SIEMENS





RXB Room controller

RXB24.1

For chilled ceiling and radiator applications CC-02 with Konnex bus communications (S-mode and LTE mode)

The RXB24.1 room controller is used for temperature control in individual rooms.

- For chilled ceiling and radiator systems
- PI control
- Konnex bus communication (S-mode and LTE mode)
- Integration into the DESIGO building automation and control system via PX KNX
- Integration into Synco
- Control of AC 24 V PDM¹⁾ thermic valve actuators or 3-position AC 24 V motorized valve actuators
- Use of motorized KNX / EIB bus valves
- Commissioning with ETS3 Professional, Synco ACS or "HandyTool"
- AC 230 V operating voltage
- Plug-in screw terminals
- 1) PDM = Pulse Duration Modulation

		The RXB24.1 room controller is optimized for control of chilled ceiling and radiator systems in individual rooms.
		The application of each controller is determined by the application software.
		The controllers are delivered with a fixed set of applications, each of which contains various individual applications. The relevant application is selected and activated during commissioning using one of the following tools:
		 ETS3 Professional (EIB / KNX Tool Software) Synco ACS "HandyTool" (the QAX34.3 room unit includes a tool function allowing you to parameterize the connected RXB controller).
Use of spare inputs/outputs		Some of the applications do not make full use of all the inputs and outputs. These I/Os can be used freely in conjunction with a building automation and control system to register digital signals, for example, or to control various items of equipment (ON/OFF or pulse control with AC 24 V). The inputs can then be read and the outputs controlled via the building automation and control system.
	Note	Not suitable for time-critical processes <1 s.

Functions

The room controller functions are determined by the selected application and its parameters, and by the input/output configuration.

For details, refer to the CLC and RAD description of functions, document CA110384.

When DESIGO RXB controllers are integrated into a building automation and control system, or into a Synco system, additional functions become available such as time scheduling, central control of setpoints, etc.

Applications

The following applications are available for the RXB24.1 room controllers:

Application group (type)	Applications	
CC-02 (with RXB24.1)	CLC01	Chilled ceiling with dew point monitoring
	CLC02	Chilled ceiling with dew point monitoring, radiator with downdraft compensation
	RAD01	Radiator with downdraft compensation

Note

Only one application at a time can be activated with the tool (ETS3 Professional, Synco ACS or "HandyTool").

The RXB24.1 room controller has the following outputs:

Туре	AC 24 V triac outputs
RXB24.1	For 2 thermic valve actuators or two 3-position actuators
RXZ20.1	Accessories: Terminal covers

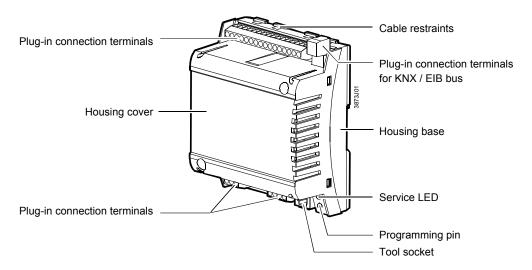
Ordering				
	When ordering please specify the quantity, product name, type code and application group.			
Example:	30	Room controllers, type RXB24.1/CC-02		
Compatibility				

The RXB24.1 room controller is compatible with field devices from Siemens Building Technologies and with KNX / EIB-compatible third-party devices.

For details, refer to the DESIGO RX hardware overview, CA2N3804.

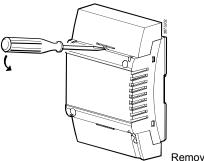
Design

The RXB24.1 controller consists of a housing base, a housing cover and the printed circuit board with connection terminals. The controller also has a tool socket, a service LED and a programming pin.

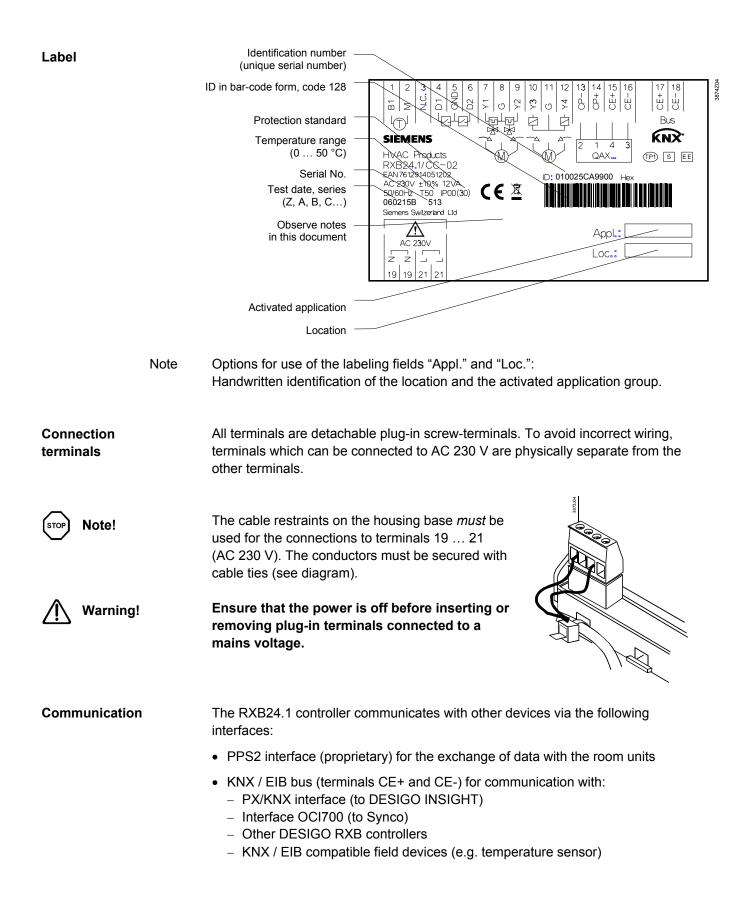


Service LED	The programming LED shows the operational status of the room controller as follows:		
	Green flashing	OK, device is in operation	
	Red ON	 Addressing mode (ACS / ETS) Fault 	
	Orange / green flashing	Parameter download	
	OFF	No supply voltageFault	
		Service LED disabled by software	
	Other patterns	• Start-up (approx. 5.sec)	
		• Fault	
Programming pin	The programming pin is used to identify the controller in the commission		
	Pressing this pin causes the red programming LED to light up and remain on until identification of the controller is complete.		
	Once the programming pin has been pressed, the tool overwr address in the room controller.		
STOP Note!	Note! If there are no terminal covers fitted, the programming pin may be op a qualified electrician.		
	The adjacent terminal may be a live mains voltage conductor.		

Terminal cover Terminal covers (RXZ20.1) are available as an option, to protect the connection terminals from physical contact and dirt. The programming LED remains visible when the terminal covers are in place, and the programming pin can be operated with a pointed implement. The cable is connected to the room controller by breaking out the perforated cable entry guide.



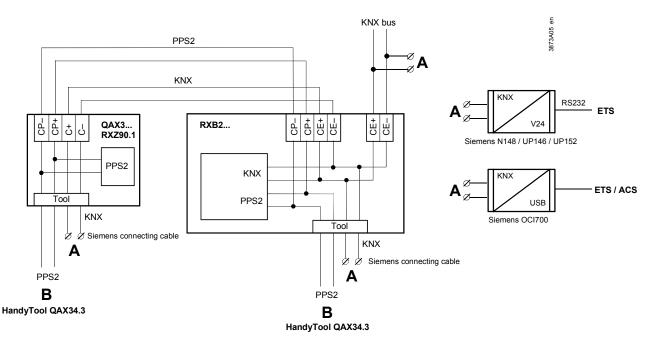
Removing the terminal cover



Connecting the tool

To facilitate commissioning, the tools ETS3 Profession or Synco ACS can be connected at three different points (marked (A) in the diagram) in the plant:

- to the KNX / EIB bus cable at any point
- to the RXB2... controller (RJ45 tool socket)
- to the room unit (RJ45 tool socket)



Notes

Caution!

The tool socket is a proprietary socket.
 A Siemens connecting cable must be used (e.g. PXA-C1).
 When connected to Ethernat, the device on the other or

- When connected to Ethernet, the device on the other end may be damaged!
- The tools ETS3 and ACS, even if connected to a tool socket, require an interface:
 - RS232 KNX/EIB interface (ETS3)
 - OCI700 USB-KNX / EIB interface (ETS3 , ACS).
- The "HandyTool" is connected to the tool socket of the room controller or to the tool socket of the room unit (QAX3..., RXZ90.1) (**B**).
- If you use OCI700 as an interface, it is connected to the service plug of the controller or of the room unit.
 As long as the OCI700 is connected to the service plug, it must be supplied by the computer via the USB interface. Otherwise the LCD display of the room unit will turn dark and the controller will switch to addressing mode.

Disposal

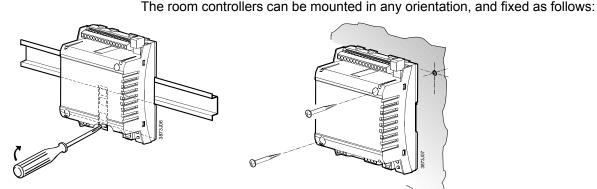


The device is classified as waste electronic equipment in terms of the European Directive 2002/96/EC (WEEE) and should not be disposed of as unsorted municipal waste. The relevant national legal rules are to be adhered to.

Regarding disposal, use the systems setup for collecting electronic waste. Observe all local and applicable laws.

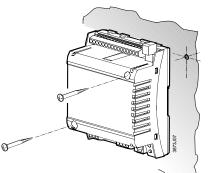
	The KNX / EIB Building Services Management Manual and system principles supplement (see "Reference documentation ", page 10) contains the information relevant for the engineering of the KNX / EIB bus (topology, bus repeaters, etc.) and for the selection and dimensions of connecting cables for the supply voltage and field devices.	
AC 230 V supply cables	 The RXB24.1 room controller operates with a mains supply voltage of AC 230 V. The controlled devices (valve actuators) receive their power directly from the room controller. This means that a separate AC 24 V supply is not necessary for the controllers and associated field devices. The sizing and fuse protection of the power supply cables depends on the total load and on local regulations. The power supply cables connected to the room controller must be secured with cable restraints. If serial wiring is applied on the terminal block 19/21, the connection will be inter- rupted if the block is removed from the controller (the jumpers 19-19 and 21-21 are on the PCB, not in the block, see terminal diagrams on pages 11 and 12) The supply cables must be secured with cable restraints. 	
AC 24 V triac outputs	The simultaneous load on outputs Y1 Y4 must not exceed 9.5 VA.	
Example:	Y1 (heating)2 thermic valve actuators, type STP72E / STA72E 5 WY2 (cooling)2 thermic valve actuators, type STP72E / STA72E 5 W	
	The maximum load is 9.5 VA for the heating sequence and 9.5 VA for the cooling sequence. This is acceptable because the two sequences never operate at the same time.	
STOP Note!	With low loads (< 2VA) the voltage tolerance may be greater than +20% (see technical data).	

Mounting instructions



Rail mounting

The housing base is designed for snapmounting on DIN rails, type EN50022-35 x 7.5 (can be released with a screwdriver).



Surface mounting

There are two drill holes for screw-mounting (see "Dimensions" for drilling template). The housing base is fitted with raised supports.

Screws: Max. diameter 3.5 mm, min. length 38 mm



Tightening torque for fixing screws max. 1.5 Nm

When mounting note the following:

- The controller should not be freely accessible after mounting. It must be mounted in a cabinet or behind a cover that can only be opened / removed with a key or a tool.
- · Ensure adequate air circulation to dissipate heat generated during operation.
- Easy access is required for service personnel
- Local installation regulations must be observed.

Mounting instructions and a drilling template are printed on the controller packaging.

Commissioning

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	The RXB24.1 room controller is commissioned with either the ETS3 Professional or the Synco ACS tool - via the RS232-KNX / EIB interface, or - via the USB-KNX / EIB interface (OCI700), or with the HandyTool" via PPS2
Labeling	The definitive application and the controller's location are handwritten in the labeling fields "Appl." and "Loc" in the commissioning stage.
Function test	A special test mode (ETS3 Professional and HandyTool) is available for operation of the outputs and interrogation of the inputs.

Note!

- In the event of a long-term short circuit (approx. 4 minutes) or overload, the thermal fuse in the transformer may trip.
 Subsequently, the device must be exchanged.
- There is no protection against accidental connection on the AC 24 V side.
- Mains AC 230 V for the supply must be disconnected before plugging and unplugging the terminal blocks (danger of electric shock!)
- If serial wiring is applied on the terminal block 19/21, the connection will be interrupted if the block is removed from the controller (the jumpers 19-19 and 21-21 are on the PCB, not in the block, see terminal diagrams on pages 11 and 12).

Technical data

	<u> </u>		
A Power supply	Operating voltage		AC 230 V ± 10 %
	Rated voltage		AC 230 V
	Frequency		50/60 Hz
	•	ion with connected field devices	Max. 12 VA
	Internal fuse		Thermal, non-resetting
Operating data	Control algorithm	1	PI
Inputs			
Signal inputs D1, D2	Quantity		2
(for volt-free contacts)	Contact voltage		DC 16 V
	Contact current		DC 5 mA
	Contact transfer	resistance	Max. 100 Ω
	Contact insulatio	n resistance	Min. 50 kΩ
	Switch time:		min. 20ms "ON", min. 20ms "OFF"
Measured value input B1	Compatible temp	perature sensors	LG-Ni 1000
	Quantity		1
	measuring range	1	0 50 °C
	Sensor current		0.5 mA
	Resolution		0.1 K
	Measuring error	at 25 °C sensor temp. (without cable)	max. 0.5 K
Outputs			
AC24 V triac outputs , Y1 Y4	Quantity		4
•	Output voltage		AC 24 V ON/OFF, PWM or 3-position: +/-20%
			(May exceed +20% with loads under 2VA)
	Permissible load	current	Max. 0.5 A
	Power limitation Total nominal load		No internal limitations
			Max. 9.5 VA (e.g. 2 thermic actuators, type
	(at both outputs simultaneously)		STP72E per heating and cooling sequence
Ports/interfaces			
Interface to room unit	Number of room	units connectable	1
	Interface type	for room unit	PPS2
	interface type	for ETS3 Professional / ACS	KNX / EIB bus
	PPS2 baud rate	In Eros Processional / Aco	4.8 kbit/s
	Baud rate on KN	X / EIB bus	9.6 kbit/s
KNX / EIB bus	Interface type		KNX / EIB (electrically isolated)
	Transceiver		TP-UART
	Bus current		5 mA
			9.6 kbit/s
	Baud rate		
	Bus topology		Refer to KNX / EIB manual
			(Reference documentation, see next page)

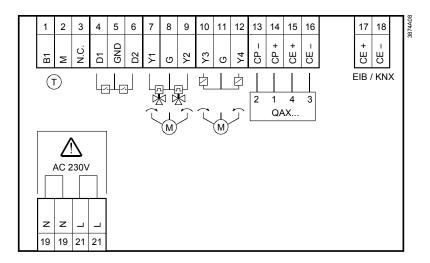
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including packaging 0.650 kg	Weight	excluding packaging	0,610 kg
		including packaging	0.650 kg

Reference documentation

- Building Services Management Manual Fundamental principles
- Building Services Management Manual Applications

Zentralverband Elektrotechnik- und Elektronikindustrie e.V. (ZVEH) (*Central association for the electrical and electronic engineering industry*) Stresemannallee 19D-60596 Frankfurt a. M, Germany.

RXB24.1



Measured value input

- Measured value input for LG-Ni 1000 sensors B1 1
- 2 Measured value input ground Μ

Signal inputs

- D1 Signal input 4
- GND 5 Signal ground
- D2 6 Signal input

Triac outputs

- AC 24 V, 0.5 A switching output Y1 7
- G 8 AC 24 V actuator supply
- Y2 9 AC 24 V, 0.5 A switching output
- 10 AC 24 V, 0.5 A switching output Y3
- 11 AC 24 V actuator supply G
- Y4 12 AC 24 V, 0.5 A switching output

Room unit

- CP- 13 PPS2 ground
- CP+ 14 PPS2 data
- CF+ 15 KNX / EIB data cable
- CE- 16 KNX / EIB data cable

KNX / EIB bus (plug-in connection)

- CE+ 17 KNX / EIB data cable
- CE- 18 KNX / EIB data cable

Power supply

- Neutral conductor Ν 19
- Phase conductor AC 230 V +/- 10 % R 21



• Local installation regulations must be observed.

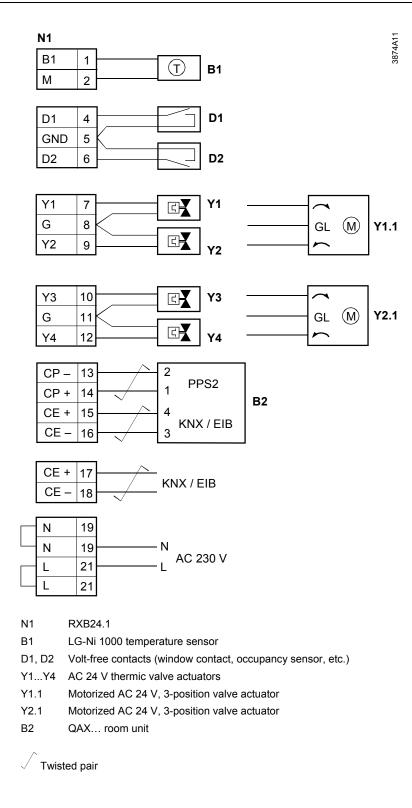
Tool socket

Proprietary RJ45-type tool socket



- 2 KNX / EIB data cable (CE–) 3 Not used
- 4 Not used
- 1 KNX / EIB data cable (CE+) 5 +12VDC
 - 6 RxD
 - 7 PPS2 (CP+) / TxD
 - 8 PPS2 (CP-)

Connection of field devices, room unit, KNX / EIB bus and power supply



Note For information on the compatibility of field devices with the RXB24.1 room controller, refer to the various application descriptions (see the CLC and RAD description of functions, document CA110384)

Parallel connection of several thermic valve actuators

Up to two thermic actuators per sequence may be connected directly to the room controller. With more than two thermic actuators, a UA1T power amplifier is required.

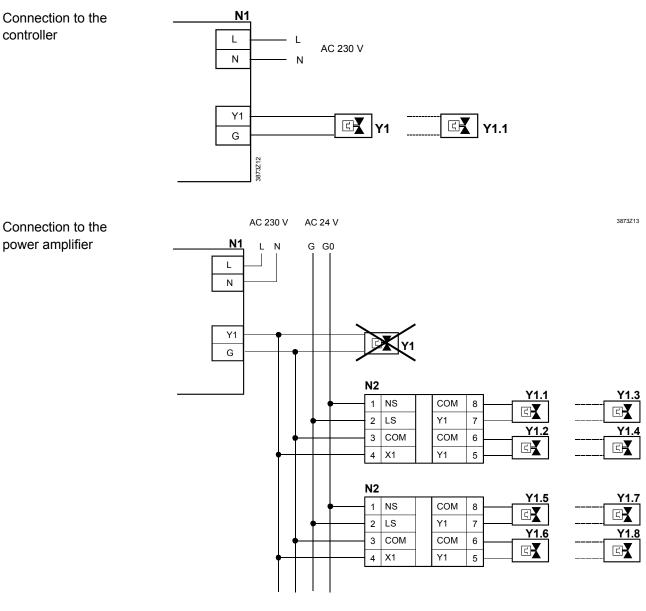
The principle is the same for output Y2. Do not exceed the maximum simultaneous load on outputs Y1 and Y2 (max. 9.5 VA).

Power consumption at input X1 of the UA1T: 0.5 VA.

(STOP) Note!

Mixed operation: It is not permissible to connect thermic actuators both to the controller and to the power amplifier.

Owing to the difference in voltage between the controller's internal transformer and the power supply of the UA1T, this could cause the valve positions to deviate substantially.



- N1 Room controller RXB24.1
- N2 UA1T power amplifier (see data sheet CA2N3591)

Y1 AC 24 V thermic valve actuators connected to the controller

Y1.x AC 24 V thermic valve actuators

(max. 2 STA72E/STP72E actuators per Y1 output on the UA1T)

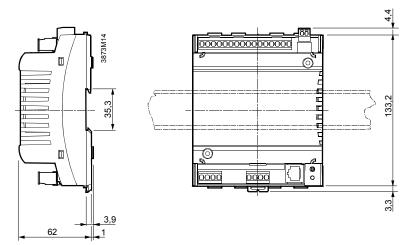
Notes

- The UA1T requires an AC 24 V supply voltage
- The UA1T is *not* suitable for the connection of 3-position actuators.

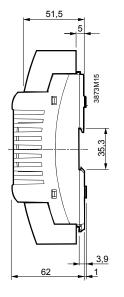
Dimensions

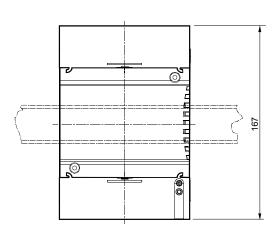
Dimensions in mm

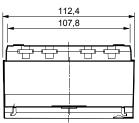
Without terminal cover

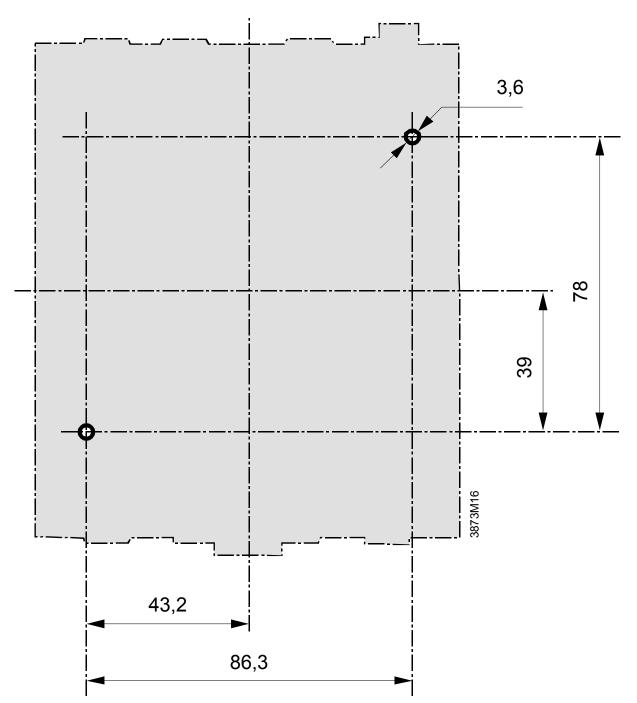


With terminal covers









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RXB24.1 - Room controller

CM2N3874en_06 2013-06-16

Subject to change