



1. OPERATING PRINCIPAL OF THE SYSTEM

A vehicle equipped with the Skybrake DD2+ anti-theft device can only be used if the Personal Transceiver (PT) is within range – either inside the vehicle or not further than two meters from it. If the engine is switched on without the PT, the engine operates in accordance with the process indicated in Table No.1.

Engine operation	Anti-theft function	Motion detector
1) 50 seconds (programmable from 35 to 65 sec)	Switched off	Switched off
2) Until the car begins moving	Switched off	Switched on
3) 50 seconds (programmable from 35 to 65 sec)	Switched on	Switched off
4) Until the car begins moving	Switched on	Switched on

Afterwards the engine is immediately immobilized, and this is confirmed by sound signals and flashing of the status LED (if this is installed).

Depends of Skybrake DD2+ model and configuration, after switching on the ignition the driver is informed of the presence of the PT with sound signals and flashing of the status LED. These signals can be used to determine which of the Skybrake DD2+ functions are switched on:

Sound signal and light diode confirmation	Anti-theft function	Motion detector
1) one time short (0.1 sec),	Switched off	Switched off
2) one time long (0.3 sec)	Switched off	Switched on
3) silence	Switched on	Switched off
4) two times	Switched on	Switched on

To be able to drive the vehicle, the PT must be inside the vehicle.

The Skybrake DD2+ system lets you start the engine without the presence of the PT (only in cases where the motion detector is switched on). In this case the vehicle's engine will be immobilized as soon as movement begins. If the ignition is turned off and then turned on, it is possible to start the engine again. The engine will be immobilized as soon as movement begins. If the engine is switched on/off without the PT more than 8 times, the engine becomes immobilized. The engine will remain immobilized until the PT is within range or the personal emergency disabling code (PIN) is used.

Skybrake DD2+ warns the driver of the non-presence of the PT in the receiving range in the following order:

1. Activation: The time during which the vehicle ignition is turned on and the system is waiting for a signal from the PT, there are no sound or light indications, and the vehicle's engine is not immobilized. Activation time is 18 seconds.

2. Warning: The warning signals consists of two parts:

a) Initial warning signals. The time during which the system warns the vehicle's driver about the non-presence of the PT within receiving range. Long sound signals are emitted; the vehicle engine is not immobilized. The length of the initial period warning signals is 1 minute.

b) Final warning signals. The time during which the system warns the vehicle's driver about the non-presence of the PT within receiving range. Brief and regular light and sound signals

are emitted; the vehicle engine is not immobilized. The length of the final warning signals is variable (the factory setting is 32 seconds).

3. Panic: The time during which the system warns the vehicle's driver about the non-presence of the PT within receiving range. Uninterrupted series (5 signals) of sound and light signals are emitted, the vehicle engine is immobilized.

If panic mode is activated while the vehicle is in motion, the vehicle's engine will only be immobilized when the vehicle's speed will be 0 km/h, remains the same at least 10 seconds and movement begins again.

If while you are driving warning signals start emitting inside the vehicle, immediately stop by the side of the road in line with road safety rules and switch off the ignition. Make sure that the PT is within range. Turn on the ignition and wait for the signals confirming that the PT has been located. If warning signals indicate that the PT is out of range, immediately contact the system installer or manufacturer.

If the vehicle's engine has been blocked by the Skybrake DD2+ immobilizer, each time the ignition is switched on the driver will be warned about the blocked engine with series of light and sound signals (5 signals).

2. WIRE MARKING, CONNECTION TO THE VEHICLE'S ELECTRICAL SYSTEM

It is recommended that the Skybrake DD2+ control unit should be placed inside the vehicle or in the engine compartment in a place that is difficult to access, if possible away from metal and heat-impacted surfaces, and also avoiding dampness and seepage of water into the control unit.

The system's control unit must be fixed to the selected surface with double-sided adhesive tape or plastic clips, with the wires facing downward.

Make sure that the wires of the system's control unit are not near moving and heat-impacted surfaces of the vehicle.

„-“ – chassis.

To be firmly screwed on to the vehicle's body (31). The “chassis” wire must be attached first.

„+“ – ignition.

Must be attached to the wire using a 3A fuse, in which, with the ignition switched on and the engine in “START” mode, +12V (15) voltage appears and does not disappear. This is the system's power wire.

“7” – outlet to the buzzer's black wire.

The main output to the buzzer's black wire and LED, for additional visual control of the system's operation. The transistor's open collector output with maximum permitted load capacity of 500mA. It is recommended that the buzzer is placed inside the vehicle under a panel in a place where its sound is not muffled.

It is recommended that the LED is placed on the vehicle's front panel in a visible area.

Attention: The status LED is not included in the manufacture's standard equipment.

Attention: Do not mix up the polarity of the buzzer and the LED wires as the sound and visual indication will disappear in this case.

“1” – engine cut-off circuit.

Internal relay 20A. The relay contacts are linked (NC) when the system is unblocked and with the ignition turned on. The engine cut-off circuit is intended for halting power supply to the engine's electrical circuits.

Make sure that the ends of the wires have not been mixed up when installing the system as this could seriously damage the vehicle's electrical system.

Recommendation: Try to use untraditional engine immobilization circuits, after seeking the advice of a competent auto dealer whether a specific short circuit will not harm the vehicle's electrical system.

In case of non-observance of the instructions, the technician installing the system will forfeit the manufacturer's warranty for this product.

The manufacturer reserves the right to change the construction of the immobilizer if this does not contravene national laws and complies with Russian Federation and EU technical standards. Any changes must be noted in the usage and installation instructions.

3. THE PERSONAL TRANSCIVER (PT)

The Skybrake DD2+ set includes two PTs. The CR2430 batteries included in the set are not placed in the PT battery contacts.

The personal transceiver consists of (see image Nr.2):

- The upper and lower transceiver casing;
- Element plate;
- 3 V CR2430 battery.



Note the battery's polarity and the markings on element plate!

In order not to damage the element plate, the PT must be placed in the casing without force and only in one specified position.

After setting up the system, it is necessary to check the operation of the PT:

- Place the battery (1) in the contact holder (2) in line with the indicated polarity;
- A few seconds after inserting the battery, observe the light diode located on the element plate. The light diode should flash 4 times, indicating that the battery is functioning normally. If the light diode does not flash, replace the battery with the new one;
- Turn on the ignition and wait for the light diode to flash again. The flashing of the light diode indicates that normal radio contact has been established between the system and the PT;
- Place the PT in the casing (3).

Attention: After turning on the ignition, the system will warn the driver of the need to change the battery with three double sound signals emitting inside the vehicle.

4. MOTION DETECTOR

The motion detector is a device built into the system which keeps track of changes in the vehicle's position in relation to the ground and existing or commenced acceleration, i.e. it keeps track of whether the vehicle is moving (driving) or stationary.

Taking into account the fact that vehicles of differing masses and dimensions create differing vibrations and acceleration while driving, the sensitivity of the motion detector can be changed (see Changing settings/programming modes)

- It is only possible to ascertain the minimum or maximum level by performing a check (commencing movement), or using special software.* After setting up the system it is necessary to test the operation of the motion detector.

To check whether the sensitivity level of the motion detector is not too low:

- Get in the vehicle;
- Remove the battery from the PT;
- Turn on the engine and wait 5 seconds;
- Begin driving slowly and evenly; if the motion detector is set correctly, the vehicle's engine will immediately cut out and be immobilized;
- If movement starts and the vehicle's engine continues running, you must increase the motion detector's sensitivity (see "Changing settings/programming modes").

After inspecting the motion detector, insert the battery in the PT's contact holder in line with polarity and place it in the casing.

5. ANTI-THEFT FUNCTION

The anti-theft function is activated while the driving the PT is taken out of the system's receiving range. For the first 50 seconds the Skybrake DD2+ control unit continues to wait for a signal from the PT (activation). After that, warning signals will sound to warn the driver (warning algorithm) If the motion detector (if equipped) is turned on, the engine will be blocked when vehicle's speed will be 0 km/h (and remains the same for at least 10 seconds) and as soon as motion starts again. If the motion detector is turned off, the engine will be blocked as soon as panic starts. Driving will not be possible until the PT is within range of the system or the personal emergency disabling code (PIN) is used.

Skybrake DD2+ anti-theft function is prohibited in the Russian Federation and the EU.

Attention: Regarding the switching on and switching off of the anti-theft function, see the section "Changing settings/programming modes".

6. ADDITIONAL ENGINE CUT-OFF MODULES

It is possible to install a maximum of 3 additional radio controlled engine cut-off modules together with the Skybrake DD2+ central module.

The additional cut-off module's technical parameters, wire marking, installation requirements and connection diagram are the same as for the central module, except for:

- There is no sticker with the serial number on the plastic casing;
- There is no wire Nr. 7 – the output to the buzzer's black wire.

Cut-off modules suitable for the respective serial number must be produced for each Skybrake DD2+ central module, so that these modules cannot be attached to other central

control modules. The central control module automatically recognizes additional cut-off modules immediately after they are installed.

If the Skybrake DD2+ central unit is installed together with an additional cut-off module, removal of the additional module will cause the system to block, because the central unit will not receive information from the cut-off module.

Attention: When installing the Skybrake DD2+ central module or cut-off modules, do not disrupt/cut-off the modules' power supply chains.

7. EMERGENCY SYSTEM DISABLING

To use the vehicle without a PT you will require a special PIN code consisting of four digits (for example, 3241). The system manufacturer will give you a card with the PIN code.

- Turn on the ignition;
- Wait until the engine is immobilized and a series of warning signals emits inside the vehicle;
- Turn off the ignition and prepare to enter the PIN code;
- Turn on the ignition, when the warning signals series emit start counting them, when the number of sound signal series aligns with the first digit of the PIN code (e.g. 3), turn off the ignition (the first digit of the PIN code has been entered);
- Turn on the ignition and continue counting the sound signal series until their number aligns with the second digit of the PIN code – (e.g. 2), then turn off the ignition;
- Turn on the ignition and repeat the above steps with the third (4) and fourth (1) digits of the PIN code;
- When turning on the ignition after entering the last PIN code digit, you will hear a sound signal – the Skybrake DD2+ system is disabled;
- The next time you turn off and turn on the ignition, the vehicle engine will be blocked and you will have to repeat the PIN code entering procedure;
- If you make a mistake while entering the PIN code, with the ignition turned on wait for a series of 12 sound signals, turn off/turn on the ignition and enter the PIN code again;
- Use of the PT automatically renews the normal operating mode of Skybrake DD2+.
- 4 sound signals – the moving into car's salon has been detected

8. CHANGING SETTINGS/PROGRAMMING MODES

ATTENTION: The certified installer has special equipment and software to perform computer-assisted programming.

The system intaller can:

1. Turn on/turn off the motion detector
2. Change the sensitivity of motion detector
3. Turn on/turn off the anti-theft function
4. Change the length of warning signals
5. Add new PT to the system
6. Enable/disable existing PT
7. Save/read out information from PT (vehicle registration number, VIN number)

Description of technical parameters for Skybrake DD2+

Nr.	Parameter name	Parameter value
1.	Operating frequency	2400 – 2480 GHz
2.	Transceiver's emitted power	≤ 1 mW
3.	Modulation form	GFSK
4.	Number of channels	125
5.	Data exchange speed	1Mbit/s
6.	Operating voltage	6-16 V
7.	Power consumption (unblocked condition)	0.015A
8.	Power consumption (immobilized condition)	0.115A
9.	Maximum power consumption in immobilization circuit	20A
10.	Maximum load at buzzer/diode exit	0.5A
11.	System fuse	3A
12.	Operating temperature of immobilizer	No -40°C to +85°C
13.	Operating temperature of Personal Transceiver (PT)	No -40°C to +55°C

THE SKYBRAKE DD2+ SET

Skybrake DD2+ module	1
Personal Transceiver	2
CR-2430 battery	2
Buzzer	1
Emergency disabling code (PIN code)	1