Satel®

RX-2K • RX-4K

RADIO REMOTE CONTROLLER

CE

The RX-2K / RX-4K controller allows you to use keyfobs to control devices connected to relay outputs. Because it is designed for use with the alarm system, it has inputs supervising the state of the alarm system, as well as an output for indication of arming / disarming / alarm clearing.

1. Features

- 2 [RX-2K] or 4 [RX-4K] control channels.
- Support for up to 340 keyfobs.
- Transmissions secured by KeeLoq code hopping.
- Configurable from a computer with DLOAD10 program installed.
- 2 [RX-2K] or 4 [RX-4K] relay outputs.
- 2 OC type outputs:
  − indication of low keyfob battery,
  − indication of arming / disarming / alarm clearing in the alarm system.
- 2 inputs to supervise the state of the alarm system:
  − armed mode information,
  − alarm information.
- LED indicator.
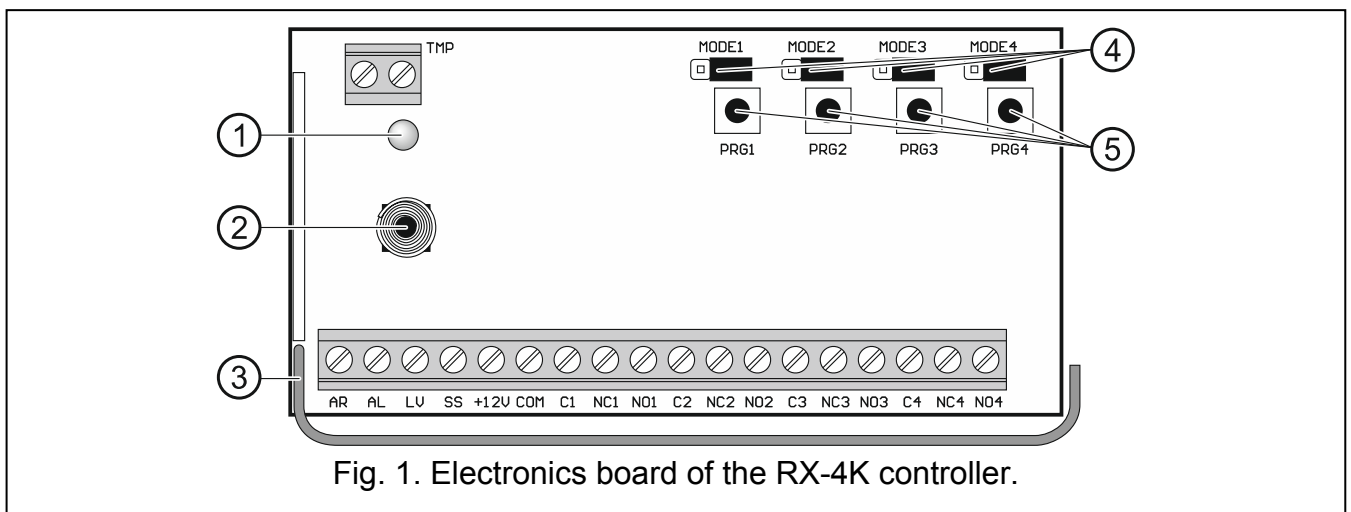- Tamper switch activated by cover removal.

2. Electronics board

Fig. 1. Electronics board of the RX-4K controller.

① bicolor LED indicator:

ON in green – power OK,

ON in red – transmission has been received from keyfob,

flashing red – transmission has been received from keyfob with low battery.

② tamper switch.

③ antenna.

④ MODE1, MODE2, MODE3 and MODE4 pins. To be used for setting the operating mode of relay outputs. The digit stands for the number of the relay output.

⑤ PRG1, PRG2, PRG3 and PRG4 buttons. Allow you to enroll keyfobs and define the cut-off time of relay outputs. The digit stands for the number of the control channel / relay output. The PRG2 [RX-2K] / PRG4 [RX-4K] button can be used to start communication with the DLOAD10 program. The PRG1 button can be used to restore the factory default settings.

Note: The RX-2K controller has no MODE3 / MODE4 pins and PRG3 / PRG4 buttons.

Terminals

TMP	-	NC type tamper output (opening the tamper switch opens the output). You can connect the TMP output to the appropriately programmed output of the alarm control panel.
AR	-	input supervising the armed status in the alarm system. The input is activated after applying the common ground. Connect the AR input to the control panel OC type output programmed as "Armed status".
AL	-	input supervising the alarm status in the alarm system. The input is activated after applying the common ground. Connect the AL input to the control panel OC type output indicating the alarm to be cleared.
LV	-	output indicating low battery in the keyfob. The output will be turned on after receiving a transmission from the keyfob with low battery. The output will be turned off after receiving a transmission from the keyfob whose battery is OK. OC type output (shorted to common ground when active). You can connect e.g. a LED to the LV output, or you can connect the output to an appropriately programmed zone of the alarm control panel.
SS	-	output indicating arming / disarming / alarm clearing in the alarm system. The indication will be triggered if the AR and/or AL input status is changed within 4 seconds of receiving a transmission from the keyfob. The indication is provided in the form of pulses of 0.16 second duration:

        1 pulse – arming,

        2 pulses – disarming,

        4 pulses – disarming and/or alarm clearing.

        OC type output (shorted to common ground when active). You can connect e.g. a siren to the SS output.

+12V	-	power input (9...16 V DC).
COM	-	common ground.
C1...C4	-	relay output common contact.
NC1...NC4	-	relay output normally closed contact.
NO1...NO4	-	relay output normally open contact.

Note: The RX-2K controller has no terminals of relay outputs 3 and 4.

3. Keyfobs

The controller supports the following SATEL 433 MHz keyfobs:

MPT-300 – 5-button keyfob,

T-4 – 4-button keyfob,

T-2 – 2-button keyfob,

T-1 – 1-button keyfob,

P-4 – 4-button keyfob,

P-2 – 2-button keyfob.

The RX-2K controller is delivered with two P-2 keyfobs, and the RX-4K controller – with one P-4 keyfob.

3.1 Keyfob battery replacement

The battery life depends on how the keyfob is used. The more frequently the buttons are pressed, the faster the battery drains. When the controller indicates that the battery is running low (LED; LV output), replace the battery as soon as possible.

⚠️ **There is a danger of battery explosion when using a different battery than recommended by the manufacturer, or handling the battery improperly.**

Be particularly careful during installation and replacement of the battery. The manufacturer is not liable for the consequences of incorrect installation of the battery.

The used batteries must not be discarded, but should be disposed of in accordance with the existing rules for environment protection.

4. Installation

⚠️ **Disconnect power before making any electrical connections.**

Changes, modifications or repairs not authorized by the manufacturer shall void your rights under the warranty.

The controller should be installed indoors, in spaces with normal air humidity. When selecting the installation place, take into consideration that thick walls, metal partitions, etc. will reduce the radio signal range. It is recommended that the controller be mounted high above the floor. This will allow you to get a better range of radio communication and avoid the risk of the controller being accidentally covered by people moving around the premises. Mounting the controller near electrical installations is not advisable, as this may cause malfunction of the device.

Note: When closing the enclosure, make sure that the programming button is not pressed by the cables.

5. Configuring

You can configure the controller using buttons and pins. Alternatively, you can use a computer with the DLOAD10 program installed to do this job. The DLOAD10 program can be downloaded from the www.satel.eu site.

5.1 Preparation for configuring using the DLOAD10 program
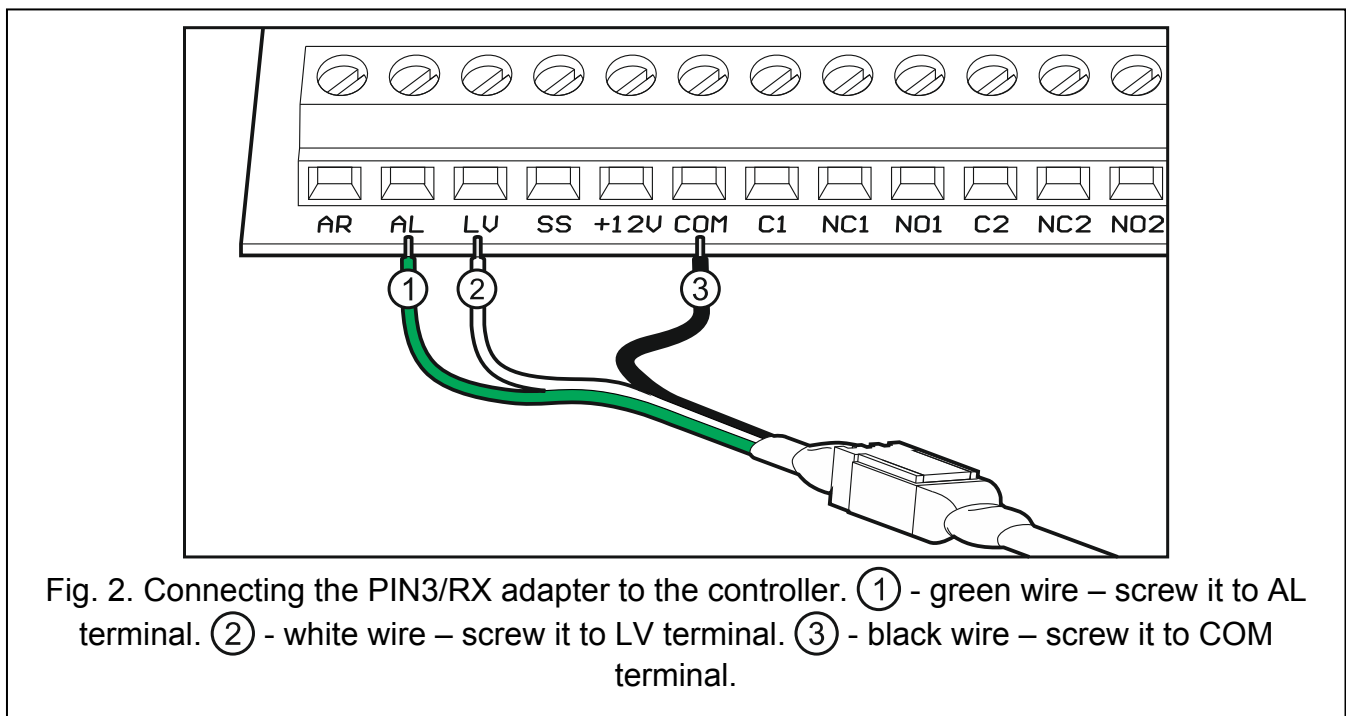
Connecting the computer to the controller

To make the connection, use the USB-RS converter offered by SATEL. The controller has no RS port connector, therefore you must use the PIN3/RX adapter, which is delivered with the converter. Screw the adapter wires to the controller terminals in accordance with Table 1 and Fig. 2.

Wire color	Function	Terminal
🟩 green	Rx signal	AL
⬜ white	Tx signal	LV
⬛ black	common ground	COM

Table 1.

Notes:

- *If you cannot establish communication between the controller and the program, add a 47 kΩ resistor between the LV and +12V terminals.*

- *Before connecting the adapter wires to the AL and LV terminals, disconnect other wires from these terminals.*

Fig. 2. Connecting the PIN3/RX adapter to the controller. ① - green wire – screw it to AL terminal. ② - white wire – screw it to LV terminal. ③ - black wire – screw it to COM terminal.

Starting communication between the controller and the program

1. Run the DLOAD10 program. Access to the program is protected by a password. To obtain access at the first run of the program, enter the factory default password: 1234 (you need not enter the factory password, just click "OK").
2. Click "Communication" →"Configuration". The "Configuration" window will be displayed.
3. In the "Port RS-232" field, select the computer COM port to be used for communication with the controller.
4. Click "OK".
5. Press and hold down the PRG2 [RX-2K] / PRG4 [RX-4K] controller button.
6. After the LED flashes red once, release the button.

7. Press again and hold down the PRG2 [RX-2K] / PRG4 [RX-4K] button.

8. When the LED starts flashing (in a repeating "red – green – OFF" sequence), release the button. The controller is ready to establish communication with the DLOAD10 program.

Note: The controller is waiting 1 minute for communication with the DLOAD10 program to be established.

9. In the DLOAD10 program, click in turn "File" →"New device" →"Keyfobs receiver RX/RE/RXH". The controller configuration window will be displayed.
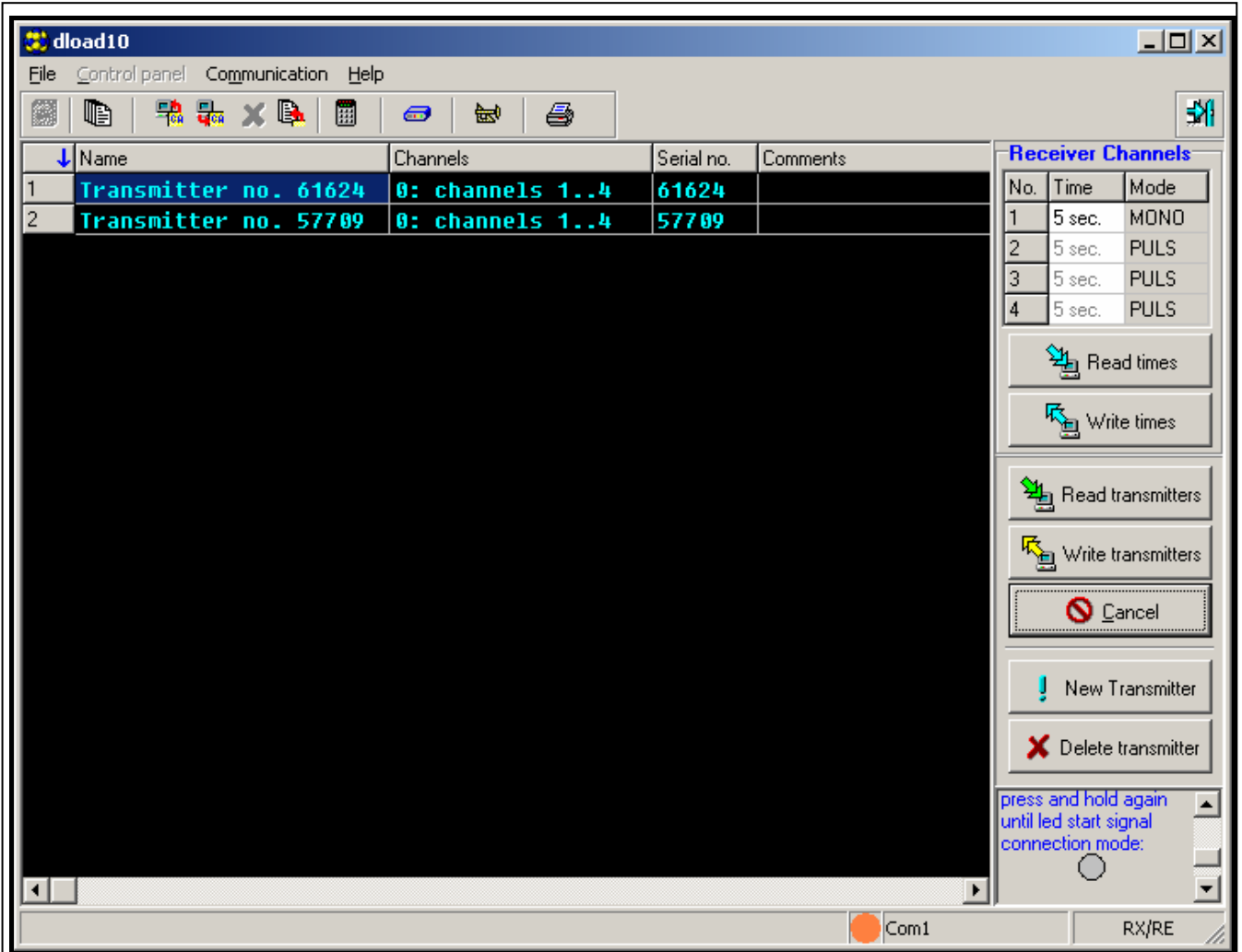

Fig. 3. DLOAD10 program: controller configuration window.

5.2 Enrolling a keyfob

Enrolling a keyfob by using a button

You can use any button to enroll a keyfob, but only using the PRG1 button allows the keyfob user to control all channels (relay outputs). If another button is used, the keyfob will only be able to control some channels. For example, if you use the PRG2 button, it will only control the channels 2-4 [RX-4K] / channel 2 [RX-2K].

Table 2 shows the channels (relay outputs) that can be controlled by using each keyfob buttons, depending on which controller button was used to enroll the keyfob. The button numbers refer to the keyfobs P-2, P-4, T-1, T-2 and T-4, whereas the symbols – to the MPT-300 keyfob.

Note: *The ■ button on the MPT-300 keyfob is not used when working in conjunction with the controller.*

	Controller button	Channels controlled from a keyfob	Keyfob button			
			1 / ○	2 / ●	3 / □	4 / ▲
RX-4K	PRG1	1-4	1	2	3	4
	PRG2	2-4	2	3	4	
	PRG3	3-4	3	4		
	PRG4	4	4			
RX-2K	PRG1	1-2	1	2		
	PRG2	2	2			

Table 2.

1. Press the selected controller button. The LED will start flashing green.
2. Press the keyfob button (in the case of the MPT-300 keyfob, press the ○ button). The LED will start flashing red.

Note: *If the LED will turn on in green, it means that no more keyfobs can be enrolled or the keyfob is not supported.*

3. Press the same keyfob button again. The LED will turn on in green.

Enrolling a keyfob by using the DLOAD10 program

1. Click "Read transmitter" to read the data of keyfobs enrolled in the controller.
2. Click "New Transmitter". The "New Transmitter" window will open.
3. Press the keyfob button (in the case of the MPT-300 keyfob, press the ○ button).
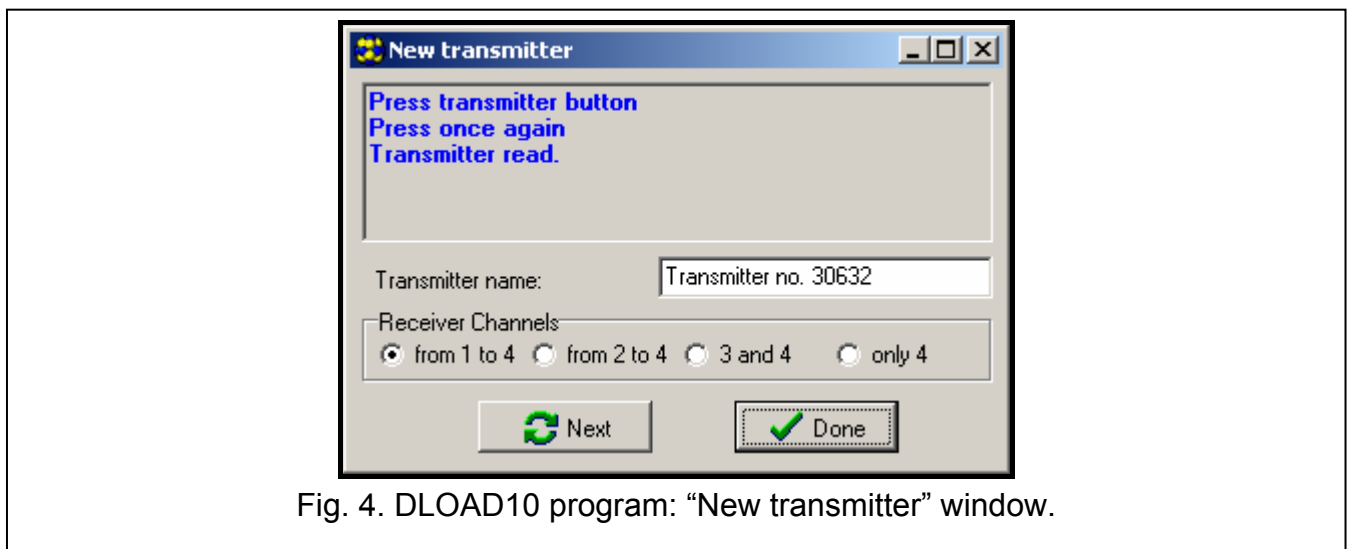4. Press again the keyfob button when such a command is displayed in the "New Transmitter" window.

Fig. 4. DLOAD10 program: "New transmitter" window.

5. You can enter your own name of the keyfob.
6. You can define the channels to be controlled by the keyfob (by default, it controls all channels).
7. Click "Done" to close the window.
8. Click "Write transmitters" to write the keyfob data to the controller.

5.3 Deleting a keyfob

You can only delete individual keyfobs by using the DLOAD10 program.

1. Click "Read transmitter" to read the data of keyfobs enrolled in the controller.
2. Click on the keyfob you want to delete.
3. Click "Delete transmitter". The "Confirm" window will be displayed.
4. Click "OK". The "Confirm" window will be displayed.
5. Click "Write transmitters" to write the changes to the controller.

5.4 Restoring factory default settings and deleting keyfobs

When restoring the factory default settings, you can delete all keyfobs.

1. Press and hold down the PRG1 button.
2. After about 3 seconds, when the LED flashes red once, release the button.
3. Press and hold down again the PRG1 button.
4. After about 3 seconds, when the LED starts flashing red, release the button.
5. When the LED stops flashing red and turns on in green, it means that the factory default settings of the controller have been restored.

5.5 Setting the operating mode for a relay output

You can set a different operating mode for each relay output. The output 1 pins are used as an example in the table below.

MODE1	**Pulse mode** [jumper across two pins on the right] – the relay output is turned on when the keyfob button is pressed (up to 30 seconds – then the keyfob stops transmitting to prevent the battery discharge).
MODE1	**Monostable mode** [jumper across two pins on the left] – pressing the keyfob button turns on the relay output for a preset time.
MODE1	**Bistable mode** [jumper removed from pins] – each pressing the keyfob button changes the relay output status to the opposite one.

5.6 Programming the relay output cut-off time

If the relay output works in the monostable mode, you can program the cut-off time for it ranging from 1 to 255 seconds (by default: 5 seconds). The cut-off time is programmed individually for each output.

Programming the time by using buttons

1. Press twice the controller button designated with the number of the relay output for which you want to program the time. The LED will go off.
2. Press the keyfob button. The LED will start flashing green and red alternately.
3. Measure the time during which the relay output is to be turned on and press the keyfob button again. The LED will turn on in green.

Programming the time by using the DLOAD10 program

1. Click "Read times" to read the times programmed in the controller.
2. In the "Time" column, enter the cut-off time for the given relay output.
3. Click "Write times" to write the changes to the controller.

6. Specifications

RX-2K / RX-4K controller

Supply voltage .... 9...16 V DC
Standby current consumption ....13 mA
Maximum current consumption
                RX-2K ....50 mA
                RX-4K ....65 mA
Operating frequency band..433.05 ÷ 434.79 MHz
Relay output... 2 A / 24 V DC
LV output.. 50 mA / 12 V DC
SS output .... 500 mA / 12 V DC
Operating temperature range..-10°C...+55°C
Maximum humidity ....93±3%
Dimensions .... 118 x 72 x 24 mm
Weight
                RX-2K ....92 g
                RX-4K .... 108 g

P-2 / P-4 keyfob

Operating frequency band..433.05 ÷ 434.79 MHz
Radio communication range (in open area) .... up to 200 m
Battery.. 23A 12 V
Operating temperature range..-20°C...+55°C
Dimensions .... 37 x 55 x 15 mm
Weight...24 g