BALLUFF

BNI PNT-104-105-Z015
BNI PNT-202-105-Z015
BNI PNT-206-105-Z015
BNI PNT-302-105-Z015
BNI PNT-305-105-Z015

IP67 Modules
User's Guide

Content

1 Notes

1.1.	**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 ….
1.2.	**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

1.3. Symbols

> **ℹ Note**
> This symbol indicates general notes.

> **⚠ Attention!**
> This symbol indicates a security notice which most be observed.

1.4. Abbreviations

BNI	Balluff Network Interface
I	Standard input port
PNT	ProfiNet™
EMC	Electromagnetic Compatibility
FE	Function ground
O	Standard output port

1.5. Deviating views

Product views and illustrations in this manual may differ from the actual product. They are intended only as illustrative material.

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. Installation and startup

⚠ **Attention!**
Installation and startup are to be performed only by trained specialists. Qualified personnel are persons who are familiar with the installation and operation of the product, and who fulfills the qualifications required for this activity. Any damage resulting from unauthorized manipulation or improper use voids the anufacturer's guarantee and warranty. The Operator is responsible for ensuring that applicable of safety and accident prevention regulations are complied with.

2.3. General safety notes

Commissioning and inspection
Before commissioning, carefully read the operating manual.
The system must not be used in applications in which the safety of persons is dependent on the function of the device.
Authorized Personnel
Installation and commissioning may only be performed by trained specialist personnel.
Intended use
Warranty and liability claims against the manufacturer are rendered void by:
- Unauthorized tampering
- Improper use
- Use, installation or handling contrary to the instructions provided in this operating manual

Obligations of the Operating Company
The device is a piece of equipment from EMC Class A. Such equipment may generate RF noise. The operator must take appropriate precautionary measures. The device may only be used with an approved power supply. Only approved cables may be used.
Malfunctions
In the event of defects and device malfunctions that cannot be rectified, the device must be taken out of operation and protected against unauthorized use.
Intended use is ensured only when the housing is fully installed.

2.4. Resistance to aggressive substances

⚠ **Attention!**
The BNI modules generally have a good chemical and oil resistance. When used in aggressive media (eg chemicals, oils, lubricants and coolants each in high concentration (ie, low water content)) must be checked prior application-related material compatibility. In the event of failure or damage to the BNI modules due to such aggressive media are no claims for defects.

Hazardous voltage

⚠ **Attention!**
Disconnect all power before servicing equipment.

ℹ **Note**
In the interest of product improvement, the Balluff GmbH reserves the right to change the specifications of the product and the contents of this manual at any time without notice.

3   Getting Started

3.1. Module overview
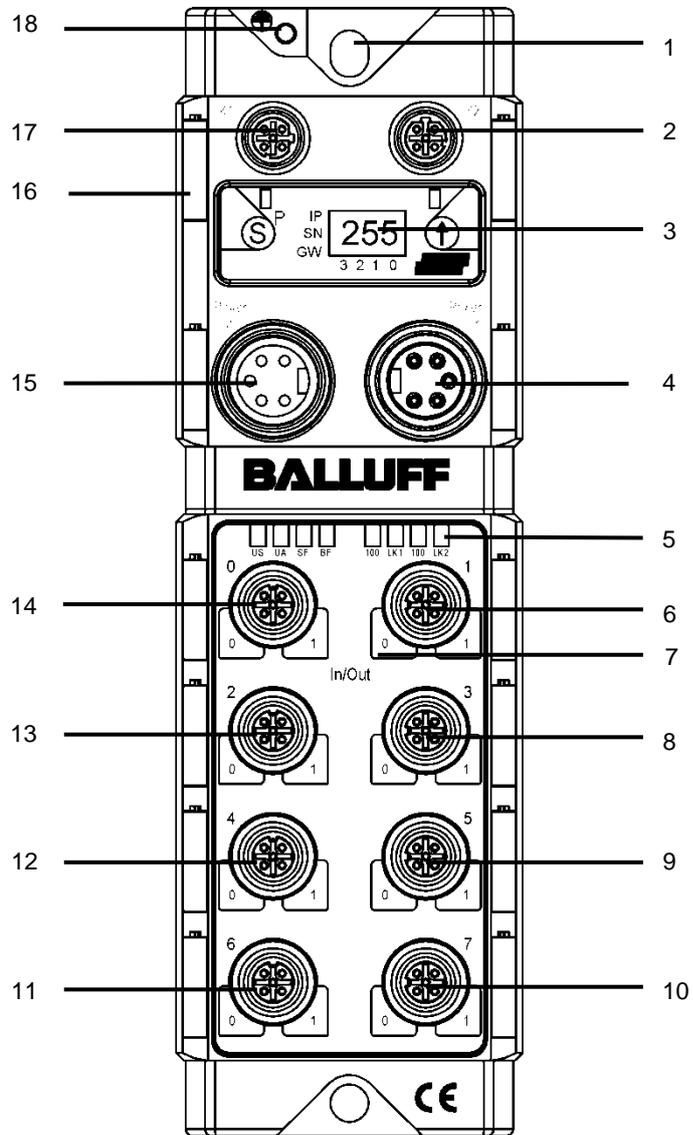
Figure 1 – Overview BNI PNT-xxx-105-Z015

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		

3.2.	**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)
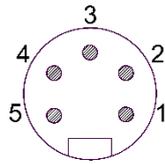
Pin	Function	Description
1	GND Bus- / Sensor and actuator power supply	0 V
2		
3	Function ground	FE
4	Bus- / Sensor power supply	+24 V
5	Actuator power supply	+24 V

Power supply "OUT" (7/8" female)
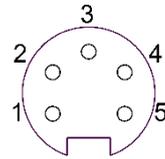
Pin	Function	Description
1	GND Bus- / Sensor and actuator power supply	0 V
2		
3	Function ground	FE
4	Bus- / Sensor power supply	+24 V
5	Actuator power supply	+24 V

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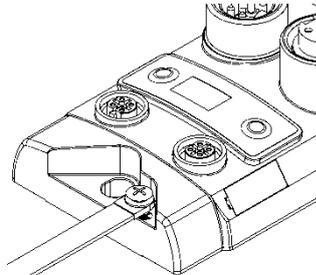
Note
The FE connection from the housing to the machine must be low-impedance and kept as short as possible.

PROFINET Interface

M12, D-coded, female
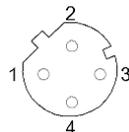
Pin	Function	
1	Tx+	Transmit Data +
2	Rx+	Receive Data +
3	Tx-	Transmit Data -
4	Rx-	Receive Data -

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	+24V, 200mA*	+24V, 200mA
		n.c.	
2	Input / Output 2A	Output 2A*	Input
		n.c.	
3	GND	GND	GND
4	Input / Output 2A	Output 2A	Input
5	FE	FE	FE

* Only for BNI PNT-206-105-Z015

> **i**   **Note**
> For the digital sensor inputs follow the input guideline per EN61131-2, type 2.

> **i**   **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.

> **i**   **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-206-105-Z015	Output	
BNI PNT-302-105-Z015	Input / Output	
BNI PNT-305-105-Z015	Input	Output

4.1. Dimensions
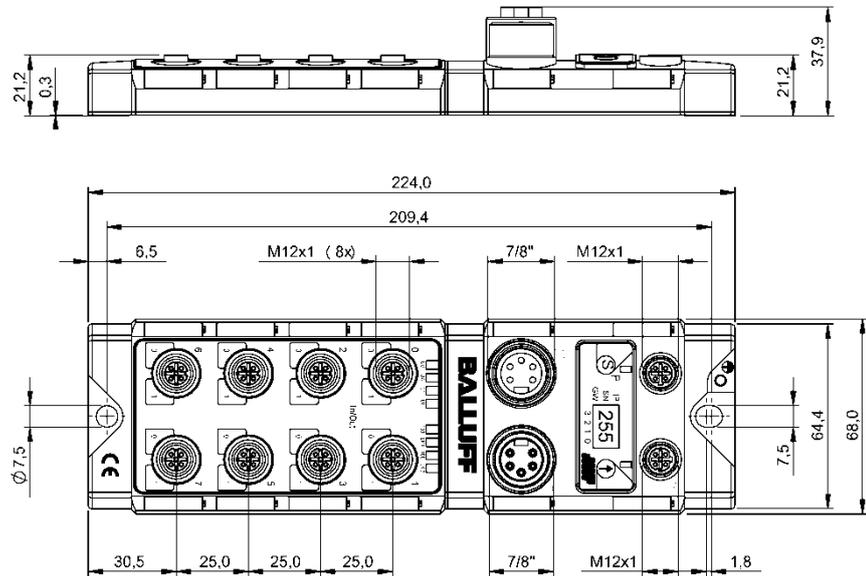
4.2. Mechanical data

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 Storage temperature	-5 °C ... 70 °C -25 C ... 70 °C

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

4.5. 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 802.33x-Pause)

4.6. Function indicators

Status LEDs

Port LEDs

Module status

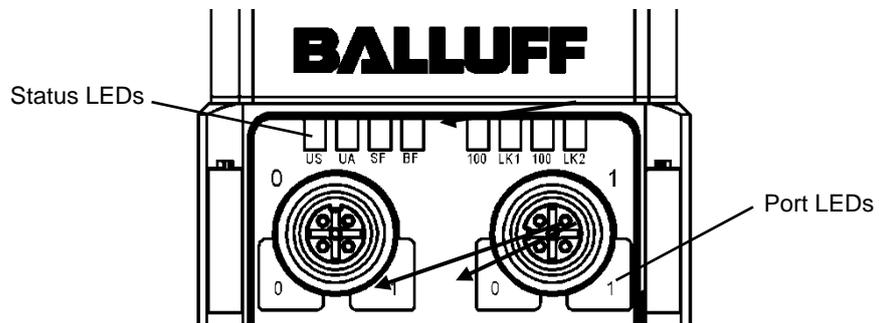| LED	Status	Function
US	green	Input power OK
	red	Low Input power (<18V)
UA	green	Output power OK
	red	Low Output power (< 18V)
SF	off	No error
	red	Watchdog timeout; channel, generic or extended diagnosis present; system error
	red flashing	DCP signal service is initiated via the bus
BF	off	No error
	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

|	
5.1. Configuration	When planning Profibus devices, a device is depicted as a modular system with a header module and several data modules. The screenshots shown here have been taken from the configuration software of the Siemens HW config.
GSDML file	The device data required for project planning is saved in GSDML files (**G**eneric **S**tation **D**escription **M**arkup **L**anguage). The GSDML files are available in two languages as an Internet download (www.balluff.com). The data modules of an IO-Link block are displayed in the project planning software according to the slot. The GSDML file makes the possible data modules available (input or output of different data ranges). For configuration of the IO-Link blocks, the corresponding data modules are assigned to a slot.
Integration of the module	The device can be found by searching in the catalog and inserted in the Profinet section by drag & drop.
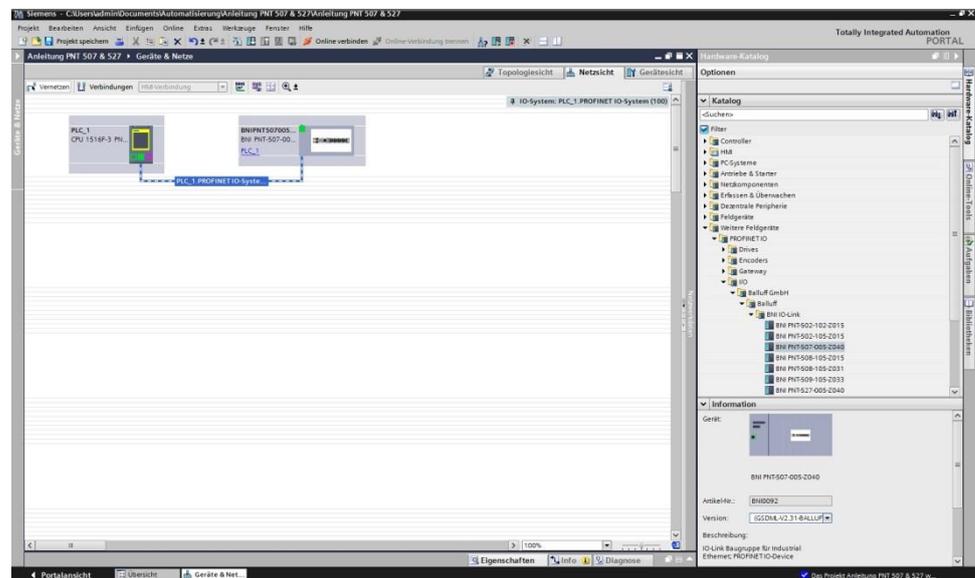
The module BNIPNTxxx105Z015 with the
submodules PN-IO, port 1-M12, port 2-M12 are used for
Profinet communication.
In X1 PN-IO, functions such as prioritized run-up or the domains for the ring topology can be
selected.
In slot 0 the port function (input, output, diagnostics input) or diagnostics messages can be
defined.

5   Integration

Configuration of the header module

Double-click on the header module to open its properties.
Click on the "Parameter" tab to open a menu selection for defining the port functions and diagnostic functions.
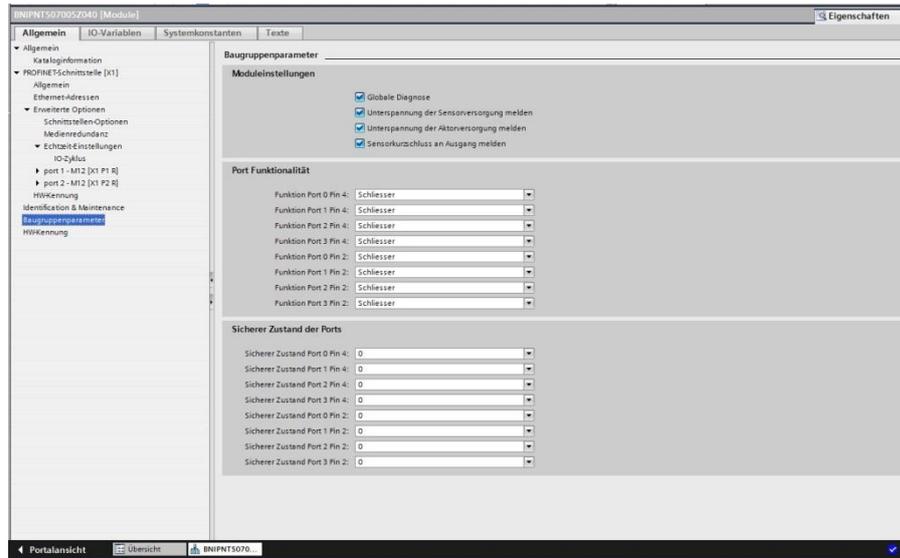
> **Note**
>
> **Standard input and output:**
> For each port, the function (N.C., N.O., diagnostic input (pin 2)) can be arbitrarily selected for each port at pin 2 and pin 4.

Hardware configuration

The standard I/O modules must now be configured appropriately for the configuration of the header module.
If necessary, these can be taken over into the configuration table from the hardware catalog by means of drag & drop.

Module addressing:
Double-clicking on the addressable modules allows you to change the addressing in the "Addresses" window

Configuring a standard input / output:
If one of the possible port pins (pin 4) is to be configured with a standard function (input, output), the "Standard I/O" placeholder module must be used for the corresponding slot.
To address the inputs and outputs, input pin 2 / 4 and output 2 / 4 must be taken over from the catalog and used in the configuration according to the given modules.

With the remaining modules, the various functions are mapped into the process data areas.

5   Integration

Device name, Double-click on the module in the Profinet line to view the communication parameters of the
Profinet address module.

The device name and the Profinet address (IP) are configured here.
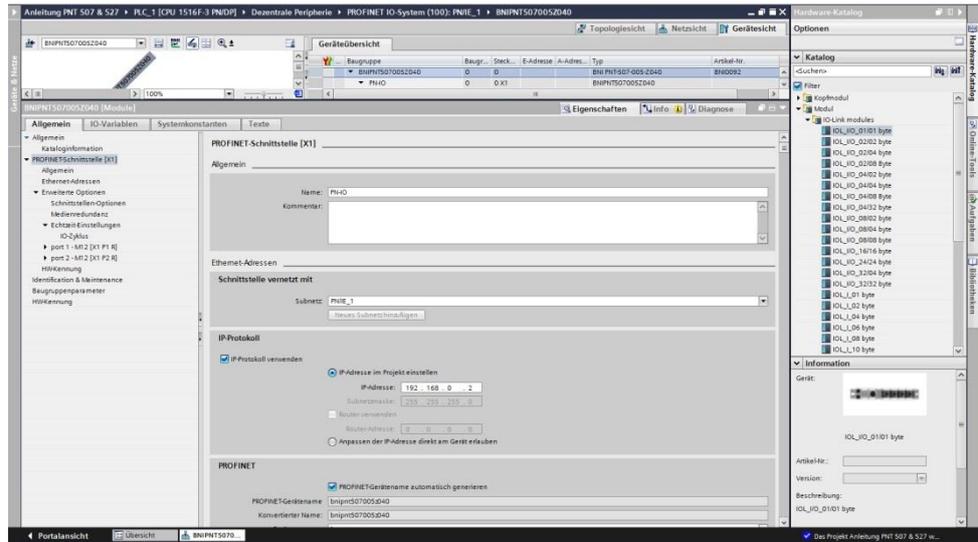
Establishing device relationship

"Device view "→ Right-click on the module→ "Assign device name".
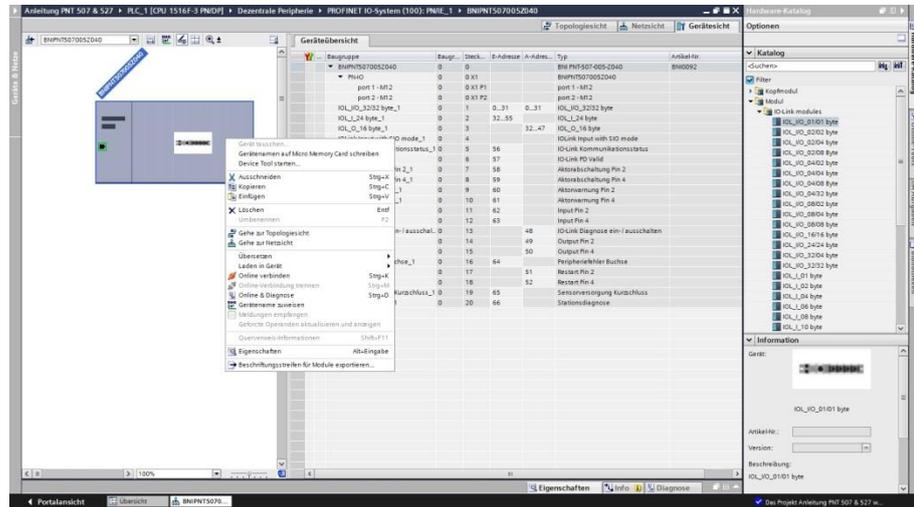
Assigning device name

Select the desired name and use "Assign name" to assign the marked device that you found.
The device name must be the same as that previously configured under device properties (see previous page)

Identification takes place via the MAC address (on the rear of the device) or via the Blink Test.
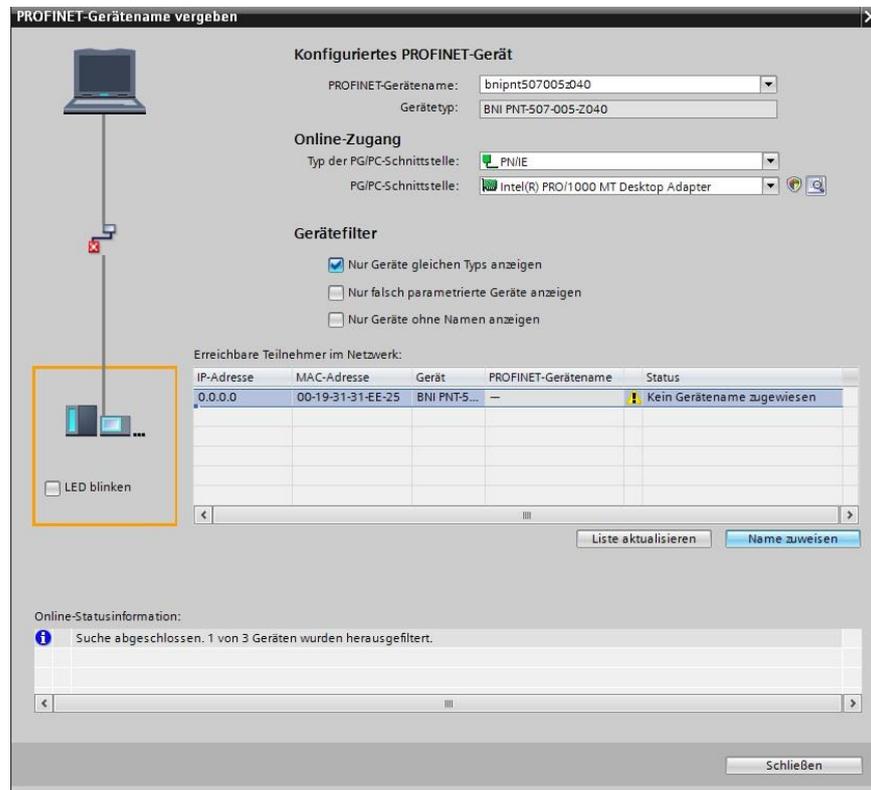
5	**Integration**	

Concluding the configuration

Download the configuration into HW config.

At this point, the bus error on the module should disappear.

If the module still reports a bus error,
there could be a problem in one of the following areas:

- Device relationship not established.
  Scan the network and check whether the device is signaling under the correct device name and correct IP address.
  Adapt the Ethernet address or device name if necessary, assign the device name to the device once again and download the configuration.

5.2. Functions in module properties

Description of the functions in module properties

Module settings

Global diagnostics:
This function can be used to permit / suppress all diagnostics messages of the module. (optical diagnostics signals and diagnostics in configured diagnostics modules are not affected)

Sensor supply undervoltage:
This function can be used to permit / suppress the diagnostics message Sensor supply undervoltage. (optical diagnostics and diagnostics in configured diagnostics modules are not affected)

Actuator supply undervoltage:
This function can be used to permit / suppress the diagnostics message Actuator supply undervoltage. (optical diagnostics signals and diagnostics in configured diagnostics modules are not affected)

Sensor connection to output:
This function can be used to permit / suppress the diagnostics message Sensor Short-circuit on the module output. (Visual diagnostics and diagnostics in configured diagnostics modules is not affected) Function applies only to channels/pins which are configured as outputs. Channels/pins configured as inputs are unaffected.

Port functions

The function for every individual port pin can be defined here:
Make contact = input as normally open contact
Break contact = input as normally closed contact
Output = output function

Safe state

This function is a supplement to an output configuration of the respective port pin.
For each port pin, a safe status can be predefined which is assumed in the event of a failure in bus communication.

5.3. Bit mapping and function

Bit mapping and function of the configurable modules

Inputs pin 4
Inputs pin 2
Outputs pin 4
Outputs pin 2

Signal from configured inputs or outputs are depicted in the modules
Inputs pin 4 / Inputs pin 2 and Outputs pin 4, Outputs pin 2.

The "Inputs pin 2" module also depicts the diagnostic inputs of the diagnostic input function.

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Port 7	Port 6	Port 5	Port 4	Port 3	Port 2	Port 1	Port 0

Actuator shutdown pin 4 / pin 2

Depicts a short circuit between a set output to ground at the respective port pin.

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Port 7	Port 6	Port 5	Port 4	Port 3	Port 2	Port 1	Port 0

Actuator warning pin 4 / pin 2

Feedback if a voltage is being supplied at an output that is not set.

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Port 7	Port 6	Port 5	Port 4	Port 3	Port 2	Port 1	Port 0

Restart pin 4 / pin 2

If this function is configured, after an actuator short-circuit there is no automatic restart, but rather the port must be activated by inserting the corresponding bit.

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Port 7	Port 6	Port 5	Port 4	Port 3	Port 2	Port 1	Port 0

Peripheral error, socket

Feedback indicating the port at which an error occurred.

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Port 7	Port 6	Port 5	Port 4	Port 3	Port 2	Port 1	Port 0

Short-circuit Sensor supply

Feedback indicating the port at which there is a sensor supply short circuit.

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Port 7	Port 6	Port 5	Port 4	Port 3	Port 2	Port 1	Port 0

Station diagnostics

Feedback indicating which fault occurred.

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
IO-Link short circuit	Actuator Warning	Actuator Short-circuit	Sensor voltage Short-circuit	External error	Res.	US actuator	US sensor

6.1. Diagnostics message	The diagnostics message that is generated by the module in the event of an error is usually read out by the PLC and processed. It is also possible to read out the diagnosis from the module by means of function modules and evaluate it.	

The diagnostics message is 34 bytes long and divided into 3 blocks:
Block Header, Alarm Specifier, Channel Properties

Byte	Value	Meaning	Block
0	00	Block Type	Block Header
1	02	Block Type	
2	00	Block Length	
3	1E	Block Length	
4	01	Block Version High	
5	00	Block Version Low	
6	00	Alarm type	
7	01	Alarm type	
8	00	API	
9	00	API	
10	00	API	
11	00	API	
12	00	Slot number	
13	01	Slot number	
14	00	Subslot number	
15	01	Subslot number	
16	00	Module ID	
17	00	Module ID	
18	00	Module ID	
19	17	Module ID	
20	00	Submodule ID	
21	00	Submodule ID	
22	00	Submodule ID	
23	01	Submodule ID	
24	XX	AlarmSpecifier	AlarmSpecifier
25	36	AlarmSpecifier	
26	80	User Structure ID	
27	00	User Structure ID	
28	XX	Channel number	
29	XX	Channel number	
30	08	ChannelProperties	ChannelProperties
31	00	ChannelProperties	
32	00	ChannelErrorType	
33	1 A	ChannelErrorType	

6   Diagnostics

6.2. Block Header

The first part of the diagnosis is the so-called Block Header, which is 24 bytes long.

Block Type

The first 2 bytes of the Block Header are described by the Block Type to define the data type.

Possible values	Meaning
0x0002	Alarm Notification Low

Block Length

2 bytes of data that define the length of the following diagnostics message (for the complete diagnostics message, the 2 bytes from the Block Type and the 2 bytes from the Block Length must be added).

Block Version High

1 byte, preset to 0x01

Block Version Low

1 byte, preset to 0x00

Alarm Type

2 bytes; the information on the type of alarm is provided here

Possible values	Meaning
0x0001	Diagnostics

API

4 bytes, default is 0.

Possible values	Meaning
0x00000000	Default value

Slot

2 bytes of data that describe which slot of the module reports an error

Possible values	Meaning
0x0010	Slot 2-15 (Standard IO modules)
0x0011	Slot 2-15 (Standard IO modules)
0x0012	Slot 2-15 (Standard IO modules)
0x0013	Slot 2-15 (Standard IO modules)
0x0014	Slot 2-15 (Standard IO modules)
0x0015	Slot 2-15 (Standard IO modules)
0x0016	Slot 2-15 (Standard IO modules)
0x0017	Slot 2-15 (Standard IO modules)
0x0018	Slot 2-15 (Standard IO modules)

Subslot

2 bytes of data that describe which subslot of the slot reports an error

Possible values	Meaning
0x0001	Subslot 1

Module ID   4 bytes of data that describe which module is inserted in the respective slot.
(The module ID is saved in the GSDML)

Possible values	Meaning
0x00000059	Output pin 4
0x0000005A	Output pin 2
0x0000005B	Input pin 4
0x0000005C	Input pin 2

Submodule ID   4 bytes of data that describe which submodule is used with the respective module.
(The submodule ID is saved in the GSDML)

Possible values	Meaning
0x00000001	BNI PNT-302-105-Z015 (header module)

6.3. AlarmSpecifier   2 bytes, subdivided as follows:

Sequence Number   Bit 0-10, this counter is incremented with every new diagnostic message.

Channel Diagnostic   Bit 11

Possible values	Meaning
0x00	No diagnosis related to channel is pending
0x01	Diagnosis related to channel is pending

Manufacturer-Specific Diagnosis   Bit 12

Possible values	Meaning
0x00	No diagnosis related to manufacturer is pending
0x01	Diagnosis related to manufacturer is pending

Submodules Diagnostic State   Bit 13

Possible values	Meaning
0x00	No further diagnosis of submodule present
0x01	At least one further diagnosis of the submodule present

Bit 14 reserved

ARDiagnosis State   Bit 15

Possible values	Meaning
0x00	No further diagnosis of module is present
0x01	At least one further diagnosis of the module is present

User Structure ID   2 bytes, describes the type of diagnosis

Possible values	Meaning
0x8000	Channel-related diagnosis

6	Diagnostics

6.4. Channel Number   Configuration as standard I/O

Error Type	Channel Number
Undervoltage US	8000
Undervoltage UA	8000
No UA	8000
Sensor Short circuit Pin 1 - 3	0…..n
Actor Short circuit Pin 2 - 3	0…..n
Actor Short circuit Pin 4 - 3	0…..n

6.5. Channel Properties   2 bytes, subdivided as follows:

Type

Possible values	Meaning
0x00	Used if the channel number is 0x8000 or none of the types defined below is relevant.
0x01	1 bit
0x02	2 bits
0x03	4 bits
0x04	8 bits
0x05	16 bits
0x06	32 bits
0x07	64 bits
0x08 – 0xFF	Reserved

Bit 0-7

Accumulative   Bit 8 not used, always 0.

Maintenance

Possible values		Meaning
Bit 9	Bit 10	
0x00	0x00	Diagnostics

Bit 9-10

Specifier

Possible values	Meaning
0x00	Not used
0x01	Diagnosis appeared
0x02	Diagnosis left
0x03	Diagnosis left, but another is still active

Bit 11-12

Direction

Possible values	Meaning
0x00	Manufacturer-specific
0x01	Channel used as input
0x02	Channel used as output
0x03	Channel used as input and output

Bit 13-15

6.6. Channel Error Type

Error code in hex	Description
0x0000	Unknown error
0x0001	Short-circuit
0x0002	Undervoltage
0x0003	Overvoltage
0x0004	Overload
0x0005	Temperature limit exceeded
0x0006	Cable break
0x0007	Upper threshold exceeded
0x0008	Lower threshold undershot
0x0009	Error
0x001A	External error
0x001B	Sensor has incorrect configuration (IO-Link device)
0x0101	Actuator warning
0x0105	Actuator supply undervoltage
0x0104	No actuator power supply

7	**Webserver**

7.1. General Information

The BNI fieldbus module contains an integrated web server for retrieving detailed device information and for configuring the device.

To use the web interface you must first ensure that the module has been correctly integrated into your network. In addition the IP subnet of the BNI module must be accessible from the PC on which the browser is running. Please use Internet Explorer 10 or newer as the browser; older versions may result in display problems.

For open a connection with the web server, enter the IP address of the module in the address line of the browser. The homepage then appears with the essential device information.

7.2. Navigation / Info   The navigation bar is located in the upper area of the window, which allows you to switch between the various dialogs of the web interface. To do this click on the corresponding icon.

When the "Info" tab is selected the following overview appears:
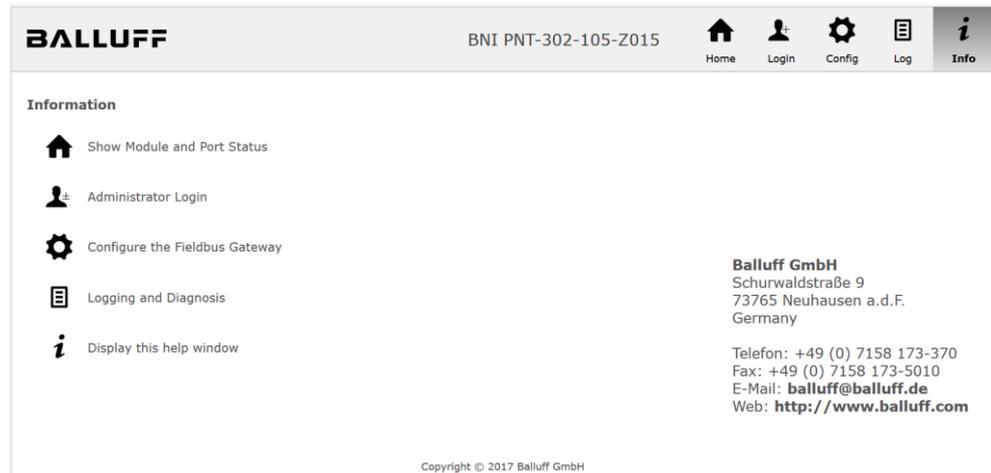
The "BALLUFF" logo at upper right links to the international Balluff homepage.

7   Webserver

7.3. Login/Logout   To make configuration settings on the fieldbus module using the web interface, you must first log in. Functionalities which cannot be used without logging in are indicated by the grayed out buttons.

The default password is:

BNI PNT-XXX-XXX-XXXX	"BNIPNT"
BNI EIP-XXX-XXX-XXXX	"BNIEIP"
BNI ECT-XXX-XXX-XXXX	"BNIECT"

The password cannot be changed!
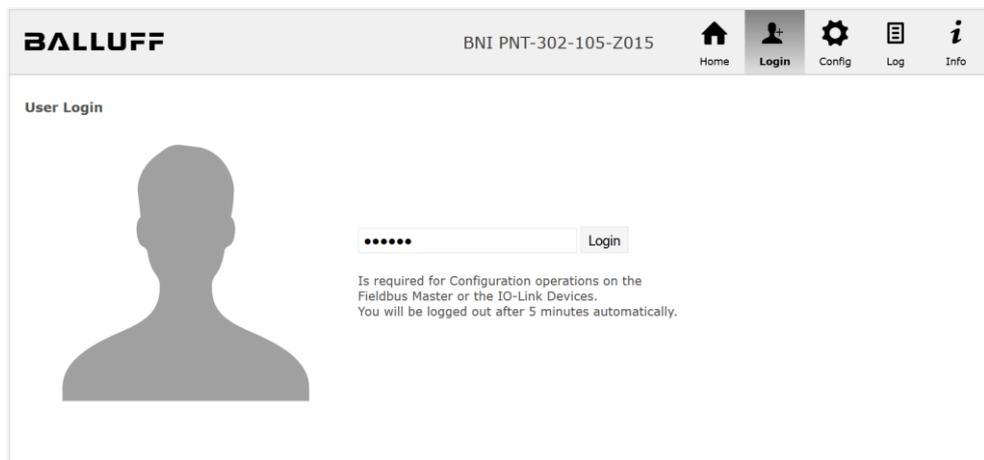
After successfully logging in the dialogs are shown as follows:

Use the "Logout" button to log out again. After 5 minutes of no interaction with the Webserver the user is automatically logged out.

> **Note**
> For security reasons the fieldbus module shows only one login at a time with configuration access. Reading (without logging in) is however possible from multiple PCs at the same time on the fieldbus module.
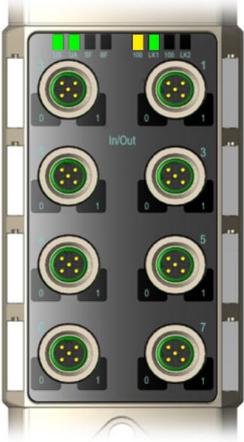
7.4. "Home" dialog

Under "Home" you are given the essential information about the fieldbus itself and its network activity. You are also shown whether the configuration block was enabled by the controller (PLC).

Information is also shown about the current process data and the status of the module via the corresponding LEDs. After selecting "LED Legend" a Help dialog appears which explains the meaning of the LEDs

Balluff Network Interface Profinet

PNT:

EIP:

> LED Legend

7.5. "Config" dialog   The configuration page enables configuration of the module. You can change the module information texts and the (for EIP) IP-Configuration.

PNT / ECT:

EIP:

The parameter set "Module Configuration" on the left side is used by clicking "Save Configuration" and permanently stored in the device.

The "Reboot" button reboots the device as if the power to the module had been turned off and on again.

Clicking on "Factory Reset" deletes the configuration and log files saved in the device and then performs a reboot, so that the device is restored to the default factory configuration as on delivery.

7.6. "Log" dialog   This dialog provides general service information about the device as well as a logging function.

The upper table (see screenshot below) contains important information for all service inquiries.

> **ℹ Note**
> If you have a detailed question about a specific situation, send us a screenshot of this Web site or print the site as a PDF.

Logging shows events which have occurred in chronological order. This provides a tool for detailed troubleshooting in equipment.

Events are classified using the "**Severity**" column:

Internal Error (Emergency, Alert, Critical)
→ The fieldbus module has detected a fault in itself (hardware or software) which should not occur during normal operation. If this happens, the module must be serviced or replaced.

External Error (Error, Warning)
→ The fieldbus module has detected what may be a non-permissible event which is affecting the module from the outside. The system may require troubleshooting.

Event (Informational, Notice)
→ The fieldbus module has detected an important normal operating event and reports it. These may include for example configuration actions over the web interface and other configuration interfaces which are also recorded.

Clicking on "Set Module Time" sends the current browser time to the fieldbus module but does not permanently store it. After a reset, reboot or loss of power the time begins to run again from the year 2000.

Clicking on "Update Log" refreshes the display, and "Clear Log" deletes all entries. The log entries are stored in a ring buffer.

8   Monitoring & Diagnostics

8.1. General   The fieldbus module offers a number of diagnostics interfaces which are described in the following:

- Device diagnostics using the web interface
- Network diagnostics via SNMP
- Fieldbus-specific diagnostics using the PLC

The web interface and the fieldbus-specific diagnostics interface are each described in a separate section.

The monitoring and diagnostics interfaces on the device are accessed via the IP-based management interface over the Ethernet network. Alternately to the procedure for setting IP access described in the "Integration" section, other dedicated configuration tools can also be used together with the DCP protocol of PROFINET. The following parameters must then be set:

- IP address (IP)
- Subnet mask (SN)
- Gateway address (GW)
- Device name

The configuration settings can be reset to their factory defaults through the web interface.

Configuration settings are only possible if the module has no active connection with a controller unit.

8.2. SNMP MIBs   Monitoring and diagnostics of the device network settings can be done over the network using the SNMPv1 protocol. This can be accessed simply from a so-called SNMP browser or common network management applications.

The following MIBs are supported:

- MIB-2   (RFC 1213)
- LLDP-MIB (IEEE 802.1AB)

Information about the fieldbus module is provided in the module-specific information of the MIB-2:

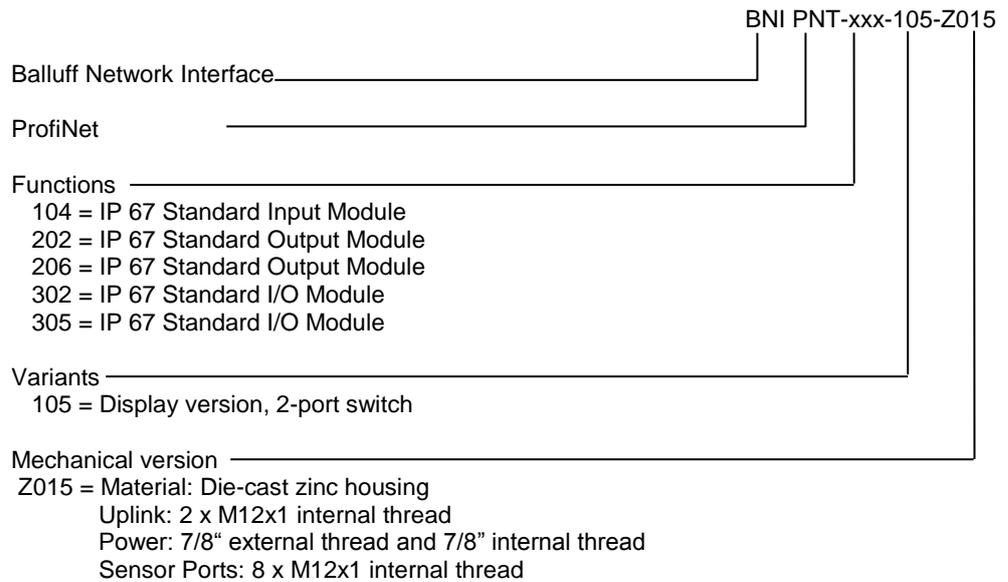| MIB variable	Description
sysDescr	A textual description of the entity. This value should include the full name and version identification of the system's hardware type, software operating-system, and networking software.
sysObjectID	{1.3.6.1.4.1.44233.1.2.1} For Balluff products with Product enterprise Number (PEN) = 44233, the product list is defined in **BALLUFF-PRODUCTS-MIB**
sysUpTime	The time (in hundredths of a second) since the network management portion of the system was last re-initialized.
sysContact	The textual identification of the contact person for this managed node, together with information on how to contact this person. ("BALLUFF")
sysName	An administratively-assigned name for this managed node. By convention, this is the node's fully-qualified domain name. ("BNI PNT ….")
sysLocation	The physical location of this node (e.g. "73765 Neuhausen a.d.F, Germany")

The port-specific information of the MIB-2 describes diagnostic data about the network connections, including the IO-Link ports:

MIB variable	Ethernet port	IO-Link Port
ifIndex	A unique value, contiguously starting from 1.	
ifDescr	A textual string containing information about the interface, i.e. "Ethernet X"	"IO-Link X" / "IO-IN X" / "IO-OUT X"
ifType	IANAifType = 6 (ethernetCsmaCd) when Ethernet	IANAifType = 280 (sdci) when IO-Link-Port = 0 (other) when I/O-Port
ifMTU	length of Ethernet MTU	length of IO-Link process data (typically max. 32 bytes) or 1, when IO-port
ifSpeed	actual Ethernet speed	IO-Link speed (no device = 0 bit/s, Com1 Mode = 4800 bit/s, Com2 Mode 38400 bit/s, Com3 Mode = 230400 bit/s)
ifPhysAddress	MAC address assigned to this port	This object may contain an octet string of zero length, since IO-Link is a serial P2P protocol with no specific addressing.
ifAdminStatus	Up(1), Down(2), depending	Up(1), Down(2), depending if IO-Link capability is configured.
ifOperStatus	Up(1), Down(2), depending if an IO-Link device is connected and operable.	
ifLastChange	The value of sysUpTime at the time the interface entered its current operational state. If the current state was entered prior to the last re-initialization of the local network management subsystem, then this object contains a zero value.	n/a
ifInOctets	The total number of octets received on the interface, including framing characters.	
ifInErrors	n/a	Number of received frames that were rejected as invalid by the IO-Link-Master (Abort).
ifOutOctets	The total number of octets transmitted out of the interface, including framing characters.	
ifOutErrors	n/a	Number of retries by the IO-Link-Master, indicating unsuccessful packet transmissions.

9	Appendix	BALLUFF

9.1. Included material   The BNI PNT consists of the following components:
- Standard I/O Module
- 4 blind plugs M12
- Ground strap
- Screw M4x6
- 20 labels

9.2. Order code   BNI PNT-xxx-105-Z015

Balluff Network Interface

ProfiNet

Functions
   104 = IP 67 Standard Input Module
   202 = IP 67 Standard Output Module
   206 = 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

9.3. Order Information

Product ordering code	Order code
BNI PNT-104-105-Z015	BNI0053
BNI PNT-202-105-Z015	BNI005F
BNI PNT-206-105-Z015	BNI007L
BNI PNT-302-105-Z015	BNI0052
BNI PNT-305-105-Z015	BNI005K

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