# SIEMENS

DESIGO™ RX

# Room unit with PPS2 interface                 QAX32.1

for use with:   – devices of the ranges DESIGO RXC, RXB, and RXA (PPS2)
                – DESIGO PX Automation stations [1]
                – devices with a PPS2 interface

- **Room temperature measurement**
- **Room temperature setpoint adjuster**
- **Mode selector switch (⏻ / Auto)**
- **PPS2 interface to controller**
- **Socket for commissioning and service tool or service terminal**

## Use

The room unit is used in rooms controlled by an individual room control system, to measure the room temperature and for operation of a room controller.

It can also be used in conjunction with a DESIGO PXC… automation station [1].

The room unit incorporates a socket for a commissioning and service tool or service terminal. This tool socket provides access via the PPS2 interface or via a bus system (e.g. LON bus) to the connected individual room controller.

[1]    If room units QAX32.1, QAX33.1 or QAX34.1 are used in conjunction with a PXC automation
       station, the room unit will show  the request of the user and not the effective state.

**Siemens Building Technologies**
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## Ordering

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

*Example:*
**30      Room units      QAX32.1**

## Equipment combinations

The room unit is suitable for use in conjunction with all controllers which incorporate a PPS2 room unit interface (e.g. DESIGO RX, DESIGO PX).

## Mechanical design

The room unit is designed for surface mounting (with knock-outs for cable entry from the top or bottom) or for mounting on a recessed conduit box with the cables connected from the rear.

The unit comprises a housing and base unit, connected by releasable snap-fittings.

The base unit accommodates the screw terminals which have an integrated terminal strip.

The housing accommodates a printed circuit board, room temperature sensor element, setpoint adjuster, rocker switch for mode selection, plug-in connectors and a socket for the commissioning and service tool or service terminal.

Both the housing and base are made of plastic.



Base unit

Housing

Socket for the commissioning and service tool or service terminal
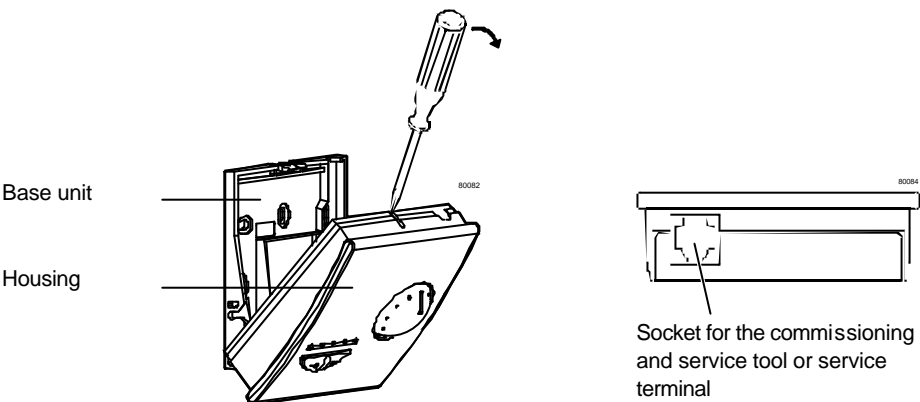
**Operator controls and indication**



Dial for stepless adjustment of the setpoint

LEDs to indicate operating mode
Rocker switch for mode selection
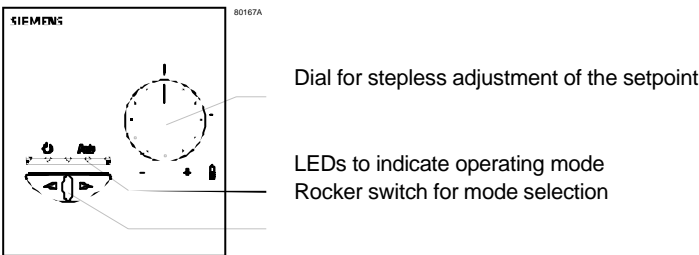
Rocker switch for mode selection

The controller operating mode can be selected on the basis of occupancy, using the rocker switch on the room unit (press left or right arrow). The current operating mode is indicated by a LED.

| Position | Operating mode [1] |
|----------|--------------------|
| ⏻ | The controller operates at the setback setpoints (at night, or when room is unoccupied or occupied intermittently) |
| Auto | Comfort mode (room occupied) |

1)    For details of these functions, refer to the application description for the relevant controller range.

Address plugs
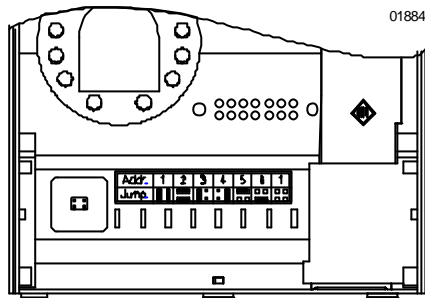


Address plugs inside the housing
They allow setting the address in cases where several
room units are connected to one controller.
The room units are delivered with address 1.

## Disposal

The device includes electrical and electronic components and must not be dis-
posed of as domestic waste.

**Current local legislation must be observed.**

## Engineering notes

The device receives its power from the connected controller via the PPS2 interface (low
voltage). Only one room unit may be connected to a RX… room controller.

A maximum of 5 room units may be connected to a PXC… automation station (they are
identified by different settings of their address plugs)

A twisted-pair cable is required for the connection to the controller.
DESIGO RX uses four-core cables, DESIGO PX uses two-core cables (see the respec-
tive installation guides). Screening is not required.

## Mounting

- The room unit is suitable for wall-mounting and for mounting on a recessed conduit
  box.
- Do not mount in recesses, shelves, behind curtains or doors, or above or near heat
  sources.
- Avoid exposure to direct sunlight or draughts.
- The electrical wiring conduit must be sealed where it joins the room unit, to prevent
  the occurrence of draughts in the conduit which could affect the sensor.
- The specified ambient conditions must be complied with.
- Mounting instructions are printed on the room unit packaging.
- A mounting kit is included with the unit.

## Installation notes

Local installation regulations must be observed.

**Note!** **The room unit is not protected against connection to AC 230 V.**

## Commissioning notes

**Response on start-up**

After an interrupt of the PPS2 interface the communication will only be re-established when the connected controller polls the PPS2 addresses. The duration of the corresponding cycle is:

RXA: 10 sec, RXB and RXC: 3 min, PX: 30 sec.

The following routine occurs in the room unit when the power supply is connected (via the PPS2 interface) or after a reset via the controller:

| Step | Function | Description |
|------|----------|-------------|
| 1 | LED test | The LEDs are operated in sequence for 1 s each |
| 2 | Device ready | After a delay of 1 s the device will be ready for PPS2 communication. The actual operating mode is displayed after a further delay of 5 s. |

## Technical data

| | | | |
|---|---|---|---|
| Supply voltage | Operating voltage (SELV to HD 384) The room unit receives its power from the connected controller, via the PPS2 interface (SELV, security extra low voltage according to HD384) | DC 12 ... 15 V | |
| | Power consumption (from controller) | Max. 0.10 VA | |
| Function data | Temperature sensor | | |
| |    Measuring element | NTC resistor | |
| |    Measuring range | 0 ... 40 °C | |
| |    Response time | ≤ 8 min | |
| |    Accuracy (5 ... 30 °C) | ± 0.5 K | |
| |    Accuracy (25 °C) | ± 0.25 K | |
| | Setpoint correction | | |
| |    Correction range (determined by controller) | max. ± 12 K (default ± 3 K) | |
| |    Accuracy over full correction range | 10 % | |
| | Indication (operating mode) | 2 LEDs, yellow | |
| Interfaces | Type of interface between controller and room unit | PPS2 (point-to-point interface, Version 2) | |
| | Baud rate | 4.8 kbit/s | |
| Cable connections | Connection terminals (screw terminals) | Stranded or solid conductors 0.8 ... 2.5 mm² | |
| | Single cable length controller – Room unit | See Installation guidelines: DESIGO RXC: CA110334, DESIGO RXA: CA2Z3884 DESIGO PX: CA110088 | |
| | Cable type | 2-core or 4-core, twisted pairs, unscreened | |
| | Connecting cable for service tool | Off-the-shelf, max. 3 m | |
| Housing protection standard | Protection standard to EN 60529 | IP 30 | |
| Protection class | Insulation protection class | III | |
| Ambient conditions | IEC 721 | Operation | Transport |
| |    Ambient air conditions | Class 3K5 | Class 2K3 |
| |    Temperature | 0 ... 50 °C | – 25 ... 70 °C |
| |    Humidity | < 85 %rH | < 95 %rH |
| |    Mechanical conditions | Class 3M2 | Class 2M2 |

| Standards | Electromagnetic compatibility | |
|---|---|---|
| | Interference immunity | EN 50082-2 |
| | Interference emission | EN 50081-1 |
| | **CE** compliance | |
| | Meets the requirements for CE marking as | |
| | defined in EMC directive | 89/336/EEC |
| Dimensions | See "Dimensions" | |
| Color | Housing front, dial | NCS S 0502-G, ≈ RAL 9003 signal white |
| | Housing, base unit, rocker switch | RAL 7035 light grey |
| Weight | Excluding packaging | 0.12 kg |

**Connection terminals**

The tool socket on the room unit provides access to the connected individual room controller via the commissioning and service tool or the service terminal.

The bus cable (Terminals 3 and 4) is therefore looped to the tool socket (Pins 1 and 2). The bus cable is not affected by the room unit.

For connection of a service terminal, the PPS2 interface (Terminals 1 and 2) is also connected to the tool socket.
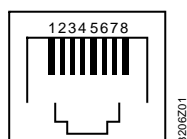
**Terminal layout**

| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 80085 |
|---|---|---|---|---|---|---|---|---|
| | | | | C– | C+ | CP– | CP+ | |
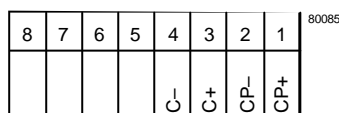
**PPS2 interface, supply voltage**

| CP+ | 1 | Device supply, Data PPS2 (pos.) |
|---|---|---|
| CP– | 2 | Device supply, Data PPS2 (neg.) |

**Bus connection (looped to tool socket)**

| C+ | 3 | With LON bus (DESIGO RXC): CLA |
|---|---|---|
| C– | 4 | With LON bus (DESIGO RXC): CLB |
| | 5 ... 8 | Not used |

**Tool socket**

Standard type RJ45 tool socket.



| | | |
|---|---|---|
| | With LON bus (DESIGO RXC): CLA | |
| | With LON bus (DESIGO RXC): CLB | |
| | Not used | |
| | Not used | |
| | Not used | |
| | Not used | |
| CP+ | Data PPS2 | |
| CP– | Data PPS2 | |

## Connection diagram

The following example shows the room unit connected to a DESIGO RXC room controller:
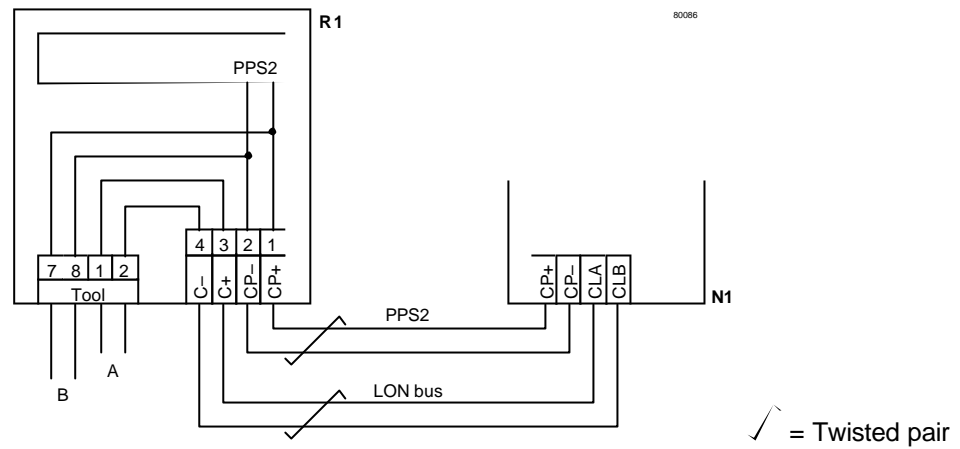


R1    Room unit QAX32.1
N1    Room controller RXC...
A     Connection for RXT10 commissioning and service tool
B     Connection for service terminal with PPS2 interface

## Dimensions

All dimensions in mm

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