

**SIEMENS**

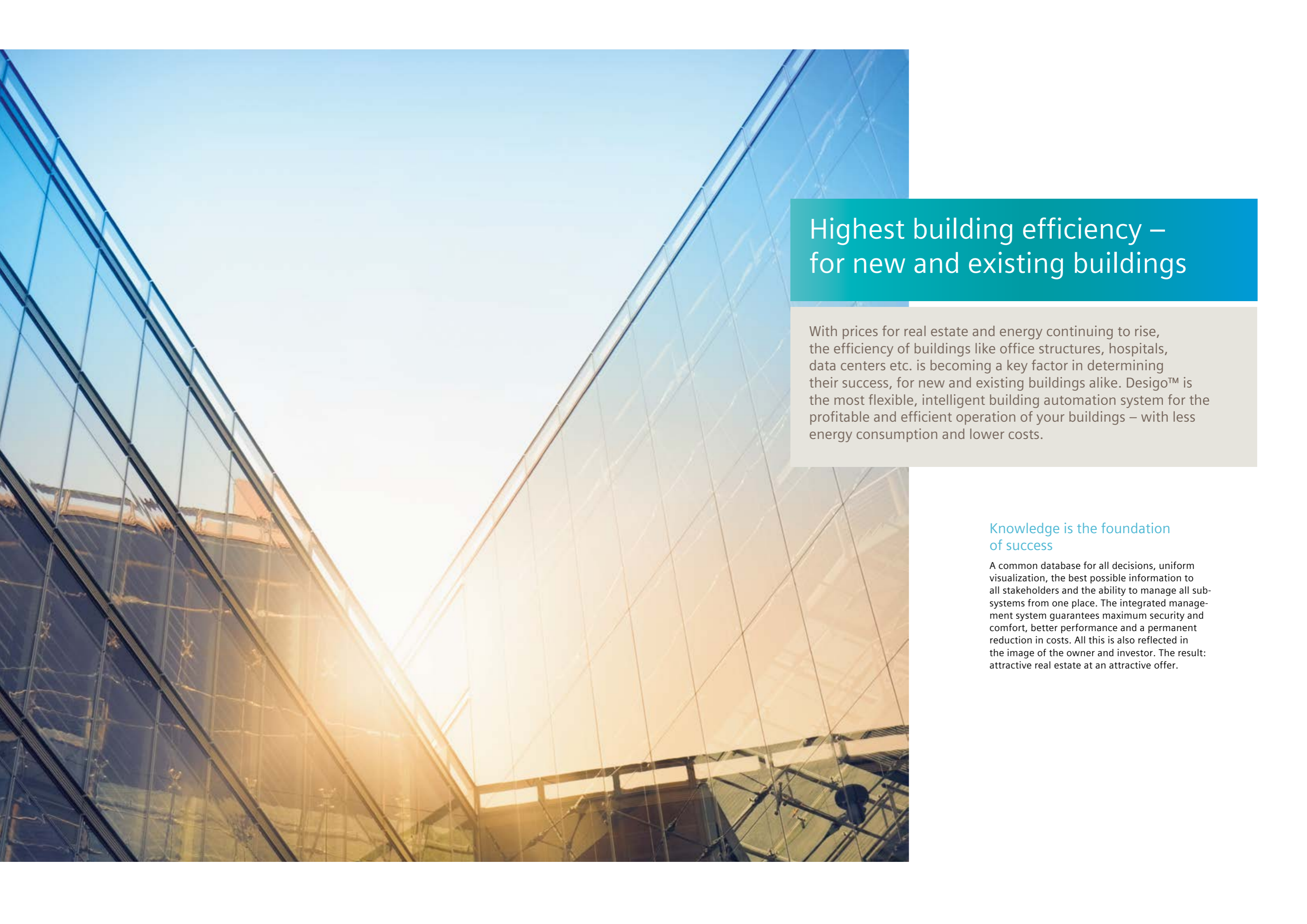
*Ingenuity for life*

## Desigo – the state-of-the-art building automation system

System catalogue 2019



[siemens.com/desigo](http://siemens.com/desigo)



## Highest building efficiency – for new and existing buildings

With prices for real estate and energy continuing to rise, the efficiency of buildings like office structures, hospitals, data centers etc. is becoming a key factor in determining their success, for new and existing buildings alike. Desigo™ is the most flexible, intelligent building automation system for the profitable and efficient operation of your buildings – with less energy consumption and lower costs.

### Knowledge is the foundation of success

A common database for all decisions, uniform visualization, the best possible information to all stakeholders and the ability to manage all sub-systems from one place. The integrated management system guarantees maximum security and comfort, better performance and a permanent reduction in costs. All this is also reflected in the image of the owner and investor. The result: attractive real estate at an attractive offer.

## Keeping your investment in mind

Desigo considers the entire lifecycle of your buildings. Comprehensive reporting and analytical functions provide you with a basis for well-founded, forward-looking and profitable decisions – with Desigo you don't react, you act proactively. The highest investment security via modular system design, compatibility with relevant industry standards and flexible options for adaptation or expansion.

A building is as modern as its building management – at least if you consider its performance from the perspective of the user. With Desigo, every building is state-of-the-art.



## Desigo goes digital

Strategic energy and resource management helps you respond to changing market conditions, save on costs and reduce risk. The combination of the latest building technology with sophisticated analyses and digital services opens up a new dimension in building performance.

Used consistently, the opportunities digitalization offers can fulfill every requirement for a sustainable, energy-efficient, safe and comfortable building. Four areas of activity complement one another here: the energy management network, the infrastructure and system data, the enterprise resource planning (ERP) and the link to a data management ecosystem resulting from all this data.

## Added value through integration

Desigo's energy management links together data about energy supply, costs and consumption as well as the energy footprint of properties in an intelligent network. On this basis, energy-efficient programs are then initiated. The same data is then available to use for green building certification or energy audits and the verification of compliance with energy-efficiency guidelines. Real added value then for owners and users.



Photo source: Iwan Baan, Fondation Louis Vuitton

## Desigo Automation Controls

The buildings we spend our lives in have an enormous impact on our well-being. This is why a state-of-the-art building automation system is so important. It integrates systems and installations like heating, ventilation, air conditioning, energy supply and distribution, safety and security – just to name a few examples – into one holistic system. The benefit: seamless interaction of architecture, system technology and room comfort or, in other words, optimum building performance.

## Desigo Room Automation

Using Desigo Room Automation, energy efficiency and the productivity of all those present in a space are harmonized. Users can thus select individual levels of comfort, but at the same time are kept informed about the resulting energy needs and can, for instance, consciously decide for energy-efficient, optimized room conditions using the Green Leaf indicator – individually for each room. Productivity can thus be influenced by individually selected comfort levels. In this way, for instance, pupils' performance at school can be improved with optimized ventilation control.

## Desigo CC

The open building management platform ensures comfortable, safe and efficient systems. Desigo CC covers all areas – from simple systems with a single subsection right up to fully integrated buildings. With simple configuration and operation, state-of-the-art technology and comprehensive functionality, Desigo CC sets new industry standards.

## Desigo Control Point

Desigo Control Point simplifies the operation and monitoring of heating, ventilation, air conditioning, lighting and shading in small or medium-size buildings. Access your building management via touch panels, a PC or a mobile device – no matter where you are. You have the functionality of a complete building management station available – where and when you need it.

## Fondation Louis Vuitton Museum, Paris

Siemens' contribution to this groundbreaking technical achievement consisted of devising a perfectly adapted, technically efficient solution that safeguards both people and property. Thus, the building is able to maintain a comfortable climate for visitors and ensure the safety of the foundation's most precious artworks, while limiting the site's environmental impact.

# Desigo – a flexible building automation system that covers all your building needs

Desigo can cover all automation levels, room automation and building management needs. Maximum flexibility has become a key argument for investors and tenants. The Desigo building automation system can easily adapt to changing requirements, offering optimized usability and comfort, and improving performance in a perfect place.

An intelligent building automation system creates the ideal framework for meeting the requirements of efficiency class A under European Standard EN 15232, and other similar, global standards. This allows offices to save up to 30 percent thermal and up to 10 percent electrical energy compared to efficiency class C.

BACS efficiency classes – EN 15232		Thermal energy	Electrical energy	Efficiency factors
High energy performance BACS and TBM	✓ <b>A</b>	0.70	0.87	
Advanced BACS and TBM	<b>B</b>	0.80	0.93	
Standard BACS	<b>C</b>	1.00	1.00	
Non-energy-efficient BACS	<b>D</b>	1.51	1.10	

BACS Building Automation and Control System  
TBM Technical Building Management System



## 1. Building management – easily connect, monitor and control your facility

Desigo CC – the integrated building management platform allows you to control and operate one or multiple disciplines like HVAC (heating, ventilation and air conditioning), lighting, shading, fire safety and security from one central location. Its modular, user-friendly software makes operation easy and intuitive.

Desigo Control Point – the embedded building management station allows easy operation and monitoring, creating perfect building conditions from anywhere.

## 2. Room automation – enhanced comfort and productivity

Desigo Room Automation integrates all the room disciplines – from HVAC to lighting and shading. This allows you to lower your energy consumption and costs while increasing room comfort.

### Lower energy consumption

Thanks to the energy-saving functions and user interaction, the Green Leaf concept decreases energy consumption with best comfort.

### Lighting

Brightness is automatically adjusted to keep lighting levels constant.

### Perfect shading

Blinds are optimally adjusted to allow the use of natural light, minimize glare and protect against heat and cold.

## 3. Plant automation – flexibly scalable

The Desigo automation stations and operator units efficiently control and monitor your building plants using a variety of energy-saving functions. Data is exchanged with room automation to make sure energy is supplied only when needed to heat, cool or ventilate a room. This allows you to optimize the air volume flow based on demand while enforcing energy-efficient operation of your ventilation and air-conditioning plants.

At the same time, comfort control ensures that temperature, air quality and humidity limits are not exceeded. If inefficient operation occurs, you will be notified automatically via the Green Leaf symbol on the management platform or room operator unit.

# Desigo is ready for building information modeling (BIM)

The future of the construction industry is digital and BIM is the right method to support efficient planning, construction and operation in a holistic approach connecting all parties involved. Customers benefit from earlier conflict and error detection, improved budget reliability, faster project delivery, higher building quality and a sound basis for lifecycle cost optimization.

Desigo is ready for BIM: With a wide range of products with BIM data in standard BIM formats, Siemens makes it easy to experience the future of construction. BIM data from Siemens, which is regularly updated, can be used directly in REVIT or converted to IFC, so you can be sure your BIM data is up to date.



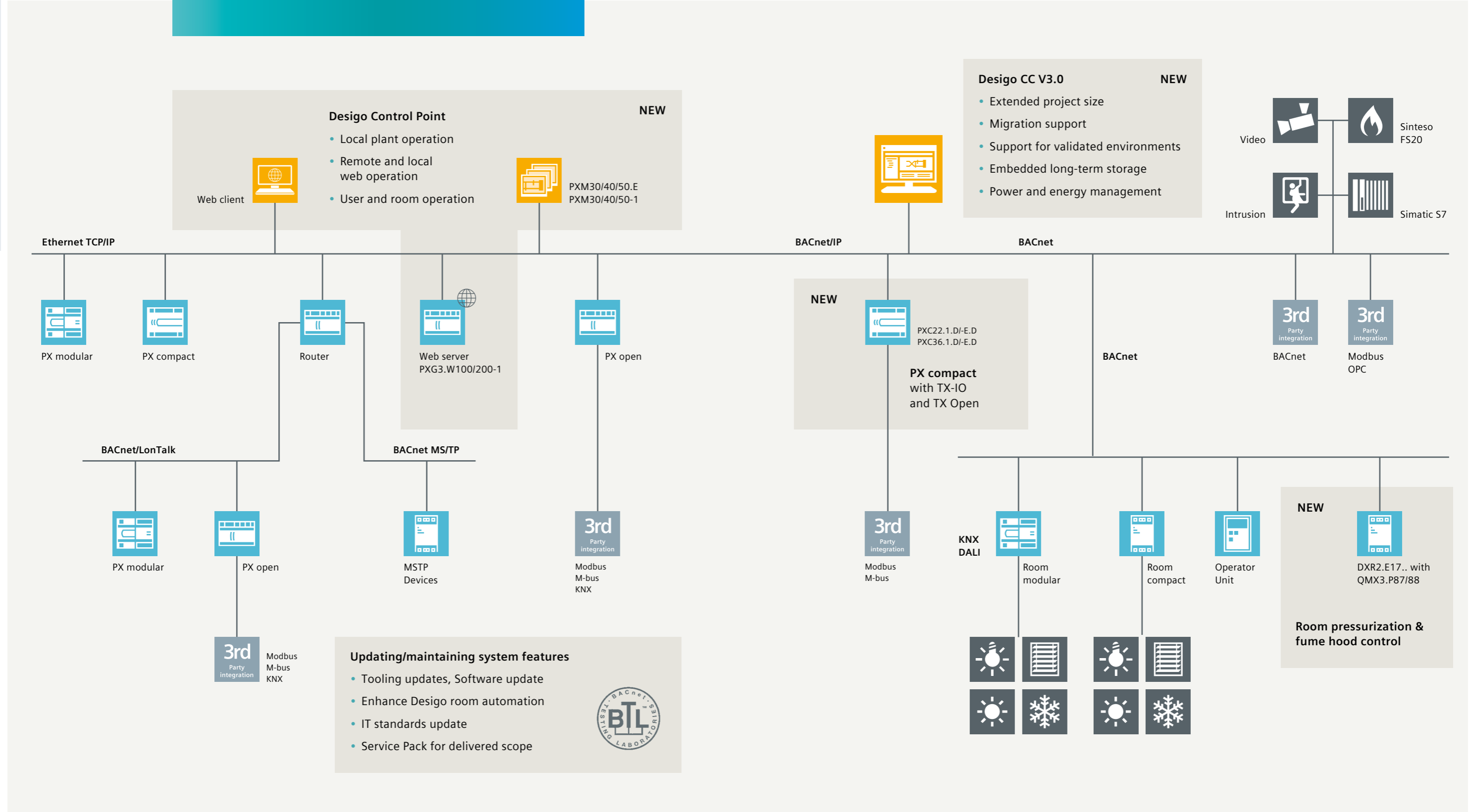
# System functions



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# Desigo V6.1 Topology







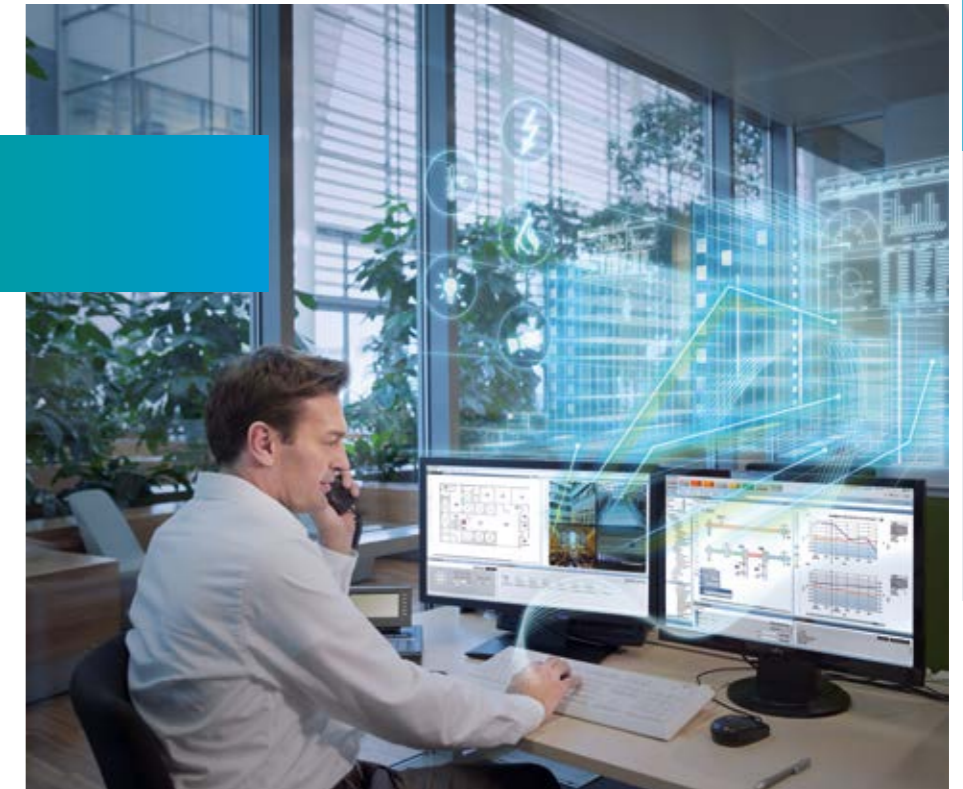


# Building Management

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## Desigo CC



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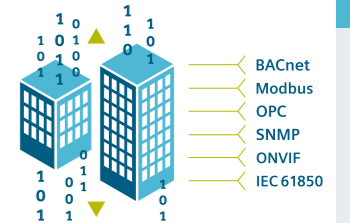
Desigo CC creates perfect places today and for the future

The open building management platform Desigo™ CC is designed to create comfortable, safe, secure and efficient facilities. The development of this software is based on our state-of-the-art technology, extensive international expertise and more than 30 years of experience in building technology. Desigo CC covers the complete scope from simple single-discipline systems to fully integrated buildings. By making it easy to operate, monitor, optimize, and manage your facility, Desigo CC sets the standard for the future while maintaining compatibility with legacy systems. With its future-oriented and discipline-independent approach, Desigo CC makes your place a perfect place for today and in the future.

## Desigo CC – a truly open platform that simplifies your business

### Open platform

Desigo CC is based on common communications standards such as BACnet, OPC, Modbus, IEC61850, SNMP and ONVIF, allowing external applications to read and write real-time data using a REST (Representational State Transfer) web service interface. Through Desigo CC driver SDKs, 3rd-party devices using proprietary protocols can also be integrated. This open platform enables a global community of developer and solution partners, independent system integrators, facility managers and OEMs to facilitate a dynamic, creative evolution of building management by gathering information and exchanging ideas, products and services. The Desigo CC Application and Integration Center provides on-demand extension development and support, ensuring countless innovations and a decreased time to market for new business solutions.



### Modular design for your individual requirements

Thanks to its modular concept, Desigo CC integrates one or more disciplines to grow along with your building management requirements. You can flexibly tailor the system to new conditions at any time and gradually integrate new systems. Desigo CC is scalable to suit buildings of all sizes and can also be used for distributed building complexes and campus infrastructures. Thanks to its modularity and flexibility, Desigo CC protects your investments and helps you plan the future of your operation. The platform can be extended to increase functionality and the interaction of the connected disciplines.



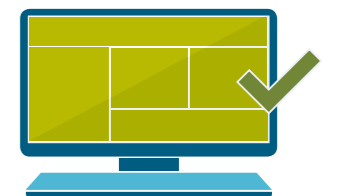
### Maximizing operational efficiency

Innovative engineering concepts make the Desigo CC building management platform efficient. Its powerful, flexible library concept, online engineering, tests and simulation minimize project commissioning time and system downtimes. With the assisted event treatment giving clear guidance to the operators, and all disciplines based on the same workflows, training requirements are minimized. Remote access offers further efficiency improvements by allowing building managers and engineers to optimize settings and monitor performance, while alarm delivery to the Desigo CC mobile app enables appropriate action, even when on the move.



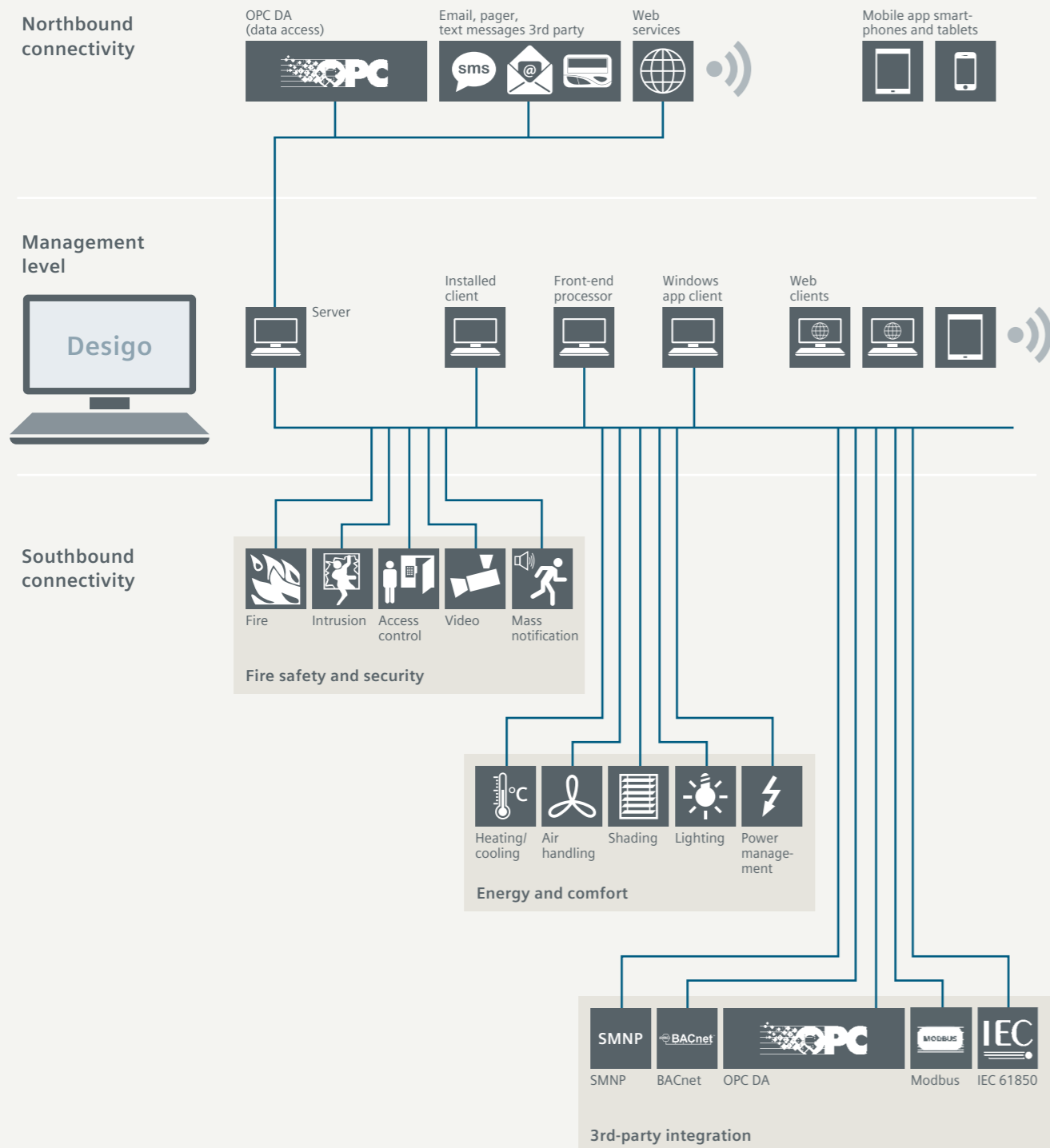
### Easy and user-friendly

In Desigo CC's unique user interface design, consistent user-based workflows focus the operator's attention on the task at hand, allowing them to take a closer look guided by the system to the most relevant information. With the same look and feel, operation on all connected subsystems, learning is an easy task, and errors in commanding, event treatment, reporting, and scheduling become more unlikely. In addition, all disciplines can be controlled from a single location using the multiple screen approach, backed by advanced vector graphics, offering to zoom in from an entire floor to the smallest detail.



## North-/southbound connectivity

Desigo CC integrates and allows to be integrated



## From single- to multi-disciplines for all types of buildings

### A platform growing with your needs

Every building presents unique challenges. Desigo CC was designed to help you manage and adapt to the changing requirements of your facility and organization. You can customize the interface to show the details you need about a building system, area or piece of equipment. Desigo CC also grows with your business needs, in project size and functionality as well as number of disciplines. As a platform based on open architecture, Desigo CC easily adapts to your needs today and tomorrow.

### A platform for all building types

Different building types and sizes have different requirements – Desigo CC answers them all (e.g. for schools, airports, industrial production sites, etc.), as well as special market requirements (e.g. pharmaceuticals and fire regulations).

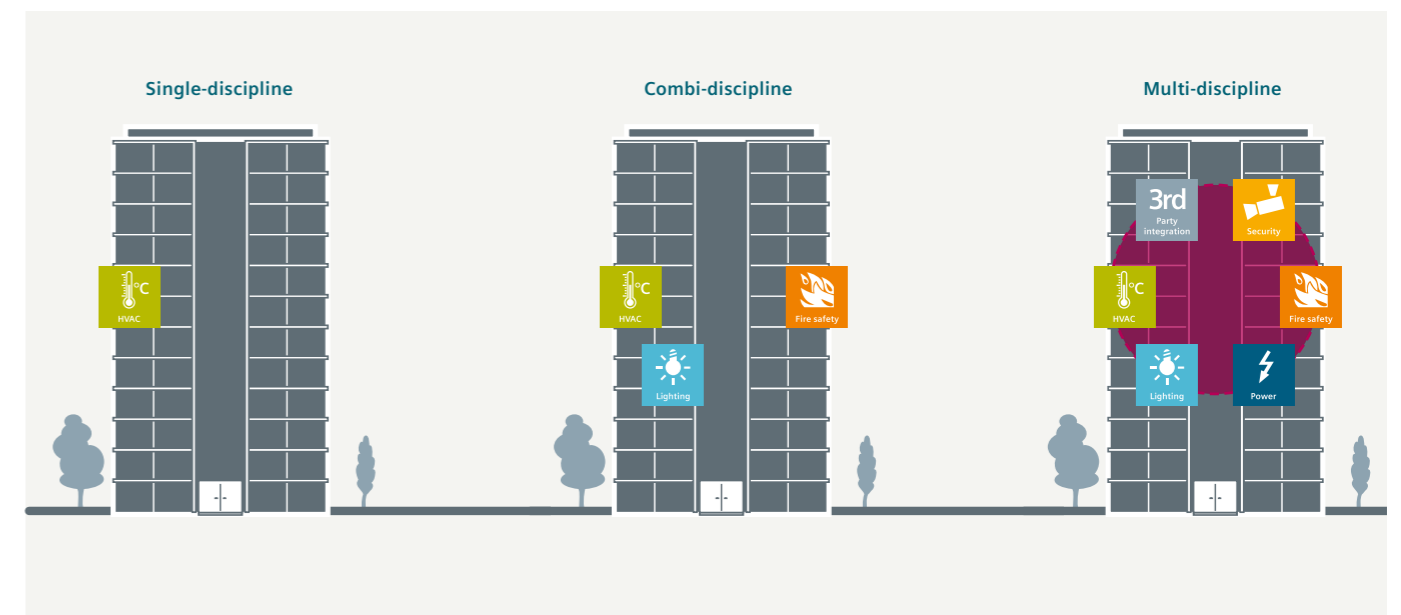
### Desigo CC optimizes cost-efficiency

Optimizing asset costs has many aspects: Your building management platform's ease of use can be a decisive factor, especially when you can monitor and control all assets and data remotely anytime and anywhere. This is convenient and enables quick, well-informed decisions, if things should go astray.

Thinking about your building's entire service life, lifecycle costs are another aspect – and so is your building management platform. From this perspective, unified workflows for all disciplines not only mean lower training expenses, but also substantially reduced infrastructure (e.g. servers and networks) and operating costs.

In addition, Desigo CC meets the highest energy efficiency standards, thanks to centralized HVAC control, and comprehensive analysis of energy consumption against building operations.

Special Desigo CC tools and templates allow you to quickly set initial building parameters and adapt them to changing needs and conditions cost-effectively. With data aggregation, historical analysis and side-by-side trends you can quickly see the effect of changes in your facility.



## 2 More safety, comfort and productivity – today and tomorrow

### Keep your people and facilities safe

Desigo CC has the capability to integrate building management with fire safety and security systems – for example, video surveillance intrusion detection or access control. Thanks to this, Desigo CC can play a critical role in maintaining the safety of your people and your buildings, thus promoting their productivity. Detailed graphics and assisted event treatment give you more profound insights, enabling better decisions.

Thanks to its highly optimized and logical interface, Desigo CC allows you to improve event management throughout your facility. You can monitor fire safety systems and video cameras through centralized controls, enhancing your ability to intelligently respond to events.



### Desigo CC routes you to the right decision

Desigo CC's assisted event treatment procedures guide the operator step by step safely through critical tasks and can be configured to be mandatory or optional, depending on the user. With investigative event treatment, a quick click will navigate you through the system to visualize the logged event. At any time, a context-sensitive list of related items lets you start with a piece of equipment, and quickly and easily access all of the information related to it. The platform helps you drill down to the information you need to address issues, and solve them accordingly.



### Advanced reporting

The advanced comprehensive Desigo CC tools and templates identify and address issues even before they become problems. Besides standard monitoring and reporting for your facility, you can also benefit from an advanced reporting tool enabling you to take fast action. With intuitive reports you can easily manage your building's KPIs, monitor your energy consumption and even identify operational and energy performance opportunities. Desigo CC's advanced reporting engine will access trend and event data from the database and provide operational workflows for delivery of energy, power, and maintenance as well as other kinds of reports.



#### Energy and power reports

Desigo CC offers easy-to-use templates for energy and power reports, including load profiles and maximum power report. While a load profile gives you details of your power demand over a specified period of time, a maximum power report shows the size of power peaks and when they occur. With the energy consumption report you can determine your energy consumption for a selected time period, and compare it to historical data.

#### Remote access

With Desigo CC you can easily be notified regarding issues, remotely, at any time and from any location, thanks to remote desktop client, web clients and mobile app. Desigo CC's client server architecture supports desktop, Windows app and web clients, all with the same user interface and functionality.

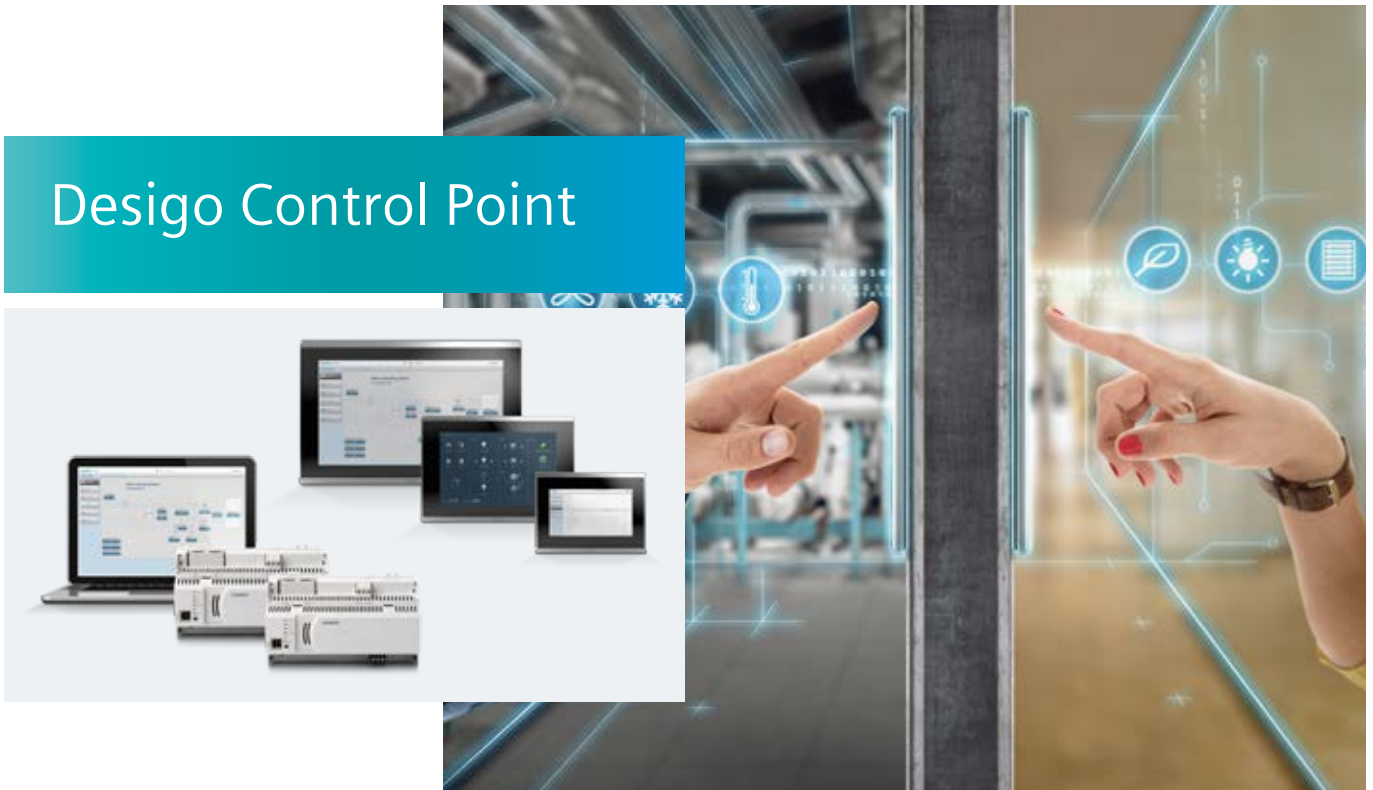
Desigo CC employs the latest technology and standards designed to work with your IT infrastructure email, SMS and pager messages.

#### Enhanced error protection support

Desigo CC is easy to navigate, letting you examine critical equipment, monitor processes, reduce errors and find vital information when you need it most. You can access information and communicate with multiple building systems.

The management platform brings together the relevant details identified for each user based on the individual's unique profile, role and view of the system. The user interface allows you to prepare personalized views. You can even create your own system view that reflects your unique needs and workflow processes.

Given Desigo CC's ease of use and ready adaptability, you can quickly benefit from it, optimizing the comfort, performance and safety of your building with a single interface. Its many features and capabilities make Desigo CC a valuable investment now that you can build on for the future.



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## Desigo Control Point – The embedded building management station

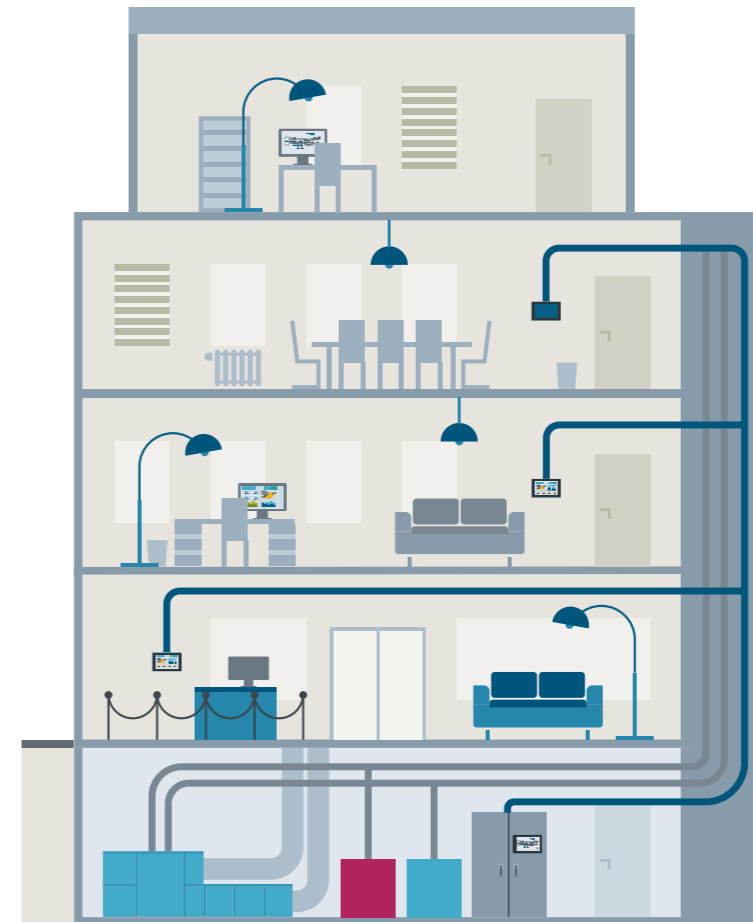
### Desigo Control Point – designed to simplify your building management tasks.

Buildings are so much more than just four walls. We spend 90 percent of our lives in buildings – to live, to sleep, to learn, to work, to recover. That's why it's so important to ensure that buildings are always optimized to support our well-being. With Desigo Control Point, this task has become a lot easier. It's the right solution for small to medium-size buildings that combines plant operation, remote operation and room operation in one device – all at the touch of your fingertips.

Desigo Control Point is a new concept for building automation management. It consists of touch panels in several sizes and web servers that enable remote control of buildings from any smart device. A great variety of public and commercial buildings can now increase user comfort while saving costs. Installation and operation are straightforward, allowing anyone to use it. Desigo Control Point also complements our building management platform Desigo CC in large or multi-discipline buildings. The use of native BACnet ensures that third-party devices can be integrated and operated.

Desigo Control Point is also suited for rooms such as meeting or conference rooms that require touch panels to control HVAC, lighting and shading to ensure best conditions for occupants. In addition, it offers tools to monitor and optimize energy consumption. With Desigo Control Point you can simplify your building automation tasks, maximize room comfort, lower maintenance and energy costs – and create perfect places for everyone.

Desigo Control Point is optimized for use as a building management station in small to medium-size buildings like banks, universities, schools, shopping malls, offices, cinemas and hospitals. Desigo Control Point touch panels can also be used as room operator units in different kinds of rooms such as meeting or function rooms.



### Simplified building management

Desigo Control Point is a consistent concept to simplify operation and monitoring of HVAC, lighting and shading with a user-friendly interface.

### Intuitive room operation

Desigo Control Point facilitates operation of lighting, blinds and HVAC in meeting rooms, offices, conference and event rooms.

### Easy monitoring of energy consumption

Desigo Control Point provides energy dashboards for public involvement or taking fast action to reduce energy consumption.

### User-friendly operation and monitoring

Desigo Control Point is ready to operate and monitor the systems in just a few seconds.

### Accessibility from anywhere

Desigo Control Point allows you to access your plant from your web browser. You can monitor and optimize your plant from your office or via mobile devices.





## 2 One building, many use cases

Desigo Control Point is designed for different tasks in the same building. Hence, it makes it easy for both plant operators and end users to operate HVAC, lights and blinds. Thanks to its connectivity, Desigo Control Point can be used from remote locations via the web, directly in a room or at the plant itself. It simplifies the control of HVAC, lighting and shading and also enables energy monitoring with informative dashboards.



### Plant operation

Desigo Control Point allows you to operate and monitor your plant state using graphics or generic data point lists via touch panels mounted on cabinet doors. Also included are alarm management, display of trends, schedules, heating curves and animated graphics.



### Remote operation

With built-in web server functionality, Desigo Control Point allows you to remotely access all management tasks from anywhere. In addition, it provides email notification of alarms and events or email trend logs based on schedules for regular reporting and analysis.



### Energy monitoring

Desigo Control Point allows you to monitor your energy consumption while achieving additional savings. It provides standard templates to display and compare energy consumption along with a flexible suite of configurable elements to fully customize your dashboards.



### Room operation

Operate HVAC, lighting and shading components via a user interface that's optimized for end users to easily operate a great variety of applications. It comes with standard templates for meeting rooms and office spaces and can be customized for different room and floor designs.

## 2 Easy and flexible building automation management



### Simple and fast

Desigo Control Point is easy to use and simplifies access to your plant from any smart device. You can monitor and operate your building, configure a schedule, create trends and reports and manage your alarms easily. The intuitive user interface can be used without any training and there are no tools required for commissioning. This significantly reduces complexity.



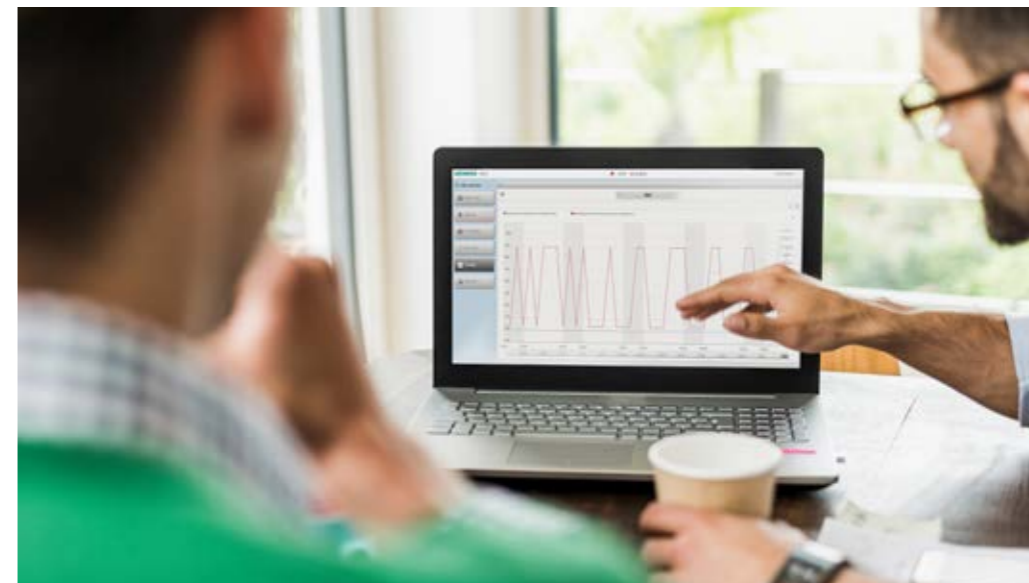
### Scalable, flexible, open

Desigo Control Point comes in three distinctive touch screen sizes and can be used in small to medium-size buildings. It also supports comprehensive projects under Desigo CC and allows you to connect with your building and operate it remotely from multiple devices, thanks to standardized HTML 5.0 web technology. Native BACnet means you can easily integrate and operate third-party equipment in the same intuitive way. Native support of the Haystack interface means you can further utilize the data your building generates. This scalability, flexibility and openness makes Desigo Control Point the optimal solution for buildings – today and tomorrow.



### Customizable

Thanks to a fully customizable user interface, Desigo Control Point supports a multitude of applications that can be supported with plant graphics, floor plans, dashboards and room interfaces. This way, Desigo Control Point is useful in any building and can offer a unique appearance, thanks to its customizable user interface.



2 Key features and facts

3 Industrial touch panels 24/7

Robust, high-quality touch panels enable Desigo Control Point to be used in difficult conditions (e.g. in basements or plant rooms).

3 User-friendly display

The capacitive display of the Desigo Control Point touch panels is intuitive and ensures ease of use – just like a smartphone.



4 Changes without interruption

Engineering can be done online from web browsers with no need for any extra tools or software. During operation, it is possible to make changes anytime without interrupting service – via remote control or on-site.

4 The latest web technology

Desigo Control Point can be controlled with any device supporting HTML5 in addition to the touch panels. The device even adjusts automatically to the resolution and orientation.

Benefits at a glance

Simplify building automation management tasks and reduce complexity	Access your building from touch panels, tablets or mobile devices	Maximize comfort in an intuitive way	Lower your energy and maintenance costs

2 The Desigo Control Point product portfolio

BACnet touch panels

BACnet/IP touch panels can be connected directly to the BACnet network. Thanks to the embedded web server, it is possible to access the system using a standard web browser from anywhere. No further web server is required for installation and operation.

Size/type	7"	10"	15"
BACnet/IP touch panels	PXM30.E	PXM40.E	PXM50.E



Client touch panels

The TCP/IP touch panels are used on projects that require multiple touch panels to operate the same system data from different locations. A centralized web server can have multiple touch panels or web browser sessions connected. This reduces the complexity and cost of larger installations.

Size/type	7"	10"	15"
TCP/IP touch panels	PXM30-1	PXM40-1	PXM50-1



BACnet web servers

The BACnet/IP web servers permit remote operation of primary and room automation stations as well as third-party BACnet/IP devices. The two variants – standard and advanced – provide different functionality according to the project's requirements.

Type	Standard	Advanced
BACnet web servers	PXG3.W100-1	PXG3.W200-1



Tested quality

BACnet® Testing Laboratories (BTL) is a registered trademark. Products that were successfully tested by BACnet Testing Laboratories, like Desigo Control Point, are allowed to carry the BTL trademark.

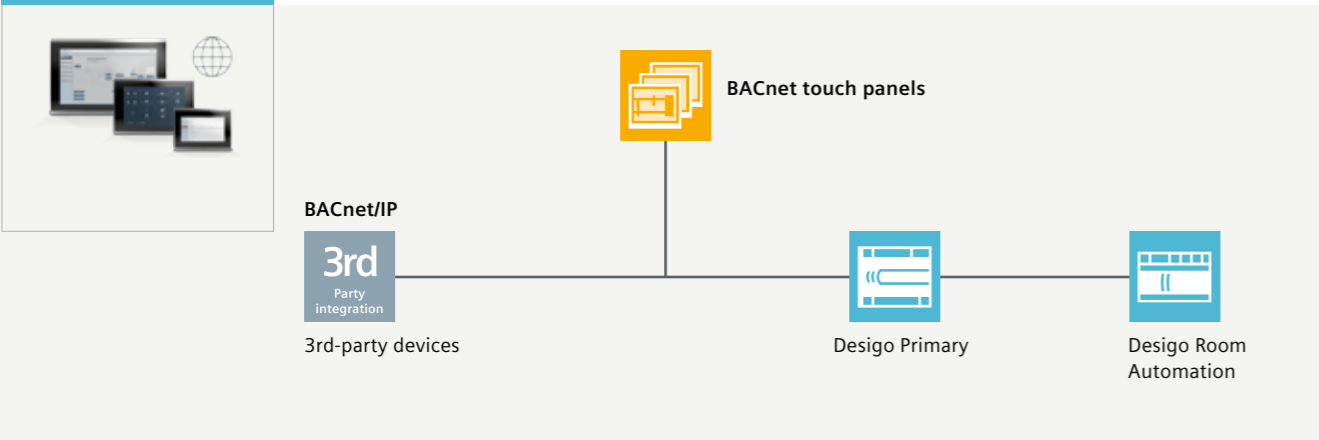


Ready for BIM data

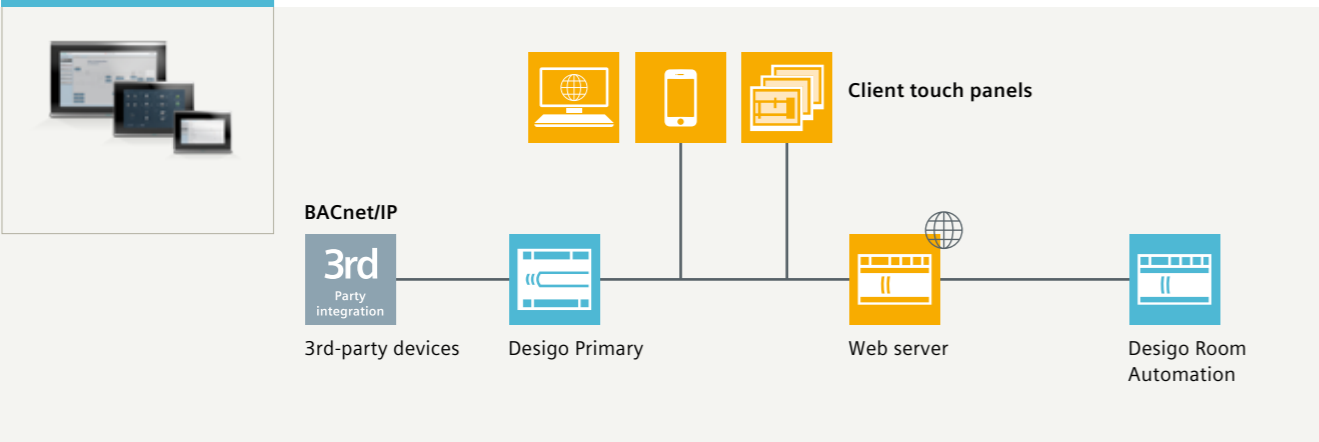
Siemens provides BIM data, which is regularly updated. Desigo Control Point devices are also available in the REVIT library.

Desigo Control Point is an embedded management station that comprises touch panels and web servers in three basic topologies:

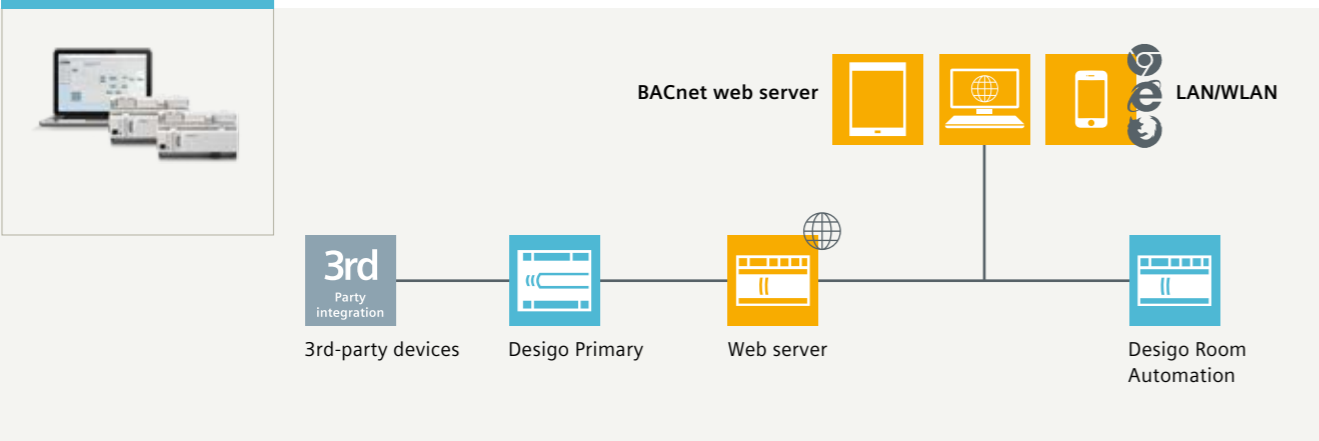
1. BACnet touch panels



2. Client touch panels

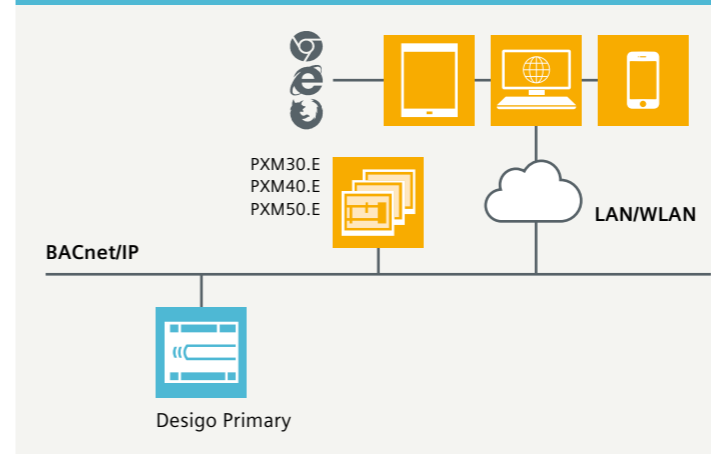


3. BACnet web server



Desigo Control Point topologies

Very small projects



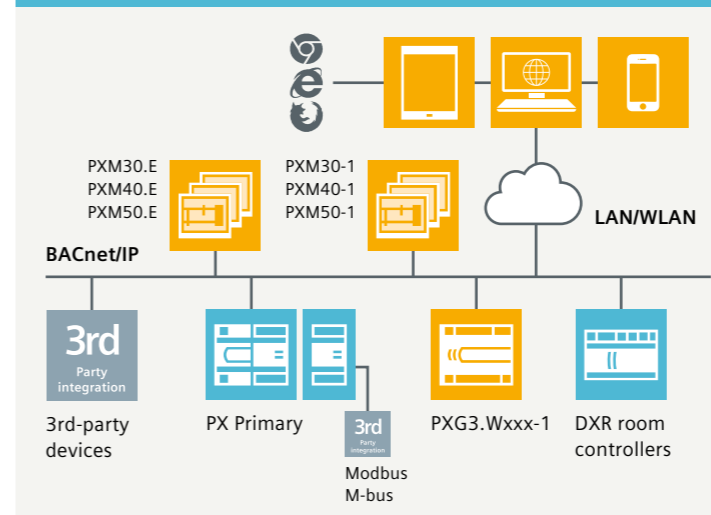
Project requirements

- Small heating or air handling system (e.g. with 50 data points)
- Additional web access for remote operation
- Operating unit for on-site plant operation

Desigo Control Point offering

- Touch panel PXMxx.E for on-site operation
- Remote access via embedded web server on PXMxx.E, therefore no extra costs for web operation

Medium-size projects



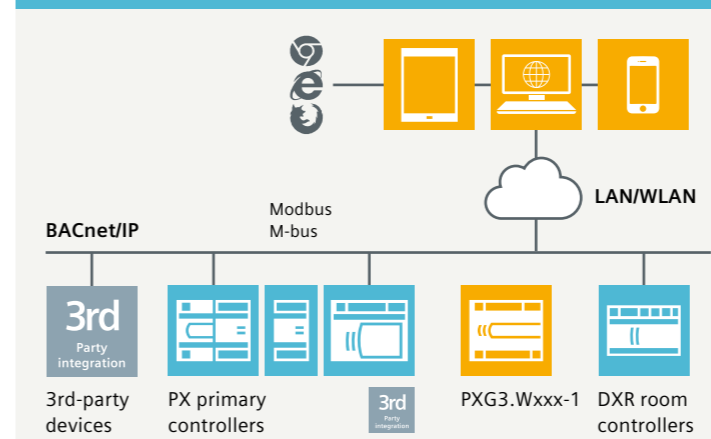
Project requirements

- Multiple heating plant and/or air handling units
- Automatic operation of multiple rooms
- BACnet devices from 3rd parties
- Integration of 3rd-party devices
- Multiple operating units on-site
- Web access for remote operation

Desigo Control Point offering

- Centralized web server PXG3.Wxxx-1 for remote web operation
- PXMxx-1 connected to PXG3.Wxxx-1 for local touch panel operation

Projects without touch panels



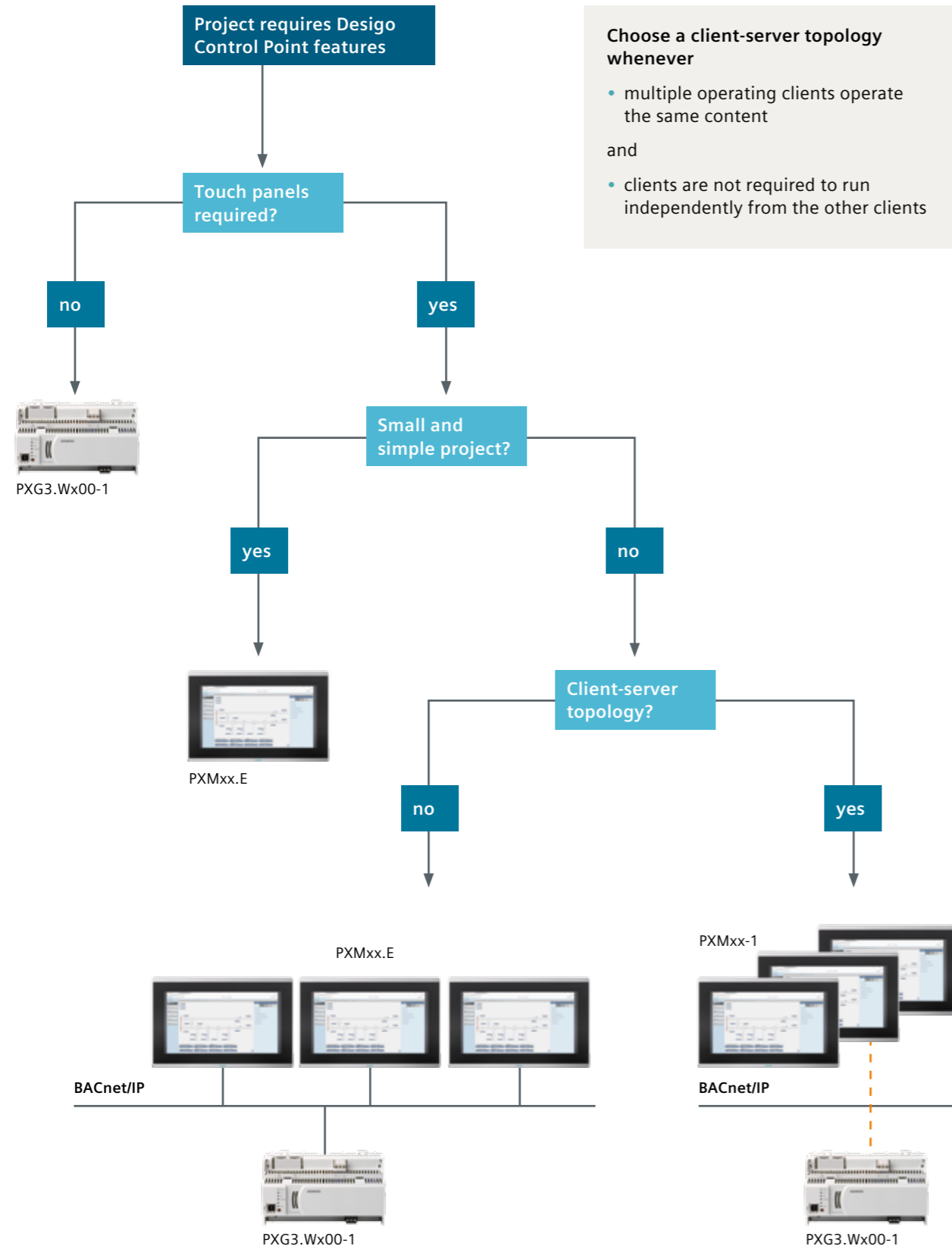
Project requirements

- Multiple heating plant and/or air handling units
- Automatic operation of multiple rooms
- BACnet device from 3rd parties
- Integration of 3rd-party devices
- No operating units on-site, operating units from 3rd parties, or, e.g., only PXM10
- Web access for remote operation

Desigo Control Point offering

- Centralized web server PXG3.W100-1 or PXG3.W200-1 for remote web operation

2 How to choose the right topology – a decision workflow



2 Overview of features and products

Features	PXM30.E PXM30-1	PXM40.E PXM40-1	PXM50.E PXM50-1
Capacitive touch panel	•	•	•
Multi-touch gestures (swipe and zoom, etc.)	•	•	•
Widescreen format	•	•	•
LED for alarm display	•	•	•
Brightness sensor	•	•	•
Panel mounting	•	•	•
Power supply AC 24 V	•	•	•
RJ45 Ethernet connection	•	•	•
Plastic frames	•		
Wall mounting		•	•
Aluminum frame		•	•
Anti-theft protection		•	•
Power over Ethernet (PoE)		•	•
Wall mounting accessories		• PXA.V40	• PXA.V50

Features	Touch panel TCP/IP	Touch panel BACnet/IP	Web interface BACnet/IP	
	PXM50-1 PXM40-1 PXM30-1	PXM50.E PXM40.E PXM30.E	PXG3.W100-1	PXG3.W200-1
Tool-free commissioning – plug & play	•	•	•	•
Generic operation of all objects/properties		•	•	•
Operation of Desigo Primary, room controllers and 3rd-party controllers		•	•	•
User administration (add, delete, change)		•	•	•
User access rights on data point level		•	•	•
Alarm viewer		•	•	•
Alarming and event history		•	•	•
Alarm routing to email recipients		•	•	•
Trend view (online and offline trends)		•	•	•
Scheduler operation		•	•	•
Heating curve		•	•	•
Animated graphics (plants, rooms, floors, etc.)		•	•	•
Embedded web server for remote access		•	•	•
Graphic engineering online via desktop web browser		•	•	•
Trend data export – manually		•	•	•
Haystack interface			•	•
Energy dashboards				•
Trend data export – automatically				•
System status report				•

2 Desigo Control Point device limits

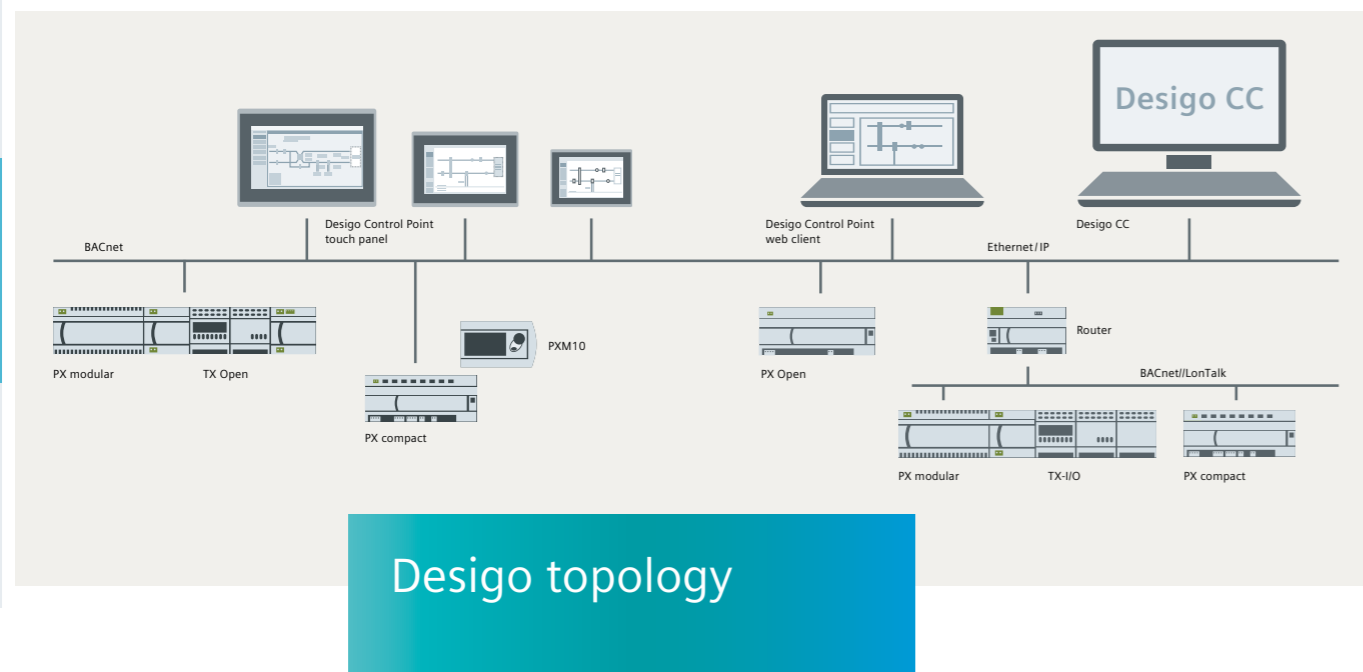
Features	Touch panel TCP/IP	Touch panel BACnet/IP	Web interface BACnet/IP	
	PXM50-1 PXM40-1 PXM30-1	PXM50.E PXM40.E PXM30.E	PXG3.W100-1	PXG3.W200-1
Generic data point operation	n.a.	All data points of all assigned devices		
Alarming	n.a.	All data points of all assigned devices		
Graphical operation (BACnet objects)	n.a.	500	1,000	2,000
Haystack interface (BACnet objects)	n.a.	500	1,000	2,000
Online trends	n.a.	20	20	50
Graphics (average complexity)	n.a.	20	20	50

# Automation controls



## Contents

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<b>Automation stations</b>	Compact series PXC..	3-8
	Modular series PXC..D	XX
	PX System controller	XX
	Desigo PX Open	XX
	Desigo Net	XX
	Integral migration PXC-NRU..	XX
<b>Operation and monitoring</b>	Desigo Control Point	XX
	Operation and monitoring: PXM..	XX
	Operation and monitoring: PXG3.W100	XX
<b>Desigo TX-I/O</b>	I/O module TXM..	XX
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	Accessories Desigo TX-I/O	XX



Desigo PX is a modern building automation and control system for the entire field of building service plants. Scalable from small to large projects with highest degree of energy efficiency, openness and user-friendly operation.

#### Desigo Control Point – the embedded management station and range of touch panels

Ergonomic operation from any location: Remote access means ease of use, and independence. Automation stations can be accessed from any location and at any time via Desigo Control Point. This offers low-cost monitoring and controlling of small to medium-size systems.

User-friendly, easy-to-understand and flexible to use: Desigo Control Point offers a choice of different touch panels to satisfy different requirements in terms of location and functionality. They excel in intuitive handling with clear user guidance and full graphical displays.

#### Desigo PX Automation Stations – scalability and openness

The Desigo PX range of programmable automation stations for primary plants offers outstanding scalability and consistent system openness. Desigo PX reliably performs all the tasks required of building technology. It has a modular system concept to make it a perfect match for the relevant requirements and needs. In smaller HVAC plants, too, it can be used to deploy DDC technology in a cost-effective way. In new buildings as well as modernization projects, this means it is necessary to invest only in the system components that are actually needed. The innovative system concept means that Desigo PX can be gradually scaled up to a large building automation system at any time. Desigo is consistent in its support of open communications, making it easy to connect a wide variety of building systems on the basis of standard open data interfaces.

#### Desigo PX Open and TX Open – scalable integration platforms

PX Open and TX Open offer a portfolio of solutions for simple and cost-effective integration of third-party systems and devices depending on the required process interaction and the number of data points.

- KNX® and LonWorks® to link room automation and secondary processes
- M-Bus, Modbus and other interfaces for universal connection of third-party devices and systems
- Simple ASCII protocols for RS232 or RS485 via PX SCL (Structured Control Languages)

#### Wide choice of applications for energy efficiency

The broad range of Desigo application libraries covers individual customer needs in a comprehensive manner.

Ready-to-use application solutions are available for generation, distribution and consumption. The different application libraries scale from simple control sequences up to highly sophisticated equipment controls. The sophisticated control strategies in our applications offer an optimized balance between energy efficiency and comfort.

#### Project engineering, service and commissioning

Professional software tools ensure efficient engineering, service and commissioning by graphical user interface and lots of analysis and reporting functions.

#### Years of experience

Siemens is one of the leaders in building automation and HVAC control worldwide. Our developments are based on the years of experience of our specialists. The result is the reliable and user-friendly automation system Desigo PX.

#### Highlights

- Universal use, thanks to modular system concept
- BACnet™ communication for maximum openness
- User-friendly operations for any location and functionality
- Years of experience in building automation

Desigo CC and Desigo PX automation stations make Aishti Foundation, Beirut, a perfect place to enjoy the arts and shopping in a high-efficiency building.

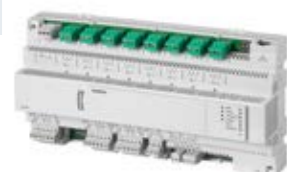




PXC100.D

Overview of automation stations: Modular series				
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 data points via TX-IO modules	–	Up to 52	Up to 200	Over 200
Number of TX Open modules for e.g. Modbus, M-Bus	–	5	5	5
Number of LonWorks devices via PXX-Lx	60 or 120	10	60 <sup>1)</sup> or 120 <sup>1)</sup>	60 <sup>1)</sup> or 120 <sup>1)</sup>

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



PXC36.1-E.D

Overview of automation stations: Compact series				
BACnet/LonTalk	PXC12.D	PXC22.D	PXC22.1.D	PXC36.1.D
BACnet/IP	PXC12-E.D	PXC22-E.D	PXC22.1-E.D	PXC36.1-E.D
<b>I/Os onboard</b>	<b>12</b>	<b>22</b>	<b>22</b>	<b>36</b>
UIO	8	16	16	24
DI	2	0	0	4
DO	2	6	6	8
Number of I/Os via TX-I/O modules	–	–	16	16
Number of TX Open modules	–	–	5	5

System controller PX Open			
Type	PXC001.D PXC001-E.D	PXA40-RS1	PXA40-RS2

Interfaces			
KNX	•	–	–
Serial RS232	•	–	–
Serial RS485	•	–	–

Network functions			
Integration KNX	2000 DP	–	–
Integration M-Bus	250 DP	800 DP	2000 DP
Integration Modbus	250 DP	800 DP	2000 DP
Integration SCL	250 DP	800 DP	1000 DP



PXC001.D

TX Open RS232/485 module	
Type	Description
TXI2.OPEN	TX Open RS232/485 module (up to 160 data points)
TXI2-S.OPEN	TX Open RS232/485 module (up to 40 data points)



TXI2.OPEN

Overview TX-I/O™ module range TXM1..



Type	TXM1.8D	TXM1.16D	TXM1.8U	TXM1.8U-ML	TXM1.8X	TXM1.8X-ML	TXM1.6R	TXM1.6R-M	TXM1.8P	TXM1.6RL	TXM1.8T
Number of I/Os	8	16	8	8	8	8	6	6	8	6	8
<b>Functionality</b>											
Local operation				•		•		•			
LC-Display				•		•					
3-color I/O status LED	•							•			
Green I/O status LED		•	•	•	•	•	•		•	•	•
<b>Digital inputs (DI)</b>											
Message signal (open/closer)	•	•	•	•	•	•					
Message impulse	•	•	•	•	•	•					
Counter 10 Hz (with debouncing)	•	1-8 <sup>1)</sup>									
Counter 25 Hz (bouncer free)			•	•	•	•					
<b>Analog inputs (AI)</b>											
LG-Ni1000			•	•	•	•			•		
Pt 1000/0...2500 Ohm			•	•	•	•			•		
T1			•	•	•	•					
DC 0...10 V			•	•	•	•			• <sup>3)</sup>		
4...20 mA/0...20 mA					•	•			• <sup>4)</sup>		
<b>Analog outputs (AO)</b>											
DC 0...10 V			•	•							
4...20 mA					5-8 <sup>2)</sup>	5-8 <sup>2)</sup>					
<b>Digital outputs (DO)</b>											
Continuous contact on/off								•	•		
Continuous contact, 3-stage								•	•		
3-stage output								•	•		
Impulse on/off, 3-stage								•	•		
Multistate								•	•		
Triac-continuous contact											•
Triac-impulse (3-stage)											•
Triac pulsewidth-modulated											•
Light control, bistable										•	

1) On the TXM1.16D the counters are implemented only on the inputs 1 to 8  
2) On the TXM1.8X.. the current exists 4...20 mA are implemented only on the I/Os 5 to 8

Remote IO Islands with integration	
Type	Description
TXA1.IBE	Easy-to-use solution with as simple adapter for remote TX-IO and TX Open. No programming/parameterization required



TXA1.IBE

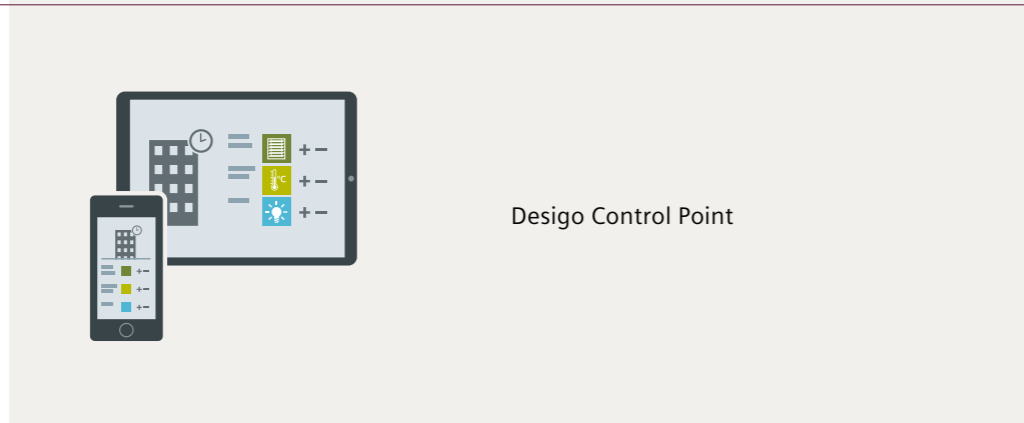


Desigo Operation and Monitoring

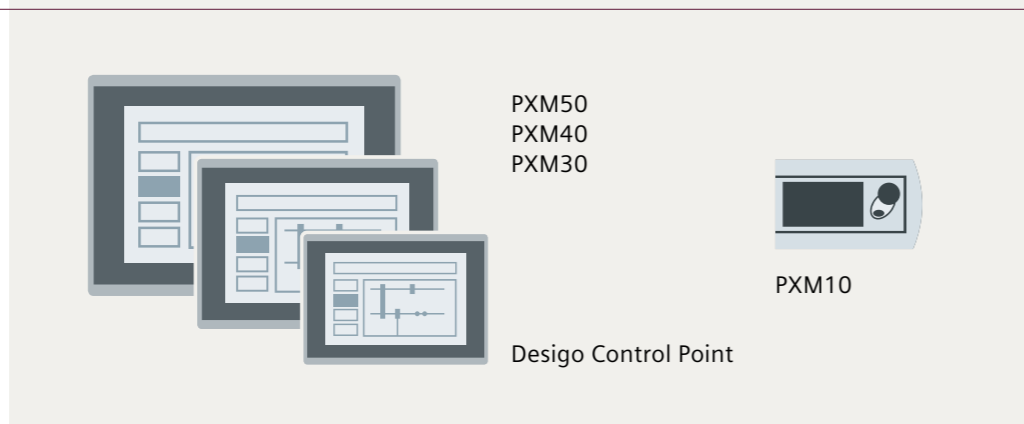
Management station



Web operation from anywhere



Plant operation via touch panels and operator units



Manual operation in the control panel



Range overview web server	
Type	Description
PXG3.W100-1	BACnet/IP web server with standard Control Point functionality
PXG3.W200-1	BACnet/IP web server with enhanced Control Point functionality



PXG3.W100-1

Range overview touch panels and operator units	
Type	Description
PXM30.E PXM40.E, PXM50.E	Desigo Control Point BACnet touch panels with integrated data management and web server functionality: 7.0 " 10.1 ", 15.6 "
PXM30-1 PXM40-1, PXM50-1	Desigo Control Point Touch panel clients (TCP/IP) 7.0 " 10.1 ", 15.6 "
PXM10	Operator Unit
TXM1...ML TXM1...M	Manual operation in the control panel



PXM40



PXM10



TXM1.8U-ML



Desigo Control Point makes your local plant operation easy. Alarming, scheduling and trending, as well as navigation via graphics, are all at your fingertips.

1

Automation controls  
Overview and selection tools

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2

3

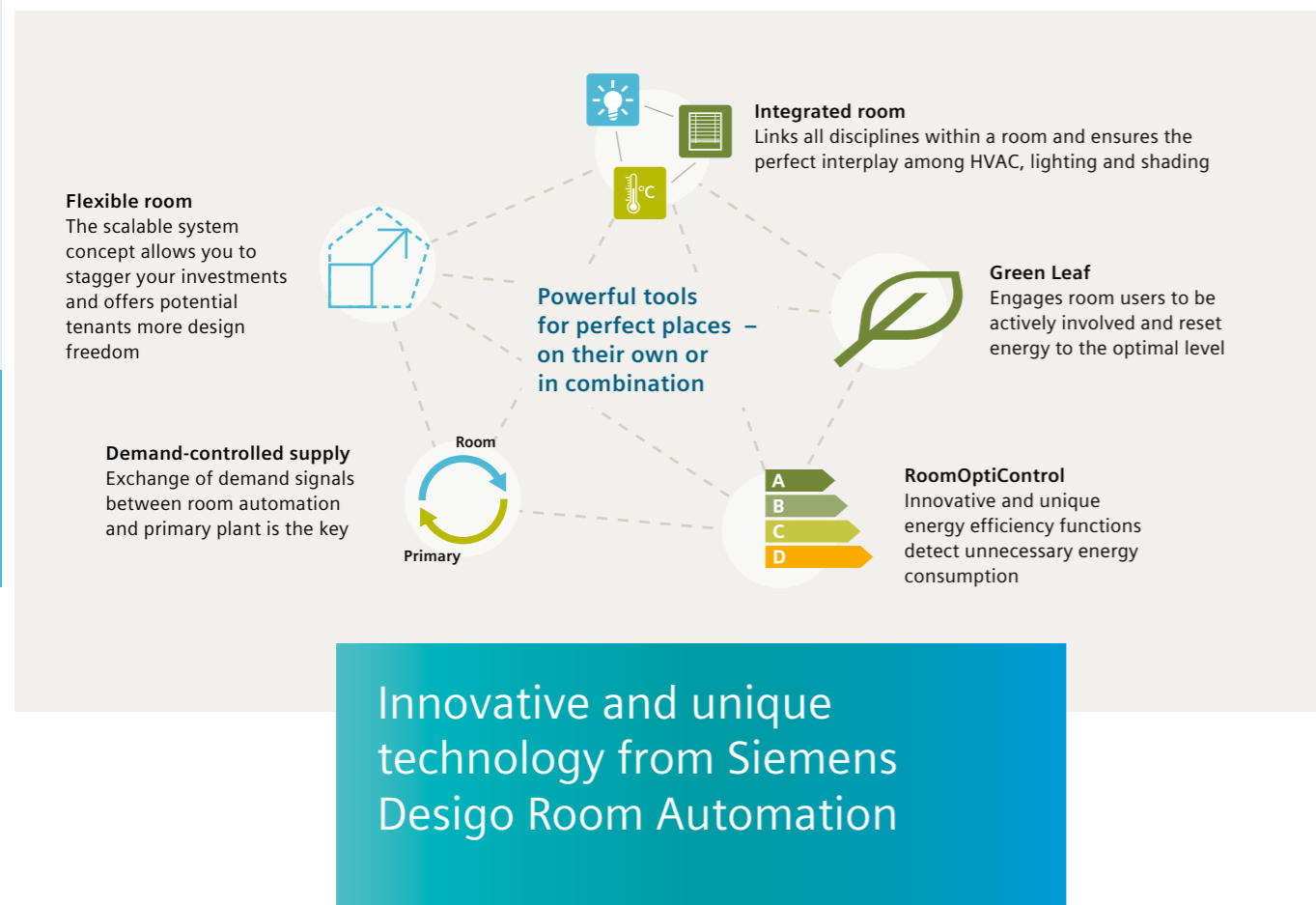
4

# Room automation



## Contents

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	Configurable room automation station with BACnet	4-4
	Programmable room automation station with BACnet	4-20
<b>Design room automation</b>		4-29
		XX
		XX
<b>Design room automation (KNX)</b>		XX
		XX
		XX



Comfort of building occupants and low running costs are often contradicting requirements. Room automation in the Desigo system, where energy demand and production are tightly connected, can satisfy both.

Siemens offers products for scalable room automation solutions, from simple HVAC applications up to room automation with HVAC, lighting and shading, all seamlessly combined in one solution.

Desigo room automation products allow you to create a system with the following open standard communication protocols:

Product range	Desigo Total Room Automation (BACnet)		Desigo Room Automation (KNX)
	ASHRAE BACnet™		KNX
Communication (Backbone)	BACnet/IP	BACnet MS/TP	KNX
Communication with sensors/actuators in room (integrations)	KNX DALI		KNX
System integration / *System functions	PXC...E.D	PXG3.L PXC...E.D	PXC001-E.D
Modular controller I/Os	PXC3.E.. TXM		
Compact controller	DXR2.E..	DXR2.M..	RXB..
Thermostats			RDG.. RDF.. RDU..
Communication with room units	KNX PL-Link	KNX PL-Link	PPS2
Room units	QMX3..	QMX3..	QAX..
Touch screen	**QMX7..		

\* Time schedules  
\*\* Connects via web server

Desigo Total Room Automation (BACnet)						
High-end market	<b>Programmable room automation</b> KNX PL-Link    DALI					<ul style="list-style-type: none"> <li>Covers all types of building structures with decentralized/centralized or mixed installation topologies and methods</li> <li>Standardized and tested application library, allows customer-specific adaptations</li> </ul>
Small to medium-size buildings with moderate complexity	<b>Configurable room automation</b> KNX PL-Link expansion					<ul style="list-style-type: none"> <li>Compact room automation station for HVAC application</li> <li>Expansion with lighting and shading application by adding KNX PL-Link devices</li> <li>Easy and efficient engineering with flexible configuration</li> </ul>
Application	Fan coil	VAV / fan-powered box	Radiator / chilled ceiling	Lights	Blinds	



### Configurable room automation station with BACnet

The room automation stations DXR2.. are perfectly suited for automatic heating, ventilation and air conditioning in a room.

In addition, the DXR2.. can be extended with lighting and shading functionality by adding KNX PL- Link modules.

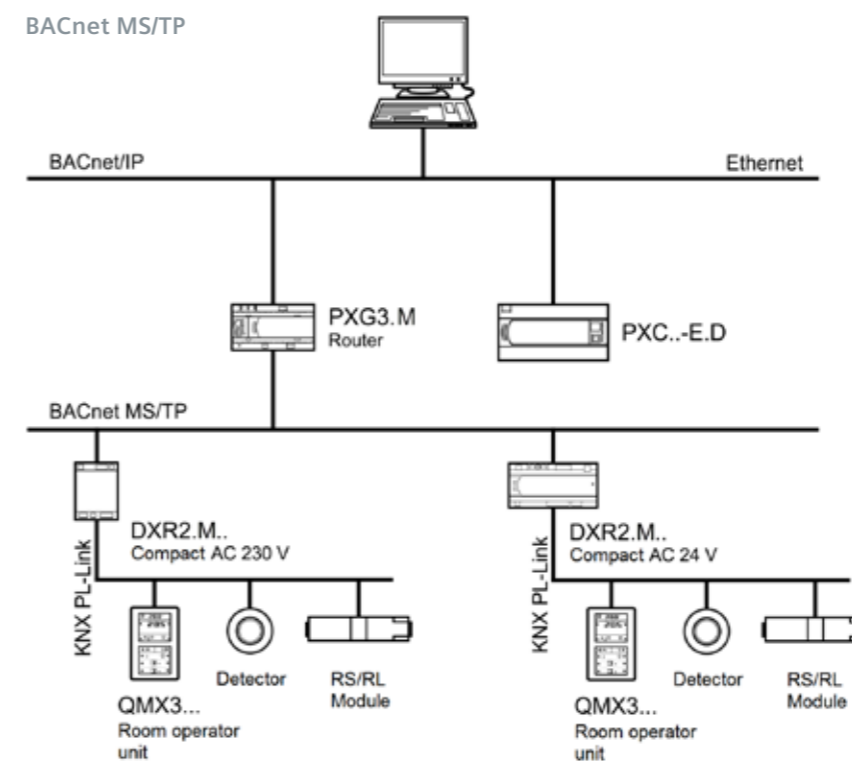
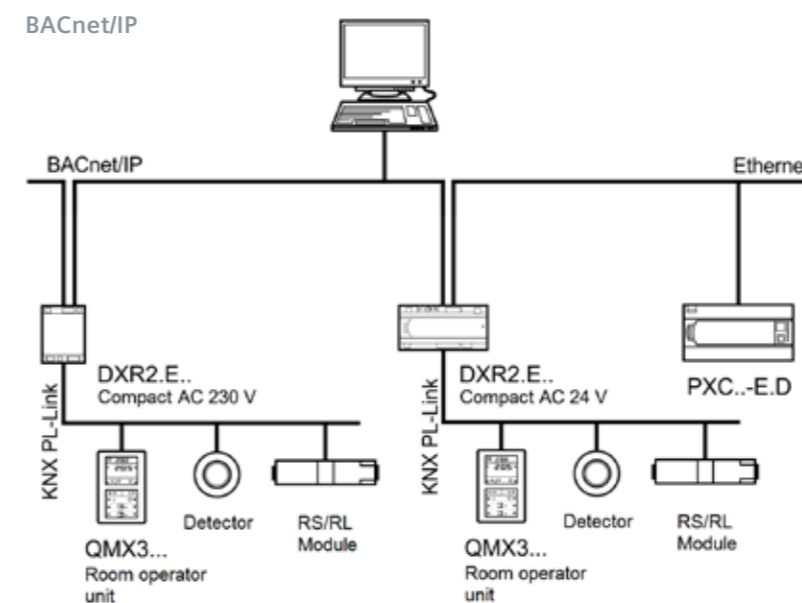
The room automation stations offer onboard I/O data points, allowing direct connection of field devices as well as an integrated interface to KNX, including power supply.

This combination allows you to create a data point mix that optimally matches application requirements.

DXR2.. comes with set of of preloaded applications that can be flexibly configured with the software tool ABT Site.

If required, DXR2.. can also be loaded with fully customized applications created in software suite ABT PRO.

### Topology for configurable room automation stations



### Application configuration

Applications can be configured by combining functions from one or several application types:

- Room sensor and operating
- Radiant (heated/chilled) ceiling and radiator
- Fan coil
- VAV system or fan-powered box
- Lighting
- Shading

Configuration is limited by total number of data points.  
Application group central functions requires dedicated room automation station.



#### Communication

BACnet/IP	DXR2.E09-101A	DXR2.E09T-101A	DXR2.E10-101A		DXR2.E12P-102A	DXR2.E12PX-102A	DXR2.E18-101A	DXR2.E18-102A	DXR2.E10PL-102B	DXR2.E10PLX-102B	DXR2.E17C-103A	DXR2.E17CX-103A
BACnet MS/TP	DXR2.M09-101A	DXR2.M09T-101A	DXR2.M10-101A	DXR2.M11-101A	DXR2.M12P-102A		DXR2.M18-101A	DXR2.M18-102A	DXR2.M10PL-102B	DXR2.M10PLX-102B		

#### Application types

Room operating	•	•	•	•	•	•	•	•	•	•	•	•
Heated / chilled ceiling and radiator	•	•	•	•	•	•	•	•	•	•	•	•
Fan coil	•	•	•	•			•					
VAV system or fan-powered box					•	•		•	•	•	•	•
Pressurized and fume hood											•	•
Lighting	•	•	•	•	•	•	•	•	•	•	•	•
Shading	•	•	•	•	•	•	•	•	•	•	•	•
Central functions							•*	•*				

#### Housing

DIN				•	•		•	•			•	•
Flat	•	•	•						•**	•**		

#### Operating voltage

230 V	•	•	•									
24 V				•	•		•	•	•	•	•	•

#### Inputs and outputs onboard

Resistor inputs		0	0	0	0	0	0	0	0	0	2	2
Digital inputs	1	1	1	1	1	1	2	2	1	1	2	2
Universal inputs	2	2	2	2	2	2	4	4	2	2	4	4
Relay outputs	3	1	3									
Triac outputs		4	4	6	6	6	8	8	4	4	4	4
Analog outputs (DC 0...10 V)	3	1		2	2	2	4	4	1	1	4	4
Pressure sensor					1	1			1	1		
SCOM communication for sensors											•	•

#### Maximum configuration

Total data points	30	30	30	30	30	60	60	60	30	60	30	60
Integrated power supply for KNX (mA)	50	50	50	50	50	50	50	50	50	50		

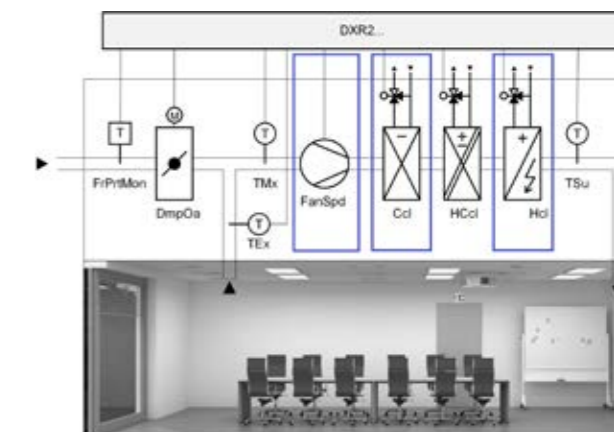
\* Cannot be combined with other applications    \*\* Via damper

### Example of product selection

#### 1. Check application requirements

##### Requirements

- Fan coil
- 4-pipe system
- 3-speed fan
- 2 valves with electrothermal actuators (2-point control signal)
- Voltage AC 230 V
- Presence detector
- Room unit with built-in temperature sensor



	Frost protection (FrPrtMon)	Outside air damper (DmpOa)	Extract air temperature (TEx)	Mixed air temperature (TMx)	Fan speed (FanSpd)	Cooling coil (Ccl)	Heating/cooling coil (HCcl)	Heating coil (Hcl)	Supply air temperature (TSu)
DI									
AI									
Relais					3				
Triac						1		1	
0..10 V									
Relais + 0..10 V									

#### 2. Find matching products in overview tables

Products matching application requirements above:

Product Number	Description	Qty
DXR2.E10	Compact room automation stations, BACnet/IP, 230 V	1
QMX3.P34	Room operator unit KNX with temperature sensor, segmented backlit display, touchkeys	1
UP 258D11	Passive infrared presence detector	1
STP73	Electrothermal actuator, AC/DC 24 V, NO, 2P, 1 m	2
VMP47.10-1.6	3-port seat valve with bypass, external thread, PN16, DN10, kvs 1.6	2

Note:  
Product overview tables provide quick overview and show main features; nevertheless, we recommend checking technical parameters of each product.

#### 3. Check total data points and bus load

Used DXR2.. onboard data points: 5  
 KNX PL-Link data points: 5  
 Total used data points: 10 < 30  
 Total KNX PL-Link bus load: 17.5 mA < 50 mA

Correct, total values do not exceed maximum configuration.

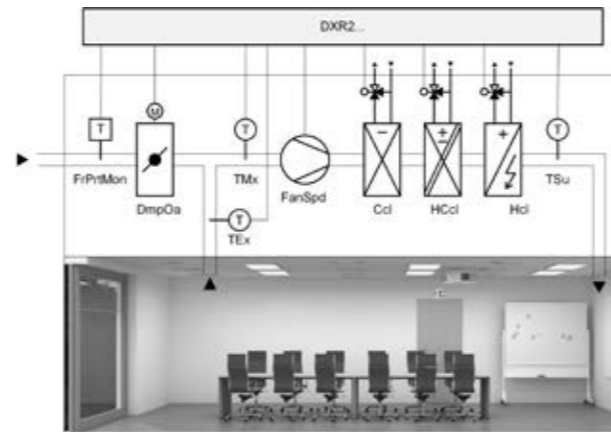
HVAC applications

Application types

Fan coil

Application can be configured from these functions:

- Outside air damper
- Single-speed fan, multi-speed fan or variable-speed fan
- Chilled water cooling coil
- Direct expansion evaporator cooling coil
- Heating/cooling coil
- Hot water heating coil
- Electric heating coil modulating, single stage or 2 stage
- Room temperature control by 2-pipe system with changeover
- Room temperature control by 4-pipe system
- Supply air temperature cascade control
- Room dehumidification control
- Air volume flow control
- Rapid ventilation
- Green Leaf



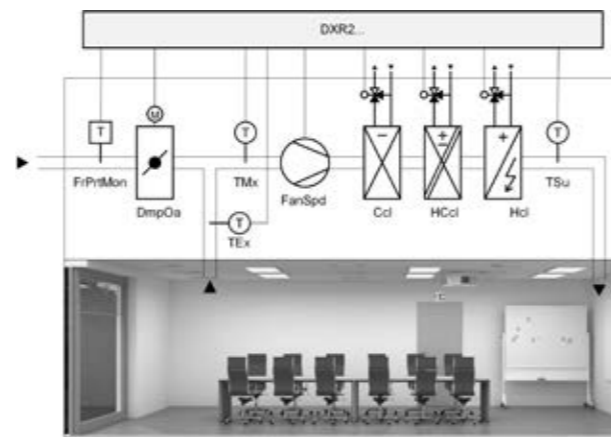
	Frost protection monitor (FrPrtMon)	Outside air damper (DmpOa)	Extract air temperature (TEx)	Mixed air temperature (TMx)	Fan speed (FanSpd)	Cooling coil (Ccl)	Heating/cooling coil (HCcl)	Heating coil (Hcl)	Supply air temperature (TSu)
DI	1								
AI			1	1					1
Relais					1-3				
Triac		2			1-2	1-2	1, 2, 4, 8	1-2	
0..10 V		1			1*	1	1, 4	1**	

\* Requires additional relais or triac for enable signal  
\*\* Requires additional triac for electric heating enable signal

VAV (variable air volume system)

Application can be configured from these functions:

- Supply and extract air control
- External flow control for VAV with integrated flow controller and differential pressure sensor
- Internal flow controller and differential pressure sensor for damper actuator control
- Internal flow controller and velocity sensor for damper actuator control
- Chilled water cooling coil
- Heating/cooling coil
- Hot water heating coil
- Electric heating coil modulating, single stage or 2 stage
- Room temperature control by 2-pipe system with changeover
- Room temperature control by 4-pipe system
- Supply air temperature cascade control
- Air flow tracking for under/overpressure
- Room dehumidification control
- Room air quality control
- Rapid ventilation
- Green Leaf



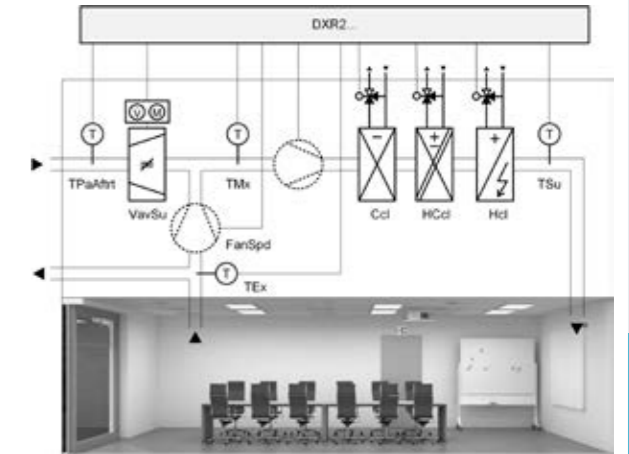
	Primary air temperature for air aftertreatment (TPaAfttrt)	Supply air VAV (VavSu)	Cooling coil (Ccl)	Heating/cooling coil (HCcl)	Heating coil (Hcl)	Supply air temperature (TSu)	Extract air temperature (TEx)	Extract air VAV (VavEx)
DI								
AI	1					1	1	
Relais								
Triac		2**	1-2	1, 2, 4, 8	1-2			2**
0..10 V		1	1	1, 4	1*			1
Actuator for VAV (KNX PL-Link)		1						1

\* Requires additional triac for electric heating enable signal  
\*\* When using DXR2.. with AC 24 V power supply in combination with GDB181.1E/3 or GLB181.1E/3, use 0..10 V signals.

Fan powered box

Application can be configured from these functions:

- Supply air control
- External flow control for VAV with integrated flow controller and differential pressure sensor
- Internal flow controller and differential pressure sensor for damper actuator control
- Internal flow controller and velocity sensor for damper actuator control
- Single-speed fan, 2-speed fan or variable-speed fan
- Chilled water cooling coil
- Heating/cooling coil
- Hot water heating coil
- Electric heating coil modulating, single stage or 2 stage
- Room temperature control by 2-pipe system with changeover
- Room temperature control by 4-pipe system
- Supply air temperature cascade control
- Room air quality control
- Rapid ventilation
- Green Leaf



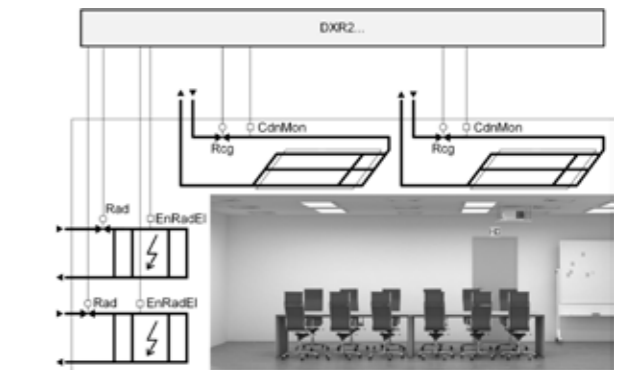
	Primary air temperature for air after-treatment (TPaAfttrt)	Supply air VAV (VavSu)	Extract air temperature (TEx)	Mixed air temperature (TMx)	Fan speed (FanSpd)	Cooling coil (Ccl)	Heating/cooling coil (HCcl)	Heating coil (Hcl)	Supply air temperature (TSu)
DI									
AI	1		1	1					1
Relais									
Triac		2			1-2	1-2	1, 2, 4, 8	1-2	
0..10 V		1			1*	1	1, 4	1**	
Actuator for VAV (KNX PL-Link)		1*							

\* Requires additional triac for enable signal  
\*\* Requires additional triac for electric heating enable signal

Radiant ceiling and radiator

Application can be configured from these functions:

- Chilled ceiling with chilled water
- Heated/chilled ceiling by 2-pipe system with changeover
- Heated/chilled ceiling by 4-pipe system with 6 way valves
- Heating ceiling with hot water
- Hot water radiator
- Electric radiator modulating or staged
- Downdraft compensation for radiators
- Condensation monitor
- Room temperature control
- Green Leaf









	Radiator (Rad)	Radiator overtemperature (RadOvrT)	Radiant ceiling (Rcg)	Condensation monitor (CdnMon)
DI		1		1
AI				
Relais				
Triac	1-4		1-4	
0..10 V	1-2*		1-2	

\* Requires additional triac or relais for electric heating enable signal






### Room sensor and operating

Application can be configured from these functions:

- Room operating units QMX3 on KNX PL-Link
- Sensors for onboard IOs or KNX PL-Link
- Presence/brightness sensors for onboard IOs or KNX PL-Link
- Push buttons for light and shading on KNX PL-Link
- Window contacts for onboard IOs
- Collision detectors for onboard IOs

						
	Temperature sensor	Air quality sensor	Humidity sensor	Brightness sensor	Presence detector	Collision detector
DI					2	2
AI	1	1	1			
HVAC sensor (KNX PL-Link)	1	1	1			
Presence and brightness sensor (KNX PL-Link)				1	1-4*	
Room unit (KNX PL-Link)	1	1	1			
Combined room unit (KNX PL-Link)	1					

\* Must be the same device

					
	Window contact	Room operator unit	Light control	Shading control	Combined control
DI	1				
Room unit (KNX PL-Link)		2*			
Combined room unit (KNX PL-Link)		1**	1	1	1
Push button (KNX-PL-Link)			1-2****	1-2****	1***

\* Must be the same device

\*\* Cannot be combined with additional push-button devices (KNX PL-Link)

\*\*\* Cannot be combined with additional light or blind control devices

\*\*\*\* Must be the same device, and every light group is switched by maximum one push button or dimmed by one pair of push buttons

### Room units

					
	P33	P43	P36	P34	P74
DI					
AI					
HVAC sensor (KNX PL-Link)					
Presence and brightness sensor (KNX PL-Link)					
Room unit (KNX PL-Link)					
Combined room unit (KNX PL-Link)					

#### Features

Mode selection	•	•	•	•	•
Fan switch	•	•	•	•	•
Set point adjuster	•	•	•	•	•
Temperature sensor	•	•	•	•	•
Humidity sensor		•			•
Air quality sensor					•




#### Mounting

Flush-mounted			•		
Directly on wall	•	•		•	•

#### Integration into DXR2...

Data points	3	3	3	3	5
KNX PL-Link bus load (mA)	7.5	7.5	12.5	7.5	15

### HVAC Sensor (KNX PL-Link)

													
	AQR2570... and AQR2532NNW	AQR2570... and AQR2533NNW	AQR2570... and AQR2535NNW	AQR2570... and AQR253NNWQ	AQR2576... and AQR2530NNW	AQR2576... and AQR2532NNW	AQR2576... and AQR2533NNW	AQR2576... and AQR2535NNW	AQR2576... and AQR253NNWQ	QMX3.P30	QMX3.P40	QMX3.P70	
DI													
AI													
HVAC sensor (KNX PL-Link)													
Presence and brightness sensor (KNX PL-Link)													
Room unit (KNX PL-Link)													
Combined room unit (KNX PL-Link)													
Push button (KNX-PL-Link)													

#### Features

LED indication air quality				•					•			•
Temperature sensor	•		•	•		•		•	•	•		•
Humidity sensor		•	•	•			•	•	•		•	•
Air quality sensor					•	•	•	•	•			•

#### Mounting

Flush-mounted	•	•	•	•	•	•	•	•	•			
Directly on wall										•	•	•

#### Integration into DXR2...

Data points	1	1	2	3	1	2	2	3	3	1	2	3
KNX PL-Link bus load (mA)	5	5	5	5	15	15	15	15	15	7.5	7.5	15



Presence and brightness sensor (KNX PL-Link)

		
	UP 258D11	UP 258D12

Features

Presence detector	•	•
Detection area at mounting height 2.5 m (m)	3	4.5
Brightness sensor	•	•

Integration into DXR2..

Data points	2	2
KNX PL-Link bus load (mA)	10	10

Actuator for VAV (KNX PL-Link)

		
	GDB181.1E/KN	GLB181.1E/KN

Features

Torque (Nm)	5	10
Air damper area (m²)	0.8	1.5
Operating range (Pa)	0...300	0...300
Operating voltage (V AC)	24	24

Integration into DXR2..

Data points	2	2
KNX PL-Link bus load (mA)	5	5

Lighting and shading



Application can be configured from these functions:

Every DXR2.. controls up to 4 lighting groups with:

- Manual switching control
- Manual dimming control with dimming actuators
- Automatic presence control
- Automatic brightness control with dimming actuators
- Constant light control with dimming actuators
- Multi-group constant light control
- LED support on push buttons
- Green Leaf – RoomOptiControl
- Burn-in and operating hours function

Every DXR2.. controls up to 2 blinds with:

- Manual control
- Automatic control with anti-glare function and energy-efficiency function (requires facade control from central functions)
- Green Leaf – RoomOptiControl
- Collision detection

		
	LgtDev 1...4	BlisDev 1...2
	Lighting	Shading
Number of outputs, Actuators for lighting (KNX PL-Link)	1-4	
Number of outputs, Actuators for shading (KNX PL-Link)		1-2

Push buttons (KNX PL-Link)

									
	UP 220/31	UP 221..	UP 222..	UP 223..	UP 285..	UP 286	UP 287..	P02	P37

Features

Display									•
Mode selection									•
Fan switch									•
Set point adjuster									•
Operation of light and shading	•	•	•	•	•	•	•	•	•
Temperature sensor								•	•
Bus transceiver modules UP117		•	•	•	•	•	•		
Bus transceiver modules in lighting actuator UP510/03 or UP525/03		•	•	•	•	•	•		
Bus transceiver modules in shading actuator UP520/03		•	•	•	•	•	•		
Light control (1x toggle)	1	1	1		1	1		1	1
Light control (2x toggle)	1	1	1		1	1		1	1
Light control (3x toggle)	1		1			1		1	1
Light control (4x toggle)	1		1			1		1	1
Light control (1x dimming or switching)	1	1	1	1	1	1	1	1	1
Light control (2x dimming or switching)	1		1	1		1	1	1	1
Light control (3x dimming or switching)	2			1			1	1	1
Light control (4x dimming or switching)	2						1	1	1
Shading control (1x shading)	1	1	1		1	1		1	1
Shading control (2x shading)	1	2	1		2	1		1	1
Combined control (1x toggle and 1x shading)	1		1	1		1	1	1	1
Combined control (2x toggle and 1x shading)	1		1	1		1	1	1	1
Combined control (3x toggle and 1x shading)				1			1	1	1
Combined control (4x toggle and 1x shading)				1			1	1	1
Combined control (1x toggle and 2x shading)							1	1	1
Combined control (2x toggle and 2x shading)				1			1	1	1
Combined control (3x toggle and 2x shading)							1	1	1
Combined control (4x toggle and 2x shading)							1	1	1
Combined control (1x dimming or switching and 1x shading)	1		1	1		1	1	1	1
Combined control (2x dimming or switching and 1x shading)				1			1	1	1
Combined control (1x dimming or switching and 2x shading)				1			1	1	1
Combined control (2x dimming or switching and 2x shading)							1	1	1
Status LED		•	•	•	•	•	•		

Integration into DXR2...

Data points	4	2	4	6	2	4	8	9	11
KNX PL-Link bus load (mA)	10	10	10	10	10	10	10	7.5	10

Actuators for lighting (KNX PL-Link)

	UP 510/03	UP 525/03	UP 510/13	UP 525/13	RS 510/23	RS 525/23	RL 512/23

Applications

Switching	•	•	•	•	•	•	•
Dimming (R, L, C)		•		•		•	

Outputs

Number of outputs	2	1	2	1	2	1	1
Switching current (A)	10*		10*		10*		16**
Rated power (VA)		10...250		10...250		10...250	

Mounting

Flush-mounted (under push buttons)	•	•					
Flush-mounted			•	•			
Room control box (AP 118/01)					•	•	•
Room control box (AP 641/01)					•	•	•

Integration into DXR2..

Data points	2	1	2	1	2	1	1
KNX PL-Link bus load (mA)	10	10	10	10	10	10	10

\* For resistive loads  
\*\* For resistive loads, AX loads (200 µF) and direct current at 24 V DC

Actuators for shading (KNX PL-Link)

	UP 520/03	UP 520/13	RS 520/23	RL 521/23

Applications

Blinds with slats	•	•	•	•
Shutters	•	•	•	•

Outputs

Number of outputs	1	1	1	2
Switching current (A)	6*	6*	6*	6*

Mounting

Flush-mounted (under push buttons)	•			
Flush-mounted		•		
Room control box (AP 118/01)			•	•
Room control box (AP 641/01)			•	•

Integration into DXR2..

Data points	2	2	2	4
KNX PL-Link bus load (mA)	10	10	10	10

\* For resistive loads

Central functions

Application can be configured from these functions:

- Central operation group including room operating mode and start optimization, set points and seasonal compensation, light, shading and forced emergency commands
- Demand-controlled hot water supply system, includes temperature set point
- Demand-controlled chilled water supply system, includes temperature set point, shift to avoid condensation by collecting condensation monitors, free cooling calculation
- Demand-controlled 2-pipe heating/cooling water supply system, includes temperature set point, changeover, free cooling calculation
- Demand-controlled air handling unit (supply and extract air), includes temperature set point, maximum humidity set point, pressure set point, maintain minimal central air volume, flow deviation calculation, summed air volume set points
- Variable air volume (VAV) emergency group, includes shutdown, extract, pressurization or purge
- Central weather station information, includes outside temperature, outside brightness, outside solar radiation, outside wind speed, outside precipitation
- Central facade functions for shading, includes brightness calculation, central operation group for facade, glare protection
- Shading central protection groups for wind protection, precipitation protection, frost protection, staged distribution for central blind commands in large buildings

	Central weather station controller					Central facade controller		
	Outside temperature	Relative outside humidity	Atmospheric pressure	Wind speed	Precipitation detector	Brightness with 1 sensor	Brightness with 3 sensor (E,S,W) (E,N,W)	Solar radiation
DI					1			
AI	1	1	1	1		1	1-3	1
Push button (KNX PL-Link)								
DXR2.. Type	DXR2..18..					DXR2..18..		

	Central HVAC supply controller			Central emergency controller				
	Operating mode groups	Light manual central operation	Shading manual central operation	Forced emergency position for shading	Forced emergency command for lighting	Forced emergency shutdown air supply	Forced smoke extraction (exhaust air)	Forced smoke pressurization (supply air)
DI	1-4			1	1	1-2	1-2	1-2
AI								
Push button (KNX PL-Link)		4*	4*					
DXR2.. Type	DXR2..18..			DXR2..18..				

\* Either 1 device UP220 for 2 outputs or 2 devices UP221 / UP285 for 1 output each

2 **Preloaded applications**

3 **Pressurized rooms and fume hoods**

Designo room pressurization and fume hood control is a range of dedicated, reliable air volume flow controllers and supplementary components for secure, precise and fast measurement, control and monitoring of air volume flows and room pressures in highly specialized working spaces. It is part of the Designo building automation and control system.

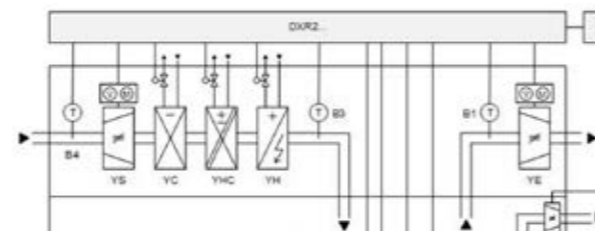
As a result, the overall system maximizes security, efficiency and cost-effectiveness.

4 **Locations:**

- Highly specialized research and manufacturing spaces requiring dedicated high-speed control solutions for room pressurization & fume hood control
- Rooms in:
  - Research facilities
  - Pharma/Biotech
  - Healthcare
  - Hi-tech manufacturing
  - Vivariums
  - Higher education customers, etc.

**Applications:**

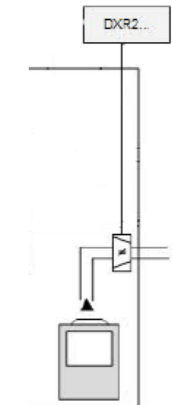
- Room ventilation and general extraction, measuring, controlling and monitoring of air volume flows
- Room balancing and room pressurization control
- Laboratory fume hood air volume flow control and monitoring
- Room air conditioning together with lighting & shading control
- Room and fume hood emergency functions
- Demand-controlled ventilation support for energy-saving opportunities
- Pressurized rooms and fume hoods
  - Application works self-contained or distributed across multiple automation stations.
  - **1 room segment control (30 data points)**  
operates one supply and one extract terminal or one fume hood, as well as coordinates operation among multiple room segments.
  - **2 room segment control in single automation station (60 data points)**  
operates two supply and two extract terminals or one fume hood, as well as coordinates operation among multiple room segments.
- Variable (VAV) and constant volume flow
  - with 2-stage electric heating
  - with hot water
  - with hot water and flow temperature control
  - with hot water and thermal power control
- Separate temperature and volume set points for all 4 operating modes.
- Supply and extract air flow tracking
- Room pressure cascade control
- Accepts external demand control ventilation signal
- Chilled water and hot water valve
- Chilled beam active or passive cooling (2-pipe) or cooling/heating (2-pipe) or cooling/heating (4-pipe)
- Radiant ceiling: cooling, cooling and heating (2-pipe) or cooling/heating (4-pipe)
- Radiator: hot water, steam (2- or 4-pipe) or electric stepped controlled
- Light: up to 4 separate zones
- Blinds: 1 or 2 motors










	Primary air temperature for air after-treatment (TPaAfttrt)	Supply air VAV differential pressure (VavSuDiffP)	Cooling coil (CCl)	Heating/cooling coil (HCcl)	Heating coil (HCl)	Supply air temperature (TSu)	Extract air temperature (TEx)	Extract air VAV differential pressure (VavExDiffP)
BI (Ohm)	1					1	1	
DI								
AI (0...10 V)	1					1	1	
AI (0...20 mA)		1						1
Triac			1	1	1			
AO (0...10 V)		1	1	1	1			1
SCOM		1	1	1	1			1

**Preloaded applications**








- Fume hood exhaust damper control
- Sensors (face velocity, duct exhaust flow, sash position)
- Operator display panel
- Push buttons, switches for fume hood lighting
- 1 light



							
	Tempera- ture sensor	Air quality sensor	Humidity sensor	Brightness sensor	Presence detector	Collision detector	Pressure sensor
DI					2	2	
AI	1	1	1				
HVAC sensor (KNX PL-Link)	1	1	1				2
Presence and brightness sensor (KNX PL-Link)				1	1-4*		
Room unit (KNX-PL-Link)	1	1	1				
Combined room unit (KNX PL-Link)	1						
SCOM							2**

\* Must be the same device  
\*\* Per segment

	QMX3.P88-1WSC	QMX3.P87-1WSC
<b>Features</b>		
Alarm indication	•	•
Warning indication	•	•
Safe indication	•	•
Buzzer off	•	•
Set points adjustment	•	•
Information button	•	
Manual mode	•	
Green Leaf	•	•
Fume hood light	•	•
Display	•	•
Emergency max		•

ASN	Description	Product picture
DXR2.E17C-103A	BACnet/IP, 24 VAC, 17 I/O room pressurization and fume hood automation station, 30 data points	
DXR2.E17CX-103A	BACnet/IP, 24 VAC, 17 I/O room pressurization and fume hood automation station, 60 data points	
QMX3.P87-1WSC	Operating display panel – wall-mounted (KNX)	
QMX3.P88-1WSC	Operating display panel – thin- & flush-mounted (KNX)	
DXA.S04P1	Air flow pressure sensor (SCOM)	
DXA.S04P1-B	Air flow pressure sensor with IP54 box (SCOM)	
DXA.B130	Sash sensors 50"	
DXA.B200	Sash sensors 80"	



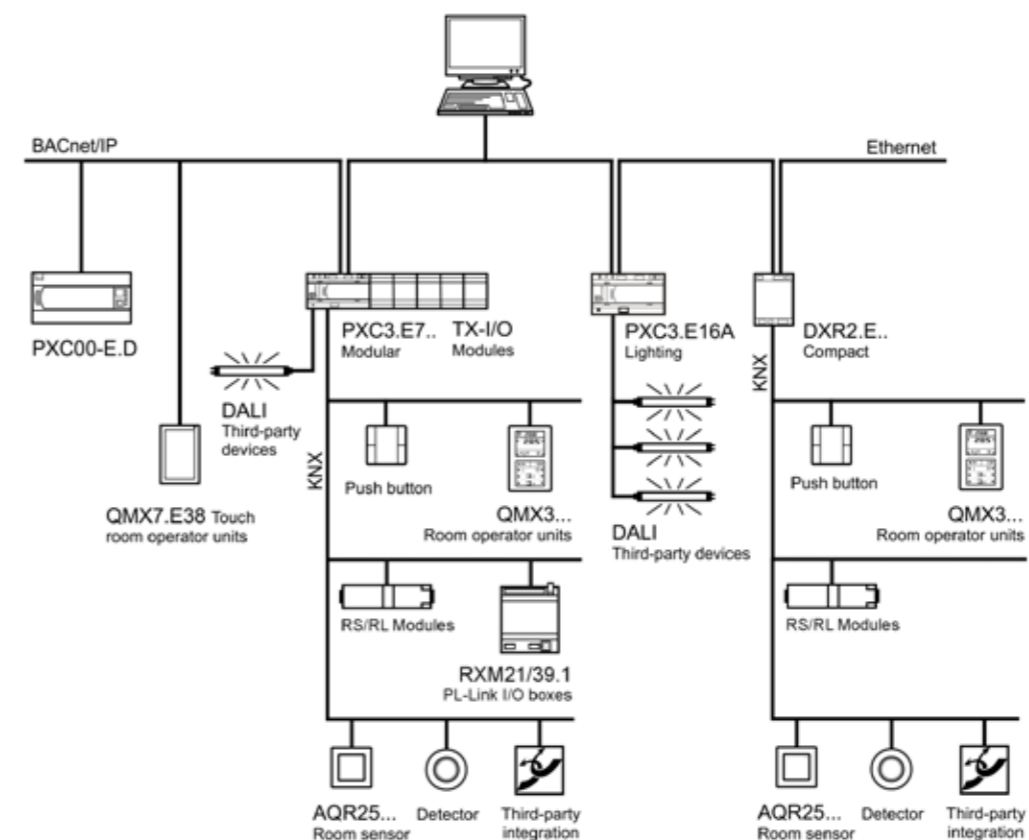
### Programmable room automation station with BACnet

DXR2.. and PXC3.. room automation stations are programmable, based on proven application blocks. Solutions thus can be tailored to specific needs and allow you to achieve maximum efficiency and comfort.





A comprehensive block library for room automation is provided as part of the scope of delivery. The library contains predefined application functions for room climate,

lighting, shading and superimposed room functions. They can be combined to form individual solutions together with operating and display functions. The individual application functions can be adapted to customer needs and are fully programmable. The application functions do not depend on the selected field devices.

### Topology for programmable room automation stations



### Modular room automation station with BACnet

				
	PXC3.E72	PXC3.E72A	PXC3.E75	PXC3.E75A
Max. numbers of rooms/room segments	4/8	4/8	8/16	8/16
System communication	BACnet/IP	BACnet/IP	BACnet/IP	BACnet/IP
<b>System functions (BACnet)</b>				
BACnet profiles	B-ASC	B-ASC	B-ASC	B-ASC
Programming	•	•	•	•
<b>Peripheral bus</b>				
Bus for I/O module	•	•	•	•
KNX PL-Link/KNX S-Mode	•	•	•	•
DALI		•		•
<b>Maximum configuration</b>				
Inputs/outputs for TX I/O modules	72	72	200	200
Devices on KNX PL-Link	64	64	64	64
DALI ballasts		64		64
Total data points	140	140	280	280
Integrated power supply for KNX (mA)	160	160	160	160

Overview I/O module TXM1..



Product	TXM1.8D	TXM1.16D	TXM1.8U	TXM1.6R	TXM1.6RL	TXM1.8RB	TXM1.8T
Number of inputs/outputs	8	16	8	6	6	8	8

Functionality

3-color I/O status LED	•						
Green I/O status LED		•	•	•	•	•	•

Digital inputs (DI)

Message signal (open/closer)	•	•	•				
Message impulse	•	•	•				
Counter 25 Hz (bouncer free)		•*	•				

Analog inputs (AI)

LG-Ni1000			•				
Pt1000/0...2500 Ohm			•				
T1			•				
DC 0...10 V			•				

Analog outputs (AO)

DC 0...10 V			•				
-------------	--	--	---	--	--	--	--

Digital outputs (DO)

Continuous contact on/off				•			•
Continuous contact 3-stage				•			
3-point output (stroke model)				•			•
Impulse on/off				•			
Impulse				•			
Impulse 3-stage				•			
Bistable contact					•		
Contact for control of blinds						•	
Modulating (PWM)							•

All I/O points of a module are configurable on any implemented functionality. The module TXM1.OPEN enables the integration of Modbus, M-bus, etc. on the PXC50/100/200..D.

\* On the TXM1.16D the counters are implemented only on the inputs 1 to 8

Compact room automation station with BACnet



Communication

BACnet/IP	DXR2. E09-101A	DXR2. E09T-101A	DXR2. E10-101A		DXR2. E12P-102A	DXR2. E18-1..A	DXR2. E10PL-102B	DXR2. E10PLX-102B	DXR2. E17C-103A	DXR2. E17CX-103A
BACnet MS/TP	DXR2. M09-101A	DXR2. M09T-101A	DXR2. M10-101A	DXR2. M11-101A	DXR2. M12P-102A	DXR2. M18-1..A		DXR2. M10PLX-102B		

System functions (BACnet)

BACnet profiles	B-ASC	B-ASC	B-ASC	B-ASC	B-ASC	B-ASC	B-ASC	B-ASC	B-ASC	B-ASC
Programming	•	•	•	•	•	•	•	•	•	•

Housing

DIN				•	•	•			•	•
Flat	•	•	•				•*	•*		

Operating voltage

230 V	•	•	•							
24 V				•	•	•	•	•	•	•

Inputs and outputs onboard

Digital inputs	1	1	1	1	1	2	1	1	2	2
Universal inputs	2	2	2	2	2	4	2	2	4	4
Relay outputs	3	1	3							
Triac outputs		4	4	6	6	8	4	4	4	4
Analog outputs (DC 0...10 V)	3	1		2	2	4	1	1	4	4
Pressure sensor					1					








Maximum configuration

Total data points	30	30	30	30	30	60	30	60	30	60
Integrated power supply for KNX (mA)	50	50	50	50	50	50	50	50	50	50

\* Via damper

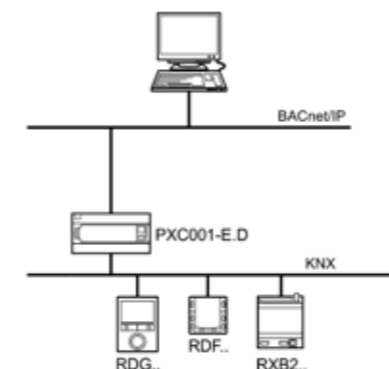
### Room units and field devices

All room units and other KNX PL-Link devices shown in the section "Configurable room automation station" can also be used with a programmable room automation station. Additionally, the following devices can be used.




	Product No.	SSN	Description
	QMX7.E38	QMX7.E38	Touch room operator unit 4.3 inch for use with PXC3.E7.. and DXR2..E.. series room automation station
	RXM21.1	S55376-C104	I/O block with KNX PL-Link for use with a PXC3.E7.. series room automation station
	RXM39.1	S55376-C105	I/O block with KNX PL-Link for use with a PXC3.E7.. series room automation station
	RL 513	5WG1 513-4DB23	Binary output (relay), 3 x AC 230 V, 6 A
	RL 260/23	5WG1 260-4AB23	4-fold binary input, AC/DC12...230V
	UP 255D21	5WG1 255-2DB21	Brightness sensor
	PXC3.E16A-100A	S55376-C118	BACnet/IP - DALI gateway

### Room Automation with KNX

#### Topology



#### Thermostat with KNX

									
Type	RDG100KN	RDG160KN	RDG400KN	RDF800KN	RDF600KN	RDF301	RDF301.50	RDF301.50H	RDU341
<b>Applications</b>									
Fan coil 2-/4-pipe	•	•		•	•	•	•	•	
Fan coil with electrical heater	•	•		•	•	•	•	•	
Fan coil with radiator	•	•							
Heating / cooling 2-/4-pipe	•	•		•					
Heat pump system		•		•	•	•	•		
Variable air volume (VAV)			•						•
VAV with electrical heater			•						•
VAV with radiator / heat-cool coil			•						
<b>Design</b>									
Wall-mounted	•	•	•						
Semi-flush-mounted				•	•	•	•	•	•
for VDE/CEE box				•	•	•	•	•	•
for British Standard box				•	•	•	•	•	•
Touch screen display				•					
Buttons for light and blind control							•		
Button for hotel application								•	
<b>Power supply</b>									
Terminal voltage AC 230 V	•			•	•	•	•	•	
Terminal voltage AC 24 V		•	•						•
<b>Inputs</b>									
Multifunctional inputs digital/analog	3	3	3	2	2	2	2	2	2
<b>Outputs</b>									
ON/OFF (PWM) triac (H/C)	•		•						
ON/OFF relay (H/C)		•		•	•	•	•	•	•
Analog outputs DC 0..10V (H/C)		•	•						•
3-stage relay (fan)	•	•		•	•	•	•	•	
Analog DC 0..10 V (fan)		•							

### Compact room controller RXB with KNX

#### RXB applications

#### RXB hardware

The product range comprises compact controllers and corresponding room units for comfortable control. The compact room controllers are optimized to the respective application with regard to input/output configuration. HVAC functions are operated via standard room units.

Communication is based on KNX S-mode. The fan coil room controllers also communicate in KNX LTE mode. KNX LTE mode is used to communicate with control equipment from the Synco™ 700 product range.

#### RXB software

Each RXB unit comes with preloaded application software featuring one or several applications (see next page). The ETS software helps engineer and commission a network with RXB units. In addition, the Synco™ tool

and room unit QAX34.3 by Siemens can be used for commissioning and parameterization.




#### Connection to the Desigo building automation and control system

Desigo PX KNX allow flexibly connecting RXB controllers to the Desigo building automation and control system, and hence acts as a gateway to BACnet. The connection provides access to other functions such as time schedules and central control of set points. RXB thus fits into the overall expandable modular system, and ensures long-term cost-efficiency.

#### Integration into Synco™

The Synco™ central control unit RMB795 is used for controlling and monitoring the RXB controllers in a Synco™ system.

### HVAC

Chilled ceiling radiator-type systems		KNX (S- and LTE-mode)	
Fan coil units			
	<ul style="list-style-type: none"> <li>• QAX30</li> <li>• QAX31</li> <li>• QAX32</li> <li>• QAX33</li> <li>• QAX34</li> <li>• QAX39</li> <li>• QAX84</li> <li>• AQR2531..</li> </ul>	<ul style="list-style-type: none"> <li>• RXB21.1</li> <li>• RXB22.1</li> <li>• RXB24.1</li> <li>• RXB39.1</li> </ul>	
	Room units	Controllers	

### Fields of application

The scope of RXB is defined by the preprogrammed application software. The following pages provide an overview of the options and the corresponding devices, divided into different areas of application. The devices are supplied preprogrammed with the applications. The required application can be selected by means of the ETS, Synco™ tool or the Handy tool QAX34.3.

Due to the fact that the applications are predefined, engineering simply involves the definition of a small number of parameters, e.g.:

- PWM or 3-position control of the valves and actuators
- Temperature set points
- Manual or automatic fan control
- Room operating units QAX3.., QAX84.1 (PPS2 interface)

Fan coil systems		
Application	Description	Devices
FNC02	2-pipe system with changeover	RXB21.1/FC-10
FNC03	2-pipe system with changeover and electrical reheater	RXB22.1/FC-12
FNC04	4-pipe system	RXB21.1/FC-10
FNC05	4-pipe system with electrical reheater	RXB22.1/FC-12
FNC08	4-pipe system with supply air temperature limitation	RXB21.1/FC-10
FNC10	2-pipe system with changeover and outside air damper	RXB21.1/FC-11
FNC12	4-pipe system with outside damper	RXB21.1/FC-11
FNC18	2-pipe system with changeover and radiator	RXB21.1/FC-11
FNC20	4-pipe system with air-side control	RXB21.1/FC-10
FNC02/03/04/08	2-pipe/4-pipe system with EC fan-coil support	RXB39.1/FC13

### Common functions

- Window contact, occupancy detector, 4 operating modes
- Manual fan control with room unit
- Automatic fan control (RXB21.1/RXB22.1 3 speed; RXB39.1 continuous fan speed 0..10V)
- Options for 2-pipe systems: heating only, cooling only or changeover, via KNX bus

Heated/chilled ceilings and radiators		
Application	Description	Devices
CLC01	Chilled ceiling with dewpoint monitoring	RXB24.1/CC-02
CLC02	Chilled ceiling with dewpoint monitoring and radiator	RXB24.1/CC-02
RAD01	Radiator with downdraft compensation	RXB24.1/CC-02







### Common functions

- Window contact, occupancy detector, 4 operating modes



1 Room automation  
 Overview and selection tools

2 Room units / PPS2

							
QAX..	30.1	31.1	32.1	33.1	34.3	39.1	84.1

3 Features

Display					•		•
Mode selection			•	•	•		•
Fan switch				•	•		•
Set point adjuster		•	•	•	•	•	•
Operation of lights/blinds							
Temperature sensor	•	•	•	•	•		•

4 Mounting

Flush-mounted						•	•
Directly on wall	•	•	•	•	•		
Control panel (door)						•	

Communication

PPS2	•	•	•	•	•	•	•
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Product range

Desigo RX	RXB..	•	•	•	•	•	•
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