



ASTRO

IMPORTANT INFORMATION FOR YOUR SAFETY

ASTRO uses a rechargeable lithium battery, which can be hazardous if not handled properly. To ensure safe operation of your device, please follow these guidelines:

ALWAYS use the provided charging cable.

NEVER leave the device charging unattended.

NEVER charge using a voltage above 5V.

NEVER use or charge if the case shows noticeable swelling.

NEVER use or charge if the device is excessively hot.

NEVER allow the device to get wet.



Failure to follow these safety instructions could result in irreversible damage to the battery. A damaged battery may swell, and in extreme cases, pose a fire risk. ASTRO is not responsible for any damage caused by improper handling of the battery.

If you notice any issues with your device, please contact ASTRO support immediately at info@astrotimer.pt

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WELCOME

ASTRO is a new approach to racing telemetry. We aim to provide a revolutionary experience both on the track and at home.

ASTRO is a portable GPS laptimer and telemetry system designed for karting, motorcycles, bikes and cars. It combines innovation and unmatched precision at an affordable price.

Relentless Precision: With a top-of-the-line 25Hz update rate and support for four simultaneous constellations (GPS, GALILEO, BEIDOU and GLONASS), ASTRO updates the driver's position 25 times per second. Error correction algorithms ensure sub meter precision even in demanding conditions.

No Interruptions: Featuring 32GB of internal memory and 7-hour battery life, ASTRO is built for all types of racing – from casual sprints to hardcore endurances – without losing any data.

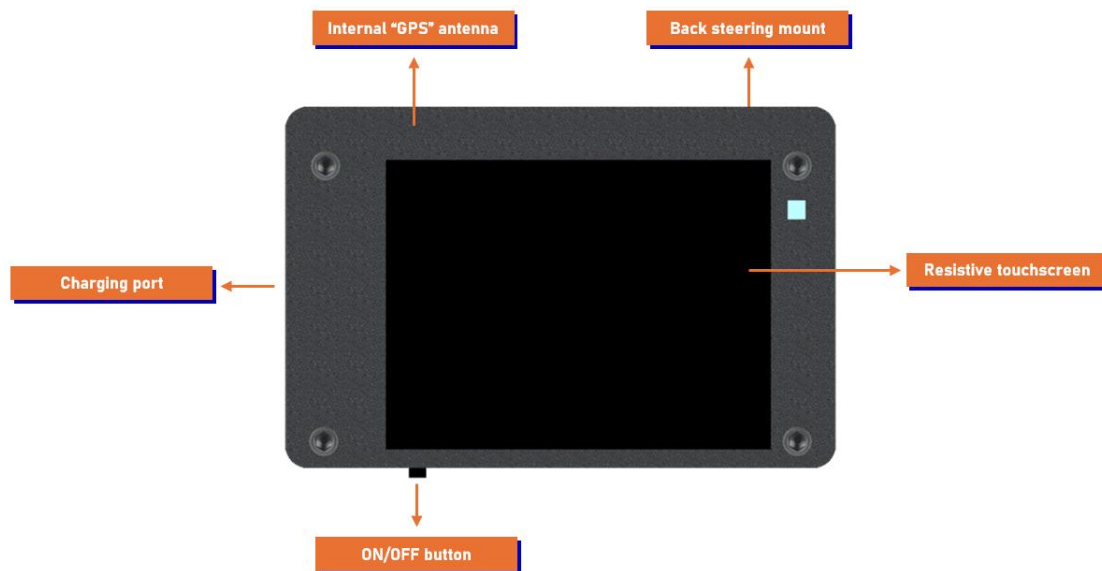
Improve like Never Before: ASTRO's innovative sector display lets drivers understand how each sector impacts their lap time in real-time. A three-colour system enables continuous lap-by-lap improvement to crush lap times.

National and Track Leaderboards: Compare your performance against the best drivers in your country or on your track. Gain insights with powerful analysis tools and compare your racing line to top competitors. Rise up the leaderboards to win achievements and showcase your skill.

Ease of Use and Availability: Access your data anywhere, anytime. There's no need to download or install bulky and complex apps or software. Simply create an account, upload your data on the go, and you have unlimited access wherever you are.

1. DEVICE OVERVIEW

ASTRO was designed to be as simple and straightforward as possible to use. It features just one physical button to turn the device ON/OFF. All other functions are operated via a resistive touchscreen that can be used even while wearing racing gloves.



ASTRO includes a semi-universal steering wheel mount on the back. The device can be attached to most steering wheels by inserting and tightening the rear screw into one of the steering wheel holes. ASTRO is also compatible with universal handlebar mounts featuring an M5 screw insert, such as Quadlock, making it ideal for motorcycles and bikes. For cars, ASTRO can be mounted on the steering wheel or paired with other universal mounting solutions. Additionally, ASTRO offers custom mounts tailored for various use cases. For detailed mounting guides and tutorials, visit the ASTRO website or follow us on social media.

ASTRO calculates its position by connecting to GPS satellites. On the first startup, the system will take a few minutes to establish a valid fix with 4 or more satellites under ideal conditions (outdoors, clear skies). Once the initial fix is established, the system will remember its position for up to 4 hours, even when turned off. During this time, any subsequent startup will establish a valid fix quickly.

IMPORTANT: ASTRO relies on an internal antenna to establish a valid fix with up to 16 satellites. For optimal performance and precision ensure that the top of the device is never covered and always faces the sky.

Keep in mind that ASTRO is not waterproof by design. The device should not be used under rain without protection. Water will damage the device. Water damage is not covered by warranty.

2. CHARGING AND STAND-BY

ASTRO is a battery-powered device designed for both sprint and endurance racing. It comes with a 5V USB-A to USB-C charging cable that can be used with any USB-compatible charger or device. Always use the provided charging cable and never leave ASTRO charging unattended.

- Charging the device from 0% to 100% takes approximately 3 hours and 30 minutes.
- A full battery will power the device for over 7 hours under normal conditions and temperatures. However, extreme heat or cold may impact battery life and significantly reduce performance.

IMPORTANT: Never use a charger with a voltage higher than 5V to charge the ASTRO battery. Using a different voltage can result in irreversible damage to the device. Never charge if the device is swollen or extremely hot. Never attempt to remove, repair or recharge a damaged battery.

ASTRO does not include a battery monitoring system (BMS). When connected to a charger, it will power on automatically and remain on throughout the charging process. Once the charger is disconnected, ASTRO will automatically reboot. Users must manually turn off the device after charging.

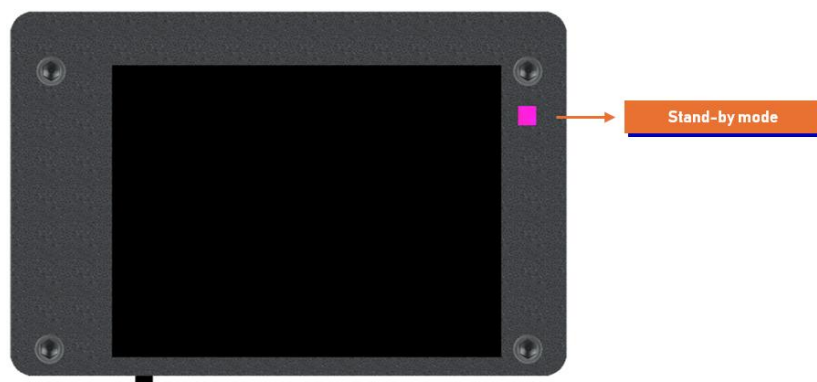
To ensure uninterrupted charging, always use a stable power source. If charging is interrupted - such as when using a laptop that enters hibernation - ASTRO will reboot due to the disruption and continue consuming battery.

IMPORTANT: ASTRO will always power on when connected to a charger and reboot if charging is interrupted. You can use this behaviour to confirm that the device is charging properly. If charging is interrupted, remember to manually turn off the device to prevent unnecessary battery drain.

To manage power consumption ASTRO will enter a stand-by mode automatically if two conditions are simultaneously met:

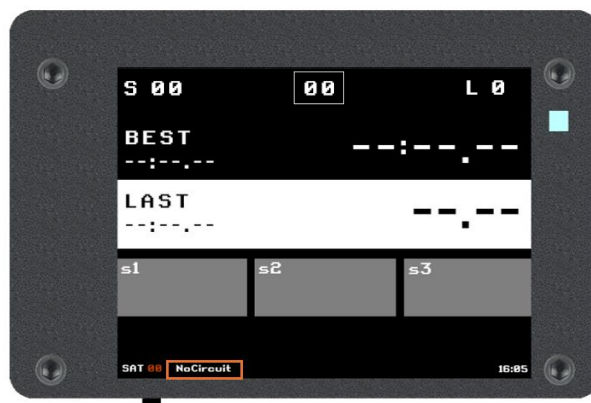
- No valid satellite fix (4 satellites) is achieved for over 15 minutes;
- No action is detected (e.g. touching the screen) for over 15 minutes.

In stand-by mode the screen will turn off and the LED will fade purple every second. To exit stand-by mode simply press anywhere on the screen.

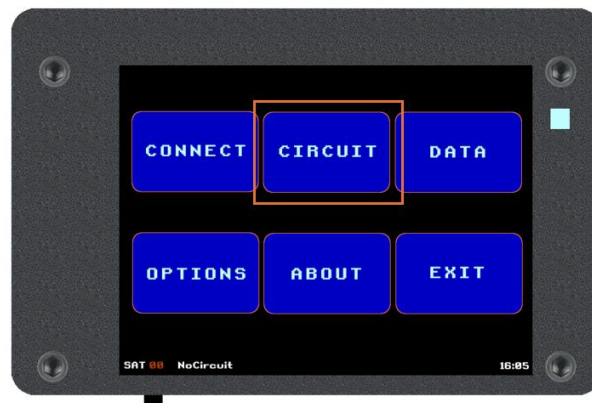


3. FIRST TIME SETUP

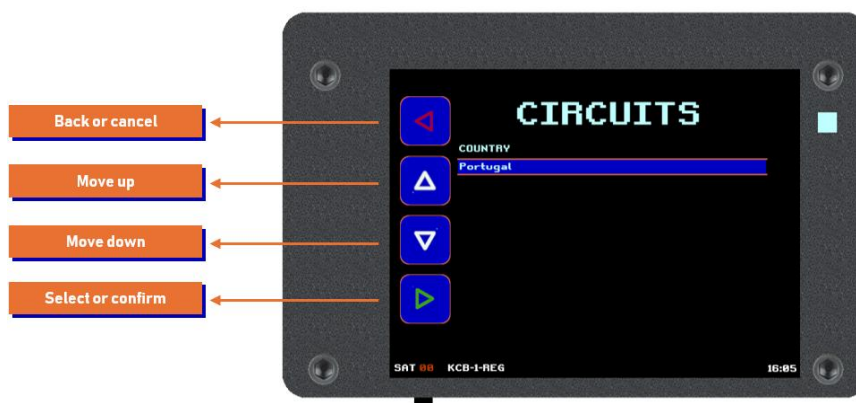
After turning on the device, it will boot for approximately 5 seconds while displaying the ASTRO logo. Once booted, the Race Screen will appear with blank values and “NoCircuit” will be shown in the bottom left corner. A circuit must be selected before using the device on the racetrack.



To select a circuit, access the main menu by pressing and holding anywhere on the screen for 3 seconds. The main menu will then display 6 options, as shown in the following image:



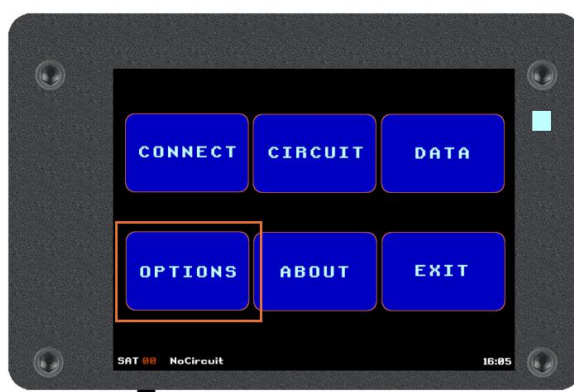
In the main menu, press CIRCUIT and navigate to the desired country. Navigating the menu lists and selecting options is easy using the left navigation bar:



After selecting the country, a preloaded list of circuits and configurations will be displayed. Simply use the navigation bar to select the appropriate circuit. If the desired circuit is at the bottom half of the list, the user can scroll “up” to reach the end faster. The active circuit will always be displayed in the bottom left corner of the screen. The selected circuit will remain saved even when the device is turned off.

IMPORTANT: To prevent accidental access to the main menu during a race, the menu screen will automatically time out after 30 seconds of inactivity and revert to the standard Race Screen.

For the initial setup it's important to adjust the screen and LED brightness. These settings can be found under OPTIONS in the main menu:



Within OPTIONS there are two independent settings: LED and BLU (Backlight Unit). Both LED and BLU can be configured manually or set to AUTO.

In AUTO mode, a specific time can be set to automatically dim the LED and/or BLU. At the designated hour, the intensity will decrease and after 7 a.m., the intensity will automatically return to the previously manually configured value. This feature is particularly useful for endurance racing, as it eliminates the need to manually adjust the LED/BLU for nighttime use.

4. RACE SCREEN

The most important screen on the device is the RACE SCREEN. This screen is displayed by default after turning on the device and provides essential information during racing sessions. To use the Race Screen correctly, an active circuit must be selected. Please refer to 2. FIRST TIME SETUP to set an active circuit.

IMPORTANT: To ensure optimal performance, it is recommended to turn on the device at least 5 minutes before the start of your session. Verify that the SAT indicator, located at the bottom of the race screen, is green for optimal performance. A higher SAT count indicates greater precision.

The race screen will display blank values until the start/ finish line of the selected circuit is crossed for the first time. If the pit exit is located after the start/ finish line, the driver must complete the outlap before the Race Screen starts displaying lap information.

The Race Screen is designed to assist drivers during both qualifying and racing sessions with clear, easy-to-read information. It includes a white high-contrast area, which makes looking for important information easier.



- Session status: displays the important session informations:
 - “S” displays de session time in the (in minutes),
 - “L” displays the number of laps completed since crossing the start/finish line for the first time.
 - The middle square displays current speed. As speed increases, the colour of the value changes to facilitate perception.
- Best and last lap: shows the best lap of the session and the time of the last completed lap.
- Current lap status: displays the current lap time and live delta, comparing the current lap time to the last completed lap.

- General information: displays the number of satellites with a valid fix, the active circuit, and the current time of day.
- Sectors: shows the driver's real-time performance using sector deltas compared to the last completed lap and a three-colour system:
 - **RED**: the sector is slower than the same sector in the last completed lap
 - **GREEN**: the sector is faster than the same sector in the last completed lap but not the fastest sector recorded in the active session
 - **BLUE**: the sector is the fastest of the active session across all laps

ASTRO's Dynamic LED will blink after each completed sector using the same colour scheme. At the end of the lap, the LED will display the colour corresponding to the overall lap performance. The Dynamic LED allows drivers to gather information without looking at the screen, and the blink intensity will change based on the performance of each sector or lap.

- Fast **RED** blink if the sector/ lap time is slower by more than half a second compared to the last completed sector/ lap
- Slow **RED** blink if the sector/ lap time is slower by less than half a second compared to the last completed sector/ lap
- Fast **GREEN** blink if the sector/ lap time is faster by more than half a second compared to the last completed sector/ lap
- Slow **GREEN** blink if the sector/ lap time is faster by less than half a second compared to the last completed sector/ lap

IMPORTANT: If the driver records the fastest sector/ lap of the session, the LED will always blink **BLUE** fast.

ASTRO prioritizes data collection to ensure that the driver never misses any laps or session information. If the driver enters the main menu during an active session, data collection and lap timing will continue running in the background, and the Dynamic LED will keep blinking after each sector or lap.

5. PIT TIMER

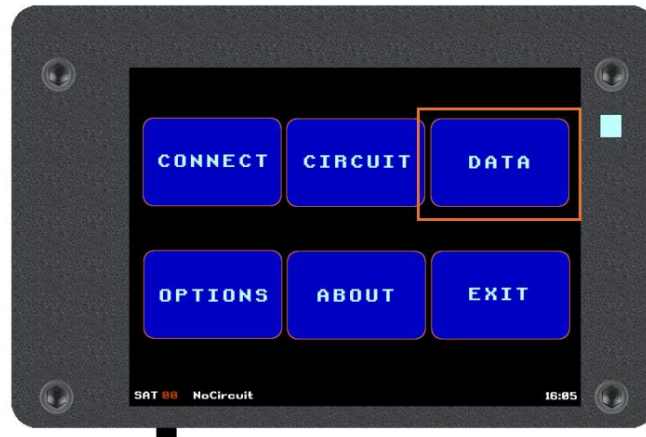
ASTRO includes a pit timer feature to help drivers accurately track pit stop durations. To activate the timer, simply double tap the race screen in quick succession. Once started, the timer will measure the length of the pit stop until the user double-taps the screen again. After stopping, the final pit time will be briefly displayed for one second before automatically returning to the race screen.



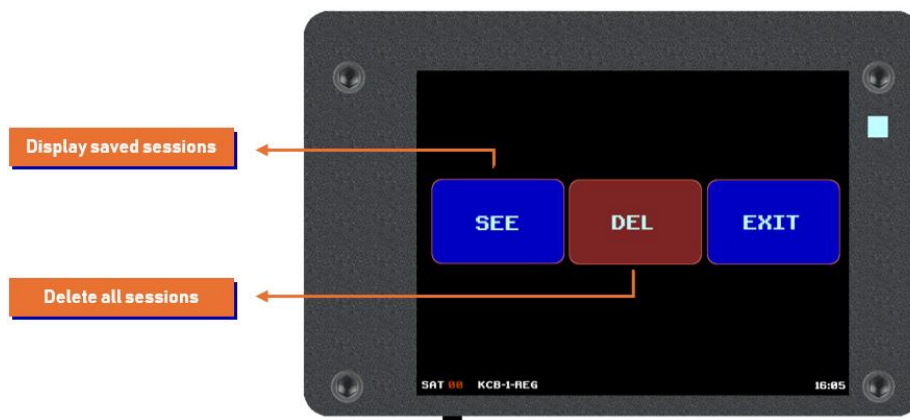
6. DATA

ASTRO automatically records telemetry data from racing sessions. The data will be organized into sessions and each session represents a continuous streak of laps run on a circuit.

A new session will be automatically created if the device is turned OFF and back ON, or if the driver remains under 10 kph for more than 1 minute and 30 seconds. The data can be accessed directly on the device using the DATA option in the Main Menu.



Within DATA there are two options: SEE and DEL. Select SEE to display completed session information or DEL to erase all sessions from the device memory.

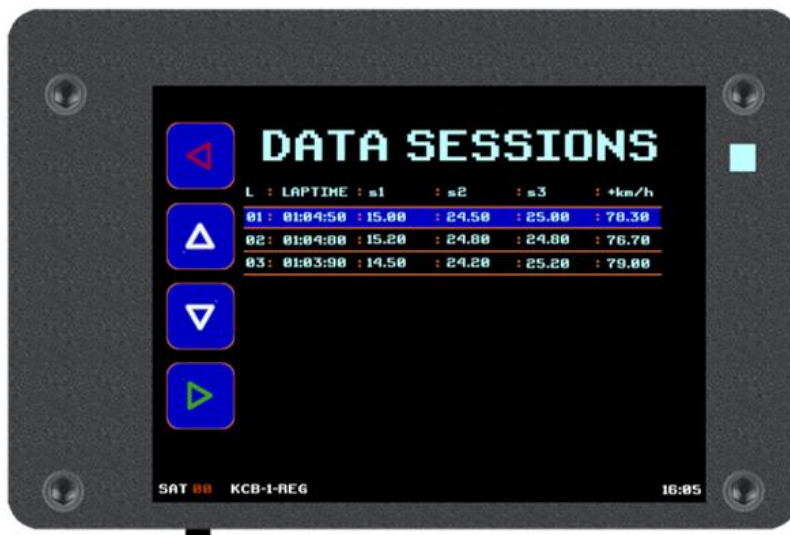


IMPORTANT: Deleting sessions will erase all sessions irreversibly and all information will be completely lost. Individual sessions can be deleted using the WEBAPP. Refer to section 7. ASTRO WEBAPP for more information.

Within DATA all sessions recorded will be displayed in chronological order (newest to oldest). The session name will be automatically created based on the date, time and circuit separated by underscores. For example, a session completed on 2024/09/28, at 16h30 on KCB-1-REG will be displayed as 20240928_1630_KCB-1-REG.



Each session can be selected using the left navigation bar. After selecting the desired session, press the green right arrow to display the telemetry data for each recorded lap. Laps are organized in ascending order from first to last, showing the overall lap time, each sector time, and top speed achieved during each lap.



7. CONNECT

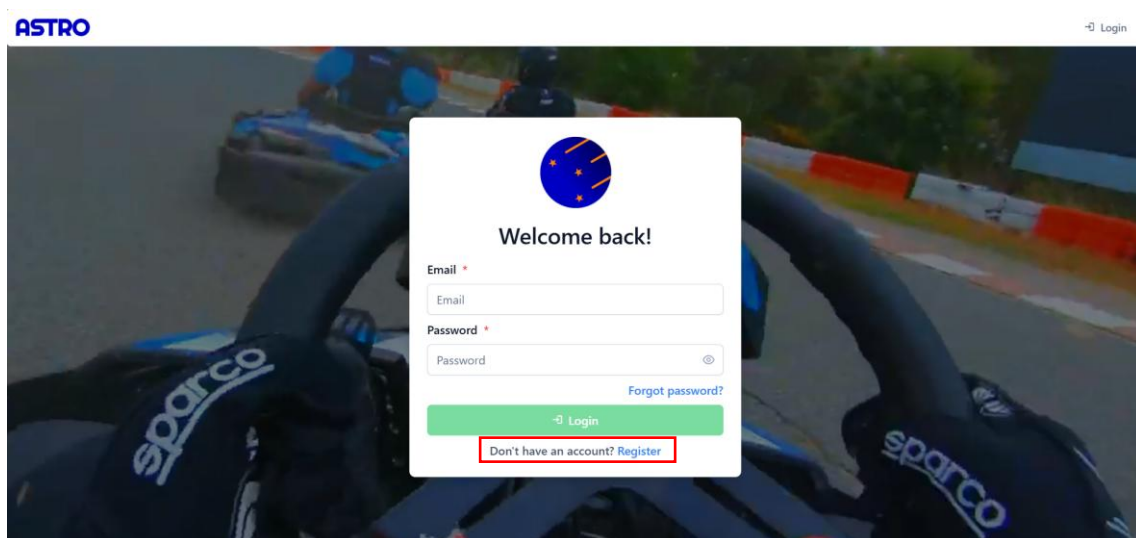
ASTRO offers an innovative ecosystem through the ASTRO WEBAPP, where drivers can upload their sessions, analyse performance, compare with other drivers and climb leaderboards to earn prizes.

The ASTRO WEBAPP can be accessed from anywhere, whether on a mobile device or a computer. To establish a Bluetooth connection with the ASTRO WEBAPP, select the CONNECT option from the main menu. The ASTRO device will begin broadcasting to nearby devices, allowing you to establish the connection using the ASTRO WEBAPP.

IMPORTANT: During a live connection ASTRO cannot be used. To revert to the main menu or Racing Screen, disconnect ASTRO using the ASTRO WEBAPP.

8. ASTRO WEBAPP

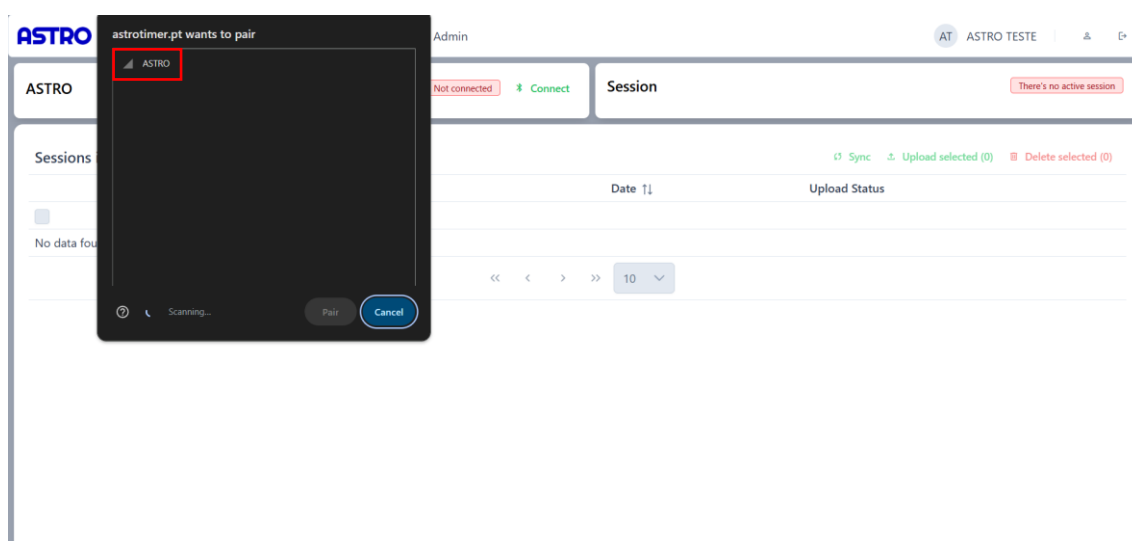
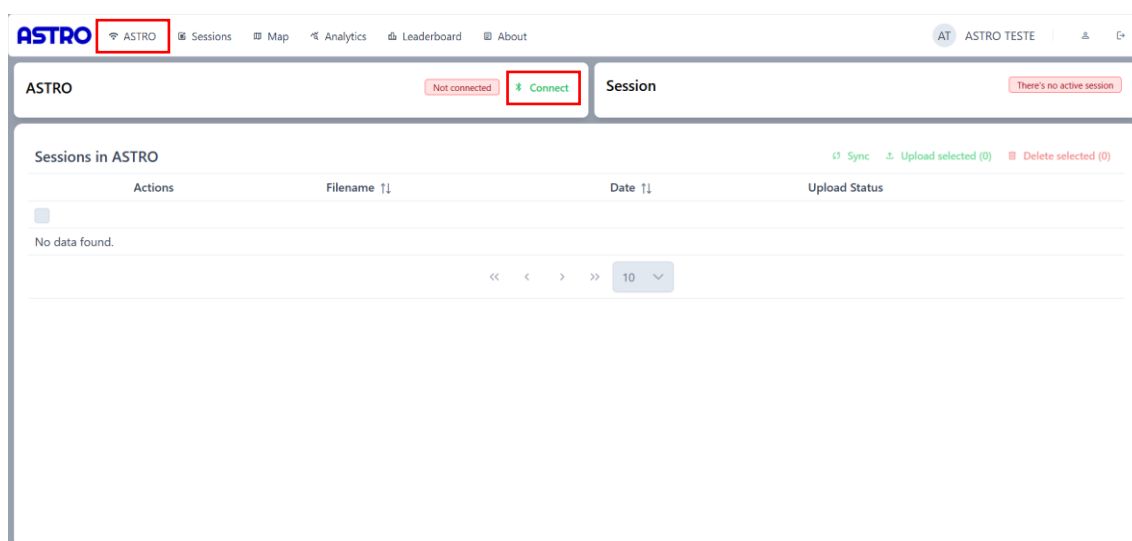
ASTRO experience is only beginning when racing ends. Drivers are encouraged to create a free ASTRO Webapp account at astrotimer.pt. Simply navigate to the LOGIN button on the top left corner of the screen and select “Don't have an account? Register”.



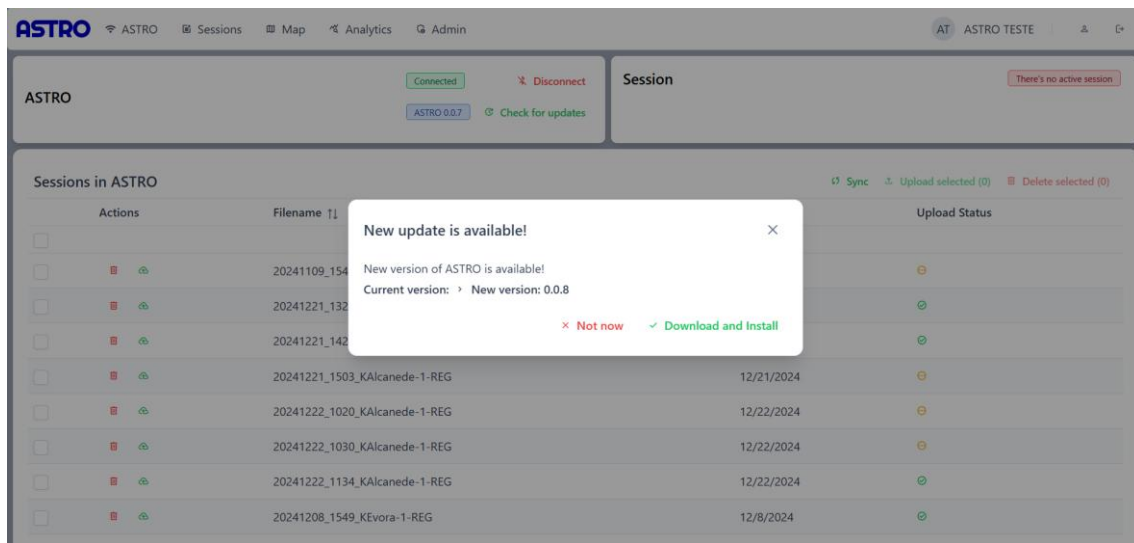
After creating an account all data recorded by the device can be uploaded to the cloud to analyse, compare and compete with other drivers.

IMPORTANT: iOS users (iPhone or Mac) must install Bluefy – Web BLE Browser through the official Apple Store to connect ASTRO via Bluetooth.

After creating an account and validating the email address, login into the Webapp and select the ASTRO tab on the top left corner of the screen. Next, select Connect from the toolbar. Make sure ASTRO has the menu “CONNECT” open and the device will show up on the Bluetooth search list of your browser.



Once connected, the Webapp will automatically display all available sessions stored on your ASTRO and check for any available updates. If an update is found, a popup will notify you and prompt you to proceed with the update.



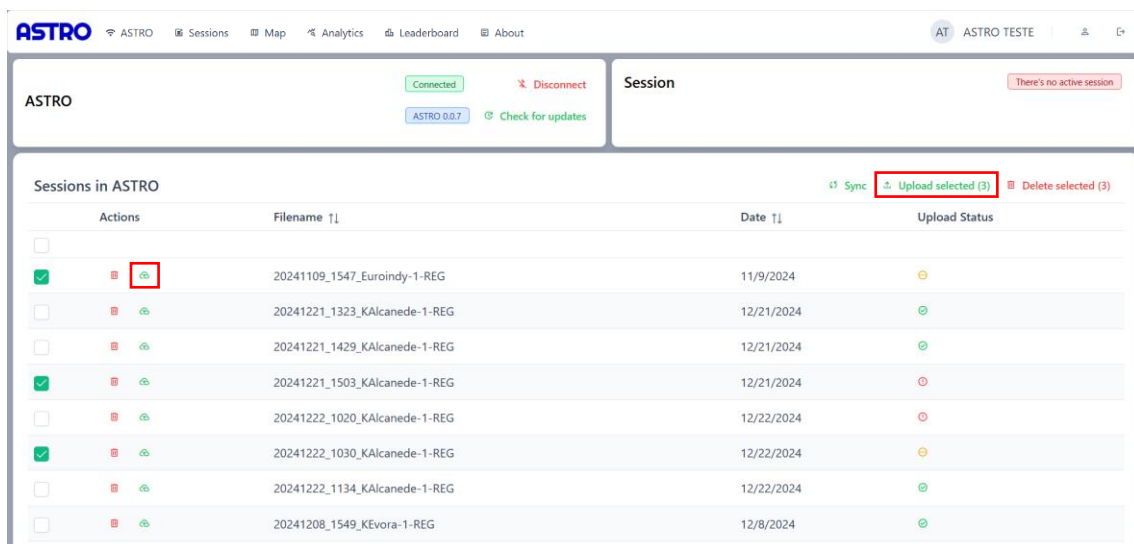
Keeping ASTRO up to date is strongly recommended to ensure access to the latest features and improvements.

IMPORTANT: During an ASTRO update, don't turn off the device or the ASTRO Webapp. To avoid interruptions, make sure to connect ASTRO to the charger before starting the update.

The Web App will automatically detect all available sessions on ASTRO and check if any have been previously uploaded. There are two ways to upload sessions:

- Upload an individual session by clicking the cloud icon next to it.
- Upload multiple sessions by selecting them and clicking "Upload Selected".

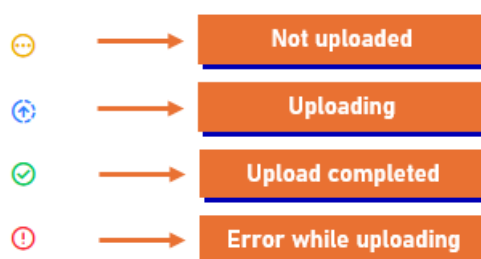
Uploaded sessions will be stored in your personal library for easy access and analysis.



The Upload Status column will display the status of each session based on four different states. These states indicate whether a session is being uploaded, has already been uploaded, or if any issues occurred during the upload process. Below is a list of all possible session states:

- Not Uploaded: The session has not been uploaded yet.
- Uploading: The session is currently being uploaded.
- Upload completed: The session was successfully uploaded.
- Error while uploaded: An issue occurred during the upload process. The user may retry the upload.

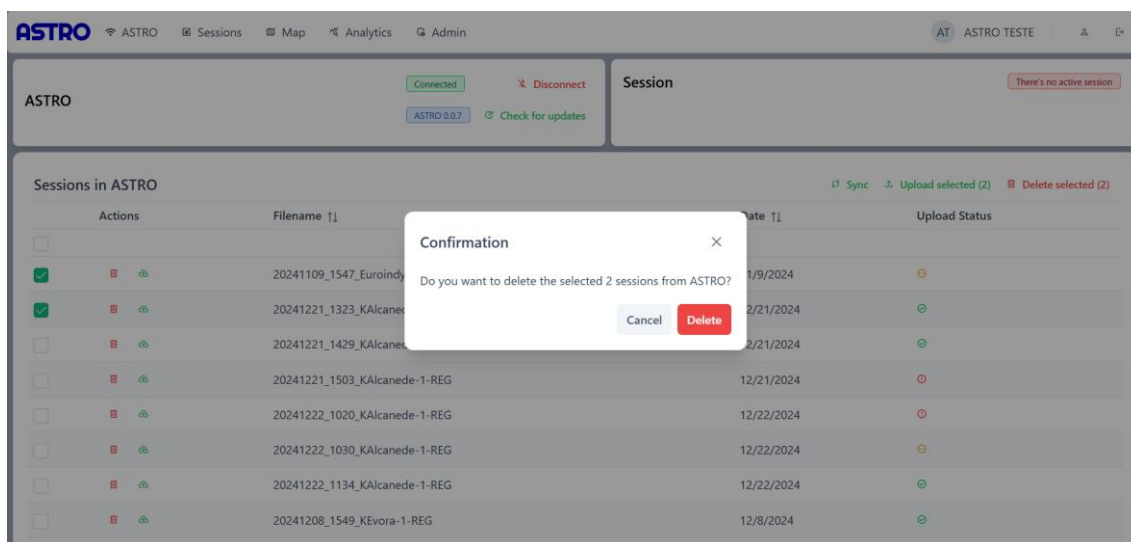
These statuses help track the progress and ensure all sessions are correctly stored in your personal library.



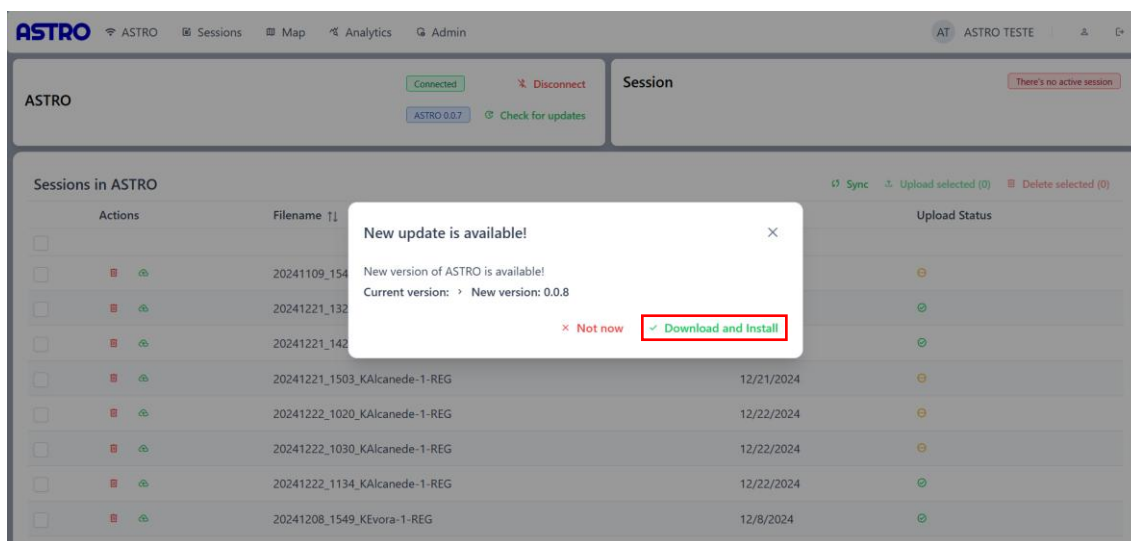
The ASTRO tab can also be used to delete unwanted sessions from the device. Like the upload process, sessions can be uploaded individually or in batches. To delete an individual session, click on the “trash

bin” icon. To delete multiple sessions, select all sessions and click on “Delete selected”. A confirmation prompt will appear to confirm.

IMPORTANT: Deleting sessions is permanent and irreversible and all data will be excluded from ASTRO and the Webapp. Always double check the selected sessions before deleting.



Users can also check for software updates and start the update process. To check for updates, click “Check for updates” in the top-left card. If a new version is available, a popup will appear with the message “New update available!” To begin the update, click “Download and Install”.



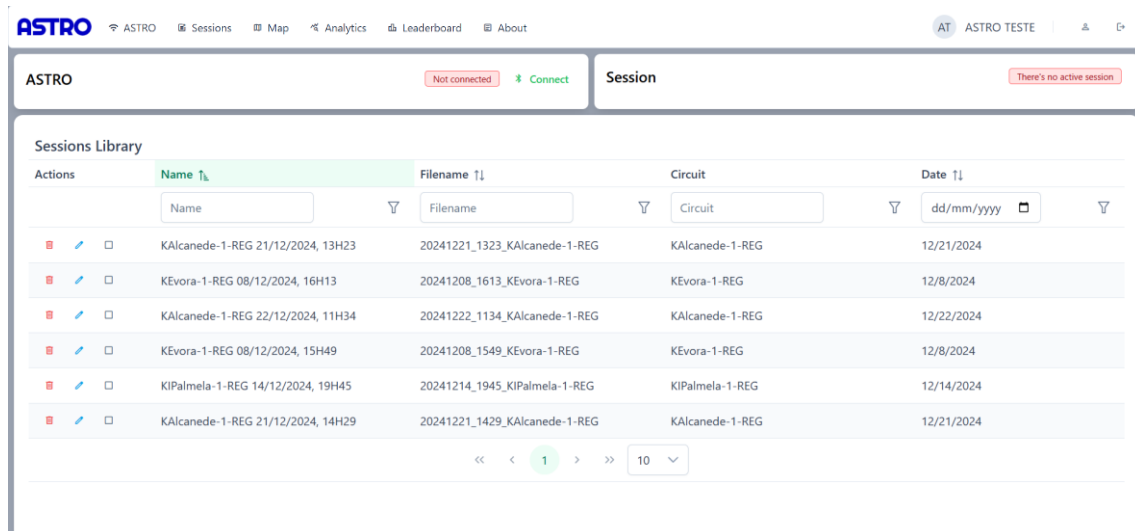
Once the update starts, a progress bar will appear in the top-left card, showing the update status. During this process:

- Do not turn off ASTRO
- Keep the browser open
- Avoid using Bluetooth for other devices to prevent interruptions

Following these steps ensures a smooth and successful update.

Actions	Filename	Date	Upload Status
☐			
☐	20241109_1547_Euroindy-1-REG	11/9/2024	
☐	20241221_1323_KAlcanede-1-REG	12/21/2024	
☐	20241221_1429_KAlcanede-1-REG	12/21/2024	
☐	20241221_1503_KAlcanede-1-REG	12/21/2024	
☐	20241222_1020_KAlcanede-1-REG	12/22/2024	
☐	20241222_1030_KAlcanede-1-REG	12/22/2024	
☐	20241222_1134_KAlcanede-1-REG	12/22/2024	
☐	20241208_1549_KEvora-1-REG	12/8/2024	

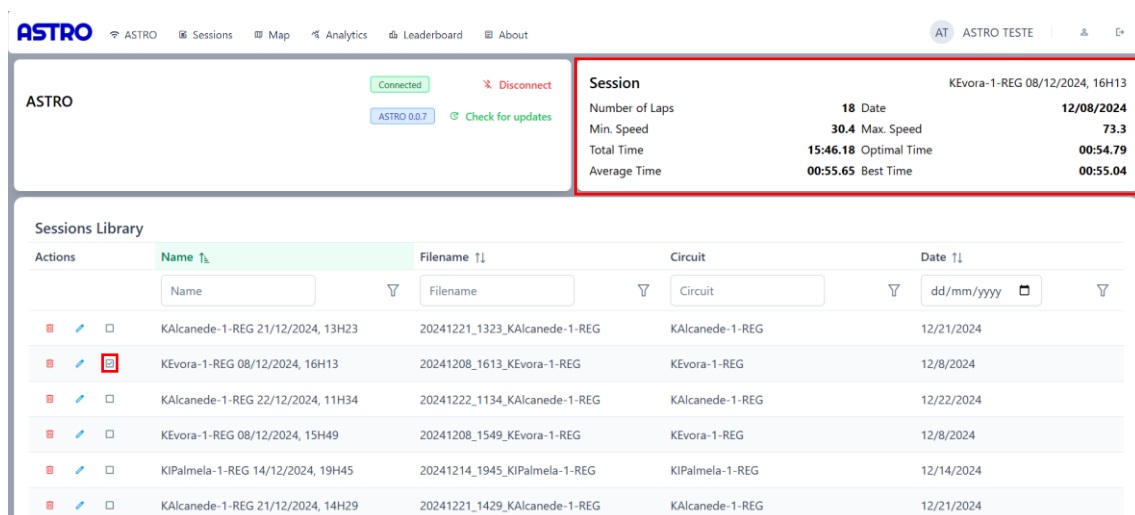
In the SESSIONS tab, users can explore and analyse previously uploaded sessions from any browser, PC, or mobile device. Simply log into your ASTRO account to access your stored sessions. **No Bluetooth connection to ASTRO is required.** This allows for seamless review and analysis anytime, anywhere.



In the SESSIONS tab, users have three main actions:

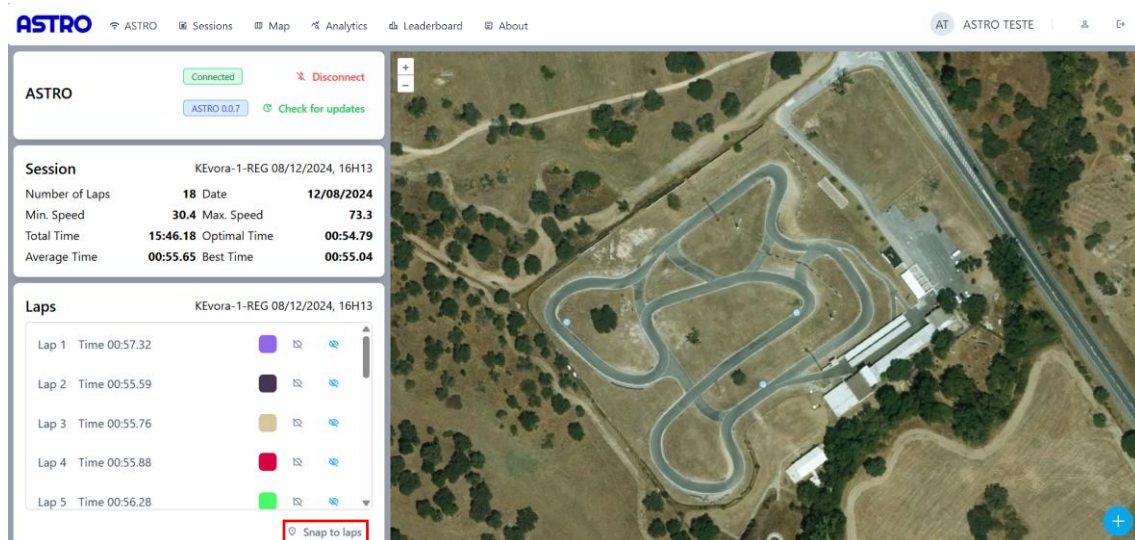
- Delete session: Remove sessions from the session library.
- Edit session: Rename a session for better organization.
- Set as active session: Choose a session for in-depth analysis.

To access all available analysis tools, the user must select an active session. A selected session will be marked with a tick and its quick stats will be displayed in the top-right card for easy reference.



After setting an active session, the user will be able to analyse each lap and the overall performance on the race track. There are two tabs with tools available for analysis: MAP and ANALYTICS.

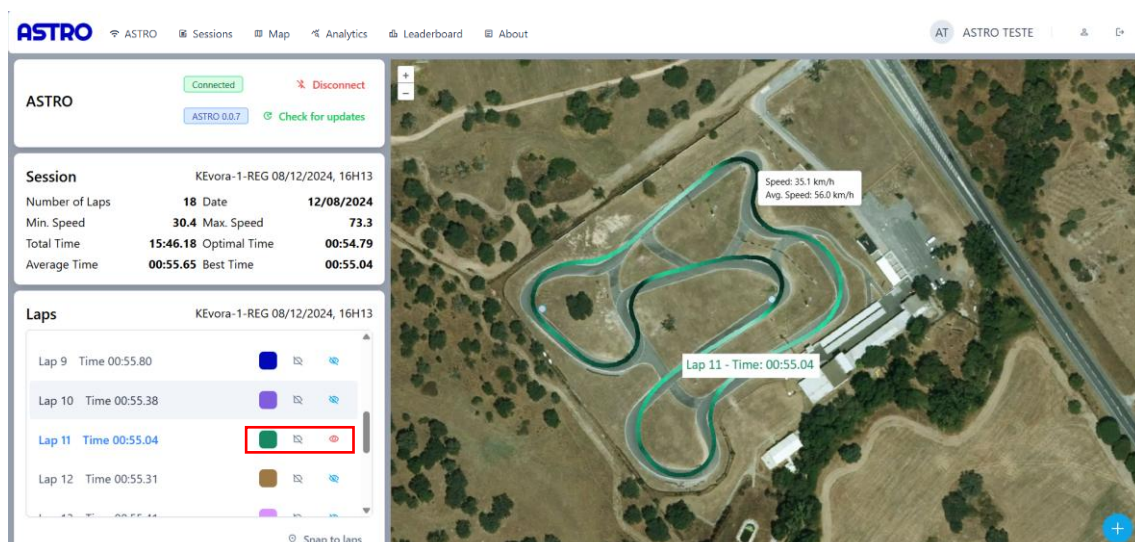
In the MAP tab, users can analyse their racing performance. To quickly center the view on the racetrack, click the “Snap to laps” button. Alternatively, users can manually explore the map and zoom in for a more detailed view of their race data.



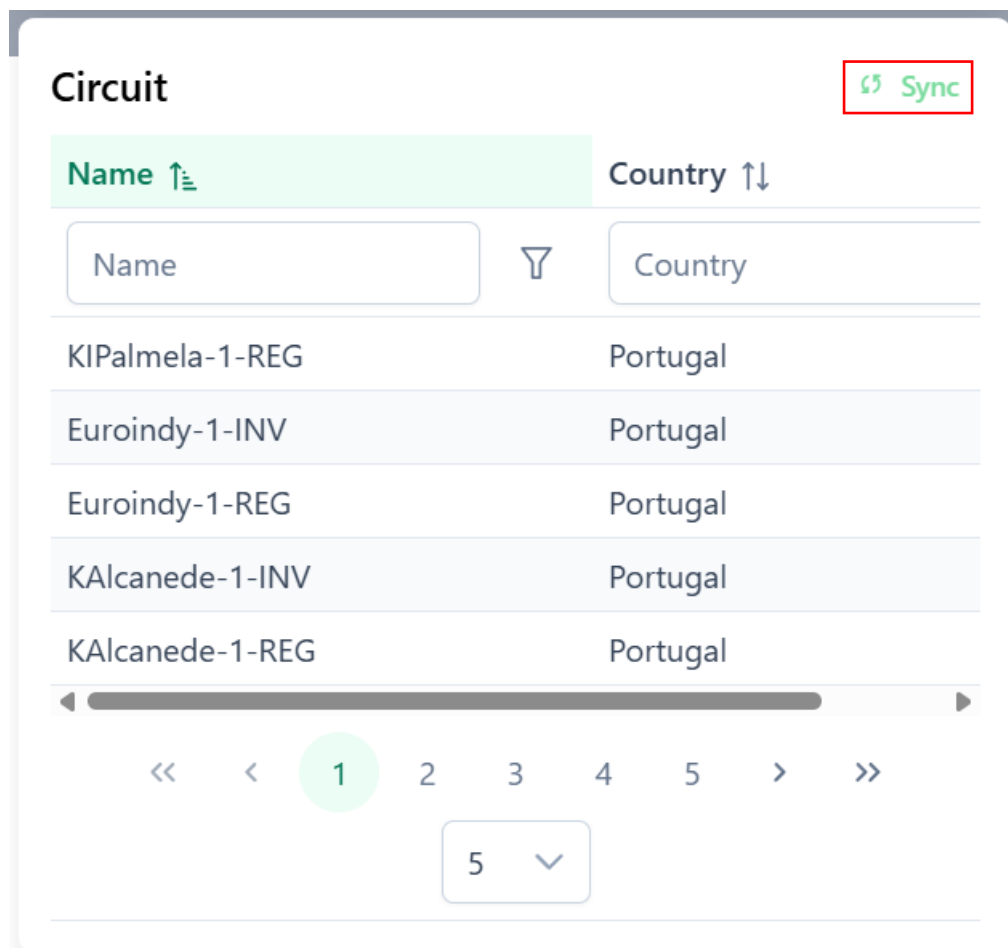
Multiple laps can be selected and compared using the “eye” icon in the Laps card. The line color can be adjusted for better visibility, with dynamic color changes based on speed:

- Increased saturation: indicates braking.
- Decreased saturation: represents acceleration.

Hovering over the racing line displays the recorded speed at any point. This tool is perfect for comparing different racing lines and optimizing performance.



The MAP tab also enables circuit browsing and synchronization. By clicking the “Sync” button in the Circuits card, users can update ASTRO's circuit database with the latest tracks and improvements. New circuits are regularly added, and existing ones are continuously refined. To ensure the best experience and access to the most up-to-date circuit data, it is recommended to sync circuits regularly.



IMPORTANT: To sync circuits ASTRO needs to be connected to the Webapp via Bluetooth. After a successful sync, a confirmation message will pop up on the bottom right of the screen.

In the Analytics tab, users can check each lap performance and analyse sector times. Laps can be filtered based on overall time, sector time or max/ min speed. Users can also export a spreadsheet with all the session information.

ASTRO

ASTRO

Sessions

Map

Analytics

Leaderboard

About

AT

ASTRO TESTE

ASTRO

Not connected

Connect

Session

18

Date

12/08/2024

30.4

Max. Speed

73.3

15:46.18

Optimal Time

00:54.79

00:55.65

Best Time

00:55.04

Session KEvora-1-REG 08/12/2024, 16H13

Export

Session KEvora-1-REG 08/12/2024, 16H13 laps

Lap	Time	Sector 1	Sector 2	Sector 3	Max. Speed	Min. Speed
Lap 11	00:55.04	14.80	16.20	24.04	72.5	34.1
Lap 12	00:55.31	14.87	16.28	24.15	71.8	35.9
Lap 13	00:55.41	14.77	16.40	24.24	72.5	35
Lap 14	00:55.23	14.71	16.23	24.28	72.5	34
Lap 15	00:55.40	14.75	16.32	24.32	72.5	35.1
Lap 16	00:55.56	14.76	16.23	24.56	72.3	32.7
Lap 17	00:55.27	14.76	16.31	24.20	73.2	34.2
In Lap	00:00.00				0	0
Avg	00:55.65					

<<

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1

2

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10

In the Leaderboards tab, users can explore the top 10 fastest lap times recorded by all drivers in the ASTRO database for each circuit. Think you've got what it takes to make the leaderboard on your favorite track? **Challenge yourself and climb the ranks!**

ASTRO

ASTRO

Sessions

Map

Analytics

Leaderboard

About

en-US

AT

ASTRO TESTE

Leaderboard

Portugal

KEvora-1-REG

Top 10

Racer	Best Time	Optimal Time	Min. Speed	Max. Speed	Avg. Speed	Rank
Pedro Gonçalves	00:55.35	00:48.980	35.2	72.31	55.4	1
Carlos Silva	00:56.36	00:48.980	35.66	70.86	54.8	2
Diogo Raposo	01:10.60	00:48.980	25.24	64.43	44.2	3

9. ISSUES AND SUGGESTIONS

At ASTRO, we are committed to continuous improvement and resolving any issues. If you encounter any problems with your ASTRO device or ASTRO Webapp, please let us know. We also welcome your suggestions for additional features or improvements.

Contact us at: info@astrotimer.pt

Follow us on Instagram at: [astrotimer.pt](https://www.instagram.com/astrotimer.pt)

Join our Discord: discord.gg/ch8urBhsHT

Check out our YouTube channel: youtube.com/@astrotimer

Let's push the limits.