SIEMENS

Wireless room thermostat with 24-hour time switch and LCD
RDJ100RF/SET

RDJ100RF (Transmitter) RCR100/433 (Receiver)

Programmable, for heating systems

- 2-position or PID control to switch on/off heating systems
- Operating modes: Automatic, Comfort, Energy saving, and Frost protection
- 24-hour time switch
- Service interval reminder
- Large LCD display
- Minimum and maximum setpoint limitation
- RDJ100RF, transmitter, battery powered
- RCR100/433, receiver, mains powered

The device comprises with 1 x RDJ100RF (transmitter) and RCR100/433 (receiver), is used to control the room temperature in heating systems.

Typical applications include:

- Homes
- Residential buildings
- Schools
- Offices

The device can be used together with the following equipment:

- Thermal valves or zone valves
- Combi boilers
- Gas or oil burners
- Pumps

Functions

Temperature control

RDJ100RF/SET offers both 2-position and PID intelligent learning temperature control, configurable via parameter P01 (control behaviour).

2-position control algorithm to switch on and off the heating system within a switching differential (SD) as per the difference between setpoint setting and measured room temperature.
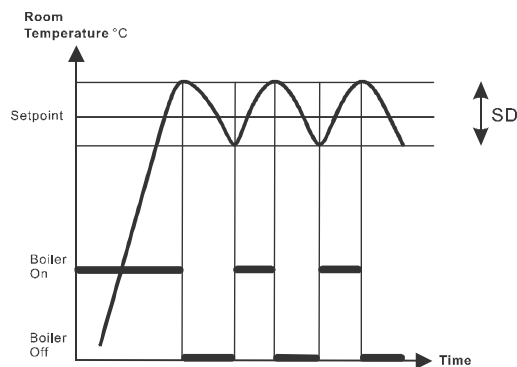
PID intelligent learning control algorithm periodically switches on and off the heating system. The period time (T) and pulse length (P) of the control signal (PWM) are determined by the setpoint and the measured room temperature.
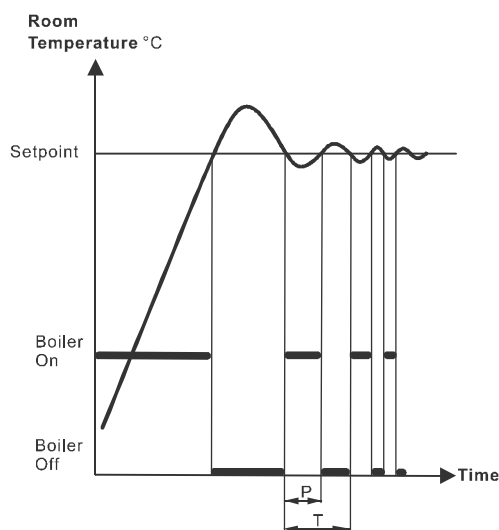
In general, PID control provides more comfort and is more energy efficient than 2-position control.

Control behaviour (P01)

The factory setting for control is "PID slow", ideal for most heating systems. Optimum control can be selected if control does not provide the desired result:

2-position, 1 K

2-position controller with 1 [K] switching hysteresis

- For systems with small capacity that appear slow
- For applications requiring extended runtimes or where frequent switching causes problems
- For difficult control loops where hunting may result

Typical applications:

- Dry floor heating systems
- Heat pumps
- Electric heating with contactors

2-position, 0.5 K

- 2-position controller with 0.5 [K] switching hysteresis.
- For general control situations. Provides better comfort than 1 [K] switching hysteresis.
- Can also be used for difficult control situations.

PID slow

PID control behaviour for slow heating systems that require longer minimum On times and a limited number of switching cycles per hour.

Typical applications:

- Wet floor heating systems, oil fired boilers
- Can also be used for all other types of heating applications. (Alternative setting)

Minimum switch on/off time	> 4 minutes
Minimum period	Approximately 12 minutes

PID fast

PID control behaviour for fast heating systems that tolerate a high number of switching cycles.

Typical applications:

- Electric heaters with current valve
- Gas boilers
- Fast thermal actuators

Minimum switch on/off time	> 1 minute
Minimum period	Approximately 6 minutes

⚠ WARNING
Do not use PID fast for oil boilers or electric mechanical actuators!

Backup

When removing the batteries, the setpoints and information required for operating mode changeover are retained for max. 2 minutes.

Operating modes

The device has the following modes: Automatic, Comfort, Energy saving and Frost protection.

Move the operating mode slider to the respective position to select another operating mode.

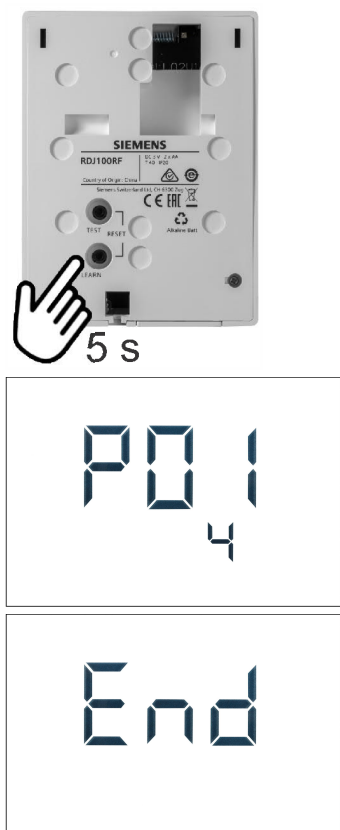|	
Automatic mode	Automatic mode is active when symbol ⏰AUTO is displayed. The device operates as the selected 24-hour time program.
Comfort mode	Comfort mode is active when symbol ☼ is displayed. The device controls to the temperature setpoint adjusted at T☼. This setpoint can be adjusted by setting the program slider to T☼.
Energy saving mode	Energy saving mode is active when symbol ☾ is displayed. The device controls to the temperature setpoint adjusted at T☾. This setpoint can be readjusted by setting the program slider to T☾.
Frost protection	Frost protection is active when symbol ⏻ is displayed. The device controls to the preset temperature setpoint for frost protection.

Commissioning notes

Parameter list

| Parameter	Description	Factory setting	Setting range	Remark
P01	Control behavior	PID slow (4)	0 = 2P, 1.0 K 1 = 2P, 0.5 K 2 = PID fast 4 = PID slow	
P02	Maximum temperature range	30 °C	P03…30 °C	Limit of comfort and economy setpoint
P03	Minimum temperature range	5 °C	5 °C…P02	Limit of comfort and economy setpoint
End	Exit parameter setting			

Parameter setting

The parameter setting remains in non-volatile memory and is not erased when the battery is removed. The reset function on the rear of the thermostat reloads the factory settings.

Parameter setting mode

1. Press LEARN on the rear for 5 seconds until "P01" appears.
2. Press advance button, the parameter value on the second line flashes and is ready for adjustment.
3. Adjust the parameter using setting knob.
4. Press advance button once to confirm the setting.
5. Rotate the setting knob clockwise to next parameter and repeat steps 2 to 4.
6. Exit parameter setting mode by rotating the setting knob clockwise to "End" and pressing advance button once.

Note: The thermostat automatically exits parameter setting mode one minute after the last action.

Display

The digital display shows the current room temperature, the ON/OFF times as well as the symbol for the currently active operating mode which is currently active. When the heating output is active, the triangle symbol is displayed.
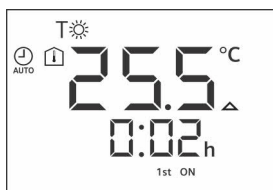
Service interval reminder

The service interval reminder function is an aid to carry out a safety check on the boiler at regular intervals.

If service interval function has been enabled on thermostat and the pre-warning time is reached, the display shows message "SEr" with the number of remaining days until service is due. The pre-warning will appear up to 50 days prior to its next service.

If the message "SEr…DuE" appears, it indicates that the thermostat has past the service day. Depending on the setting of the service reminder function, the thermostat will either only display a warning or switch off (frost protection).

In case the service reminder function is switched off, the display will show "OFF". Then the thermostat can only be activated manually for 60 minutes by turning the setting knob or pressing the advance button. The thermostat will control under comfort mode regardless of the selected operating mode (automatic, comfort or energy saving).

If service interval function is enabled and operating mode selector is set to Standby mode or set to other mode from Standby mode, the screen will display the remaining days until next service due.

The service interval reminder can be enabled and reset by a service professional.

Equipment combinations

Description		Product number	Data sheet *)
Electrothermal actuator (for radiator valves)		STA23..	4884
Electrothermal actuator (for small valves 2.5mm)		STP23..	4884
Electromotoric actuator		SFA21..	4863

*) The documents can be downloaded from http://siemens.com/bt/download.

Ordering

When ordering, specify name and product number, e.g. room temperature controller RDJ100RF/SET.

Order valves and actuators as separate items.

Mechanical design

The transmitter consists of 4 parts:
- Plastic housing with digital display containing the electronics, operating elements and built-in room temperature sensor
- Baseplate (mounting base)
- Battery compartment
- Fold-out stand

The housing engages in the baseplate and snaps on. There is a reset button on the rear of the transmitter.
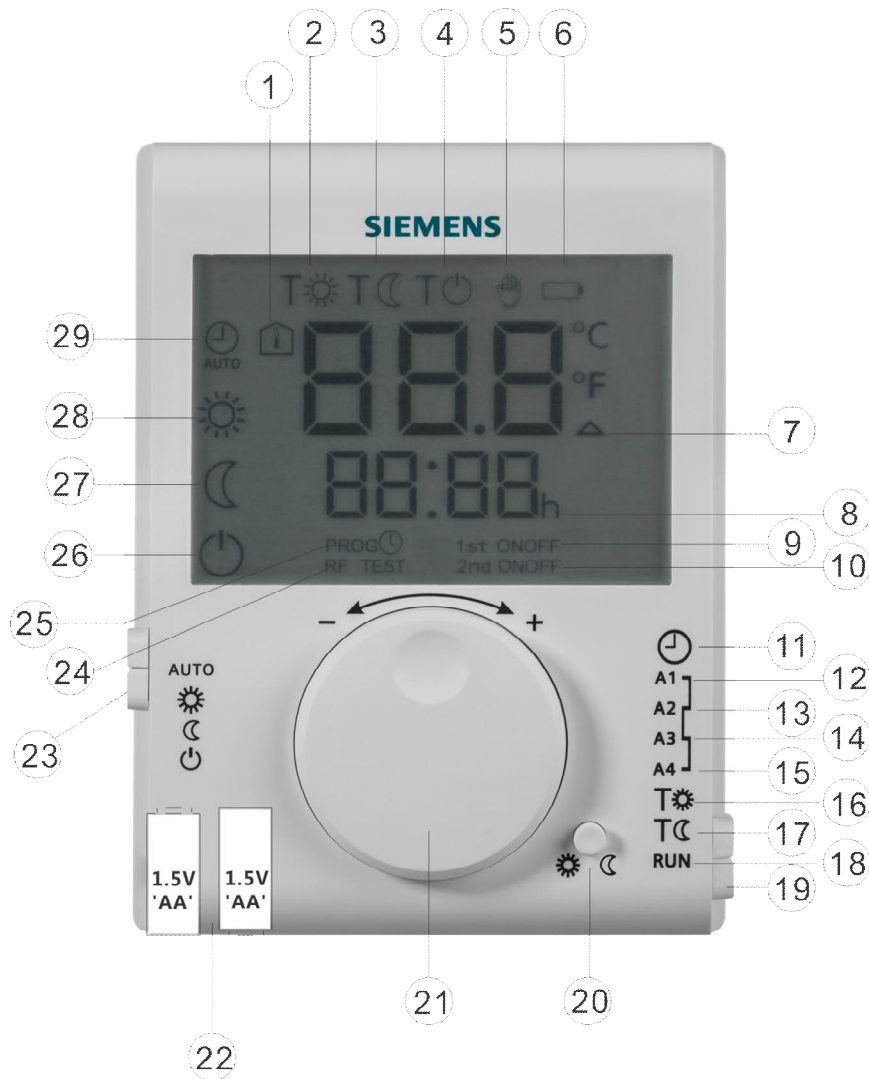
RDJ100RF (Transmitter) Elements	Functions
1	⌂ Room temperature display in °C
2	T☼ The transmitter controls to the adjusted comfort temperature setpoint
3	T☾ The transmitter controls to the adjusted energy saving temperature setpoint
4	T⏻ The transmitter controls to the fixed frost protection temperature setpoint
5	✋ Setpoint temporarily overridden until the next switching time
6	▭ Indicates low battery power; replace batteries
7	△ Indicates a heat request
8	Time of day (00:00...23:59 format)

9	Indicates first switch-on/off time
10	Indicates second switch-on/off time
11	Time setting position
12	First switch-on time
13	First switch-off time
14	Second switch-on time
15	Second switch-off time
16	Comfort temperature setting
17	Energy saving temperature setting
18	RUN position
19	Program slider
20	Advance button (override / presence button)
21	Temperature setting knob
22	Battery compartment
23	Operating mode slider
24	**RF TEST** indicates RF signal test
25	Indicates that programming is taking place
26	⏻ Frost protection; control to a preset temperature setpoint of 5 °C for frost protection
27	☾ Energy saving mode; continuous control to the energy saving temperature setpoint
28	☼ Comfort mode; continuous control to the comfort temperature setpoint
29	⏰ Automatic mode; the transmitter operates as per the selected program

The receiver is located in a plastic housing with LEDs and buttons.
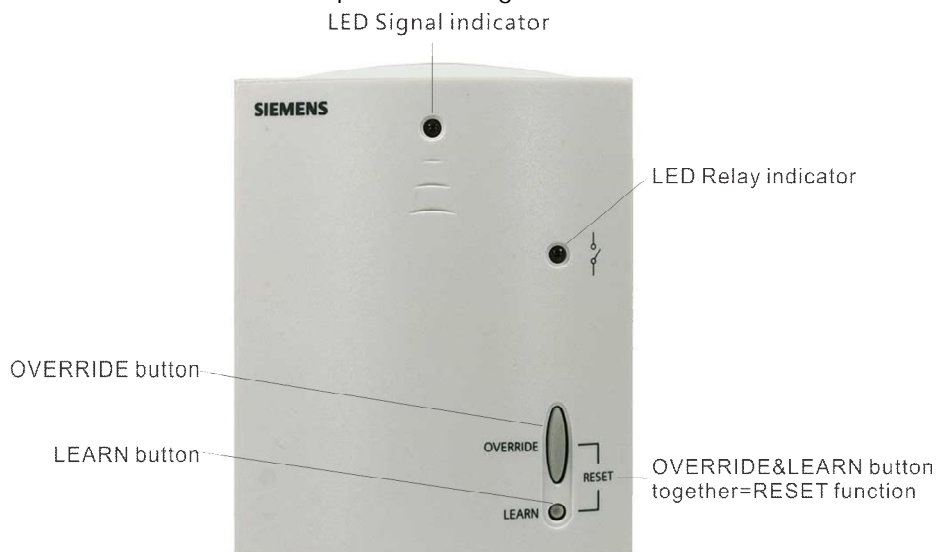
The transmitter is located in a plastic housing. Two buttons are visible on the rear when removing the baseplate.
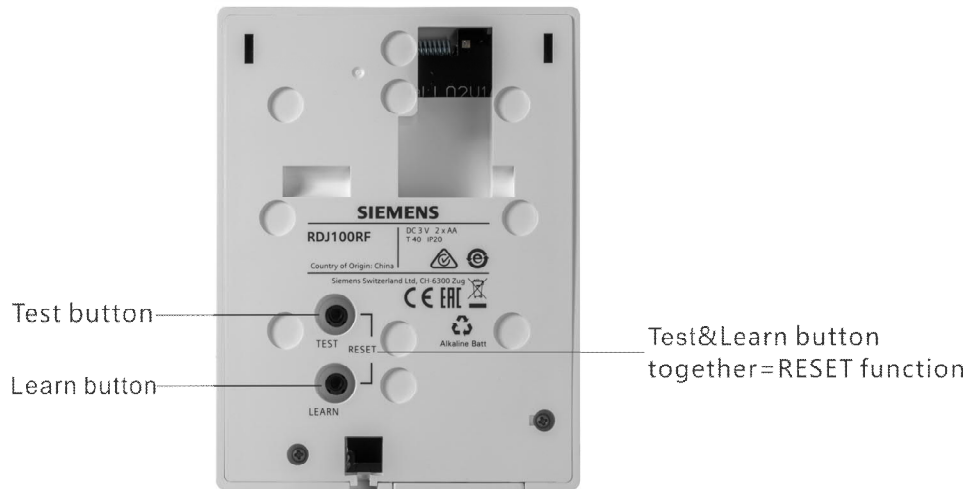
OVERRIDE

Override allows for temporarily overriding the active value from the sender. Override responds differently depending on the radio connection (normal or fault).

Example A: Normal connection between sender and receiver

Press the OVERRIDE button to overwrite the value for ca. 14 minutes. The value then returns to the setpoint.

Example B: Faulty connection between sender and receiver

Press the OVERRIDE button to permanently override the value. The value returns to the setpoint after the connection between sender and receiver works again.

RF LED

RF state	RF LED
Power up (first 5 seconds)	Flash RED
Power up (after 5 seconds)	RED
Press OVERRIDE switch	Flash RED + ORANGE (amber) (4 seconds)
Learning period	No LED
Software reset	RED
RF receive	GREEN
No RF within last 25 minutes	RED
Manual override (RF receive)	Flash ORANGE

Relay LED

Relay state	Relay LED
From OUT to ON (first 5 seconds)	Flash ORANGE
ON	ORANGE
From ON to OFF (after 5 seconds)	Flash ORANGE
OFF	OFF

Mounting

When mounting the transmitter, attach the baseplate first. You need to mount the transmitter on a flat wall. (For details, refer to the separate mounting instructions A6V10974424.)

The transmitter comes with a fold-out stand and may be used as a "mobile" device.

Mounting the receiver does not require a baseplate. Connect the electrical connections first and then fit and secure the receiver in compliance with local regulations. (For details, refer to the separate mounting instructions A6V10974424.)

If the reference room contains thermostatic radiator valves, set them to their fully open position.

For commissioning, refer to the operating instructions A6V101035990.

Communication of RDJ100RF/SET (transmitter and receiver) is bonded ex factory.
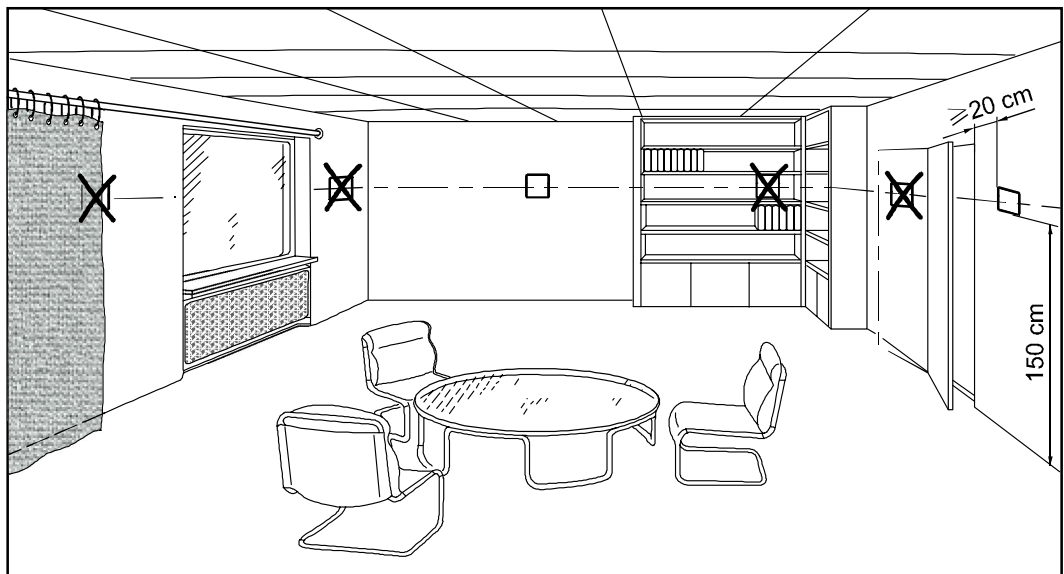
- The devices are suitable for wall mounting.
- Recommended height: 1.5 m above the floor.
- Do not mount the devices in recesses, shelves, behind curtains or doors, or above or near heat sources.
- Avoid direct solar radiation and drafts.
- Seal the conduit box or the installation tube if any, as air currents can affect sensor readings.
- Adhere to allowed ambient conditions.

Change of batteries

If the battery symbol appears, the batteries are almost empty and must be replaced.

Reset

Simultaneously press the TEST and LEARN buttons on the rear of the transmitter to reset it.

Simultaneously press the OVERRIDE and LEARN buttons to reset the receiver. This resets all individual settings to their default values.

Maintenance

The transmitter and receiver are maintenance-free except for the transmitter battery.

Disposal
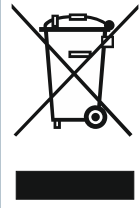
	The device is considered an electronic device for disposal in accordance with the European Guidelines and may not be disposed of as domestic garbage. • Dispose of the device through channels provided for this purpose. • Comply with all local and currently applicable laws and regulations. • Dispose of empty batteries in designated collection points.

Instructions for the replacement of alkaline batteries

	⚠ WARNING
	Explosion due to fire or short-circuit, even with discharged batteries Risk of injury due to flying parts • Prevent the batteries from coming into contact with water. • Do not recharge batteries. • Do not damage or disassemble batteries. • Do not heat batteries over 85°C.

	⚠ WARNING
	Leakage of electrolyte Severe burns • Handle damaged batteries only wearing suitable protective gloves. • In case of contact with electrolyte, rinse eyes immediately with plenty of water. Consult a doctor.

Observe the following:
• Use only a battery of the same type and from the same manufacturer as a replacement.
• Observe the polarities (+/-).
• The batteries must be new and undamaged.
• Do not mix new and used batteries.
• Store, transport and dispose of the batteries in compliance with local requirements, regulations and laws. Also observe the instructions of the battery manufacturer.

Product documentation

Topic	Title	Document ID:
Operating	Operating instructions	A6V101035990
Installation	Mounting instructions	A6V10974424
CE declaration		A6V101123354

Related documents such as CE declarations, etc., can be downloaded from the following address: http://siemens.com/bt/download.

Power supply

Operating voltage	DC 3 V (2 x 1.5 V AA alkaline batteries)
Battery life	>1 year (with AA alkaline batteries)

Radio frequency

Frequency band	ISM 433 MHZ
Maximum radio-frequency power	4.19 dBm

Operational data

Thermistor	$10\ k\Omega \pm 1\%$ at 25 °C	
PID control: Minimum switch on/off time Minimum period time	Slow 4 min 12 min	Fast 2 min 6 min
Setpoint setting range Factory setting comfort setpoint Factory setting for energy saving mode	5…30 °C (Comfort mode) 5…30 °C (Energy saving mode) 5 °C (Frost Protection, fixed value) 20 °C 10 °C	
Resolution of settings and displays	Setpoints	0.5 °C
	Actual value displays	0.5 °C
	Display of time of day	1 min

Environmental conditions

Operation Climatic conditions Temperature Humidity	IEC 60721-3-3 Class 3K5 0…+40 °C <90% r.h.
Transport Climatic conditions Temperature Humidity Mechanical conditions	IEC 60721-3-2 Class 2K3 -25…+60 °C <95% r.h. Class 2M2
Storage Climatic conditions Temperature Humidity	IEC 60721-3-1 Class 1K3 -10…+60 °C <90% r.h.

Standards, directives and approvals

EU conformity (CE)	A6V101123354 *)
RCM conformity to EMC emission standard	A6V101123355 *)
Safety class	III as per EN 60950-1

Standards, directives and approvals	
Pollution degree	2
Degree of protection of housing	IP20
Environmental compatibility	The product environmental declaration (A6V101123361 *) contains data on environmentally compatible product design and assessments (RoHS compliance, materials composition, packaging, environmental benefit, disposal).

*) The documents can be downloaded from http://siemens.com/bt/download.

Eco design and labeling directives			
ErP class 4	Based on EU Regulation 813/2013 (Eco design directive) and 811/2013 (Labeling directive) concerning space heaters, the following classes apply:		
	Application with On/Off operation of a heater	Class I	Value 1%
	PWM (TPI) room thermostat, for use with On/Off output heaters	Class IV	Value 2%

General	
Weight (including package) RDJ100RF/SET	475 g
Color of housing front	Signal-white RAL9003
Housing material	ABS (LCD lens:PC)

Receiver RCR100/433

General unit data	
Operating voltage	AC 230 V +10/-15%
Power	<10 VA
Frequency	50...60 Hz

Outputs	
Switching capacity of relays Voltage Current	AC 24…250 V 8 (3) A

Switching outputs (LX, L1, L2)		
Relay contacts	Switching voltage	Max. AC 250 V; Min. AC 24 V
	Switching current	Max. 8 A res., 3 A ind.
	At AC 250 V	Min. 10 mA

Switching outputs (LX, L1, L2)

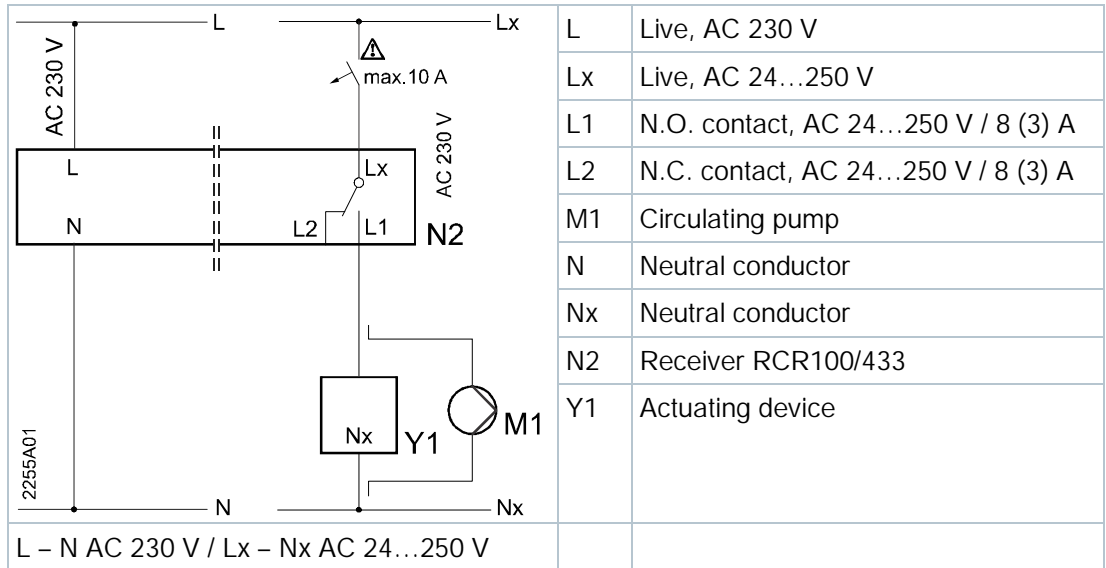| Contact life at AC 250 V	At 5 A res.	1×10^5 cycles (Guide value)
Insulating strength	Between relay contacts and coil	AC 5,000 V
	Between relay contacts (same pole)	AC 1,000 V

Electrical connections

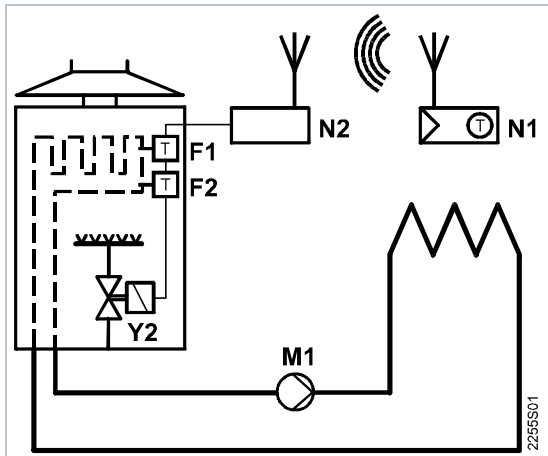| Connections terminals (via baseplate) For solid wires For stranded wires	Screw terminals 2×1.5 mm² 1×2.5 mm²(min. 0.5 mm²)

Environmental conditions

Operation Climatic conditions Temperature Humidity	IEC 60 721-3 Class 3K3 0…+45 °C <85% r.h.
Storage and transport Climatic conditions Temperature Humidity Mechanical conditions	IEC 60 721-3 Class 2K3 -25…+70 °C <93% r.h. Class 2M2

Standards, directives and approvals

EU conformity (CE)	A6V101123354
Safety class	II as per EN 60 730-1
Degree of pollution	2

Color

Unit front	Signal-white RAL 9003
Base	Gray RAL 7035
Dimensions	83x104x32 mm

Connection diagram

L	Live, AC 230 V	
Lx	Live, AC 24…250 V	
L1	N.O. contact, AC 24…250 V / 8 (3) A	
L2	N.C. contact, AC 24…250 V / 8 (3) A	
M1	Circulating pump	
N	Neutral conductor	
Nx	Neutral conductor	
N2	Receiver RCR100/433	
Y1	Actuating device	

L – N AC 230 V / Lx – Nx AC 24…250 V

2255A01
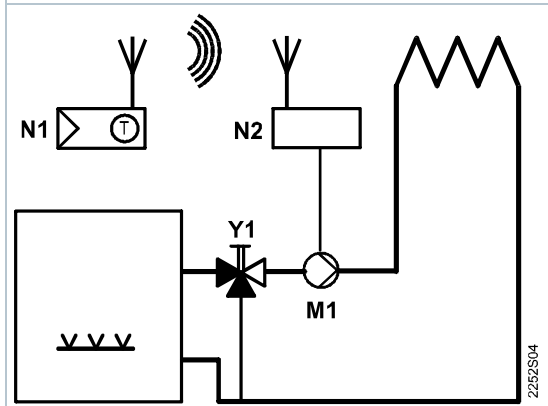
2255S01	2255S02
Wireless room temperature controller with receiver control of a gas-fired wall-hung boiler	Wireless room temperature controller with receiver control of atmospheric gas burner
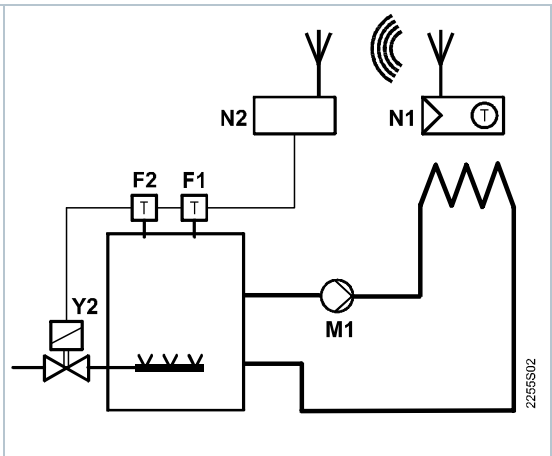
|	
2252S04	
Wireless room temperature controller with receiver control of a heating circuit pump (pre-control by manual mixing valve)	

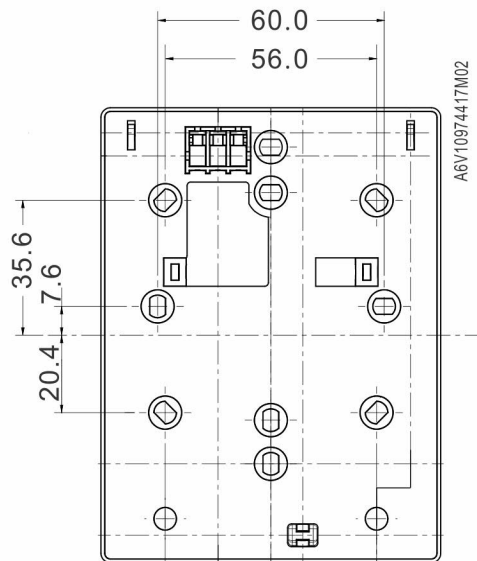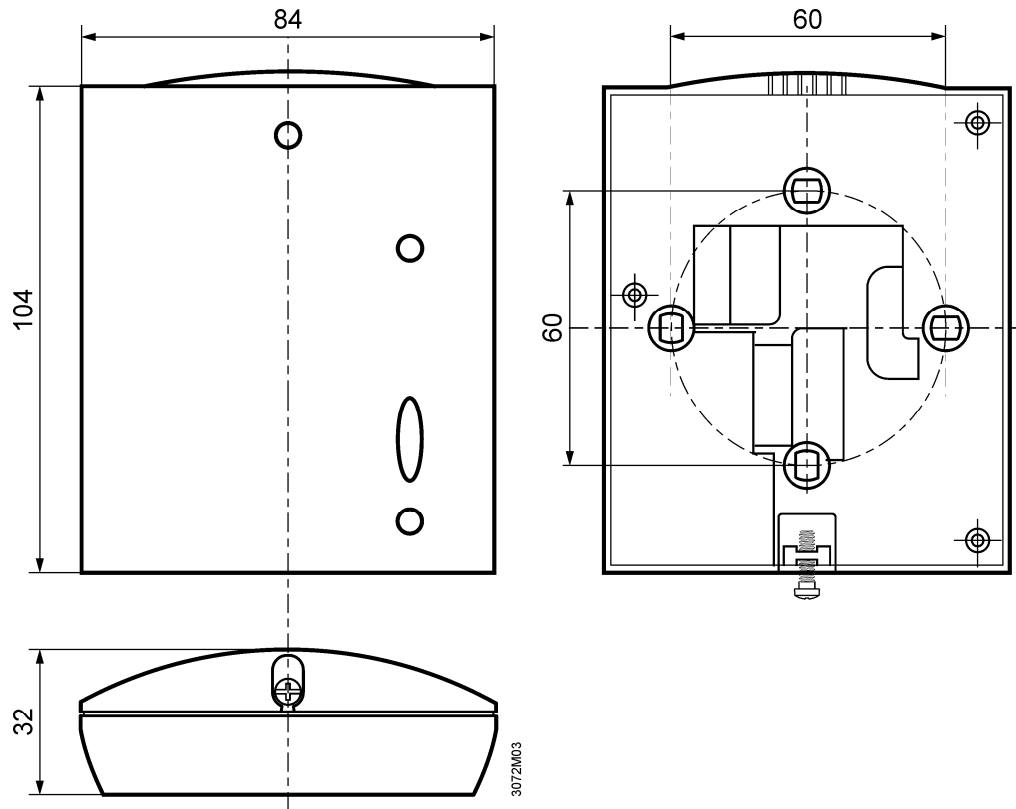|				
F1	Thermal reset limit thermostat	N1	Room temperature controller RDJ100RF (Transmitter)
F2	Safety limit thermostat		
M1	Circulating pump	N2	RCR100/433 (Receiver)
		Y1	3-port valve with manual adjustment
		Y2	Magnetic valve

Dimensions

[mm]

Room temperature controller
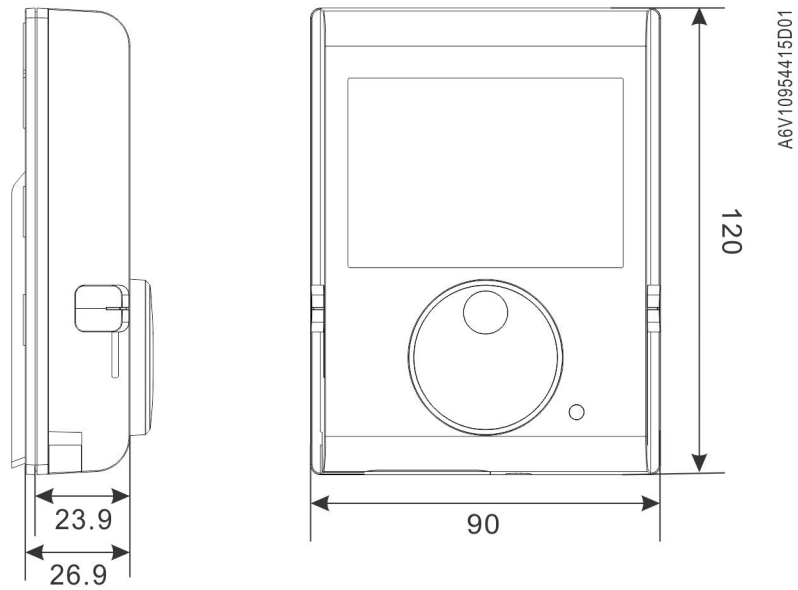
Room temperature controller mounting plate

Room temperature receiver with mounting plate

Product history

Index 1)	Date	Changes
≥C	June 2018	• Add new function min/max temperature limitation, selectable control behavior, parameter settings and service interval reminder.
Z, A	March 2017	First release.

1) Product index can be found next to the production date on the rear of the device "YYMMDDX".