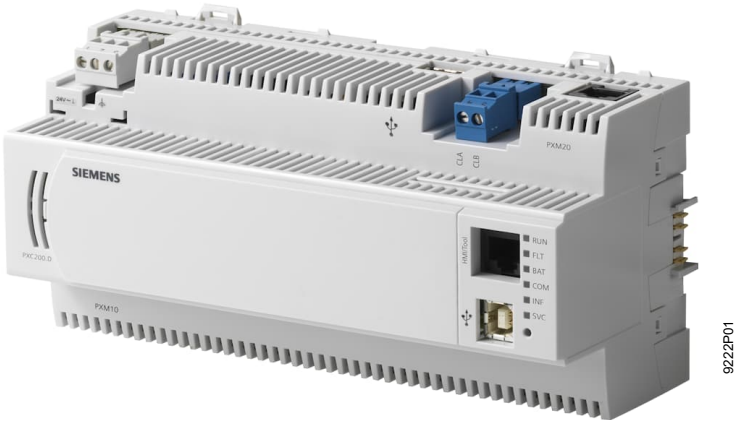
SIEMENS

# 9222




Desigo™ PX

# Automation stations modular series

# PXC....D
# PXC...-E.D
# PXA40-…

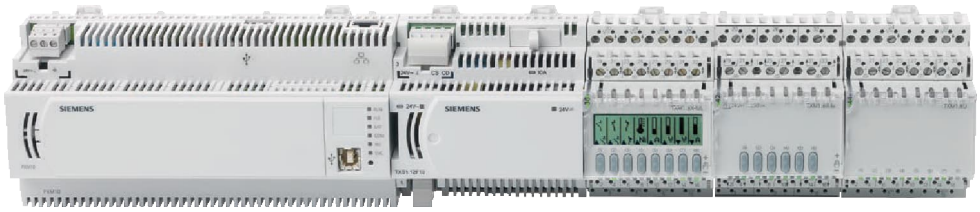
- **Freely programmable modular automation stations for HVAC and building services plants.**
- **Communications**
  **– BACnet/IP**
  **– BACnet/LonTalk**
- **BTL label (BACnet communications is BTL tested)**
- **Comprehensive management and system functions (alarm management, time schedules, trends, access protection, etc.)**
- **Connection of TX-I/O modules with any data point mix**
- **Connection of TX Open modules for the integration of third-party devices**
- **Integration of LONMARK®-compatible devices**
- **Integrated web server for generic operation**
- **For stand-alone applications, or for use within a device or system network**
- **Scalable range of touch panels and ~~local and remote~~ operating devices**

| | |
|---|---|
| ***Validity*** | ***This data sheet is valid for firmware Desigo V6.1 and higher.***<br>***For older devices / firmware see data sheet CM1N9222en_13.*** |

## Functions

Modular, freely programmable automation stations for HVAC and building control systems.

- Management functions (alarm management with alarm routing, schedulers, trend functions, remote management, access protection with individually defined user profiles and categories).
- For stand-alone applications or for use within a device or system network.
- BTL-tested BACnet communications on LonTalk, PTP or IP, compliant with BACnet standard (Rev. 1.12 -for Desigo V6.0 and later) including B-BC profile.
- AMEV profiles AS-A and AS-B to recommendation "BACnet 2011 - Version 1.2 (for Desigo V6.0 and later)".
- Freely programmable, using the D-MAP programming language (close resemblance to CEN standard 11312). All function blocks, available in libraries, can be graphically connected.
- Engineering and commissioning using the Desigo Xworks Plus tool.
- Connection of field devices to a customized mix of TX-I/O modules.
- Connection of installed PTM-I/O modules – the perfect solution to migrate legacy systems.
- Connection of TX Open modules to integrate third-party devices such as variable speed drives, pumps or energy counters.
- Connection of detached I/O islands with integration.
- Connection of LonMark® compatible devices
- Low voltage protection and start-up management to protect the devices against fluctuating voltage.
- Scalable range of touch panels, Web solutions and operator units.



Modular automation station with connected TX-I/O modules

**Overview of automation stations – modular series**

Connection of TX-I/O modules, TX Open modules, PTM-I/O modules via PXX-PBUS and LonWorks devices via PXX-L11/12.
Activation of generic Web operation with PXA40-W1

| BACnet/IP | PXC00-E.D | PXC50-E.D | PXC100-E.D | PXC200-E.D |
|---|---|---|---|---|
| BACnet/LonTalk | PXC00.D | PXC50.D | PXC100.D | PXC200.D |
| Number of physical data points TX-I/O | – | 80 | 200 | 350 |
| Number of TX Open Modules for e.g. Modbus, M-Bus | – | 5 | 5 | 5 |
| Number of data points (TX-I/O and TX Open) | – | 400 | 600 | 1000 |
| Number LonWorks Devices via PXX-Lx | 60 or 120 | 10 | 60 or 120 [1)] | 60 or 120 [1)] |

[1)] In concurrent use with TX-I/O modules, the number of devices is reduced in relation to capacity

## Extension capabilities of the automation stations

**TXM1.. : The flexible range of TX-I/O modules** for signaling, measuring, counting, switching, and positioning. The I/O modules with local manual control on the module housing permit the operator to control the equipment manually directly from the cabinet.

| TX-I/O devices [1] | | Type | Data sheet |
|---|---|---|---|
| Digital input module | 8 or 16 I/O points | TXM1.8D, TXM1.16D | CM2N8172 |
| Universal module | without / with local operation and LCD | TXM1.8U, TXM1.8U-ML | CM2N8173 |
| Super universal mod. | without / with local operation and LCD | TXM1.8X, TXM1.8X-ML | CM2N8174 |
| Relay module | without / with local operation | TXM1.6R, TXM1.6R-M | CM2N8175 |
| Resistance measuring module (for Pt100 4-wire) | | TXM1.8P | CM2N8176 |
| Relay module bistable | | TXM1.6RL | CM2N8177 |
| Triac module | | TXM1.8T | CM2N8179 |
| Power supply module 1.2 A, | Fused 10A | TXS1.12F10 | CM2N8183 |
| Bus interface module, | Fused 10A | TXS1.EF10 | CM2N8183 |

[1] TXM1... und TX Open modules require TXS1.12F10 power supply modules.

**TX Open : Flexible ~~TX Open~~ platform** to integrate third-party systems and devices such as Modbus or M-Bus. Tested integrations solutions and applications based on our large know how.

| TX Open devices [1] | | Type | Data sheet |
|---|---|---|---|
| TX Open module | up to 40 data points | TXI2-S.OPEN | CM1N8187 |
| TX Open module | up to 160 data points | TXI2.OPEN | CM1N8187 |

[1] TXM1... und TX Open modules require TXS1.12F10 power supply modules.

**PXX-L11/12.. : Extension modules** allow for flexibly connecting LonWorks devices such as room controllers and third- party devices.

| PXX-.. devices [2] | Type | Data sheet |
|---|---|---|
| Integration of max. 60 devices (PXC50..D: max. 10 devices) | PXX-L11 | CM1N9282 |
| Integration of max. 120 devices (PXC50..D: max. 10 devices) | PXX-L12 | CM1N9282 |

[2] A high number of LonWorks devices reduces the performance of the PXC for connected TX-I/O or PTM-I/O data points respectively.

**PXX-PBUS : The extension module** allows connecting installed PTM-I/O modules to PXC50/100/200…D automation stations, making them the perfect solution to migrate legacy systems.

| PXX-.. device | Type | Data sheet |
|---|---|---|
| PBUS extension module | PXX-PBUS | CM1N9283 |

**Note:** One supply module TXS1.12F10 is required as bus supply for the P-bus for each P-bus strand. A TXS1.12F10 can supply max. 64 load units (1 LU = 12.5 mA, DC 24 V)

**Limits of the PXX-PBUS extension module:**

- DB (Function blocks instances): 1500
- Trends: 100
- Local BACnet references. 100

**To prevent high cycle times of the PXX-PBUS extension module:**

- Only use PXC100-(E).D controllers together with PXX PBUS; do not use PXC 200 controllers.
- Do not connect PXX-L11 or PXX-L12 or PX Web modules (WO-W2) together with PXX-PBUS on the same controller.
- Do not use WebServer functionality on PXC, when using PXX-PBUS.
- Do not extend existing applications from PXC128-U or PXC64-U with new functionality.

**TXA1.IBE : Remote IO Islands with Integration**

Easy to use solution via simple adapter for remote TX-I/O and TX Open. No programming/ parameterization required.

| Device | Type | Data sheet |
|---|---|---|
| Island bus expansion module | TXA1.IBE | CM2N8184 |

### Desigo Control Point

| Device | Type | Data sheet |
|---|---|---|
| BACnet touch panels with integrated data management and web server functionality:<br>7.0 "<br>10.1 ", 15.6 " | <br><br>PXM30.E<br>PXM40.E, PXM50.E | <br><br>A6V10933111<br>A6V10933114 |
| BACnet/IP web server with standard functionality<br>BACnet/IP web server with enhanced functionality | PXG3.W100-1<br><br>PXG3.W200-1 | A6V10808336 |
| Client touch panels with data management in the PXG3.Wx00-1 web server<br>7.0 "<br>10.1 ", 15.6 " | <br><br>PXM30-1<br>PXM40-1,PXM50-1 | <br><br>A6V10933111<br>A6V10933114 |

### Operator units for automation stations


| | Type | Data sheet |
|---|---|---|
| Local operating unit | PXM10 | CM1N9230 |
| Network operator unit in a BACnet/IP network [1)] | PXM20-E | CM1N9234 |
| Network operator unit in a BACnet/LonTalk network [1)] | PXM20 | CA1N9231 |
| Cable (3 m) between PXM10 or PXM20 and PXC....D | PXA-C1 | -- |

[1)] In the case of a PXC....D automation station, one PXM10 and one PXM20 operator unit may be connected, but not twice the same type.

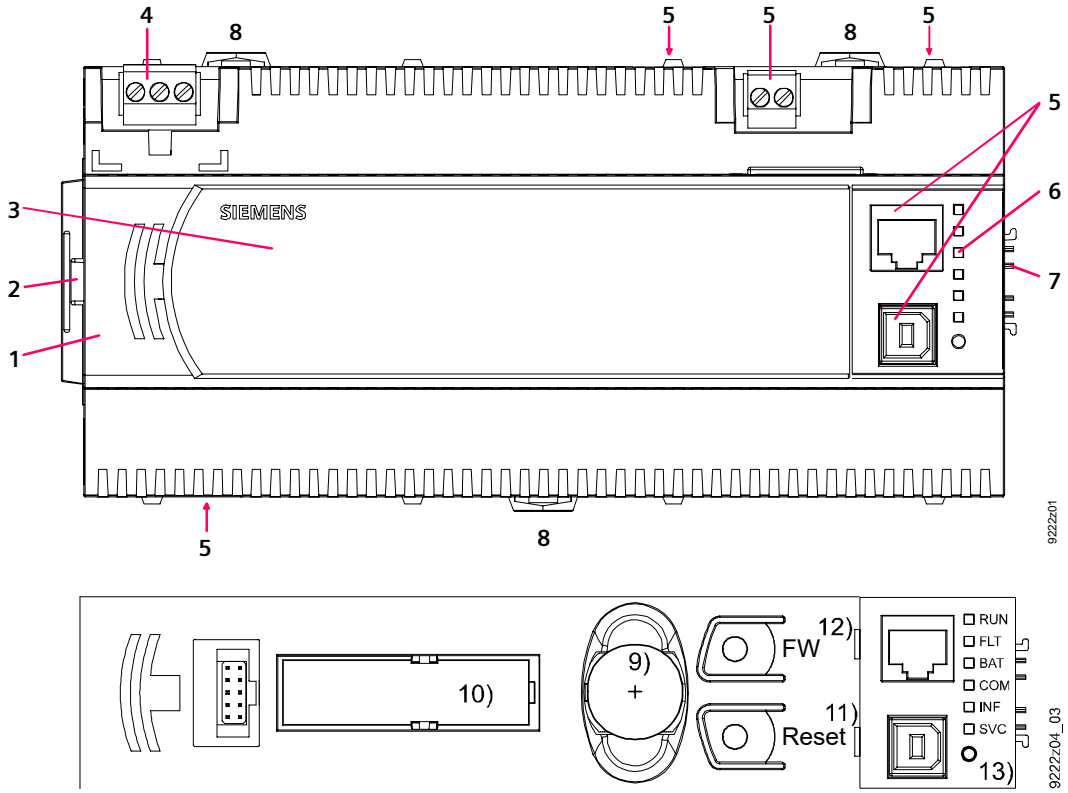
## Accessory

| | |
|---|---|
| Adapter for Firmware download | PXA-C2 |

## Mechanical design

The compact construction enables the automation stations to be mounted on a standard mounting rail.

**PXC....D**

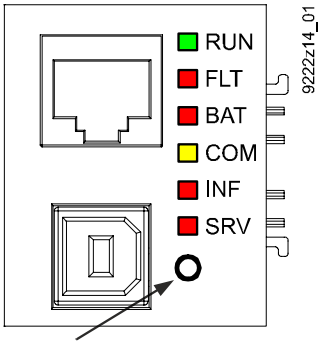






| | |
|---|---|
| **1** | Plastic housing |
| **2** | Cover to interface for extension module |
| **3** | Front cover or PXM40-W1 option module |
| **4** | Plug-in terminal block with screw terminals (operating voltage) |
| **5** | Interface for network, operator units, tool, etc. |
| **6** | LED display for devices and system status |
| **7** | Island bus connector (not on PXC00…) |
| **8** | Slider for mounting on DIN rail |
| **9** | Battery for real time clock (Lithium Type CR2032 or optionally BR2032): Backup during power breakdown. |
| **10** | Battery for trend data and present parameters (Lithium Type FR6/AA): Backup during power breakdown. |
| **11** | Reset pin: Pressing the pin forces a restart. |
| **12** | Firmware pin: If the pin is pressed during restart (reset), the present DMAP program is deleted from the FLASH. |
| **13** | Service pin: To identify the automation station in the IP network / LonWorks network during commissioning. |

**LED indicators**




Service pin (Desigo)

| LED | Color | Activity | Function |
|---|---|---|---|
| RUN | Green | Continuously ON<br>Continuously OFF | Power OK<br>No power |
| FLT | Red | Continuously OFF<br>Continuously ON<br>Rapid flashing | OK<br>Fault<br>Firmware missing / corrupt |
| BAT | Red | Continuously OFF<br>Continuously ON | Battery OK<br>Battery empty– replace! |
| COM | Yellow | Continuously ON<br>Continuously OFF<br>Flashing | Connection to switch OK<br>No connection to switch<br>Communication |
| INF | Red | | Freely programmable |
| SRV (Ethernet) | Red | Continuously OFF<br>Continuously ON<br><br>Flashing<br>Flashing per wink command *) | OK<br>No connection to switch or DHCP Server<br>No IP address configured<br>Physical identification of automation station after receipt of wink command |
| SRV (LONWORKS Bus) | Red | Continuously OFF<br>Continuously ON<br><br>Flashing<br>Flashing per wink command *) | LONWORKS node is configured<br>Faulty LONWORKS chip, or service pin currently depressed<br>LONWORKS node is not configured<br>Physical identification of automation station after receipt of wink command |

**Battery change**

1) If one of the batteries has low charge the "BAT" LED lights up ant the automation station sends a system event.

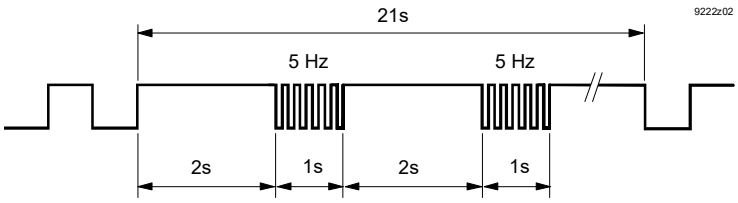
Remaining battery life after a "Low batt" event:

- Battery for real time clock (Type CR2032 or optionally BR2032): several days.
- Battery for trend data and present parameters (Type AA Lithium): approx. 15 hrs. Alkaline: several days.
- As long as there is an external power supply, the battery may be removed for unlimited time.

STOP Caution!

- To prevent hardware damage by electrostatic discharge (ESD), a wrist strap with earth cable must be used during the battery change.
- Note the special disposal notes on Li batteries.
- Devices Series A: Do not replace an alkaline battery with a Lithium battery!

*) Wink command pattern:



## Technical data

| | | |
|---|---|---|
| General device data | Operating voltage | AC 24 V ± 20% (SELV / PELV) or<br>AC 24 V class 2 (US) |
| | Safety extra-low voltage SELV or Extra-low voltage PELV | HD 384 |
| | Operating frequency | 50/60 Hz |
| | Energy consumption | Max. 24 VA (same for all types) |
| | Internal fuse | 5 A |
| Operating data | Processor | Motorola Power PC MPC885 |
| | Storage | 64MB SDRAM / 32MB FLASH<br>(96MB total) |
| | Accuracy class | 0.5 |
| Data backup in event of power failure | Battery Backup of realtime clock | Battery operation (cumulative): 10 years |
| | • **Lithium** Type CR2032 (optionally BR2032) (field replaceable) | Without load: 10 years |
| | Battery Backup of SDRAM 1x AA: (field replaceable) | Battery operation (cumulative): min. 2 weeks |
| | • **Lithium** Type FR6/AA: Devices series B and later | Without load: Lithium 10 years |
| | • **Alkaline**: Devices series B | Without load: Alkaline 4 years |

| Communication interfaces | PXC....**D** | PXC...**-E.D** |
|---|---|---|
| Building Level Network | LONWORKS FTT Transceiver (screw terminals **(B)**) | 10 Base-T / 100 Base-TX IEEE802.3, Auto-sensing (RJ45 **(D)**) |
| Local communication (HMI) (RJ45 **(C)**) | • PXM20 (BACnet/LonTalk) *)<br>Connection cable max. 3 m | |
| Local communication (HMI, Tool) (RJ45 **(E)**) | • PXM10 (serial)<br>• PXM20 (BACnet/LonTalk) *)<br>• FW Download Tool<br>Connection cable max. 3 m | |
| Local communication (HMI) (RJ45 **(G)**) | • PXM10 (serial)<br>Connection cable max. 3 m | • PXM10 (serial)<br>Connection cable max. 3 m |
| USB host interface (Modem) | • RS232 modem (via USB-RS232 adapter PXA-C3) | • RS232 modem (via USB-RS232 adapter PXA-C3) |
| USB device interface | (for future applications) | (for future applications) |
| Ethernet interface | | |
| Interface type | | 100BaseTX, IEEE 802.3 compatible |
| Bit rate | | 10 / 100 MBit/s, autosensing |
| Protocol | | BACnet on UDP/IP |
| Pin | | RJ45 socket, screened |
| LONWORKS bus interface | | |
| Network | TP/FT-10 | |
| Baud rate | 78 kBit/s | |
| Protocol | BACnet | |
| Interface chip | Echelon Processor TMPN3150B1AF | |
| Island bus interface (CD, CS ) | | |
| Protection | Short-circuit proof | Short-circuit proof |

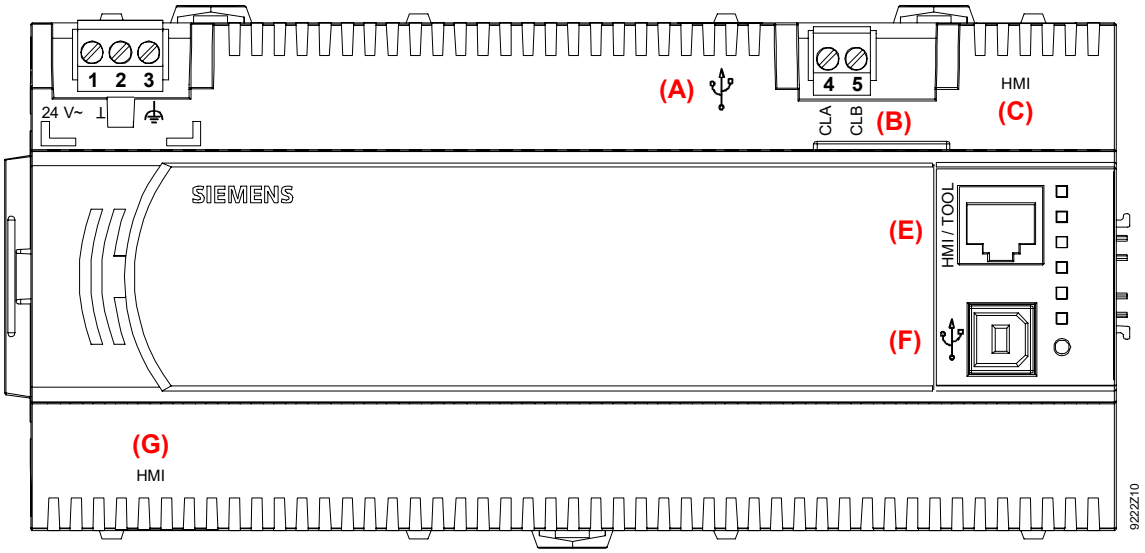
***) only ONE PXM20 per automation station**

| | | |
|---|---|---|
| Plug-in screw terminal | Power supply, bus, signals | Solid or stranded conductors<br>0.25…2.5 mm2 or 2 x 1.5 mm2 |
| Simple cable lengths, cable types (see Installation Guide PX, CA110396) | Connection cable **Ethernet and PXM20-E** | Max. 100 m |
| | Cable type | Standard at least CAT5<br>UTP (Unshielded Twisted Pair)<br>or STP (Shielded Twisted Pair) |
| | Connection cable **LONWORKS bus** | See Installation Guide CA110396 |
| | Cable type | CAT5 |
| | Connection cable **PXM10** | Max. 3 m |
| Connection cables for island bus | | See CM110562 |
| Protection data | Housing protection standard | IP 20 to EN 60529 |
| | Protection class | III to EN 60730-1 |
| Ambient conditions | Normal operation | To IEC 60721-3-3 |
| | Environmental conditions | Class 3K5 |
| | Temperature | 0...50 °C |
| | Humidity | 5…95 % r.h. (non-condensing) |
| | Mechanical conditions | Class 3M2 |
| | Transport | To IEC 60721-3-2 |
| | Environmental conditions | Class 2K3 |
| | Temperature | -25…70 °C |
| | Humidity | 5…95 % r.h. (non-condensing) |
| | Mechanical conditions | Class 2M2 |
| Standards, guidelines 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) | CM1T9222xx *) |
| | UL certification (US) | UL916 http://database.ul.com/ |
| | FCC | CFR 47 Part 15 Class B |
| | RCM-conformity (EMC) | CM1T9222en_C1 *) |
| | EAC conformity | Eurasia conrformity |
| | AMEV: Supports profiles AS-A and AS-B as of AMEV guideline "BACnet in public buildings" | BACnet 2011 en, V1.1 |
| Environmental compatibility | Product environmental declaration (contains data on RoHS compliance, materials composition, packaging, environmental benefit, disposal) | CM1E9222 *) |
| Dimensions | *See "Dimensions"* | |

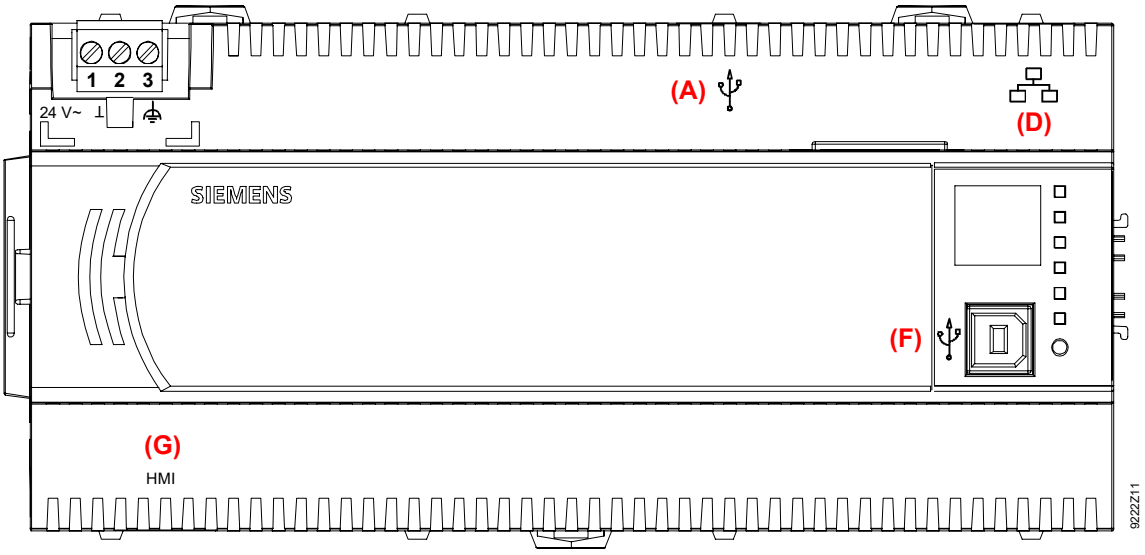
| Weight | *Excluding packaging* | *With packaging* |
|---|---|---|
| All types | 0,489 kg | 0,531 kg |

*) The documents can be downloaded from http://siemens.com/bt/download.

## PXC....D



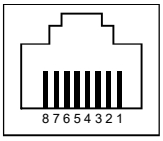

## PXC...-E.D




| | | | |
|---|---|---|---|
| 1, 2 | 24 V ~, ⊥ | Operating voltage AC 24 V | Plug-in screw terminal block |
| 3 | ⏚ | Functional ground | |
| (A) | ⇐ | USB host interface (for modem via PXA-C3 adapter cable) | |
| 4,5 (B) | CLA, CLB | LONWORKS bus | Plug-in screw terminal blocks |
| (C) | HMI | RJ45 interface (LONWORKS) for operator unit PXM20 (tool as well) | |
| (D) | ⇐ | RJ45 interface for Ethernet<br>(Operator unit PXM20-E can be connected to hub/switch) | |
| (E) | HMI / Tool | RJ45 interface (LONWORKS and serial) for PXM10, PXM20 and tool | |
| (F) | ⇐ | USB device interface (for future applications) | |
| (G) | HMI | RJ45 interface (serial) for operator unit PXM10 | |

## Pin assignment for RJ45 plug

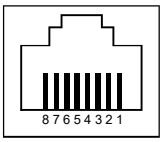
**Plug (C)**
**"HMI" (LONWORKS)**




| Pin | description | Pin | description |
|---|---|---|---|
| 1. | LONWORKS Data A (CLA) | 5. | Unused |
| 2. | LONWORKS Data B (CLB) | 6. | Unused |
| 3. | G0 / GND | 7. | Unused |
| 4. | G / Plus | 8. | Unused |

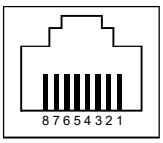
**Plug (D)**
**Ethernet**

RJ45 socket screened, standard connection in accordance with AT&T256



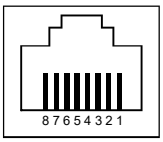

| | | | |
|---|---|---|---|
| 1. | Tx+ | 5. | Unused |
| 2. | Tx – | 6. | Rx – |
| 3. | Rx + | 7. | Unused |
| 4. | Unused | 8. | Unused |

**Plug (E)**
**"HMI / Tool"**
**(LONWORKS and serial)**




| | | | |
|---|---|---|---|
| 1. | LONWORKS Data A (CLA) | 5. | Unused |
| 2. | LONWORKS Data B (CLB) | 6. | Unused |
| 3. | GND | 7. | COM1 / TxD |
| 4. | +24 V max. 300 mA (PXM20) | 8. | COM1 / RxD |

**Plug (G)**
**"HMI" (serial)**




| | | | |
|---|---|---|---|
| 1. | unused | 5. | Unused |
| 2. | unused | 6. | *) |
| 3. | G0 / GND | 7. | COM1/TxD |
| 4. | G / Plus | 8. | COM1/RxD |

*) 6 Unused (PXC….D)
Connected to pin 8 (PXC…-E.D)

## Connection diagrams

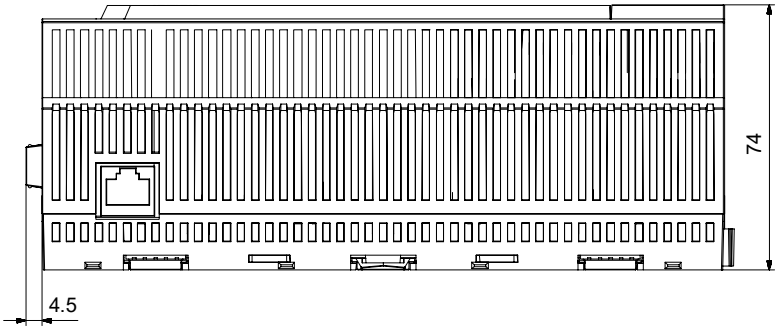
**Connecting TX-I/O modules and field devices**

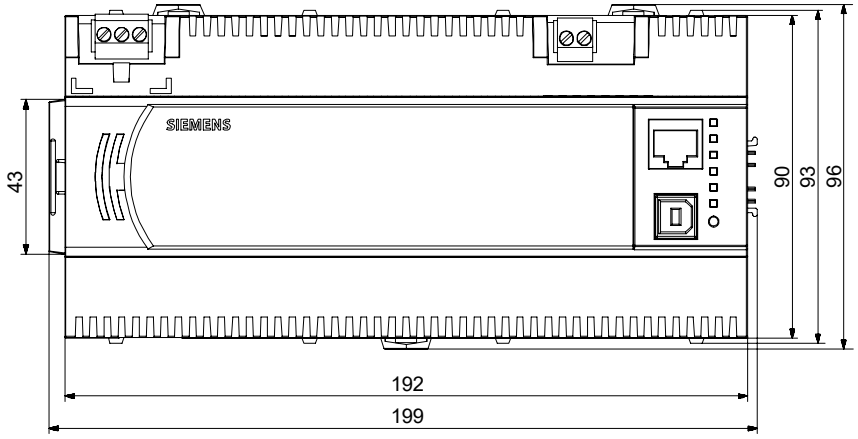
See Planning and Installation Guide TX-I/O, CM110562.

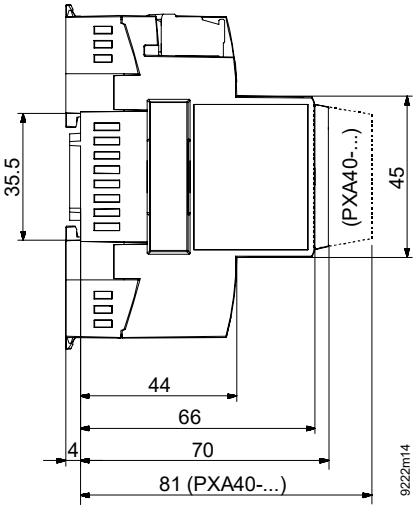
## Dimensions

All dimensions in mm

### Automation stations, system controllers PXC….D



## Disposal

The device is considered electrical and electronic equipment for disposal in terms of the applicable European Directive and may not be disposed of as domestic garbage.

- Dispose of the device through channels provided for this purpose.
- Comply with all local and currently applicable laws and regulations.
- Dispose of empty batteries in designated collection points.
  **Lithium batteries:** May catch fire, explode or leak. Do not short circuit, charge, disassemble, dispose of in fire, heat above 100 °C, or expose to water.
  Disposal: Seal battery terminals with tape.

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