RADIO REMOTE CONTROLLER SET
RXH-1K

CE

The RXH-1K remote controller set enables electrical equipment to be remotely controlled by means of radio transmitters (remote keyfobs). The remote controller set can work with up to 40 remote keyfobs. **The RXH-1K only supports SATEL-manufactured 433 MHz remote keyfobs.**

The remote controller design is based on the Microchip Technology Inc. component parts, which use the dynamically changed KEELOQ® code for the transmission between transmitter and receiver. It ensures both the safety of use and the resistance to spurious control signals coming from other equipment.

Interaction of the RXH-1K with the security systems is facilitated by the inputs informing of the system status. They make it possible to easily organize signaling of arming/disarming, as well as of alarm clearance.

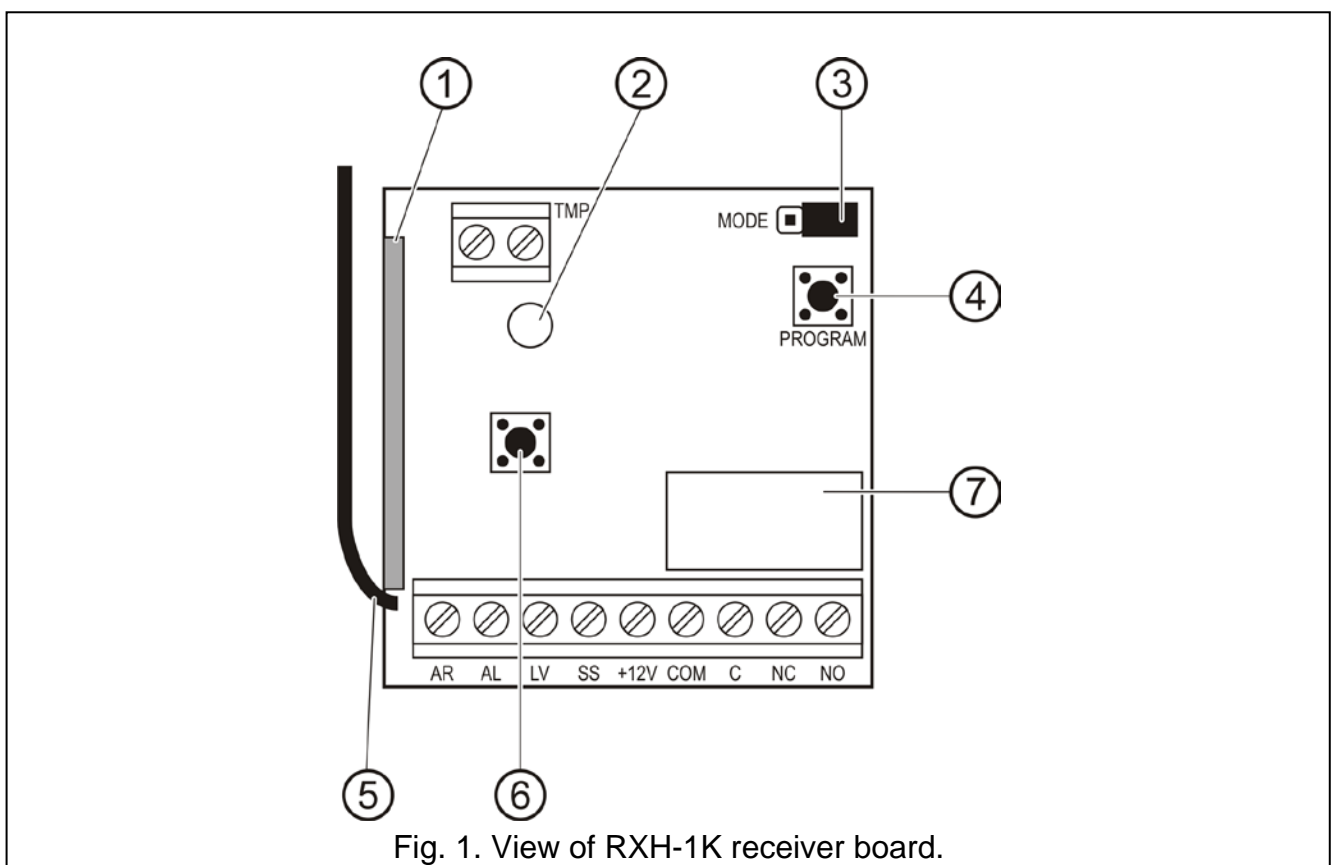# 1. Description of electronics board

Fig. 1. View of RXH-1K receiver board.

Explanations for figure 1:

1 − **superheterodyne receiver**, high sensitivity, immune to spurious signals;
2 − **LED indicator**;
3 − **pins to program the operating mode of relay**;
4 − **programming button**;
5 − **antenna**;
6 − **tamper contact**;
7 − **relay**.

Description of terminals:

AR – information signal input – security system status (armed/disarmed);

AL – information signal input – alarm;

LV – signal output – low battery in remote keyfob (OC); the output activates when the receiver detects low voltage in the remote keyfob battery and remains active until a remote keyfob with good battery is used (it can be used e.g. to report a trouble in the security system);

SS – siren control output (OC);

+12V – supply voltage input (direct voltage from 9 V to 16 V);

COM – common (ground);

C – common terminal of relay;

NC – normally closed terminal of relay;

NO – normally open terminal of relay;

TMP – tamper contact terminals.

The two-color **LED** indicates the module operating status and helps in programming the controller parameters:

- green light – normal operating mode;
- red light – receiving signal from remote keyfob in normal operating mode;
- green blinking light – waiting for the first press of the remote keyfob button when entering new remote keyfob into the receiver memory;
- red blinking light:
  - waiting for the second press of the remote keyfob button when entering new remote keyfob into the receiver memory;
  - the remote keyfob battery is exhausted (after pressing the remote keyfob button normal operating mode);
  - clearance of the receiver memory;
- alternately blinking red and green light – programming the monostable relay ON time.

The PROGRAM button allow:

- entering remote keyfobs into the receiver memory;
- programming the monostable relay changeover time for the given channel;
- clearing the receiver memory.

2. Installation

The receiver electronics board includes components sensitive to electrostatic discharges. These electrostatic discharges should be removed prior to installation. Also, touching the receiver board components should be avoided in the process of installation.

The RXH-1K is mounted in a plastic housing. When closing the housing, be particularly careful so that the programming button is not pressed in by the cables.

It is recommended that the manufacturer specified batteries be used in the remote keyfobs. The battery status must be periodically checked (e.g. by noting how the LED on the receiver board lights when the remote keyfob button is being pressed) and, if necessary, the used batteries must be replaced by new ones.

Notes:

- *Do not discard the used batteries. They should be disposed of as required by the existing regulations European Union Directives 91/157/EEC and 93/86/EEC.*

- *Making any construction changes or unauthorized repairs is prohibited. This applies, in particular, to modification of assemblies and components.*

3. Programming

For programming the RXH-1K remote controller, use the programming button located on the electronics board. To operate the controller you can use any button of the remote keyfob.

3.1 Adding remote keyfobs

To add a remote keyfob to the controller memory, do the following:

1. Press the PROGRAM button – the LED will start blinking green.
2. Press any button on the remote keyfob – the LED will start blinking red.
3. Press again the same remote keyfob button – the LED will light up solid green. The remote keyfob has been entered into memory.

Note: *If the remote controller memory is already full or if the remote keyfob is incorrect (made by another manufacturer), the first depression of the remote keyfob button will make the controller return to its normal condition.*
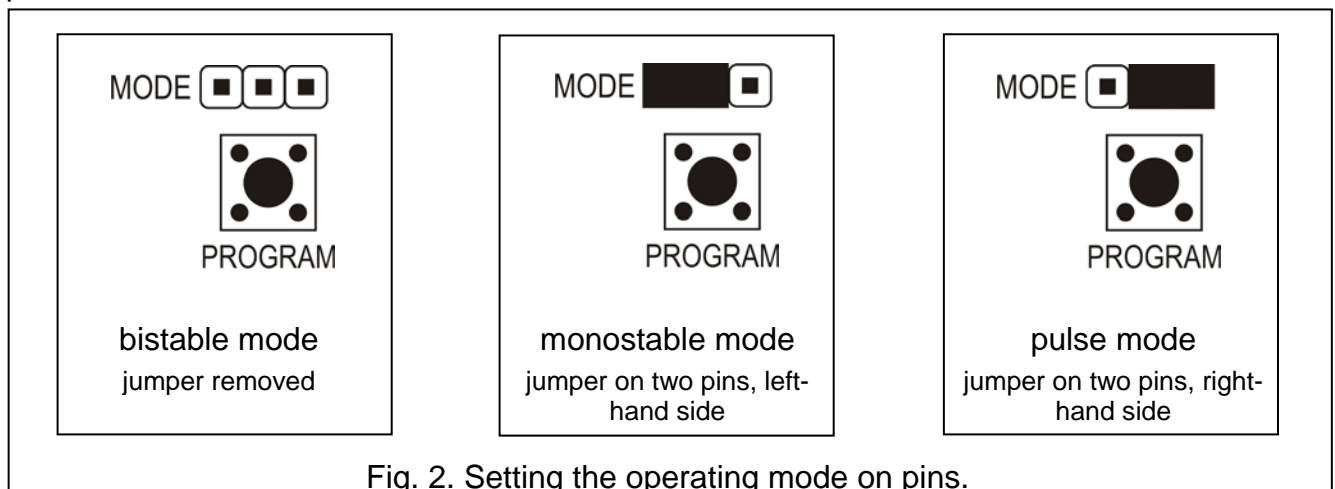
3.2 Removing remote keyfobs

Clearing the remote keyfob from the controller memory is only possible by erasing the entire contents of the controller memory. To do this, follow the steps below:

1. Press and hold down the PROGRAM button until the LED changes for a while the color of its light to red (which will occur after approx. 3 seconds).
2. Release the PROGRAM, button momentarily, then press it again and hold down until the LED starts blinking red (which will occur after approx. 3 seconds). This is how the erasing of controller memory is indicated.

When the LED starts lighting steadily green again, the receiver is ready for programming new remote keyfobs.

3.3 Programming relay operating mode

The relay can work in one of the three modes, depending on how the jumpers are set on pins.

bistable mode	monostable mode	pulse mode
jumper removed	jumper on two pins, left-hand side	jumper on two pins, right-hand side

Fig. 2. Setting the operating mode on pins.

Bistable mode (see: fig. 2) – each press of the remote keyfob button changes the relay status to the opposite one.

Monostable mode (see: fig. 2) – relay activated for a preset time.

Pulse mode (see: fig. 2) – relay activated for the time when remote keyfob button is pressed. After the button is held down for more than 30 seconds, the keyfob stops transmitting, thus preventing the battery discharge.

3.3.1 Programming monostable mode on-time

By default, the monostable mode on-time is preprogrammed at 5 seconds. It can be changed by the user and set within the range of **1 to 255 seconds**.

In order to enter the new monostable mode on-time:

1. Press the PROGRAM button twice – the LED will go out.
2. Press any button on the remote keyfob – the LED will start blinking alternately green and red.
3. Having measured off the required time, press the remote keyfob button again – the LED light will turn into steady green.

4. Interaction with the security system

Using the remote keyfob button you can arm/disarm the security system or trigger/clear an alarm. To be able to do so, connect the terminals of relay selected for control to the suitably preprogrammed control panel zone.

The SS receiver output can signal arming/disarming/disarming and alarm clearing by means of the remote keyfob. In order to ensure such signaling, it is necessary to connect suitably preprogrammed control panel outputs to the AR, AL inputs (the armed mode information output to the AR input, and the output signaling alarm to be canceled – to the AL input). The AR and AL inputs are monitored for 4 seconds since the remote keyfob was used. If there is a change in the status of the monitored inputs during that time, the SS output will be shorted to the common ground for the pulse duration (0.16 second). The event can be identified by the number of pulses:

- 1 pulse – arming;
- 2 pulses – disarming;
- 4 pulses – disarming plus alarm clearing.

The SS output can be used e.g. to control a siren. Permissible current-carrying capacity of the SS output is 500 mA.

In the example presented in Fig. 3, the panel armed mode is controlled by means of the remote keyfob. The relay works in the pulse mode (appropriately placed jumper) and connects ground (0 V) to the panel CTL input. In order to arm or disarm, press and hold down the remote keyfob button until you hear a beep from the alarm signaling device.

The SS output controls the relay, which supplies +12 V voltage to the +SA siren input and, consequently, generates a sound signal. The OUT1 control panel output remains connected via the 2.2 kΩ resistor to the common ground in the siren, thus ensuring presence of the load on the OUT1 output, as well as cabling control when armed/disarmed states are being signaled. The resistor should be installed inside the siren housing.

The figure shows also a simple solution to low battery indication in the remote keyfob (the LED is connected to the LV input).

The CA-6 control panel makes it possible to program the following parameters:

OUT1 – alarm on for preset time (+12 V during the output on-time);
OUT2 – alarm on until canceled (+12 V during the output on-time);
OUT3 – power supply output (+12 V);
OUT4 – armed mode indicator (type OC output – program +12 V during on-time);
OUT5 – alarm on until canceled (type OC output – program +12 V during on-time);
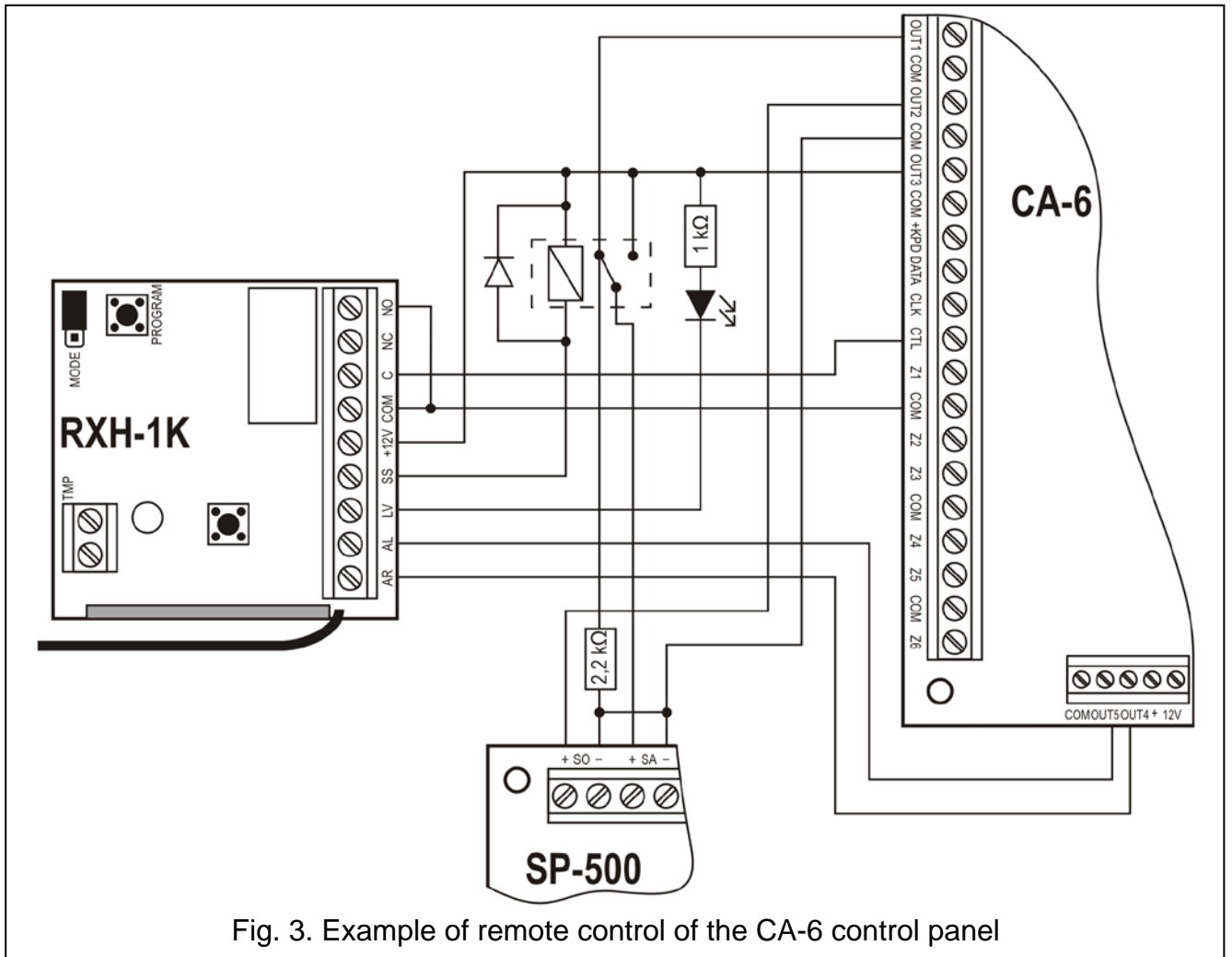CTL – arming/disarming one or both partitions (FS 125).

Fig. 3. Example of remote control of the CA-6 control panel

5. Specifications

Radio communications range in open area	up to 200 m

(an obstacle between the transmitter and the receiver will reduce the device operating range)

Supply voltage	12 V DC ±15%
Standby current consumption	20 mA
Max. current consumption	40 mA
Relay contacts rating (resistive load)	2 A / 24 V DC
Adjustment range of changeover time in monostable mode	1–255 s
Current-carrying capacity of LV (OC) output	50 mA
Current-carrying capacity of SS (OC) output	500 mA
Operating frequency band	433,05–434,79 MHz
Environmental class according to EN50130-5	II
Maximum humidity	93±3%
Operating temperature range, receiver	-10 to +55 ºC
Operating temperature range, transmitter (remote keyfob)	-10 to +55 ºC
Housing dimensions	72x118x24 mm
Receiver weight	50 g
Transmitter (keyfob) weight	30 g

Hereby, SATEL sp. z o.o., declares that this remote controller set is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC. The declaration of conformity may be consulted at www.satel.eu/ce