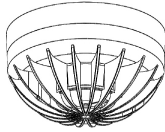




WIRELESS INDEPENDENT SMOKE DETECTOR

«Ladoga PD-RK-A»



Installation Guide

1 General Information

1.1 The wireless independent smoke Detector «Ladoga PD-RK-A» (hereinafter, the Detector) is intended for detecting ignitions accompanied by smoke, sound warning about the fire accident and «Fire» message generation and sending within the 433.05 to 434.79 MHz frequency range via two-way communication by the «Rielta-Contact-R» exchange protocol.

Operating principle of the Detector is based on the registration of the optical radiation reflected from smoke particles.

1.2 The Detector can be employed either as part of a fire alarm system that is operated by any control panel (hereinafter, CP) supporting the «Rielta-Contact-R» wireless exchange protocol, or operate in stand-alone mode without the CP.

1.3 In case of operation as a component of a system with a CP after detection of ignition, the Detector generates Fire alarm message and transmits it to the CP, switches on LED light state indication and sound warning.

1.4 In case of operation in stand-by mode, the Detector switches on the state LED light together with sound indication automatically.

1.5 In case of operation with a CP, Norm state restoration is executed after smoke content reducing lower the threshold and getting «Arming» command from the CP. Sound announcement is switched off by the command from the CP.

1.6 In a stand-by mode the Detector restores Norm state and switches OFF sound strictly after smoke content reducing lower the threshold.

1.7 The Detector provides pulse and continues modes of sound warning. Mode of operation is configured by means of the CP.

1.8 The Detector provides compensation of the optical smoke chamber dust content and controls its operability.

1.9 Radio signals exchange with the CP is fulfilled via the wireless two-way communication in 433.05 – 434.79 MHz frequency range. The Detector provides automatical switch to a reserve operating frequency in case of radio-frequency interference at the main one.

1.10 Transmitter power does not exceed 10 mW.

1.11 The Detector comprises functionality testing module with speed of response not more than 5 s.

1.12 The Detector status is displayed by two built-in LED indicators.

1.13 The Detector controls it's removal from the base.

1.14 The Detector is powered from two galvanic power supply batteries CR123A type with nominal voltage 3 V: the main and backup ones.

1.15 Ignition is detected if at least one battery is in working order.

1.16 During operation in standby mode in case of any battery failure, short sound signal is generated once in 30 s.

1.17 The Detector generates and transmits the following messages via wireless communication channel:

- «Norm» – normal state;
- «Fire alarm» – ignition is detected;
- «Optical smoke chamber dusting» – upon reaching the dust concentration threshold;
- «Failure» – circuit fault or sensitivity drop;
- «Main power-supply low-battery» – if power-supply voltage drops below $(2.4 \pm 0.2) V$;
- «Backup power-supply low-battery» – if power-supply voltage drops below $(2.4 \pm 0.2) V$;
- «Tamper» – in case of the Detector removal from the base.

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

1.19 The Detector provides safe operation for up to 10 hours in continuous announcement mode.

1.20 The Detector does not refer to measuring equipment.

1.21 The Detector designed to operate in closed areas continuously around the clock.

2 Features

Table 1

Parameter	Value
Sensitivity threshold	0.16 ± 0.03 dB/m
Acoustic pressure level at 1 m distance from the Detector, not less than	85 dB
Sound alarm signals frequency	2 ... 5 kHz
Detector operation duration under the established period of radio exchange of 60 s or more, in the absence of radio interference and at normal climatic conditions prior to the formation of messages: <ul style="list-style-type: none"> - «Main battery discharge» - «Backup battery discharge» 	up to 8 years not less than 2 months
IP rating	IP30

Table 1 continued

Dimensions, not more than	Ø125x70 mm
Weight, not more	0.2 kg
Average service life	10 years
Operating conditions	
Operating temperature	-20...+55 °C
Permissible humidity (at a temperature +40 °C)	93 %

3 Scope of Delivery

Table 2

Name	QNT
Wireless independent smoke Detector «Ladoga PD-RK-A»	1 pc.
Screw 3-3x30.016	2 pcs.
Wall plug NAT 5x25 SORMAT	2 pcs.
CR123A lithium power-supply battery	2 pcs*
Wireless independent smoke Detector «Ladoga PD-RK-A». Installation Guide	1 copy
* Installed	

4 Design of the Detector

The Detector outside view is shown in Figure 1.

The Detector comprises:

- base (1);
- case (2) with LED indicators (3);
- PCB(4).

On the PCB front side the following elements are located:

- operability test button TEST (5);
- pin contacts RESET (6);
- main power supply battery (7) with an isolator;
- backup power supply battery (8) with an isolator;
- TAMPER (removal from the base control) (9);
- antenna (10).

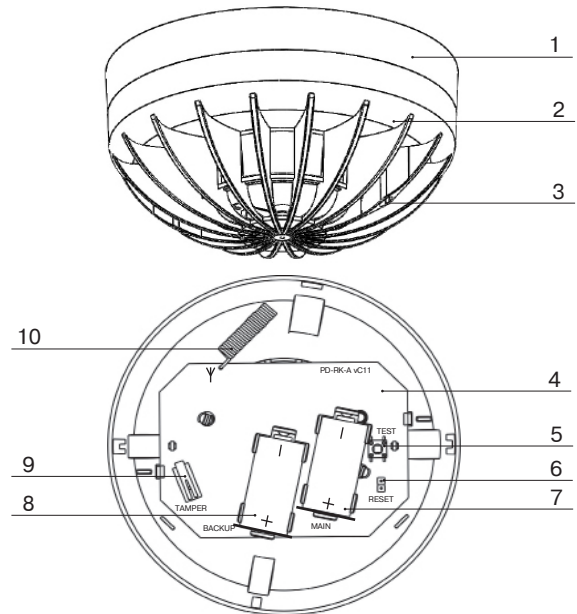


Figure 1

5 Switching ON and Setting Up

Generally operational sequence consists of the following steps:

- binding (logging) the Detector with the CP;
- choosing place of installation;
- operability testing;
- installation.

6 Binding with the CP

6.1 Prepare the CP for the new device logging («Binding» mode) in accordance with the CP Manual. In the Detector radio-coverage zone only one CP prepared for binding procedure should be located.

6.2 Remove the Detector from the base rotating it counter clockwise.

6.3 Install primarily the backup power supply battery, and then install the main power supply battery. If the batteries are already installed, remove the isolating plates between «+» contacts and battery holders primarily from backup, and then from main power supply batteries.

6.4 Close RESET pin contacts located on the PCB by any metal object and hold it until «Binding» indication switches on.

6.5 Fulfill binding. Successful binding with the CP, the red LED indicator blinks shortly.

Note: The time during which the Detector operates in the «Binding» mode is limited to 100 sec. To repeat binding procedure, repeat Cls. 6.3 – 6.5.

7 LED Indication

The Detector displays its state in accordance with Table 3.

Table 3

Detector Status	Indication	Notes
«Binding»	Green LED indicator blinks intermittently	
«Binding» completed	Single-shot (2s) red LED lighting	
«Fire»	Red LED indicator intermittent blinking at 2 Hz frequency	
«Norm»	Green LED one blinks once per 15 s	
«Dusting»	Red LED blinks once per 15 s	Independent operation without CP
«Power supply failure»	Red LED switching on once per 15 s and sound signal – once per 40 s	Independent operation without CP
No communication with the CP	Red LED indicator blinks once per 15 s	Operation with the CP
Communication quality appraisal «Excellent»	Three blinks of green LED	Operation with the CP
Communication quality appraisal «Good»	Two blinks of green LED	Operation with the CP
Communication quality appraisal «Communication established»	One blink of green LED	Operation with the CP
Communication quality appraisal «No communication»	Four blinks of green LED	Operation with the CP

8 Standalone Mode

To provide the Detector operation independently without CP, instead of binding procedure act as follows:

- remove the Detector from the base rotating it counter clockwise;
- remove the isolating plates between «+» contacts and battery holders primarily from backup, and then from main power supply batteries;
- close «Reset» pin contacts on the PCB by any metal object and hold it until «Binding» indication switches on;
- wait for approximately 100 s till the end of binding mode without binding with the CP.

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, only 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 side of mounting;
- 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;
- minimum distance to lighting fixture should be not less than 0.5 m.

9.3 Transmission quality is varying in different premises; therefore, it is advisable to appraise a communication quality before the Detector is finally installed.

10 Communication Quality Appraising

10.1 Bring the Detector to the assumed place of installation.

10.2 Press and release the arm of sensing element, ensuring control of the Detector removal from the base (9) (see Figure 1).

10.3 The Detector displays the quality of communication by LED indication as per Table 4.

Table 4 - Communication quality appraisal indication

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	

11 Operability Test

Press the operability test button (5) (Figure 1) and hold it during not less than 5 s, until the Detector switches «Fire» LED indication and preset sound signal. Make sure that «Fire» alarm message at correspondent zone is received. You can also use test aerosol for verification.

In case of operation with the CP in order to restart the Detector, «Arming» command by the «Rielta-Contact-R» protocol from the CP is required.

12 Installation

12.1 Choose the Detector location, where the quality of communication is appraised «excellent» or «good» and carry out marking for its mounting. Use the base for marking.

12.2 Install the base at the chosen place and fasten it by 2 screws.

12.3 Insert the Detector into the base and fix it by turning clockwise.

13 Maintenance

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

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/cm² pressure.

Technical maintenance rate for optical smoke chamber dustiness prevention depends on the operating conditions and statistical data. It is recommended to provide periodical services of all detectors logged in the fire alarm system.

In case of any battery discharge, **both** batteries should be replaced with a new one.

Attention! It is forbidden to remove and disassemble optical smoke chamber by hand.

14 Protective Measures

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

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

15 Post-consumer Recycling Data Sheet

15.1 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.

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

16 Storage and Transportation

16.1 The Detectors 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.

16.2 Storage conditions of the Detectors: storage premises should not contain any current-conducting dust, acid and alkali fumes, as well as corrosive gases or those destroying insulation.

16.3 Power supply batteries should be stored separately from the Detector or inside the Detector with installed isolating plates between "+" and battery holders.

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

17 Manufacturer's Guarantees

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

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

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

17.4 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.

18 Packing Certificate

Wireless security passive infrared wide-angle detector «Ladoga PD-RK-A» 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