



Desigo™ RXC

## Room controller

**RXC10.1**  
**RXC10.5**

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

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**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 <sup>1</sup>
- Operating voltage AC 24 V

1) PDM = pulse/duration modulated

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### 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

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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

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

## Ordering

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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

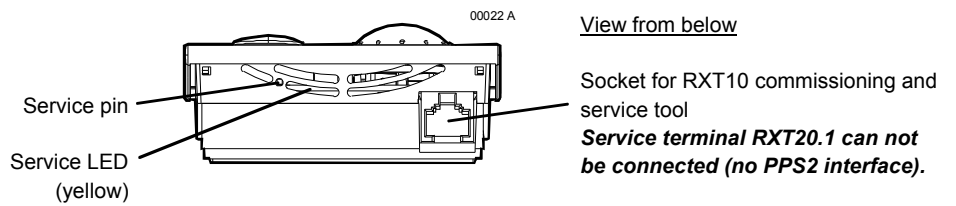
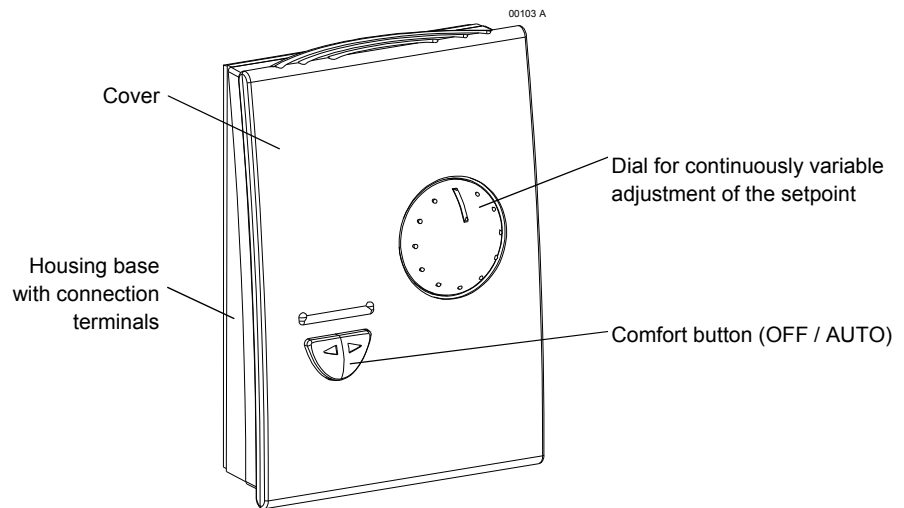
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The RXC10 controller can be used in conjunction with the Siemens field devices. For details, refer to the RX hardware overview, CA2N3804.

## Mechanical design

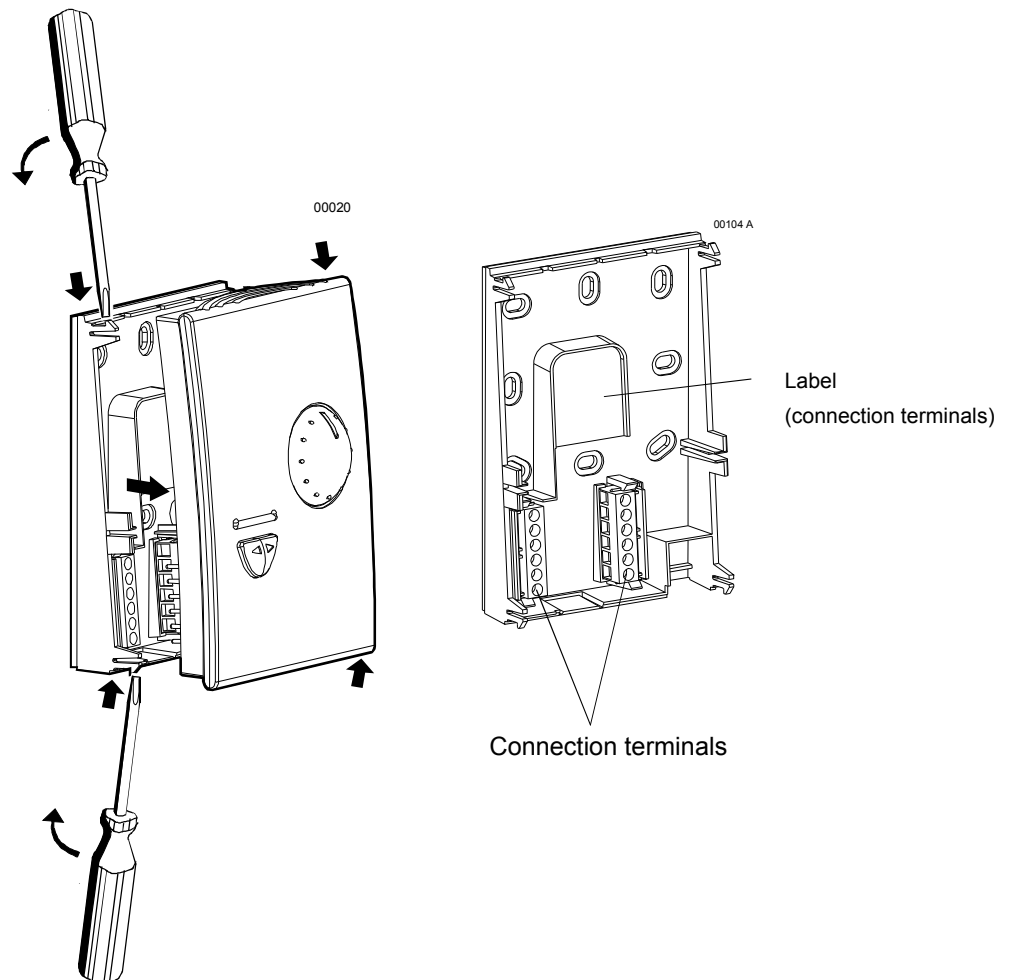
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The RXC10 controller comprises a housing base with connection terminals and a cover incorporating the printed circuit board and the operator controls. The controller also has a tool socket, a service LED and a service pin.

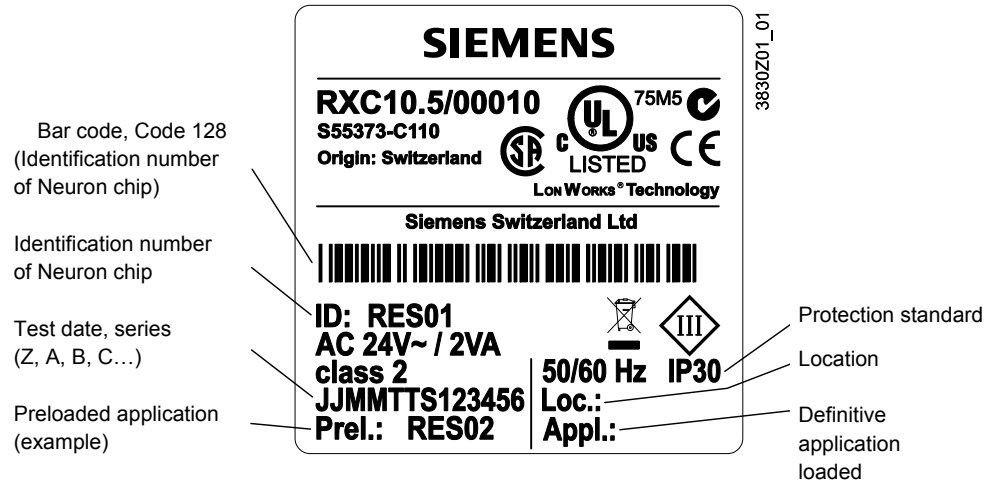


## Terminal cover

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.

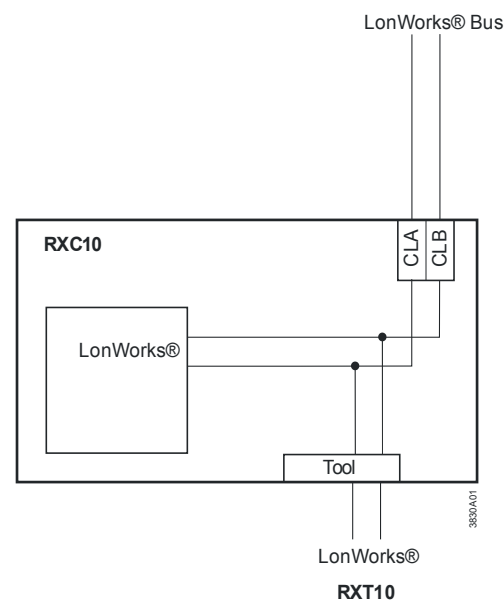
## Communication

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 3<sup>rd</sup> 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.

## 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

|                                                                   |                                                                     |                                                                                        |
|-------------------------------------------------------------------|---------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| <b>⚠ Power supply</b>                                             | Operating voltage                                                   | SELV / PELV AC 24 V $\pm$ 20%                                                          |
|                                                                   | Rated voltage                                                       | AC 24 V                                                                                |
|                                                                   | Frequency                                                           | 50/60 Hz                                                                               |
|                                                                   | Power consumption                                                   | Max. 2 VA + external load                                                              |
|                                                                   | Internal fuse                                                       | None                                                                                   |
| <b>Operating data</b>                                             | Control algorithm                                                   | PI or PID                                                                              |
|                                                                   | Temperature sensor                                                  | NTC resistance sensor                                                                  |
|                                                                   | Measuring range                                                     | 5 ... 40 °C                                                                            |
|                                                                   | Response time                                                       | $\leq$ 8 min                                                                           |
|                                                                   | Measuring accuracy (25 °C)                                          | $\pm$ 0.25 °C                                                                          |
|                                                                   | Measuring accuracy (0 ... 30 °C)                                    | $\pm$ 0.5 °C                                                                           |
|                                                                   | Setpoint correction                                                 |                                                                                        |
|                                                                   | Correction range                                                    | max. $\pm$ 12 K (default $\pm$ 3 K)                                                    |
| <b>Inputs</b><br>Signal inputs D1, D2<br>(for volt-free contacts) | Accuracy over full correction range                                 | 10%                                                                                    |
|                                                                   | Quantity                                                            | 2                                                                                      |
|                                                                   | Contact voltage                                                     | Approx. DC 30 V (pulsed)                                                               |
|                                                                   | Contact current                                                     | Approx. DC 10 mA (pulsed)                                                              |
|                                                                   | Contact transfer resistance                                         | Max. 100 $\Omega$                                                                      |
|                                                                   | Contact insulation resistance                                       | Min. 50 k $\Omega$                                                                     |
|                                                                   | Not suitable for pulse control                                      |                                                                                        |
| <b>Outputs</b><br>Triac outputs Y1, Y2                            | Quantity                                                            | 2                                                                                      |
|                                                                   | Output voltage                                                      | AC 24 V ON/OFF, PDM or 3-position<br>(depending on application parameters)             |
|                                                                   | Load current per triac                                              | Max. 0.5 A                                                                             |
|                                                                   | Total nominal load<br>(with load at both<br>outputs simultaneously) | Max. 9.5 VA<br>(e.g. 2 thermic valves, type STE72 per<br>heating and cooling sequence) |
|                                                                   | Internal fuse                                                       | 2 A (both outputs together)                                                            |
|                                                                   | Quantity                                                            | 1                                                                                      |
|                                                                   | Nominal voltage range                                               | DC 0 ... 10V                                                                           |
| <b>Control output YC1</b>                                         | Overrange                                                           | $\geq$ 0.5 V                                                                           |
|                                                                   | Resolution                                                          | 8 bits (50 mV)                                                                         |
|                                                                   | Output current                                                      | Max. 1 mA                                                                              |
|                                                                   | Response time                                                       | 100 ms                                                                                 |
| <b>Ports</b><br>LONWORKS® bus                                     | Interface type                                                      | LONMARK®-compatible,<br>electrically isolated                                          |
|                                                                   | Transceiver                                                         | On RXC10.1: FTT-10A<br>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<br>0.25 ... 2.5 mm <sup>2</sup><br>or 2 x 1.5 mm <sup>2</sup> 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 <sup>2</sup>                                                          |
|                             | 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                                                                                             |
| Protection class            | Insulation protection class                                                                                                                        | III                                                                                              |
| 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                                                                                       |
|                             | CE compliance                                                                                                                                      |                                                                                                  |
|                             | Meets requirements of EMC directive                                                                                                                | 2004/108/EC                                                                                      |
|                             | 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)<br>ISO 9001 (Quality)<br>2002/95/EC (RoHS)                               |
|                             |                                                                                                                                                    |                                                                                                  |
| Dimensions                  | See dimension diagrams                                                                                                                             |                                                                                                  |
| Color                       | Front plate                                                                                                                                        | NCS S 0502-G<br>≈ RAL 9003 signal white                                                          |
|                             | Housing base and mounting plate                                                                                                                    | RAL 7035 light grey                                                                              |
| Weight                      | Weight excluding packaging                                                                                                                         | 0.16 kg                                                                                          |

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|  |     |     |  |
|--|-----|-----|--|
|  | 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 |

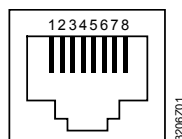


**Note!**

**Local installation regulations must be observed.**

### Tool socket

Standard RJ45 tool socket for LONWORKS® devices.

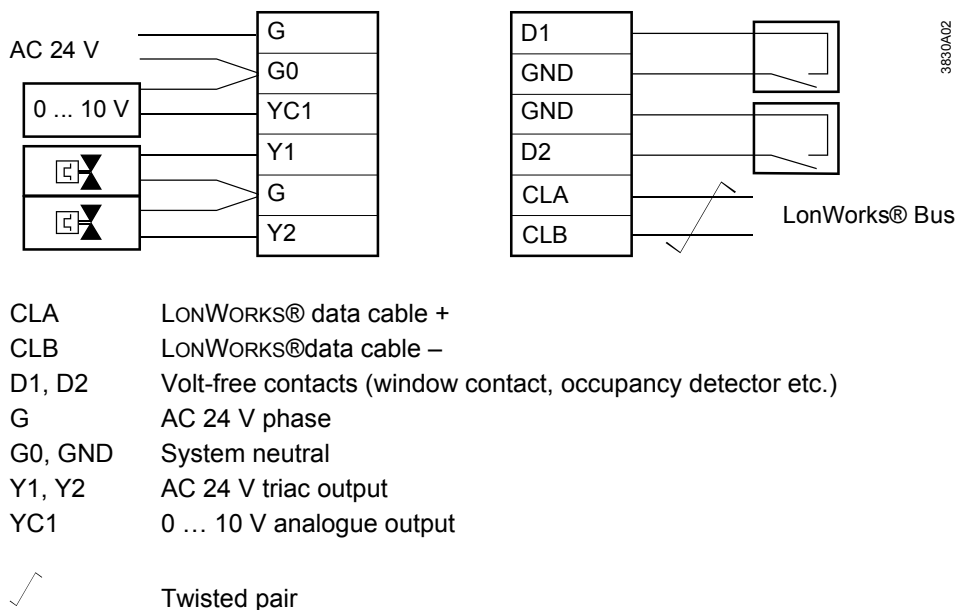


- 1 LONWORKS®, Data A (CLA)
- 2 LONWORKS®, Data B (CLB)
- 3 Not used
- 4 Not used
- 5 Not used
- 6 Not used
- 7 Not used
- 8 Not used



## Connection diagrams

### Connection of field devices, LONWORKS® bus and supply voltage



**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.

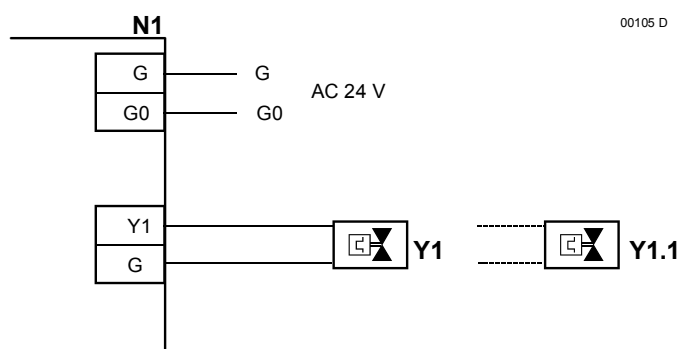


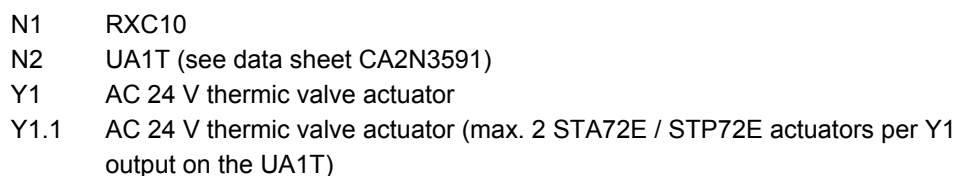
### Note!

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

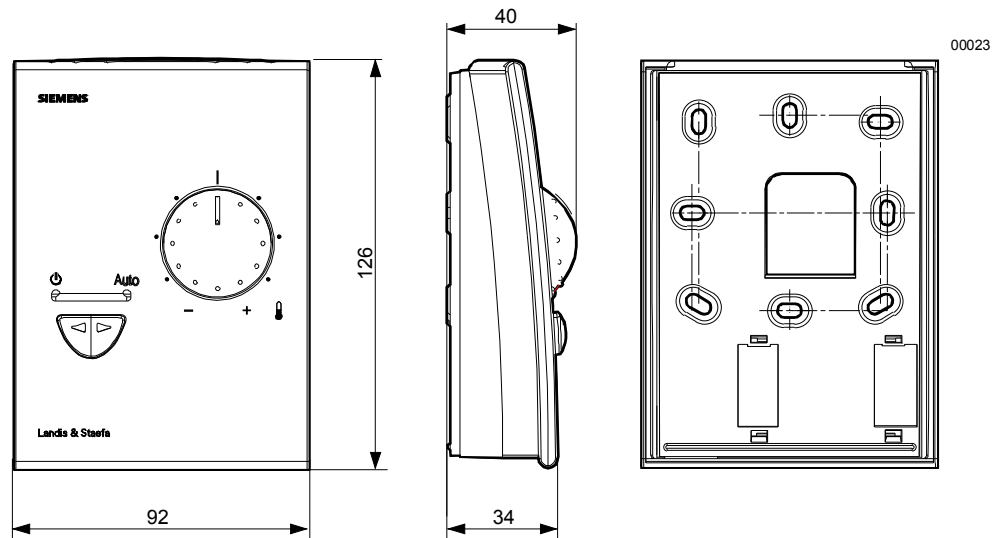




- The UA1T requires an AC 24 V supply voltage
- The UA1T is *not* suitable for the connection of 3-position actuators.

## Dimensions

All dimensions in mm



## Drilling diagram (1:1)

