Self-learning Room Temperature Controller REV16

5 operating modes and menu selection via roller selector

- **Mains-independent room temperature controller**
- **Straightforward, self-explanatory menu selection via roller selector**
- **Self-learning 2-position controller providing PID mode (patented)**
- **Choice of operating modes:**
  automatic with maximum 3 heating periods, continuously comfort mode, con-
  tinuously economy mode, frost protection with one 24-hour operating mode
  and one heating period
- **In automatic mode, one temperature setpoint can be adjusted for each heating**
  period

Use

For room temperature control in:
- Apartments, single-family or holiday houses
- Offices, individual rooms, consulting rooms or commercially used spaces

For control of the following pieces of equipment:
- Solenoid valves of instantaneous water heaters
- Solenoid valves of atmospheric gas burners
- Forced draft gas or oil burners
- Circulating pumps in heating systems, zone valves
- Electric direct heating systems or fans of electric storage heaters
- Thermic actuators

Functions

- PID mode with self-learning or selectable switching cycle
- 2-position control
- Automatic mode with switching program for working days and weekend, with up to 3 heating periods per day
- One temperature setpoint for each heating period
- One 24-hour operating mode with one heating period
- Remote operation
- Override button
- Sensor calibration and reset function
- Frost protection function
- Limitation of the minimum setpoint
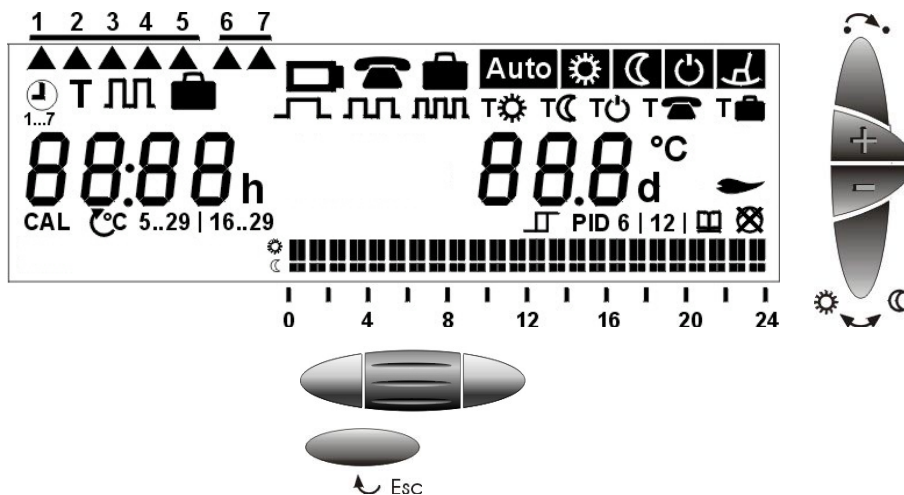- Holiday mode
- Periodic pump run

Ordering

Room temperature controller with 7-day time switch   **REV16**

When ordering, please give the type reference.
The controller is supplied complete with batteries.

Technical design

Display and operating elements

Operating elements

	Selection of operating mode
	Warmer button
	Colder button
	Override button
	Roller selector for the menu, submenu and settings **Confirm by pressing**
	Leaving the current menu level and returning to the menu level previously active (the settings currently displayed will be accepted)

Display

$21:38_h$	Time of day
$20.8\,^{\circ}C$	Room temperature
🔋	Change batteries (display appears about 3 months before batteries are exhausted)
☎	Remote operation active
💼	Holiday mode active

Selection of operating mode (only one operating mode is active)

	Auto	Automatic mode
	☀	Comfort mode
	☾	Economy mode
	⏻	Frost protection
	🪑	24-hour mode with one heating period (heating period is automatically generated from the current 24-hour program)

**Temporary change of the current setpoint temperature
(change only active until the next switching point is reached)**
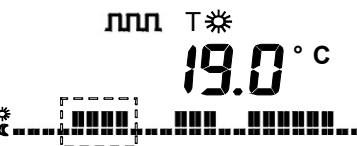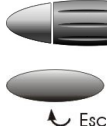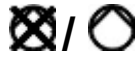
+ −	$19.0\,^{\circ}C$	When pressing the + or – button once, the adjusted setpoint temperature will be displayed. It can be readjusted in increments of 0.2 °C (max. +/- 4 °C).

Override button

In operating modes **Auto** and 🪑, this button can be used to switch from comfort to economy temperature, or vice versa. The selection is maintained until the next switching point is reached or until the operating mode is changed.

Menu-driven user settings: 4 main menus available

Time of day and day	Main menu	Submenu	Settings
	🕐 1...7	$12:00_h$	Current time of day
Esc		1 2 3 4 5 6 7 ▲	Current day of week

Temperature	Main menu	Submenu		Factory settings
	T	T☀	Setpoint comfort mode	19 °C
Esc		T☾	Setpoint economy mode	16 °C

	T⏻	Setpoint frost protection	5 °C
	T☎	Setpoint economy mode Remote operation	10 °C

Time switch	Main menu	Submenu	Settings
	ЛЛ	1 2 3 4 5 6 7 ▲▲▲▲▲	Selection of working day or weekend
		⌐Г ЛЛ ЛЛЛ	Selection of the number of heating periods, max. 3
		☀☾ Selection of heating period start and end time	
		ЛЛЛ T☀ **19.0** °C ☀☾ Selection of heating period setpoint temperature	

Absence	Main menu	Submenu	
	💼 T💼		Entry of holidays or periods of absence (number of days with economy mode / setting / max. 99 days)
			Temperature setpoint during absence Factory setting 12 °C

Menu-driven heating engineer settings	Menu item	Settings
	CAL	Sensor calibration
	℃ 5..29 | 16..29	Setpoint limitation
	⊓Γ	2-position control
	PID 📖	PID mode, self-learning
	PID 6 | 12	PID mode with a switching cycle of 6 or 12 minutes
	⊠/◯	Periodic pump run off / on

Temperature setpoints

In the automatic operating modes, temperature setpoints can be adjusted individually for every comfort period and for the continuous operating modes. The temperature setpoint of economy mode is the same in automatic and continuous operation.

Protective function
⏻

In frost protection mode, the room temperature is constantly monitored. If it falls below the adjusted setpoint, heating is switched on to maintain the adjusted frost protection setpoint temperature T⏻ .

24-hour operating mode

The controller generates the 24-hour operating mode from the current 24-hour program. It automatically selects the switch-on time of the first heating period and the switch-off time of the last heating period to generate and display a complete heating period. The comfort temperature used by the controller is the currently stored standard setpoint of the continuous mode ☀. The self-generated 24-hour operating mode is maintained until another operating mode is selected.

Example

Automatically generated
24-hour operating mode

Current 24-hour
switching program
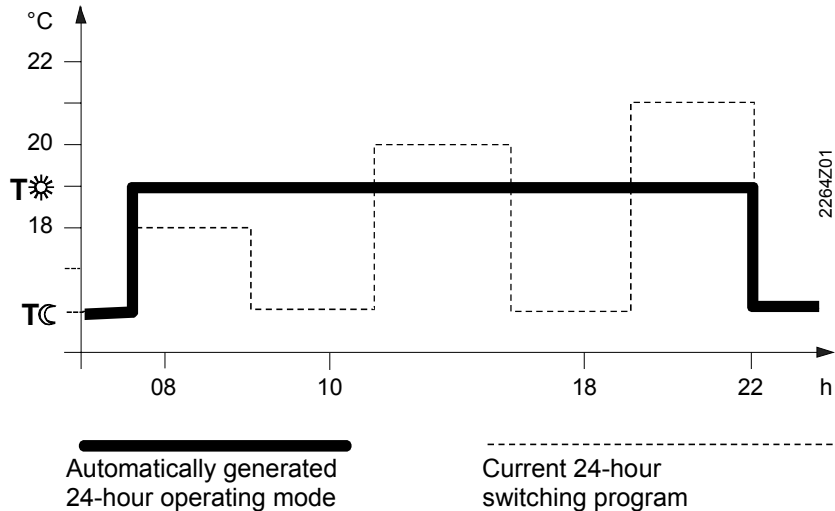
Switching program

In the continuous operating modes ☀ ☾ ⏻ , the switching program is not taken into consideration.

With the 7-day switching program, it is possible to enter either the working days (1-5) or the weekend (6-7).
When a heating period is programmed, 3 different switching patterns are available.
It is possible to select 1, 2 or 3 heating periods.
For each heating period, the start time, end time and comfort setpoint are to be entered. In between heating periods, it is always the same economy temperature setpoint that is used. This economy temperature setpoint can be adjusted on the temperature menu.

Example with 2 heating periods per day
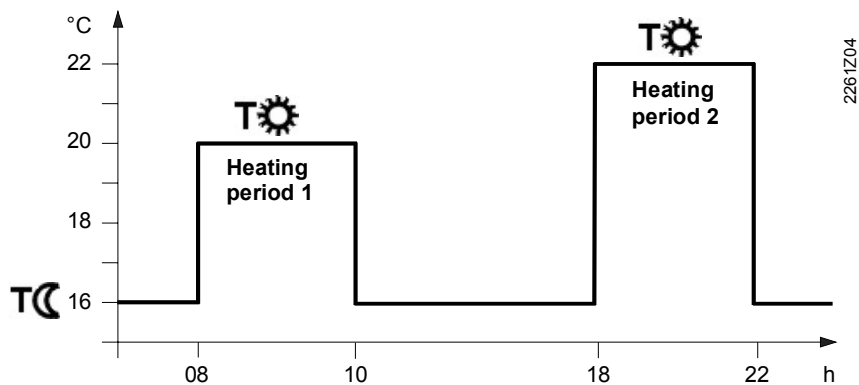
Holiday function

The holiday function is to be selected on the user menu. Set the start of the holiday period (day of departure / $\overset{1\ 2\ 3\ 4\ 5}{\blacktriangle\blacktriangle\blacktriangle\blacktriangle\blacktriangle}\ \overset{6\ 7}{\blacktriangle\blacktriangle}$ / day of week), the duration and the temperature setpoint (T🧳) during your absence. This will enable the controller to maintain the required temperature for a period of up to 99 days. Every midnight, the counter subtracts one day. When the holiday period is over and the counter reads 00, the controller will resume the operating mode selected last.

Remote operation

Using a suitable remote operating device, the controller can be switched to an independently adjustable economy temperature T☎. Changeover is accomplished by the making of a potentialfree contact connected to terminals T1 and T2. In that case, symbol ☎ will appear on the display. When the contact opens, the operating mode selected last will be resumed.

| Operation according to the setting made on the controller	Continuously remote operation economy temperature
	T ☎

Remote operating device

Suitable remote operating devices: telephone modem, manual switch, window switch, presence detector, central unit, etc.

Factory settings

Oper- ating mode	Block / week- days	Switching times						Temperatures in ° C						
		1st period		2nd period		3rd period		T☀ 1st period	T☀ 2nd period	T☀ 3rd period	T☾	T⏻	T☎	T💼
Auto	1-5 Mo-Fr 6-7 Sa-Su	06.00 07.00	08.00 23.00	11.00	13.00	17.00	22.00	19 19	20	21	16 16			
☀	1-7 Mo-Su	00.00	24.00					19						
☾	1-7 Mo-Su	00.00	24.00								16			
⏻	1-7 Mo-Su	00.00	24.00									5		
☎													10	
💼	Absence													12

Factory settings heating engineer level

Setpoint limitation   ☾°C 5..29
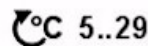
PID mode, self-learning   PID 📖

Periodic pump run off   ⊗

Heating engineer level

Accessing

To access the heating engineer level, keep the warmer and colder buttons depressed and simultaneously roll the roller selector away from the display and then toward the display.

Sensor calibration **CAL**	If the displayed temperature does not correspond to the effective room temperature, the temperature sensor can be recalibrated (recalibration to be made on the heating engineer level). The displayed temperature can be matched to the effective room temperature in increments of 0.2 °C (max. ± 2 °C).
Limitation of setpoint C°C 5..29 | 16..29	Minimum setpoint limitation of 16 °C prevents undesired heat transfer to neighboring apartments in buildings with several heating zones. The setting is to be made on the heating engineer menu.
Control	The REV16 is a 2-position controller providing PID mode. The room temperature is controlled through the cyclic switching of an actuating device. The controller generates the positioning signals depending on the deviation of the adjustable setpoint from the actual value acquired by the built-in temperature sensor. The rate of response to the deviation depends on the selected control algorithm:
Self-learning mode PID 📖	The controller is supplied with an active self-learning operating mode, enabling it to automatically adapt to the controlled system (type of building construction, type of radiators, size of the rooms, etc.). After a certain learning period, the controller optimizes its parameters and then operates with the learned parameters.
Exceptions	In exceptional cases, in which the self-learning mode may not be ideal, it is possible to select PID 12, PID 6 or 2-Pt mode:

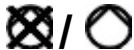|	
PID 12	PID 12 mode Switching cycle of 12 minutes for normal or slow controlled systems (massive building structures, large spaces, cast-iron radiators, oil burners).
PID 6	PID 6 mode Switching cycle of 6 minutes for fast controlled systems (light building structures, small spaces, plate radiators 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.
⊗ / ◯	Protects the pump against seizing during longer off periods. Periodic pump run is activated for one minute every 24 hours at midnight. This function can be selected on the heating engineer menu.

Periodic pump run inactive: ⊗ / periodic pump run active: ◯

|	
Reset functions	**User-defined data:** Press the button behind the pin opening for at least one second: this resets the user-specific settings to their default values (the heating engineer settings will not be changed). The clock starts at 12:00. During the reset time, all sections of the display light up, enabling them to be checked. **All user-defined data plus the heating engineer settings:** Press the button behind the pin opening together with the warmer and colder buttons for at least one second. After this reset, all factory settings will be reloaded (also refer to section "Factory settings").

Mechanical design

|	
Battery change	About 3 months before the batteries are exhausted, the battery symbol ⊏⊐ appears on the display, but all functions will be fully maintained. When changing the batteries, the current data will be retained for a maximum of one minute.
Controller	The REV16 has a plastic housing with a large display and easily accessible operating elements. The controller is removed from its base by sliding it upward. It is thus possible to replace the two 1.5 V alkaline batteries type AA in the compartment at the rear of the controller.

7/12

Base

The base can be fitted to most types of commercially available recessed conduit boxes or directly on the wall for wiring. The base only houses the terminals for the electrical connection between the controller and the connected devices. The entire electronics (including the relay with a potentialfree N.O. contact) are accommodated in the controller.

Notes

Engineering

- The room temperature controller should be fitted in the main living room
- The place of installation should be chosen such 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 approximately 1.5 m above the floor
- The controller can be fitted to most commercially available recessed conduit boxes or directly on the wall
- Above the unit, there must be sufficient clearance for removing the controller from its base and for replacing it
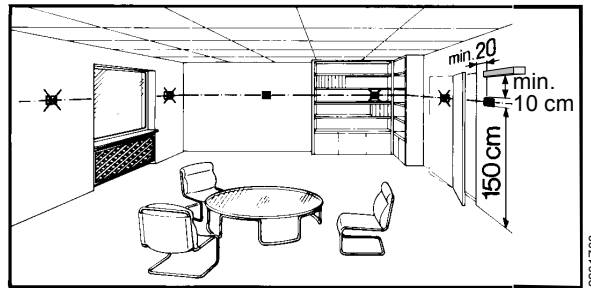
Mounting and installation

- When installing the controller, the base must first be fitted and wired. Then, the unit can be slid onto the base from above
- For more detailed information, please refer to the installation instructions supplied with the controller
- For the electrical installation, the local safety regulations must be complied with
- The remote operation contact T1 / T2 must be wired separately using a separate screened cable
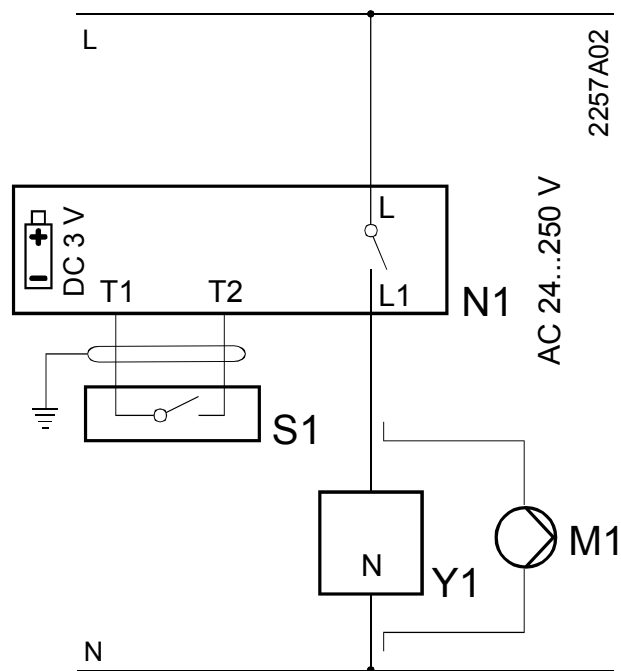
Commissioning

- The battery transit tab, which prevents inadvertent operation of the controller during transport and storage, must be removed
- The control mode can be changed on he heating engineer level
- 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 correspond to the effective room temperature, the temperature sensor should be recalibrated
 (refer to "Sensor calibration")

Technical data

General unit 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
	Switching capacity of relay	
	Voltage	AC 24…250 V
	Current	6 (2.5) A
	Safety class	II to EN 60 730-1
	Sensing element	NTC 10 kΩ $\pm$1 % at 25 °C
	Measuring range	0…50 °C
	Time constant	max. 10 min
	Setpoint setting ranges	
	Normal temperature	5…29 °C
	Economy temperature	5…29 °C
	Frost protection temperature	5...29 °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
	Display of time	1 min
Norms and standards	CE conformity	
	Electromagnetic compatibility	89/336/EEC
	Low voltage directive	73/23/EEC
	C-tick	N474
Product standards	Automatic electrical controls for household and similar use	EN 60 730-1
	Electromagnetic compatibility	
	Immunity	EN 50082-1
	Emissions	EN 50081-1
Environmental conditions	Operation	
	Climatic conditions	3K3 to IEC 60 721-3
	Permanent ambient temperature	5...40 °C
	Humidity	< 85 % r.h.
	Storage and transport	
	Climatic conditions	2K3 to IEC 60 721-3
	Ambient temperature	-25...70 °C
	Humidity	< 93 % r.h.
	Mechanism	2M2 to IEC 60 721-3
Weight	Incl. package	0.33 kg
Color	Housing	signal-white RAL9003
	Base	grey RAL7038
Size	Housing	140 x 104.5 x 30 mm

Connection diagram

2257A02

L	Live AC 24 …250 V
L1	N.O. contact, AC 24 … 250 V / 6 (2.5) A
M1	Circulating pump
N	Neutral conductor
N1	Room temperature controller REV16

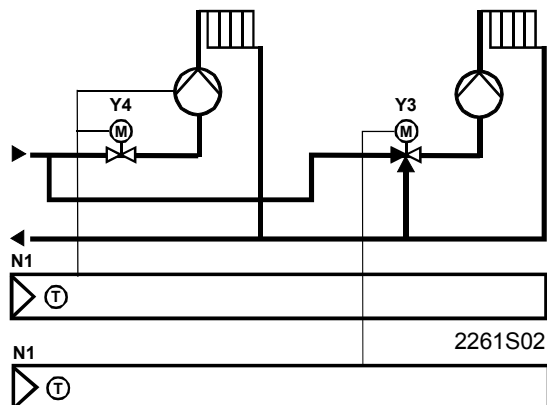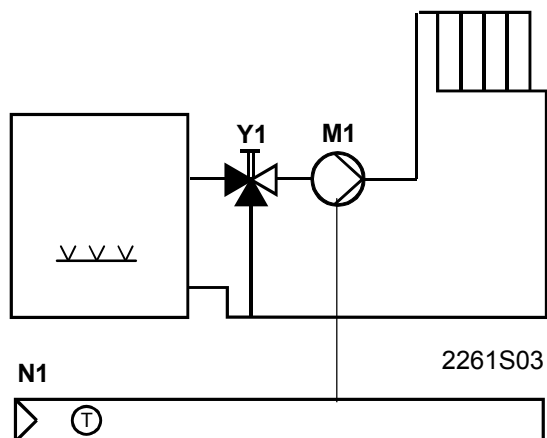|	
S1	Remote operating device (potentialfree)
T1	Signal "remote operation"
T2	Signal "remote operation"
Y1	Actuating device

Application examples

2261S03
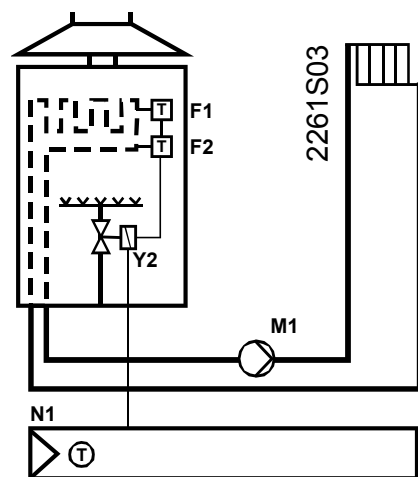
Instantaneous water heater
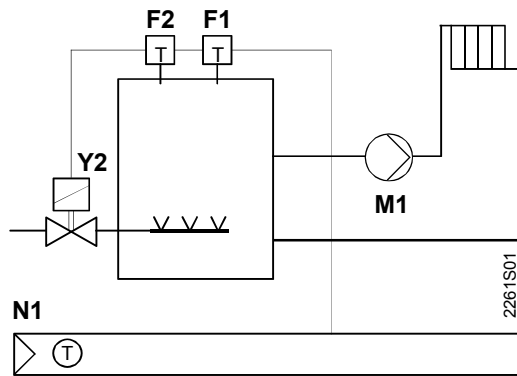
Atmospheric gas burner

Zone valve

Circulating pump with precontrol via manual mixing valve

F1   Limit thermostat

F2   Safety limit thermostat

M1   Circulating pump

N1   Room temperature controller REV16

Y1   3-port valve with manual adjustment

Y2   Solenoid valve

Y3   Motorized 3-port valve

Y4   Motorized 2-port valve

Dimensions

2264M01

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Subject to alteration

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Room Temperature Controller REV16

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