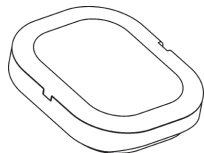




## SECURITY WIRELESS INERTIA DETECTOR

«Gran-RK»

### Installation Guide



#### 1 General Information

1.1 Security wireless inertia detector «Gran-RK» (hereinafter «the Detector») is designed to detect changing of the monitored item position from its initial installation place and sending alarm messages via wireless two-way communication by the «Rielta-Contact-R» protocol to the control panel (hereinafter «the CP»).

1.2 The Detector operates in the frequency range from 433.05 to 434.79 MHz. The power radiated by the Detector doesn't exceed 10 mW.

1.3 Wireless two-way communication «Detector - CP» is provided at the main or reserve frequencies. Switching between the main and reserve frequencies is accomplished automatically.

1.4 Radio communication is initiated by the Detector at 10, 15, 30, 60, 300 and 600 second intervals assigned during its logging to the CP. Alarm and tamper messages are transmitted immediately.

1.5 The Detector is powered by two power-supply batteries of CR2450 type: the main and back-up one.

1.6 The Detector generates and transfers messages with the following information content:

- «Normal» – under keeping its initial position;
- «Tilt-Alarm» – under tilt changing for 3° or more;
- «Displacement-Alarm» – item displacement from its initial position at a distance of 0.25 m or more with the acceleration of 0.5 m/s<sup>2</sup> (0.05 g) and more along any of the three axes during the period at least 1 s;
- «Tamper» – under case tampering or the Detector removal from its place of installation;
- «Failure» – under long-term vibration interferences;
- «Main power-supply low-battery» – main power-supply battery voltage drop for less than 2.2<sub>-0.2</sub> V;
- «Backup power-supply low-battery» – back-up power-supply battery voltage drop for less than 2.2<sub>-0.2</sub> V;

1.7 The Detector provides immunity to electromagnetic interferences.

1.8 Industrial interferences created by the Detectors do not exceed the limits for the facilities used in housing, commercial zones or production areas with low power consumption.

1.9 The Detector is designed for continuous and uninterrupted operation.

1.10 The Detector operational stability provides its normal operation under the following influencing factors:

- a) Tilt changing for at least 1°;
- b) Displacement from its initial position for the distance of not more than 0.1 m and more with the acceleration of 0.2 m/s<sup>2</sup> (0.02 g) along any of the three axes during the period at least 1 s.

1.11 The Detector provides a possibility of a tilt sensitivity adjustment (the sensitivity value is adjusted as one of a number of: 3°, 10°, 25°, 45°), as well as displacement threshold adjustment (displacement threshold is adjusted as one of a number of: 1 – min, 2, 3, 4, 5, 6, 7, 8 – max).

1.12 The Detector can be integrated in a security system in single-channel or two-channel operation modes. In single-channel mode «Tilt-alarm» and «Displacement-Alarm» messages are combined in one. The operation mode is chosen on the stage of the Detector binding with the CP.

#### 2 Specifications

Table 1

Parameter	Value
Operating temperature	minus 20 ... +55 °C
Permissible relative humidity at +25 °C without moisture condensation	98 %
IP rating	IP54
Dimensions, max	65x55x20 mm
Weight, max	0,05 kg
Battery life under normal climatic conditions and assigned radio exchange period not less than 60 s under vibration interference absence	48 months
- from the main battery, not less than	2 months
- from the backup battery, not less than	
Average service life	8 years

#### 3 Scope of Delivery

Table 2

Name	QNT
Security wireless inertia detector «Gran-RK»	1 pc.
Lithium power-supply battery CR2450	2 pc.*
Screw 3-3x30.016	1 pc.
Security wireless inertia detector «Gran-RK». Installation Guide	1 copy
* Installed	

#### 4 The Detector Design

The Detector comprises the following elements: the base with an openable fixing hole (6) and a case cover with the printed circuit board (PCB) installed (1).

Main power-supply battery holder (2), «Reset» contacts (3), backup power-supply battery holder (4), tamper (5) are located on the PCB.

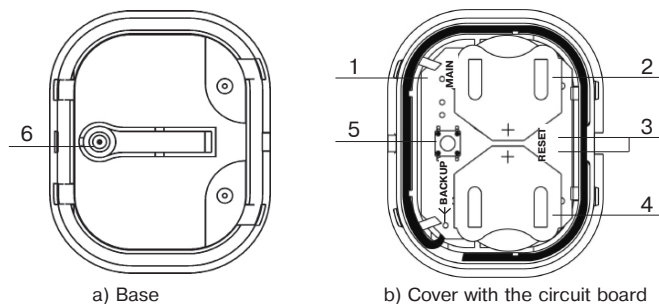


Figure 1 - Detector layout

#### 5 LED Indication

The Detector generated the following LED indication types:

- LED indication of the mode «Binding» (procedure of the Detector logging in the CP),
- LED indication of the mode «Identification» is switched ON by the relevant command from the CP. The LED indication continues lighting during 15 min after the case is closed if other types of indication are OFF, and «Tamper» message or indication inhibition command from the CP are not generated.
- The Detector state LED indication switches on after the Detector case is closed and is deactivated after the first 15 minutes after the cover is closed on the condition that during this time no Tamper message is generated or there is no command from the CP on indication disabling.

The LED indication modes are listed in Table 3.

Table 3

The Detector Mode	LED indication	Note
End of the «Binding mode»	LED indicator lighting red for 2-3 s	
«Binding mode»	LED indicator blinking green with 0.25 s period	The Detector logging in the CP in single-channel mode
	LED indicator blinking green with 1 s period	The Detector logging in the CP in two-channel mode
«Identification» indication	Alternate LED blinking red and green	By the relevant command from the CP
«Tilt-Alarm»* «Displacement-Alarm»*	LED blinking red every 4 s until the relevant messages delivery is conformed	State indication is ON, «Identification» indication is OFF
«Communication Quality Appraising»	See section «Communication Quality Appraising»	
«Interference»* indication	LED blinking green with the frequency of 5 Hz under detection of a movement with acceleration of 0.2 m/s <sup>2</sup> and more	«State» indication is ON, «Identification» indication is OFF
Initial orientation storage procedure finishing*	LED lighting green for 2-3 s	«State» indication is ON, «Identification» indication is OFF
«Norm»	Indication is OFF	

\* The LED indication of the Detector mode

#### 6 Binding with the CP

The binding procedure is intended for logging of the Detector in the CP with further service information exchange.

6.1 Prepare CP for binding according to the CP Installation Guide.

6.2 When it is necessary to fulfill logging of the Detector in two-channel mode, press and hold the tamper contact (5). In other case the tamper contact should stay in disengaged state up to the end of the logging procedure.

6.3 Observing polarity install the first backup power supply battery to the holder (4), and then the main one to the holder (2). If the batteries are already installed, then remove the isolators.

6.4 LED indicator blinking green means that the Detector is in «Binding mode».

6.5 In case of the absence of the indication mentioned above, close the contacts «Reset» for 2-3 s.

6.6 Successful binding procedure finish is displayed by the LED indicator lighting red for 2-3 s.

6.7 The time of binding procedure fulfillment is limited to 70 s, after it the Detector switches to a sleeping mode. For «Binding» mode resumption it is necessary to close the contacts «Reset» for 2-3 s.

## 7 Operating Modes

The Detector provides two operating modes – Mode 1 and Mode 2.

7.1 At Mode 1 the initial orientation in the space is stored after each «Tilt-Alarm» and «Displacement-Alarm» message generation.

7.2 At Mode 2 the initial orientation in the space is stored after closing the case of the Detector.

The «Norm» mode resumption after «Tilt-Alarm» message generation is fulfilled only after the Detector initial position is restored.

7.3 The Detector operating mode is defined by the state of case tamper contacts during initial 2 s after energizing of the Detector logged in the CP. If the tamper contact is closed, the Detector switches to Mode 1; if the tamper contact is opened, the Detector switches to Mode 1.

7.4 After successful binding procedure finishing the Detector operates in mode 1 independently of the tamper contact state.

7.5 Provide the Detector immovability during 5 s for procedure of the initial orientation memory finishing. Procedure finish is depicted by «Norm» message generation and relevant LED indication (see Table 3).

## 8 Availability Check

8.1 To check the Detector availability it is necessary to:

- put the base on the flat surface;
- set the cover with the PCB on the base and leave it fixed for 8-10 s.

8.2 After getting the regular «Norm» message, the Detector should be displaced for 25-30 cm or tilted for 3° or more. After detecting change of its initial position, the Detector should transmit the message «Tilt-Alarm» or «Displacement-Alarm» and repeat it by red LED indicator, located on the PCB (See Table 3).

## 9 Communication Quality Appraising

9.1 In order to check the wireless communication availability, accomplish the following steps:

- place the Detector to the assumed place of mounting;
- push and release the Detector tamper contact.

9.2 After tamper contact release, the Detector generates «Tamper» message and transmits it via radio communication channel. The message is followed by the LED indication, displaying the radio communication quality in accordance with Table 4.

Table 4

LED Indication		Communication Quality Appraisal	Recommendations
Color	Mode		
Green	Three blinks	Excellent	Installation of the Detector recommended
Green	Two blinks	Good	
Green	One blink	Communication presents	Choose another place or use the repeater *
Red	Four blinks	No communication	

\* «Ladoga-RK» system repeater

## 10 Installation

10.1 Install the Detector in the place, where the radio communication quality is appraised as «Excellent» or «Good».

10.2 The place of installation should be protected against accident mechanical interferences: impacts, vibration.

10.3 Fasten the base to the mounting surface.

The main method of the Detector installation is fastening of the base to the mounting surface is by means of double-sided tape. For the reliable Detector mounting, fulfill the following steps:

- check, that the mounting surface is flat, dry and clean;
- put off protective film from the working surface of the double-sided tape;
- fix tightly the Detector to the mounting surface and hold it down for 2-3 s.

To ensure removal control, the Detector is fastened to the secured object by means of screw through the Detector openable hole (6) in the base of the Detector.

10.4 Install the cover with the PCB to the base.

10.5 After the Detector mounting, check the «Interference» indication absence during 1-2 min.

**Attention!** Do not leave the Detector energized for the long time while the repeater is powered off. It will save the battery life.

## 11 Storage and Transportation

11.1 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/s<sup>2</sup> 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 of +35 °C.

11.2 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.

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

11.3 During storage period lithium batteries should be removed from the holders or isolators should be installed between a battery «+» and a holder.

The storage premises should not contain any current-conducting dust, acid and alkali fumes, or corrosive or destroying insulation gases.

## 12 Manufacturer's Guarantees

12.1 The Manufacturer guarantees conformity of the Detector to the requirements of its technical specification, provided that conditions of transportation, storage, assembling and operation are observed.

12.2 The guaranteed shelf life is 63 months since the date of manufacturing the detector.

12.3 The guaranteed service life is 60 months since the date of commissioning within the storage period guaranteed.

12.2 If non-conformity of the Detector to technical requirements is detected during the guaranteed period, provided that rules of operation are observed, it shall be repaired by the Manufacturer.

**Note** – The guaranteed period for the Detectors is not applied to the power-supply batteries.

## 13 Packing Certificate

Wireless passive infrared detector «Foton-19RK» has been manufactured in compliance with the active technical documentation, classified as fit for operation and packed by «Development and Production Enterprise RIELTA» LLC.

Packing date \_\_\_\_\_  
month, year