

RELAY MODULE «BRV-RK»

Installation Guide

1 General Information

1.1 Relay module «BRV-RK» (hereinafter, the BRV-RK) is designed to supervise external devices by means of relay outputs.

1.2 The BRV-RK is intended for operation as a component of a system that is operated by a control panel (hereinafter, the CP), supporting «Rielta-Contact-R» wireless two-way communication protocol.

1.3 The BRV-RK transmits commands on energizing/de-energizing of relay outputs, modes of operation (continuous, pulse) and their run time during regular radio sessions via wireless communication.

1.4 Two frequencies in the 433.05 – 434.79 MHz frequency range are used for wireless signal exchange: the main frequency and the backup one. Switching to the backup operating frequency is fulfilled automatically in case of radio-frequency interferences on the main one.

1.5 Transmission power does not exceed 10 mW.

1.6 BRV-RK is provided with:

- two relay outputs;
- two inputs for the loops (L) plugging;
- two inputs for plugging of the main and backup power supply control loop;
- case tamper;
- two-color LED indicator.

1.7 BRV-RK is supplied from the external power supply with rated voltage 12 V.

1.8 BRV-RK ensures periodical control of loops inputs and CS outputs operability. The loop state is estimated by their input circuit resistance values:

- «Norm» state: 4.1 ... 5.7 kΩ;
- «Alarm» state: 0.5 ... 3.6 kΩ or 6.5 ... 11 kΩ;
- «Short Circuit» state: below 110 Ω;
- «Failure» state: exceeding 14 kΩ.

External power supply operability is estimated by the supervision circuit resistance values:

- «Norm» state: below 110 Ω;
- «Failure» state: exceeding 14 kΩ.

1.9 During regular radio sessions «BRV-RK» generates and transmits to CP the following messages via wireless communication:

- «Norm»;
- «Tamper»;
- «Main power supply failure» (MF) – under receiving message about main external power supply failure at MP input;
- «Backup power supply failure» (BF) – under receiving message about backup external power supply failure at BP input;
- «Power supply failure» – under supply voltage drop on terminals «+12 V» below (10 ± 0.2) V;
- «Loop failure» – under short-circuit or disconnection of the loop;
- «Alarm» – at the correspondent resistance values of the loop circuits.

1.10 Radio exchange period (RP) is assigned by the command from CP from the range: 10, 15, 30 sec, 1, 5, 10 min by the «Rielta-Contact-R» wireless two-way communication protocol.

1.11 BRV-RK operation modes are displayed by two-color LED indicator (See Table 3).

1.12 BRV-RK is designed to operate continuously around the clock in the closed premises of accommodation and manufacturing facilities.

1.13 BRV-RK has immunity to electromagnetic interferences.

2 Principal Technical Characteristics

Table 1

Parameter	Value
Rated voltage (Uinput), V	12 (+4 V/-1.8 V)
Consumption current: - average in standby mode, not more, mA - maximal, not more, mA	15 130
Relay outputs: - maximal current, A - maximal voltage, V	7 30
Operating temperature, °C	from minus 30 ... +50
Permissible humidity (at 40 °C), %	93
Ambient class	Boreal climate
IP rating	IP20
Dimensions, maximum, mm	170 x 120 x 45
Weight, maximum, kg	0.3
Average service life, not less, years	8

3 Scope of Delivery

Each BRV-RK unit package contains the items listed in Table 2.

Table 2

Name	QNT
Relay module «BRV-RK»	1 pc.
Antenna	1 pc.
Screw 3-3x30.016	2 pcs.
Wall plug NAT 5x25 SORMAT	2 pcs.
Resistor 5.1 kΩ 0.125 W	4 pcs.
Relay module «BRV-RK». Installation Guide	1 copy

4 Protective Measures

4.1 Fulfilling installation and exploitation of «BRV-RK» follow customers safety instructions for electric installations.

4.2 All installation operations shall be executed only when BRV-RK is powered OFF.

5 Design

BRV-RK design with removed cover is shown in Figure 1.

The base (1) is provided with holes (2) for BRV-RK fixation on the installation surface. The printed circuit board (PCB) (3) comprises the following elements:

- antenna leading-in socket (4);
- two-color LED indicator (5);
- reset contacts (6);
- connecting blocks (7).

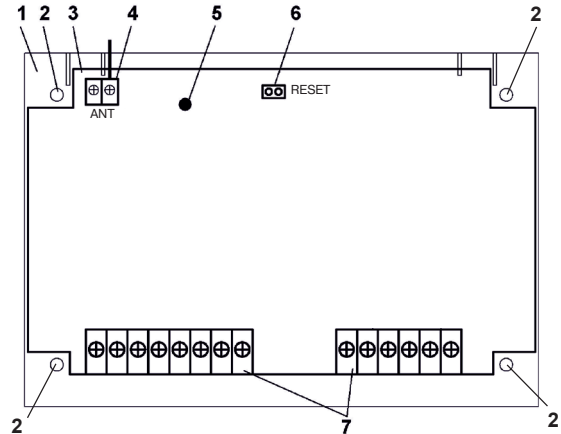


Figure 1 – BRV-RK with removed cover

6 LED Indication

Table 3

BRV-RK Status	LED Indication
«Binding» mode	LED indicator blinking green
«Binding is completed»	Short-term (2 sec) LED indicator lighting red
«Identification» indication	Alternate LED indicator lighting green and red
Switching ON	Short term (2 sec) LED indicator lighting red
«Communication Quality Appraising»	See Table 4

7 Switching On and Setting Up

7.1 Remove the cover.

7.2 Install antenna into leading-in socket «ANT».

7.3 Prepare the CP for the new device logging («Binding» mode) in accordance with the CP Installation Guide. Only one CP, prepared for binding, should be located in radio coverage zone during BRV-RK logging.

7.4 Fulfill BRV-RK energizing by applying 12 V to «-12 V+» inputs.

7.5 Short-circuit «Reset» contacts on BRV-RK PCB.

7.6 Make sure in alternate LED indicator lighting green (binding mode). Remove short-circuit by opening contacts.

7.7 Execute binding procedure in accordance with the CP Installation Guide.

7.8 Wait for short-term LED indicator lighting red.

Note – The binding procedure is limited to 100 sec. To resume the «Binding» mode, repeat operations described in sect. 7.5 – 7.8.

8 Communication Quality Appraising

8.1 Place BRV-RK at the assumed place of installation in a position, which provides vertical antenna orientation.

8.2 Push «Tamper» contacts and hold it for 3 sec or longer.

8.3 Release «Tamper» contacts.

8.4 Appraise the communication quality by LED lighting in accordance with the Table 4.

Table 4

LED Indication		Communication Quality Appraisal	Recommendations Color
Color	Mode		
Green	Three blinks	Excellent	Green Green
Green	Two blinks	Good	
Green	One blink	Communication established	Green Red
Red	Series of blinks	No communication	

*) – «Ladoga BRSS-RK-RTR» or «Ladoga BRSS-RK-RTR», ver. 1

9 BRV-RK External Plugging

Connecting blocks for BRV-RK plugging is shown in Figure 2.

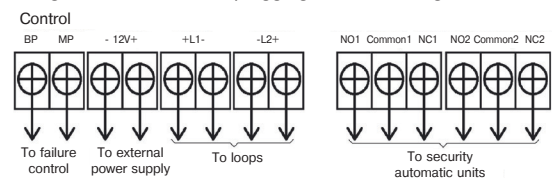


Figure 2 – Connecting blocks for external modules plugging

Figure 3 represents recommended connection diagrams of:

- power supply terminals (a);
- external sensors with NC contacts (b);
- external sensors with NO contacts (c);
- communication buses with annunciators (d).

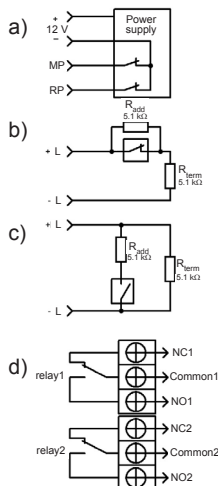


Figure 3 –External devices connection diagram

Power supply operability control circuits should be plugged to the relevant BRV-RK input: operability of the backup power supply – to «BP» input and the main one – to «MP» input. The second wire from these relays should be plugged to connecting block «-12 V».

Under absence of «failure outputs» of the power supply unit, close «MP», «BP», «-12 V» of BRV-RK together.

Loop terminal (EOL) resistor (R_{term}) and additional resistors (R_{add}) provide «BRV-RK» a possibility to control the loop operability.

10 Installation

10.1 Install BRV-RK at the place, where communication quality is appraised as «Good» or «Excellent» (See Sect. 8).

10.2 It is not recommended to install «BRV-RK» at the following places:

- at massive metal constructions and nearer 1 m from them;
- nearer than 1 m from electrical power cables, as well as from water or gas pipes;
- near the source of radio interferences;
- inside metal constructions.

10.3 Run the power lines far enough from electrical power cables. Install «BRV-RK» in a position, which provides vertical antenna orientation.

11 Storage and Transportation

11.1 The BRV-RK in their original packing may be shipped by any transport means in closed vehicles over any distances in compliance with the existing shipping rules concerning the respective means of transportation.

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

11.3 BRV-RK should be stored without installed power supply batteries.

12 Manufacturer's Guarantees

12.1 The manufacturer guarantees conformity of the BRV-RK to it's Technical Specifications provided that the transportation, storage, installation and operation conditions are observed.

12.2 The guaranteed shelf life of the «BRV-RK» is 63 months since the date of manufacture.

12.3 The guaranteed useful life is 60 months since the day of putting into operation within the guaranteed shelf life.

12.4 The «BRV-RK» that is found non-conforming to the Technical Specifications 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.

13 Acceptance and Packing Certificate

Wireless outputs module «BRV-RK»,

batch number _____,

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

Person in charge of acceptance and packing

QC representative _____
month, year