



DESIGO™ RX, DESIGO™ PX

## Flush-mounting room unit with PPS2 interface QAX84.1/PPS2

For use with:

- Equipment from the RXC, RXB, RXL, and RXA (PPS2) ranges
- DESIGO PX automation stations<sup>1)</sup>
- Devices with a PPS2 interface

- **Measurement of the room temperature**
- **Buttons for adjustment of the room temperature setpoint**
- **Buttons for selection of the control mode (⏻ / Auto) and for manual control of the fan in fan-coil systems (up to 3 speeds)**
- **LCD for display of room temperature and control mode**
- **PPS2 interface to the controller**

### Use

The flush-mounting PPS2 room unit is used in rooms controlled by an individual room control system, to measure the room temperature and for operation of the room controller. The functions of the LCD display are determined by the controller. If manual fan-speed control is enabled in the controller, the room unit can be used to operate a fan-coil system.

The room unit is also suitable for use in conjunction with a DESIGO PX automation station <sup>1)</sup>.

1) If a QAX32.1, QAX33.1, QAX34.1 or QAX84.1 room unit is used in conjunction with a PXC... automation station, the display shows the state requested by the user, rather than the actual state.

## Type summary

- **QAX84.1/PPS2**      **PPS2 room unit, flush-mounting**  
**(Items supplied: plug-in operator unit, bus coupling unit,**  
**Siemens DELTA-line bezel in titanium white)**

## Ordering

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

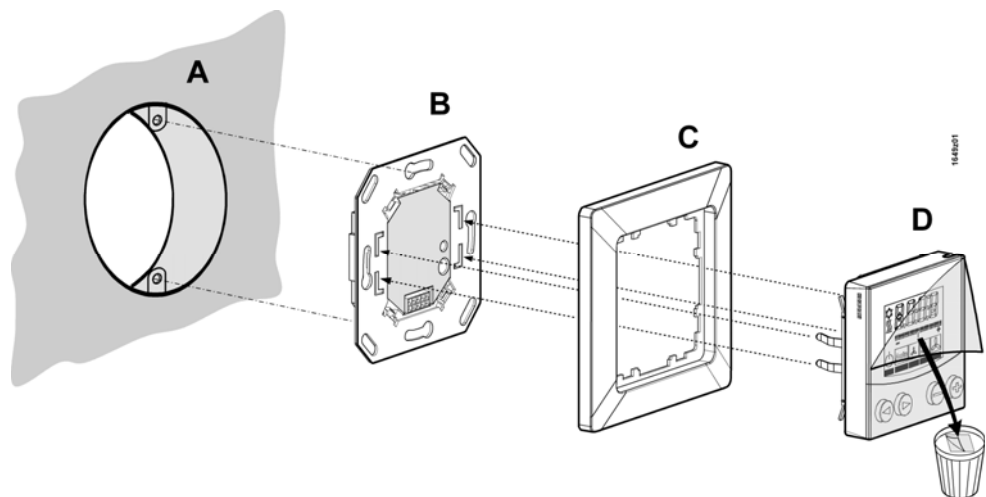
*Example:*

**30**      **PPS2 room units, flush-mounting**                      **QAX84.1/PPS2**

## Compatibility

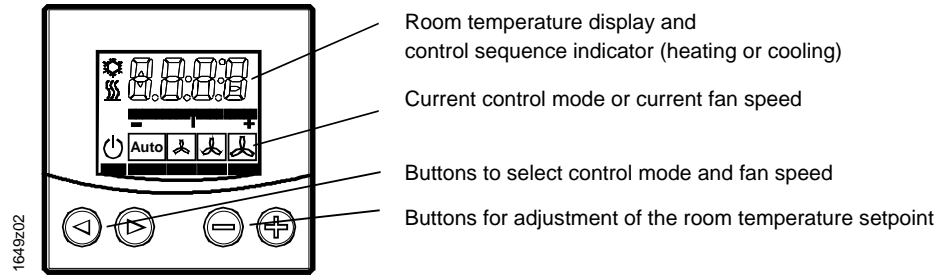
The flush-mounting PPS2 room unit can be used with all controllers with a PPS2 room unit interface (e.g. DESIGO RX and DESIGO PX).

## Mechanical design



- The unit is designed for mounting in a **conduit box (A)** (suitability must be clarified in advance)
- Essentially the device consists of the **plug-in operator unit (D)** and the flush-mounting **bus coupling unit** with a PPS2 connection (**B**)  
The two are interconnected with clamping springs.
- **A Siemens DELTA-line Bezel (C)** is supplied. The device is compatible with DELTA-vita and DELTA.miro bezels. Bezels from various other manufacturers can also be used (suitability must be clarified in advance)
- The **operator unit (D)** incorporates the room temperature sensor element, buttons for setpoint adjustment, selection of control mode (⏻ / Auto) and fan-speed control, the LCD panel, the plug-in connection to the bus coupling unit, and spring clamps to secure the two parts.
- The **bus coupling unit (B)** contains the electronics for the PPS2 interface and the contact pins which plug into the connection terminals for the PPS2 cable.

## Operator controls and display panel



**Note** The controller determines the actual functions of the buttons and display (based on the selected application and the associated parameters). The following describes all the functions of the elements illustrated.

### Keys to select control mode and fan speed

- The buttons can be used like an occupancy button to determine the control mode (⏻ / Auto). They can also be used to define three manual fan speeds.
- Pressing the left button selects the option one step to the left, and pressing the right button selects the option one step to the right.
- The currently active control mode or the manually selected fan speed is indicated by a bar under the relevant symbol.

Item	Fan speed <sup>1)</sup>	Operating mode <sup>1)</sup>
	Fan controlled automatically by the controller	The controller uses setpoints for <b>reduced operation</b> (room partially occupied or empty / night).
<b>Auto</b>	Fan controlled automatically by the controller	Controller operates in <b>Comfort mode</b> (room occupied).
	Manual, fan-speed 1	
	Manual, fan-speed 2	
	Manual, fan-speed 3	

1) For a detailed description of these functions, please refer to the application description for the controller range concerned.









### Buttons for adjustment of the room temperature setpoint

- When one of the buttons is pressed for the first time, the LCD display switches from room temperature to setpoint display
- Each additional operation of the + or – button increases or reduces the setpoint by 0.5 K or 1.0 °F (the controller determines the engineering unit)
- The maximum possible adjustment range is also determined by the controller.

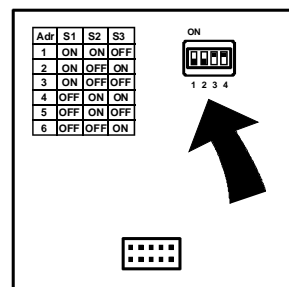
## LCD panel

The following display options are possible in normal operation (actual options determined by the controller).

For details refer to the application description for the controller range concerned.

Display field (examples):	Description
	Room temperature in °C (resolution 0.5 °C)
	Room temperature in °F (resolution 1.0 °F)
	Setpoint adjustment displayed in digits (Displayed only when adjusting the <b>relative</b> setpoint)
	Scale and digits (Displayed only when adjusting the <b>absolute</b> setpoint)
	Control sequence: Cooling
	Control sequence: Heating
	Facility to select control mode and fan speed Fan running at fan-speed I
	Facility to select control mode only Current mode is "Auto"

## Address switch



The units is fitted with DIL switches (on the rear of the operator unit) for setting the address.

Setting is required if there is more than one room unit connected to the same controller. All units are factory-set to Address 1.

Switch #4 is not used.

## 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 room unit receives its power from the connected controller via the PPS2 interface (extra low voltage, SELV)
- Only one room unit can be connected to an RX... room controller.
- Up to 5 room units (identifiable by their address-switch settings) may be connected to one PXC... automation station.
- The room unit must be connected to the controller with a twisted pair cable (see the relevant installation guide). Unscreened cable may be used.

## Mounting instructions

- The room unit is suitable for flush mounting
- Recommended height: 1.50 m above floor level
- The unit should not be mounted in recesses, shelving, behind curtains or doors or above or near direct heat sources
- Avoid direct sun and drafts
- The conduit must be sealed on the device side, as currents of air in the conduit can affect the sensor reading
- The admissible ambient conditions must be observed
- Mounting instructions are enclosed with the device

## Installation

Local installation regulations must be observed.



**Caution**

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

## Commissioning

### Start-up characteristics

After an interruption of the connection to the PPS2 interface, communications are only re-established when the connected controller next polls the PPS2 addresses.

The cycle times are as follows:

RXA: 10 seconds, RXB and RXC: 3 minutes, PX: 30 seconds

When the supply voltage is connected (via the PPS2 interface) or in the event of a controller reset, the following routine is executed in the controller:

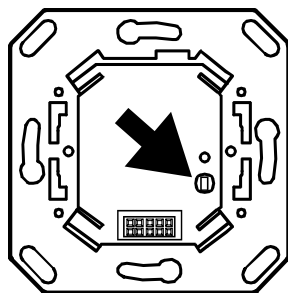
Step	Function	Description
1	LCD test	All segments of the display module are operated for approx. 5 s
2	Identification by controller	Until the controller recognizes the room unit as a PPS2 user, the display reads: <b>E 15</b>
3	Ready for operation	1 s after recognition by the controller, the room unit is ready for operation

### Display in response to LONWORKS® device "Wink" command

If the PPS2 flush-mounting room unit is connected to a LONMARK®-compatible controller (DESIGO RXC) the display can be used for help with commissioning. When the RXT10 commissioning and service tool issues a Wink command, the room unit displays the type of controller connected. For example:

Type of controller	Display
RXC21.1	r. 21
RXC30.1	r. 30

### Service pin function (LONWORKS® devices)



As an aid to commissioning, the bus coupling unit has a service pin which has the same function as the service pin on the room controller to which the bus coupling unit is connected. This is useful if the controller is not easily accessible.

During commissioning and operation, the LCD panel displays error messages:

Display	Description	Type of error
<b>C 02</b>	C: No communication with controller for over 64 s 02: Firmware version (e.g. Version 2.0)	D
<b>E 1</b>	Room temperature sensor outside range 0 ... 40 °C	S
<b>E 15</b>	Controller has not yet added the room unit to its list of members (during controller start-up)	D
<b>E 17</b>	Controller does not recognize room unit type	D
<b>0.0</b>	Initial value, after room unit is switched on and before a controller has sent a value.	S
<b>99.5</b>	Controller has not transmitted a valid temperature value	S

S Static error: The error display remains valid until the error has been cleared.

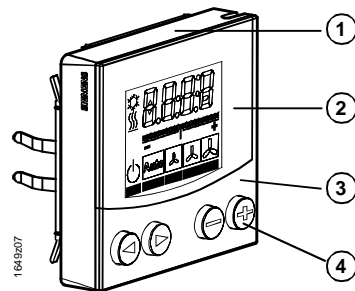
D Dynamic error: For 5 s after its occurrence, the error is displayed instead of the room temperature. The display then reverts to normal.  
If the error persists, it can be displayed again by pressing the + or – button. Pressing the button again implements a setpoint adjustment.

All other error codes indicate a hardware error.

## Technical data

Supply voltage	Operating voltage	DC 12 ... 15 V
	The device receives its power via the PPS2 interface from the connected room controller (SELV in accordance with HD 384)	
Operating data	Power consumption (controller)	Max. 0.10 VA
	Temperature sensor	
	Measuring element	NTC resistance sensor
	Measuring range	0 ... 40 °C
	Response time	≤ 14 min
	Measuring accuracy (5 ... 30 °C)	± 0.5 K
	Measuring accuracy (25 °C)	± 0.25 K
	Setpoint correction	
Correction range (defined by controller)	Max. ± 10 K (basic setting ± 3 K)	
Display	Accuracy over full correction range	10 %
	Type	LCD
	Functions displayed	– Room temperature – Setpoint adjustment – Control mode (☺ / Auto) – Manually selected fan speed – Control sequence – Type of error
Ports/interfaces	Type of port between controller and room unit	PPS2 (point-to-point interface, V 2)
	Baud rate	4.8 kbps

Cable connections	WAGO plug-in connection terminals	Wire diameter 0.6 ... 0.8 mm or 1.0 mm (solid conductors only)	
	Cable type	Solid conductors, 2-core, twisted pair, unscreened	
	Single cable length controller – Room unit	See Installation guidelines: DESIGO RXC: CA110334, DESIGO RXA: CA2Z3884 DESIGO PX: CA110396	
Housing protection	Protection standard to EN 60529	IP 30	
Protection class	Insulation protection class	III	
Ambient conditions	IEC 721	Normal operation	Transport
	Environmental conditions	Class 3K5	Class 2K3
	Temperature	0 ... 50 °C	- 25 ... 70 °C
	Humidity	< 85 % rh	< 95 % rh
	Mechanical conditions	Class 3M2	Class 2M2
Industry standards	Electromagnetic compatibility		
	Interference immunity	EN 61000-6-2	
	Emitted interference	EN 61000-6-3	
	<b>CE</b> marking: Meets the requirements of EMC Directive	89/336/EEC	
Dimensions	See "Dimensions"		
Color			



- 1 White NCS-S 0502-G
- 2 White NCS-S 0502-G
- 3 Mirror silver
- 4 White aluminum RAL9006

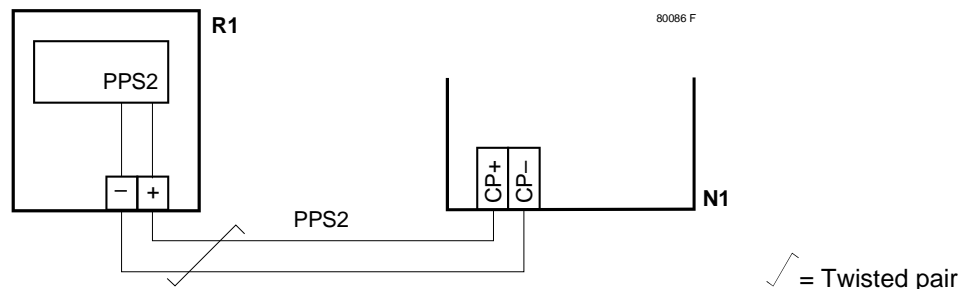
Weight g	With / without packaging	84 / 126 g
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### Connection terminals

- +** Red CP+ Device power supply, PPS2 data (positive)
- Gray CP- Device power supply, PPS2 data (negative)

Wires are interchangeable

### Wiring diagram

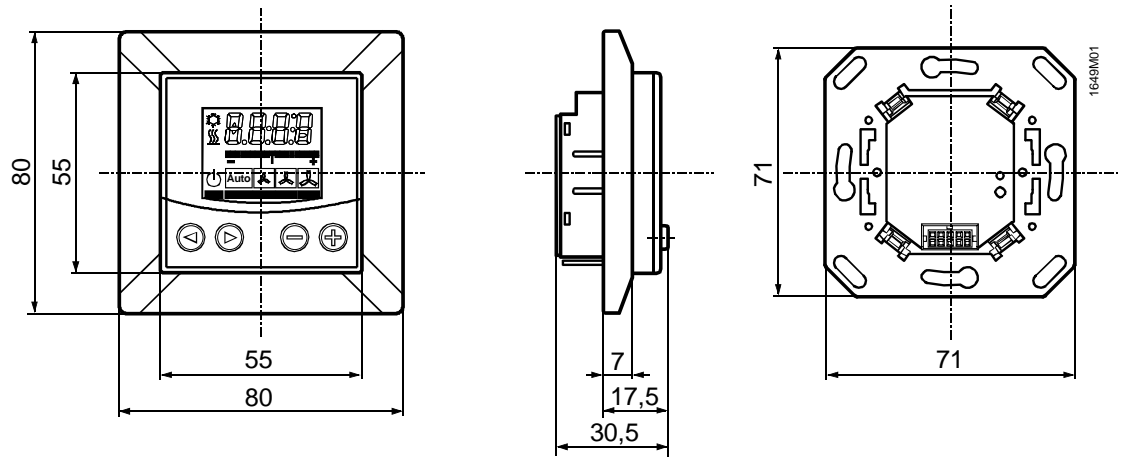


- R1 Flush-mounting PPS2 room unit, QAX84.1/PPS2
- N1 Controller with PPS2 connection

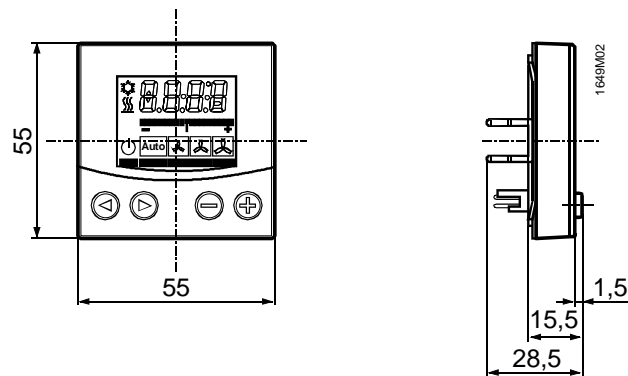
## Dimensions

Dimensions in mm

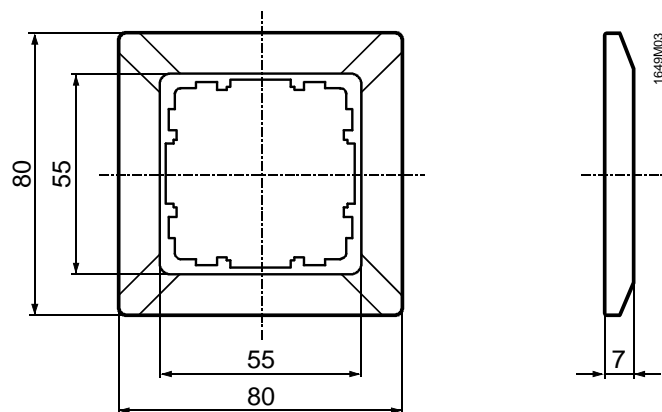
Room unit



Operator unit



DELTA-line bezel



Bus coupling unit

