Room Temperature Controllers RDD10...
with LCD
for heating systems

2-position control with ON / OFF output for heating
Operating modes: normal operation and energy saving mode
Automatic operating mode change over as an option
Mains-powered AC 230 V (RDD10) or battery-powered DC 3 V (RDD10.1)

Use

The RDD10... is used for the control of the room temperature in heating systems.

Typical applications:
- Apartments
- Commercial spaces
- Schools

For the control of the following pieces of equipment:
- Thermic valves or zone valves
- Gas or oil burners
- Fans
- Pumps
**Functions**

The controller acquires the room temperature with its integrated sensor and maintains the setpoint by delivering control commands. The switching differential is 1 K.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>T</td>
<td>Room temperature</td>
</tr>
<tr>
<td>SD</td>
<td>Switching differential</td>
</tr>
<tr>
<td>W</td>
<td>Room temperature setpoint</td>
</tr>
<tr>
<td>Q14</td>
<td>Output signal for heating</td>
</tr>
</tbody>
</table>

**Operating modes**

The RDD10... provides normal operation and, optionally, energy saving mode or OFF. The difference between normal operation and energy saving mode is only the room temperature setpoint. The changeover from normal operation to energy saving mode, and vice versa, is made by pressing a button.

**Normal operation**

When normal operation is activated, symbol “∆” appears on the display. The setpoint can be readjusted by pressing buttons + and −.

**Energy saving mode or OFF**

When energy saving mode is activated, symbol “〇” appears on the display. The setpoint can be readjusted by pressing buttons + and −. When the energy saving setpoint is set to “0”, the controller is switched off, that is, the RDD10... is not active in energy saving mode. In that case, symbol “〇” does not appear.

**Automatic operating mode change over**

When this function is activated and a manual changeover has been made, the operating mode will automatically be reset on completion of an adjustable period of time. This period of time can be adjusted with buttons + and − after pressing the hour glass button.

The operating action of the reset depends on the setting of the DIL switch, from normal operation to energy saving mode / OFF, or vice versa. The operating mode can be manually reset before the delay time has elapsed. When the delay is active, the hour glass symbols appears on the display.

**Display**

The digital display shows the actual room temperature and the symbol of the operating mode currently active. When the heating output is activated, the triangle symbol appears. When the function “automatic operating mode change over” is activated, the hour glass symbol is shown.

Display in normal operation

Display in energy saving mode
Type summary

<table>
<thead>
<tr>
<th>Type reference</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>RDD10</td>
<td>Mains-powered AC 230 V</td>
</tr>
<tr>
<td>RDD10.1</td>
<td>Battery-powered DC 3 V</td>
</tr>
</tbody>
</table>

Ordering

When ordering, please give name and type references, e.g. *room temperature controller RDD10*.
Valve actuators are to be ordered as separate items.

Equipment combinations

<table>
<thead>
<tr>
<th>Type of unit</th>
<th>Type reference</th>
<th>Data sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motoric on/off actuator</td>
<td>SFA21...</td>
<td>4863</td>
</tr>
<tr>
<td>Thermal actuator (for radiator valve)</td>
<td>STA21...</td>
<td>4893</td>
</tr>
<tr>
<td>Thermal actuator (for small valve 2,5 mm)</td>
<td>STP21...</td>
<td>4878</td>
</tr>
</tbody>
</table>

Accessories

<table>
<thead>
<tr>
<th>Description</th>
<th>Type reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adapter plate 120 x 120 mm for 4&quot; x 4&quot; conduit boxes</td>
<td>ARG70</td>
</tr>
<tr>
<td>Adapter plate 96 x 120 mm for 2&quot; x 4&quot; conduit boxes</td>
<td>ARG70.1</td>
</tr>
<tr>
<td>Adapter plate for surface wiring 112x130 mm</td>
<td>ARG70.2</td>
</tr>
</tbody>
</table>

Mechanical design

The unit consists of two parts:
- A plastic housing with digital display, which accommodates the electronics, the operating elements and the built-in room temperatures sensor
- A mounting base

The housing engages in the mounting base and snaps on.
The base carries the screw terminals. The DIP switch is located at the rear of the housing.
Legend

1 Display of the room temperature, setpoints or operating mode changeover time
2 symbol when actual room temperature is displayed
3 Normal operation
4 Energy saving mode
5 symbol when displaying the operating mode changeover time or when the operating mode changeover function is activated
6 heating on
7 symbol indicating that batteries need to be replaced (only with battery-powered versions)
8 Buttons for adjusting the setpoint and the operating mode changeover time
9 Button for operating mode changeover “Normal operation ↔ energy saving mode”
10 Button for adjusting the operating mode changeover time
11 Battery compartment (only with battery-powered versions)

The required room temperature setpoints for normal operation and energy saving mode and the operating mode changeover time are adjusted with buttons. Operating mode changeover can be triggered by pressing a button.

The operating action for the automatic operating mode changeover function is selected with a DIP switch.

<table>
<thead>
<tr>
<th>DIP switch no.</th>
<th>Meaning</th>
<th>Position ON</th>
<th>Position OFF</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Operating action of automatic operating mode changeover</td>
<td>Automatic operating mode changeover from normal operation to energy saving mode or OFF</td>
<td>Automatic operating mode changeover from energy saving mode or OFF to normal operation</td>
</tr>
</tbody>
</table>

Notes

The room temperature controller should be mounted in a location where the air temperature can be measured as accurately as possible without getting adversely affected by direct solar radiation or other heat or refrigeration sources.

Mounting height is about 1.5 m above the floor.

The unit can be fitted to a recessed conduit box.

- Only authorised staff may open the controller.
  Caution: AC 230 V!
- The cables used must satisfy the insulation requirements with regard to mains potential

Mounting, installation and commissioning

When mounting the unit, fix the baseplate first. Then, make the electrical connections and fit and secure the cover (also refer to Mounting Instructions).

The controller must be mounted on a flat wall and in compliance with local regulations.
If there are thermostatic radiator valves in the reference room, they must be set to their fully open position.

**Maintenance**

The controller is maintenance-free.

**Sensor calibration**

If the temperature on the display does not agree with the room temperature effectively measured, the temperature sensor can be recalibrated. For that purpose, both buttons + and - must be pressed simultaneously for 3 seconds. Then, the temperature displayed can be changed by a maximum of +/- 3 Kelvin by pressing the + and - buttons. Five seconds after the last push of a button, the controller will automatically return to the normal operational statuses.

**Change of batteries**

(only with battery-powered versions)

If the battery symbol appears, the battery power is almost exhausted and the batteries should be replaced.

**Technical data**

- **Power supply**
  - Operating voltage
    - RDD10 at L - N: AC 230 V +10/-15 %
    - RDD10.1: DC 3 V (2 x 1.5 V AAA Alkaline batteries)
  - Frequency (RDD10): 50 or 60 Hz
  - Power consumption (RDD10): 4VA
  - Battery life (RDD10.1): > 1 years (AAA Alkaline batteries)

- **Control outputs**
  - Control output Q12 (N.C. contact)
    - Rating RDD10 (AC 230 V): max. 5(2) A
    - Rating RDD10.1 (AC 24...250 V): max. 5(2) A
  - Control output Q14 (N.O. contact)
    - Rating RDD10 (AC 230 V): max. 5(2) A
    - Rating RDD10.1 (AC 24...250 V): max. 5(2) A

- **Functional data**
  - Switching differential SD: 1 K
  - Setpoint setting range
    - 5...35 °C (normal operation)
    - 0 (OFF) and 5...35 °C (energy saving mode)
  - Increments: 0.5 °C
  - Factory setting normal operation: 20 °C
  - Factory setting energy saving mode: 8 °C
  - Setting range of operating mode changeover time: 0.5...24 h
    - Increment: 0.5 h
    - Factory setting: 0 h (not activated)

- **Environmental conditions**
  - Operation to IEC 721-3-3
    - Climatic conditions: class 3K5
    - Temperature: 0...+50 °C
    - Humidity: <95 % r. h.
  - Transport to IEC 721-3-2
    - Climatic conditions: class 2K3
    - Temperature: -25...+60 °C
    - Humidity: <95 % r. h.
    - Mechanical conditions: class 2M2
  - Storage to IEC 721-3-1
    - Climatic conditions: class 1K3
    - Temperature: -25...+60 °C
    - Humidity: <95 % r. h.
### Norms and standards

<table>
<thead>
<tr>
<th>Compliance</th>
<th>Standard/Directive</th>
</tr>
</thead>
<tbody>
<tr>
<td>(\mathbb{C}) conformance to</td>
<td>EMC directive 89/336/EEC</td>
</tr>
<tr>
<td></td>
<td>Low voltage directive 73/23/EEC and 93/68/EEC</td>
</tr>
<tr>
<td>(\checkmark) C-Tick conformance to</td>
<td>EMC emission standard AS/NSZ 4251.1:1994</td>
</tr>
</tbody>
</table>

### Product standards

<table>
<thead>
<tr>
<th>Category</th>
<th>Standard/Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automatic electrical controls for household</td>
<td>EN 60 730 – 1 and</td>
</tr>
<tr>
<td>and similar use</td>
<td>EN 60 730 – 2 - 9</td>
</tr>
</tbody>
</table>

### Electromagnetic compatibility

<table>
<thead>
<tr>
<th>Component</th>
<th>Standard/Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emissions</td>
<td>IEC/EN 61 000-6-3</td>
</tr>
<tr>
<td>Immunity</td>
<td>IEC/EN 61 000-6-1</td>
</tr>
</tbody>
</table>

### Safety and Pollution class

<table>
<thead>
<tr>
<th>Class</th>
<th>Standard/Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety class</td>
<td>II to EN 60730</td>
</tr>
<tr>
<td>Pollution class</td>
<td>normal</td>
</tr>
</tbody>
</table>

### Degree of protection of housing

<table>
<thead>
<tr>
<th>Protection</th>
<th>Standard/Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of protection of housing</td>
<td>IP30 to EN 60529</td>
</tr>
</tbody>
</table>

### Connection terminals for

<table>
<thead>
<tr>
<th>Terminals for</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>use solid wires or prepared stranded wires</td>
</tr>
<tr>
<td></td>
<td>2 x 1.5 mm(^2) or 1 x 2.5 mm(^2) (min. 0.5 mm(^2))</td>
</tr>
</tbody>
</table>

### General

<table>
<thead>
<tr>
<th>General Information</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>0.20 kg</td>
</tr>
<tr>
<td>Colour of housing front</td>
<td>white, NCS S 0502-G (RAL9003)</td>
</tr>
</tbody>
</table>
Connection diagram

RDD10

N1 Room temperature controller
Y1 Regulating unit
L, Ln Live, AC 230 V
N Neutral, AC 230 V

RDD10.1

Lx Live, AC 24 ... 250 V
Q11, Q12 N.C. contact (for N.O. valves)
Q11, Q14 N.O. contact (for N.C. valves)
Nx Neutral, AC 24 ... 250 V

Application examples

Room temperature controller with direct control of a gas-fired wall-hung boiler

Room temperature controller with direct control of a gas-fired floor-standing boiler

Room temperature controller with direct control of a heating circuit pump (pre-control by manual mixing valve)

F1 Thermal reset limit thermostat
F2 Safety limit thermostat
M1 Circulating pump
N1 RDD10... room temperatures controller
Y1 Three-port valve with manual adjustment
Y2 Magnetic valve