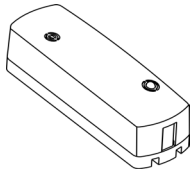# WIRELESS MAGNETIC CONTACT SECURITY DETECTOR

«Ladoga MK-RK» ver. 3

Installation Guide

1 General Information

1.1 Wireless magnetic contact security Detector «Ladoga MK-RK» ver. 3 (hereinafter, the Detector) is intended for opening or shifting control of doors, windows or other structural elements with transmission of messages to the control panel (hereinafter, CP) via two-way wireless communication by the «Rielta-Contact-R» protocol.

1.2 Opening or shifting control is fulfilled by built-in magnetic contact monitoring. The Detector comprises the plugs for external inertia detectors (hereinafter, the EID) hooking up.

1.3 The Detector is − single-zone, provides a possibility for one EID hooking up to «G 1» loop.

The built-in Gerkon and «G 1» loop are integrated in a single control zone, operation tactics of which is set by the «XP2» jumper (see Cl. 8).

1.4 The Detector operates within 433.05 − 434.79 MHz frequency range. Transmission power does not exceed 10 mW.

1.5 The Detector ensures operation at the main and backup operating frequencies. The changeover to backup operating frequency is fulfilled automatically.

1.6 Radio communication is initiated by the Detector at 10, 15, 30 sec, 1, 2, 5, 10 min intervals assigned in the process of their binding with the CP. Alarm and tamper messages are transmitted immediately.

1.7 The Detector is powered from the one lithium power supply battery CR123A.

1.8 Operation modes of the Detector are displayed by a two-color LED indicator.

1.9 The Detector generates and transmits the following messages:
- «Norm» − under closed built-in magnetic contacts and «G 1» loop resistance value in the range 3.6 ... 6.5 kΩ;
- «Intrusion to Zone 1» − under opened built-in magnetic contacts and «G 1» loop resistance value less than 3.4 or more than 6.9 kΩ;
- «Tamper» − in the event of case tampering or removal from the installation surface;
- «Power Supply Low Battery» − under the power supply battery voltage drop over $2.2_{-0.2}$ V;

1.10 The Detector is designed to operate continuously, around the clock.

1.11 The Detector has immunity to electromagnetic interference.

2 Specifications

Table 1

Parameter	Value
Distance between the Detector and the magnet, mm: - for magnetic contact opening - for magnetic contact restoration	more than 15 less than 5
Monitored loop resistance range, kΩ: - in the «Norm» state - in the «Alarm» state	3.6 to 6.5 less than 3.4 or more than 6.9
Operating temperatures range, ˚C	minus 20 to +55
Permissible relative humidity at 25 ˚C temperature, %	up to 98
Dimensions, mm, max	112 x 41 x 32
Weight, kg, max	0.1
IP rating	IP30
Ambient class	Boreal climate
Battery life under normal climatic conditions, disabled indication and assigned radio exchange period not less than 30 sec: months, not less	60
Average service life, years	8

3 Scope of Delivery

Each Detector unit package contains the items listed in the Table 2.

Table 2

Name	QNT
Wireless magnetic contact security Detector «Ladoga MK-RK» ver. 3	1 pc.
Power supply lithium battery CR123A	1 pc.
Magnetic contact inertia security Detector	1 pc.
Resistor 5.1 kΩ 0.125 W	1 pc.
Wireless magnetic contact security Detector «Ladoga MK-RK» ver. 3. Installation Guide	1 copy

4 Design of the Detector

The Detector consists of a case and a printed circuit board (PCB). On the front side of the PCB (1) there are located: antenna (2), builtin hermetic contact (3), jumper (5), tamper (4), two-color LED indicator (7), terminal blocks for EID hooking up (8), battery holder (9), «RESET» contacts (11). The PCB is fixed on the base with a latch (10).

Magnet (6) of the inertial detector (supplied) is used for the built-in hermetic contact supervision. The magnet should be installed opposite to the recess in the sidewall of the base.
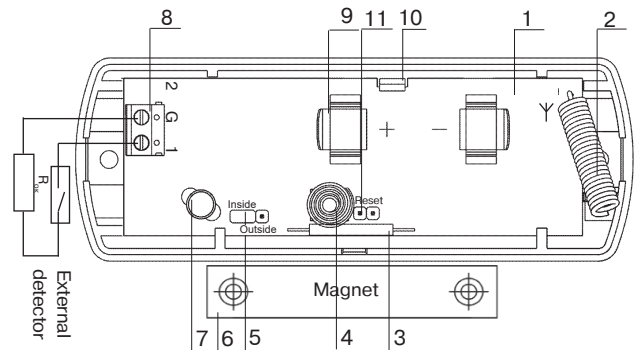

Figure 1 − «Ladoga MK-RK» ver. 3

5 Indication

The following types of indication are generated by the Detector:

a) «Binding» − procedure of logging of the Detector in the CP;

b) «Identification» indication is activated by relevant commands received from the CP, remains active during 15 min or until the Detector cover is opened;

c) LED indication of the Detector state is activated after the Detector cover is closed and remains active during 15 min under conditions:
- other LED indication types absence;
- alarm «Tamper» message is not generated during this time;
- absence of command from the CP disabling the Detector state indication.

The modes of LED indication are listed in the Table 3.

Table 3

The Detector State	Indication	Note
End of the «Binding» procedure	LED indicator lighting red for 2−3 sec	
«Binding» procedure	LED indicator periodical blinking green	The Detector logging in the CP
«Identification» indication	LED indicator alternate blinking red and green	By the relevant command from the CP
«Intrusion to Zone 1»	Single-shot LED indicator lighting red for 4 sec*	State indication is ON, «Identification» indication is OFF
Communication Quality Appraisal	See sect. «Communication Quality Appraising»	
«Norm»	Indication is OFF	
* LED indication of the Detector		

6 Binding with the CP

The «Binding» mode is intended for the Detector logging in the CP and service information exchange.

6.1 Prepare the CP in accordance with CP Installation Guide.

6.2 Place the power supply battery to the holder (9) (if the battery is installed by manufacturer, remove an isolator).

6.3 Periodical LED indicator blinking green is evidence of binding process.

6.4 In case of mentioned above LED indication absence, short-circuit «RESET» terminals for 2−3 sec.

6.5 Successful binding procedure complying is indicated by LED indicator lighting red for 2−3 sec.

6.6 The time limit for the binding process of the Detector is 100 sec. To restart the binding procedure, short-circuit «RESET» terminals for 2−3 sec.

7 Communication Quality Appraising

7.1 For radio communication quality appraising it is necessary to:
- install the PCB to the base;
- set the Detector on the assumed place of installation;
- push and then release case tamper.

7.2 After case tamper releasing the Detector generates case tamper alarm message, transmits it via radio communication channel and represents communication quality with CP by LED indication in accordance with the Table 4.

Table 4

LED Indication		Communication Quality Appraisal	Recommendations
Color	Mode		
Green	Three blinks	Excellent	Install the Detector at this place
Green	Two blinks	Good	
Green	One blink	Communication established	Choose another place for installation or use a repeater*
Red	Series of blinks	No communication	
* «Ladoga-RK» system repeater			

8 Operation features

8.1 Jumper (pic. 5, fig. 1) is in the «OUTSIDE» position. Only «G 1» line is controlled, the position of the built-in reed switch is ignored.

8.2 Jumper is in the «INSIDE» position. Only the built-in reed switch is controlled; nothing should be connected to the «G 1» line.

8.3 Jumper is not installed. Both the «G 1» line and the built-in reed switch are controlled.

9 Installation

9.1 Choose the place of installation. Mark the holes layout, for the purpose the base of the Detector can be used (see Figure 2). Fasten the base by screws. To ensure wall tampering control, fasten the screw in the wall tamper holder.

9.2 Install the PCB, connect the wires of monitored loops to terminal blocks (8) and close the cover. The length of the loops must not exceed 5 m. Install the terminal (EOL) resistor Rterm (5.1 kΩ) at the end of the loop as shown in Figure 1. The connections must be soldered or screwed.

Antenna holder plate

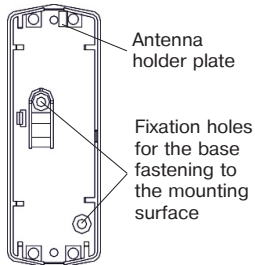Fixation holes for the base fastening to the mounting surface

Figure 2 – The Base

9.3 It is not recommended to install the Detectors on metal surfaces. The distance between the Detector and a magnet or magnetically conductive material should be at least 25 mm.

9.4 Irrespectively of any permissible positions of the monitored structure, the Detector and the magnet should not be subjected to mechanical impacts (compression, blows, etc.).

9.5 In case of simultaneous usage of a built-in hermetic contact and an external detector plugged to «G 1» contacts, remove jumper.

Attention! Antenna should be installed to the antenna holder plate (see Figure 2). The antenna location outside of antenna holder plate essentially reduces radio communication range.

10 Storage and Transportation

10.1 The detector are transported without power supply battery. The detector in their original packaging are resistant to:

- transport jolting with the acceleration up to 30 m/sec^2 at impact frequency range from 10 to 120 per minute or 15 000 strikes;
- ambient temperature range minus 50 ... +50 °C;
- relative air humidity (95 ± 3) % at a temperature +35 °C.

10.2 The detector in original package may be transported by any means of transportation in closed vehicles over any distances in compliance with the existing shipping rules concerning the respective means of transportation.

10.3 After transportation under the conditions different to exploitation conditions the detector shall be ready to operate after a maximum of six hours.

10.4 The storage room shall be free from current-conducting dust, acid vapors, alkali and gases that cause corrosion and destroy insulation.

11 Manufacturer's Guarantees

11.1 The Manufacturer guarantees conformity of the Detector to it's Technical Specifications if conditions of transportation, storage, assembling and operation are observed. The guaranteed storage period is 63 months since the date of manufacturing the Detector.

11.2 The guaranteed period of operation is 60 months since the date of commissioning within the storage period guaranteed.

11.3 The Detectors that are found to non-conforming to it's Technical Requirements shall be repaired by the Manufacturer, provided the installation and operation rules have been complied with.

Note – Warranty obligations are not applied to the power supply battery.

12 Acceptance and Packing Certificate

Wireless magnetic contact security Detector «Ladoga MK-RK» ver. 3 has been manufactured in compliance with the active technical documentation and classified as fit for operation and packed by «Development and Production Enterprise RIELTA» LLC.

Packing date _____
month, year