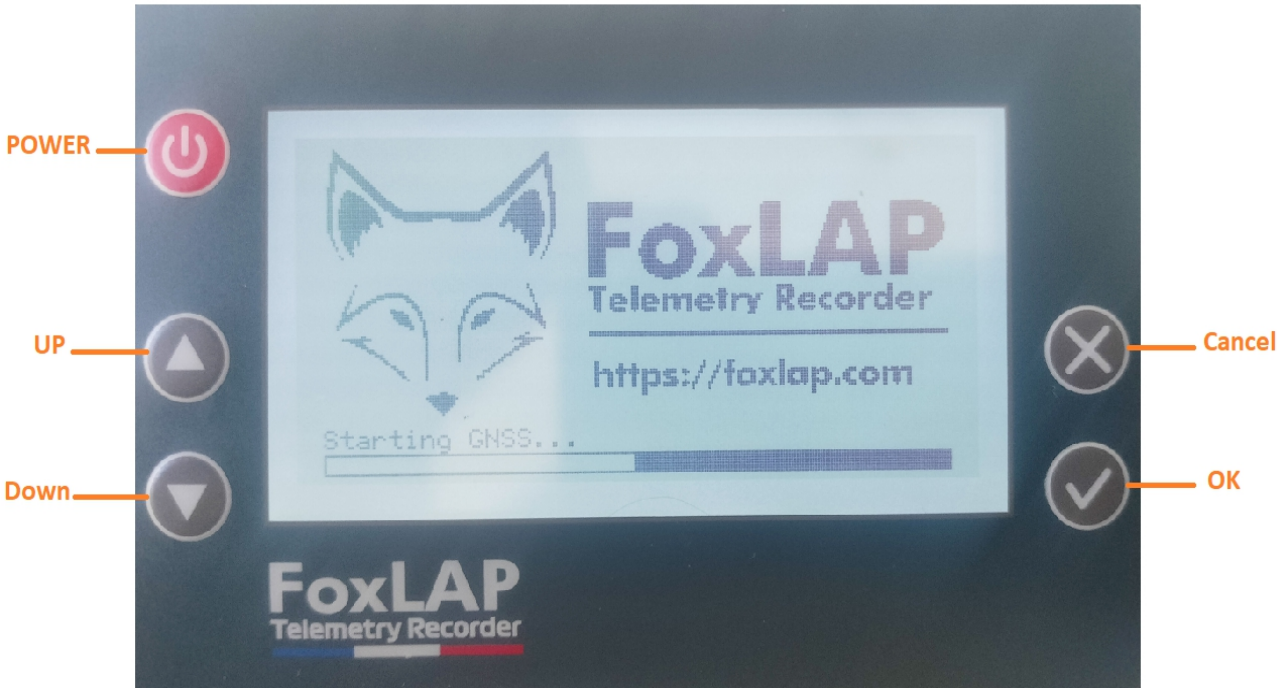
FOXLAP - User Guide

Summary



1. First Launch

On first launch, the device prompts you to set up your FoxLAP account and connect to Wi-Fi

1.1 Account creation

- If you haven't already, create an account at https://foxlap.com/register
- Enter your **name** and choose a **password**. Only the following characters are supported: `0-9, a-z, A-Z, ! # $ % & ' ( ) * + , - . @ : ; =`
- The device will must be able to connect to the internet, that's why you will have to enter Wi-Fi credentials, if your Wi-Fi password uses unsupported symbols, consider creating a **2.4 GHz** hotspot from your phone with a compatible password.
- Once your account set up in the device, you will not be asked to enter it again. (*But you will be able to remove your account at anytime*).

1.2 Wi-Fi setup

- Select your network in the list and enter the password using the on-screen keyboard. if your Wi-Fi password uses unsupported symbols, consider creating a 2.4 GHz hotspot from your phone with a compatible password.
- Press **OK** to confirm. If the connection fails, power-cycle the device and try again. *After a successful connection, the device will remember your network and automatically connect to it if it is available.*
- **Note:** Only 2.4 GHz networks are supported (On recent iPhones (iOS 14 and later), Personal Hotspot defaults to 5 GHz, you will have to force the hotspot to be in 2.4Ghz)

Create a Wi-Fi Hotpot using 2.4GHZ on modern iphones.

- **Open Settings**
- Tap **Cellular** (or **Mobile Data**).
- Tap **Personal Hotspot**.
- Make sure **Allow Others to Join** is turned on.
- Toggle **Maximize Compatibility** on.

What "Maximize Compatibility" does:

- **Off**: Hotspot broadcasts at 5 GHz (higher speed, shorter range, requires 5 GHz-capable devices).
- **On**: Hotspot switches to 2.4 GHz (slightly slower but longer range and works with more devices).

Once "Maximize Compatibility" is enabled, any device joining your hotspot will connect over 2.4 GHz. You can confirm this on the client device's Wi-Fi details.

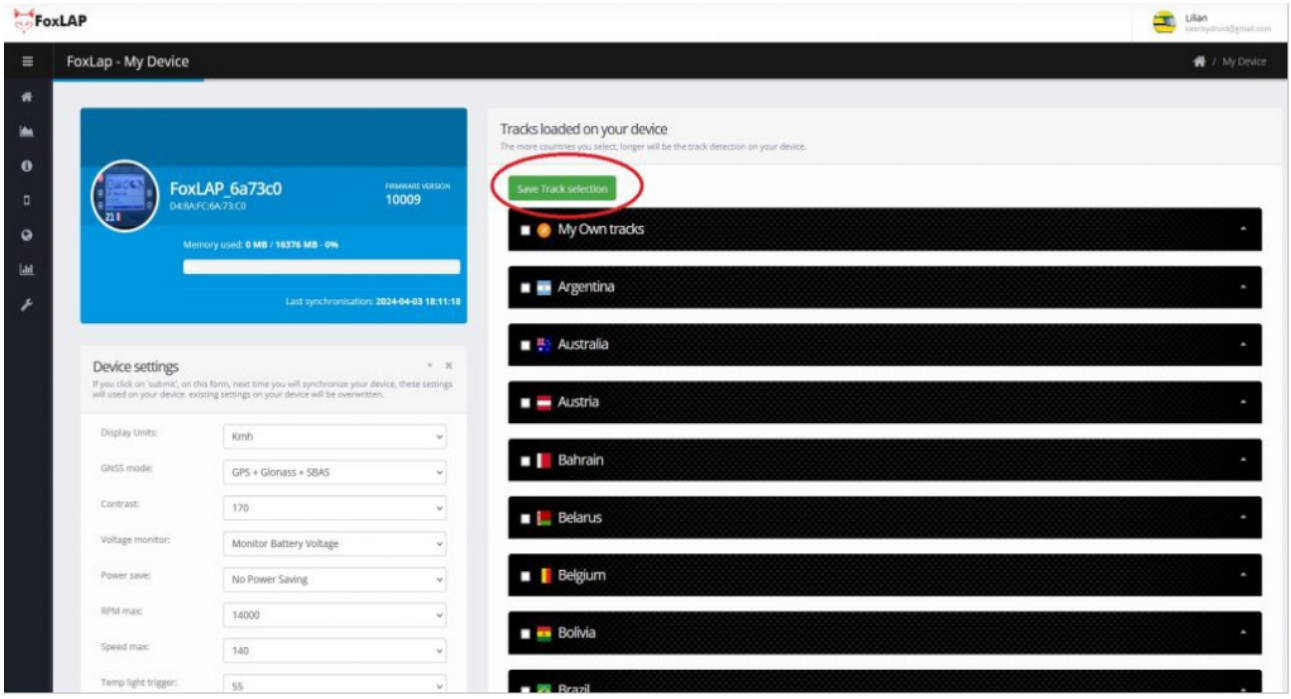
1.3 Sync your settings and tracks

- Once online, on the first launch, the device fetches your saved settings and available tracks from your account (https://foxlap.com/mydevice.php).

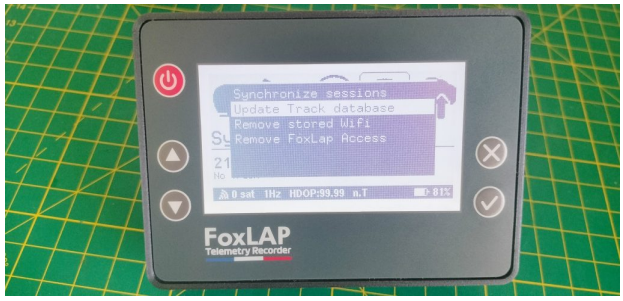
  You can see a first launch process in this video: https://www.youtube.com/watch?v=bhl_U4WhiV8

1.4 Adding custom tracks

- If your favorite track isn't listed, create it via the online tool on your account https://foxlap.com/track_creation.php
- You can see how to create a track in this video: https://www.youtube.com/watch?v=yb-_YDaLdlY&t=4s
- **Don't miss the next step: On the page https://foxlap.com/mydevice.php You must select/unselect the tracks you want to be available on your device**



- **Don’t select all the tracks**. Only select tracks from your country or the ones you will use. The more you select tracks, longer will be track detection. don’t forget to click on “**Save Track selection**” when you change selection.
- In the case of custom created tracks, you will find them in **“My own tracks”** category. Select them, then click on **“Save Track Selection”**
- Each time you change track selection in your account, you will have to click on **“Save Track selection”**.
- And finally, on your device go to **Synchronize** and select **Update track database**.



1.5 Sync sessions and device's settings

To upload your sesions on the online tool, you have to go to **Synchronize** -> **Synchronize sessions**.
The device will send your device's settings and your not yet uploaded sesions on your account. If a known Wi-Fi network is available, it will connect automatically, otherwise a network list will appear and you will have to enter the informations.

Note : Only 2.4Ghz networks are supported

2. Device Main Menu

The main menu displays 13 items, each represented by its icon.

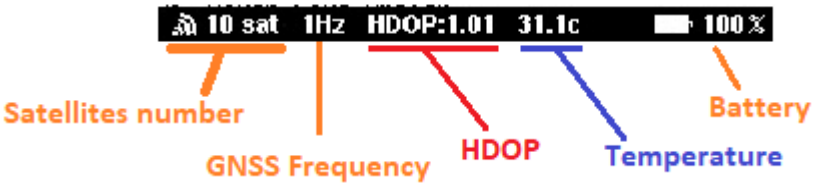
2.1 Navigation

1-LAP Recorder ; 2-My sessions ; 3-Tracks ; 4-Driver ; 5-Race Mode ; 6-GPS Status ; 7-Sensors & RPM status ; 8-Synchronize ; 9-Wifi Transfer ; 10-GoPRO ; 11-Backlight ; 12-Get Weather & Jetting ; 13-Settings

- **Navigation**
  Use the **Up** and **Down** buttons to scroll through the list.
- **Selection**
  Press **OK** to confirm a choice, or **Cancel** to return to the previous screen.

2.1 Bottom Status Bar

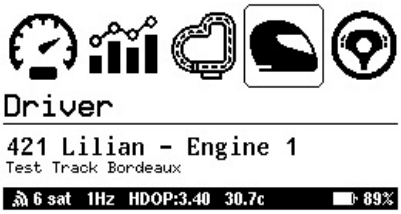
The bottom status bar is always visible—whether you're navigating menus or racing—and shows:



- **Satellites**: Number of GNSS satellites in view (12+ indicates good reception).
- **Update Rate**: Position fix frequency. In menu mode it's fixed at 1 Hz; in Race Mode you can select 10 Hz, 16 Hz, 20 Hz, or 25 Hz (depending on your settings)
- **HDOP** (Horizontal Dilution of Precision): A measure of horizontal accuracy; lower is better (ideally ≤ 0.7).
- **Temperature**: temperature as read by the external sensor.
- **Battery**: Remaining battery life, shown as a percentage.

3. Drivers

In this menu, you are able to create, select and delete drivers

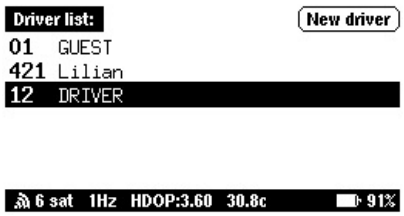


3.1 Driver Creation

The Drivers menu lets you manage drivers profiles: create new drivers, switch between them, or delete existing ones

Highlight « **New Driver** » at the top of the list and press **OK**.

- When prompted, enter the driver's name using the on-screen keyboard:
- Use **Up**/**Down** to navigate letters.
- Press **OK** to select each character.
- Once the name is complete, highlight the ✓icon and press **OK** to confirm.
- Enter the driver's number and highlight the ✓icon and press **OK** to confirm.
- The new profile appears in the list. Each driver's sessions and lap records are stored separately and are not visible under other profiles.



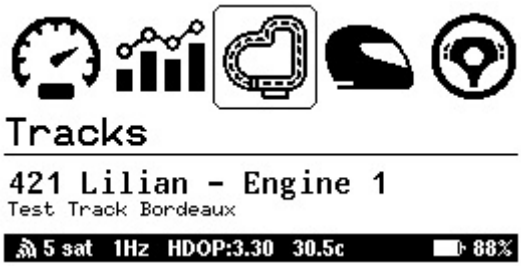
3.2 Driver Deletion

Highlight the driver you wish to remove and press **OK**.

- In the popup, select **Delete** and press **OK** again to confirm.
- All data associated with that driver—sessions, lap times, settings—will be **permanently** erased from the device

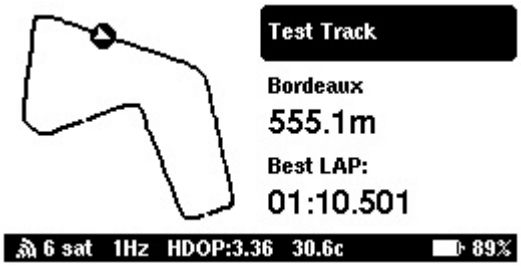
4. Tracks

The Tracks menu lets you browse and manage tracks based on your current GPS position.



- A valid GNSS fix is required. If GPS data is unavailable, you'll see **No tracks available – check GPS** and cannot enter the menu

- Once a position is received from the GPS, you will be able to enter this menu. The device displays **Searching nearby tracks...** then lists all tracks within a 50 km radius. Within a track's options, choose:



- **Select :** Select your wanted track. Sometimes there are multiples tracks for the same places (different path, inverted).

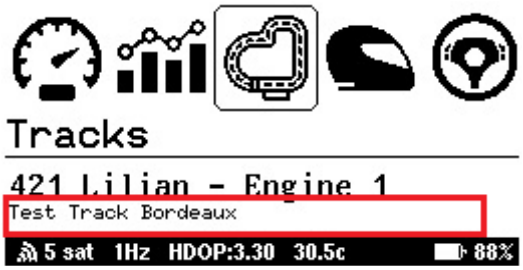
- **Select & Edit**: View your all-time best lap time for this track, and reposition the start/finish line if needed.

- **Reset Best Lap**: Clear the recorded best lap. **Warning**: this action is irreversible.

- **Remove**: Delete custom tracks from the device. FoxLAP-provided tracks cannot be removed.

4.1 Track Selection

After selecting a track, it becomes the active circuit for lap timing and appears at the bottom of the Main Menu.

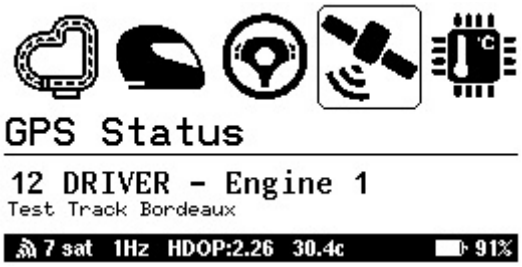


4.2 Syncing track

To refresh your track list (including any new custom tracks created online), go to **Synchronize > Update track database**

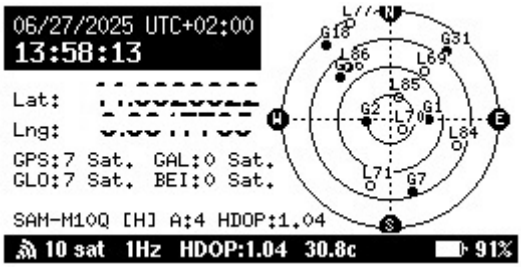
5. GPS Status

The **GPS Status** menu provides real-time GNSS reception and fix quality metrics.



5.1 Status overview

- **Satellites (Total & per Constellation)**: Total in view, with breakdown (GPS, GLONASS, GALILEO, Beidou).
- **Update Rate**: Current GNSS update frequency (Hz).
- **HDOP (Horizontal Dilution of Precision)**: Measure of horizontal accuracy; lower is better (≤ 0.7 ideal).



- **Coordinates**: Current latitude and longitude.

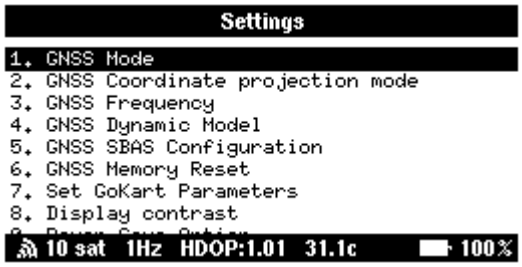
Press OK to see you curent position on the selected track

Press cancel to return to the main menu

5.2 Best Practice

- Power on the device at least **5 minutes** before use in an open area to ensure a stable fix.
- Confirm at least 12 satellites and HDOP ≤ 1.0 before starting lap recording.
- If reception is poor (HDOP > 2.0 or fewer than 6 satellites), move to a location with a clearer view of the sky.

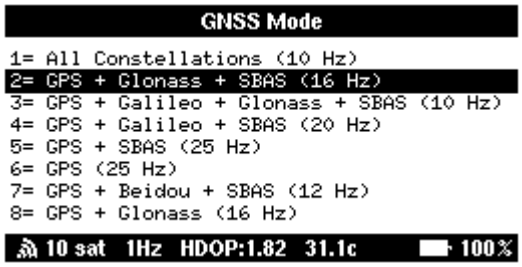
5.3 GPS Fine tuning



1.GNSS Mode

Access via **Settings > GNSS Mode**. Select one of eight modes combining different GNSS constellations and SBAS corrections. Each mode balances satellite availability, update rate, positional accuracy, and power consumption.

- **GPS**: Global coverage; baseline for all modes.
- **GLONASS**: Russian system; enhanced polar **and urban coverage**.
- **Galileo**: European system; high precision, especially in Europe.
- **BeiDou**: Chinese system; strong performance in Asia-Pacific.
- **SBAS**: Satellite-Based Augmentation (e.g., EGNOS in Europe, WAAS in North America, MSAS in Japan); provides correction data for improved accuracy.



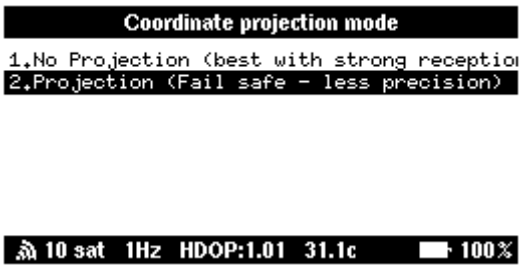
1. **All Constellations (10 Hz)**
    - **Advantages**: Maximizes satellite visibility and positional accuracy; robust in urban or obstructed environments.
    - **Disadvantages**: Moderate update rate but enough for race application; higher power consumption.
2. **GPS + GLONASS + SBAS (16 Hz)** **(Default)**
    - **Advantages**: Faster position updates; improved accuracy with dual constellations and SBAS corrections.
    - **Disadvantages**: Slightly reduced satellite availability compared to All Constellations.
3. **GPS + Galileo + Glonass + SBAS (10 Hz)**
    - **Advantages**: High precision in Europe (Galileo + EGNOS);
    - **Disadvantages**: Moderate update rate; fewer satellites than All Constellations mode. Takes time to see Galileo satelites
4. **GPS + Galileo + SBAS (20 Hz)**
    - **Advantages**: Higher refresh rate for fast-moving activities; **good positional accuracy. reliable accuracy with SBAS precision**
    - **Disadvantages**: Increased power draw; limited to two constellations.
5. **GPS + SBAS (25 Hz)**
    - **Advantages**: Maximum update frequency with SBAS corrections; efficient in open-sky conditions.

- **Disadvantages**: No multi-constellation redundancy; performance degrades in obstructed areas.

6. **GPS (25 Hz)**
    - **Advantages**: Highest refresh rate and lowest power usage without SBAS overhead.
    - **Disadvantages**: Single-constellation; lowest resilience to signal loss and multipath errors.
7. **GPS + BeiDou + SBAS (12 Hz)**
    - **Advantages**: Enhanced coverage in Asia-Pacific regions; SBAS improves accuracy.
    - **Disadvantages**: Lower update rate; BeiDou availability may be region-dependent.
8. **GPS + GLONASS (16 Hz)**
    - **Advantages**: Dual-constellation redundancy; faster updates than All Constellations.
    - **Disadvantages**: No SBAS corrections; slightly less precise.

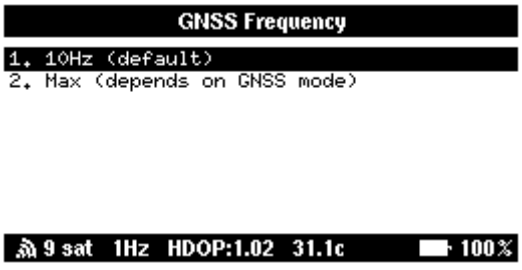
2.GNSS Coordinate Projection mode

Adjust how the device handles temporary GNSS signal loss and finish-line detection.



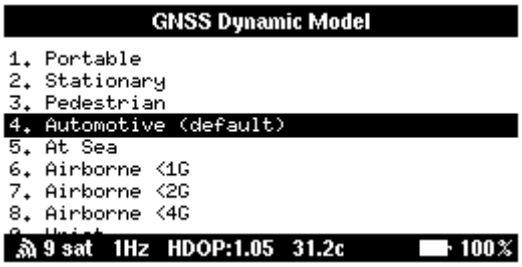
- **No Projection**
  Relies solely on live satellite fixes for positioning. Provides the highest accuracy when reception is strong, but in weak-signal areas (e.g., tree cover, or near large metal structures) **you may miss finish-line crossings or experience gaps in lap detection**. I do not encourage using this mode
- **Projection** (Default)
  Uses your last known speed and heading to predict position during brief signal outages, ensuring reliable finish-line detection. This fail-safe approach prevents missed laps but may introduce a very small drift in lap timing (but still very accurate)

3.GNSS Frequency



- **10Hz :** Good balance for accuracy, performance and power saving
- **Max :** Maximum Frequency possible based on GNSS mode used (e.g Number of constellations and type)

4.GNSS Dynamic Model



Access via **Settings** > **GNSS Dynamic Model**. Select the model that best matches your activity profile. Each mode adjusts the receiver's internal filters for optimal performance under different dynamics:

- **Portable**

Use Case: Handheld or backpacked device; minimal movement.

Pros: High positional stability; reduces noise when stationary or at walking speeds.

Cons: Slow to respond to rapid motion changes; **not ideal for fast-moving vehicles**.

- **Stationary**

Use Case: Fixed installation (e.g., garage or pit bench).

Pros: Maximum fix accuracy and stability; assumes no movement to filter noise.

Cons: Cannot track any motion; all movements are discarded.

- **Pedestrian**

Use Case: Walking or jogging (<10 km/h) on foot.

Pros: Balances filter between stationary and vehicular speeds; handles gentle motion.

Cons: Inadequate for higher speeds or rapid direction changes.

- **Automotive (Default)**

Use Case: Cars, karts, motorcycles up to ~200 km/h.

Pros: Optimized for vehicular dynamics; fast response to acceleration and turns.

Cons: **Slightly increased noise at very low speeds**.

- **At Sea**

Use Case: Marine environments (boats, yachts).

Pros: Filters out wave-induced motion; smooth tracking over water.

Cons: May lag during rapid vessel maneuvers.

- **Airborne <1G**

Use Case: Light aircraft or drones with gentle maneuvers.

Pros: Handles low-G aerial motion; retains accuracy when level.

Cons: Not suited for high-G activities.

- **Airborne <2G**

Use Case: Aerobatic planes or high-performance drones.

Pros: Supports moderate dynamic loads up to 2 G.

Cons: Increased susceptibility to noise when used on ground vehicles.

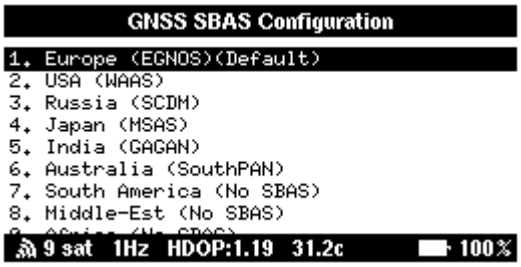
- **Airborne <4G**

Use Case: High-G aerobatics or missile platforms.

Pros: Maintains lock under severe accelerations up to 4 G.

Cons: Excessive filtering for ground use; higher power consumption.

5.GNSS SBAS Configuration



Access via **Settings** > **GNSS SBAS Configuration**. Select the regional Satellite-Based Augmentation System (SBAS) to enhance GNSS accuracy:

EUROPE (EGNOS) (Default) : Improves horizontal and vertical accuracy by up to 1–3 m; ideal for European users.

USA (WAAS) : Provides similar accuracy improvements for users in the USA, Canada, and Mexico.

Russia (SCDM) : Regional corrections for enhanced precision across Russia.

Japan (MSAS) : Improves accuracy over Japanese territory; reduces positional drift.

India (GAGAN) : Augmentation for aviation standards; suitable for Indian subcontinent.

Australia (SouthPAN) : Enhanced positioning for Australasia region.

South America (No SBAS) : No regional SBAS service; revert to uncorrected GNSS or use a nearby SBAS if receivable.

Middle-East (No SBAS) : No regional SBAS currently operational.

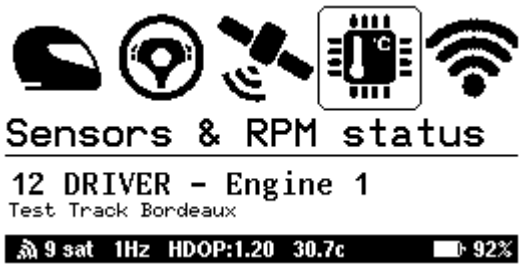
Africa (No SBAS) : rely solely on core GNSS constellations for positioning.

China (BDSBAS) : Regional correction service leveraging BeiDou SBAS; improves accuracy in mainland China.

South Korea (KASS) : Korea Augmentation Satellite System provides enhanced precision for Korean territory.

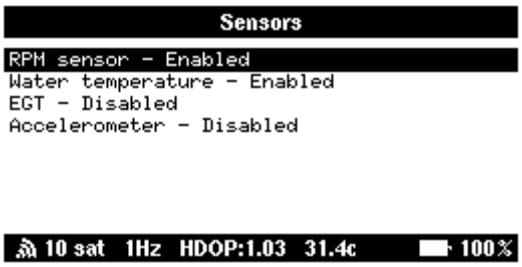
6. Sensors and RPM Status

Monitor real-time data from optional external sensors—engine RPM, water temperature, exhaust gas temperature (EGT) — **whether on-track or in the garage**. It don't require to receive a GPS position.

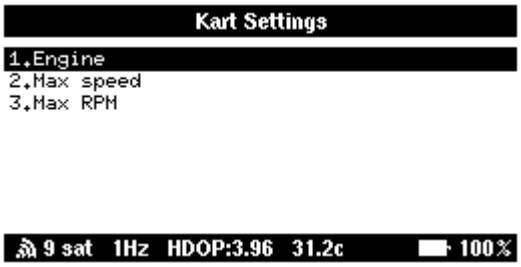


6.1 Requirement

- External sensors must be connected to the device's sensor ports.



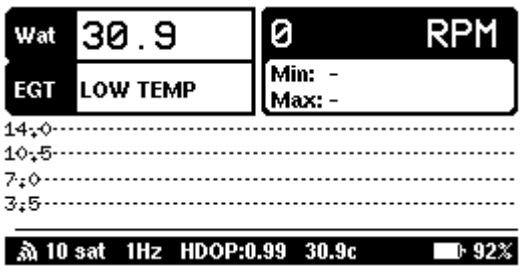
Enable desired sensors in **Settings > Sensors**: toggle **RPM**, **Water Temp**, **EGT**, and **Accelerometer** as needed.



In **Settings** > **Set Kart Parameters**, configure Max RPM and Max Speed to set graph scale boundaries. For example, set 15000 for a Rotax Max.

6.2 Overview screen

- **RPM**: Live engine RPM (revolutions per minute). The graph shows the RPM evolution over time.
- **Water Temperature**: Engine coolant temperature
- **EGT**: Exhaust gas temperature



7. Race Mode

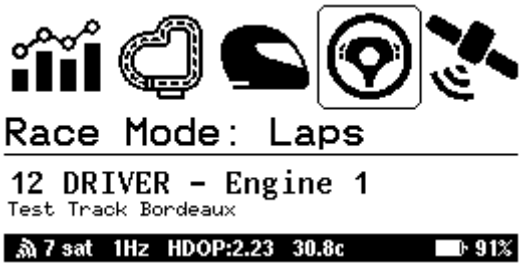
Choose between timed lap sessions or endurance-style runs.

Laps Mode

- Counts laps crossing the start/finish line.
- Session automatically ends after 10 sec of no movement.
- Ideal for sprint races (time-based).

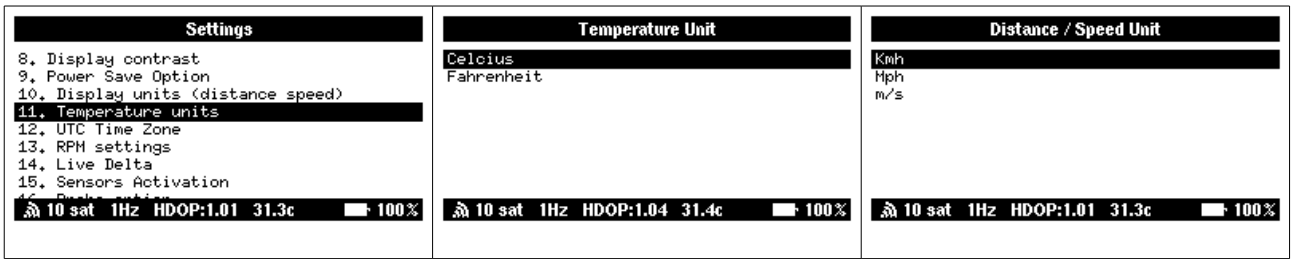
Enduro Mode

- Counts laps similarly but continues when stopped.
- Use for endurance events with pit stops.
- Manually end session with **Cancel**.



8. Units

By default, units are Km/h and °celcius. You can change the settings. The selected units will be used in all displays

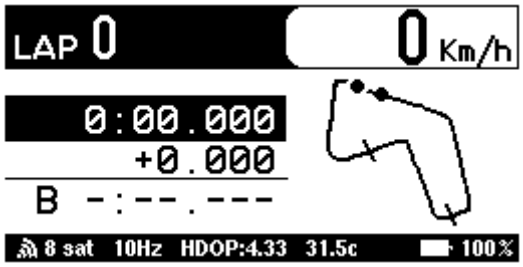


9. LAP Recorder

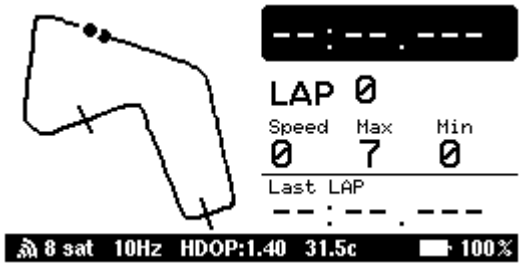
Prepare the device for lap timing. In this mode, automatic shutdown is disabled, and the unit waits for you to cross the start/finish line to begin recording. The device enters standby and will not power off due to inactivity.*By default in the main menu and other menus, the device automatically shutdown after 5 minutes of inactivity to preserve the battery life (the automatic shutdown can be disabled/enabled in **Settings** > **Power Save option**)*

9.1 Overview screen

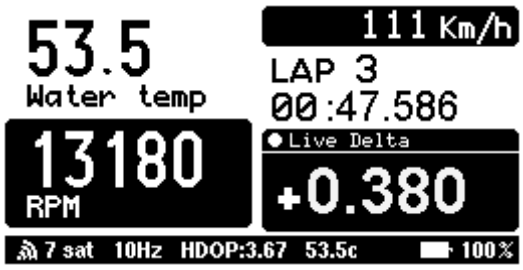
There are eight differentlayouts. Press **OK** to cycle through them:



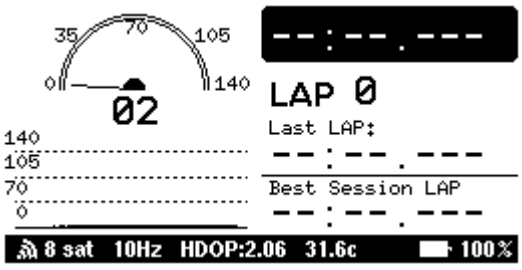
View 1 : If **Live Delta** is activated – It shows current lap time, the live delta with the best lap in the session and your best LAP time. Otherwise, if **Live delta** is disabled. It show the gap of your last LAP with the best session lap



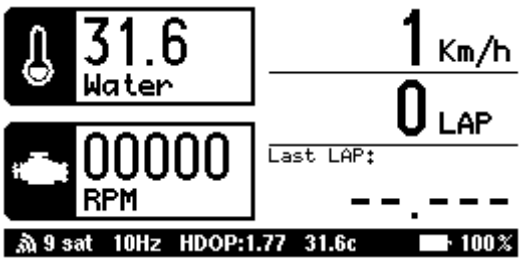
View 2 : Show current LAP time, Max Speed, min Speed and your last LAP time



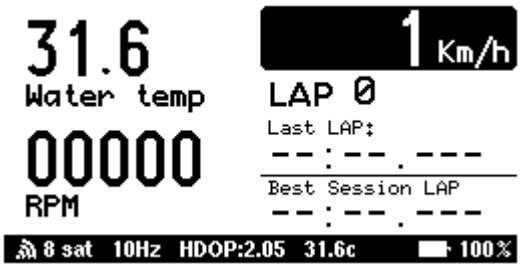
View 3: Show your Water temperature, the RPM, speed current LAP, Best LAP time and Live Delta



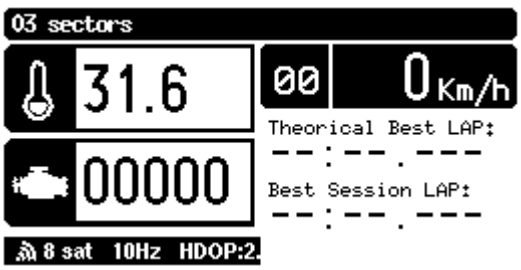
View 4 : Speecd, RPM graph, Cureent time, current LAP, Last and best LAP session



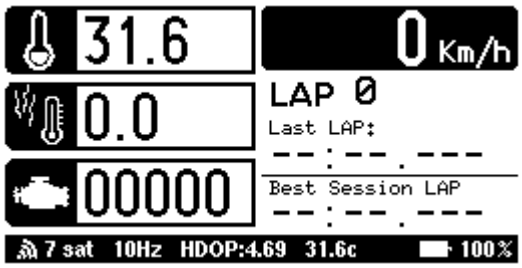
View 5 : Water temperature, RPM, Speed, current LAP and last LAP time



View 6 : Water temperature, RPM, Speed, current LAP last LAP time and best Session lap



View 7 : Sectors, Water temperature, RPM, Speed, current LAP, best Session lap and **theoretical** best lap (based on sectors)

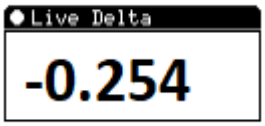


View 8 : Water temperature, RPM, EGT, Speed, current LAP last LAP time and best Session lap

9.2 Thresholds & Box colors

The Lap Recorder uses colored backgrounds in status boxes to provide instant visual feedback. The box background color can toggle from black to white.

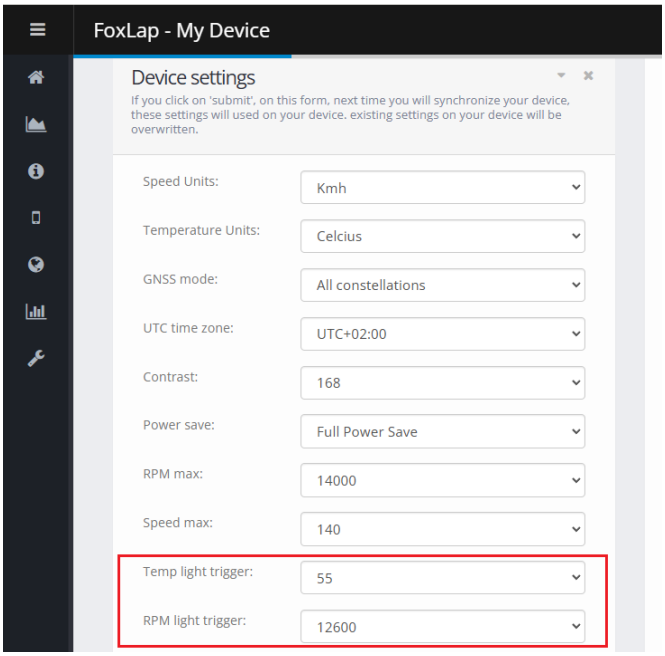
Live Delta : When you are faster than your session best, the box background turns white with black text. When you are slower, it inverts to **black** background with **white** text.

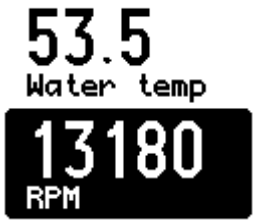
 **Losing time**	 **Gaining time**

Water Temperature : By default under 55°c (131°F), the background box is white and the text is black. Colors are inverted over 55°c (131°F).

RPM: Under the RPM threshold (default 12 600 RPM), boxe is **white** with **black** text. Exceeding the threshold inverts the colors

Threshold values can be customized in your online account (https://foxlap.com/mydevice.php ►My Device Settings). After saving, sync the device via **Synchronize > Synchronize Sessions** to apply changes.





9.3 Session Summary

After you finish your ride, the device automatically displays your session statistics.

- In **Lap Mode**, the summary appears after a few seconds of inactivity.
- In **Enduro Mode**, it appears immediately after you press **Cancel**.

The session summary includes:

- **Best Lap (time and lap number)**
- **Speed, RPM, Water Temperature, and EGT**: Minimum and maximum values recorded during the session
- **Theoretical Best Lap** (if sectors are configured)

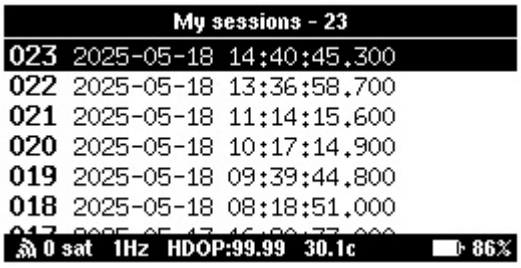
10. My sessions

The **My Sessions** menu lets you access, review, synchronize, or delete recorded sessions.

10.1 Navigate Sessions

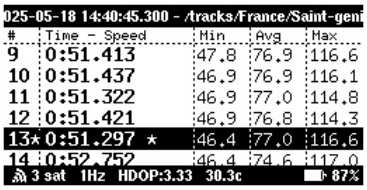
From the Main Menu, select **My Sessions** and press **OK**.

Sessions are grouped by Year–Month. Use **Up** and **Down** to browse groups, press **OK** to enter, or **Cancel** to return to the Main Menu

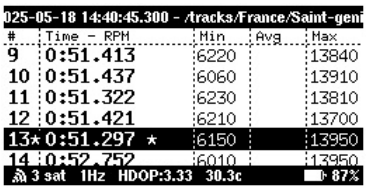


After entering a month, highlight the desired session and press **OK**. In the options menu, choose:

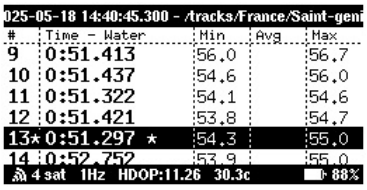
1. **View Data**: Cycle through data displays (Speed, RPM, Temperature, Sector Analysis, Lap Replay). Press **OK** to advance to the next display.
2. **Synchronize Session**: Upload this session to your FoxLAP online account.
3. **Delete Session**: Permanently remove the session from the device. **Warning**: if this session is also on your online FoxLAP account, it will be deleted online too after the next synchronisation.



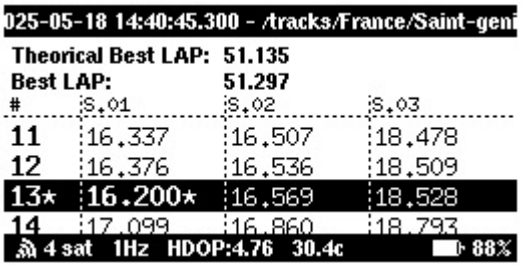
1-Speed details



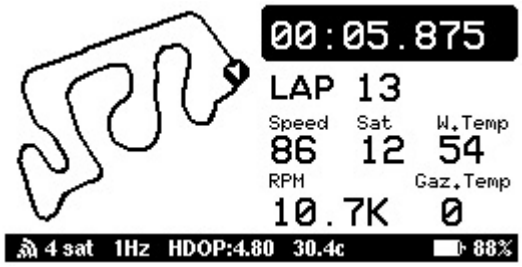
2-RPM details



3-Water temperature details



4-Sectors with theoretical best lap



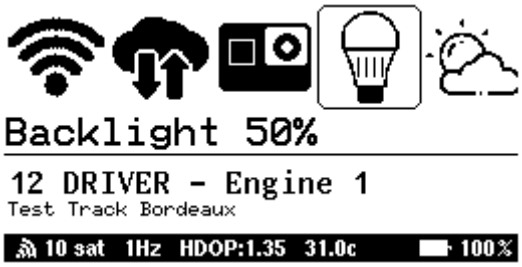
5-Animated replay of the session Lap

Each press on the **OK** button change the screen to the next one

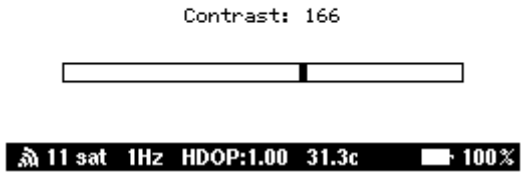
Exiting : Press Cancel at any point to return to the previous menu

11. Backlight & contrast

This menu let you configure the backlight intensity. From 0% (No backlight) to 100% (bright and intense backlight)



In **Settings** > **Display Contrast** you will be able to set contrast from 160 (clear contrast) to 170 (Dark contrast)



12. UTC time Zone

The device uses Coordinated Universal Time (UTC) for all GPS-derived timestamps. To display your local date and time:

1. Navigate to **Settings > UTC Time Zone**.
2. Choose your offset from **UTC−12:00** to **UTC+12:00**.

For example, France is UTC+1 in winter and UTC+2 during summer (Daylight Saving Time).

Once set, all displayed times and dates will update to your local time zone.

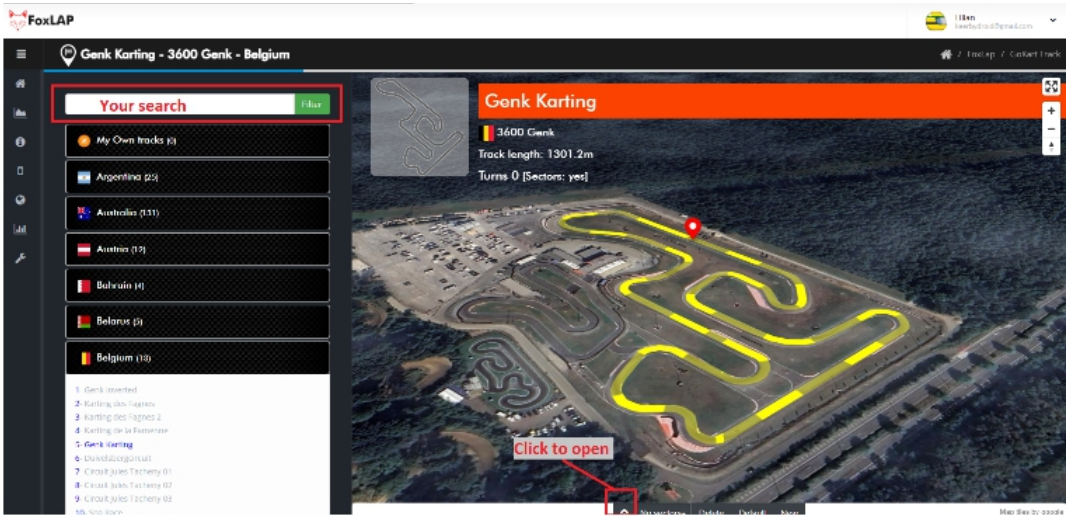
13. Configure sectors

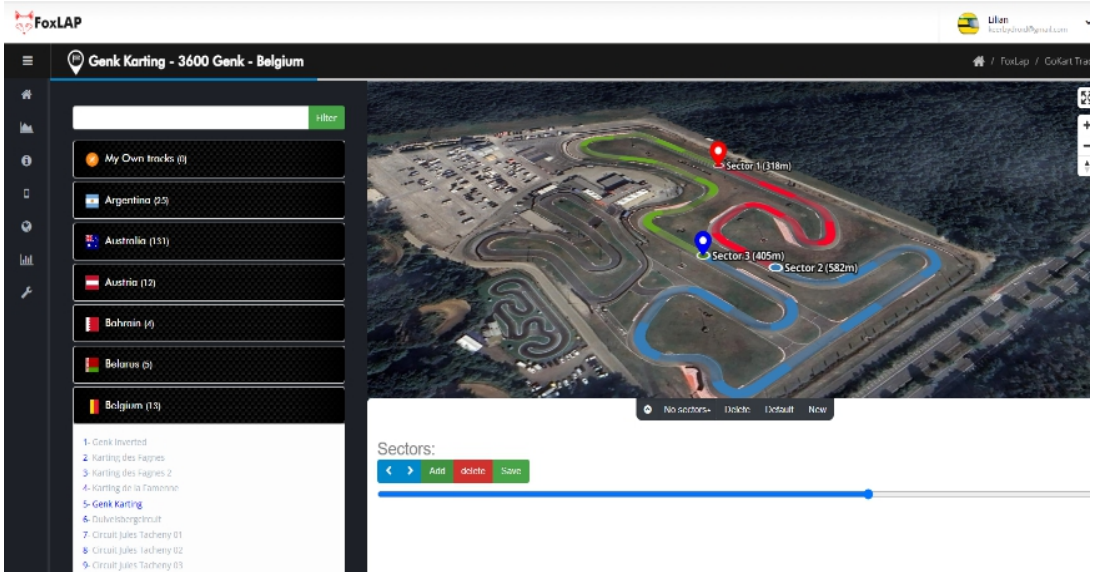
Define custom sector splits on tracks via the FoxLAP online portal and sync them to your device.

13.1 Online Configuration

1. Sign in to your FoxLAP account at https://foxlap.com/karting-track-database.php.
2. Locate your track in the list or use the search bar.
3. If the track does not exist, click **Create Track** and follow the track creation tutorial.
4. To add a sector:
    - Click the track thumbnail, then drag the sector marker along the circuit map to the desired split point.
    - Click **Add Sector**. Repeat for each split.
5. After placing all markers, click **Save**, enter a name, and confirm.
6. In the configurations list, select your new setup and click **Set as Default** (marked in green). It means that this sector configuration is the default setting and will be used by the online tool and for track database retrieval.

https://foxlap.com/161/track-Genk_Karting_Belgium.html





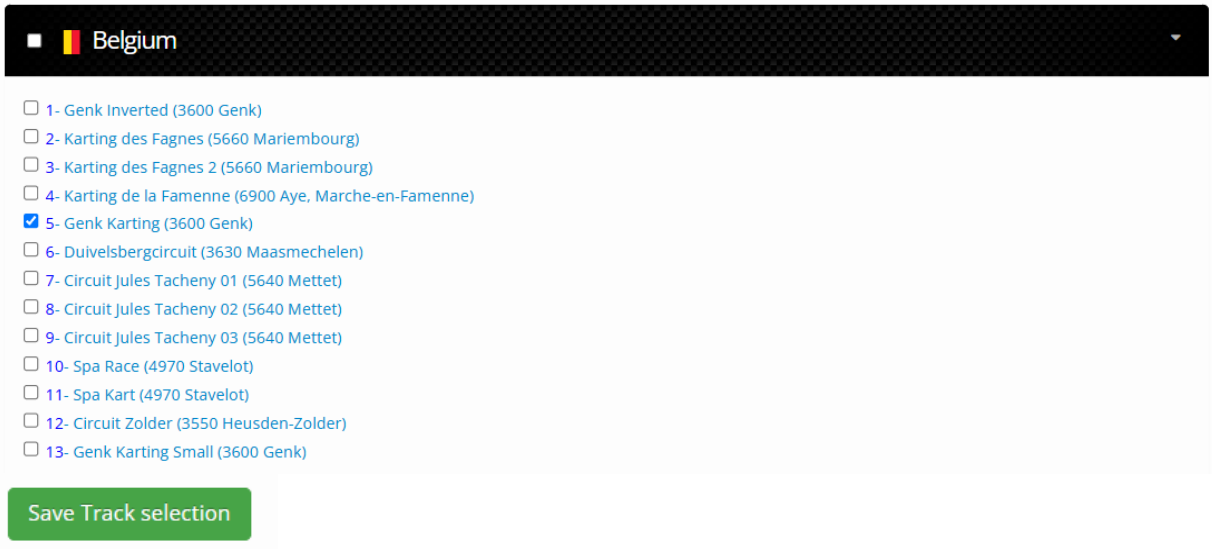
13.2 Sync to Device

1. On the device, go to **Synchronize > Update track database**.
2. Wait for the synchronization to complete.

13.3 Tips & Troubleshooting

- Ensure the track is included under **My Device** (https://foxlap.com/mydevice.php) before syncing.
- After changing selections on the web portal, always click **Save Track Selection** and then sync the device.
- If sectors do not appear, verify you are online and that the device shows the correct firmware version that supports sectors.
- For best accuracy, review and fine-tune split points on a computer with a full-screen map view.
- Don't set more than 4 sectors

Always make sure that the track is included in the track list on https://foxlap.com/mydevice.php



If you change track selection on this page, don't forget to click on « Save Track Selection »