WIRELESS SMOKE DETECTOR

«Ladoga PD-RK»

Installation Guide

1 Introduction

1.1 The wireless smoke detector «Ladoga PD-RK» (hereinafter, the Detector) is intended for detecting ignition accompanied by smoke. Operating principle of the Detector is based on the registration of optical radiation in the infrared range, reflected from the particles of combustion products in the air suspension.

1.2 The Detector generates and sends notifications of its status, as well as receives control commands from the control panel (hereinafter, CP) within the 433.05 to 434.79 MHz frequency range via a two-way communication by the «Rielta-Contact-R» exchange protocol.

1.3 The Detector provides compensation of the optical smoke chamber dust content.

1.4 The Detector ensures transmission and indication of the following messages:

- **«Tamper»** – in case of the Detector removal from the base;
- **«Failure»** – in case of the Detector system fault or its sensitivity drops more than 1.5 times;
- **«Norm»** mode – in case there are no other messages;
- **«Fire»** – ignition is detected;
- **«Main power-supply low-battery»** – if power-supply voltage drops below (2.4 ± 0.2) V;
- **«Backup power-supply low-battery»** – if power-supply voltage drops below (2.4 ± 0.2) V;
- **«Optical smoke chamber dusting»** – upon reaching the dust concentration threshold;
- **«Binding»** mode - during logging of the Detector in the system;
- **«Identification»** - upon receipt of a relevant command from the CP.

1.5 The following rates of radio exchange may be assigned:10 s,15s, 30 s, 60 s, 2 min or 5 min by the command from the CP. Messages about ignition and failures are transmitted immediately.

1.6 The «Fire» notification is stored until smoke content reducing lower the threshold and getting «Set on» command from the CP.

1.7 The detector is designed for continuous round-the-clock operation. It is installed in closed rooms, residential and industrial buildings and structures.

2 Features

Table 1

Parameter Name	Value
Threshold of sensitivity	0.14 dB/m;
Detector response delay	maximum 5 s
Broadcast period	10 sec to 10 min
Operating temperature	from minus 20 to +55 °C
Dimensions	maximum Ø125 x 70 mm
Weight (without batteries)	maximum 0.2 kg
IP rating	IP30
Average time to failure	at least 60 000 hours
Average service life	10 years
Service life from one set of batteries under normal conditions (at least 60 s on-air period)	up to 10 years

3 Scope of delivery

Table 2

Name	QNT
Wireless smoke detector «Ladoga PD-RK»	1 pc.
Screw 3-3x40.016	2 pcs.
Screw plug «SORMAT» NAT 5x25	2 pcs.
CR123A lithiun power supply battery	2 pcs.*
Wireless smoke detector «Ladoga PD-RK». Installation Guide	1 copy
* Included	

4 Design of the Detector

The detector appearance is shown in Figure 1.

The detector consists of a board with an optical camera installed in the case (2), which is fixed on the base (1). On the case (2) there are LED indicators (3) and a hole (4) for insertion of a reflector (needle, paper clip, wire with thickness not exceeding 1 mm) intended for testing the detector operability. On the PCB there are: tamper switch (5), main (6) and backup (7) battery holders, «Reset» contacts (8).

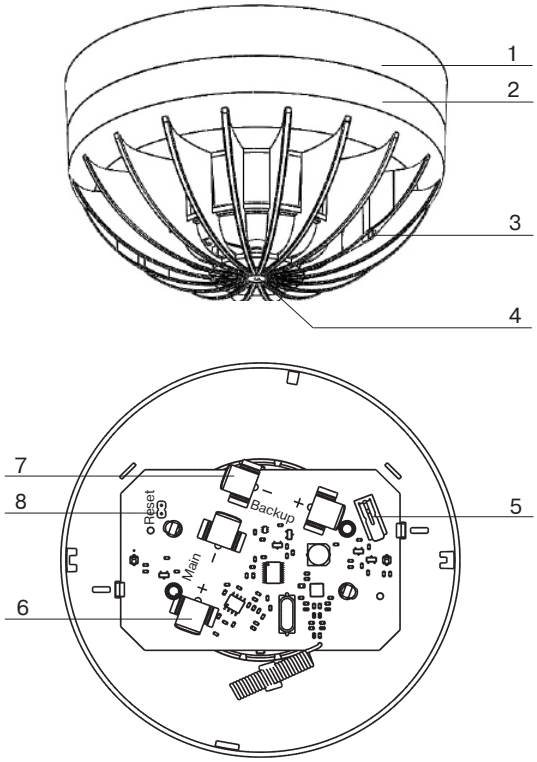

Figure 1

5 LED Indication

Table 3

Detector Status	Indication
«Norm» mode	LED indicator lights green (once per 15 s)
«Binding» mode	LED indicator blinks green intermittently
«Fire»	LED indicator blinks red alternately at 1 Hz frequency
«Communication Quality Appraisal»	see Table 4
«Identification» indication is on	LED indicator blinks red and green alternately
No communication with the CP	LED indicator blinks red (once per 15 s)

6 Binding with the CP

The «Binding» procedure is intended for logging of the connected Detector in the CP and for the reception of communication parameters by the Detector.

6.1 First install the battery in the holder (7) and then the other battery in the second holder (6) or remove the insulators.

6.2 Close «Reset» (8) contacts on the PCB in order to reset the Detector.

6.3 The green LED blinking displayes the Detector operation in the «Binding» mode.

6.4 After a successful binding with the CP, the red LED indicator lights for 2 s.

6.5 The time during which the Detector operates in the «Binding» mode is limited to 100 s, after what the Detector changes to the sleep mode. The «Binding» mode may be resumed.

Note:

1 A Detector supplied by the manufacturer is ready for the binding procedure and does not require an additional contacts closing.

2 To start in test mode it is necessary to press the tamper switch while installing the battery power supply (see par. 6.1).

7 Operability Test

Insert the reflector through the hole (4) into the optical chamber and hold it for at least 5 s, the indicator will start to turn red periodically. Make sure that the «Fire» notification in the corresponding zone is received and registered by the fire alarm control panel. You can also use test aerosol for verification. To restart the Detector after the «Fire» notification generation, «Set On» command by the wireless two-way communication «Rielta-Contact-R» protocol from the CP is required.

8 Installation

8.1 Install the Detector in the location, where the quality of communication is appraised «excellent» or «good».

8.2 Install the base at the chosen place. Insert the Detector into the base and fix it by turning clockwise.

9 Installing the Detector

9.1 When choosing the place of installation for the Detector, take into account the fact that the Detector refers to fire Detectors with operability control and therefore, a single Detector may be installed in the monitored premise.

9.2 All other conditions being equal, the location chosen for the installation of the Detector should meet the following requirements:

- prevention of water ingress from the front side and the base side;
- minimum vibrations of building structures;
- minimum illumination
- maximum distance from sources of electromagnetic interference and infrared radiation (heating units);
- maximum convenience of installation, checking and removal of the Detector.

9.3 Transmission quality may differ from premise to premise; therefore, it is advisable to apprise a communication quality before the Detector is finally installed.

It is not recommended to place the Detector:

- on massive metal structures and closer than 1 m from them;
- closer than 1 m from power lines and metal water and gas pipes;
- near sources of radio interference;
- inside metal structures.

10 Communication Quality Appraising

10.1 The Detector should be installed within the radio coverage zone of the CP; therefore, it is recommended to check the messages transmission from the presumed installation place and to appraise the quality of the communication.

10.2 After removal from its base (tamper contact is released), the Detector transmits the «Tamper» message and then displays the quality of communication as per 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	Use the «Ladoga-RK» system repeater
Red	Four blinks	No communication	

11 Maintenance

11.1 The operability of the Detector should be checked at least annually.

11.2 The Detector should be cleaned from dust if the Detector generates «Fault» or «Optical Smoke Chamber Dustiness» message. For this purpose, sweep the optical system of the Detector by air under 0.3–0.5 kg/cm^2 pressure.

In order to prevent the optical smoke chamber dustiness, depending on the operating conditions and according to statistical data, it is recommended to carry out periodical technical maintenance of all Detectors logged in the fire alarm system.

Attention! For the power supply battery life safe-energy, do not leave the Detector energized with the repeater powered off for a long time.

12 Protective Measures

12.1 When installing and operating the Detector, one should be guided by the provisions of the «Safety Instructions for the Operation of Consumer Electrical Installations».

12.2 All installation works should be carried out with the external power switched off.

13 Post-consumer Recycling Data Sheet

13.1 The Detector does not contain precious metals, dangerous and toxic substances enabled to injure human's health or environment. The relay on expiry it's working time does not to pose direct threat to life and health of people, as well as an environment.

13.2 Post-consumer recycling may be fulfilled by the rules of conventional equipment recovery.

14 Manufacturer's Guarantees

14.1 The manufacturer guarantees conformity of the Detector to the Technical Specifications requirements provided the transportation, storage, installation and operation conditions are observed.

14.2 The guaranteed shelf life of the Detector is 42 months since the date of manufacture.

14.3 The guaranteed useful life is 36 months since the day of putting into operation within the guaranteed shelf life.

14.4 The Detectors that are found non-conforming to the Technical Specifications 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 batteries.

15 Storage and Transportation

The Detectors 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.

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.

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

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

16 Packing Date

The wireless smoke detector «Ladoga PD-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.

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