Room thermostat with Auto Timer, Option External Input
for heating systems

- Room temperature control
- 2-position control with On/Off output for heating
- Comfort, Economy, Auto timer and Protection mode
- Auto time switch
- Adjustable commissioning and control parameters
- Mains-powered AC 230 V (RDE100) or battery-powered DC 3 V (RDE100.1)
- Multifunction input for external floor sensor, keycard contact, etc.

Use

The RDE100.. is used to control the room temperature in heating systems.

Typical applications:
- Apartments
- Commercial spaces
- Schools

For the control of the following pieces of equipment:
- Thermal valves or zone valves
- Gas or oil boilers
- Fans
Functions

- Room temperature control via built-in sensor or external input
- Selection of operating mode with operating mode touchkey
- Setting auto time switch (individual day, 7 day or 5-2 day)
- Display of current room temperature or setpoint in °C or °F
- Touchkey lock (manually)
- Setpoint lock
- Periodic pump run
- Reloading factory settings for commissioning and control parameters
- Two multifunctional inputs freely selectable for:
  - Floor Heating temperature limitation function (RDE100.1)
  - Operating mode switchover contact (keycard, window contact, etc.) (RDE100.1)

Temperature control

The RDE100.. acquires the room temperature with its built-in sensor and maintains the setpoint by delivering control commands. The switching differential is 1 K.

![Temperature control diagram]

- T: Room temperature
- SD: Switching differential
- W: Room temperature setpoint
- Q14: Output signal for heating

Floor Heating limitation function

The floor heating temperature limitation function is part of the floor heating application.

The external floor temperature sensor is connected to input X1, and acquires the floor temperature. If the floor temperature exceeds the parameterized temperature limit xx °C (Parameter P14 = 1, Parameter P15 = 1, Parameter P16 = xx °C), the heating valve is fully turned off until the floor temperature returns to below the parameterized limit. The factory setting for this function is OFF (disabled).

Operating mode switchover function

This function allows keycard application, please refer to the section "Operating notes, Economy mode".
**Periodic pump run function**

Can only be used when circulating pump or valve is controlled!
This function protects the pump or valve against seizing during longer off periods.
Perodic pump run is activated for 3 minutes every 24 hours at 12:00.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Pump status</th>
</tr>
</thead>
<tbody>
<tr>
<td>P12 = 0 (Default)</td>
<td>Pump run off</td>
</tr>
<tr>
<td>P12 = 1</td>
<td>Pump run on</td>
</tr>
</tbody>
</table>

**Type summary**

<table>
<thead>
<tr>
<th>Product No.</th>
<th>Stock No.</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>RDE100</td>
<td>S55770-T278</td>
<td>Mains-powered AC 230 V</td>
</tr>
<tr>
<td>RDE100.1</td>
<td>S55770-T279</td>
<td>Battery-powered DC 3 V</td>
</tr>
</tbody>
</table>

**Ordering**

- When ordering, please indicate product No./stock No. and description
- Example:
  - **Product No.** | **Stock No.** | **Description**
  - RDE100          | S55770-T278   | Room thermostat
- Valve actuators/external sensor must be ordered separately
### Equipment combinations

<table>
<thead>
<tr>
<th>Description</th>
<th>Product No.</th>
<th>Data Sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electromotoric actuator</td>
<td>SFA21..</td>
<td>4863</td>
</tr>
<tr>
<td>Electrothermal actuator (for radiator valves)</td>
<td>STA23..</td>
<td>4884</td>
</tr>
<tr>
<td>Electrothermal actuator (for small valves 2.5 mm)</td>
<td>STP23..</td>
<td>4884</td>
</tr>
<tr>
<td>Damper actuator</td>
<td>GDB..</td>
<td>4634</td>
</tr>
<tr>
<td>Damper actuator</td>
<td>GSD..</td>
<td>4603</td>
</tr>
<tr>
<td>Damper actuator</td>
<td>GQD..</td>
<td>4604</td>
</tr>
<tr>
<td>Rotary damper actuator</td>
<td>GXD..</td>
<td>4622</td>
</tr>
<tr>
<td>Cable temperature sensor</td>
<td>QAH11.1</td>
<td>1840</td>
</tr>
<tr>
<td>Room temperature sensor</td>
<td>QAA32 ..</td>
<td>1747</td>
</tr>
</tbody>
</table>

### Mechanical design

The room thermostat consists 2 parts:
- Plastic housing which accommodates the electronics, the operating elements and the room temperature sensor
- Mounting plate with screw terminals
The housing engages in the mounting plate and is secured with a screw.

### Operation and settings

1) Operating mode touchkey
2) Set
3) Ok
4) Touchkey for decreasing a value
5) Touchkey for increasing a value
<table>
<thead>
<tr>
<th>#</th>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>Indicating that batteries need to be replaced (only with battery-powered version)</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>Protection mode (protection mode symbol can be enabled via parameter settings).</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>Auto timer mode</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>View and set auto time switch</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>Comfort mode</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>Economy mode</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>Escape</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>Display</td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
<td>Display of time</td>
</tr>
<tr>
<td>13</td>
<td></td>
<td>Morning: 12-hour format Afternoon: 12-hour format</td>
</tr>
<tr>
<td>14</td>
<td></td>
<td>Confirmation</td>
</tr>
<tr>
<td>15</td>
<td></td>
<td>Room temperature in degrees Fahrenheit</td>
</tr>
<tr>
<td>16</td>
<td></td>
<td>Touchkey lock activated</td>
</tr>
<tr>
<td>17</td>
<td></td>
<td>Room temperature in degrees Celsius</td>
</tr>
<tr>
<td>18</td>
<td></td>
<td>Display of room temperature, setpoint, etc.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>8</td>
<td>➔</td>
<td>External input enabled</td>
</tr>
<tr>
<td>9</td>
<td>🔔</td>
<td>Permanent setpoint setting</td>
</tr>
<tr>
<td>10</td>
<td>🕒</td>
<td>Day and time setting</td>
</tr>
<tr>
<td>11</td>
<td>🗯️</td>
<td>Holiday mode setting</td>
</tr>
</tbody>
</table>

**Mounting and installation notes**

Do not mount the thermostat in niches or bookshelves, not behind curtains, not above or near heat sources, and not exposed to direct solar radiation. Mount about 1.5 m above the floor.

![Mounting diagram]

**Mounting**

- Mount the thermostat in a clean and dry location without direct air flow from a heating/cooling equipment, and not exposed to drip or splash water

**Wiring**

See Mounting Instructions M1429 enclosed with the thermostat.

- Ensure that wiring, fusing and earthing comply with local regulations
- Correctly size the cables to the thermostat and the valve actuators
- Use only valve actuators rated for AC 24…230 V
- The AC 230 V mains supply line must have an external fuse or circuit breaker with a rated current of no more than 10 A
- Disconnect from power supply before removing the unit from its mounting plate
- External Inputs X1, ⬇️ may carry mains potential. Sensor cables or window contact must carefully install before powering up the thermostat
### Commissioning notes

**Commissioning**

After power is applied, the thermostat carries out a reset during which all LCD segments flash, indicating that the reset was made correctly. After the reset, the thermostat is ready for commissioning by qualified HVAC personnel.

The control parameters of the thermostat can be set to ensure optimum performance of the entire system. Please refer to Operating Instructions CB1B1422, section "Do you want to change parameters?".

**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, adjust parameter P04.

**Setpoint lock**

We recommend reviewing the setpoint lock (for public areas) in parameters P06 and P08 and changing them as needed.

**Touchpad scanning rate**

Since the thermostat uses touch technology and to minimize battery power consumption, a parameter P21 (adjustable from 0.25 to 1.5 seconds) is implemented for the user to adjust. This function is only valid for the battery-powered version and the default value is 1 second.

This means that when, for a certain time, the user does not touch the touchpad, the unit operates in power saving mode and the touchpad is running at a scanning rate of 1 second.

(From the calculation – assuming 4 operations per day on the thermostat, the estimated 1-second scanning rate results in a battery life of 1 year. If the user increases the scanning rate, the batteries’ life is extended.)

**Change of batteries (only with battery-powered version)**

If the battery symbol 🟢 appears, the batteries are almost exhausted and should be replaced. Use alkaline batteries type AAA.

### Operating notes

The RDE100.. provides Comfort, Economy, Auto timer and Protection mode. The difference between Comfort and Economy mode is only the room temperature setpoint. The changeover between Comfort, Economy and Protection mode is made either automatically by the auto time switch or by pressing touchkey mode.

**Comfort mode 🌿**

When Comfort mode is activated, symbol 🌿 appears on the display. The setpoint (20 ºC) can be readjusted by pressing touchkeys + and −.

**Economy mode 🍃**

When Economy mode is activated, symbol 🍃 appears on the display. The setpoint (16 ºC) can be readjusted by pressing touchkeys + and −.

In RDE100.1, a window contact feature is that a user can connect a window contact to the input X1, 🎨. Depending on whether the window contact is configured to Normally Open or Normally Close (Parameter P14 = 2, Parameter P17 = 0 or 1), a change in this status will automatically switch the thermostat from any modes to Economy mode. This feature is good for public area. The factory setting for this function is Off (disabled).

**Protection mode 🧐**

If the temperature falls below 5 ºC, the unit automatically activates the heating output. The symbol 🧐 appears only, if the icon is enabled via parameter settings.
When Auto timer mode is enabled, the changeover between the operating modes (Comfort and Economy mode) will take place automatically. There are three options for time switch setting: individual day, 7 day or 5-2 day. You can select Comfort or Economy mode in every 15 minutes interval of the day. The 0:00 to 24:00 hour time bar will allow you to set the mode throughout the selected day(s).

<table>
<thead>
<tr>
<th>Default value</th>
<th>Day/s</th>
<th>Comfort mode</th>
<th>Economy mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mo (1) – Fr (5)</td>
<td>6:00 – 8:00 hr</td>
<td>22:00 – 6:00 hr</td>
<td></td>
</tr>
<tr>
<td></td>
<td>17:00 – 22:00 hr</td>
<td>8:00 – 17:00 hr</td>
<td></td>
</tr>
<tr>
<td>Sa (6) – Su (7)</td>
<td>7:00 – 22:00 hr</td>
<td>22:00 – 7:00 hr</td>
<td></td>
</tr>
</tbody>
</table>

Please refer to Operating Instructions CB1B1422, section "Do you want to enter your own time switch?".

**Holiday mode**

When holiday mode is activated, symbol 🗻 appears on the display. The setpoint (12 °C) and the number of days a user is away can be readjusted by pressing touchkeys + and –.

**Maintenance notes**

The thermostats are maintenance-free.

**Disposal**

In terms of disposal, the room thermostats are classified as electronic scrap conforming to the European Directive 2011/65/EU (WEEE) and must not be disposed of as unsorted domestic waste. The relevant national legal regulations must be complied with and the units must be disposed of via the appropriate channels. Local and currently valid legislation must be observed.

**Technical data**

<table>
<thead>
<tr>
<th>Power supply</th>
<th>Operating voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>RDE100 at L - N</td>
<td>AC 230 V +10/-15%</td>
</tr>
<tr>
<td>RDE100.1</td>
<td>DC 3 V (2 x 1.5 V alkaline batteries AAA)</td>
</tr>
<tr>
<td>Frequency (RDE100)</td>
<td>50 Hz</td>
</tr>
<tr>
<td>Power consumption (RDE100)</td>
<td>4 VA</td>
</tr>
</tbody>
</table>

Battery life calculation is based on the touchpad scanning rate during idle time (assuming a user presses 4 touchkeys per day):

- Scanning rate 0.25 s: 194 days battery life
- Scanning rate 0.50 s: 274 days battery life
- Scanning rate 1.00 s: 346 days battery life
- Scanning rate 1.50 s: 379 days battery life

**Control inputs**

<table>
<thead>
<tr>
<th>Control input Q11-Nx (Com)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rating RDE100</td>
</tr>
<tr>
<td>Rating RDE100.1</td>
</tr>
</tbody>
</table>
**External sensor**

- External sensor (RDE100.1)
- 'X1' - 'L' (Reference)
- Or
- Digital On/Off
- 'X1' - 'L' (Reference)

**Control outputs**

- Control output Q12-Nx (NC contact)
- Rating RDE100: (AC 24...230 V) max. 5(2) A min. 8 mA
- Rating RDE100.1: (AC 24...230 V) max. 5(2) A min. 8 mA

- Control output Q14-Nx (NO contact)
- Rating RDE100: (AC 24...230 V) max. 5(2) A min. 8 mA
- Rating RDE100.1: (AC 24...230 V) max. 5(2) A min. 8 mA

**Function data**

- Switching differential SD: 1 K
- Comfort mode: 20 °C (5...35 °C)
- Economy mode: 16 °C (5...35 °C)
- Holiday mode: 12 °C (5...35 °C) (Standalone)

**Environmental conditions**

- Built-in room temperature sensor
- Setpoint setting range: 5...35 °C (Comfort/Economy mode)
- Accuracy at 25 °C: < ±0.5 K
- Temperature calibration range: ±3.0 K

- Resolution of settings and displays
- Setpoints: 0.5 °C
- Temperature value displays: 0.5 °C

**Norms and standards**

- **C-compliance to**
  - EMC directive: 2004/108/EC
  - Low voltage directive: 2006/95/EC

- **C-Tick conformity to**
  - EMC emission standard: AS/NSZ 4251.1:1999

- **RoHS (Restriction of Hazardous Substances)**: 2011/65/EU

- **Product standards**
  - Automatic electrical controls for household and similar use: General requirements EN 60730-1
  - Particular requirements for temperature sensing controls: EN 60730-2-9

- **Electromagnetic compatibility**
  - Emissions: EN 61000-6-3
  - Immunity: EN 61000-6-2

- **Safety class**: II as per EN 60730-1, EN 60730-2-9

- **Pollution class**: II as per EN 60730

- **Degree of protection of housing**: IP30 as per EN 60529
Connection terminals for
Solid wires or prepared stranded wires
2 x 1.5 mm² or 1 x 2.5 mm² (min. 0.5 mm²)

Weight
0.166 kg

Color of housing front
RAL9003

Connection diagrams

RDE100
N1 Room thermostat
Y1 Valve actuator
L Live, AC 230 V
N Neutral conductor, AC 230 V

RDE100.1
Lx Live, AC 24 ... 230 V
Q11, Q12 NC contact (for NO valves)
Q11, Q14 NO contact (for NC valves)
Nx Neutral conductor, AC 24 ... 230 V
X1 External input signal
Ⅰ Measuring neutral for external input
B1 Temperature sensor (Floor temperature limit)
S1 Switch (keycard, window contact)

Application examples

Room thermostat with direct control of a gas-fired wall-hung boiler
Room thermostat with direct control of a gas-fired floor-standing boiler
Room thermostat with direct control of a heating circuit pump (precontrol by manual mixing valve)

F1 Thermal reset limit thermostat
F2 Safety limit thermostat
M1 Circulating pump

Room thermostat with direct control of hydronic floor heating system

N1 RDE100.. room thermostat
Y1 Mixing 3-port valve with manual adjustment
Y2 Magnetic valve

Dimensions

All dimensions in mm

Remarks

Heating:
Because of the unavoidable self heating effects of the electrical current, any loads of more than 3 Amperes connected to the unit can influence the control behavior and temperature accuracy in a negative way.