



Room Temperature Controller

REV300

with backlit touch screen

- Mains-independent room temperature controller
- Self-explanatory touch screen
- 3-position controller with PI mode and optimum start control
- Choice of 3 different 24-hour modes and one 7-day mode with individually adjustable 24-hour modes

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 electric 3-position actuators with a running time of **120...150 seconds**, suited for use with stroke and rotary actuators.

Functions

- PI control
- Adaption of integral action time (volume adaption)
- Adaption of control gain (heat output adaption)

- 7-day time switch
- Remote operation
- Automatic operation with 7-day switching program
- 3 different 24-hour operating modes
- Remote control and override button
- Sensor recalibration and reset function
- Locking of display to facilitate cleaning or to prevent tampering
- Frost protection function and minimum limitation of setpoint
- Holiday mode
- Optimum start control for the first heating period (P.1)

Ordering

Room temperature controller with 7-day time switch

REV300

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

The controller is supplied with batteries.

Technical features

Control

The REV300 is a 3-position controller providing PI mode. Modulating room temperature control is accomplished through the control of an electric actuator.

Important

To ensure optimum control, an actuator running time of **120...150 seconds** is mandatory. This must be considered when selecting the actuator.

The control generates the positioning signals in accordance with the deviation of adjusted setpoint and actual room temperature acquired by the built-in sensor. The control can be adapted to the characteristics of the controlled system by adjusting the integral action time and the control gain.

Integral action time

The integral action time (volume adaption) can be adjusted as follows (DIP switches no. 2 and 3):

- Normally sized controlled system (80 min)
- Fast controlled system (40 min), e.g. small rooms, light radiators, etc.
- Slow controlled system (160 min), e.g. large rooms, heavy radiators, etc.

Control gain

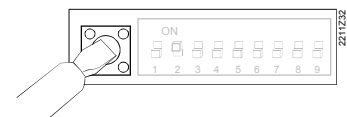
The control gain can be adjusted as follows (DIP switches no. 4 and 5):

- Average control gain (0.5) for normally sized heat output
- Small control gain (0.25) for oversized heat output, e.g. in the case of high boiler or flow temperatures
- Great control gain (1) for undersized heat output, e.g. in the case of low boiler or flow temperatures

Parameter settings

All basic settings are made with DIP switches. They can be accessed after removing the controller from its base.



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



Function	DIP switch no.								
	1	2	3	4	5	6	7	8	9
Setpoint limitation 3...29 °C	*	▼							
Setpoint limitation 16...29 °C		▲							
Integral action time 80 min	*		▼	▼					
Integral action time 40 min			▲	▲					
Integral action time 160 min			▼	▲					
Control gain normal	*				▼	▼			
Control gain small					▲	▼			
Control gain great					▼	▲			
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									▲

* Factory setting (OFF)

Operating modes

The controller has 4 different automatic operating modes that offer the selection of 24-hour or 7-day switching programs.	
In addition, 2 continuous operating modes without the switching program function and one standby mode can be selected.	

Switching program

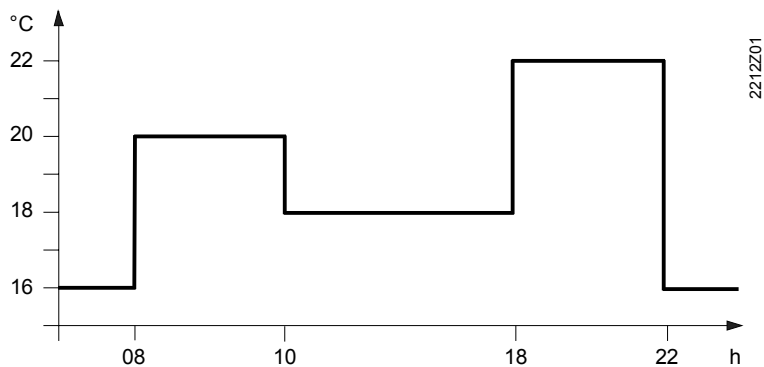
The controller's switching program can be used either as a 7-day or 24-hour program, depending on the selected operating mode. It is also possible to select a continuous operating mode with which the switching program is not used.

24-hour program

With 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, the switching pattern will then be used for every day.

At the switching points, the time can be set and the associated setpoint adjusted. A specific setpoint can be assigned to each switching point.

Example with 2 switching cycles:



7-day switching program

When using a 7-day switching program, a different switching pattern can be applied to each weekday. This means that, depending on requirements, one of the three 24-hour

switching patterns can be selected for each weekday. Like with the 24-hour program, time and setpoint of all switching points may differ.

Override button

In automatic operation, a manual change from the normal to the economy temperature, or vice versa, can be enforced by pressing 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. Sensor calibration is to be activated with DIP switch no. 9. The 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.

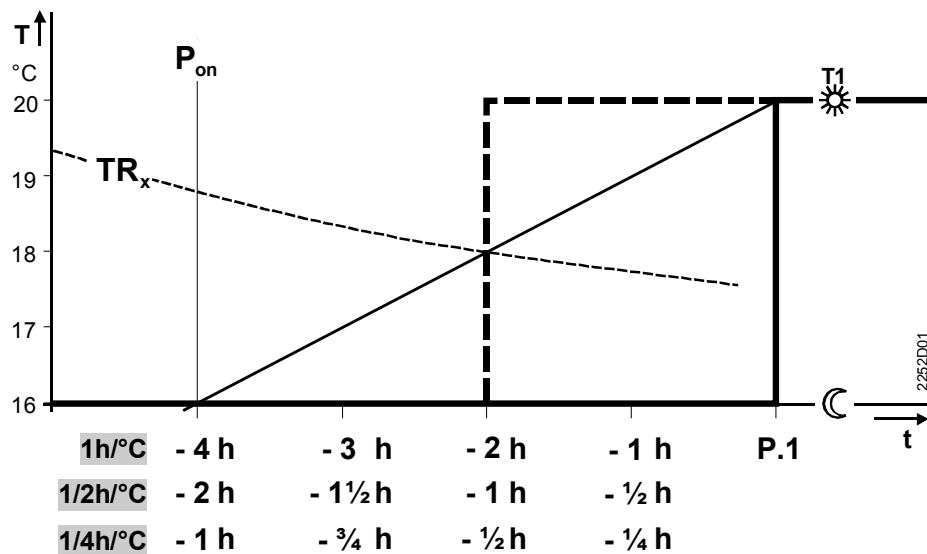
Optimum start control

Optimum start control brings forward switch-on point P.1, that is, the first switch-on point of the day, so that the adjusted 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 heat output (boiler capacity, flow temperature).

Optimization can be set as follows using DIP switches no. 6, 7 and 8:

Example using a setpoint of 20 °C:

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



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

Setpoints

In automatic operation, setpoints can be adjusted individually for each switching point and for the continuous operating modes, etc.

Limitation of setpoint

When using minimum setpoint limitation to 16 °C, undesired heat transfer to neighboring flats is prevented in buildings with several heating zones. This function can be selected with DIP switch no. 1.

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. The display will be fully lit for 3 seconds, allowing the correct functioning of the display to be checked.

Actuator

After the reset, an open and close signal is delivered to the actuator, allowing the actuator's direction of rotation to be checked (relay synchronization). In addition, a close signal will be supplied to the actuator for 150 seconds, to ensure the valve is fully closed.

**Note**

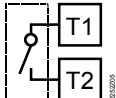
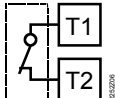
After each reset, all individual settings such as time of day, weekday, switching points, temperature setpoints, sensor calibration, etc., must be reentered.

Holiday function

For the holiday function, the first day of the holiday period, the duration and the temperature setpoint can be entered. This means that when leaving the house or the apartment for a longer period of time (up to 99 days), the plant can be switched to an economy temperature (e.g. 14 °C). Every midnight, the counter subtracts one day. When the 24-hour counter reaches 00, the operating mode selected last will automatically be resumed.

Remote operation

Using a suitable remote operation 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. In that case, symbol ☾ appears on the display. When the contact opens, the selected operating mode will be reactivated.

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

Remote operation units

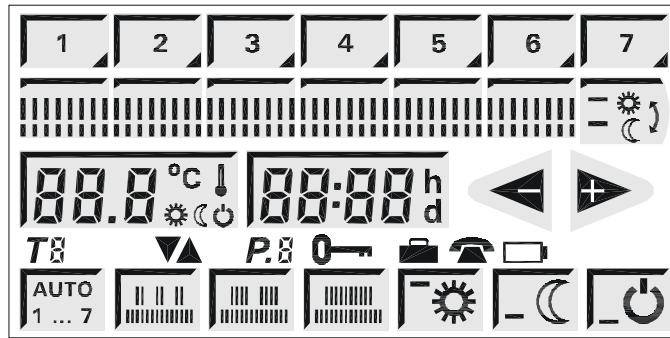
Suitable remote operation units are: Telephone modem, manual switch, window switch, occupancy detector, control center, etc.

Mechanical design**Controller**

Plastic housing with a large display which also serves as a touch screen. The backlit display is activated by touching and, after 15 seconds, switches off again to save battery life.

The controller (top section) can be removed from its base by pressing a button. A hinged battery compartment cover facilitates the exchange of the two 1.5 V alkaline batteries type AA. The base can be removed and fitted to all commercially available recessed conduit boxes or directly on the wall, to be wired before the controller is fitted. The housing accommodates the electronics, a DIP switch and the relays with potentialfree N.O. contacts. The connection terminals are integrated in the base.

Display and operating elements



Display to appear when making the display check

Display



Temperature values and symbols



Normal temperature



Economy temperature



Standby with frost protection



Time of day or switching time

Display symbols



Change batteries



Remote control active



Locking of display active



Holiday program active



Temperature setpoint number of switching program



Actuator / valve open / close



Switching point number of switching program

Arrow buttons



Increasing / decreasing values

Operating mode buttons



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



Automatic operation for 24-hour program with 3 heating periods



Automatic operation for 24-hour program with 2 heating periods



Automatic operation for 24-hour program with 1 heating period



Continuous operation at normal temperature



Continuous operation at economy temperature



Standby with frost protection

Day button



Display and selection of the current day

Switching time buttons



Switching time buttons for setting the switching times

Level button / override button



Switching manually from the normal to the economy temperature, or vice versa




Display locking / reset button



Opening for locking the display or for making a reset

Display button function

Operation takes place via the display by touching the respective section of the display. For that purpose, the display is subdivided into a number of fields with display or button functions. The function of the fields is indicated by a grey background. If a field is grey, it provides a button function; if it is not grey, it is a display field. If a button field is selected by touching, a black bar appears and the current value flashes, which can then be adjusted with the + / - buttons.

Automatic storage	When an adjustable display button is pressed, the displayed value will automatically be stored 5 seconds later and the display returns to the previous operating mode. The same action is achieved when pressing 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 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 buttons Activation	To clean the display or to prevent tampering, the display buttons can be locked. To do this, press the button behind the little hole for a short moment (max. 2 seconds):  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 be retained 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 relays	
	Voltage	AC 24...250 V
	Current	8 (3.5) A
	Sensing element	
	Measurement range	0...40 °C
	Time constant	max. 10 min
	Setpoint setting range	
	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
	Integral action time (volume adaption)	
	Adjustable	80 / 40 / 160 min
	Factory setting	80 min
	Control gain (heat output adaption)	
	Adjustable	0.5 / 0.25 / 1
	Factory setting	0.5

Standards

CE-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
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Degree of protection	IP 30 to EN 60 529
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Environmental conditions

Perm. ambient temperature

Operation	3...35 °C
Storage and transport	-25..+60 °C

Perm. ambient humidity	G to DIN 40 040
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Weight

Incl. packing	0.4 kg
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Color

Housing	signal-white RAL9003
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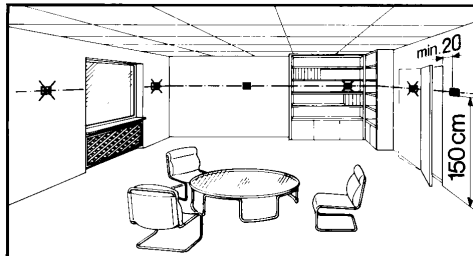
Seize

Housing	130 x 110 x 33 mm
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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 heat 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



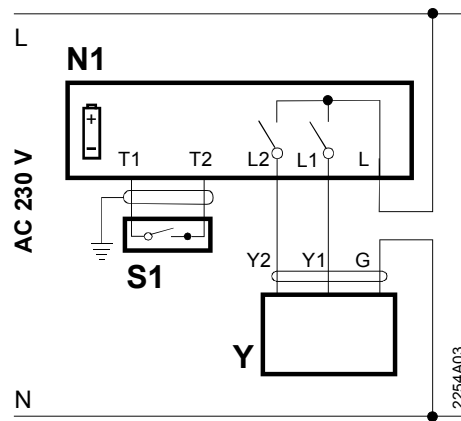
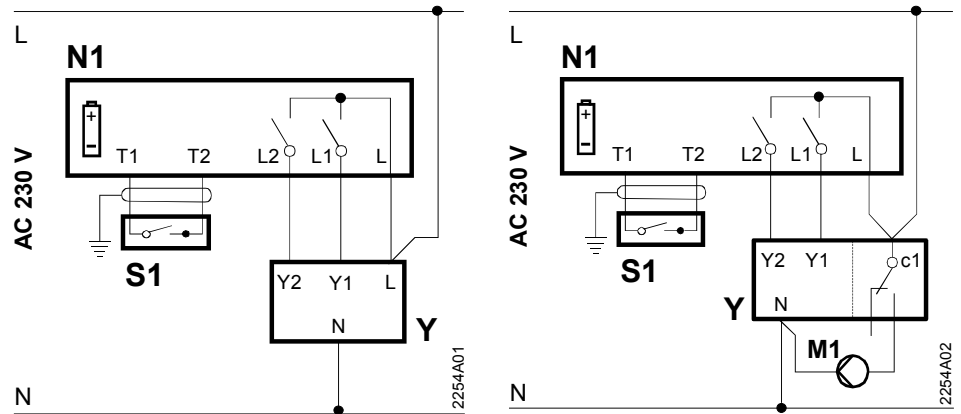
Mounting and installation

- 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 controller
- 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

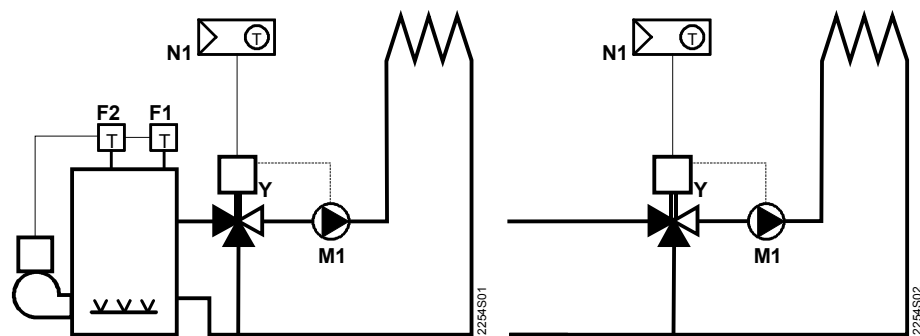
- The battery transit tab, which prevents inadvertent operation of the unit during transport and storage, must be removed
- The control characteristic can be changed with the DIP switch located at the rear of the unit
- If the reference room is equipped with thermostatic radiator valves, they must be 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



c1	Auxiliary switch	S1	Remote operation unit (potential-free)
L	Live	T1	Signal "remote operation"
L1	Positioning signal "open" AC 24 ... 250 V / 8 (3.5) A	T2	Signal "remote operation"
L2	Positioning signal "close" AC 24 ... 250 V / 8 (3.5) A	Y	Ractuating device
M1	Circulating pump	Y1	Positioning signal "open"
N	Neutral conductor	Y2	Positioning signal "close"
N1	Room temperature controller REV300		

Application examples



F1 Thermal reset limit thermostat
 F2 Manual reset safety limit thermostat
 M1 Circulating pump

N1 Room temperature controller REV300
 Y1 3-port valve with manual adjustment
 Y2 Actuator

Dimensions

