REA22
Room Temperature Controller
Basic Documentation

Issue: 2.0
Controller series: A
# Contents

1 Summary ......................................................................................................................... 5
  1.1 Brief description ........................................................................................................ 5
  1.2 Features ..................................................................................................................... 5
  1.3 Field of use ............................................................................................................... 6
    1.3.1 Target market ...................................................................................................... 6
    1.3.2 Types of buildings ............................................................................................ 6
    1.3.3 Types of systems .............................................................................................. 6
    1.3.4 Controllable equipment ................................................................................... 6
  1.4 Product liability ........................................................................................................ 7

2 Handling ........................................................................................................................... 8
  2.1 Engineering ............................................................................................................... 8
  2.2 Mounting ................................................................................................................. 9
  2.3 Electrical installations ............................................................................................. 10
    2.3.1 Regulations for installation ............................................................................ 10
    2.3.2 Connection diagram ....................................................................................... 10
  2.4 Display and operating elements ............................................................................. 11
  2.5 Startup ..................................................................................................................... 12
    2.5.1 First startup .................................................................................................... 12
  2.6 Short-term individual settings .............................................................................. 13
    2.6.1 Short-term increase/decrease of actual room temperature ......................... 13
    2.6.2 Short-term change of temperature level ....................................................... 13

3 Description of end-user settings .................................................................................... 14
  3.1 Set the time of day or weekday .............................................................................. 14
  3.2 Select operating modes ......................................................................................... 14
  3.3 Enter individual temperatures and heating periods ............................................. 15
    3.3.1 7-day time switch .......................................................................................... 15
    3.3.2 Check settings of the 7-day time switch ....................................................... 16
    3.3.3 24-hour mode with one heating period ....................................................... 16
    3.3.4 24-hour mode with two heating periods ...................................................... 17
    3.3.5 24-hour mode with three heating periods ................................................... 17
    3.3.6 Continuous normal temperature .................................................................. 18
    3.3.7 Continuous economy temperature ................................................................ 18
    3.3.8 Continuous standby with frost protection ................................................... 18
  3.4 Holiday program ..................................................................................................... 19
  3.5 Reset to standard values ....................................................................................... 20
4 Description of heating engineer settings ........................................... 21
  4.1 DIP switch 1 .................................................................................. 21
      4.1.1 Optimum start control ......................................................... 21
  4.2 DIP switch 2 .................................................................................. 22
      4.2.1 Limitation of setpoint .......................................................... 22
      4.2.2 Cooling function ................................................................. 22
      4.2.3 Periodic pump run (pump kick) ............................................ 22
  4.3 DIP switch 3 .................................................................................. 23
      4.3.1 Control ............................................................................... 23
      4.3.2 Frost protection ................................................................. 23
  4.4 Functional check ........................................................................... 24
  4.5 Calibration of sensor .................................................................... 24

5 Applications............................................................................................. 25
  5.1 Instantaneous water heater .............................................................. 25
  5.2 Atmospheric gas burner ................................................................. 25
  5.3 Zone valve ...................................................................................... 25
  5.4 Circulating pump with pre-control through manual mixing valve .... 26
  5.5 Refrigeration unit ........................................................................... 26

6 Dimensions .................................................................................................. 27

7 Technical data ........................................................................................... 28

8 Index............................................................................................................. 29
1 Summary

1.1 Brief description

- Mains-independent room temperature controller featuring straightforward operation and an easy-to-read display
- Self-learning two-position controller providing PID control (patented)
- Choice of three different 24-hour operating modes and one 7-day mode including individually adjustable 24-hour modes
- Control of cooling equipment

1.2 Features

- PID control
- Self-learning or adjustable switching cycle time
- 7-day time switch
- Pre-selected 24-hour operating modes
- Override button
- Reset function
- Sensor calibration
- Setting check
- Holiday mode (1…99 days)
- Cooling function
- Frost protection function
- Minimum limitation of setpoint
- Pump kick
- Optimum start control in the morning (P.1)
1.3 Field of use

1.3.1 Target market

- OEM
- Manufacturers of boiler and heating units

1.3.2 Types of buildings

Room temperature control in:

- Single-family and holiday houses
- Apartments and office spaces
- Individual rooms and consulting rooms
- Commercially used spaces

1.3.3 Types of systems

Standard heating systems, such as:

- Radiator heaters
- Convector heaters
- Underfloor heating systems
- Ceiling heating systems
- Radiant panels
- Cooling systems

1.3.4 Controllable equipment

- Solenoid valves of instantaneous water heaters
- Solenoid valves of atmospheric gas burners
- Forced draught gas and oil burners
- Electrothermal actuators
- Circulating pumps in heating systems
- Electric direct heating
- Fans of electric storage heaters
- Zone valves (normally closed)
- Cooling and refrigeration equipment
1.4 Product liability

- The products may only be used in building service plants and applications as indicated before
- When using the products, all requirements specified under "Technical data" must be observed
- Local regulations for electrical installations must be complied with
2 Handling

2.1 Engineering

- The room temperature controller should be fitted in the main living room.
- The place of installation should be chosen so that the sensor can capture the room temperature as accurately as possible, without being affected by direct solar radiation or other heating or cooling sources.
- Mounting height is approx. 1.5 m above the floor.
- The unit can be fitted to most commercially available recessed conduit boxes or directly on the wall.
## 2.2 Mounting

<table>
<thead>
<tr>
<th>Description</th>
<th>Illustration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open screw on the controller without opening the cover.</td>
<td><img src="2276Z21" alt="Illustration" /></td>
</tr>
<tr>
<td>Lift controller from base.</td>
<td><img src="2276Z22" alt="Illustration" /></td>
</tr>
<tr>
<td>Mount base directly on the wall or onto a recessed conduit box.</td>
<td><img src="2276Z23" alt="Illustration" /></td>
</tr>
<tr>
<td>Connect wires to base. For correct wiring, refer to connection diagram in this chapter.</td>
<td><img src="2276Z24" alt="Illustration" /></td>
</tr>
</tbody>
</table>
### Description

Mount controller onto the base again.

Tighten screw. The controller is ready for operation.

### 2.3 Electrical installations

#### 2.3.1 Regulations for installation

When installing the room temperature controller, the base must first be fitted and wired. Then, the unit is engaged at the top, swung downward and secured with a screw.

For the electrical installation, the local safety regulations and standards must be complied with.

#### 2.3.2 Connection diagram

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>Live, AC 24…250 V</td>
</tr>
<tr>
<td>L1</td>
<td>N.O. contact, AC 24…250 V / 0.1…6 (2.5) A</td>
</tr>
<tr>
<td>L2</td>
<td>N.C. contact, AC 24…250 V / 0.1…6 (2.5) A</td>
</tr>
<tr>
<td>M1</td>
<td>Circulating pump</td>
</tr>
<tr>
<td>N1</td>
<td>REA22 controller</td>
</tr>
<tr>
<td>Y1</td>
<td>Regulating unit</td>
</tr>
</tbody>
</table>
2.4 Display and operating elements

1. Display
   - Standby with frost protection
   - Normal temperature
   - Economy temperature
   - Block/day
   - Switching pattern with flashing time cursor
   - Heating/cooling on
   - Cooling mode
   - Holiday mode
   - Battery change
   - Time of day
   - Weekday
   - Room temperature (measured)
   - Active normal temperature

2. Battery compartment
   - Two alkaline batteries 1.5 V (AA)

3. Setting slider
   - Time/weekday
   - Switching pattern allocation
   - Switching times
   - Normal temperatures
   - T1...T3

4. Setting buttons
   - Block/day button
   - Switching pattern button
   - Set values lower
   - Set values higher

5. Operating mode selector
   - Auto 1...7
     - 7-day mode with up to three heating periods per day
     - 24-hour mode with one heating period
     - 24-hour mode with two heating periods
     - 24-hour mode with three heating periods
     - Continuous normal temperature
     - Continuous economy temperature
     - Standby with frost protection

6. Override button

7. Warmer/colder button
2.5 Startup

The controller is supplied with factory-set switching patterns, switching times and temperatures.

2.5.1 First startup

*Note* For the first startup no tools are required.

Proceed according to steps 1 to 4 as follows:

1. Open the cover and remove the battery compartment
2. Remove the black transit tabs from the two batteries
3. Place the battery compartment into its correct position again. The unit switches itself on

2. Move the setting slider to this position.

2.1 Set the correct time of day with these buttons.

2.2 Set the correct weekday with this button (1 = Monday…7 = Sunday).

3. Move the setting slider back to the position on the right, because only that position allows you to close the cover.

4. Select the automatic mode with the operating mode selector.

Fold up operating instructions again, place them back into the cover and close the cover again.
2.6 Short-term individual settings

Caution! These changes are valid only up to the next switching point.

2.6.1 Short-term increase/decrease of actual room temperature

By pressing these buttons, you increase or decrease the actual room temperature in increments of 0.2 °C by a maximum of ±4 °C. The display first shows the newly selected temperature and then the actual value again.

Note If, as a result of the factory settings, you always feel either too warm or too cold, you should readjust the temperatures * or ° on the settings level (see chapter “Description of end-user settings) to suit your needs.

2.6.2 Short-term change of temperature level

When pressing this button, you change from the current temperature level to the other. The display shows either *, when the change was made from the economy temperature, or °, when it was made from the normal temperature. This means you can select the economy temperature during the time you are absent.
3 Description of end-user settings

3.1 Set the time of day or weekday

With the cover open, the time of day or weekday can be set as follows:

- Move the setting slider to the time of day / weekday position and press to set the required time of day.

- Press this button to select the new weekday (1 = Monday / 7 = Sunday).

- Move the setting slider back to this position and close the cover.

3.2 Select operating modes

With the cover open, the following operating modes can be selected:

- **Auto 1...7** Move the operating mode selector to 7-day mode. With that, you use the 7-day setting with up to three heating periods per day.

- Move the operating mode selector to 24-hour mode with one heating period. With that, you use the 24-hour setting with one heating period.

- Move the operating mode selector to 24-hour mode with one heating period. With that, you use the 24-hour setting with two heating periods.

- Move the operating mode selector to 24-hour mode with one heating period. With that, you use the 24-hour setting with three heating periods.

- Move the operating mode selector to «Normal temperature». This ensures continuous heating to the normal temperature. The display shows and .

- Move the operating mode selector to «Economy temperature». This ensures continuous heating to the economy temperature. The display shows .

- Move the operating mode selector to «Standby». In that case, heating is provided only when the room temperature falls below the preset frost protection limit (e.g. 5 °C). The display shows .

**Note** A detailed description of how to set the different modes and their possibilities is given in the following sections.
3.3 Enter individual temperatures and heating periods

The controller is supplied with factory-set switching patterns, switching times and temperatures. There are several switching patterns available that can be set to suit your specific needs. You can either rely on the factory settings or make settings tailored to your personal needs.

3.3.1 7-day time switch

The controller can be assigned to a 7-day switching pattern (weekday block 1-5 / weekend block 6-7) with up to three different heating periods.

Proceed as follows:

- **Auto 1..7** Move the operating mode selector to the 7-day time switch position, enabling its blocks and switching patterns to be set. With that, you will afterwards use the 7-day setting with up to three heating periods per day.

- Move the setting slider to the position where the blocks (weekday 1-5, weekend 6-7 or day 1...7) and switching patterns can be set.

- **Day** Select the required block (weekday 1-5, weekend 6-7 or individual day 1...7) by pressing this button. Start to enter the switching times on the required block (weekday 1-5 / weekend 6-7) that are used for most of the days. After that, if required, change with the individual day selection (1...7) the settings.

  **If you make settings for individual days, the respective block will be cancelled and can be reinstated only by making a reset.**

- **Press this button to assign the required switching pattern to the block.**

- Select the switching position (e.g. P.1) and press to enter the required switching time.

- Select the temperature position (e.g. T1) and press to enter the required temperature. \textit{T1 is the temperature between the switching points P.1 and P.2, T2 the temperature between the switching points P.3 and P.4, and T3 the temperature between the switching points P.5 and P.6.}

- Select «Economy temperature» and press to enter the required value. **The entered economy temperature is the same for all blocks.**

- Move the setting slider back to this position and close the cover.

**Note** If a position cannot be set, the display shows \textit{PR 55}. 

---

Siemens Building Technologies  
Landis & Stefa Division  
Basic Documentation REA22  
Description of end-user settings  
Issue 2.0  
CE1P2276E / 31.03.1999  
15/30
3.3.2 Check settings of the 7-day time switch

The controller offers the possibility to check your settings of the 7-day time switch mode. Proceed as follows:

Auto 1..7 Move the operating mode selector to the position at the top.

Day 1..7 6..7 Press button. The switching patterns set for the individual days are shown in consecutive order.

Note If corrections have to be made on your settings, proceed as described in the previous section.

3.3.3 24-hour mode with one heating period

The controller can be assigned to a 24-hour switching pattern with one heating phase. Proceed as follows:

Move the operating mode selector to 24-hour mode with one heating period, enabling its block and switching pattern to be set. With that, you will afterwards use the 24-hour setting with one heating period.

Select the switching position (e.g. P.1) and press to enter the required switching time. Enter switching position P.2 accordingly.

Select the temperature position (e.g. T1) and press to enter the required temperature. T1 is the temperature between the switching points P.1 and P.2.

Select «Economy temperature» and press to enter the required value.

Move the setting slider back to this position and close the cover.

Note If a position cannot be set, the display shows PR 55.
3.3.4 24-hour mode with two heating periods

The controller can be assigned to a 24-hour switching pattern with two heating periods. Proceed as follows:

- Move the operating mode selector to 24-hour mode with two heating periods, enabling its blocks and switching patterns to be set. With that, you will afterwards use the 24-hour setting with two heating periods.

- Select the switching position (e.g. P.1) and press ← → to enter the required switching time. Enter switching positions P.2 to P.4 accordingly.

- Select the temperature position (e.g. T1) and press ← → to enter the required temperature. T1 is the temperature between the switching points P.1 and P.2 and T2 is the temperature between the switching points P.3 and P.4.

- Select «Economy temperature» and press ← → to enter the required value. The entered economy temperature is the same for all blocks.

- Move the setting slider back to this position and close the cover.

3.3.5 24-hour mode with three heating periods

The controller can be assigned to a 24-hour switching pattern with three heating periods. Proceed as follows:

- Move the operating mode selector to 24-hour mode with three heating periods, enabling its blocks and switching patterns to be set. With that, you will afterwards use the 24-hour setting with three heating periods.

- Select the switching position (e.g. P.1) and press ← → to enter the required switching time. Enter switching positions P.2 to P.6 accordingly.

- Select the temperature position (e.g. T1) and press ← → to enter the required temperature. T1 is the temperature between the switching points P.1 and P.2, T2 is the temperature between the switching points P.3 and P.4, and T3 is the temperature between the switching points P.5 and P.6.

- Select «Economy temperature» and press ← → to enter the required value. The entered economy temperature is the same for all blocks.

- Move the setting slider back to this position and close the cover.

Note: If a position cannot be set, the display shows PR 55.
### 3.3.6 Continuous normal temperature

The controller can be assigned to continuous normal temperature $T_3$.

Proceed as follows:

1. Move the operating mode selector to «Normal temperature». This ensures continuous heating to the normal temperature $T_3$. The display shows $\bullet$ and $T_3$.
2. Select «Normal temperature $T_3$» and press $\leftarrow \rightarrow$ to enter the required value.
3. Move the setting slider back to this position and close the cover.

### 3.3.7 Continuous economy temperature

The controller can be assigned to continuous economy temperature.

Proceed as follows:

1. Move the operating mode selector to «Economy temperature». This ensures continuous heating to the economy temperature. The display shows $\circ$.
2. Select «Economy temperature» and press $\leftarrow \rightarrow$ to enter the required value.
3. Move the setting slider back to this position and close the cover.

### 3.3.8 Continuous standby with frost protection

The controller can be assigned to continuous standby with frost protection.

Proceed as follows:

1. Move the operating mode selector to «Standby». In that case, heating is provided only when the room temperature falls below the preset frost protection limit (e.g. 5 °C). The display shows $\circ$. 

## End-User Settings
3.4 Holiday program

You can enter the start and the duration of your holiday period. In that case, the controller switches to economy mode at the beginning of the holiday period and back to the selected operating mode when the holiday period has expired. The display shows, with the **holiday symbol** 🏷, the number of **remaining** days (e.g. 14) in the holiday period as follows:

![Display showing holiday remaining days](image)

To make settings, proceed as follows:

1. Move the setting slider to the holiday symbol.

2. **Day** □ Press this button to set the start of the holiday period (max. 6 days in advance; 1 = Monday…7 = Sunday).

3. ▶◀ Press the arrow buttons to enter the duration of the holiday period (1...99 days).

4. Move the setting slider back to this position and close the cover. If you return from your holidays earlier than expected, you have to reset the holiday period to **00**.

**Note**

On completion of the holiday period, the controller will resume the selected operating mode (e.g. **Auto 1...7**).
## 3.5 Reset to standard values

By pressing these three buttons simultaneously, a complete reset is made, which means that the switching times and temperatures will be reset to their default values.

*Caution!*

**All individual settings will be lost!**

At the same time, a display check is made, which looks as follows:

![Display Check](image)

The following table shows the default values that will be recalled after a reset:

<table>
<thead>
<tr>
<th>Auto</th>
<th>T1</th>
<th>T2</th>
<th>T3</th>
<th>T1</th>
<th>T2</th>
<th>T3</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-5</td>
<td>6.00</td>
<td>8.00</td>
<td>11.00</td>
<td>13.00</td>
<td>17.00</td>
<td>22.00</td>
<td>19°C</td>
</tr>
<tr>
<td>6-7</td>
<td>7.00</td>
<td>23.00</td>
<td>PASS</td>
<td>PASS</td>
<td>PASS</td>
<td>19°C</td>
<td>20°C</td>
</tr>
<tr>
<td>1-7</td>
<td>7.00</td>
<td>23.00</td>
<td>PASS</td>
<td>PASS</td>
<td>PASS</td>
<td>19°C</td>
<td>20°C</td>
</tr>
<tr>
<td>6-7</td>
<td>6.00</td>
<td>8.00</td>
<td>17.00</td>
<td>22.00</td>
<td>PASS</td>
<td>19°C</td>
<td>20°C</td>
</tr>
<tr>
<td>1-7</td>
<td>6.00</td>
<td>8.00</td>
<td>11.00</td>
<td>13.00</td>
<td>17.00</td>
<td>22.00</td>
<td>19°C</td>
</tr>
<tr>
<td>1-7</td>
<td>PASS</td>
<td>PASS</td>
<td>PASS</td>
<td>PASS</td>
<td>PASS</td>
<td>19°C</td>
<td>20°C</td>
</tr>
<tr>
<td>1-7</td>
<td>PASS</td>
<td>PASS</td>
<td>PASS</td>
<td>PASS</td>
<td>PASS</td>
<td>19°C</td>
<td>20°C</td>
</tr>
</tbody>
</table>

**Note**

If the cooling function is activated (DIP switch is set to COOLING), the default values T1…T3 are all set to 23 °C!

## 3.6 Battery change

If this symbol ![Battery Change Symbol](image) appears, you need to replace the batteries within the next three months as follows:

- Get two new alkaline batteries type AA, 1.5 V
- Remove the battery compartment, then the batteries, insert the new batteries and replace the battery compartment
- Make certain the old batteries are disposed of properly, in compliance with environmental requirements

*Caution* The setting data are maintained for a maximum of one minute only!
4 Description of heating engineer settings

4.1 DIP switch 1

The factory setting of all DIP switches is OFF.

If one or several DIP switch positions are changed, the reset button must be pressed as a confirmation. Otherwise the previous settings are still active!

4.1.1 Optimum start control

Optimization brings forward the switch-on point P.1 such that the selected setpoint will be reached at the desired time. The setting depends on the type of control system in use, that is, on heat transmission (piping system, radiators), building dynamics (building mass, insulation), and heating output (boiler capacity, flow temperature). The optimization is set with DIP switch 1 as follows:

<table>
<thead>
<tr>
<th>DIP Switch Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td>No effect</td>
</tr>
<tr>
<td>1/4h/°C</td>
<td>For fast controlled systems</td>
</tr>
<tr>
<td>1/2h/°C</td>
<td>For medium controlled systems</td>
</tr>
<tr>
<td>1h/°C</td>
<td>For slow controlled systems</td>
</tr>
</tbody>
</table>

\[ T = T_R + \Delta T \]

\[ TR = T_R + P_m \]

\[ P_m = \frac{t}{h} \]

T: Temperature (°C)

TR: Actual value of room temperature

T: Forward shift of switch-on point (h)

P_m: Starting point for optimum on
4.2 DIP switch 2

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>☀ 3…29°C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>☀ 16…29°C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HEATING</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COOLING</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>◮ PUMP OFF</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>◮ PUMP ON</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note*

The factory setting of all DIP switches is OFF.

If one or several DIP switch positions are changed, the reset button must be pressed as confirmation. Otherwise the previous settings are still active!

4.2.1 Limitation of setpoint

When using minimum limitation of setpoint to 16 °C, undesired heat transfer to neighbouring flats is prevented in buildings that have several heating zones. The function can be selected with DIP switch 2.

4.2.2 Cooling function

DIP switch 2 is used for switching over to cooling mode when used in cooling applications.

The display shows COOLING after confirmation with the reset button.

4.2.3 Periodic pump run (pump kick)

The setting is made with DIP switch 2 while the pump is running. Protects the pump from seizing during longer OFF periods. Periodic pump run is activated for one minute every 24 hours at 12:00 h.
4.3 DIP switch 3

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self learning</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PID 12</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PID 6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-Pt</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5°C</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3°C</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10°C</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note**

The factory setting of all DIP switches is OFF.
If one or several DIP switch positions are changed, the reset button **must** be pressed as confirmation. **Otherwise the previous settings are still active!**

4.3.1 Control

The REA22 is a two-position controller providing PID control. The room temperature is controlled through the cyclic switching of a regulating unit.

**Self-learning mode**

The controller is supplied with an active self-learning mode, which enables it to automatically adapt to the controlled system (type of building construction, type of radiators, size of rooms, etc.). After a certain learning period, the controller optimizes its parameters and then operates in the mode it has learned.

In exceptional cases, where the self-learning mode may not be adequate, it is possible to choose PID 12, PID 6 or 2-Pt mode:

**PID 12 mode**

Mode with a switching cycle of 12 min for normal or slow controlled systems (e.g. massive building structures, large spaces, cast-iron radiators, oil burners).

**PID 6 mode**

Mode with a switching cycle of 6 min for fast controlled systems (e.g. light building structures, small spaces, plate radiators or convectors, gas burners).

**2-Pt mode**

Mode with a pure two-position control with a switching differential of 0.5 °C (±0.25 °C) for very difficult controlled systems with considerable outside temperature variations.

4.3.2 Frost protection

Frost protection is adjustable with DIP switch 3 to either 3 °C, 5 °C (factory setting), or 10 °C.
4.4 Functional check

- Check the display. If there is no display, check the correct fitting and function of the batteries
- Open front cover
- Mover setting slider to mode T3.
  - In the case of heating mode, set the set value temperature to 29 °C by using button 
  - In the case of cooling mode, set the set value temperature to 3 °C by using button
- Mover setting slider to AUTO/RUN
- The relay and thus the regulating unit must respond after no more than one minute. If this is not the case:
  - Check regulating unit and wiring
  - Room temperature may be higher than 29 °C or lower than 3 °C
- Reset setpoint temperature T3 to its previous level

4.5 Calibration of sensor

If the displayed room temperature does not agree with the measured temperature, the temperature detector can be recalibrated.

When the setting slider is set to the position Day, press button . Then, the display will change as follows:

![Temperature Adjustment Display]

By pressing button or , the temperature can be changed in increments of 0.2 °C (max. ±2 °C). On completion of the readjustment, the setting slider must be reset to the AUTO/RUN position.
5 Applications

5.1 Instantaneous water heater

- N1: REA22 room temperature controller
- Y2: Solenoid valve

5.2 Atmospheric gas burner

- N1: REA22 room temperature controller
- Y2: Solenoid valve

5.3 Zone valve

- N1: REA22 room temperature controller
- Y3: Motorized three-port valve
- Y4: Motorized two-port valve
5.4 Circulating pump with pre-control through manual mixing valve

- **M1**: Circulating pump
- **N1**: REA22 room temperature controller
- **Y1**: Manually operated three-port valve

5.5 Refrigeration unit

- **E1**: Refrigeration unit
- **N1**: REA22 room temperature controller
6 Dimensions

(Subject to alteration)
7 Technical data

Operating voltage  DC 3 V
  Batteries (alkaline AA)  2 x 1.5 V
  Battery life  approx. 2 years
  Backup for battery change  max. 1 min

CE conformity to
  EEC directive  89/336/EEC
  Low voltage directive  73/23/EEC

Switching capacity of relays
  Voltage  AC 24…250 V
  Current  0.1…6 (2.5) A

Measuring element NTC 68 kΩ at 25 °C
  Measuring range  0…40 °C
  Time constant  max. 2 min

Setpoint setting range
  Normal temperature  3…29 °C
  Economy temperature  3…29 °C

Setpoint for frost protection
  Adjustable  3 / 5 / 10 °C
  Factory setting  5 °C

Resolution of settings and display
  Setpoints  0.2 °C
  Switching times  10 min
  Measurement of actual value  0.1 °C
  Display of actual value  0.2 °C
  Time display  1 min

Safety class to EN 60730-1  II
Degree of protection to EN 60529  IP30
Electromagnetic compatibility
  Immunity  EN 50082-2
  Emissions  EN 50081-1

Perm. ambient temperature
  Operation  3…35 °C
  Storage  -25…+60 °C

Perm. ambient humidity to DIN 40040  G
Weight  0.24 kg
Colour  white RAL9003
Index

2
24-hour mode
 One heating period ................................................................. 16
 Three heating periods .............................................................. 17
 Two heating periods ............................................................... 17

2-Pt mode .................................................................................. 23

7
7-day time switch
 Check ......................................................................................... 16
 Set ............................................................................................. 15

B
Battery change ........................................................................... 20
Brief description ........................................................................ 5

C
Calibration .................................................................................. 24
Connection diagram ................................................................. 10
Continuous mode
 Economy temperature ................................................................. 18
 Normal temperature ................................................................. 18
 Standby with frost protection .................................................... 18

Control
 2-Pt mode .................................................................................. 23
 PID 12 mode ............................................................................. 23
 PID 6 mode .............................................................................. 23
 Self-learning mode ..................................................................... 23
 Cooling function ....................................................................... 22

D
Default values ........................................................................... 20
Dimensions ................................................................................ 27
DIP switch 1 ............................................................................... 21
DIP switch 2 ............................................................................... 22
DIP switch 3 ............................................................................... 23
Display ....................................................................................... 11

E
Electrical installations ............................................................... 10
Engineering ............................................................................... 8

F
Features ..................................................................................... 5
First startup ............................................................................... 12
Frost protection ......................................................................... 23
Functional check ....................................................................... 24

H
Handling .................................................................................... 8
Holiday program ........................................................................ 19
L
Limitation of setpoint ..................................................................................................... 22

M
Mounting ....................................................................................................................... 9

O
Operating elements ....................................................................................................... 11
Optimum start control ................................................................................................. 21

P
Periodic pump run ......................................................................................................... 22
PID 12 mode ................................................................................................................. 23
PID 6 mode ................................................................................................................... 23
Product liability ............................................................................................................. 7
Pump kick .................................................................................................................... 22

R
Regulations for installation .......................................................................................... 10
Reset ........................................................................................................................... 20

S
Select operating modes ............................................................................................... 14
Self-learning mode ....................................................................................................... 23
Settings
  Time of day .............................................................................................................. 14
  Weekday .................................................................................................................. 14
Startup ........................................................................................................................ 12

T
Target market ................................................................................................................. 6
Types of buildings ....................................................................................................... 6
Types of systems ......................................................................................................... 6