## General Guide for Installation
- Install the device as far as possible from metal parts and wiring harnesses.
- For better receiving of GPS-GLONASS signals direct the upper part of the device casing to the windshield minding metal obstacles.
- Recommendation: connect device supply directly to the OBD-II connector wires where pin 16 is +12B, pin 4 is GND (common).

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Please indicate the place of ALTOX module's location in the vehicle for possible maintenance:


Authorized Service:
Installation Date:

**Altox**

Operational Manual

# ALTOX TRACKER-4

## General Information

Dear buyers of ALTOX equipment!
We thank you for purchasing a new ALTOX TRACKER-4 device. This device will provide you with great options to control the location and routes of your vehicle.
You need a SIM card for your ALTOX device. It is recommended to use special plans for M2M equipment.

## Use

Using ALTOX system you can remotely control the location of your vehicle via SMS text messages and/or satellite monitoring system ALTOX SERVER 2.0 in the real-time mode (setting TRACKING1). If there is no GSM connection, the device saves over 10,000 into embedded memory. ALTOX device uses Wialon IPS v1.1 protocol which allows using other monitoring systems that support this protocol.

## Control and Programming

Algorithm for the connection of the device to the monitoring system:
- Register in ALTOX SERVER 2.0 or any other monitoring system that supports Wialon IPS v1.1 protocol;
- If needed change server IP address and port in the device using instructions SERVER1 and SERVER2, respectively;
- Ask your mobile provider for APN access point and set is up using SMS-commands APN1, APN2, APN3;
- Ask device ID using SMS-command ID1 or Id2;
- Add a new item with this ID to the monitoring system.

## Control via an outgoing call

Call the phone number of the SIM card installed in the GSM module.
The phone number you are using to make a call should already be saved in the device (see text messages SMS-commands NUM1/2/3).
Saving of the first caller's phone number into cell NUM1 follows up automatically (cell NUM1 should be empty).
When setting CALL1 is activated, ALTOX tracker responds to the call, then you need to enter a DTMF-command :
- Switch ON/OFF OUT1 – press 1.
- Switch ON/OFF OUT2 – press 2.
- Request status message  – press 3.
- Request account balance message – press 4.
After a minute the connection is dropped automatically.
If CALL0 setting is active, the incaming call is dropped, and OUT1 reverses its state.

## SMS Status Messages:

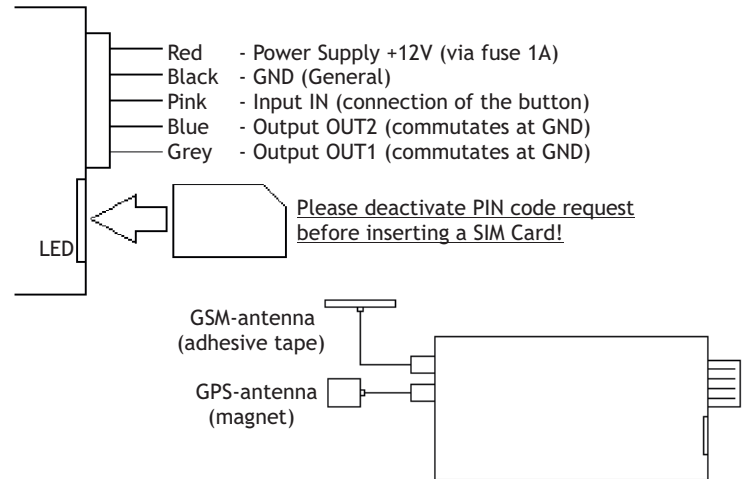| | |
|---|---|
| Date: 01.01.16 | - current date |
| Time: 00:00:00 (UTC) | - current time |
| GSM (0-31): 28 | - GSM receive signal level (not less than 10) |
| GPS: 15,0 | - number of satellites and HDOP parameter |
| Speed: 0km/h | - current speed |
| Volt: 12.8V | - car-system voltage |
| I/O: 0,0,0 | - IN, OUT1 and OUT2 status |
| http://google.com/maps | - link to the current location in Google Maps |

## Specifications

| Parameter | Value |
|---|---|
| Power Supply Voltage | 10V - 28V |
| Standby Current | less than 35mA |
| Max Current for Auxiliary Output Terminals | 150mA |
| Operating Temperature | from -40 to +80°C |

Red   - Power Supply +12V (via fuse 1A)
Black  - GND (General)
Pink   - Input IN (connection of the button)
Blue   - Output OUT2 (commutates at GND)
Grey   - Output OUT1 (commutates at GND)

LED

Please deactivate PIN code request before inserting a SIM Card!

GSM-antenna (adhesive tape)

GPS-antenna (magnet)

## LED status (in SIM card slot)

Solid - request to SIM card, searching/registration in the network
Slow blinking (once every 2 seconds) - waiting mode
Fast blinking (5 times every second) - establishing of GPRS/RING/SMS/USSD

| Internet Settings | Command |
|---|---|
| APN Access Point (ask your mobile provider) | APN1:internet |
| APN User Name (ask your mobile provider) | APN2:login |
| APN Password (ask your mobile provider) | APN3:password |
| Internet-application server's IP address | SERVER1:X.X.X.X |
| Internet-application server's port | SERVER2:XXX |
| Number of attempts to establish GPRS before reconnect | COUNT1:3 |
| Number of attempts to establish TCP before reconnect | COUNT2:2 |
| Ping frequency in home network, 1-99 sec | PING1:30 |
| Ping frequency in roaming, 0-99 sec (0-OFF) | PING2:30 |
| Tracking mode (committing routes to the system) | TRACKING1 /0 |

Note: after the setting of the APN point, ALTOX tracker will switch into GPRS mode. To capture movement history send instruction TRACKING1. In this mode, Internet traffic amounts to not more than 30MB per month without taking rounding off into account.
To automatically switch off the data transfer in roaming use setting «PING2:0».

| Settings for the TRACKING1 mode | Command |
|---|---|
| Switching threshold moving/parking, km/h | TMOTION:10 |
| Transmission frequency in motion (0-50km/h), 1-99sec | FREQ1:5 |
| Transmission frequency in motion (50-100km/h), 1-99s | FREQ2:10 |
| Transmission frequency in motion (>100 km/h), 1-99sec | FREQ3:15 |
| Transmission frequency when parked, 0-9999sec (0-OFF) | FREQ4:60 |
| Transmission frequency in motion (roaming), 0-999sec | ROAM1:90 |
| Transmission frequency when parked (roaming), 0-9999s | ROAM2:600 |

### SMS with ID and General Settings:
ID:12345678901234 - Unique Device Identificator
P500,0 K1 S1:v11.0 - PULSEIN:500,PULSEOUT:0, KEEPOUT1, SMSF1,SMSV:11
C1 P"" - CALL1, PASS: (up to 4 characters)
N1"" - phone number cell NUM1
N2"" - phone number cell NUM2
N3"" - phone number cell NUM3
B"*100#":10,5:1 - BAL:*100#, BTIMER1:10, BTIMER2:5, TRANSLIT1

### SMS with ID and Internet Settings:
ID:12345678901234 - Unique Device Identificator
S"XXX.X.X.X","XXX" - SERVER1:XXX.X.X.X, SERVER2:XXX
G"apn","user","pass" - APN1:apn, APN2:user, APN3:pass
C3,2 P30,30 T0:10 - COUNT1/2, PING1/2, TRACKING0,TMOTION:10
F5,10,15,60 R90,90 - FREQ1/2/3/4, ROAM1/2

## Control via Text Messages (SMS/TCP)
Send a text message (SMS) instruction to the phone number associated with the SIM card installed in the module. Text message instructions can be sent from any phone number. If the password is set (PASS), then before entering any instruction, you should include its value with no spaces (for example, «1111STATUS», where 1111 is password, STATUS is a command).
Messages are not case sensitive.
When sending instructions from server using TCP, add «cmd_» before command (for example, cmd_ACTIVATE).

| Control | Command |
|---|---|
| Request SMS with the device status | STATUS / LOCATION |
| Switch on auxiliary output OUT1 | ACTIVATE / OUTPUT_ON |
| Switch off auxiliary output OUT1 | DEACTIVATE / OUTPUT_OFF |
| Switch on auxiliary output OUT2 | ACTIVATE2 / OUTPUT_ON2 |
| Switch off auxiliary output OUT2 | DEACTIVATE2 / OUTPUT_OFF2 |

To request the account balance of the SIM card (by number from the BAL setting) use SMS command «USSD». If you need to request data for another phone number, add it in the command: «USSD:*XXX#».
To send a text message from the phone number associated with the SIM card in the tracking device, use «SMS:NNN:XXX»,where NNN is the phone number to which a text message should be sent to, and XXX is a text message.
If there is a response SMS is received, the tracker will forward it back to the phone number from which the latest correct text message instruction has been sent or to the phone number from NUM1/2/3 (see setting SMSF1).

| Additional Instructions | Command |
|---|---|
| Send USSD-request *XXX#  using the module's SIM card | USSD:*XXX# |
| Send text message XXX from SIM card's number to NNN | SMS:NNN:XXX |
| Request GSM stations data (MCC,MNC,LAC,CID) | GSMINFO |

### SMS with GSM Stations Data:
The text message contains 7 cells with data: N, MCC, MNC, LAC and CID.
N - number of cell from 0 to 6 (if a cell is empty, all fields have value 0);
MCC - Mobile Country Code;
MNC - Mobile Network Code;
LAC - Local Area Code;
CID - Cell ID.
LAC and CID fields values are displayed in hexadecimal notation.
MCC, MNC, LAC and CID data allow to determine the location of the vehicle on the map (using Google, Yandex services, etc.).
**Attention!** LAC and CID fields values are displayed in hexadecimal notation

## Settings

You can enter several settings simultaneously, dividing them by commas.
If the password is set (PASS:XXXX), then before entering any instruction, you should include its value with no spaces (XXXXSETTINGS1).
Messages are not case sensitive.
When sending instructions from server using TCP, add «cmd_» before command (for example, cmd_SMSF1).

| General Settings Instructions | Command |
|---|---|
| Request SMS with device ID and settings 1 | ID1 / SETTINGS1 |
| Request SMS with device ID and settings 2 | ID2 / SETTINGS2 |
| Restore to factory default settings | SETDEFAULT |

1. To change the signal reporting time at input IN send PULSEIN:XX, where XX is value in ms.
This setting prevents false triggers when sensors with a long period of contact chatter are connected.

2. For pulse signals send SMS-command «PULSEOUT:XX» to the device's SIM card number, where XX is the duration of the signal in seconds from 1 to 9999 value.
This instruction switches auxiliary output OUT1 into the pulse mode.
To switch OUT1 back into normal operation mode use the same command with value 0 (PULSEOUT:0).

3. Setting KEEPOUT1 activates the option to save and to subsequently restore of auxiliary output OUT1 state when the device's power supply is switched off and then switched on, respectively.
To switch off this option send SMS-command KEEPOUT0 to the device.

4. By default, the device uses the option of forwarding all incoming SMS text messages (SMSF1 setting) that are not commands to the phone number used to send the last correct command or the the phone number set up for the device NUM1, NUM2 or NUM3.
The text of the forwarded text message includes sender's phone number in the first line and the text of the message.
To switch off this option send SMS-command SMSF0 to the device.

5. In the waiting mode the device controls the car system voltage.
When the heater is turned off and the voltage drops below the predefined value XX (see settings, instruction SMSV:XX, where XX - threshold voltage), the system will send an alarm SMS text message to the first authorized phone number entered into settings (see settings, commands NUM1, NUM2, NUM3).
The next alarm SMS text messages about the voltage drop will be sent every 3 hours.

6. CALL0 setting switches the module into the mode of dropping incoming calls which allows saving money (in this case output OUT1 reverses its state)..

7. To set up a password for each text message command send PASS:XXXX to the device where XXXX is a 4-characters-long password.

8. Using SMS-commands NUM1, NUM2 and NUM3 save in the device authorized phone numbers. Phone numbers should be entered in the international format.
Attention! Authorized phone numbers should not have caller identity restriction (the number should not be hidden), otherwise the device will drop the call.

9. Use BAL:XXX, where XXX is the request account balance number, to save the phone number to request account balance status via USSD.

10. Setting BTIMER1:N (where N is a number of days) sets the period of time for automated account balance requests using USSD (BAL setting) and sending the response to the first authorized phone number NUM1 / NUM2 / NUM3.
This option allows automated control of the account balance SIM card of the device.
To switch off this option send a text message command with value 0 (BTIMER1:0)

11. Setting BTIMER2:N (where N is a number of hours) is similar to setting BTIMER1, with one exception: the response with the account balance information is sent to the server equipment (TCP connection).
Attention! When USSD is used to request account balance information GPRS session might be closed which can result in rounding off of Internet traffic.

| Technical Settings | Command |
|---|---|
| Pulse time of the input signal IN, 1-9999ms | PULSEIN:500 |
| Pulse mode for OUT, 0-OFF (0-9999 sec) | PULSEOUT:0 |
| Restoring of the state for OUT after power supply | KEEPOUT1 /0 |
| Forwarding of incoming SMS (to switch off use SMSF0) | SMSF1 /0 |
| SMS about car system voltage drop | SMSV:11.0 |
| CALL1 - response incoming call, CALL0 - dropping call | CALL1 /0 |
| Setting the password before entering SMS-commands | PASS:XXXX |
| Save the phone number into cell NUM1 | NUM1:+YYYYYYY |
| Save the phone number into cell NUM2 | NUM2:+YYYYYYY |
| Save the phone number into cell NUM3 | NUM3:+YYYYYYY |
| Save USSD number fore account balance requests | BAL:*XXX# |
| Timer for sending SMS with balance, 0-99 days (0-OFF) | BTIMER1:10 |
| Timer for sending balance into application, 1-9 hours | BTIMER2:5 |
| Transliteration of cyrillic characters | TRANSLIT1 /0 |