



## Application

---

The RXC34.1 room controller is a universal controller, specifically designed for use as a fast volume flow rate controller. The addition of extension modules (e.g. RXC41.1) provides scope for the integration of further applications.

For operation, either conventional room units and momentary-contact switches, or integrated room units with a bus connection may be used.

The controller application is determined by downloading the relevant application software, also referred to simply as the "application". The various applications and associated functions are described in detail in the RXC applications library (CA110300).

The RXT10 commissioning and service tool is used to download the application and to commission the RXC34.1 (see "Commissioning notes").

The controller is delivered with laboratory application LAB01 for use in laboratories.

## Functions

---

The room controller functions are determined by the selected application and the associated parameters.

For a detailed description of functions, refer to the DESIGO RXC Applications library, document CA110300.

Integrating the DESIGO RXC room automation system into the building automation and control system makes additional functions available, such as time scheduling, central control of setpoints, etc. (refer to the DESIGO INSIGHT documentation).

## Types

---

<b>RXC34.1</b>	Room controller
<b>RXZ30.1</b>	Accessories: Terminal covers

## Ordering

---

When ordering please specify the quantity, product name, type code and application. The controllers are delivered with laboratory application LAB01 for use in laboratories.

The RXZ30.1 terminal covers are supplied in packs of 10 pairs and must be ordered separately.

*Example:*

<b>30</b>	<b>Room controller</b>	<b>RXC34.1/LAB01</b>
<b>30</b>	<b>Pairs of terminal covers</b>	<b>RXZ30.1</b>

## Compatibility

---

The RXC34.1 controller can be combined with extension modules, such as the RXC40.1 for lighting control (data sheet 3842) and the RXC41.1 for the control of blinds (data sheet 3843). In such cases, the RXC34.1 controller must be loaded with an application which matches the selected combination of extension modules. The possible combinations and the associated applications are described in the applications library (CA110300).

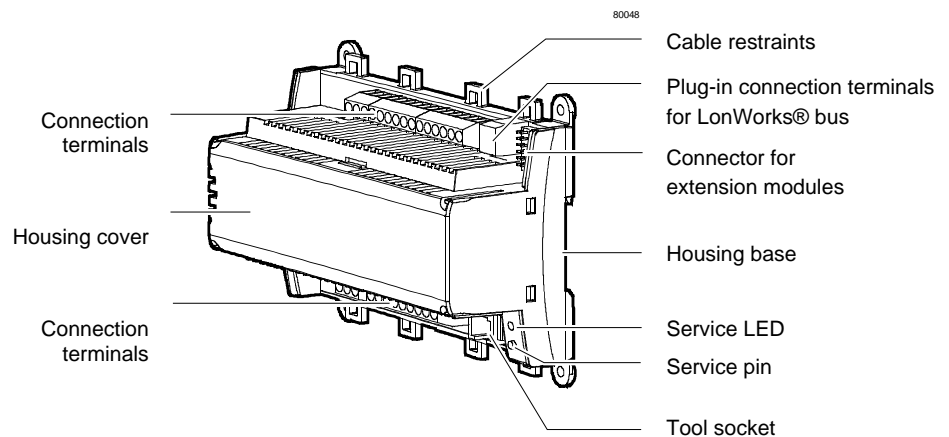
For operation, a room unit from the QAX3... series may be used in conjunction with conventional momentary contact switches for lighting control, or the flexible room units, QAX50.1 or QAX51.1 may be used.

Refer to the RX hardware overview, document CA2N3804 for an overview of the available field devices.

## Design

---

The RXC34.1 controller consists of a housing base, a housing cover and the printed circuit board with connection terminals. The controllers also have a connector base for the extension modules, a tool socket, a service LED and a service pin.

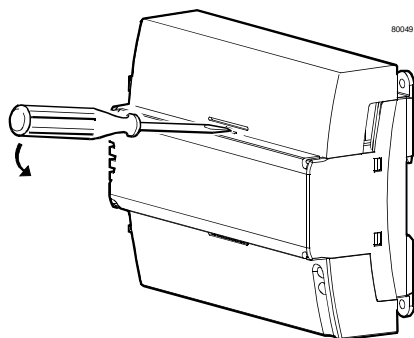


### Terminal covers

Terminal covers (RXZ30.1) are available as an option to protect the connection terminals from physical contact and dirt. The terminal covers *must* be used on equipment mounted outside the control panel or distributor box.

When fitting the terminal covers, make sure that they lock into position correctly. These covers also provide strain relief for the cables connecting the extension modules.

The service LED remains visible when the terminal covers are in place, and the service pin can be operated with a pointed implement.



Removing the terminal cover

## Label

Bar code, Code 39  
(ID number)

Protection standard

Temperature range  
(0 ... 50 °C)

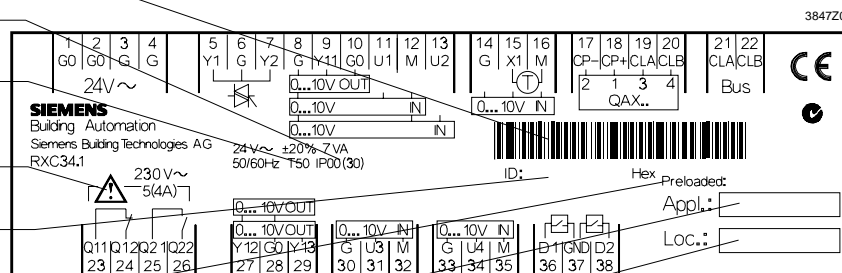
Observe notes  
in this document

Neuron ID

Factory-loaded  
application

Definitive  
application

Location



## Note

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

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

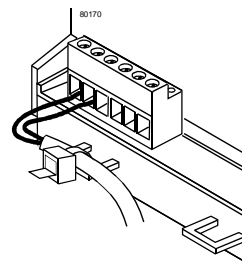
## Connection terminals

The connection terminals for the LonWorks® bus are detachable plug-in terminals. All other terminals are fixed.



## Caution

- The cable restraints on the housing base *must* be used for the connections to relay terminals 23 ... 26. The conductors must be secured with cable ties (see diagram).
- For safety reasons, the mains voltage (230 VAC) and the SELV for the two relay contacts (terminals 23 ... 26) must not be combined.



## Communication

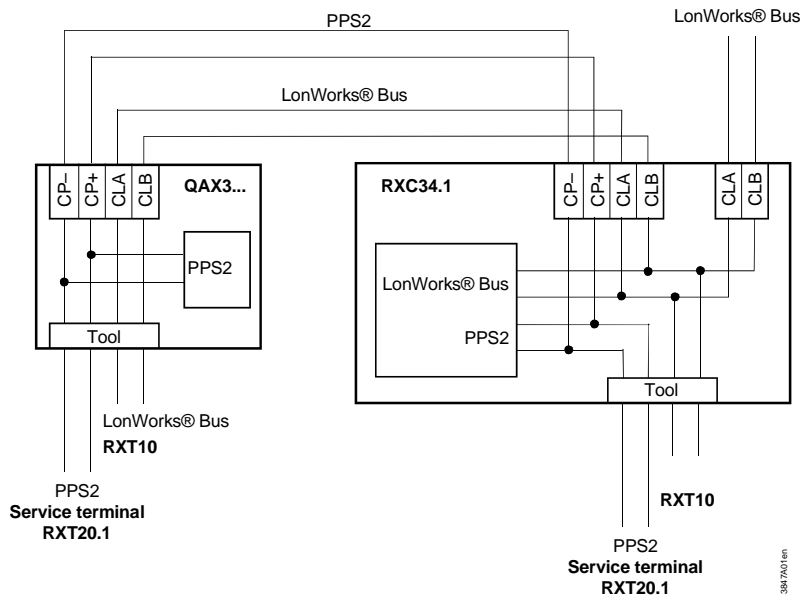
The RXC34.1 controller communicates with other devices via the following interfaces:

- LonWorks® bus (terminals CLA and CLB) for communication with:
  - The PXR system controller or the NIDES.RX interface (to DESIGO)
  - Other DESIGO RXC controllers
  - LONMARK®-compatible third-party devices (e.g. occupancy sensors)

- PPS2 (terminals CP– and CP+):  
Interface to the QAX3... room units. (In addition to PPS2, the LonWorks® bus can also be looped to the tool socket on the room unit.)
- Tool socket (RJ45) on the controller or room unit, for:
  - RXT10 commissioning and service tool (LonWorks® bus)
  - RXT20.1 service terminal (PPS2)
- PE bus (plug-in connection):  
Interface to the extension modules such as the RXC40.1 and RXC41.1.

LonWorks® bus  
and PPS2

The diagram below shows the wiring of the LonWorks® bus and PPS2 interface when a QAX3... room unit is connected. It also shows the options for connecting the RXT10 commissioning and service tool and the RXT20.1 service terminal.



### 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, CA110412).

### 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 device includes electrical and electronic components and must not be disposed of as domestic waste.

**Current local legislation must be observed.**

### Engineering notes

The DESIGO RX installation guide (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.



### Note!

In the case of line topology the length of the spur or stub between the RXC34.1 and the QAX... room unit is limited to 3 m.

## Extension modules

The plug-in connection for the extension modules incorporates both the communications and the power supply. The power supply is limited to a maximum of two extension modules. The possible combinations are determined by the available applications. Refer to the RXC applications library (CA110300).

## Signal inputs

The cables for signal inputs D1 and D2 (SELV) must be routed separately from the AC230 V cables and must comply with SELV requirements. The low voltage and mains voltage must not be routed in the same cable.



### Note!

**Signal inputs D1 and D2 may be used for volt-free maintained contacts (e.g. window switches). N.B.: No pulse control.**

## AC 24 V supply

The controller operates with an AC 24 V supply voltage (SELV). The supply cable must be protected with at least 10 A.

The controlled devices (valves and damper actuators) are supplied directly from the controller.

The maximum load on the outputs must not be exceeded (see "Technical data").

The power consumption of the connected devices must be taken into account when sizing the transformer.

## Volt-free relay outputs up to AC 250 V

The volt-free relay outputs allow switching of loads up to AC 250 V, 5 A (4 A). The cable dimensions depend on the connected load and the local installation regulations.

The circuits must be protected with external fuses (max. 10 A) as there are no internal fuses.

The cables must be secured with cable restraints. The combining of mains voltage (AC 230 V) with SELV (e.g. AC 24 V) is not permissible.

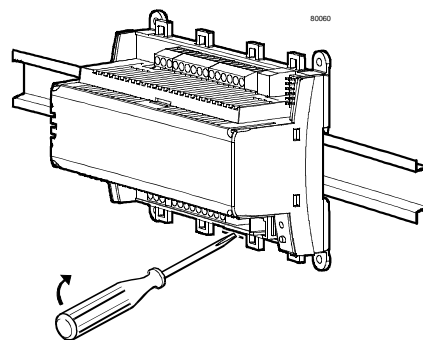
## AC 24 V triac outputs

The maximum load on each output must not exceed 12 VA.

The simultaneous load on outputs Y1 and Y2 must not exceed 24 VA.

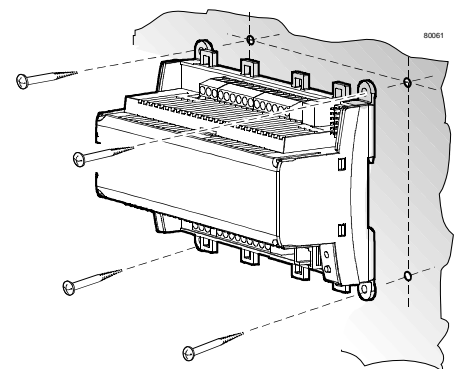
## Mounting instructions

The controller can be mounted in any orientation as follows:



### Rail mounting:

The housing base is designed for snap-mounting on DIN rails, type EN50022-35x7.5 (can be released with a screwdriver)



### Surface mounting:

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

Screws: max. diameter 3.5 mm

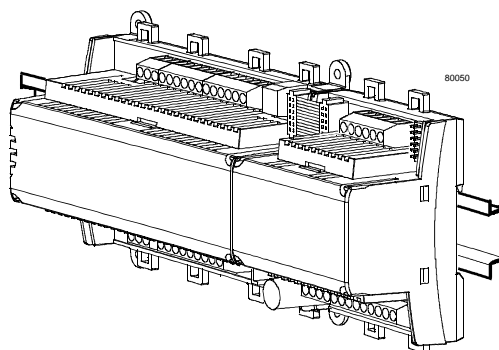
When mounting note the following:

- The controller should not be freely accessible after mounting
- Ensure adequate air circulation to dissipate heat generated during operation.
- Easy access is required for service personnel
- Local installation regulations must be observed.

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

### Mounting with extension modules

The controller and extension modules (e.g. RXC40.1 and RXC41.1) should be mounted on the same DIN rail, if possible. In any case, the length of the connecting cable must never exceed 3 meters.



#### Notes

- When different types of extension modules are used, they are mounted in a specific order for each application, and this must be adhered to.
- The maximum permissible cable length (3 meters) applies to the complete module assembly.

## Commissioning

---

The RXC34.1 controller is commissioned with the RXT10 commissioning and service tool. This is connected to the LonWorks® bus via a tool socket (on the controller or room unit).

The commissioning procedure for the entire DESIGO RXC range is described in detail in the RXT10 user manual (CA110412).

### 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

The direct interrogation of the inputs and control of the outputs with the RXT10 commissioning and service tool is supported as a function of the application. This makes it possible to test the installation, and to operate the connected plant provisionally, before the complete DESIGO RXC system is commissioned.

#### Notes


The LonWorks® bus plug (terminals 19 and 20) can be removed and reconnected at any time, even while the controller is in operation. Only the original bus plug may be used.



### Caution

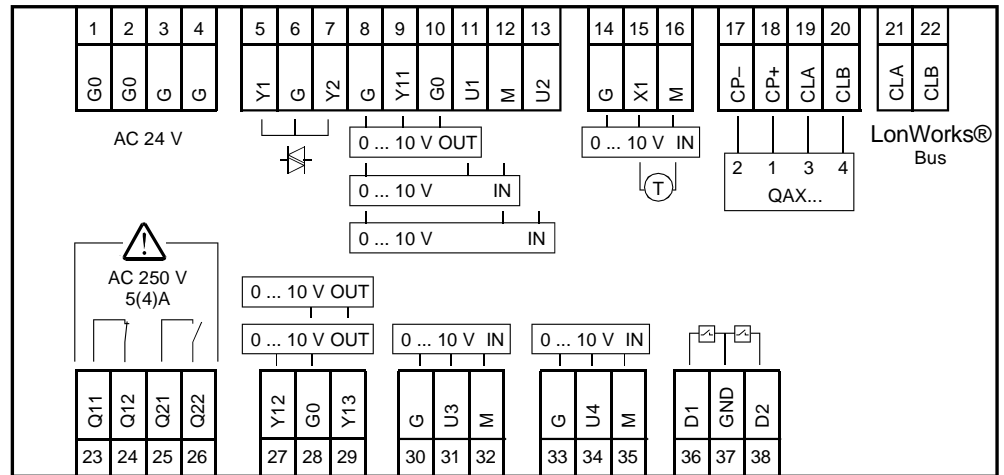
**There is no protection against the accidental connection of AC 230 V on the AC 24 V side.**

## Technical data

<b>Power supply</b>	Operating voltage	AC 24 V $\pm$ 20 %
	SELV safety low voltage in accordance with	HD 384
	Frequency	50/60 Hz
	Power consumption	
	without field devices	7 VA
	with field devices and extension modules	Max. 34 VA
	Internal fuse	Thermal, self-resetting
Supply cable protection (external fuse)	$\leq$ 10 A	
<b>Inputs</b>		
Signal input for volt-free contacts	Number of inputs	2 (D1, D2)
	Contact voltage (SELV to HD 384)	DC 33 V
	Contact current	DC 8 mA
	Contact transition resistance	Max. 100 $\Omega$
	Contact insulation resistance	Min. 50 k $\Omega$
	<i>Not suitable for pulse control, as the inputs are for static detection only</i>	
Measured value input for temperature measurement	Number of inputs	1 (X1) <sup>1)</sup>
	Suitable temperature sensor	LG-Ni 1000
	Measuring range	-40 ... 110 °C
	Sensor current	2.5 mA at 0 °C
	Resolution	$\leq$ 0.2 K
	Accuracy	At 25 °C $\pm$ 0.2 K
Measured value input for DC 0 ... 10 V signals	Number of inputs	5 (X1, U1 ... U4) <sup>1)</sup>
	Measuring range (nominal)	DC 0 ... 10 V
	Overrange	0.5 V
	Subrange	0 V
	Resolution	25 mV
	Sample rate	$\leq$ 200 ms (U1... U4) $\leq$ 1 s (X1)
	<b>Outputs</b>	
Relay outputs	 SELV and non-SELV voltages must not both be connected to one RXC34 controller.	
	Number of outputs	2 (Q11/12 N/C, Q21/22 N/O)
	Relay type	Monostable
	Contact rating with AC voltage	
	Switching voltage	Max. AC 250 V, min. AC 19 V
	Nominal current, resistive/inductive	Max. AC 5 A / 4 A ( $\cos\phi = 0.6$ )
	Making current 200 ms half-time	Max. 20 A
	Switching current at AC 19 V	Min. AC 10 mA
	Contact rating with DC voltage	
	Switching voltage	Max. DC 250 V, min. DC 5 V
	Switching current at DC 5 V	Min. DC 100 mA
	Switching capacity	Max. 20 W
	Inductive load L/R	Max. 7 ms
	External fuse	Max. 6 A (slow blow)
	AC 24 V triac outputs	Number
Output voltage		AC 24 V on/off, PDM or 3-position (can be configured)
Output current		Max. 0.5 A
Total nominal load		Max. 24 VA
Simultaneous load per output		Max. 12 VA
<sup>1)</sup> X1 changeover option in RXT10 tool: LG-Ni 1000 $\leftrightarrow$ 0 ... 10 V		



Control outputs DC 0 ... 10 V	Number	3 (Y1 ... Y13)	
	Voltage range	Nominal	DC 0 ... 10 V
		Overrange	5.5 V
	Resolution	8 bits (50 mV)	
	Output current	Max. 1mA	
	Time constant	100 ms	
Interface to room units	Max. number of room units	Max. 1	
	Interface type, for RXT10	LonWorks®	
	PPS2 baud rate	4.8 kbit/s	
	LonWorks® baud rate	78 kbit/s	
LonWorks® bus	Interface type	LONMARK®-compatible), electrically isolated	
	Transceiver	FT-X1	
	Baud rate	78 kbit/s	
	Bus topology and bus termination	See Installation guide, CA110334	
Interface to extension modules	Serial PE bus (for data and supply voltage)		
<b>Cable connections</b>	Connection terminals for signals and power supply (screw terminals)	Solid conductors 0.25 ... 2.5 mm <sup>2</sup> or 2 x 1.5 mm <sup>2</sup> or confectioned cable	
	LonWorks® bus connection terminals (plug-in screw terminals)	Solid conductors 2 x 1.0 mm <sup>2</sup>	
	Connecting cable for extension modules	10-core ribbon cable	
Single cable lengths (see <i>Installation guide</i> , CA110334)	Signal inputs	D1, D2	Max. 100 m with diameters ≥ 0.6 mm
	Measured value input	X1, U1 ... U4	Max. 100 m with diameters ≥ 0.6 mm
	AC 24 V triac outputs	Y1, Y2	Max. 100m where A ≥ 1.5 mm <sup>2</sup>
	Control outputs DC 0 ... 10 V	Y1 ... Y13	Max. 100m where A ≥ 1.5 mm <sup>2</sup>
	Interface to room unit		Max. 115 m where A= 0.75 mm <sup>2</sup>
	Cable type		(including tool connecting cable) 4-core, unscreened
	VAV compact controller with PPS2 interface (YC1, YC2)		twisted pair Max. 230 m where A = 1.5mm <sup>2</sup> , for all compact VAV controllers together
	LonWorks® bus (tool socket cable type)		See Installation guide, CA110334
<b>Housing protection standard</b>	Protection standard to EN 60529	IP30 with terminal cover fitted and wall mounted without DIN rail All other mounting arrangements: IP00	
	<b>Protection class</b>	Suitable for use in systems with protection class I or II	
<b>Ambient conditions</b>		Normal operation	Transport
	Class	3K5 to IEC 60,721-3-3	Class 2K3 to IEC 60,721-3-2
	Temperature	0 ... 50 °C	- 25 ... 65 °C
	Humidity	< 85 % rh	< 95 % rh
<b>Industry standards</b>	Product safety	Automatic electronic controls for household and similar use	EN 60730-1 EN 60730-2-11
		Special requirements for energy controllers	
	Electromagnetic compatibility	Interference immunity	EN 61000-6-1
	Emitted interference	EN 61000-6-3	
<b>CE marking:</b>	Meets the requirements of EMC Directive	89/336/EEC	
	Low Voltage Directive	73/23/EEC	
<b>Dimensions</b>	See dimension diagrams		
	Width in DIN modular spacing units	8,5	
<b>Weight</b>	Excluding packaging		
		0.28 kg	



3847A02

**Power supply**

G0	1	Controller ground	} +/- 20%
G0	2	Controller ground	
G	3	AC 24 V supply	
G	4	AC 24 V supply	

**Triac outputs**

Y1	5	AC 24 V, 0.5 A switching output
G	6	AC 24 V supply
Y2	7	AC 24 V, 0.5 A switching output

**Analog inputs / outputs**

G	8	AC 24 V (phase)
Y11	9	Analog OUT 0 ... 10 V
G0	10	Controller ground
U1	11	Analog IN 0 ... 10 V
M	12	Measuring neutral (G0)
U2	13	Analog IN 0 ... 10 V

**Measured value inputs for temperature sensors or 0 ... 10 V devices**

G	14	AC 24 V (phase)
X1	15	Analog IN LG-Ni 1000 / 0...10 V
M	16	Measuring neutral (G0)

**Room unit**

CP-	17	PPS2 ground
CP+	18	PPS2 data
CLA	19	Data A
CLB	20	Data B

**LonWorks® bus (plug-in)**

CLA	21	Data A
CLB	22	Data B

### Relay outputs

Q11	23	N/C contact
Q12	24	N/C contact
Q13	25	N/O contact
Q14	26	N/C contact

### Analog inputs / outputs

Y12	27	Analog OUT 0 ... 10 V
G0	28	Controller ground
Y13	29	Analog OUT 0 ... 10 V
G	30	AC 24 V (phase)
U3	31	Analog IN 0 ... 10 V
M	32	Measuring neutral (G0)
G	33	AC 24 V (phase)
U4	34	Analog IN 0 ... 10 V
M	35	Measuring neutral (G0)

### Signal input for volt-free contacts

D1	36	Signal input
GND	37	Signal input ground
D2	38	Signal input

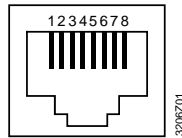


### Caution

- Observe the technical data for the relay outputs.
- Local installation regulations must be observed.

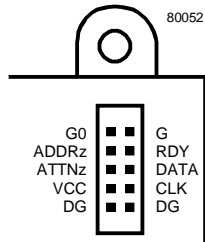
### Tool socket

Standard RJ45 tool socket for LonWorks® devices.



1	LonWorks®, Data A (CLA)	5	Not used
2	LonWorks®, Data B (CLB)	6	Not used
3	Not used	7	PPS2 (CP+)
4	Not used	8	PPS2 (CP-)

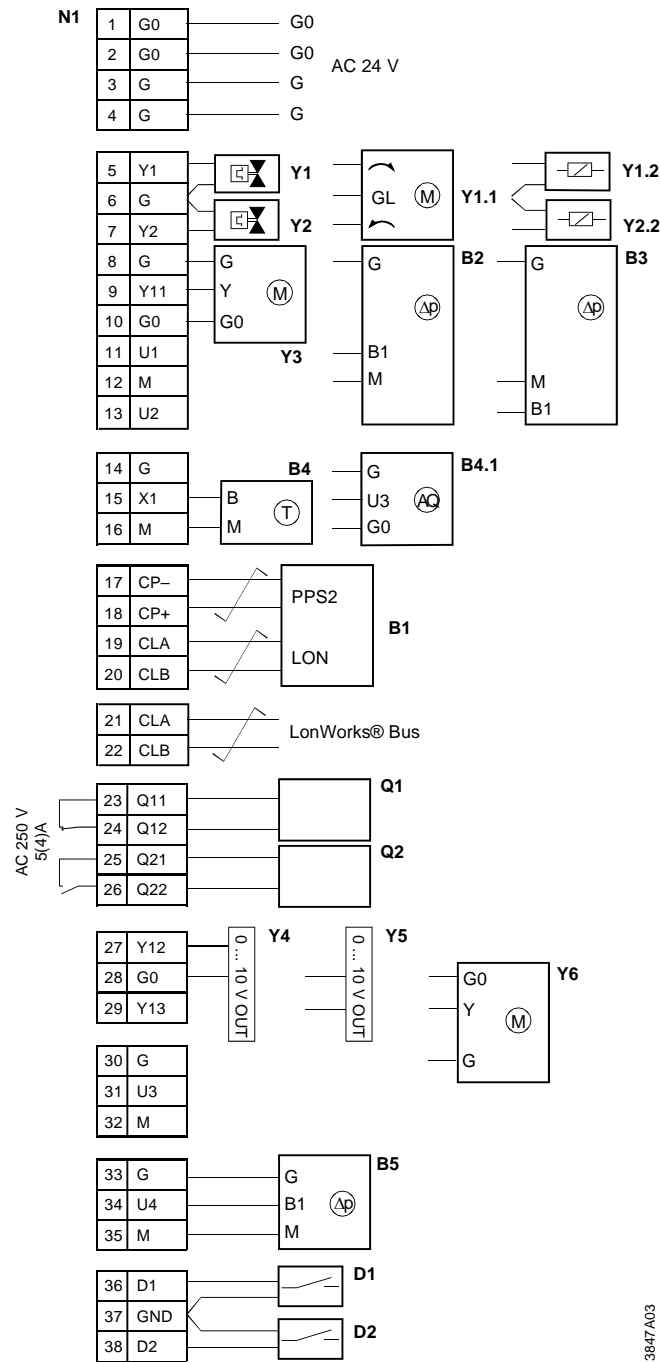
### Connector for extension modules



G0	Ground	G	AC 24 V
ADDRz	Module address	RDY	Handshake
ATTNz	Handshake	DATA	Data
VCC	DC 5 V	CLK	Clock
DG	Electronics ground	DG	Electronics ground

Connection diagrams

Connection of field devices, room unit, LonWorks® bus and power supply



- B1 QAX3... room unit
  - B2, B3, B5 Differential pressure sensor
  - B4 LG-Ni 1000 temperature sensor
  - D1, D2 Volt-free contacts (window contact, occupancy sensor, etc.)
  - N1 RXC34.1 room controllers
  - Q1, Q2 External consumers or indicators
  - Y1 / Y2 AC 24 V thermic valve actuators
  - Y1.1 AC 24 V, 3-position valve or damper actuator
  - Y1.2, Y2.2 AC 24 V contactors for electric heating coil
  - Y3, Y6 Actuators 0 ... 10 V
  - Y4, Y5 Display unit 0 ... 10 V
- ↗ Twisted pair

Note For information on actuators compatible with the RXC34.1 controller, see the relevant application description. Refer to the RXC applications library, 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 output Y3.

Note that the simultaneous load on outputs Y3 and Y4 must not exceed 9.5 VA.

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

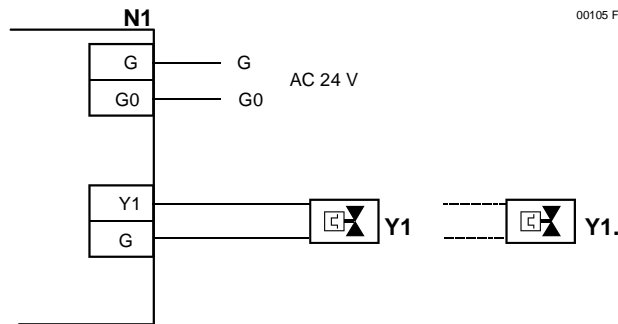


**Note!**

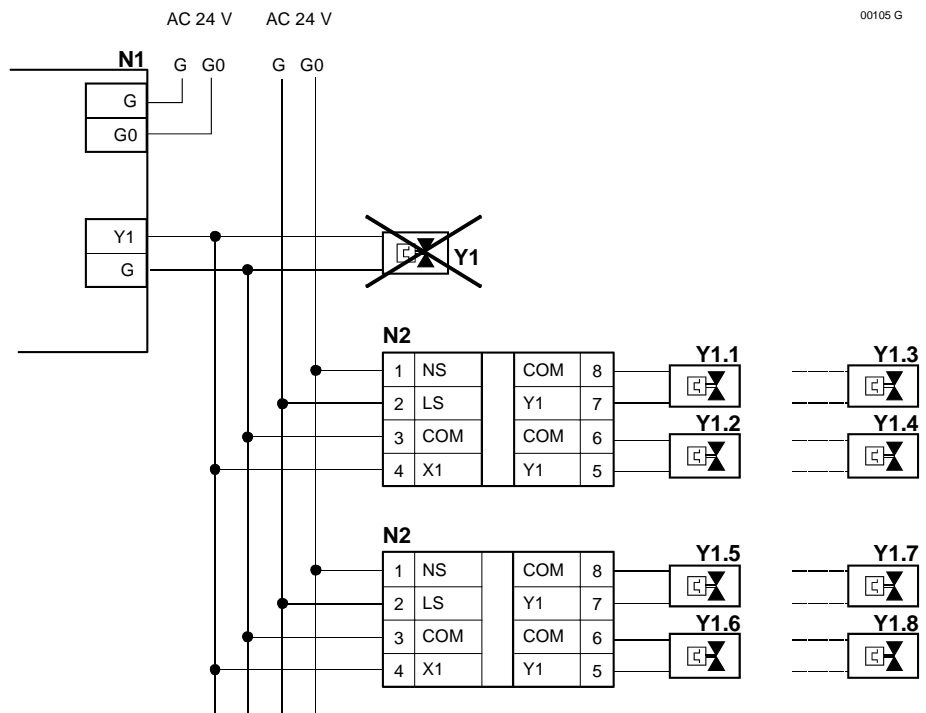
Mixed operation: **Connecting thermic actuators to the controller as well as to the power amplifier is NOT allowed.**

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

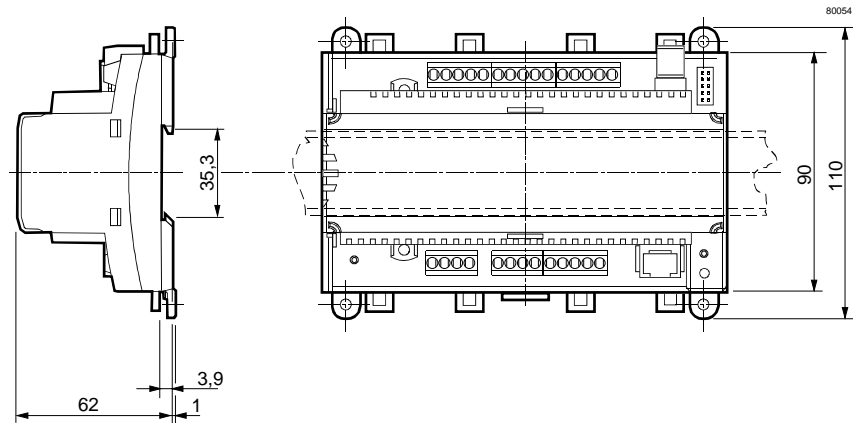


- N1 RXC32.1
- N2 UA1T (see data sheet CA2N3591)
- Y3 AC 24 V thermic valve actuator
- Y3.x AC 24 V thermic valve actuator (max. 2 STA71 / STP71 actuators per Y1 output on the UA1T)

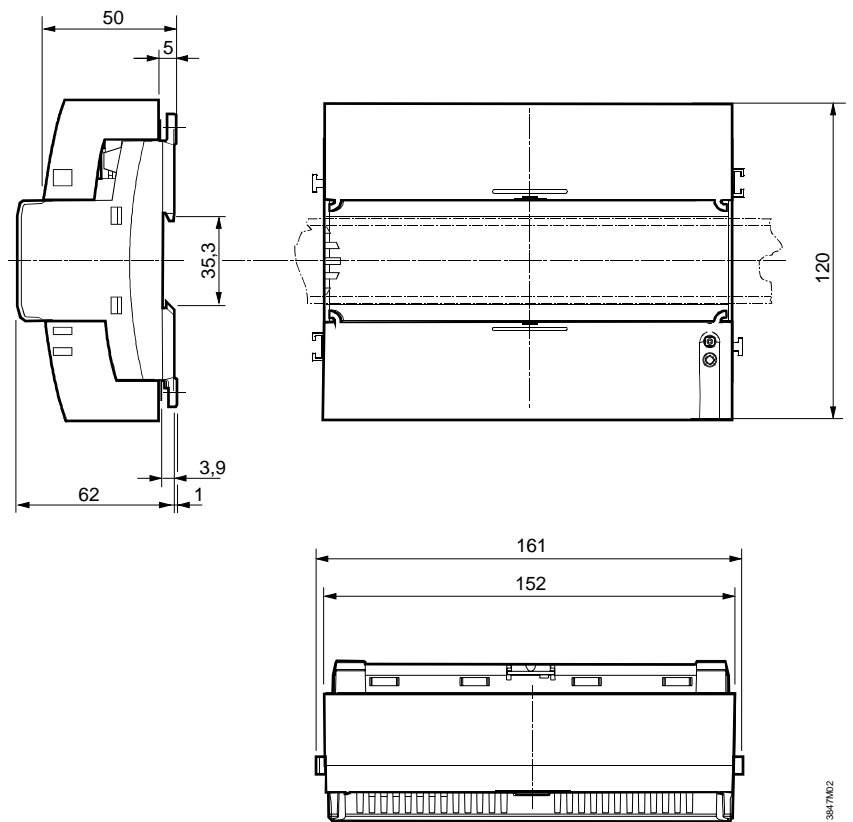
Notes

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

**Without terminal covers**



**With terminal covers**



**Drilling diagram**

