

TrackHead

User Guide

Version 2022/05 rev.: 3

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Attention, to read please

1. For full use, have mobile data turned on on your smartphone, and deactivate your PIN before creating a SIM card, check Data, SMS, Calls, CLIP.
2. Make sure that the card and fuse are inserted correctly
3. With the sim card inserted, **verify the LED diagnostics and pairing of the device in the application immediately after connecting the battery**, before assembling the device, then remove the device cover.
4. **Add device via QR code, read every step and follow wizard** for correct initialization and configuration. Dont forget to test you sim card described in wizard.
5. **Device initialization - SMS method from wizard is recomended.** SD card manipulation is not user friendly. Please read carefully wizard steps, and **dont forget** to set correct **Trust number 1** and **APN**. It is necessary for device to work correctly.
6. Notification type „**Locked position change**“ and „**Alarm**“ is **safety critical** and **CALL or SMS method is highly recommended** instead of PUSH. PUSH method is propagated over the internet by more independent systems. CALL or SMS is sent directly to user phone number from tracker. This method is the most reliable for delivery.
7. **Locked position change** and **Alarm** notification is triggered only if Tracker is in **Locked** operating mode (read Device controls page 29 and Device Operating work modes on 33). If device is Locked, after moving , Locked position change notification is triggered immediately and TrackHead changes operating mode to Alarm . In Alarm operating mode, Alarm notification is triggered periodicaly. In default settings , periode is 60s and count of triggers is 4. This values can be changed in configuration screen (chapter Other settings page 42).
8. Please read more about device operating modes in chapter Device Operating work modes on 33. Device supports different operating modes: Unlocked, Locked, Alarm, Tracking. **In all modes device can turnes off automatically after not moving in configured delay with actived movement sensor. If device turned off automatically, then it turns on after movement is detected.**This configurations is explained in chapter Custom power settings page 40

9. Special OFF mode is set by button OFF. If device is set to OFF, it goes to deep sleep for minimal power consumption. OFF state means that main modules of device(GSM,GPS) have not been powered. Although, TrackHead is in OFF state, device starts and sends info data one time per 2-4days. OFF can be set in Locked, or Unlocked mode. See below these two differences:

1. If device is set OFF in UNLOCKED mode, device cannot start itself. It can be started physically with **magnetic key ONLY !** as shown in the **Figure. 18: Physical activation of the device**

Warning: If you want to set standard ON mode, it is needed also to set Unlocked,Locked or Track operating mode in the App.

2. If device is set OFF in LOCKED mode, device starts itself through moving sensor. After device starts-up, software scans next movements. If movements continue, Locked position change and Alarm notification is triggered and device Special OFF function cancels and TrackHead sets to ON automatically.

On the other side, if movements do not continue, Special OFF function does not cancel and continues in OFF and goes to deep sleep in Locked mode in few minutes with movement sensor activated.

Introduction

The TrackHead is a GPS locator and antitheft device. It is an intelligent product used to track the position of bicycles, motorcycles and other devices. The equipment was developed and manufactured in Slovakia by Rhalotel s.r.o., which has many years of experience in the development and production of monitoring equipment and providing services in the field of truck traffic monitoring. The device has a built-in accelerometer which, in the lock mode, after moving or manipulating the bicycle, notifies the owner of unauthorized manipulation. Through the application, the customer can track routes and the entire history of the device. A great advantage of TrackHead GPS locator is that it offers the ability to set battery life according to the specific energy modes.

Technical parameters

The device reads position data and communicates using a GSM / GPRS module. This module provides the Internet connection needed to control the device using an intelligent application available for smartphones with the Android or IOS operating system, but also for common Internet browsers.

The device obtains data on the change in the movement of a car, bicycle or transported goods using a triaxial accelerometer (motion sensor).

TrackHead has a battery with a capacity of 3350 mAh, which can ensure a long period of operation of the device in accordance with the settings, up to 1 year. Once connected to the Internet, this device can be configured using an application available on iPhone, Android and all devices with a web browser. The battery supports 5V charging via micro-USB connector, while the charging current reaches up to 1A.

Package content

The product package contains:

- Bike TrackHead device
- User Manual digital links
 - A manual containing QR codes to actual version
 - Warranty card
- Activation card
 - A card containing device credentials- Security code
- Micro-SD card
 - Contains the initialization configuration file
- TrackHead magnetic key-chain
- Device cap , USB cup
- Tiny screwdriver

To install the device and during the period of use, you will need:

- Micro-USB cable (type B) and simple charging power supply 5V DC at recommended with 1A capabilities – without power recognition protocol
- Socket wrench
- SIM card

Minimum requirements

The device does not require special hardware or software requirements. For initialization with integrated wizard, there is needed SIM to support SMS function. Second option is initialization the GSM module with SD card, a micro-SD input port is required, where a micro-SD card with initialization data. The application can be launched in any browser or in a mobile application. It is necessary to have a SIM card with a data package, an active CLIP function and roaming for use abroad. **It is recommended to remove/cancel authorization via PIN code.**

The amount of data transferred depends on the interval of sending the data frame and the way the locator is used.

Indicative values: One data frame sent contains approximately 50 bytes. For 1 hour of use with a maximum frequency of sent data 6s: 1Hod (30Kb), 6Hod (180Kb). The charging interval for mobile operators is 1KB by default. The recommended data volume is 500MB/per year.

The application is suitable for devices with Android, iOS or web browser. Map mode may not be displayed correctly on devices with older operating systems such as Android 4.4.4 or older.

Recommendations

We ask users not to disclose their username and password, as they may lose information about their TrackHead if it is stolen, and their property will be insecure. The same goes for the TrackHead password itself.

It is also recommended to update the application regularly, as updates ensure the smooth operation of the device and its security. The device firmware is updated automatically, which appears in the **Device Identification** section when an update is available, along with basic information about the new version.

The user must take care not to damage the device with high-pressure cleaners. **When cleaning, do not aim the high-pressure cleaner nozzle on top of the appliance**, as the electronic components of this product could be seriously damaged.

The user must not expose the battery to extreme conditions – **very high** but; especially, **very low** temperatures, which could **permanently destroy** the battery.

Important setting!!! Be sure you have set the notification Locked Position change because without this setting, although your device is locked, it is impossible to deliver notification about the changed position of the device

Device initialization procedure

1. Loosen the 4 screws, remove the device unit with the battery from the aluminum case, turn the device upside down so that the cables do not pull the battery itself, but so that the battery falls out of the case by itself and make sure the battery is disconnected
2. Deactivate PIN on your SIM card , make sure that your SIM card supports SMS, Calls, data, CLIP.
3. Insert the SIM card into the TrackHead with gold-plated contacts towards the PCB
4. If both a SIM card and an SD card are inserted, connect the battery connector.
5. Initialization process can be made either by **wizard from JER Connect app** or by SD card.
 1. **It is recommended to set the APN initialization by wizard from JER Connect app, by SMS command , continue with chapter - *Adding a device***
 2. Initialization set APN can be processed also physicaly by SD card (It is not recommended for beginners)
 - a. Remove the SD card and save the settings to the SD card using a computer.
 - b. Open the config_bck.ini file in a text editor and enter the number TRUST1, it is the telephone number of the user who has the right to send SMS commands. From the TRUST telephone number it is possible to send a command to lock / unlock the device, etc.
 - c. Enter the correct APN of your SIM card operator, you will get this information on the operator's website
 - d. *Save this file as config.ini on the SD card and insert the SD card into the TrackHead with the correct side*
6. After the correct initialization and registration to the network, a verification SMS message should arrive at the specified number TRUST1 that the initialization was successful.
7. Indicator with no problem behavior, first flashes 2x / 3s after registering to the network 1x / 3s and after connecting to the Internet and server 1x / 10s. LED diagnostics are described in Tab. 2.
8. Insert the device into the protective cover so that the notch on the flange of the case is oriented in the center of the USB charging connector.
9. Tighten the screws carefully and gradually alternately, the screws are small and care must be taken not to jam and damage the thread.
10. Continue with chapter Installation in the head tube

LED Diagnosis

While configuring, the device gives the user information about the change of its states by the green LED light located on the device itself.

Status changes together with the corresponding LED light indication are summarized in Tab. 2.

Tab. 2 List of device states indication

Status	LED indication
Boot, SIM card is not ready	3x flashes with 3-second intervals
Searching GSM network	2x flashes with second intervals
Connected to GSM, connecting to the server	1x flash with 3-second intervals
Successfull connection to the server	1x flash with 8-second intervals

Installation in the head tube

When the user wants to instal TrackHead to the bicycle, it is necessary to remove the screw on the top of the tube and start removing the star nut located in the head tube of the bicycle.

TrackHead is then inserted into the bicycle head tube.



Figure. 1: Unscrew star nut from the top of steerer tube



Figure. 2: Removing the star nut



Figure 3: Insert TrackHead into the steerer tube, remove yellow tape before



Figure 4: TrackHead insert to steerer tube

The device is then secured against theft in a unique way. The principle of this fuse lies in the simple plastic part located on the bottom of the device. For the user, however, securing only means tightening the screw located at the bottom of the head tube, Next figure shows a view from the bottom of the head tube where you tighten the screw so that the device is adequately fastened. The maximum force of tightening the screw, is located on the mark on the device case. If value is not on the device mark, force is not more than 6Nm.



Figure 5: Tightening the screw from the bottom



Figure 6: TrackHead's orientation (orientation of the USB connector)

Important! When inserting TrackHead into the head tube, turn the TrackHead in the correct position, so that the USB connector is facing the rider's seat. As shown on the Figure . Orientation of the device is important to ensure the correct function of the "3D Position" function.

Special WARNING!

It must be taken into consideration that the fastening mechanism consists of plastic parts. Therefore, when tightening the screw, take care to ensure that the plastic parts are not damaged by excessive force!

Note: TrackHead device can adapt to different diameters of the bike head tube.

ATTENTION !!!: The extender part (extended screw with nut and washer) is not suitable for permanent mounting. Extender is a replacement tool that is used for headset adjustment and it is needed to be removed before driving.

JER Connect Portal

Trackhead can be used offline or online, according to the needs and capabilities of the user. Offline mode works on the principle of sending the current position of the device via SMS. This mode is described in the chapter Offline mode. In online mode, the data is synchronized according to the refresh rate setting. Device configuration and states can be found in the application – JER connect portal, where the user's list of devices is located, or where the user adds the device.

Links to application access and downloads:

<http://trackhead.bike/>

Registration at JER Connect portal

To pair the device, it is necessary to register on the portal where the TrackHead device configuration application module is located. The first step is to open the website <https://www.jzdny.org/rado-os/#> or a smartphone application downloaded from GooglePlay or the AppStore. The previews shown below are from the web version of the application.

The first step is the registration on the JER connect portal. Registration is possible via social networks or the registration form. As shown on below the users can select either by continuing with their Social network account or they can use Join In button and fill in the Registration form.

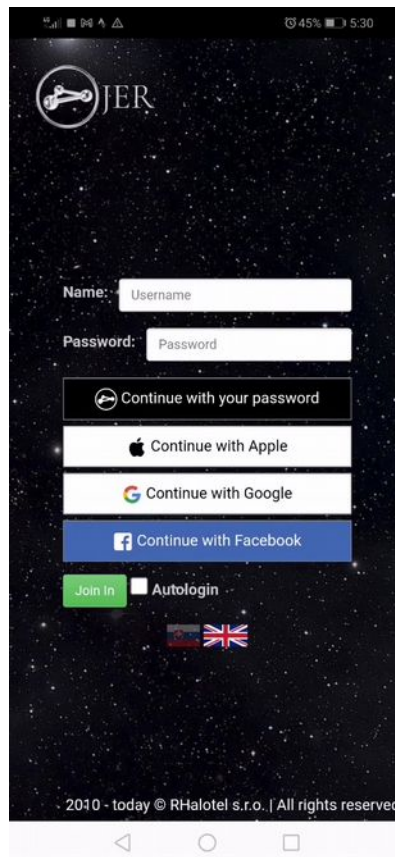


Figure. 7: User registration – first step

Adding a device

Add Device button is in **main menu** → **Devices**. After selecting this button, the window shown below will be displayed.

After filling in the data from the activation card, or by scanning the QR code from the product packaging, and pressing the **Add** button, you will add the device to your list. After adding the device, the application informs you about the status of the operation. If needed, you can remove the device from the list the same way. Enter the information of the device you want to remove and press the **Remove** button to confirm. The application again provides information about the status of the operation.

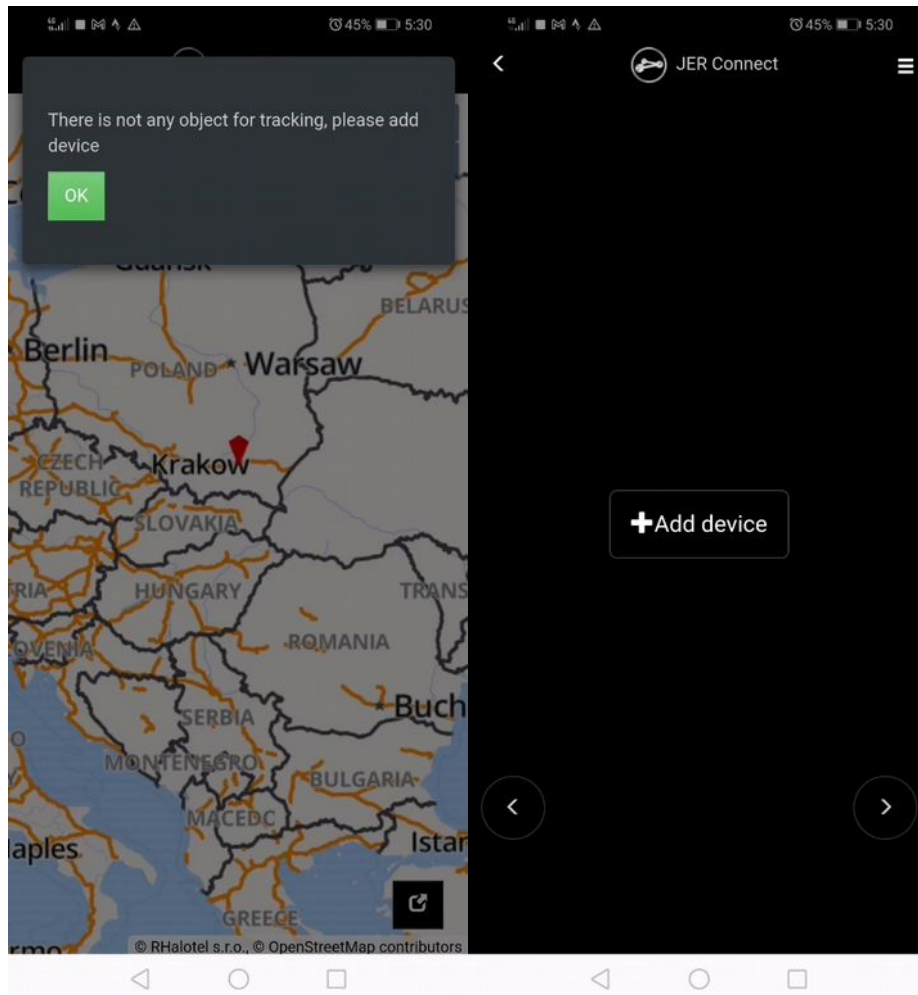


Figure 8: Add device button

Interactive Wizard

After the device is added, an interactive configuration wizard manual appears. Follow the guide step by step to successfully initialize TrackHead. Users can initialize and use the device quite effectively, because interactive manual guides the user step by step to interact with device and wizard forms and can understand basic features easily. It also contains diagnostic features and recommendation for correction of common problems.

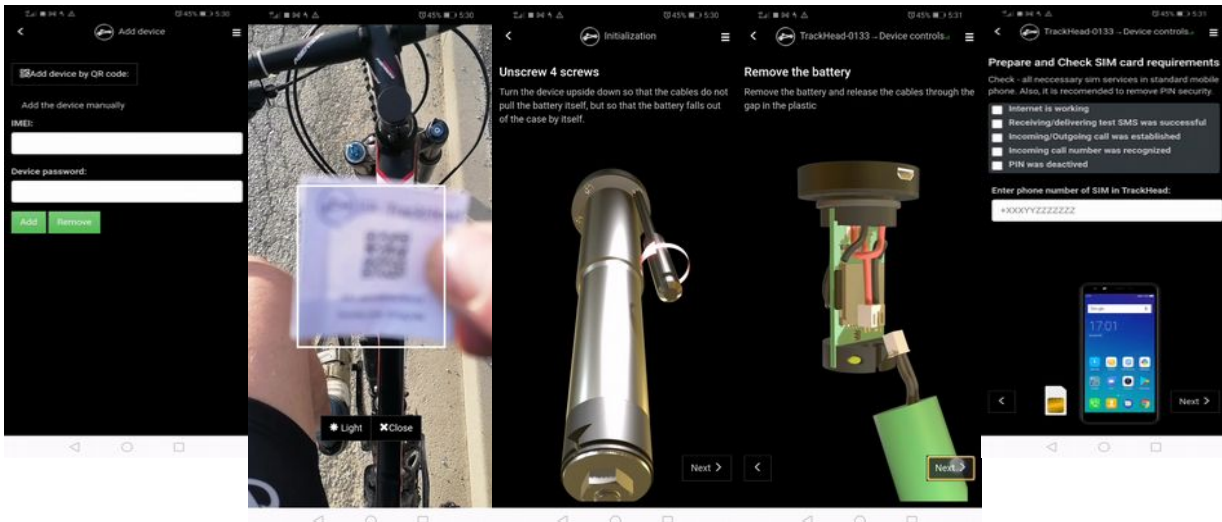


Figure 9: Initialization and configuration wizard

Initialization process

Do not forget to set correct **Trustnumber 1** and **APN**. Thanks to this wizard, user can set device successfully, without a need to read every line of user paper guide. Initialization is more simple than the previous process with editing config file on SD card. Now, the user fills in the form and sends security SMS by one button touch.

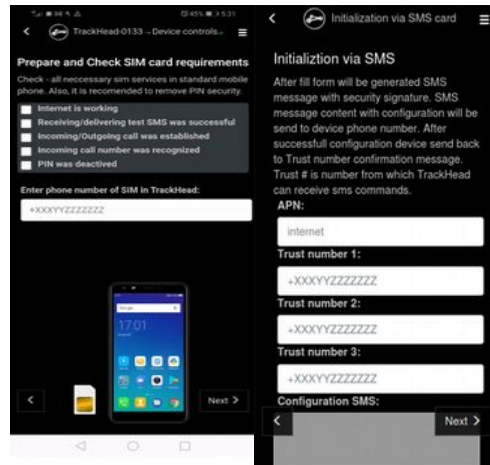


Figure 10: Initialization and configuration wizard

Device basic usage

If TrackHead is already paired and you click on its icon on the map, information about its parameters is displayed in the upper left part of Figure 11. The user can view the route passed and the relevant statistics of the selected device in the interface shown in Figure 12.

The graphical interface contains the individual components:

- Back button - top left - back navigation in screen logic , root is map with device list
- Navigation description top center
- Menu button - top right - show/hide system menu, after open other module the system menu content will be extended with specific module functions

Device on The map

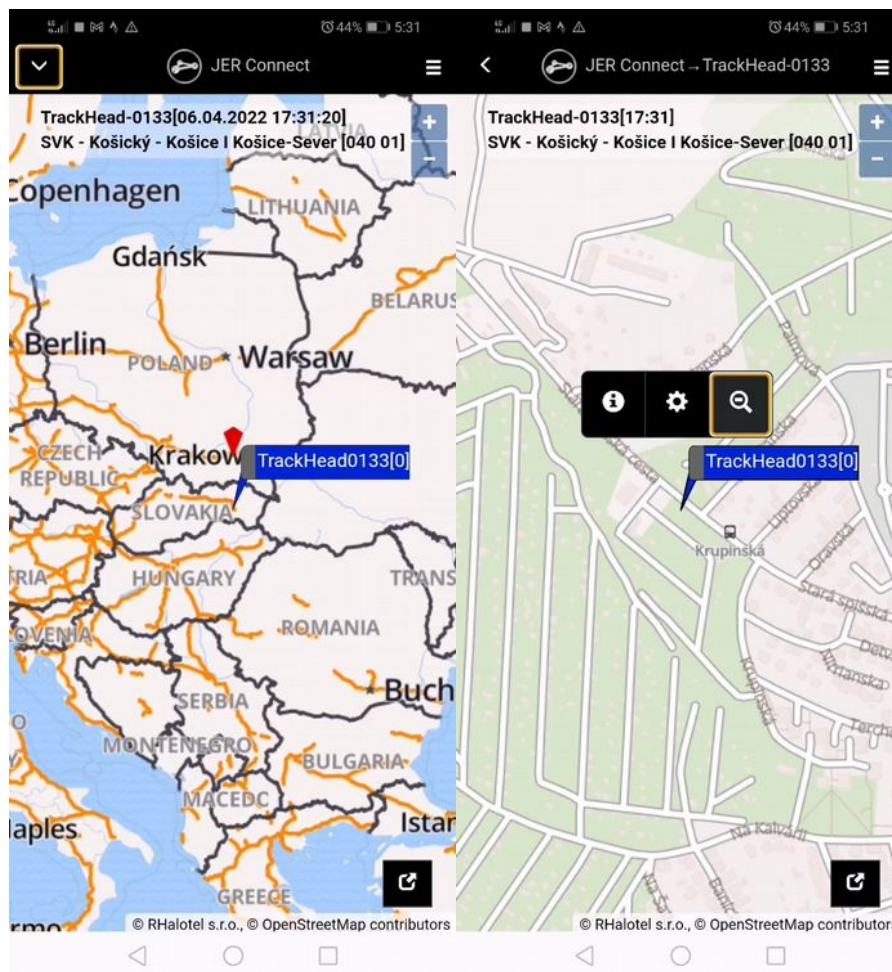


Figure. 11: Intro screen in the application

Quick detail

After selecting device from list, or from the map, quick detail with few latest data will be shown.

With OK (pressing tick) button, displays the last traveled trajectory (history) of the device from the moment the button is pressed to the selected time period

(for example, the last 24 hours) . The trajectory traversed by the TrackHead is displayed by purple color, with circles that represents speed.

If the user needs to show other time trajectory, there can be chosen 24/36/48 hours or a week to Now/Tomorrow, To date or select exactly from-to dates.

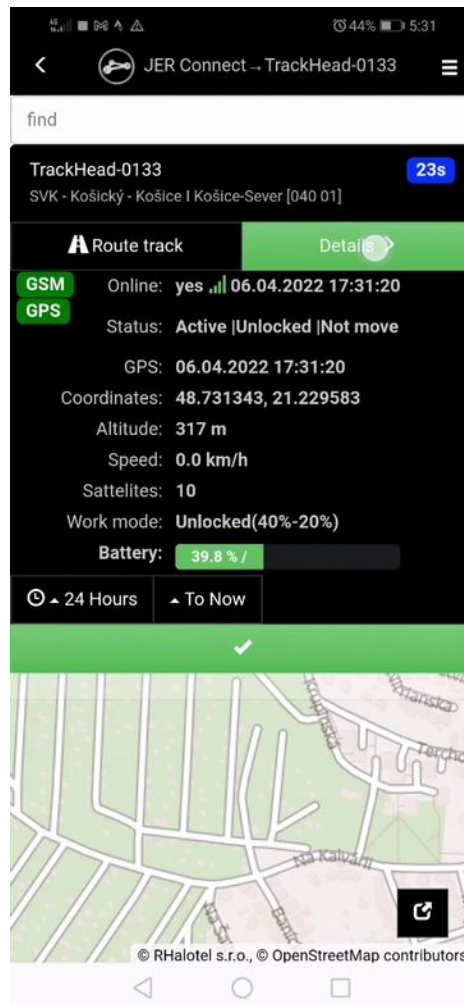


Figure.12: Quick detail and data of the device

Show selected data on the map

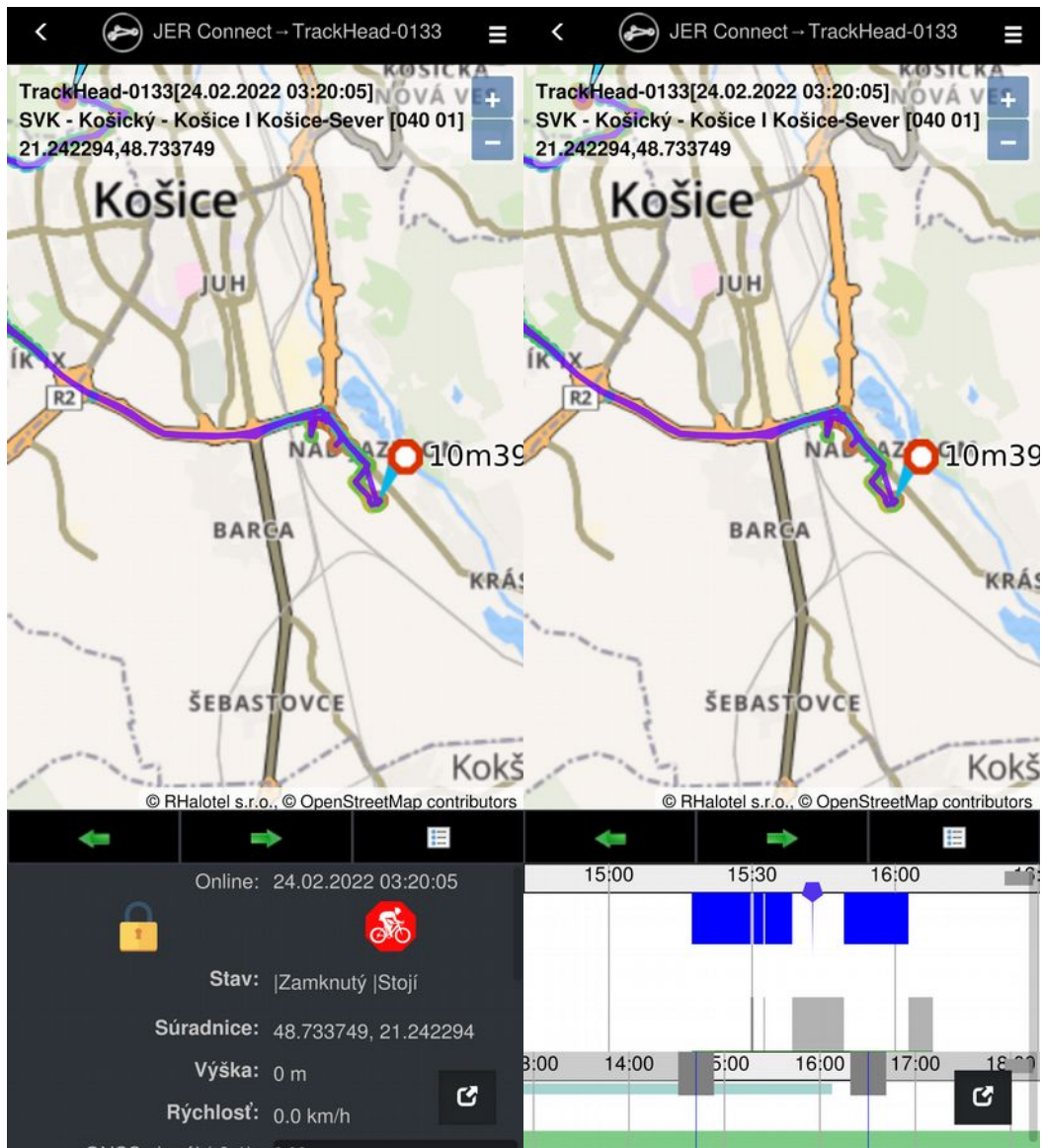


Figure. 13: Timeline – interactive graph

- Time point – time point of the trajectory
 - The user manipulates it by hovering the mouse over the graphs or the trajectory itself (or by touching the smartphone display)
 - This point is displayed by red on a purple trajectory
 - After touch on timeline Blue mark (penta) in the graphs represent the time-point in timeline
 - selected time is shown on the map by red mark
 - The text status of the device at selected time is displayed after touching button (table icon) at the top-right of graph . Same touchclick returns text table info -> graph

Localization methods

It is a localization method derived from BTS - GSM stations coordinates.

Energy consumption is only ~3mA

Precision ~50-1000m.

This method of localization provides coordinates instantly; there is no delay time to fix satellites; advantage is it's functionality anywhere, also in interior or underground if a GSM signal is available

Indicators: GSM localization availability , GPS module indicators

You can manually switch to GSM localization if precise GPS is not available

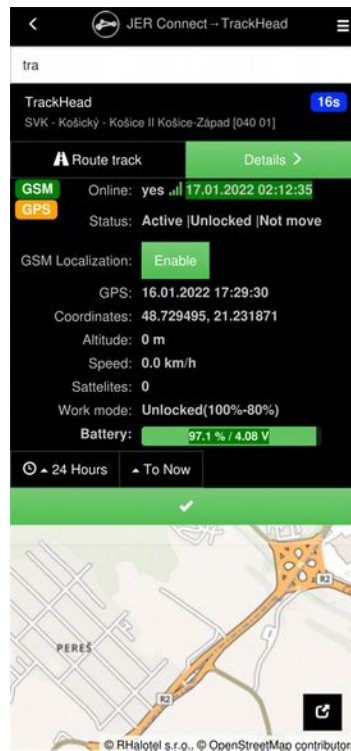


Figure. 14: GSM/GPS localization

Device features

If Object is selected, after clicking on "Menu", the user can see several options, choosing the option Menu → Devices (15) .

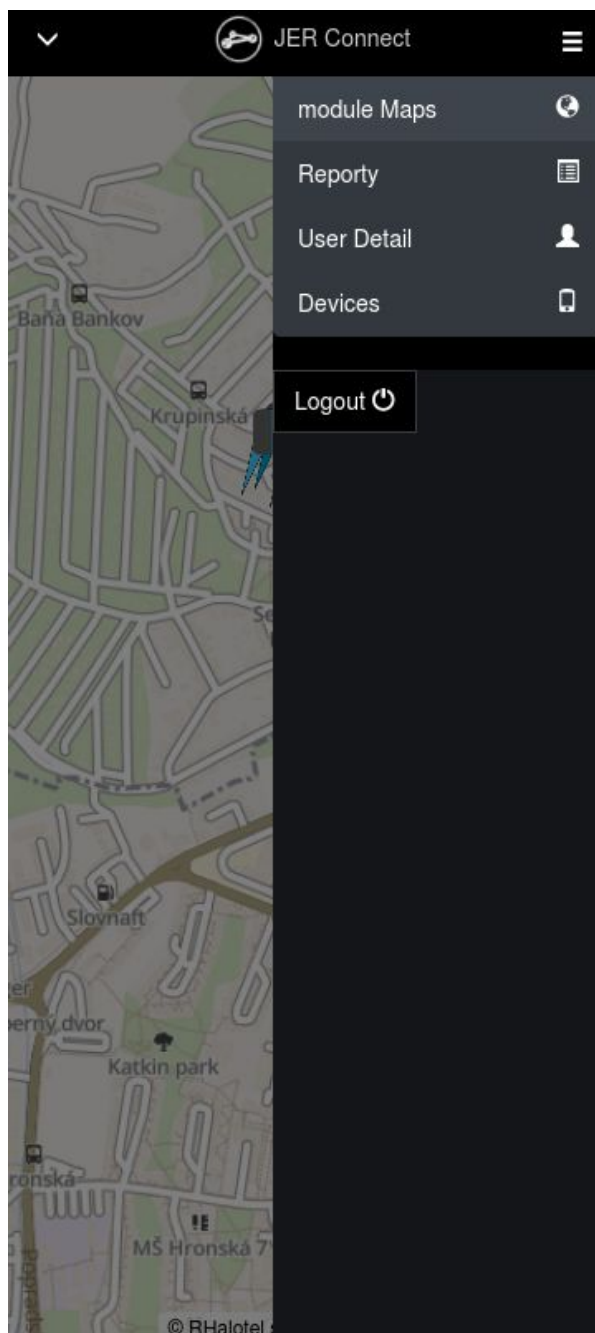


Figure. 15: Main menu

Device controls

Details contains the controls of the device. Here it is possible to secure the device by locking it, but also to unlock the device.

- A locked device means that it responds to the movement of the bicycle and then announces this unwanted movement – if the corresponding notifications are activated.
- An unlocked device means that the device does not respond to the movement of the bicycle (if the device is deactivated, it does not activate on move). For example, the function „Unlocked“ is being used when the user is riding or has its bike under control and does not need to be notified about each movement, or no security activation of the device is required when moving.
- The unlocked function is used, for example, when the user is riding or in control of the bicycle and does not need to be notified of each movement of the bicycle, or no activation of the device is required when moving.

You can find more about device modes in chapter Device Operating work modes on page Attention, to read please

The **Turn-off**/Turn-on(in unlocked) or Sleep-Stand-by/On-Active(in locked state) button can be used to change the device mode. The data refresh(sync frequency) rate can be set in this element, ie in what time interval the device will send data to the application (Obr. 16).

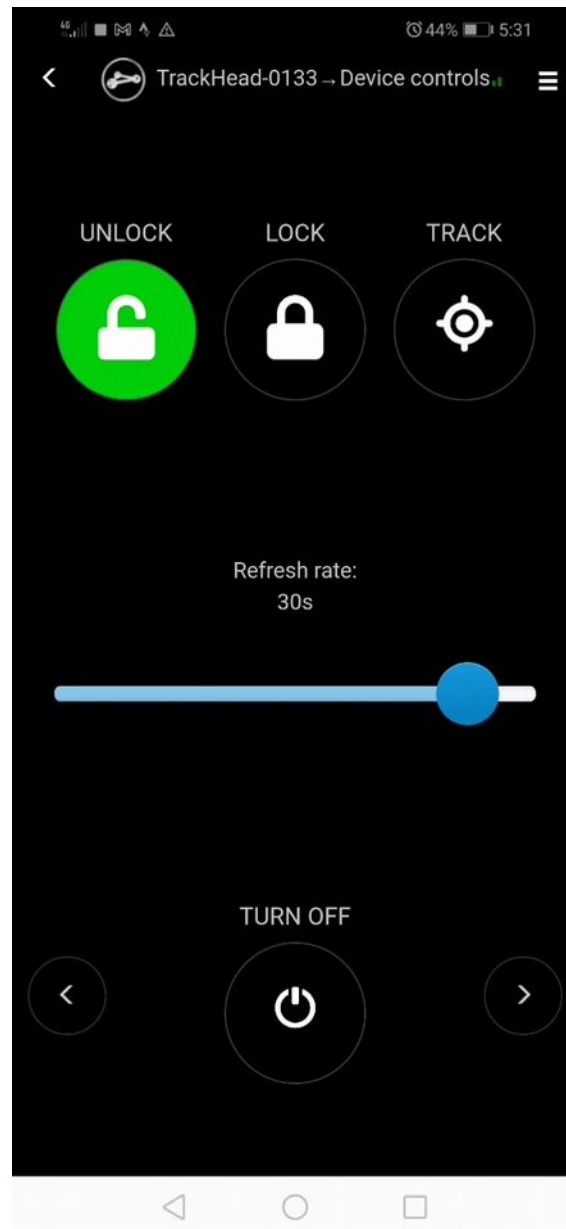


Figure. 16 Device controls

Blinking circle informs you that the device lock request is being processed, and as soon as the request is processed, the icon notification disappears and the device is currently unlocked (or locked).

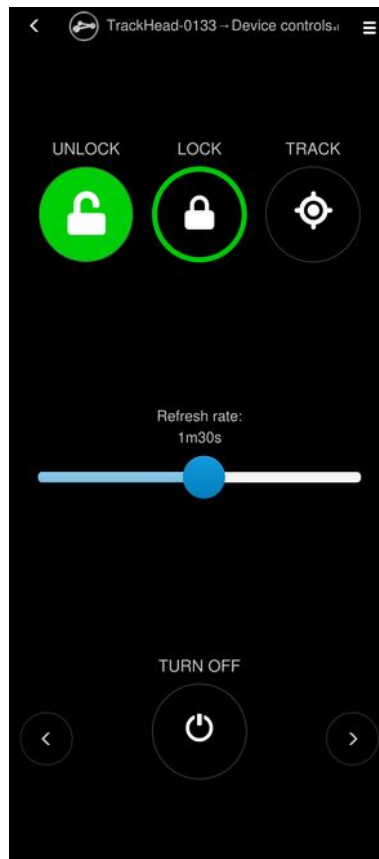


Figure. 17: Indication about resuest status

These buttons are used to set the individual operating modes of the device. Follow Device Operating work modes

Turn OFF Special functionality can be locked or unlocked according to your needs. More explanation read in chapter: Attention, to read please page 3

- OFF - UNLOCKED: Warning! the device will turn off and can be turned on with a magnetic key only. All functions will be disabled, including the motion sensor. Are you sure you want to turn off the device completely?
- OFF - LOCKED: Warning! the device switches off, only the motion sensor remains locked and active. The device switches on when motion is detected. All other functions are deactivated. Are you sure you want to put the device in STANDBY mode?

The physical switching ON state (Mechanical switching on of the device) is performed by attaching the magnet located on the JER key fob to the top of the device itself. The key fob must be attached as long as the device is switched on and it goes online, e.i. until the LED on the side of the head starts flashing. In this way, the device can be woken from sleep mode. After waking up (activating) the device, the device status is synchronized with the status stored in application (on servers).

Note: The magnetic keychain must be attached so that the hole on the keychain faces the micro USB connector. This operation is shown in 18.

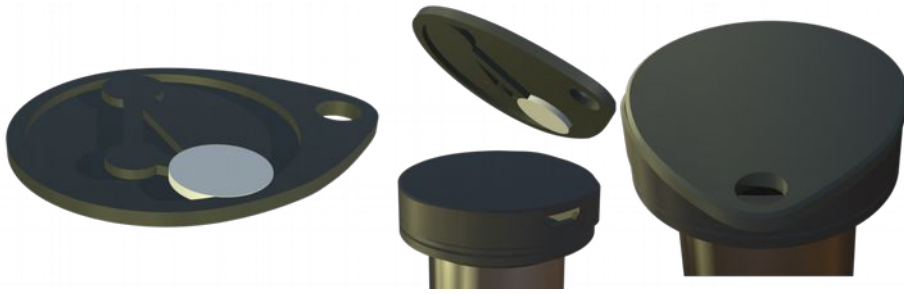


Figure. 18: Physical activation of the device

Device Operating work modes

Each work mode switches specific power profile. The device has predefined profiles. But user can set a custom power profile with checked advanced settings, more about new settings of power profiles is described in next chapter of the report.

* **Default - Unlocked work mode** - device is working in default mode with defined power profile, user can track object with optimal power, device is not locked.

* **Locked work mode** - device switches default power profile to locked power profile and increases power consumption, shorten sent intervals, activates movement sensor. Device now can transit to Alarm mode if locked position was changed. It will send „**Locked position change**“ notification.

* **Alarm work mode** - has similar behavior like mode described above (locked work mode). Alarm work mode switches power profile, it also increases consumption more. Device emits alarm notifications according to settings. Alarm mode cannot be set by user, it has been set automatically only from **locked** mode if movement is detected. Then user can choose work mode with Unlock, Lock, or Track.

* **Tracking work** mode significantly increases energy consumption and settings values, it will bring the device to maximum power

Latest data

The device detail is displayed by selecting any device from Device list, or from the Map by clicking the green button **Details** from fast panel **12**. This page contains more all features of the device divided into individual parts.

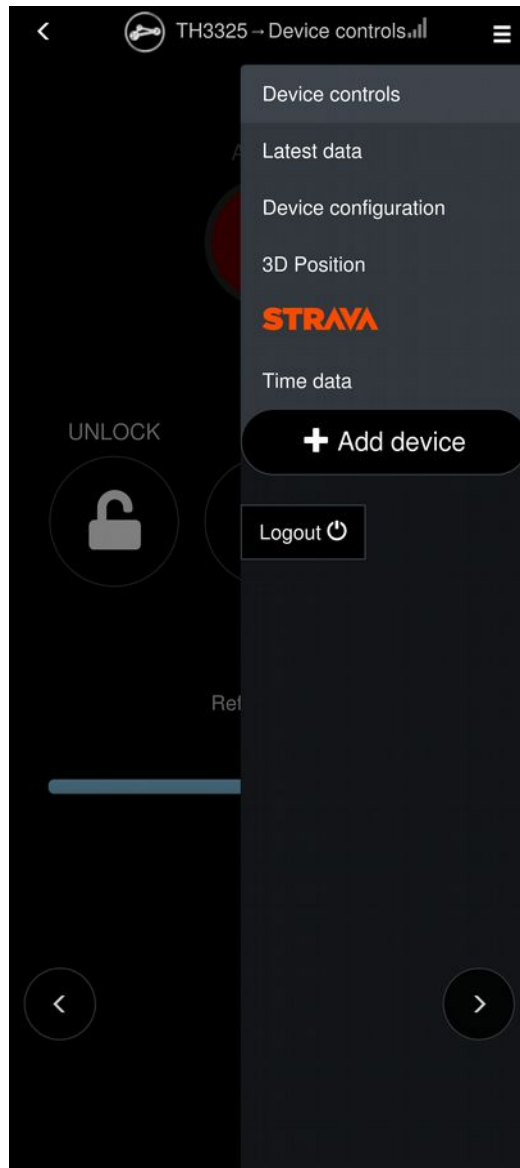




Figure 19: Selected device extended menu

The first part contains detailed information about the device. This part is shown in **20** and represents all device data in detail.






Figure. 20: Latest detailed data




The first line contains information about whether the device is connected to the network and synchronizes data with the application at a certain interval, or is not connected to the network and does not synchronize the data. The user is notified of the **Online** / **Offline** status via the icon:

- Online - 
 - The device regularly synchronizes data with the application
- Offline - 
 - The device does not synchronize data with the application

Another property that is displayed in the first line is the current time.

The second line contains information about the performance mode that is currently configured in the application. The device information is displayed to the user using icons:

- Active - 
 - The device wakes up after a while and synchronizes with the application
- Inactive/stand-by - 
 - The device is switched off and can only be activated with a magnet
- Unlocked - 

- The device is not secured against theft
- Locked - 
 - The device is secured against theft
- Moving - 
 - The device and thus the thing (car, bicycle) to which it is attached is in motion
- Not moving - 
 - The device and thus the thing (car, bicycle) to which it is attached does not move/ is standing still

The next line contains information about the location of the device and thus about the **latitude** and **longitude** in degrees. Next to this information is the **above sea level** where the current facility is located.

In the fourth line, the user finds information about individual signals. In the first column of this line is the information about the **GSM signal** (mobile network) in percent. Next to this information there is **GPS signal** (GNSS signal) state, which is also expressed as a percentage. The value is calculated on the basis of HDOP (horizontal dilution of precision).

There is also information about the **number of satellites**, which determines the current position of the device. In practice, this means that the **more satellites**, the **better** (more accurate) GPS signal.





There is also information about the **number of satellites**, which determines the current position of the device. In practice, this means that the **more satellites**, the **better** (more accurate) GPS signal.

Then there is the current **battery voltage**. When the battery is charged or charging, the voltage is higher and when discharged, the voltage is significantly lower.

The sixth line contains information about the current **speed** of the device in kilometers per hour in the first column. In the second column of this line user will find information about the **number of satellites** that determine the location of the device (this information is also found in the fourth line of the GPS signal).

Here user can find information about the **battery capacity** in percent and the current **temperature** of the device in degrees Celsius.

Roaming indicates whether the current SIM on the TrackHead is connected to roaming. In practice, this means that when the device is connected to roaming, the user may be charged extra fees as it is connected to the transmitters of a third-party operator. The next column contains information about the **state of charge** of the battery, which is represented by icons:

- Fully charged - 
- Charging - 
- Pre-charging - 
- The device is not connected to a charger - 

The penultimate line contains information about the current **power mode** and when this mode switches to a less energy-intensive mode, or when the device is completely discharged.

The last line contains information about:

1. The time during which the device is switched on
2. Frequency of sending data to the user (synchronization of data in the application during online mode – Refresh rate)
3. The amount of time the device is in standby mode (sleep mode)

In practice, this means that this line informs the user how **often** and for **how** long the device wakes up from sleep mode, **sends data** at a certain frequency and then **switches off**. User can read more about the battery in the section Custom power settings .

Device configuration

The device configuration itself consists of four parts. To run section press Initialization, Notifications, Set the one of default profiles or set custom profile, Other settings.

Green tick (Settings are synchronized) means, that configuration is synchronized and written in the device

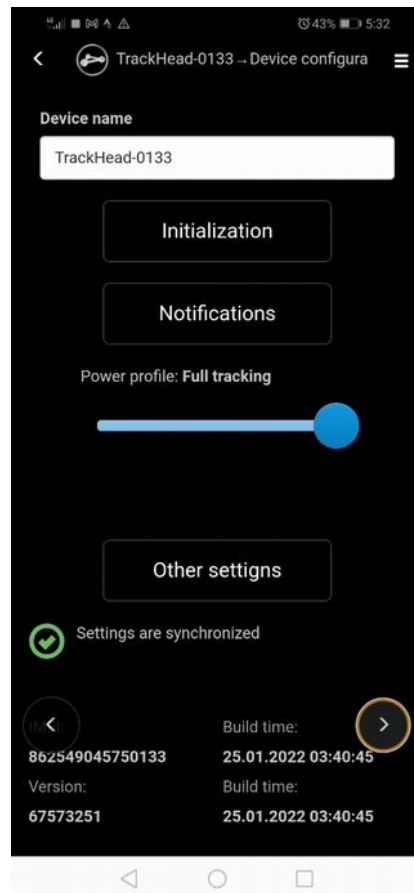


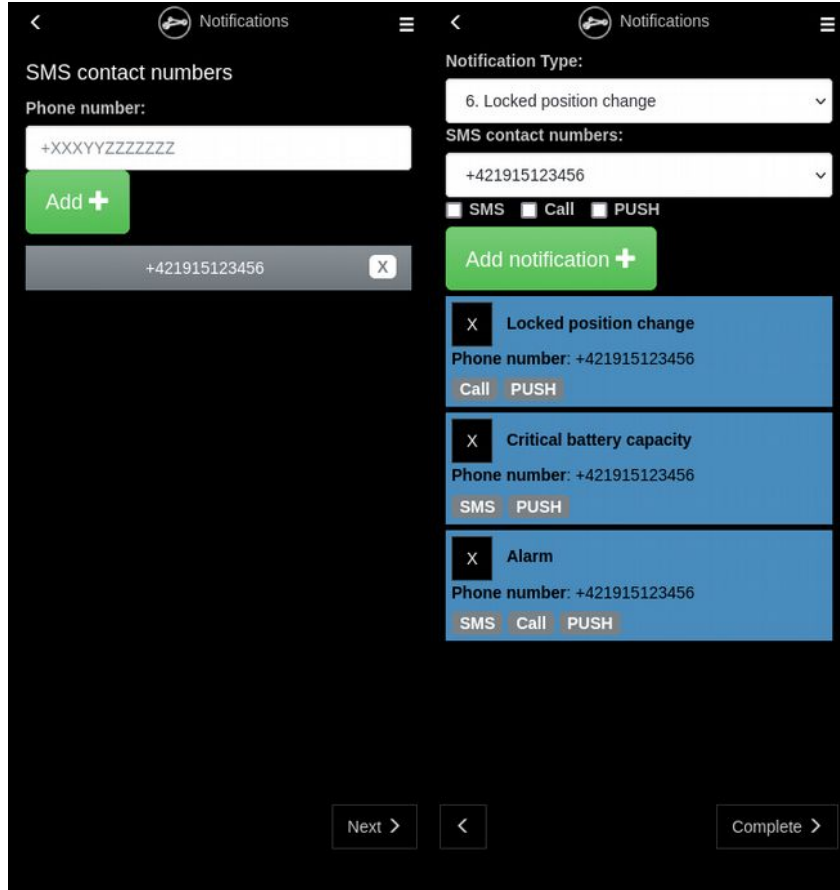
Figure. 21: Device configuration

Initialization

Device initialization process was described in chapter Initialization process.

Notifications

TrackHead supports 10 types of notifications, (safety critical is *Locked position change* and *Alarm*) It is highly recommended to set CALL or SMS method for safety critical notifications.



The screenshot displays the 'Notifications' configuration interface. On the left, under 'SMS contact numbers', there is a text input field containing '+XXXXYYZZZZZZZZ' and a green 'Add +' button. Below this, a list shows the number '+421915123456' with a delete 'X' icon. On the right, under 'Notifications', the 'Notification Type:' dropdown is set to '6. Locked position change'. The 'SMS contact numbers:' dropdown is set to '+421915123456'. There are three checkboxes for 'SMS', 'Call', and 'PUSH'. A green 'Add notification +' button is present. Below this, a list of notifications is shown, each with a delete 'X' icon and a list of methods: 'Locked position change' (Call, PUSH), 'Critical battery capacity' (SMS, PUSH), and 'Alarm' (SMS, Call, PUSH). At the bottom, there are 'Next >', '<', and 'Complete >' buttons.

Figure. 22: Notifications

Custom power settings

Power profiles are more closer to user for understanding. For simplicity, there are predefined profiles (Full power, medium, low power and Custom). Custom power profile values can be edited for advanced users.

There were added new firmware functions that can significantly improve device power efficiency and decrease energy consumption. Custom power profile is available to be edited by user in details:

Power profile creates five settings blocks, each block is activated conditionally according to the specific battery capacity level.

Five Levels are split by capacity (100-80-60-40-20-0)%

One setting block contains:

- * **Refresh rate** - is time period, how often the device send new data (position, other values)
- * **Save data interval** - is time period, how often the device writes data to database. If device is offline, data is written to SD card. Data si synchronized automatically when device goes online.
- * **Turn off after stop** - Auto turn off function saves energy consumption. If it is not moving, after selected time, the device turns off automatically. After movement, device turns on.
- * **GPS module turns on** - If gps is allways turned off, device cannot fix precise position, only from GSM stations (precision = +-1Km). Recommended option is "Enable after first ride detection", if device is turned on, GPS leaves OFF, but after first ride it goes ON, it saves energy. Last option - means that GPS is turned on with device turing on, precise position can be finded fastes way, but consumes the energy the most.
- * **Standby GPS module** - After detectetion of not moving, after selected delay, GPS function goes stand-by. Then after detection of ride, GPS gets back to full functionality. GPS Stand-by mode saves energy.

Each work mode: (Default, Locked, Alarm, Tracking) has own 5 setting blocks and can be edited also for advanced users after checking "*Advanced settings*"

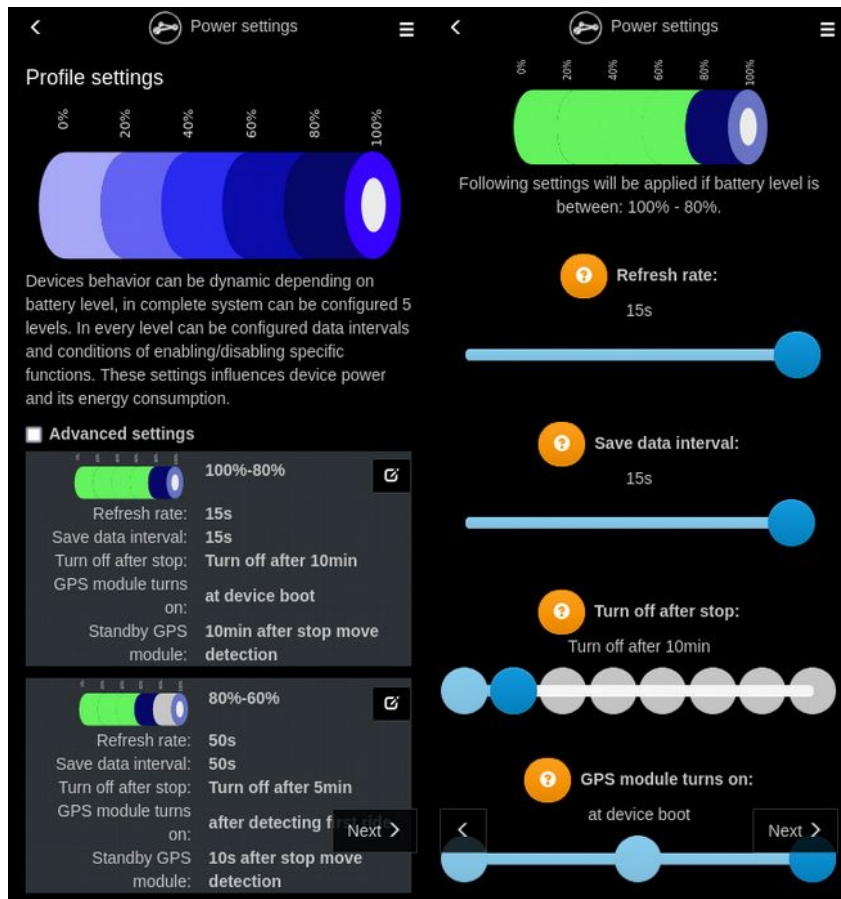


Figure. 23: Power profile settings

Other settings

User may configure Alarm notifications behavior, also can disable or enable Sounder and LED indication.

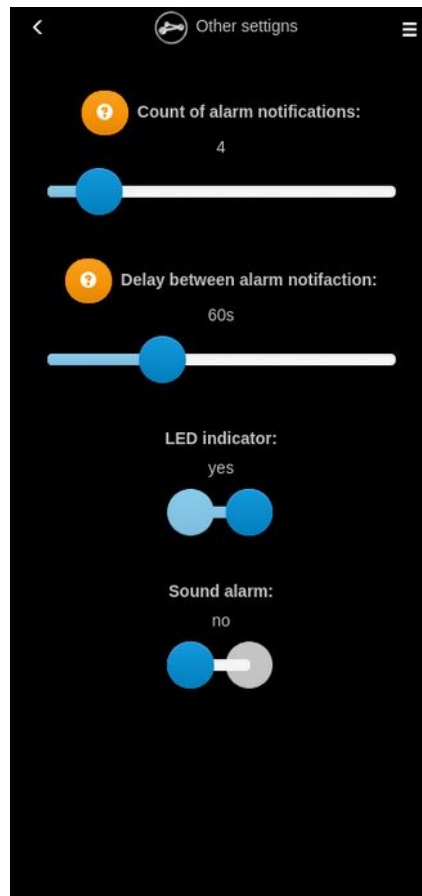


Figure. 24: Other settings

3D Position

View panel of 3D position is fully user-interactive. User can see actual angle and position of Bike from any point of view.

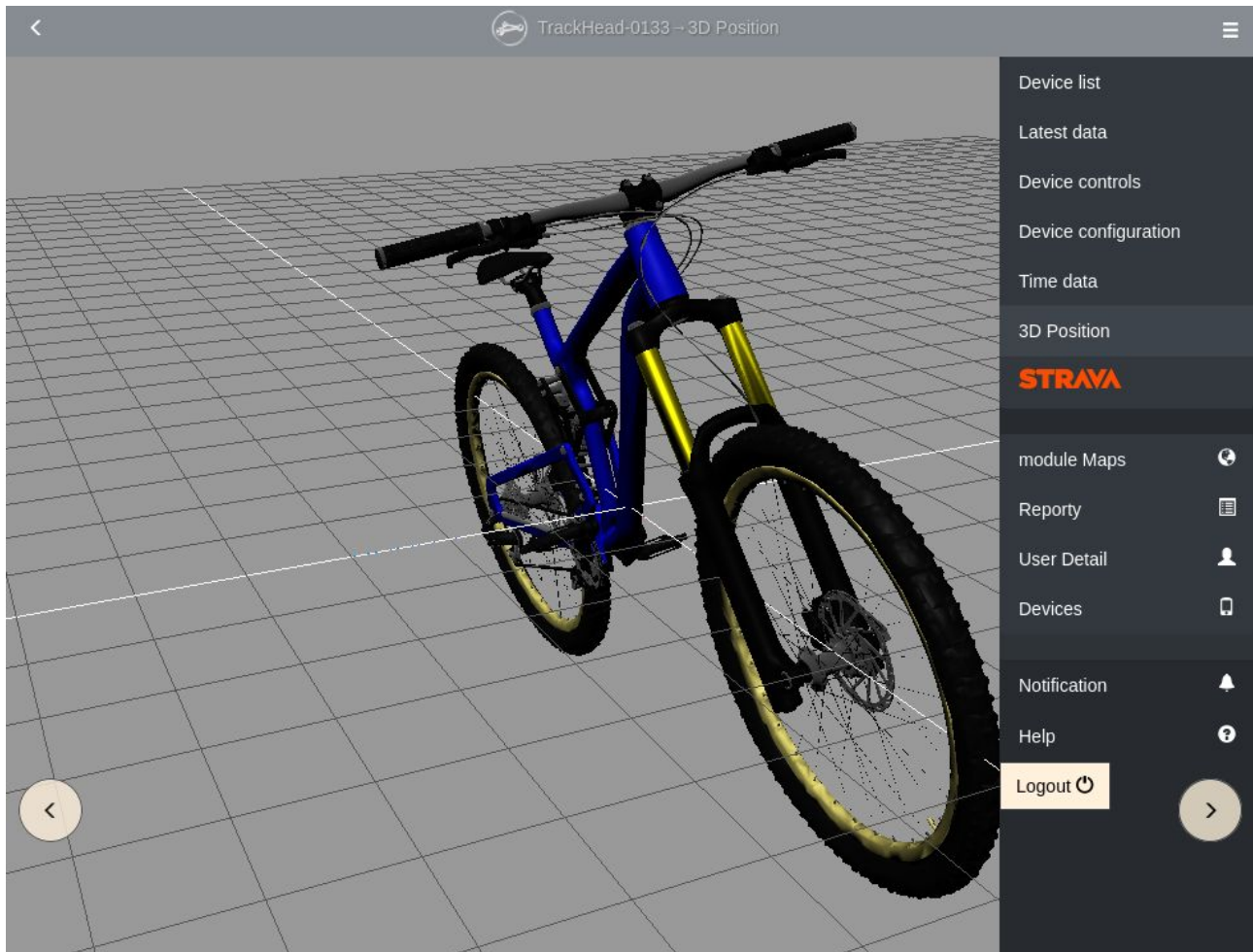


Figure. 25: 3D position

STRAVA - supported features

Features are available only if STRAVA account is linked (follow User detail -> link account)

Start activity – system starts measuring activity at the current time.

Stop – if system is in the process of activity measuring, button stops current measuring and immediately uploads new activity to STRAVA.

Cancel – button cancels current measuring without start time point remembering.

Export activity – button exports activity based on loaded path which was loaded on the map before. Fill in the form 27 then, export activity.

Automatic activity synchronization – if automatic synchronization is turned on, system detects start and stop time point based on start/stop detect duration settings below. These durations mean threshold state > continuous moving or not moving duration.

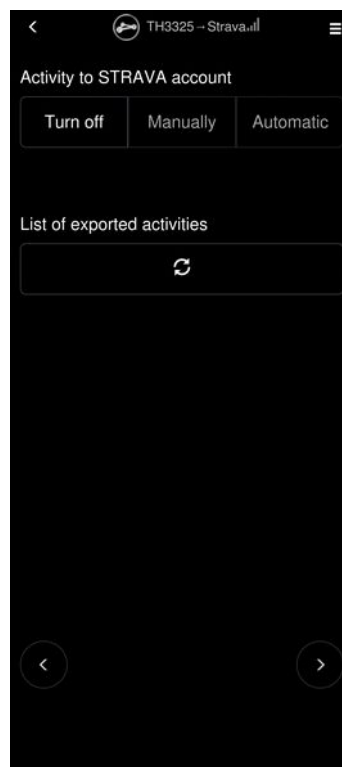
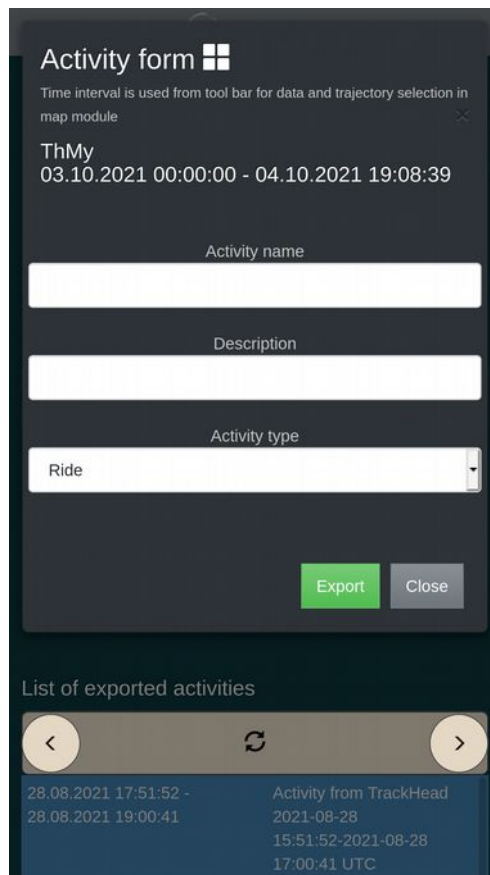


Figure. 26: Control features for Strava activity export

Activity export form

Form is shown only if **Export activity** button is used.



The screenshot shows a mobile application interface for exporting an activity. The form is titled "Activity form" and includes a subtitle: "Time interval is used from tool bar for data and trajectory selection in map module". The activity name is "ThMy" and the time interval is "03.10.2021 00:00:00 - 04.10.2021 19:08:39". The form contains three input fields: "Activity name", "Description", and "Activity type" (with "Ride" selected). At the bottom of the form are "Export" and "Close" buttons. Below the form is a "List of exported activities" section with a scrollable list of activity entries.

Activity Name	Time Interval
Activity from TrackHead	28.08.2021 17:51:52 - 2021-08-28 15:51:52-2021-08-28 17:00:41 UTC

Figure. 27: export form for Strava activity

List of exported activities

List item contains start/end time, name, export status information, Recovery from filed uploads can be processed by two ways:

- **GPX download** – gpx data file can be imported directly in Strava account page.
- **Resync** – if upload for any mistake fails, you can restart upload process by resync button

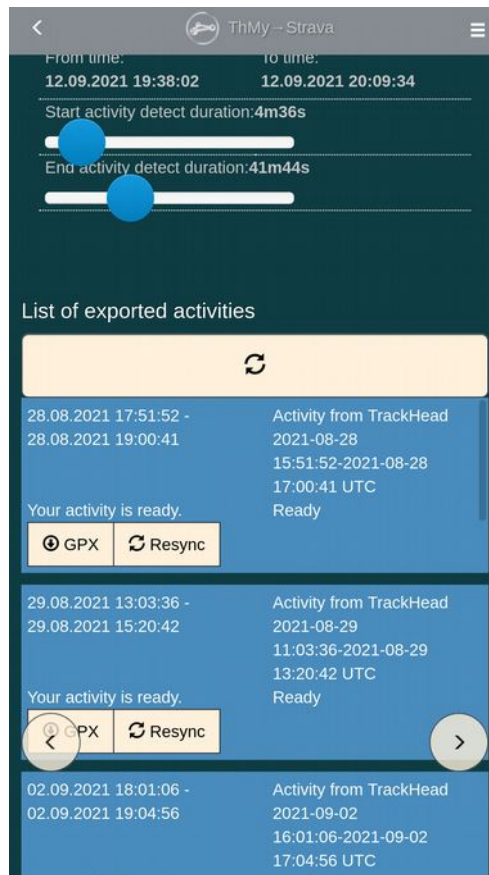


Figure. 28: Strava activity device controls

Device time data

The user can view historical data in the form of graphs by selecting the device time data option from the **Devices module**. These data are shown in 29.



Figure. 29: Device data in the timeline


Using these graphs, the user can control data such as charging time, battery voltage, GPS, GSM signal.

User detail

System can connect third party services by linking account. Then, user can sign in to JER Connect system depending on third party application (Strava, Google etc.) and status of its authentication.

Linking account can bring benefits. For example, it can offer to the user sharing or extending some extra features from API that third party provides. User can use application more flexible and easier. For example, JER Connect among otherwise supports also STRAVA API services, which enables automatic synchronization of position data from TrackHead. Also, data transfer from TrackHead to STRAVA is much easier and very fast.

For enabling STRAVA connected features follow:

- Click on Link account button  30 and open authorization dialog of third party page

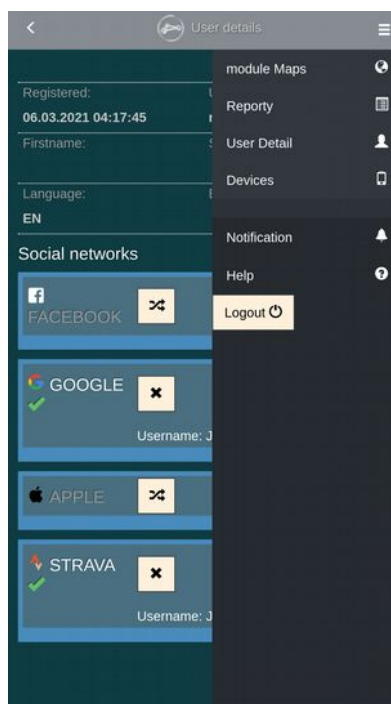


Figure. 30: Social networks account linking

- Let view/upload permissions checked and click on Authorize button 31.
After successful authorization, JER shows confirmation 32 and authorization status 33.

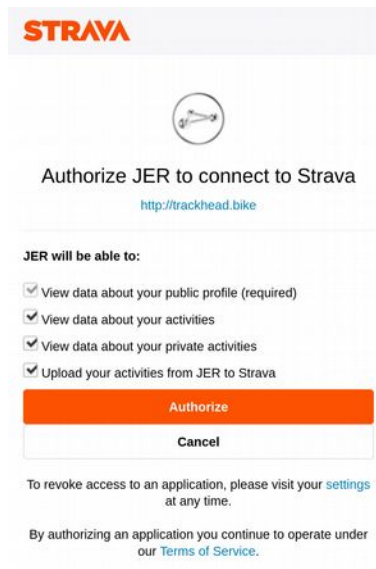


Figure. 31: Example of Strava authorization dialog

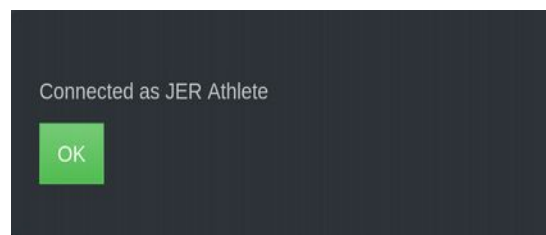


Figure. 32: Successful account linking



Figure. 33: Strava - linked account detail status

Offline mode

The Device can be configured by SMS commands even there is no internet connection. SMS commands must be sent from the TRUST telephone number to the phone number of the SIM card in TrackHead.

	Command	Reply from device
1.	LOCK	LOCK OK
2.	UNLOCK	UNLOCK OK
3.	INFO [interval] [duration] [format] *	Formatted * response (device status)
4.	TURNOFF [duration] *	

the [interval] [duration] parameters must be in seconds. The INFO command means periodic sending in a given *interval* for the specific *duration*. TURNOFF is to *turn off* the device for the *duration*.

* *future function in the next firmware version*

Battery

Battery consumption cannot be determined precisely because its capacity can be redistributed based on device performance. This redistribution is possible using battery performance modes. In this chapter, these modes are described in more detail for better user understanding.

Energy consumption

Battery consumption depends on the time configuration for each device state – device **on** and device in **standby mode** (sleep mode). The status change is set by the time interval of sending data about the position and status of the device (data refresh rate). For better understanding, examples of setting the battery modes will be introduced.

When the device is running at full power, the battery mode is set so that the device uses most of its capacity to send high-frequency data (a data frame is sent every **30 seconds**) and is constantly connected to the Internet and synchronizes data with the application. The battery lasts approximately **80 hours** in such mode, with a high-quality GSM signal. The better the signal, the more efficiently battery capacity is used.

The basic idea of devices with low power consumption is to switch between sleep mode (standby) and active mode. The low-power TrackHead only needs **25 μA** to operate (without an active accelerometer – **unlocked mode, standing**, even only **10 μA**). This means that when the device is turned on once every 24 hours for 10 minutes, the power – battery capacity will last approximately **480 days** in such a power redistribution. If the device is awakened once every **70 hours**, it will last in this mode for approximately **2 years**.

The battery temperature is also affected by the ambient temperature in which the device is used. The battery discharges in a cold environment rather than in a warm one. This means that the device should last longer in summer than in winter.

Due to the fact that these calculations were created only by means of mathematical-physical relations, they **are not determined exactly**. The parameters of the device cannot be determined precisely, as the device uses more energy during switching on and also during individual operations. The calculations are therefore only **approximate** and are given for a better understanding of the individual battery modes.

Charging

The battery can only be charged using a type B micro-USB cable, and the charging source must be galvanically isolated from the public mains. In practice, this means that the micro-USB cable can be connected to a standard adapter (smartphone charger) or via the computer's USB port (or USB port in a car or train). Permitted power supply is via 5V / 1A DC. The charging connector is located **on the top of the device**.

When charging via the adapter, it is necessary to use an adapter that meets individual standards and is technically intact. During charging, the device may overheat (both the battery and the PCB itself), a common phenomenon that occurs during this operation. The battery capacity can be checked in the **application** in the **Device detail** section. More detailed information and technical parameters about the battery can be found in the **security data card**.

Warranty notice Rhalotel s.r.o.

For new goods that have been sold to the consumer through the seller under a consumer contract through the eshop

<http://shop.jer.earth>, in compliance with all warranty conditions RHalotel assumes responsibility for any defects in the product that occur on the product after it has been taken over by the consumer during the warranty period. The warranty period is 24 months, subject to compliance with all conditions in accordance with generally binding legal regulations. The seller is responsible for product defects in accordance with the warranty conditions and provisions of the Civil Code from the date of receipt of the product by the consumer during the warranty period of 24 months. Claims for product defects must be made during the warranty period, otherwise they will terminate. The warranty period begins when the product is taken over by the consumer.

The consumer can claim his product defects by email at: jer.earth@rhalotel.com. When claiming, the consumer is obliged to present the goods for repair complete, together with the original proof of purchase and date of sale.

In the case of a repairable defect, the consumer has the right to remove it for free of charge, in due time and in an appropriate manner, and the manufacturer is obliged to remove the defect without undue delay. If this is not disproportionate to the nature of the defect, the consumer may, instead of repair the defect, request a replacement of the product or, if the defect concerns only a part, replacement of the part. In the case of a defect which cannot be repaired and which prevents the product from being used properly, the consumer may claim a discount on the purchase price of the product or a replacement of the product or may withdraw from the purchase contract. Upon withdrawal from the purchase contract, the consumer is obliged to return the complete product (including all accessories) to the seller.

The warranty does not cover wear and tear of the product due to its normal use, reduction of the battery capacity due to wear and tear or improper use, and use of the product in temperatures outside the temperature range as specified in the battery safety data sheet.

The consumer has the right to ask the seller to test the product and provide information on use. Installation and operation of the product are not part of the manufacturer's warranty obligations. The manufacturer is not liable for any damage caused by improper use, operation or handling of the product. Improper product selection and the fact that the product does not meet the consumer's requirements cannot be a reason for a complaint.

The consumer is not entitled to issue parts or components of the product that have been replaced in the product during the elimination of the defect.

The complaint cannot be recognized as justified and the consumer loses the right to warranty repair or elimination of the defect free of charge in the following cases:

The product was not sold under a consumer contract, the product was used in violation of the instructions, the operating and maintenance instructions in the manual or safety regulations were not followed, the product was connected to an electrical network where the supply voltage fluctuates, was exposed to adverse external influences, e.g. solar or other radiation or electromagnetic field, faulty supply or input voltage or inappropriate polarity of this voltage, the product was mechanically damaged due to the fault of the buyer (for example during transport, improper handling, falling, cleaning, etc.), the product was modified, changed or altered in any way by persons other than those authorized by the manufacturer, the protective elements used to detect unauthorized interference with the product have been violated on the product (seals, etc.), the defect is caused by pollution, natural wear (including reduced capacity of the rechargeable battery due to excessive number of charging cycles), any external intervention into the product, including natural disasters, short circuits at inputs, outputs or covers, in the event of arbitrary changes to the warranty card by an unauthorized person, the product has been used in a manner other than usual for the given type of product.

Complaints also cannot be recognized as justified if the additional services of the JER portal, which the operator operates free of charge, are non-functional or unavailable.

A normal use of product is considered mainly if:

The product is used in accordance with the technical standards valid in the Slovak Republic, including the signals used, the product is used with the recommended clean and unworn magnetic, optical or other carriers (storage media), which are in accordance with technical standards valid in the Slovak Republic.

The manufacturer is not liable for any product defects caused by the media used, the structure or the amount of information stored on them than allowed by the standards. The product is used together with the manufacturer's supplied unworn accessories and is regularly replaced with accessories subject to faster wear (eg battery, headphones, charger).

If there is a discrepancy with the purchase contract caused by information from a source other than the manufacturer, this discrepancy is not considered a reason to complain about the product.

Furthermore, wear and tear of the product or part of the product caused by normal use of the product or part of the product (eg discharging the battery or reducing the battery capacity after normal life (6 months), wear of imaging parts, mechanical damage to accessories) is not considered a breach of the purchase contract.

Battery pack is original part of the device from JER and cannot be replaced by another not original battery.

The condition of the product may change if it is stored for too long and / or under inappropriate conditions. In such case, in the interest of safe operation, the product must be inspected by a qualified service technician before operation.

Such device control is not covered by warranty repairs and any costs are borne by the consumer.

Purchased equipment and services of the JER portal may only be used in a lawful manner in accordance with the laws in force in the country in question. JER is not responsible for damage caused by improper or illegal use of the JER equipment or services itself.

EU - Declaration of Conformity

Compliance with European Union directives



The manufacturer RHalotel s.r.o. declares that the product TrackHead (RHUT4ULPS) manufactured by RHalotel s.r.o. , to which this declaration relates, is in conformity with the provisions of the European Union Directives, including the latest amendments.

The full text of the EU Declaration of Conformity is available at: <https://shop.jer.earth>