

Programmable Room Thermostat, wired, heating only with independent DHW control, battery powered

RDL121



For heating system, such as gas boilers, heat pumps and zone valves, with independent on/off domestic hot water (DHW) control

- Room temperature control
- Independent On/Auto/Off control of DHW
- 2-position (On/Off), TPI control for heating
- One voltage-free relay output for heating
- One voltage-free relay output for DHW
- One multifunctional input for external temperature sensors, open window detection, etc.
- 7-day scheduler (heating + DHW)
- E-paper display with touch keypad
- Adjustable commissioning and control parameters
- Configuration via local HMI or Siemens Quick Config mobile application
- Operating voltage:
 - Room thermostat RDL121 Batteries, 2 × AA

Use

The RDL121 thermostat controls the room temperature in heating system and provides an independent on/off relay output for domestic hot water (DHW) control.

Typical applications:

- Apartments
- Single family homes

Controlled equipment:

- 2-position valve actuators
- Gas or oil boilers
- Heat pumps (non-reversible)
- Circulating pumps
- DHW equipment (charging pumps, DHW zone valves, etc.)

Suitable for applications:

- Radiator heating
- Radiant floor heating
- Radiant ceiling heating

Functions

- Room temperature control via built-in or external sensor
- 2-position control with On/Off or TPI (Time Proportional Integral) behavior
- Operating mode selection: COMFORT, ECO, Auto, and Protection (frost protection enabled)
- Frost protection (enabled at 5 °C or disabled)
- Independent DHW control with ON/OFF/AUTO mode selector
- 7-day scheduler with up to 8 switching points per day (heating + DHW)
- Current setpoint override, effective until the next scheduled switching point
- Yearly clock with automatic Daylight-Saving Time (DST) adjustment
- Absence mode with selectable start/end dates and dedicated temperature setpoint
- Limitation of minimum and maximum setpoint adjustments for heating
- Radiant panel temperature maximum limitation for heating
- Optimum start/stop
- Valve/pump kick function to prevent seizure or sticking
- One multifunctional input X1, configurable for:
 - Room temperature external sensor (AI)
 - Radiant panel temperature (AI)
 - Window contact (DI)
 - Setback to energy saving (DI)
- Sensor type X1 configurable: NTC3K or NTC10K
- Position digital input X1, configurable: Normally open or normally closed
- Displays current room temperature or setpoint
- Screen saver on/off
- Key touch sound on/off
- E-paper display with configurable dark mode
- User interface available in 20 selectable languages
- Keypad lock configurable: full lock, menu lock, or expert parameter access restriction; unlockable via long button press or PIN code
- Configurable commissioning and control parameters, which are retained after power cycles
- Configuration wizard after the first power-up or after factory reset

- Parameters and scheduler settings configurable via Siemens Quick Config mobile application using NFC
- NFC communication on/off
- Reloading factory settings via parameter
- Factory reset button to restore default settings

NOTICE	
!	• When using the valve/pump kick function, ensure that the controlled device is a pump or valve.

Technical design

- The thermostat consists of:
 - Control unit with display, buttons and room temperature sensor
 - Mounting plate with screw terminals

For more information about the buttons and display, see document [A6V15035312](#).

Type summary

Type	Stock number	Description
RDL121	S55770-T529	Room Thermostat Programmable, domestic hot water, heating only, AA batteries

Inbox item

Items	Quantity
Thermostat with mounting plate	1
Battery	2
Mounting instructions	1

Equipment combinations

Sensors

Type of units		Product no.	Data sheet *)
Cable temperature sensor for under floor applications, cable length 4 m NTC (3 kΩ at 25 °C)		QAP1030/UFH	N1854
Cable temperature sensor, cable length 2.5 m NTC (3 kΩ at 25 °C)		QAH11.1	N1840

Type of units		Product no.	Data sheet ^{*)}
Cable temperature sensor, PVC cable length 2 m NTC (10 kΩ at 25 °C)		QAP1030.200	N1831
Room temperature sensor NTC (3 kΩ at 25 °C)		QAA32	N1747
Cable temperature sensor, PVC cable length 2 m NTC (10 kΩ at 25 °C)		QAA2030	N1745

Actuators

Type of units		Product no.	Data sheet ^{*)}
Electrothermal actuator for radiator valves, NC, AC 230 V operating voltage, 2-position control signal		STA321..	A6V14028280
Electrothermal actuator for radiator valves, NO, AC 230 V operating voltage, 2-position control signal		STP321..	A6V14028280
Electromotoric actuators for zone valves, AC 230 V operating voltage, 2-position control signal		SFA21/18	N4863
Electromotoric rotary actuator with spring-return for ball valves, AC 230 V, 2-position, 2 Nm, 30/15 s		GQD321.9A	N4659
Electromotoric rotary actuator for ball valves, non-spring return, AC 230 V, 2-position, 5 Nm, 150 s		GDB341.9E	A6V10636150
Electrothermal actuator for radiator valves, NC, AC/DC 24 V operating voltage, 2-position control signal		STA121..	A6V14028280
Electrothermal actuator for radiator valves, NO, AC/DC 24 V operating voltage, 2-position control signal		STP121..	A6V14028280
Electromotoric actuators for zone valves, AC 24 V operating voltage, 2-position control signal		SFA71/18	N4863
Electromotoric rotary actuator with spring-return for ball valves, AC/DC 24 V, 2-position, 2 Nm, 30/15 s		GQD121.9A	N4659
Electromotoric rotary actuator for ball valves, non-spring return, AC/DC 24 V, 2-position, 5 Nm, 150 s		GDB141.9E	A6V10636150

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

Product documentation

Document title	Document number
Mounting instructions	A6V16530386
Operation manual	A6V15035312
CE declaration	A5W02940089A
RCM declaration	A5W02940094A
UKCA declaration	A5W02940099A
Product environmental declaration	A5W02988193A

Related documents such as environmental declarations, CE declarations, etc., can also be downloaded at the following Internet address:

www.siemens.com/bt/download

Notes

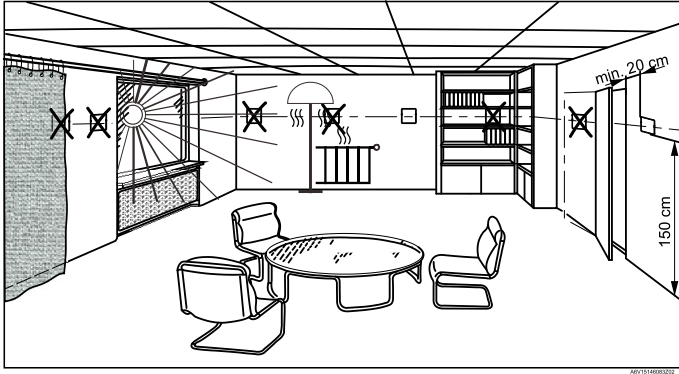
Safety

 CAUTION	
	National safety regulations Failure to comply with national safety regulations may result in personal injury and property damage. • Observe national regulations and comply with the appropriate safety regulations.

 WARNING	
	Explosion due to fire or short-circuit, even with discharged batteries Risk of injury due to flying parts • Prevent the batteries from coming in contact with water. • Do not recharge batteries. • Do not damage or disassemble batteries. • Do not heat batteries over 60 °C.

 WARNING	
	Electrolyte leakage Chemical burns • Use suitable protective gloves to grasp damaged batteries. • Immediately rinse eyes with plenty of water if electrolyte comes into contact with eyes. Consult a doctor.

Mounting



Mounting

- RDL121 is suitable for wall mounting.
- Recommended height for wall mounting: 1.50 m above the floor.
- Do not mount or place the thermostat in recesses, behind curtains or doors, or above or near heat sources.
- Do not mount or place the thermostat near large metal structures or other construction elements with fine metal meshes such as special glass or special concrete.
- Do not mount or place the thermostat where it is exposed to dripping water, moisture or excessive heat.
- Do not mount or place the thermostat on metal surfaces.
- Avoid direct sunlight.
- Seal the conduit box or the installation tube if any, as air currents can affect sensor readings.
- Observe allowable ambient conditions.
- Keep the thermostat out of the reach of people (including children) whose physical, sensory or mental capabilities, knowledge, or experience prevents them from using the thermostat safely without supervision or instructions.

Wiring

- Make sure wiring, protection, and earthing comply with local regulations.
- Disconnect from power supply before mounting/dismantling and wiring.
- Correctly size the cables to the thermostat and valve actuators.
- Use only valve actuators rated for AC 24...230 V.
- Use external upstream protection with a maximum 10 A circuit breaker in the supply lines under all circumstances.

Installation

⚠ WARNING	
	No internal line protection for supply lines to external consumers Risk of fire and injury due to short circuits • Adapt the line diameters as per local regulations to the rated value of the installed fuse.

⚠ WARNING



Risk of explosion

Personal injury and property damage

- Install the battery at the correct polarity (+/-) using the illustration in the battery compartment.
- Install only the correct battery types according to the indication in the battery compartment.
- In case of a leakage, avoid contact with skin, eyes and mucous membranes.
- Remove leaking batteries from the battery compartment with a cloth.

Observe the following:

- Batteries must be undamaged.
- Do not mix new and used batteries.

Commissioning

Commissioning

- The thermostat is ready for use after batteries are inserted.
- You can configure the thermostat locally via the user interface, or remotely via the Quick Config mobile application even when the device is still in the packaging box and unpowered.
Note: Your phone must support the NFC functionality to use Quick Config for configuration.

Operation

See the [operation manual](#) for details.

Maintenance

Apart from replacing batteries when the local screen displays a low battery notification, the thermostat is maintenance-free. See the [operation manual](#) for information about replacing batteries.

Open Source Software (OSS)

These devices use Open Source Software (OSS). All Open Source Software components used in the product (including copyrights and licensing agreement) are available at <http://siemens.com/bt/download>.

Software license overview

OSS document ID	Device
A6V13482237	RDL121

Disposal



This symbol or any other national label indicates that the product, its packaging, and, where applicable, any batteries may not be disposed of as domestic waste. Delete all personal data and dispose of the item(s) at separate collection and recycling facilities in accordance with local and national regulations.

For additional details, refer to [Siemens information on disposal](#).

Warranty

Technical data on specific applications are only valid together with Siemens products listed under "Equipment combinations". Siemens rejects any and all warranties in the event that third-party products are used.

Technical data

Power supply	
Operating voltage	DC 3 V (2 × 1.5 V AA alkaline batteries)
Battery life	2 years (with NANFU, EXCELL-LR6)

Switching capacity of relay	
Voltage	AC 24...230 V
Qx rating min., max. resistive (inductive)	8 mA...5 (2) A
Contact life at AC 230 V At 5 A res.	Guided value: 1 × 10 ⁵ cycles

⚠ WARNING	
	No internal fuse. External upstream protection with a maximum 10 A circuit breaker in the supply lines is required under all circumstances.

External protection	
Circuit breaker	Maximum 10 A Type B, C or D

Multifunctional input	
X1-M	
Temperature sensor input	
Type	NTC 3k
Temperature range	-20...70 °C
Temperature sensor input	
Type	NTC 10k
Temperature range	-20...70 °C

Multifunctional input	
Digital input	
Operating action	Selectable (NO/NC)
Contact sensing	Dry contact
Insulation against mains power	SELV
Input response time	Up to 60 s

Functional data	
Frost protection	5 °C (factory setting) or disabled
Setpoint setting range	5...40 °C
Built-in room temperature sensor	
Accuracy at 25 °C	< ±0.5 K
Temperature calibration range	±5 K
Resolution of settings and displays	
Setpoints	0.5 °C
Room temperature	0.5 °C

Ambient conditions and protection classification	
Degree of protection of housing as per EN 60529	IP30
Protection against electrical shock as per EN 60730-1	Class II
Climatic ambient conditions	
Transport and storage (in packaging)	• Temperature: -25...+70 °C • Ambient humidity: < 95 % r.h. (non-condensing)
Operation (in dry locations having no temperature or humidity control)	• Temperature: 0...50 °C • Ambient humidity: < 95 % r.h. (non-condensing)
Mechanical ambient conditions	
Transport (in transport packaging) as per IEC/EN 60721-3-2	Class 2M4
Operation as per IEC/EN 60721-3-3	Class 3M11
Atmospheric pressure	Min. 700 hPa (equal to max. 3000 m above sea level)

Standards, directives and approvals

EU conformity (CE)	See EU declaration of conformity A5W02940089A*.
RCM conformity	See RCM declaration of conformity A5W02940094A*.
UK conformity (UKCA)	See UK declaration of conformity A5W02940099A*.
Environmental compatibility	The product environmental declaration (A5W02988193A*) contains data on environmentally compatible product design and assessments (RoHS compliance, materials composition, packaging, environmental benefit, disposal).

* The documents can be downloaded from www.siemens.com/bt/download.

Eco design and labeling directives

Based on EU Regulation 813/2013 (Eco design directive) and 811/2013 (Labelling directive) concerning space heaters and combination heaters, the following classes apply:

Application with On/Off operation of a heater	Class I	value 1 %
TPI (PWM) room thermostat, for use with On/Off output heaters	Class IV	value 2 %

General

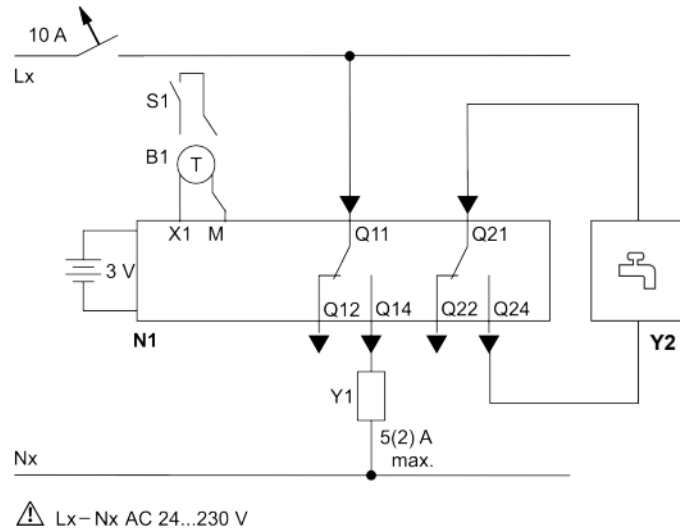
Display language	cs, da, de, et, en, es, fr, it, lv, lt, hu, nl, pl, pt, ro, sk, fi, sv, tr, el
Housing color	RAL9016
Thermostat with box, user document and accessory	281 g
Thermostat	132 g

Electrical connections

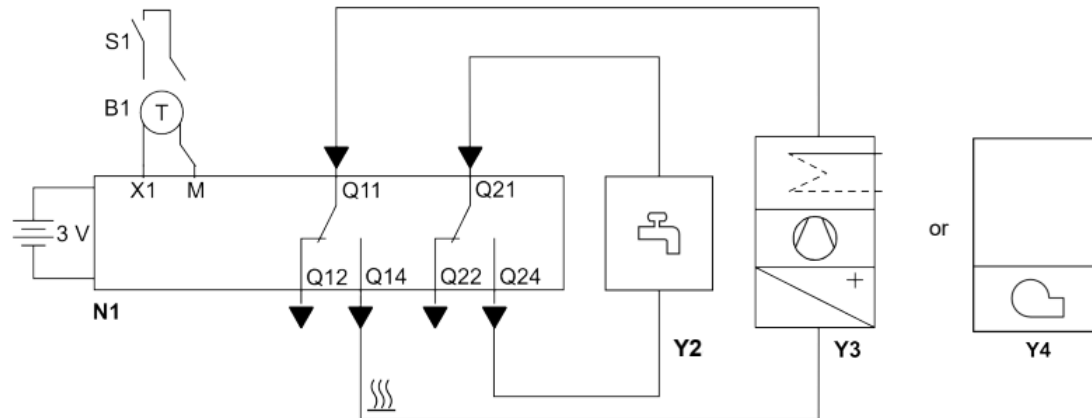
Connection terminals	Screw terminals
For solid wires or prepared stranded wires	1 × 0.5...2.5 mm ² or 2 × 0.5...1.5 mm ²

Connection diagrams

On/off load with DHW



Heat pump (non-reversible) or boiler with DHW



Lx, Nx	Live, AC 24...230 V	Y3	Heat pump
N1	Wired room thermostat RDL121	Y4	Boiler
Y1	Heating load AC 24...230 V	B1	External temperature sensor
Y2	DHW boiler	S1	Potential-free switch

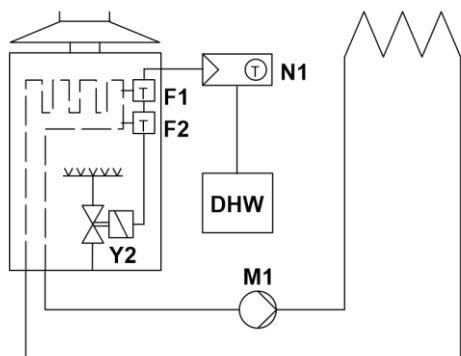
⚠ WARNING



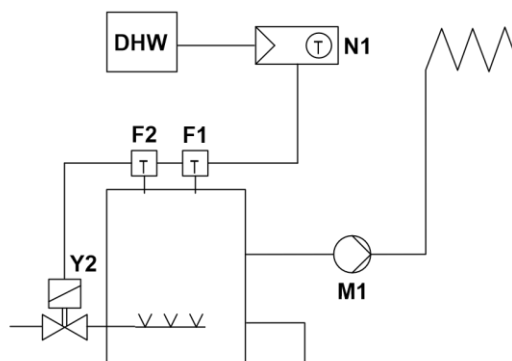
- Current greater than 5 (2) A is not allowed to pass through RDL121. An additional relay or contactor must be installed on high-current devices.
- Do not mix SELV/PELV with mains power on Q11 and Q21.

Application examples

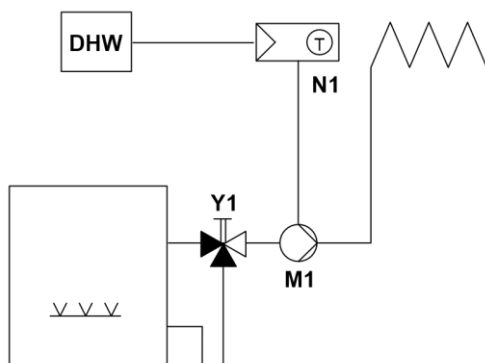
Room thermostat with direct control of a gas-fired wall-hung boiler and independent control of DHW



Room thermostat with direct control of a gas-fired floor-standing boiler and independent control of DHW



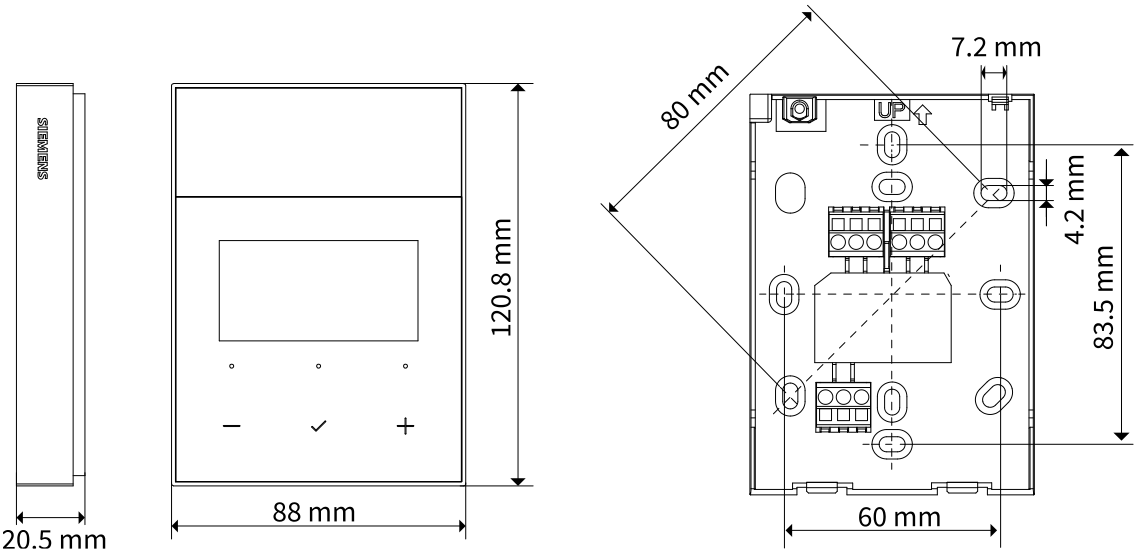
Room thermostat with direct control of a circulating pump (precontrol by manual mixing valve) and independent control of DHW



F1 Thermal reset limit thermostat
F2 Safety limit thermostat
M1 Circulating pump
N1 RDL121 room thermostat

Y1 Mixing 3-port valve with manual adjustment
Y2 Magnetic valve
DHW DHW heating equipment

Dimensions



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