

Room Temperature Controller

REV200

with backlit touch screen

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- Mains-independent room temperature controller
 - Easy-to-understand, self-explanatory touch screen
 - Self-learning 2-position controller with PID control (patented)
 - Choice of 3 different 24-hour operating modes and one 7-day mode including individually adjustable 24-hour modes
 - Control of cooling equipment

Use

Room temperature control in:

- apartments, single-family or holiday houses
- offices, individual rooms and consulting rooms or commercially used spaces

For the control of the following pieces of equipment:

- Solenoid valves of an instantaneous water heater
- Solenoid valves of an atmospheric gas burner
- Forced draft gas and oil burners
- Heating pumps, zone valves (normally closed)
- Electric direct heating systems or fans of an electric storage heater
- Thermic actuators
- Cooling and refrigeration equipment

Functions

- PID control with a self-learning or selectable switching cycle
- Automatic operation with 7-day program
- 3 different 24-hour modes
- Remote control and override button
- Sensor calibration, reset function
- Locking of display to facilitate cleaning and to prevent tampering
- Frost protection function, minimum limitation of the setpoint
- Holiday mode
- Cooling
- Pump kick
- Optimum start for the first heating period (P.1)

Ordering

Room temperature controller with 7-day time switch **REV200**
When ordering, please give type reference according to "Type summary".
The unit is supplied complete with batteries.

Technical features

Control

The REV200 is a 2-position controller providing PID mode. The room temperature is controlled by the cyclic switching of a regulating unit.
The control generates the positioning signals according to the deviation of the adjusted setpoint from the actual value acquired by the built-in temperature sensing element.
The rate of response of the plant depends on the selected control algorithm:

Self-learning mode

The factory settings produce a self-learning operating mode. The controller adapts automatically to the type of controlled system (that is, type of building construction, heat demand, types 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.

Control algorithm

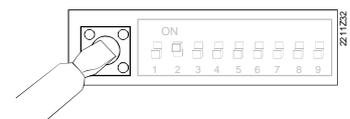
In exceptional cases where the self-learning mode may not be adequate, it is possible to select PID 12, PID 6 or 2-Pt mode:

- | | |
|-------------|--|
| PID 12 mode | Switching cycle of 12 minutes 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 minutes for fast controlled systems (e.g. light building structures, small spaces, plate radiators or convectors, gas burners). |
| 2-Pt mode | Pure 2-position control with a switching differential of 0.5 °C (± 0.25 °C) for very difficult controlled systems with considerable outside temperature variations. |

Parameter settings

The control algorithm is selected with DIP switches no. 1 and no. 2.
All basic settings are made with a number of DIP switches. The DIP switches can be accessed by removing the unit from its base.

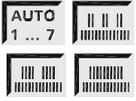
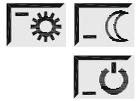
Every DIP switch setting must be confirmed by pressing the DIP switch button, thus activating the setting.



| Function | Switch no. | | | | | | | | |
|---|------------|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Self-learning control * | ▼ | ▼ | | | | | | | |
| PID mode with a switching cycle of 12 minutes | ▼ | ▲ | | | | | | | |
| PID mode with a switching cycle of 6 minutes | ▲ | ▼ | | | | | | | |
| 2-position control | ▲ | ▲ | | | | | | | |
| Setpoint limitation 3...29 °C * | | | ▼ | | | | | | |
| Setpoint limitation 16...29 °C | | | ▲ | | | | | | |
| Heating active | | | | ▼ | | | | | |
| Cooling active | | | | ▲ | | | | | |
| Periodic pump run OFF * | | | | | ▼ | | | | |
| Periodic pump run ON | | | | | ▲ | | | | |
| Optimum start control OFF * | | | | | | ▼ | ▼ | ▼ | |
| Optimum start control ¼ h / °C | | | | | | ▼ | ▼ | ▲ | |
| Optimum start control ½ h / °C | | | | | | ▼ | ▲ | ▼ | |
| Optimum start control 1 h / °C | | | | | | ▲ | ▼ | ▼ | |
| Sensor calibration inactive * | | | | | | | | | ▼ |
| Sensor calibration active | | | | | | | | | ▲ |

* Default settings (all OFF)

Operating modes

| | |
|--|---|
| The controller has 4 different automatic modes with a choice of 24-hour and 7-day programs. |  |
| In addition, 2 continuous modes without a switching program function and one standby mode are available. |  |

Switching program

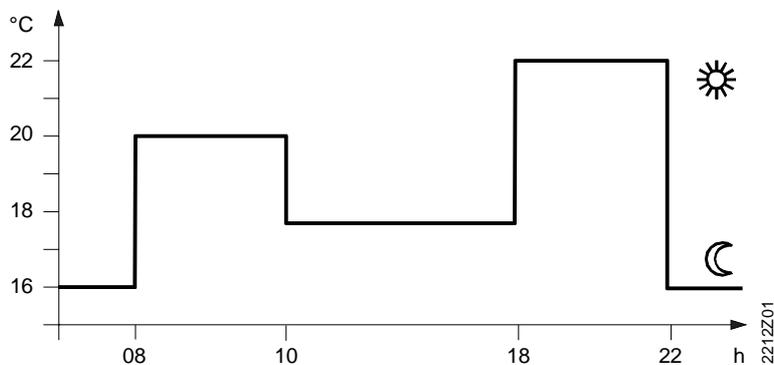
By selecting the appropriate operating mode, the switching program can be used either as a 7-day or 24-hour program. In addition, it is possible to select a continuous operating mode, which does not make use of the switching program.

24-hour program

For the 24-hour program, there are 3 different switching patterns available. There is a choice of 1, 2 or 3 switching cycles. Depending on the choice made, this switching pattern is then repeated for every day.

At the switching points, both the time and the associated setpoint can be selected. A specific setpoint can be selected for each switching point.

Example with 2 switching cycles:



7-day program

The 7-day program offers different switching patterns for every day of the week. This means that one of the three 24-hour switching patterns can be selected differently for

every day of the week, depending on the requirements. Like with the 24-hour program, time and setpoint of every switching point can be different.

Override button

In the automatic modes, a manual change from normal to economy temperature can be enforced via the override button. The selection will automatically be reset when the next switching point is reached or when changing the operating mode.

Sensor calibration

If the temperature displayed does not agree with the room temperature effectively measured, the temperature sensor can be recalibrated. Calibration is activated with DIP switch no. 9 (sensor calibration ON) and a DIP switch reset. The displayed room temperature can be brought in line with the room temperature effectively measured, the increments being 0.2 °C (max. ±2 °C).

Important

When sensor calibration is completed, the DIP switch must be reset to OFF and the DIP switch reset button must be pressed.

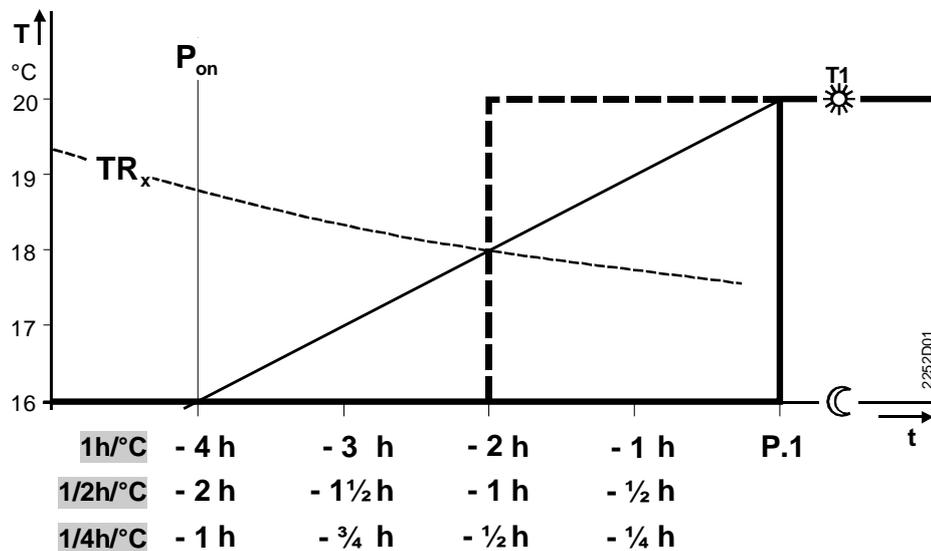
Optimum start control

Switch-on point P.1, which is the first switch-on point of the day, is brought forward 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, type of insulation), and heating output (boiler capacity, flow temperature).

Optimization can be set with DIP switches no. 6, 7 and 8.

| | |
|-----------------|-------------------------------|
| OFF | No effect |
| ¼ h / °C | For fast controlled systems |
| ½ h / °C | For medium controlled systems |
| 1 h / °C | For slow controlled systems |

Example with an actual room temperature of 18 °C and a setpoint of 20 °C:



| | | | |
|---|--------------------------------------|-----------------|--------------------------------------|
| t | Temperature (°C) | TRx | Actual value of the room temperature |
| t | Forward shift of switch-on point (h) | P _{on} | Starting point optimum start control |

Cooling

DIP switch no. 4 is used for switching over to cooling mode when used in cooling applications.

Periodic pump run

The setting is made with DIP switch no. 5 while the pump is running. This protects the pump against seizure during longer OFF periods. Periodic pump run is activated for one minute every 24 hours at 12:00 h.

Setpoints

In the automatic modes, the setpoints can be entered for every switching point, and individually in the continuous modes.

Limitation of setpoint

When using minimum limitation of the 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 no. 3.

Reset

Keep the button behind the little hole depressed for at least 3 seconds. This resets the individual settings and the time of day to their default values. During the reset time of 3 seconds, the display will be fully lit, allowing the correct functioning of the display to be checked.

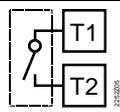
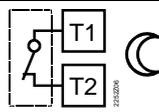
After each reset, all personal settings such as time of day, weekday, switching points, temperature setpoints, holidays, sensor calibration, etc., must be reentered.

Holiday function

For the holiday function, the start day (maximum 6 days in advance), the duration of the holiday period and the temperature setpoint must be entered. This means that when absent for a longer period of time (up to 99 days), the plant can be switched to the required economy temperature starting on the day of departure. Every midnight, the counter subtracts one day. When the day counter returns to 00, the operating mode selected last will automatically be resumed.

Remote operation

Using a suitable remote operating unit, the controller can be switched to economy mode  and the required temperature setpoint can be adjusted. Changeover takes place through the making of a potential-free contact connected to terminals T1 and T2. The display indicates this with the symbol . When the contact opens, the selected operating mode will be reactivated.

| Operation according to the settings made on the controller | Continuously economy temperature |
|---|---|
|  |  |

Remote operating units

Suitable remote operating units are telephone modem, manual switch, window switch, occupancy detector, control center, etc.

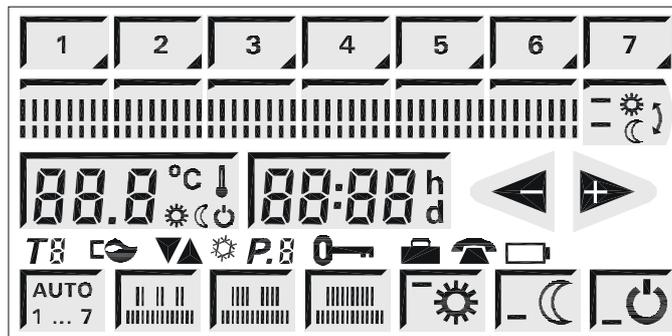
Mechanical design

Controller

Plastic housing with a large display which also serves as a touch screen. The display's lighting is switched on by touching the screen and switches automatically off after 15 seconds.

The controller (top section) can be easily removed from its base by pressing a button. A hinged battery compartment cover facilitates the straightforward exchange of the two 1.5 V alkaline batteries type AA. The base 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 housing accommodates the electronics, a **DIP** switch and a relay with a potential-free changeover contact. The connection terminals are integrated in the base.

Display and operating elements



Display check

Button displays



Temperature values and symbols



Normal temperature



Economy temperature



Standby with frost protection



Time of day or switching time

Display symbols



Change batteries



Burner in operation



Remote control active



Locking of display active



Holiday program active



Temperature setpoint number of switching program



Display button (with display of the current day)



Cooling function activated



Switching point number of switching program

Arrow buttons



Increasing / decreasing values

Operating mode buttons



Automatic operation for the 7-day program with up to 3 heating periods per day



Automatic operation for the 24-hour program with 3 heating periods



Automatic operation for the 24-hour program with 2 heating periods



Automatic operation for the 24-hour program with 1 heating period



Continuous operation with the normal temperature



Continuous operation with the economy temperature



Standby with frost protection

Switching time buttons



Switching time buttons for setting the switching points

Level button / override button



For switching manually from the normal to the economy temperature, and vice versa

Display locking / reset



Opening for locking the display or for the reset

Display button function

The entire operation is effected via the touch screen. For this purpose, the screen is divided into sections that provide display and button functions. This is indicated by highlighting. If a field is highlighted, it has button functions; if a field is not highlighted, it is used for display purposes. When a field is selected by touching, a black pointer appears and the current value flashes, which can then be changed by touching the + / - buttons.

Automatic storage When an adjustable display button is touched, the displayed value will automatically be stored 5 seconds later and the display returns to the initial operating mode. The same action is achieved when touching the button again.

Adjusting the values  Pressing one of these buttons for less than one second produces a step of one minute (time settings) or of 0.2 °C (temperature settings). Pressing for more than one second means quick adjustment which can be cancelled again by pressing the button repeatedly.

Locking the display

Before cleaning the display or to prevent tampering, the display buttons can be locked.

Activation

Press the button behind the little hole for a short moment (max. 1 second):  appears and all other displays disappear. The display buttons are now disabled while all the other functions are fully maintained.

Deactivation

Press the button behind the little hole again (max. 1 second).

Battery change

About 3 months before the batteries are exhausted, the display shows the battery symbol . The other displays disappear, the display buttons are deactivated while all the other functions are fully maintained. When changing the batteries, the current data will remain stored for at least one minute.

Technical data

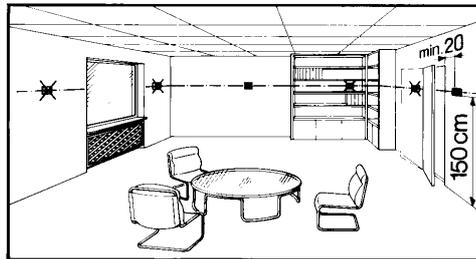
| | | | |
|-----------------------------|--------------------------------------|-------------------|--|
| General unit data | Operating voltage | DC 3 V | |
| | Batteries (alkaline AA) 2 x 1.5 V | 2 x 1.5 V | |
| | Life | approx. 2 years | |
| | Backup for battery change | max. 1 min | |
| | Switching capacity of relay | | |
| | Voltage | AC 24...250 V | |
| | Current | 8 (3.5) A | |
| | Sensing element | | |
| | Measurement range | 0...40 °C | |
| | Time constant | max. 10 min | |
| | Setpoint setting ranges | | |
| | Normal temperature | 3...29 °C | |
| | Economy temperature | 3...29 °C | |
| | Frost protection temperature | 3...16 °C | |
| | Resolutions of settings and displays | | |
| Setpoints | 0.2 °C | | |
| Switching times | 10 min | | |
| Measurement of actual value | 0.1 °C | | |
| Display of actual value | 0.2 °C | | |
| Display of time | 1 min | | |
| Standards | Conformity | | |
| | Electromagnetic compatibility | 89/336/EEC | |
| | Low voltage directive | 73/23/EEC | |
| | EMC directive | | |
| | Electromagnetic immunity | EN 50,082-2 | |
| | Electromagnetic emissions | EN 50,081-1 | |
| Safety class | | II to EN 60 730-1 | |
| Degree of protection | | IP30 to EN 60 529 | |
| Environmental conditions | Perm. ambient temperature | | |
| | Operation | 3...35 °C | |
| | Storage and transport | -25...+60 °C | |

| | | |
|--------|------------------------|----------------------|
| Weight | Perm. ambient humidity | G to DIN 40 040 |
| | Incl. packing | 0.4 kg |
| Color | Housing | signal-white RAL9003 |
| | Base | grey RAL7038 |
| Seize | Housing | 130 x 110 x 33 mm |

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 getting adversely affected by direct solar radiation or other heating or refrigeration sources
- Mounting height is approximately 1.5 m above the floor
- The unit can be fitted to most commercially available recessed conduit boxes or directly on the wall



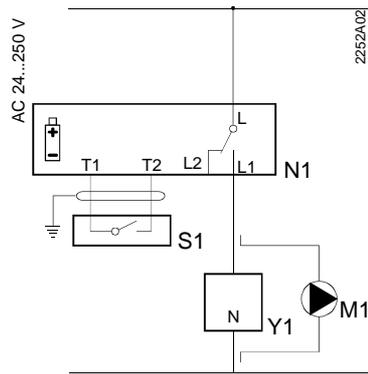
Mounting and installation

- When installing the controller, the base must first be fitted and wired. Then, the unit can be engaged at the top, swung downward and snapped on
- For more detailed information, refer to the installation instructions supplied with the unit
- The local regulations for electrical installations must be complied with
- The remote control contact T1/ T2 must be wired separately, using a screened cable

Commissioning

- The battery transit tab, which prevents inadvertent operation of the unit during transport and storage, must be removed
- The control mode can be changed with the DIP switch located at the rear of the unit
- If the reference room is equipped with thermostatic radiator valves, they must be set to the fully open position
- If the room temperature displayed does not agree with the temperature effectively measured, the sensor should be recalibrated (refer to section "Calibration of sensor")

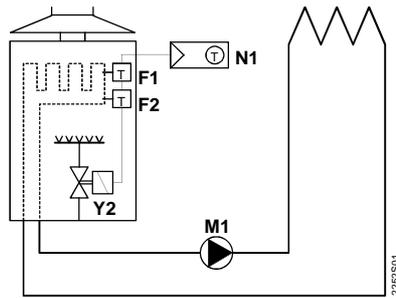
Connection diagrams



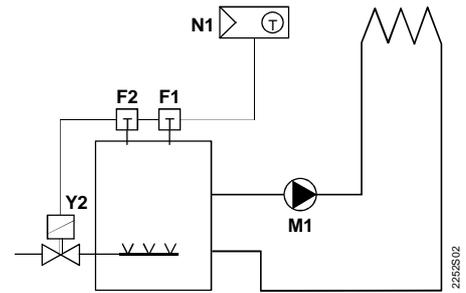
| | | | |
|----|---|----|--|
| L | Live, AC 24 ... 250 V | S1 | Remote operating unit (potential-free) |
| L1 | N.O. contact, AC 24 ... 250 V / 8 (3.5) A | T1 | Signal "remote operation" |
| L2 | N.C. contact, AC 24 ... 250 V / 8 (3.5) A | T2 | Signal "remote operation" |
| M1 | Circulating pump | Y1 | Regulating unit |
| N1 | Room temperature controller REV200 | | |

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

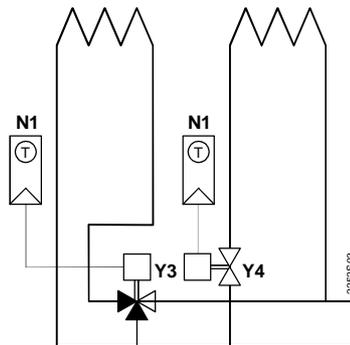
Application examples



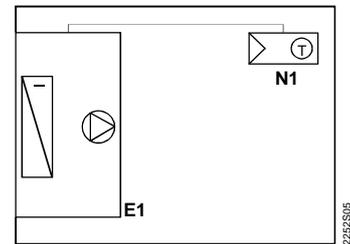
Instantaneous water heater



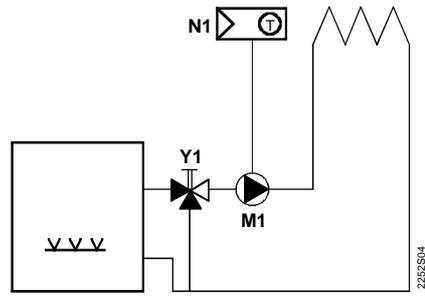
Atmospheric gas burner



Zone valve



Refrigeration unit



Circulating pump with precontrol by manual mixing valve

- | | | | |
|----|------------------------------------|----|-------------------------------------|
| E1 | Refrigeration unit | Y1 | 3-port valve with manual adjustment |
| F1 | Thermal reset limit thermostat | Y2 | Solenoid valve |
| F2 | Safety limit thermostat | Y3 | Motorized 3-port valve |
| M1 | Circulating pump | Y4 | Motorized 2-port valve |
| N1 | Room temperature controller REV200 | | |

Dimensions

