

TECHNICAL
DESCRIPTION



PRIZRAK 7S

SLAVE CAR ALARM SYSTEM

PRIZRAK — PROTECTION AGAINST PROFESSIONAL CARJACKING

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Introduction

We've designed for you a new format of the Technical description. For your convenience, we've integrated into it a navigation tool which uses links to the internal content of the technical document and to external resources.

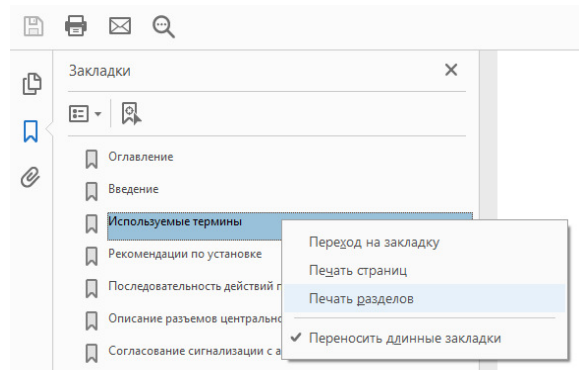
It is recommended to use a PDF viewer program — Adobe Acrobat Reader to unleash the full potential of the integrated navigation tool. Follow the link <https://get.adobe.com/ru/reader/> to download a free version of this program from Adobe's official website.

We've also included links in chapters of the Technical description instead of specifying the page numbers. The underlined text is a link. By clicking the link you will get to a chapter in the document or to a place the link refers to.

The Technical manual has an interactive table of contents. By clicking a name of the required chapter you will automatically get to that chapter. Furthermore, you can make the navigation throughout the document much convenient in the «Bookmark» toolbar. The toolbar also includes an interactive list of contents which is used for quick shifting between chapters.

You can use the «Bookmark» toolbar to print out only a desired chapter of the document. For this purpose, make the right click on the required chapter and select the «Print chapters» tool.

Explanations and notes in the Technical manual are highlighted in *italics*.



Alarm system description

The alarm system Prizrak-7S/BT has been designed to protect a vehicle from theft while parked and from forcible seizure while operated. The anti-theft system is built on the principle of authentication of a user who is authorized to drive the vehicle. The user's authentication can be carried out with the Kay ID tag (Bluetooth Smart), Slim tag, smartphone tag and/or by entering a secret PIN code combination using the original vehicle buttons.

The basic control tool of the alarm system is the vehicle's original remote. It is used to either arm or disarm the alarm system.

The alarm system Prizrak-7S/BT is equipped with standard digital interfaces such as: two CAN BUSES; two common-purpose digital buses; LIN BUS for communications with various electronic control units. The two-way communication digital bus which is called TP-BUS establishes communication with peripheral devices produced by TEC electronics. Furthermore, the alarm system is equipped with inputs and outputs that process or generate discrete signals. The inputs and outputs can be configured according to a specific task that is to be implemented on a vehicle.

Modifications and package contents of Prizrak-7S/BT

Table 1 — Package contents of various modifications of Prizrak-7S/BT

Item	Prizrak-7S/BT	Prizrak-7S/BT/Slim	Prizrak-7S/BT/2Slim
Slim tag		+	2 pcs.
Siren	+	+	+
Main alarm module	+	+	+
LED	+	+	+
Set of wire looms for connection	+	+	+
Memo card	+	+	+
User guide	+	+	+
Equipment passport	+	+	+
Wiring diagram	+	+	+
Package	+	+	+

Terminology

Bluetooth code. The code is designed to pair a user's smartphone with the alarm system in order to use it as a tag. To keep the code secret when testing the alarm system, a professional installer should use a temporary registration code - the barcode of the plastic card supplied with the device. The temporary code is valid until the vehicle hasn't traveled a distance of 10 km after installing the system. Later on, an authorized vehicle user will be able to pair a smartphone using a personal Bluetooth code located under the protective film of the plastic card.

Radio tag — is an electronic key that the alarm system user should always carry when operating the vehicle. The alarm system will automatically detect a tag before the vehicle is set in motion. There are two types of radio tags: Slim tag — designed to carry out authentication and Key ID tag — besides authentication, it can be used to arm/disarm the alarm system thanks to the integrated button.

Smartphone tag — it is a mobile device (smartphone) with the installed application Prizrak ID. After pairing a smartphone with the system it can be used for authentication instead of a radio tag. When installing the alarm system, it allows to register a smartphone as a tag to test its functionality without scratching off the protective film of the user Bluetooth code located on the plastic card supplied with the device. This can be done by using the «INSTALLER» mode of the Prizrak ID application and the barcode number located on the plastic card supplied with the alarm system.

Authentication — authentication is a procedure designed to verify whether a vehicle user is authorized to drive the vehicle. Authentication can be carried out by having a tag inside the vehicle and/or by entering a secret PIN code combination. Tag and PIN code are the two independent authentication contours, two different authentication procedures should be carried out to disable each contour (refer to chapter [Authentication](#)).

PINroDrive® — this is an anti-theft feature of the alarm system which is disabled after entering a secret PIN code combination. The code should be entered every time prior to driving. The code is entered with original vehicle buttons.

Programming button (PB) — one of the original vehicle buttons which is used for programming the alarm system features or for entering PUK code. The built-in button of the Key ID tag can also be used as the programming button.

Guard mode — is an active state of anti-theft features of the alarm system. The mode can be disabled after disarming a vehicle with the original remote key and carrying out an authentication routine prior to driving, otherwise the vehicle will be immobilized.

Beeper — sound generator located on the circuit board of the main module of the alarm system. It is designed for indication of operating modes of the alarm system.

Kes — keyless entry system.

PB — the built-in programming (reset) button.

Installation recommendations

The built-in Programming (reset) button can be used to configure the alarm system. Also it can be used to carry out authentication using the default PIN code combination "2"; to program resistive buttons which will be used in a secret PIN code combination; to reset the alarm system to default settings. Configuring the alarm system settings by means of the built-in button is possible as long as the vehicle hasn't travelled 10 km. after the installation.

Mount the main module of the alarm system on a vehicle. Position the main alarm module inside the vehicle so that the GSM antenna is distanced from the vehicle's wire harness, electronic control modules and vehicle's body iron parts at a minimum of 70 mm. You may rotate the GSM antenna at an angle of 60 -180 degrees (figure 1). It is not allowed to mount the main alarm module in areas that may contain liquids and foreign objects as well as moving mechanical parts that may cause damages to the main alarm module or its wire harness.

To ensure proper operation of the built-in shock, tilt, displacement sensors, the main module of the alarm system has to be mounted firmly and have close contact with vehicle bodywork or other solid construction parts of a vehicle.

It is not recommended to mount the alarm system components and wire harness cables in a close proximity to vehicle's moving parts and mechanisms (e.g. steering wheel column, gas, brake pedal, clutch pedal, window wipers mechanism and etc.).

Do not connect the alarm system outputs directly to loads greater than the rated nominal value of the system outputs as this may lead to their malfunction. Always use an appropriate wire gauge when connecting to high-energy power circuits and protect the system from short circuiting by installing protective fuses.

The alarm system installation sequence

Step 1

Install the alarm system on a vehicle according to the wiring diagram, this technical description and the information posted on our web-database — Integrator: <https://tecel.ru/en/support/>

Step 2

- After connecting the alarm system to power and vehicle's CAN-bus, carry out a vehicle interfacing routine which is described for each vehicle in the Integrator (see chapter Interfacing the alarm system with a vehicle).
- Connect the alarm system to "wired buttons" if needed (see Integrator). Program the wired buttons and assign one of the buttons as the programming button. The wired buttons have to be programmed until the vehicle hasn't travelled 10 km after the installation of the system. Buttons available in vehicle CAN bus don't have to be programmed.

Step 3

- Pair a smartphone with the alarm system using the mobile application «Prizrak ID». You can use a temporary code to register "a smartphone as a tag" and fully test the alarm system functionality. Don't scratch off the protective film of the secret Bluetooth code located on the plastic card - only an end alarm system's user is allowed to do that.

Step 4

Test the basic functions of the alarm system:

- radio tags operation (if included in the set);
- vehicle central locking system control; «comfort» feature; hazard lights control;
- sensors operation (they should be adjusted if needed);
- PINtoDrive® and AntiHiJack features;

Step 5

After testing all the basic functions, make sure the alarm system and its components are firmly secured. Re-assemble vehicle parts according to its manufacturer's instructions. Make sure all disconnected plugs and connectors are in place. Put back all vehicle elements that were dismantled before installing the alarm system. Make sure all the elements are mounted correctly and securely fastened. Check all fasteners such as screws, nuts, clips, cable ties etc., if any were disconnected during the installation.

Indicate in the user manual (page 2) a button which was assigned as the programming button.

Alarm system configuration methods

Programming and configuring the alarm system features is recommended to carry out using the special software «TECprog2» that can be downloaded at: <https://tecel.ru/en/tecprog2/>. The use of the software allows to shorten the alarm system installation time and avoid selecting wrong settings.

Connecting the alarm system to a PC via USB cable allows to: update firmware; select a vehicle model; configure settings and assign various features to inputs and outputs.

It is also possible to connect the alarm system to a PC via Bluetooth using a USB adapter TECprog-USB-Bluetooth. This connection method only allows to configure the alarm system settings.

There is an alternative configuration method which doesn't require connecting the system to a PC. Changes to the system settings can also be made using the PB and related programming menus. Each programming menu contains a specific list of settings which corresponds to the name of a menu. In order to enter the programming menu - the programming button should be pressed and released the related number of times. For example, «menu 12» means that the required setting is in the «User features» menu and to enter this menu, the programming button should be pressed and released 12 times.

Table 2 — Programming menus

Menu name	Designation	Number of pressings on the PB	Number of confirmation beeps
Menu 8	Built-in sensors adjustment	8	5
Menu 10	Hardware features configuration	10	3
Menu 11	Programmable inputs and outputs configuration	11	6
Menu 12	User settings configuration	12	4
Menu 14	PIN code change	14	1
Menu 20	Underhood module configuration	20	10
Menu 23	BT relay Prizrak 1A configuration	23	13

Alarm system's wiring harness description

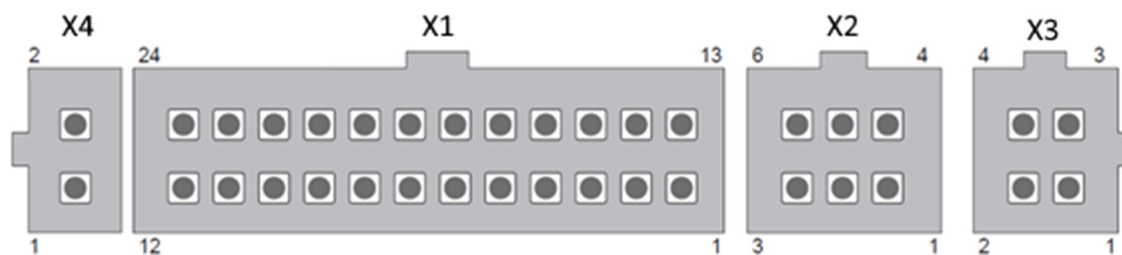


Table 3 — X1 (24-pin) connector

Wire №	Wire colour	Wire function (optional mode)	Description
1	Grey/blue	DATA2 - RX	LIN/ComfortControl Mazda/CLS control on Mazda
2	Yellow	TP-BUS	Data bus for modules produced by «TEC electronics»
3	—		
4	—		
5	Orange/green	Programmable input	Driver's door
6	Green/black	Programmable input (-)	Hood
7	White/black	Programmable output (-300 mA)	Wired engine blocking control
8	Pink/black	Programmable output (+1300 mA) (Programmable output (-350 mA))	Panic/warning to the siren
9	Brown	CAN2	CAN2-L
10	Brown	CAN1	CAN1-L
11	Grey/black	Programmable input (-)	Reference ground of resistive buttons/Negative button
12	Red	Power supply +12V	Power +12V
13	Grey/green	DATA2 - TX	LIN/ComfortControl Mazda/CLS control on Mazda
14	—		
15	—		
16	—		
17	Green	Programmable output (-300 mA)	Central locking system control - analog
18	Pink/green	Programmable input (+)	Brake pedal control input
19	Blue	Programmable output (-300 mA)	Unlock central locking system
20	Blue/red	Programmable output (-300 mA) (Programmable output (+300 mA))	Hazard lights — analog control
21	Brown/yellow	CAN2	CAN2-H
22	Brown/red	CAN1	CAN1-H
23	Grey/yellow	Programmable input (+)	Positive input of resistive buttons/Positive button
24	Black	Power supply - ground	Power (-)

Table 4 — X2 (6-pin) connector

Output №	Wire color — variant 1	Wire color — variant 2	Wire function	Description
1	Pink	Yellow/white	Programmable output (+300 mA)	Not assigned
2	White	Yellow/black	Programmable output (+300 mA)	Not assigned
3	Orange	Yellow/red	Programmable output (+300 mA)	Not assigned
4	Brown	Yellow/green	Programmable output (-300 mA)	Not assigned
5	Yellow	Yellow	Programmable output (+1200 mA)	Not assigned
6	Blue	Yellow/blue	Programmable output (-300 mA)	Not assigned

Table 5 — X3 (4-pin) connector

Wire №	Wire color	Wire function (optional mode)	Description
1	Blue/white	Programmable input (-) (DATA1 - RX)	Trunk pin-switch input
2	Red/white	Programmable input (+)	Alarm trigger override when opening trunk
3	White/green	Programmable input (-) (DATA1 - TX)	Parking brake control input
4	Orange/white	Programmable input (-)	Doors control input except the driver's door

Table 6 — X4 (2-pin) connector

Wire №	Wire color	Wire function	Description
1	Blue	(-)	LED
2	Red	(+)	LED

Interfacing the alarm system with a vehicle

Vehicles compatible with the alarm system are divided into groups. Each group is divided into subgroup; each group and subgroup has its own number (see the web data-base «Integrator»). Interfacing means detecting group and subgroup of a vehicle by carrying out a special interfacing routine.


There are three vehicle interfacing methods:

- automatically — when connecting the alarm system to a vehicle;
- using a PC;
- manually — using the programming menu of the alarm system and PB.

Automatic interfacing

Make sure all vehicle electronic components are in place. For example: if the instrument panel or the climate control panel is disconnected, the alarm system might not detect all information in vehicle CAN bus which necessary to identify a specific vehicle make and model.

Interfacing procedure for each vehicle is described in the Integrator. After connecting the alarm system to vehicle's CAN bus, +12 V and carrying out a group and subgroup will be detected automatically (turning ON/OFF the ignition and locking/unlocking a vehicle with the remote key - see Integrator). You just have to make sure that vehicle make and model are detected correctly by carefully counting audible signals (group number — pause, subgroup number — pause).

 *If a vehicle group consists of two digits then each digit will be indicated separately. For example: group 35, subgroup 2 will be indicated as follows: 3 long signals — one-second pause, 5 long signals — two-second pause, 2 short signals — four-second pause.*

Interfacing using a PC

Selecting a vehicle make and model and configuring settings of the alarm system can be carried out via PC with installed software TECprog2. An up-to-date TECprog2 software version is available for download at: <https://tecel.ru/en/tecprog2/>.

This method allows to reduce time needed to install the system and avoid possible mistakes in programming.

Backup method (manual interfacing)

The method can be used when it is not possible to detect group and subgroup by using the first and second interfacing methods. This method may be helpful when a vehicle manufacturer has updated the vehicle and some data running on the CAN bus has changed. If this is the case, some alarm features may become unavailable because such interfacing procedure doesn't consider the configuration of the vehicle.

This interfacing method is performed with the use of the built-in programming button. Prior to performing the interfacing procedure, make sure that the module's memory is cleared (group and subgroup isn't already programmed) and the CAN-bus wires are not connected. While setting up the group/subgroup, the interfacing process will be terminated if the built-in programming button remains touchless within 60 sec.

Manual interfacing method description:

1. Supply +12 V to the alarm module. Wait for short intermittent signals.
2. Enter the «Menu 10» by pressing the programming button 10 times no later than in 10 seconds after supplying power to the module. There will be 3 confirmation signals if everything has been done correctly.
3. Press the programming button 1 time in order to select the option №1 «Vehicle model». The alarm will start emitting short intermittent signals.
4. Enter **the** vehicle group number by pressing the programming button the relevant number of times (refer to the Integrator).
5. Enter **a** vehicle subgroup number by pressing the programming button the relevant number of times (refer to the Integrator).
6. Make sure the vehicle model has been programmed correctly by listening to the audible signals:
 - press the programming button 1 time to confirm that the group and subgroup is correct.
 - press the programming button 2 times if it is incorrect. Repeat the vehicle model setup procedure starting from the step №4.


Programming vehicle buttons

At this step is carried out selection and programming of original vehicle buttons that are going to be used in a PIN code combination and to configure the alarm system settings. The system can operate with the following types of vehicle buttons:

«**Resistive buttons**» — the original vehicle buttons that are usually located on the steering wheel. These buttons must be programmed during the installation of the system.

«**Positive and negative buttons**» — these buttons can be either original vehicle buttons or additionally installed buttons. This is a regular momentary-push button which is short circuited to the «ground» or to «+12V» when being pressed. Such buttons **MUST** be programmed when installing the alarm system. One of these buttons can be assigned as the programming button.

«**CAN-buttons**» — these buttons are the original buttons of a vehicle that work via CAN bus. Such buttons don't have to be programmed. A standard programming button is automatically assigned after the alarm system identifies group and subgroup of a vehicle If equipped with "CAN-buttons".

 *The analog buttons have to be programmed before the vehicle has travelled 10 km after installing the alarm system. Otherwise, reset the alarm system to defaults, perform vehicle make and model identification routine and program the buttons.*

Programming routine for resistive buttons

Resistive buttons can be used in a PIN code combination together with "CAN-buttons".

Connect the grey/yellow wire (connector X1 - pin 23) to a signal wire of the resistive buttons which shows positive polarity. Connect the grey/black wire (X1 - pin 11) (refer to the menu 10, option №4).

Programming sequence:

1. Switch on the ignition and wait for approximately 5 seconds.
2. Press and hold one by one (for approximately 2 sec) all steering wheel buttons and switches under the steering wheel (cruise control and etc.); A button will not be programmed and it will not be possible to use it if it is released before the immobilizer emits a short beep. A short beep after pressing a button means that this button can be used in a PIN code combination.
3. Switch OFF the ignition, a confirmation trill will sound.
4. Switch ON the ignition. Assign the programming button (refer to chapter "Assigning and changing the programming button").

Assigning and changing the programming button

These buttons can be used together with "CAN-buttons".

Connect the selected buttons to any programmable inputs of the alarm system of corresponding polarity that are not used for other purposes. Program to the inputs the feature №17 (refer to Programmable outputs features menu). One of these buttons can be assigned as the Programming button or they can be used in a PIN code combination even if resistive or CAN buttons are also available for use.


Regular (positive/negative) buttons that are short circuited to "chassis ground" or "+" when pressed should be connected to grey/black (X1- pin 11) or grey/yellow (X1 - pin 23) inputs, these inputs should be programmed as "Negative or positive" buttons (refer to menu 10, option №4). The setting of the option №4 can only be changed with the built-in programming button and until any PIN code combination hasn't been entered with vehicle buttons.

Assign the programming button (refer to chapter Assigning and changing the programming button).

Assigning and changing the programming button

The Programming button should be assigned until a vehicle hasn't travelled 10 km after installing the system. To assign the Programing button:

- switch on the ignition;
- select a button, press and hold it for not less than 5 sec. — until the system emits a long signal.

 *To change the programming button, reset the alarm to default settings. Then, carry out vehicle make and model (group/subgroup) identification procedure and program all available buttons.*

Configuring hardware functions of the alarm system (menu 10)

The sequence of actions to configure hardware settings is described below. The alarm system's built-in buzzer emits audible signals (hereinafter — the signals) during the programming process indicating the current status of an option of the programming menu.

If an option number or an option value consists of two digits, it will be indicated as follows: the first digit will be indicated by long beep(s), the second — by short beep(s). For example: the figure 12 — will be indicated by one long beep and two short beeps; 25 — two long and 5 short beeps.



It is possible to enter PIN code «2» with the programming button if a vehicle hasn't yet travelled 10 km after installing the system and the default PIN code hasn't been changed. The alarm system exits the programming mode if at any moment during the programming procedure the ignition is switched OFF or if within 30 seconds after the last action is made, the brake pedal is not pressed.

Configuration sequence:

1. **Switch the vehicle's ignition ON. Carry out an authentication procedure. Enter the programming menu not later than within 10 seconds.**
2. **Press and release the programming button 10 times:**
 - confirmation — 3 beeps. A different number of beeps signifies an error.
3. **Select a desired option of the programming menu by pressing and releasing the programming button the number of times corresponding to the option number listed in the menu. Each time the button is pressed the option number is increased by one. The option numbers are changed in rotation, i.e. after the last option number goes the first one;**
 - **the emitted beeps will indicate the current option value.**
4. **To find out the current value of the option — press and hold the brake pedal.**
 - **the emitted beeps will indicate the current option value.**
5. **To change the value of the option keep the brake pedal down. Press the PB a required number of times. Each time the button is pressed, the value number of an option is increased by one. The values numbers of an option are changed in rotation, i.e. after the last value number of an option goes the first one.**
 - the signals will indicate the number of a new value.
6. **To configure a value of another option, release the brake pedal. This will bring you back to the step 3 of the programming sequence.**
 - the signals will indicate the same option number which you've just configured.
 - to go to another option, press and release the PB the number of times required to get to a desired option number.
7. **To exit the programming mode — switch the ignition OFF.**

Table 7 — Hardware features of the alarm system (menu 10)

№	Feature name	Default value	Available values (note) The default values are highlighted in bold
1	Vehicle model	—	refer to chapter «Interfacing the alarm with a vehicle»
2	Type of the wired engine block	2	1 — Relay with normally open contacts (NO). 2 — Relay with normally closed contacts (NC).
3	Vehicle immobilization at safe speed	1	1 — Disabled. Engine is blocked regardless of vehicle speed. 2 — At speed of 30 km/hour. 3 — Only when vehicle comes to full stop.
4	Inputs adjustment for connection to analog buttons	1	The outputs №№ 11, 23 (connector X1) are connected to: 1 — Steering wheel resistive buttons. 2 — Positive and/or negative button (universal programmable inputs).
5	Ability to simultaneously control the OEM security system and the central door locking system	1	1 — Enabled. 2 — Disabled.
6	Sequential doors unlocking	2	1 — Enabled. 2 — Disabled. Is used when unlocking the central locking with the Key Id tag's button.
7	Hazard lights control algorithm	4	1 — Pulse hazard lights control button; 2 — Status hazard lights control button; 3 — Turn signal lamps control; 4 — Hazard lights control via CAN.
8	Central locking control algorithm	4	1 — Control via single wire (considering the CDL status); 2 — Control via single wire (regardless of CDL status); 3 — Double wire control; 4 — Control via CAN-bus.
9	—	—	—
10	«Comfort» feature operation duration	3	1 — 10 sec.; 3 — 30 sec.; 5 — 50 sec. 6 — 60 sec.
11	Optional sensors (shock, volume) type	1	1 — Multiplexed; 2 — Standard (for connection to sensors with divided «warning» and «trigger» outputs).
12	Starting the engine before carrying out authentication	1	1 — Enabled; 2 — Disabled. (The setting «2-OFF» doesn't affect anything if only a relay pLine-221 is used to block the engine)
13	Optional parking sensors control algorithm	1	1 — By shifting the gear lever to «R». The front and rear parking sensors will turn on either after shifting the gear lever to «R» or with the control button. The sensors will turn off after the vehicle goes above 15 km/h. 2 — By shifting the gear lever to «D» or «R» with possibility to turn the parking sensors off before the end of the ride. The front parking sensors will turn on when vehicle speed is below 15km/h. The rear parking sensors will turn on when vehicle is reversing at speed below 15 km/h. 3 — By shifting to «R» with possibility to turn the parking sensors off before the end of the ride. This feature works very similar to the feature «1» with the exception that the parktronic will not turn back on after shifting the gear lever to «R» again until the ignition is cycled OFF and ON or the control button is pressed.


14	Assigning the control button for optional parktronic	—	Can be used a vehicle CAN-button; vehicle original analog (resistive) or digital button (positive or negative). <u>Assigning (refer to Hardware features programming sequence (menu 10) starting from the step 5):</u> After pressing the brake pedal the alarm emits intermittent signals to indicate the option status. Press and hold the selected button (buzzer beeps and LED signals will cease): • hold the button pressed for less than 2 seconds — control by pressing the control button shortly. • hold the button pressed for 3 to 5 seconds — control by long press (2,5 seconds); • hold the button for more than 5 seconds — status control. Release the button — the alarm will emit one buzzer beep and 1 LED flash. Release the brake pedal the alarm will begin indicating the option number.
15	Monitoring vehicle speed for Immobilizer and AntiHiJack features	1	1 — Enabled; 2 — Disabled. The setting defines engine blocking algorithm for the Immobilizer and AntiHiJack features.
16	The number of pressings on the brake pedal to trigger AntiHiJack	3	The range from 1 to 7. The value of this option doesn't effect anything if the option «Speed monitoring» is enabled and vehicle speed is available in CAN bus (option 15).
17	--	--	--
18	--	--	--
19	--	--	--
20	--	--	--
21	Searching a tag/entering PIN code to confirm system disarming	1	Refer to the chapter «Tag search when disarming»: 1 — Not registered. 2 — Tag search: if the tag can't be detected within 10 sec, — the siren will set off (tag search when disarming); 3 — Central locking block when disarming (radio tag search when disarming); 4 — Operates similar to value 3, but only for one armed cycle if three—factor authentication enabled; 5 — Central locking block when disarming (constant tag search); 6 — Similar to value 5 but is active only for one armed cycle if three—factor authentication enabled; 7 — Entering PIN code to confirm disarming.
22	—	—	—
23	Alert trigger delay when vehicle perimeter is violated	1	1 — Disabled; 2 — 0,5 sec; 3 — 1,0 sec; 4 — 2,0 sec; 5 — 3,0 sec. 5 — 3,0 sec. Alert may trigger or the alarm can only send alert SMS notifications when opening a vehicle with the keyless entry system. If this is the case, set one of the available settings to prevent such false alerts.
24	Blocking the engine via CAN bus	2	1 — Enabled in the system; 2 — Disabled; 3 — Enabled in CAN relay.
25	Perimeter monitoring pause when arming	2	1 — Enabled for 30 sec; 2 — Disabled. When remote starting a vehicle the OEM security system may trigger. This feature disables vehicle OEM security system by imitating vehicle perimeter violation while the vehicle runs self-diagnostics. The feature №23 «Time channel» can be assigned to a programmable output to implement this task. In the menu 10, option 10 «Time channel» set the value «1» which means 10 seconds.
26	Secret code for the «Beach mode»	—	Programming a secret code (refer to chapter «Beach mode»)
27	—	—	—
28	—	—	—
29	—	—	—
30	Type of built-in electro-mechanical relay in CAN-relay Implant (integrated electro-mechanical relay)	3	1 — Normally open relay (NO); 2 — Normally closed (NC); 3 — The built-in electro-mechanical relay is not used.
31	Diagnostics of CAN-relay Implant	—	1 — Ready for operation; 2 — Not registered; 3 — Registration procedure in progress; 4 — Registration failed; 5 — No communication with CAN relay; 6 — CAN relay firmware update required; 7 — Error in connections to CAN bus.
32	Resetting CAN relay Implant to defaults	—	In order to reset CAN-relay to factory values: • press and release the programming button one time; • wait for the confirmation trill. The alarm system will inform about the current feature status by a series of 2 beeps and LED flashes: 1 — Registered; 2 — Not registered (was reset to default values).
33	Setting CAN bus of the system to control «CAN relay Implant»	1	1 — CAN relay is searched automatically on any available CAN bus; 2 — CAN relay is searched on CAN1; 3 — CAN relay is searched on CAN 2.
34	—	—	—
35	Controlling vehicle central locking with the Key ID tag's button	1	1 — Arming/Disarming and locking/unlocking the CDL; 2 — Only arming and locking the CL; 3 — Only disarming and unlocking the CL; 4 — Reserved by the manufacturer; 5 — Reserved by the manufacturer; 6 — Reserved by the manufacturer; 7 — Disabled (controlling the armed state is not performed).
36	Authentication with Key ID tag	1	1 — Enabled; 2 — Disabled.
37	Using the Key ID tag's button as the programming button	1	1 — Enabled; 2 — Disabled.
38	Alarm disarming with vehicle's factory remote or with keyless entry system (slave mode)	1	1 — Enabled; 2 — Disabled (the system can be disarmed with the Key ID tag's button or by entering PUK code).
39	—	—	—
40	—	—	—
41	—	—	—
42	—	—	—

43	Slave mode operation	1	<p>1 — By obtaining all necessary information from vehicle CAN bus; 2 — By obtaining all necessary information via special programmable inputs without carrying out Slave «learning» routine; 3 — Start Slave «learning» routine (it is described in the chapter «Slave mode adjustment»); 4 — Via special analog inputs after carrying out Slave «learning» routine. To enable the «Slave» mode operation via the analog programmable inputs, it is required to connect the «Hazard lights monitoring», «Central locking «lock» pulse monitoring», «Central locking «unlock» pulse monitoring» programmable inputs to appropriate electrical circuits in the vehicle (refer to the table 9 «Programmable inputs features» №№ 15, 18, 19). Select the value «2» of the option №43 if vehicle hazard lights flash once when locking the vehicle with the OEM remote key or keyless access system and when unlocking — twice. If the vehicle's hazard lights flash differently or the «Slave mode» doesn't work then the «Slave» analog signals «learning» routine should be performed by selecting the value «3», which is described in the chapter «Slave mode adjustment». The value «4» will assign automatically, once the alarm has learned those signals.</p>
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Programmable inputs/outputs configuration (menu 11)

Configuring inputs and outputs means assigning to them a required feature from the tables 10 and 11 correspondingly.

Configuring can be carried out with the Programming button (hereinafter — the PB). Throughout the programming process the system's built-in beeper emits audible signals (hereinafter signal(s)) which indicate the status of settings being configured. If an option number or an option value consists of two digits, it will be indicated as follows: the first digit will be indicated by long signal(s) and, the second — by short signal(s). For example: the figure 12 will be indicated by one long signal and two short signals; 25 — two long and 5 short signals.

 *It is possible to enter PIN code «2» with the programming button if a vehicle hasn't yet travelled 10 km after installing the system and the default PIN code hasn't been changed. The system exits the programming mode if at any moment during programming the ignition is switched OFF or if within 30 seconds after the last action is made, the brake pedal is not pressed.*

Configuring sequence:

1. **Switch ON the ignition. Complete an authentication procedure.**
2. **Within 10 sec. after authentication press the PB 11 times.;**
 - the alarm system will emit 6 signals and 6 LED flashes. Another quantity of signals means an error.
3. **Select a required option by pressing the PB the number of times which corresponds to a desired option number (refer to the Table 9).**
 - the alarm will indicate the selected option number by series of signals and LED flashes.
4. **Now it is possible to change the option value by pressing and holding the brake pedal.**
 - the system will indicate the current option value with series of signals and LED flashes.
5. **Change the option value by pressing the PB a number of times required to advance from the current value to a desired one. The alarm will inform about the new option value by series of beeps and LED flashes.** Keep in mind while shifting within the option, that after the last option value goes the first one.
 - the alarm's buzzer will indicate the new value of the feature.
6. **The alarm will automatically exit the programming mode and will save all current settings in the nonvolatile internal memory after releasing the brake pedal and switching off the ignition.**

Refer to the table 9 to view all available settings that can be assigned to any configurable input or output.

Table 8 — Inputs and outputs configuration (11)

Feature №	Setting description Pin № (wire color)	Operating mode	Default value	Available values. Remark. The default values are highlighted in bold
X1 (24-pin) connector				
1	Configuration of DATA2 RX and DATA2 TX. X1-1 (grey/blue) and X1-13 (grey/green)	LIN	2	1 — Reserved by the manufacturer; 2 — LIN Data bus; 3 — «ComfortControlMazda» module control data bus; 4 — Central locking control on Mazda vehicles.
2	Input function configuration X1-5 (orange/green)	Input (–)	24	Driver's door pin-switch input. Can be assigned any feature listed in the table of programmable inputs.
3	–	–	–	–
4	Output function configuration X1-7 (white/black)	Output (–)	54	Wired engine blocking relay control (NC/NO relay). Can be assigned any feature listed in the table of programmable outputs.
5	Output function configuration X1-8 (pink/black)	Output (+) Output (–)	55	Panic/warning signals to the siren. Can be assigned any feature listed in the table of programmable outputs.
6	Output polarity X1-8 (pink/black)		1	1 — Positive polarity; 2 — Negative polarity.
7	Output function configuration X1-17 (green)	Output (–)	52	Central locking (alternative) control. Central locking «lock» for double wire control or «lock/unlock» for single wire control. Can be assigned any feature listed in the table of programmable outputs.
8	Output function configuration X1-19 (blue)	Output (–)	53	Central locking control (alternative). Central locking «unlock» for double wire control. Can be assigned any feature listed in the table of programmable outputs.
9	Output function configuration X1-20 (blue/red)	Output (+) Output (–)	51	Hazard lights control (analog). Can be assigned any feature listed in the table of programmable outputs.
10	Output polarity X1-20 (blue/red)		2	1 — Positive polarity; 2 — Negative polarity.
11	Input function configuration X1-6 (green/black)	Input (–)	2	Hood (bonnet) pin-switch input. Can be assigned any feature listed in the table of programmable inputs.
12	Input function configuration X1-11 (grey/black)	Input (–)	–	Reference ground input for resistive buttons. The feature of the input can only be changed after configuring its function in the programming menu 10, option №4.
13	Output function configuration X1-18 (pink/green)	Input (+)	1	Brake pedal input. Can be assigned any feature listed in the table of programmable inputs.
14	Output function configuration X1-23 (grey/yellow)	Input (+)	–	Positive input for resistive buttons. Menu 10, option №4.
X2 (6-pin) connector				
15	Output function configuration X2-1	Output (+)	0	Output is not used. Can be assigned any feature listed in the table of programmable outputs.
16	Output function configuration X2-2	Output (+)	0	Output is not used. Can be assigned any feature listed in the table of programmable outputs.
17	Output function configuration X2-3	Output (+)	0	Output is not used. Can be assigned any feature listed in the table of programmable outputs.
18	Output function configuration X2-4	Output (–)	0	Output is not used. Can be assigned any feature listed in the table of programmable outputs.

19	Output function configuration X2-5	Output (+)	0	Output is not used. Can be assigned any feature listed in the table of programmable outputs.
20	Output function configuration X2-6	Output (-)	0	Output is not used. Can be assigned any feature listed in the table of programmable outputs.
X3 (4-pin) connector				
21	Configuration of DATA1 RX and DATA1 TX X3-1 (white/blue) and X3-3 (white/green)	Input (-) LIN	2	1 — Reserved by the manufacturer; 2 — Universal programmable outputs; 3 — LIN-Bus.
22	Configuration of X3-1 (white/blue)		16	Trunk (boot) input. Can be assigned any feature listed in the table of programmable inputs.
23	Input function configuration X3-2 (red/white)	Input (+)	7	Alarm trigger override when opening trunk with an original remote key or keyless entry system in armed mode. Can be assigned any feature listed in the table of programmable inputs.
24	Configuration of X3-3 (white/green)	Input (-) LIN	13	Parking brake. Can be assigned any feature listed in the table of programmable inputs. The operating mode of the output depends on the setting of the option 21
25	Input configuration X3-4 (orange/white)	Input (-)	28	All doors pin switches input except for the driver's door. Can be assigned any feature listed in the table of programmable inputs

Programmable inputs features

Programmable features listed in the tables 10 and 11 can be assigned to programmable inputs or outputs correspondingly. Thanks to that, the alarm system can be easily configured according to needs of an installer. Some of the features of the alarm system can be assigned to programmable outputs and inputs of the hood compartment module HCU-230/BT. But not all of the features can be programmed into HCU-230/BT due to its hardware capabilities.

Table 9 — Programmable inputs features

Feature №	Description	Possibility to use the feature in the HCU-230/BT and in BT-relay
1	Brake pedal input. This feature can be used if the brake pedal position data is absent in vehicle CAN bus (refer to the «Integrator»). A programmable input with assigned feature «Brake pedal input» should be connected to the output of vehicle's brake pedal pin switch.	yes
2	Hood (bonnet) pin switch input. This feature can be used when the hood position data is absent in vehicle CAN bus. A programmable input with the assigned feature «Hood (bonnet) pin switch input»	yes
3	Doors. This feature can be used when there is no data on doors' pin switch status in vehicle's CAN bus (refer to the Integrator). A programmable input with assigned feature "Doors" should be connected to doors' pin-switches.	yes
4	Central locking «locked» status. This feature can be used when the status of the central locking system is absent in vehicle CAN bus (refer to the Integrator). A programmable input with the assigned feature «Central locking status» should be connected to a proper vehicle electrical circuit.	yes
5	Central locking «unlocked» status. This feature can be used when the status of the central locking system is absent in vehicle's CAN bus (refer to the Integrator). A programmable input with the assigned feature «Central locking status» should be connected to a proper vehicle electrical circuit.	yes
6	Ignition status. The feature can be used when the ignition status isn't available in vehicle CAN bus. This problem might occur when blocking some of vehicle's electrical circuits. A configurable input with the assigned feature «Ignition status» should be connected to vehicle's wire which generates a signal of a constant level while the ignition is switched on. The analog input «Ignition status» doesn't abolish analyzing this status via vehicle CAN bus. The ignition is considered as being switched ON if the alarm system receives such information via any available source.	yes
7	Alarm trigger override when opening trunk with an original remote key or keyless entry. Connect this input to a vehicle wire which generates a pulse signal when opening the trunk lid with the OEM remote or with keyless entry system to avoid false alert triggers. The alarm system only monitors this input during the «armed mode». Once the system detects a pulse signal via this input, it will ignore the sensors (shock, tilt/ displacement) and the trunk pin switch status within 5 sec. starting from the moment of receiving the command until the trunk is fully released. Five seconds after closing the trunk lid, the system resumes to monitor the sensors and the trunk lid pin switch status.	no
8	Parking sensors' control button. The input is used to control aftermarket parking sensors when CAN-buttons aren't available. A programmable input with the assigned feature «Parking sensors' control button» should be connected to the output of a relative vehicle's button or an aftermarket button.	yes
9	—	
10	—	
11	—	
12	—	
13	Parking brake. Can be used if there is no parking brake data on vehicle's CAN-bus (refer to the Integrator). A configurable input with the assigned feature "Parking brake" should be connected to the appropriate circuit of vehicle's parking brake.	yes
14	CAN-bus «awakening». Is used in exceptional cases (refer to the Integrator).	no
15	Hazard lights status monitoring. The feature is used when implementing the analog «Slave» mode. An input configured as «Hazard lights status monitoring» should be connected to a high-current circuit which controls vehicle's turn indicators (either right or left).	no
16	Trunk (boot). The input is used if there is no hood position data on vehicle's CAN bus. A programmable input with the assigned feature «Trunk (boot) input» should be connected to the pin switch output of the vehicle's boot.	yes
17	Wired PIN code button (digital positive or negative). The feature is assigned to a programmable input(s) when necessary to connect the system to vehicle's «wired» button(s) which intended to be used as buttons for a PIN code combination in case if there are no «CAN buttons» in a particular car. The programmable input configured as the «Wired PIN code button» input must be connected to the output of a positive or negative button (momentary push-button with NO contacts). Use the programmable inputs №11 (grey/black) and №23 (grey/yellow) if you need to connect to «resistive» buttons.	no
18	Command to lock central locking. The input is used when implementing the analog Slave. A programmable input with the assigned feature «Command to lock central locking» should be connected to a vehicle's wire that registers pulse signal when locking the vehicle with the original remote or KES.	no
19	Command to unlock central locking. The input is used when implementing the analog Slave. A programmable input with the assigned feature «Command to unlock central locking» should be connected to a vehicle wire that registers pulse signal when unlocking the vehicle with the original remote or KES.	no
20	Optional sensor №1 input	yes
21	Optional sensor №2 input	yes
22	—	
23	—	
24	Driver's door input. This feature can be used if the driver's door status is absent in vehicle CAN bus (refer to the «Integrator»). A programmable input with assigned feature "Driver's door input" should be connected to the driver's door pin switch.	yes
25	Vehicle factory alarm system panic. This feature can be used if the status of vehicle factory alarm system is absent in vehicle CAN bus (refer to the «Integrator»). A configurable input with assigned feature "Vehicle factory alarm system panic" should be connected to a vehicle's wire which generates a signal after factory alarm system has triggered.	yes

26	Enable tag search. A configurable input with the assigned feature «Enable tag search» should be connected to a button located outside the vehicle (e.g. trunk unlock button). After supplying the relevant signal to the input, the alarm system starts searching for a tag in range of the vehicle during 1 minute. The system will disarm and will unlock vehicle doors after detecting a tag. The feature will function if in «Menu 10» option №21 is set the value «Disable vehicle unlocking with original remote until a tag is detected» or «Disable vehicle unlocking with original remote at dangerous places until a tag is detected (constant tag search)». The tag search mode will turn off in 1 minute or after re-arming.	yes
27	«Beach mode button». The input is used for entering a secret combination of the «Beach mode». A configurable input with the assigned feature «Beach mode button» should be connected to a button located outside the vehicle (e.g. trunk unlock button, keyless access button located on the driver's door). Refer to the chapter «Beach mode».	no
28	All doors except driver's door. The feature can be assigned to a configurable input if CAN bus doesn't contain vehicle doors' statuses (refer to the integrator). A programmable input with assigned feature (all doors except driver's door) should be connected to pin-switches of all doors except for the driver's door.	yes
29	—	
30	Arm and lock central locking. When a signal is supplied to the input with assigned feature «Arm and lock central locking», the alarm system will arm and lock vehicle doors.	no
31	Disarm and unlock. When a signal is supplied to the input with assigned feature «Disarm and unlock central locking», the alarm system will disarm and unlock vehicle doors.	no
32	Arm and lock/Disarm and unlock central locking. When a signal is supplied to the input with assigned feature «Arm and lock/Disarm and unlock», the alarm system will sequentially disarm and unlock or arm and lock the central locking.	no
33	—	
34	Temporary alarm system disarming for a third-party remote start system. After supplying a signal to the configurable input with the assigned feature «Temporary alarm system disarming for a third-party remote start system», the alarm system will not trigger when a third-party system is starting the engine.	

Programmable outputs features

Table 10 — Programmable outputs features

Option №	Description	Possibility of using the function in HCU 230/BT
0	The output is not used The output doesn't generate any signals or pulses.	yes
1	«Security» mode status The output generates a signal of a constant level once the vehicle is armed either with the original key or with KES. The output stops generating a signal after disarming the vehicle.	yes
2	Pulse after arming The output generates the 0,8 sec. pulse signal once the vehicle is armed either with the original key or with KES.	yes
3	Pulse after disarming The output generates the 0,8 sec. pulse once the vehicle is armed either with the original key or with KES.	yes
4	Pulse after authentication The output generates the 0,8 sec. pulse after carrying out authentication. Can be used to unlock an aftermarket hood lock	yes
5	Vehicle's factory alarm system panic The output generates a signal of a constant level as long as the vehicle's factory alarm system is triggered.	yes
6	Panic to a pager. The output generates a signal of a constant level during 30 seconds after vehicle's perimeter has been violated (doors, hood, trunk) or any sensor has triggered.	yes
7	Panic/warning to vehicle's klaxon A pulse signal is generated during 30 sec. if while in «armed mode». vehicle perimeter is violated (door/s opened, hood, trunk). The feature might be implemented on vehicles without an OEM alarm system. The potential disappears right after disarming the alarm. Is used when connecting to vehicle's klaxon	no
8	Doors, hood and trunk A signal of a constant level is generated on the output after opening any vehicle's compartment which was programmed beforehand (doors, hood, trunk). <i>Programming procedure (refer to inputs/outputs configuration sequence (menu 11) beginning from the step 5):</i> <i>With the brake pedal depressed select the option №8, the system will indicate the currently selected option number by series of 8 beeps (2 times).</i> <i>After that the system will be emitting intermittent audible signals. As soon as you hear intermittent signals — release the brake pedal. The alarm will keep emitting intermittent sounds. Open only that vehicle compartment/s (you may do it beforehand) that you'd like to be indicated on the output. The compartments you don't want to be indicated on the output should be closed.</i> <i>Depress the brake pedal again and keep it down, the alarm emits 8 beeps — the compartment/s are now assigned to the output. If you don't depress the brake pedal and exit the programming menu, the system will save in its memory a previous option value.</i>	yes
9	—	—
10	Pressure on vehicle's original button The output generates a signal of a constant level when a button that was programmed beforehand is pressed. <i>Programming procedure (Inputs/outputs configuration sequence (menu 11) beginning from the step 5):</i> <i>Depressing the brake pedal proceed to the status of the option №10. The alarm will emit 2 series of 1 long beep, and then it will start emitting short intermittent signals. Holding the brake pedal, press a desired button (please refer to the Integrator web site to check the list of available buttons for a specific vehicle). If the alarm "learns" the button, it stops emitting intermittent signals and returns to indication of the currently selected option number by a series of 1 long signal. Release the brake pedal and the system will start indicating the current option number. The system will exit the option saving the previous settings and will go back to indication of the current option number if you release the brake pedal before the alarm system "learns" a button.</i>	yes
11	Ignition The output generates a signal of a constant level after switching the ignition on. The output stops generating the signal after switching the ignition off.	yes
12	ACC A constant level signal is generated while the vehicle's ACC is ON (the first position of the ignition lock can match with the ignition). The output stops generating the signal after switching the ACC off.	yes
13	Engine running The output generates a signal of a constant level after starting the engine and as long as it is running. The output stops generating the signal after shutting down the engine.	yes
14	Engine RPM A pulse signal is formed with frequency of 1 pulse after 20 revolutions per minute of the vehicle's crankshaft.	no
15	Gear lever position The output generates a signal after putting the gear lever into a certain position that was programmed beforehand: for AT transmission — «R, N, D»; for manual transmission - only «R». <i>Programming procedure (Inputs/outputs configuration sequence (menu 11) beginning from the step 5):</i> <i>Depressing the brake pedal proceed to the status of the option №10. The alarm will emit 2 series of 1 long beep and after a brief pause 5 short beeps, and then it will start emitting short intermittent audible signals. Holding the brake pedal, put the gear lever in the desired position (for AT transmission — «R, N, D»; for manual transmission - only «R»). Release the brake pedal and depress it again, it will stop emitting intermittent signals and will return to indication of the currently selected option number by a series of 1 long beep. Release the brake pedal and depress it again, the alarm will start indicating the current option number.</i>	yes
16	Vehicle set in motion The output generates a signal of a constant level if the vehicle exceeds the speed of 5-10 km (it depends on a certain vehicle).	yes
17	Front parking sensors control (power supply) The output generates a signal of a constant level when the engine is running and the vehicle is moving slower than 15 km/hour.	yes
18	Rear parking sensors control (power supply) The output generates a signal of a constant level when the engine is running, the gear lever is in «R» and the vehicle is moving slower than 15 km/hour.	yes
19	Vehicle speed The output generates a pulse signal with frequency of 1 pulse per second which is proportional to vehicle speed of 1 km/h. The indicated speed is approximate.	no
20	Brake The output generates a signal of a constant level when the brake pedal is applied. The output stops generating the signal after releasing the brake pedal.	yes
21	Parking brake The output generates a signal of a constant level as long as the parking brake is engaged.	yes
22	Marker lights The output generates a signal of a constant level while marker lights are switched on.	yes
23	Timer channel ("Comfort") The output generates a signal during a pre-selected time (10-60 sec.) after arming the vehicle with original remote, KES or mobile app. The time may be set up by intervals of 10 sec. in the menu 10, option №10.	yes


24	Starter or OBDII diagnostic bus block (NC relay control) The output generates a signal of a constant level when the AntiHiJack feature triggers. The signal will also be generated as long as CAN bus is active after switching off the ignition and arming the system. The output stops generating the signal after carrying out authentication.	yes
25	Pulse to latch the hood lock The output generates a 0,8 sec. pulse signal after arming the system with the original key or KES and also after an anti-theft feature has triggered. The output doesn't generate the signal while the hood is open.	yes
26	Power supply for LED of aftermarket parking sensors The output is designed to indicate the status of aftermarket parking sensors. If the selected operation algorithm is «By shifting the gear lever to «R»» or «By shifting to «R» with possibility to turn the parking sensors off before the end of the ride» — the output generates a signal as long as the parking sensors are turned on. The output generates a signal of a constant level as long as the parking sensors are not active if the algorithm «By shifting the gear lever to «D» or «R» with possibility to turn the parking sensors off before the end of the ride» is selected.	yes
27	—	
28	—	
29	—	
30	—	
31	Gas pedal block (NC relay control) The output generates a signal to control a normally closed relay which should be connected in series to the signal wire of the gas pedal. The relay interrupts the gas pedal signal wire allowing to decrease the vehicle speed and immobilize it at a safe speed when the AntiHiJack feature has triggered.	yes
32	Pulse to latch aftermarket door pin locks The output generates a 0.8 signal pulse after blocking the vehicle with the original remote.	yes
33	Pulse to unlatch aftermarket door pin locks The output generates a 0.8 sec. pulse after blocking the vehicle with the original remote.	yes
34	Central locking blockage until a tag is detected (NO relay control) A signal of a constant level is generated on a configurable output when the system receives the disarming command from either the original remote or KES and detecting a tag. The output stops generating the signal after the system receives arming command from either the original remote or KES. The output generates the signal constantly in the following situations: if the service mode is enabled; the selected authentication method is «PIN code».	yes
35	—	
36	—	
37	—	
38	—	
39	—	
40	—	
41	—	
42	Dashcam control The output generates a signal of a constant level as long as the ignition is switched on. The output also generates the signal for 5 minutes if the alarm system triggers (including warning from sensors). The system will continue generating the signal for another 5 minutes if the alarm triggers again before the operating cycle of the dashcam expires.	yes
43	—	
44	Central locking blockage until a tag is detected (NC relay control) A signal of a constant level is generated on a configurable output when the system is armed. The output stops generating the signal after the system receives the disarming command from either the original remote or KES and detecting a tag. The output doesn't generate the signal in the following situations: if the service mode is enabled; the selected authentication method is only «PIN code».	yes
45	Service mode status The output generates a signal of a constant level after enabling the Service mode and stops generating the signal after disabling the service mode.	yes
46	—	
47	—	
48	—	
49	—	
50	—	
51	Hazard lights alternative control It is designed to control vehicle's hazard lights on vehicle's where controlling hazard lights via CAN-bus is not available (refer to the integrator). The output should be connected to the wire harness of the hazard lights button. It is configured automatically after interfacing the alarm with a vehicle, but it can be adjusted manually if needed.	yes
52	Central locking system alternative control. Pulse to lock central locking system for double-wire control or pulse to lock/unlock central locking for single-wire control. The output generates a pulse signal to lock the central locking system if double-wire control algorithm is selected or the output generates pulses to lock and unlock the central locking system if single-wire control algorithm is selected. The feature can be used when controlling the central locking system via CAN bus is not available (refer to the Integrator). The feature is adjusted automatically after carrying out vehicle group and subgroup detection procedure, but also it can be configured manually if needed (refer to menu 10; option 8).	yes
53	Central locking system alternative control. Pulse to unlock the central locking system if double-wire control algorithm is selected. The output generates a pulse signal to unlock the central door locking system. The feature can be used when controlling the central locking system via CAN bus is not available. The feature is adjusted automatically, but also it can be configured manually if needed (refer to menu 10; option 8).	yes
54	Wired engine block (controlling a NC/NO relay). The output generates a signal of a constant level to control an external engine blocking relay (NO relay or NC relay). The type of a relay being controlled can be configured in menu 10; option 2.	no
55	Panic/warning signals to siren. The output generates signal(s) to control the audible siren.	no
56	—	
57	Engine block by imitating the pushing of the start-stop The feature has been developed for vehicles equipped with the Start/Stop button (Push-to-Start button). This anti-theft feature allows to shutdown vehicle engine by imitating the pushing of the Start/Stop button, making the engine blocking very similar to a usual engine shutdown. Operation algorithm: If the Immobilizer feature has triggered: • For vehicles with A/T — when the gear lever is shifted from «P» or «N» to «D» the signal is generated on the output until the engine shuts down. • For vehicles with M/T — when the vehicle is set in motion — the signal is generated on the output until the engine shuts down. If AntiHiJack has triggered : The output generates the signal when the vehicle comes to a complete stop. If the alarm system isn't able to receive the speed data from the CAN bus, the vehicle's engine will be blocked according to the Immobilizer feature operating algorithms when starting the engine next time.	no
58	External beeper control The system generates a signal on the output according to algorithms of the embedded beeper. When this feature is assigned to any configurable output the embedded beeper stops working.	yes

59	-	
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Adjusting built-in sensors (menu 8)

It is recommended to use the special software «TECprog2» to configure all settings of the alarm system. This will sufficiently reduce the time spent for the installation of the system and avoid accidental mistakes while adjusting the settings.

Adjusting can also be carried out with the Programming button (hereinafter — the PB). Throughout the adjusting process the system's built-in beeper emits audible signals (hereinafter signal(s)) which indicate the status of settings being configured.

 *It is possible to enter PIN code «2» with the programming button if a vehicle hasn't yet travelled 10 km after installing the system and the default PIN code hasn't been changed. The immobilizer will exit the programming mode if at any moment during the adjusting process the ignition is switched OFF or if within 30 seconds after doing any action, the brake pedal is not pressed.*

Adjusting sequence:

1. **Switch on the ignition. Complete an authentication procedure.**
2. **Within 8 sec. after authentication press the PB 11 times.**
 - the alarm system will emit 5 beeps and 5 LED flashes. Another quantity of signals means an error.
3. **Select a required option by pressing the PB the number of times which corresponds to a desired option number (refer to the Table 11).**
The alarm will indicate the selected option number by series signals.
4. **Now it is possible to change the option value by pressing and holding the brake pedal.** The alarm will inform about the current option value by series of signals.
5. **To change the option value — press and release the PB a number of times required to advance from the current value to a desired one.** The system will inform about the new option value by series of signals. Keep in mind while shifting within the option, that after the last option value goes the first one.
6. **To configure another option release the brake pedal — you'll get back to the step 3 of the programming sequence. To exit the programming menu — switch the ignition off.**

Table 11 — Built-in sensors adjustment (menu 8)

Option №	Description	Default setting	Note
1	Shock sensor warning	4	0 — the zone is disabled; ... 8 — maximum sensitivity
2	Shock sensor trigger	4	0 — the zone is disabled; ... 8 — maximum sensitivity
3	Tilt/displacement sensor trigger	4	0 — the zone is disabled; ... 8 — maximum sensitivity

The built-in shock sensor can be quickly tested by temporary exiting the adjustment mode. Meanwhile the auto windows closure feature doesn't work, though all other features of the alarm system operate as usual.

To temporary exit the process of adjustment — turn the ignition OFF. The alarm will not emit any sound. Test the shock sensor after arming the alarm system.

After turning the ignition back ON, the alarm comes back to the same programming menu option as it has been before temporary exiting for shock sensor testing. If the ignition is not turned ON within 10 minutes after the testing is finished, the alarm saves the current sensor sensitivity value and automatically exits the menu «Built-in sensors adjustment» menu and trill will sound.

Configuring user functions of the alarm system

The process of configuring the system with the use of the programming button is described below. Throughout the configuring process the system's built-in beeper emits audible signals (hereinafter — signal(s)) which indicate the status of settings being configured.

If the number of a feature or a value of an option consists of two digits, it will be indicated as follows: the first digit will be indicated by long beep(s), the second — by short beep(s). For example: the figure 12 — will be indicated by one long beep and two short beeps; 25 — two long and 5 short beeps.

i It is possible to enter PIN code «2» with the programming button if a vehicle hasn't yet travelled 10 km after installing the system and the default PIN code hasn't been changed. The immobilizer will exit the programming mode if at any moment during the adjusting process the ignition is switched OFF or if within 30 seconds after doing any action, the brake pedal is not pressed.

Configuring sequence:

1. **Switch vehicle's ignition ON. Carry out authentication;**
2. **Within 10 sec. after carrying out authentication enter the related programming menu by pressing and releasing the programming button 12 times (or the integrated button of the Key-ID tag);**
 - the alarm's beeper will emit 4 short beeps to confirm that everything is done correctly.
3. **Select a desired feature of the menu by pressing and releasing the programming button the number of times needed to advance to a required feature number;**
4. **Press and hold the brake pedal to change the option value;**
 - the alarm will indicate the currently selected option value by a series of beeps.
5. **Press the programming button (or the integrated button of the Key-ID tag) the number of times required to advance from the current value to a desired one. Keep in mind that after the last option value goes the first one;**
 - the buzzer beeps will indicate the new value of the option.
6. **Release the brake pedal;**
 - the buzzer beeps will indicate the feature number you've just programmed.
 - now it is possible to shift to another feature of the menu or exit the menu.
7. **To exit the programming menu — switch off the ignition.**

Table 12 — User features

№	Feature description	Default value	Available values (note) The default values are highlighted in bold
1	Immobilizer (anti-theft protection while a vehicle is parked)	1	1 — Enabled. 2 — Disabled.
2	AtiHiJack (protection from hijacking while driving)	1	1 — Enabled. 2 — Disabled.
3	Travel distance to trigger AntiHiJack	1	Range of values from 1 to 10. The value is multiplied by 100 meters. The default value — 100 meters.
4	Siren operation algorithm when alert triggers	4	Values range 1 to 4: 1 — siren disabled; 2 — siren doesn't sound when warning triggers; 3 — loudness for warning is the same as for arming/disarming (refer to the option №11); 4 — siren is enabled (maximum loudness)
5	Radio tag search sonic indication for disarming confirmation	1	1 — Enabled. 2 — Disabled.
6	Audible confirmation after authentication	1	1 — Enabled. 2 — Disabled.
7	Service (valet) mode automatic disabling	1	1 — Enabled. 2 — Disabled.
8	Auto door lock	2	1 — Enabled. 2 — Disabled.
9	Auto door unlock	2	1 — Enabled. 2 — Disabled.
10	Windows, side mirrors, sunroof automatic closure «Comfort»	4	Range of values from 1 to 5 : 1 — Windows closure; 2 — windows and side mirrors closure; 3 — windows and sunroof closure; 4 — windows, sunroof, side mirrors closure ; 5 — OFF (closure is not performed)
11	Siren chirps loudness when arming/disarming	4	Values range from 1 to 4: 1 — Silent arming/disarming; 2 — Minimum loudness; 3 — medium; 4 — Maximum
12	Authentication method (PUK code required)	1/3	1 — Радиометка (Призрак-7S/BT/Slim, -7S/BT/2Slim). 2 — PIN-код. 3 — Радиометка или PIN-код (Призрак-7S/BT). 4 — Радиометка и PIN-код.
13	—	—	—
14	New tags registration	—	The number of beeps indicates the number of registered tags (from 0 to 8)
15	Tags detection quality test	—	Allows to determine zones where tags are best detected.
16	AntiHiJack feature auto deactivation with a tag	2	1 — Enabled. 2 — Disabled.
17	Auto rearming	2	1 — Enabled. 2 — Disabled.
18	Delete smartphone tags from memory	—	The number of beeps indicates the number of registered smartphone tags (from 0 to 4).
19	Delete radio tags from memory	—	The number of beeps indicates the number of registered radio tags (from 0 to 4).

Hood control unit HCU-230/BT (menu 20)

The module HCU-230/BT (hereinafter: the module) should be registered («paired») in memory of an alarm system which would control the module. Pairing can be carried out using the special software TECprog2 or the Programming button (menu 20). Once the module has been paired it will not operate with another alarm system until registration of the HCU-230 is cancelled (refer to chapter «Unregistering the module HCU-230/BT»).

Registering the module using the programming button and special programming menu

i *The hood control module can only be registered (paired) within 2 minutes after supplying power to it. If a hood compartment module is already registered in the alarm system's memory and you're trying to register another (new) module, then a previously paired module will be unregistered. The alarm system will operate only with the newly registered HCU.*

1. Mount the main alarm system and the HCU on a vehicle and supply power to both modules.
2. Turn the vehicle's ignition ON and carry out an authentication procedure (enter PIN code and/or wait until the radio tag is detected) — confirmation trill will sound.
3. Enter the menu «Hood control module HCU-230/BT settings» within 10 seconds after carrying out authentication by pressing and releasing the programming button 20 times. The system will emit 11 beeps and flash the LED 11 times to confirm that the menu has been successfully entered.
4. Select feature №1 «Registering the hood compartment unit HCU-230/BT» by pressing and releasing the programming button 1 time. The alarm will indicate the selected feature number with a repeating beep and one LED flash.
5. Press and hold the brake pedal. The alarm system will indicate if any hood compartment module has already been registered into the main alarm module:
 - one beep and one LED flash — an HCU module has already been registered;
 - silence — no modules are registered.
6. In order to register (pair) a new module - press and release the programming button 1 time. The alarm system will begin searching for an HCU module. The searching process will be indicated by an intermittent audible signal:
 - once the alarm system has detected one module available for «pairing» it will immediately start the registration procedure, herewith the length of beeps will change;
 - if the alarm system detects two or more available modules — a long beep will sound. The registration process will be cancelled. Switch off the ignition and wait for at least two minutes. Start the procedure from the very beginning.
7. Successful registration is followed by the confirmation trill and a short single repeating beep which means that one module has been registered.
8. Release the brake pedal and switch the ignition OFF. The confirmation trill will sound.

Configuration menu of the hood control module HCU-230/BT (menu 20)

The process of configuring the module HCU-230 with the Programming button (hereinafter PB) is described below. Throughout the configuring process the system's built-in beeper emits audible signals (hereinafter — signal(s)) which indicate the status of settings being configured.

If the number of a feature or a value of an option consists of two digits, it will be indicated as follows: the first digit will be indicated by long beep(s), the second — by short beep(s). For example: the figure 12 - will be indicated by one long beep and two short beeps; 25 — two long and 5 short beeps.

Configuring sequence:

1. **Switch vehicle's ignition ON. Carry out authentication;**
2. **Within 10 sec. after carrying out authentication enter the related programming menu by pressing and releasing the programming button 20 times (or the integrated button of the Key-ID tag);**
 - the alarm's beeper will emit 10 short beeps to confirm that you've entered the menu.
3. **Select a desired feature of the menu by pressing and releasing the programming button the number of times needed to advance to a required feature number.**
4. **Press and hold the brake pedal to change the option value.**
 - the alarm will indicate the currently selected option value by a series of beeps.
5. **Press the programming button (or the integrated button of the Key-ID tag) the number of times required to advance from the current value to a desired one. Keep in mind that after the last option value goes the first one.**
 - the buzzer beeps will indicate the new value of the feature.
6. **Release the brake pedal.**
 - The buzzer beeps will indicate the feature number you've just programmed.
 - Now it is possible to shift to another feature of the menu or exit the menu.
7. **To exit the programming menu — switch off the ignition.**

i *It is possible to enter PIN code «2» with the programming button if a vehicle hasn't yet travelled 10 km after installing the system and the default PIN code hasn't been changed. The immobilizer will exit the programming mode if at any moment during the adjusting process the ignition is switched OFF or if within 30 seconds after doing any action, the brake pedal is not pressed.*

Table 13 — Configuration menu of the module HCU-230/BT (menu 20)

No	Feature name (pin №)	Default value	Available values (note) The default values are highlighted in bold
1	«Registering the hood control module HCU-230/BT»	—	Refer to the chapter «Registering HCU-230/BT module»
2	Testing communication quality with the HCU-230/BT module	—	—
3	Unregistering the module HCU-230/BT	—	Refer to the chapter «Registering HCU-230/BT module»
4	Pink/black input/output configuration (2)	1	1 — Panic/warning signals to the siren ; 2 — Engine blocking (NC relay control); 3 — Configurable output; 4 — Configurable input.
5	Pink/black input/output feature configuration (2)	—	Set the value 3 or 4 in the feature 4. If the value 3 is set a desired feature from the table of configurable outputs. If the value 4 is set, select the value 4 from the table of configurable inputs.
6	Pink/black input/output polarity (2)	1	1 — Positive polarity. 2 — Negative polarity.
7	Green output configuration (3)	4	1 — Panic/warning signals to the siren; 2 — Engine blocking

			(NC relay control); 3 — Programmable output; 4 — Latching electro-mechanical hood lock
8	Green output feature configuration (3)	—	After setting value 3 in the option №7 you can select any feature from the table of configurable outputs.
9	Blue output configuration (4)	4	1 — Panic/warning signals to the siren; 2 — Engine blocking (NC relay control); 3 — Programmable output; 4 — Unlatching electro-mechanical hood lock.
10	Blue output (4) feature configuration	—	After setting value 3 in the option №9 you can select any feature from the table of configurable outputs.
11	White/black output configuration (5)	2	1 — Не используется. 2 — Блокировка двигателя (управление нормально замкнутым (НЗ) реле). 3 — Программируемый выход. 4 — Программируемый вход.
12	White/black output feature configuration (5)	—	After setting value 3 or 4 in the option №11 you can select any feature from the table of configurable outputs. After setting value 4 you can select any feature from the table of configurable inputs.
13	Built-in accelerometer of the HCU-230/BT sensitivity adjustment	4	1 — minimum; ... 8 — maximum
14	Siren/klaxon control (on any of the outputs)	1	1 — siren control; 2 — klaxon control

Unregistering the module HCU-230/BT

The procedure may be useful in case if the already installed module has to be paired with another (new) alarm system. Once the module has been unregistered it is possible to pair it with another system.



*Unregistering the hood module doesn't mean resetting it to default values.
Resetting the module to defaults is only possible after resetting the alarm system.*

Unregistering without the alarm system:

1. Disconnect the module from power.
2. Connect the wires in pins №2 and №5 to vehicle's ground.
3. Supply power to the module.
4. Disconnect pins №2 and №5 from vehicle's ground.
5. Within the next 10 seconds supply 5 negative pulses to the module's pins №2 and №5.

Unregistering the module using the Programming button and the special menu of the alarm system:

Install the module HCU and the main alarm system's module on a vehicle and connect them to power.

1. Turn the vehicle's ignition ON and carry an authentication procedure (enter PIN code and/or wait until a tag is detected) — confirmation trill will sound.
2. Enter the «Configuration menu of the module HCU-230/BT» by pressing and releasing the programming button 20 times within 10 seconds after carrying out authentication. The system will emit 11 beeps and the LED will blink 11 times to confirm that the menu has been successfully entered.
3. Select the option №3 «Registering the hood control module HCU-230/BT» by pressing and releasing the programming button 3 times. The alarm will indicate the selected feature number by a series of 3 beeps and 3 LED flashes.
4. Press and hold the brake pedal. The alarm's beeper will indicate if any hood compartment module is already registered into the main alarm's module:
 - one beep and one LED flash — an HCU module has already been registered;
 - silence — no module is registered.
5. Press the programming button 1 time to cancel registration of the module, short intermittent beeps after pressing the button indicate the unregistering;
6. The confirmation trill will sound if the registration is successfully cancelled. Hereafter you may exit the programming menu by switching the vehicle's ignition OFF.

The system emits a long warning beep if an error occurs while unregistering the module HCU. You will have to start over if the warning beep sounds.

Configuring the BT relay Prizrak 1A (menu 23)

For proper operation the relay must be registered (paired) in an alarm system. Registration of the relay can be performed either with the use of the special computer software TECprog2 or with the Programming button and the special programming menu of the alarm system. If a BT-relay has ever been paired with an alarm system it will only be possible to register it in memory of another alarm system after cancelling the previous registration (refer to chapter «Unregistering BT relay»).

Registering BT relay via TECprog2

Supply power to the relay. If more than one relay is planned to be registered (up to three in total), supply power to all relays.

Switch on vehicle's ignition and carry out authentication. Connect the system to a computer and run the software TECprog2. Go to the menu «Peripheral devices». Click on the feature «Register new devices». The available devices will be displayed in the program with their names and serial numbers. Select a BT relay(s) you'd like to pair with the system and click «Register».

Registering BT relay using the Programming button

A BT relay can be registered using the programming button only within 2 minutes after supplying power to it. No more than three relays can be registered in one alarm system

This registration method eliminates the use of a personal computer as the registration is carried out by pressing the programming button (hereinafter - PB). Programming button (hereinafter — the PB). Throughout the programming process the system's built-in beeper emits audible signals (hereinafter signal(s)) which indicate the status of settings being configured. If an option number or an option value consists of two digits, it will be indicated as follows: the first digit will be indicated by long beep(s), the second — by short beep(s). For example: the figure 12 — will be indicated by one long beep and two short beeps; 25 — two long and 5 short beeps.

1. **Switch vehicle's ignition ON. Carry out authentication;**
2. **Within 10 sec. after carrying out authentication enter the related programming menu by pressing and releasing the PB 23 times (or the integrated button of the Key ID tag); The alarm's beeper will emit 13 short beeps to confirm that you've entered the menu.**
3. **Press and release the PB 1 time to enter the option №1 «BT relay registration». The system will emit one buzzer beep.**
4. **Press and hold the brake pedal to find out the number of already registered relays which will be indicated by buzzer beeps.**
5. **Connect the BT relay to power then press and release the PB 1 time. The alarm system will start searching for the relay, This process will be indicated by short beeps.**
6. **The confirmation trill will sound after successful registration. The number of short beeps following after successful registration indicate the**
 - The buzzer beeps will indicate the feature number you've just programmed.
 - Now it is possible to shift to another feature of the menu or exit the menu.
7. **To register one more relay, repeat the registration procedure beginning from the step 5.**
8. **To exit the programming menu — switch off the ignition.**

Configuring the BT relay 1A (2x3)

It is recommended to carry out configuring of the relay's features in the TECprog2 software.

Adjusting the relay with the use of the Programming button (menu 23)

This method of adjustment eliminates the use of a personal computer, all adjustments are performed by pressing the programming button (hereinafter — PB).

Throughout the programming process the system's built-in beeper emits audible signals (hereinafter signal(s)) which indicate the status of options being configured. If an option number or an option value consists of two digits, it will be indicated as follows: the first digit will be indicated by long beep(s), the second — by short beep(s). For example: the figure 12 — will be indicated by one long beep and two short beeps; 25 — two long and 5 short beeps.

8. **Switch the ignition on. Carry out authentication.**
9. **Within 10 sec. after carrying out authentication enter the programming menu by pressing and releasing the PB (or the integrated button of the Key ID tag) 23 times;**
 - the alarm's beeper will emit 13 short beeps to confirm that you've entered the menu.
10. **Press the programming button the number of times required to advance to a desired option number. Each pressing on the PB enhances the value number of the option being configured by one. The value numbers are changed in rotation, after the last option number goes the first one;**
11. **Press and hold the brake pedal in order to change the value of the selected option.**
 - the buzzer beeps will indicate the number of the current value
12. **Still pressing the brake pedal press and release the programming button the number of times required to change the current number of the value to a desired number.**
 - the buzzer beeps will indicate the selected value.
13. **To proceed to another option — release the brake pedal and you will go back to the step 3 of the programming process.**
 - the buzzer will indicate the current option which you've just configured
 - press the PB the required number of times to advance to a desired option. Switch off the ignition to exit the programming

Table 14 — BT relay configuration menu (menu 23)

№	Cell	Option	Default value. Note
1	—	Relay registration	Refer to chapter - Registering BT relay using the Programming button
2	First radio relay in memory	Test communication quality with CAN relay	Refer to chapter test communication quality with BT relay
3		Unregister CAN relay	Refer to chapter Unregistering BT relay
4		Output 1 feature configuration (Yellow, Yellow/black, Yellow/red) and (Green, Green/black, Green/red)	Default value - Wired engine block control (only NC relay). Can be assigned any feature form the list of configurable features (refer to the technical description).

5		Output 2 feature configuration (Orange/white)	Can be assigned any feature from the list of features for configurable outputs (refer to the technical manual)
6		Output 3 feature configuration (Blue)	
7		Sensitivity level of the integrated accelerometer	Default value — 4 Range from 1 — MIN to 8 — MAX
8		Increased stealth mode of the relay	1 — enabled; 2 — disabled (default setting)
9	Second radio relay in memory	Test communication quality with CAN relay	Refer to chapter - Communication quality test with CAN relay
10		Unregister the relay	Refer to chapter - Unregistering BT relay
11		Output 1 feature (Yellow, Yellow/black, Yellow/red and (Green, Green/black, Green/red)	Default value - Wired engine blocking relay control (only NC); Can be assigned any feature from the list of features for configurable outputs (refer to the technical manual).
12		Output 2 configuration (Orange/white)	Can be assigned any feature from the list of features for configurable outputs (refer to the technical manual).
13		Output 2 configuration (Orange/white)	Can be assigned any feature from the list of features for configurable outputs (refer to the technical manual).
14		Sensitivity level of the integrated accelerometer	Заводская установка - 4. Range of values from 1 — MIN to 8 — MAX
15		Increased stealth mode of the relay	1 - enabled; 2 - disabled (default value)
16	Third radio relay in memory	Test communication quality with CAN relay	Refer to chapter - Communication quality test with BT relay
17		Unregister the relay	Refer to chapter - Unregistering BT relay
18		Output 1 feature (Yellow, Yellow/black, Yellow/red and (Green, Green/black, Green/red)	Default value - Wired engine blocking relay control (only NC). Can be assigned any feature from the list of features for configurable outputs (refer to the technical manual)
19		Output 2 configuration (Orange/white)	Can be assigned any feature from the list of features for configurable outputs (refer to the technical manual)
20		Output 3 feature configuration (Blue)	Can be assigned any feature from the list of features for configurable outputs (refer to the technical manual)
21		Sensitivity level of the integrated accelerometer	Заводская установка - 4. Range of values from 1 - MIN to 8 - MAX
22		Increased stealth mode of the relay	1 - enabled; 2 - disabled (default value)


Unregistering radio relay

When registering the radio relay that has ever been registered in another device, the previous registration of the relay must be cancelled.

Unregistering BT relay with the use of the programming button

This method allows to unregister the relay if only it is registered in memory of the alarm system which is going to be used for unregistering.

1. **Switch vehicle's ignition ON. Carry out authentication;**
2. **Within 10 sec. after carrying out authentication enter the related programming menu by pressing and releasing the PB 23 times (or the integrated button of the Key ID tag); The alarm's beeper will emit 13 short beeps to confirm that you've entered the menu.**
3. **Press and release the PB 3 times to select the option №3 «Unregister BT relay». The system will emit three buzzer beeps to confirm that you've selected the option №3.**
 - if you need to unregister the second or the third relay - select the option №10 or №17.
4. **Press and hold the brake pedal, the buzzer beeps will indicate that the relay is registered in the memory cell.**
 - if you don't hear buzzer beeps - no relay is registered in the memory cell.
5. **Press and release the programming button 1 time - the system will emit short signals and the confirmation trill.**
 - A long warning signal means that an error occurred while unregistering the relay. You will need to repeat the unregistering procedure.
6. **To exit the programming menu - switch off the ignition.**

 *If a relay became malfunction or if it was dismantled then this relay has to be unregistered from the alarm system's memory. Otherwise the system will emit short buzzer beeps each time after authentication, Press and release the PB 10 time in the option 5 to unregister the relay.*

Unregistering BT relay without the use of the alarm system's module.

If the relay was dismantled without unregistering it first then it can be unregistered by doing the following:

- disconnect the relay from power;
- connect the orange/white wire to the vehicle ground.
- Supply power to the relay;
- within 20 seconds disconnect the orange/white wire from vehicle ground and then short circuit it to vehicle ground five times.

The clicking sound of the built-in electro-mechanical relays means that everything is done correctly.

Resetting the relay to defaults

Resetting the settings of the relay is carried out by resetting the alarm system. Herewith the settings of the BT relay will also reset to defaults. Resetting the alarm system to defaults doesn't unregister the BT relay from the alarm's memory.

Adjustng the Slave feature

It is designed for vehicles that don't have all necessary data running in their CAN bus which is required for proper operation of the «Slave» feature. In order to ensure that this feature operates properly, the alarm system needs to receive the statuses of vehicle hazard lights and central door locking system when arming/ disarming the vehicle with vehicle's original remote key or **Kessy**. In order to provide the alarm system with such data, the

features №№ 15, 18, 19 should be assigned to any programmable inputs and the configured inputs should be connected to appropriate circuits in the vehicle where the hazard lights and central door locking statuses appear when arming/disarming.

In the Menu 1 «Hardware features configuration», option №43 — «Slave mode operation» set up the value «2» in case when arming the vehicle with the OEM remote key or keyless entry system the hazard lights flash one time and when disarming- two times.

The adjustment routine with the use of the programming button (PB) is described below. **Throughout** the programming process the system emits indication beeps.

The adjustment routine:

1. **Switch the ignition to the ON position; Carry out an authentication procedure.**
2. **Within 10 seconds after carrying out authentication enter the Menu 1 by pressing and releasing the programming button 10 times;**
 - 3 beeps following after that confirm that the correct program menu has been selected. If the number of beeps is different — an error occurred.
3. **Press and release the programming button 43 times:**
 - the alarm confirms the action with 4 long and 3 short beeps.
4. **Press and hold the brake pedal:**
 - confirmation — the number of beeps indicate the current option value.
5. **Holding the brake pedal, advance to the value «3», each pressing on the button increases the number of the current value by one. Keep in mind that after the last number of the value goes the first one:**
 - confirmation - 3 beeps.
6. **Release the brake pedal and switch the ignition to the OFF position:**
 - confirmation - 1 beep;
 - make sure all doors are closed.
7. **Lock the vehicle by pressing the «lock» button on the OEM remote key or use keyless entry system.**
 - confirmation – 1 beep.
8. **Press the «lock» button on the OEM remote key or use the keyless entry system one more time:**
 - confirmation – 1 beep.
9. **Press the «lock» button on the OEM remote key for the third time or arm the car with keyless entry system:**
 - confirmation – 2 beeps.
10. **Unlock the vehicle from the «unlock» button of the OEM remote key or use keyless entry system:**
 - confirmation – 1 beep;
 - all further actions are performed to test the «Slave mode».
11. **Lock the vehicle with the factory remote key or keyless entry system:**
 - confirmation – 1 klaxon honk or 1 siren chirp.
12. **Unlock the vehicle with the factory remote key or keyless entry system:**
 - confirmation – 2 klaxon honks or 2 siren chirps;
 - trill will sound, confirming that the «learning» procedure has been successfully completed; The alarm system will exit the programming mode and will automatically save the value «4 – via the programmable analog inputs after the alarm has «learned» the analog signals».

Searching a tag/entering PIN code to confirm system disarming

The radio channel of some vehicles that is responsible for detection of original keys isn't secured well enough. The original vehicle security system (or the central locking system) of some vehicle models is at risk of «intellectual» hacking («codgrabbers», «repeaters», «retransmitter» and etc.). The special features of the alarm system are designed to counteract unauthorized attempts to disarm a vehicle via the «original vehicle radio channel» and driver's door lock cylinder. These features also help protect vehicles from unauthorized disarming in case the original vehicle key was stolen. The features can be enabled in the menu 10, feature №21 «Searching a tag/entering PIN code to confirm system disarming».

Disarming confirmation with a Tag or PIN code

The alarm system can be configured so that it wouldn't disarm until the disarming command is confirmed. The confirmation of the disarming command can be carried out with a Tag (menu 10, feature №21, value 2). If enabled, the feature becomes active 30 seconds after arming, while searching a tag the integrated buzzer emits short beeps. The system sets off the siren if the tag hasn't been detected within 10 seconds after opening any door, hood or trunk. To disarm the alarm system - switch on the ignition and carry out authentication.

Disarming can also be confirmed by entering a secret PIN code combination (menu 10, feature №21, value 7). You have 30 seconds to enter PIN code after opening any vehicle's compartment. The alarm system will set off the siren if the correct PIN code combination is not entered.

Blocking the vehicle's central locking when a tag is out of range

If the feature is enabled, the alarm system will not disarm when unlocking the vehicle with factory control systems (KES, factory remote control, driver's door lock cylinder) until an authorized driver confirms disarming. The confirmation should be carried out by having a tag in the system's range or by entering a PIN code combination depending on the selected setting (menu 10, option №21).

Value 2: when unlocking the vehicle with factory systems, the central locking will unlock but the alarm system will not disarm until it detects a registered tag (detecting a tag can take a few seconds). The alarm system will set off the siren and send a notification to a user's phone number.

Value 3: the system's programmable outputs can be used to block the unlocking circuit of the central locking system. This feature prevents the unlocking of the vehicle without a tag. When unlocking the vehicle with factory systems, the central locking will unlock, but the alarm system will not disarm until the system detects a tag (this can take some seconds). The system will stop blocking the central locking system as soon as it detects a tag.

Value 4 is similar to value 3, but if only the feature «Quick enabling the three-factor authentication mode» is on.

Value 5: constant radio tag search mode when the system is armed, herewith, the system will disarm without delays. This mode is characterized by a higher power consumption both of the system and a tag compared to a mode without constant tag search. The system's programmable outputs can be used to block the unlocking circuit of the central locking system. The alarm system will set off the siren and will send a notification to a user's phone number if the alarm system hasn't detected a tag before receiving the disarm command.

Value 6: works similar to the value 5, but if only the feature «Quick enabling the three-factor authentication mode» is on.

Controlling aftermarket electro-mechanical blockers of vehicle's doors

Aftermarket blockers of vehicle doors can be controlled via two programmable outputs. From the list of features for programmable outputs select the feature №32 "Latching aftermarket door blockers" for one output and the feature №33 "Unlatching aftermarket door blockers" for another output.

The alarm system generates the latching pulse when arming (all doors, hood, trunk should be closed) and the unlatching pulse when disarming a vehicle with factory remote and detecting a tag.

Blocking vehicle's radio channel when a tag is out of range

The alarm system on some vehicles is capable of blocking the control of the central locking from the original remote by shunting the data bus of the vehicle's KES module or by blocking its power supply. For this purpose you can use any programmable output of the system and assign to it the feature №34 - «Vehicle's CDL blocking when a tag is out of range (with NO relay)» or the feature №44 - «Vehicle's CDL blocking when a tag is out of range (with NC relay)» depending on the situation.

When enabled, the feature disables vehicle unlocking with factory remote, for this reason it is necessary to either turn on the constant tag search (menu 10; option 21; value 5 or 6) or to initiate the tag search each time when disarming a vehicle. This would require connecting an input of the alarm system to a button located outside the vehicle (trunk release button, or KES button on the door handles) and assign to it the feature №26 «Start radio tag search». The following settings can be set up to implement this feature - menu 10; option 21; values 3 or 4.

PIN code

PIN code is a secret pressings combination on one or more OEM vehicle interior buttons. Please refer to the Integrator to find out the list of buttons available for use as PIN code buttons on a particular vehicle.

PIN code is a one-, two-, three- or four-digit number. Each digit consists of figures from 1 to 9.

PIN code may be easily changed as many times as needed either by an installer during installation or by an end alarm user at any time.

In order to ensure proper secrecy level - the factory PIN code two - (2) pressings on «PB» — programming button) must be changed.

If it hasn't been changed, each time after entering the factory PIN code, the alarm emits a long warning beep reminding about necessity to change the PIN code.

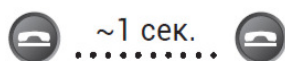
Entering PIN code

1. Switch on the ignition or start the engine.
2. Enter PIN code combination (the sequence is described below).
3. The confirmation trill means that the code has been entered correctly.

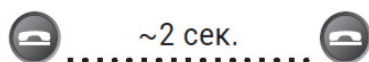
Entering PIN code with the use of one button

 The pictures of the buttons in this manual are used as an example and may differ on a certain vehicle.


If the secret PIN code combination consists of one digit the button(s) should be pressed the relative number of times making a one second pause between pressings on the button. The PIN code «2» is entered as follows:



To enter personal PIN code combination which consists of several digits, the programming button should be pressed the relevant number of times making a two-second pause after entering each digit of the PIN code. PIN code «11» is entered as follows:



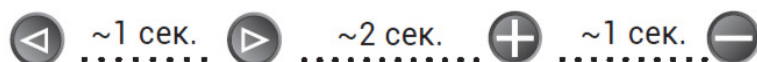
Entering PIN code with the use of multiple buttons

 Obey the sequence of pressing the buttons when entering a PIN code.


To enter personal one-digit PIN code combination with several buttons - sequentially press the relevant buttons making a one-second pause after pressing each button. PIN code «4» is entered as shown below:



To enter multiple-digit PIN code combination with several buttons - sequentially press one by one the relevant buttons making a one-second pause after entering each value of the digit and making a two-second pause after entering each digit of PIN code combination. PIN code «22» is entered as follows:



Changing PIN code

 It is impossible to change PIN code if the currently selected authentication method is only Tag.
It is impossible to set PIN code «1», one pressing on one button.
When changing the authentication method to «Tag», the PIN code resets to defaults.

1. **Switch ON the vehicle's ignition. Complete authentication.**
2. **Within 10 seconds after carrying out authentication press and release the programming button 14 times.**
 - the system will emit one short beep to confirm that the «PIN code change» mode has been successfully entered.
3. **Set the new PIN code combination.** Any button of the vehicle that responds by beep when being pressed can be used to set up the new PIN code combination.
4. **Wait for confirmation: 1 short beep.**
 - repeat the new PIN code. Wait for confirmation: two short beeps and the confirmation trill means – the PIN code has been successfully changed, the immobilizer will automatically exit the programming mode.
 - the long warning beep means that PIN code hasn't been changed due to an error while setting the new PIN code combination. Repeat the PIN code change procedure starting from the step № 4.

Determining buttons available for PIN code

Carry out the PIN code change procedure including the step №3. Sequentially and shortly one by one press and release the original vehicle buttons (steering wheel buttons, windows control buttons and etc.) while being on the step №3.

Press and release each button only one time in order to not accidentally change the current PIN code. If the buzzer of the alarm system emits an audible signal after pressing a button this means that this button is available for use in a PIN code combination. Switch off the ignition after detecting the buttons.

PUK code

PUK code is a 4 digit number located under the protective film of the plastic card that is included in the alarm set. Entering PUK code disables all the anti-theft features of the immobilizer, regardless of what authentication method is selected.

PIN code combination is used:

- to disarm the system when a tag or PIN code is lost;
- when changing the authentication method;
- to disable auto-deactivation of the Service mode.

PUK code is entered with the Programming button (or with the built-in button) making a two-second pause after entering each digit of the PUK code.

PUK code entry sequence:

1. Switch on the ignition.
2. Enter PUK code.
3. Wait for the confirmation trill.
Make a pause for more than three seconds and re-enter PUK code if you made a mistake.

To temporarily deactivate the alarm system (to turn on the Service mode) - press and release the programming button 6 times within 10 seconds after entering the PUK code combination.

Authentication

Authentication - is a special validation procedure designed to verify the vehicle owner or a vehicle user who is authorized to drive the vehicle or change the system setting. There are two basical authentication methods - «Tag» or «PIN code». The name of the authentication method defines the way the authentication is supposed to be carried out.

Authentication by Tag (radio tag or smartphone tag):

1. Switch on the ignition.
2. The alarm system will automatically detect a tag in range of the vehicle.
3. The confirmation trill will sound.

Authentication by PIN code:

1. Switch on the ignition.
2. Enter a PIN code combination (press the Programming button two times if the default PIN code hasn't been changed making a one-second pause between the pressings)
3. The built-in buzzer will emit the confirmation trill.



The authentication methods can be used either separately or they can be combined (refer to the table 19).

Adjusting authentication methods:

Your installation technician can set an authentication method which best suits your needs. Entering a secret PUK code combination located on the plastic card is not required for that. This can be done if only the vehicle hasn't travelled 10 km after the installation. Otherwise the authentication method can only be changed after entering PUK code. Changing the authentication method can be carried out in the option №9 of the menu User settings (menu 12).

Authentication method - «Tag»

After switching on the ignition the alarm system starts searching for a tag of any available type. After detecting a tag the alarm system completes authentication without the need to carry out any additional actions by the driver. If a tag is not available for use (the tag's battery is discharged, the tag is damaged or lost) it is possible to drive the vehicle only after entering PUK code located on the plastic card supplied with the alarm system.

Authentication method - «PIN code».

This authentication method requires a PIN code combination to be entered using the vehicle's original buttons after switching on the ignition. After setting this authentication method all tags of the system stop operating even if they were registered in memory. If the authentication is impossible to carry out using a secret PIN combination (lost, forgotten) then it will only be possible to drive the vehicle after entering PUK code located on the plastic card supplied with the alarm system. Further more PIN code can be changed after entering PUK code. (refer to chapter Changing PIN code).



If this authentication method is set the alarm system will operate according to the anti-theft algorithms of PINTODrive®.

Authentication method - «Tag or PIN code»

Authentication can be carried out by using a tag of any type or by entering a PIN code combination. If a tag is available in range of the vehicle the authentication will be carried out automatically after switching on the ignition. If a tag can't be detected by the system (tag is not available, lost, damaged) the authentication can be carried out by entering a PIN code combination. This authentication method operates according to the algorithms of the authentication method «PIN code» if a tag isn't available.

Authentication method - «Tag and PIN code» (Three-factor authentication)

This authentication method requires disabling three security contours: the alarm system will disarm after unlocking the vehicle with vehicle's original remote, a tag will be detected after switching on the ignition and then a PIN code combination should be entered. If the tag isn't available or malfunction it will only be possible to drive the vehicle after entering PUK code located under the protective film of the plastic card supplied with the system.

Table 15 — Authentication methods

Authentication method	Authentication procedure description	Confirmation sounds after authentication
Tag	Radio tag or smartphone tag should be in the vehicle	Confirmation trill
PIN code	PIN code combination should be entered using vehicle's original buttons (tags are disabled)	Confirmation trill
Tag or PIN code	Radio tag or smartphone tag should be in the vehicle or a PIN code combination should be entered	Confirmation trill after detecting a tag or after entering PIN code
Tag and PIN code (three-factor authentication)	Both having a tag in the vehicle and entering a PIN code combination with using vehicle's original buttons is mandatory	Confirmation trill after detecting a tag and another confirmation trill after entering PIN code


Confirmation signals after carrying out authentication

After carrying out an authentication procedure successfully the system emits the confirmation trill. The authentication method «Tag and PIN code» assumes two authentication trills.

Some additional buzzer beeps after the confirmation trill are designed to drag user's attention. Refer to the table 16 to determine the reason why additional beeps follow the confirmation trill:

Table 16 - Additional buzzer beeps following after the confirmation trill

Buzzer beep	The reason	Recommended actions
Long	The default PIN code hasn't been changed	It's recommended to change the default PIN code
	Service mode is enabled	It's recommended to disable the Service mode
	The authentication method «Tag» was changed to «Tag or PIN code»	It's recommended to enter PIN code at least one time (to confirm that the authentication method was changed under your will and you know your PIN code combination)
Five short	It is recommended to replace the radio tag's battery	Please replace your radio tag's battery

 If the authentication method has been changed to «Tag or PIN code», then after the vehicle travels 10 km every time when carrying out authentication the system will emit a long warning beep. To disable the long warning beep enter PIN code to confirm that you are familiar with it and are able to use it when needed.

Quick engaging the three-factor authentication

Three -factor authentication mode increases the anti-theft possibilities of the alarm system in case the tag has been stolen or lost. You can easily enable the three-factor authentication mode when parking your vehicle at a potentially dangerous place (e.g. at the hypermarket parking lot). Thus, the authentication method "Tag or PIN code" can be quickly changed to "Tag and PIN code" that will be active just for only one armed cycle. This method provides maximum anti-theft protection as after enabling the "Three-factor authentication" you will have to disable three security contours:


- disable the vehicle's factory security system by unlocking it with the original remote (the first contour);
- carry out authentication using a tag (the second contour);
- enter a secret PIN code combination using the vehicle's original button(s) (the third contour).

Three-factor authentication provides the maximum anti-theft protection.

Three-factor authentication mode can be easily enabled without using a programming menu for that.

The maximum protection can be easily enabled by carrying out the following simple actions:

1. Switch the vehicle's ignition on and wait until the system detects a tag, then within 20 seconds
2. Open and close the driver's door.
3. Enter PIN code and wait for the confirmation signal.
4. Switch the ignition off.
5. There should be two confirmation signals indicating that the authentication method "Tag and PIN code" has been enabled for one armed cycle.

 The system can be configured so that enabling the three-factor authentication would automatically activate the feature «Blocking the vehicle's central locking when a tag is out of range».

Immobilizer

Immobilizer – the feature was designed to protect vehicles from theft while being parked. The «armed mode» of the Immobilizer feature is automatically activated if the ignition remains switched off for more than 3 sec. Once the feature has switched to «armed mode» — it is required to carry out an authentication procedure prior to driving, otherwise the vehicle will be immobilized:

- the vehicle will be immobilized after attempting to drive away (if «Speed monitoring» feature is enabled and is supported by a particular vehicle. Find out whether this feature is supported by your vehicle in the Integrator);
- the vehicle will be immobilized 5 seconds after switching on the ignition if the «Speed monitoring» feature has been disabled or is not supported by a particular vehicle.

AntiHiJack

AntiHiJack - is a feature designed to protect a vehicle from hijacking while it is being operated on the road and from theft while it is parked. AntiHiJack switches to the «armed mode» in the following situations:

- the ignition has been switched off for more than 3 sec. (if the Immobilizer feature is disabled, but if the Immobilizer is enabled — the system follows the Immobilizer feature algorithms);
- after opening and closing the driver's door while the engine is running.

After switching to the «armed mode», the AntiHiJack feature sequentially passes through several phases and eventually immobilizes the vehicle if authentication hasn't been carried out. The phases follow one after another just only while the ignition is ON. After switching OFF the ignition, the system saves in its nonvolatile memory the last phase of the AntiHiJack feature. The system continues to follow the operation algorithm of the last phase of the AntiHiJack feature after switching the ignition back to the ON position. The AntiHiJack feature may be deactivated in any phase by carrying out an authentication procedure.

The armed mode of the AntiHiJack feature includes the following phases:

1. Waiting phase.
2. Warning phase.
3. Immobilizing phase.



To disable the AntiHiJack feature after triggering - carry out authentication.

Waiting phase.

In this phase the AntiHiJack feature follows two different algorithms depending on whether the «Speed monitoring» is supported in a particular vehicle or not.

The AntiHiJack waits until the vehicle covers a set distance once it has been triggered if the «Speed monitoring» is enabled and/or is supported by a particular vehicle. The waiting phase is divided into three subphases if «Speed monitoring» feature is not supported by a particular vehicle (or it is disabled in the «Hardware functions configuration» menu):

- waiting until the driver's door is closed;
- waiting until the brake pedal is pressed the selected number of times;
- pause before shifting to the «Warning» phase.

Warning phase consists of two subphases:

- warning the driver of the vehicle of necessity to carry out authentication;
- warning other road users of possible dangerous situation due to the upcoming vehicle immobilization by flashing the vehicle's hazard lights (within 10 seconds). The system continues to emit the warning beeps.

Фаза блокировки.

The engine blocking triggers, the hazard lights continue to flash. The warning beeps and hazard lights will switch off in 15 sec. AntiHiJack remains in the engine blocking phase until authentication is carried out.



If «Engine blocking at a safe speed» is enabled — the engine will only be blocked:

- when the vehicle's speed drops below 30 km/h or after the vehicle comes to a complete stop;
- this depends on the settings of the feature «Engine blocking at a safe speed»;
- when starting the engine next time

The «Safe engine blocking» feature reduces the possibility of road accidents when the engine blocking triggers. After switching OFF the vehicle's ignition, the alarm system stops flashing the hazard lights and emitting the warning beeps. If the "Immobilizer" feature hasn't yet switched to the «armed mode» (see the Immobilizer feature section) then after switching ON the ignition next time, the hazard lights and warning beeps will be activated for 15 seconds. Herewith, AntiHiJack allows to start the vehicle's engine but prevents driving the vehicle according to the same algorithms as the Immobilizer feature does. If the Immobilizer feature has switched to the «armed mode» — then after turning the ignition off, the AntiHiJack feature will deactivate and the system will follow the operation algorithms of the Immobilizer feature.

Special operating mode of the AntiHiJack feature - protecting vehicles from theft while parked

If authentication hasn't been carried out, the vehicle will not be immobilized instantly, but unexpectedly for would-be thieves after driving a certain distance set by the user. Such element of surprise sufficiently increases the anti-theft resistibility and thieves have nothing else to do, but leave the vehicle. To enable the special AntiHiJack mode - disable the Immobilizer feature and leave the AntiHiJack feature ON.

Deactivating AntiHiJack with a tag

The use of the three-factor authentication method assumes having a tag and entering PIN code to carry out authentication. Enable the feature "Deactivating AntiHiJack with a tag" in order to avoid entering PIN code when driving. If AntiHiJack triggers while the car is being operated — the tag will be detected automatically. This allows keeping your eyes on the road since you don't have to enter PIN code.

If a tag can't be used for some reason (e.g. discharged battery, a tag is lost or damaged) — you may disable AntiHiJack by entering your PIN code combination.

Gas pedal blocking (forced stop)

The feature will immobilize the vehicle if AntiHiJack is triggered, adhering to the «Safe engine blocking» feature settings. It is obligatory that the vehicle supports the «Speed monitoring» to implement this feature. At the end of the «Warning phase», if vehicle's speed hasn't increased within 5 seconds or brake pedal has been pressed within 3 seconds — the gas pedal block activates for 2 sec. and then it deactivates for 5 seconds. This can be repeated for 5 times. Every time the gas pedal blocking triggers — the time gap for which the system deactivates the gas pedal block-ing reduces by 1 second. After the 5-th time the gas pedal blocking activates permanently. The mandatory condition for «Gas pedal blocking» feature operation is that the «Safe engine blocking» mode must be enabled.

Immobilizing a vehicle by imitating the pressing of the Start/Stop button

This anti-theft feature allows to shutdown the engine by imitating the Start/Stop button push, making the engine blocking very similar to the usual engine shutdown routine.

This anti-theft feature allows to shutdown the engine by imitating the pressing of the Start/Stop button, making the engine blocking very similar to a usual engine shutdown. To implement this feature, the alarm system's output with the programmed feature № 57 («Immobilizing a vehicle by imitating the engine Start-stop button push») should be connected to a proper wire of the Start/Stop button. When a pulse signal is applied to that wire — the engine must shutdown.

Operation algorithm:

Immobilizer feature operation algorithm:

- For vehicles with A/T — after shifting the gear lever from «P» or «N» the signal is generated on the output until the engine shuts down;
- For vehicles with M/T — when the vehicle starts moving — the signal is generated on the output until the engine shuts down. If AntiHiJack has triggered.

AntiHiJack operation algorithm:

The alarm system generates the signal on the output after the vehicle comes to a complete stop. If the system doesn't receive the speed data from the CAN-bus, the vehicle's engine will be blocked according to the Immobilizer feature operating algorithms when starting the engine next time.



Settings of the options «Engine blocking at a safe speed» and «Ability to start the engine before carrying out authentication» don't affect operation of the feature «Immobilizing a vehicle by imitating the pressing of the Start/Stop button».

Service mode

The mode was designed for situations when necessary to conceal the fact that the alarm is equipped with an anti-theft device.

Service mode is the operating mode that temporarily disables all anti-theft and comfort functions (automatic windows closure, Immobilizer, AntiHiJack, controlling an aftermarket electro-mechanical hood locks, remote/automatic engine start, and etc.).

Service mode allows an alarm user to leave the vehicle in a workshop, at a service center to perform maintenance or repair works, at a car wash station and etc., without notifying anybody that the vehicle is equipped with a security system. There is no need to tell anybody a secret PIN code combination or hand over a unique tag to unauthorized people. While in this mode the system will not be interfering any maintenance works and it can't be detected by any diagnostics equipment.

The system notifies the driver that the «Service mode» is enabled by emitting a long warning beep after every authentication.

To enable or disable the Service mode:

1. **Switch on the ignition.**
1. Within 10 sec. after carrying out authentication press and release the Programming button 6 times.
3. **Wait for the confirmation trill:**
 - one short beep, and one confirmation trill.
 - two short beeps, two confirmation trills.


Service mode auto deactivation

The service mode will automatically turn off as soon as the vehicle travels 10 km after the mode has been activated. Thanks to this feature, you don't have to worry that your vehicle remains unguarded if you forget to disable the service mode as the alarm system automatically enables all security features and the vehicle remains protected. This feature can be enabled/disabled in the «User's features configuration» (menu 12). The Service mode will not automatically disable if it has been enabled with the use of PUK code. The feature «Service mode auto deactivation» is not available for vehicles that don't support the «Speed monitoring» feature.

«Beach mode» feature

The «Beach mode» feature is handy to use in situations when there is a risk that the car's key, alarm's tag or smartphone can be lost or carrying all these items is uncomfortable.

The «Beach mode» feature can be implemented in vehicles equipped with a button that can be pressed when the user is outside the vehicle. This button is used to enter a secret combination to arm or disarm the system. There is no default code for this feature, the code is programmed by the technician when installing the alarm system.

 *Note, that disarming the system by entering the secret code of the beach mode is impossible if the vehicle has been armed with the original key, keyless access system or by twisting the car's key in the driver's door lock cylinder.*

«Beach mode» programming sequence

1. Assign the function №27 «Secret code for the «Beach mode» to any programmable input. Connect the assigned input to a button located outside the vehicle (door handle button, trunk lid button).
2. In the «Menu 1» — «Hardware functions configuration» select the option №26 «Beach mode code» and assign a secret code.
3. Now you need to test the operation of the Beach mode, this is necessary in order to make sure that the vehicle's central locking system operates properly and it is possible to unlock the vehicle, for example, after auto-rearming.

Secret code for the «Beach mode»


This is a secret combination of pressings on the button located on the outside of the vehicle to which is connected the input №27 "Beach Mode Button". The code is a 1, 2, 3 or 4-digit number. Each digit is a number from 1 to 9.

The secret code for the «Beach mode» can be changed by the user at anytime.

Programming/changing the secret code

Programming can be carried out with the Programming button (hereinafter - the PB). Throughout the adjusting process the system's built-in beeper emits audible signals (hereinafter signal(s)) which indicate the status of settings being configured.

If an option number or an option value consists of two digits, it will be indicated as follows: the first digit will be indicated by long beep(s), the second — by short beep(s). For example: the figure 12 - will be indicated by one long beep and two short beeps; 25 — two long and 5 short beeps.

 *It is possible to enter PIN code «2» with the programming button if a vehicle hasn't yet travelled 10 km after installing the system and the default PIN code hasn't been changed. The immobilizer will exit the programming mode if at any moment during programming the ignition is switched OFF or if within 30 seconds after the last action is made, the brake pedal is not pressed.*

Configuring sequence:

1. **Switch on the ignition. Carry out authentication. Enter the programming menu not later then within 10 seconds after carrying out authentication.**
2. **Press the PB 10 times**
 - confirmation - 3 buzzer beeps.
3. **Press the PB 26 times**
 - confirmation - 2 long and 6 short buzzer beeps.
4. **To check the value of the option press the brake pedal:**
 - no signals means that the feature is disabled;
 - 1 beeps - the feature is enabled;
 - 2 beeps - the test procedure hasn't been carried out;
 - 3 beeps - the feature is disabled because the vehicle has travelled 10 km after installing the system and the test procedure hasn't been carried out;
 - 4 beeps - the input hasn't been configured (if the input was reconfigured after setting the feature).
5. **To change the secret code - release the brake pedal (1 confirmation beep will sound) and set the new code using the button which is located outside the vehicle.**
6. **Enter the new code one more time to confirm the new code;**
 - confirmation - two beeps and trill - secret code has been changed;
 - long warning beep - the secret code hasn't been changed. An error occurred while setting the secret code. Please repeat the procedure of setting/changing the secret code starting from the step №5.


«Beach mode» test procedure

When testing, the vehicle's ignition key or the original Keyless remote control should be outside the vehicle.

If you haven't performed the test routine - the feature will be able to only lock the central locking and will disable after the vehicle has traveled 10 km. It will be possible to unblock the feature only by resetting the system to default settings.

Test routine:

1. Close all doors, hood, trunk lid.
2. Open and close the driver's door.
3. Enter the secret code — the system will lock the central locking.
4. Wait until the siren chirps (approximately 1 minute). The siren will chirp once every 15 seconds.
5. Enter the secret code of the Beach mode: the central locking will unlock. Don't open any door, hood or trunk in order to test whether the vehicle's central locking unlocks after automatic rearming.
6. Wait until the siren chirps once (maximum waiting time is 6 minutes). This is necessary to check whether the central locking system unlocks after self-rearming of the vehicle.
7. Enter the secret code — the central locking should unlock if the vehicle's security system has self-rearmed.
8. Within 30 seconds after after the doors have unlocked, open the driver's door, the confirmation trill will sound. This means that the test routine has been successfully completed and the «Beach mode» feature is fully functional.

 *If while performing the step 5, the vehicle's doors don't unlock - try re-entering the code of the Beach mode (probably a mistake was made while entering the code). If you're sure that the code has been entered correctly, but the vehicle's doors don't unlock - it means that the test routine hasn't been carried out. Check all connections of the alarm system to the vehicle.*

Diagnostics of the Beach mode status

The mode allows to test the settings of the «Beach mode» feature.

Enter the hardware features configuration menu (menu 10), feature №26 - «Beach mode». Press and hold the brake pedal. The alarm system will indicate the status of the «Beach mode» features by buzzer beeps.

- No beeps - the feature is disabled.
- 1 beep - the feature is enabled.
- 2 beeps - the test routine hasn't been performed.
- 3 beeps - the feature has been disabled after driving 10 km distance (reset the system to re-enable the feature).
- 4 beeps - the input for the «Beach mode» hasn't been assigned (if the configuration of the input was changed after the input had been assigned).

The system will exit the diagnostics mode after releasing the brake pedal. Next, you can set/change the secret code of the Beach mode.

Using the «Beach mode» (entering the secret code)

Close doors, hood and trunk of the vehicle. Enter the secret code of the «Beach mode» by pressing the button located outside the vehicle. Do not press the button and do not make pauses after entering each digit of the code for longer than 1 sec.

Tags

Tag - an electronic key that should always be carried by an authorized user when operating the vehicle. The alarm system detects a tag automatically before setting the vehicle in motion. After detecting a tag, the system emits the confirmation sound. All modifications of the system are compatible with three types of tags.

Types of tags


Slim tag - is a miniature electronic device (radio tag) that can only be used for authentication of an authorized vehicle user.

Key ID tag - is an electronic device (radio tag) equipped with a button. The tag can be used to carry out authentication and to arm/disarm the alarm system. The built-in button of the Key ID tag can also be used as the Programming button.

Smartphone tag - smartphone tag can only be used for authentication of an authorized vehicle user. A smartphone can be either used as the main authentication method, e.g. if tags are not supplied with the system or as a back-up method, e.g. if the main tag (e.g. Slim tag) is lost or damaged. Authentication with a smartphone is carried out similarly to authentication with a Slim tag.

The mobile application «PINtoDRIVE ID» should be installed on a smartphone to be able to use a smartphone as a tag for authentication.

The mobile application has a feature «Authentication only if the smartphone screen is unlocked» which is designed to keep the vehicle protected in case if the smartphone has been stolen. If enabled, this feature doesn't allow a person who holds the smartphone to carry out authentication until the smartphone screen is unlocked (e.g., graphical key, fingerprint, Face-ID).


 All modifications of the alarm system can be equipped with tags. Up to 8 radio tags can be registered into one system including maximum 4 smartphone tags.

Tags detection quality test

This feature allows to make a test of how the alarm system detects a tag depending on its location in the vehicle. It is recommended to perform the test when the vehicle's engine is running. Slightly increase and decrease the engine's RPM while testing the tags.

The entire test procedure is carried out using the programming button (hereinafter the PB). During the test procedure the system performs indication with the internal buzzer (hereinafter - signal(s)).

If an option number or an option value consists of two digits, it will be indicated as follows: the first digit will be indicated by long beep(s), the second — by short beep(s). For example: the figure 12 - will be indicated by one long beep and two short beeps; 25 — two long and 5 short beeps.

 It is possible to enter PIN code «2» with the programming button if a vehicle hasn't yet travelled 10 km after installing the system and the default PIN code hasn't been changed. The system will exit the programming mode if at any moment during programming the ignition is switched OFF or if within 30 seconds after the last action is made, the brake pedal is not pressed.

Test routine:

1. **Complete authentication. The alarm system, will emit the confirmation trill indicating that the authentication is successful.**
2. **Press and release the programming button 12 times;**
 - the alarm's beeper will emit 4 short beeps.
3. **Press and release the programming button 15 times;**
 - the alarm's beeper will emit 1 long and 5 short beeps to indicate that the option №15 of the programming menu has been successfully selected.
4. **Press and hold the brake pedal during 10 seconds;**
 - confirmation - one buzzer beep.
5. **Release the brake pedal to initiate the constant radio tag search mode;**
6. **Verify detection quality of a tag by moving it to different places of the vehicle interior;**
 - the confirmation trill which is emitted every 3 seconds indicates the reliable radio tag detection.
7. **To quit testing the tags, press the brake pedal or simply turn the ignition OFF.**

Registering radio tags (Slim tags and Key ID tags)

Register all desired radio tags within one registration procedure. The radio tags which haven't been registered within one registration procedure will be erased from the system's memory. Registering a smartphone as a tag can be performed in the special mobile application PINtoDrive ID.

Preparing radio tags for registration


If there is only one working radio tag that is used for authentication - leave the battery only in that tag. If you have more than one working radio tag - leave the battery only in one of the working radio tags and remove the batteries from the others.

If there are no working radio tags then before registering tags - remove the batteries from all tags that you are planning to register.

Sequence of actions to register radio tags

The configuration procedure is carried out with the use of the programming button (hereinafter the PB). While configuring the settings, the system performs indication with the internal buzzer beeps and the external LED flashes (hereinafter - signal(s)).

If an option number or an option value consists of two digits, it will be indicated as follows: the first digit will be indicated by long signal (s), the second — by short signal (s). For example: the figure 12 - will be indicated by one long signal and two short signals; 25 — two long and 5 short signals.

 It is possible to enter PIN code «2» with the programming button if a vehicle hasn't yet travelled 10 km after installing the system and the default PIN code hasn't been changed. The system will exit the programming mode if at any moment during programming the ignition is switched OFF or if within 30 seconds after the last action is made, the brake pedal is not pressed.

Registration procedure:

1. **Carry out an authentication procedure.**
2. **No later than within 10 sec., press and release the programming button 12 times;**
 - the system will emit 4 short signals to confirm that the menu 12 has been entered.
3. **Press and release the programming button 14 times to select the option Registering new tags;**
 - the system will emit a series of 1 long signal and 4 short signals.
4. **Press and hold the brake pedal;**
 - the signals will indicate the total number of already registered radio tags by series of signals.
5. **Holding the brake pedal, place a battery into one of the radio tags**
 - short intermittent signals will indicate that the radio tag registration procedure has started.
6. **Repeat the step №5 to register each tag.**
7. After registering all radio tags, the system will indicate the total number of registered tags in the system's memory by a series of signals. Make sure the number of signals matches the number of all radio tags registered in the system.
8. **Release the brake pedal and switch the vehicle's ignition OFF after registering the last radio tag, the confirmation trill will sound.**



*One and the same tag can't be registered in more than one system at the same time.
Tag's battery replacement procedure is described in the Annex №2*

Deleting smartphone tags from memory

1. Switch the vehicle's ignition to the ON position. Complete authentication: enter PIN code or wait until a tag is detected.
2. Within 10 seconds, enter the programming menu by pressing and releasing the programming button 12 times. The system shall emit 4 signals to confirm that the menu has been entered.
3. Press and release the programming button 19 times in order to access the option «Deleting smartphone tags from memory». The system will emit a series of one long signal and 9 short signals.
4. Press and hold the brake pedal. The alarm system will start indicating the number of smartphone tags already registered in the system by emitting the relevant number of signals.
5. Still keeping your foot on the brake pedal, press the programming button one time to erase all radio tags from the system's memory. Wait until the confirmation trill sounds.
6. Release the brake pedal and switch off the ignition to finish the procedure.

Pairing a smartphone with the alarm system

Pairing a smartphone with the alarm system is carried out in the mobile app «Prizrak ID». The pairing procedure is accompanied with helpful tips through-out the entire registration process.

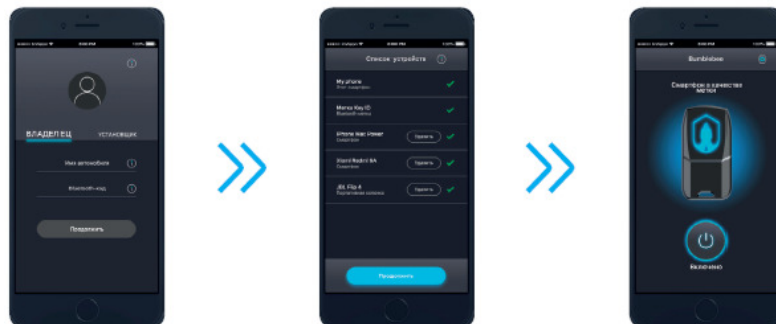


*Bluetooth version of a smartphone shouldn't be lower than Bluetooth 4.2 with (BLE) technology.
The OS version of the smartphone shouldn't be lower than 6.0 for Android and 12 for IOS.*

The installation specialist is not allowed to scratch off the protective film of the Bluetooth code in order to test the functionality of the alarm system. However, there is a temporary code designed to test the smartphone tag feature after installing the system. The temporary code is a code located under the barcode of the plastic card supplied with the system. The code is valid until the vehicle travels 10 km after installing the system. After that the mobile application will remind the end user to delete registration of a tag with the temporary code.



The smartphone's operating system can terminate operation of the «Prizrak ID» app. If this is the case, the smartphone will stop working as a tag until the mobile application is restarted. This peculiarity can cause immobilization of the vehicle while driving if the AntiHiJack feature is enabled in the system. Therefore, it is recommended to always carry a radio tag when using the vehicle to avoid this situation.



Download and install the mobile app «Prizrak ID» on your smartphone. All further actions have to be performed inside the vehicle:

1. Carry out authentication.
2. Run the mobile app «Prizrak ID».
3. Give the vehicle a name (any name).
4. Enter the Bluetooth code located on the plastic card supplied with the system and tap the button «Continue».
5. The list of all radio tags and smartphones paired with the alarm system will be displayed on the screen (e.g. smartphone tags with temporary access).
6. Once the logo of a radio tag appears in your smartphone screen, it means that the smartphone has been successfully paired.

Deleting smartphone tags

There are two ways to delete smartphone tags from the system's memory: either selectively one by one – in the mobile app Prizrak ID or all at once — using a special programming menu as described below.

Deleting all smartphone tags from memory:

1. **Switch the vehicle's ignition to the ON position. Carry out authentication: enter PIN code or wait until a tag (Key ID or Slim tag) is detected.**
2. **Within 10 seconds enter the programming menu by pressing and releasing the programming button 12 times.**
 - the alarm system shall emit 4 signals to confirm that the menu has been entered.
3. **Press and release the programming button 18 times in order to access the option «Deleting smartphone tags from memory».**
 - the system shall emit a series of one long and 8 short signals.
4. **Press and hold the brake pedal.**
 - the system indicates the number of smartphone tags already registered in the system by emitting the relevant number of signals.
5. **Press and release the Programming button 1 time to delete all smartphone tags from memory.**
 - the confirmation trill means that the tags have been deleted.
6. **Release the brake pedal and switch of the ignition to exit the programming menu.**

Resetting the system to factory default settings

Carrying out the reset procedure will result in deleting all non-default settings from the system's nonvolatile memory — such as vehicle make and model, paired smartphone tags, paired peripheral devices, authentication method and etc. The PIN code combination as well as all other settings of all programming menus will also be reset to default values.


If the alarm system is installed on a vehicle:

1. Disconnect the system from power supply.
2. Press and hold pressed the built-in Programming button.
3. Still holding the button pressed connect the module back to power supply. There will be intermittent beeps.
4. Release the button (wait until after the intermittent signals discontinue).
5. Switch ON the ignition and carry out an authentication procedure (Enter PIN code and/or wait until a tag is detected) — the confirmation trill will sound.
6. Wait for the intermittent signals signifying that the system has been reset to the default values. Disconnect the system from power supply to finish the reset procedure.

If the alarm system isn't connected to a vehicle

There are two ways to reset the system to defaults:

1. With the use of the built-in button considering that the default PIN code «2» hasn't been changed and the vehicle hasn't traveled a distance of 10 km yet.
2. With the use of the built-in button and PUK code.

 *No one but an authorized user of the alarm system is allowed to scratch off the protective film and enter the PUK code. An alarm system can be reset to default values by connecting it to the same vehicle it was previously connected to (refer to chapter: If the alarm system is installed on a vehicle).*

Порядок выполнения сброса настроек, следующий:

1. Press and hold the built in programming button.
2. Still pressing the Programming button connect the system to power supply. The system will start emitting intermittent signals.
3. Release the button, wait until the system discontinues emitting the signals.
4. Enter the default PIN code «2» using the built-in programming button if the vehicle hasn't travelled 10 km after installing the system or enter PUK code. Wait until the confirmation trill sounds.
5. Wait for intermittent sound signifying that the module has been reset to the default values.
6. Disconnect the system from power supply.

Arming

The system can be armed in any convenient way:

- by pressing the "lock" button on the original remote;
- by using the Keyless entry system;
- by twisting the car's key in the driver's door lock cylinder;
- by pressing the built-in button of the Key ID tag;

One chirp (of the siren or klaxon) indicate that the system has been armed. The external LED will start to flash. After some time the LED flashes become less frequent in order to save car's battery energy

Disarming

The system can be disarmed in any way described below:

- by pressing the "lock" button on the vehicle's original key;
- by using the Keyless entry system;
- by twisting the car's key in the driver's door lock cylinder;
- by pressing the built-in button of the Key ID tag;

Two chirps (of the siren or klaxon) indicate that the system has been disarmed. The external LED will fade.

Rearming

If enabled, the feature will automatically rearm the system 1 minute after disarming via phone or a Key ID tag if all doors, hood and trunk remained closed. By default the system is disabled (refer to the menu 12 - User features configuration) If a vehicle has been disarmed with OEM remote key then the «automatic rearming» operates according to the vehicle manufacturer's algorithms. The «automatic rearming» feature is very convenient when a vehicle was disarmed unintentionally.

Door ajar warning

If you leave a door, hood or trunk open and arm the alarm system, it will warn you on that with 3 siren chirps. The external LED will inform you of what exactly you have forgotten to close by the certain number of flashes:

- one flash - hood open;
- three flashes - trunk open;
- three flashes - door (doors) open.

You can simply close the open door/s (hood, trunk) without disarming and re-arming the vehicle the system will automatically take that vehicle compartment under control.

Срабатывание сигнализации

If while in armed mode any door, hood, trunk is open, or the ignition is switched on the alarm system will trigger. This will set off the siren or klaxon and the vehicle's hazard lights will flash.

The alarm is equipped with two built-in digital sensors: shock and tilt/displacement sensors. Through these sensors the alarm reacts to such external impacts as shocks, bumps and vibrations or tow-away attempts. An optional sensor can be connected to the alarm if needed (multiplex or standard one). While in armed mode the alarm responds to external impacts in two ways: warning - the siren chirps several times; alert - the siren sets off and the hazard lights flash during 30 sec. The sensors' sensitivity can be adjusted in the system settings.



To enhance vehicle security, the system can be equipped with an optional sensor with a standard output or with a multiplex output.

Annoyance exclusion

If alert triggers from one of the sensors three times in a row within an hour – the system will start ignoring that sensor. The system resumes responding to that sensor if only there is no any impact on the same sensor within an hour. This feature prevents triggering panic, but the system will still respond to light impacts with warning signals regardless of their frequency and duration.

Arming with siren exclusion

The alarm system can be armed excluding the sensors, herewith, it doesn't react on mechanical impacts on the vehicle. It is possible not only to disable the warning signals but also disable the sensors completely.

To disable the sensors, arm the alarm system by pressing and releasing the "lock" button on the original vehicle remote. To disable the warning mode - within the next 3 seconds press and release the "lock" button of the original vehicle remote, the siren will emit an intermittent sound and after a pause — one chirp to confirm that the sensors will not respond to light impacts on the vehicle.

The system will disable all the sensors completely if within the next 3 seconds the "lock" button of the vehicle's remote is pressed for the third time, the siren will emit an intermittent sound and after a pause — 2 chirps to indicate that all sensors have been disabled.

Alarm events memory

If an alarm event occurs in armed state while away from the vehicle, it will be indicated on disarming by 4 siren chirps and the external LED will inform about the alarm cause.

Table 17 — Indication of the last cause of alarm

LED flashes	Indication of the alarm cause
1	«Annoyance exclusion» feature was enabled
2	Hood (bonnet) position sensor triggered
3	Trunk (boot) position sensor triggered
4	Door (doors) position sensor triggered
5	Shock sensor triggered (panic)
6	Shock sensor triggered (warning)
7	Tilt/displacement sensor triggered
8	Optional sensor triggered (panic)
9	Optional sensor triggered (warning)

Releasing trunk without disarming

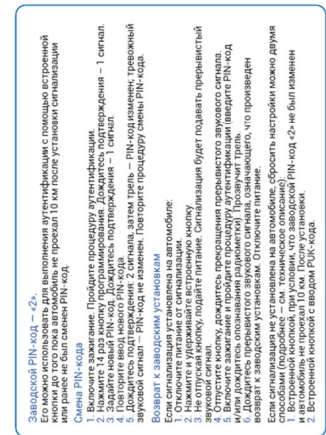
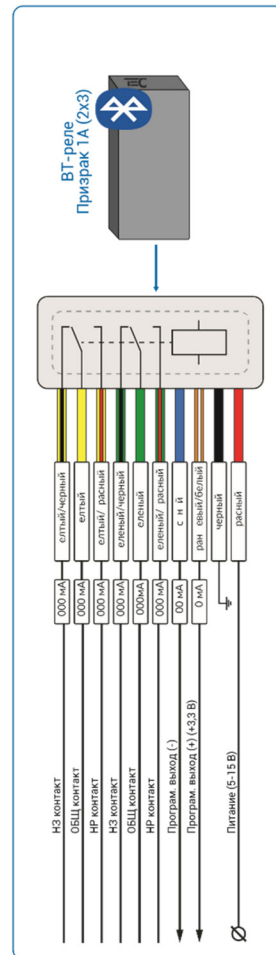
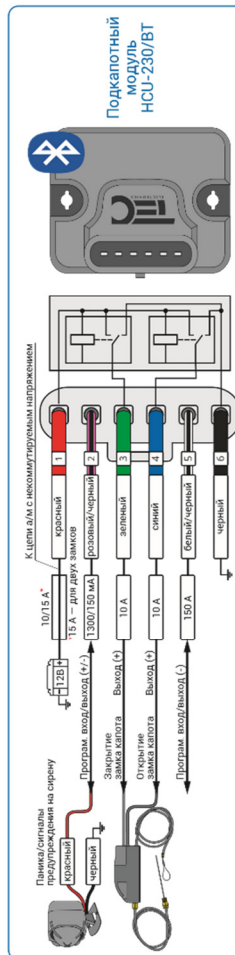
The trunk lid can be released with the use of the vehicle's remote or keyless entry system while the alarm is in armed state. While the trunk is being lift up the system doesn't monitor the built-in sensors, but still monitors the rest of the vehicle perimeter so that the vehicle remains secured from intrusion. As soon as the trunk is closed, the system takes control of it and re-enables all sensors.

«Beach mode» feature

«Beach mode» feature was designed for use in situations where a high risk of stealing or loosing the vehicle's remote, radio tag or a smartphone(s) persists. All these belongings can be left inside the vehicle under protection of the alarm system rather than carry them around. The instructions on how to use and configure the feature can be found in chapter «Beach mode feature».

Tag search when disarming

If this mode is enabled in the system, it begins to search for a tag after receiving the "unlock" command from the vehicle's remote or the keyless access system and only after detecting a tag the system completely disarms. The use and configuration of this feature is described in chapter «2».

[illegible]

Annex 2 - Internal parts of the main alarm system module and tags

The built-in button - function

The button of the Key ID tag can be used instead of the usual Programming button:

1. To enter the default PIN code - «2» until the vehicle travels a distance of 10 km after the installation of the system or the default PIN code hasn't been changed. It doesn't matter what authentication method is set.
2. To enter PUK code to disarm all anti-theft features of the alarm system.
3. To use it instead of the Programming button to configure setting of the system. Before configuring the system, the authentication should be carried out.

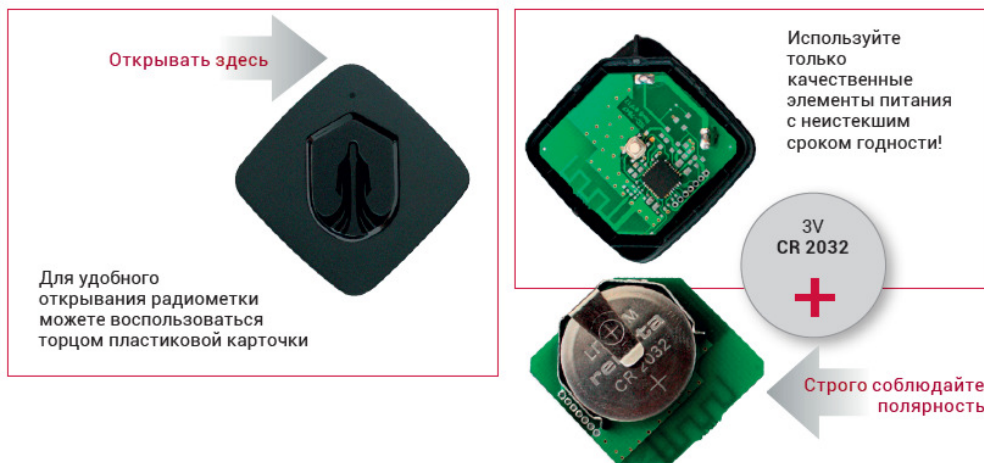
The built-in LED

The built-in LED of the green color allows to promptly analyze the data obtained from vehicle CAN bus and correct settings or connections of the system in the vehicle if needed without connecting the alarm system to PC. The indication is performed as follows:

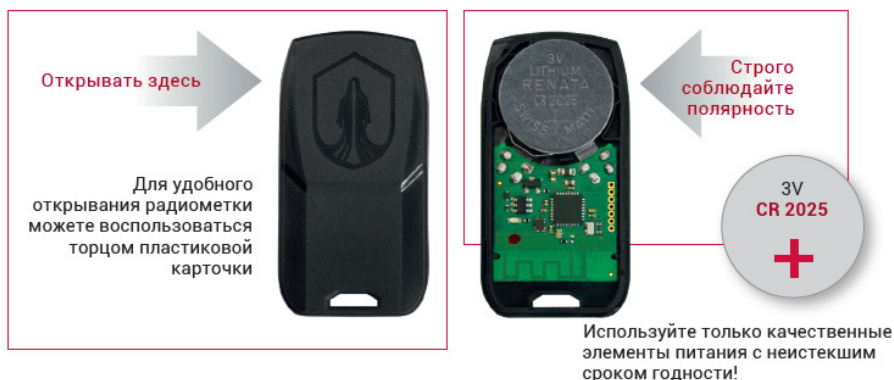
1. The LED illuminates for 5 seconds (or less if the duration of the active state is shorter) when receiving the following statuses:
 - trunk (boot) is open;
 - hood (bonnet) is open;
 - a door is open (each door separately);
 - the statuses of the ignition switch and the Start/Stop button (ACC, IGN, Start);
 - engine is running;
 - the parking brake is engaged;
 - the brake pedal is applied;
 - the system armed;
 - factory alarm system triggered;
 - the status of the central door locking system;
 - the sensors are ignored;
2. The engine's RPM are indicated with 5 seconds after starting the engine (after the indication of the ignition switch is finished), the LED blinks with the frequency of 1 blink per second - proportionally to 500 RPM.
3. Engine temperature — LED flashes 1 time after each time new temperature data is received (with ignition ON or when the engine is running).

Radio tag's battery replacement

Ключ-метка Key ID



Slim-метка



Annex 3 - Technical data and operating conditions

Parameter	Value
Power supply voltage (V)	9 ... 15
Maximum current drain during standby mode, mA when vehicle CAN bus is not active (average; mA)	12
Operating temperature, (°C)	−40 ... +85
Storage temperature, (°C)	−40 ... +85
Maximum relative humidity, (%)	95