TECHNICAL DESCRIPTION

PRIZRAK

700
710

Comfortable and modern –
without trinkets

For modern cars and car owners

Table of contents

Alarm description

Introduction

This Technical Manual is applicable for the following Slave alarm systems: Prizrak-700 & Prizrak-710, (hereinafter referred to as Alarm).

Immobilizer and AntiHiJack features are available only in "Prizrak-710"

The Alarm is designed for protecting the vehicle from being stolen from parking location and from being hijacked. The Alarm also notifies should the vehicle be tampered with while it is parked.

In order to receive information on Alarm connection to a given vehicle and on the list of vehicles compatible with the Alarm along with information on its functionality please use Integrator files installation data (hereinafter referred to as Integrator files).

Starting from v 6.**4**.xxx the alarm supports underhood module HCU-230.

Terms

Programming button — one of original buttons of the vehicle used for programming the Alarm (see Integrator files for information on which button is used in each given vehicle). When using the Alarm, the Programming button is not redefined. The button can be redefined only during the installation of the Alarm in the vehicle.The button integrated in the Alarm's case can be used as Programming button. (see Fig. 2).

Security — it is the condition of Alarm that is entered by locking the vehicle's doors in any way provided by the vehicle manufacturer (with the lock cylinder on driver's door, keyless access system, remote control, or re-arming etc.) that includes arming of the original vehicle alarm. Secure condition is left by unlocking the doors with the original remote control or vehicle keyless access system and by entering the PIN code.

Speed control — allows setting the locking activation algorithm for Immobilizer and AntiHiJack features. Speed control can be activated and de-activated in user settings programming menu. Certain vehicles may not support this feature (please see Integrator files for details).

Guard mode — is an active operation mode of Immobilizer and AntiHiJack features: should one of these features enter the Guard mode, it is necessary to enter the correct PIN code; otherwise the Engine locking will occur.

Comfort feature — is the original function that allows not only locking vehicle's doors but also close the vehicle's windows (possibly with the roof insert) with the original remote control and (or) with the key).

Alarm features

- Theft protection when the vehicle is parked (immobilizer feature)
- Hijacking protection (AntiHiJack feature)
- Audible and light notifications on alarm triggering
- Engine locking
- Accessory sensors connection: tilt, volumetric etc. (shock sensor is included in standard delivery kit)
- Trunk opening without disarming
- Automatic windows closing when arming
- Central locking system activation

Alarm operation algorithm

Arming / disarming

To arm the alarm press the button of the remote, or close the doors with keyless system or lock the door with the key. Alarm will warn you that it is armed with audible signal and LED flashes. After some time interval between flashes will decrease.

To disarm the alarm press button of the remote, or open vehicle with keyless system. Alarm will warn you with 2 audible signals. LED will go off.

Emergency disarming

If remote is unavailable (low battery charge for example), then to disarm the alarm do following:

1. Open drivers door with key. Alarm will be triggered
2. Turn the ignition on and enter PIN code, enter confirmation. Alarm will be disarmed.

Open door warning

If you left door, hood, or trunk open, the system will warn you with 3 audible signals. LED will flash indicating open compartment:

- 2 flashes — open trunk
- 3 flashes — open trunk
- 4 flashes — open door (doors).

Alarm won't warn you when vehicle is accesed through unopened door. You can, without rearming, close door, hood, or trunk, and the system will take it under its control.

Alarm trigger

In the Security mode, the Alarm can react to actions with your vehicle in two ways: Warning and Alarm. The Warning triggers when there are weak effects on the shock sensor, e.g. due to vibrations caused by passing transport. In this case the siren emits several short signals. Alarm signal is activated if any door, hood or trunk were opened and when there was a strong effect on shock sensor. Siren will be on for 30 seconds and hazard lights will blink

You can adjust sensors sensitivity

Public order feature

After three triggers in armed mode from one sensor in one hour alarm will stop responding to this sensor for one hour. Alarm will. continue working with this sensor if there were no triggers for one hour. This function will cancel alerts but warnings will stay.

Triggger check

Alarm remembers causes of alerts for security period. Memory will be cleared after ignition switched on.

If alarm was triggered, after disarming the alarm four audible signals will be made and indcation of cause will start.

Table 1. Trigger diagnostics

LED flashes	Trigger cause
x2	Hood
x3	Trunk
x4	Doors
x5	Sensor 1 Trigger’
x6	Sensor 2 "Trigger"
x7	Sensor 1 "Warning"
x8	Sensor 2 "Warning"
x9	"Public order feature"

Arming the alarm in sensor off mode

If you would like to turn audible alert off:

- Arm the alarm
- In 3 seconds press button of the remote, siren will make one long audible signal, then pause and one short signal— warning mode will switch off. Alarm will not react to warning trigger from sensors
- In next 3 seconds press button again — siren will make song signal, then pause and 2 more signals — all sensors will switch off.

Trunk opening without leaving the security mode

You can open the trunk with remote or keyless system While trunk is open alarm will stop reacting to sensor input, but will control doors so the vehicle will stay secured from intrusion. After trunk is close the system will secure it and turn all sensors back on.

Disarming with PIN code

Alarm can be set up so it requires PIN code to be entered to be disarmed. If PIN code wasn’t entered in 30 seconds after opening any door, trunk, or hood.

PIN code is required only if alarm was armed for more than 30 seconds. To turn the alert off enter PIN code.

"PINToDrive" feature

"PINToDrive®" — is a feature designed to prevent vehicle from being stolen from parking space. "PINToDrive®" goes into effect if ignition was switched off for more than 3 seconds. If "PINToDrive®" feature is enabled and active it requires PIN code to be deactivated, otherwise

- Engine will be switched off on attempt to move
- The engine will be turned off within 5 seconds after the ignition has been turned on if the Speed control is off or is not supported by the vehicle.

"AntiHiJack" feature

"AntiHiJack" — is the function that prevents the vehicle from being hijacked or stolen from its parking area.

AntiHiJack enters the Guard mode in the following cases:

- The ignition has been turned off for longer than 30 seconds (in case if Immobilizer feature was not on; if it was on thenthe Alarm will follow its algorithms).
- Driver’s door has been opened.

Upon entering the Guard mode, AntiHiJack feature passes a sequenceof phases and in case if the Guard mode has not been deactivated,the feature will activate the Engine locking. Changing of phases takes place only when the ignition is on. When ignition has been turned off the Alarm will save its current condition and will continue its operation when the ignition is back on. AntiHiJack’s Guard mode can be deactivated at any phase by entering the PIN code. Guard mode includes the following phases:

- *Idle phase*
- *Alarm phase*
- *Locking phase*

Idle phase. In this phase AntiHiJack follows two different algorithms depending on the availability of Speed control.

If the Speed control is available, AntiHiJack waits until the vehicle covers a set distance from the moment of Guard mode activation. Upon that, AntiHiJack goes into the Warning phase. If the Speed control is not available, Idle phase consists of three stages:

- Waiting for driver’s door closing
- Waiting for a certain number of brake pedal pressings
- Pause before Alarm phase initiation.

Warning phase. This phase consists of two stages:

- Driver warning on the necessity of entering the PIN code (10 seconds). It is carried out by audible and light signals.
- Warning the other drivers on the road on the possible hazardous situation due to the upcoming engine locking (10 seconds). It is carried out by vehicle hazard lights warning the other drivers. Audible and light signals warning the driver are still on.

Locking phase. Engine locking is activated. Hazard lights will be on for 15 seconds. AntiHiJack will be in the locking phase until the PIN code is entered.

When safe locking mode is on (see Alarm hardware features programming (Menu 1) section), Engine locking will be activated only if the vehicle’s speed is 30 km/h or less. If the vehicle speed exceeds 30 km/h the Alarm will wait for speed decrease for an unlimited amount of time (while the vehicle is moving). As soon as the speed goes as low as 30 km/h the Alarm will lock the engine

Use of safe locking mode allows mitigating the risk of collisions when Engine locking is activated. When the ignition is off AntiHiJack turns the hazard lights and audible driver warning signals off. If the Immobilizer feature has not entered the Guard mode (see the Immobilizer feature section) then, upon the next ignition activation AntiHiJack will allow turning the engine on but will interfere with driving as per the same algorithms as the Immobilizer feature. If the Immobilizer feature has entered the Guard mode, then, upon ignition’s deactivation AntiHiJack feature will stop its operation and Alarm will follow the algorithms of Immobilizer feature..

PIN-code

PIN-code — is a secret sequential combination of original vehicle button(s). Please see the Integrator files for the list of original buttons perceived by the Immobilizer. PIN code needs to be entered prior to driving the vehicle. PIN code is a one-, two-, three- or four-digit number. Each digit is a number from 1 to 9.

PIN code can be promptly changed numerous times by both technical specialists during Immobilizer installation or by you during day to day vehicle use.

To maintain proper security level PIN code has to be changed. Until this is done signal will be emitted every factory PIN entry as a reminder to change it

PIN-code entry:

Factory PIN-code – 2, it has to be entered via built in button.

1 Turn the ignition on or start the engine
2 Enter PIN-code.
3 Wait for confirmation trill .

If you made an error during input warning trill will be made. After trill try again.

It is impossible to set PIN "1" – single button press

PIN-code examples

Buttons , , , , — used as an example. **Ask for precise list from your installer** .

One button PIN-code

One digit PIN-code "2":

2 digit PIN-code "11":

pause ~2 seconds

Multiple buttons PIN-code

Please mind button sequence.

One digit PIN-code "4":

2 digit PIN-code "22":

pause ~2 seconds

PUK-code

In case if the vehicle owner loses the PIN code, the Alarm supports the entering of the PUK code. PUK code completely replaces the PIN code but cannot be changed during operation. PUK code is located under the protective layer on the plastic card. PUK code entering is carried out by Programming button with 2-second pause after each digit. PUK code can be entered with the integrated button and with the original vehicle button assigned as the Programming button:

1 Turn the ignition on or start the engine.
2 Enter PUK-code.
3 Wait for confirmation trill

If you made an error during input warning trill will be made. After trill try again

After succesfull PUK entry new PIN can be registred

Maintanence mode

Maintenance is an operation mode when all theft prevention and service functions of the alarm are temporarily deactivated.

Alarm will warn about maintanence mode by :

- LED flash after disarming
- LED goes off if ignition switched on
- Warning trill after PIN-code entry
- Upod turning the ignition off LED flashes.

To toggle maintanence mode following should be done:

1 Turn the ignition on.
2 Enter PIN-code.
3 Press built in button 6 times (this has to be done in 10 second frame after PIN code entry).
4 Wait for confirmation:
   - Mode is on – 1 sound, 1 LED flash and a trill
   - Mode is off – 2 sounds, 2 LED flash and a trill.

Automatic maintenance mode shutdown

This function will switch maintanence mode off after vehicle was driven for 10 kilometers

If maintanence mode was switched on via built it button it will not switch off automatically.

If speed control is not supported by a vehicle this function will be disabled.

Additional features

The alarm has additional features , allowing to raise security level.

Automatic window closing ("Comfort")

Alarm can be programmed to close all windows after arming the alarm. This feature is not supported by all vehicles. Please check Integrator files.

Control of an electromechanical hood lock

The alarm allows to close hood lock when alarm is armed , and open it with PIN-code.

Central lock control

If vehicle does not have:

- Door locking on move
- Door unlock on Ignition o
- This can be done with the alarm.

This feature is not supported by all vehicles. Please check Integrator files.

Connection

Inputs/Outputs of the alarm

Alarm I/O is described in Tables, and pin numeration is indicated on fig. 1. Input / Output configuration is carried out via programming (see "Alarm hardware features programming (Menu 1)").

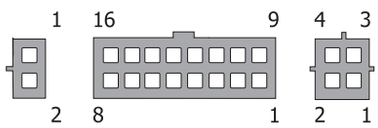


Figure 1. Connector pin numeration from harness viewpoint

Table 2. Alarm main connector description

№	Colour	Type	Function	Current, mA
1	Green	(-) Output	Programmable negative output	150
2	Blue	(-) Output	Programmable negative output	150
3	—	Not used	—	—
4	Gray/Yellow	Analog / digital button	Reference ground / Negative button	0,5
5	Pink/Green	(+) Input	Programmable positive input	1,5
6	Brown	CAN	CAN-L	
7	White/Black	(-) Output	Engine locking / TP-BUS	150
8	Black	Power supply	Ground	— [1]
9	Orange/Green	(-) Output	Programmable negative output	150
10	Green/Yellow	(+) Input	Programmable positive input	1,5
11	Blue/Red	(+/-) Output	Alternate hazard lights control	150/150
12	Gray/Black	Analog / digital button	Analog button / Positive button	0,5
13	Green/Black	(-) Input	Programmable negative input	1,5
14	Brown/Red	CAN	CAN-H	
15	Pink/Black	(+/-) Output	Siren control (+) / Horn control (-)	1300/150
16	Red	Power supply	+12 V	1500/2 [2]

[1] — Useful current of output No. 8 depends on demand connected to negative outputs.

[2] — Typical useful current values in operation and idle modes are indicated and may change depending on positive outputs demand.

Outputs No. 1, 2, 7, 9, 11, and 15 are protected from short circuit, inductive eruptions, overheating and maximum current surpassing.

Alarm main connector contact pins description

Pin № 1, 2, 9. Programmable negative output.

Pin № 3. Not in use.

Pin № 4. Reference ground / Negative button. Depending on control button type choice one of the following functions is used:

- ◇ Reference ground: when selecting the analog control button it is connected to the corresponding vehicle wire (see Integrator files)
- ◇ Negative button: is connected to negative (controlled by making contact with the ground) button. It is used in case if there are no original buttons perceived by the Alarm.

If the vehicle has original buttons controlled via CAN bus that are perceived by the Alarm, this input may be unused.

Pin № 5, 10. Programmable positive inputs.

Pin № 6, 14. "CAN-L. CAN-H vehicle data bus". Connects to vehicles CAN bus.

Pin № 7. Engine locking / TP-BUS. It is connected to the engine control relay.

Pin № 8. Ground. Connects to the vehicles body in the area determined by vehicle manufacturer for OEM connection.

Pin № 11. (+/-) output "Alternate hazard lights control". Used to control hazard lights in vehicles where CAN bus is not avaliable. For list of vehicles that require this connection please refer to Integrator

Pin № 12. "Analog button/Positive button". Depending on chosen control button type one of the following functions is used:

- ◇ Analog button is connected to the corresponding vehicle wiry at the steering wheel
- ◇ Positive button is connected to the positive button (the one controlled by +12V voltage). It is used in case if there are no original vehicle buttons perceived by the Immobilizer.

If the vehicle has original buttons controlled via CAN bus that are perceived by the Immobilizer, this input may be discarded.

Pin № 13. (-) programmable negative input.

Pin № 15. Siren control / Horn control. Required algorithm is set when installing the Alarm (see Alarm hardware features programming (Menu 1)).

Pin № 16. Alarm power supply. It is connected through 3A fuse to any non-switched circuit.

Table 3. 4-pin connector description

№	Colour	Type	Function
1	Red	Power	+12V sensor power supply
2	Black	Power	Sensor power supply ground
3	White	Input (–)	Sensor 2 (Trigger)
4	Blue	Input (–)	Sensor 1 (Warning)

Alarm can be equipped with an additional sensor. The alam can operate with standart sensors as well as with multiplex sensors

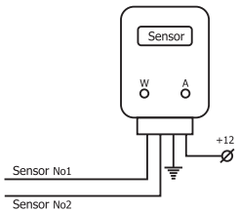
Table 4. LED connector description

№	Colour	Type	Function
1	Red	Power supply	Ground
2	Blue	Power supply	+12V

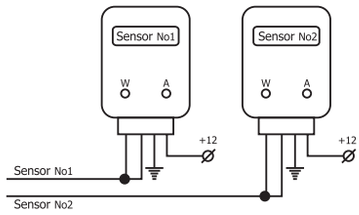
External sensors connection

The shock sensor included in the delivery kit is equipped with dedicated outputs for warning and alarm. This sensor operates correctly in both multiplex and standard modes. Sensor connection is carried out with a special harness supplied in the kit. No additional programming is required..

When it is necessary to install other sensors, various connection schemes are available, two of which are presented below. Should the sensor with dedicated warning and alarm zones please refer to Scheme No. A. It is necessary to use the standard sensors operation mode (see Alarm hardware features programming (Menu 1) section). In this scheme Sensor No. 1 has a functional purpose of warning input, while Sensor No. 2 is the triggering input. When connecting two multiplex sensors Scheme No. B is applied. In this case it is necessary to program the multiplex sensors inputs operation (see Alarm hardware features programming (Menu 1) section). In this scheme functional purposes of sensor inputs are identical. When receiving a signal longer than 0.8 sec, Warning is triggered. If the signal is longer than 0.8 sec,Alarm is activated.



The scheme No.A



The scheme No.B

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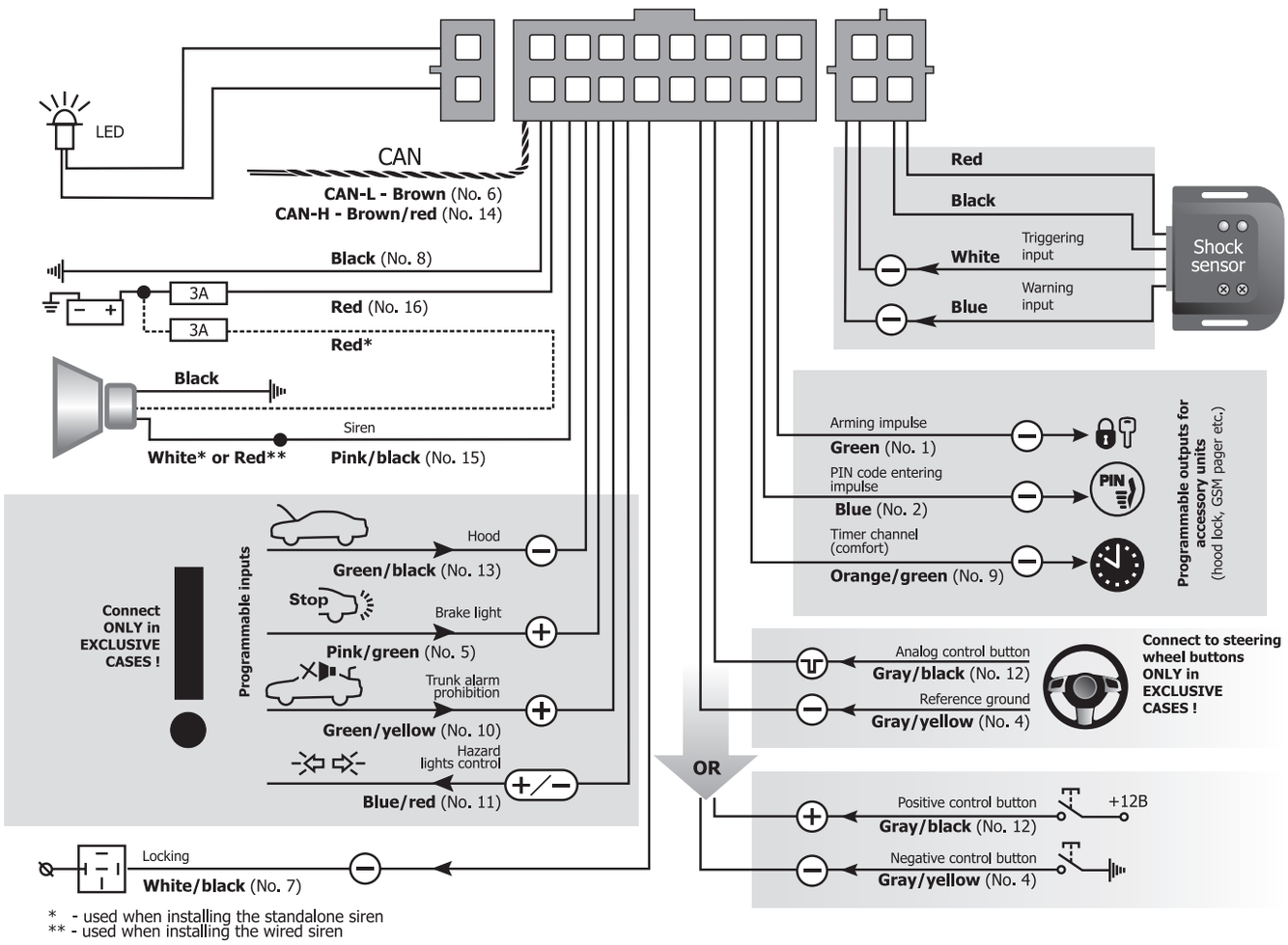
Alarm connection scheme (Factory settings)



Alarm programming

Programming stage one

Programming is performed with programming button.

Interfacing alarm with the vehicle

Identifying the vehicle model

Vehicles supported by the Alarm are divided into functional groups, each of which is divided into subgroups. All groups and subgroups are assigned with item ordinals (see Integrator files). Interfacing is the procedure of Alarm detecting vehicle group and subgroup.

There are two interfacing options

1 Automatic interfacing

In order to automatically interface the Alarm with the vehicle it is necessary to carry out a set of actions (see Integrator files). Upon vehicle identification algorithm is launched the Alarm emits a constant audible signal.

Interfacing procedure is diffrent for every vehicle, please check Integrator.

2 Forced interfacing

This option should be used in extraordinary cases

Programming is carried out with the bultin button. Prior to interfacing procedure initiation vehicle group must not be identified and CAN bus must not be connected. Programming will stop if Programming button not pressed for 60 seconds.

Programming sequence:

1. Power the Alarm and wait for discontinuous audible and light signal.
2. Enter Menu 1 by pressing the Programming button 10 times (this needs to be within 10 seconds after the system has been powered). If the procedure is carried out correctly, the Alarm will inform on this fact with three audible and light signals.
3. Enter menu option #1 – Vehicle model – by pressing the Programming button once. The Alarm will inform on option condition with 1 audible and 1 light signal series.
4. Enter the vehicles group number by pressing the Programming button for the corresponding number of times (see Integrator files). The Alarm will emit series of audible and light signals where the number of signals corresponding with the group number.

If group is 2 digit number – enter first digit of the group, wait for 2 seconds and enter second digit of the group number.The Alarm will emit series of audible and light signals corresponding with the group number.

5. Enter the vehicle's subgroup number by pressing the Programming button for the corresponding number of times (see Integrator).

Verify that the vehicle model has been chosen correctly with help of audible signals:

- If everything is corrent, press programming button once. Audible signals will stop, programming is complete
- If model of the vehicle was chosen incorrectly – press programming button twice. Repeat the procedure from № 4.

Analog steering wheel buttons pogramming .

In order to use the analog steering wheel buttons please do as follows:

1. Right after the Immobilizer identifies the vehicle model, turn the ignition on and wait for no less than 5 seconds.
2. Press all the steering wheel (and steering wheel column) buttons sequentially. If sound is emitted after pressing the button, then this button is avaliable to use
3. Turn the ignition off. A trill will be made
4. Turn the ignition on.
5. Assign programming button by pressing and holding the button for 5 seconds(wait for sound signal)/

It is nessesary initiate this procedure within 15 minutes after interfacing the alarm with the vehicle. If 15 minutes period has passed reset the system to default settings and reprogram the alarm.

Programming of digital (positive and/or negative) button

To use digital button:

1. Set the alarm to work with digital buttons (см. табл. 6. "Alarm hardware features configuration ("menu 1")", option #4; Changes can be made only from built in button before first entry of the pin with analog or digital buttons.
2. Assign connected button as programming button

It is nessesary initiate this procedure within 15 minutes after interfacing the alarm with the vehicle. If 15 minutes period has passed reset the system to default settings and reprogram the alarm

Programming stage two

Alarm configuration programming

At stage two Alarm hardware functions and user settings are changed and a new PIN code is programmed. Three independent menus are used during programming (see programming menu table)

Table 5. Programming menu

Name	Code	Number of audio signals	Function
"Menu 1"	10	3	Alarm hardware features configuration
"Menu 2"	12	4	User settings configuration
"Menu 3"	14	1	PIN code changing

Hardware features configuration ("Menu 1")

Programming is performed as in hardware features configuration.

Table 6. Hardware features configuration ("Menu 1")

#	Option name	Range	Factory settings	Description
1	Vehicle model	—	—	—
2	Engine locking	1-5	2	1 – Normally open relay 2 – Normally closed relay 3 – Gas pedal lock 4 – Starter and CAN bus lock 5 – Digital relay control (underhood module HCU-230)
3	Safe lock mode	1-3	1	1 – Engine lock is speed independent 2 – Engine will be locked at 30km\h or less 3 – Engine will be locked at full stop
4	External buttons type	1-2	1	1 – inputs #4 and #12 used as analog buttons 2 – inputs #4 and #12 used as digital buttons
5	Hazard lights control algorithm	1-5	— [1)]	1 – impulse negative control 2 – status negative control 3 – impulse positive control 4 – status positive control 5 – Lights control (negative)
6	Siren control / Horn control	1-2	1	Output #15 operation mode and polarity 1 – Siren control. Constant level signal (+12V) 2 – Horn conrol. Discrete negative signal. Used to control stock horn
7	Timer channel (comfort) feature running time	1-6	3	One unit is equal to 10 seconds
8	External sensors operation mode	1-2	2	1 – multiplex external sensors operation mode 2 – standard external sensors operation mode
9	Output (–) #1	1-26	25 Impulse to lock the hood	Programmable output ("Programmable outputs features")
10	Output (–) #2	1-26	4 impulse after PIN-code	Programmable output ("Programmable outputs features")
11	Output (–) #9	1-26	23 Timer channel ("Comfort")	Programmable output ("Programmable outputs features")
12	Input (+) #5	1-8	1 Brake lights state	Programmable input ("Programmable inputs features")
13	Input (+) #10	1-8	7 Disable alert by trunk state	Programmable input ("Programmable inputs features")
14	Input (–) #13	1-8	2 Hood control	Programmable input "Programmable inputs features")
15	Engine launch restriction	1-2	2	1 — Enabled 2 — Disabled
16	Speed control	1-2	1	1 — Enabled 2 — Disabled
17	Brake pedal presses	1-7	3	—

[1)] — If hazard lights caontrolled via CAN bus, this option won't be defined. If hazard lights are not controlled via CAN, then range is defined.

Annotations to the table

Option №1. Vehicle model. Allows forced selection of vehicle group and subgroup.

Option №2. "Engine locking". option has 4 states:

1 Output №7 set to control normally open relay.
2 Output №7 set to control normally closed relay.
3 Output №7 set to control gas pedal lock.
4 Output №7 set to control starter lock and diagnostic bus (control normally closed relay control). Constant level signal is formed if the bus is active to block the starter.
5 Output №7 set to control underhood module HCU-230.

Option №3. Safe lock mode.

1 Engine will be locked at any speed
2 Engine will be locked only if speed is less than or equal to 30km/h
3 Engine will be locked only after full stop

Option №4. External buttons type.Depending on the buttons used:

◇ Inputs #4 and #12 are used for connecting analog (steering wheel) buttons
◇ Inputs #4 and #12 are used for connecting digital (positive\ negative) buttons.

Option №5. Hazard lights control agorithm. In the majority of cases the algorithm is set automatically during vehicle interfacing.

Option №6. Siren/horn control. Allows setting output #15 for emitting the Alarm signal to the vehicle's original horn.

Option №7. Timer channel (comfort) feature running time. Allows to set the time within which Timer channel (comfort) feature will be active. Time is set in 10 sec intervals, i.e. if the options setting is 3, and then the feature will be active for 30 sec.

Option №8. External sensors operation mode. Allows setting one of two external sensors operation modes (see External sensors connection section).

1 Multiplex mode for connecting multiplex sensors
2 Standard mode for connecting sensors with dedicated warning and alarm outputs

Options №№ 9-11. Programmable outputs. Designed to change the Alarm outputs configuration by assigning each of the outputs one of 25 features from Alarm programmable outputs features table.

Options №№ 12-14. Programmable inputs. Designed to change the Alarm outputs configuration by assigning each of the outputs one of 7 features from Alarm programmable inputs table.

Option №15. Engine launch restriction. If enabled engine cannot be launched without PIN code.

Option №16. Speed control. Changes operation settings for PinToDrive and AntiHIJack.

Option №17. "Brake pedal presses". Changes amount of brake presses required for AntiHiJack to activate. If Speed control is active this option won't affect anything.

Table 7. Alarm programmable outputs

Feature		Description
#	Name	
1	Security	Constant level signal is formed while the Alarm is in Security mode.
2	Arming impulse	0.8 second long impulse is formed when Alarm is entering the Security mode, an impulse is also formed when AntiHiJack feature is triggered.
3	Disarming impulse	0.8 second long impulse is formed when Immobilizer is leaving the Security mode.
4	PIN code entering impulse	0.8 second long impulse is formed when the correct PIN code is entered. The impulse is also formed in Maintenance mode 1 second after the ignition has been turned on even if the PIN code had not been entered.
5	Stock security system panic	Constant level signal is formed while the original vehicle alarm (if the vehicle is equipped with it) is in Alarm condition.
6	Siren panic	30 seconds long constant level signal is formed if one of the following zones is triggered while the vehicle is in Security condition: doors, hood or trunk opening. The function can be applied in vehicles that are not equipped with original alarm system. The signal stops when vehicle is not in Security mode any longer..
7	Horn panic	30 seconds long constant level signal is formed if one of the following zones is triggered: doors, hood or trunk opening. The function can be applied in vehicles that are not equipped with original alarm system. The signal stops when vehicle is not in Security mode any longer. This feature is used for sending an alarm signal to the original vehicle horn.
8	Doors, hood, and trunk	Constant level signal is formed if one of the doors, hood, or trunk is open.
9	Sensors ignoring	Constant level signal is formed when the trunk is open in Security mode if the trunk has been opened with the original remote control. Also the signal is formed for the purposes of Comfort feature. The feature purpose is to deactivate the sensors to prevent false alarms.
10	Original buttons	Constant level signal is formed if the preset vehicle button is pressed.
11	Ignition	Constant level signal is formed when ignition is turned on (including engine starting).
12	ACC	Constant level signal is formed when vehicle ACC are on (1st key position, may match with ignition on certain vehicles). It is turned off only when the ignition key is out of ignition lock. Can be used for correct accessory alarm system or multimedia system power management.
13	Engine on	Constant level signal is formed when the engine is on.
14	Engine rpm	Impulse signal is formed. Its impulse sequence frequency is proportional to the engine crankshaft rotation frequency. 1 impulse per second corresponds with 20 crankshaft rpm. The signal's purpose is to determine the approximate and not precise rpm value.
15	Gearbox state	Constant level signal is formed if transmission handle is set in preprogrammed position (P, R, N, and D). For semi automatic transmission the positions are R, N, D) ; for manual transmission only R position is available.
16	Vehicle is moving	Constant level signal is formed if the vehicle speed has exceeded a certain threshold value (depends on a vehicle and varies in the range from 5 to 10 km/h).
17	Front parking sensors activation	Constant level signal is formed if the engine is on and the transmission is in D) position or R position (for mechanical transmission only R position is available) and the movement speed is less than 15 km/h.
18	Rear parking sensors activation	Constant level signal is formed if the engine is on and the transmission is in R position and the vehicle movementspeed is less than 15 km/h..
19	Movement speed	Impulse signal is formed. Its impulse sequence frequency is proportional to the vehicle speed. 1 impulse per second corresponds with 1 km/h speed. The signal's purpose is to determine the approximate and not precise speed value
20	Brake	Constant level signal is formed when the brake pedal is pressed.
21	Parking brake	Constant level signal is formed when the vehicle is on parking brake.
22	External lights	Constant level signal is formed when the external lights are on..
23	Timer channel (Comfort)	Constant level signal is formed for a set period of time (10 to 60 seconds) upon arming. The time is set in 10-second intervals
24	Starter and diagnostic bus lock	Constant level signal is formed with the bus active prior to PIN code entry. The signal is also formed if AntiHiJack feature has been triggered.
25	Hood lock close impulse	0.8 second long impulse is formed when Alarm is entering the Security mode, impulse is also formed if engine is locked. Impulse will not be formed if hood is open.
26	Gas pedal lock (forced stop)	Required for Safe Lock Mode to stop the vehicle if AntiHiJack feature was triggered.

[1)] — all handle positions to move forward (D, S, M, L etc.).

Table 8. Programmable inputs features

№	Название функции	Описание функции
1	Brake lights state	The function is used only in case if the vehicle's CAN bus does not contain data on brake pedal position. In this case Brake lights state input is to be connected to brake pedal terminal switch output..
2	Hood control	The function is used in case if vehicle's CAN bus does not contain data on hood position. In this case Hood control input has to be connected to hood's terminal switch.
3	Doors control	The function is used in exceptional cases when CAN bus does not contain data on doors position (see Integrator files)
4	Central lock is closed (state)	The function is used in exceptional cases when CAN bus does not contain data on central locking system status (see Integrator files).
5	Central lock is open (state)	The function is used in exceptional cases when CAN bus does not contain data on central locking system status (see Integrator files).
6	Ignition control	The function is used only in cases when getting the correct data from CAN bus is not available. This situation may occur when certain vehicle circuits are blocked. In this case Ignition control input is to be connected to the vehicle wire that has a constant level signal when the ignition is on. Connecting this input does not cancel ignition analysis via CAN bus. Ignition is considered as turned on when data is received by any informational channel (CAN bus or analog input).
7	Trunk alarm	This function is used in case if the alarm is triggered when the trunk is opened via the original remote control and/or keyless access system. In this case Trunk alarm prohibition input is to be connected to trunk opening feed control wire. Input control is carried out only in Security mode. When a command to open the trunk is detected, the alarm ignores external sensors inputs and trunk terminal switch for 5 seconds (until the trink is open). In 5 seconds after the trunk lid has been closed system turns security back on.
8	CAN bus wake up	Function is used in extraordinary cases.

Programming sequence

1 Turn the ignition on.
2 Enter the PIN code and wait for confirmation.
3 Enter Menu 1 by pressing the Programming button 10 times (you need to do this within 10 seconds after PIN code entering). The Alarm will notify of menu accessed by three audible and three light signals.
4 Select menu option by pressing and releasing Programming button for the number of times corresponding with the menu option number. The Alarm will inform on menu number by series of audible and light signals
5 Go to option setting by pressing and holding the brake pedal. The Alarm will inform you of the option setting by series of audible and light signals, changing their duration.
6 Change the option setting by pressing and releasing the Programming button for the number of times necessary for moving from the current setting number to the required setting number in the option (e.g., in order to change function No. 2 (Arming impulse) with function No. 16 (Vehicle is moving) you need to press and release the Programming button 14 times. The Alarm will inform on the new option setting with series of audible and light signals. It is necessary to consider that during navigation in the option the first number goes after the last one. Release the brake pedal; the Alarm will indicate the current setting and then the current menu option number. Now you can proceed with programming the next option and leave the programming mode.
6.1. Function No. 8 Doors, hood, and trunk programming algorithm (applicable only for options No. 10, 11 and 12 of Menu 1).
6.1.1 Set any combination of doors, hood, and trunk (hereinafter reffere just as "doors"), opening of which will cause the Alarm to form a signal on the programmable output.
6.1.2 With the brake pedal pressed go to option number 8 settings. The Alarm will inform on option condition twice with series of 8 audible and light signals, after which it will start emitting irregular audible and light signals. When the irregular signals are activated, release the brake pedal. The Alarm will continue emitting irregular signals. Open the doors that are to be identified on this output, the rest are to be closed (you can open the doors in advance). Press the brake pedal again. The Alarm will inform on option setting change with series of 8 signals and the doors will be assigned to this output. If the brake pedal is not pressed and current option programming is left, the Alarm will save its previous condition. Release the brake pedal and the Alarm will go to option number indication.
6.2. Function #10 Original buttons programming algorithm (applicable only for options #10, #11, and #12 of the Menu 1).
6.2.1 With the brake pedal pressed go to option number 10 settings. The Alarm will inform on option condition twice with series of 10 audible and light signals, after which it will start emitting irregular signals. When the irregular signals are detected, press the required button while holding the brake pedal (for the list of buttons of the given model, please see Integrator files). If the Alarm has perceived the button, it will stop emitting irregular signals and will start indicating the option setting number with series of 10 audible and light signals. Release the brake pedal, the Alarm will indicate menu option number. If the brake pedal is released prior to the button is pressed, the Alarm will save its previous condition and will start indicating the menu option number.
6.3. Function No. 15 Transmission condition programming algorithm (applicable only for options #10, #11, and #12 of Menu 1).
6.3.1 With the brake pedal pressed go to option number 15 settings. The Alarm will inform on option state twice with series of 15 audible and light signals, after which it will start emitting irregular signals. Then change the transmission to the required position: P, N, D* or R (transmission handle can be set in necessary position in advance); for semi automatic transmission the positions are R, N, D*; for manual transmission only R position is available. Release and press the brake pedal again. The Alarm will stop emitting irregular signals and will start indicating the option setting number with series of 15 audible and light signals. Release the brake pedal, the Alarm will indicate menu option number. If the brake pedal is released prior to the button is pressed, the Alarm will save its previous condition.
7 In order to go to next menu option programming press and release the Programming button for the number of times necessary for navigation from the required option (e.g., in order to navigate from option #2 to option #8 in Menu 1 press and release the Programming button 6 times). Important note: when navigating menu options, the first option follows the last one.

Exiting the programming mode. The Alarm will exit programming mode and save all configuration settings in energy independent memory when ignition is turned off or within 60 seconds after last menu action if the brake pedal is released.

Alarm user settings ("Menu 2")

Таблица 9. Settings menu ("Menu 2")

#	Description	Factory settings	Option state			
			On		OFF	
			LED	Sound signals	LED	Sound signals
1	"PINTODrive®" feature	ON	ON	1	OFF	2
2	"AntiHiJack" feature	ON	ON	1	OFF	2
3	Speed control trigger distance	1	Range from 1 to 10			
4	Siren if alarm was triggered	4	Range from 1 to 4			
5	PIN code audio reminder	OFF				
6	PIN code audio confirmation	ON	ON	1	OFF	2
7	Maintanence mode auto deactivation	ON	ON	1	OFF	2
8	Close central lock while driving	OFF	ON	1	OFF	2
9	Central lock deactivation when ignition is turned off	OFF	ON	1	OFF	2
10	Comfort feature control	ON	ON	1	OFF	2
11	Volume of arm/disarm audio confirmation	4	Range from 1 to 4			
12	Disarm confirmation with PIN code	OFF	ON	1	OFF	2

Annotation to the table

Option №1. "PINTODrive®" feature. Allows turning the "PINTODrive®" feature on or off.

Option №2. "AntiHiJack" feature*. Allows turning the AntiHiJack feature on or off.

Option №3. Speed control trigger distance allows to set distance before lock (Speed control is on). The distance is set by 100 meter sections. For example, if the option's setting is 3, then Lock activation Distance is 300 meters.

Option №4. Enable siren if alarm was triggered. Allows to select siren operation mode:
- 1 — Siren is off;
- 2 — Siren is silent on warning;
- 3 — Warning volume is equal to arm/disarm trigger volume, see option # 11;
- 4 — Siren is on (maximum volume).

Option №5. PIN code audio reminder. If you use Disarm confirmation with PIN code feature (#12), you can turn on audio reminder to enter PIN code.

Option №6. PIN code audio confirmation. Allows to toggle audio confirmation of successful PIN code entry.

Option №7. Maintanence mode auto deactivation. Allows to toggle automatic deactivation of maintanence mode.

Option №8. Close central lock while driving. Allows to toggle central lock.

Option №9. Central lock deactivation when ignition is turned off. Allows to turn on or off automatic central lock unlocking upon ignition deactivation.

Option №10. Comfort feature control. Allows to turn on or off automatic windows closing during vehicle locking.

Option №11. Volume of arm\disarm audio confirmation. Allows to choose required volume level:
- 1 — Silent arm/disarm;
- 2 — Minimum volume level;
- 3 — Medium volume level;
- 4 — Maximum volume level;

Option №12. Disarm confirmation with PIN code. При использовании данной функции снятие с охраны происходит только после ввода PIN-codea. Если PIN-code не введен, сработает тревога.

* Only for Prizrak 710\TEC - 710

Programming sequence

1. Turn the ignition on.
2. Enter PIN-code, wait for confirmation.
3. Enter settings menu, to do this press programming button 12 times (start the operation within 10 seconds after PIN-code entry). If you did everything correctly the alarm will make 4 audio and visual signals.
4. Enter menu option by pressing programming button the same number of times corresponding to chosen menu option. The alarm will confirm chosen option with visual and audio signals.
5. To change option press and hold brake pedal. The alarm will confirm chosen option state with visual and audio signals
6. To change option state press programming button amount of times required to change option to chosen one. For example: to change option state from to 2 to 4 button has to be pressed twice.
7. Release the brake pedal. Now you can program different option or leave the programming mode.
8. To program a different menu option press programming button number of times requiered to move from one option to another. For example to move from option #2 ("AntiHiJack" feature) to option #8 (Close central lock while driving) press and programming button 6 times.

It is possible to finish programming and leave settings at any moment by swiching the ignition off. If within 60 seconds no changes were made and brake pedal was not pressed, the alarm will leave settings menu. This will be confirmed by a trill

PIN code changing

1 Turn the ignition.
2 Enter PIN-code, wait for confirmation.
3 Press programming button 14 раз. Wait for confirmation with 1 audio and flash signals.
4 Enter new PIN-code. You can use any vehicle buttons that are confirmed with a sound upon press.
5 Wait for confirmation with 1 audio and flash signals.
6 Repeat new PIN-code.
7 Wait for confirmation:
◇ 2 flashes and audio signal, then trill: PIN-code was changed, the alarm left PIN-code changing mode
◇ Sound alert means that the PIN code has not been changed. A mistake has been made when entering the new PIN code confirmation and it is necessary to repeat the PIN code changing procedure starting from p. 4
8 CAN bus activation (any procedure that will cause CAN bus to awake).

You can exit the PIN code changing mode anytime by turning the ignition off.

It is impossible to set PIN-code "1" – one press on one button.

Change programming button

1 Reset to factory default
2 Interface the Alarm with the vehicle.
3 If analog steering wheel buttons are used please define them (see above for the description of this procedure)
4 In order to assign any of the buttons perceived by the Alarm as the Programming button, press the selected button and hold it for longer than 5 seconds until a long audible signal will be heard.

Programming button can be assigned within 15 minutes after interfacing with the vehicle

Examples of programming

Example 1

Objective: You would like to change the factory settings of the Alarm: set output No. 2 Engine lock to control the normally open relay.

Procedure:

1 Turn the ignition on.
2 Enter the PIN code and wait for confirmation.
3 Enter Menu 1 by pressing the Programming button 10 times. If you have performed all actions correctly, the Alarm will notify you of it with 3 audible and light signals.
4 According to Hardware features configuration (Menu 1) option No. 2 Engine lock has to be selected. To do so, press and release the Programming button 2 times. The Alarm will inform you on chosen menu option number by series of 2 audible and light signals.
5 Enter option No. 2 by pressing and holding the brake pedal. The Alarm will inform you on set option by repeated double audible and light signals because current (factory set) option setting is normally closed relay control.
6 Select the normally open relay control by pressing and releasing the Programming button 3 times. The Alarm will inform you on the option state with series of audible signal and flash
7 Exit programming mode by turning the ignition off

Example 2

Objective: You would like to change the factory settings of the Alarm: to increase the AntiHiJack activation distance from 100 to 300 meters.

Procedure:

1 Turn the ignition on.
2 Enter the PIN code and wait for confirmation.
3 Enter Menu 2 by pressing the Programming button 12 times. If you have performed all actions correctly, the Alarm will notify you of it with 4 audible and light signals.
4 Select the programming option for setting the AntiHiJack activation distance. According to Alarm settings menu (Menu 2) table, option #3 has to be selected. To do so, press and release the Programming button 3 times. The Alarm will inform you on chosen menu option by series of 3 audible and light signals.
5 Enter option #3 by pressing and holding the brake pedal.The Alarm will inform you on the option setting by repeated single audible and light signals because the current (factory set) option setting is 1 (which stands for 100 meters distance).
6 Change option #3 state by pressing and releasing the Programming button twice, therefore increasing the option setting by 2 (1+2=3). The Alarm will inform you on the option setting with series of 3 audible and light signals (300 meters).
7 Exit the setting mode by turning the ignition off

Reset to factory default settings

The Alarm has a procedure to reset to factory default state, where all vehicle settings are removed from Alarm's permanent memory, and PIN code and all other options are returned to factory original values..

If alarm is installed in a car:

1. Remove power supply from the Alarm
2. Press and hold the integrated button (see Fig. 2).
3. Connect the power supply while holding the button. The Alarm will emit discrete audible signal.
4. Release the button and wait until the discrete signal stops
5. Turn the ignition on and enter the current PIN code
6. Wait for descrete signal to confirm reset to factory settings
7. Remove the power supply and disconnect the Alarm from CAN bus.

If alarm is not installed in the vehice:

1. Press and hold the integrated button (see Fig. 2)
2. Connect the power supply while holding the button. The Alarm will emit discrete audible signal.
3. Release the button and wait until the discrete signal stops.
4. If vehicle was not driver for more than 10 kilometer and factory PIN-code was not changed, enter PIN-code "2" with built in button. Otherwise enter PUK-code with built in button. It will confirmed by a trill.
5. Wait for descrete signal to confirm reset to factory settings
6. Remove the power supply

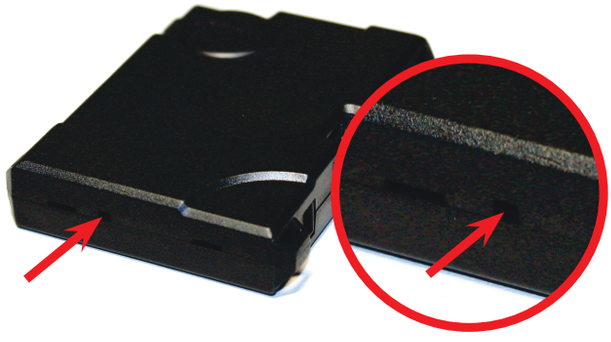
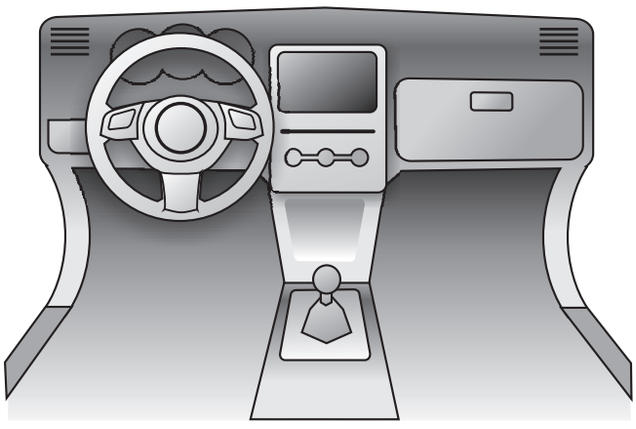
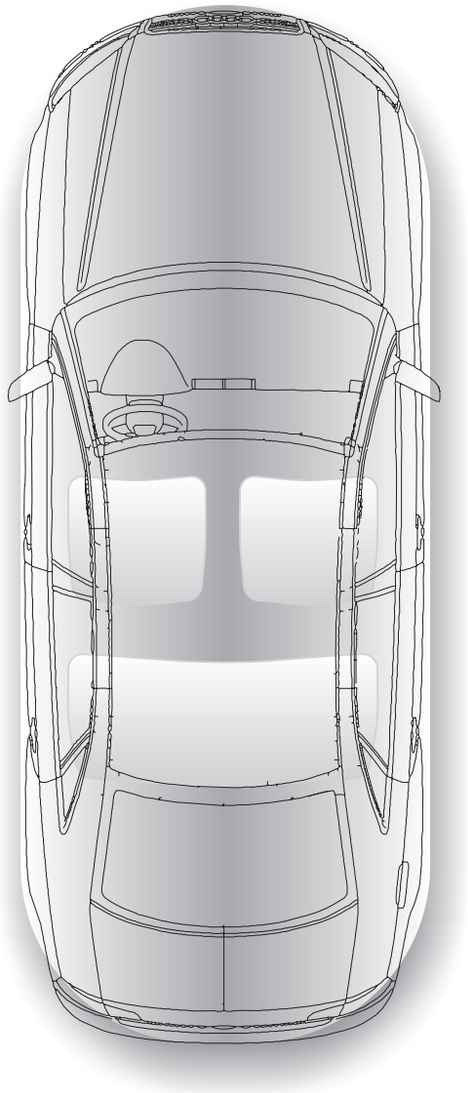


Figure 2. Built in button

Unit placement scheme





Show alarm elements on this scheme. I'll help you find them later

Kepp this scheme in a safe place.

Package contents

Наименование	Q-ty
Central unit	1 pcs.
Main harness	1 pcs.
LED with harness	1 pcs.
Shock sensor	1 pcs.
Harness for shock sensor	1 pcs.
Siren	1 pcs.
Compact Disk	1 pcs.
Reminder-card	1 pcs.
User manual	1 pcs.
Warranty leaflet	1 pcs.
Wiring manual	1 pcs.
Packaging	1 pcs.

Technical data and operation conditions

Parameter	Value
Power supply voltage, V	9 … 15
Maximum current draw in standby mode, mA	1,5
Maximum current draw in operation mode, A	1,5
Operating temperature °C	– 40 … + 85
Storage temperature °C	– 40 … + 85
Maximum relative air humidity, %	95

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