



DOT Integral 4G

User Manual

Document version 1.0

Software version 0.1 or later

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GENERAL INFORMATION

The DOT INTEGRAL 4G navigation controller (hereinafter referred to as the “tracker”) is a compact and functional device designed for remote monitoring of moving objects and collecting data from equipment installed on them.

Data transmission to the server is carried out via a cellular network of any standard - 2G, 3G, 4G. INTEGRAL 4G can transmit data simultaneously to 2 servers. Supported data transfer protocols to the server:

- Arnavi(Internal) – proprietary open protocol available for integration (description available on request).
- EGTS

Functionality and distinctive features of INTEGRAL 4G:

- Built-in cellular network and navigation antennas.
- Separate high-precision GPS/GLONASS receiver.
- Modem supporting 2G, 3G, 4G networks.
- 1 nano-SIM card.
- Digital interface RS-485 (Connecting FLS and other sensors).
- Digital CAN interface (Connecting tachographs, cars).
- Digital interface RS-232.
- 1-Wire (Connecting temperature sensors and Dallas identification keys).
- 1 analog input (voltage measurement up to 33 V, ignition connection, discrete mode).
- 2 discrete inputs (Discrete, pulse, frequency operating modes).
- 2 discrete outputs (Control of external equipment or relays).
- Battery protection against overcharging and deep discharge, temperature monitoring and selection of charging modes.
- Input power protection up to 500V.
- Physical button on the device for quickly updating settings and software updates.
- 5V 500mA output for powering external sensors or camera.
- Driving behavior monitoring and power-saving mode management based on data from the built-in motion sensor.

For questions or further information, contact support@edvado.com.

1. Technical specifications

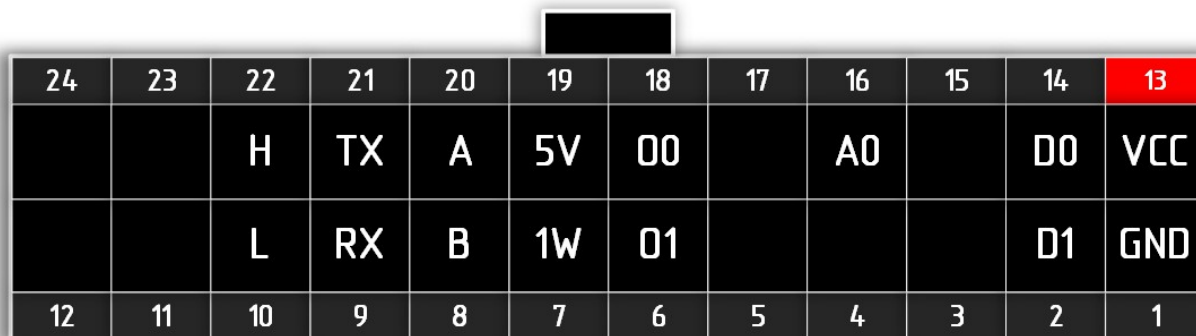
The main technical characteristics of the tracker are presented in Table 1.

Table 1

Parameter	Value	Note
Device dimensions, mm	70 x 69 x 22	Excluding antennas and mounting hardware
Weight, g	200	Without wires
Supply voltage, V	8 — 50	Excluding transient spikes
Power protection, V	up to 500	
Reverse polarity protection	Yes	
Operating temperature range, °C	-40 ... +80	Excluding battery
Analog input, pcs.	1	Measuring range 0-33 V, 12 bit resolution
Discrete input, pcs.	2*	Logic "1" level: less than 1 V at the input.
Digital outputs, qty.	2*	Open collector, Switching current up to 540 mA
Output for powering sensors	Yes	5V, 500mA
Motion/tilt sensor	+	Built-in
USB interface	Yes	Diagnostics, updates
RS485 interface	Yes*	When using RS-485, RS-232 interface is not available
RS232 interface	Yes*	When using RS-232, the RS-485 interface is not available
CAN interface	Yes	
1-WIRE interface	Yes	Temperature sensors, iButton keys
Non-volatile memory, MB	32	400 000 events
Cellular network module	2G, 3G, 4G	FDD-LTE: B1, B3, B7, B8, B20 UMTS/HSDPA/HSPA+: B1, B8 GSM/GPRS/EDGE: 900/1800MHz
Navigation module	Yes	Glomass / GPS
GSM antenna	Yes	Internal
Navigation antenna	Yes	Internal
Number of SIM card slots	1*	Without using a SIM chip
Number of SIM chip slots	1*	Without using a SIM card
Backup battery, mA	200-1500	Li-Pol
Built-in battery protection	Yes	Overcharge and deep-discharge protection; battery temperature monitoring

2. Main connector pinout and device appearance

Figure 1 and Table 2 provide information on the pinout of the main connector. The appearance of the device is shown in Figures 2-3.



24	23	22	21	20	19	18	17	16	15	14	13
		H	TX	A	5V	O0		A0		D0	VCC
		L	RX	B	1W	O1				D1	GND
12	11	10	9	8	7	6	5	4	3	2	1

Figure 1

Table 2

No	Designation	Description
1	GND	Power supply negative
2	D1	Digital input 1
3	-	No internal connection
4	-	No internal connection
5	-	No internal connection
6	O1	Digital output 1
7	1W	1-Wire digital interface output
8	B	Input B of digital interface RS-485
9	RX	Input (RX) of the RS-232 digital interface
10	L	Input L of digital CAN interface
11	-	No internal connection
12	-	No internal connection
13	VCC	External device power input (12-24V)
14	D0	Digital input 0
15	-	No internal connection
16	A0	Analog input
17	-	No internal connection
18	O0	Digital output 0
19	5V	Power output for external sensors or camera
20	A	Input A of the RS-485 digital interface
21	TX	Output (TX) of the RS-232 digital interface
22	H	CAN digital interface input H
23	-	No internal connection
24	-	No internal connection

3. Connection recommendations

Recommended sequence of actions when connecting a device:

1. Install SIM card
2. Connect the internal battery of the device
3. Close the case
4. Connect power to the device (red and black wires of the main harness)

Warning: connect the permanent positive supply wire last, through a 2 A fuse installed as close as possible to the connection point on the vehicle electrical system.

The remaining wires of the harness are connected according to the required functionality.

For the best signal reception from satellites, the tracker should be placed so that the logo on the body faces up. Positioning the device at any other angle is also acceptable. When installing, the tracker body on the logo side must not be obscured by metal objects or coatings.

If you plan to use the driving style control function, it is recommended to orient the tracker so that the connection side of the main connector is directed in the direction of travel of the car.

WARNING! Do not place the tracker near very hot vehicle components. Ambient temperatures above +80°C may affect stable operation of the device.

4. Operation indication

PWR CRG

Combined power indicator.

- Green – external power connected.
- Green and red simultaneously (appearing yellow) – external power connected and internal battery charging.

GSM | NAV

GSM/GPS modem status indicator. The indication is a series of short and long LED flashes.

Long flashes – GSM modem operating mode:

- No long flashes – GSM modem off.
- 1 long flash – searching for and registering on the cellular network.
- 2 long flashes – registered on the network and connecting to the server.
- 3 long flashes – server connection established.

Short flashes – navigation modem operating mode:

- No short flashes – navigation modem off.
- 1 short flash – modem on, searching for satellites.
- 2 short flashes – satellites acquired with acceptable signal quality (5 to 8 satellites in view).
- 3 short flashes – satellites acquired with excellent signal quality (more than 8 satellites in view).

(more than 8 satellites in view).

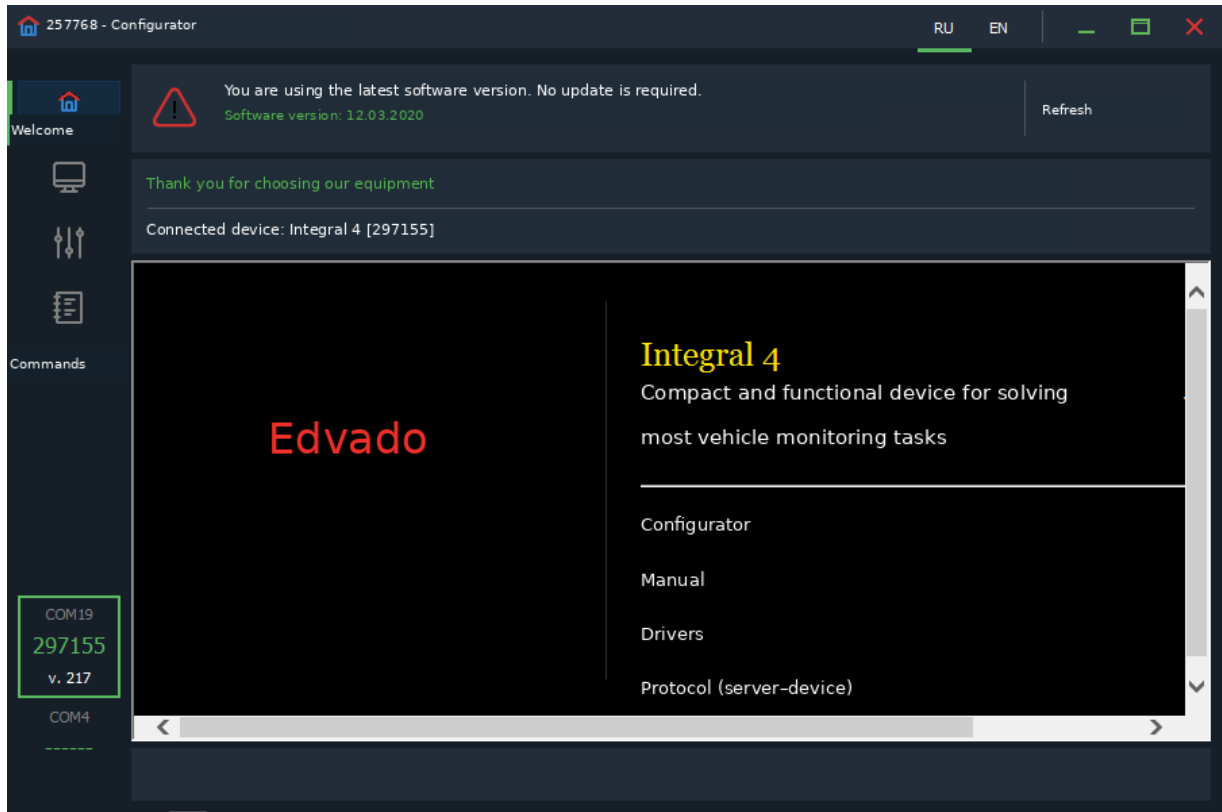
After power is applied (1-3 min), the GSM | NAV LED should repeat a sequence of 3 long and 3 short flashes, indicating normal device operation.

Otherwise, check the installation and settings, or contact support@edvado.com.

SETUP AND UPDATE

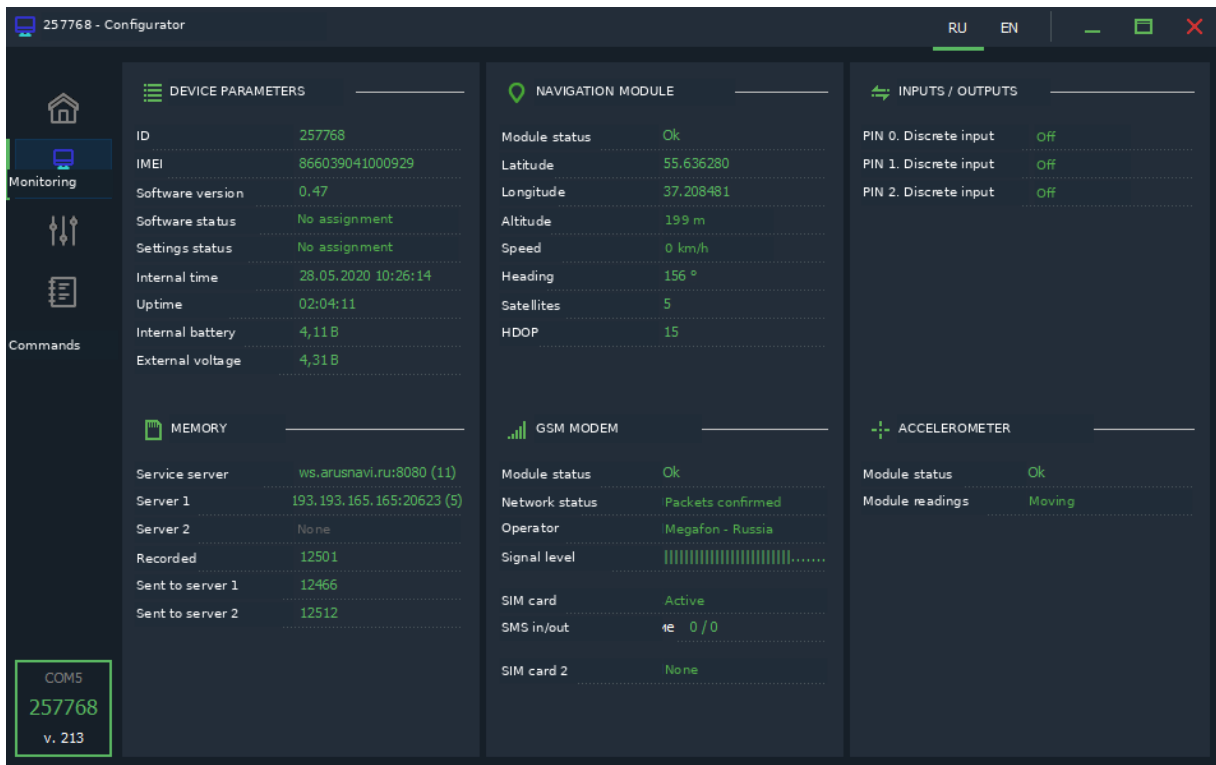
5. Local configurator

The “DOT Configurator” application is designed for local diagnostics and configuration of the tracker (via a wired USB connection). The configurator displays in real time all parameters characterizing the operation of the device at the moment. Also, in the application you can download additional materials, such as: instructions, drivers for DOT equipment, etc.

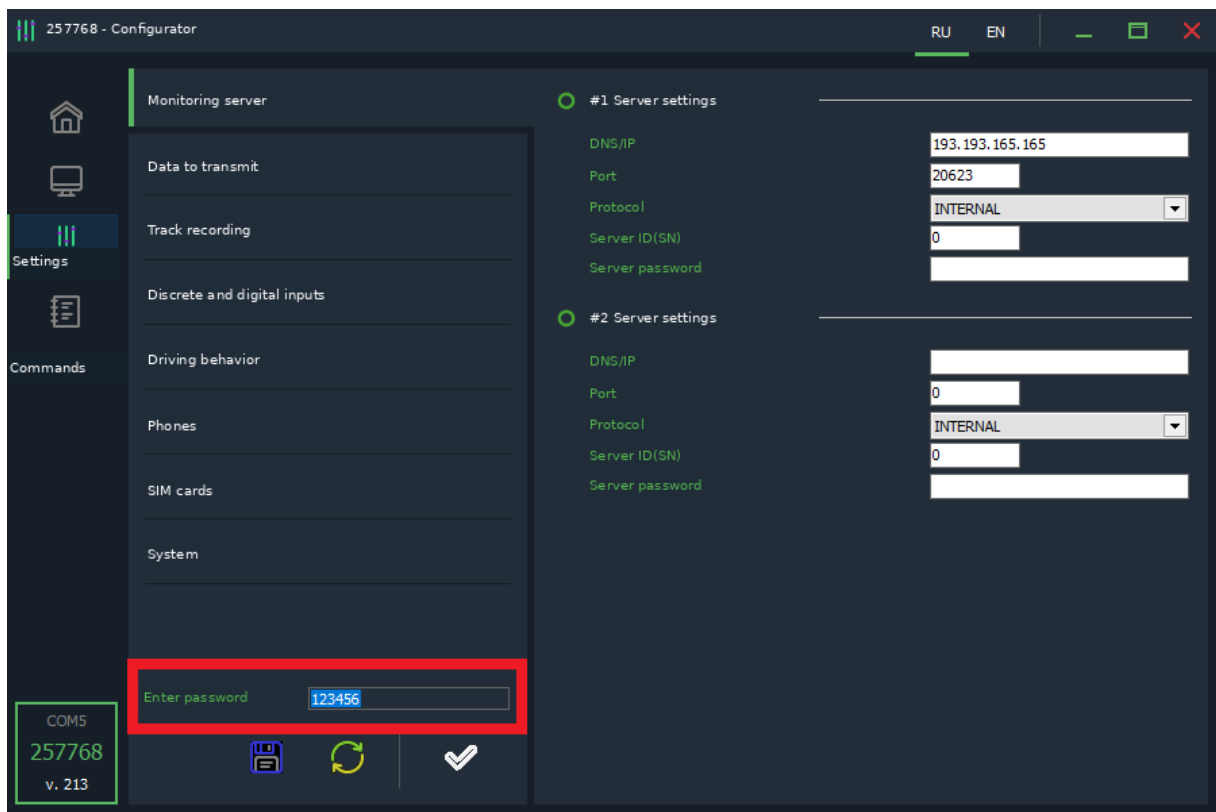


Main sections of the configurator (vertical panel on the left):

- Welcome – General device information and additional materials for download.
- Monitoring – Real-time display of device status and connected peripherals.
- Settings – Menu for changing device settings; its structure is similar to the Web Configurator.
- Commands – Menu for sending service commands to the device.



“Monitoring” section



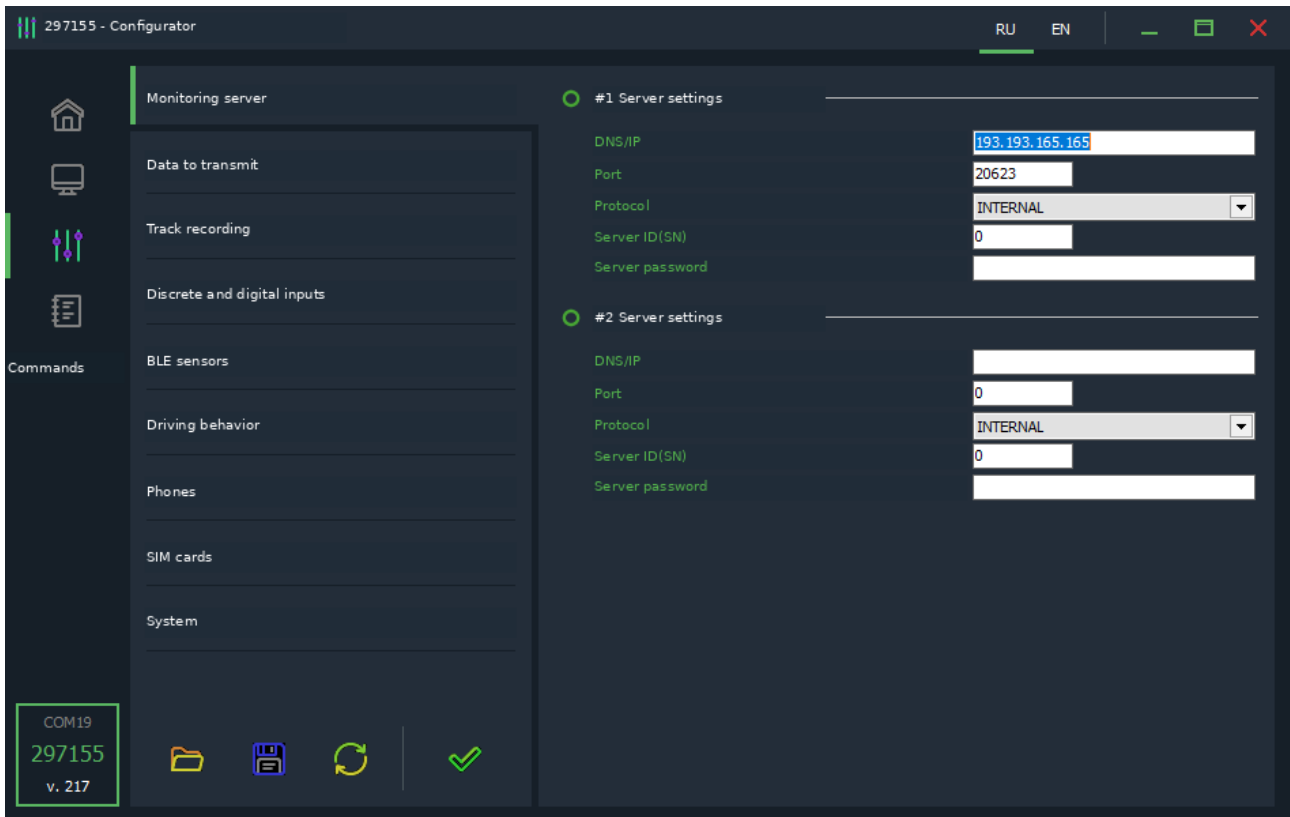
Section "Settings"

You may need to enter your device password to change settings.

Setting up INTEGRAL 4G

Monitoring Server tab

The tracker can transmit data simultaneously to two monitoring servers. To configure, you need to set the address and port of the monitoring server, select the protocol type (INTERNAL or EGTS) for one or two monitoring servers.



<DNS/IP> - monitoring server address.

<Port> - monitoring server port (1-65535).

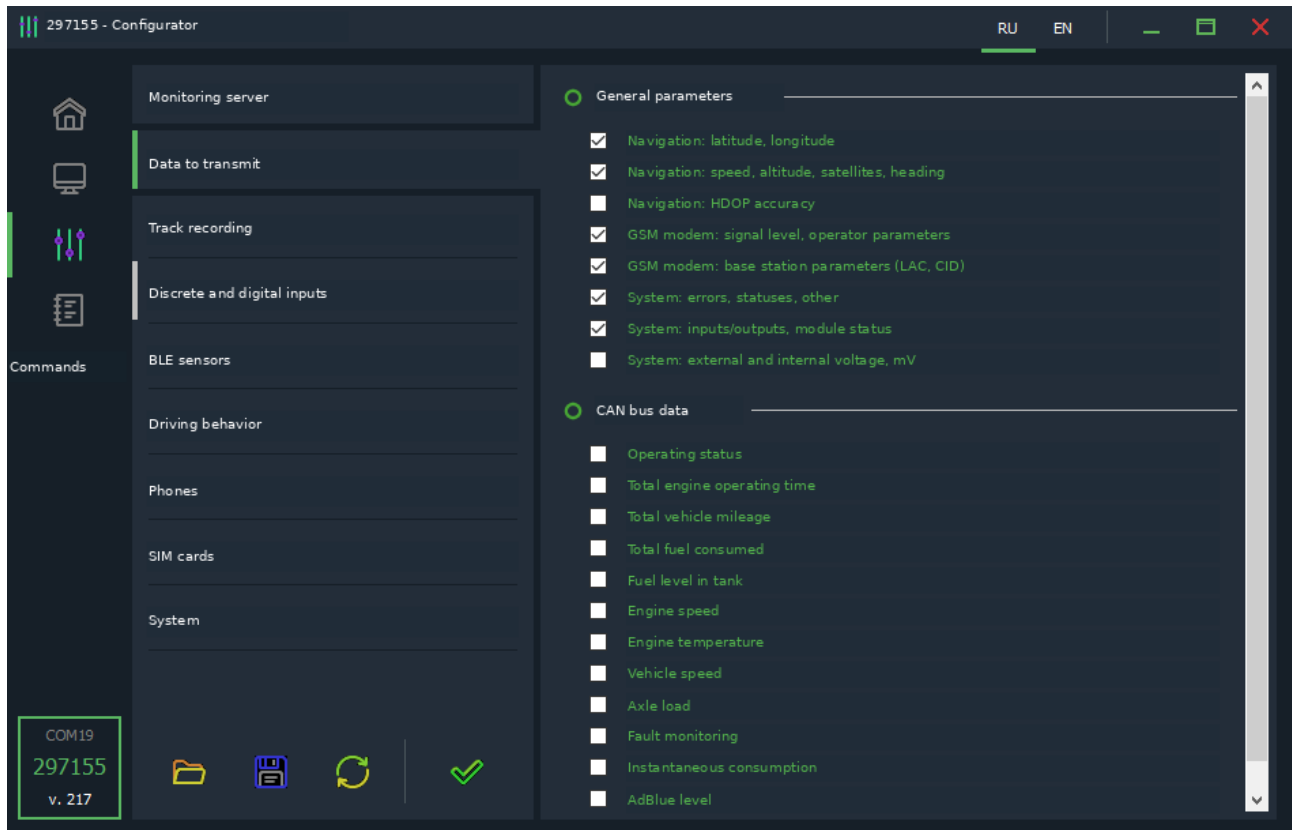
<Protocol> - Data transfer protocol to the server (Arnavi (Internal) or EGTS)

Tab "Data to be transferred"

To effectively transfer data to the server, taking into account traffic compression, it is necessary to select a set of data that should be transferred to the server.

“CAN bus data” will only be transmitted when an external CAN reader is connected.

If you configure the device only to determine the location of a moving object (vehicle) without using additional equipment, it is enough to select only the first two items of the “Package Structure”: GPS / GLONASS coordinates and GPS / GLONASS parameters. In this case, data transfer traffic from the device to the server will be minimal, which will have a positive effect on cellular communication costs



“Track recording” tab

Track recording parameters determine the balance between track detail and data traffic.

<Heading change - angle> - If the angle between the heading of the last position sent to the server and the current heading exceeds the specified value, the current position is sent to the server.

<Speed change - speed> - If the change between the speed at the time the last position sent to the server was determined and the current speed exceeds the specified value, then the current position will be sent to the server.

<At least every - distance> - If the distance between the last position sent to the server and the current position exceeds the specified value, then the current position will be sent to the server.

<Parked interval - time> - Time interval between the last sending of data to the server and the next sending of data to the server, when stopped. The unit of measurement is second.

**Warning: events triggered by angle, speed and distance
are sent only while the vehicle is moving, i.e. when
the coordinate-freezing conditions are not met.**

Freezing coordinates - conditions under which location coordinates will be fixed and remain unchanged - parking. Conditions can be combined.

Setting up a motion sensor. Sensitivity – the higher the value, the more sensitive the sensor. Trigger delay – time of continuous movement in seconds to detect the start of movement.

**Warning: to freeze coordinates while parked based on
ignition, connect ignition to input
IN2 configured in discrete mode.**

Tab "Discrete and digital inputs"

To use peripheral equipment, the digital interface and inputs/outputs must be configured to the appropriate operating mode. Detailed information is in the "Functionality" section.

<Analog input threshold> - voltage threshold in mV at the corresponding input:

-If the voltage value at the input is above the specified threshold, then the input is considered activated (logic 1).

-If the voltage value at the input is below the specified threshold, then the input is considered deactivated (log. 0).

<External supply threshold> - ignition threshold in mV at the external power input. If the value is 0, ignition is determined by IN2.

<LLS filtering level> - additional filtering value for data from the FLS with the corresponding network address.

<Temperature sensor N address> - a list of temperature sensor addresses known to the tracker and sequence numbers reserved for them. The list can be edited manually, or you can allow the tracker to supplement the list automatically.

The screenshot shows the '297155 - Configurator' application window. The left sidebar contains a 'Commands' menu with options: Monitoring server, Data to transmit, Track recording, Discrete and digital inputs (selected), BLE sensors, Driving behavior, Phones, SIM cards, and System. The main area is divided into 'Discrete' and 'Digital' sections. The 'Discrete' section includes settings for IN0[-]/OUT0, IN1[-]/OUT1, and IN2[+] (all set to 'input - discrete'), Analog input threshold (5000 mV), and Virtual ignition threshold (0 mV). The 'Digital' section includes CAN/RS485/RS232 settings (Universal LLS mode, CAN program number 0), a checkbox for 'Enable median filter for sensors' (unchecked), LLS filtering levels (0 for all), 1-WIRE mode (1-Wire mode), and a checkbox for 'Allow new temperature sensors' (checked). Below this, there are fields for temperature sensor addresses, with the first three populated: 0000058CB54E, 00000732313F, and 0417A0DD28FF. The bottom of the window shows a status bar with 'COM19 297155 v. 217' and a green checkmark icon.

Driving style tab

Integral 4G implements 2 ways to control driving style:

1. If the fields in the driving style are not filled in with values, the tracker transmits the maximum acceleration values on three axes, recorded between messages.
2. If at least one line is filled in, the tracker switches to sending packets adding only those accelerations that fall within the given thresholds in the settings.

Detailed description in the “DRIVING STYLE” section.

<Transmit accelerometer data> – transmit acceleration values to the server in accordance with the specified driving style control method.

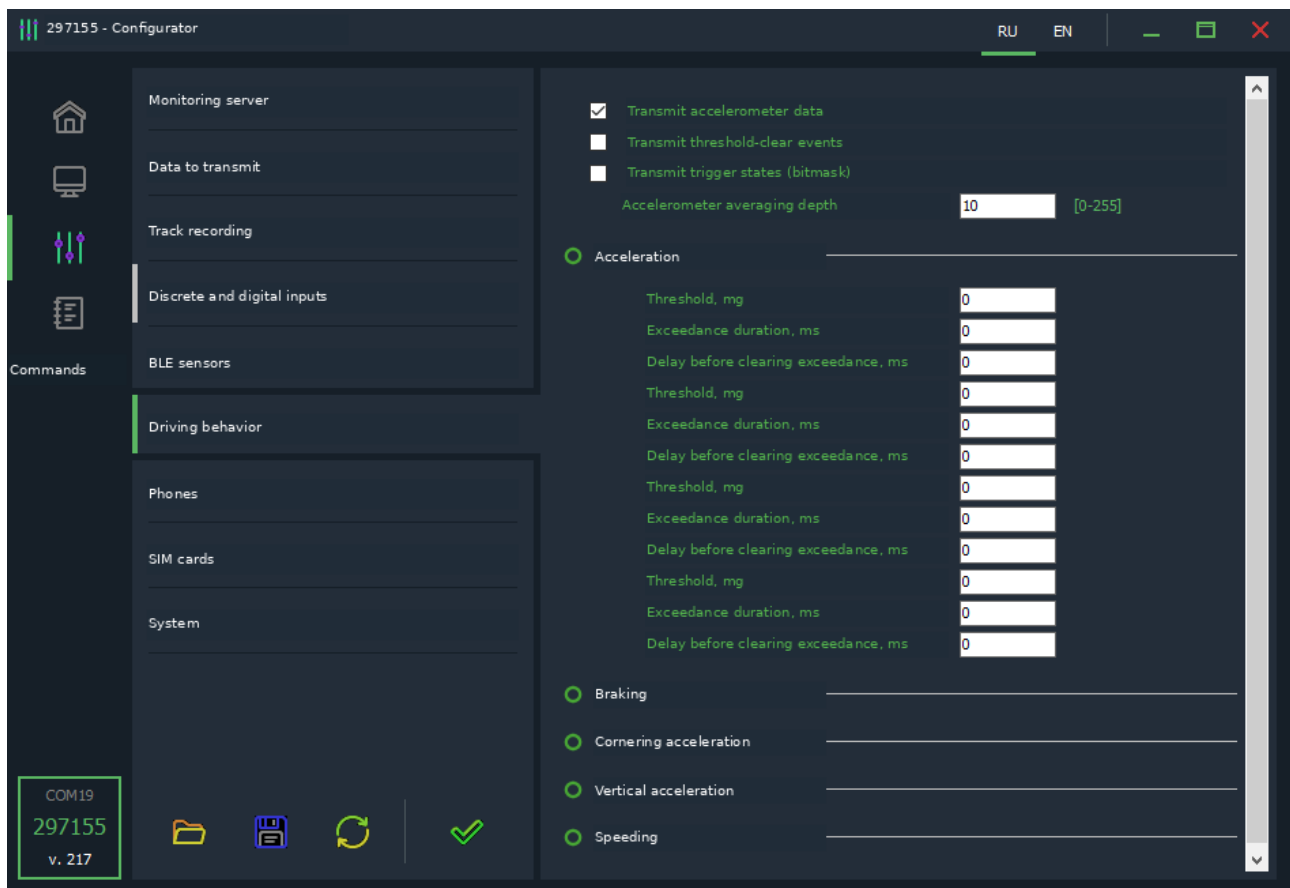
<Transmit threshold-clear events> – send an event about the end of exceeding the threshold to the server.

<Transmit trigger states (bitmask)> – transmit the status to the server for each threshold exceeded.

<Accelerometer averaging depth> - allows you to smooth out accelerations. The number in the configurator 100 will correspond to an average of 10 seconds.

Each acceleration threshold has three settings:

- Acceleration threshold value;
- Duration for recording the excess;
- Pause before removing the excess.



Phones tab

When calling from the specified phone number, Integral 4G can perform a specific function. Up to 5 phone numbers are supported with their corresponding functions:

- Sending an informational SMS to a specified number
- Sending an SMS with a location and a link to a map
- Rebooting the device
- Updating software
- Updating settings

The screenshot shows the '297155 - Configurator' application window. The interface is in Russian (RU) and English (EN) tabs are visible at the top right. The left sidebar contains a 'Commands' section with icons for Monitoring server, Data to transmit, Track recording, Discrete and digital inputs, BLE sensors, and Driving behavior. Below these is the 'Phones' section, which is currently selected. Under 'Phones', there are sub-sections for 'SIM cards' and 'System'. At the bottom left of the sidebar, a status box shows 'COM19', '297155', and 'v. 217'. The main area of the configurator displays five phone number entries, each with a green radio button, a label (Phone No. 1 to 5), and two input fields: 'International-format number' and 'Mode'. The 'Mode' dropdown menu for each entry is set to 'Info SMS'. At the bottom of the main area, there are icons for a folder, a floppy disk, a refresh button, and a checkmark.

"SIM cards" tab

Integral 4G supports one SIM card or SIM chip.

<Roaming allowed> – use this SIM card in roaming.

<Enable card PIN entry> – when prompted for a PIN code, the tracker will try to enter the specified PIN.

WARNING: this setting stores the PIN code in the device memory and DOES NOT enable or change the PIN code on the SIM card. If PIN entry is already enabled on the SIM card, entering an incorrect value in this parameter will block the card.

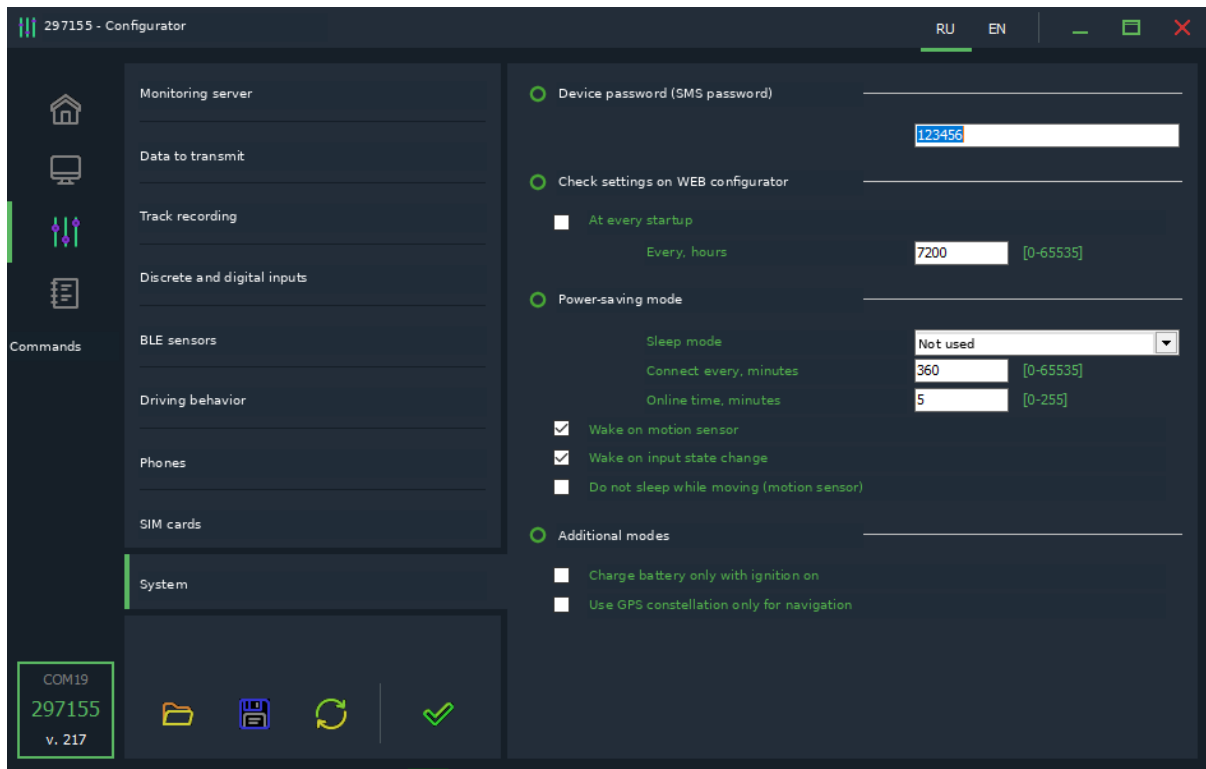
<APN, username, password> - APN settings. Empty fields mean APN is running in automatic mode.

<USSD balance request> – USSD balance request command, for example *100#. The balance is requested and sent to the server at the specified interval in hours.

System Tab

<Device password> - device access password. Used when sending SMS and TCP commands, and when changing settings locally.

<Check settings on the WEB configurator> setting the frequency of synchronization of settings with the WEB configurator.



Power Saving Mode

<Sleep mode> - in order to save energy, turn off the GPS module, or go into deep sleep in accordance with the selected conditions.

<Connect every, minutes> - in deep sleep mode, the device will wake up and communicate in accordance with the specified time interval.

<Online time> - the maximum time allotted for searching for satellites and transmitting a packet to the server in deep sleep mode when using communication at specified time intervals.

<Wake on motion sensor> - while driving, the device will operate normally. (This also applies to the “disable GPS” mode)

<Wake on input state change> - when the state of any discrete input changes, the device will contact to transmit a new packet to the server.

6. Configuration using SMS, TCP commands

The structure of the message with the command to change settings is as follows:

<access_password>*SETP*<parameters_to_change>

By default, the <access_password> field is 123456

Field <parameters_to_change> contains the number and value of one or more parameters to be changed.

Each element from the list of changeable parameters has the following structure:

#<parameter number> = <value>

<parameter_number> - numerical index of the parameter.

<value> - new parameter value, can be simple or compound.

A composite value is a sequence of simple values separated only by a comma:

<value_1, value_2, value_N>.

List elements are transmitted without delimiters: the end of one element is indicated by the beginning of the next (# sign).

When sending messages via SMS, it is necessary that the length of the message does not exceed 160 characters, and the message contains letters only of the Latin alphabet.

If the SMS command was accepted, an SMS with the current device settings will be sent in response.

The device automatically synchronizes settings with the WEB configurator, so the WEB configurator always contains the actual current settings of the device.

Table 3 – List of Setting Parameters for the SETP Command

Parameter number	Description
#1	Monitoring server settings 1
#2	SIM card 1 mobile operator APN parameters
#3	Device access password
#4	PIN code of SIM card 1 (if activated)
#5	Track recording parameters
#6	Setting the Power Saving Mode
#7	-
#8	-
#9	Input/output operating modes
#10	Data from the CAN bus for transmission to the server
#11	Operating modes of digital interfaces
#12	External CAN reader program number
#15	Operating mode in roaming
#16	Analog input threshold
#19	Filtration level of LLS sensors
#20	Speed limit
#21	Motion sensor operating parameters
#26	Monitoring server settings 2

Example of changing several parameters in one message:
 123456*SETP*#1=hosting.wialon.com,20623#5=400,18,20,150#9=F,D,D#11=0,30

123456*SETP*#1=193.193.165.165,20623,0,0#2=send.ee,,#4=#5=1000,15,50,150,1000,18,50,150#6=3,360,5
 #7=send.ee,,#8=#9=D,D,D#10=1#11=5,30#12=0#15=1,1#16=5000,0#19=0,0,0,0#21=10,0#26=,0,0,0

**If you have difficulty composing the “SETP” command, use the response
 to the “GETP” command as a reference.**

The main parameter settings are described below. For further information on configuration commands, contact support@edvado.com.

Monitoring server parameters 1 - Parameter number: 1

Command format: #1=<server_address>,<server_port>,<protocol>,<ID>

Arguments:

<server_address> - a string up to 32 characters long. Contains the DNS name or IP address of the server.

<server_port> - a number from 1 to 65535. It is not a required parameter: if there is no need to change the port, the parameter can be omitted.

<protocol> - Protocol type. 0 – Arnavi, 4 – EGTS.

<ID> - identifier for the monitoring server. The default is IMEI. If an alternative identifier is required, set a value other than zero.

Examples:

123456*SETP*#1=193.193.165.165,20629,4 – set IP address, server port, protocol type - EGTS

123456*SETP*#1=hw.geliospro.ru,20144 – set the DNS name and server port

123456*SETP*#1=hw.geliospro.ru – change only the server address, leave the server port unchanged

SIM card cellular operator APN parameters - Parameter number: 2

Command format: #2=<APN>,<username>,<password>

Arguments:

<APN> - a string up to 32 characters long. Contains the access point name

<username> - a string up to 32 characters long. Contains the username of the access point

<password> - a string up to 32 characters long. Contains the access point password

Examples:

123456*SETP*#2=internet,gdata,gdata – set the APN parameters of the Megafon operator

123456*SETP*#2= , , – clear APN parameters

Device access password - Parameter number: 3

Command format: #3=<new_access_password>

Arguments:

<new_access_password> - a string up to 8 characters long. Contains the new password to access the device. An empty line means that the device will be accessed without a password.

Examples:

123456*SETP*#3=13571 – set the access password 13571 SETP*#1=193.193.165.165,20629,4 – example of an SMS command when the password is disabled.

Path processing parameters - Parameter number: 5

Command format:
#5=<home_distance>,<home_angle>,<home_speed>,<home_interval>,<roaming_distance>,<roaming_angle>,<roaming_speed>,<roaming_interval>

Home – settings for operating mode in the home network Roaming – settings for operating mode in roaming

Arguments:

For a description of the arguments, see the "Local Configurator" section.

Examples:

123456*SETP*#5=400,18,20,150 – set all parameters for trajectory processing

123456*SETP*#5=,,35,300 – change only the speed and interval, leave the distance and angle unchanged

123456*SETP*#5=,15 – change only the angle, leave other parameters unchanged

123456*SETP*#5=400,18,20,150, 1000,25,40,360 – various modes for home and roaming.

Monitoring server parameters 2 - Parameter number: 26

Command format: #1=<server_address>,<server_port>,<protocol>,<ID>

Arguments:

<server_address> - a string up to 32 characters long. Contains the DNS name or IP address of the server.

<server_port> - a number from 1 to 65535. It is not a required parameter: if there is no need to change the server port, the parameter can be omitted.

<protocol> - Protocol type. 0 – Arnavi, 4 – EGTS.

<ID> - identifier for the monitoring server. The default is IMEI. If an alternative identifier is required, set a value other than zero.

Examples:

123456*SETP*#1=193.193.165.165,20629,4 – set IP address, server port, protocol type - EGTS

123456*SETP*#1=hw.geliospro.ru,20144 – set the DNS name and server port

FUNCTIONALITY

7. Operating modes of inputs and outputs

Each input/output has several operating modes. List of available operating modes:

Table 4

No	Digital inputs (IN0, IN1, IN3)	Analog input (A2)	Digital outputs (OUT 0, OUT 1)
1	Discrete	Discrete	Mode 1 (Discrete output)
2	Pulse	Pulse	Indication (Output)
3	Frequency	ADC	Key-based deactivation (Output)
4	Ignition	Ignition	By speed (Output)
5	Ground monitoring		Safe immobilization (Output)
6	Non-zero pulse		

To power additional equipment, the tracker provides a power output with a voltage of 5V and a maximum

load 500mA.

Digital input IN3 is also a 1-Wire digital input. When using the IN3 input in discrete mode, the ability to connect keys and temperature sensors via the 1-Wire interface is lost.

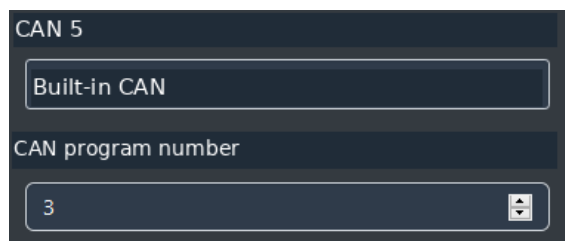
WARNING! Do not apply more than 5 V to IN3. Discrete input IN3 is intended only for switching to supply negative.

8. Operating modes RS-485, RS-232, CAN

Table 5

No	RS-485 / RS-232	CAN
1	Universal mode (LLS + Arnavi CAN)	
2	CAN Log text protocol	
3	CAN Log binary protocol	
4	Microlink	
5		Built-in CAN

To use the built-in CAN reader, select “Built-in CAN”, then set the internal CAN program number corresponding to the vehicle model on which Integral 4G is installed:



The list of supported cars and the corresponding CAN programs are available at the link:

<https://docs.google.com/spreadsheets/d/1vkZuc5tkFOzLz65n0fcsKZFy8zkNIbo9sCM5zfpq6f8/edit#gid=1624217125>

If the required car model is not in the list, please contact support@edvado.com support service.

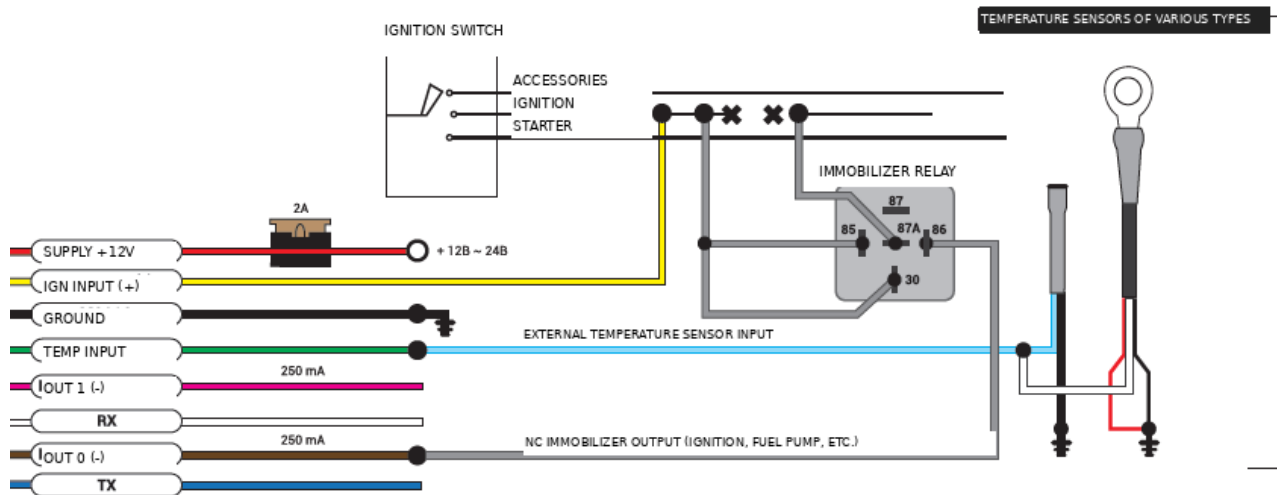
WARNING! Only one interface, RS-485 or RS-232, can be used at a time. CAN operates independently of the other interfaces.

9. 1-Wire

Connecting digital sensors via 1-WIRE interface.

To monitor the temperature of various devices or objects, temperature sensors operating via a 1-wire interface are used (up to 8 sensors can be connected simultaneously on one data bus).

The figure below shows a diagram of connecting several temperature sensors of various types.



Thermal sensor connection diagram

When new temperature sensors are connected, they are automatically assigned indexes from 0 to 10, under which they are transferred to the server. The list of temperature sensors is saved in the settings and synchronized with the WEB configurator. The list of sensors can also be edited manually, and automatic addition of sensors can be disabled.

Simultaneously with working thermal sensors, Integral 4 recognizes 1 identification key, which will be sent to the server at the time of connection. The universal output can be configured to indicate that the Dallas key has been read.

Warning: with parasitic power (two-wire connection), operation of up to 3 sensors on the bus is guaranteed.

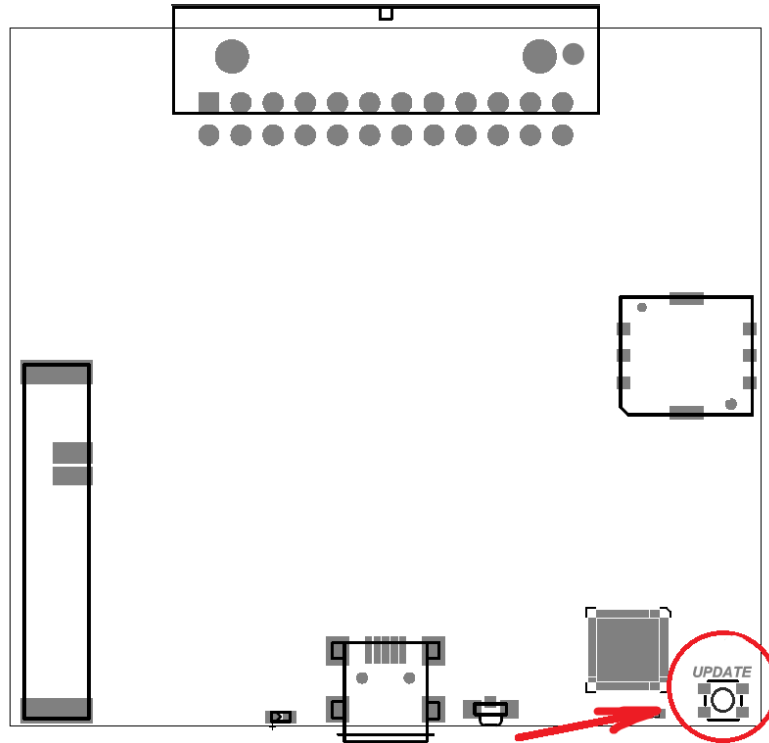
Connect the Dallas key to 1-W (pin 2) and GND (pin 1). A message containing its unique key number in the form `avl_driver=` is sent to the Wialon server.

If the device requires an additional discrete negative input, but 1-WIRE mode is not required, then pin 2 (1-W) can also be configured to operate as a discrete input.

Warning: do not connect equipment with a pull-up to the power supply to the 1-Wire input.

10. Button for quick device settings

Pressing the physical button leads to several actions being performed in succession: checking for a new software version and automatic updating, checking and downloading settings from the web configurator, forcing the package to be sent to the server in accordance with the current device settings.



The function is typically used for:

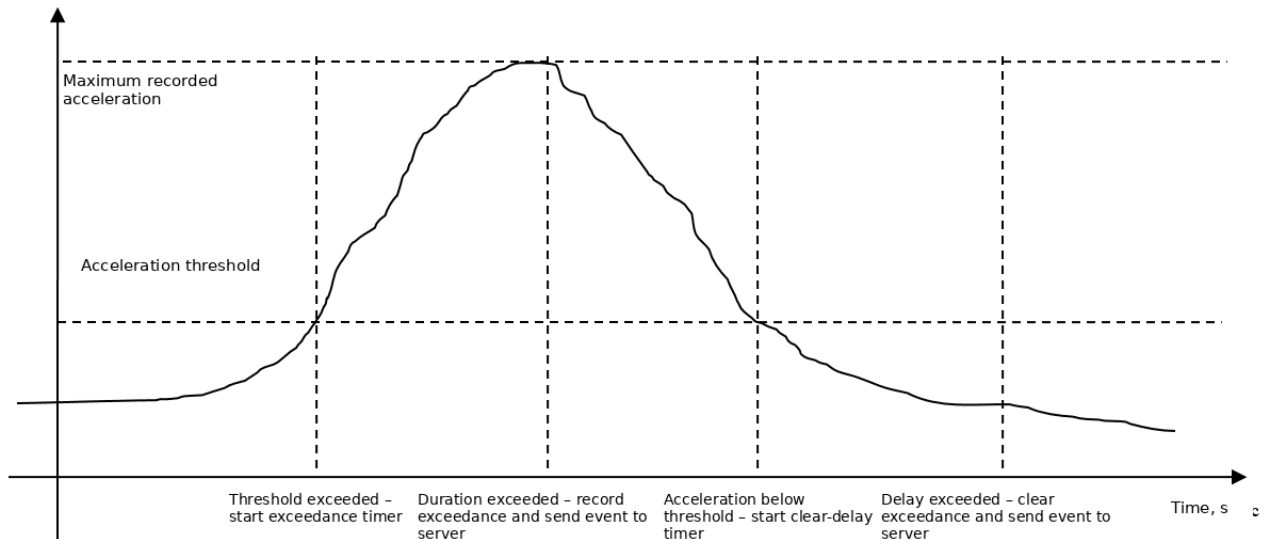
- quickly update settings specified on the web configurator without the need to send an SMS or TCP command;
- prompt communication when the tracker is installed for the first time;
- prompt check for software updates.

11. Driving style

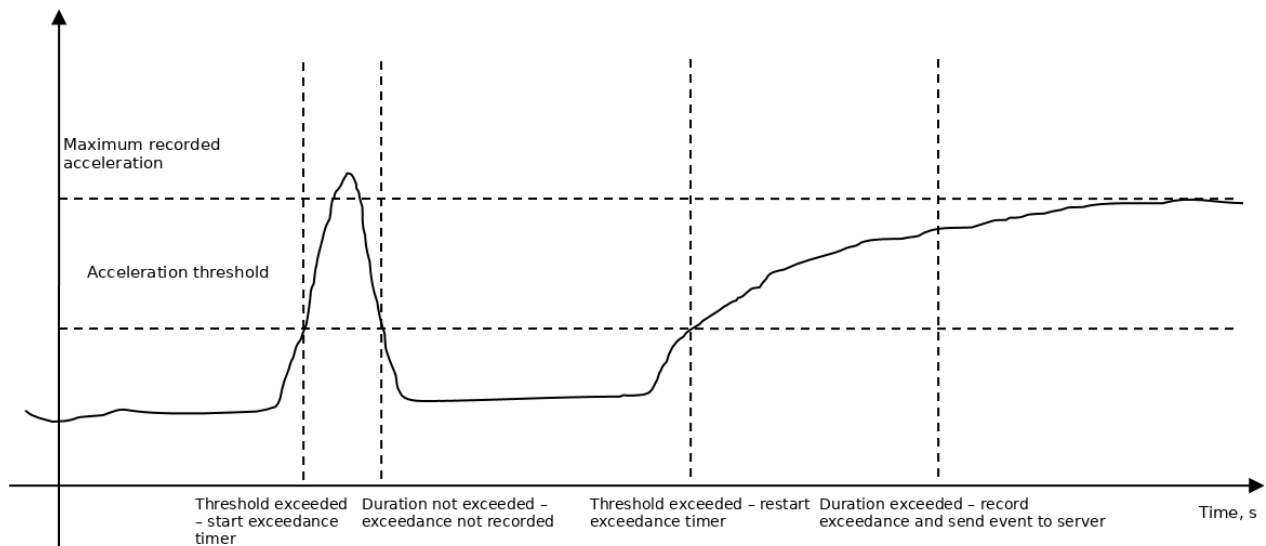
Integral 4G monitors acceleration along three axes and recognizes driving parameters such as acceleration, braking, angular acceleration, vertical acceleration, and overspeeding. For each parameter, you can set up to 4 thresholds (up to 20 thresholds in total for all parameters), violation of which will be recorded and transmitted to the server.

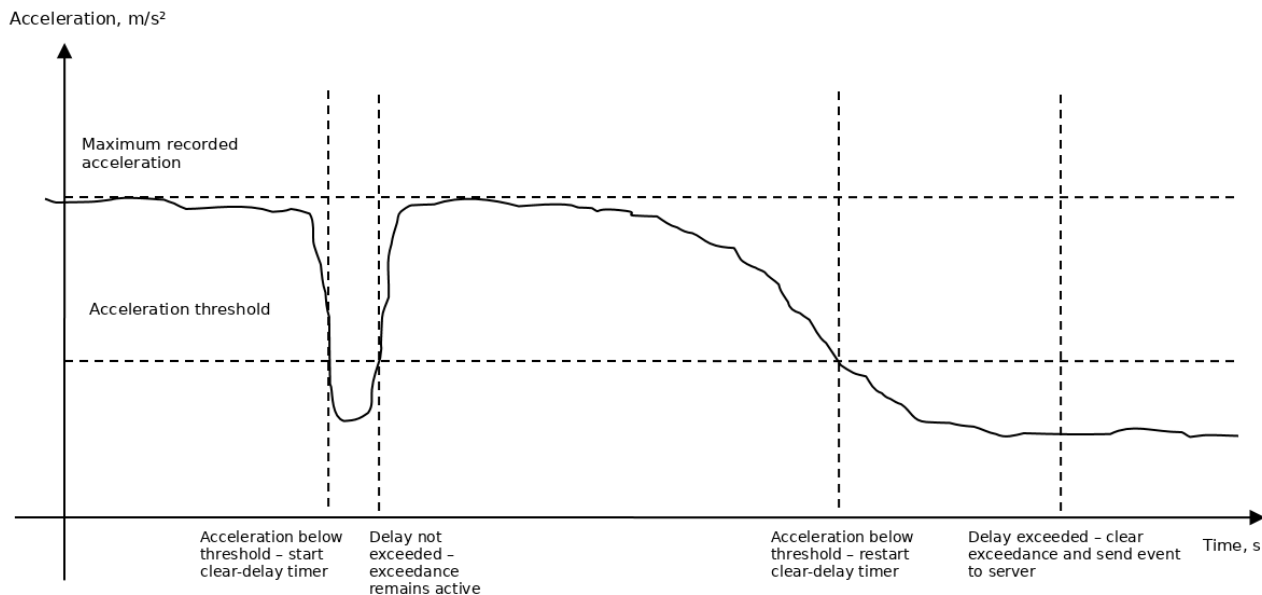
The operation of each threshold is shown in the figures below.

Acceleration, m/s^2



Acceleration, m/s^2





When the acceleration threshold is exceeded, the exceedance timer starts. If acceleration drops below the threshold, the timer stops and no exceedance is recorded. A subsequent threshold crossing restarts the timer.

If acceleration remains above the threshold longer than the configured exceedance duration, the exceedance is recorded and the corresponding event is sent to the server.

(After an exceedance is recorded, a drop below the acceleration threshold starts the clear-delay timer. If acceleration exceeds the threshold again, the timer stops and the exceedance remains active. A subsequent drop below the threshold restarts the timer.

When the clear delay expires, the acceleration exceedance is cleared and the corresponding event is sent to the server.

Setting the driving style is described earlier in the chapter “Setting via the local configurator”.

FULL LIST OF SMS AND TCP COMMANDS

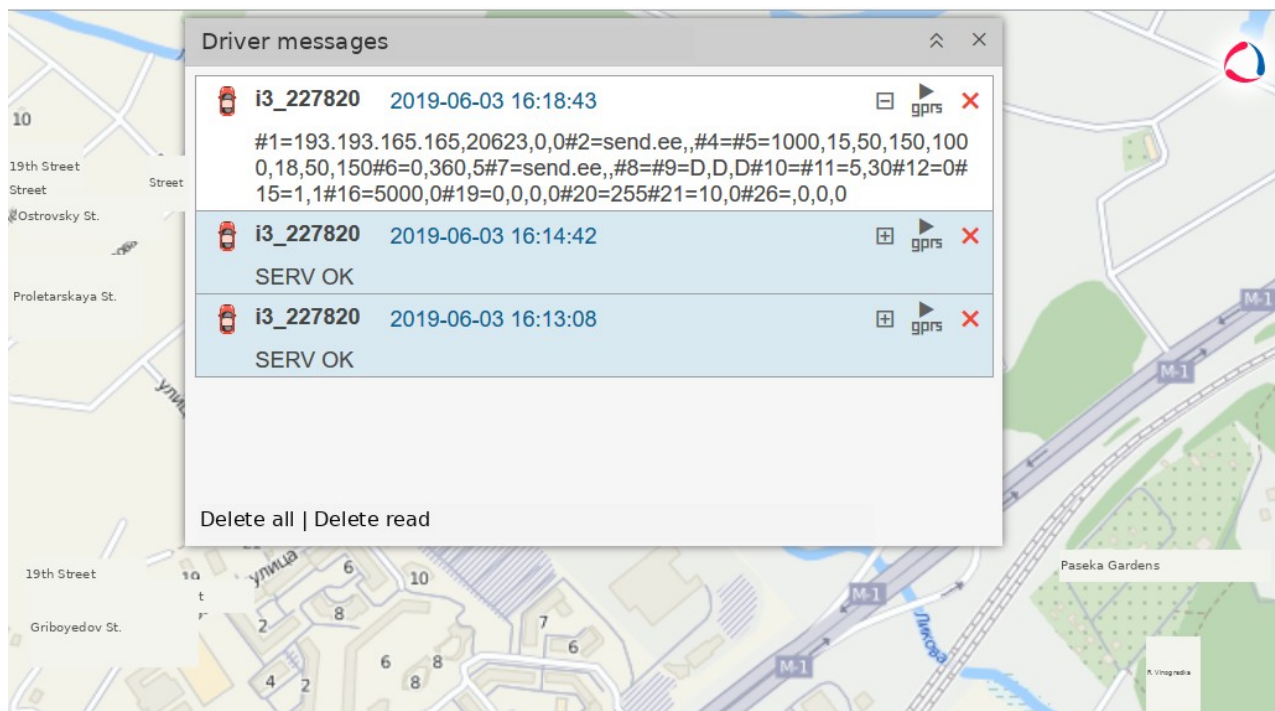
Table 6 – SMS and TCP text commands:

Format	Command Description
<access_password>*SETP* <parameter_list>	Tracker configuration command. A detailed description of the command is in the "Configuration via SMS" section.
<access_password>*ODOM.x	Set the internal odometer value in meters
Control commands	
<access_password>*SERV*1.1	Send a packet with coordinates to the server immediately.
<access_password>*SERV*1.4	Update software via the web configurator, even if the assigned and current versions are the same.
<access_password>*SERV*1.5	Update the software via the web configurator if the assigned version is different from the current one.
<access_password>*SERV*1.6	Clear black box
<access_password>*SERV*1.7	Reboot
<access_password>*SERV*1.8	Download settings from the web configurator
<access_password>*SERV*1.9	Send current settings to the web configurator
<access_password>*SERV*8.x.y	Transfer output X to state Y
<access_password>*SERV*9.x	Transfer output 0 to state X
<access_password>*SERV*10.x	Switch output 1 to state X
<access_password>*SERV*24.x.y.k	Activate output X for Y minutes and K seconds
<access_password>*SERV*37	Delete all registered temperature sensors
<access_password>*SERV*48.x	Idatalink command, (X – command code)
<access_password>*SERV*49.x.y.k	Webasto command
<access_password>*SERV*50.x	Remote engine-start command (X – command code)

Information commands

Format	Command Description
<access_password>*GETP	Get the current tracker configuration
<access_password>*GETT	Get current phone book configuration
<access_password>*SMSI	Receive SMS with IMEI, ID and monitoring server address 1
<access_password>*SMSK	Receive an SMS with coordinates and a link to the map
<access_password>*SMSW	Receive an SMS with the numbers of connected temperature sensors

All information, configuration and control commands above can be sent via SMS or as TCP text commands (the “driver message” function in Wialon). The device response is also returned to the server:



In the case where the request contains the recipient's phone number and is sent as a TCP command, the response to the request will be sent to the specified phone number.

Short TCP commands are also available (the “custom message” function in Wialon). They are listed in Table 7.

Table 7 – TCP commands from the server.

Format	Command Description
0101	Send a packet with coordinates to the server immediately
0104	Update software via the web configurator, even if the assigned and current versions are the same
0105	Update software via the web configurator if the assigned version is different from the current one
0106	Clear black box
010550	External CAN reader software update
0107	Restarting the device
0108	Download settings from the web configurator
0109	Send settings to web configurator
080X0Y(ZZ)	Activate / Deactivate output X – output number (0 – IN0 (U0), 1 – IN1 (U1), 2 – IN2 (U2), 3 – IN3 (U3)), Y – new state (1 – activate, 0 – deactivate), ZZ – (optional) activation of the input for a time in seconds from 01 to 99 (01 – 1 second, 10 – 10 seconds)

WIALON PARAMETER DESCRIPTIONS

Table 8

Wialon parameter	Description	Comments
pwr_ext	External supply voltage	
pwr_int	Internal battery voltage	
hdop	Horizontal dilution of precision	
cell_id	GSM base station code	
lac	GSM location area code	
mnc	GSM mobile network code	
mcc	GSM mobile network code	
gsm	GSM signal strength	Range from 1 to 31 (99 – no GSM network)
gsm_st	GSM chip operation status	0 – not running, 1 – running, 2 – AT OK, network search, 3 – GPRS test, 4 – GPRS OK
nav_st	GPS/Glonass chip operation status	0 – not launched, 1 – launched, 2 – search for satellites, 3 – satellites captured
mw	Motion sensor status	0 – no movement, 1 – movement
sim_t	SIM card/SIM chip	0 – SIM card, 1 – SIM chip
sim-in	SIM presence	
st0	Tamper sensor	
st1	1-Wire digital input	
st2	Ignition	
freq_0	Frequency sensor IN0	
freq_1	Frequency sensor IN1	
info_messages	Service value	Indicates the reason for recording a new packet
lls1_val	RS-485 fuel level	
lls1_temp	RS-485 temperature from FLS	
adc3	IN2 voltage value	
I/O	Bitwise parameter (inX/outX)	
ID		
text		
balance_sim1		
balance_sim2		
gps_full_milleage		
avl_driver		
wln_brk_max		
wln_accel_max		
wln_crn_max		
can_eng_full_time	CAN engine hours	
can_full_mileage	CAN mileage	
can_fuel_level_cons	CAN fuel consumed	
can_fuel_level	CAN fuel level (%)	
can_fuel_level	CAN fuel level (liters)	
can_rpm	CAN engine speed	
can_eng_temp	CAN engine temperature	

WARRANTY

The warranty period for equipment is 2 years (except for batteries) and starts from the date of initial installation, provided it is carried out by an installer authorized by the equipment manufacturer. The date of initial installation and information about the installer must be indicated on the warranty card and certified by the installer's seal.

Warranty obligations do not apply to batteries.

To ensure the specified characteristics of the tracker, it is recommended to replace the battery every 2 years.

THE PRODUCT IS NOT SUBJECT TO WARRANTY REPAIR/REPLACEMENT IN THE CASES OF:

- violations of product operating rules;
- presence of mechanical damage (external or internal);
- malfunctions caused by the ingress of foreign objects, insects, liquids;
- presence of chemical, electrochemical, electrostatic, extreme thermal damage;
- damage caused by non-compliance with state standards of power supply, communication, and cable networks;
- damage caused by the installation of components that do not meet the manufacturer's specifications;
- if repair or maintenance work during the warranty period was carried out by person(s) not authorized by the manufacturer;
- if the manufacturer's seals on the equipment are broken;
- in cases of deficiencies in the operation of equipment due to external influences on the equipment and the electrical circuit to which the equipment is connected;
- in case of violations caused by the actions of third parties or other unforeseen circumstances not related to the obligations of the equipment manufacturer.

PACKAGE CONTENTS

The tracker is supplied with the items listed in Table 9.

Table 9 – Package contents

No	Name	Qty	Note
1	Navigation controller "DOT INTEGRAL 4G"	1	monitoring device
2	Main harness	1	
4	Product data sheet	1	

All the latest technical information and software can always be found on the corresponding page of the manufacturer's website:

<http://www.edvado.com>

Note: the manufacturer reserves the right to change the package contents without degrading the product's performance characteristics.