



Desigo™ RXC

Room controller

RXC10.1
RXC10.5

for chilled ceilings, radiators, and VAV applications
with LONMARK®-compatible bus communications

The RXC10 room controller is used for temperature control in individual rooms.

- For chilled ceilings, radiators, and VAV applications
- PI or PID control (dependent on application)
- Downloadable application software
- LONMARK®-compatible bus communications
- Integrated into the Desigo building automation and control system
- Control of thermic valve actuators, AC 24 V, PDM ¹
- Operating voltage AC 24 V

1) PDM = pulse/duration modulated

Application

The RXC10 room controller is optimized for the control of chilled ceilings, radiator-type heating, and VAV applications at individual room level.

The controller application is determined by downloadable application software, also referred to simply as the “application”. The various applications and the associated functions are described in detail in the Desigo RXC applications library (V1: CA2A3810, V2:CA110300).

The controllers are delivered pre-loaded with basic application 00010. The basic application, which contains only I/O module functions, is overwritten with the definitive application in the commissioning phase. The RXT10 commissioning and service tool is used for this purpose (see “Commissioning”).

Use as an I/O module

In conjunction with a building automation and control system, the RXC10 controller can also be used as a universal input module, e.g. to register the room temperature from digital signals or a setpoint reset unit.

In this case, the controller is loaded with basic application 00010. The inputs can then be interrogated via the building automation and control system.

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 RXC applications library. (V1: CA2A3810, V2:CA110300).

When Desigo RXC is integrated into a building automation and control system, additional functions become available, such as time scheduling, central control of setpoints etc. (refer to the Desigo INSIGHT documentation for further information).

Types

Product No.	Stock number	Designation
RXC10.5/00010	S55373-C110	Room controller

Ordering

When ordering, please specify the quantity, product name, type code and application. The controller is loaded with basic application 00010.

Example:

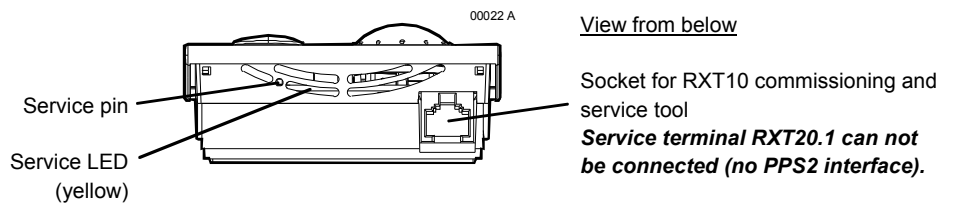
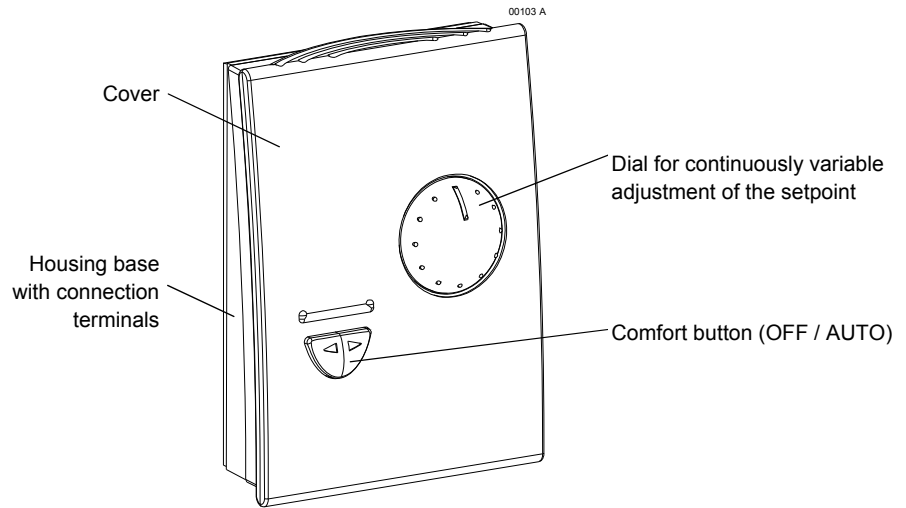
30 Room controllers RXC10.5/00010

Compatibility

The RXC10 controller can be used in conjunction with the Siemens field devices. For details, refer to the RX hardware overview, CA2N3804.

Mechanical design

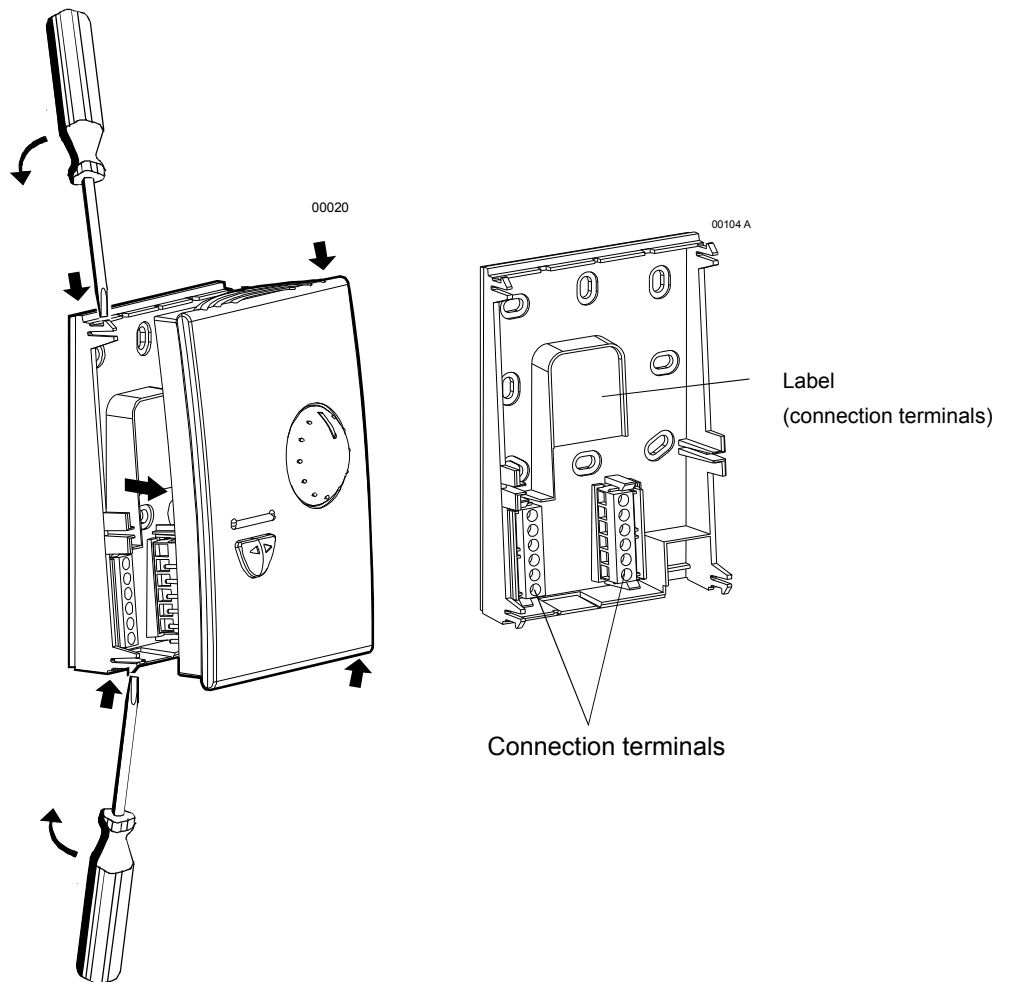
The RXC10 controller comprises a housing base with connection terminals and a cover incorporating the printed circuit board and the operator controls. The controller also has a tool socket, a service LED and a service pin.



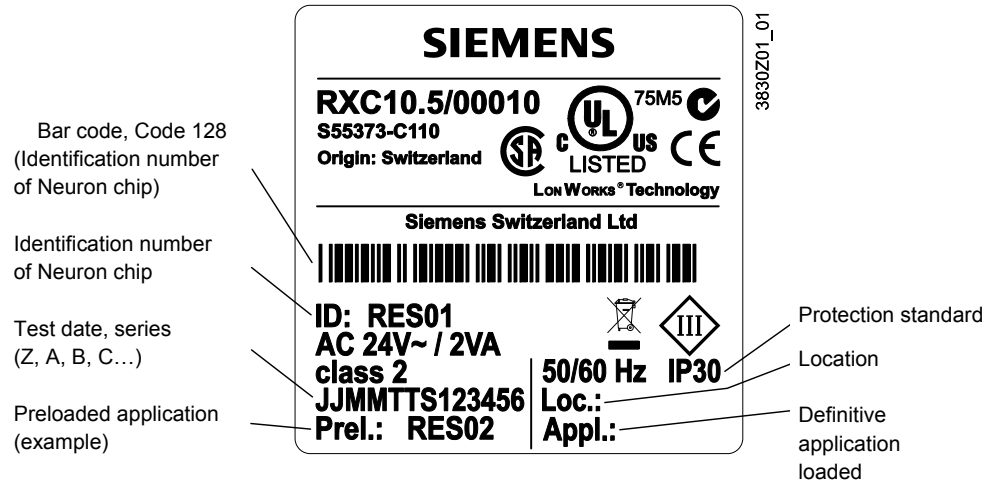
View from below

Terminal 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)



Note

Options for use of the labelling fields “Appl.” and “Loc.”:

- Hand-written entry of the location and the loaded application ... or
- Printed adhesive label (printed from the RXT10 commissioning and service tool)

Connection terminals

The two rows of terminals are slotted into the housing base (see the diagram “Terminal cover”). They can be removed to facilitate connection.

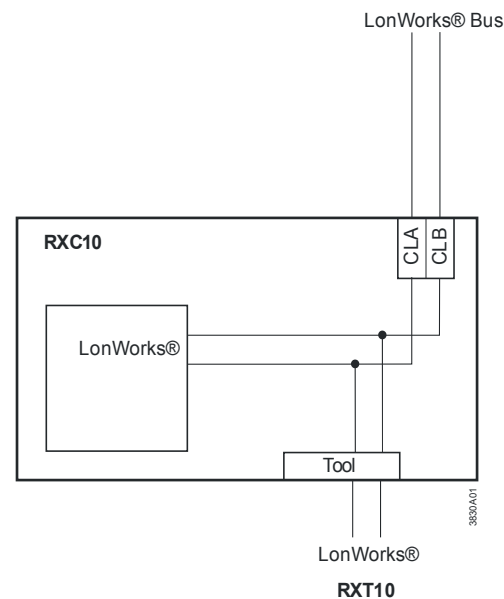
Communication

The RXC10 controller communicates with other devices via the following interfaces:

- LONWORKS® bus (terminals CLA and CLB) for communication with:
 - PXR system controller or NIDES.RX interface (to Desigo)
 - Other Desigo RXC devices
 - LONMARK®-compatible 3rd party devices (e.g. presence detector)
- Tool socket (RJ45) on the controller, for:
 - RXT10 commissioning and service tool (LONWORKS® bus)

LONWORKS® bus

The following diagram shows the wiring of the LONWORKS® bus and interface to the RXT10 commissioning and service tool.



Service LED

The yellow service LED shows the current operational status of the controller by means of different flashing patterns (see the RXT10 user manual, CM110669).

Service pin

The service pin is used to identify the controller in the commissioning phase. When the pin is pressed, the controller's identification number is transmitted to the RXT10 commissioning and service tool.

Disposal



The devices are 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 Desigo RXC installation guide, document CA110334, contains the relevant engineering information for the LONWORKS® bus (topology, bus repeaters, bus termination etc.) and for the selection and dimensions of connecting cables for the supply voltage and field devices.

The controller operates with an AC 24 V supply voltage. Connected valves are supplied directly from the controller.

This device has no circuit breakers for supply lines to external consumers (field power supply)!

Line insulation must always be sufficient for the available rated voltage.



When forwarding supply voltage (**for 24 V low voltage as well**) to external consumers, the wiring cross sections must at any rate be adapted to the preswitched overcurrent protection device. Please comply under all circumstances with local regulations.

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 STP72E 6 W
Y2 (cooling) 2 thermic valve actuators, type STP72E 6 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.

Mounting

The mounting instructions are printed on the controller packaging, together with a drilling template.



Caution!

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


Commissioning

The RXC10 controller is commissioned with the RXT10 commissioning and service tool. For this purpose, the RXT10 is connected to the LONWORKS® bus via the tool socket on the controller.

The commissioning procedure for the entire Desigo RXC range is described in detail in the RXT10 user manual, document CM110669.

Labeling	The labeling fields “Appl.” and “Loc.” are used to indicate the application actually loaded and the location of the controller, either in writing or by use of printed adhesive labels (see “Label” under “Mechanical design”).
Function test	With all applications (including basic application 00010), the inputs can be interrogated and the outputs overridden using the RXT10 commissioning and service tool.

Technical data

⚠ Power supply	Operating voltage	SELV / PELV AC 24 V ± 20%
	Rated voltage	AC 24 V
Caution! 	Frequency	50/60 Hz
	Power consumption	Max. 2 VA + external load
	Internal fuse	None
	External fuse	Transformer with secondary limitation of max. 10 A or
		External secondary power fuse with max. T 10 A non-renewable fuse or max. C 13 A circuit breaker is required in all cases
Operating data	Control algorithm	PI or PID
	Temperature sensor	NTC resistance sensor
	Measuring range	5 ... 40°C
	Response time	≤ 8 min
	Measuring accuracy (25 °C)	± 0.25 °C
	Measuring accuracy (0 ... 30 °C)	± 0.5 °C
	Setpoint correction	
	Correction range	max. ± 12 K (default ± 3 K)
	Accuracy over full correction range	10%
Inputs		
Signal inputs D1, 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 kΩ
	Not suitable for pulse control	
Outputs		
Triac outputs Y1, Y2	Quantity	2
	Output voltage	AC 24 V ON/OFF, PDM or 3-position (depending on application parameters)
	Load current per triac	Max. 0.5 A
	Total nominal load (with 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
	Nominal voltage range	DC 0 ... 10V
	Overrange	≥ 0.5 V
	Resolution	8 bits (50 mV)
	Output current	Max. 1 mA
	Response time	100 ms

Ports

LONWORKS® bus	Interface type	LONMARK®-compatible, electrically isolated
	Transceiver	On RXC10.1: FTT-10A On RXC10.5: FT 5000
	Baud rate	78 kBit/s
	Bus topology, bus termination	See installation guide, CA110334

Cable connections

Connection terminals	Stranded or solid conductors 0.25 ... 2.5 mm ² or 2 x 1.5 mm ² solid
Cable lengths	See installation guide, CA110334
Signal inputs D1, D2	Max. 100 m with diameters ≥ 0.6 mm
Triac outputs Y1, Y2	Max. 100m where A ≥ 1.5 mm ²
LONWORKS® bus	See installation guide, CA110334
Cable type	See installation guide, CA110334
Tool connecting cable	Max. 3 m

Housing protection standard

Protection standard to EN 60529	IP30
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Protection class

Insulation protection class	III
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Ambient conditions

Operation	Class 3K3 to IEC 60721-3-3
Temperature	5 ... 40 °C
Humidity	< 85 %rh
Transport	Class 2K3 to IEC 60721-3-2
Temperature	- 25 ... 65 °C
Humidity	< 95 %rh

Standards and directives

Product standard Automatic electronic controls for household and similar use	EN 60730-1
Electromagnetic compatibility	
Immunity (industrial & residential)	EN 60730-1
Emissions (residential)	EN 60730-1
 compliance	
Meets requirements of EMC directive	2004/108/EC
Meets requirements of RoHS directive	2011/65/EU
UL compliance	UL316
 C-Tick conformity (EMC)	AS/NZS 61000-6-3

Environmental compatibility

The product environmental declaration CA2E3830 contains data on RoHS compliance, materials composition, packaging, environmental benefit, disposal	ISO 14001 (Environment) ISO 9001 (Quality)
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Dimensions

See dimension diagrams	
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Color

Front plate	NCS S 0502-G ≈ RAL 9003 signal white
Housing base and mounting plate	RAL 7035 light grey

Weight

Weight excluding packaging	0.16 kg
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00109

	G	D1	
	G0	GND	
	YC1	GND	
	Y1	D2	
	G	CLA	
	Y2	CLB	

Signal inputs

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

Analogue 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

LONWORKS® bus

CLA	Data A
CLB	Data B

Power supply

G	AC 24 V
G0	System neutral

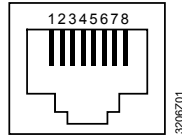


Note!

Local installation regulations must be observed.

Tool socket

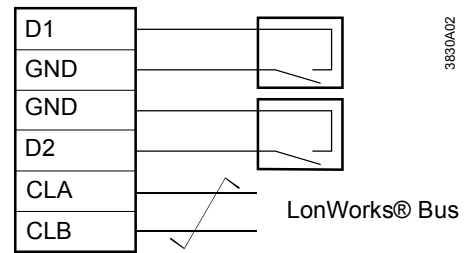
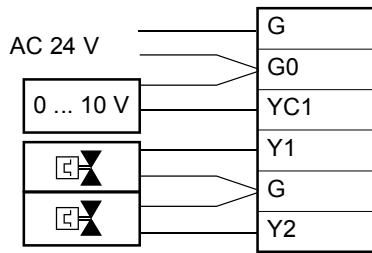
Standard RJ45 tool socket for LONWORKS® devices.



- 1 LONWORKS®, Data A (CLA)
- 2 LONWORKS®, Data B (CLB)
- 3 Not used
- 4 Not used
- 5 Not used
- 6 Not used
- 7 Not used
- 8 Not used

Connection diagrams

Connection of field devices, LONWORKS® bus and supply voltage



3830A02

- CLA LONWORKS® data cable +
 - CLB LONWORKS® data cable -
 - D1, D2 Volt-free contacts (window contact, occupancy detector etc.)
 - G AC 24 V phase
 - G0, GND System neutral
 - Y1, Y2 AC 24 V triac output
 - YC1 0 ... 10 V analogue output
- Twisted pair

Note For information on compatible actuators for the RXC10 controller, refer to the relevant application description. See Applications library (V1: CA2A3810, V2:CA110300).

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.

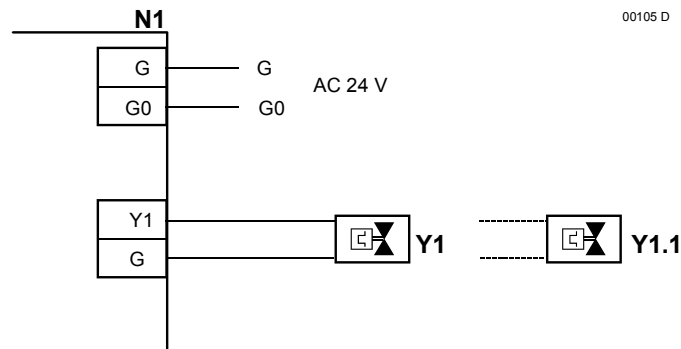


Note!

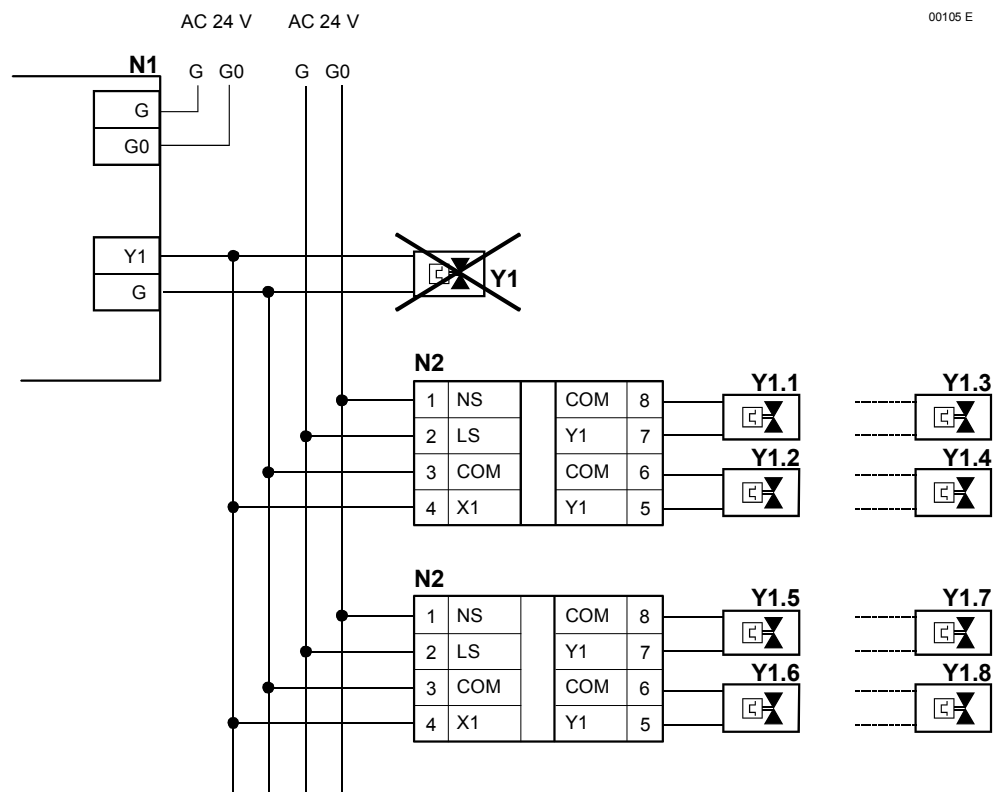
Mixed operation: **Connecting thermic actuators to the controller as well as to the power amplifier is NOT allowed.**

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



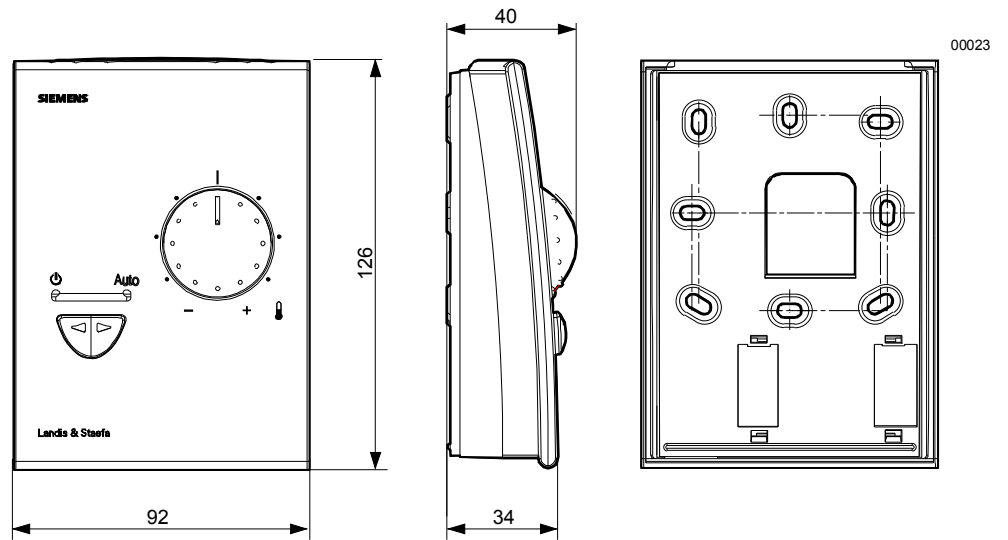
- N1 RXC10
- N2 UA1T (see data sheet CA2N3591)
- Y1 AC 24 V thermic valve actuator
- Y1.1 AC 24 V thermic valve actuator (max. 2 STA72E / STP72E actuators per Y1 output on the UA1T)

Notes

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

Dimensions

All dimensions in mm



Drilling diagram (1:2)

