SIEMENS

Heating Controller   RVL479

for use with a partner unit

Communicating heating controller for use in residential and non-residential buildings. For exclusive use on the bus together with heating controllers as a partner unit. 1 programmed plant type. Operating voltage AC 230 V

Use

- Types of buildings:
  - Multi-family houses
  - Single-family houses
  - Non-residential buildings
- Types of plants:
  - Heating zones
  - Combined plants consisting of several heating zones
- Types of heating systems:
  - Radiator, convector, underfloor and ceiling heating systems, radiating panels

Functions

Heating zone control   Weather-dependent flow temperature control through control of the mixing valve in a heating zone

Operating modes	Auto ⏲	**Automatic mode**
		Automatic changeover from NORMAL to REDUCED temperature, and vice versa, according to the weekly program, automatic changeover to holiday mode, demand-dependent control of heating system (ECO function)
	☾	**Setback mode**
		Continuous heating to the REDUCED temperature, with ECO function
	☼	**Comfort mode**
		Continuous heating to the NORMAL temperature, no ECO function
	⌂	**Protection**
	⩗	**Manual operation**
		No control, circulating pumps in service

Frost protection is ensured in all operating modes.

Other functions

- Optimization functions
- Protective functions
- Remote control
- Commissioning aids
- Communication functions

Ordering

When ordering, please give type reference **RVL479**.
The controller is supplied complete with Operating Instructions and Installation Instructions.
Sensors and, if required, room unit, actuator and valve must be ordered as separate items.

Product documentation

Type of documentation	Document no.	Part no.
Basic Documentation	P2540	–
Installation Instructions (languages: de, en, fr, nl, sv, fi, da, it, es)	G2543	74 319 0620 0
Operating Instructions (languages: de, en, fr, nl, sv, fi, da, it, es)	B2540	74 319 0616 0
CE Declaration of Conformity	T2540	–
Environmental Declaration	E2540	–

Equipment combinations

Partner unit

Suitable partner units are:
- RVL480 (Data sheet N2540)
- RVL481 (Data sheet N2541)
- RVL482 (Data sheet N2542)
- RVL470 (Data sheet N2522)
- RVL471 (Data sheet N2524)
- RVL472 (Data sheet N2526)

Suitable sensors

- Flow and return temperature: all sensors with sensing elements LG-Ni 1000, for example:
  - Strap-on temperature sensor QAD22
  - Immersion temperature sensors QAE212… and QAP21.3
- Room temperature:
  - Room unit QAW50
  - Room unit QAW70
  - Room temperature sensor QAA24

- Outside temperature:
  - Outside sensor QAC22 (LG-Ni 1000 sensing element)
  - Outside sensor QAC32 (NTC 575 sensing element)

Suitable actuators

All electromotoric and electrohydraulic actuators for 3-position control made by Siemens can be used.
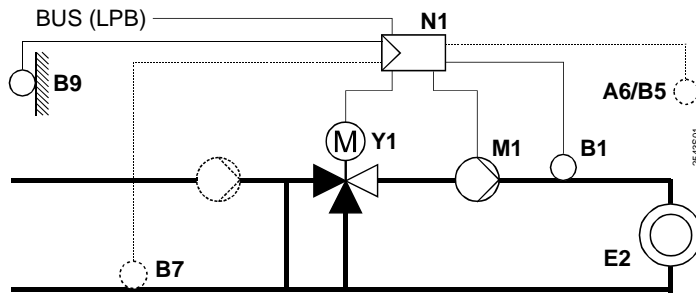
Communication

The controller is capable of communicating with:
- All units with LPB capability made by Siemens
- SYNERGYR OZW30 central unit (from software version 3.0)

Technical design

Plant type

The RVL479 has one plant type preprogrammed: "Heating circuit control with mixing group"

A6	Room unit
B1	Flow sensor
B5	Room sensor
B7	Return sensor
B9	Outside sensor

E2	Load (space)
LPB	Data bus
M1	Heating circuit pump
N1	Controller RVL479
Y1	Mixing valve heating circuit

Working principle

Connection to a partner unit is mandatory. The partner unit is defined by assigning an address. Each partner unit can be operated with only one RVL479.

Enduser settings

With weather-dependent control, the flow temperature is controlled in function of the prevailing outside temperature via the heating curve. Its basic setting is made with the little bar on the front of the unit or on an operating line. The room temperature can be readjusted with the knob.
In addition, following can be entered by the enduser:
- Room temperature set values for NORMAL heating, REDUCED heating and frost protection/holidays
- Weekly switching program and a maximum of eight holiday periods per year
- Operating mode
- Time of day and date

Temperature acquisition

- Flow temperature: with LG-Ni 1000 sensor
- Outside temperature: with LG-Ni 1000 or NTC 575 sensor; the RVL479 identifies the type of sensor used; with interlinked controllers, it is also possible to define the source of the outside temperature
- Room temperature: with a room temperature sensor or a room unit or both (averaging)

Space heating	• The room temperature is included in the control. It can be acquired with a sensor or simulated by a room model with an adjustable building time constant. When using a sensor, the effect on the control can be adjusted. It is also possible to limit the maximum room temperature
	• The heating is switched on and off depending on demand (ECO function). It is switched off when the amount of heat stored by the building mass is sufficient to maintain the required room temperature. In that case, the controller takes into account the development of the room temperature and the building's heat storage capacity. It is possible to set two heating limits, one for NORMAL heating and one for REDUCED heating
	• The control is optimized. Switching on, heating up and shutting down are controlled such that, during occupancy times, the required room temperature is always maintained. At the end of each occupancy period, the heating will be shut down (circulating pump) until the room temperature setpoint for the non-occupancy time is reached (quick setback, can be disabled). During heating up, the room temperature setpoint can be boosted (boost heating). It is possible to set maximum limits for the heating up time and for early shutdown

3-position control

3-position control operates as weather-dependent or load-dependent flow temperature control. P-band and integral action time are adjustable. The flow temperature is controlled via the regulating unit (control or slipper valve).

Minimum and maximum limitation of the flow temperature as well as maximum limitation of the rate of setpoint rise are adjustable.

Minimum limitation of return temperature

Minimum limitation of the return temperature acts prevents flue gas condensation.

Locking functions

On the software side, all settings can be locked to prevent unauthorized readjustments.

Time switch

• The RVL479 has one seven-day time switch for entering the daily occupancy times. Each day can accommodate three occupancy times, whereby each weekday may have different occupancy times

• For entering a maximum of eight holiday periods, the RVL479 is equipped with a yearly time switch featuring automatic summer- / wintertime changeover

Remote control

• Changeover of operating mode with the QAW50 room unit

• Overriding the major controller functions with the QAW70 room unit

• Selection of another (programmable) operating mode with an external switch

• Preselection of a fixed flow temperature set value with an external switch. Type of set value (fixed or minimum) and flow temperature can be selected

Note on QAW70

The day of the week is set automatically with the date by the controller; an adjustment from the room unit QAW70 is not possible.

Communication

To provide this function, connection of the RVL479 to its partner unit via the data bus is mandatory. Each RVL479 requires one partner unit.

Communication with other units also takes place via the data bus and facilitates:

• Signaling of heat demand to the heat source

• Exchange of locking and enforced signals

• Exchange of measured values such as outside temperature, return temperature, flow temperature and of clock signals

• Reception of heat demand signals from the SYNERGYR OZW30 central unit (from software version 3.0)

• Exchange of error messages

| **Error messages and** | • Error message in the event of sensor, data bus or room unit faults |
| **flow temperature alarm** | • Flow temperature alarm; adjustable is a period of time during which the flow temperature may stay outside the set limits; a fault message is given when the time has elapsed |

Other functions
- Display of parameters, actual values, operational statuses and fault messages
- Simulation of outside temperature
- Relay test; all relays can be controlled manually
- Sensor test; all measured values of the sensors can be displayed
- Testing the contacts connected to terminals H1–M and H2–M
- Outside temperature-dependent frost protection for the plant; a minimum flow temperature is maintained, its setpoint and the response threshold can be adjusted
- Pump overrun time to prevent buildup of heat
- Periodic pump run (pump kick) to prevent seizing of the pump in the summer
- Controller hours run meter

For more detailed information on communication with LPB, refer to the following documents:
- Data sheet Basic System Data LPB: N2030
- Data sheet LPB: N2032

Mechanical design
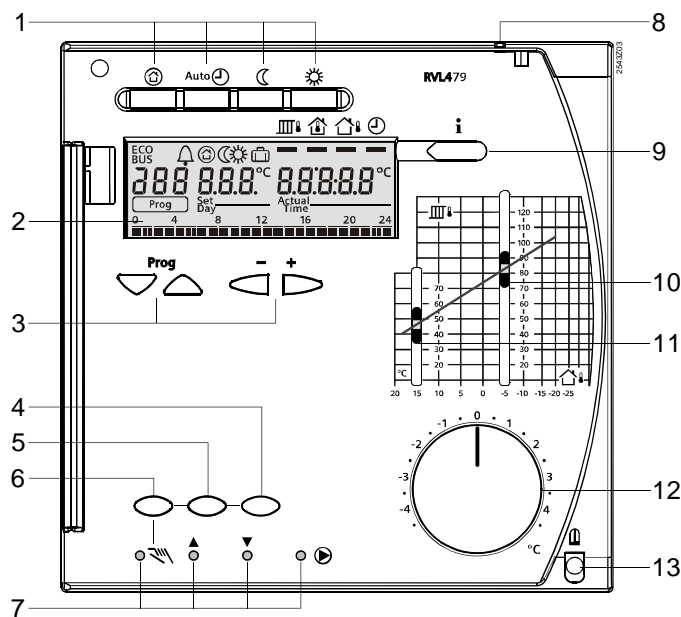
1 Operating mode buttons (selected button is lit)
2 Display (LCD)
3 Buttons for operating the display:
  Prog = selection of operating line
  – + = adjustment of displayed value
4 Button for "close heating circuit mixing valve" in manual operation
5 Button for "open heating circuit mixing valve" in manual operation
6 Button for manual operation
7 LEDs for:
  ⤧ Manual operation
  ▲ Heating circuit mixing valve opens
  ▼ Heating circuit mixing valve closes
  ⊕ Pump runs
8 Sealing facility in the cover
9 Info button for the display of actual values
10 Setting slider for flow temperature setpoint at an outside temperature of –5 °C
11 Setting slider for flow temperature setpoint at an outside temperature of 15 °C
12 Setting knob for readjustment of room temperature
13 Fixing screw with sealing facility

The RVL479 is comprised of controller insert, which accommodates the electronics, the power section, the output relays and – on the front – all operating elements, and the base, which carries the connection terminals. The operating elements are located behind a lockable transparent cover.

All values are read in the display (LCD) featuring background lighting.

The operating instructions can be inserted in the transparent cover.

The controller insert is secured to the base with two screws, one of which can be sealed. The cover can also be sealed.

The RVL479 can be fitted in 3 different ways:

- Wall mounting (on a wall, in the control panel, etc.)
- Rail mounting (on a top hat rail)
- Flush panel mounting (control panel door, etc.)

Analog operating elements

- Buttons for selecting the required operating mode
- Info button
- Direct adjustment of the heating curve with the help of the SIGMAGYR setting facility
- Knob for manual readjustment of the room temperature
- 3 buttons for manual operation and manual positioning commands

Digital operating elements

The entry or readjustment of all setting parameters, activation of optional functions and reading of actual values and statuses is made according to the operating line principle. An operating line with an associated number is assigned to each parameter, each actual value and each function that can be selected.

One pair of buttons is used to select an operating line and one pair to readjust the display.

Notes

Engineering

- The wires of the measuring circuits carry extra low voltage, those to the actuator and the pump carry AC 24…230 V
- The local electrical regulations must be complied with
- Sensor cables must not be run parallel to mains carrying cables for loads such as actuator, pump, burner, etc. (insulation class II EN 60730)

Commissioning

- The data bus address must be entered
- The partner unit must be available on the data bus

Disposal

In terms of disposal, the RVL479 are classified as electronic scrap conforming to the European Directive 2002/96/EG (WEEE) and must not be disposed of as domestic waste. The relevant national legal requirements must be complied with and the units must be disposed of through the relevant channels. Local and currently valid legislation must be observed.

Warranty

When using the RVL479 together with third-party devices not specifically mentioned, correct functioning must be ensured by the user. In that case, Siemens will assume no responsibility for service and warranty.

Technical Data

Power supply	Rated operating voltage	AC 230 V ($\pm$10 %)
	Frequency	50 Hz
	Power consumption (no external load)	max. 7 VA
	Supply line fusing	10 A
Output relays	Switching capacity	AC 24…230 V
	Switching current Y1, Y2, Q1	AC 0.02…2 (2) A
	Rated current of ignition transformer	max. 1 A (max. 30 s)
	Switch-on current of ignition transformer	max. 10 A (max. 10 ms)
Permissible cable lengths to sensors and room unit	Copper cable 0.6 mm $\varnothing$	20 m
	Copper cable 0.5 mm^2	50 m
	Copper cable 1.0 mm^2	80 m
	Copper cable 1.5 mm^2	120 m
Connection terminals	Screw terminals for wire section	up to 2.5 mm^2
Communication by wire	Bus protocol/type	LPB
	Bus loading characteristic E	6
Backup	Backup of controller clock	12 h
Standards	$C\!\epsilon$-conformance to	
	EMC directive	2004/108/EC
	– Immunity	– EN 61000-6-1 / -2
	– Emissions	– EN 61000-6-3 / -4
	Low voltage directive	2006/95/EC
	– Safety	– EN 60730-1 / EN 60730-2-9
Protective data	Safety class	II to EN 60730
	Degree of protection (cover closed)	IP42 to EN 60529
	Degree of contamination	2 to EN 60730
Dimensions		refer to "Dimensions"
Weight	Unit (net)	1.1 kg
Colors	Controller insert	Light grey RAL 7035
	Terminal base	Pigeon blue RAL 5014

Environmental conditions		*Operation* *EN 60721-3-3*	*Transport* *EN 60721-3-2*	*Storage* *EN 60721-3-1*
	Climatic conditions	class 3K5	class 2K3	class 1K3
	Temperature	0…+50 °C	–25…+70 °C	–20…+65 °C
	Humidity	<95 % r.h. (non-condensing)	<95 % r.h.	<95 % r.h. (non-condensing)
	Mechanical conditions	class 3M2	class 2M2	class 1M2
	Use above sea level	max. 3000 m above sea level		

Connection diagrams

Low voltage side
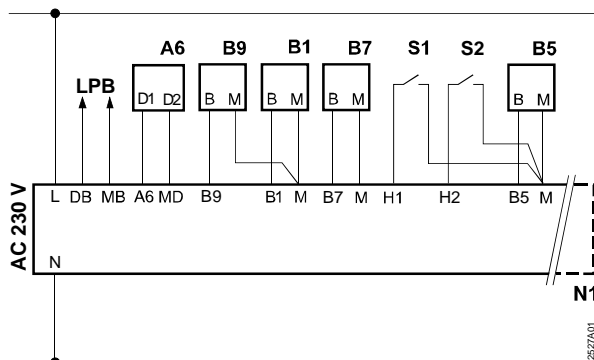
Mains voltage side
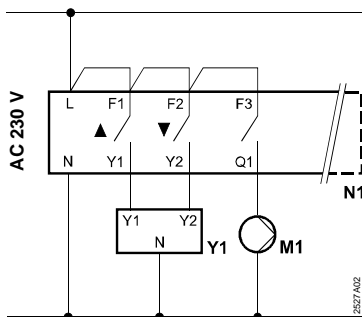
A6	Room unit	M1	Heating circuit pump
B1	Flow sensor	N1	Controller RVL479
B5	Room sensor	S1	Remote control operating mode
B7	Return sensor	S2	Remote control flow temperature setpoint
B9	Outside sensor	Y1	Actuator heating circuit
LPB	Data bus		

Dimensions

Dimensions in mm