

WiaTag 1.3

User Guide

date: October 10, 2016

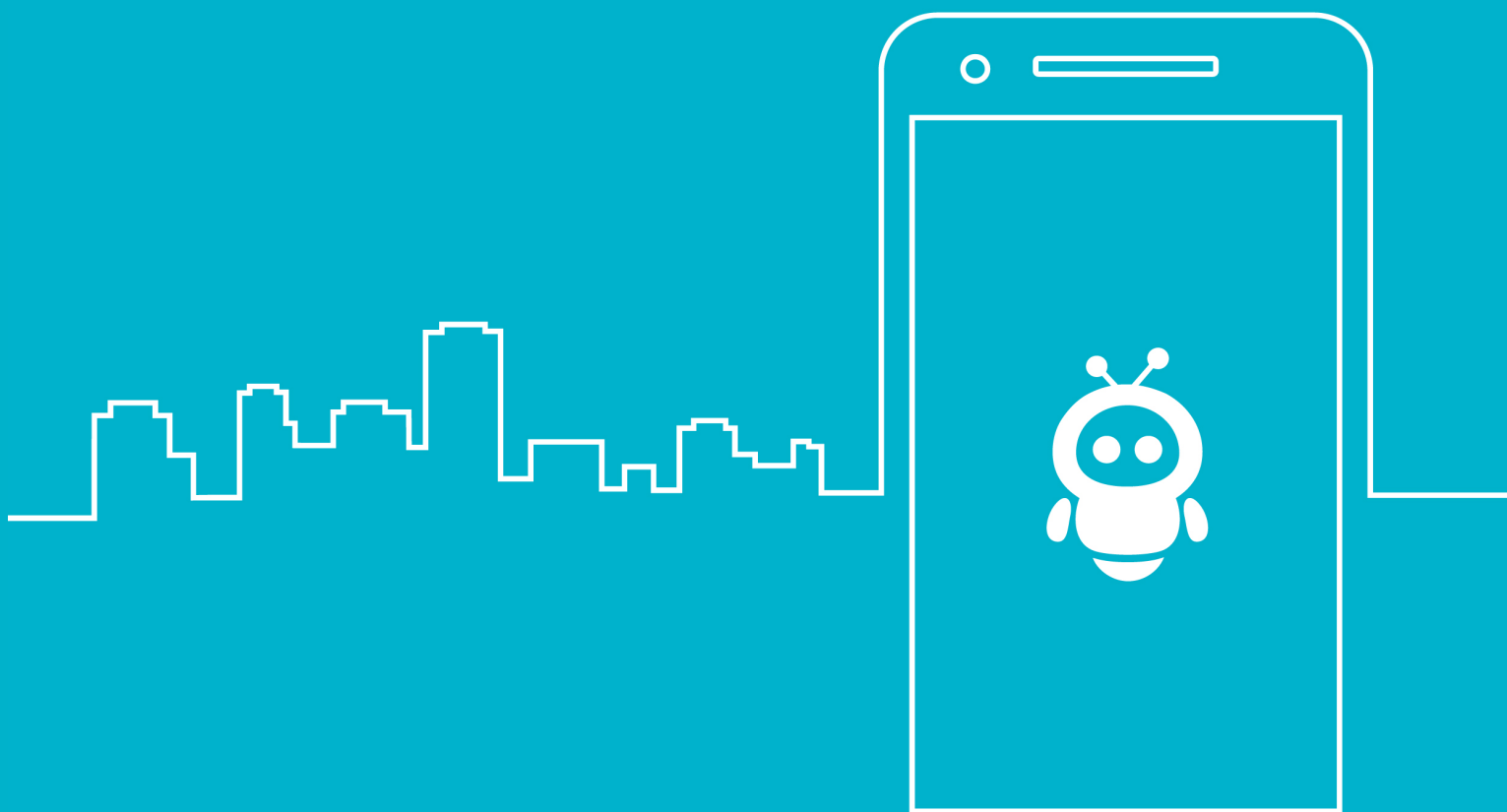


Table of Contents

Overview	4
Creating a Unit for WiaTag	5
Unit Creation From the Monitoring System	5
Unit Creation From the Application	6
Starting Application and Choosing Mode	7
User Modes	7
Active	7
Standard	8
Lite	8
Custom	8
Main Screen	9
Top Block	9
Central Block	10
Bottom Block	10
GPS Connection	10
Internet Connection	10
Service Status	10
Other	10
Latest Data	11
Actions Menu	12
Scan QR code	12
Send Photo	12
Sending from Camera	12
Sending from Library	12
Send Position	13
Send SOS	13
Custom Statuses	14
Template Creating	14
Status Sending	14
Template Deleting	15
Settings	16
Connection Settings	16
Server	16
Unit Properties	16
Operation Mode	17
Data Collection	17
Data Sending	18

Start/Stop by Event	18
Data Settings	19
Location Source	19
Messages Filtration	19
Additional Parameters	20
Main Screen	21
Administrative Settings	21
User Mode	21
Admin password	21
Custom Statuses	21
Remote Control	21
Visible Settings	24
Notifications	24
Photo Quality	25
Debug Mode	25
Power Save Mode	25
Clear Black Box	25
Reset	26
NFC Reader	26
Other	26
Measurement System	26
Contact us	26
Help	26

Overview

WiaTag is an application used for tracking unit's location.

WiaTag can be installed on Android based mobile devices, such as cell phones, laptops, netbooks, etc. Location is tracked mainly using GPS, therefore a device should possess GPS receiver.

WiaTag is compatible with GPS and GLONASS tracking systems [Wialon Hosting](#) and [Wialon Local](#). Position data is sent from mobile device to the server of tracking system to be stored. Besides position data (coordinates, course, speed. etc.), images, alarm messages, and custom statuses can also be sent to the server.

Data received from a mobile device can be processed by a tracking system and presented in different forms such as tracks of traveled routes on the map, notifications, etc.

Creating a Unit for WiaTag

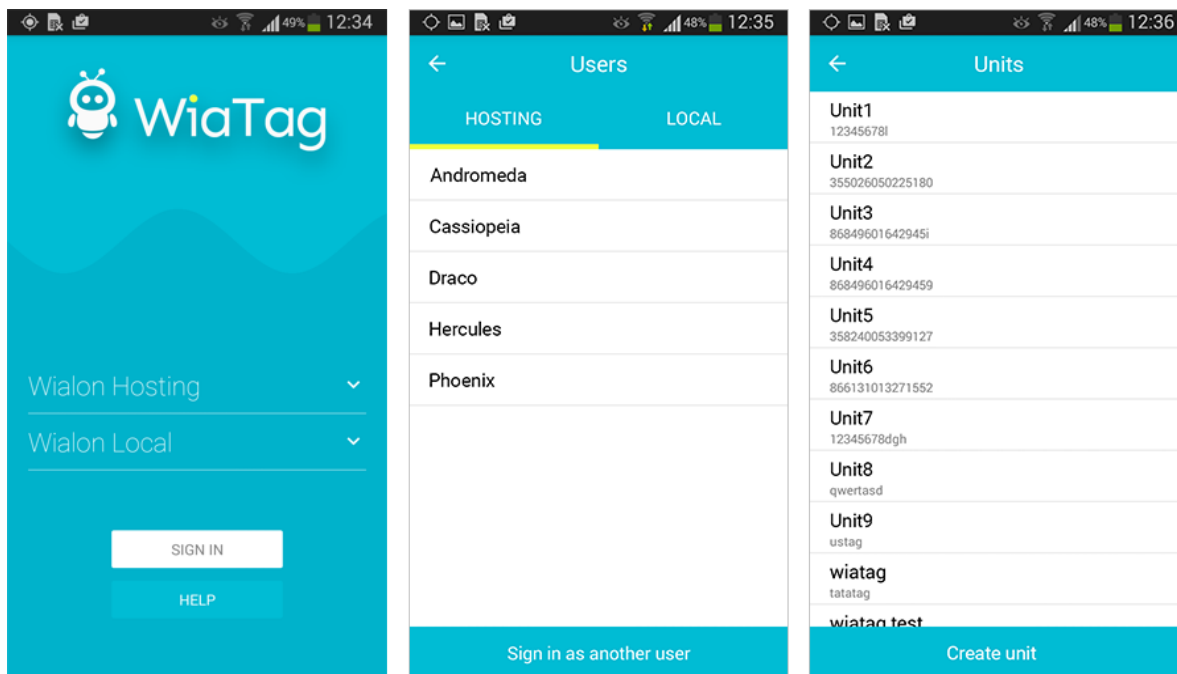
WiaTag application needs a unit to be created in the monitoring system. It can be done either from the interface of the monitoring system or from the application itself.

Unit Creation From the Monitoring System

The fields to be filled in upon unit's creation are described in the documentation on [Wialon Hosting](#) and [Wialon Local](#). So, let's just observe how to fill in the fields directly connected with the application operation. Firstly, in the 'Device type' field choose 'WiaTag' option. Then indicate a unique ID. Note that both numeric and alphabetic values can be used for it (for example, mobile device's IMEI code). The indicated identifier is used in WiaTag for a unit connection. Moreover, if you would like to use a password for a connection, then it is necessary to indicate one in the 'Device access password' field.

General	Access	Icon	Advanced	Sensors	Custom Fields	Unit Groups	Commands	Eco Driving
Profile	Trip Detection	Fuel Consumption	Service Intervals					
* Name:	WiaTag_test		from 4 to 50 characters					
* Device type:	WiaTag		Wialon IPS ASC Antares 5					
Unique ID:	test007							
Phone number:								
Device access password:	optional							
Creator:	krir							
Account:	krir							

The list of units created in the monitoring system for the work with WiaTag is available in the application after an authorization. To authorize, tap the 'Log in' at the bottom of a unit connection screen and choose the monitoring system used. Then choose a user from the list (the list contains all the users authorized from this device in any mobile application of Wialon system) or authorize as another user (corresponding button at the bottom of the screen). Afterwards, we get to the list of units any of which can be chosen to work with WiaTag.

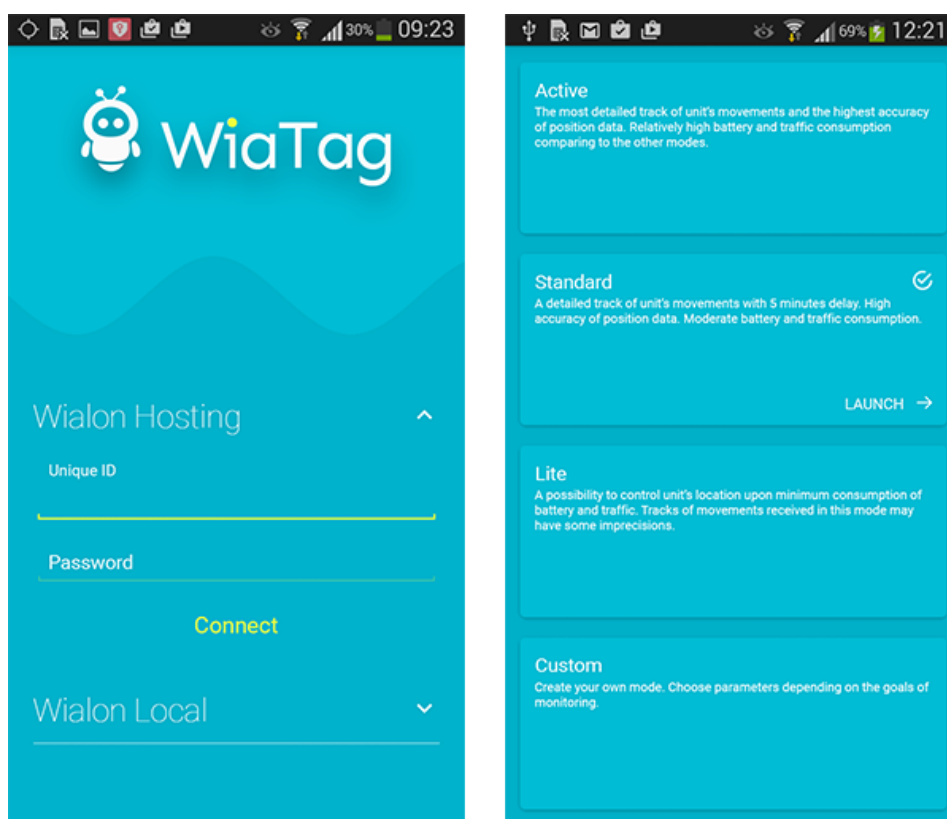


Unit Creation From the Application

To create a unit from the application, it is also necessary to authorize first (see above). Afterwards tap the corresponding button at the bottom of the screen, fill in the appeared fields, and confirm your action by tapping 'Save'. A created unit gets into the list of units.

Starting Application and Choosing Mode

On the unit connection screen choose a monitoring system used (Wialon Hosting or Wialon Local) in order to launch an application choose. Afterwards fill in the appeared fields. For Wialon Hosting it is necessary to indicate a unique ID and password (optional), for Wialon Local — server address, unique ID, and password (optional).



User Modes

After connecting to the monitoring system it is necessary to choose a user mode: Active, Standard, Lite, or custom one. Each mode has its own parameters of data collecting and sending.

Active

This mode provides you with a possibility to receive the most detailed track of unit's movements and ensures the highest accuracy of position data. This mode provides relatively high battery and traffic consumption comparing to the other modes.

Data collection: continuous.

Data sending: continuous.

Maximum accuracy value: 30 meters.

Standard

This mode provides you with a possibility to receive a detailed track of unit's movements with 5 minutes delay and ensures relatively high accuracy of position data. Moderate battery and traffic consumption is considered to be an advantage of the mode.

Data collection: smart mode.

Data sending: by timeout (5 minutes).

Maximum accuracy value: 50 meters.

Lite

This mode provides you with a possibility to control unit's location upon minimum consumption of battery and traffic. Note that track of movements received in this mode may have some imprecisions.

Data collection: by timeout (5 minutes).

Data sending: by timeout (5 minutes).

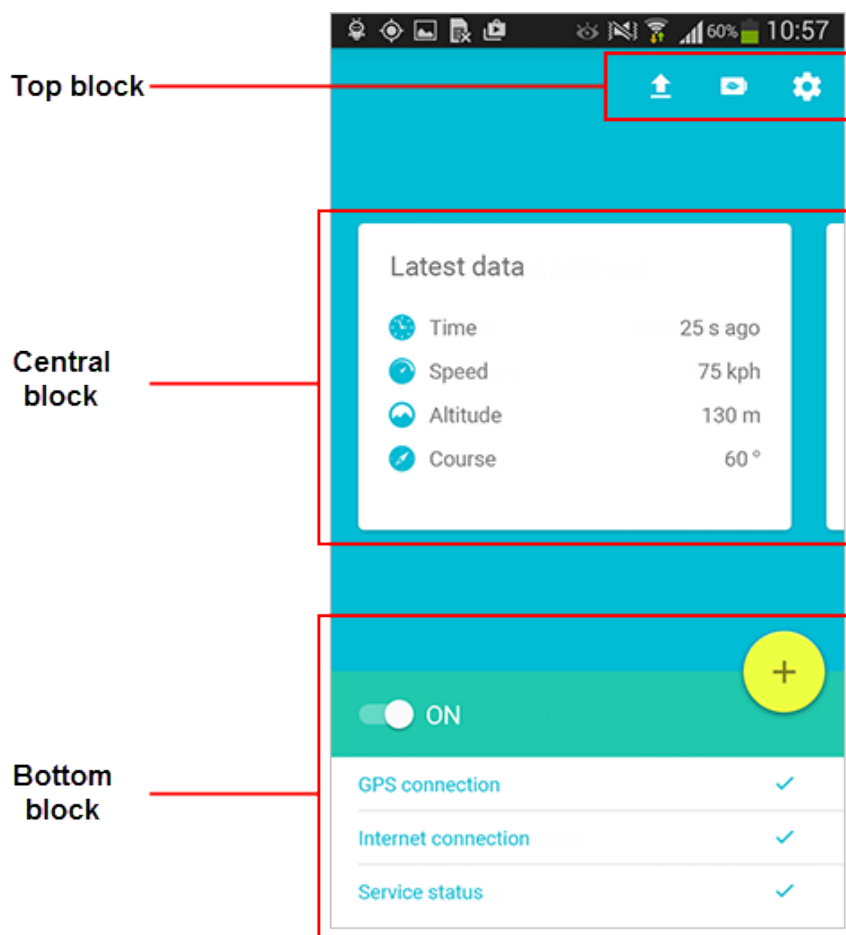
Maximum accuracy value: 1000 meters.

Custom

This is a mode where all parameters should be set individually according to the goals of tracking. Initially all the parameters have standard values.

Main Screen

An interface of the application's main screen could be conditionally divided into 3 blocks: top, central, and bottom one.



Top Block

The top block contains 3 buttons:

- Arrow — unloads messages from the black box. Red indicator is shown upon the availability of messages in the box;
- Battery — turns on the [power save mode](#) upon tapping it;
- Gear — transfers to the application settings menu.

Central Block

Central part of the screen is occupied by the block where you can view unit's [latest data](#) or (upon indicating the corresponding settings) send unit's [current status](#) (use a horizontal slide to switch from latest data viewing to current state sending). Latest data receiving and current status sending requires availability of GPS and Internet connection as well as starting unit's location determination service.

Bottom Block

Upon the first launch of the application a unit's location determination service is stopped. To start it, tap the corresponding button at the top of the block. The further activity of the application depends on the settings used, availability of GPS connection (to generate location messages) as well as connection with Internet and server (to send messages from clipboard or black box). State of data collecting and sending parameters is shown in the bottom block:

GPS Connection

Shows the availability of GPS connection

Internet Connection

Shows the availability of Internet connection.

Service Status

Shows whether location determination service is started or stopped.

ATTENTION!

Stopping of the service may be restricted by an administrator.

For Android devices automatic start/stop of the service is also possible after reboot, while charging the battery, or by schedule.

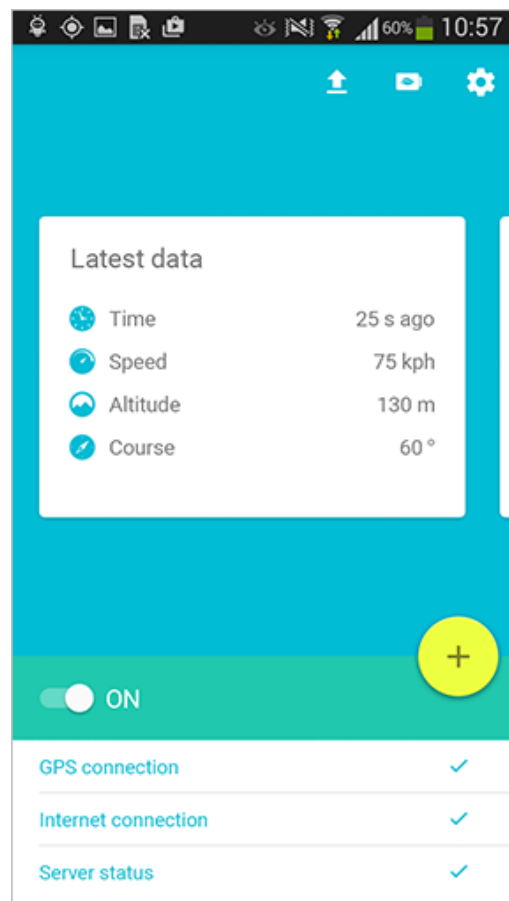
Other

Tap the '+' button in the bottom block in order to open the [actions menu](#). Note that implementation of any action from this menu requires the availability of Internet connection.

Latest Data

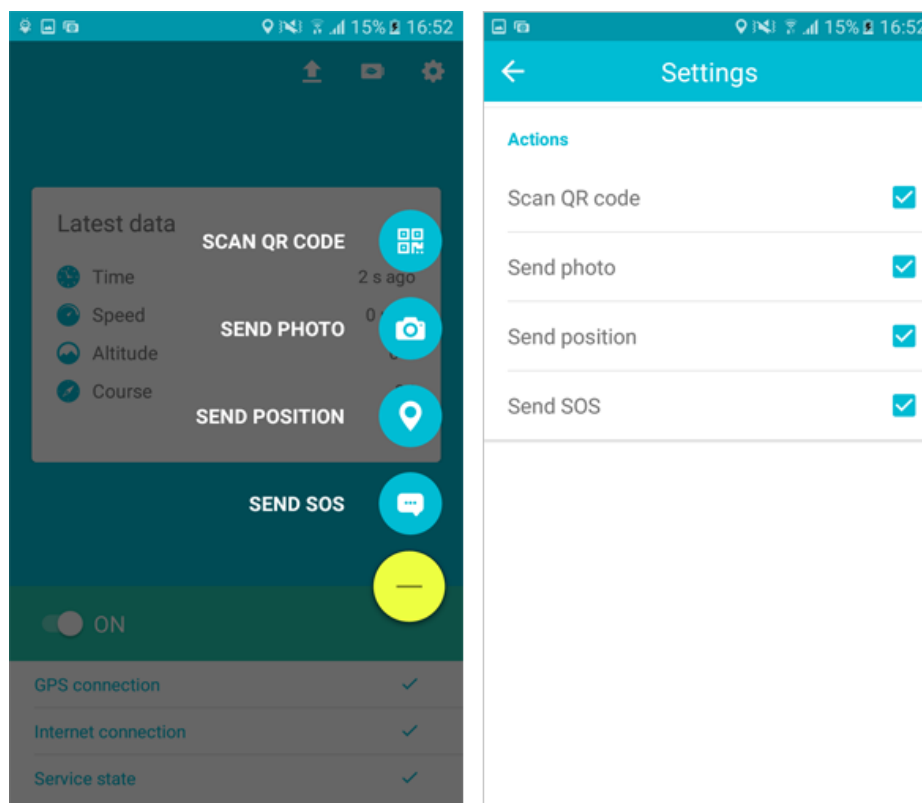
Latest data is taken from received messages. Latest data is refreshed automatically upon receiving new messages. The latest data block may contain up to 4 items on your choice:

- Time — date and time of receiving the message;
- Speed — unit's speed (in km/h);
- Altitude — elevation of a unit above the sea level (in meters);
- Course — direction of movement (in degrees). It can take on the values from 0 to 360 degrees, where 0° is a course strictly northward, and then the value increases clockwise;
- Position — geographical latitude and longitude of unit's location;
- Accuracy — accuracy of location data (in meters). In other words, accuracy is a radius (drawn around a current location point) within which a unit can be situated.



Actions Menu

This menu contains a list of actions available for a chosen [user mode](#):



Scan QR code

Scan QR code in order a message containing 'qr' parameter to be sent to the server. This message is stored in the data base of the system and afterwards can be used for the monitoring purposes.

Send Photo

An image sent to the server is saved in the data base of the system and afterwards can be used for the monitoring purposes. Note that unit's location info is send to the server along with the image. Before sending a photo it is recommended to indicate [image quality](#).

Sending from Camera

Choose this item in order to take a picture and send it.

Sending from Library

Choose this item in order to send an image stored in the memory of your mobile device.

Send Position

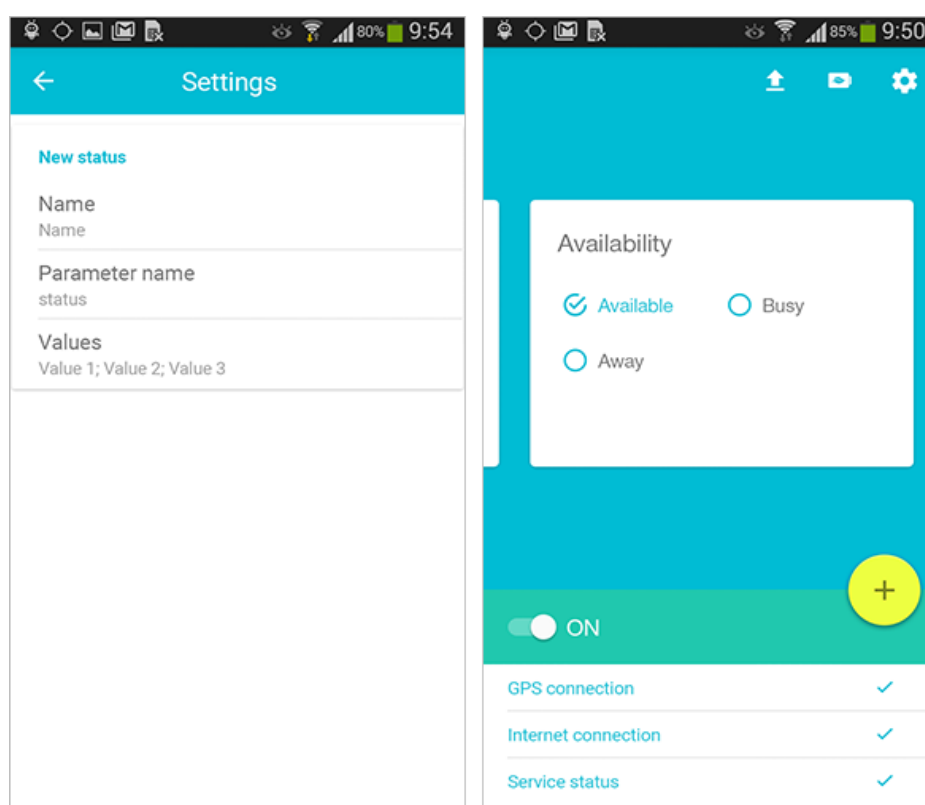
Position sent to the server is saved in the data base of the system and afterwards can be used for the monitoring purposes.

Send SOS

Alarm message (SOS) can be sent in case a critical situation occurs. In the monitoring system's data message it has the following view: 'SOS=1'. Note that unit's location info is send to the server along with the alarm message. Unit's location is detected by the system at the moment of SOS sending. In case of failure to detect current location, the latest known location will be sent.

Custom Statuses

WiaTag application supports creating and sending of custom statuses. A user can create any number of custom statuses templates, for example, 'Template 1' can obtain such values as 'Free', 'Busy', 'Away', and 'Template 2' — 'Private', 'Business', 'Unified', etc. Template creating is done in the corresponding section of the application settings. Template sending is done on the main screen of the application.



Template Creating

To create custom statuses template, go to the application settings (main screen>top block>gear button). Afterwards, choose 'Custom statuses' item in the 'Administrative settings' section. To create template, tap the corresponding button and fill in parameters:

- Name — indicate template's name;
- Parameter name — indicate parameter's name;
- Values — add the necessary number of values (max 6) and give a name for each of them.

Status Sending

Sending custom statuses from created templates is implemented in the central block of the main screen. Using the horizontal slide switch to the necessary template and tap a status to be sent.

Custom statuses appear in the tracking system as data messages containing parameter's name and value.

Custom statuses are usually sent along with coordinates. If there is no access to 'fresh' position data at the moment, then the last known coordinates are used.

Sent statuses can be used in the monitoring system to adjust notifications (notification type should be 'Message parameter control').

Sent parameters (both alarms and custom statuses) can be used in the tracking system to adjust notifications (notification type should be 'Message parameter control'). You can be notified on receiving custom statuses by e-mail, SMS, online popup message. Moreover, you can register received statuses in unit's database and generate reports on them

Template Deleting

To delete a template, go to the Settings>Administrative settings>Custom statuses, choose a template you would like to delete, tap the corresponding button in the bottom, and confirm your action in the appeared dialog.

Settings

User settings menu serves to configure parameters influencing the work of both the application and the location determination service. A number of settings available to a user is indicated in the 'Visible settings' item of the 'Administrative settings' section.

ATTENTION!

Access to the settings can be restricted by the [password of administrator](#).

Connection Settings

Server

Host

The service is compatible with GPS and GLONASS tracking systems such as [Wialon Hosting](#) and [Wialon Local](#). For Wialon Hosting a server host is indicated automatically upon starting the application. For Wialon Local it should be done manually. For both Wialon Hosting and Local a server host can be edited manually (if necessary) in this field.

Port

For Wialon Hosting a server port is indicated automatically upon starting the application. For Wialon Local it should be done manually. For both Wialon Hosting and Local a server port can be edited manually (if necessary) in this field.

Unit Properties

Unique ID

Unit's unique ID is an identification code used to recognize your mobile device in the tracking system. It can be the same as IMEI code of the mobile device or any other identifier.

Password

Indicate a password if it should be used for a unit access. Note that an indicated password should be duplicated in the interface of a monitoring system (corresponding field of a unit properties dialog), otherwise unit's data will not be registered on the server.

Bind unit

Here choose a unit to bind your application to.

Operation Mode

Chosen configuration of the operation mode may influence the consumption of traffic and battery. Operation mode is defined by 3 parameters. Depending on the goals of tracking you can choose settings for data collection, data sending, and starting/stopping by event. Further there is an information on each setting.

Data Collection

Data Collection Method

- Continuous — location data is collected constantly, collected data can be characterized by a high accuracy. The negative side is higher consumption of battery and traffic.
- By timeout — location data is collected regularly over a certain period of time. This period of time (timeout) should be indicated in the corresponding field (5 minutes by default). Note that the less timeout is, the more accurate data you collect. Using this method traffic and battery consumption depends on a timeout indicated.
- Smart mode — the key feature of the method is that data collection takes place only upon unit's movement. If a unit stays still for more than 5 minutes, then location determination service is stopped, and the application switched to motion detection. The location determination service will be automatically started upon detecting any motion.

Motion Detection

If smart mode has been chosen, then it is necessary to indicate motion detection parameters. Further there are some recommendations on their usage:

- Activity recognition — can be used on devices having the corresponding configuration. That is why the efficiency of this method should be tested for each device individually.
- Accelerometer — can be applicable for those who travel by foot. The negative side is that the beginning of motion can be often detected upon shaking device while standing still.
- Wi-Fi — can be applicable for those who uses Wi-Fi upon reaching any checkpoint. The algorithm is the following: Wi-Fi connection is available — a unit stands still, Wi-Fi is not available — a unit is on the move. This method is not considered to be a high accuracy one because of the large amount of Wi-Fi networks in a city's infrastructure.
- GSM — in this case a motion is detected considering location of cellular base stations. The algorithm is the following: a device determines location of cellular base stations and repeats the action after a period of time. If location of cellular base stations is changed, then motion is detected. Note that some imprecision can take place upon determining base stations location. Therefore it is not considered to be a high accuracy method. The efficiency of this method should be tested for each device individually.

- Significant motion sensor — in this case the motion is detected upon significant movement of a unit. A significant movement is a movement that might lead to a change in the user's location. This method is considered to be a high accuracy one and can be applied for those who moves on foot, rides a bike, or drives a car. The efficiency of this method should be tested for each device individually.

Motion Detection Timeout

The indicated time shows the regularity of motion detections.

Detect Motion Continuously

Enabling of this option increases the motion detection accuracy, but in the same time considerably increases the battery consumption. Enabling of this option excludes the usage of timeout.

Data Sending

Data Sending Method

Data can be sent continuously, by timeout, or manually.

In the first case ('Continuous' option), location data is sent to the server constantly (upon arriving to the black box and upon the Internet availability). The battery is consumed actively using this method, therefore it is recommended to use it if you have the possibility to charge your battery any time.

In the second case ('By timeout' option), location data is sent to the server regularly (once in the indicated time) and afterwards a mobile device returns to the sleeping mode.

In the third case ('Manual' option), all collected location data messages are stored in the black box, and if necessary a user unloads the black box manually.

Timeout

This parameter is relevant only if data sending by timeout is chosen above. Timeout value should be no less than 5 minutes.

Work in Roaming

Depending on this checkbox state, the mobile device sends data in roaming or not.

Start/Stop by Event

Auto Startup

Mark this checkbox to automatically launch WiaTag after your mobile device has been rebooted.

Work While Charging

Automatically launch WiaTag service when the charger is connected and stop it when the charger is disconnected.

Work by Schedule

The service can be automatically started or stopped according to a schedule. Created schedule intervals are displayed only upon choosing this option. Schedules can be edited or deleted. Further, there is a guide on how to create a schedule.

Add Schedule

Schedule creation becomes available only if the 'Work by schedule' flag has been chosen above. Tap 'Add schedule' button, indicate time interval and days of the week for starting/stopping the service.

Data Settings

Location Source

This option allows to choose the method for determining unit's location. It can be Google Fused (default), GPS, Wi-Fi and mobile networks, or GPS+Wi-Fi+mobile networks. Note that the corresponding options should be enabled in the settings of the mobile device itself.

Messages Filtration

If you activate this option, parameters listed below will be applied to messages prepared for sending to the server. This filtration can be applied only to the messages generated by GPS, because if wireless technology is used, such data as speed, course, satellites count, etc. is unknown, and accuracy can exceed 2000 meters.

The conditions of filtration are listed below. The 'logical OR' operation is applied to them, in other words, a new message is generated if any of the mentioned conditions is met. This is not applicable to the Max accuracy and Max speed parameters as they are intended to exclude messages with improbably high values (potentially invalid messages).

Min Time Interval

Minimum time interval between messages sent to the server (in seconds). In other words, a new message is generated when the indicated time since previous message has passed.

Min Distance

Minimum distance between messages (in meters). In other words, a new message is generated if the unit has traveled the indicated distance since the previous message.

Change in Course

Indicate an angle on which a course will be changed (i.e., a motion direction) for new message sending (in degrees).

Change in Speed

Indicate a speed change (difference between the previous and current messages) which is sufficient for sending a new message.

Max Accuracy

Maximum accuracy value (in meters). If exceeded, such message is considered invalid and will not be sent to the server.

Max Speed

Maximum speed value (in kilometers per hour). If exceeded, such message is considered invalid and will not be sent to the server.

Additional Parameters

Choose the additional parameters you would like observe in data messages:

LBS Data

If this option is chosen, then sent messages contain information on the nearest base cell stations (for example, cell tower ID).

Provider name

If this option is chosen, then sent messages contain parameter 'p' showing a source of location data.

Accuracy

If this option is chosen, then sent messages contain parameter 'a' showing information about accuracy of a detected location (in meters).

Battery Level

If this option is chosen, then sent messages contain parameter 'b' showing a battery level (percentage).

Last Status

If this option is chosen, then sent messages contain the last indicated unit [status](#).

Main Screen

Latest Data

The [latest information](#) on the key parameters of unit monitoring. Latest data block occupies the central place on the main screen of the application.

Actions

Here you can adjust the [list of actions](#) available to a user.

Administrative Settings

User Mode

The choice of a [user_mode](#) depends on the goals of monitoring. The modes may differ by their configuration. A configuration influences both the accuracy of received data and the consumption of traffic and battery.

Admin password

Choose the option if you would like to make configuration of WiaTag available only to those who has administration privileges. Without entering a password user will be unable to stop the service or view/change settings.

In the corresponding field enter the password (active if the usage of admin password is enabled) restricting the access to the above mentioned actions.

Custom Statuses

Choose this item to set [custom statuses](#).

Remote Control

Choose this item to enable/disable remote control.

Using remote control you can send a command from the interface of the monitoring system. The following commands are available:

- Send custom message;
- Query snapshot;
- Query snapshot from camera;
- Query position;
- Start/stop;

- Torch;
- Upload configuration.

The 'Upload configuration' command provides you with the possibility to configure a user settings menu remotely. To do so, this command should be attached with [JSON format](#) text file containing a necessary configuration. A configuration file has the [following view](#).

A configuration file contains 'key:value' pairs where key stands for the app settings and value — for the required configuration of these settings. Below is the list of keys, corresponding settings, and possible configurations:

data_collection_mode	data collection	0 — continuous, 1 — by timeout, 2 — smart mode
data_collection_timeout	data collection timeout	custom value, min
motion_detectors	motion detection	0x1 — activity recognition, 0x2 — accelerometer, 0x4 — Wi-Fi, 0x8 — GSM, 0x10 — significant motion sensor
motion_detectors_timeout	timeout for motion detection	custom value, min
detect_motion_continuously	detect motion continuously	true — enable, false — disable
data_sending_mode	data sending	0 — continuous, 1 — by timeout, 2 — manual
data_sending_timeout	data sending timeout	custom value, min
send_data_in_roaming	send data in roaming	true — enable, false — disable
auto_startup	auto startup	true — enable, false — disable
work_while_charging	work while charging	true — enable, false — disable
work_by_schedule	work by schedule	true — enable, false — disable
location_source	location source	0 — Google Fused, 1 — GPS, 2 — Wi-Fi+mobile networks, 3 — GPS+Wi-Fi+mobile networks
enable_filtration	filtration enabling/disabling	true — enable, false — disable
filtration_min_time	min time interval	custom value, sec
filtration_min_distance	min distance	custom value, m (ft)
filtration_change_in_course	change in course	custom value, 0-360°
filtration_change_in_speed	change in speed	custom value km/h (mph)
filtration_max_accuracy	max accuracy	custom value, m (ft)
filtration_max_speed	max speed	custom value, km/h (mph)

send_parameter_lbs	additional parameters, LBS data	true — enable, false — disable
send_parameter_provider_name	additional parameters, provider name	true — enable, false — disable
send_parameter_accuracy	additional parameters, accuracy	true — enable, false — disable
send_parameter_battery_level	additional parameters, battery level	true — enable, false — disable
send_parameter_last_status	additional parameters, last status	true — enable, false — disable
enable_action_send_photo	actions menu adjustment, photo sending	true — enable, false — disable
enable_action_send_position	actions menu adjustment, position sending	true — enable, false — disable
enable_action_send_sos	actions menu adjustment, SOS sending	true — enable, false — disable
visible_statistics	visible settings	0x1 — time, 0x2 — speed, 0x4 — altitude, 0x8 — course, 0x10 — location, 0x20 — accuracy
user_mode	user mode	0 — active, 1 — standard, 2 — lite, 3 — custom
use_admin_password	admin password	true — enable, false — disable
admin_password	set admin password	custom, both numeric and alphabetic values
photo_quality	photo quality	0 — original, 1 — high, 2 — medium, 3 — low
enable_debug_mode	debug mode	true — enable, false — disable
power_save_mode_at_low_battery	power save mode at low battery	true — enable, false — disable
enable_power_save_mode	power save mode	true — enable, false — disable
visible_settings	visible settings	this key has inclusions, because it is necessary to indicate settings' sections and values. All the possible values for each section are listed below
connection_settings	connection settings	0x1 — server, 0x2 — unit properties
operation_mode	operation mode	0x1 — data collection, 0x2 — data sending, 0x4 — start/stop by event
data_settings	data settings	0x1 — location source, 0x2 — filtration, 0x4 — additional parameters

main_screen_customizer	main screen	0x1 — latest data, 0x2 — actions
administrative_settings	administrative settings	0x1 — user mode, 0x2 — admin password, 0x4 — custom statuses, 0x8 — remote control, 0x20 — notifications, 0x40 — photo quality, 0x80 — debug mode, 0x100 — power save mode, 0x200 — clear black box, 0x400 — reset
other_items	other	0x1 — contact us, 0x2 — help

Note that values can be presented numerically (0, 1, 2, etc.), alphabetically (true/false), or by flags (0x1, 0x2, 0x20, etc.). Numeric and alphabetic values are used to choose single parameter/status. Using flags, you can indicate multiple parameters. For example, it is required to show such parameters as 'Contact us' and 'Help' in the user settings menu. To do so, it is necessary to make an addition of their flags (0x1 + 0x2 = 0x3), convert a received sum into decimal number system, and indicate a result of conversion as a value of a key.

Example of a configuration file for visible settings:

```
"visible_settings":{
    "connection_settings":1,
    "operation_mode":1,
    "data_settings":4,
    "main_screen_customizer":0,
    "administrative_settings":2,
    "other_items":2
}
```

Share Configuration

To share current configuration of the application, tap this item. In the appeared menu choose program for configuration sending and indicate an addressee. Moreover, you can save a configuration into buffer for a further usage.

Visible Settings

Here you indicate the settings to be shown in the user menu.

Notifications

A status bar may display information on the method of data collection and sending as well as location source chosen. Moreover, here received messages are shown (choosing of a message type is described below). Receiving of a notification is shown by a special icon.

Show App Status

Enable this option in order a special indicator of the application activity to be shown in the notifications panel.

Background Events

Here you can choose events for which notifications will be shown in a status bar:

- Invalid ID or password (in case either unit's unique ID or password is invalid);
- Connection error (in case a connection with a server cannot be established);
- Location determination error (in case of failure to determine location).

Photo Quality

Here you can choose image quality which will be used upon photo sending (traffic consumption depends on the chosen quality). The following variants are available:

- Original — original image without quality loss;
- High — original image is compressed to 3 megapixels (not more than 600 kb);
- Medium — original image is compressed to 2 megapixels (not more than 300 kb);
- Low — original image is compressed to 1 megapixel (not more than 100 kb).

Debug Mode

If the checkbox is enabled, log files are saved in the 'WiaTag' folder. This mode is recommended to employ when you just start using the program. Then, when all necessary features have been tested, the debug mode can be disabled. If you have encountered any bugs or crashes, it is advisable that you send log files to the developers for the further analysis.

'Send logs' option is available only if debug mode has been enabled. This option serves for sending log files to the application developers by e-mail. Such fields as address and subject are already filled in, the log file is attached. All you should do is describe a problem and send e-mail. To use this option make sure that your mail account is set.

'Clear logs' option delete all the saved log files from the 'WiaTag' folder.

Power Save Mode

Power save mode provides you with a possibility to decrease battery consumption. This is possible due to the changing of [data sending](#) method to manual.

Enable this option in order the power save mode to be activated upon reaching low battery level (15%).

Clear Black Box

Tap the option in order to delete all the messages from the black box.

Reset

Tap the option to reset all the settings to default ones.

NFC Reader

To read NFC tags, it is necessary to enable this option. Upon reading a tag, a message containing 'nfc' parameter is sent to the server. This message is stored in the data base of Wialon Hosting and afterwards can be used for the monitoring purposes. Note that NFC reader can be enabled if a device is equipped with NFC chip.

Other

Measurement System

WiaTag supports two systems of measurement — metric and U.S. one. Here choose the system you would like to work with. If the 'Automatic' item is chosen, then the system of measurements will be set depending on the settings of your device.

Contact us

This option serves to contact the application developers.

Help

Tap this item to view WiaTag user manual.