



Room Temperature Controller with 7-Day Time Switch, LCD and opt. Remote Temperature Sensor for heating systems

RDE20.1

2-position control with ON/OFF output for heating
Operating modes: normal operation and energy saving mode
7-day time switch and manual operation
Battery-powered DC 3 V
Input for external temperature sensor

Use

The RDE20.1 is used for the control of the room temperature in heating systems.

Typical applications:

- Apartments
- Commercial spaces
- Schools

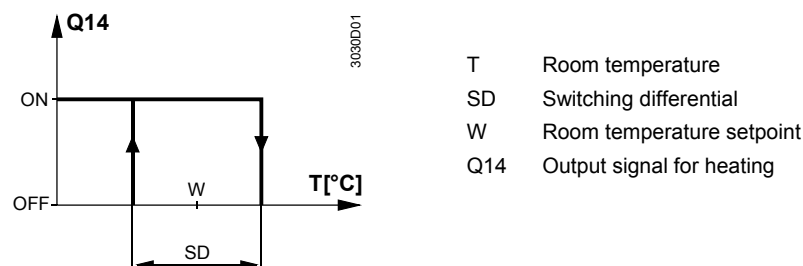
For the control of the following pieces of equipment:

- Thermic valves or zone valves
- Gas or oil burners
- Fans
- Pumps

Functions

The controller acquires the room temperature with its integrated sensor or external room temperature sensor (QAA32) or external return air temperature sensor (QAH11) – if used – and maintains the setpoint by delivering control commands. The switching differential is 1 K.

Function diagram



Remote temperature sensor

The RDE20.1 can provide control either according to the internal room temperature or according to a remote temperature. The controller detects automatically when a QAH11 is connected. In this case, the internal temperature sensor is deactivated.

Operating modes

The RDE20.1 provides normal operation and, optionally, energy saving mode or OFF. The difference between normal operation and energy saving mode is only the room temperature setpoint. The changeover between the operating modes can be made either automatically according to the 7-day time switch or manually with the operating mode selector.

Normal operation

When normal operation is activated, symbol "☀" appears on the display. The setpoint can be readjusted by pressing buttons $\oplus$ and $\ominus$.

Energy saving mode or OFF

When energy saving mode is activated, symbol "☾" appears on the display. The setpoint can be readjusted by pressing buttons $\oplus$ and $\ominus$.

In energy saving mode, the unit can also be switched to "Off". This is accomplished by selecting a setpoint of 5 °C and then keeping button $\ominus$ depressed for 4 seconds. In that case, the "OFF" will appear and the symbol "☾" does not appear.

7-day time switch

The changeover between the operating modes can take place either automatically (☀, ☾) or manually (☀, ☾), depending on the position of the operating mode selector. When the operating mode selector is in position "☀", changeover will take automatically according to the selected switching pattern. For every weekday, a specific switching pattern can be selected.

Factory setting:

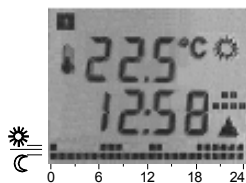
Day(s)	Normal operation	Energy saving mode
Mo (1) – Fr (5)	6:00 – 8:00 h and 17:00 – 22:00 h	22:00 – 6:00 h and 08:00 – 17:00 h
Sa (6) – Su (7)	7:00 – 22:00 h	22:00 – 7:00 h

The current setpoint can be temporarily readjusted by pressing buttons $\oplus$ and $\ominus$. The setpoint will then be reset to its initial value the next time automatic or manual changeover takes place.

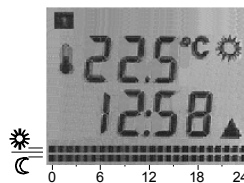
When the operating mode selector is set to "☀" or "☾", the RDE20.1 will maintain normal operation or energy saving mode respectively.

Display

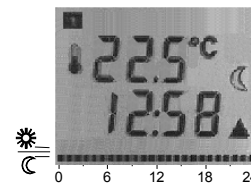
The digital display shows the actual room temperature, the time of day, the weekday, the current switching pattern and the symbol of the operating mode currently active. The switching pattern shows normal operation as a double bar and energy saving mode as a single bar with a flashing time pointer. When the heating output is activated, the triangle symbol appears.



Automatic changeover according to the switching pattern



Normal operation



Energy saving mode

Backup

When taking out the batteries, the setpoints and the information required for operating mode changeover are retained for 3 minutes.

Ordering

When ordering, please give name and type reference: room temperature controller RDE20.1.

Sensor and valve actuators are to be ordered as separate items.

Equipment combinations

Type of unit	Type reference	Data sheet
Temperature sensor	QAH11	1840
Room sensor	QAA32	1747
Electromotoric actuator	SFA21...	4863
Electrothermal actuator (for radiator valve)	STA21...	4877
Electrothermal actuator (for small valve 2,5 mm)	STP21...	4878
2-port and 3-port zone valves	MXI/MVI421...	4867
Electromotoric actuator for zone valve V..146..	SUA21	4830
Electric actuator	SUA11/22	4832
Air damper actuator	GDB...	4624
Air damper actuator	GSD/GQD...	4606
Rotary damper actuators	GXD...	4622
16A extension relay module	SEZ16	-

Accessories

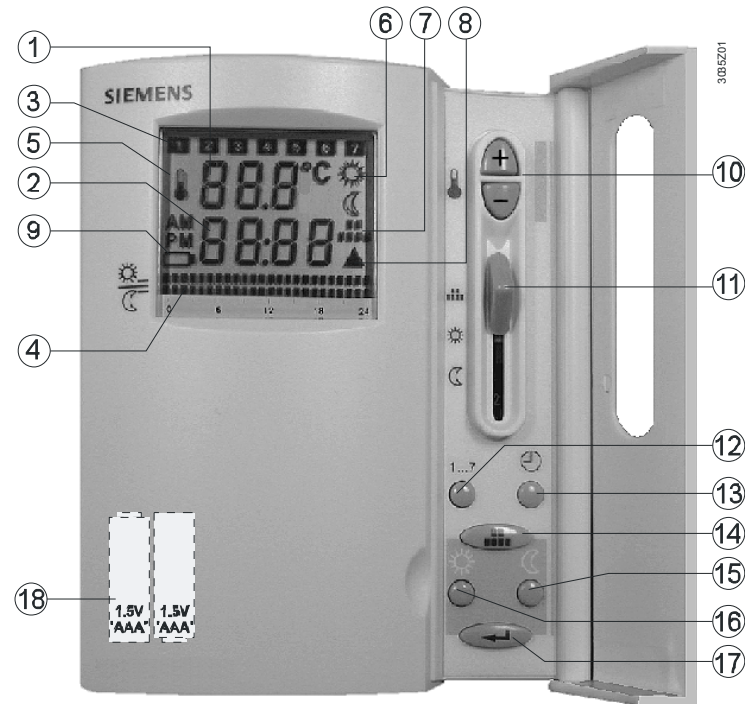
Description	Type reference
Adapter plate 120 x 120 mm for 4" x 4" conduit boxes	ARG70
Adapter plate 96 x 120 mm for 2" x 4" conduit boxes	ARG70.1
Adapter plate for surface wiring 112x130 mm	ARG70.2

The unit consists of two parts:

- A plastic housing with digital display, which accommodates the electronics, the operating elements and the built-in room temperatures sensor
- A mounting base

The housing engages in the mounting base and snaps on.

The base carries the screw terminals.

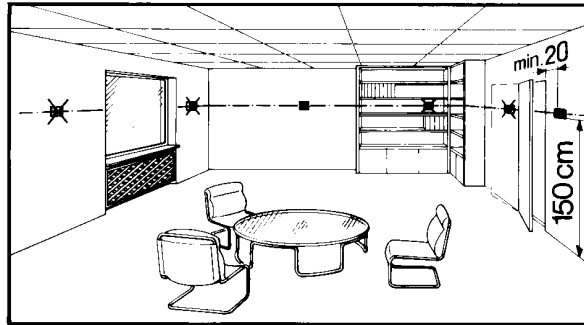


Legend

- 1 Display of the room temperature in °C or setpoints
- 2 Current time of day using the format 00:00 ... 23:59
- 3 Current weekday from 1 (Monday) to 7 (Sunday)
- 4 Current switching pattern with flashing time pointer
- 5 symbol when actual room temperature is displayed
- 6 Normal operation
- 7 symbol in automatic mode or when selecting the switching pattern
- 8 heating on
- 9 symbol indicating that batteries need to be replaced
- 10 Buttons for adjusting the setpoints, the time of day and the switching times
- 11 Operating mode selector
- 12 Setting the weekday
- 13 Setting the time of day
- 14 Selecting and leaving the setting mode for the switching pattern
- 15 Setpoint adjustment for energy saving mode
- 16 Setpoint adjustment for normal operation
- 17 Button for confirming the switching pattern settings
- 18 Battery compartment

The room temperature controller should be mounted in a location where the air temperature can be measured as accurately as possible without getting adversely affected by direct solar radiation or other heat or refrigeration sources.

Mounting height is about 1.5 m above the floor.



The unit can be fitted to a recessed conduit box.



- Only authorised staff may open the controller.
- Caution: The switching output voltage is from AC24V up to AC250V**
- The cables used must satisfy the insulation requirements with regard to mains potential

Mounting, installations and commissioning

When mounting the unit, fix the baseplate first. Then, make the electrical connections and fit and secure the cover (also refer to separate Mounting Instructions). The controller must be mounted on a flat wall and in compliance with local regulations. If there are thermostatic radiator valves in the reference room, they must be set to their fully open position.

Maintenance

The controller is maintenance-free.

Sensor calibration

If the temperature on the display does not agree with the room temperature effectively measured, the temperature sensor can be recalibrated. For that purpose both buttons  and  must be pressed simultaneously for 3 seconds. Then, the temperature displayed can be changed by a maximum of +/- 10 K by pressing the  and  buttons. Five seconds after the last push of a button, the controller will automatically return to the normal operational status.

Setpoint limitation

The setpoint limitation is used in some specific applications where the setpoint temperature is required to be above 35°C (Less than 60°C). For that purpose both buttons  and  must be pressed simultaneously for 5 seconds. The top row of the LCD will then display 35°C to signify the default setpoint limitation whereas the bottom row will display **SPLE** to signify the setpoint limitation mode. The temperature limitation can be changed by pressing the  and  buttons. Five seconds after the last push of a button, the controller will automatically saved the value and return to the normal operational status.

Change of batteries

If the battery symbol appears, the battery power is almost exhausted and the batteries should be replaced. Only AAA alkaline batteries have to be used.

Reset

To reset, first press and hold the button , then press the two buttons  and  simultaneously for 3 seconds. All individual settings will be reset to their standard values.

Technical data

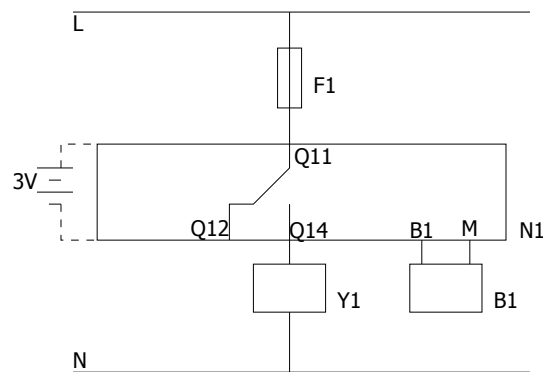
Power supply	Operating voltage	DC 3 V (2 x 1.5 V AAA Alkaline batteries)
	Battery life (RDE20.1)	> 1 years (AAA Alkaline batteries)
	Supply line fusing	max. 10 A
Sensor inputs	External:	
	External temperature sensor (Inputs B1, M)	QAH11/QAA32, Safety class II NTC resistor 3 kΩ at 25°C
	Permissible cable length for External sensor (Terminal B1)	max. 20 m, copper cable, 1.5 mm ²
	Tolerance	max. ± 2.5°C
	Internal:	
Outputs  Switching Outputs (Q11, Q12, Q14)	Relay Contacts	
	Switching voltage	max. AC 250 V min. AC 24 V
	Switching current At 250 V	max. 5A res., 2 A ind. min. 50 mA
	Contact life at AC 250 V	guide values:
	At 0.1 A res.	2 x 10 ⁶ cycles
	At 0.5 A res.	1 x 10 ⁶ cycles
	At 4 A res.	1.5 x 10 ⁵ cycles
	No load	5 x 10 ⁷ cycles
	Insulating strength	
	Between relay contacts and coil	AC 3750 V for 6 sec. AC 2000 V for 60 sec.
	Between relay contacts (same pole)	AC 1000 V for 60 sec.
Operational data	Switching differential SD	1 K
	Setpoint setting range	5...35 °C (normal operation) 5...60 °C (with setpoint limitation) 0 (OFF) and 5...35 °C (energy saving mode)
	Factory setting normal operation	20 °C
	Factory setting energy saving mode	8 °C
	Resolution of settings and displays	
	Setpoints	0.5 °C
	Switching times	60 min
	Actual value displays	0.5 °C
	Time of day displays	1 min
	Setpoint Limitation range	35...60 °C
Electrical connections	Factory setting setpoint limitation	35 °C
	Resolution for setpoint limitation	0.5 °C
	Connection terminals (via mounting plate)	screw clamp terminals
	For solid wires	2 x 1.5mm ²
Environmental conditions	For stranded wires	1 x 2.5mm ² (Minimum 0.5 mm ²)
	Operation	to IEC 721-3-3
	Climatic conditions	class 3K5
	Temperature	0...+50 °C
	Humidity	<95 % r. h.

Norms and standards

Transport	to IEC 721-3-2
Climatic conditions	class 2K3
Temperature	-25...+60 °C
Humidity	<95 % r. h.
Mechanical conditions	class 2M2
Storage	to IEC 721-3-1
Climatic conditions	class 1K3
Temperature	-25...+60 °C
Humidity	<95 % r. h.
CE conformity to	
EMC directive	2004/108/EC
Low voltage directive	2006/95/EC
C-Tick conformity to	
EMC Requirement	AS/NZS 4251.1: 1999
Product standards	
Automatic electrical controls for household and similar use	EN 60 730- 1 and EN 60 730- 2-9
Electromagnetic compatibility	
Emissions (industrial sector)	EN 61000-6-3
Immunity (domestic sector, light ind.)	EN 61000-6-1
Safety class	II to EN 60730
Pollution degree	3
Degree of protection of housing	IP30 to EN 60529
Weight	0.21 kg
Colour of housing front	white, RAL 9003
Housing material	ABS (Slider: POM, LCD Lens: GP PS)

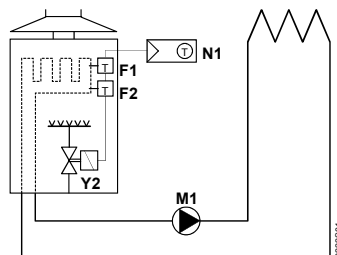
General

Connection diagram

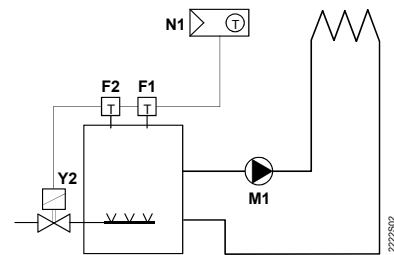


- B1** QAH11 external temperatures sensor
- N1** RDE20.1 room temperature controller
- Y1** Regulating unit
- L, N** Live, Neutral AC 24...250 V
- B1** Signal input "External temperature sensor"
- F1** External fuse
- M** Measuring neutral "External temperature sensor"
- Q11, Q12** N.C. contact (for N.O. valves)
- Q11, Q14** N.O. contact (for N.C. valves)

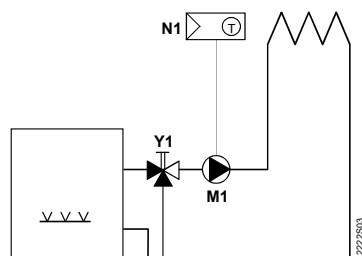
Application examples



Room temperature controller with direct



Room temperature controller with direct

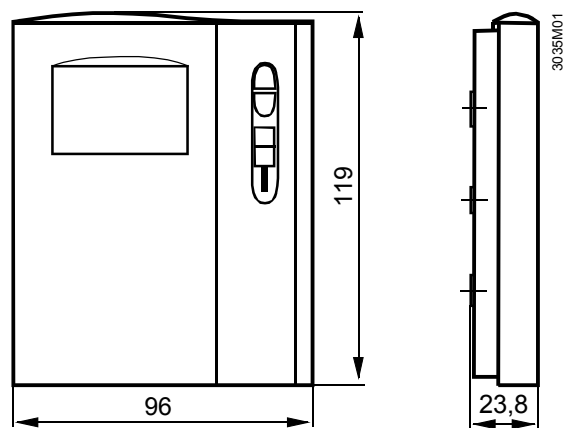


Room temperature controller with direct control of a heating circuit pump (precontrol by manual mixing valve)

F1	Thermal reset limit thermostat	N1	RDE20.1 room temperatures controller
F2	Safety limit thermostat	Y1	3-port valve with manual adjustment
M1	Circulating pump	Y2	Magnetic valve

Dimensions

Controller



Baseplate

