



RDU50



RDU50.2

## Room Temperature Controller with LCD

## RDU50...

for heating and cooling systems

### Modulating PI control

Control depending on the room or the return air temperature

Output for a DC 0...10 V actuator

Automatic heating / cooling changeover (RDU50)

Manual heating / cooling changeover (RDU50.2)

Operating modes: normal and energy saving or off (RDU50)

Operating modes: normal, energy saving and off (RDU50.2)

Operating mode changeover input for remote control

Selectable installation and control parameters

Adjustable minimum limitation for cooling output

Output signal inversion as an option

Display of room temperature or setpoint selectable

Minimum and maximum setpoint limitation

Operating voltage AC 24 V

### Use

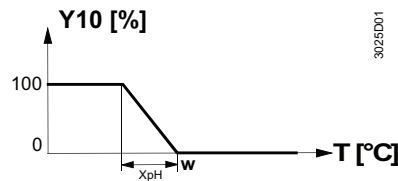
Control of the room temperature in individual rooms of ventilation or air conditioning plants that are heated or cooled. The RDU50 is suitable for use with VAV systems in connection with the VAV compact controllers types G...B181.1E/3.

For the control of the following pieces of equipment:

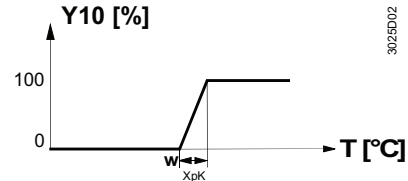
- 0...10V valve actuators
  - 0...10V damper actuators
- VAV compact controllers (with RDU50)

The controller acquires the room temperature with its integrated sensor or – if used- via a remote return air temperature sensor (QAH11.1) and maintains the setpoint by delivering continuous DC 0...10 V control commands to the actuators. The controller provides PI control. The proportional band in heating mode is 2 K and in cooling mode 1 K (adjustable). The integral action time is 5 minutes (adjustable).

**Heating mode**



**Cooling mode**

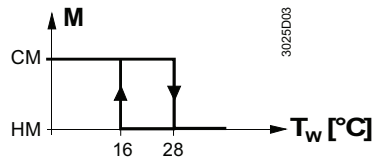


- |     |                             |     |                           |
|-----|-----------------------------|-----|---------------------------|
| T   | Room temperature            | w   | Room temperature setpoint |
| XpH | Proportional band "Heating" | Y10 | Manipulated variable      |
| XpK | Proportional band "Cooling" |     |                           |

Note: the diagrams only show the proportional part of the PI controller

**Automatic changeover (RDU50)**

The water or air temperature acquired by the changeover sensor (QAH11.1) is used by the controller to automatically switch from heating to cooling mode, or vice versa. When the temperature lies above 28 °C (adjustable), the controller switches to heating mode, below 16 °C (adjustable) it switches to cooling mode. If, immediately after switching on, the temperature lies between the 2 changeover points, the controller will start in heating mode. The medium temperature is measured at half-minute intervals and the operational status updated. The value of the current temperature reading and the mode can be visualized temporary by selecting parameter P14.

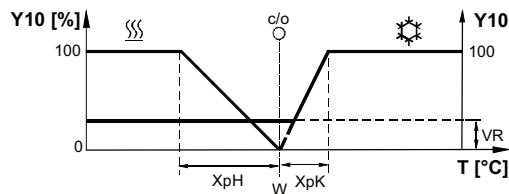


- |    |                    |
|----|--------------------|
| CM | Cooling mode       |
| HM | Heating mode       |
| Tw | Medium temperature |
| M  | Operating mode     |

In systems without automatic changeover, the temperature sensor can be replaced by an external switch for manual changeover. In systems with continuous heating mode, no sensor will be connected to the controller's input. With continuous cooling mode, the controller input must be bridged.

**Minimum limitation of cooling signal**

Using parameter P11 the cooling signal output can be limited to a minimum value of between 0 and 100 %. This can be used to ensure a minimum supply air volume. When used in connection with a VAV controller, this setting must be taken into account.



- |     |   |
|-----|---|
| T   | Room temperature                            |
| Y10 | Output percentage                           |
| W   | Room temperature setpoint                   |
| XpH | Proportional band heating                   |
| XpK | Proportional band cooling                   |
| VR  | 0 – 100 % min. limitation of cooling output |
| c/o | Heat-cool changeover                        |

Function diagram "Heating-cooling" with minimum limitation cooling

**Inversion of output signal**

The output signal can be inverted with the help of DIP switch no. 2. If set to ON, 0V corresponds to 0% travel and 10V to 100% travel. In position OFF, 0V corresponds to 100% travel and 10V to 0% travel.

This function is useful in conjunction with normally open valves.