

Wireless glass break detector «Zvon-RK»

Installation Guide

1 Общие сведения

1.1 Wireless glass break detector «Zvon-RK» (hereinafter referred to as the Detector) detects the destruction of sheet glass and double-glazed windows, as well as structures made of hollow glass blocks (hereinafter referred to as glass blocks).

The Detector is also designed to block the opening (displacement) of doors, windows, showcases and other structural elements of enclosed spaces using a protected structure displacement sensor (hereinafter referred to as SDS), connected to the «LINE» terminals with terminating resistor with the length of the two-wire communication line not exceeding 2.5 m.

1.2 The detector operates as part of a control panel (hereinafter referred to as the CP) that supports the Rielta-Contact-R radio exchange protocol. The detector transmits notifications about its status via a bidirectional communication channel with the frequency range from 433.05 to 434.79 MHz using the Rielta-Contact-R protocol:

- «Normal» – in the absence of any destructive effect on the secured glass;
- «Alarm» – upon detection of a destructive effect on the secured glass;
- «Opening» – when the detector case is opened;
- «Battery discharge» – when the battery supply voltage drops to at least 2.5-0.2 V;
- «Line normal» – when the line resistance in the range of 3.5 kOhm up to 6.7 kOhm;
- «Line violation» – when the line resistance is more than 6.9 kOhm or less than 3.3 kOhm.

Notifications about an alarm, a violation in the communication line with the structure displacement sensor and case opening are transmitted immediately, the rest of notifications are transmitted during the subsequent communication session. The frequency of the communication sessions can be set to: 10 s, 15 s, 30 s, 60 s, 2 min, 5 min, 10 min.

1.3 The power emitted by the transmitter does not exceed 10 mW. The detector does not require obtaining permits for purchase, use and is not subject to registration or licensing.

1.4 The detector is powered by 3V DC CR123A lithium battery located inside the detector housing.

1.5 The detector is noise-immune (does not issue an «Alarm» notice) when:

- non-destructive mechanical impact is applied on glass (glass block) with a rubber ball weighing 0.39 ± 0.01 kg;
- the detector is exposed to sinusoidal sound signals at the operating frequencies creating a sound pressure level at the location of the detector:

- 1) no more than 70 dB at the first operating frequency;
- 2) no more than 80 dB at the second operating frequency;

- the detector is exposed to an acoustic signal with a spectral characteristic of white noise, which creates a sound pressure level of not more than 70 dB at the location of the detector

1.6 The detector remains operational after exposure to sinusoidal vibration with an acceleration of 0.5 g within the frequency range from 10 to 55 Hz.

1.7 The detector is designed for continuous round-the-clock operation.

1.8 According to the number of detection zones, the detector belongs to two-zone.

2 Field of application

The detector can be used in offices, shops, museums, exhibition halls, banks, residential areas, etc.

3 Technical specification

Table 1

Parameter	Value
Maximum range, not less than	6 m
Viewing angle	120°
Installation height, not less than	2 m (according to pictures 4 - 8)
The probability of detecting the destruction of protected glass, not less than	0,9
Time of technical readiness for work, no more	30 sec
Operating temperature range	from - 20 to +55 °C
Controlled line resistance range:	
- in «Normal» state	3.5 kΩ to 6.7 kΩ
- in the «Line violation» state	less than 3.3 kΩ or more 6.9
Relative air humidity at +25 °C	up to 98 %
Airing period (Programmable when paired with CP)	from 10 seconds to 10 minutes
Sensitivity (with a signal duration of at least 20 ms):	
- at the first operating frequency	(80 ± 3) dB
- at the second operating frequency	(90 ± 3) dB
Overall dimensions	88x80x38 mm
Weight	0,1 kg
Case protection class	IP30
The duration of the detector's operation under normal climatic conditions with a set broadcasting interval of at least 60 seconds and a set acoustic noise level at not more than 70 dB)	up to 5 years
Average service life	8 years

4 Contents of the kit

Table 2

Name	Qty
Wireless glass break detector «Zvon-RK»	1 pc.
Lithium battery CR123A	1 pc.*
Resistor 0.125-5.1 kOhm	1 pc.
Wireless glass break detector «Zvon-RK». Installation guide	1 copy

* Included

5 Putting into operation (Registration with CP)

The «Linking» procedure is intended for registering the detector in the control panel and exchanging service information.

1. Prepare the control panel for registration of the detector in accordance with the instructions for the control panel. If you need to control the opening/closing of doors, windows, etc., connect a 5.1 kOhm terminating resistor to the «LINE» contacts. The detector will control two zones after linking, otherwise leave the «LINE» terminals free, then the detector will exclude control of the second zone (it will link as a single zone detector).

2. Install a CR123A battery observing the polarity or remove the insulator.

3. Intermittent green indication shows that the detector is ready for the linking procedure.

If there is no indicated indication, close the RESET contacts for 2-3 seconds.

4. When successfully linked with the CP, the indicator turns red.

Note – The zone number is determined in accordance with the manual for the control panel. The time during which the detector is in the «Linking» mode is limited to 100 seconds, after that the detector goes into sleep mode. To resume the «Linking» mode, close the RESET contact.

6 Light indication

The indication will automatically turn off 10 minutes after the lid is closed. To resume the display, simply open the lid again.

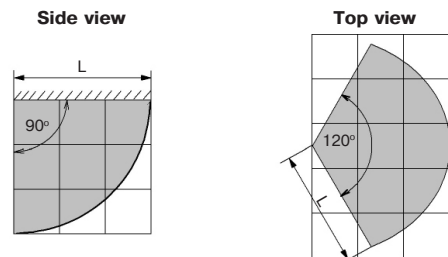
Table 3

Detector status	Indication	Notes
«Normal»	ON	
«Interference»	Green LED if ON	For the duration of the interference
«Alarm»	Single red light for 3 seconds	
«Line breaking»	Short-term switching on in red for 0.5 seconds	
«Opening»	See «Connection quality assessment»	
«Linking»	Intermittent green light	Registration of the sensor in CP
«Identification» indication	Alternating red and green lights	The corresponding command was received from CP
«Testing» mode	Turn on green LED with a period of 1 second	
«Connection quality»	See «Connection quality assessment»	

7 Choosing a place of installation

Before installing the detector, please read the following requirements:

- it is recommended to install the detector at a height of at least 2 m (see installation examples in Pictures 4–8);
- when choosing the installation location, the detector radiation pattern should be taken into account (Picture 1);



Picture 1 – Detection zone diagram

- the distance (L) from the detector to the most remote point of the controlled glass should not be more than 6 m;

- when working together with an active ultrasonic detector, the distance between them must be at least 1 m;

- all areas of controlled glass must be located within the line of sight of the detector.

The detector must be placed in the radio visibility zone of the CP; therefore, it is recommended to evaluate the quality of communication with the CP from the place of the intended installation of the detector.

8 Installation

To install the detector, remove the case cover.

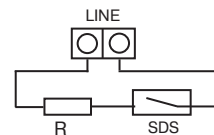
After selecting the location of the installation, make markings for its fastening. A base can be used for marking (see Figure 3).

Fix the base with screws.

If necessary, connect the sensor, to the «LINE» terminals (Picture 2). At the end of the line, install the terminal element - Rok – a 5.1 kOhm resistor. The length of the lines must not exceed 2.5m. Connection points must be fixed by soldering or fastened with screws.

With closed contacts, the line resistance ensures transmission of «Normal» notifications.

When open the transmission of the notification changes to «Line breaking».



Picture 2 – Connection of the displacement sensor scheme

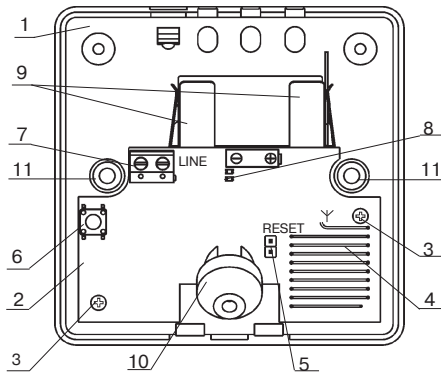
9 Design

The detector consists of a cover with a light window and a base (1) with a printed circuit board (2).

The printed circuit board (2) is fixed on the base (1) with two screws (3).

The following items are located on the printed circuit board (2): printed antenna (4), «RESET» jumper (5), tamper sensor (6), terminal block «LINE» (7), two-color LED indicator (8), battery holder (9) and microphone (10).

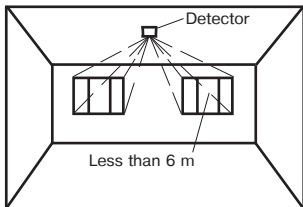
The base of the detector (1) has two holes (11) for attaching the detector to the mounting surface.



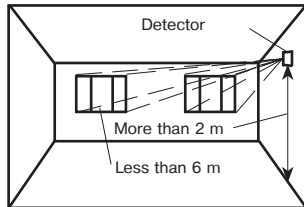
Picture 3

10 Examples of installation

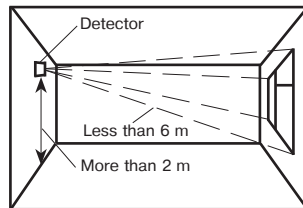
Pictures 4-8 show options for the correct installation of the Detector, Picture 9 shows incorrect installation.



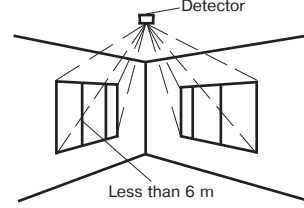
Picture 4 – Ceiling installation



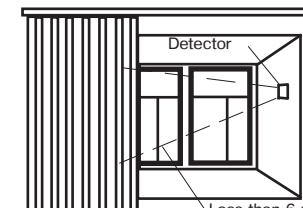
Picture 5 – Side wall installation



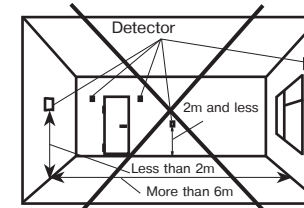
Picture 6 – Opposite wall installation



Picture 7 – Ceiling installation (for controlling 2 windows in adjacent walls)



Picture 8 – Installation of the detector between glass and a curtain



Picture 9 – Inappropriate places of installation

11 Connection quality assessment

To assess the quality of the radio communication, it is necessary to:

Place the registered Detector at the site of installation.

Remove the cover. At the same time, the Detector transmits a notification about the opening of the case and the quality of communication with the CP is indicated by a three-point scale with a green indicator (see table 4).

Table 4

Indication		Connection quality	Рекомендации
Color	Mode		
Green	Three blinks	Perfect	Installation in this location is allowed
Green	Two blinks	Good	
Green	One blink	Weak	Choose a different installation location or use a repeater
Red	Four blinks	No connection	

12 Sensitivity adjustment and performance test

Install a lithium battery or remove the insulator. Close the case cover. Assess the interference situation in the room (the indicator should not turn green).

Turning on of green the indicator tells about the presence of interference in the room. Remove the sources of interference wherever possible.

The detector sensitivity adjustment is designed to set its operating range in accordance with the distance from the remotest point of the controlled structure to the detector. If this distance is between 3 to 6 m, then it is recommended to use the maximum sensitivity (level 3). If the distance is shorter, the detector sensitivity can be reduced by 6 dB steps from level 3 to 0 (minimum). The change in sensitivity is carried out by issuing a command from the CP. After reducing the sensitivity, check the detectability of the detector using the sound simulator of acoustic glass breaking «ARS» manufactured by «Argus-Spectrum» or similar, or a test steel ball with a diameter of 20 ... 22 mm, suspended on a thread 30 ... 35 cm long.

Note – the maximum sensitivity of the detector is set automatically when registering in the CP.

Switch the detector to the «Testing» mode with a command from the CP, and then the free end of the thread should be pressed in the upper part of the glass and the other end of the thread with the ball should be inclined at an angle $(45 \pm 15)^\circ$, depending on the type of strength and thickness of the glass. Perform several times a test impact with a simulator (ball). When tested with a simulator or a ball, the detector must generate an alarm notification.

ATTENTION! The detectors must be checked at least once a year to assure their performance.

13 Disposal information

13.1 The Detector does not pose a danger to human life, health and the environment; after the end of its service life, it is disposed of without taking special measures to protect the environment.

13.2 Dispose of batteries by handing over the used batteries to a trade organization, service center, equipment manufacturer or an organization that accepts waste batteries and accumulators.

14 Manufacturer warranty

14.1 The manufacturer guarantees the compliance of the detector with the requirements of technical specifications, subject to the conditions of transportation, storage, installation and operation.

14.2 The storage warranty period is 63 months from the date of manufacture of the detector by the manufacturer.

14.3 The operation warranty period is 60 months from the date of commissioning within the warranty period of storage.

14.4 Detectors, which during the warranty period revealed failures in operation or malfunctions, are replaced to the serviceable ones by the manufacturer.

Note – Lithium batteries are not covered by the warranty..

15 Storage and Transportation

15.1 The Detectors in their original packing may be shipped by any transport means in covered vehicles (in railway, cars, trucks, ship cargo holds, etc). The Detector is resistant to:

- a) transport jolting with the acceleration 30 m/sec^2 with impact frequency from 10 to 120 impacts/sec or 15000 impacts with the same acceleration;
- b) the ambient temperature minus $50 \dots +50 \text{ }^\circ\text{C}$;
- c) relative air humidity $(95 \pm 3) \%$ at the ambient temperature $+35 \text{ }^\circ\text{C}$.

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

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

16 Packing Date

Wireless glass break detector «Zvon-RK» 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.

month, year

Made in Russia

Rev. 3 of 01.12.2021
v10.3/v10.5

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