



## WIRELESS ZONE EXTENSION MODULE

«Ladoga BRSS-RK-485 ver. 1»

«Ladoga BRSS-RK-485 ver. 2»

### Installation Guide

#### 1 Product Overview

Wireless zone extension modules «Ladoga BRSS-RK-485 ver. 1» and «Ladoga BRSS-RK-485 ver. 2» (hereinafter, «the BRSS») are intended for state control and monitoring of terminal devices (hereinafter, the «TD») state via two-way communication and transmission of the received information to external device (hereinafter, the «ED») by the «RIELTA-Contact-R» protocol.

BRSS-RK provides the possibility of hooking up to external device (ED): personal computer (hereinafter, «PC») or any other device supporting CDC-ACM interface of the virtual serial port at a speed 57 600 baud. Hooking up is fulfilled by means of USB-port and is intended for BRSS and TD adjustment, configuring and state monitoring in the «RIELTA-Contact-R» protocol.

«Ladoga BRSS-RK-485 ver. 2» differs from «Ladoga BRSS-RK-485 ver. 1» by a possibility of USB-port connection at a closed cover.

#### 2 Features

Table 1

Parameter	Value
Supported wireless devices, items	up to 31
Power supply, V DC	10 – 15
Current consumption, maximum, mA	50
Operating temperature, °C	minus 30 ... +50
Dimensions, maximum, mm	82 x 57 x 32
Weight, maximum, kg	0.06
IP rating	IP20
Operating frequencies, MHz	433.05 – 434.79
Power output, maximum, mWt	10

The BRSS is resistant to mechanical impacts.

The BRSS is designed for continuous and interrupted operation.

BRSS provides connection of:

- two-way communication bus with ED;
- two-way power supply circuit;
- external antenna.

BRSS assigns wire address within the range 1 ... 8 by means of DIP-switches.

BRSS ensures tamper protection.

BRSS average service life is 8 years.

#### 3 BRSS LED Indication Modes

Table 2

LED Indicators State	BRSS State
Simultaneous lighting of yellow, red and green LEDs during several seconds	Test indication of BRSS powering
Yellow LED indicator is lighting continuously	BRSS is energized
Yellow LED is blinking (at 1 Hz frequency)	Binding mode
Red LED blinking (at 8 Hz frequency)	Programming
Red LED is lighting during 3 sec	Radio interference
Shot-term blink of the red LED	Message from TD is received
Short-term blink of green LED	Message from ED (PC) is received via communication bus (USB port)

#### 4 BRSS Operation Modes

##### 4.1 Standby Mode

In standby mode the BRSS accepts the information about the state of connected TD, transmits it to the ED via radio communication channel, receives supervision commands from ED and transmits them to the TD via wireless two-way communication.

The details of BRSS joint operation with different ED are described in relevant ED Installation Guides.

##### 4.2 Programming mode

The mode provides update of BRSS software.

For BRSS reprogramming by means of PC, it is necessary to install software «Ladoga-RK Configurator», which last version is accessible at the site of RIELTA company at the section «Radiochannel / Software» ([www.rielta.ru/radiokanal](http://www.rielta.ru/radiokanal)). After program start it is necessary to choose virtual COM port, to which BRSS is hooked up, and specify exchange speed. Choose software file and press the button «SW update. Load». Locate a firmware file with filename extension «crypt». Programming process should begin automatically. For the forced switch-on the program mode, remove USB cable from BRSS, install «BOOT» jumper and install USB cable to BRSS again. Do not forget to remove «BOOT» jumper after software update.

**ATTENTION!** BRSS hooking up to PC (or any other ED) by means of USB connector should be fulfilled only when BRSS is de-energized.

##### 4.3 Configuration Mode

The configuration mode is intended for BRSS and TD adjustment, as well as adding and deleting of the new TD.

Configuration mode provides the following operations:

- network number and operating frequency assignment;
- radio exchange interval and control period choosing for each TD;
- binding (adding) of the new TD;
- TD deleting.

Operation procedure and fulfillment of the described operations is listed in a «Software «Ladoga-RK Configurator» Manual» or in a relevant ED Installation Guide.

#### 5 Installation Procedure

BRSS installation procedure is described in relevant ED Installation Guide and can be essentially different for connection of various ED. The herein Installation Guide presents the main recommendations, that can be realized by using PC with the software «Ladoga-RK Configurator» installed.

The listed recommendation fulfillment ensures installation and testing the wireless system at the secured object.

##### 5.1 Radio Network Number and Operating Frequency Choosing and Setting

Every radio network deployed at the guarded object should have the unique number (network number). The network number is chosen from 1 to 126 range. Besides that, the operating frequency should be assigned. The operating frequency appoints the main and reserve operating frequency pair, providing communication between wireless devices of radio network. Operating frequencies numbers from 1 to 4 range are assumed.

In case of «Ladoga-RK Configurator» usage for radio network number and operating frequency assignment, refer to menu entry «Referential» and choose section «Set network parameters».

**ATTENTION!** Changing the network number and/or operating frequency requires repeating the binding procedure of each TD.

##### 5.2 Setting of TD Radio Exchange Period and Control Period per Default

The BRSS provides state control of each TD connected to the network. For this purpose radio exchange period is assigned to wireless device during procedure of binding. In accordance with this period, the device sends status messages. The radio exchange period (RP) can be selected from the range: 10, 15, 30 sec, 1, 5 and 10 min.

Pay attention to the fact that the shorter is radio exchange period, the shorter is power supply batteries life and the higher is the wave-range occupancy, which results in communication errors. Permissible number of wireless devices functioning at one operating frequency irrespective of the network number should not exceed  $2 \cdot RP$  (radio exchange period RP value in seconds).

If BRSS is getting no messages from TD during «Control Period», it transmits the information to ED about communication loss with this TD. Control period is determined as a sum of the preset number of skipped radio exchange periods N plus one (N+1). It is recommended to choose N value 3 or 4 at excellent communication quality. N value may be increased if communication quality is poor. Maximum N value is 15. Every TD provides the possibility to control the communication quality in the place of installation (see the relevant wireless device Installation Guide).

Listed parameters assignment ensures their transmission to every TD during the process of binding.

**ATTENTION!** The binding procedure can not be fulfilled without setting parameters listed in sect. 5.1, 5.2 of the herein Installation Guide.

##### 5.3 Binding of TD with BRSS

The binding procedure is intended for wireless TD logging in the network. During binding procedure, the BRSS transmits to TD the following parameters: network number, operating frequency, radio exchange period, and network address.

Binding can be executed under supervision of BRSS by the ED (in compliance with relevant ED Installation Guide), as well as by means of preinstalled software «Ladoga-RK Configurator» by opening tab card «Composition». To avoid cross-talk signals between contemporary configuring systems, binding with TD should be fulfilled with BRSS antenna plugged off. TD should be placed at 0.5 – 1 m distance from BRSS.

Switching the BRSS to binding mode is executed by the command from ED (or PC). Yellow LED indicator periodical blinking indicates that BRSS fulfills binding procedure. TD logging in the network is realized in accordance with the correspondent TD Installation Guide. Information about logged TD is stored in nonvolatile BRSS memory.

**ATTENTION!** After binding procedure finishing, it is recommended to draw a mark on the TD case, designating the assigned zone (channel) number. Afterwards switch the TD off by main power supply battery removal. Therewith power supply batteries safety is provided when BRSS is de-energized.

#### 5.4 BRSS Installation and Mounting Procedure

Choosing the place of installation essentially influences over reliability of communication with TD. Preferred place of BRSS location is network center.

The BRSS should be located far enough from metal objects and wires (at the distance less than 1 – 2 m). Besides, high-frequency devices (CDMA-modems and WiFi routers), power units and other similar devices, creating strong force fields should be maximally distanced (minimum 5 – 10 m) from BRSS.

Choose preliminary place of BRSS installation, ensure it's temporary fastening, energize the BRSS and proceed to choosing place of installation of TD.

The information about communication quality with TD is displayed in the column «Signal Level» in computer software «Ladoga-RK Configurator» tab card: «Monitoring». The signal value exceeding 150 corresponds to excellent quality, the value in the range 120 – 150 means good communication quality.

Unsuccessful results of communication quality appraising indicate that the place of installation shall be changed. Otherwise use the repeater BRSS-RK-RTR.

**ATTENTION!** Remember, that the signal value is appraised at the particular moment of receiving information from TD. Thus, the signal level updates only in the next radio exchange period with TD or in the event of alarm or tampering. If necessary, the radio exchange period of definite TD can be changed online by using computer software «Ladoga-RK Configurator» tab card: «Containment».

Finally choose the place of installation and fasten the BRSS.

#### 5.5 Wireless TD Installation

Wireless TD installation should be completed in accordance with the relevant TD Installation Guide. However, communication quality in the place of installation should be taken in account. The method of BRSS – TD communication quality appraising is described in the correspondent TD Installation Guides.

**ATTENTION!** It should not be overlooked, that 10 – 15 cm displacement of TD from the chosen place of installation can essentially improve or worsen BRSS – TD communication quality.

#### 5.6 Information Transmission Check. Installed System Monitoring

Using software «Ladoga-RK Configurator», it is possible to realize monitoring of entire system by means of guarded object test-passing. All events occurred during test-passing would be displayed on the tab card «Monitoring». It is possible to record all events to the event log. If it is necessary, prolonged monitoring can be fulfilled. All events are automatically saved in a log, which is available in tab card «LOG» (button «Load»).

#### 5.7 BRSS Plugging to ED

Successful results in procedures listed in previous chapters confirm the system readiness for use. Unplug the BRSS from the PC. Fasten the BRSS tightly and hook up the ED in accordance with the ED Installation Guide.

## 6 Scope of Delivery

Each BRSS unit package contains the items listed in Table 3.

Table 3

Name and Designation	QNT	
	ver. 1	ver. 2
Wireless zone extension module «Ladoga BRSS-RK-485 ver. 1»	1 pc.	-
Wireless zone extension module «Ladoga BRSS-RK-485 ver. 2»	-	1 pc.
Antenna	1pc.	1pc.
Screw 3-3x30.016	2 pc.	2 pc.
Screw plug «SORMAT» NAT 5x25	2 pc.	2 pc.
Wireless zone extension module «Ladoga BRSS-RK-485». Installation Guide	1 copy	1 copy

## 7 Manufacturer's Guarantees

The manufacturer guarantees conformity of the BRSS to the requirements of technical conditions provided the transportation, storage, installation and operation conditions are observed.

The guaranteed shelf life of the BRSS is 63 months since the date of manufacture. The guaranteed useful life is 60 months since the day of putting into operation.

The BRSS that is found non-conforming to the requirements of technical conditions shall be replaced by the manufacturer free of charge.

## 8 Claims

In case the BRSS is found non-complying to the requirements of technical conditions, or in case of a breakdown during the guarantee period, the BRSS shall be returned to the manufacturer with the datasheet attached.

## 9 Packing Certificate

Wireless zone extension module:

«Ladoga BRSS-RK-485 ver. 1»,

«Ladoga BRSS-RK-485 ver. 2»,

has been manufactured in compliance with the active technical documentation and classified as fit for operation and packed by «RIELTA» JSC.

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