SIEMENS

2474

Heating Controller RVP300

- **Multifunctional heating controller for use in residential and non-residential buildings; suitable for weather-dependent flow temperature control of heating zones with or without room temperature compensation**
- **With communication capability**
- **2 programmed plant types with automatic assignment of the functions required for each type of plant**
- **Digital setting of the heating curve, analog room temperature readjustment, operating line principle for all other parameters gitale**
- **Multifunctional relay**
- **Operating voltage AC 230 V, CE conformance**

Use

- Types of buildings:
  - Multi-family houses
  - Single-family houses
  - Smaller non-residential buildings
- Types of plants:
  - Heating zones equipped with their own boilers
  - Heating zones with district heat connection
  - Combined plants consisting of several heating zones and heat generation
- Types of heating systems:
  - Radiator, convector, underfloor and ceiling heating systems, radiating panels

CE1N2474E
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Siemens Building Technologies
Landis & Staefa Division

Functions

Heating zone control

- Weather-dependent flow temperature control through control of the seat or slipper valve in a heating zone
- Weather-dependent flow temperature control through control of the two port valve in the primary return of a heating zone with district heat connection (transfer station)

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

⏻ **Standby**

Frost protection is ensured in all operating modes.
The controller can be switched to manual operation.

Other functions

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

Ordering

When ordering, please give type reference **RVP300**. Sensors and, if required, room unit, actuator and valve must be ordered as separate items.

Equipment combinations

Suitable sensors and room units

- Flow and return temperature: all sensors with LG-Ni 1000 Ω at 0 °C, for example:
  - Clamp-on temperature sensor QAD22
  - Immersion temperature sensors QAE22... and QAP21.3
- Room temperature:
  - Room unit QAW50
  - Room unit QAW70
  - Room temperature sensor QAA24
- Outside temperature:
  - Outside sensor QAC22 (Ni sensing element)
  - Outside sensor QAC32 (NTC sensing element)

Suitable actuators

The following actuators made by Landis & Staefa can be used:

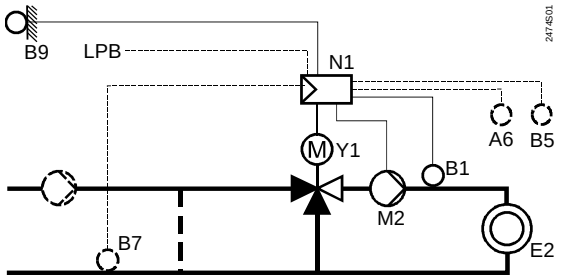
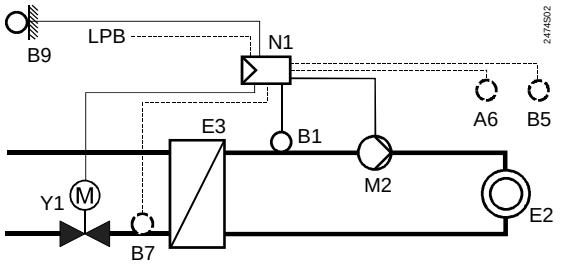
- for three-position control, running time 0.5...14.5 minutes
- for two-position control
- operating voltage AC 24 V ... AC 230 V

Communication

The controller is capable of communicating with:

- All units with LPB capability made by Landis & Staefa
- SYNERGYR OZW30 central unit (from software version 3.0)

Plant types

Description, plant type	Picture
1–0 Space heating with mixing zone, three-position control or two-position control acting on seat or slipper valve	
2–0 Space heating with district heat, three-position control or two-position control acting on two-port valve	

A6 Room unit QAW50 or QAW70
B1 Flow sensor
B5 Room sensor
B7 Return sensor
B9 Outside sensor
E2 Load (room)
E3 Heat exchanger
LPB Data bus
M2 Circulating pump
N1 Controller RVP300
Y1 Seat or slipper valve

Working principle

The RVP300 offers 2 different plant types that are ready programmed in the controller. When commissioning the system, the respective plant type must be entered. This activates all functions that are required for the selected plant type. The standard settings are practice-oriented.
All functions not required for the selected plant type will not be shown and are disabled.

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 on two operating lines. The room temperature can be readjusted with the knob.
In addition, the following can be entered by the enduser:

- Room temperature set values for normal heating, reduced heating and frost protection/holidays
- One weekly switching program and one holiday period per year
- Operating mode
- Time of day and date

Temperature acquisition

- Outside temperature: with Ni or NTC sensor; the RVP300 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 set value for the non-occupancy time is reached (quick setback, can be disabled). During heating up, the room temperature set value can be boosted (boost heating). It is possible to set maximum limits for the heating up time and for early shutdown.

Control

Heating zone

The heating zone control operates as weather-dependent flow temperature control with three-position or two-position control. The flow temperature is controlled via the regulating unit (seat or slipper valve).
Minimum and maximum limitation of the flow temperature as well as maximum limitation of the rate of set value rise are adjustable.
Minimum limitation of the return temperature helps prevent flue gas condensation.

District heat

The district heat control operates as weather-dependent control of the secondary flow temperature via the valve in the primary return.
is weather-dependent
Maximum limitations act on the primary return temperature, whereby the following selections can be made: type of compensation (local outside sensor or bus signal), slope of limit curve, and start of compensation.
The integral action time of the limit functions is adjustable.

Locking functions

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

Time switch

- The RVP300 has 1 weekly 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 holiday period, the RVP300 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 (H1)

Communication

Communication with other devices is effected via the data bus and allows:

- Signalling of heat demand to the heat generator
- Exchange of locking and enforced signals
- Exchange of measured values such as outside temperature and return temperature as well as clock signals
- Communication with other devices
- Reception of heat demand from the SYNERGYR OZW30 central unit (from software version 3.0)
- Exchange of error messages

Error messages

- Error message in the event of sensor faults
- Error message in the event of data bus or room unit faults

Other functions

- Multifunctional relay. Choice of functions:
  - Alarm contact in the event of error messages
  - On / off according to heat demand
- Display of parameters, actual values, operational statuses and error messages
- Simulation of outside temperature

- Relay test; all relays can be controlled manually
- Sensor test; all measured values of the sensors can be displayed
- Outside temperature-dependent frost protection for the plant; a minimum flow temperature is maintained, its set value 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 technical features, functions and communication with LPB, please refer to the following pieces of documentation:
- Basic Documentation RVP3...: CE1P2474E
- Data sheet “Basic System Data LPB“: CE1N2030E
- Data sheet “LPB“: CE1N2032E

Mechanical design

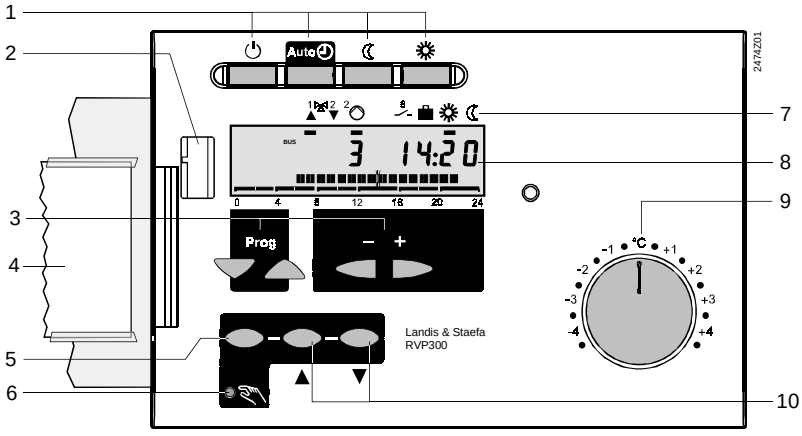
The RVP300 is comprised of controller insert, which accommodates the electronics, the power section, the output relays and – on the front – all operating elements, and the base, which carries the connection terminals. The operating elements are located behind a cover.
The operating instructions can be inserted in the cover.
The controller insert is secured to the base with two screws.
The RVP300 can be fitted in three different ways:
- Wall mounting (on a wall, in the control panel, etc.)
- Rail mounting (on a standard DIN mounting rail)
- Flush panel mounting (control panel door, etc.)

Analog operating elements

- Buttons for selecting the required operating mode
- Knob for manual readjustment of the room temperature
- Three 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.



1 Operating mode buttons (selected button is lit)
2 Service plug
3 Buttons for operating the display:
Prog = selection of operating line
– + = readjustment of displayed value
4 Operating instructions
5 Button for manual operation
6 LED for manual operation
7 State display (outputs, temperature levels, holiday)
8 Display (LCD)
9 Knob for room temperature readjustments
10 Buttons for «Open valve / Close valve» in manual operation

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 should not be run parallel to mains carrying cables for loads such as actuator, pump, burner, etc.

Commissioning

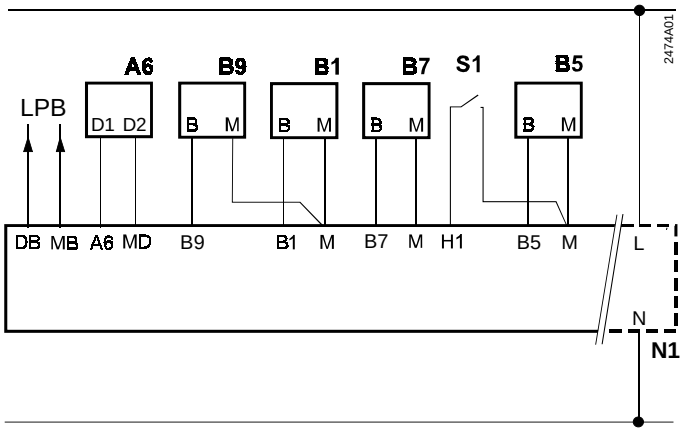
The plant type must be selected.
When used in district heat plants, the district heat parameters can be locked.
Each controller is supplied complete with installation and commissioning instructions.

Technical data

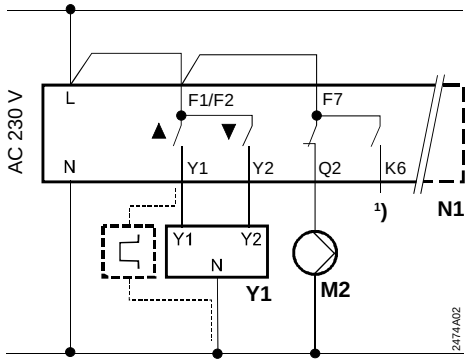
General data	Rated operating voltage	AC 230 V +10/–15 %
	Frequency	50 Hz
	Power consumption	8 VA
	Perm. ambient temperature	
	Transport and storage	–25...+65 °C
	Operation	0...50 °C
	Bus loading characteristic E (LPB)	6
	Backup of time switch	12 h min.
	Weight (net)	0,8 kg
Standards	Product safety	
	Automatic electrical controls for household and similar use	EN 60730-1
	Particular requirements for temperature sensing controls	EN 60730-2-9
	Degree of protection	IP40 to EN 60529
	Safety class (if correctly installed)	II to EN 60730
	CE–conformance to	
	EMC directive	89/336/EWG
	Low voltage directive	73/23/EWG
	EMC directive	
	Electromagnetic immunity	EN 50082-2
	Electromagnetic emissions	EN 50081-1
Output relays	Rated voltage	AC 230 V
	Rated current	2 (2) A
	Contact current at AC 24...90 V	0,1...2 A, cos φ >0,6
	Contact current at AC 90...250 V	0,02...2 A, cos φ >0,6
	Max. switch-on current (fuse)	10 A max.
Perm. cable lengths	to the sensors and external contacts	
	Copper cable 0.6 mm dia.	20 m
	Copper cable 1,0 mm^2	80 m
	Copper cable 1,5 mm^2	120 m
	to the room unit	
	Copper cable 0,25 mm^2	25 m
	Copper cable from 0,5 mm^2	50 m

Connection diagrams

Low voltage side

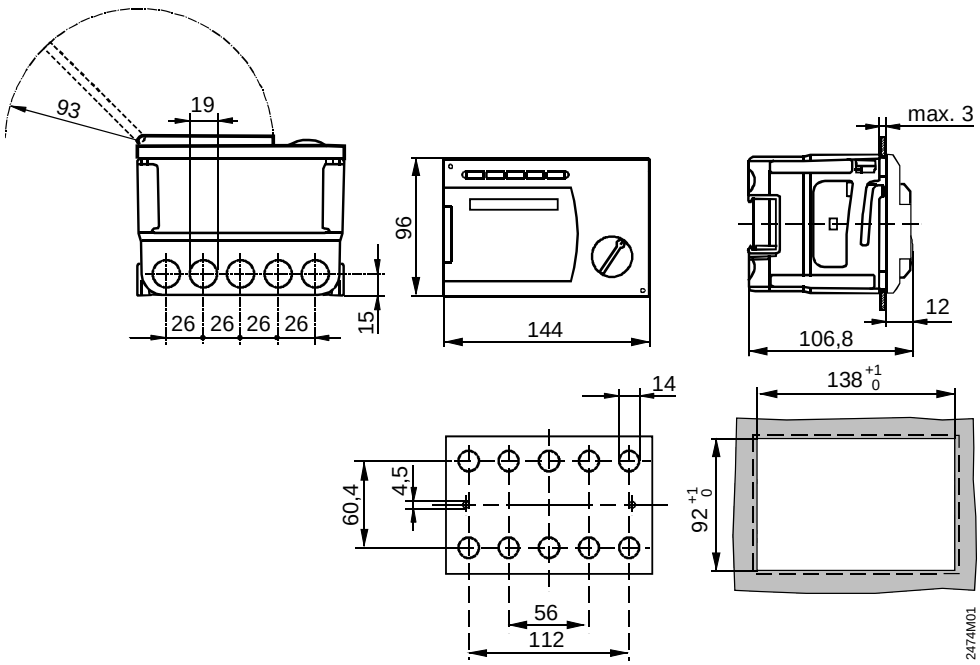


Mains voltage side



A6	Room unit (QAW50 or QAW70)	M2	Heating circuit pump
B1	Flow sensor	N1	Controller RVP300
B5	Room sensor	S1	Remote control operating mode
B7	Return sensor	Y1	Actuator of heating circuit
B9	Outside sensor	1)	Multifunctional output
LPB	Data bus		

Dimensions



Dimensions in mm