RiDom

# Dual-channel leakage detector «Ri-FD-2»

## Installation guide

## 1 GENERAL INFORMATION

1.1 The dual-channel leakage detector «Ri-FD-2» (hereinafter referred to as the Detector) allows to detect leaks of water, liquid solutions, and other conductive non-aggressive liquids and transmit notifications via a two-way radio channel in accordance with the «Ri-Contact-R» protocol.

1.2 The Detector operates as part of the RiDom smart home detection system, communicating with the «Ri-HUB-1» control center (hereinafter referred to as the Hub) via the «Ri-Contact-R» radio channel protocol.

1.3 The Detector does not require licensing or registration of a radio frequency device.

1.4 The Detector consists of a signal processing unit «Ri-FD-2 BOS» (hereinafter referred to as BOS) and remote leakage sensors «Ri-EFD» (hereinafter referred to as RS). The BOS sensor has two terminals for connecting the RS - «G 1» and «G 2». Up to two parallel-connected RSs can be connected to one terminal.

1.5 The Detector can be added into the system in a dual-channel operating mode or in a single-channel mode. In the second case, the «G 2» status will be ignored. The mode is selected at the time of registering the Detector in the Hub.

1.6 Two frequencies - the main and backup - are used to exchange radio signals between the Detector and the Hub. The transition to the backup frequency is automatic.

1.7 Radio exchange is initiated by a Detector with a period of: 10, 15, 30, 60, 120, 300 or 600 seconds, selected when setting up with a Hub. Alarm notifications are transmitted immediately.

1.8 The Detector status is indicated by two-color LED and sound indicators.

1.9 The Detector generates and ensures transmission of the following notifications via radio channel:

- «Line 1 normal» – in the absence of liquids between the sensor terminals of the RS connected to «G 1»;
- «Line 2 normal» – in the absence of liquids between the sensor terminals of the RS connected to «G 2»;
- «Alarm in line 1» – in the presence of liquids between the sensor terminals of the RS connected to «G 1»;
- «Alarm in line 2» – in the presence of liquids between the sensor terminals of the RS connected to «G 2»;
- «Opening» – when the case is opened or the BOS sensor is removed from the mounting surface;
- «Break in line 1» – when the communication line of the BOS with the RS connected to «G 1» is broken;
- «Break in line 2» – when the communication line of the BOS with the RS connected to «G 2» is broken;
- «Battery discharge» – when the battery voltage drops below 2.2 V.

1.10 The Detector is designed for continuous round-the-clock operation.

1.11 The Detector is resistant to electromagnetic interference.

## 2 TECHNICAL SPECIFICATION

Table 1

| Parameter | | Value |
|---|---|---|
| Frequency range | | 868.7...869.2 MHz |
| Radiation power | | 25 mW |
| Allowable number of RSs on one communication line | | 2 pcs. |
| Length of each communication line between RS and BOS, | | 5 m |
| Protection class: | - BOS<br>- RS | IP30<br>IP67 |
| Battery type | | CR123A, CR2450 |
| Duration of operation of the Detector from a battery under normal climatic conditions and with a set broadcast period of 60 s | | 36 months |
| External RS cable length | | 10 m |
| Overall dimensions: | - BOS<br>- RS | 112 x 41 x 32 mm<br>65 x 22 x 16 mm |
| Weight: | - BOS<br>- RS | 0.1 kg<br>0.03 kg |

Table 1 continued

| Parameter | Value |
|---|---|
| Duration of operation of the sensor in normal climatic conditions and with a set broadcast period of 60 s:<br>- Main battery<br>- Backup battery | <br>8 years<br>2 months |
| Average service life | 8 years |
| **Operation conditions** | |
| Operating temperature range | -20... +55 °C |
| Permissible air humidity at a temperature of +25 °C, without moisture condensation | Up to 98 % |

## 3 CONTENTS OF THE KIT

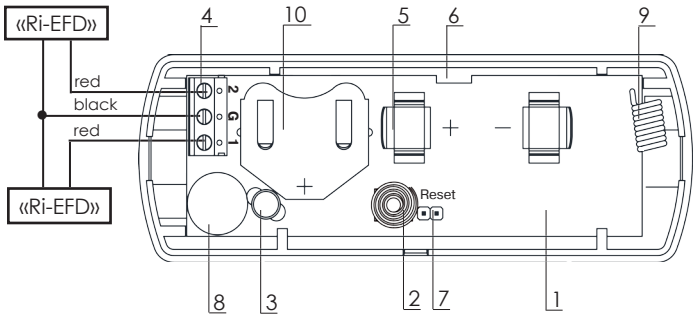
Table 2

| Name | Qty. |
|---|---|
| Dual-channel leakage detector «Ri-FD-2» | 1 pc. |
| Signal processing unit «Ri-FD-2 BOS» | 1 pc. |
| External leakage sensor «Ri-EFD» | 2 pcs. |
| Lithium battery CR123A | 1 pc.* |
| Lithium battery CR2450 | 1 pc.* |
| Screw 3-3x30.016 | 6 pcs. |
| Nylon dowel NAT 5x25 SORMAT | 6 pcs. |
| Installation guide for the «Ri-FD-2» | 1 copy |
| * Included | |

## 4 DESIGN

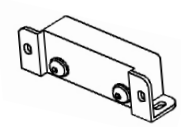
The appearance of BOS is shown in Picture 1.

The BOS sensor consists of a case and a printed circuit board. On the front side of the printed circuit board (1) there are: a tamper switch (2), a two-color LED indicator (3), a terminal block (4) for connecting the RSs, holders of the main (5) and backup battery (10), Reset contacts (7), sound indicator (8), antenna (9). The lift-off switch is located on the back of the printed circuit board. The board is fixed in the base of the case with a latch (6).




Picture1 – Base of the case with PCB

The appearance of the RS is shown in Figure 2.



The RS case is sealed, equipped with sensor contacts and a 1.5 m cable for connection to the BOS. The design of the DP allows for its mounting on both horizontal and vertical surfaces.

Picture 2 – External leakage sensor «Ri-EFD»

## 5 CHOOSING THE PLACE OF INSTALLATION

When choosing a location for installing the Detector, take into account the presence of obstacles that impair the passage of the radio signal.

**Do not install the detector under the following conditions:**

1. In close proximity to electrical wiring.
2. Near metal objects and mirrors that cause attenuation of the radio signal or shield it.

## 6 CONNECTING THE DETECTOR TO THE SYSTEM

6.1 Open the RiDom application. In the «My Devices» tab, click + and then **Add device**. Select the «Ri-FD-2» detector from the list of devices and follow the application prompts.

6.2 Remove the case cover by releasing the latches.

6.3 If it is necessary to register the detector in single-channel mode, during registration, short-circuit the «G 2» terminals with a conductive object.

6.4 When prompted by the app, remove the battery isolator.

6.5 The Detector will periodically turn on the green indicator, which indicates that it is in the «Linking» mode. If there is no indication, close the «RESET» contacts for 2-3 seconds.

6.6 If the connection to the Hub is successful, the red indicator on the Detector will turn on for 2-3 seconds, then the Detector will show up in the application, as well as all information about the Detector.

The Linking mode time is limited to 100 seconds. To resume the «Linking» mode, it is necessary to briefly close the «RESET» contacts.

6.7 Install the case cover back.

## 7 INDICATION

The Detector generates the following types of indication:

- indication of the «Linking» mode (registration of the Detector in the Hub);
- «Identification» turns on when the corresponding command is received from the Hub and stays for 15 minutes or until the case is opened;
- light indication of the Detector status turns on and stays for the first 15 minutes after closing the case in the absence of other types of indication (except for sound), provided that during this time an «Opening» notification is not generated or a command from the Hub is not transmitted to prohibit the indication;
- sound indication of the sensor status turns on when the corresponding command is received from the Hub.

The modes for turning on the indicators are presented in Table 3.

Table 3

| Detector status | Indication | Comments |
|---|---|---|
| Ending the «Linking» mode | Turns on the red indicator for 2–3 s | |
| «Linking» mode | Turns on the green indicator with a period of 0.25 s | Registering a Detector in the Hub in single-channel mode |
| | Turns on the green indicator with a period of 1 s | Registering a Detector in the Hub in dual-channel mode |
| «Identification» indication | Alternately turning on the indicator light in red and green colors | The corresponding command has been received from the Hub |
| «Alarm in channel 1» «Alarm in channel 2» | Single turning on of the red indicator light with a period of 4 s* | Status indication is on and «Identification» indication off |
| Initiation «Alarm in channel 1» «Alarm in channel 2» | Turning on the sound indicator twice** | Audio status indication enabled |
| Recovery after «Alarm in channel 1» «Alarm in channel 2» | One-time activation of the sound indicator** | |
| Connection quality assessment | See section «Connection quality assessment» | |
| «Fault in channel 1» «Fault in channel 2» | The orange indicator light turns on twice with a period of 12 s | Status indication is on and «Identification» indication is off |
| «Normal» | OFF | |

* Light indication of Detector status
** Sound indication of Detector status

## 8 CONNECTION QUALITY ASSESSMENT

8.1 To assess the quality of radio communication between the Detector and the Hub, you should:

- place the Detector in the intended installation location;
- press and then release the tamper switch.

8.2 When the tamper switch is released, the Detector generates a notification about the case tampering, transmits it via radio channel and displays the quality of radio communication with the Hub in accordance with Table 4.

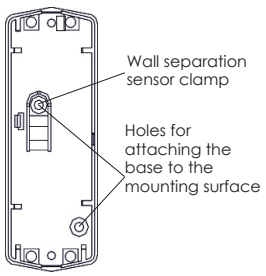
Table 4

| Indication | | Connection quality | Recommendations |
|---|---|---|---|
| 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 | Multiple blinks | No connection | |

## 9 INSTALLATION

9.1 Select the installation location for the Detector elements and make markings for their fastening. The RS and the base of the BOS case can be used (see Figure 3) for marking.

9.2 The RS should be positioned so that the liquid that appears in the controlled area closes the sensor terminals. Attaching the RS to the floor with the sensors facing down ensures the formation of a flooding signal when a depth of liquid grows to 1 mm. Installing the RS with the sensors on the side provides more convenient access to the sensor pins to remove residual conductive liquid from the surface of the RS between the contacts after eliminating the leakage.




Picture 3 – Base of the BOS case

9.3 Secure the RS to the mounting surface with screws or waterproof glue. Secure the base of the BOS case with screws. To monitor the separation from the wall, be sure to fix the screw into the clamp of the wall separation switch.

Install the printed circuit board and connect the RS to the terminal block (4) according to Picture 1.

Close the BOS cover.

## 10 TROUBLESHOOTING

Table 5

| Detector notification | Troubleshooting methods |
|---|---|
| «Opening» | Check the reliability of the BOS fastening, close the cover |
| «Alarm on Line 1» «Alarm on Line 2» | If there is no liquid (moisture) between the sensor terminals of the RS, check for the absence of a short circuit between the wires of the BOS communication line with the RS |
| «Break in line 1» «Break in line 2» | Check the integrity of the BOS communication line with the RS, its fastening in the BOS terminal blocks |
| «Low main battery» | Replace the main and backup batteries |
| «Backup battery low» | Replace backup battery |

## 11 STORAGE AND TRANSPORTATION

11.1 The Detectors 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 ... +55 °C;
- relative air humidity (95 ± 3) % at a temperature +35 °C.

11.2 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.

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

11.4 During storage period lithium batteries should be removed from the holders or isolators should be installed.

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

## 12 DISPOSAL INFORMATION

12.1 The Detector does not contain precious metals, hazardous or toxic substances that can harm human health or the environment, and does not pose a danger to life, health and the environment at the end of its service life.

12.2 In this regard, the Detector can be disposed of in accordance with the rules for the disposal of general industrial waste.

12.3 Dispose of batteries by handing over the used batteries to a trading organization, service center, equipment manufacturer or organization that accepts used batteries and batteries.

## 13 MANUFACTURER WARRANTY

13.1 LLC NPP RIELTA guarantees that the Detector meets the requirements of technical specifications within 39 months from the date of manufacture, subject to the conditions of transportation, storage, installation and operation.

13.2 Warranty period of operation of the Detector is 36 months from the date of commissioning within the warranty period of storage.

13.3 If during the warranty period the Detector, which is subject to the rules of transportation, installation and operation, is found to be inconsistent with the requirements of the technical specifications, it is to be replaced or repaired by the manufacturer.

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

## 14 DATE OF MANUFACTURE

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month, year

ridom.ru

Made in Russia

v.12/v.12.1/v.12.2R

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