



HVAC control with Synco – simple and energy-efficient





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 and RXL – 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

Synco 700	Synco RXB/RXL	Synco living	Synco operating
Versatile HVAC controller range of modular design	Enhanced comfort thanks to individual room climate	Enhanced comfort in living spaces	Efficient operation of plant including straightforward remote control
Control of: <ul style="list-style-type: none"> • Heating • Ventilation • Air conditioning • Refrigeration • Distribution of heating and cooling energy • Primary energy plant 	Individual room control with: <ul style="list-style-type: none"> • Fan coils • Radiators • Chilled ceiling 	Home Automation System for: <ul style="list-style-type: none"> • Heating • Ventilation • DHW • Lighting • Blinds • Security 	Monitoring and remote control of plant: <ul style="list-style-type: none"> • Alarm reporting via SMS, e-mail, pager or fax • Remote control of plant, e.g. via Web server

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

Standalone controllers for small buildings and basic applications

Synco 100 Temperature controller, sensor and control panel combined in one unit	Synco 200 HVAC controller for all standard applications
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Synco living – comfort for living rooms



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 nonoccupancy, 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.

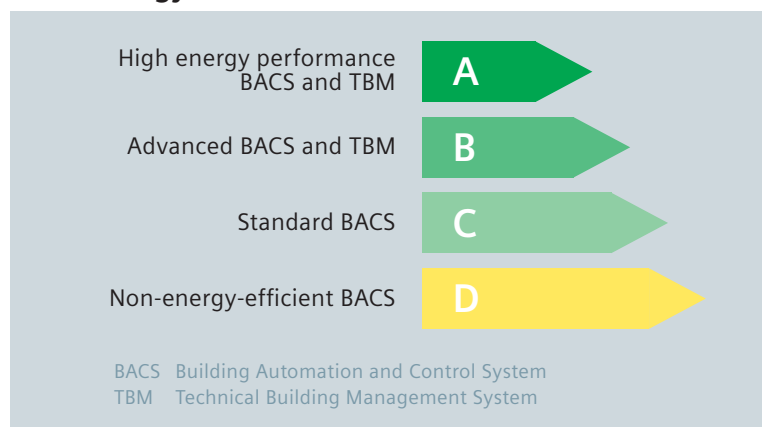
■ Energy efficiency based on eu.bac certification

Controls bearing the eu.bac certification label, such as Synco RXB, 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 0.2K, eu.bac-certified controllers ensure energy savings of up to 14% in comparison with noncertified controllers, depending on the climatic area in which they are used.

BACS Energy Performance Classes – EN 15232



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 standalone 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 – also when extending plant, when changing building usage, in the case of staged construction, or when upgrading existing controllers: 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 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.

■ Superior support and comprehensive documentation

We offer you extensive support: training modules, e-learning, comprehensive technical documentation, descriptions of applications, etc.

■ 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
- Versatility and expandability for future use
- Straightforward operation and quick commissioning
- Superior support and comprehensive documentation
- Decades of experience and high quality 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 RXB and RXL – enhanced comfort owing to individual room control**

At the workplace, Synco RXB and RXL 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 products are eu.bac-certified for high control accuracy and energy efficiency.



■ **Synco living – enhanced comfort in living spaces**

Specifically matched to the requirements in the private sector, the Synco living Home Automation System combines space heating, ventilation, DHW heating, lighting, blind control, security, etc., and affords ease of control via its intuitive central apartment unit.

All plant components can be easily integrated into the system through wiring or over radio links. Configuration and commissioning work can be carried out quickly, with no need for using extra tools: simply by pressing a button on the operator unit.

In 2006, Synco living was granted the “red dot award” for excellent design.



reddot design award
winner 2006

Highlights

- Versatile HVAC controller range of modular design
- Enhanced comfort owing to individual room climate
- More comfort in living spaces
- Efficient operation of plant thanks to remote control from any location
- Support functions for quick commissioning
- Simple concept for opening communication
- 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 central communication unit with its integrated 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, e-mail, pager or fax, if required.

■ Synco tool – support functions for quick commissioning

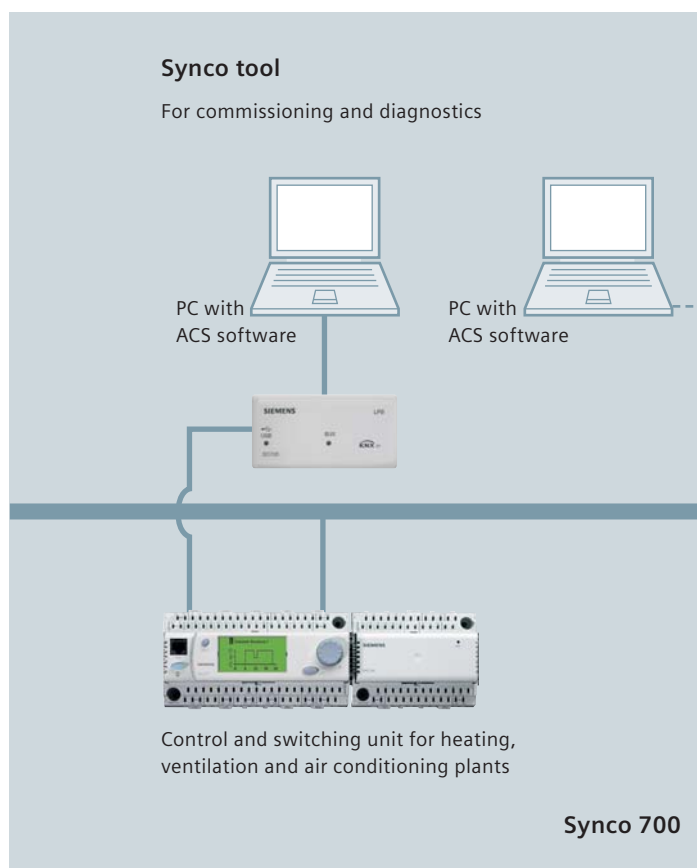
To facilitate commissioning, the Synco tool offers you a host of help functions and choices: Diagnostics including trending, for example, straightforward fault tracing thanks to access to all data points of all controllers, saving all settings on the PC, or printing commissioning reports.

■ 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)
- RMZ789 universal module (6 UI, 2 AO, 4 DO)

■ Operator units (for all types of controllers)

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

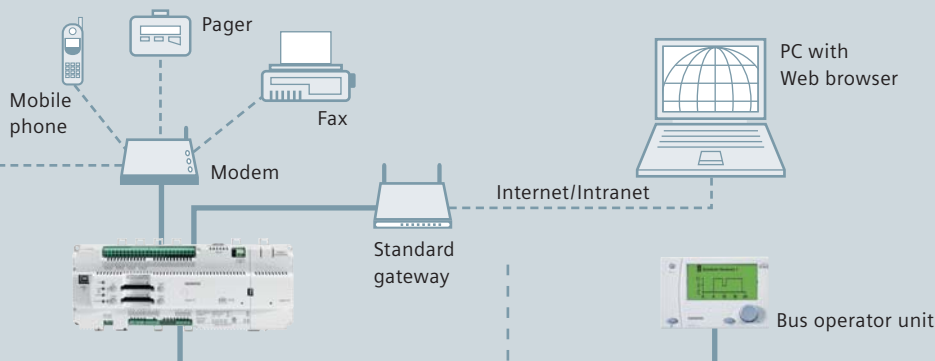
UI: Universal Input

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

Home Automation System

Synco RXB/RXL

Synco living

■ Heating controllers

RMH760 modular heating controller
RMK770 boiler sequence controller

■ Extension modules for heating controllers

RMZ782 heating circuit module
RMZ783 DHW module

■ Room unit

QAW740 room unit

■ Synco operating

OZW771 central communication unit
OZW775 Web server
ACS7... plant and operating software

■ Synco tool

OCI700.1 service and operating tool

■ Room controllers

RXB21.1/FC-10, RXL21.1/FC-10

- 2-pipe system with changeover
- 4-pipe system
- 4-pipe system with room-supply air cascade
- 4-pipe system with air damper

RXB21.1/FC-11, RXL21.1/FC-11

- 2-pipe system with changeover and outside air damper
- 4-pipe system with outside air damper
- 2-pipe system with changeover and radiator

RXB22.1/FC-12, RXL22.1/FC-12

- 2-pipe system with changeover and electric reheater
- 4-pipe system with electric reheater

RXB24.1/CC-02, RXL24.1/CC-02

- Chilled ceiling with dewpoint monitoring
- Chilled ceiling/radiator with dewpoint monitoring and downdraft compensation
- Radiator with downdraft compensation

■ Synco living

QAX910 central apartment unit
QAW910 room unit
QAA910 room temperature sensor
SSA955 radiator control actuator
RRV912/918 heating circuit controller
QAC910 meteo sensor
ERF910 RF repeater

■ GAMMA wave products

- Light and blind actuators
- DELTA reflex smoke detectors
- Door and window contacts



The standalone controllers – Synco 100 and Synco 200

Smaller nonresidential 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

- Compact and space-saving design
- Straightforward and time-saving installation
- Minimum wiring effort
- No special training required
- No control panel required

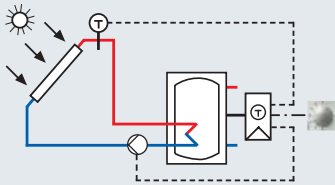
Synco 200

- Cost-saving installation technique
- More than 130 preprogrammed and documented applications



Synco – application examples

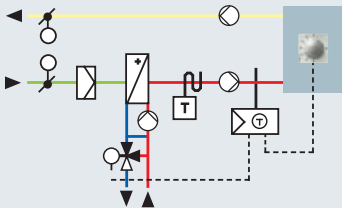
Solar DHW heating with Synco 100



Differential temperature controller RLE127

- DHW storage tank with solar collector
- Remote setpoint readjuster
- Direct mounting on pipework, no control panel required

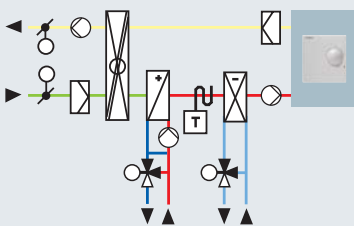
Ventilation plant with supply air temperature control and Synco 100



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

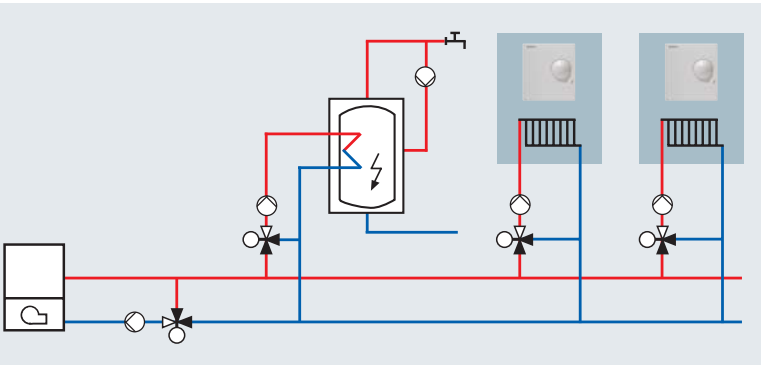
Ventilation plant with room-supply air cascade control and Synco 200



Universal HVAC controller RLU232

- Control, cascade with supply air 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

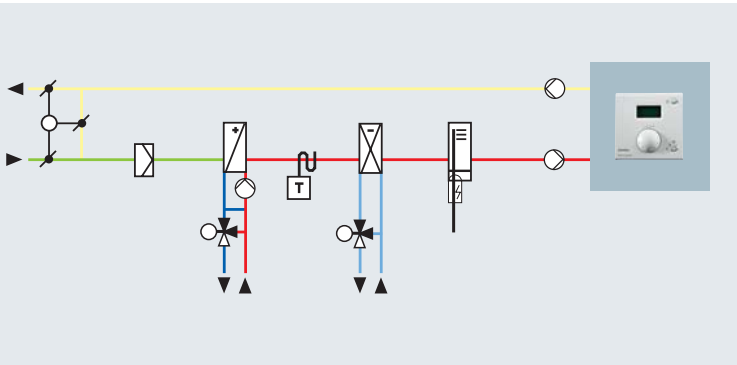
Heating plant with heat generation, two heating circuits, DHW heating and Synco 700



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

Welcome to the world of innovative thinking

■ Innovation

Siemens invests a great deal in both manpower and research and development. This results in a steady stream of insights, technologies and inventions that enable us to improve the reliability of our products and systems, ensuring the securest products and making our systems even more simple and convenient to operate.

■ Reliability

With a history of over hundred years, if you need an established, reliable partner you are in the very best of hands with Siemens. System expansions and up grades can be continuously made over a period of years, which ensures your investment for the future.

■ Comfort

Siemens products and solutions ensure comfort in your working and living environments. Today, tomorrow and for decades to come. That's why numerous customers around the world rely on Siemens.

■ Energy and ecological efficiency

Siemens helps save energy, protect our resources and reduce harmful emissions.



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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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