Manual - Radio receiver shutter or series switch, 2 channel Art. Nr. 8080.0221.7



Introduction

You have decided in favour of a high-quality product that has been developed and manufactured with the utmost care. Only proper, professional installation and commissioning can ensure long, reliable and fault-free operation. This manual contains important information on commissioning and handling. Please read carefully before putting your new Free-Control device into operation! Keep the manual in a safe place for future reference!

This device meets the requirements of the applicable national and European regulations and is approved for use in the EU and EFTA States. You can find the declaration of conformity, further information, application examples, range summary and operating instructions at: www.kopp-elektro.eu

Liability or any further claims, in particular for compensation for injury to persons or damage to property caused by the device due to missing or faulty functions are excluded. Changes due to technical progress, changes in standards, modified manufacturing processes or design changes are expressly reserved.

Please note the rules of electrical engineering and compliance with the technical data!

Please ensure and check that the device is switched off before beginning work.

Do not connect any devices that require supervised operation. Do not make any changes to the devices. The radio transmission takes place on a non-exclusive, available frequency channel at 868.3 MHz. Therefore, faults cannot be completely ruled out. However, the appropriate layout will ensure that maximum transmission security is achieved. Not suitable for safety applications, e.g. EMERGENCY STOP, EMERGENCY CALL.

Notes on radio operation

Free-Control can be used anywhere that the expansion or extension of existing installations is impossible or very difficult. Therefore, the possible applications of the Free-Control radio system are extremely versatile, right up to Smart Home. The specification for the radio range is always a free field value and is only to be seen as a reference value.

Signal reduction and transmission range depend on the following:

- 1. the material composition to be penetrated (wood, masonry, glass, etc.)
- 2. the material thickness to be penetrated (wall thickness)
- 3. the climatic conditions (dry environment, rain, snow, etc.)
- 4. existing local radio interference (possible local radio masts, in-house wireless routers, etc.)
- 5. any existing radio dead spots (receiver shadowed by areas that are impenetrable to radio)

The above factors can change unexpectedly and significantly influence the transmission range.

Reduction of the radio transmission signal in % (reference values)

rain, snow = approx. 60 - 100% metal, metal mesh, aluminium cladding reinforced concrete = approx. 75% = approx. 30% wood, plaster, uncoated glass = approx. 10%

General system information on the Free-Control system

The Free-Control devices can be integrated with other Free-Control products and the Kopp Smart Home system using the programming pin that comes with them. For the extensive range of functionality and the additional functions this offers in combination with other components, please refer to the "Integration into the Smart Home system" chapter.

The radio system works with the encrypted and bi-directional Free-Control radio protocol on the radio frequency 868.3 MHz. Bi-directional means that the transmitter and receiver communicate with each other. In order to encrypt the data during data transmission, the AES procedure with 128-bit encryption is used. AES stands for Advanced Encryption Standard and is considered to be a symmetric encryption method, recognised worldwide as secure. The radio signal is frequency modulated and consists of a fixed system security key, which is issued using the rolling code procedure.

Maintenance-free

A Free-Control installation is maintenance-free. The batteries of the battery-operated participant only have to be replaced from time to time. (See "Commissioning" chapter)

<u>Recommendation:</u> In the case of complex switches/installations, we recommend replacing the batteries of all radio transmitters at the same time as soon as the battery of the first participant has to be replaced because the battery is dead.

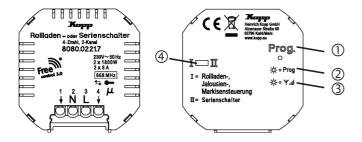
Function and device overview - Radio Receiver shutter or series switch, 4-wire/2-channel

The third generation Free-Control receiver can control connected consumers on the basis of received radio commands. Commands are sent out by Free-Control radio transmitters.

The Free-Control radio receiver with shutters/series switch function enables, for example, convenient and individual control of connected AC motors for shutters, blinds and awnings. Electrically operated awnings can be automatically retracted or extended. OR when using the serial switch function, two consumers can be switched independently of each other from one radio receiver.

It is conveniently operated using one of the Free-Control radio transmitters of the same generation (radio wall switch, radio hand-held transmitter, radio universal transmitter, sensors, etc.) (see "Control Mode" chapter) or via the Kopp Smart Home system.

Device Overview



- ① Programming button operated using the programming pin supplied with it to activate programming mode/learning mode
- 2 Programming LED
- 3 Field strength detection LED
- 4 DIP switch for setting the function

Select function / DIP switch

DIP switch setting

Roller shutters/awning function = POS I
Series switch function = POS II

Mounting option

When installing the radio receiver, is sufficient to ensure contact safety.

1. Installation into flush-mounted box/switch box

All flush-mounted radio receivers can be installed in a flush-mounted/switch box. A flush-mounted box of at least 60 mm in depth must be used.

2. Installation in the surface-mounted junction box

All flush-mounted radio receivers can also be installed in a surface-mounted junction box. A junction box measuring at least a 85x85 mm must be used.

3. Installation in junction box

For this, we recommend using the mounting clip for top-hat rail mounting.

LED signals

The LEDs are found on the back of the radio receiver.

(see "Function and Device Overview" chapter)

Programming LED				
LED ☆ • Prog	lights	activate learning mode for 20 seconds		
LED ☆ • Prog	goes out 1x	positive acknowledgement: Radio transmitter has been programmed correctly		
LED ☆ • Prog	flashes quickly	error message: The same radio transmitter has been programmed repeatedly		
LED ☆ • Prog	flashes 3x	error message: Occupied memory		
LED ☆ • Prog	flashes 2x	positive acknowledgement: Programme memory of the radio receiver has been completely deleted		

Field strength detection LED

Every Free-Control radio receiver comes with internal field strength detection.

The field strength detection LED γ_{ill} 3 flashes in learning mode and in operating mode.

This allows the radio link between radio transmitter and radio receiver, i.e. the quality of the received signal at the radio receiver, to be assessed during installation. As soon as a radio transmitter signal is received by the radio receiver, the LED * • Yall flashes between 1 and 4 times.

- ☼ Y₁II flashes 0x = no reception

<u>Recommendation:</u> Change placement of the radio transmitter and/or radio receiver in order to achieve a better radio signal.

☼ ● Y₁II flashes 2x = moderate reception

Recommendation: Check whether the placement of the radio transmitter

and/or radio receiver can be changed in order to achieve a better radio signal.

Recommendation: Devices can be installed in the desired location.

Recommendation: Devices can be installed in the desired location.

Commissioning

Please note the rules of electrical engineering and compliance with the technical data!
Installation should only be performed by a skilled electrician or under their direction and supervision!

Electrical connection

Note: The contacts of this radio receiver are not potential-free. This means that the supply voltage for the radio receiver is the same voltage that is connected through the consumer.

Connect neutral conductor N to connecting terminal N (1).

Connect phase L to connecting terminal L (2).

Function: SERIES SWITCH Connect first consumer to connecting terminal (\downarrow (1)). Connect second consumer to connecting terminal (\downarrow (4)).

Function: BLINDS/SHUTTERS/AWNINGS SWITCH

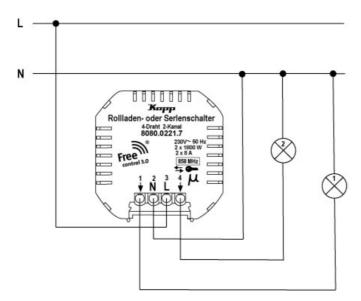
e.g. motor connection to open shutters: connect to connecting terminal (\downarrow (1)).

e.g. motor connection to close shutters: connect to connecting terminal (\downarrow (4)).

In order to comply with the switching sequence of the contacts, the programming procedure must be taken into account. In the programming procedure for shutters, both radio transmission buttons (UP/DOWN) are programmed in a programming cycle. The transmission button activated first controls the output to the connecting terminal (\downarrow (1)), the second transmission button controls the output to the connecting terminal (\downarrow (4)).

Sample connection:

In the case of the series switch function, in the following connection drawing (1) and (2) are to be seen as a light source. If the roller shutters and awning control function has been selected, (1) is to be seen as the motor for opening and (2) as the motor for closing.



Programming procedure

In order that the radio receiver can be integrated into your Free-Control system and can communicate with other Free-Control devices, the device must first be programmed. You can programme other Free-Control devices (e.g. a Free-Control radio wall switch, radio hand-held transmitters, sensors, etc.) directly to the receiver or the radio receiver can be connected to the Kopp Smart Home system.

Direct programming of Free-Control products:

Function: Roller shutters and awnings switch

- 1. Set slide switch to POS. I.
- 2. Connect the radio receiver to the power.
- 3. Assign the radio receiver to a radio transmitter.
- The output channels (switch output 1 (e.g. "OPEN" shutters) and switch output 2 (e.g. "CLOSE" shutters) are programmed in a single programming procedure.
- 4. Press the PROG button (1) on the radio receiver with

the enclosed programming pin and keep it pressed down for approx. 2 seconds until the LED lights up.

- Learning mode is now active for 20 seconds.
- 5. Within 20 seconds, emit a radio signal from the desired radio transmitter.
- 6. The LED ② of the radio receiver briefly goes out x1 if the radio signals are received and stored by the radio receiver.
- The field strength LED ② flashes to indicate the reception quality of the signal. (see "LED Signals/Field Strength Detection" chapter)
- 7. Ready radio receiver and radio transmitter are now connected via radio link.
- Learning mode is automatically exited after 20 seconds.
- Briefly press the PROG button ① on the radio receiver to exit learning mode prematurely.
- As soon as learning mode is ended, the LED ② goes out.
- 8. In order to programme further radio transmitters proceed as described under Point 3.
- 9. After the radio transmitter has been programmed to the radio receiver, the installation of the radio receiver can be been completed. (see "Tips for Planning" chapter)

Direct programming of Free-Control products:

- 1. Set slide switch to POS. I
- 2. Connect the radio receiver to the power.
- 3. Assign the radio receiver to a radio receiver.

The two output channels (switch output 1 and switch output 2) are programmes one after the other.

- Switch output 1 = LED red
- Switch output 2 = LED green

Switch output 1 is automatically always programmed first.

Switch output 2 cannot be programmed without programming switch output 1 first.

If only switch output 1 is programmed during the first programming procedure and not switch output 2, the next programming procedure will automatically begin with programming switch output 2.

- 4. Each programming procedure must be carried out separately and in full for each switch output. Press PROG button ① of the radio receiver with the enclosed programming pin and hold it down for 2 seconds until the LED ② for switch output 1 turns red LED and the LED ② for switch output 2 turns green.
- Learning mode for switch output 1/2 is now active for 20 seconds.
- 5. Within 20 seconds, emit a radio signal from the desired radio transmitter.
- 6. The LED ② of the radio receiver (switch output 1/2) briefly goes out x1, if the radio signal is received and stored by the radio receiver.
- The field strengths LED flashes to indicate the reception quality of the signal. (see "LED Signals/Field Strength Detection" chapter)
- 7. Finished radio receiver (switch output 1/2) and radio transmitter are now connected via radio link.
- Learning mode is automatically exited after 20 seconds.
- Press the PROG button on the radio receiver to exit learning mode prematurely.
- As soon as learning mode is ended, the LED ② goes out.
- 8. In order to programme switch output 2, proceed as described under Point 4.
- 9. In order to programme further radio transmitters, proceed as described under Point 3.
- 10. After the radio transmitter has been programmed to the radio receiver, the installation of the radio receiver can be completed. (See "Tips for Planning" chapter)
- → Error descriptions, see "LED signals" and "Fixes" chapters

Direct programming of Free-Control products:

Function: Series switch

- 1. Set slide switch to POS. II
- 2. Connect the radio receiver to the power.
- 3. Assign the radio receiver to a radio transmitter.

The two output channels (switch output 1 and switch output 2) are programmes one after the other.

- Switch output 1 = LED red
- Switch output 2 = LED green

Switch output 1 is automatically always programmed first.

Switch output 2 cannot be programmed without programming switch output 1 first.

If only switch output 1 is programmed during the first programming procedure and not switch output 2, the next programming procedure will automatically begin with programming switch output 2.

- 4. Each programming procedure must be carried out separately and in full for each switch output.
- 5. Programming mode for switch output 1

Press PROG button ① of the radio receiver with the enclosed programming pin and hold it down for 2 seconds until the LED ② for switch output 1 turns red.

- Learning mode for switch output 1 is now active for 20 seconds.
- 6. Within 20 seconds, emit a radio signal from the desired radio transmitter.
- 7. The LED 2 of the radio receiver (switch output 1) briefly goes out 1x, if the radio signal is received and stored by the radio receiver.
- The field strengths LED ③ flashes to indicate the reception quality of the signal. (see "LED Signals/Field Strength Detection" chapter)
- 8. Finished radio receiver (switch output 1) and radio transmitter are now connected via radio link.
- Learning mode is automatically exited after 20 seconds.
- Press the PROG button (1) on the radio receiver to exit learning mode prematurely.
- As soon as learning mode is ended, the LED ② goes out.
- 9. Programming mode for switch output 2

Press PROG button ① of the radio receiver with the enclosed programming pin and hold it down for 2 seconds until the LED ② (for switch output 1) turns red – press the PROG button ① of the radio receiver again for 2 seconds until the LED ② (for switch output 2) turns green.

- Learning mode for switch output 2 is now active for 20 seconds.
- 10. Within 20 seconds, emit a radio signal from the desired radio transmitter.
- 11. The LED ② of the radio receiver (switch output 2) briefly goes out 1x, if the radio signal is received and stored by the radio receiver.
- The field strengths LED ③ flashes to indicate the reception quality of the signal. (see "LED Signals/Field Strength Detection" chapter)
- 12. Finished radio receiver (switch output 2) and radio transmitter are now connected via radio link.
- Learning mode is automatically exited after 20 seconds.
- Press the PROG button ① on the radio receiver to exit learning mode prematurely.
- As soon as learning mode is ended, the LED ② goes out.
- 13. After the radio transmitter has been programmed to the radio receiver, the installation of the radio receiver can be completed. (See "Tips for Planning" chapter)
- → Error descriptions, see "LED signals" and "Fixes" chapters

Integration into the Smart Home system from Kopp

In order to be able to comfortably configure and control your Free-Control receiver or radio transmitter via a mobile device (smartphone or tablet), you will need the Kopp Gateway Mini Art. No. 2937.1505.0. With the Gateway Mini, you can turn your Free-Control components and other radio systems from various manufacturers into a Smart Home system (automatic Smart Home processes such as IF-THEN functions, time control functions and much more).

Programming new radio receivers and radio transmitters to the central controls via the Kopp HomeControl App.

Kopp's Smart Home Website - Info, downloads, etc.	Download Area-Manuals-Smart Home System	
www.kopp-	www.kopp-	
elektro.eu/themenwelten/smart-	elektro.eu/downloads/kopp-	
home	homecontrol-app	

Reset (factory settings)

Delete programmed transmitter-receiver assignment:

- 1. Press the PROG button 1 on the radio receiver with the enclosed programming pin and keep it pressed down.
- 2. After approx. 3 seconds, the LED ② of the radio receiver lights up. After a further 7 seconds, the LED ② flashes 2x and then goes off.
- 3. Finished Programme memory has been completely deleted. Ready to programme new radio transmitter.

Operating mode

The Free-Control radio receiver adapter can be controlled by programmed Free-Control radio transmitters (e.g. radio hand-held transmitter, radio wall transmitter, radio universal transmitter, sensors, etc.) or via the Smart Home system from Kopp. The devices can be individually controlled via the Kopp HomeControl App or using automatically saved Smart Home processes.

To do so, please refer to the previous chapter, "Integrating into the Smart Home System from Kopp" and the two QR codes. With the press of a button on any radio transmitter, a radio command is sent to the radio receivers/receiver groups that are programmed accordingly.

Please refer to the respective manual or the "Operating Mode" chapter for the radio transmitter!

Function: Shutter switch

With the press of a button on any radio transmitter, a radio command is sent to the radio receivers/receiver groups that are programmed accordingly.

- short press of the button (in the case of radio wall switch/connected radio universal transmitters on a conventional switch: upwards) Command: ON / OPEN
- short press of the button (downwards) Command: OFF / CLOSE

The motor-operated shutters, blinds, awnings start operating in the selected direction.

When in operation, the motor can be stopped at any position. To do do, briefly activate the radio transmitter again. The safety shut-off switch integrated into the receiver switches the output contacts after max. 150 seconds. With a long press of the button upwards, the drive mode, for example for motor-driven roller shutters, blinds and awnings, can be activated. The motor then moves until it has reached the OPEN or CLOSED position or until it is stopped by releasing the button on the radio transmitter.

- long press of the button (upwards) means: OPEN to position/slat adjustment of blind
- long press of the button (downwards) means: CLOSE to position, adjustment of slats on blinds

Change drive direction

To change direction, first stop the motor. To do so, briefly activate the drive mode of the radio transmitter. Then briefly press the radio transmitter button for the other drive direction.

Slat adjustment

Before the slat adjustment can be activated, stop the motor. Then activate the radio transmitter for > 0.4 seconds. The slat adjustment is activated for as long as the radio transmitter is activated.

Function series switch:

- short press of the button (in the case of radio wall switch/connected radio universal transmitters on a conventional switch: upwards) Command: ON
- short press of the button (downwards) Command: OFF

What to do in the event of voltage supply / voltage failure

When voltage is applies to the radio receiver, the LEDs briefly flash x1 each. Existing programming is retained after a loss of voltage.

Fixes

Several factors can influence correct operation of the radio system. The following are the most common faults and their causes and solutions are briefly explained.

Fault	Cause	Solution
LED does not flash when voltage is applied	No power	Check power supply
Radio receiver only switches on sometimes when the radio transmitter is activated.	Transmitter-receiver are located on the edge of the transmission range	With the help of the integrated field strength detection, check the signal quality
Radio receiver does not switch	No voltage; outside of the transmitter range	Check power supply; with the help of the integrated field strength detection, check the signal quality

Tips on planning

• Before installing, carry out an on-site inspection

in order to plan the best possible installation. Answer the following question for yourself: What must/should be installed where?

Try to find any sources of interference and assess

the security of transmission. (see the "Notes on Radio Operation" chapter)

- Use the integrated field strength detector of any Free-Control radio receiver to determine and assess the radio reception quality before completing the installation.
- If you determine from the field strength detector display that the radio signal is not reaching the radio receiver at a sufficient strength, select a different installation location.
- Perform a radio test under practical conditions (open/closed windows/doors; electrical consumers on/off etc.);
- Only after successfully completing the radio test, complete the desired installation.
- Note that Free-Control receivers cannot be switched in parallel with conventional switches/buttons, except in the case of the Free-Control radio receivers with potential-free contact.