4.5. PROFINET

PROFINET port	1 x 10Base-/100Base-Tx
Connection for PROFINET port	M12, D-coded
Cable types per IEEE 802.3	Shielded twisted pair min. STP CAT 5/ STP CAT 5e
Data transmission rate	10/100 Mbit/s
Max. cable length	100 m
Flow control	Half Duplex/Full Duplex (IEEE 802.3x-Pause)

4.6. Function indicators



Module status

LED	Status	Function
US	green	Input power OK
	red	Low Input power (<18V)
UA	green	Output power OK
	red	Low Output power (< 18V)
SF	off	No error
	red	Watchdog timeout; channel, generic or extended diagnosis present; system error
	red flashing	DCP signal service is initiated via the bus
BF	off	No error
	red	No configuration; or low speed physical link; or no physical link
	red flashing	No data exchange
100	off	Bus clock: 10 Mbit/s
	yellow	Bus clock: 100 Mbit/s
LK	green	Data transfer

I/O Port

Each port has two two-colour LEDs to indicate the I/O-States

Status	Function	Description
off	I/O State	State of the Input or Output Pin is 0
yellow	I/O State	State of the Input or Output Pin is 1

Status	Port configuration		
	Diagnostic Input	Input	Output
red	Input low	short-circuit between Pin 1 und 3	short-circuit on output Pin
red flashing	—	—	short-circuit between Pin 1 und 3

5 Integration

5.1. Configuration

When project planning ProfiNet™ devices, a device is mapped as a modular system which consists of a header module and multiple data modules.

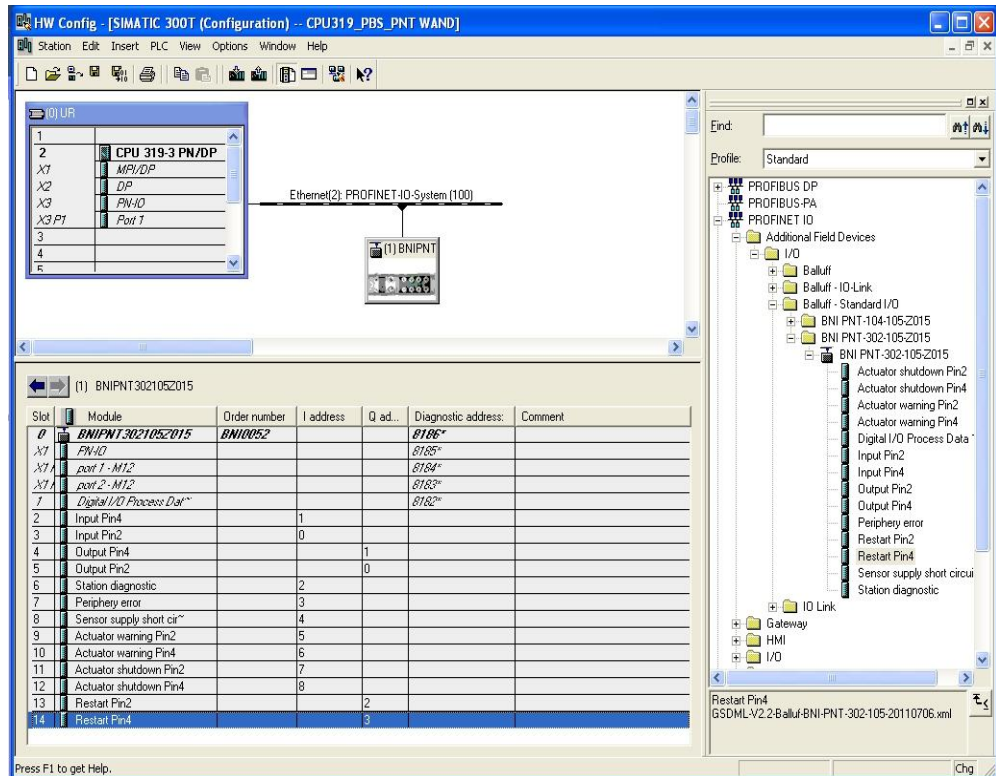
GSDML-File

The device data required for project planning are stored in GSDML files (**G**eneric **S**tation **D**escription **M**arkup **L**anguage). The GSDML files are available in 2 languages for downloading over the Internet (www.balluff.com).
The GSDML file provides the possible data modules (inputs or outputs of various data width).

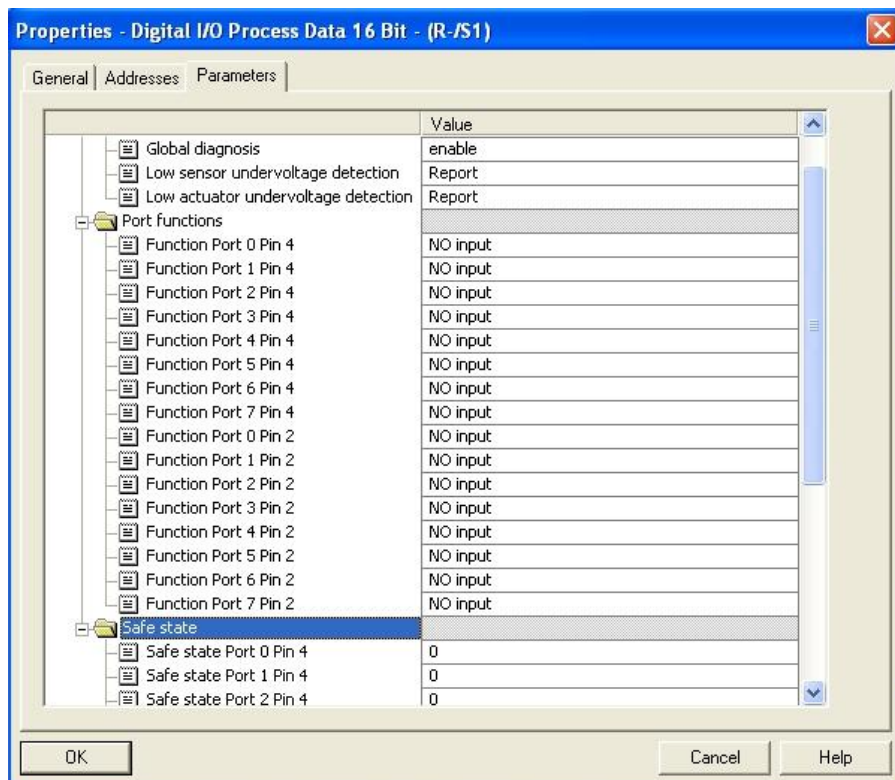
(1) BNIPNT302105Z015						
Slot	Module	Order number	I address	Q ad...	Diagnostic address:	Comment
0	BNIPNT302105Z015	BN10052			8186*	
X1	FN-IO				8185*	
X1	port 1 - M12				8184*	
X1	port 2 - M12				8183*	
1	Digital I/O Process Data				8182*	
2	Input Pin4		1			
3	Input Pin2		0			
4	Output Pin4			1		
5	Output Pin2			0		
6	Station diagnostic		2			
7	Periphery error		3			
8	Sensor supply short cir~		4			
9	Actuator warning Pin2		5			
10	Actuator warning Pin4		6			
11	Actuator shutdown Pin2		7			
12	Actuator shutdown Pin4		8			
13	Restart Pin2			2		
14	Restart Pin4			3		

5 Integration

Integrating the module to configuration

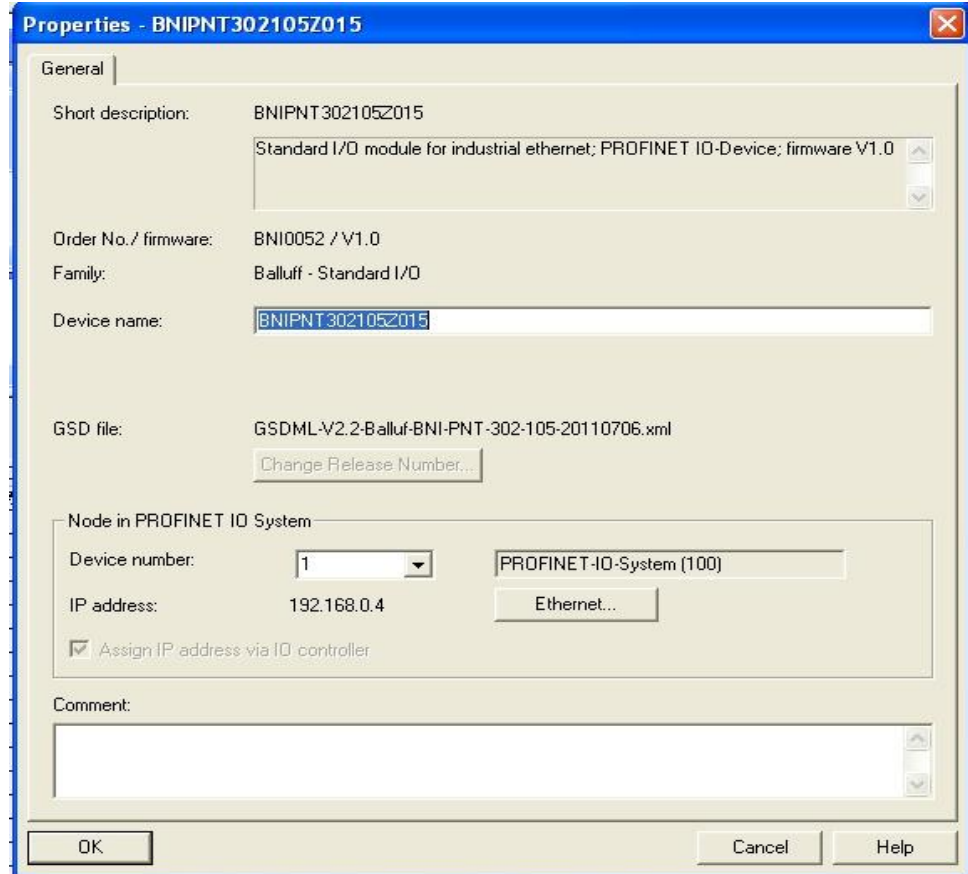


Object properties



5 Integration

Naming of the device

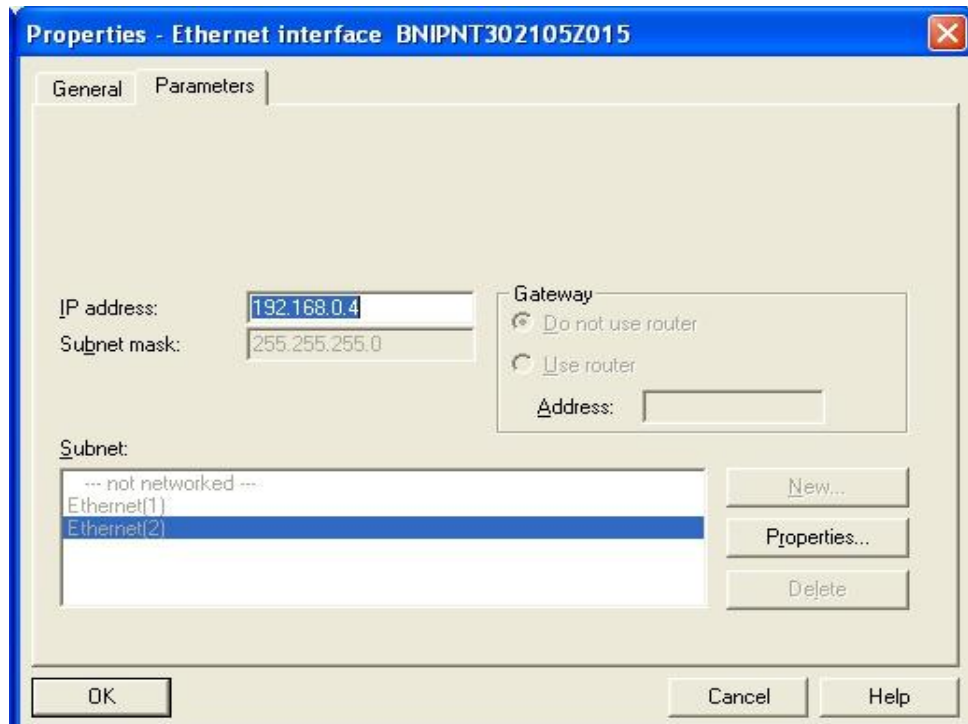


The 'Properties - BNIPNT302105Z015' dialog box is shown with the 'General' tab selected. It contains the following fields and options:

- Short description:** BNIPNT302105Z015
- Order No./ firmware:** BNI0052 / V1.0
- Family:** Balluff - Standard I/O
- Device name:** BNIPNT302105Z015
- GSD file:** GSDML-V2.2-Balluff-BNI-PNT-302-105-20110706.xml
- Node in PROFINET IO System:**
 - Device number:** 1
 - IP address:** 192.168.0.4
 - ☒ Assign IP address via IO controller
- Comment:** (empty text area)

Buttons at the bottom: OK, Cancel, Help.

Configuration of the Ethernet address



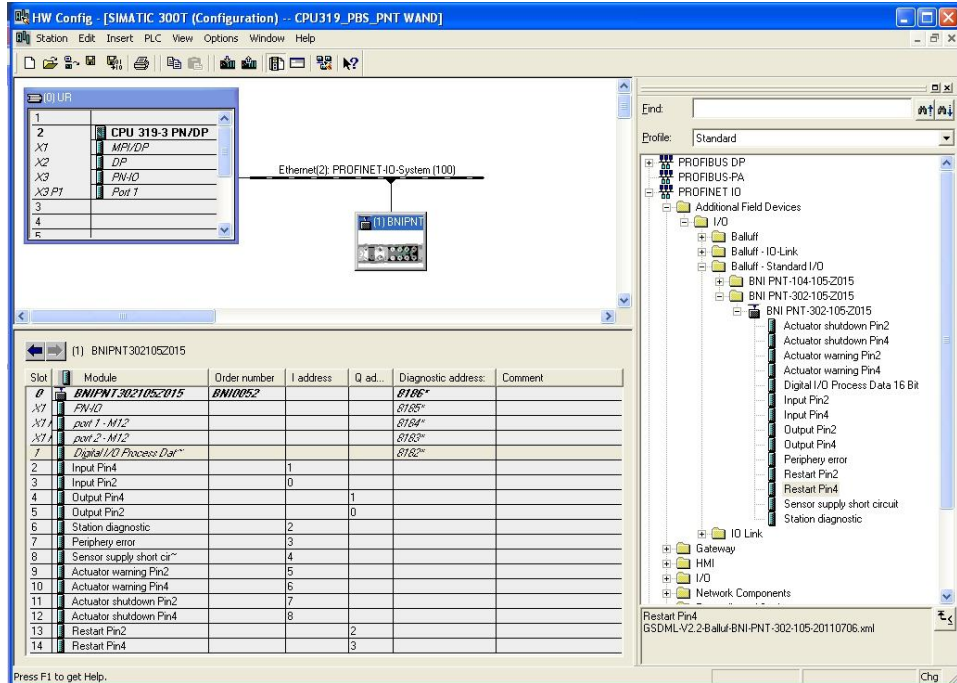
The 'Properties - Ethernet interface BNIPNT302105Z015' dialog box is shown with the 'Parameters' tab selected. It contains the following fields and options:

- IP address:** 192.168.0.4
- Subnet mask:** 255.255.255.0
- Gateway:**
 - ☒ Do not use router
 - ☐ Use router
 - Address:** (empty text field)
- Subnet:**
 - not networked ---
 - Ethernet(1)
 - Ethernet(2) (selected)

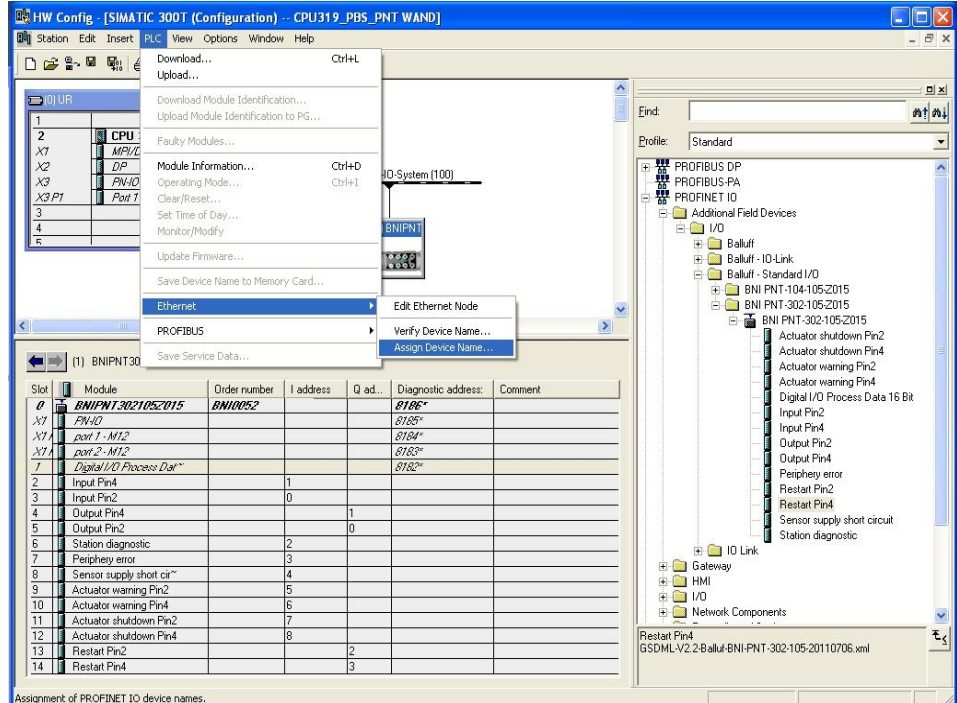
Buttons at the bottom: OK, Cancel, Help.

5 Integration

Finish Hardware configuration

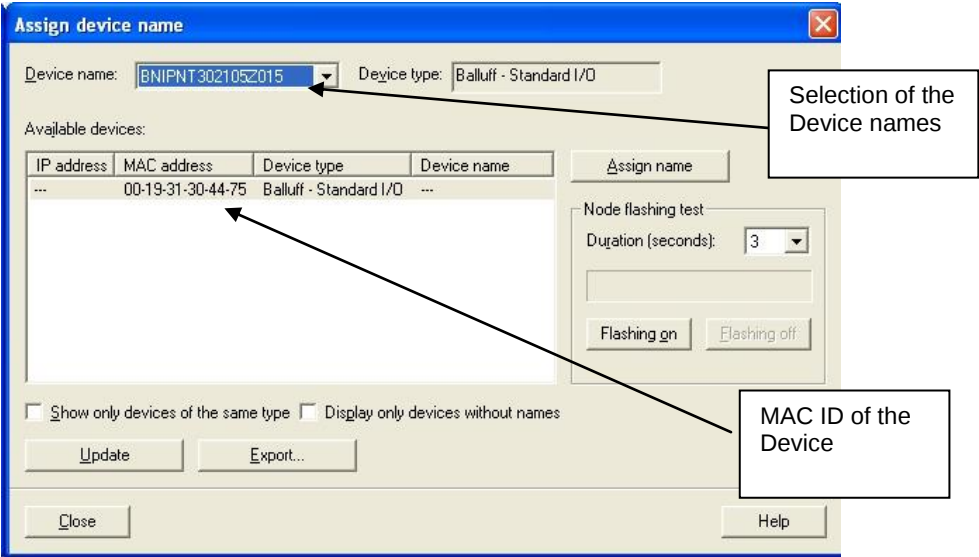


Integration to the ProfiNet network

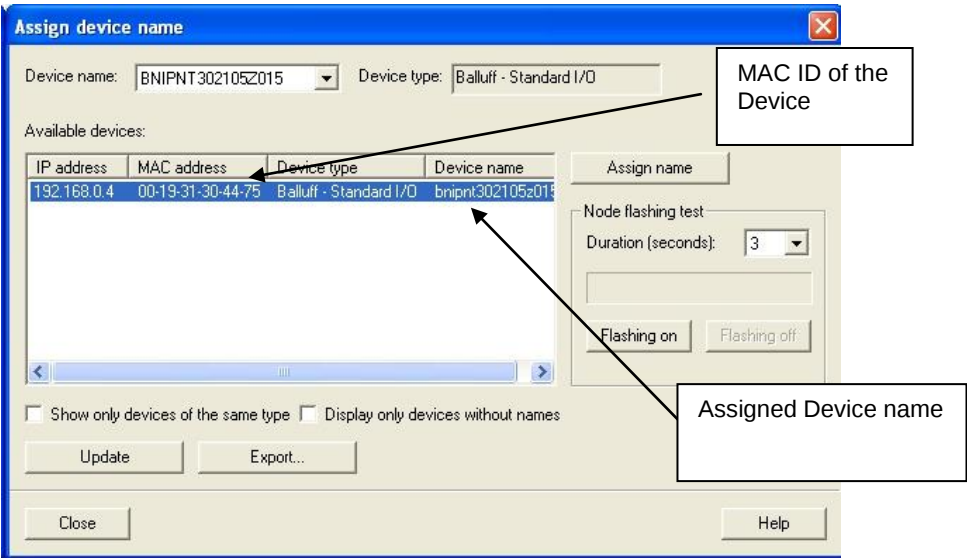


5 Integration

Scanning the system



Succesfully integrated in the system



6 Webservice

6.1. General

The module includes an internal webserver to get detailed information about the current state. Also you can use it to configure the module.

First make sure that a correct integration into your network has been done. To get a connection to the webserver enter the IP address of the module to your browser address bar. A welcome page with a list of all Balluff Profinet Network-interfaces is shown. Please use Internet Explorer 7 or higher.

6.2. Home

By click on "play"-button "Home" active.

You can get some information about the configuration and network-activity of the module. At the top of the window you can see the navigation bar which allows you to switch between the different webpages, just click on the corresponding text.

6.3. Diagnostic Process

On this page you can get some information about the module's current process data by having a look at the Leds.

6.4. Diagnostic Module

On this page you can see the current module and network status like you can see it on the module itself.

6.5. Configurations

You can change module position and module information.

This can only be used by entering a username and a password:

Username: Balluff

Password: BNIPNT

7 Appendix

7.1. Included material

The BNI PNT consists of the following components:

- Standard I/O Module
- 4 blind plugs M12
- Ground strap
- Screw M4x6
- 20 labels

7.2. Order code

BNI PNT-302-105-Z015

Balluff Network Interface

ProfiNet

Functions

- 104 = IP 67 Standard Input Module
- 202 = IP 67 Standard Output Module
- 302 = IP 67 Standard I/O Module
- 305 = IP 67 Standard I/O Module

Variants

- 105 = Display version, 2-port switch

Mechanical version

- Z015 = Material: Die-cast zinc housing
- Uplink: 2 x M12x1 internal thread
- Power: 7/8" external thread and 7/8" internal thread
- Sensor Ports: 8 x M12x1 internal thread

7.3. Order Information

Product ordering code	Order code
BNI PNT-104-105-Z015	BNI0053
BNI PNT-202-105-Z015	BNI005F
BNI PNT-302-105-Z015	BNI0052
BNI PNT-305-105-Z015	BNI005K

Notes

Notes

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