

SIEMENS



Desigo™ PXC4, PXC5 & PXC7

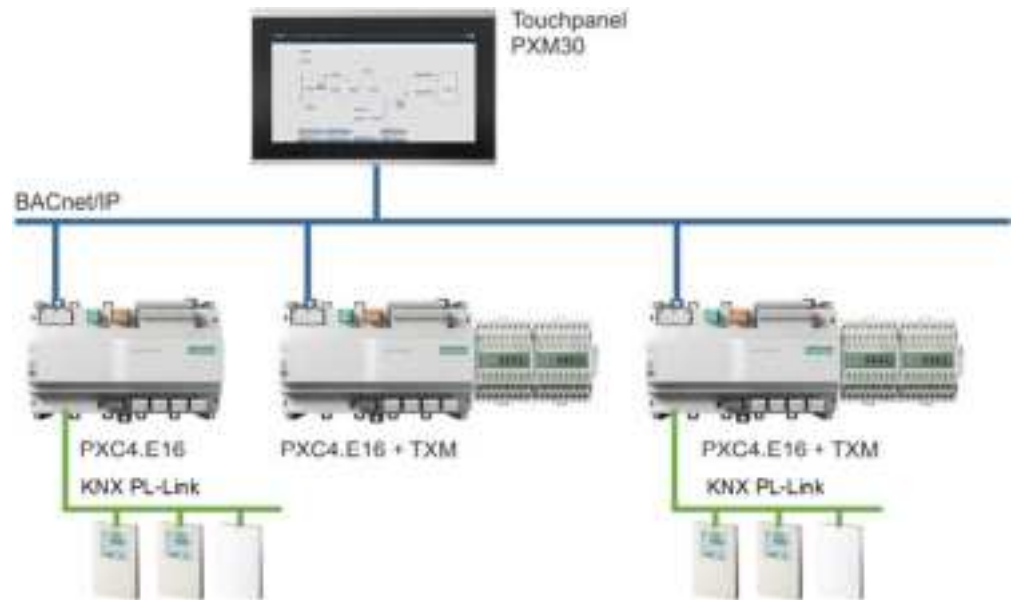
Automation controls for high-tech buildings

Range Description

Table of Contents

1	Desigo PXC Controllers – The flexible, reliable ...	3
2	... and scalable automation and control system	4
3	Desigo Control Point	5
4	... Embedded building operations	6
5	... Portfolio	8
6	Operation and monitoring	9
7	A family of programmable automation stations	10
8	PXC4 automation stations	13
9	PXC5 system controllers	15
10	PXC7 automation stations	16
11	TXM input/output modules for PXC7 and PXC4	17
12	KNX PL-Link field bus for “plug-and-play” field device communication	18
13	ABT Site ... for flexible and intuitive...	20
14	... set-up, programming, and commissioning	21
15	Can be extended in stages at any time	22

1 Desigo PXC Controllers – The flexible, reliable ...



The Desigo PXC automation and control system is optimized for control and monitoring of heating, ventilation, air conditioning plants and other technical plants in buildings. Scalability, energy efficiency, openness, and user-friendly operation sets it apart.

Desigo Control Point – embedded building operations

Desigo Control Point is designed to meet the requirements of different users in a building. Building operation and monitoring are enabled through intuitive touch panels on the control panel or via PC in the office. Through smart devices, users can also access related information anytime from any location.

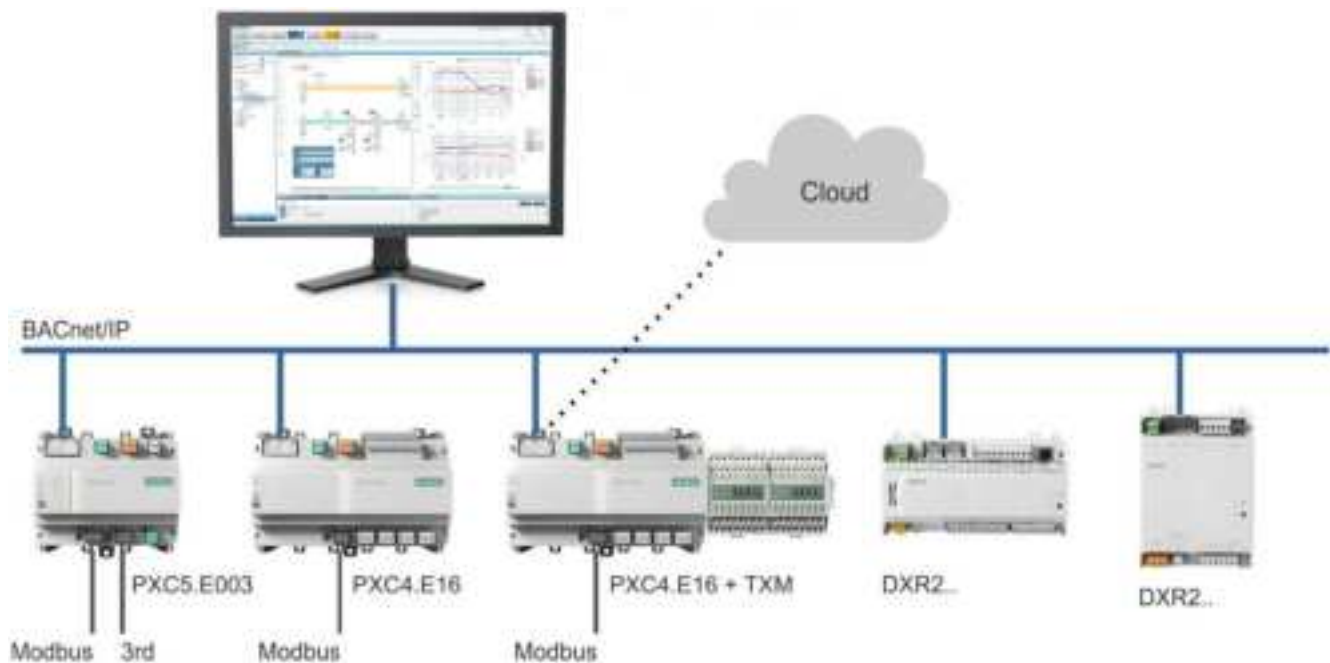
Automation stations – scalable and open

Its scalability and openness distinguish the freely programmable automation stations for primary plants and meets all expectations associated with the control and monitoring of building services. Modular in design, the system can be ideally adapted to specific requirements and needs, making cost-effective DDC technology a possibility even in smaller HVAC systems. This innovative system strategy can add the PXC controller range in stages to a building automation and control system as needed and when required. Desigo PXC consistently supports open communications, making it easy to connect a wide variety of building services equipment based on standard open data interfaces.

KNX PL-Link field devices - easy to connect

Connect and replace KNX PL-Link devices without using any additional tools. Compatible field devices can be wired by using standard KNX twisted-pair cables. Up to 5 devices can be powered directly from the automation station before adding an external KNX power supply to run in maximum 64 KNX PL-Link nodes per KNX network and automation station.

2 ... and scalable automation and control system



Scalable solutions

Whether small buildings or large complexes, standard or advanced solutions – with the Designo PXC family you get the optimal control for any type of high performing buildings.

Smart engineering

With our license-free Designo Engineering Framework, you can intuitively engineer and commission a wide range of products leveraging the sophisticated applications and growing libraries.

Simple integration

Integrate different protocols with no additional hardware or software in a consistent and harmonized workflow saving additional costs and efforts.

Secured connectivity

Our Designo PXC controllers with on-board WLAN and cloud remote access meet the highest security standards.



Tested quality

BACnet® Testing Laboratories (BTL) is a registered trademark. Products that are successfully tested by the BACnet Testing Laboratories may bear the BTL label.

3 Designo Control Point ...



Designo Control Point is a consistent concept designed to simplify operation and monitoring of heating, ventilation, air conditioning, lighting, and shading in small or medium-sized buildings.

It facilitates building operation and monitoring by allowing you to access your buildings and plants via touch panels, PC, or mobile device – wherever you are. Whether it is for maximizing room comfort, monitoring and operating your primary plant, or displaying your building data, Designo Control Point is the answer.

Efficient and intuitive remote plant operation ...

... that is Designo Control Point



4 ... Embedded building operations

Function overview

- | | |
|--|--|
| <ul style="list-style-type: none"> • Plant graphic: Fast and targeted monitoring and operation of the system using animated and real-life plant images. • Schedulers: Central programming of all time-controlled building services. • Alarm management: Detailed overview of alarms to quickly locate and eliminate errors. • Trending: Comfortable analysis of trend data to optimize operations and increase energy efficiency. • Reporting: Customized snapshots of values displayed in a report form. Reports are used to analyze plant operation and for evaluation and documentation purposes. • Generic operation: An efficient tool for navigation through the hierarchical structure to all the data points in the system. The user can then read or manipulate the data points with the appropriate access rights. | <ul style="list-style-type: none"> • Energy monitoring: Display and compare energy consumption based on a comprehensive library of graphics and configurable elements. • Haystack interface: Access by external IT systems for BACnet objects in a Desigo system via Haystack tagging or Haystack REST APL. Haystack is an initiative to simplify data access to the Internet of Things (IoT), optimized to the needs of building automation and control (http://project-haystack.org/). • Heating curve: Graphical display of the heating curve with the ability to modify parameters. • Engineering: Flexible and efficient creation of customized operation, based on graphic libraries. • User management: Enabling functions and access rights for different user roles. |
|--|--|



Plant graphic



Alarm management



Schedulers



Reporting



Trending



Energy monitoring



Simplify your plant and room operation

Designo Control Point has a user-friendly interface, designed to simplify tasks such as alarm management, scheduling, trending, report creation and consumption visualization. The use of native BACnet ensures that third party devices can be integrated and operated in the same intuitive way. Managing your plant and room anywhere, anytime has never been so easy!

Access your building whenever you want

With Designo Control Point, you can remotely connect with your building from multiple devices. HTML 5.0 technology allows operation independent of mobile device type, size, or orientation.



Enhance your room comfort

Designo Control Point makes it easy to manage the operation of all kinds of rooms. Whether it is a meeting room, office space, conference room, or event room – you can easily control climate, lights, and blinds. The high resolution graphics can be customized to suit all floor plans and room layouts.

Monitor your energy usage for additional savings

With Designo Control Point you can display and compare energy consumption using standard dashboard templates or customize your views using comprehensive dashboard functions. Share your energy history in public areas to encourage even more savings!



Operate and monitor your plant easily

Designo Control Point makes your local plant monitoring easy. The high resolution capacitive displays provide the ultimate user experience and intuitive operation. Alarming, scheduling and trending, as well as navigation via graphics, are all at your fingertips.

5 ... Portfolio

BACnet touch panels (BACnet/IP)

The BACnet/IP touch panels enable direct connections to any BACnet network. Thanks to the embedded web server, it is possible to access the system using a standard web browser. For installation and operation, no extra tools are required.



Product range overview	Type	Data sheet
BACnet touch panels with integrated data management and web sever functionality 7.0 ", 10.1 ", 15.6 "	PXM30.E PXM40.E PXM50.E	A6V11664137

Client touch panels (TCP/IP)

When your project requires operation of the same system via multiple control panels, the TCP/IP touch panels are the right solution. Various web browser sessions and touch panels can connect to a centralized web server. This way, you can reduce the complexity and costs of larger installations.



Product range overview	Type	Data sheet
Touch panel clients (TCP/IP) 7.0 ", 10.1 ", 15.6 "	PXM30-1 PXM40-1 PXM50-1	A6V11664139

BACnet web servers (BACnet/IP)

Designo primary and room automation stations as well as third-party BACnet devices can be operated via BACnet/IP web servers – from the same network or remotely via an Internet connection to see what really matters.



Product range overview	Type	Data sheet
BACnet web servers with standard and extended control point functionality	PXG3.W100-2 PXG3.W200-2	A6V12304192

6 Operation and monitoring

Comfortable operation tailored at the right place

Intuitive operations provide excellent coverage of various requirements at the right place: On the panel, in the technical plant rooms or using a web browser from anywhere at any time. It permits inexpensive monitoring and operating of small to mid-sized plants.

Location	Products	Application	User
Office remotely	  Remotely via web clients Office	Operate and monitor	Building operator
Panel doors	Touch panels 	On-site operation	Technical services manager
Panel	TXM 	Manual intervention	Service technician
Field/Room	QMX 	Manual operation	User

Plant operation with Desigo Control Point – Embedded building operation

Designed to simplify building automation operation and monitoring tasks: Anytime from anywhere using a standard web browser.

Manual operation on the panel

The Desigo I/O modules include facilities for manual/emergency operation of plants and display operating states.

7 A family of programmable automation stations



PXC4

PXC5

PXC7

The Desigo PXC range offers flexibility and ease of use in controlling and monitoring of building automation and control systems.

The modern system approach includes cloud connection to all PXC controllers as well as user-friendly operation via Desigo Control Point.

Comprehensive system functions such as alarm management, time scheduling, and trend data storage cover all the requirements associated with building operations.

Decentralized automation stations operate autonomously via networked BACnet communication, guaranteeing a high level of operational reliability. The automation stations also support BACnet Secure Connect (BACnet/SC) to protect communication between devices.

Integration of third-party devices via Modbus rounds out the list of features for optimized controllers.

The ABT Site tool provides efficient engineering and commissioning via WLAN, Ethernet, or the cloud.

Alarm management

One of the most important functions of any building automation and control system is automatic alarm notification plant alarms. Alarm management (generation, display, and handling) must be simple, efficient, and consistent at all system levels. Desigo takes advantage of BACnet alarm functions and supports the following three types of alarms with up to 256 alarm priority levels:

- Basic alarms (no user interaction required)
- Simple alarms (acknowledgment required)
- Extended alarms (acknowledgement and alarm reset required)

Alarm messages

An alarm is automatically recorded, registered, and forwarded to a Desigo Control Point or to a Desigo management station. Meaningful alarm messages are also sent to remote devices.

Alarm lists provide an easy-to-read view of all pending and time-stamped alarms for straightforward processing.

Pop-up windows and optical/acoustic signals notify the operators.

Alarm routing

Alarms are routed based on time and priority. This guarantees uninterrupted routing, even if the operator is unavailable. Overviews help the user to handle alarm situations quickly and correctly.

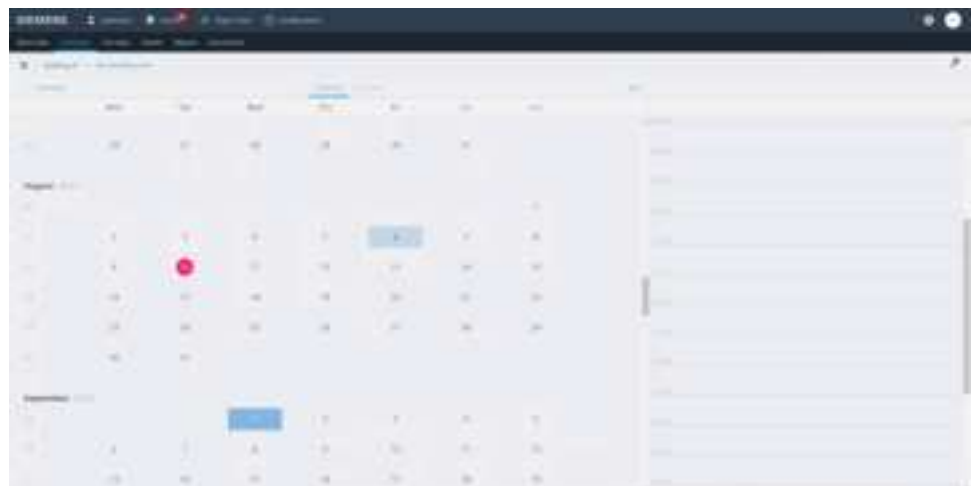


Scheduler/calendar

Schedulers control workflows and processes on basic building automation and control functions on a day-to-day basis. Ventilation, heating, and air conditioning are controlled based on office and operation hours in offices, banks, restaurants and schools.

Schedulers ensure that the temperature setpoints are lowered at night in the building. They also ensure that certain rooms are not air-conditioned during vacations and that holidays and plants are only operated as needed.

Scheduler programs are saved and processed directly in a decentralized manner on the automation level. The primary plants continue to operate autonomously in the event the network failures.



Trend data storage

Fully integrated trend data stores real-time (online) and historical (offline) data. The trend functions allow the operator to monitor and fine tune plants.

The Designo system uses trend log objects per BACnet standard; the objects are accessible by any other client.

Gathering options: Query, change of value (COV)

Trend options: Continuously, one-time pass, defined timeframe.



Trend graphics can also be displayed on the PXM30/40/50 touch panels and Designo Control Point web clients.

Access rights to data

Access rights are comfort functions to filter information by the individual needs of the customer. In other words, resident engineers or service engineers, for example, only have access to the information on a strict-need-to-know basis.

Only authorized personnel can access operator units and requires a name and password. The access rights can also be assigned in detail, down to individual data points. Designo uses the following access levels:

- Internal, extended service, and basic service
- Administrator, extended operation, and basic operation

Handling certificates and IT security

Digital certificates ensure the IT security of the control system. This applies for both the built-in web-server and https communication while encrypting BACnet traffic using the BACnet/SC option. Handling of the appropriate certificates is an integral part of the engineering process; the ABT tool allows for easy handling of these tasks without special know how.

8 PXC4 automation stations



For the control of primary plants.

- Compact automation station for HVAC and building control systems, freely programmable
- System functions such as alarming, schedulers, trend functions, and access security
- Stand-alone application or for use within a building automation and control system
- Direct connection of field devices
- Extensions possible with TXM I/O modules
- The following functions are available with KNX PL-Link bus:
 - Communication with room operator units and sensors.
 - Plug-and-play connection of Siemens field devices with KNX PL-Link.
- Integration of communicative field devices, e.g. variable speed drives via Modbus
- Engineering and commissioning with the user-friendly ABT Site tool
- BTL tested BACnet communication on IP (BACnet/IP and BACnet/SC) or BACnet MS/TP, in compliance with the BACnet standard including B-BC profile (Rev. 1.15)
- WLAN interface for engineering and commissioning
- BACnet/SC support (as BACnet/SC node only)

PXC4.E16 variants	PXC4.E16S ¹⁾	PXC4.E16 ¹⁾
Order number	S55375-C108 ²⁾	S55375-C100 ²⁾
Number of inputs/outputs (Onboard)	16	16
Number of universal inputs/outputs (UIO)	12	12
Number of relay outputs (DO)	4	4
Number of inputs/outputs (Onboard + TXM)	up to 40	up to 40
Number of integration data points (Modbus TCP and/or RTU)	0	up to 40
Total number TXM-I/Os and integration DPs	40 ³⁾	80 ³⁾
Number of KNX PL-Link devices	0	up to 64
Number of configurable RS485 interfaces for Modbus RTU integration	0	1
Number of BACnet/SC nodes connected to PXC4.E16/ PXC4.E16S acting as hub	0 (node only)	0 (node only)

¹⁾ Communication BACnet/IP, BACnet/SC: PXC4.E16 and PXC4.E16S.
Communication BACnet MS/TP: PXC4.M16 and PXC4.M16S.

²⁾ For details on engineering, see PXC4, PXC5 & PXC7 Planning overview, A6V13054435.

³⁾ KNX PL-Link DPs do not count as integration points. For KNX PL-Link, only the limitation of BACnet objects have to be considered.

For more information about PXC4 automation stations, refer to the data sheets A6V11646018 and A6V11937668.

UIO	Universal inputs/outputs support the following signal types: • Passive sensors LG-Ni 1000, 2x LG-Ni1000, Pt 1000 (375, 385), NTC 10k (Type II / Beta (0-50 °C) = 3892 K), NTC 100k • Resistance sensors 1000 Ohm, 2500 Ohm, 1000...1175 Ohm (for setpoint shift) • Voltage input analog DC 0...10 V. • Binary potential-free contacts for signaling functions • Counters to 25 Hz (electronic switch to 100 Hz) • Analog outputs DC 0...10 V
DO	Relay outputs AC 250 V for binary controls, changeover contact (NO, NC, pulse)

9 PXC5 system controllers



Freely programmable system controller that integrate Modbus and/or MS/TP devices or subsystems.

- BTL tested BACnet communication on IP (BACnet/IP and BACnet/SC) or BACnet MS/TP, in compliance with the BACnet standard including B-BC profile (Rev. 1.15)
- Modbus TCP/RTU and BACnet MS/TP
- The following functions are available with KNX PL-Link bus:
 - Communication with room operator units and sensors.
 - Plug-and-play connection of Siemens field devices with KNX PL-Link.
- IT security including HTTPS and BACnet/SC (as BACnet/SC hub)
- WLAN interface for engineering and commissioning
- System functions such as alarming, schedulers, trending, time sync, and life check
- Grouping functionality e.g. common setpoints for room controls or energy demand
- System and supervisory functionality
- Integration of Modbus subsystems and devices via TCP and/or RTU: Data point mapping to BACnet/IP and supervisory functionality
- Integration of BACnet MS/TP subsystems and devices: Supervisory functionality and routing to BACnet/IP

Type	PXC5.E003
Order number	S55375-C103 ¹⁾
Number of integration data points (Modbus TCP and/or RTU)	up to 500
Number of BACnet/MSTP devices per RS485 interface	up to 60 ²⁾
Number of BACnet/SC devices as a BACnet/SC hub	up to 100
Number of KNX PL-Link devices	up to 64
Number of configurable RS485 interfaces either for integration of Modbus RTU or BACnet MS/TP	2

¹⁾ For details on engineering, see PXC4, PXC5 & PXC7 Planning overview, A6V13054435.

²⁾ Depending on the behavior of the third-party MS/TP devices

For more information about PXC5 system controllers, refer to the data sheet A6V11646020.

10 PXC7 automation stations



Freely programmable automation stations for HVAC, building services plants, and system controllers

- BTL tested BACnet communication on IP (BACnet/IP and BACnet/SC) or BACnet MS/TP, in compliance with the BACnet standard including B-BC profile (Rev. 1.15)
- Modbus TCP/RTU and BACnet MS/TP
- The following functions are available with KNX PL-Link bus:
 - Communication with room operator units and sensors.
 - Plug-and-play connection of Siemens field devices with KNX PL-Link.
- IT security including HTTPS and BACnet/SC (as BACnet/SC hub)
- WLAN interface for engineering and commissioning
- System functions such as alarming, schedulers, trending, time sync, and life check
- Grouping functionality e.g. common setpoints for room controls or energy demand
- System functionality for integrated subsystem and devices
- Integration of Modbus subsystems and devices via TCP and/or RTU: Data point mapping to BACnet/IP and supervisory functionality
- Integration of BACnet MS/TP subsystems and devices: Supervisory functionality and routing to BACnet/IP

PXC7 variants	E400S	E400M	E400L
Order number	S55375-C111 ¹⁾	S55375-C110 ¹⁾	S55375-C105 ¹⁾
Number of TXM inputs and outputs	up to 100	up to 200	up to 400
Number of integration data points (Modbus TCP and/or RTU)	up to 100	up to 200	up to 400
Total number TXM-I/Os and integration DPs	100 ²⁾	250 ²⁾	600 ²⁾
Number of BACnet/SC devices connected as nodes	up to 100	up to 100	up to 100
Number of BACnet MS/TP devices in a field level network	up to 60 ³⁾	up to 120 ³⁾ (2 x 60)	up to 240 ³⁾ (4 x 60)
Number of KNX PL-Link devices	up to 64	up to 64	up to 64
Number of configurable RS485 interfaces either for integration of Modbus RTU or BACnet MS/TP	1	2	4

¹⁾ For details on engineering, see PXC4, PXC5 & PXC7 Planning overview, A6V13054435.

²⁾ KNX PL-Link DPs do not count as integration points. For KNX PL-Link, only the limitation of BACnet objects have to be considered.

³⁾ Depending on the behavior of the third-party MS/TP devices.

For more information about PXC7 automation stations, refer to the data sheet A6V12505052.

11 TXM input/output modules for PXC7 and PXC4

Flexible input and output modules for sensors and actuators

Type TXM1.xxx	8D	16D	8U	8U-ML	8X	8X-ML	6R	6R-M	8P	8T	4D3R
Number of inputs/outputs	8	16	8	8	8	8	6	6	8	8	7
Number of universal inputs/outputs (UIO)			8	8							
Number of universal inputs/outputs (XIO)					8	8					
Number of relay outputs (DO)							6	6			3
Number of digital inputs (DI)	8	16									4
Number of TRIAC										6	
Number of Inputs (P)									8		
Local override	-	-	-	•	-	•	-	•	-	-	-
LCD indication	-	-	-	•	-	•	-	-	-	-	-
3 color I/O status LED	•	-	-	-	-	-	-	•	-	-	•
Green I/O status LED	-	•	•	•	•	•	•	-	•	•	-

UIO	Universal inputs/outputs support the following signal types: - Passive sensors LG-Ni 1000, 2x LG-Ni1000, Pt 1000 (375, 385), NTC 10k (Type II / Beta (0-50 °C) = 3892 K), NTC 100k - Resistance sensors 1000 Ohm, 2500 Ohm, 1000...1175 Ohm (for setpoint shift) - Voltage input analog DC 0...10 V. - Binary potential-free contacts for signaling functions - Counters to 25 Hz (electronic switch to 100 Hz) - Analog outputs DC 0...10 V
XIO	Universal inputs/outputs support the following signal types: - Same as UIO, and in addition - Current input 4...20 mA or 0...20 mA - Current output 4...20 mA on outputs 5 to 8
DO	Relay outputs AC 250 V for binary controls, changeover contact (NO, NC, pulse)
TRIAC	TRIAC: Permanent contact, pulse width modulation
DI	Binary output: Status signal (NO/NC), Signal pulse, Meter 10 Hz (DI 1-8)
P	Pt100 4 wire, 0...250 Ohm, Pt1000 / 0...2500 Ohm, LG-Ni1000

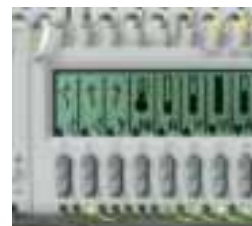
TXM I/O modules with local operation

TXM1.6R-M



Local override, three-colored LEDs

TXM1.8U-ML and TXM1.8X-ML



Local override, LCD

12 KNX PL-Link field bus for “plug-and-play” field device communication

KNX PL-Link complies fully with the KNX standard. Communication between the PXC4, PXC5, and PXC7 automation stations and peripheral devices with KNX PL-Link has been optimized so that plug-and-play functionality is available offering automatic device recognition, device connection, and device configuration. KNX PL-Link devices are configured by using the Desigo standard tools. The KNX commissioning software (ETS) is not needed.

Increased engineering and commissioning efficiency

Using KNX PL-Link devices together with the Siemens automation stations saves engineering and commissioning time. In addition, in service cases no engineering tool is required. If more than one device needs to be assigned to the automation station, following mechanisms are supported:

- Offline engineering using the KNX device ID (barcode sticker delivered together with the device).
- Offline engineering and online commissioning using the service pin from the KNX device.

Taking the maximum out of the automation stations

Per automation station up to 64 KNX PL-Link devices can be connected. KNX PL-Link data points do not count as integration points. For KNX PL-Link, only the limitation of BACnet objects must be considered. The automation stations have an internal bus power supply for approximately 5 KNX PL-Link devices. If the integrated power supply is insufficient to cover the power demand, the internal bus power supply can be replaced by an external bus power supply unit.

Following KNX PL-Link devices are supported by the PXC4, PXC5 and PXC7 automation stations:

Device type		Product No.	Functions
Room sensors		QMX3.P30 S55624-H103	Temperature sensor
		QMX3.P40 S55624-H116	Multisensor for temperature and humidity
		QMX3.P70 S55624-H104	• Multisensor for temperature, humidity, and CO2 • Air quality indicator with LED

Device type		Product No.	Functions
HVAC room operator units		QMX3.P34 S55624-H105	• Temperature sensor • Segmented backlit display and touchkeys
		QMX3.P44 S55624-H143	• Multisensor for temperature and humidity • Segmented backlit display and touchkeys
		QMX3.P74 S55624-H106	• Multisensor for temperature, humidity, and CO2 • Segmented backlit display and touchkeys

More device types are coming soon.

13 ABT Site ... for flexible and intuitive...

Professional software tools and a wide range of proven application function blocks are available for engineering automation stations.

ABT Site

The engineering tool ABT Site is a user-friendly software tool that is easy to use and geared toward technical processing of customer projects. This includes configuration, programming, commissioning, and final adjustments on the automation station with the associated program. A variety of report functions are available for documentation purposes.

Thanks to the intuitive design, Designo ABT Site makes it easy to begin working right away without time-consuming training.

ABT Site supports certificate management for both secure communication between devices (BACnet/SC) and https communication (TLS certificate) with web servers embedded in the devices.

Efficient engineering with function blocks

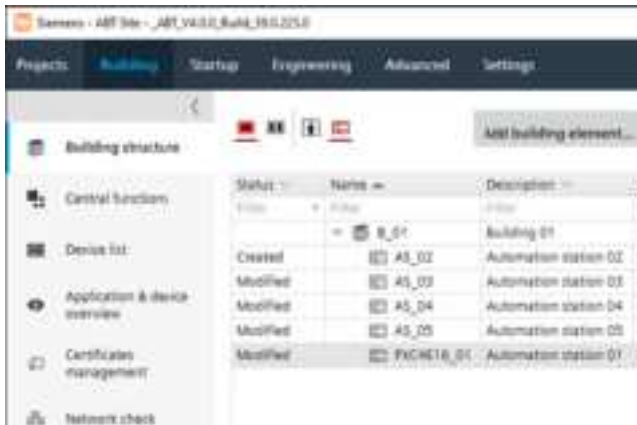
The project-specific HVAC applications are configured, programmed, commissioned, and maintained using a programming editor with freely programmable graphical function charts, offering an intuitive and efficient engineering experience. A collection of over 250 predefined and tested function blocks are assembled to create the required controls applications.

The programming editor can be used offline in the office or online in the plant room for fast and efficient commissioning thanks to actual process values displayed in the program structure.

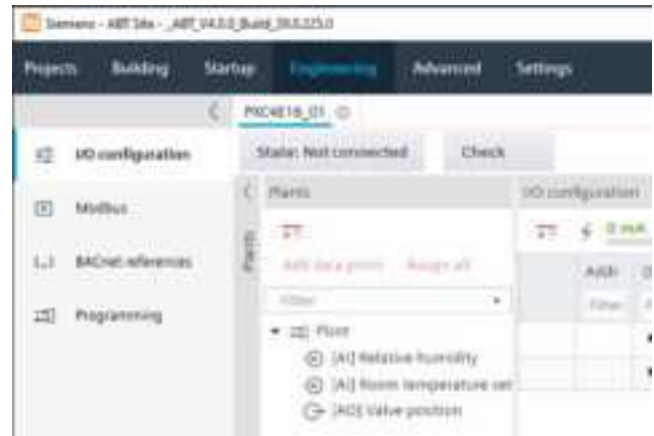
ABT Go

ABT Go allows commissioning via an easy-to-use app from your mobile device. Functions such as I/O testing as well as reporting (including plant pictures) are included.

14 ... set-up, programming, and commissioning



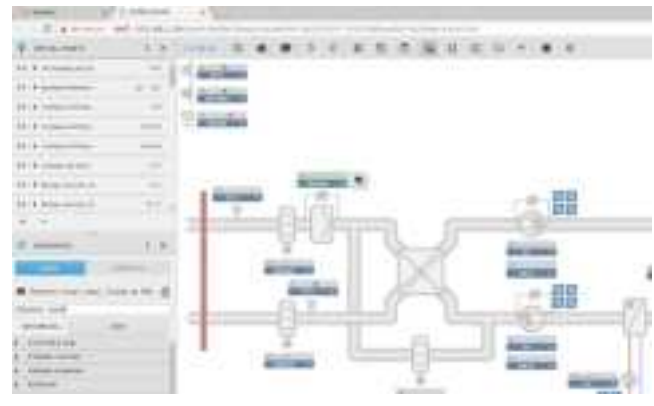
Set up system: Project settings/Building view



Set up data points: I/O configuration/Modbus editor



Program device: Graphical programming editor



Create graphics: Designo Control Point offline engineering



Wiring test: Easy-to-use ABT Go mobile app to simplify commissioning.

15 Can be extended in stages at any time



Improve operation, step-by-step

Desigo Control Point – embedded building operations - can be supplemented as needed in panels, rooms, or on a floor.



Increased ease of service

Remote operation via web solutions increases ease of service throughout the life of the building.



Desigo room automation

The unique and flexible solution for all room automation tasks to reduce energy consumption at a maximum level of comfort.

Desigo room automation provides a product range of solutions with room operation for HVAC as well as lighting and shading.



Desigo CC – The integrated building management platform

The Desigo CC management platform offers comfortable, system-wide multistation operation of distributed building complexes, uniting innovative management of building comfort, security, and energy distribution.

Issued by
Siemens Switzerland Ltd
Smart Infrastructure
Global Headquarters
Theilerstrasse 1a
CH-6300 Zug
+41 58 724 2424
www.siemens.com/buildingtechnologies