

Temperature Controller	UP 237K UP 254K	5WG1 237-2KB_1 5WG1 254-2KB_3
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## Product and Application Description



The room temperature controller UP 237K and UP 252K are available in the following colors, matching the design of the wall switch design line DELTA i-system or DELTA style:

### DELTA i-system

Temperature Controller UP 237K

titanium white

5WG1 237-2KB11

aluminum metallic

5WG1 237-2KB31

### DELTA style

Temperature Controller UP 254K

titanium white/

metallic silver

5WG1 254-2KB13

platinum metallic

5WG1 254-2KB43

The room temperature controls UP 237K and UP 254K are especially designed for usage in rooms which are heated and/or cooled and whose temperatures are controlled depending on up to four room operating modes (comfort mode, pre-comfort mode, energy-savings mode and protection mode). As required, a parameter can be used to set that the controller does not consider all four operating modes but rather only three (comfort mode, energy-savings mode and protection mode). The room temperature control can be used as a two-point control (thermostat) or as a continuous control (P or PI control). These Room temperature controller can only function together with the necessary Bus Transceiver Module (BTM) UP 117 and the associated application program.

### **LED displays**

Along with a button and a rotary knob on its upper edge, the clear and self-explanatory user interface contains 5 green illuminating light emitting diodes (LED) to display whether "manual operation" is activated as well as the current room operating mode and two red illuminating LEDs and 2 duo-color illuminating LEDs on the left edge. The duo-color LEDs are used to display whether the heating valve (LED is lit in red) or the cooling valve (LED is lit in yellow) is open. If these LEDs are not illuminated, then both valves are closed.

A red LED is used to display whether a window is open or whether a dew point alarm is pending.

### **Button**

Briefly pressing the button on the control causes switching in automatic mode (the LED for the display of manual operation is not lit) each time between "comfort mode" and "pre-comfort mode" (with four operating modes) or between "comfort mode" and "energy-savings mode" (with three operating modes). Moreover briefly pressing the button during active energy-savings or protection mode starts a "comfort prolongation". Pressing and holding down (e.g.  $\geq 1$  s, but  $< 3$  s) the button during continuous comfort prolongation can cause this to end at any time and jump back to the room operating mode before the start of the comfort prolongation.

Holding down the button for a longer time ( $\geq 3$  s) can cause switching from automatic to manual operation. In manual operation every room operating mode can be permanently activated and not changed by a bus telegram. If manual operation is activated, then each time the button is pressed briefly the light display of the current operating mode wanders gradually from the current position to the next operating mode symbol until the extreme right or left position is reached and from there back again. If during a waiting time of around 3 seconds no

renewed brief pressing of the button occurs, then the displayed room operating mode will be activated and this reported by the Bus. If the button in "manual operation" is pressed for a very long ( $\geq 3$  s) time, then the system will be switched to automatic operation and at the same time to comfort mode. If a presence detector is installed, then a brief pressing of the button in automatic operation is ignored.

### Note:

Via a parameter setting the switching of room control modes and an activation of on-site comfort prolongation can be locked by the button.

### **Rotary knob**

The control is supplied with two rotary knobs: one inserted in the control for shifting the basic target value to a higher or lower value and a second for directly setting the target value in the range of 16 to 26 °C.

If instead of shifting the target value with the adjustable shifting range, direct target value setting in degrees Celsius is desired, then the inserted rotary knob should be exchanged with the delivered rotary knob and the parameter "target value setting" should be switched to "directly in °C" in the "Functions / objects" parameter window.

### Note:

Via a parameter setting the setting of setpoint value respectively setpoint value shifting can be locked by the rotary control.

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### Commissioning

For commissioning a control with the help of ETS (Engineering Tool Software), the control together with the suitable DELTA frame must first be inserted into a Bus Transceiver Module (BTM) UP 117 which serves to supply power to the control and to transmit data via the KNX Bus.

After removing the rotary knob for target value shifting, the recess for the commissioning button and the commissioning LED of the control are visible.

Note: The bus transceiver module UP 117 and the associated DELTA frame are not supplied and must be ordered separately.

With the help of ETS, the application program can be selected, the specific parameter and addresses assigned and transferred into the room temperature controls UP 237K and UP 254K.

### Application program

The "0705 CO Room Temperature Control H+K 803002" application program supports the following functions:

- Switching between automatic / manual operation and switching the room operating mode with the button,
- Target value shifting or target value setting in °C with the rotary knob,
- Status display with LEDs:
  - Displays (green) for manual operation and the current room operating mode (comfort, pre-comfort, energy-savings and protection mode),
  - Displays (red/yellow), whether the heating or cooling valve is open,
  - Displays (red) for dew point alarm and open window.
- Room temperature control, adjustable as:
  - heating only, cooling only, heating and cooling, each selectable as
    - heating with two-point control,
    - heating with PI control,
    - heating with PI control and sequence control (e.g. with floor and radiator heating),
    - cooling with two-point control,
    - cooling with PI control,
    - cooling with PI control and sequence control. (e.g. with cooling ceiling and supply air cooler).

The following partial functions are part of room temperature control:

- Room temperature measurement using the internal temperature sensor with Offset setting,
- Room temperature measurement using an external temperature sensor with Offset setting,
- Computation of current room temperature actual value (internal and external sensors weighted),
- With target value shifting: Basic target value assignment via parameter setting and/or via Bus,

- With target value shifting: Computation of current room temperature target value from basic target value and shifting,
- time-restricted removal of night sinking or the protection mode (comfort prolongation),
- with presence detection via the Bus, switching to the "comfort" operating mode occurs,
- Dew point mode can be activated via the Bus,
- Evaluation of the window conditions via the Bus,
- Frost protection / heat protection are reported via the Bus,
- PI control for heating / cooling with constant regulating variable-output (in %) or toggling regulating variables-output (on / off).
- Separated or joint regulating variable output for heating and cooling,
- Separated regulating variable output for basic level and auxiliary level for 2-level heating or cooling,
- Switching the desired effect and scaling the regulating variable for heating/cooling is possible,
- Maximal and minimal regulating variable for heating/cooling possible,
- Operating condition (control status) can be read out via the Bus,

### Technical Data

#### Power supply

- via the flush-mounted bus transceiver module UP 117

#### Operating elements

- 1 rotary button for manual adjustment of the setpoint (control range and type of adjustment dependent on the parameter setting and type of rotary button)
- 1 button for toggling of the room operating mode and vice versa

#### Display elements

- 5 green LED's for the current operating mode (comfort, pre-comfort, energy-saving, protection mode) and for manual mode
- 2 red LED's for dew point alarm and open window
- 2 red/yellow LED's for Heating / cooling mode

#### Temperature measurement

- Measuring range: 0 ... + 40 °C
- Resolution: 0.08 K
- Accuracy of the sensor temperature:
  - ± 1.0 K under reference conditions,
  - ± 2.0 K under ambient conditions and in measuring range

#### Connections

- 10-pole plug-in connector for connection with the bus transceiver module UP 117

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**Mechanical data**

- Casing: plastic
- Dimensions:
  - Temperature controller UP 237K for DELTA i-system (L x W x D): 55 x 55 x 16 mm (without spring)
  - Temperature controller UP 254K for DELTA style (L x W x D): 68 x 68 x 20 mm (without spring)
- Weight: approx. 30 g (UP 237K)
- Weight: approx. 40 g (UP 254K)
- Fire load: 730 KJ ± 10 %
- Mounting: The operator panel is attached to the BTM UP 117 and screwed to its mounting frame.

**Electrical safety**

- Degree of pollution (according to IEC 60664-1): 2
- Type of protection (according to EN 60529): IP 20
- Protection class (according to IEC 61140): III
- Overvoltage categorie (according to IEC 60664-1): III
- Bus: Safety extra-low voltage SELV DC 24V
- Device complies with EN 50090-2-2

**Reliability**

- Failure rate: 214 fit at 40°C

**EMV requirements**

- Complies with EN 61000-6-1 and 50090-2-2

**Environmental conditions**

- Climatic withstand capability: EN 50090-2-2
- Ambient operating temperature: - 5 ... + 45 °C
- Storage temperature: - 25 ... + 70 °C
- Relative humidity (not condensing): 5 % up to 93 %

**Markings**

- KNX *EIB*

**CE mark**

- In accordance with the EMV guideline (residential and functional buildings), low voltage guideline

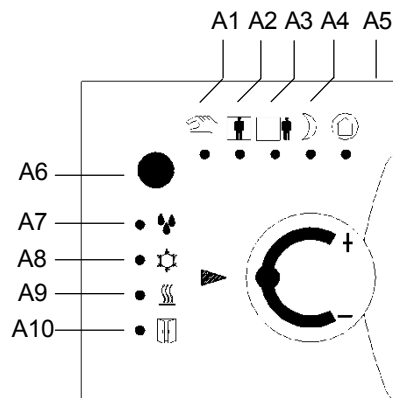
**Location and function of the operating and display elements**

figure 1: Location of the operating and display elements

- A1 LED green: illuminates during manual mode
- A2 LED green: lights up continuously in comfort mode and blinks slowly in comfort prolongation.
- A3 LED green: illuminates during pre-comfort mode
- A4 LED green: illuminates during energy-saving mode
- A5 LED green: lights up continuously in protection mode, blinks slowly in permanent protection mode
- A6: Pushbutton for selection of room operating mode
- A7: LED red: illuminates with dew point alarm
- A8: LED yellow: illuminates if cooling valve is open
- A9: LED red: illuminates if heating valve is open
- A10: LED red: illuminates if open window
- A11: Rotary button for manual setpoint shifting (shifting range dependent on parameter setting) or for setpoint adjustment in °C

**Mounting, wiring and commissioning**General description

The temperature controller is attached with the associated DELTA frame to the BTM UP 117 and screwed to its mounting frame.

Mounting and commissioning (see figure 2)

- Attach the bus cable and fix the BTM UP 117 (B8) on the flush socket (see mounting instructions for BTM UP 117)
- Remove rotary knob (B1 or B2) from the temperature controller (B3)
- Attach temperature controller with DELTA frame (B4) to the BTM UP 117 and secure using screw (B5)
- Press programming button (B7): programming LED (B6) illuminates
- Load physical address and the configures application program by means of the ETS

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- Replace rotary knob (B1 or B2).

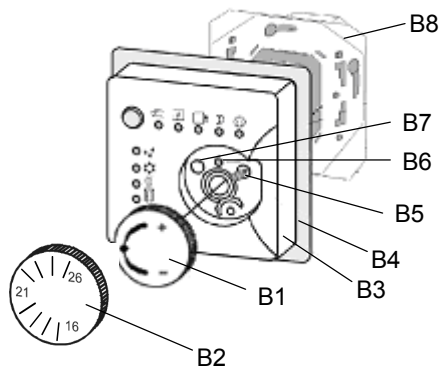


figure 2: Mounting controller

- B1 Rotary button for setpoint shifting
- B2 Rotary button for setpoint adjustment in °C
- B3 Temperature controller heating / cooling
- B4 DELTA frame
- B5 Screw for securing the controller to the mounting frame of the UP 117 (anti-theft protection)
- B6 LED for displaying normal mode (LED Off) or address mode (LED On); it is automatically extinguished once the physical address has been transferred
- B7 Button for toggling between normal mode/addressing mode for transferring the physical address
- B8 Bus Transceiver Module UP 117

**Installation instructions**

- The device can be used for fixed installations, in dry interior spaces and for integration into a flush socket.

**⚠ WARNING**

- The device must be mounted and commissioned by an authorised electrician.
- The device may not be inserted in the same box as 230 V devices.
- The device may be mounted in switch and socket combinations if VDE-certified devices are used exclusively.
- The prevailing safety rules must be heeded.
- The device may not be opened.
- For planning and construction of electric installations, the relevant guidelines, regulations and standards of the respective country are to be considered.

Mounting location (see figure 3)

Observe the following points when mounting the controller:

Controller mounted on interior wall of room to be conditioned, vis-à-vis the heat source:

- At ca. 1.5 m height in the room and at least 50 cm from the next wall.
- Not on outside walls.
- Not in niches or behind curtains.
- Not above or near heat sources or shelves.
- Not on walls covering heat sources such as a chimney.
- Not in the radiation range of heat sources and lighting bodies e.g. spotlights.
- Not in areas exposed to direct solar radiation.

The air draft of windows and doors have to be avoided!

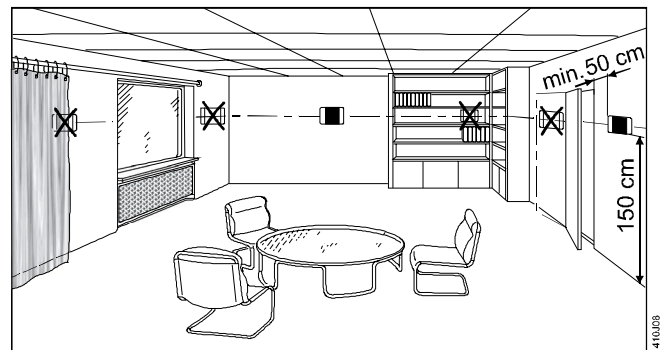


figure 3: Installation references for sensors and temperature controller.

Seal the end of the installation conduit to prevent false measurements due to air drafts, see figure 4.

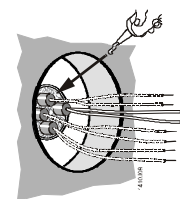


figure 4: Sealing installation conduit

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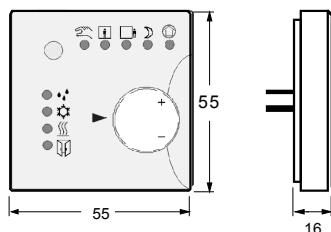
Dismantling (see figure 2)

- Remove rotary knob (B1 or B2)
- Loosen screw (B5)
- Remove controller together with DELTA frame.
- Remove BTM UP 117 (B8) according to dismantling instructions.

**Dimension Drawing**

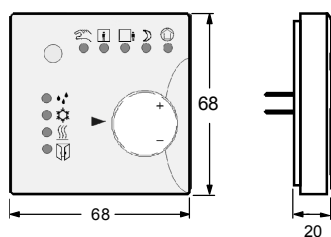
DELTA i-system temperature controller UP 237K

Dimensions in mm



DELTA style temperature controller UP 254K

Dimensions in mm

**General Notes**

- The operating instructions must be handed over to the client.
- Any faulty device is to be sent together with a return delivery note of the local Siemens office.
- If you have further questions concerning the product please contact our technical support.