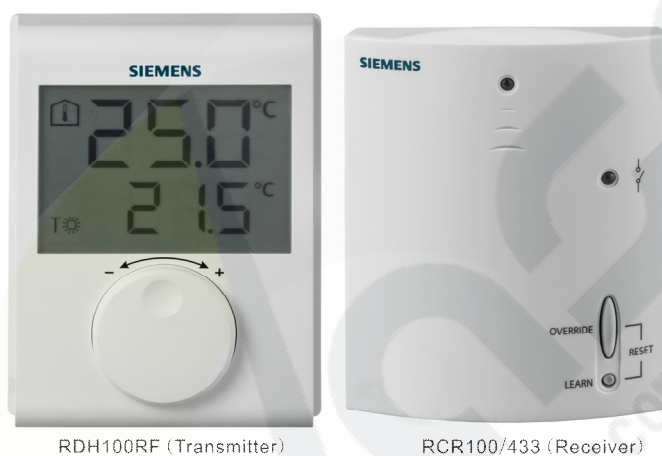# SIEMENS

Wireless room thermostat with LCD

RDH100RF/SET

RDH100RF (Transmitter)   RCR100/433 (Receiver)

Non-programmable, for heating systems

- 2-position or PID control to switch on/off heating systems
- Large LCD display
- Minimum and maximum setpoint limitation
- RDH100RF, transmitter, battery powered
- RCR100/433, receiver, mains powered

The device comprises of 1 RDH100RF (transmitter) and 1 RCR100/433 (receiver), is used to control the room temperature in heating systems.

Typical applications:

- 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

RDH100RF/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.
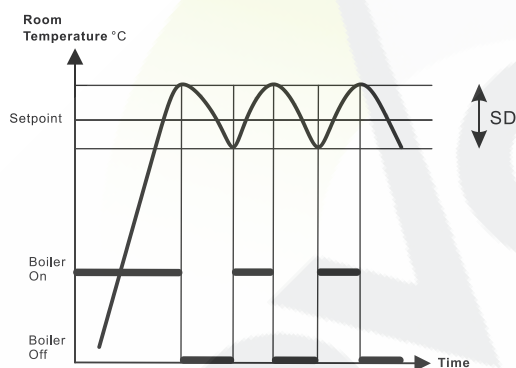
PID intelligent learning control algorithm periodically switches on and off the heating system. The period time (T) and pulse length (P) of the control signal (PWM) are determined by the setpoint and the measured room temperature.
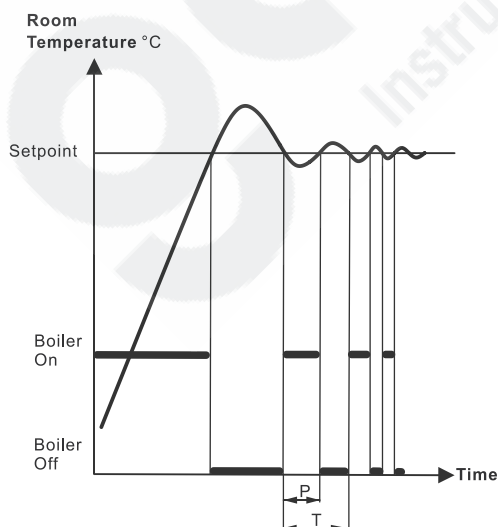
In general, PID control provides more comfort and is more energy efficient than 2-position control.

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.

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 LEARN again and, the parameter value on the second line flashes and is ready for adjustment.
3. Adjust the parameter using setting knob.
4. Press LEARN 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 LEARN once.

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

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.

Display

The digital display shows the current room temperature and the comfort temperature setpoint. When the heating output is active, the triangle symbol is displayed.
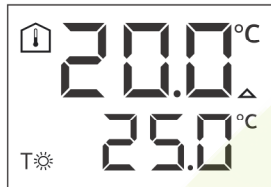
Ordering

When ordering, specify both name and product number, e.g. room temperature controller RDH100RF/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.
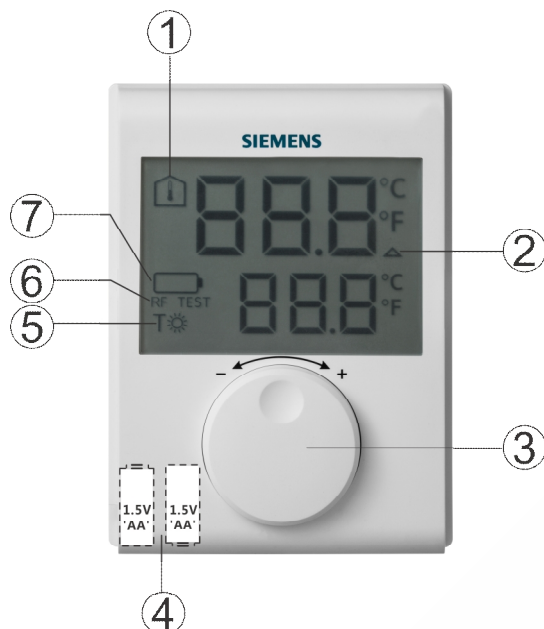
Elements	1		Display of the room temperature in °C / °F
	2	▲	Indicates a request for heating
	3		Temperature setting knob
	4		Battery compartment
	5	T☼	Comfort temperature setpoint
	6	**RF TEST**	Indicates RF signal test
	7	▭	Indicates low battery power; replace batteries

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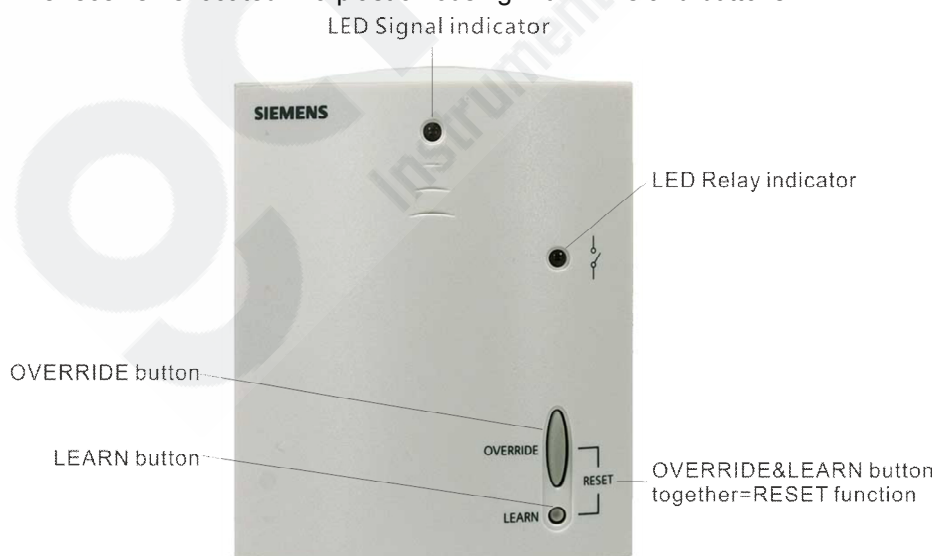
The transmitter is located in a plastic housing. Two buttons are visible on the rear when removing the baseplate.

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 A6V10974421.)

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 A6V10974421.)

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

For commissioning, refer to the operating instructions A6V101035988.

Communication of the RDH100RF/SET (transmitter and receiver) is paired ex factory.
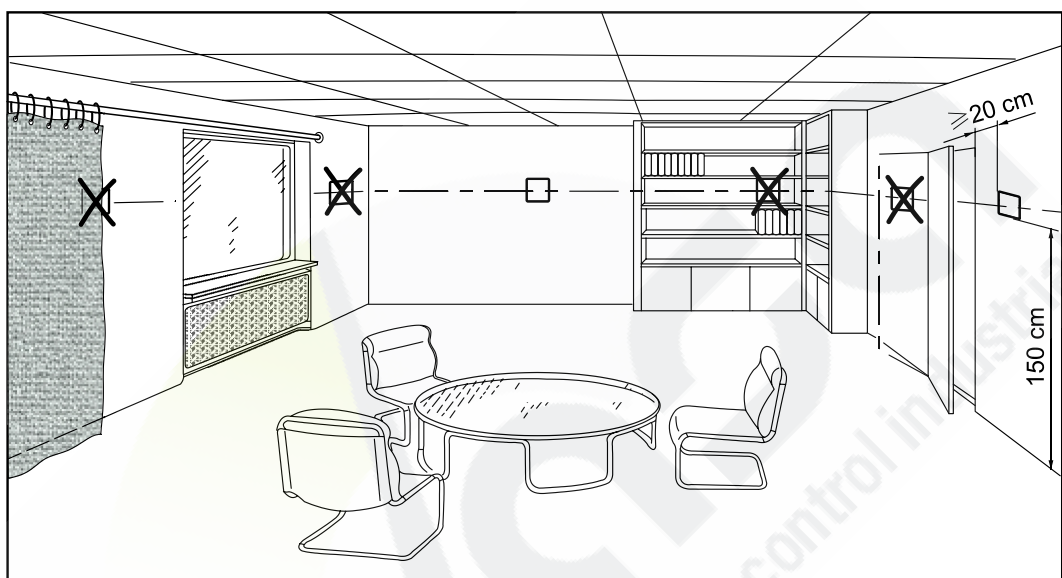
- The devices are suitable for wall mounting.
- Recommended height: 1.5 m above the floor.
- Do not mount the devices in recesses, shelves, behind curtains or doors, or above or near heat sources.
- Avoid direct solar radiation and drafts.
- Seal the conduit box or the installation tube if any, as air 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	A6V101035988
Installation	Mounting instructions	A6V10974421
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)

Sensor inputs	
Internal thermistor	10 kΩ ± 1% at 25 °C

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

Operational data		
PID control: Minimum period Minimum pulse length	Slow 4 min 12 min	Fast 2 min 6 min
Setpoint setting range	5…30 °C	
Factory setting comfort setpoint	20 °C	

Environmental conditions	
Resolution of settings and displays Setpoints Actual value displays	 0.5 °C 0.5 °C
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
Pollution degree	2
Degree of protection of housing	IP20
Environmental compatibility	The product environmental declaration (A6V101123358 *)) 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) RDH100RF/SE	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)

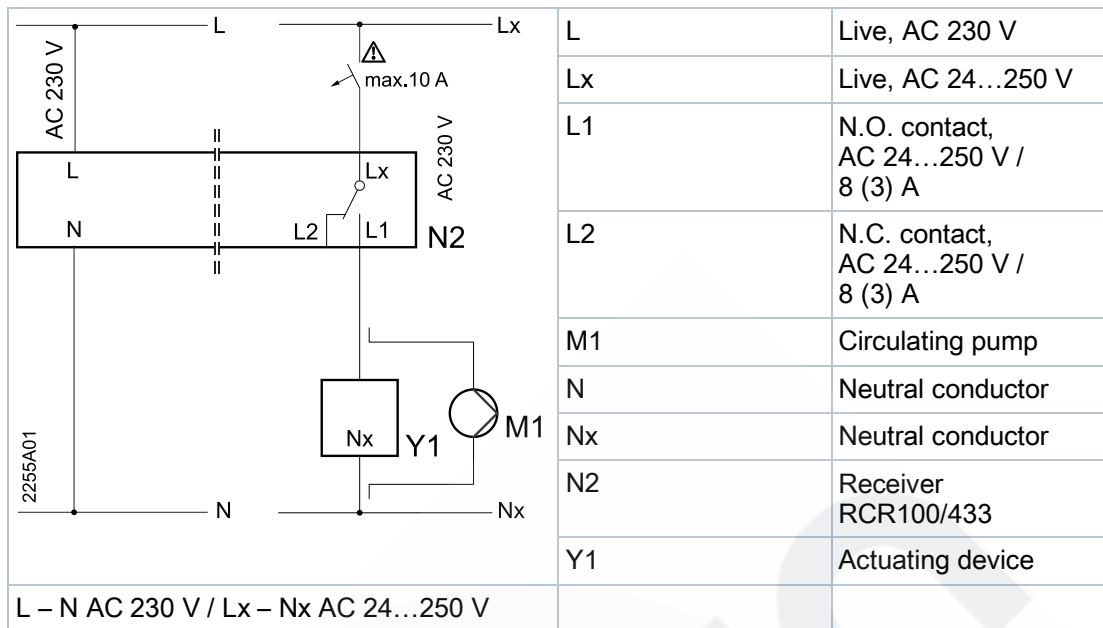|		
Relay contacts	Switching voltage	Max. AC 250 V; Min. AC 24 V
	Switching current	Max. 8 A res., 3 A ind.
	At AC 250 V	Min. 10 mA
Contact life at AC 250 V	At 5 A res.	1×10^5 cycles (guide value)
Insulating strength	Between relay contacts and coil	AC 5,000 V
	Between relay contacts (same pole)	AC 1,000 V

Electrical connections

Connections terminals (via baseplate)	Screw terminals
For solid wires	2 x 1.5 mm^2
For stranded wires	1 x 2.5 mm^2 (min. 0.5 mm^2)

Environmental conditions

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

Application examples

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
Wireless room temperature controller with receiver control of a heating circuit pump (precontrol by manual mixing valve)	

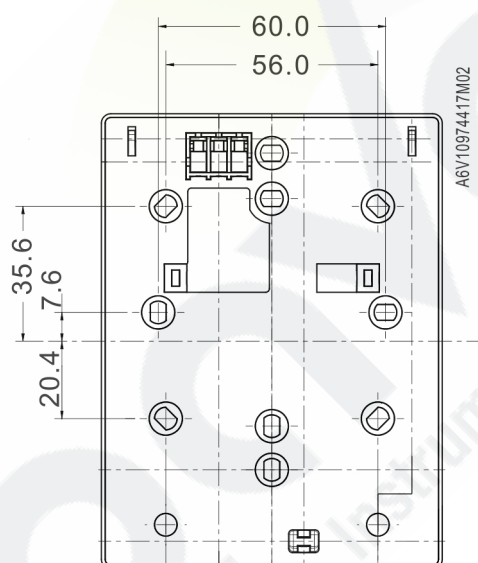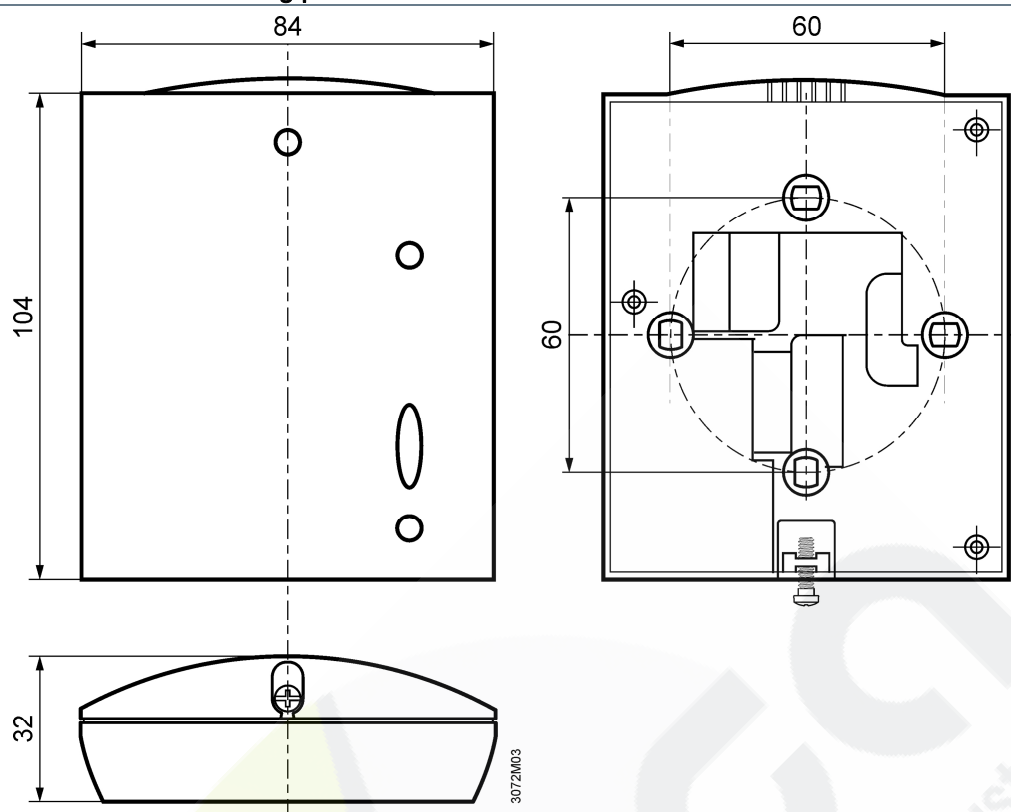| F1	Thermal reset limit thermostat	N1	Room temperature controller RDH100RF (Transmitter)
F2	Safety limit thermostat	N2	RCR100/433 (Receiver)
M1	Circulating pump	Y1	3-port valve with manual adjustment
Y2	Magnetic valve		

Dimensions

[mm]

Room temperature controller

23.9
26.9
120
90

A6V10974417M01
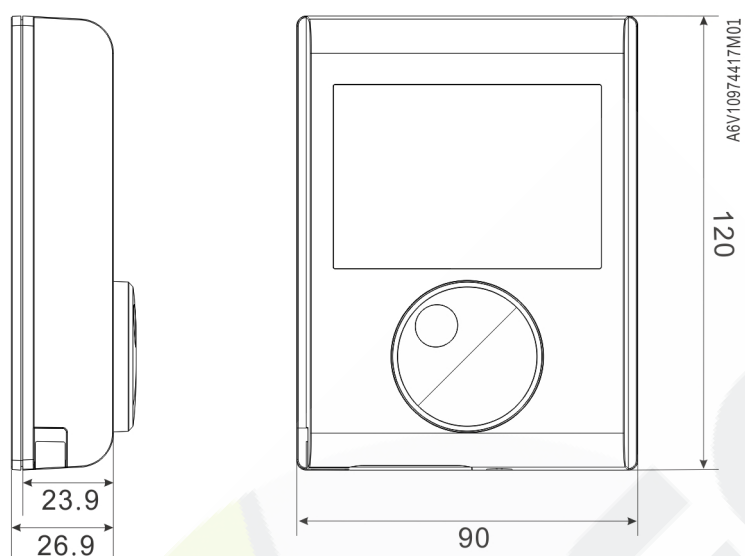
Room temperature controller mounting plate

60.0
56.0
35.6
7.6
20.4

A6V10974417M02

Room temperature receiver with mounting plate

3072M03

Product history

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