



RCP100 / RCP100T / RCP100L

Freely programmable controllers with communication

RCP100, RCP100T and RCP100L are freely programmable controllers from the Regio Maxi series intended to control heating and cooling in a zone control system.

The RCP100... controllers are part of the Regio Maxi series. Since they have communication, they can be integrated into larger or centralized SCADA systems, e.g. EXOscada, if required. The controllers can be configured via the free software Regio tool® and freely programmed via EXOdesigner. They can be connected to Regio room units (RU-units) containing a built-in temperature sensor.

Applications

The Regio Maxi controllers are suitable in buildings where you want optimum comfort and low energy consumption, for example offices, schools, shopping centres, airports, hotels, hospitals etc.

See application examples on page 4.

Easy to install



The modular design with a separate bottom plate for wiring makes the unit easy to install and commission. The bottom plate can be put into place before the electronics are installed.

The controller is mounted above a false

ceiling, on a junction box plate, or on a DIN-rail. The form factor of the casing is EURO norm, which makes it fit into a standard EURO norm cabinet.

Quick facts about RCP100...

- Communication via RS485 (Modbus or EXOline), TCP/IP (RCP100T) or LonWorks (RCP100L)
- Fast configuration via Regio tool®
- Simple installation
- On/Off or three-point control
- Input for occupancy detector, window contact, condensation detector and change-over function

Actuators

RCP100, RCP100T and RCP100L can control 24 V AC three-point actuators and/or 24 V AC thermal actuators.

Flexibility with communication

All Regio Maxi controllers can be configured for a particular application using the cost-free configuration tool Regio tool®. They can also be integrated into a central SCADA-system via RS485 (EXOline or Modbus) using EXOdesigner. Read more on page 3.



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Control modes

RCP 100, RCP100T and RCP100L can be configured for different control modes, depending on requirements:

- Heating
- Heating or cooling via the change-over function
- Heating/Heating
- Heating/Cooling
- Heating/Cooling with VAV-control and forced supply air function
- Heating/Cooling with VAV-control
- Cooling
- Cooling/Cooling

Special functions

Actuator exercise

All actuators are exercised. An opening signal is sent to the actuator for as long time as the run time has been configured. Then a closing signal is sent for as long time and the exercise is finished.

You can configure if the actuators should be exercised, which day you want the exercise to take place, or if it should take place every day. You can also configure at what time during the day the exercise should occur.

Change-over function

RCP100, RCP100T and RCP100L have an input for change-over that automatically resets the configured heating output to operate with heating or cooling function. The input can be connected to sensors of type PT1000 and have the sensor mounted so that it senses the temperature on the supply pipe to the coil.

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

Forced ventilation

It is possible to configure a digital output for forced damper control for increasing the airflow to a room for all controllers in the Regio series.

CO₂ control

CO₂ concentration can be used in different control modes in order to increase the quantity of air, regardless of controller temperature requirements. For example, the operating mode can be set to change or the VAV damper to open when CO₂ levels exceed a set value.

Built-in safety functions

To prevent condensation damages, you can connect a condensation detector to RCP100, RCP100T and RCP100L. The controller also has frost protection. It prevents frost damages by ensuring that the room temperature does not drop below 8°C when the controller is in Off-mode.

Setpoint

In Occupied mode, the controller operates from a heating or a cooling setpoint that can be changed centrally or locally via the room unit's DIP-switches or display.

Operation

Operating modes

There are five different operating modes: Off, Unoccupied, Stand-by, Occupied and Bypass.

Off: The controller is turned off. Only frost protection is active.

Unoccupied: The room where the controller is placed is not used for an extended period. Both heating and cooling control with two predefined setpoints (one for heating, the other for cooling).

Stand-by: The room is in an energy save mode and is not used at the moment. The controller is prepared to change operating mode to Occupied if someone enters the room. Both heating and cooling control with a large deadband.

Occupied: The room is in use and is therefore in a comfort mode. The controller controls the temperature around a setpoint.

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

Occupancy detector

By connecting an occupancy detector, RCP100, RCP100T and RCP100L can switch between Bypass or Occupied and the preset operating mode. The temperature is then controlled according to requirement, which saves energy and keeps the temperature at a comfortable level.

Room units

Connection of RU-units

Different Regio room units (RU-units) with built-in temperature sensor can be connected to the controller.



RCP100, RCP100T and RCP100L can be combined with the following RU-units:

- RU-F
- RU-FO
- RU-DFO
- RU-DOS

The room unit is connected to the controller with a cable with an RJ12-connector (see page 8). Regio has two cables as accessories, RU-CBL3 (length 3 m) and RU-CBL10 (length 10 m).

For more information about the room units, see the product sheet for each respective RU-unit.

Changing operating mode via the Occupancy button

If the controller is connected to a room unit with an occupancy button, you can change between Bypass and the preset operating mode.



Special functions with RU-DOS



RU-DOS is a flexible room unit with special functions. When RCP100, RCP100T and RCP100L are used together with RU-DOS, they can control lighting and blinds.

It is also possible to measure the current percentage of CO₂

and the current relative humidity (% RH) in the room.

You can also connect an outdoor temperature sensor if you wish to measure the current outdoor temperature.

Read more in the product sheet for RU-DOS.

Indications

Adjacent to terminals 40-43 and 80, there are a number of LED:s which indicate status.



Designation	Colour	Description
P/B (Power supply/Battery)	Green/ Red	Power supply on/ Battery error
Lan/Serv	Green/ Yellow	For TCP/IP status indication
Rx	Green	Port 1, Receiving
Tx	Green	Port 1, Transmitting
RURX	Green	Port RU, Receiving

The controller's indications

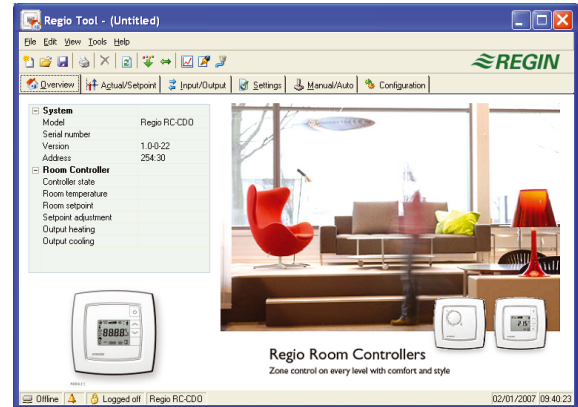
Configuration and supervision

Regio tool®

The controller is pre-programmed on delivery, but can be configured using Regio tool®.

Regio tool® is a PC-based program that makes it possible to configure and supervise an installation, and change settings, via a clear and easy user interface.

The program can be downloaded free of charge from Regin's homepage www.regincontrols.com.



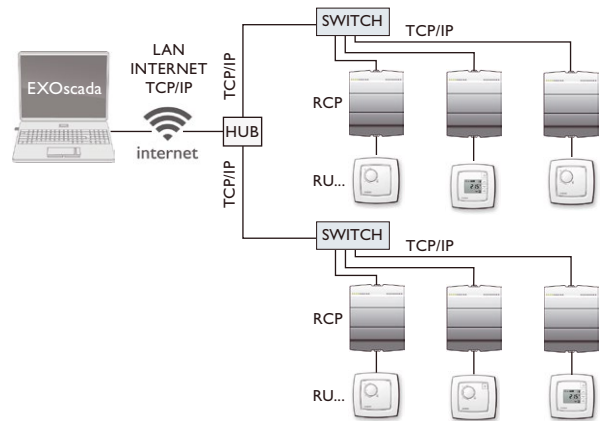
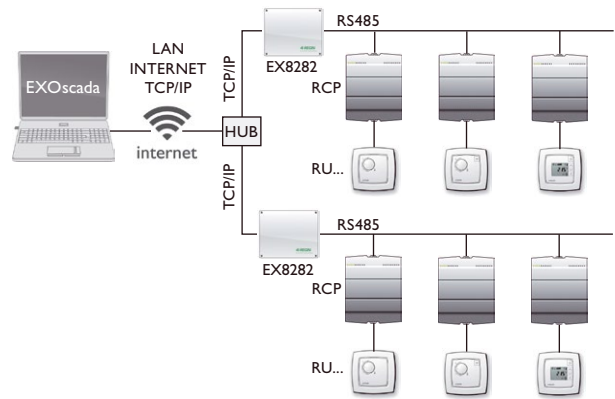
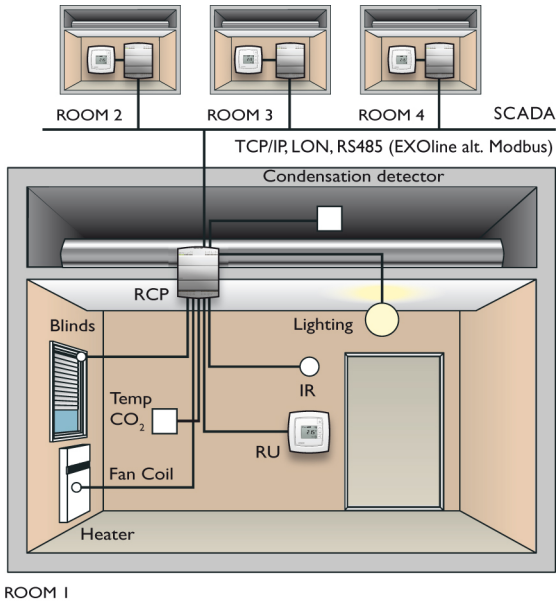
EXOdesigner and EXOscada

EXOdesigner needs to be used when configuring the Regio Maxi as a part of a larger system with a central SCADA, e.g. EXOscada.

Model with LON communication (RCP100L)

The LON model uses LonWorks, adjusted according to the LonMark guidelines. See the LonWorks network variable list in the Regio Maxi manual.

Application examples



Technical data

Supply voltage	230 V AC \pm 10%, 50...60 Hz
Power consumption, internal electronics	2 VA
Ambient temperature	0...50°C
Storage temperature	-20...+70°C
Ambient humidity	Max 95% RH
Protection class	IP20
Material casing	Polycarbonate, PC
Weight	780 g
Fuse	Internal, automatic
Built-in transformer, max capacity	30 VA
Max power consumption for fuse	30 VA
Casing	EURO-norm
Mounting	In the ceiling void
alternative	In a cabinet front with separate mounting kit
alternative	On a TS35 DIN-rail
Operating system	EXOreal
Real-time clock (RTC)	No
Battery backup	
Type	Lithium, CR2032
Battery backup of RAM	at least 5 years
Battery monitoring of RAM	Yes
Colour	Silver
CE	LVD, Low Voltage Directive: This product conforms to the requirements of European LVD standard EN 60 730-1. EMC emission and immunity standard: This product conforms with the requirements of European EMC standards EN 61000-6-1 and EN 61000-6-3 and carries the CE mark. RoHS: This product conforms to the Directive 2011/65/EU of the European Parliament and of the Council.
Communication port, Port 1	
Type	RS485 (EXOline or Modbus) with automatic detection/change-over
Modbus	8 bits, 1 or 2 stop bits. Odd, even (FS) or no parity.
Communication speed Modbus	300, 600, 1200, 2400, 4800, 9600 or 19200 bps
Communication speed EXOline	9600 bps
Galvanic isolation from the rest of the electronics, common mode voltage	Max 150 V
Data for RCP100T	
Connection	10Base-T/100Base-TX auto-negotiation (RJ45)
Cable length	Max 100 m (min Cat 5)
Protocol	EXOline-TCP
Port 1 available on -TCP/IP-models	No
LonWorks (RCP100L)	FT3150, gives a second communication port
Analogue inputs, AI	
Temperature (PT1000)	-50 \pm 150°C
accuracy (excluding sensor)	\pm 0.4°C
Voltage	0...10 V
input resistance	10 MOhm
accuracy (% of full scale)	\pm 0.15%
Digital inputs, DI	
Type	24 V DC, floating contact, powered from 24 V DC output, pin 80 and 83
Logic 0	0...5 V DC
input current at 0 V	0 mA
input resistance	8 kOhm
Logic 1	12...24 V DC
input current 24 V DC	3 mA

*Contin. Technical data***Condensation input, CI**

Type Regin's condensation detector, KG-A/1

24 V DC-output, +C

Output level on +C 24 V DC \pm 2 V
 Max total load 0.1 A, short circuit proof

GDO, 24 V AC-output for power supply of actuators etc.

Output level on GDO 24...30 V AC depending on the load
 Max total load on terminals 20 and 23 (connected internally) 12 VA

Digital outputs, DO4-8 (MosFet)

Type 24 V AC
 Max continuous load is limited by available power on GDO See GDO for available power for all DO:s
 Max transient load for each DO 4.0 A, 50 ms

Actuator exercise
 Terminal blocks

Configurable, FS = Every day at 3 pm
 Lift type for cable cross-section 2.1 mm²

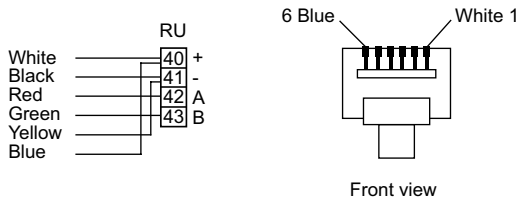
Wiring

The table shows the factory setting for the inputs and outputs on RCP100, RCP100T and RCP100L. For complete wiring table and connection diagram, see the manual for Regio Maxi.

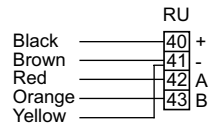
Terminal	Designation	Operation	
1	L	Line	230 V AC-connection
3	N	Neutral	
4		EMI ground, yellow-green conductor	
5		EMI ground	
10-13		No function	
20	GDO	24 V AC out common for DO4-DO5, max total load 12 VA	
21	DO4	24 V AC-output for forced ventilation	
22	DO5	Output for 24 V AC. Not configured for use (configurable).	
23	GDO	24 V AC out common for DO6-7, max total load 12 VA	
24	DO6	Output for 24 V AC thermal actuator. Heating.	
25	DO7	Output for 24 V AC thermal actuator. Cooling.	
26		Not used	
27	DO8	Output for 24 V AC. Not configured for use.	
30	G0	0 V AC. Normally used as reference ground for valve actuators and external equipment.	
31	AGnd	Analogue ground	
32	AI1	Not configured for use	
33	AI2	For switching between heating and cooling on a two-pipe system (Change-over)	
40	B		EXOnline-connection
41	A		
42	N	The 0 V reference. This should be connected to the screen of the communication cable, which in turn should be grounded at one point only.	
43	E		
47	Net+		LON-connection (only RCP100L)
48	Net-		
49	EGnd		
50	Gnd		
51	CI	Input for Regio's condensation detector, KG-A/1	
60	TCP/IP		TCP/IP-connection
70	RU	Room unit (see wiring on the next page)	
80	+C	24 V DC out common for DI1 and DI2	
81	DI1	Input for occupancy detector, potential-free, NO	
82	DI2	Input for window contact, potential-free, NO	
83	+C	24 V DC out common for DI3	
84	DI3	Not configured for use	
90-92		No function	

Wiring for RU-... (terminal 70)

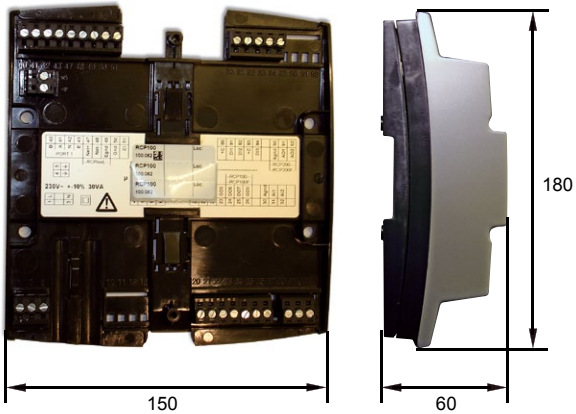
RU-connection with modular cable with RJ12 fast connector (own production). The maximum cable length is 30 m.



RU-connection with Regin's cables RU-CBL3 (3 m) or RU-CBL10 (10 m) with RJ12 fast connector.



Dimensions



mm

Product documentation

Document	Type
Regio Maxi Manual	Manual for the controllers from the Regio Maxi series
Installation instruction RCP100/RCP100T/RCP100L	Installation instruction for RCP100/RCP100T/RCP100L
Product sheet TG-R5/PT...	Information about room sensors, outdoor sensors and strap-on sensors suitable for RCP100/RCP100T/RCP100L
Product sheet TG-UH/PT...	
Product sheet TG-A1/PT...	
Product sheet and instruction IR24-P	Information about occupancy detector suitable for RCP100/RCP100T/RCP100L
Product sheet and instruction CO2RT	Information about CO ₂ -transmitter suitable for RCP100/RCP100T/RCP100L
Product sheet and instruction HTWT	Information about humidity sensor suitable for RCP100/RCP100T/RCP100L
Product sheets and installation instructions RU-F, RU-FO, RU-DFO and RU-DOS	Information about RU-units that can be used with RCP100/RCP100T/RCP100L
Product sheet KG-A/1	Information about condensation detector for the Regio controllers

All product documentation is available at www.regincontrols.com.

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