

## Self-learning Room Temperature Controller

REV22...

with one weekly operating mode including individual 24-hour modes and three 24-hour modes, cooling function



**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 weekly mode including individually adjustable 24-hour modes.**

**Control of cooling equipment.**

### Use

Room temperature control in:

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

For the control of the following pieces of 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

### Functions

- PID control
- Self-learning or adjustable switching cycle time
- Weekly time switch
- Remote operation
- Preselected 24-hour operating modes
- Override button
- Reset function
- Detector calibration
- Setting check
- Holiday mode
- Cooling
- Frost protection function
- Minimum limitation of set point
- Pump kick
- Optimum start control in the morning (P.1)

## Type summary

Room temperature controller with weekly time switch  
Room temperature controller with weekly time switch and  
remote operation connection facility

REV22

REV22T

## Ordering

## Delivery

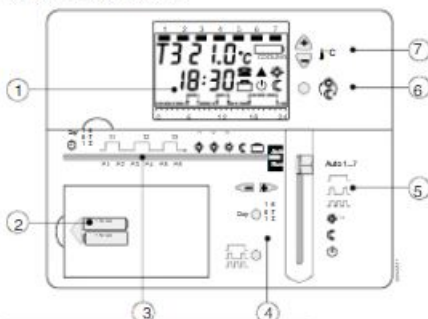
## Mechanical design

When ordering, please give type reference according to "Type summary".

The unit is supplied with batteries.

Plastic casing with an easy-to-read display, easily accessible operating elements and removable cover. The removable battery compartment allows straightforward replacement of the two 1.5 V alkaline batteries. The base plate can be fitted to all commercially available recessed conduit boxes or directly on the wall and can then be wired before fitting the controller to it. The casing accommodates the electronics with the three DIP switches. The potential-free changeover contact and the connection terminals are located on the base plate.

## 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 Cooling mode
- Remote operation active (REV22T)
- Holiday mode
- Battery change
- 18:30 Time of day
- 1 Weekday
- 2 1.0°C Room temperature (measured)
- T3 Active normal temperature

②

### Battery compartment

- Two alkaline batteries 1.5V (AA)

③

### Setting slider

- Time/weekday
- Switching pattern allocation Block/day
- Switching times P.1...P.6

④

- Normal temperatures T1...T3
- Economy temperature
- Holiday mode
- Operating position

④

### Setting buttons

- Block/day button
- Switching pattern button
- Set values lower
- Set values higher

⑤

### Operating mode selector

- Auto 1...7 Weekly 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





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### Warmer/colder buttons

## Operating modes

	Weekly 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

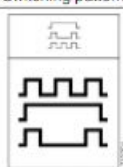

## Set points

	Standard heating	Setting range	Setting range with set point limitation	Standard cooling
 T1	19 °C	3...29 °C	16...29 °C	23 °C
 T2	20 °C	3...29 °C	16...29 °C	23 °C
 T3	21 °C	3...29 °C	16...29 °C	23 °C
	16 °C	3...29 °C	16...29 °C	29 °C

In the weekly and 24-hour operating modes, the set points are freely adjustable. Fixed is only an overtemperature protection of 29 °C in cooling mode.

## Weekly time switch

To simplify the entry of switching times, there are three different switching patterns available. These can be assigned to the respective weekdays 1...5 and weekend days 6...7 in the form of blocks. This means that with each block, the respective switching times and room temperatures need to be adapted only once.

Switching patterns	Blocks
	

It is also possible to make individual entries of the individual days 1...7.


## Override button





Manual changeover between normal and economy temperature. This manual action will automatically be reset when the next switching action takes place or when the operating mode changes.

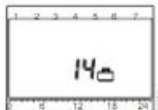
## Setting check



When pressing the button  in the weekly mode **Auto 1...7**, the selected switching patterns of the individual days will be displayed, one by one, each for three seconds.

## Holiday setting

Entry of start and duration of the holiday period. In that case, the controller will switch to economy mode  at the beginning of the holiday period. The display shows, with the **holiday symbol**  and the number of **remaining** days in the holiday period, as follows:





On completion of the holiday period, the controller will resume the selected operating mode (e.g. **Auto 1...7**).

## Calibration of detector

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 , press button . Then, the display will change as follows:

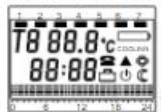


By pressing button  or , the temperature can be changed in increments of 0.2 °C (max.  $\pm 2$  °C). On completion of the readjustment, the setting slider must be reset to the Auto/Run position.

## Reset


When pressing buttons ,  and  simultaneously, all individual settings will be reset to their standard values.


Resetting also serves as a display check:





After a reset, all individual settings such as time, day, switching times, etc., must be re-entered.

## Remote operation (REV22T)

With the help of a suitable remote operation unit, the REV22T can be switched to the economy temperature set for operating mode . Changeover takes place through the making of a **potential-free contact** connected to terminals T1 and T2.

The display indicates this with the symbol .

After the contact opens, the selected operating mode becomes active again.

Operation according to the settings made on the controller	Continuous economy temperature
	

Suitable remote operation units are:

Telephone modem, manual switch, window switch, presence detector, central unit, etc.

## Technical features

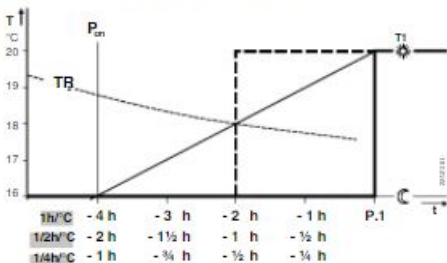
### DIP switch 1

OPTIMUM P.1	1	2	3
OFF	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1/4h / °C	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1/2h / °C	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
1h / °C	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### Optimum start control

Optimisation brings forward the switch-on point P.1 such that the selected set point 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 optimisation is set with DIP switch 1 as follows:

OFF	No effect
1/4h/°C	For fast controlled systems
1/2h/°C	For medium controlled systems
1h/°C	For slow controlled systems



T	Temperature (°C)	TR <sub>s</sub>	Actual value of room temperature
t	Forward shift of switch-on point (h)	P <sub>on</sub>	Starting point for optimum on

### DIP switch 2

	1	2	3
3...29°C	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16...29°C	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
HEATING	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
COOLING	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
PUMP OFF	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
PUMP ON	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### Limitation of set point

When using minimum limitation of set point 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.

### Cooling

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

### Periodic pump run (pump kick)

The setting is made with DIP switch 2 while the pump is running. Protects the pump against seizure during longer OFF periods. The periodic pump run is activated for one minute every 24 hours at 12:00 h.

## DIP switch 3

	1	2	3	4
Self learning			☐	☐
PID 12			☐	☐
PID 6			☐	☐
2-Pt			☐	☐
5°C	☐	☐	☐	☐
3°C	☐	☐	☐	☐
10°C	☐	☐	☐	☐

## Control

The REV22... 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 optimises its parameters and then operates in the mode it has learned.

## Exceptional cases

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** 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** 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** Pure two-position control with a switching differential of 0.5 °C ( $\pm 0.25$  °C) for very difficult controlled systems with considerable outside temperature variations.

## Frost protection

Frost protection is adjustable with DIP switch 2, either 3 °C, 5 °C, or 10 °C.

## Technical data

Operating voltage DC 3 V		Resolution of settings and display	
Batteries (alkaline AA)	2 x 1.5 V	Set points	0.2 °C
Battery life approx. 2 years		Switching times	10 min
Backup for battery change 1 min max.		Measur. of actual value	0.1 °C
CE-conformity to EEC directive low voltage directive	89/336/EEC 73/23/EEC	Display of actual value	0.2 °C
Switching capacity of relays		Time display	1 min
Voltage	AC 24... 250 V	Insulation class to EN 60730-1	II
Current	6 (2.5) A at 25 °C	Degree of protection to EN 60529	IP30
Measuring element NTC 68 kΩ		Electromagnetic compatibility	
Measuring range	0...40 °C	Immunity	EN 50082-2
Time constant	max. 2 min	Emissions	EN 50081-1
Set point setting range		Perm. ambient temperature	
Normal temperature	3...29 °C	Operation	3...35 °C
Economy temperature	3...29 °C	Storage	-25...+60 °C
Set point for frost protection		Perm. ambient humidity to DIN 40040	G
Adjustable	3 / 5 / 10 °C	Weight	0.24 kg
Factory setting	5 °C	Colour	White
			RAL9003

## Notes

### 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.



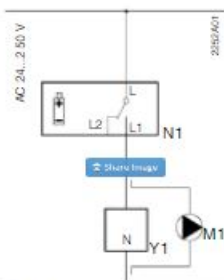
## Fitting and installation

- When installing the room temperature controller, the base plate must first be fitted and wired. Then, the unit is engaged at the top, swung downward and secured with a screw.
- For more detailed information, please refer to the installation instructions supplied with the controller.
- For the electrical installation, the local safety regulations and standards must be complied with.
- The remote operation contact T1 / T2 must be wired separately, using a separate shielded cable.

## Commissioning

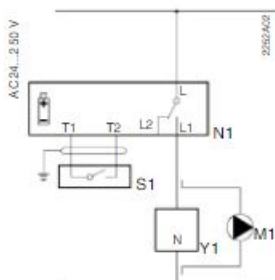
- The battery transit tab, which prevents inadvertent operation of the unit during transport and storage, must be removed from the batteries.
- The control characteristics can be changed with the help of the DIP switches located at the rear of the unit. For detailed information, please refer to the commissioning instructions.
- If the reference room is equipped with thermostatic radiator valves, they must be set to their fully open position.
- If the displayed room temperature does not agree with the measured room temperature, the temperature detector should be recalibrated (please refer to "Calibration of detector")

## Connection diagrams



REV22

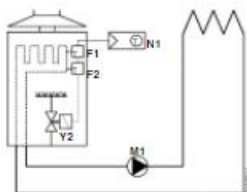
L	Live, AC 24 ... 250 V
L1	N.O. contact, AC 24 ... 250 V / 6 (2,5) A
L2	N.C. contact, AC 24 ... 250 V / 6 (2,5) A
M1	Circulating pump
N1	REV22... controller



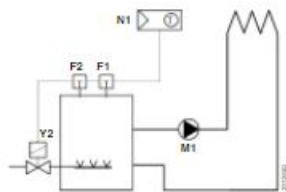
REV22T

S1	Remote operation unit (potential-free)
T1	Signal "remote operation"
T2	Signal "remote operation"
Y1	Regulating unit

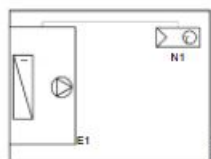
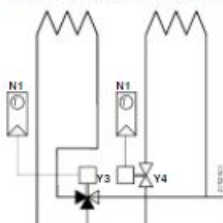
## Application examples



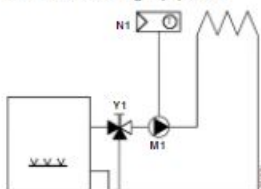
Instantaneous water heater Atmospheric gas burner



Zone valve Cooling equipment



Zone valve Cooling equipment



Circulating pump with precontrol by manual mixing valve

E1 Refrigeration unit Y1 Manually operated three-port valve

F1 Thermal reset limit thermostat Y2 Solenoid valve

F2 Manual reset safety limit thermostat Y3 Motorised three-port valve

M1 Circulating pump Y4 Motorised two-port valve

N1 REV22... room temperature controller

## Dimensions

