



DESIGO™ RXB

Room controller

RXB10.1

for chilled ceilings and radiators (CC-01), and VAV applications (VV-01)
with EIB bus communication

The RXB10.1 controller is used for temperature control in individual rooms:

- **For chilled ceilings, radiator-type heating, and VAV applications**
- **PI control**
- **EIB bus communication**
- **Integration into building automation and control system via NIEIBV2**
- **Control of thermic valve actuators, AC 24 V, PDM ¹**
- **Use of motorized EIB bus valves**
- **AC 24 V operating voltage**

PDM = Pulse Duration Modulation

Use

The RXB10.1 controller is optimized for the control of chilled ceilings, radiator-type heating, and VAV applications in individual rooms.

The application of each controller is determined by the application software.

The controllers are delivered with a permanently stored application group, comprising various individual applications. The application actually required is selected and activated with the ETS (EIB Tool Software) during commissioning.

Use of spare inputs/outputs

Some of the applications do not make full use of all the inputs and outputs. These spare 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 controller functions are determined by the selected application and its parameters, and by the input/output configuration.

For a detailed description of functions, refer to the DESIGO RXB application library (CA2A3890).

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

Applications

The following applications are available for the RXB10.1 room controller:

Application group (type)	Application
CC-01	CLC02 chilled ceiling and radiator
	<i>Other applications in preparation</i>
VV-01	VAV01 Single-duct supply or extract air system
	<i>Other applications in preparation</i>
Other application groups	<i>In preparation</i>

Note

Only one application at a time can be activated via the ETS.

Types

RXB10.1 / CC-01 Room controller

Ordering

When ordering please specify the quantity, product name, type code and application group.

Example: 30 Room controllers, type RXB10.1 / CC-01

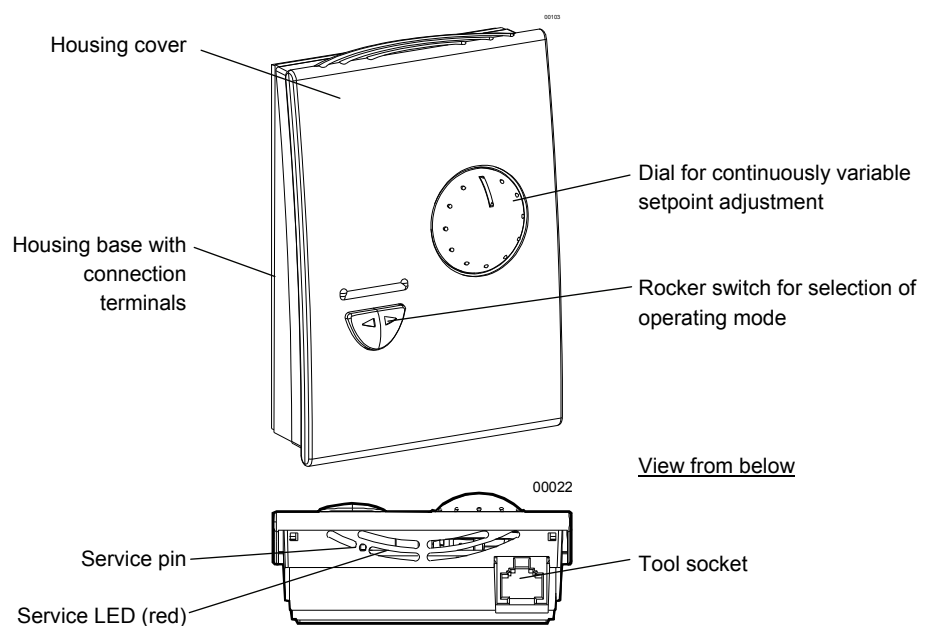
Compatibility

The RXB10.1 room controller is compatible both with Siemens Building Technologies field devices and with EIB-compatible third-party devices.

For details, refer to the DESIGO RXB range description, document CA2S3879.

Design

The RXB10.1 controller comprises a housing base with connection terminals and a cover incorporating the printed circuit board and the operator controls. The controller also has a tool socket, a service LED and a service pin.



Rocker switch for selection of operating

The rocker switch can be used like an occupancy button, to determine the controller operating mode. An LED indicates the currently active operating mode.

Item	Operating mode ¹⁾
	The controller operates with the setpoints for "reduced" operation (room unoccupied or only partially occupied, or night mode).
Auto	Controller operates in <i>Comfort</i> mode (room occupied).

Service LED

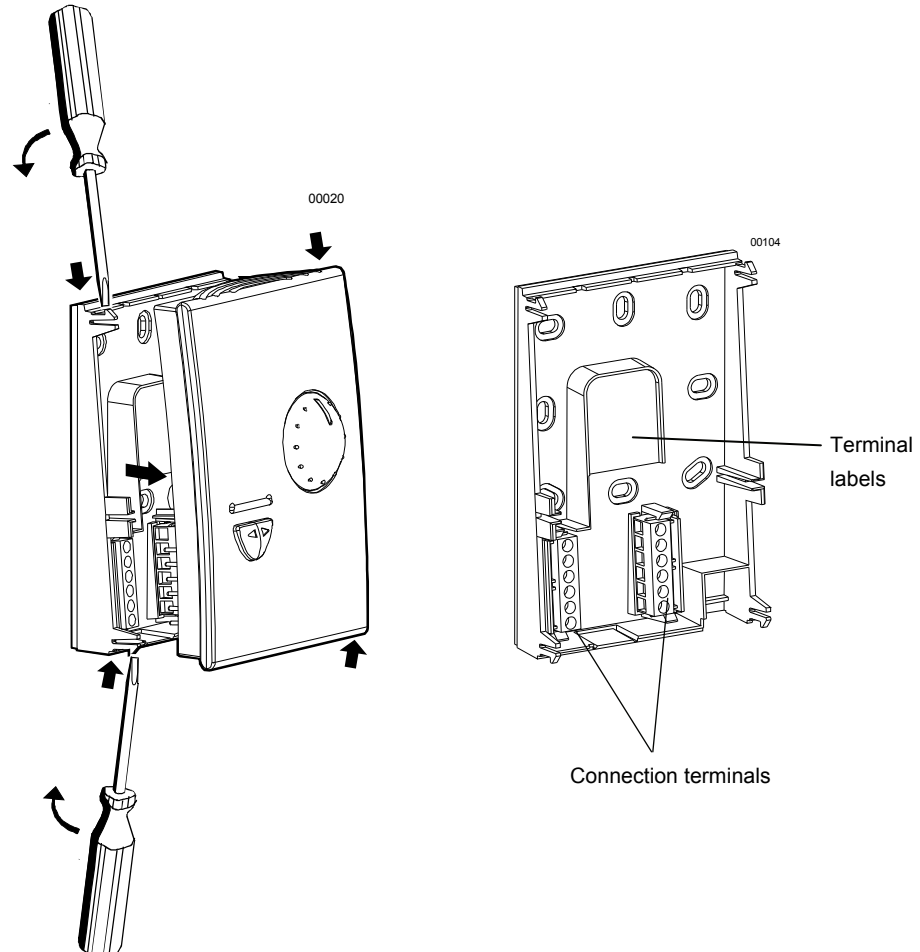
The red service LED shows the operational status of the room controller.

Service pin

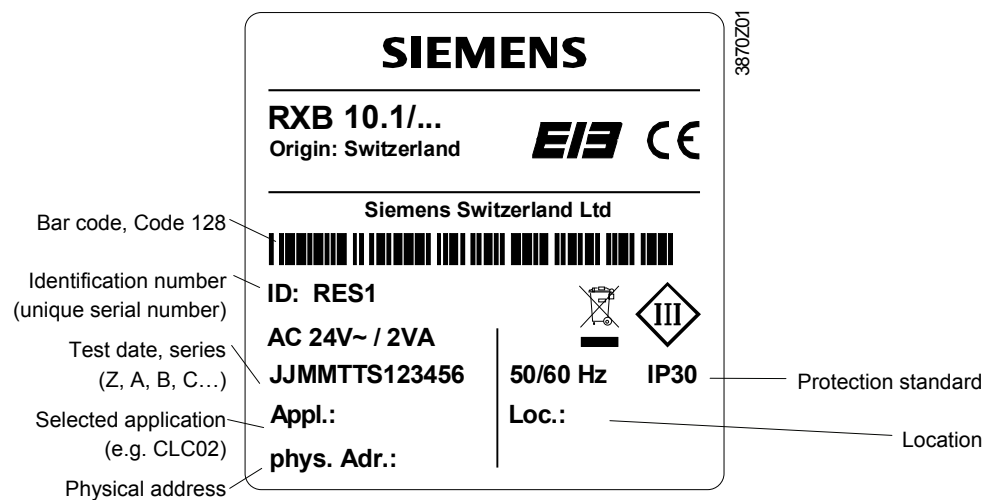
The service pin is used to identify the controller in the commissioning phase. After operation of the service pin, the ETS overwrites the physical address in the room controller. As soon as the service pin is pressed, the red service LED lights up and remains on until identification of the controller is complete.

Housing cover

The connection terminals are located in the housing base. To connect the terminals, the housing cover must first be removed (see diagram below).



Label (inside housing cover)



Note

Use of the labeling fields "Appl.", "Loc." and "Phys.Adr.:" :
– Handwritten details of location, definitive application and physical address.

Connection terminals

The two rows of terminals are located in the housing base (see the diagram under "Housing cover"). They can be removed from the housing to facilitate connection.

Communication

The RXB10.1 controller communicates with other devices via the following interface:

EIB bus (terminals CE+ and CE-) for communication with:

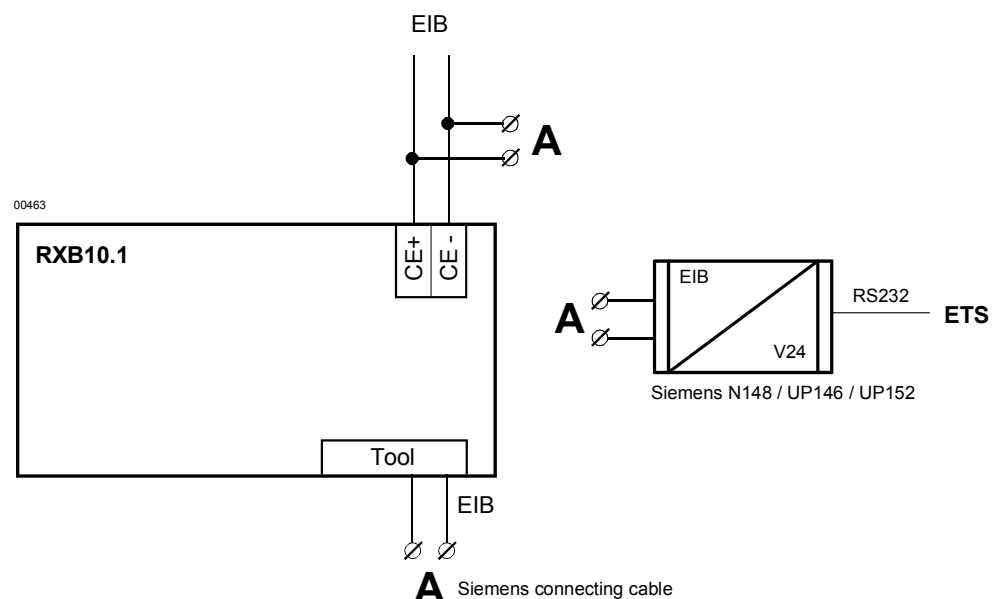
- NIEIBV2 interface (to DESIGO INSIGHT)
- Other DESIGO RXB controllers
- EIB compatible field devices (e.g. outside temperature sensor)

Note

The tool connection socket is a proprietary socket. A Siemens connecting cable must be used. When communicating via the tool socket, access to the bus is still via an RS232-EIB interface.

Tool

The following diagram shows the wiring of the EIB bus and interface to the ETS commissioning and service tool (via EIB-RS232 interface).



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.

Engineering notes

The EIB Building Services Management Manual (Principles / Applications) contains all the information relevant for the engineering of the EIB bus (topology, bus repeaters, bus termination, etc.) and for the selection and dimensions of connecting cables for the supply voltage and field devices.

The room controller operates with an AC 24 V supply voltage. Directly connected valves also receive their supply voltage from the controller.

AC 24 V triac outputs

The **simultaneous** load on outputs Y1 and Y2 must not exceed 9.5 VA.

Example:

Y1 (heating)	2 thermic valve actuators, type STA72E	6 W
Y2 (cooling)	2 thermic valve actuators, type STA72E	6 W

The maximum load is 9.5 VA for the heating sequence, and 9.5 VA for the cooling sequence. This is allowable because the two sequences never operate at the same time.

Mounting

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

Installation



Caution

Local installation regulations must be observed.

The unit is not protected against accidental connection to AC 230 V.

Commissioning

The RXB10.1 controller is commissioned with the ETS via the EIB-RS232 interface.

Labeling

After commissioning, the definitive application, location and physical address can be handwritten in the labeling fields "Appl.", "Loc." and "Phys.Adr." or a printed adhesive label can be used (see "Label").

Function test

A special (ETS) test mode is available, in which the outputs can be operated. Further, if the digital inputs have been activated, they can be interrogated.

Technical data

Power supply	Operating voltage	SELV / PELV AC 24 V $\pm$ 20 %
	Rated voltage	AC 24 V
	Frequency	50/60 Hz
	Power consumption	Max. 2 VA plus external load
	Internal fuse	None
Operating data	Control algorithm	PI
	Temperature sensor	NTC resistance sensor
	Measuring range	5 ... 40°C
	Response time	$\leq$ 8 min
	Measuring accuracy (25 °C)	$\pm 0.25^\circ\text{C}$
	Measuring accuracy (5 ... 30 °C)	$\pm 0.5^\circ\text{C}$
	Setpoint correction	
Inputs	Correction range	Max. $\pm$ 10 K (basic setting $\pm$ 3 K)
	Signal inputs D1 and D2 (for volt-free contacts)	
	Quantity	2
	Contact voltage	Approx. DC 30 V (pulsed)
	Contact current	Approx. DC 10 mA (pulsed)
	Contact transfer resistance	Max. 100 Ω
	Contact insulation resistance	Min. 50 k Ω
Outputs	<i>Not suitable for pulse control</i>	
	Triac outputs Y1, Y2	
	Quantity	2
	Output voltage	AC 24 V ON/OFF, PWM or 3-position (depending on application parameters)
	Load current per triac	Max. 0.5 A
	Total nominal load (at both outputs simultaneously)	Max. 9.5 VA (e.g. 2 thermic valves, type STE72 per heating and cooling sequence)
	Internal fuse	2 A (both outputs together)
	Control output YC1	
	Quantity	1 (connection of a VAV compact box)
	Nominal voltage range	DC 0 ... 10V
	Overrange	$\geq 0.5\text{V}$
	Resolution	8 bits (50 mV)
	Response time	100 ms
Ports/interfaces	EIB bus	
	Interface type	EIB (electrically isolated)
	Communication channel	TP-UART
	Bus current	5 mA
	Baud rate	9.6 kBit/s
Cable connections	Bus topology, bus termination	<i>See reference documentation below</i>
	Connection terminals	
	Stranded or solid conductors 0.25 ... 2.5 mm ² or 2 x 1.5 mm ²	
	Cable length	
	See installation guide RXB & RXL, CM110381	
	Signal inputs D1, D2	Max. 100 m with diameter $\geq$ 0.6 mm
	Triac outputs Y1, Y2	Max. 100m where $A \geq 1.5 \text{ mm}^2$
Housing protection standard	EIB bus	<i>See reference documentation below</i>
	Tool connecting cable	$\leq$ 15 m (cable length depends on the interface card of the connected PC)
	Protection standard to EN 60529	IP30
Protection class	Insulation protection class	III

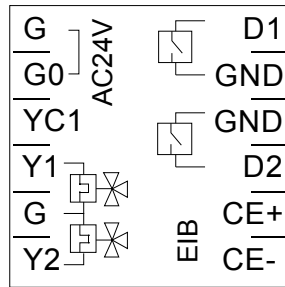
Ambient conditions	Normal operation	Class 3K5 to IEC 60721-3-3
	Temperature	5 ... 40 °C
	Humidity	< 85 % rh
	Transport	Class 2K3 to IEC 60721-3-2
Industry standards	Temperature	– 25 ... 70 °C
	Humidity	< 95 % rh
	Product safety	
	Automatic electronic controls for household and similar use	EN 60730-1
	Home and building electronic systems (HBES)	EN 50090-2-2
	Electromagnetic compatibility	
	Immunity (industrial & domestic)	EN 60730-1
	Emissions (domestic)	EN 60730-1
	 compliance	
	Meets requirements of EMC directive	2004/108/EC
Environmental compatibility	 C-Tick conformity (EMC)	AS/NZS 61000-6-3
	The product environmental declaration	ISO 14001 (Environment)
	CA2E3870 contains data on RoHS compliance, materials composition, packaging, 2002/95/EC (RoHS)	ISO 9001 (Quality)
	environmental benefit, disposal	
Dimensions	See dimension diagrams	
Color	Front plate	NCS S 0502-G ≈ RAL 9003 signal white
	Housing base and mounting plate	RAL 7035 (light gray)
Weight	Excluding packaging	0.16 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 19, D-60596 Frankfurt a. M.

00109



Signal inputs

D1	Signal input
GND	Signal ground
GND	Signal ground
D2	Signal input

Analog output

YC1	0 ... 10 V output
G0	System neutral

Triac outputs

Y1	AC 24 V, 0.5 A switching output
G	AC 24 V actuator supply
Y2	AC 24 V, 0.5 A switching output

EIB bus

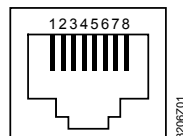
CE+ Data cable +
CE- Data cable - -

Power supply

G	AC 24 V
G0	System neutral

Tool socket

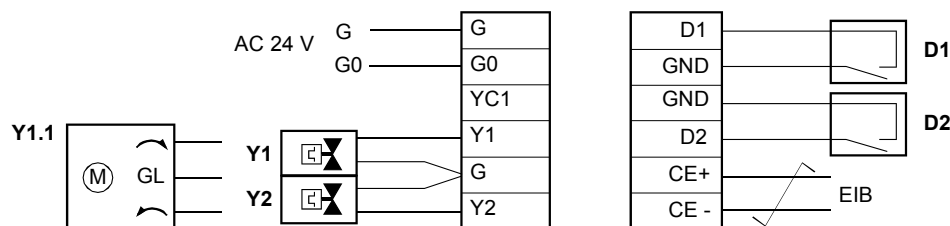
Proprietary RJ45-type tool socket



1 EIB data cable (CE+)	5 Not used
2 EIB data cable (CE-)	6 Not used
3 Not used	7 Not used
4 Not used	8 Not used

Important

Local installation regulations must be observed.



Y1, Y2 Thermic valve actuators

Y1.1 Motorized valve actuator

D1, D2 Volt-free contacts (window switch, occupancy sensor, etc.)

✓ Twisted pair

Parallel connection of several thermic actuators

Up to 2 thermic actuators can be connected directly to the room controller. In the case of more than 2 actuators a power amplifier is required.

The same principle applies to outputs Y2.

Note that the simultaneous load on outputs Y1 and Y2 must not exceed 9.5 VA.

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

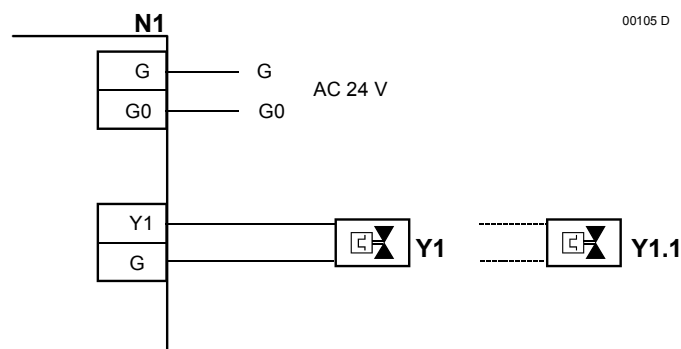


Note!

Mixed operation: **Connecting thermic actuators to the controller as well as to the power amplifier is NOT allowed.**

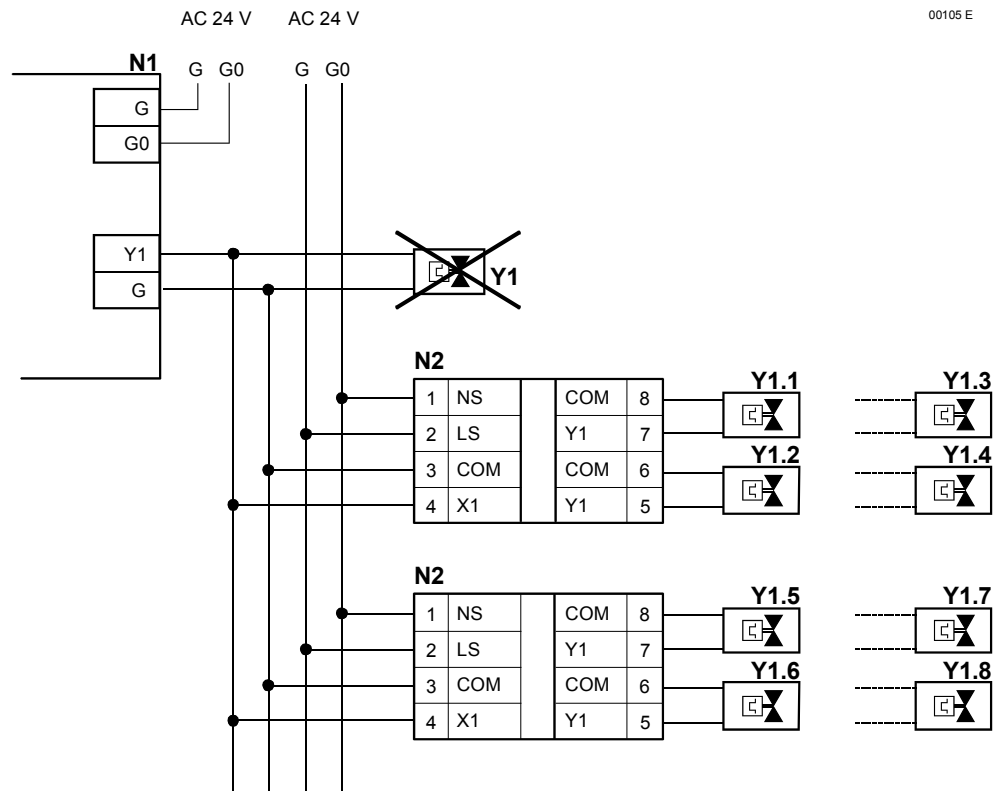
Differing voltage of the power supply of the controller and the supply of the power amplifier may cause big differences in the position of the valves.

Connection to controller



Connection to
power amplifier

00105 E



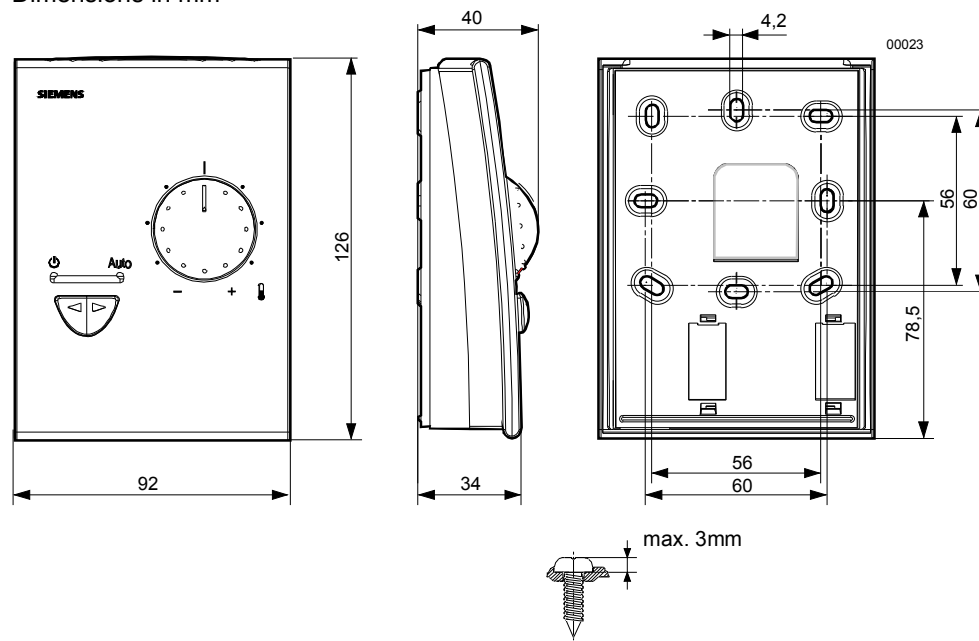
- N1 RXB10.1
 N2 UA1T (see data sheet CA2N3591)
 Y1 AC 24 V thermic valve actuator
 Y1.1 AC 24 V thermic valve actuator (max. 2 STP72E actuators per Y1 output on the UA1T)

Notes

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

Dimensions

Dimensions in mm



To avoid damaging the printed circuit board in the room controller, the heads of the screws used for mounting must not exceed a height of 3mm.

Drilling diagram (1:2)

