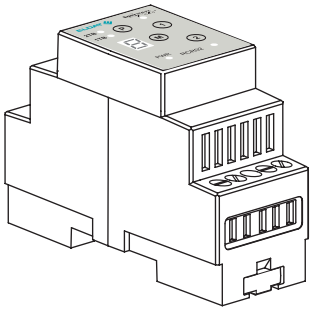
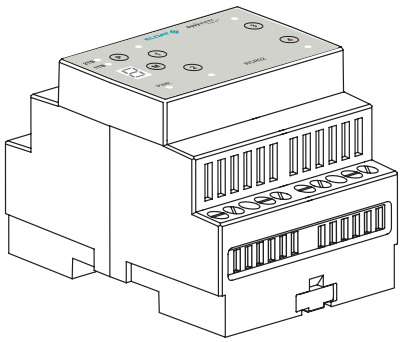
EN RCR02 DIN rail receiver

Models



RCR02EN5002A01 **2TE**



RCR02EN5004A01 **4TE**

Technical Data

Frequency:	868.30 MHz
Radiated power:	17.5 mW
Modulation:	FSK
Coding:	Easywave neo
Device type:	dual switch
Power supply:	230 V AC 50 Hz
Output:	2 potential-free relay contacts 16 A (normally open)
Power consumption:	0.4 W standby 1.2 W max. w/o load
Connected load:	see load table
Operating temperature:	-20 °C to +60 °C
Dimensions (W/L/H):	34.5/89.6/62.8 mm
Weight:	108 g

Scope of Delivery

DIN rail receiver RCR02 2TE, operating manual

Table of load

Load type	max. load
Ohmic load: Incandescent lamps, 230 V halogen lamps etc.	16 A / 3.680 VA
Inductive load: Halogen lamps with wound transformers (transformer at least 85% loaded)	3 A / 690 VA
Non- or serial-compensated fluorescent lamps with ferro-magnetic ballasts	3 A / 690 VA
Parallel-compensated fluorescent lamps with ferromagnetic ballasts	3 A / 690VA
Electronic ballast capacity: electronic ballasts, electronic transformers, etc.	4 A / 920 VA

Function

The RCR02 2TE DIN rail receiver is used for the potential-free activation of two mains-powered devices.

The receiver can be operated in ON/OFF, PULSE and DEAD MAN'S SWITCH modes. The ON/OFF mode can also be used with two TIMER functions and a LOGIC function.

Technical Data

Frequency:	868.30 MHz
Radiated power:	17.5 mW
Modulation:	FSK
Coding:	Easywave neo
Device type:	quadruple switch
Power supply:	230 V AC 50 Hz
Output:	2 potential-free relay contacts 16 A (normally open) 2 potential-free relay contacts 16 A (change-over)
Power consumption:	0.4 W standby 1.9 W max. w/o load
Connected load:	see load table
Operating temperature:	-20 °C to +60 °C
Dimensions (W/L/H):	70.5/89.6/62.8 mm
Weight:	186 g

Scope of Delivery

DIN rail receiver RCR02 4TE, operating manual

Table of load

Load type	max. load
Ohmic load: Incandescent lamps, 230 V halogen lamps etc.	16 A / 3.680 VA
Inductive load: Halogen lamps with wound transformers (transformer at least 85% loaded)	3 A / 690 VA
Non- or serial-compensated fluorescent lamps with ferro-magnetic ballasts	3 A / 690 VA
Parallel-compensated fluorescent lamps with ferromagnetic ballasts	NO 3 A/ 690 VA NC 1.5 A/345 VA
Electronic ballast capacity: electronic ballasts, electronic transformers, etc.	4 A / 920 VA

Function

The RCR02 4TE DIN rail receiver is used for the potential-free activation of four mains-powered devices.

The receiver can be operated in ON/OFF, PULSE and DEAD MAN'S SWITCH modes. The ON/OFF mode can also be used with two TIMER functions and a LOGIC function.

Intended Use

The device is intended for mounting on a DIN rail in a distribution box or a control cabinet in dry rooms. The unit may only be used as a wireless receiver for activating electrical devices in accordance with the load table. To be operated with Easywave wireless transmitters.

The manufacturer shall not be liable for any damage caused by improper or non-intended use.

Safety Advice

Before installing the device, carefully read through this operating manual! Failing to observe these instructions may result in fire or other hazards.

Caution! This device may only be operated with a 230 V/50 Hz AC power supply. Electrical installation may only be carried out by a qualified electrician (in accordance with VDE 0100).

These devices are part of a building installation. Please observe applicable laws, standards and regulations of the country in which the devices are installed, as well as the manufacturer's instructions for the devices to be switched. Load the devices only up to the specified maximum limit!

This device is only intended for indoor use in dry and dust-free rooms.

Have faulty devices checked by the manufacturer!

Do not make any modifications to the device!

Setting up the Receiver

A Installing the Receiver

A1 Mounting the Receiver

Please observe the installation regulations for installation in distribution systems.

The device is intended for installation on a standard DIN rail (35x7.5 mm). Pull out the slide to allow fixing through mounting points.

Only a qualified electrician may install, connect in accordance with the connection diagram and set up the receiver.

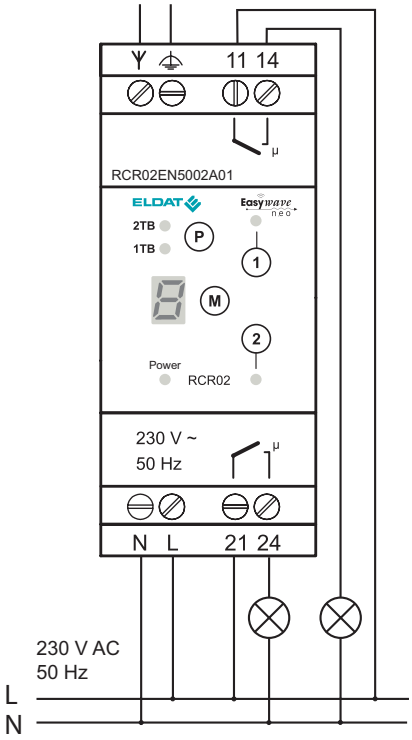
1. Switch off the power supply.
2. Mount the RCR02 onto the rail.
3. Connect the cables for the power supply and for the devices in accordance with the connection diagram (see page 2).
4. Switch on the supply voltage.
5. Program the receiver as set out in to the operating manual (see pages 4–7).

In unfavourable environmental conditions, the ACC-ANT50-03-21P external antenna can be used to improve wireless reception. This is not included in delivery and can be ordered separately.

A Installing the Receiver

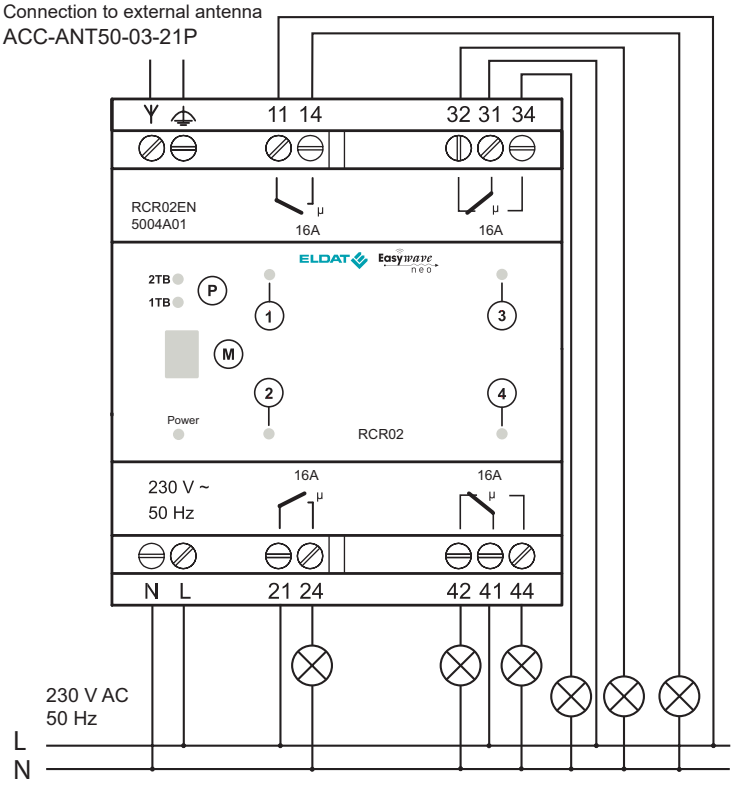
A2 Electrical Connection

Connection to external antenna
ACC-ANT50-03-21P



Connection Diagram RCR02 2TE

Connection to external antenna
ACC-ANT50-03-21P



Connection Diagram RCR02 4TE

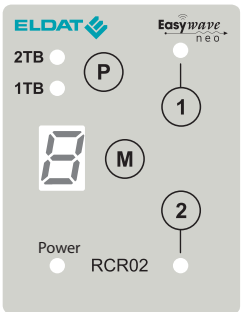
Connecting the external antenna:
Connect the white antenna cable to the antenna terminal ⏚
and the black cable to the functional earth terminal ⏚.

Note: Mount the antenna away from metal housing.

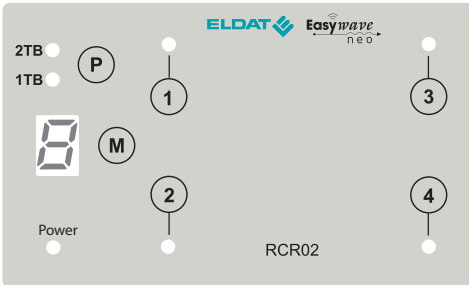
Cable cross-sections
rigid cables:
0.5 – 2.5 mm²
flexible cables with wire end ferrules:
0.5 – 1.5 mm²

B Operation

B1 Operating and Display Elements



RCR02 2TE



RCR02 4TE

DISPLAY		Operating Status	Programming Mode
LED GREEN			
PWR	Power	Supply voltage is on, LED is lit.	
LED RED			
2TB	2-button operation	LED 2TB flashes when a wireless signal is detected.	Displays the selected operation.
1TB	1-button operation		Signals the programming or delete mode.
1	LED output 1 is lit	Relay 1 switched	Displays the output selected for programming.
2	LED output 2 is lit	Relay 2 switched	
3	LED output 3 is lit	Relay 3 switched	
4	LED output 4 is lit	Relay 4 switched	
Digital Display			
0....L		Upon receiving a programmed transmission code, the corresponding operating mode is displayed for 2 s.	Displays the selected operating mode. Displays the seconds during Timer II programming.

OPERATING		Operating Status	Programming Mode
P	Programming button		Start programming mode, select operation
M	Mode button		Select operating mode
1	Channel 1 button	Manually switch output ON/OFF	Select output 1
2	Channel 2 button	Manually switch output ON/OFF	Select output 2
3	Channel 3 button	Manually switch output ON/OFF	Select output 3
4	Channel 4 button	Manually switch output ON/OFF	Select output 4

When changing into the programming mode, all outputs are switched off and no switching operations are possible.
When returned to operating mode, the outputs remain switched off.

B Operation

B2 Operating Modes

Press the P button to specify whether you want to program a transmitter in 2-button operation or in 1-button operation.

Then press the M button repeatedly to select the desired operating mode. The operating mode currently selected is shown in the digital display.

Once you have selected the output to be programmed, the desired transmission code can be programmed with the selected combination of operation and operating modes.

To do this, simply press the button for the transmitter that you wish to program.

In 2-button operation (2TB), switching ON transmitter buttons A or C starts or retriggers the TIMER functions. Transmitter buttons B or D switch OFF or stop the TIMER function. Only one transmission button must be programmed in the receiver, the code for the second button is assigned automatically.

If a PULSE or DEAD MAN'S SWITCH function is programmed in 2TB, both buttons always perform the same function!

In 1-button operation (1TB), each button switches ON and OFF alternately or triggers a PULSE.

Each button can start and retrigger the TIMER and actuate the DEAD MAN'S SWITCH.

Each button must be individually programmed in the receiver, there is no automatic assignment.

The LOGIC function cannot be used with 1TB. Therefore, the set-up is ignored in this operating mode.

Operating Mode			2-button operation (2TB) transmitter button				1-button operation (1TB) transmitter button			
			A	B	C	D	A	B	C	D
ON/OFF		ON and OFF switches with 1- or 2-button operation.								
0	I/O	If, when using the 1TB, the transmitter button is pressed and held for longer than 1.6 s, all outputs into which the transmitter has been taught in are switched off.	ON	OFF	ON	OFF	ON/ OFF	ON/ OFF	ON/ OFF	ON/ OFF
PULSE		When a transmitter button is pressed, the relay is activated for the duration of time specified in the operating mode. Only possible with 1TB; with 2TB both buttons trigger the same operation.								
1	1 s	Output is activated for 1.0 seconds	ON		ON		ON	ON	ON	ON
			OFF after timeout							
TIMER		The length of the switching time is permanently programmed. The relay switches ON for the duration of the selected time. The switching time can be retriggered (retrig), i.e. each new keystroke before the time has expired starts the switching time again.								
2	3 min	Switch-off after 3 minutes without shutdown warning	ON/ retrig	OFF	ON/ retrig	OFF	ON/ retrig	ON/ retrig	ON/ retrig	ON/ retrig
3	7 min !	Switch-off after 7 minutes with shutdown warning*)	ON/ retrig	OFF	ON/ retrig	OFF	ON/ retrig	ON/ retrig	ON/ retrig	ON/ retrig
TIMER adjustable										
4	individual	The length of the switching time can be set by the operator. An individual switching time can be assigned to each transmitter. The switching time assigned to a given transmitter can only be changed by teaching-in that transmitter again. A 15-minute switching time without shutdown warning is configured as a factory preset. The timer is retriggerable. Switching time min. 1s, max. 16h40m, shutdown warning optional.	ON/ retrig	OFF	ON/ retrig	OFF	ON/ retrig	ON/ retrig	ON/ retrig	ON/ retrig
5	global	The length of the switching time can be set by the operator. An individual switching time can be programmed for each channel. The programmed switching time applies to all transmitters of the relevant channel that have been taught-in to this operating mode. If the switching time is changed, the changes will also be applied to transmitters that have already been taught-in. A 15-minute switching time without shutdown warning is configured as a factory preset. The timer is retriggerable. Switching time min. 1s, max. 16h40m, shutdown warning optional.	ON/ retrig	OFF	ON/ retrig	OFF	ON/ retrig	ON/ retrig	ON/ retrig	ON/ retrig
DEAD MAN		The output is active for as long as the transmitter button is held down.								
6	max. 36s	Switches OFF when the button is released or automatically after 36 seconds.	ON		ON		ON	ON	ON	ON
LOGIC		Only possible with 2TB! All programmed transmission codes are combined according to an AND / OR logic. This operating mode is subordinate to all other operating modes! Therefore, this operating mode gets deactivated, as soon as a command is sent from a paired transmitter with another operating mode. ALL other operating modes must be OFF! If a different operating mode switches ON, LOGIC cannot switch OFF. Switching a different operating mode OFF while LOGIC is ON resets the LOGIC function. (However, it can be started again at any time.)								
7	Logic v / ^	**OR relationship**: **I**f one of the programmed transmitters sends an **A** telegram (**ON**), the relay switches on.								
		AND relationship: If all of the programmed transmitters that previously sent an **A** send a **B** telegram (**OFF**), the relay switches off.								

*) The shutdown procedure (!) is indicated as follows: 30 seconds before the end: output switches OFF 1x briefly and then back ON.
15 seconds before the end: output switches OFF 2x briefly then back ON.

When using energy-saving lamps, a shutdown warning is not possible and using this function can result in damage to the lamp.

B Operation

B3 Conversion Table for TIMER adjustable

Conversion seconds with multiplier in time (hours:minutes:seconds)

		Multiplier			
Seconds	Counter	1	10	100	1000
1	1	0:00:01	0:00:10	0:01:40	0:16:40
2	2	0:00:02	0:00:20	0:03:20	0:33:20
3	3	0:00:03	0:00:30	0:05:00	0:50:00
4	4	0:00:04	0:00:40	0:06:40	1:06:40
5	5	0:00:05	0:00:50	0:08:20	1:23:20
6	6	0:00:06	0:01:00	0:10:00	1:40:00
7	7	0:00:07	0:01:10	0:11:40	1:56:40
8	8	0:00:08	0:01:20	0:13:20	2:13:20
9	9	0:00:09	0:01:30	0:15:00	2:30:00
10	0	0:00:10	0:01:40	0:16:40	2:46:40
11	1	0:00:11	0:01:50	0:18:20	3:03:20
12	2	0:00:12	0:02:00	0:20:00	3:20:00
13	3	0:00:13	0:02:10	0:21:40	3:36:40
14	4	0:00:14	0:02:20	0:23:20	3:53:20
15	5	0:00:15	0:02:30	0:25:00	4:10:00
16	6	0:00:16	0:02:40	0:26:40	4:26:40
17	7	0:00:17	0:02:50	0:28:20	4:43:20
18	8	0:00:18	0:03:00	0:30:00	5:00:00
19	9	0:00:19	0:03:10	0:31:40	5:16:40
20	0	0:00:20	0:03:20	0:33:20	5:33:20
21	1	0:00:21	0:03:30	0:35:00	5:50:00
22	2	0:00:22	0:03:40	0:36:40	6:06:40
23	3	0:00:23	0:03:50	0:38:20	6:23:20
24	4	0:00:24	0:04:00	0:40:00	6:40:00
25	5	0:00:25	0:04:10	0:41:40	6:56:40
26	6	0:00:26	0:04:20	0:43:20	7:13:20
27	7	0:00:27	0:04:30	0:45:00	7:30:00
28	8	0:00:28	0:04:40	0:46:40	7:46:40
29	9	0:00:29	0:04:50	0:48:20	8:03:20
30	0	0:00:30	0:05:00	0:50:00	8:20:00

		Multiplier			
Seconds	Counter	1	10	100	1000
31	1	0:00:31	0:05:10	0:51:40	8:36:40
32	2	0:00:32	0:05:20	0:53:20	8:53:20
33	3	0:00:33	0:05:30	0:55:00	9:10:00
34	4	0:00:34	0:05:40	0:56:40	9:26:40
35	5	0:00:35	0:05:50	0:58:20	9:43:20
36	6	0:00:36	0:06:00	1:00:00	10:00:00
37	7	0:00:37	0:06:10	1:01:40	10:16:40
38	8	0:00:38	0:06:20	1:03:20	10:33:20
39	9	0:00:39	0:06:30	1:05:00	10:50:00
40	0	0:00:40	0:06:40	1:06:40	11:06:40
41	1	0:00:41	0:06:50	1:08:20	11:23:20
42	2	0:00:42	0:07:00	1:10:00	11:40:00
43	3	0:00:43	0:07:10	1:11:40	11:56:40
44	4	0:00:44	0:07:20	1:13:20	12:13:20
45	5	0:00:45	0:07:30	1:15:00	12:30:00
46	6	0:00:46	0:07:40	1:16:40	12:46:40
47	7	0:00:47	0:07:50	1:18:20	13:03:20
48	8	0:00:48	0:08:00	1:20:00	13:20:00
49	9	0:00:49	0:08:10	1:21:40	13:36:40
50	0	0:00:50	0:08:20	1:23:20	13:53:20
51	1	0:00:51	0:08:30	1:25:00	14:10:00
52	2	0:00:52	0:08:40	1:26:40	14:26:40
53	3	0:00:53	0:08:50	1:28:20	14:43:20
54	4	0:00:54	0:09:00	1:30:00	15:00:00
55	5	0:00:55	0:09:10	1:31:40	15:16:40
56	6	0:00:56	0:09:20	1:33:20	15:33:20
57	7	0:00:57	0:09:30	1:35:00	15:50:00
58	8	0:00:58	0:09:40	1:36:40	16:06:40
59	9	0:00:59	0:09:50	1:38:20	16:23:20
60	0	0:01:00	0:10:00	1:40:00	16:40:00

B4 Timer Multiplier Table

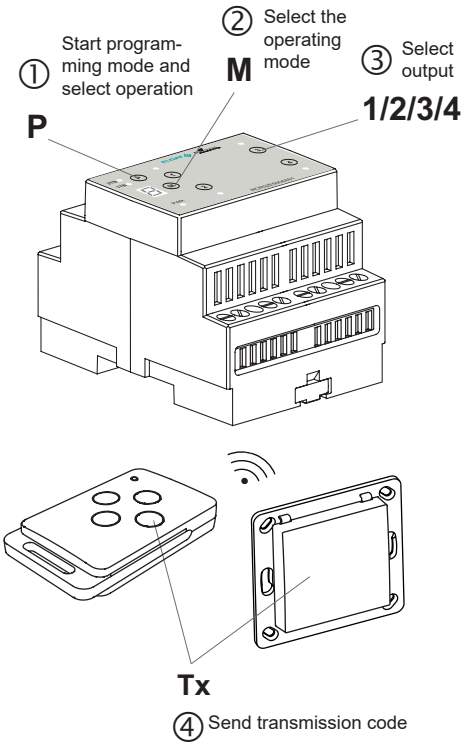
Multiplier	
A	1 x seconds
C	10 x seconds
E	100 x seconds
F	1,000 x seconds
H	100 x seconds with shutdown warning

C Programming

C1 Programming the Transmitter

If a previously programmed transmitter is programmed again in the same output, the previous operating mode is overwritten with the new operating mode.

32 transmission codes can be programmed per output.



	Operation [1] [Press button]	Display	Note
Programming 2TB	① **P** 1x briefly	LED 2TB flashes	Programming mode 2-button operation started.
	② **M** repeatedly	OM number in digital display	Select the operating mode (OM).
	③ **1/2/3/4**	LED 1/2/3/4 and LED 2TB flashes	Select switching output. Only one output can be active at any time, change as often as required.
	④ Transmitter button **Tx** 1x briefly	LED 2TB and LED of the selected output light up	Transmission code is programmed. When all the LEDS go out, the receiver is ready for operation.
Programming 1TB	① **P** 2x briefly	LED 1TB flashes	Programming mode 1-button operation started.
	② **M** repeatedly	OM number in digital display	Select the operating mode (OM).
	③ **1/2/3/4**	LED 1/2/3/4 and LED 1TB flash	Select switching output. Only one output can be active at any time, change as often as required.
	④ Transmitter button **Tx** 1x briefly	LED 1TB and LED of the selected output light up	Transmitter is programmed. When all the LEDs go out, the receiver is ready for operation.

1) Timeout: If no buttons are pressed within 30 seconds, the RCR02 automatically switches to operating mode. The settings are not saved.

Programming can be cancelled by pressing the P button several times. The order is: 2TB --> 1TB --> Operating mode. In operating mode, all red LEDsS and the display are off, as long as no output is activated.

C2 Setting the TIMER

The switching times for operating modes 4 and 5 can be set individually for each output.

The switching time is calculated using the base time measured during programming and the selected multiplier.

The maximum base time is 60 seconds. After this time the measurement stops automatically and skips to the multiplier setting.

TIMER individual (4)

The set switching time applies individually to every transmitter programmed to this operating mode.

The most recently set switching time is saved and used during teach-in.

The switching time assigned to a given transmitter can only be changed by teaching-in that transmitter again.

TIMER global (5)

The set switching time applies globally to all transmitters in a given channel.

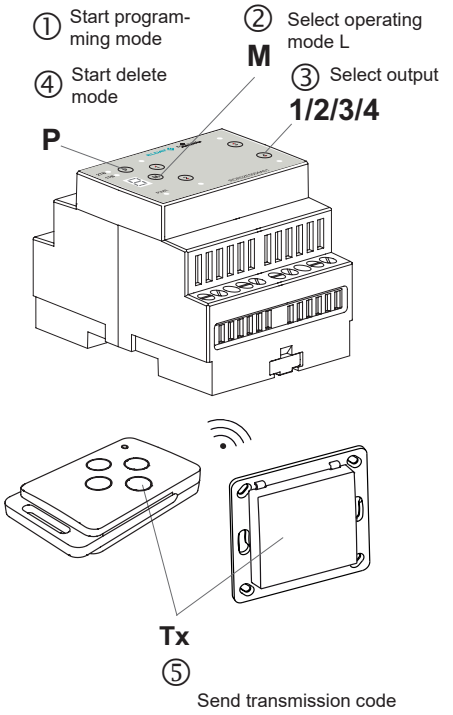
The most recently set switching time is also used for transmitters that have already been programmed.

Operation [Press button]	Display	Note
1. **P** 1x briefly	LED 2TB flashes	Programming mode started.
2. **M** repeatedly	OM number in digital display	Select TIMER operating mode to be set. (4 or 5)
3. **1/2/3/4**	LED 1/2/3/4 and LED 2TB flashes	Select output. Only one output can be selected.
4. **P** > 1.6s	LED 2TB + 1TB flash alternately LED 1/2/3/4 light up Display counts up the seconds	The base time measurement for the timer has started. In the display the seconds count upwards from 1-10(0) a maximum of 6 times. After a maximum of 60s, the measurement automatically stops.
5. **P** 1x briefly	LED 1/2/3/4 and 2TB + 1TB light up display: multiplier (A) flashes	The base time measurement has stopped. The currently selected multiplier is shown in the display.
6. **M** repeatedly	LED 1/2/3/4 and 2TB + 1TB light up Display: current multiplier flashes	Set up the multiplier to be used for the time just measured (see section B4, „TIMER Multiplier Table“).
7. **P** 1x briefly	LED 1/2/3/4 and 2TB + 1TB light up Display: selected multiplier lights up	The measured time is multiplied by the multiplier of the chosen OM and the new switching time is saved. When all the red LEDs go out, the receiver is ready for operation.

C Programming

C3 Deleting the Transmitter

In delete mode, individual transmitters can be deleted from the memory of an output.



Operation [Press button] [1]		Display	Note
①	**P** 1x briefly or **P** 2x briefly	LED 2TB flashes LED 1TB flashes	Programming mode started.
②	**M** repeatedly	L	Select delete function L.
③	**1/2/3/4**	LED 1/2/3/4 and LED xTB flash	Select output. Only one output can be selected. Output can be changed as often as required.
④	**P** > 1.6s	LED output and 2TB and 1TB flash quickly	Delete mode started. Cancel 1x **P** <1.6s
⑤	Transmitter button **Tx** 1x briefly	LED output and 2TB and 1TB light up	Transmitter deleted from the selected output. When all the LEDs go out, the receiver is ready for operation.

1) If no buttons are pressed within 30 seconds, the RCR02 automatically switches back to operating mode. The settings are not saved.

If a transmitter is programmed in several outputs, it must be deleted individually from each output as necessary.

If an attempt is made to delete a transmitter that is not programmed into the selected output, the LEDs flash quickly and the receiver remains in delete mode.

C4 Output Reset

A reset must be performed individually for each output.

All programmed transmitters are deleted and all switching times for the respective output are reset.

Operation [Press button] [1]		Display	Note
1.	**P** 1x briefly or **P** 2x briefly	LED 2TB flashes LED 1TB flashes	Programming mode started.
2.	**M** repeatedly	L	Select delete function L.
3.	**1/2/3/4**	LED 1/2/3/4 and LED xTB flash	Select output. Only one output can be selected. Output can be changed as often as required.
4.	**P** > 1.6s	LED output and 2TB and 1TB flash quickly	Delete mode started. Cancel 1x **P** <1.6 s
5.	**P** > 1.6s	LED output and 2TB and 1TB light up	All transmission codes from the selected output are deleted and the TIMER is reset. When all the LEDs go out, the receiver is ready for operation.

1) If no buttons are pressed within 30 seconds, the RCR02 automatically switches back to operating mode. The settings are not saved.

C Programming

C5 Factory Reset

Performing a factory reset restores all settings of all channels to the factory default.

All taught-in transmitters and, if applicable, all servers will be deleted and all switching times set back to the default values.

Operation [Press button]		Display	Note
1. **M**	Press and hold the button		
2. **1+2**	Press and hold for 5s	The symbol will be displayed for 4s.	Factory reset has been performed and all settings are restored. When the display dims, the receiver is ready for operation.

D Bidirectional Functions (Easywave neo)

To enable use of bidirectional functions, an APC01 Easywave neo server can be taught-in to the RCR02.

The RCR02 is automatically recognized and configured by the server as a 2-fold (2TE) or 4-fold (4TE) switch activator.

During teach-in, the server automatically recognizes the number of available channels and does not have to be separately taught-in to each channel.

The available range of functions is also recognized automatically so that no specific operating mode has to be selected while teaching-in a server.

Teach-in the APC01 server according to the instructions in the Easywave app.

After teach-in, the server receives feedback on every switching operation carried out, even if the operation is triggered by another transmitter, or manually using keys 1–4 on the RCR02.

This means that the current state of each output can be shown via the relevant app at any time.

An incoming switch command via the server is shown as a dash (-) on the display of the RCR02.

D1 Programming the Server into the Receiver

Only one server at a time can be programmed into the receiver. Any server already programmed will be overwritten.

Follow the instructions in the app to teach-in the server.

To enable use of the bidirectional functions, select “ELDAT Easywave neo” as the system.

Operation [Press button]		Display	Note
1.	Start the learning process via the app.		
2. **P**	1x briefly	The display shows the last selected operating mode.	All operating modes possible, except (delete mode) If is shown in the display, press the **M** key once to exit delete mode.
3.	Complete the learning process via the app.		

D2 Deleting the Server from the Receiver

To delete a server, the receiver must be supplied with power.

Alternatively, for deletion via the app, the server can also be deleted by performing a factory reset on the receiver.

⚠ As soon as a server is programmed into the RCR02, each switching command will trigger an acknowledge radio signal .

If a server is not in use, delete it from the receiver to avoid unnecessary radio transmissions.

Operation [Press button]	Display	Note
1. Delete the receiver in the app while the receiver is supplied with electricity and is within range of the server.		

E General Information

Disposal

Old devices must not be disposed of with household waste!

Dispose of the waste product at a designated collection point for electronic waste or via your specialist retailer.

Dispose of the packaging material in the recycling containers for cardboard, paper and plastics.

Warranty

During the warranty period, we undertake to rectify free of charge by repair or replacement any product defects arising from production or material faults.
Any unauthorised tampering with, or modifications to, the product shall render this warranty null and void.

Conformity

CE

ELDAT EaS GmbH hereby declares that the radio equipment type RCR02 is in compliance with the Directive 2014/53/EU.

The full text of the EU declaration of conformity can be obtained at the following internet address: www.eldat.de

Customer Service

If, despite correct handling, faults or malfunctions occur or in case of damage, please contact your retailer or the manufacturer.

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