



Synco – for enhanced comfort and energy efficiency

Buildings place different requirements on HVAC control systems depending on building size, life cycle, operating times, and comfort needs.

Synco™ can be matched to all these requirements: The standard controllers offer maximum energy efficiency plus reliability and represent a product range of modular design. This means that Synco enables you to plan a versatile, cost- and energy-efficient HVAC control system and to straightforwardly install and commission it – with no need for programming.



Synco 700 – HVAC control in a multipurpose building



Synco RXB, RXL and RDG, RDF, RDU – individual room control in an office

The right product for every type of application

Control system for small to medium-size multipurpose buildings – communicating HVAC control for the entire building

Everything under one roof: apartments and offices, training rooms and shops

<p>Synco 700</p> <p>Versatile HVAC controller range of modular design</p>	<p>Synco RXB/RXL room controllers Synco RDG/RDF/RDU room thermostats</p> <p>Enhanced comfort thanks to individual room climate</p>	<p>Synco operating</p> <p>Efficient operation of plant including straightforward remote control</p>
<p>Control of:</p> <ul style="list-style-type: none"> – Heating – Ventilation – Air conditioning – Refrigeration – Distribution of heating and cooling energy – Primary energy plant 	<p>Individual room control with:</p> <ul style="list-style-type: none"> – Fan coils – Radiators – Chilled ceiling – Variable air volume systems – Heat pumps 	<p>Monitoring and remote control of plant:</p> <ul style="list-style-type: none"> – Alarm reporting via SMS or e-mail – Remote control of plant, e.g. via Web server

Open **KNX communication** for optimum interplay between controllers with standardized data exchange

Stand-alone controllers for small buildings and basic applications

<p>Synco 100</p> <p>Temperature controller, sensor, and control panel combined in one unit</p>	<p>Synco 200</p> <p>HVAC controller for all standard applications</p>
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Synco 100 and Synco 200 – HVAC control for small buildings

Synco – everything for energy-efficient HVAC control

Energy savings thanks to intelligent building automation

Intelligent and integrated building and room automation can produce considerable energy savings without sacrificing comfort.

The European Norm EN 15232 (“Energy performance of buildings – Impact of building automation”) subdivides building automation into four energy efficiency classes from A to D. Energy efficiency class A, for example, states that energy savings in office spaces can reach 30% in relation to the standard. Synco offers important prerequisites for ensuring compliance with energy efficiency class A.

Synco controllers exchange information on energy usage via KNX communication, thus making certain that the only plant components put into operation are those required for ensuring the desired comfort level: heating boilers, refrigeration machines, pumps, and so on. The proven and programmed energy saving functions provided by all Synco controllers support energy-optimum operation of plant – both summer and winter.

Users and plant operators can greatly influence a building’s energy consumption by shutting down plant during hours of non-occupancy, by setting adequate room temperatures, and by matching the time program to the actual occupancy times. The straightforward operation of Synco controllers and room units supports the operator when making settings for energy-efficient operation of the entire HVAC plant.

Energy efficiency based on eu.bac certification

Controls bearing the eu.bac certification label, such as Synco RXB and RXL, stand for tested quality, control accuracy, and energy efficiency in compliance with the

relevant European Norms and international test standards. The respective tests are conducted by independent, accredited test bodies on behalf of the European Building Automation and Controls Association (eu.bac).

A high level of control accuracy optimizes the room climate and does away with unnecessary readjustments of the room temperature setpoint. A setpoint reduction of only 1 °C generates energy savings of up to 6%. In the case of a CA value (control accuracy) of 0.1 to 0.2 K, eu.bac-certified controllers ensure energy savings of up to 14% in comparison with non-certified controllers, depending on the climatic area in which they are used.

eu.bac certification stands for tested quality, control accuracy, and energy efficiency



BACS Energy Classes – EN 15232

High energy performance BACS and TBM	A
Advanced BACS and TBM	B
Standard BACS	C
Non-energy-efficient BACS	D

BACS Building Automation and Control System
TBM Technical Building Management System

Simple, versatile, and reliable

■ Comprehensive product range

From basic temperature control to complete HVAC plant control – from heat or refrigeration generation control through distribution to individual room control: Synco offers a comprehensive range of standard controllers for all types of applications. The stand-alone controllers are suited for basic applications. In larger systems, Synco controllers communicate via the KNX standard bus.

■ Versatile and expandable for future use

Synco supports the entire life cycle of a building. Whether you change the usage of a building, in case of a staged construction or when you expand or modernize a plant – Synco is the ideal solution for you. Thanks to their modular concept and backward-compatible communication, the controllers can be expanded and adapted at any time. This means that the functionality of HVAC plants can grow depending on new requirements, and investments can be made in stages.

■ Straightforward operation and quick commissioning

Synco excels in high levels of user and service friendliness, owing to straightforward and efficient operation. Proven and preprogrammed applications and energy saving functions are integrated, enabling you to save time and costs in terms of planning, engineering, and commissioning. Furthermore, smooth and energy-efficient operation is ensured.

■ Competent support for your work

With Siemens, you have a strong and competent partner at your side. Backed by our in-depth know-how, we offer you extensive support for Synco – for example different training modules, e-learnings as well as comprehensive technical documentation and application descriptions.

■ Decades of experience and high quality standards

HVAC plant control is one of the challenges we have been facing for more than 70 years. The incremental development of our products benefits from our in-depth application know-how resulting from decades of practical experience and extensive research work.

We attach great importance to quality management and systematically subject our products to stringent tests. Controllers and their functions are thoroughly tested in our own HVAC laboratory. This ensures the highest levels of product quality and puts us in a position to work with you as your competent partner.

Highlights

- Energy savings thanks to intelligent building automation
- Energy efficiency ensured by eu.bac-certified controllers
- Comprehensive product range for any requirements
- Versatility and expandability for future use
- Straightforward operation and quick commissioning
- Superior support through a reliable partner
- Highest quality and reliability backed by decades of experience and high standards





Communicating HVAC control for the entire building

Small or medium-size multipurpose buildings often accommodate different types of premises, such as shops, offices, and apartments. Synco ensures convenient and energy-efficient control of HVAC plant, irrespective of the type of application.

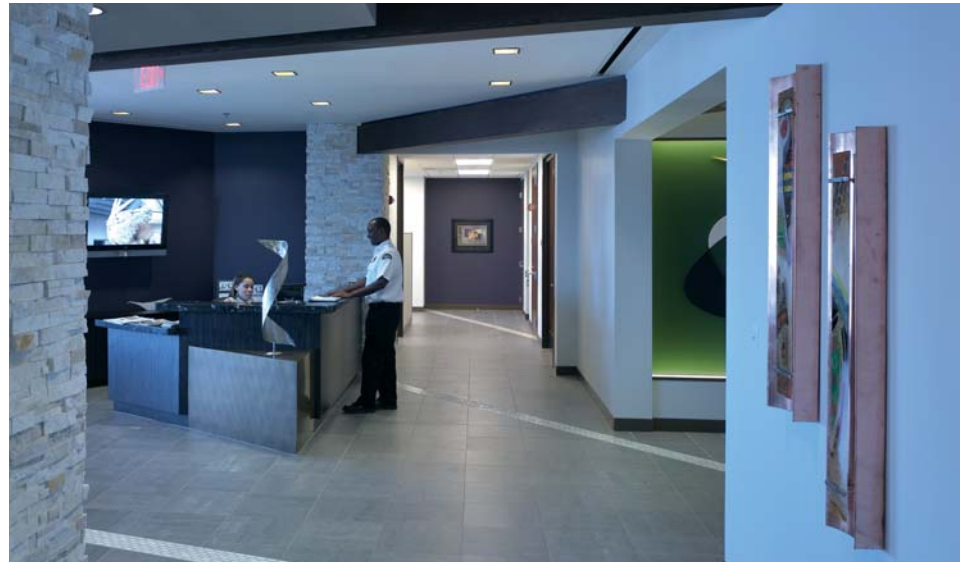
■ Synco 700 – versatile HVAC controller range of modular design

Being the heart of the system, Synco 700 manages primary energy plant, controls and monitors HVAC plant, and communicates via KNX. Installation and commissioning work can be performed quickly and efficiently: The extension modules simply click onto the controllers. Thanks to proven standard applications integrated in the controllers, there is no need for programming. The documentation gives

you an overview of all integrated applications. The only thing you have to do is to select the respective application number on the operator unit. Also, customized configurations can be made very straightforwardly.

Thanks to their compact DIN design and the use of state-of-the-art cage terminals, Synco 700 controllers save you space and costs when mounted in control panels.





■ Synco room controllers and room thermostats

Synco RXB, RXL controllers and RDG, RDF, RDU thermostats ensure the correct room temperature at the right time in the most simple way: in connection with Synco 700 for plant control and matching room units. KNX-based time programs are used to ensure optimum control of primary energy plant in accordance with the different occupancy schedules.

This way, Synco RXB and RXL ensure the right room climate as the basis for maximum efficiency from the workplace to the conference room – reliably and economically: Synco RXB and RXL products are eu.bac-certified for high control accuracy and energy efficiency.

The RDG, RDF, RDU room thermostats are suited for a broad range of applications and can be easily fitted in any kind of room. They stand out through their modern design as well as their innovative features. Thanks to their large display and intuitive operating concept, the thermostats also deliver a high level of user friendliness.

Highlights

- Efficient installation thanks to flexibly applicable and modular HVAC controller range
- Enhanced comfort owing to individual room climate
- More comfort in living spaces
- Efficient operation of plant due to remote control from any location
- Quick commissioning with practical support functions
- Simple communication establishment through pragmatic concept
- Open data exchange irrespective of supplier thanks to KNX

One system for all types of applications

■ Synco operating – efficient operation of plant with straightforward remote control

Thanks to Synco's Web server, plant operation and monitoring can be effected from any PC at any time and from any location. An alarm system delivers fault status or maintenance messages in due time, also via SMS or e-mail, if required.

■ Synco tool – support functions for quick commissioning

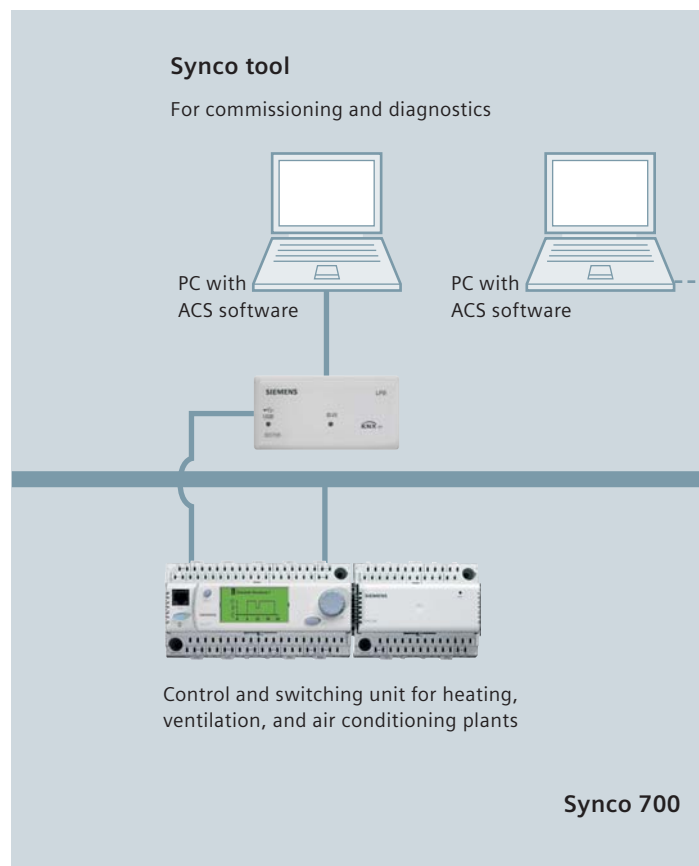
To facilitate commissioning, the Synco tool offers you a host of help functions and choices: Diagnostics including trending, for example, straightforward fault tracing thanks to access to all data points of all controllers, saving all settings on the PC, or printing commissioning reports.

■ Simple concept for opening communication

With Synco, opening and starting communication is child's play: Simply interconnect the units, activate the bus power supply on the controller, and set the device address. All relevant settings can be made directly via local operation. This way, the units exchange information over the bus – information about energy demand, for example, room temperatures or time programs. In addition, the units ensure automatic coordination within the system.

■ Open data exchange via KNX standard bus, irrespective of supplier

The KNX standard bus facilitates interconnections of HVAC, lighting and blind control, for instance, irrespective of the supplier – for simultaneous control of the ventilation system and of lighting via presence detectors, for example.



■ Universal controllers

- RMU710** modular universal controller, 1 control loop
- RMU720** modular universal controller, 2 control loops
- RMU730** modular universal controller, 3 control loops
- RMS705** switching and monitoring device

■ Universal extension modules (for all types of controllers)

- RMZ785** universal module (8 UI)
- RMZ787** universal module (4 UI, 4 DO)
- RMZ788** universal module (4 UI, 2 AO, 2 DO)

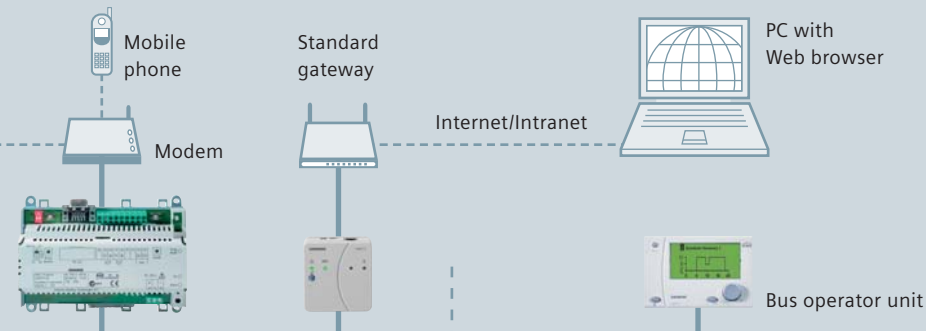
■ Operator units (for all types of controllers)

- RMZ790** plug-in type operator unit
- RMZ791** detached operator unit (3 m)
- RMZ792** bus operator unit

UI: Universal Input
DO: Digital Output
AO: Analog Output

Synco operating

Efficient operation of plant including alarm reporting



The world's only open standard for home and building control – ISO/IEC 14543-3



Control and switching unit for heating, ventilation, and air conditioning plants



Central control unit and room controller for individual room climate



Synco RXB/RXL room controllers, Synco RDG/RDF/RDU room thermostats

■ Heating controllers

- RMH760** modular heating controller
- RMK770** boiler sequence controller

■ Extension modules for heating controllers

- RMZ782** heating circuit module
- RMZ783** DHW module
- RMZ787** universal module (4 UI, 4 DO)
- RMZ789** universal module (6 UI, 2 AO, 4 DO)

■ Room unit

- QAW740** room unit

■ Synco operating

- OZW771** central communication unit
- OZW772** Web server (Ethernet)
- OZW775** Web server (Ethernet, analog or GSM modem)
- ACS7...** plant operating software

■ Synco tool

- OCI700.1** service and operating tool

■ Central control unit

- RMB795**
- Central control unit for room controllers

■ Room controllers

- RXB21.1, RXL21.1**
- Fan coil units, 2-pipe and 4-pipe system

RXB22.1, RXL22.1

- Fan coil units, 2-pipe and 4-pipe system with electric reheater

RXB24.1, RXL24.1

- Chilled ceiling or radiator

■ Room thermostats

RDG100KN

- Fan coil units, 2-pipe and 4-pipe systems
- Universal system, chilled/heated ceiling and radiator

RDG400KN

- Variable air volume system

RDF301, RDF301.50

- Fan coil units, 2-pipe and 4-pipe systems
- Heat pump systems
- Semi flush mount

RDU341

- Variable air volume system
- Semi flush mount



The stand-alone controllers – Synco 100 and Synco 200

Smaller non-residential buildings often demand simple autonomous systems. Here, the main requirements are affordably priced installation, straightforward commissioning and operation, rather than future extensions.

■ Synco 100 – temperature controller, sensor, and control panel combined in one unit

Synco 100 affords optimum and favorably priced temperature control of smaller premises and plants. Installation is extremely simple. The controller with its integrated temperature sensor is fitted directly on the plant and operates as an immersion, room or air duct temperature controller. There is no need to use a control panel.

Commissioning and operation are very easy. You feed power to the controller, connect the actuators, and the plant is ready to operate. So the effort required for installation and material is extremely small – and there is no need for special training courses.

■ Synco 100 controllers

- RLE132 immersion temperature controller, 3-position signal
- RLE162 immersion temperature controller, DC 0...10 V signal
- RLE127 differential temperature controller, 2-position signal
- RLA162 room temperature controller
- RLA162.1 room temperature controller
- RLM162 air duct temperature controller





■ **Synco 200 – universal HVAC controllers**

Synco 200 controls temperature, humidity, pressure, and other HVAC-specific measuring variables. The main areas of application include basic ventilation, air conditioning, and chilled-water plants.

You benefit from more than 130 proven, preprogrammed, and completely documented standard applications. All of them are selected locally with the help of a number on the controller’s display and then activated. The controller’s compact design and state-of-the-art cage terminals enable the units to be mounted in control panels at low cost and where space is limited. This makes installation extremely efficient and affordably priced.

■ **Synco 200 controllers**

- RLU202 universal controller (2 DO)
- RLU220 universal controller (2 AO)
- RLU222 universal controller (2 AO, 2 DO)
- RLU232 universal controller (3 AO, 2 DO)
- RLU236 universal controller (3 AO, 6 DO)

DO: Digital Output
AO: Analog Output

Highlights

- Affordably priced and reliable controllers for basic HVAC applications

Synco 100

- Simple, cost-efficient installation due to compact design and direct mounting (no control panel required)
- Quick commissioning thanks to minimum wiring effort
- Time savings, as no special training is required

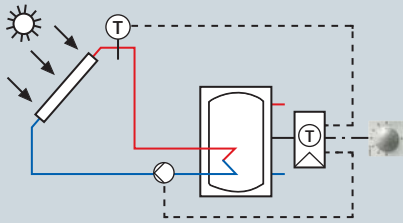
Synco 200

- Cost-saving installation technique
- Convenient commissioning with more than 130 preprogrammed and documented applications



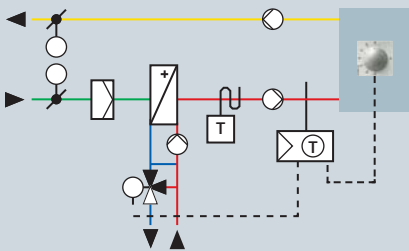
Synco – application examples

Solar DHW heating with Synco 100



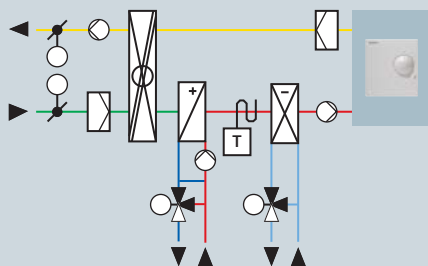
- **Differential temperature controller RLE127**
 - DHW storage tank with solar collector
 - Remote setpoint readjuster
 - Direct mounting on pipework, no control panel required

Ventilation plant with supply air temperature control and Synco 100



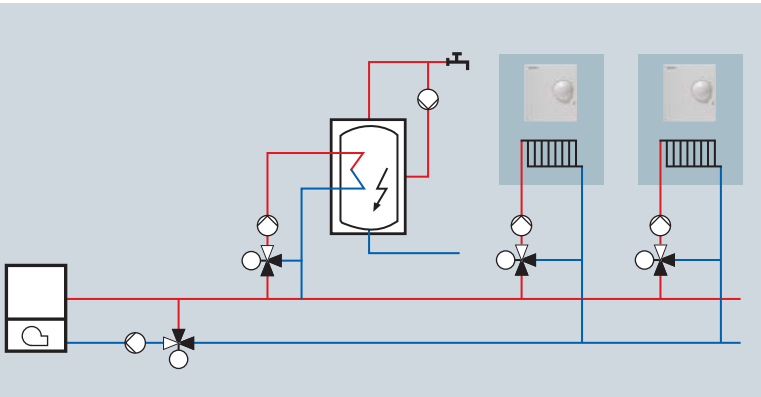
- **Air duct temperature controller RLM162**
 - Supply air temperature control, PI- or P-mode
 - Remote setpoint readjuster
 - Temperature setpoint shifted by outside temperature
 - Direct mounting on air duct, no control panel required

Ventilation plant with room-supply air cascade control and Synco 200



- **Universal HVAC controller RLU232**
 - Control, cascade with supply air temperature min/max limitation
 - Remote setpoint readjuster
 - Energy recovery with anti-icing protection
 - 2-phase frost protection
 - Air heating coil pump, demand-dependent release
 - Summer/winter compensation
 - Operating function integrated in controller

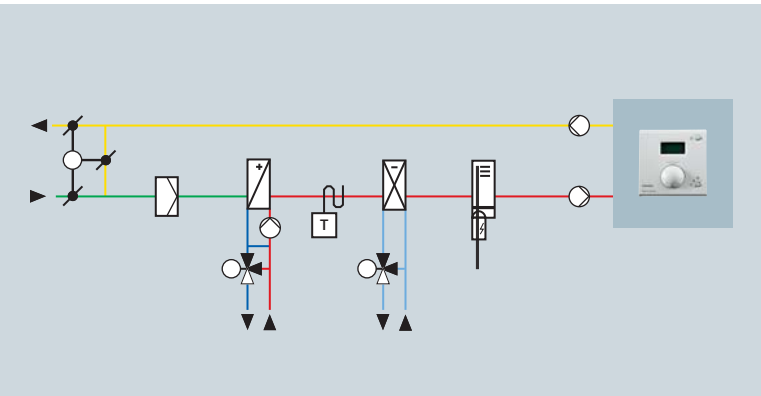
Heating plant with heat generation, two heating circuits, DHW heating, and Synco 700



■ Modular heating controller RMH760

- Two controlled heating circuits
- Four 7-day programs and yearly calendar
- Control of DHW storage tank charging
- Control of circulating pump
- Boiler temperature control including multistage or modulating burner control

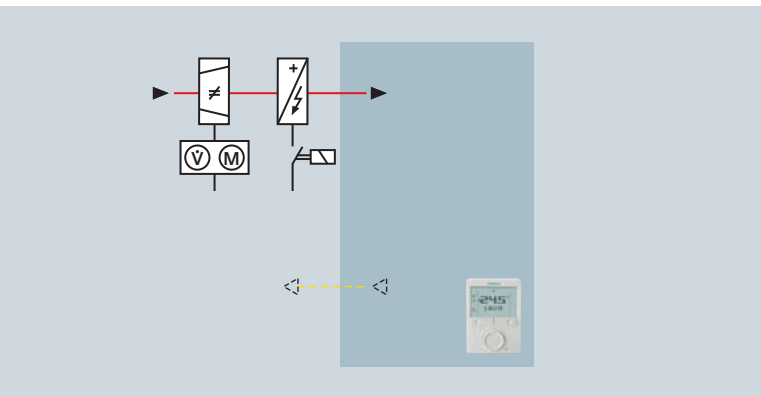
Ventilation plant with room-supply air cascade control and Synco 700



■ Modular universal controller RMU730

- Control and monitoring
- Room temperature control with min/max limitation of the supply air temperature
- Room humidity control via air humidifier
- Limitation of supply air humidity
- Mixed air damper with start-up control
- 2-speed fan
- 2-phase frost protection
- 7-day program and yearly calendar

Variable air volume plant with individual room temperature control with Synco 700 and Synco RDG



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■ RDG400KN individual room thermostat and RMU7..B primary air handling controller

- Room temperature control with temperature sensor
- Modulating control of actuator with min/max limitation of the air flow signal
- Room thermostat provides the primary air handling controller with demand-dependent setpoints
- Central time switch program

Answers for infrastructure.

■ Megatrends driving the future

The megatrends – demographic change, urbanization, climate change, and globalization – are shaping the world today. These have an unprecedented impact on our lives and on vital sectors of our economy.

■ Innovative technologies to answer the associated toughest questions

Throughout a 160-year history of proven research and engineering talent, with more than 50,000 active patents, Siemens has continuously provided its customers with innovations in the areas of healthcare, energy, industry, and infrastructure – globally and locally.

■ Increase productivity and efficiency through complete building life cycle management

Building Technologies offers intelligent integrated solutions for industry, commercial and residential buildings, and public infrastructure. Over the entire facility's life cycle, our comprehensive and environmentally conscious portfolio of products, systems, solutions, and services for low-voltage power distribution and electrical installation technology, building automation, fire safety and security ensures the:

- optimum comfort and highest energy efficiency in buildings,
- safety and security for people, processes, and assets,
- increased business productivity.



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The information in this document contains general descriptions of technical options available, which do not always have to be present in individual cases. The required features should therefore be specified in each individual case at the time of closing the contract.

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