



«Astra-R»

Wireless alarm system

Operation Manual

This operating manual is intended to describe the principle of operation, operating conditions and maintenance of the Astra-R wireless security alarm system (Figure 1).

The manufacturer reserves the right to make changes to the design, firmware, circuit solutions and product packaging that do not worsen its specifications, do not violate mandatory regulatory requirements, without prior notice to the customer.

The technical features of the product not specified in the operation manual in terms of design, firmware and circuit solutions are standard for the product, if they do not worsen the declared technical characteristics. The customer, due to dissatisfaction with technical features not specified in the operation manual or changes made, has the right to return the product to the seller while maintaining the presentation of the product and within the time limits established by law, with a full refund of the previously paid money.

List of abbreviations:

RVC – wireless receiver Astra-RVC;

TRC – wireless transmitter Astra-TRC (keyfob);

CP – control panel «Astra-712/X» or analog;

1 Function

Wireless panic button system - transmitting alarm signals from registered **TRC** via radio channel to **RVC** and generating a notification by triggering the built-in **RVC** relay.

Remote control of electrically operated mechanisms - transmitting signals from registered **TRC** via radio channel to **RVC** and triggering the built-in **RVC** relay to control mechanisms (gates, barriers).

2 Components

2.1 RVC

2.1.1 RVC – standalone receiver intended for:

- receiving the signals via radio channel from TRC, decoding and identification of the received signal,
- control of the built-in relay.

2.1.2 RVC supports up to 99 TRCs.

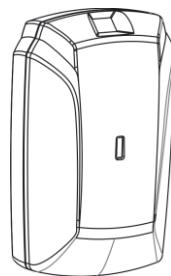
2.1.3 Power supply of the RVC is carried out from an external stabilized power source "Astra-712/0" or similar.

2.2 TRC

2.2.1 TRC – small-sized radio transmitters (keyfobs) with autonomous power supply, designed to generate and transmit signals when pressing a panic button.

2.2.2 TRC in order to avoid a discharge of the battery stops transmitting 10 sec. after pressing the button, if the button remains in the pressed state.

2.3 The coverage range guaranteed by the manufacturer with a direct line of sight between the RVC and TRC is at least 300 m on an area covered with dry soil, in the absence of powerful radio interference, objects interfering and reflecting radio waves. Inside reinforced concrete buildings or in the presence of interference, the communication range between the RVC and TRC can be reduced to 30 m.



RVC



TRC

Figure 1

3 Technical specifications

Operation frequency, MHz 434.92

Technical specifications of RVC

Power supply voltage, V from 10.5 to 15

Current consumption, mA, not more 50

Max relay load voltage at 0.1 A, V 100

Boot time, sec, not more 10

Overall dimensions, mm 101 × 63 × 32

Weight, kg, not more 0.07

Technical specifications of TRC

Power supply voltage, V from battery **CR 2430**, V, not more 3

Transmitting power, mW, not more 10

Current consumption:

- in standby mode, µA, not more 5

- in transmitting mode, mA, not more 45

Overall dimensions, mm 74 × 33 × 14

Weight, kg, not more 0.03

Operation conditions

Temperature range of RVC, °C from 0 to + 50

Temperature range of TRC, °C from 0 to + 50

Relative humidity, % up to 95 at + 35 °C
without moisture condensation

4 Delivery set

Wireless transmitter Astra-TRC (keyfob) 2 pcs.

Wireless receiver Astra-RVC (ver. B) 1 pcs.

Screw 2 pcs.

Dowel 2 pcs.

Operation manual 1 copy.

Note – TRC added in RVC's memory.

5 Construction

5.1 RVC

5.1.1 Structurally, the RVC is made in the form of a unit consisting of a base and a removable cover. A PCB with radio elements and a built-in antenna is mounted inside the unit (fig. 2).

5.1.2 On the board there are green and red indicators for monitoring the operation of the radio control room and indication of broadcasting.

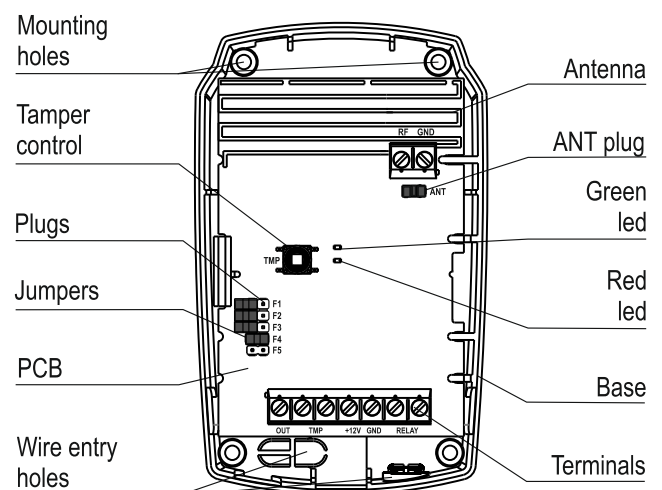


Fig. 2

5.1.3 The PCB has screw terminal blocks:

Terminal	Function
OUT	Not used
TMP	RVC tampering, relay opens when tampering
+ 12V, GND	Power supply
RELAY	Relay output (closed in the normal state, opens when panic button signal received)
RF, GND	Connecting an external antenna

5.1.4 The PCB has an ANT plug for connecting the built-in antenna.

NOTE!

To use an external antenna - you must remove the jumper from the ANT plug.

To use built-in antenna - you must install a jumper on ANT plug.

5.2 TRC

5.2.1 Structurally, the TRC is made in the form of a key fob, consisting of a cover (front side) and a base (Figure 3).

5.2.2 The lid contains a button and a PCB with radio elements.

5.2.3 A red indicator is installed on the board to monitor the TRC status.

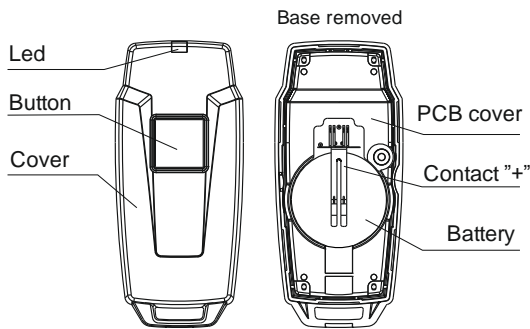


Figure 3

6 Indication

6.1 RVC

- When issuing notifications "No registered TRC", "Norm" relay contacts are closed.
- When receiving a radio channel notification from a registered TRC (notification "Command from TRC"), the relay state changes in accordance with the set operating mode of the relay, see **section 10**.

Table 1 – RVC indication

Notification	Green led	Red led
No registered TRC	Flashing 1 time/ sec	Off
Norm	On	Off
Power turning on	Off	Lights up 1 time for 1 sec
Registration mode	Off	Lit up to 30 sec
Successful registration	Off	Flashing 2 times/sec for 4 sec
Command from TRC	Off	Lights up for the programmed time (p. 8.5) or until the next command from the TRC is received (see p. 10.1)
Tampering	Any state	

6.2 TRC

Table 2 – TRC indication

Notification	Red led on TRC
Pushing the panic button	Lights up 1 time for 1 sec
Power failure	3x flash when the panic button is pressed and the battery voltage is below 2.3 V
Radio mode	2x flash after installing the battery

Notes

- 1 "Power failure" is indicated when panic button is pushed.
- 2 When the message "Power failure" appears, the battery must be replaced within one week.

7 Factory defaults

- 2 of TRCs registered in RVC's memory;
- RVC's relay mode – relay opens for 2 sec when panic button is pushed on the TRC;
- **Built-in antenna** enabled (jumper is installed on the ANT plug).

8 Modes of operation

ATTENTION!

- 1) When external circuits are connected to the TMP terminals, installing jumpers on plugs F1, F2 is prohibited
- 2) F4 jumper is constantly installed

Table 3

Mode of operation	Plug			Tamper control button position when powering on RVC	
	F1	F2	F3		
TRC registration/ TRC removing	+	+	any	Not pressed	
Relay mode	Trigger	-	-	+	Any
	Opens for time period	-	-	-	Any
Relay opening time interval programming	+	+	-/+	Pressed	

Notes

- 1 Jumpers are removed and installed when the power is off, if there is no special instruction.
- 2 F5 plug not used

9 Configuring

9.1 RVC and TRC after transportation under conditions different from the operating conditions, keep unpacked under operating conditions for at least 2 hours.

9.2 TRC from the delivery set are registered in the RVC's memory. Registration of additional TRC is carried out according to the procedure of pp. 9.3, 9.4 of this operation manual.

9.3 Registration of TRC into RVC's memory (assigning TRC's)

TRCs are registered in turn in any sequence. In case of successful registration, the RVC will "memorize" the unique serial number of the TRC in its non-volatile memory and assign it a conditional serial

number that follows in the order of the registered TRC.

Procedure:

- 1) Remove RVC's cover (see p. 13.2).
- 2) Disconnect external electrical circuits from **TMP** terminals.
- 3) Install jumpers on **F1** and **F2** plugs.
- 4) Enable power of RVC,

The **green led** will turn on if there is at least one registered TRC or it will blink at a frequency of 1 time per 1 second in the absence of registered TRC.

- 5) Shortly press the **TMP button** on the RVC's PCB, while the red indicator will light up - the RVC has entered the registration mode for 30 sec.
- 6) Press the button (for 1-2 sec.) on the **registered TRC**.

The **red led** on the RVC will blink **2 times in 1 sec.** for 4 sec. - **successful registration**.

Possible reasons of unsuccessful registration:

- TRC was registered earlier;
- Different radio mode on RVC and TRC (см. п.9.3);
- Wrong registration procedure – repeat procedure (see p. 9.4)

To register subsequent TRC, repeat the steps 5),6).

- 7) Disable power of RVC.
- 8) Remove jumpers from **F1** and **F2** plugs.
- 9) Close RVC's cover.

9.4 Relay time programming

9.4.1 Programming the relay time for a time from 2 sec to 4 min

- 1) Remove cover of RVC (see. p. 13.2).
- 2) Disconnect external electrical circuits from **TMP** terminals.
- 3) Remove jumper from **F3** plug, install jumpers on **F1** and **F2** plugs.
- 4) Press **TMP button** on RVC's PCB and, while holding it, turn on the power supply of the RVC, while the red led will light up.
- 5) Release the **TMP button** on the RCV, while the red led turn off.
- 6) Wait for the required (programmable) time interval (from 2 sec to 4 minutes) and install a jumper on plug **F3**. The RVC **red indicator** will light up for 1 sec.

The **green led** will turn on if there is at least one registered TRC or it will blink at a frequency of 1 time per 1 second in the absence of registered TRC.

- 7) Disable RVC power.
- 8) Remove jumpers from **F1 - F3** plugs.
- 9) Close RVC's cover.

9.4.2 Accelerated programming of the relay time from 20 sec to 30 min

With accelerated programming, the programming time is reduced by 10 times; the programming step is 10 sec.

- 1) Remove RVC's cover (see p. 13.2).
- 2) Disconnect external electrical circuits from **TMP terminals**.
- 3) Remove jumper from **F3** plug, install jumpers on **F1** and **F2** plugs.
- 4) Press **TMP button** on RVC's PCB and, while holding it, turn on the power supply of the RVC, while the red led will light up.
- 5) Release the **TMP button** on the RCV, while the red led turn off.
- 6) Press the **TMP button** again for 1-2 sec, the red indicator of the RVC will light up.
- 7) Wait for the required (programmable) time interval, reduced by 10 times (from 2 s to 3 minutes), then install a jumper on the **F3** plug. The **red indicator** will turn off.

The **green led** will turn on if there is at least one registered TRC or it will blink at a frequency of 1 time per 1 second in the absence of registered TRC.

- 8) Disable RVC power.
- 9) Remove jumpers from **F1 - F3** plugs.
- 10) Close RVC's cover.

10 Testing

10.1 Trigger mode of RVC's relay

- 1) Remove RVC's cover (see p. 13.2).
 - 2) Remove jumpers from **F1, F2** plugs. Install jumper on **F3** plug. Connect **+ 12V, GND** terminals to the power supply.
 - 3) Enable power of RVC.
- Red led** turn on 1 time for 1 sec. Then **green led** will turn on.
- 4) Press the button on registered **TRC**.
- Then **red led** of RVC will turn on.
Relay terminals will open.
- 5) Press the button on registered **TRC**.
- On the **RVC**, the **red led** will turn off and the **green led** will light up.
The relay will return to the original state.
Each time the button on the TRC is pressed, the state of the relay and indicator on the RVC changes.
- 6) Disable RVC's power.

10.2 RVC relay mode with time interval

- 1) Remove RVC's cover (see p. 13.2).
 - 2) Remove jumpers from **F1-F3** plugs.
 - 3) Connect **+ 12V, GND** terminals of RVC to the power supply.
 - 4) Enable power of the RVC.
- Red led** turn on 1 time for 1 sec. Then **green led** will turn on.
- 5) Press the button on registered **TRC**.
- Then **red led** of RVC will turn on.
Relay terminals will open for programming time interval.

Note – If during the triggered state of the relay, press the button on the registered TRC again, then the time of the triggered state will be prolonged for the programmed time interval from the moment of pressing.

- 6) Disable RVC's power.

ATTENTION! If the button on the TRC is pressed more than 15 times outside the range of the RVC, there is desynchronization of the RVC and the TRC. To restore press the TRC button 2 times.

11 Replace of the TRC battery

- 1) Remove the base of TRC.
- 2) Take out an old battery.
- 3) After a time of at least 10 sec, install new battery.
- 4) Assemble TRC.

12 Reset of RCV (remove all TRC)

- 1) Remove RVC's cover (see p. 13.2).
 - 2) Disconnect external electrical circuits from **TMP terminals**.
 - 3) Install jumpers on **F1** and **F2** plugs.
 - 4) Enable power of RVC.
- Red led** turn on 1 time for 1 sec.

The **green led** will turn on if there is at least one registered TRC or it will blink at a frequency of 1 time per 1 second in the absence of registered TRC.

- 5) **Press and hold** the **TMP button** on the RVC until the red indicator turns off. The green indicator on the RVC will start blinking at a frequency of 1 time per 1 second - the RVC reset.
- 6) Disable power of RVC.

Note – After RVC reset, the programmed relay time is reset to the factory value - 2 sec.

13 Installation place

13.1 Select the installation place

13.1.1 The RVC should be placed at the maximum height (not less than 2 m) to ensure the largest wireless coverage area of the RVC.

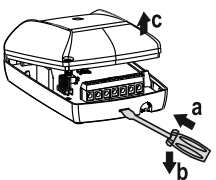
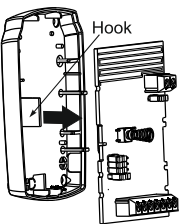
13.1.2 The wires of the power supply circuits, relay and TMP circuits, the interface line of the RVC should be located away from power and high-frequency cables.

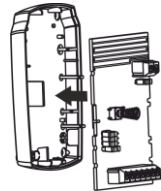
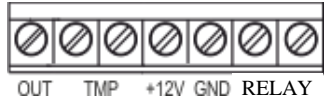
13.1.3 RVC is not recommended to place:

- on massive metal structures or closer than 1 m from them;
- closer than 1 m from power lines and metal water or gas pipes, sources of radio interference;
- below 1.5 m from the floor;
- inside metal structures.

ATTENTION! Do not place the RVC at a distance of less than 10 m from other radio equipment (including its antennas) that is a source of interference for the RVC. Do not place the RVC at a distance of less than 5 m from the computer (system unit and display), uninterruptible power supply and other power equipment.

13.2 RVC installation procedure

<p>1 Push the cover latch out of the groove in the base.</p> <p>Remove the cover</p> 	<p>2 Fold back the hook on the base. Remove PCB</p> 
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<p>3</p> <ul style="list-style-type: none"> • Press out the plugs of the selected mounting holes. • Make a marking at the selected installation location using the enclosed base. • Route wires from power supply, relay and TMP circuits, interface line through the wire entry hole. • Fix the base of the RVC 	<p>4 Install the PCB back into place by aligning the notches on the PCB with the guide tabs on the base. Push the board all the way down (until it clicks)</p> 
<p>5 Electrical installation to the output terminals of the RVC conducts in accordance with the selected operating mode.</p> <p>Connect the TMP terminals to the Control Panel zone to control the opening of the RVC.</p> 	<p>6 Close the cover</p>

14 Warranty

The warranty period of operation of the RVC is 5 years from the date of commissioning, but not more than 5 years 6 months from the date of manufacture and subject to the requirements of the current operational manual. The warranty period for the operation of the TRC is 1 year from the date of commissioning, but not more than 1 year 6 months from the date of manufacture and subject to the requirements of the current operational documentation.

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