GIRA

Operating instructions

RTC 230 V~ with relay output, 1-way switch and control light
Art. no. 2475 00

Product image non-binding

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1 Safety instructions

To avoid potential damage, read and follow the following instructions:

Electrical devices may be mounted and connected only by electrically skilled persons.

Danger of electric shock. Always disconnect before carrying out work on the device or load. In so doing, take all the circuit breakers into account, which support dangerous voltages to the device and or load.

Instructions are part of the product, so keep them in a safe place.

2 Device components

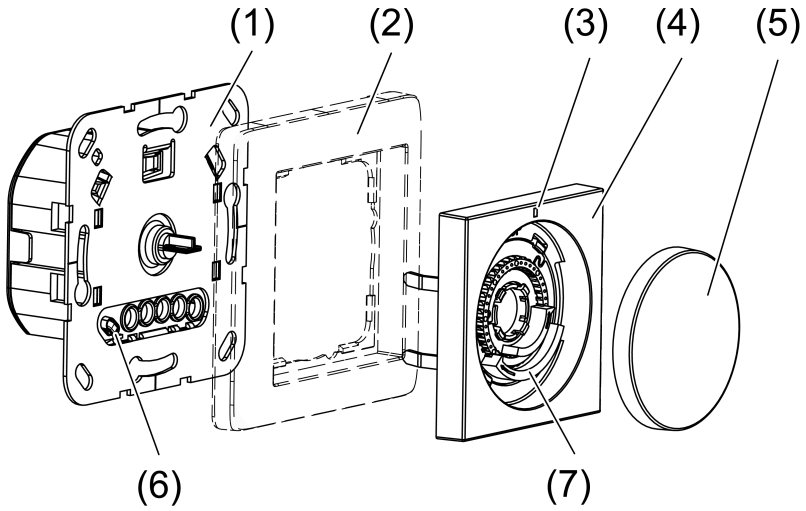

Figure 1: Device components

(1) Room temperature controller insert
(2) Cover frame
(3) Status LED
(4) Central plate
(5) Control knob
(6) Internal temperature sensor
(7) Adjustment rings for temperature limit

During renovation work, the temperature sensor (6) must not become dirty or be painted over.

3 Intended use

- Electronic room temperature controller for controlling electric heating appliances (e.g. electric radiators, infrared heaters or electric/water-based underfloor heating systems) or valve drives for 230 V~
- Control of the room temperature in closed rooms
- Mounting in appliance box with dimensions according to DIN 49073

4 Product characteristics

- Manually setting a comfort temperature
- Manually switching off the temperature control
- Adjustable temperature limits
- Universal input for activation of reduction temperature (ECO) via central clock or switching to comfort temperature upon detected presence, adjustable
- Input for activating the cooling mode via central control
- Internal temperature sensor
- Frost protection function
- Controller output working method: pulse width modulation (PWM) or 2-point, adjustable
- Offset adjustment (correction value for measured temperature)

5 Functional description

Lowering mode (ECO)

In many areas of the building it makes sense for the temperature to be set to a lower temperature at certain times rather than to heat permanently to the comfort temperature.
In lowering mode, the setpoint temperature is lowered by 4 °C by connecting the universal input ◷ with 230 V. This should be controlled by a central clock.
In cooling mode, the connecting of the universal input ◷ is ignored.

Presence operation

As an alternative to lowering mode, in which the room temperature is lowered, presence mode can be activated, in which the temperature is only regulated to the set comfort temperature when people are present. If no presence is detected, the temperature is set to the lowering temperature.
When presence mode is activated, a presence detector or a presence switch is used to switch from lowering mode to comfort mode.
This is done by connecting the universal input ◷ with 230 V.
In cooling mode, the connecting of the universal input ◷ is ignored.

Cooling mode

Modern heat pump systems often also provide the option of cooling rooms. In cooling mode, it is possible to change the cooling temperature using the control knob.
Switching between heating and cooling mode is done via the control knob or by connecting the input terminal “C” with 230 V.

Offset

This function can be used to adjust the position of the control knob so that it corresponds to the room temperature. Thus, the indication of the temperature via the control button is comparable in different rooms. An adaptation of up to +/- 3 °C is possible.

Control adjustment

Depending on the heating system, the control behaviour can be adjusted.
2-point control (factory settings): The output remains switched on until the selected setpoint temperature has been exceeded by 0.5 °C. The output will not be switched on again until the setpoint value is undercut by 0.5 °C.
Pulse width modulated control: The output is not permanently actuated, but for a time period (pulse width) it depends on the difference between target and actual temperature. This method brings the actual temperature gradually closer to the setpoint temperature.

6 Operation

Brief overview

Function	Control knob	Status LED	LED colour
Change room temperature	... turn right or left	maximum 2 minutes	Red = heating mode Blue = cooling mode Orange = frost protection (10 seconds)
Display operating mode	... press briefly	10 seconds	Red = heating mode Blue = cooling mode Orange = frost protection

Increasing or reducing the room temperature

- Turn the control knob to the right or left.

  If the setpoint temperature is not reached, the LED lights up for a maximum of 2 minutes in the colour of the current operating mode.

  In the middle position, the device regulates to approx. 20 °C setpoint temperature. The room temperature reached depends on the installation location of the device and the ambient conditions. The lowest setpoint temperature is approx. 5 °C and the highest setpoint temperature is approx. 30 °C Bild.

Indication of the current operating mode

- Press the control knob briefly.

  The LED lights up for 10 seconds in the colour of the current operating mode. **Orange** = frost protection, **blue** = cooling mode, **red** = heating mode.

Switching off the temperature control

- Press the control knob for longer than 2 seconds until the LED lights up **orange**.

  The device has switched to frost protection. The frost protection prevents the temperature from falling below 5 °C.
  Each time the control knob is turned, the LED lights up **orange** for 10 seconds.

- To activate the temperature control, press the control knob again for more than 2 seconds.

  The device switches back to the previous operating mode. The LED lights up for 10 seconds.
  Red = heating mode, **blue** = cooling mode.

Manual switching between heating and cooling mode

If 230 V is present at the input terminal C, manual switching to heating mode is not possible.

- Press the control knob for longer than 4 seconds until the LED flashes **red** in heating mode or flashes **blue** in cooling mode.
- Briefly press the control knob again to change the operating mode.
- Press the control knob for longer than three seconds until the LED lights up continuously to accept the displayed operating mode.
  After 10 seconds without actuation, the displayed operating mode is automatically adopted.

  Red = heating mode, **blue** = cooling mode.

7 Information for electrically skilled persons

Selecting a suitable installation location

- Recommended installation height: 1.50 m on interior walls.
- Do not mount the device near sources of interference, such as ovens, refrigerators, draughts (e.g. next to the door) or direct sunlight. This affects the temperature measurement of the internal temperature sensor.
- Do not mount the device within shelf walls or behind curtains and similar covers.
- Do not use the device in multiple combinations with heat-generating devices such as dimmers.

DANGER!

Electric shock when live parts are touched.

Electric shocks can be fatal.

Always disconnect before carrying out work on the device or load. To do so, switch off all corresponding circuit breakers, secure them against being switched on again and check that there is no voltage. Cover up any adjacent live parts.

Connecting and fitting the device

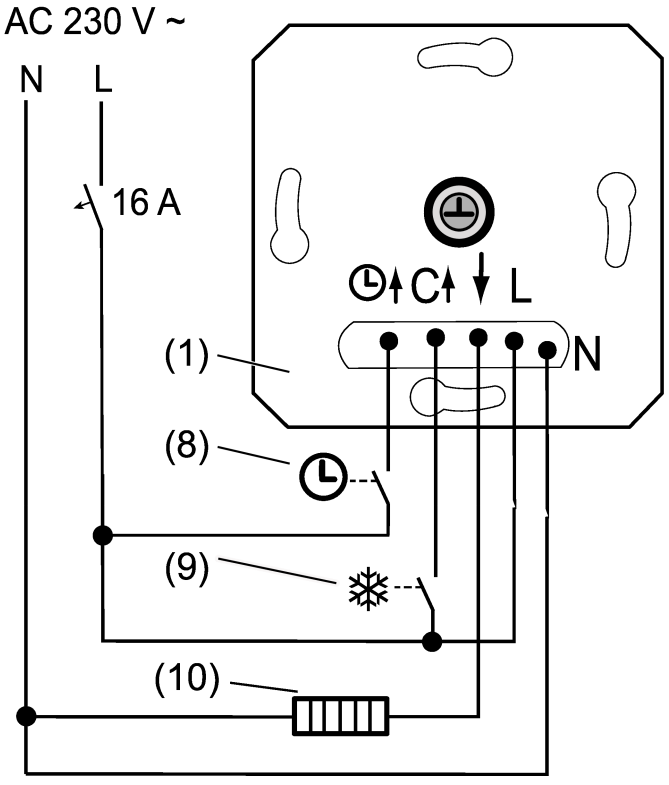

Figure 2: Connection example of the insert

- Connect the electrical heating device (10) or cooling device to the insert (1) according to the connection diagram (see figure 2). Observe conductor cross-sections (technical data)

i When using with underfloor heating, suitable measures must be taken on the underfloor heating at the site of installation in order to prevent overheating.

- Optionally, connect the input ◷ via a switching contact (8) of a central clock (lowering mode) or connect the switching contact of a presence detector or switch (presence mode).
  If 230 V is applied to the input, the setpoint temperature is reduced in lowering mode and raised to the comfort temperature in presence mode.
- Optionally, connect the cooling input **C** via a switching contact of the heating system (9).
  If 230 V is applied to input C, the cooling mode is active. If 230 V is switched off, the device automatically switches to heating mode.
  After each switchover, the LED lights up for 10 seconds in the colour of the current operating mode.
- Fit device in appliance box; device connection terminals must be at the bottom.
- Fit cover frame (2), central plate (4) and control knob (5).
- Switch on mains voltage.

  The device calibrates itself within the first 90 minutes. Control deviations are possible during this period.

i When testing the function of the device, make sure that the output is activated with a delay of up to 30 seconds.

7.1 Commissioning

Setting the offset

This function can be used to adjust the position of the control knob so that it corresponds to the room temperature. Thus, the indication of the temperature via the control button is comparable in different rooms. An adaptation of up to +/- 3 °C is possible.

This setting is only possible if the lower temperature limit has not been raised by the blue setting ring (see Setting the temperature limits).

Precondition: The desired setpoint temperature has been reached in the room.

- Turn the control knob to 5 °C (left stop) and press twice in quick succession (double-click).

  The LED flashes quickly, alternately **red** and **green**.

- Turn the control knob to the desired position for the current room temperature and press it for longer than three seconds.

  The control knob position is saved and the LED lights up **green** for 5 seconds.

  If the LED flashes **red** for 5 seconds, the change was greater than +/- 3 °C and the adaptation is discarded.

Control mode and evaluation of universal input

Default setting:

– 2-point feedback control
– Universal input ◷: Lowering mode

Changing the settings:

- Press the control knob for longer than 20 seconds.

  The LED flashes **green/blue** for 2-point control and **green** for PWM control.

- Press the control knob briefly: The control behaviour is changed.
- Press the control knob for longer than three seconds: The control behaviour is saved.

  Adjustment of the universal input:
  The LED flashes **red** in lowering mode and **red/blue** in presence mode.

- Press the control knob briefly: The evaluation of the universal input is switched.
- Press the control knob for longer than three seconds: The evaluation of the universal input is saved and the setting mode is exited.

After approx. 2 minutes without any operation, the setting mode is exited without saving.

Setting the temperature limits

The room temperature controller has a setting range of 5 ... 30 °C. The adjustment rings on the central plate can be used to limit the temperature setting range.

The specified temperature values may deviate from the actual room temperature depending on the installation location.

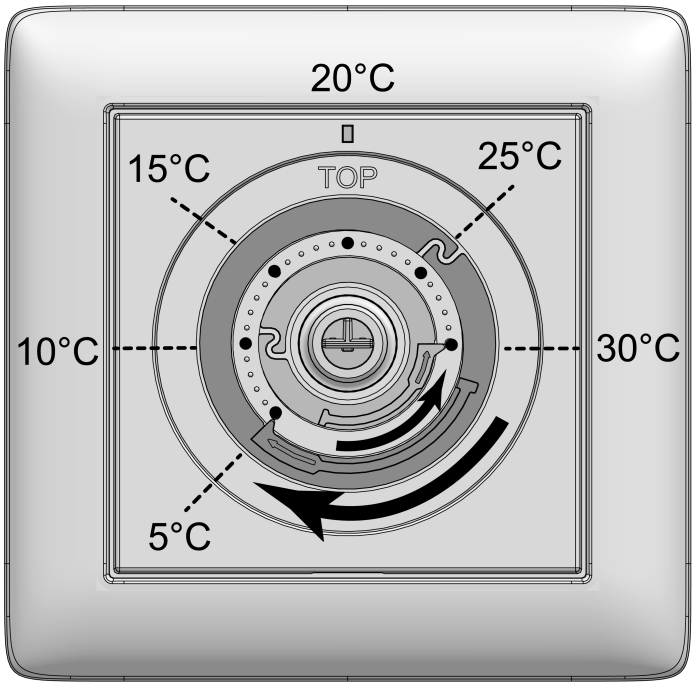

Figure 3: Adjustment rings for temperature limit

- Pull the control knob (5) off the central plate (4) so that the adjustment rings (7) are visible (see figure 3). The temperature values shown in the picture are for orientation purposes.
- Turn the large blue adjustment ring clockwise to the desired minimum temperature. Each notch corresponds to a change of about 1 °C.
- Turn the small red adjustment ring anticlockwise to the desired maximum temperature.
- Replace the control knob, observing the coding of the control knob and rotary axle.

8 Technical data

Rated voltage	AC 230 V ~
Mains frequency	50 / 60 Hz
Switching current, heating	16 A
Switching current, cooling	1 A
Connected load, heating device	
Ohmic load	3680 W
Valve drives deenergised closed (NC)	1 … 10
Standby power	Max. 0.15 W
Ambient temperature	-5 ... +45 °C
Storage/transport temperature	-25 ... +70 °C
Cable length inputs	Max. 100 m
Controller class (EU 811/2013)	IV
Contribution to energy efficiency	2%
Installation depth	approx. 26 mm
Clampable conductor cross-section (see figure 4)	

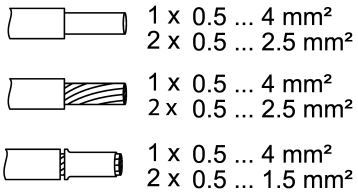

Figure 4: Clampable conductor cross-section

Data according to DIN EN 60730-1	
Type of action	1.Y
Degree of soiling	2
Measured surge voltage	4000 V

Information according to ErP 2009/125/EC

Electronic room temperature controller	Yes
Power consumption	
In standby mode	0.15 W
In idle state	0.15 W
In standby mode with information and status display	No
This controller fulfils the following control functions	TE(0/0/0/0/0/0/0/0)

8.1 Product information in accordance with the Ecodesign Directive (ErP 2009/125/EC)

Contact details: Gira Giersiepen GmbH & Co. KG, Dahlienstraße, 42477 Radevormwald, Germany			
Model identifier: RTC 230 V~ with relay output, 1-way switch and control light, 2475 00			
Specification	**Icon**	**Value**	**Unit**
Power consumption			
In the off state	P_0	-	W
In standby mode	P_{sm}	0.15	W
In idle state	P_{idle}	0.15	W
In networked standby mode	P_{nsm}	-	W
In standby mode with information or status display		No	
Type			
Single-stage heat output, no room temperature control		No	
Two or more manual levels, no room temperature control		No	
Room thermostat with mechanical thermostat		No	
Electronic room temperature controller		Yes	
Electronic room temperature controller with time-of-day control		No	
Electronic room temperature controller with weekday regulation		No	
Other control options			
Presence detection		No	
Detection of open windows		No	
Remote control option		No	
Adaptive control of the start of heating		No	
Operating time limit		No	
Black ball sensor		No	
Self-learning function		No	
Control accuracy		No	

Codes of the control functions

The format of the code is TC (f1/f2/f3/f4/f5/f6/f7/f8), where TC is the code for temperature control and f1 to f8 are the codes for the respective control functions, if available; otherwise "0" must be specified.

		(TC)*	Control functions							
			f1	f2	f3	f4	f5	f6	f7	f8
Type of temperature control	Single-stage heat output, no room temperature control	NC								
	Two or more manual levels, no room temperature control	TX								
	Room thermostat with mechanical thermostat	TM								
	Electronic room temperature controller	HP								
	Electronic room temperature controller with daytime control	TD								
	Electronic room thermostat with weekday control	TW								
Control functions	Presence detection		1							
	Detection of open windows			2						
	Remote control option				3					
	Adaptive control of the start of heating					4				
	Operating time limit						5			
	Black ball sensor							6		
	Self-learning function								7	
	Control accuracy with CA < 2 Kelvin and CSD < 2 Kelvin									8

* Temperature control code

9 Warranty

The warranty is provided by the specialist trade in accordance with statutory requirements. Please submit or send faulty devices postage paid together with a fault description to your responsible salesperson (specialist trade / installation company / electrical specialist trade). They will forward the devices to the Gira Service Center.

Gira
Giersiepen GmbH & Co. KG
Elektro-Installations-
Systeme

Industriegebiet Mermbach
Dahlienstraße
42477 Radevormwald

Postfach 12 20
42461 Radevormwald

Deutschland

Tel +49(0)21 95 - 602-0
Fax +49(0)21 95 - 602-191

www.gira.de
info@gira.de