RC-O

Room controllers with manual forced ventilation function

RC-O is a room controller from the Regio Mini series intended to control heating and cooling in a single zone.

RC-O is a room controller in the Regio series. The controller does not have a communication port.

Regio

Regio is an extensive range of controllers for control of heating and cooling.

The controllers are divided into three different series; Mini, Midi and Maxi. The Midi range consists of pre-programmed controllers with communication. Maxi consists of freely programmable controllers with communication. The Mini controller range, of which RC-O is a part, consists of pre-programmed, stand-alone controllers.

Applications

The Regio controllers are suitable for use in buildings requiring optimum comfort and reduced energy consumption, such as offices, schools, shopping centres, airports, hotels and hospitals.

Sensor

The controller has a built-in room temperature sensor. An external sensor for room temperature or change-over can also be connected (PT1000).

Actuators

RC-O can control 0...10 V DC valve actuators and/or 24 V AC thermal actuators.

Short facts about RC-O

- **Easy installation**
- **Built-in function for forced ventilation**
- **On/Off or 0...10 V control**
- **Input for occupancy detector, window contact, condensation detector and change-over function**

Easy to install

The modular design, featuring a separate bottom plate for wiring, makes the entire Regio range of controllers easy to install and commission. The bottom plate can be put into place before the electronics are installed. Mounting takes place directly on the wall or on an electrical connection box.

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Control mode

RC-O has the control mode Heating and Cooling in sequence. A change-over function can also be activated, see below.

Operating modes

There are four different operating modes: *Unoccupied*, *Stand-by*, *Occupied* and *Bypass*. *Occupied is the preset operating mode. It can be set to Stand-by* via a DIP switch. The operating modes can be activated via an occupancy detector or the occupancy button.

Unoccupied: The room in which the controller is placed is not used for a extended time period, such as during holidays or long weekends. Both heating and cooling are kept within a temperature interval with configurable min/max temperatures (FS min = 15°C, max = 30°C).

Stand-by: The room is in an energy saving mode and is not used at the moment. This can, for instance, be during nights, weekends and evenings. The controller stands by to change operating mode to *Occupied* if presence is detected. Both heating and cooling are disconnected within a temperature interval surrounding the current setpoint (FS heating setpoint = -3°C, cooling setpoint = +3°C).

Occupied: The room is in use and a comfort mode is activated. The controller maintains the temperature around a heating setpoint (22°C) and a cooling setpoint (24°C).

Bypass: The temperature in the room is controlled in the same way as in the *Occupied* operating mode. The output for forced ventilation is also active. This operating mode is useful for instance in conference rooms, where many people are present at the same time for a certain period of time.

When *Bypass* has been activated by pressing the occupancy button, the controller will automatically return to its preset operating mode (*Occupied* or *Stand-by*) after 2 hours have elapsed. If an occupancy detector is used, the controller will automatically return to its preset operating mode if no occupancy is detected for 10 minutes.

Occupancy detector

By connecting an occupancy detector, RC-O can switch between the *Bypass* operating mode and its preset operating mode (*Occupied* or *Stand-by*). This way, the temperature is controlled from requirement, making it possible to save energy while maintaining the temperature at a comfortable level.

The occupancy button

Pressing the occupancy button for less than 5 seconds when the controller is in its preset operating mode will cause it to change to operating mode *Bypass*. Pressing the button for less than 5 seconds when the controller is in *Bypass* mode will change its operating mode to the preset operating mode

If the occupancy button is pressed for more than 5 seconds will change the controller's operating mode to *Unoccupied* regardless of its current operating mode. A short press when in Shutdown mode will return the controller to *Bypass*.

Forced ventilation

Regio has a built-in function for forced ventilation. A closing of the digital occupancy detector input will set the controller to *Bypass* mode and activate the output for forced ventilation (DO1). This can for instance be used to open a damper. This function is terminated when the settable forcing interval (10 min.) has run out. The function can also be activated at the press of a button.

Change-over function

RC-O has an input for change-over that automatically resets output UO1 to operate with heating or cooling function. A PT1000 type sensor can be connected and mounted so that it monitors the supply temperature of the heating coil.

The output function is set to Heating when the fluid temperature exceeds 22°C and to Cooling when the temperature falls below 18°C.

To ensure satisfactory functioning using a sensor, the system must have continuous primary circuit circulation. When the change-over function is not used, the input must be left disconnected.

Setpoint adjustment

When in mode *Occupied* , the controller operates using a heating setpoint (FS = 22°C) or a cooling setpoint (FS = 24°C) that can be changed locally using DIP switches.

Setpoint can be adjusted up and down (FS = ±3°C) using the knob on the front of the controller. Switching between heating and cooling setpoints takes place automatically in the controller depending on heating or cooling requirements.

Built-in safety functions

RC-O has an input for a condensation detector to detect moisture accumulation. If detected, the cooling circuit will be stopped. The controller also has frost protection which is active when a window is open and the controller is in mode *Off*. This prevents frost damages by ensuring that the room temperature does not drop below 8°C.
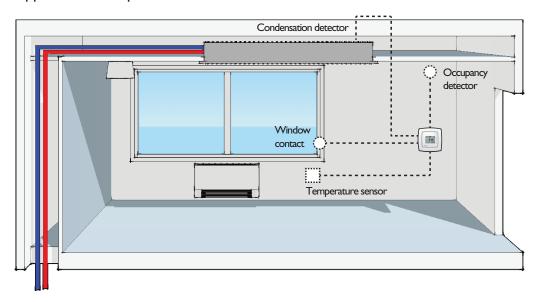
Indication

The controller has a LED shaped as a thermometer on its front. A red light indicates heating control is active and a blue light indicates active cooling control. If the LED is switched off, it means neither heating or cooling control is active.

Actuator exercise

All actuators are exercised, regardless of type or model. The controller performs this exercise at an interval of 23 hours. An opening signal is sent to the actuator for as long time as its configured run time. A closing signal is then sent for an equal amount of time, after which the exercise is completed.

Application example

Technical data

Supply voltage	18...30 V AC, 50...60 Hz
Power consumption	2.5 VA
Ambient temperature	0...50°C
Storage temperature	-20...+70°C
Ambient humidity	Max 90% RH
Protection class	IP20
Built-in temperature sensor	NTC type, range 0...50°C, accuracy ±0.5°C at 15...30°C
Material, casing	Polycarbonate, PC
Weight	110 g
Colour	Signal white RAL 9003

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This product carries the CE mark.

For more information, see www.regincontrols.com.

Inputs

External room sensor	PT1000 sensor, 0…50°C. Suitable sensors are Regin's TG-R5/PT1000, TG-UH/PT1000 and TG-A1/PT1000.
Change-over	PT1000 sensor, 0…100°C. Suitable sensor is Regin's TG-A1/PT1000.
Presence detector	Closing, potential-free contact. Suitable occupancy detector is Regin's IR24-P.
Condensation detector alt. window contact	Regin's condensation detector KG-A/1 resp. potential-free contact

Outputs

Forced ventilation	24 V AC actuator, max 0.5 A
Valve actuators alt. thermal actuators	2 outputs
Valve actuators	0…10 V DC, max. 5 mA
Termal actuator	24 V AC, max. 2.0 A
Output	Heating or cooling
Actuator exercise	23 hours interval
Terminal blocks	Lift type for max cable cross-section 2.1 mm^2

Basic heating setpoint, set via DIP switches

The ON-position is marked on the DIP switch. The cooling setpoint is 2°C higher.

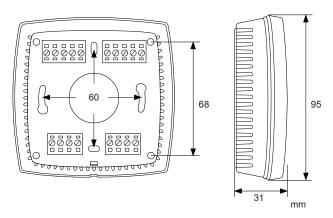| Basic setpoint, heating (°C)	SW1	SW2
20	OFF	OFF
22 (FS)	OFF	ON
24	ON	OFF
26	ON	ON

Other DIP switches

	ON	OFF	Comment
SW3	Stand-by	Occupied (FS)	Preset operating mode
SW4	DI, window switch. Closed contact indicates closed window.	CI, Regin's condensation detector, KG-A/1 (FS).	Function terminal 33, DI2/CI.
SW5	Digital output for 24 V AC thermal actuator.	Analogue output for 0...10 V DC valve actuator (FS).	Function terminal 23, UO1.
SW6	Digital output for 24 V AC thermal actuator.	Analogue output for 0...10 V DC valve actuator (FS).	Function terminal 24, UO2.
SW7	External, PT1000-sensor	Internal NTC-sensor (FS)	Temperature sensor

Wiring

Terminal	Designation	Function
10	G	Supply voltage 24 V AC
11	G0	Supply voltage 0 V
12	DO1	Output for forced ventilation
13-14		No function
20	GDO	24 V AC out common for DO
21	G0	0 V common for UO (when using 0...10 V actuators)
22		No function
23	UO1	Output for 0...10 V valve actuator alt. thermal actuator. Heating or Cooling via change-over.
24	UO2	Output for 0...10 V valve actuator alt. thermal actuator, cooling.
30	AI1	Input for an external sensor
31	UI1	Input for change-over sensor
32	DI1	Input for occupancy detector
33	DI2/CI	Input for Regin's condensation detector KG-A/1 alt. window contact
40	+C	24 V DC out common for DI
41	AGnd	Analogue ground, reference for AI and UI (with analogue and digital function)
42-43		No function

Dimensions

Product documentation

The product documentation is available for download from Regin's website, www.regincontrols.com.

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