

## Tools, devices, materials

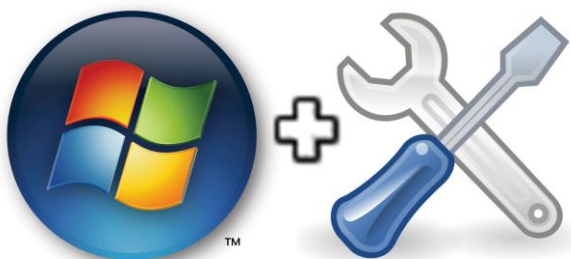
To update the firmware you will need:

1. GALILEOSKY satellite monitoring terminal (hereinafter – terminal) of one of modifications. For detailed instructions on terminal connecting and setting click the link: <http://7gis.ru/en/podderzhka/dokumentacziya.html>



Picture 1. GALILEOSKY terminal

2. Windows-based computer with the installed program of configuration of GALILEOSKY terminals – "Configurator". Its version should be not less than 4.1.0. You can download it here <http://7gis.ru/en/podderzhka/programmyi.html>



Picture 2.

3. "Mini-USB" cable



Picture 3. Mini-USB cable

## General information

Firmware updating of GALILEOSKY satellite monitoring terminal (hereinafter – terminal) may be required when you want to implement new features not available in the current version of the firmware or when it is necessary to correct errors identified in the current firmware.

There are two ways of firmware updating:

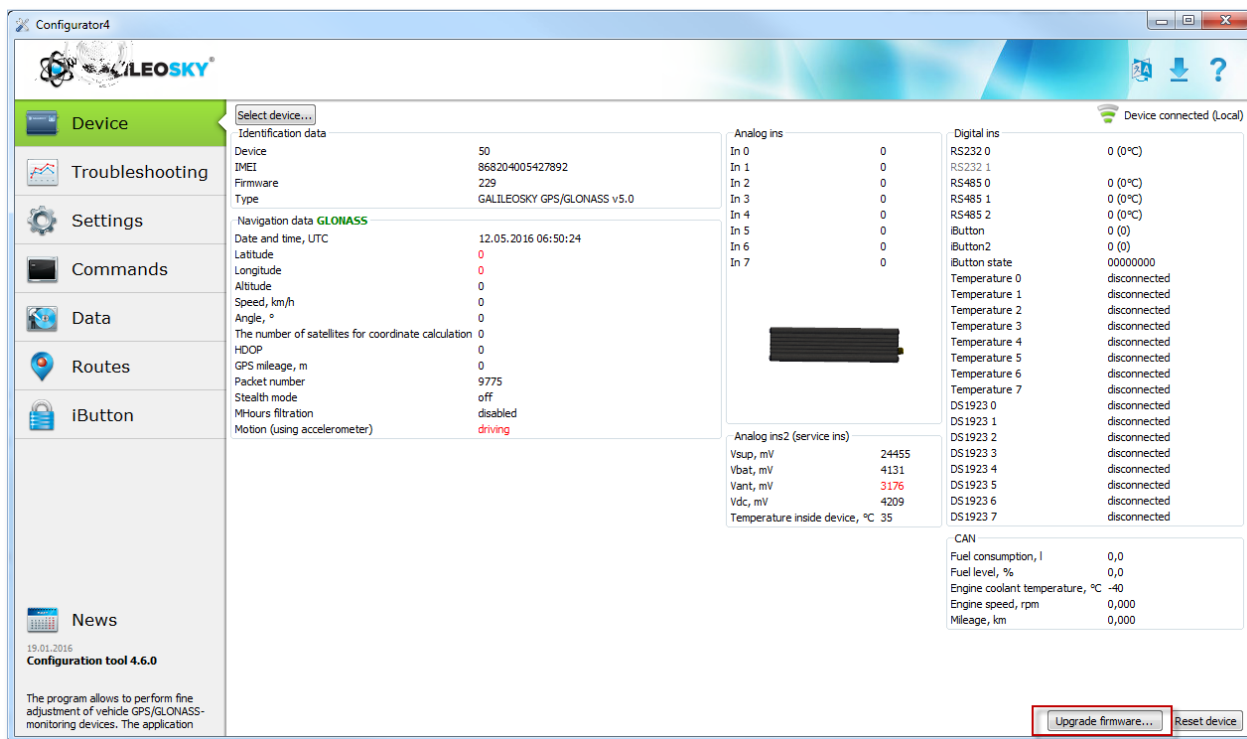
1. Local firmware updating via USB connection to the computer;
2. Remote firmware updating via GPRS connection.

## Local firmware updating via USB connection

**ATTENTION!!!** Make sure the version of your Configurator is not less than 4.1.0. You can't upgrade the terminal with user's algorithms support using version 3 of Configurator.

Local firmware updating via USB connection is carried out in the following order:

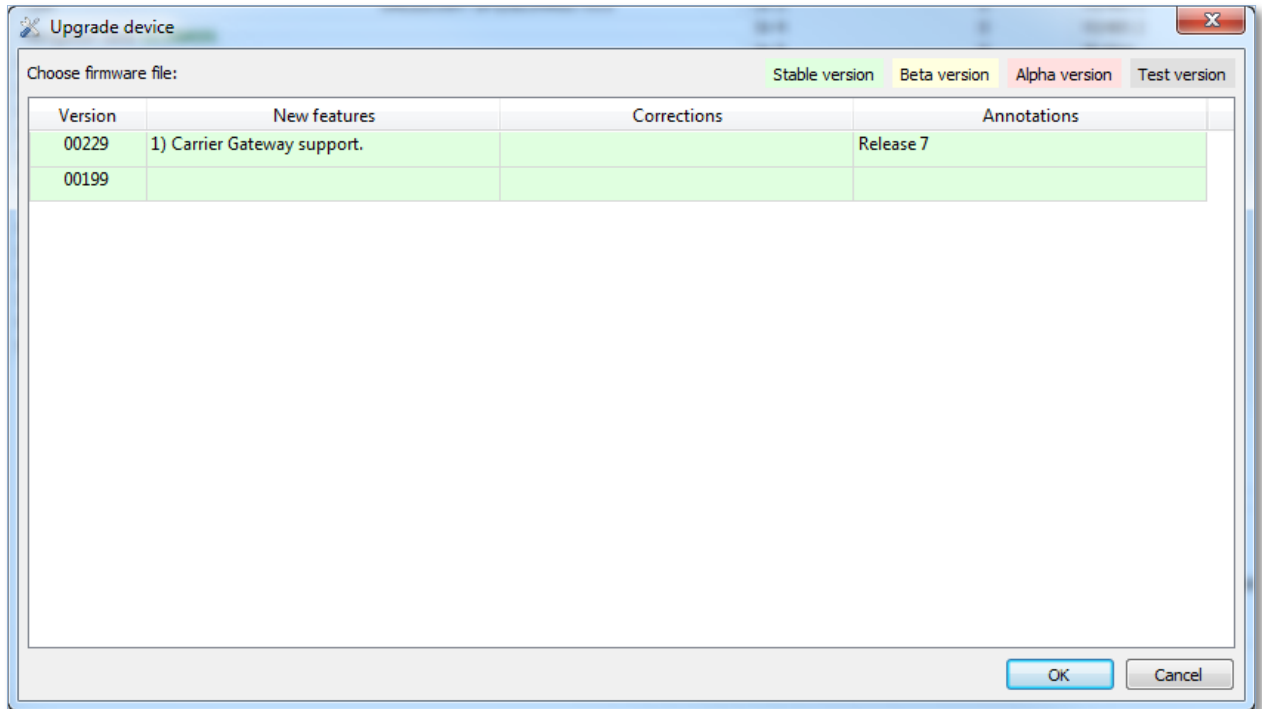
1. Run Configurator, check its version, if it is less than 4.1.0, download the current one by clicking <http://7gis.ru/en/podderzhka/programmyi.html>
2. Go to tab "Device" and click "Upgrade firmware" button (Pic.4):



Picture 4. Firmware upgrading

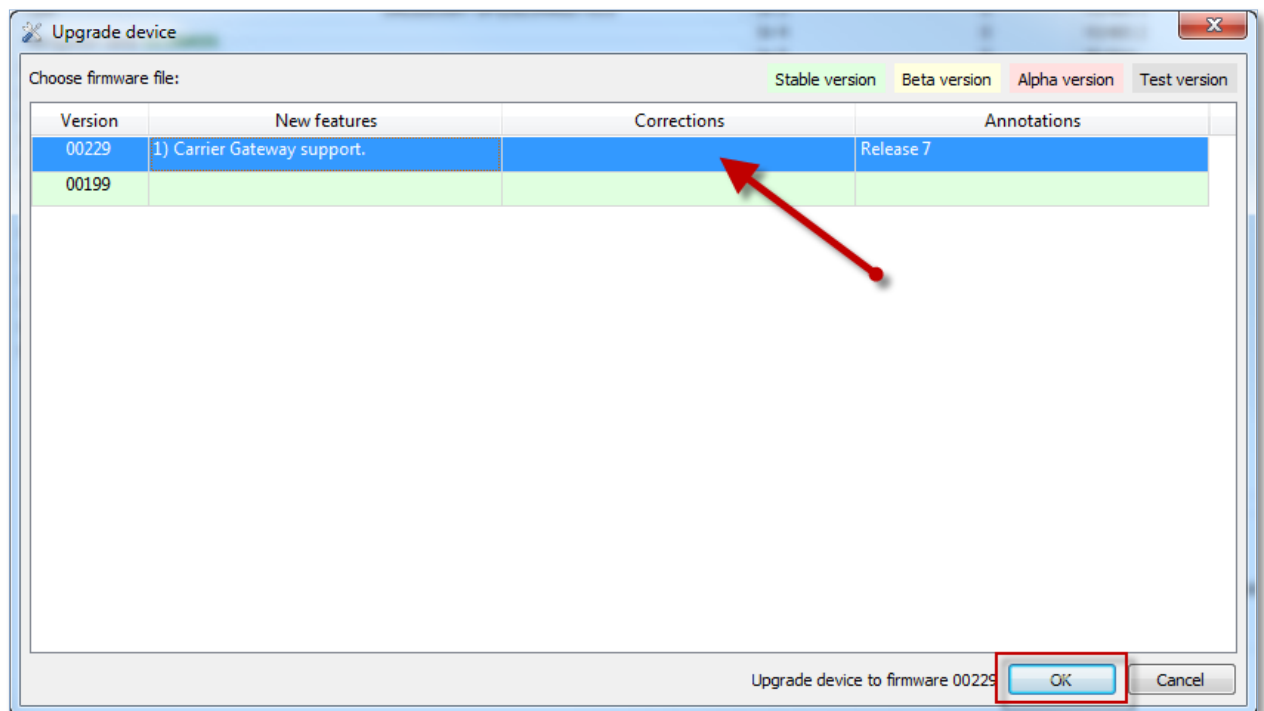
You will see the list with available versions of firmware (Pic.5):

## User's manual. Special functions. Terminal's firmware updating.



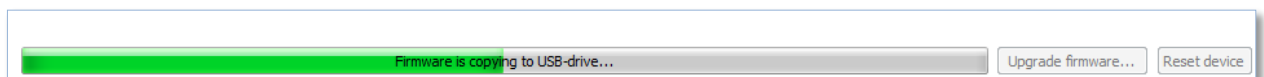
Picture 5. Selection of firmware version

3. Select a necessary version and click OK button (Pic.6):

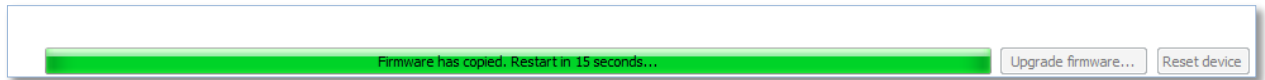


Picture 6. Selection of firmware version

4. Wait for firmware downloading. When it is completed, the terminal will reset (Pic.7):



## User's manual. Special functions. Terminal's firmware updating.



Picture 7. Firmware progress bar

**ATTENTION!!!** At the moment of firmware updating, the terminal is in bootloading mode, terminals with old version of bootloader have all indicators (blue, green, yellow, red) activated until firmware is upgraded and the terminal is reset.

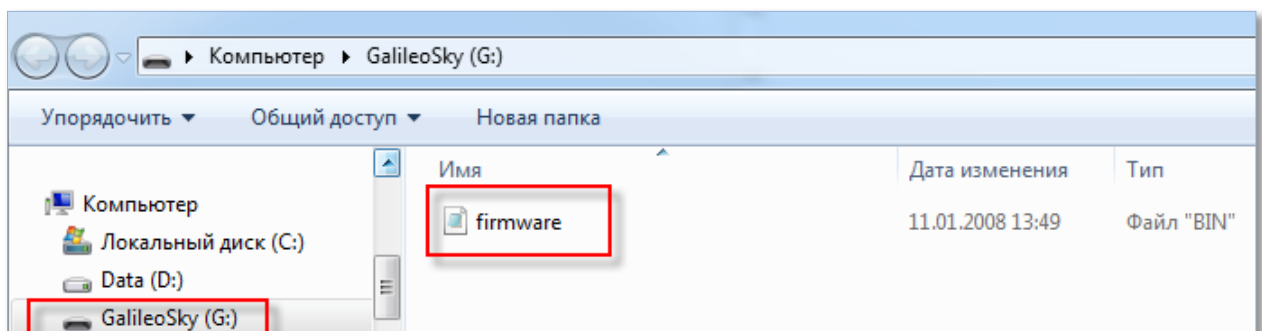
Terminals with new version of bootloader and user's algorithm support (they were released after March 27, 2015 and have (2) before IMEI) have all indicators operating in modes specified in Table 1, appendix 1 of the current manual.

5. After updating the terminal will automatically restore all settings, which the terminal had before new firmware loading. Make sure that the firmware was updated and configuration was saved (Pic. 8).

Identification data	
Device	50
IMEI	868204005427892
Firmware	229.7
Type	GALILEOSKY GPS/GLONASS v5.0
Navigation data <b>GLONASS</b>	
Date and time, UTC	13.05.2016 04:48:54
Latitude	0
Longitude	0
Altitude	0
Speed, km/h	0
Angle, °	0
The number of satellites for coordinate calculation	0
HDOP	0
GPS mileage, m	0
Packet number	701
Stealth mode	off
MHours filtration	disabled
Motion (using accelerometer)	stop

Picture 8. Current version of firmware

6. If the previous firmware updating completed incorrectly and the terminal is detected as removable disc, when you connect the terminal to a computer (Pic.9), it means, it is in bootloading mode.



Picture 9. Detection of the terminal in bootloading mode

## User's manual. Special functions. Terminal's firmware updating.

In order to restore operation of the terminal, carry out the following actions:

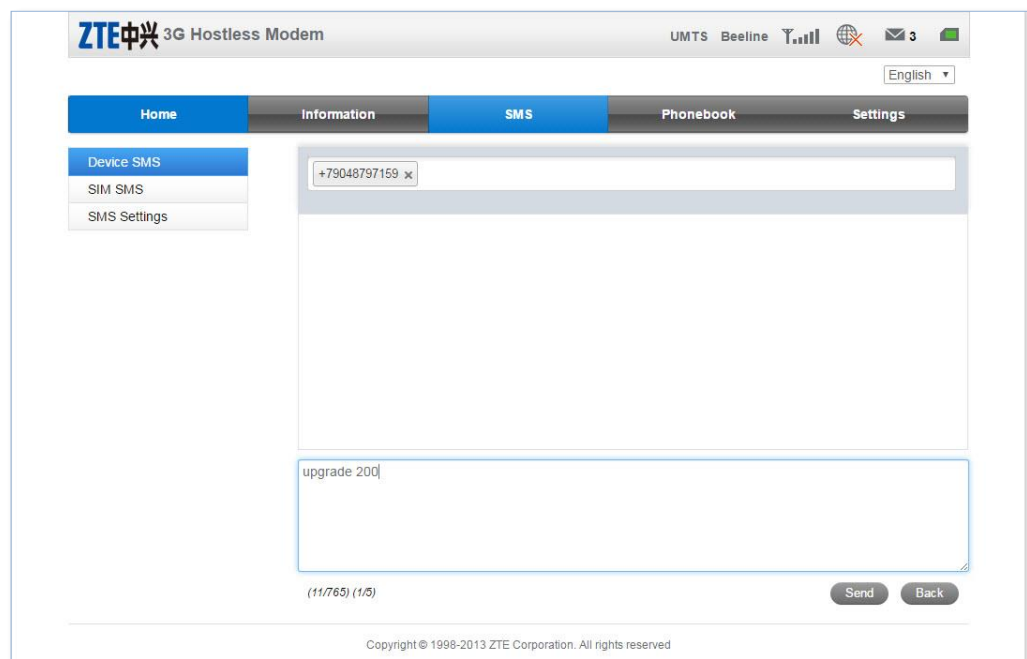
- Run Configurator (not less than 4.1.0), go to tab "Device";
- When the terminal is detected by Configurator, you will see the list with firmware versions (Pic.5);
- Select a necessary firmware file (Pic.6);
- Wait till firmware is downloaded and the terminal is reset (Pic.7) and check correctness of firmware updating.

### Remote firmware updating via GPRS connection

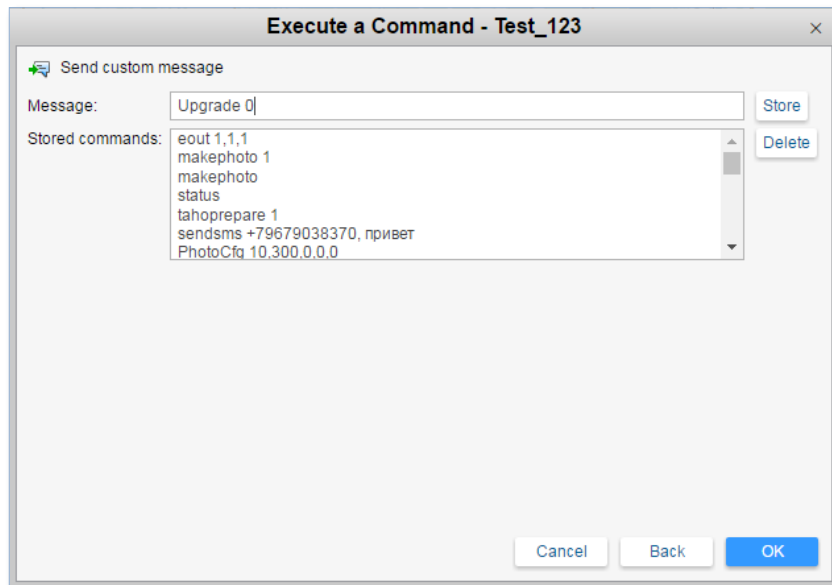
Remote firmware updating via GPRS connection is used, when it is inappropriate or not possible to upgrade firmware locally via USB connection to PC. Updating is carried out in the following order.

1. Send *Upgrade 0* command or *Upgrade N* command to the terminal, where N – number of the firmware, use one of the ways:
  - SMS command (Pic. 10);
  - A command sent from the monitoring software (Pic. 11).

**ATTENTION!** In case the command contains an incorrect firmware version, the terminal will download the latest stable compatible firmware version.

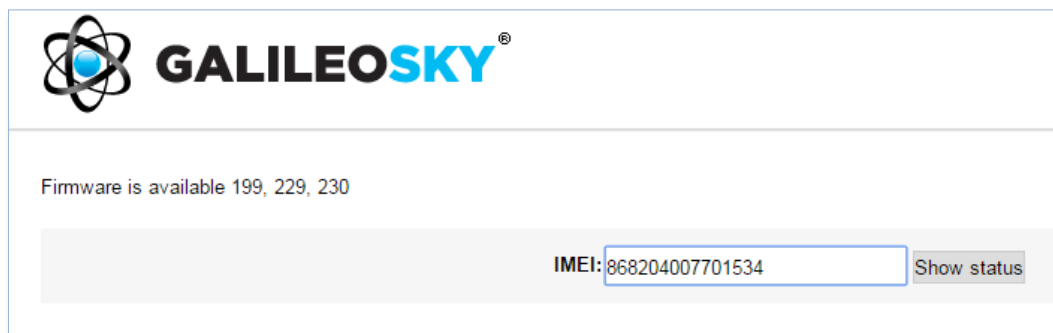


Picture 10. Sending an SMS command



Picture 11. Sending a command from the monitoring software

2. The firmware updating process depends on the state of GSM network and can last up to 30 minutes. Use “Status of the remote firmware” tools <http://f.7gis.ru:8022/>, which will help you to learn the status of the terminal (Pic. 12).



Picture 12. Status of firmware updating

3. After updating, the terminal will automatically restore all settings, which the terminal had before new firmware loading. Verify the firmware update by sending *Status* command. The response will contain the information about the firmware version.

*Command: status*

*Response: Dev52432 **Soft=203** Pack=46 TmDt=17:51:56 19.12.13 Per=120 Nav=0  
Lat=57.986607 Lon=56.208122 Spd=0.0 HDOP=0.6 SatCnt=16 A=4.80*

**GALILEOSKY terminal's firmware updating is completed; the terminal is ready for operation.**

Table 1. Operation of LED indicators

Mode	Action	Involved indicators	Number of indicator blinks	Parameters, ms		
				Impulse length	Length of pause between two impulses	Length of pause between pulse train
Remote updating	Bootloader start	Yellow	6	200	200	700
	Switching to SIM1	Blue, green	2	150	150	150
	Switching to SIM2 (SIM-chip)	Blue, green	3	150	150	150
	Switching to SIM0	Blue, green	1	150	150	150
	Activating GSM module	Yellow	5	200	200	700
	Registration in GSM network	Yellow	4	200	200	700
	Connecting to the server	Yellow	3	200	200	700
	Entering updating process	Yellow	3	200	200	700
	A part of data from the server is received	Yellow	1	200	200	700
	A part of data from the server is received	Green	1	50	50	0
		Blue	1	0	500	0
		Blue	1	50	50	0
		Green	1	0	500	0
	No response of the server to request	Yellow	2	200	200	700
Blue, green		2	100	100	0	
Local updating (USB)	Start of updating	Yellow	2	200	200	700
	A part of data is recorded	Yellow	1	200	200	700