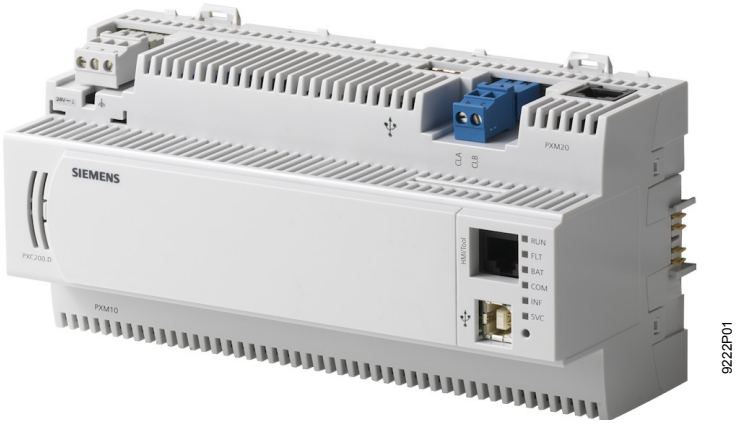
SIEMENS

9222



Desigo™ PX

Automation stations modular series

PXC....D
PXC...-E.D
PXA40-…

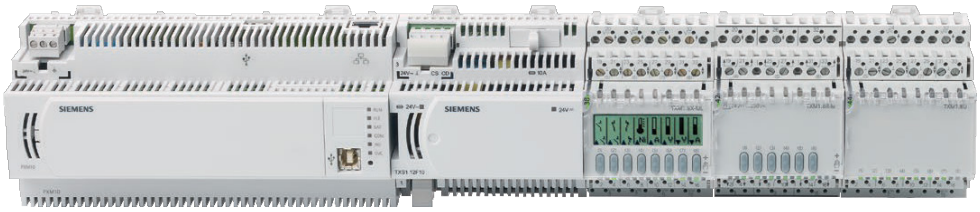
- **Freely programmable modular automation stations for HVAC and building services plants.**
- **Communications**
  - **– BACnet/IP**
  - **– BACnet/LonTalk**
- **BTL label (BACnet communications is BTL tested)**
- **Comprehensive management and system functions (alarm management, time schedules, trends, 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 operaion**
- **For stand-alone applications, or for use within a device or system network**
- **Scalable range of touch panels and operating devices**

Validity	***This data sheet is valid for firmware Desigo V6.1 and higher.*** ***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	–	52	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 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)

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

Device combinations with the automation stations

Desigo Control Point

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

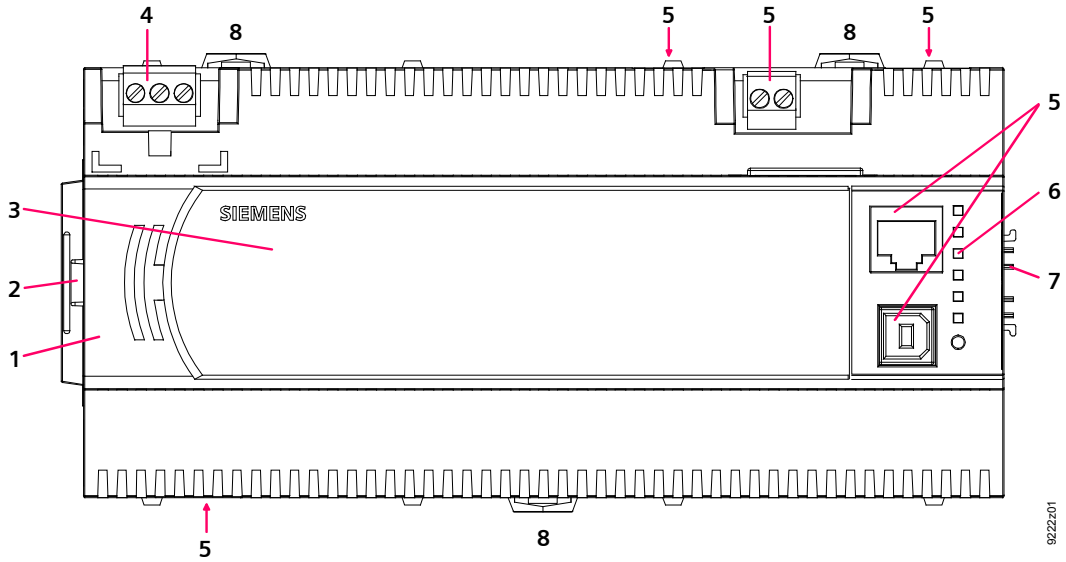
[1)] In the case of a PXC....D automation station, one PXM10 and one PXM20 operator unit may be connected, but not twice the same type.

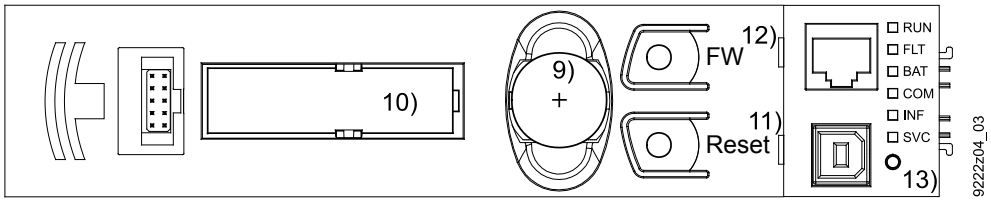
Accessory

Adapter for Firmware download	PXA-C2

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

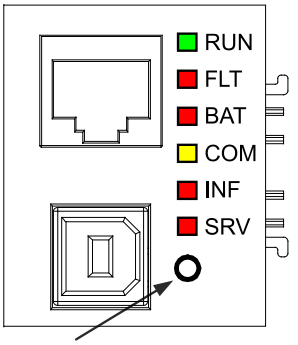
PXC....D





1	Plastic housing
2	Cover to interface for extension module
3	Front cover or PXM40-... 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 (Lithim Typ CR2032): Backup during power breakdown.
10	Battery for trend data and present parameters (Lithium Typ 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



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

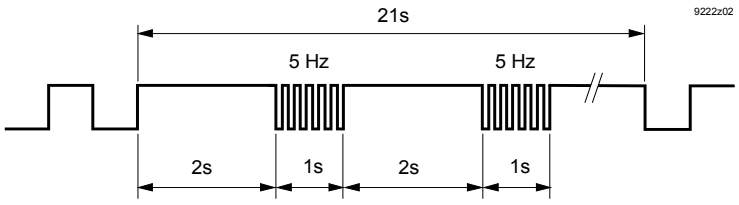
Remaining battery life after a "Low batt" event:

- Battery for real time clock (Type CR2032): 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.

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 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 (96MB total)
	Accuracy class	0.5
Data backup in event of power failure	Battery Backup of realtime clock • **Lithium** type CR2032 (field replaceable)	Battery operation (cumulative): 10 years 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) *)	
Local communication (HMI, Tool) (RJ45 **(E)**)	• PXM10 (serial) • PXM20 (BACnet/LonTalk) *) • FW Download Tool Connection cable max. 3 meters	
Local communication (HMI) (RJ45 **(G)**)	• PXM10 (serial)	• PXM10 (serial)
USB host interface (Modem)	• RS232 modem (via USB-RS232 adapter cable PXA-C3)	• RS232 modem (via USB-RS232 adapter cable 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

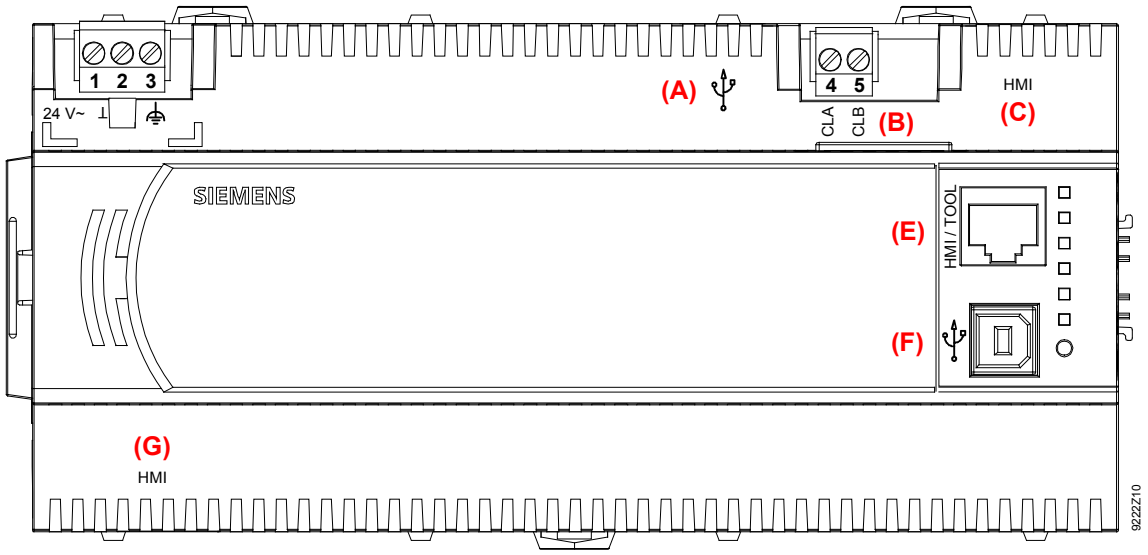
***) only ONE PXM20 per automation station**

Plug-in screw terminal	Power supply, bus, signals	Solid or stranded conductors 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** Cable type	Max. 100 m Standard at least CAT5 UTP (Unshielded Twisted Pair) or STP (Shielded Twisted Pair)
	Connection cable **LONWORKS bus** Cable type	See Installation Guide CA110396 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"*	

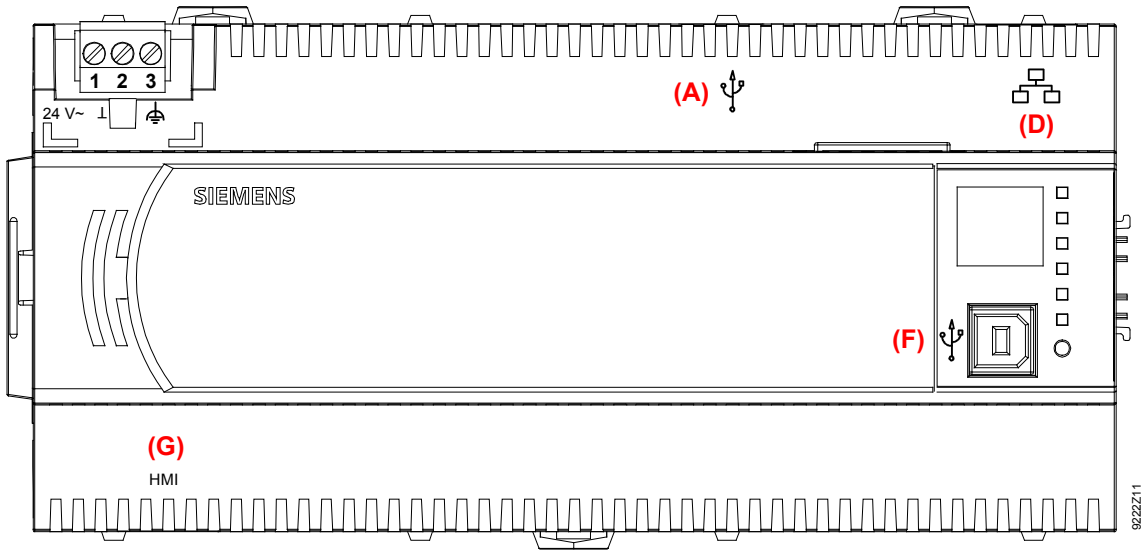
Weight	*Excluding packaging*	*With packaging*
All types	0,489 kg	0,531 kg

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

PXC....D



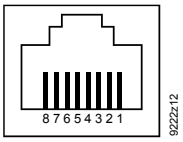
PXC...-E.D



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 (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

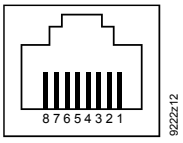
Plug (C)
"HMI" (LONWORKS)



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

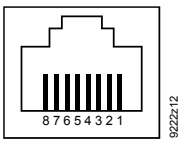
Plug (D)
Ethernet

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



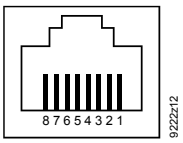
1.	Tx+	5.	Unused
2.	Tx –	6.	Rx –
3.	Rx +	7.	Unused
4.	Unused	8.	Unused

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

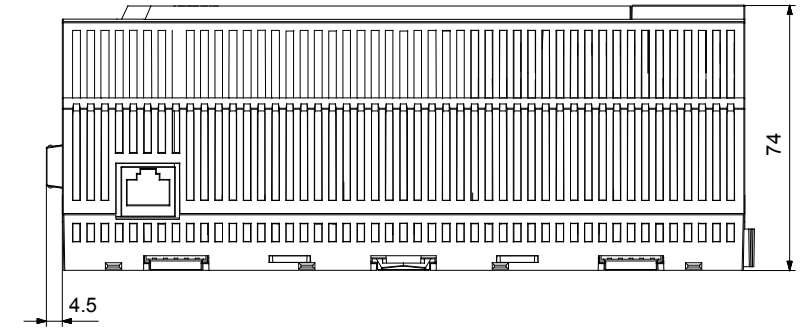
Connecting TX-I/O modules and field devices

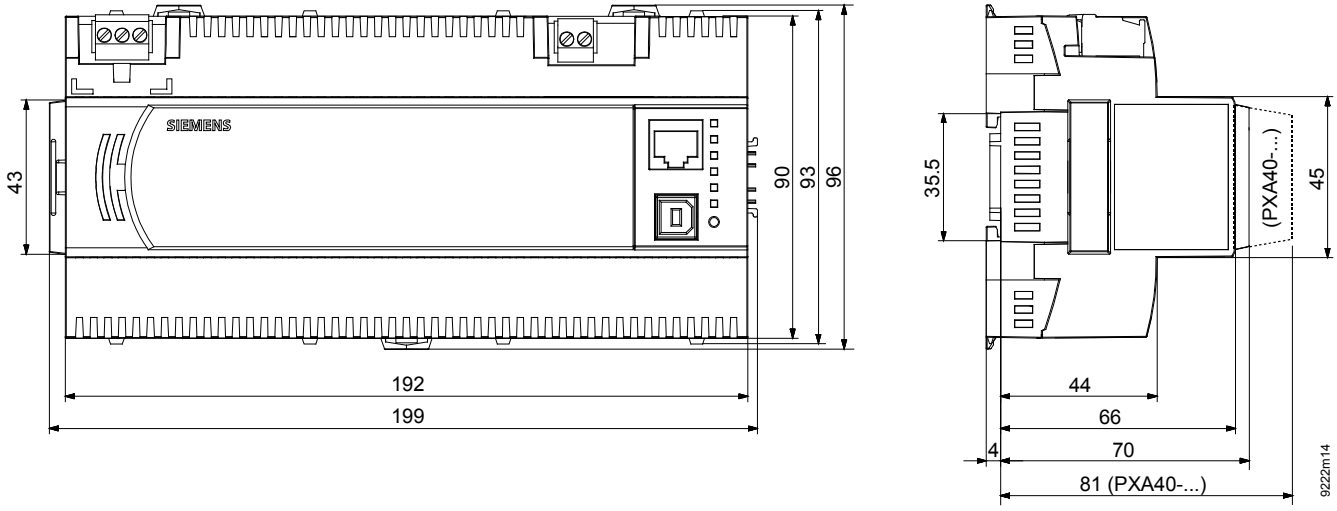
See Planning and Installation Guide TX-I/O, CM110562.

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.

Published by:
Siemens Switzerland Ltd.
Building Technologies Division
International Headquarters
Gubelstrasse 22
6301 Zug
Switzerland
Tel. +41 41-724 24 24
www.siemens.com/buildingtechnologies