



Desigo™ PX

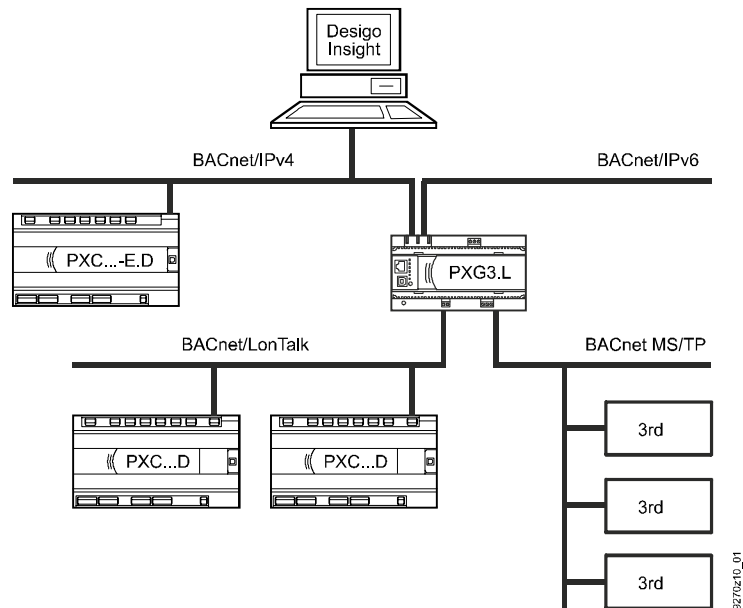
## BACnet router for

- BACnet/IP
- BACnet/LonTalk
- BACnet MS/TP

**PXG3.L**  
**PXG3.M**

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- Routing between BACnet/IP , BACnet/LonTalk (PXG3.L only), and BACnet MS/TP
  - Supports BACnet/IPv4 and BACnet/IPv6
  - BACnet standard compliant
  - ISO 16484-5 compliant
  - BTL label (BACnet communications passed the BTL test)
  - BBMD support (BACnet Broadcast Management Device)
  - Third-party device support
  - Configuration via Xworks Plus or Web browser (via IPv4)
  - Web browser access to network statistics
  - Firmware update via Ethernet and USB Device
  - LED indication for Ethernet link and activity
  - LED indication for BACnet/LonTalk and BACnet MS/TP (diagnostics)
  - 2-port Ethernet switch for low-cost cabling (10/100 baseT)
  - BACnet MS/TP (RS-485) baud rates: 9600, 19200, 38400, 76800, 115200
  - Plug-in screw terminal blocks for supply, LONWORKS, and MS/TP
  - RJ45 plug for PXM20 (LONWORKS)
  - Operating voltage: AC 24 V or DC 24 V
  - DIN rail mounting
  - BACnet MS/TP Slave Proxy
  - SNMP (v2), MIB-2
  - BACnet NAT

The PXG3... BACnet router connects a BACnet/IP network to a BACnet/LonTalk network (PXG3.L only), and/or a BACnet MS/TP channel. BACnet objects are transmitted simultaneously throughout any and all networks.



## Router functions

### Four-way routing

The PXG3... BACnet router transmits BACnet protocol between a BACnet/IPv4 network, a BACnet/IPv6 network, a BACnet/LonTalk network (PXG3.L only), and a BACnet MS/TP channel. BACnet objects are simultaneously transmitted throughout any and all networks.

### BBMD

Broadcast Management Device, used to distribute BACnet Broadcast messages across IP Routers.

### Web server

The BACnet router includes a Device Object and can be operated by a BACnet Client. Present operating state, date and time as well as statistics on sent packages can be viewed via web server.

### MS/TP Slave Proxy

The BACnet router can serve as a Slave Proxy for slaves that are connected to its MSTP port. In other words, it responds to Who-Is messages on the slaves' behalf by sending an I-Am message.

### SNMP v2

Simple Network Management protocol MIB-2, for monitoring and diagnosing the BACnet router network interface.

### BACnet NAT

Supports setup of a BACnet network over a NAT device. Additionally, remote access from a public network to BACnet devices is possible on a private network.

**Important:** the public IP address must be static.

For security reasons we recommend using VPN tunneling with BACnet NAT.

### BACnet/IP to BACnet/IP

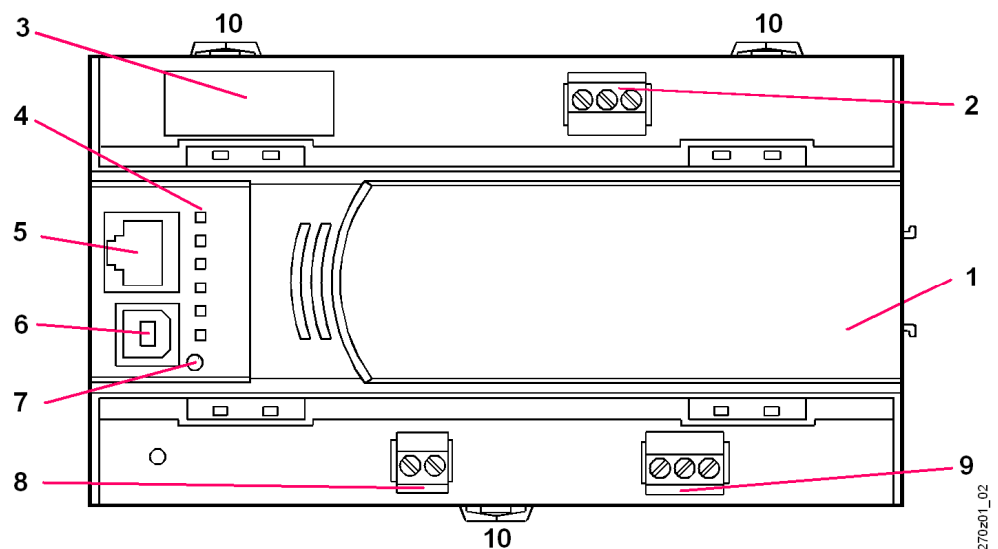
When routing between BACnet/IP and BACnet/IP on one IP network, the BACnet router address must be the same on both BACnet networks. The difference is that different BACnet UDP ports are used on the BACnet network.

- The router complies with BACnet standard and ISO 16484-5.
- A 2-port Ethernet switch allows low-cost cabling via line topology. This is the preferred commissioning medium.
- The LONWORKS network is connected via a 2-pin connection terminal.
- The MS/TP channel is connected via RS485 or a 3-pin connection terminal.
- An RJ45 plug on the device front allows connecting to a PXM20 operator unit (PXG3.L only).
- A USB port is available for connecting the tool.

### Type summary

| Type (ASN) | Product number (SSN) | Name                                           | Ethernet ports | LONWORKS | MS/TP |
|------------|----------------------|------------------------------------------------|----------------|----------|-------|
| PXG3.L     | S55842-Z105-A100     | BACnet Router<br>Ethernet/IP-<br>LonTalk-MS/TP | 2              | x        | x     |
| PXG3.M     | S55842-Z106-A101     | BACnet Router<br>Ethernet/IP-MS/TP             | 2              |          | x     |

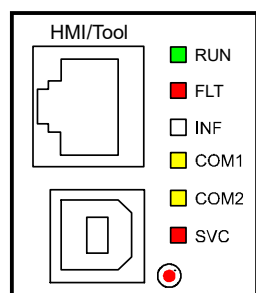
### Mechanical design



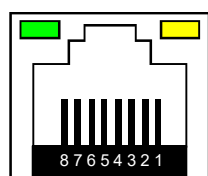
- 1 Plastic housing
- 2 Plug-in terminal block (operating voltage)
- 3 2-port Ethernet switch (with 2 LEDs each for display purposes)
- 4 LEDs for device and system status indication
- 5 RJ45 interface for PXM20 (PXG3.L only)
- 6 Tool interface (USB Device)
- 7 Service button for identification on network (Ethernet, LONWORKS)
- 8 LONWORKS terminal block (PXG3.L only)
- 9 MS/TP terminal block
- 10 Slider for mounting on DIN rail

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## LEDs



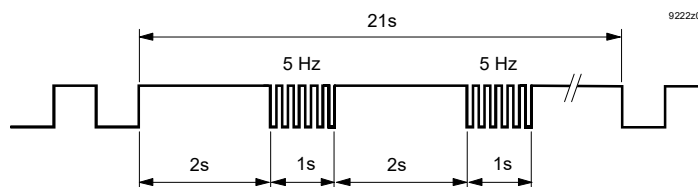
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9270z05

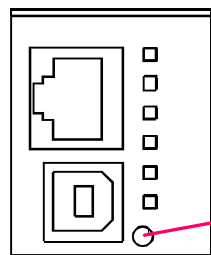
| LED            | Color  | Activity                                                                                                                                            | Function                                                                                                                                                          |
|----------------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| RUN            | Green  | <ul style="list-style-type: none"> <li>Continuously ON</li> <li>Continuously OFF</li> <li>Flashing</li> </ul>                                       | <ul style="list-style-type: none"> <li>Device ready.</li> <li>At least one internal power supply out of range.</li> <li>Start-up of device.</li> </ul>            |
| FLT            | Red    | <ul style="list-style-type: none"> <li>Continuously OFF</li> <li>Continuously ON</li> <li>Flashing</li> </ul>                                       | <ul style="list-style-type: none"> <li>OK</li> <li>HW fault or program fault.</li> <li>Incorrect or corrupt FW.</li> </ul>                                        |
| INF            | --     | --                                                                                                                                                  | (Not used)                                                                                                                                                        |
| COM1           | Yellow | <ul style="list-style-type: none"> <li>Flashing</li> </ul>                                                                                          | <ul style="list-style-type: none"> <li>Sends MS/TP packages.</li> </ul>                                                                                           |
| COM2           | Yellow | <ul style="list-style-type: none"> <li>Flashing</li> </ul>                                                                                          | <ul style="list-style-type: none"> <li>Sends LONWORKS packages (PXG3.L only).</li> </ul>                                                                          |
| SVC            | Red    | <ul style="list-style-type: none"> <li>Continuously OFF</li> <li>Continuously ON</li> <li>Flashing</li> <li>Flashing per wink command *)</li> </ul> | <ul style="list-style-type: none"> <li>Configured.</li> <li>Defective Hardware.</li> <li>Unconfigured.</li> <li>Physical identification of the router.</li> </ul> |
| Ethernet 1 / 2 | Green  | <ul style="list-style-type: none"> <li>Continuously ON</li> <li>Continuously OFF</li> <li>Flashing</li> </ul>                                       | <ul style="list-style-type: none"> <li>Link active</li> <li>Link inactive</li> <li>Network activity</li> </ul>                                                    |
|                | Yellow | <ul style="list-style-type: none"> <li>Continuously ON</li> <li>Continuously OFF</li> </ul>                                                         | <ul style="list-style-type: none"> <li>Link 100 Mbps</li> <li>Link 10 Mbps</li> </ul>                                                                             |

\*) Wink command pattern:



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## Service button



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| Button | Press                                                   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------|---------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1      | <ul style="list-style-type: none"> <li>Short</li> </ul> | Physical identification on the network (Ethernet).<br><br>Proceed as follows to reset the device to a <b>factory state</b> :<br>1. Power off device.<br>2. Power on device.<br>3. Wait for all LEDs to light up and turn off again, then push the SVC button.<br>4. Keep SVC button pressed until all LEDs light up, then release.<br><i><b>Up to Desigo V6_SP (FW V01.15.15.144): Keep SVC button pressed until the green RUN LED flashes, then release.</b></i><br>5. Wait for device to fully start up unconfigured (RUN LED on, SVC LED flashes).<br><br>Any device passwords and other settings are lost. |

## Engineering

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- The router does not require programming. It is configured either using Xworks Plus or the Desigo SSA-DNT via Ethernet or using a USB device. For details see SSA (Setup & Service Assistant) Commissioning, CA111050).
- Each device has a unique identification number to ensure efficient commissioning. The number is located on a removable barcode label.
- Each device has a unique MAC address.

For more details see document “Ethernet, TCP/IP, MS/TP and BACnet - Principles” (CM110666).

## Installation

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**Ethernet:** See installation manual Desigo TRA, CM111043.

**LONWORKS:** See installation manual Desigo RXC, CA110336.

Note

**HMI** (RJ45 plug): only the PXM20 can be connected. Otherwise the PXG3.L or the mistakenly connected device may be damaged.

## Mounting

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The router is designed for mounting on a standard mounting rail or on a wall. Power is supplied by connecting the plug-in screw terminal blocks.

## Commissioning

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To prevent equipment damage and/or personal injuries adhere to local safety regulations and related safety standards.

## Maintenance

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No maintenance required. A supercap supports the real-time clock (3 days).

## Disposal

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The devices are considered electronic devices for disposal in terms of the European Directive 2012/19/EU (WEEE) and may not be disposed of as domestic waste.

Dispose of the devices via the proper channels.

Observe all local and applicable laws.

## Technical data

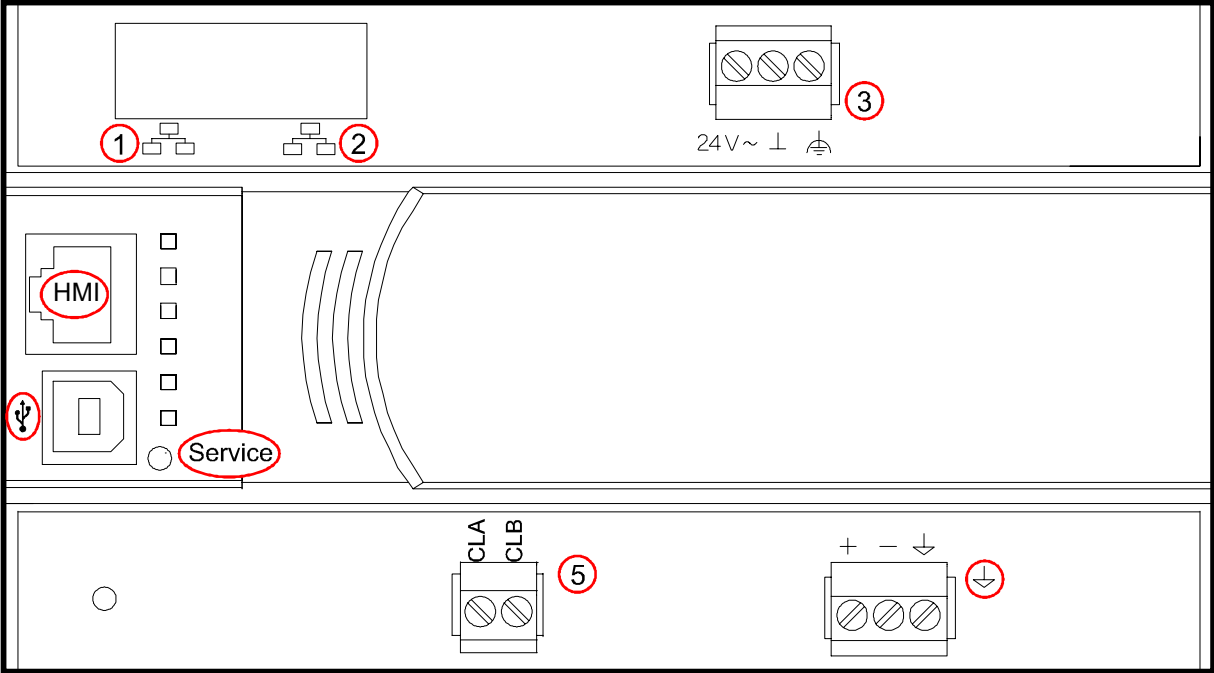
|                                                                                                                            |                                                                                                                        |                                                                                                                                                                                        |
|----------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operating voltage<br>(24 V~, $\perp$ ,  ) | Operating voltage                                                                                                      | AC 24 V $\pm$ 20 % (SELV/PELV) or<br>AC/DC 24 V class 2 (US)<br>48...63 Hz<br>Symmetric                                                                                                |
|                                                                                                                            | Half-wave load<br> = Technical ground |                                                                                                                                                                                        |
| Power consumption                                                                                                          | At AC 24 V                                                                                                             | Max. 9 VA                                                                                                                                                                              |
|                                                                                                                            | At DC 24 V                                                                                                             | Max. 4 W                                                                                                                                                                               |
|                                                                                                                            | Max. permissible transit power AC/DC 24 V<br>(RJ45 interface, HMI)                                                     | Max. 0.5 A                                                                                                                                                                             |
|                                                                                                                            | Internal fuse                                                                                                          | With PTC                                                                                                                                                                               |
| Hardware information                                                                                                       | Processor                                                                                                              | Series B<br>Atmel ARM9<br>Series C<br>Texas Instruments AM3352,<br>600MHz                                                                                                              |
|                                                                                                                            | Memory                                                                                                                 | Series B<br>256 MB Flash, 64 MB SDRAM<br>Series C<br>512 MB Flash, 512 MB SDRAM<br>(DDR3)                                                                                              |
|                                                                                                                            | Response to power /<br>communication failure                                                                           | Energy reserve (Supercap) to support real-time clock (3 days).<br>Data available only if saved to flash memory.                                                                        |
|                                                                                                                            | Ethernet interface                                                                                                     | Plug<br>Interface type<br>Bit rate<br>Protocol<br>2 x RJ45, screened<br>100BaseTX, IEEE 802.3 compatible<br>10/100 Mbps, half / full duplex,<br>auto-negotiation<br>BACnet over UDP/IP |
| HMI interface                                                                                                              | Generic, for HMI (LONWORKS)                                                                                            | RJ45 (PXG3.L only)                                                                                                                                                                     |
| USB interface                                                                                                              | Plug                                                                                                                   | Type B (USB device)                                                                                                                                                                    |
|                                                                                                                            | Data rate (USB 1.0 full speed)                                                                                         | 12 Mbps                                                                                                                                                                                |
|                                                                                                                            | Galvanic isolation of $\perp$                                                                                          | No                                                                                                                                                                                     |
|                                                                                                                            | Protective switch against surges and<br>overcurrent                                                                    | Yes                                                                                                                                                                                    |
| LONWORKS interface<br>(PXG3.L only)                                                                                        | Interface type                                                                                                         | TP/FT-10                                                                                                                                                                               |
|                                                                                                                            | Transceiver                                                                                                            | FT 5000 smart transceiver                                                                                                                                                              |
|                                                                                                                            | Galvanic isolation                                                                                                     | Yes                                                                                                                                                                                    |
|                                                                                                                            | Bit rate                                                                                                               | 78 kbps                                                                                                                                                                                |
| MS/TP interface                                                                                                            | Protocol                                                                                                               | BACnet over LonTalk                                                                                                                                                                    |
|                                                                                                                            | Interface type                                                                                                         | RS485                                                                                                                                                                                  |
|                                                                                                                            | Galvanic isolation                                                                                                     | Yes                                                                                                                                                                                    |
|                                                                                                                            | Baud rates                                                                                                             | 9600, 19200, 38400, 76800, 115200                                                                                                                                                      |
| Connection terminals,<br>plug-in                                                                                           | Protocol                                                                                                               | BACnet over MS/TP                                                                                                                                                                      |
|                                                                                                                            | Design type                                                                                                            | Plug-in screw terminals                                                                                                                                                                |
|                                                                                                                            | Cu-wire or Cu-strand with wire end<br>sleeve                                                                           | 1 x 0.6 mm dia. to 2.5 mm <sup>2</sup><br>or 2 x 0.6 mm dia. to 1.0 mm <sup>2</sup><br>1 x 0.6 mm dia. to 2.5 mm <sup>2</sup><br>or 2 x 0.6 mm dia. to 1.5 mm <sup>2</sup>             |
|                                                                                                                            | Cu-strand without wire end sleeve                                                                                      | Slot screws                                                                                                                                                                            |
|                                                                                                                            | Screwdriver                                                                                                            | Screwdriver, size 1<br>with shaft dia. $\leq$ 4.5 mm                                                                                                                                   |
|                                                                                                                            | Max. tightening torque                                                                                                 | 0.6 Nm                                                                                                                                                                                 |

|                                      |                                                                                                                                         |            |                                                                                                                                            |
|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| Assignment as per EN 60730           | Operation of automatic controller                                                                                                       |            | Type 1                                                                                                                                     |
|                                      | Degree of pollution                                                                                                                     |            | 2                                                                                                                                          |
| Housing protection standard          | Design type                                                                                                                             |            | Protection class III                                                                                                                       |
|                                      | Protection type as per EN 60529                                                                                                         |            |                                                                                                                                            |
|                                      | Front parts in the DIN section                                                                                                          |            | IP30                                                                                                                                       |
| Ambient conditions                   | Terminal part                                                                                                                           |            | IP20                                                                                                                                       |
|                                      | Operation                                                                                                                               |            | As per IEC 60721-3-3                                                                                                                       |
|                                      | Climatic conditions                                                                                                                     |            | Class 3K5                                                                                                                                  |
|                                      | Temperature                                                                                                                             |            | -5 ... 50 °C                                                                                                                               |
|                                      | Humidity                                                                                                                                |            | 5...95% r.h. (non-condensing)                                                                                                              |
|                                      | Mechanical conditions                                                                                                                   |            | Class 3M2                                                                                                                                  |
|                                      | Transport                                                                                                                               |            | As per IEC 60721-3-2                                                                                                                       |
|                                      | Climatic conditions                                                                                                                     |            | Class 2K3                                                                                                                                  |
|                                      | Temperature                                                                                                                             |            | -25...70 °C                                                                                                                                |
|                                      | Humidity                                                                                                                                |            | 5...95% r.h. (non-condensing)                                                                                                              |
|                                      | Mechanical conditions                                                                                                                   |            | Class 2M2                                                                                                                                  |
| Standards, directives, and approvals | Product standard                                                                                                                        | EN 60730-1 | Automatic electrical controls for household and similar use                                                                                |
|                                      | Product family standard                                                                                                                 | EN 50491-x | General requirements for Home and Building Electronic Systems (HBES) and Building Automation and Control Systems (BACS)                    |
|                                      | Electromagnetic compatibility (Applications)                                                                                            |            | For use in residential, commerce, light-industrial and industrial environments                                                             |
|                                      | EU conformity (CE)                                                                                                                      |            | CM1T9270xx <sup>1)</sup>                                                                                                                   |
|                                      | UL certification (US)                                                                                                                   |            | UL 916, <a href="http://ul.com/database">http://ul.com/database</a>                                                                        |
|                                      | RCM-conformity (EMC)                                                                                                                    |            | CM1T9222en_C1 <sup>1)</sup>                                                                                                                |
|                                      | EAC conformity                                                                                                                          |            | Eurasia conformity                                                                                                                         |
|                                      |                                                      |            | Certificate:<br><a href="http://www.bacnetinternational.net/btl/sea_rch.php">www.bacnetinternational.net/btl/sea_rch.php</a> <sup>2)</sup> |
| Environmental compatibility          | Product environmental declaration (contains data on RoHS compliance, materials composition, packaging, environmental benefit, disposal) |            | CM1E9270 <sup>1)</sup>                                                                                                                     |
|                                      |                                                                                                                                         |            |                                                                                                                                            |
| Color                                | Housing                                                                                                                                 |            | RAL 7035 (light-gray)                                                                                                                      |
| Dimensions                           | Housing as per DIN 43880, see dimensions                                                                                                |            |                                                                                                                                            |
| Weight                               | Without/with packaging                                                                                                                  |            | 286 g / 332 g                                                                                                                              |

<sup>1)</sup> The documents can be downloaded at <http://siemens.com/bt/download>.

<sup>2)</sup> Filter list of results for 'BTL-31001'.

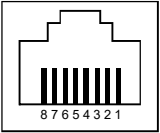
Connection terminals and interfaces



9270z04

|         |              |                                      |
|---------|--------------|--------------------------------------|
| 1, 2    |              | 2 x RJ45 interface for Ethernet      |
| 3       | 24 V ~, ⊥, ⚡ | AC/ DC 24 V operating voltage        |
| 5       | CLA, CLB     | LONWORKS interface (PXG3.L only)     |
| ↓       | +, -, ↓      | MS/TP interface                      |
| HMI     |              | RJ45 interface for HMI (PXG3.L only) |
|         | USB          | USB tool interface                   |
| Service |              | Service button                       |

RJ45 pin assignment  
for HMI



| Pin | Name    | Description           | Pin | Name | Description   |
|-----|---------|-----------------------|-----|------|---------------|
| 1   | CLA     | LONWORKS A            | 5   | nc   | Not connected |
| 2   | CLB     | LONWORKS B            | 6   | nc   | Not connected |
| 3   | AC24V_N | AC24V Neutral         | 7   | nc   | Not connected |
| 4   | AC24V_L | AC24V Line max. 500mA | 8   | nc   | Not connected |

Operating voltage  
pin assignment

| Pin | Name   | Description      |
|-----|--------|------------------|
| 1   | 24 V ~ | AC 24 V          |
| 2   | ⊥      | System neutral   |
| 3   | ⚡      | Technical ground |

LONWORKS pin  
assignment

| Pin | Name | Description |
|-----|------|-------------|
| 4   | CLA  | LONWORKS A  |
| 5   | CLB  | LONWORKS B  |

MSTP pin assignment

| Pin | Name | Description    |
|-----|------|----------------|
| +   | +    | Data +         |
| -   | -    | Data -         |
| ↓   | ↓    | Reference wire |

All dimensions in mm



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