RACE NAVIGATOR TELEMETRY

RN TELEMETRY USER MANUAL

Handbook

RACE-NAVIGATOR.COM

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RACE NAVIGATOR TELEMETRY

Thank you for choosing Race Navigator!

Please read this manual before using the telemetry system for the first time.

Visit our website for more information:
www.race-navigator.com

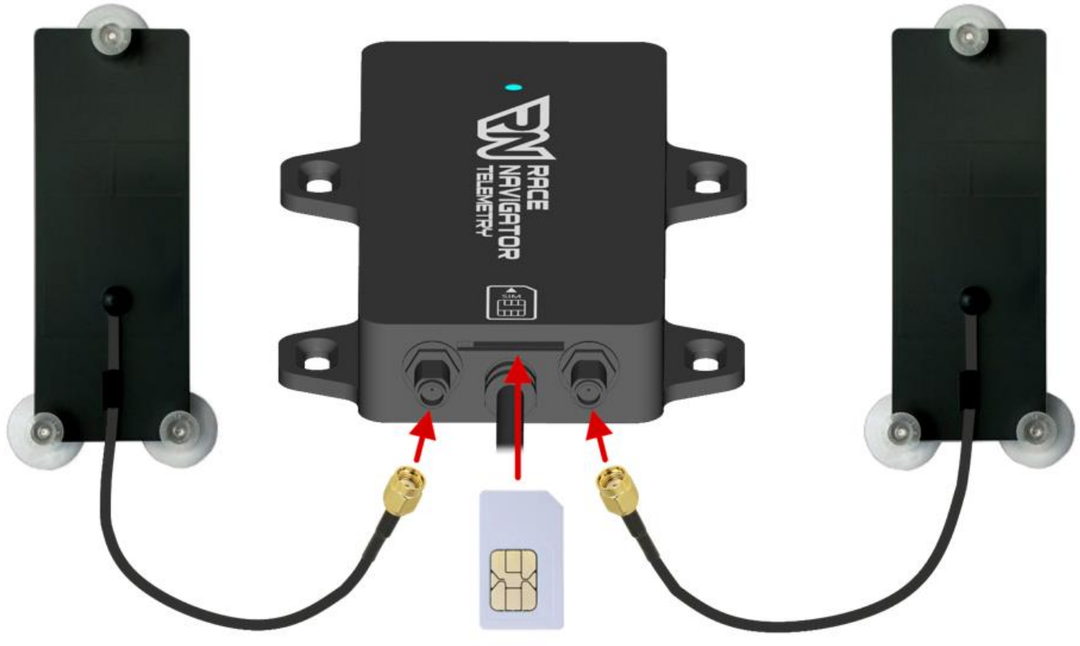
Manual updated: 11-01-2021

1. PACKAGE CONTENT

Delivery scope

Take the Race Navigator Telemetry system out of the box and check the content:

- Race Navigator Telemetry modem
- 2x LTE window mounted antennas



2. SIM CARD AND ANTENNAS MOUNTING

SIM card

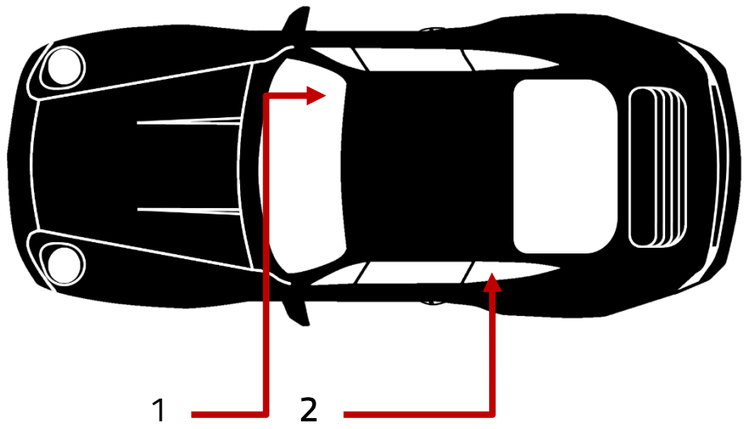
This modem is using a standard size SIM card.

Slide the SIM card into the slot above the USB cable outlet until it locks in (a properly locked card should not stick out of the slot). To unlock the card, just press on it with something thin (i.e. your fingernail).

LTE Antennas

Plug and screw both antenna connectors into the modem like shown in the picture. Place the antennas on the flat window surface.

To receive the highest signal strength place one antenna **(1)** on the front windscreen and the second **(2)** on the rear side window.



3. SETTING UP THE MODEM

Before you start using the LTE modem with the RN device, a quick settings check is recommended.

Connect the USB cable of the modem to your PC.

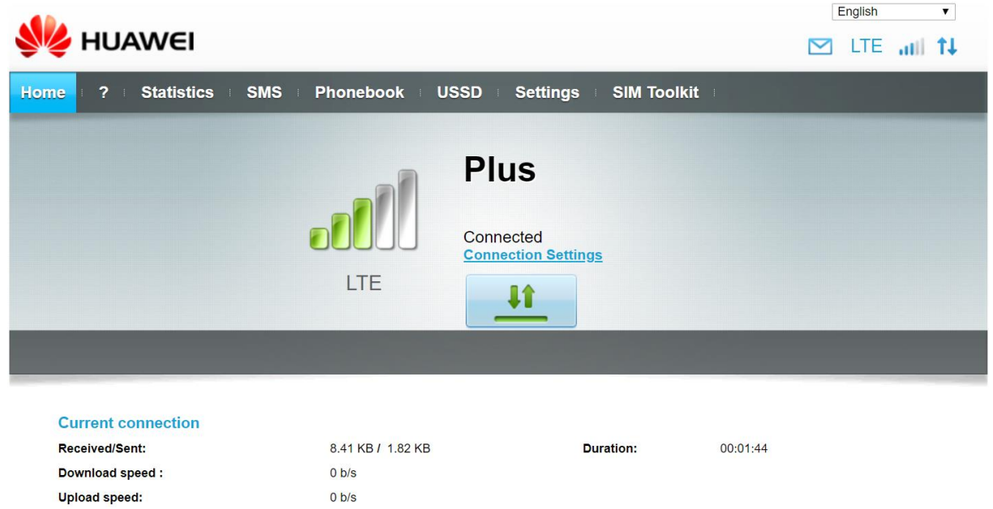
As soon as the modem is booted up completely, the configuration website will open in your browser.

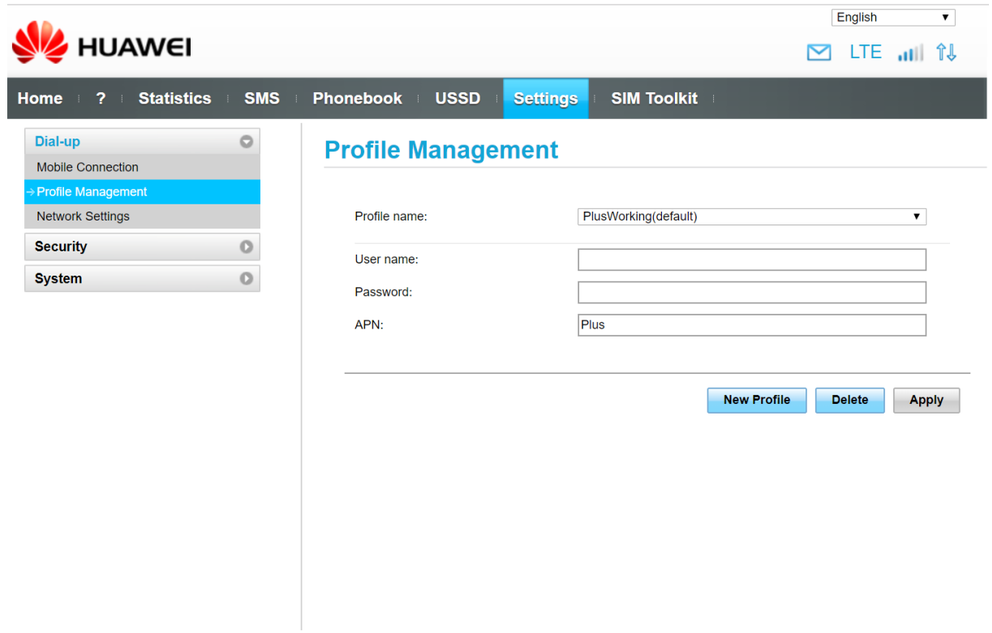
Go to *Settings→Profile Management.* Check if the proper name of the operator is entered in the "APN:" check box.

Example of German APN settings:

Operator:	APN:	User:	Password:
Vodafone	web.vodafone.de	---	---
BLAU	internet.eplus.de	blau	blau
O2	internet	---	---
Aldi Talk	internet.mobilcom	eplus	gprs *or* internet
Telekom	internet.telekom	t-mobile	tm
Mobilcom	internet.mobilcom	---	---

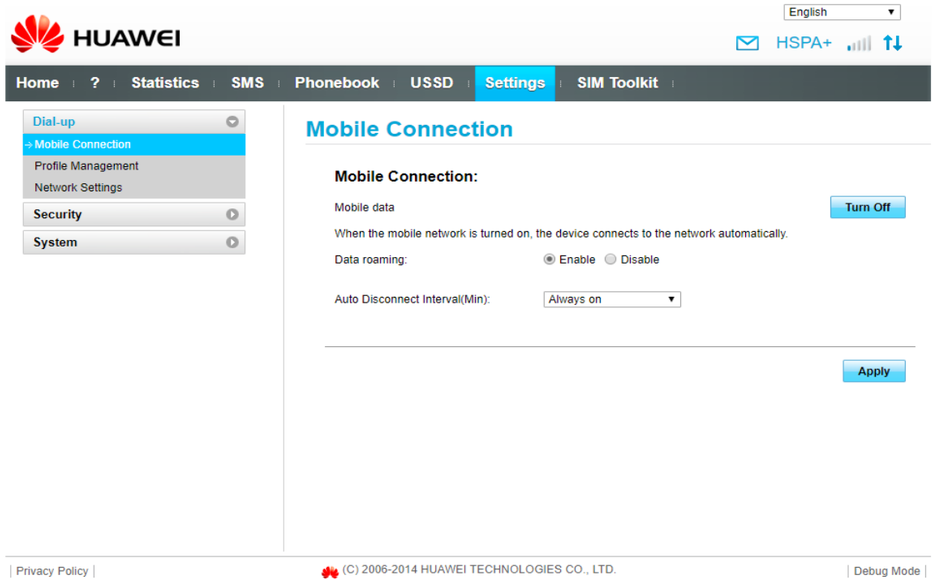
Your operator should provide these settings in the documentation included with the SIM card or on the website.





3.1. ROAMING SETTINGS

In order to use the modem abroad the roaming setting needs to be enabled. Please be aware that depending on the operator the cost of using mobile data transfer on roaming may vary.



To check or change the roaming settings go to Settings →Mobile Connection and choose the proper option:

- Enable (to use the modem abroad).

- Disable (to block the data transfer abroad).

- Then press Apply button to confirm the new settings.

4. STATUSES

The led diode indicates statuses of the Modem:

	State	Color	Blinking frequency	Status description
	-	Off	-	The USB-Modem is removed
	Blinking	Green	Twice per 2s	The USB Modem is powered on.
	Blinking	Green	Once per 0,2s	The software of the USB-Modem is being updated.
	Blinking	Green	Once per 2s	The USB-Modem is registering with a 2G network.
	Solid	Green	-	The USB-Modem is connected to a 2G network
	Blinking	Blue	Once per 2s	The USB- Modem is registering with a 3G/3G+ network
	Solid	Blue	-	The USB-Modem is connected to a 3G/3G+ network
	Blinking	Cyan	Once per 2s	The USB-Modem is registering with a 4G network.
	Solid	Cyan	-	The USB-Modem is connected to a 4G network

5. CONNECTING TO RN

Before connecting the Telemetry system, check if there is any update available for your Race Navigator. Only the latest software version will be fully stable when working with the Telemetry system.

To connect the modem to a Race Navigator, simply connect the USB plug to an unused USB port in your RN device. After connecting, a LTE icon appears on the status bar of RN device.

- Red icon – Modem detected, signal not available right now (could be because of no sim card, no internet connection, no signal detected)
- White icon – connected; amount of white bars indicates quality:

- Poor
- Fair
- Good

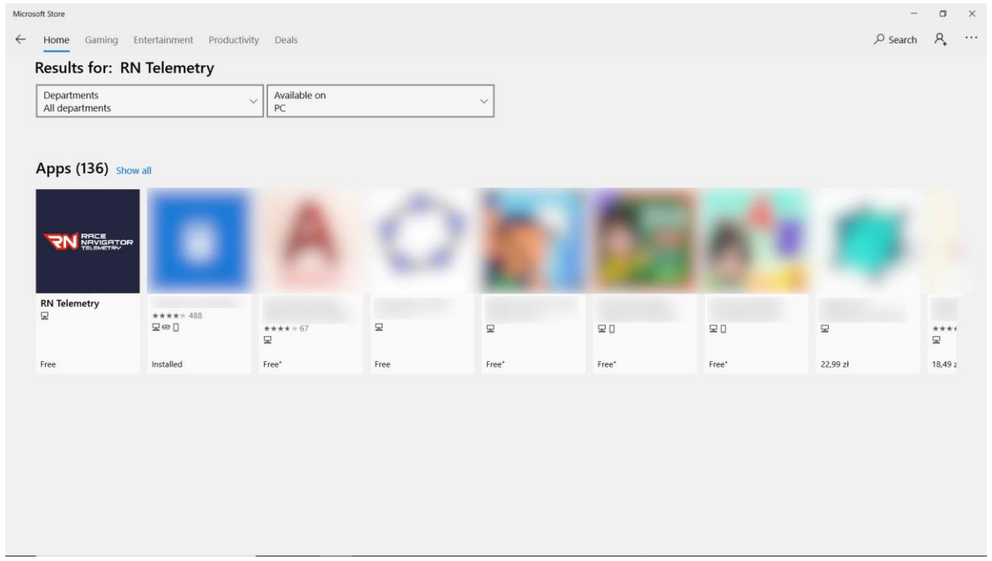
6. RN TELEMETRY – COMPATIBILITY & INSTALLATION

Compatibility

The RN Telemetry application is compatible with all PCs with Windows 10 operating system. The application requires stable Internet connection.

Download from Microsoft Store

Installation is simple: open the Microsoft Store app and search for “RN Telemetry”. On the list of results, click on the app with the name "RN Telemetry" and on the application site, click on the GET button. Wait for the installation process to finish and start the RN Telemetry application.



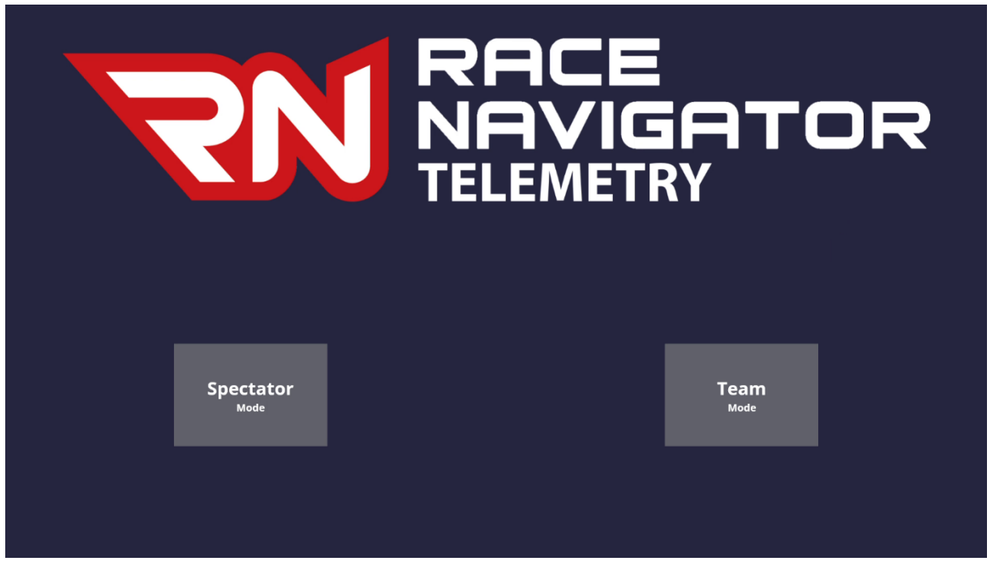
7. DATA TRANSFER USAGE

You can calculate how much data are used by the telemetry system during standard operation using the table from below:

Time of operation	Data used
1 hour	30 MB
2 hours	60 MB
4 hours	120 MB
12 hours	360 MB
24 hours	720 MB

Please mind that this data transfer is valid for a standard operation, that means recording of data while driving on the track.

The system is using much less data transfer when a car is standing or no recording is on.



8. MAIN MENU

After first start-up, the application displays a screen with two work modes to choose:

Spectator Mode - displays main info, does not require signing up,

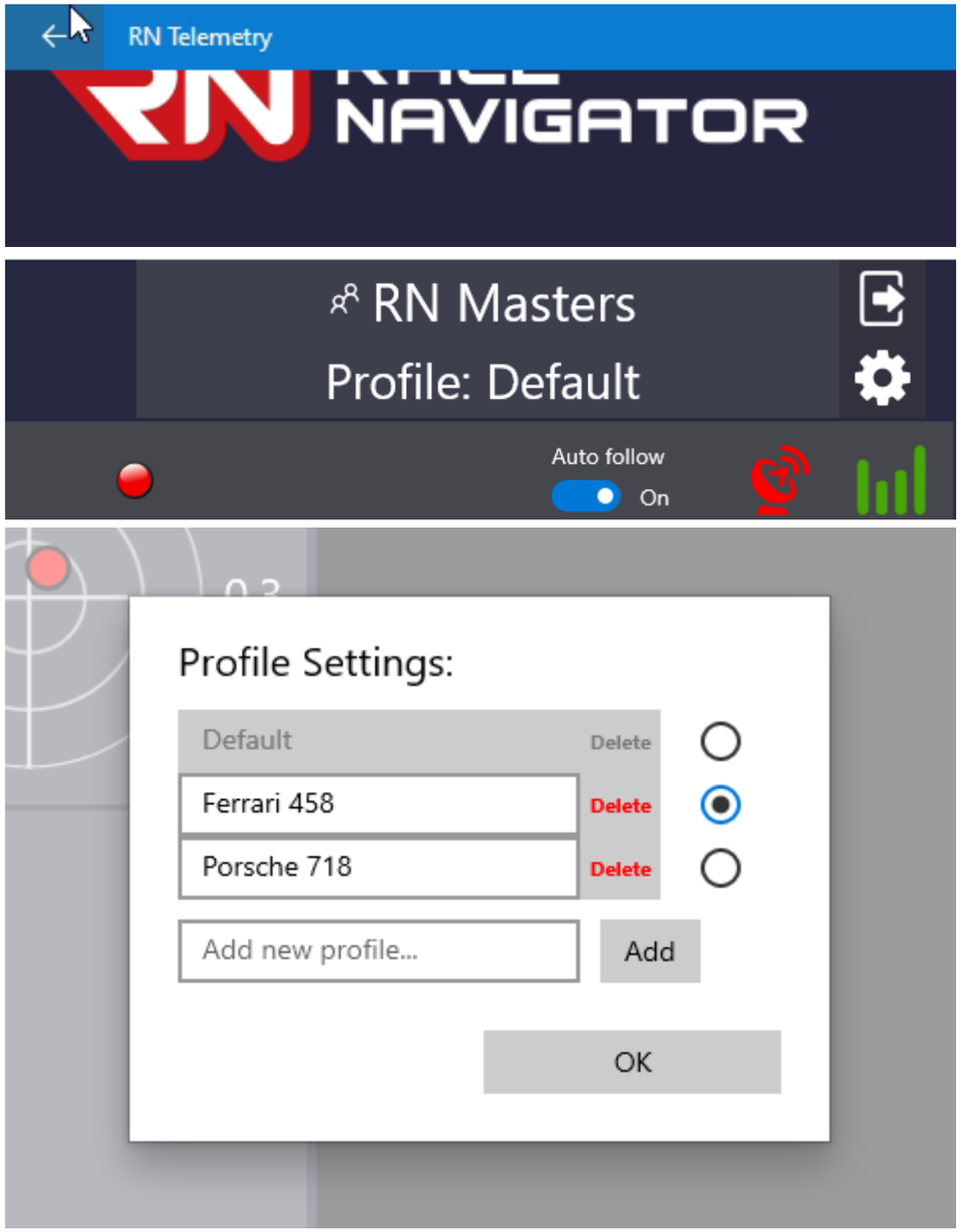
Team Mode – more advanced mode, designed to be used by teams, requires signing up to access.

9. NAVIGATIONS & PROFILES

To return to the previous view, use the arrow on the left side of the window's top bar.

In the profile section, the name of your account and the currently selected profile are displayed. To log out, click the ⎋ icon.

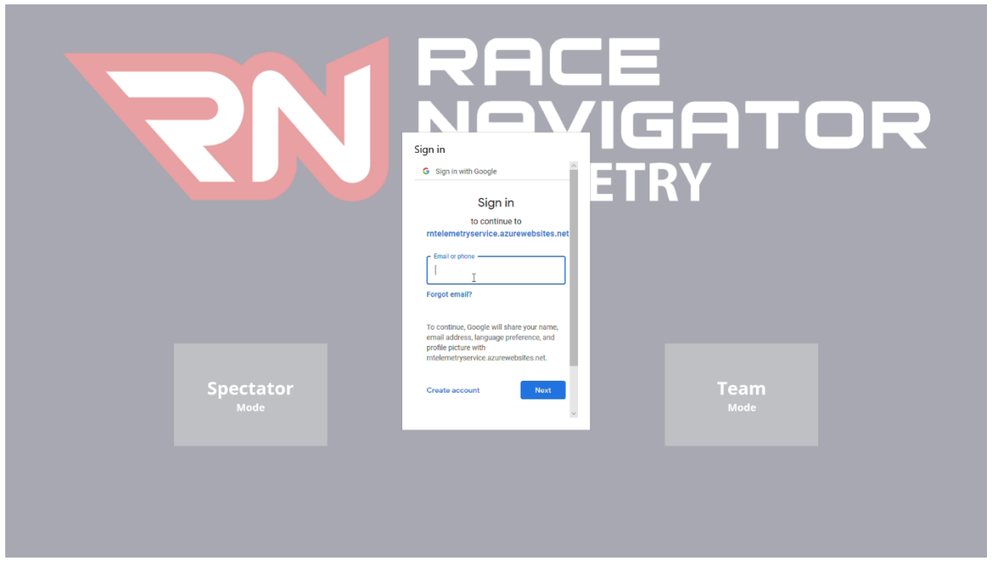
You can save custom setups for indicators in different profiles by adding profiles for each setup. Enter the profile settings by clicking on ⚙.



10. TELEMETRY APP SIGNING-IN

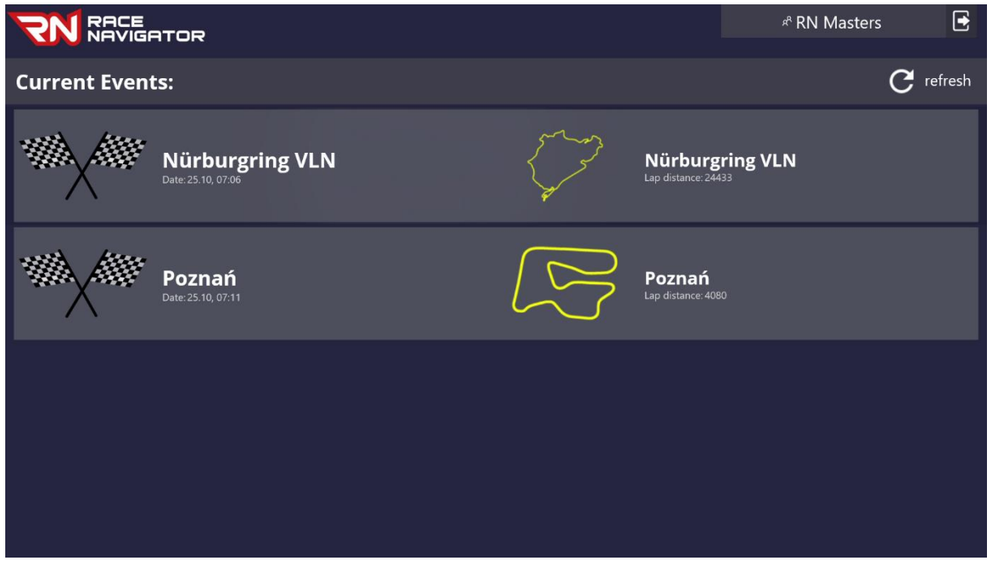
For log in it is necessary to use a valid account for your team. Please use the account registered for your products by RN Vision.

If you don’t have an registered account yet, please contact RN Vision support by email: support@rn-vision.com.



11. TELEMETRY APP OVERVIEW

After signing in, the application displays the current events. Click on one of the events to enter the overview screen.

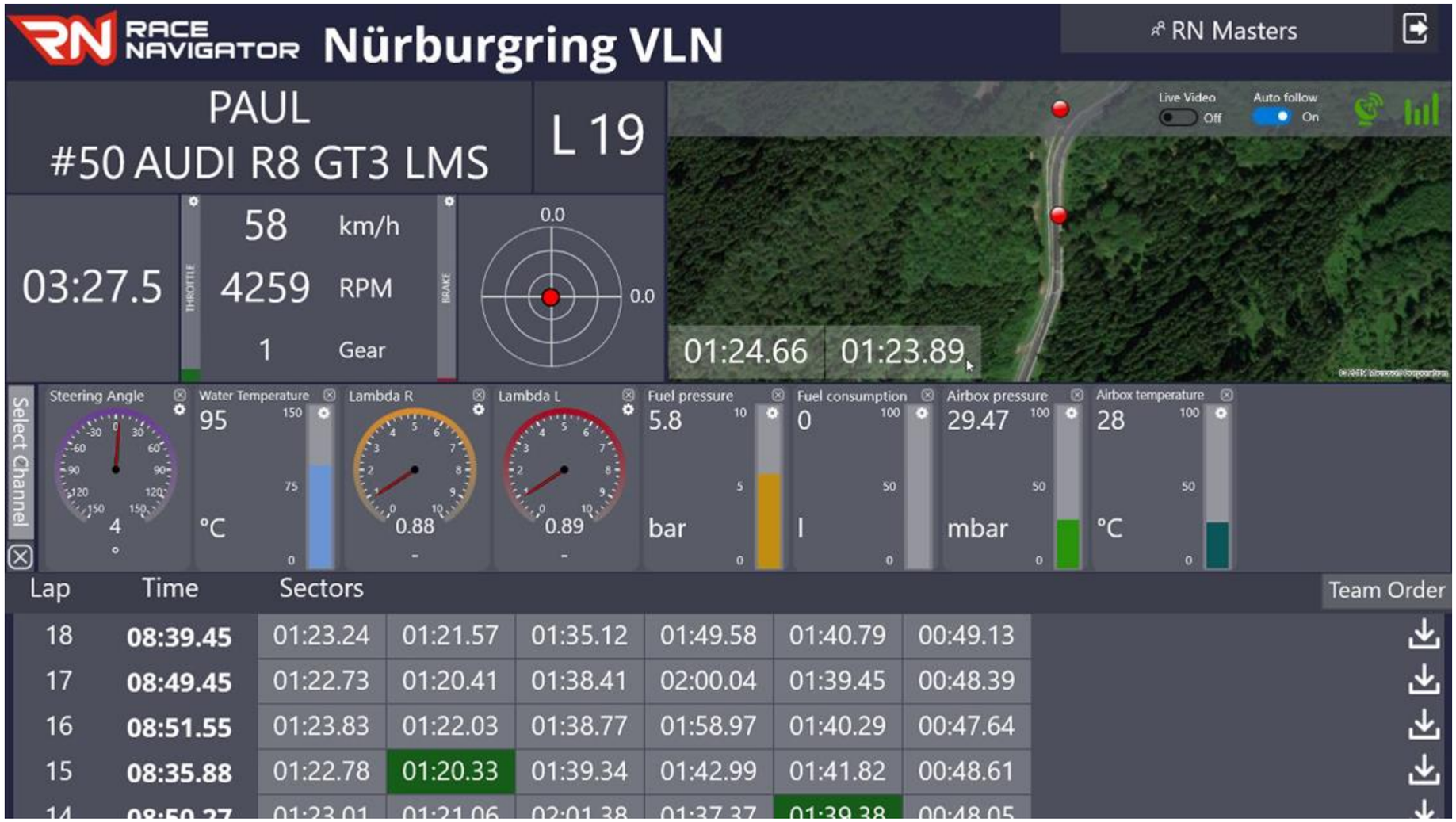


Now you can see the map focused on the track with all cars connected visible and a list of them with basic info. Use the two available buttons:

To enter the details view or to communicate with cars (Team order).

12. DETAILS VIEW

In this view you can observe detailed data from the Race Navigator.



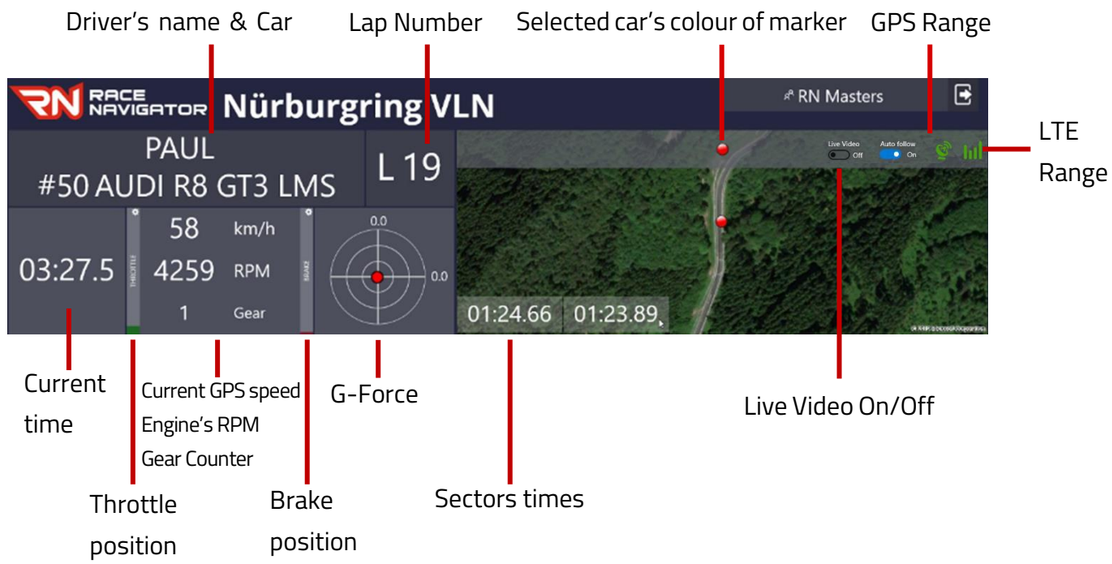
12.1. DASHBOARD

On the main dashboard section you can see the following information:

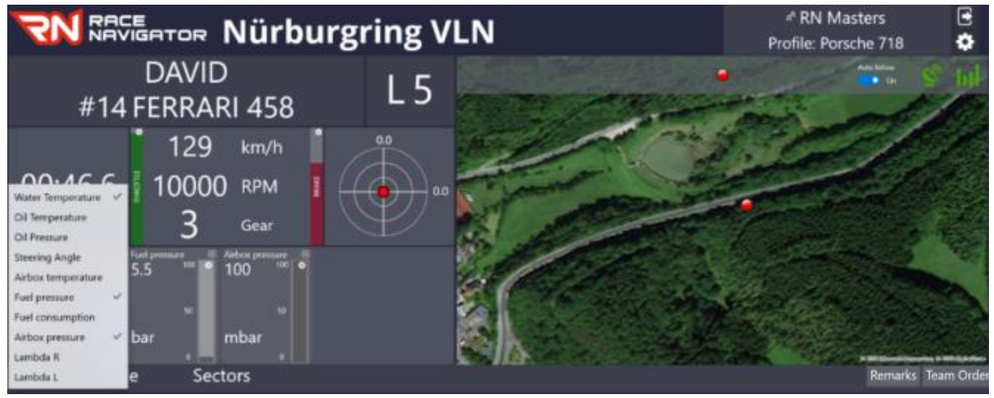
- Car info: driver's name and car name (named like in the RN device)
- Lap number
- Current lap time
- Speed
- RPMs
- Gear counter
- Throttle & Brake position bars
- G-force

On the map you can find:

- Car position marker
- Auto follow switch – disabling map following marker of selected car
- GPS and LTE range bar indicator
- Sector time boxes
- Live Video switch



Map size depends on the number of channels – if more than four are selected, the map is scaled down:

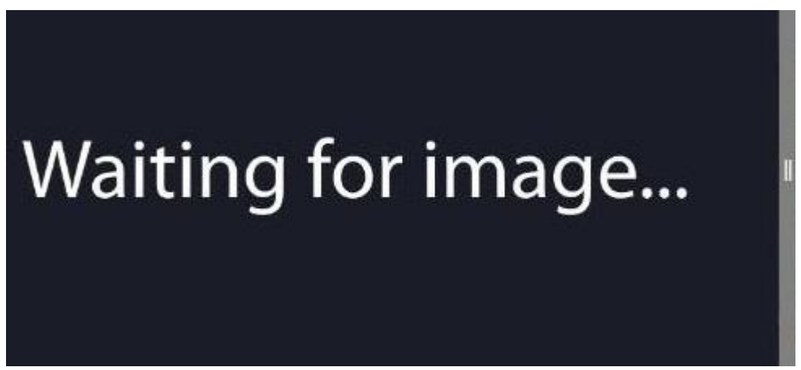


12.2. LIVE VIDEO PREVIEW

The Live Video Preview in the RN Telemetry software is an unique feature that provides a possibility to observe a current situation on the track from Race Navigator system cameras. The video has lower resolution than a recorded one and is displayed with 2 frames per second to limit a transfer rate. The video contains a full layout that is recorded by the system including a view from all connected cameras. This feature delivers higher level of experience and is even more useful to observe how the car performs, when a car drives to a pit box and if any accident happens. The latency is very low - between 2 to 4 seconds depending on internet signal quality.

- To turn on the Live Video use the slider:

- A size of the Live Video window can be adjusted by holding and dragging the right corner:



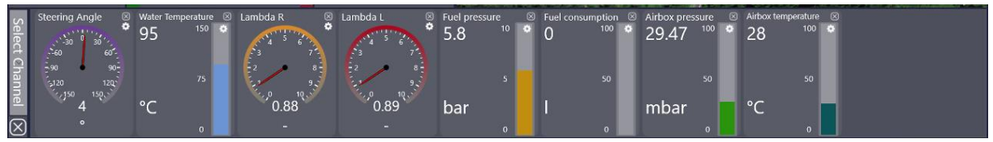
12.3. CAN DATA

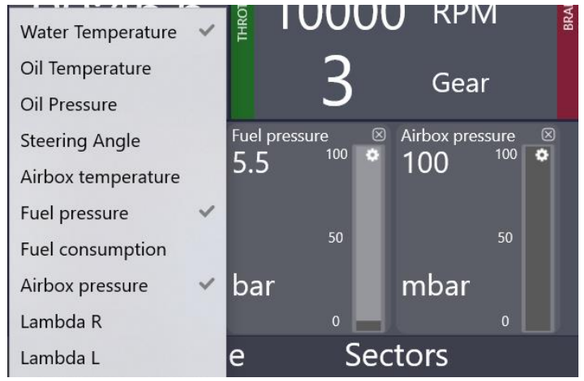
This section is fully customizable – you can choose a number of indicators from the list of channels (click on Select Channel to open the list) and change the properties (⚙ icon on the channel) of each indicator:

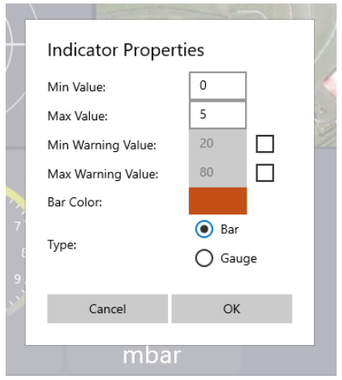
- Range of displaying value - Min & Max value
- Warning alert range (red highlight) - Min & Max warning value
- Bar/gauge scale color
- Type of indicator – Bar or Gauge

To close a channel just click on ⊠ in the channel's area. If you want to clear the section and close all channels use ⊠ next to Select Channel button

The list of available channels depends of which IDs the currently selected CAN interpreter contains.







Depending on the type of connection there will be a different set of data available.

OBD2 Plug connection has a limited number of channels available:

- RPM
- Throttle
- Water Temperature
- Oil Temperature*

*Available in not all cases

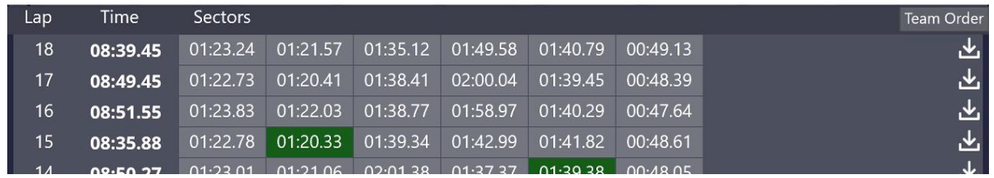
For additional channels it is necessary to use CAN cable connection. The types of channels depend on what is available in the CAN protocol of car. A list of all channel is available in the Selecting CAN of Car menu in the RN device.

List of additional channels through CAN connection (examples):

- Brake
- Gear
- Steering Angle
- Fuel pressure
- Airbox temperature
- Fuel consumption
- Airbox pressure
- Lambda L
- Lambda R
- Tire temperatures and pressures
- Etc.

12.4. LAPS & SECTORS

In this section you can see a list of all laps from the current event with their times and sectors times.



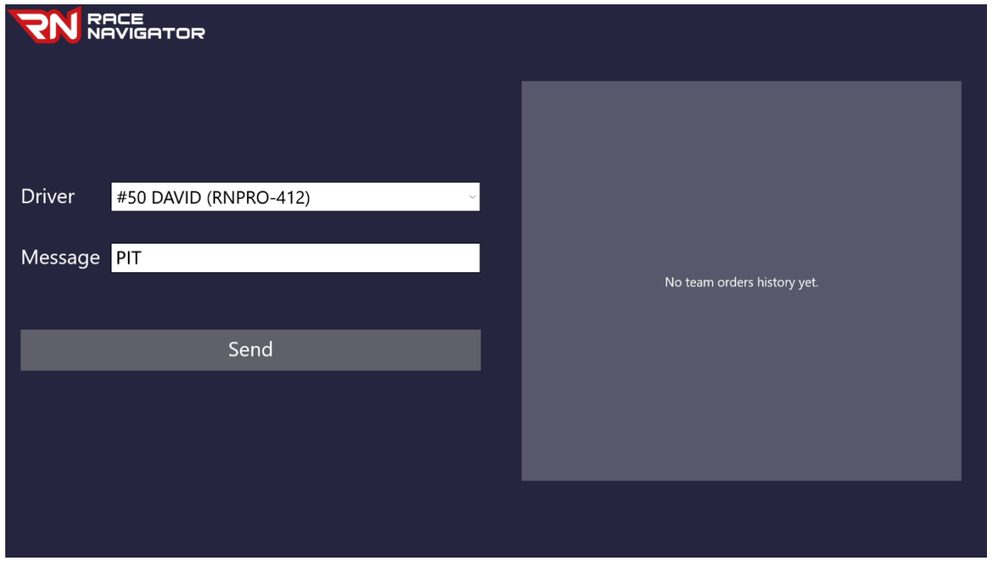
Shown sectors are based on the standard track definitions including sector definitions of our systems.

Sectors with best time are colored green.
Use for downloading lap data (See 14 EXPORT LAP DATA).

Use the Team Order button to jump into the communication dialog.

13. TEAM ORDERS

You can open the TEAM ORDERS communication dialog from the main view (See: 11 TELEMETRY APP OVERVIEW) or from the DETAILS VIEW by using the Team Order button on the top of the LAPS AND SECTORS section.

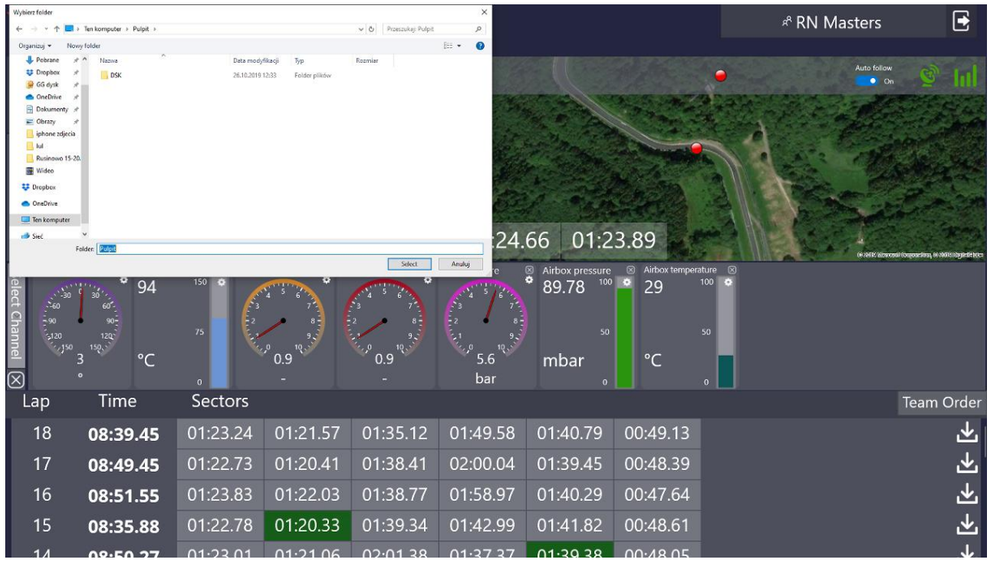


In this dialog you can send instant messages to all currently connected drivers from your team. All previous messages are visible in the history area on the right side of this view.

Sent messages will appear instantly on the screen of the receiving RN device and (if the screen was not tapped) remain there for 10 seconds.

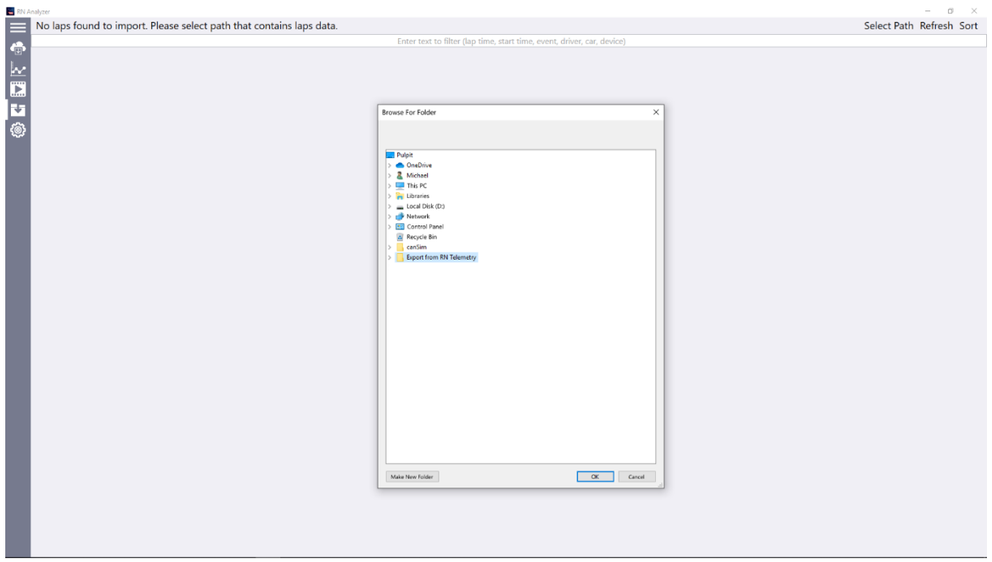
14. EXPORT LAP DATA

While in the details view of the car click on the icon located in the lap section to download the chosen lap's data. Select a destination directory to save the data on your drive.



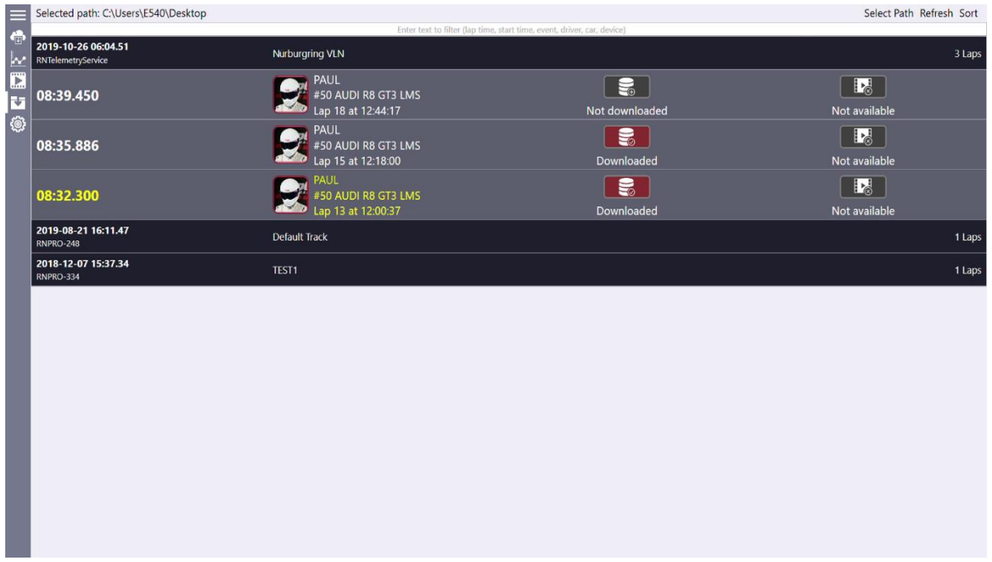
15. IMPORT DATA IN RN ANALYZER FOR WINDOWS

Start the Analyzer Software for Windows (download it here: https://www.race-navigator.com/en/rn-apps/). Go to the IMPORT dialog, select a path (RN Telemetry app export destination folder) and wait until the list of laps and events will be loaded.



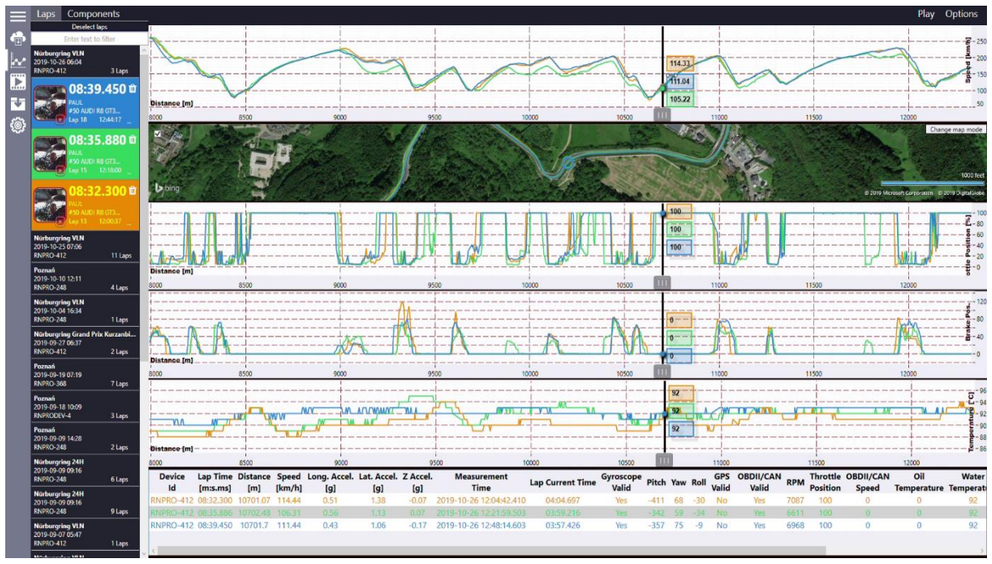
When list of laps from this folder appears, just click on the download button of the chosen laps.

Remember! Only laps data are exported from the RN Telemetry app. Video files are not available to import.



The downloaded laps can now be analyzed – just go to the ANALYZER dialog and select them.

For more info about using RN Analyzer for Windows check its manual.



16. HISTORICAL EVENTS

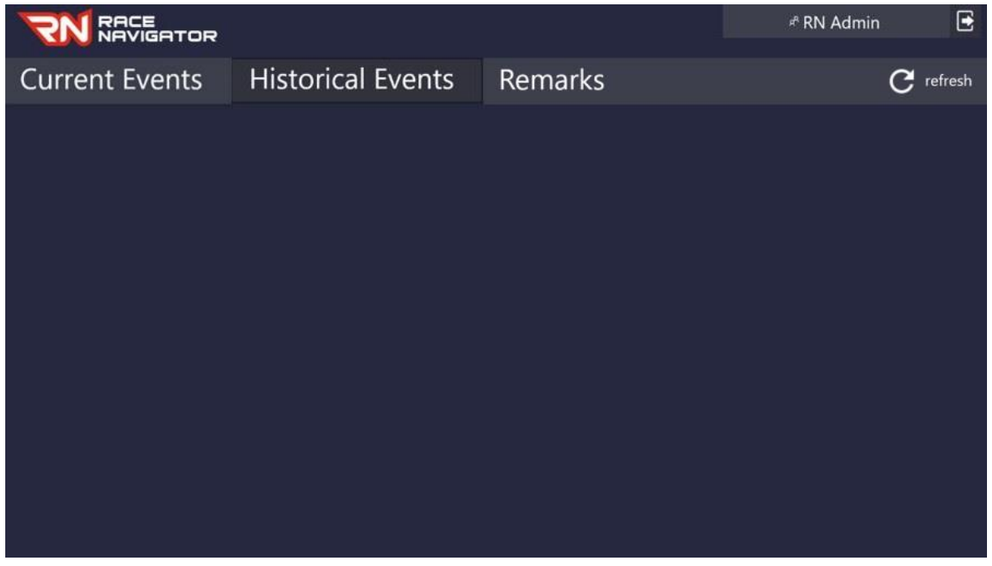
In the Historical Events section you have access to a list of previous events that your team participated and all laps from these events.

The list shows events from last few months (minimum 3 months).

You can easily check all basic laps parameters on the list like a driver name, car details, lap time, sector times. It is also possible to download lap data for analysis.

Historical Events are located in the TEAM MODE.

Once you klick on the Historical Events section a list of previous events appears. Events are sorted by start time, from the newest.



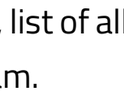
After opening a selected Event, list of all laps are displayed that were recorded by all cars of your team.

Full laps are colored white while the others are colored grey, except for the best laps of each driver which are colored yellow.

You can easily search for laps that you want to verify by changing the default sorting.

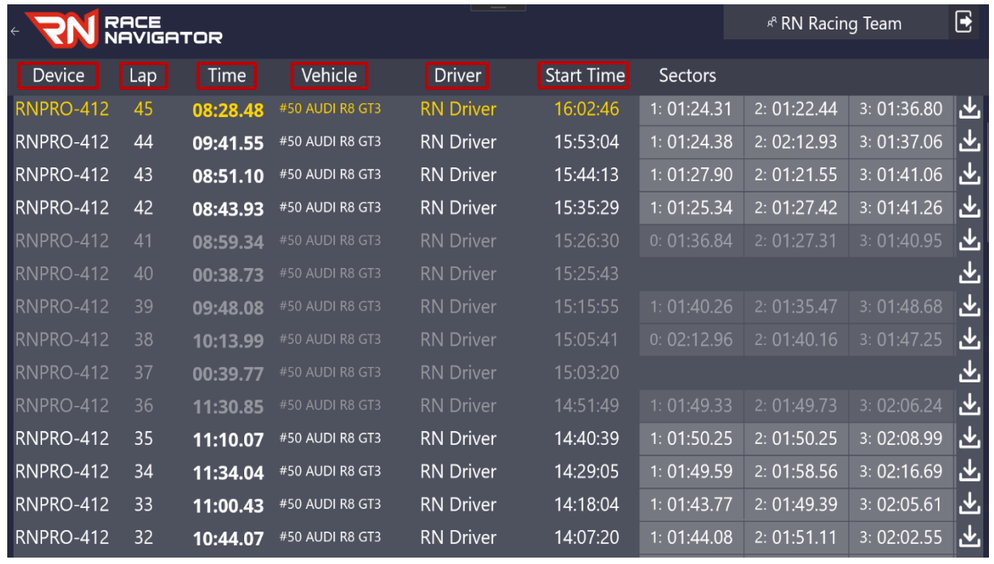
Laps can be sorted by:

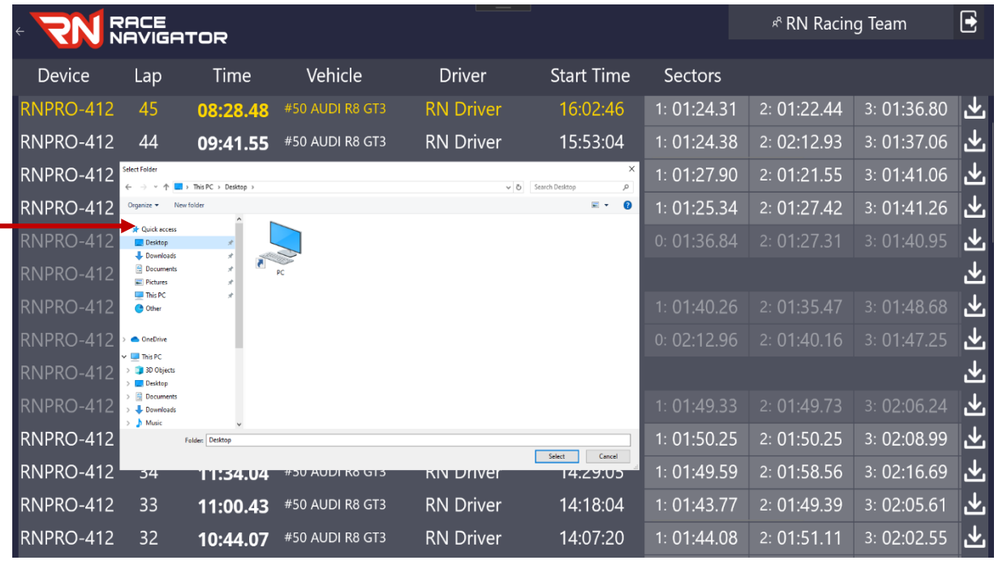
- Device,
- Lap,
- Time,
- Vehicle,
- Driver,
- Start Time.

To download Data click on icon: 

Then select an export destination:

Downloaded data can be imported directly to the RN Analyzer for Windows app for detailed analysis.
You can also send the lap data file by email so that it is accessible by other user or can be imported to the RN Analyzer for iOS app (from the email attachment).



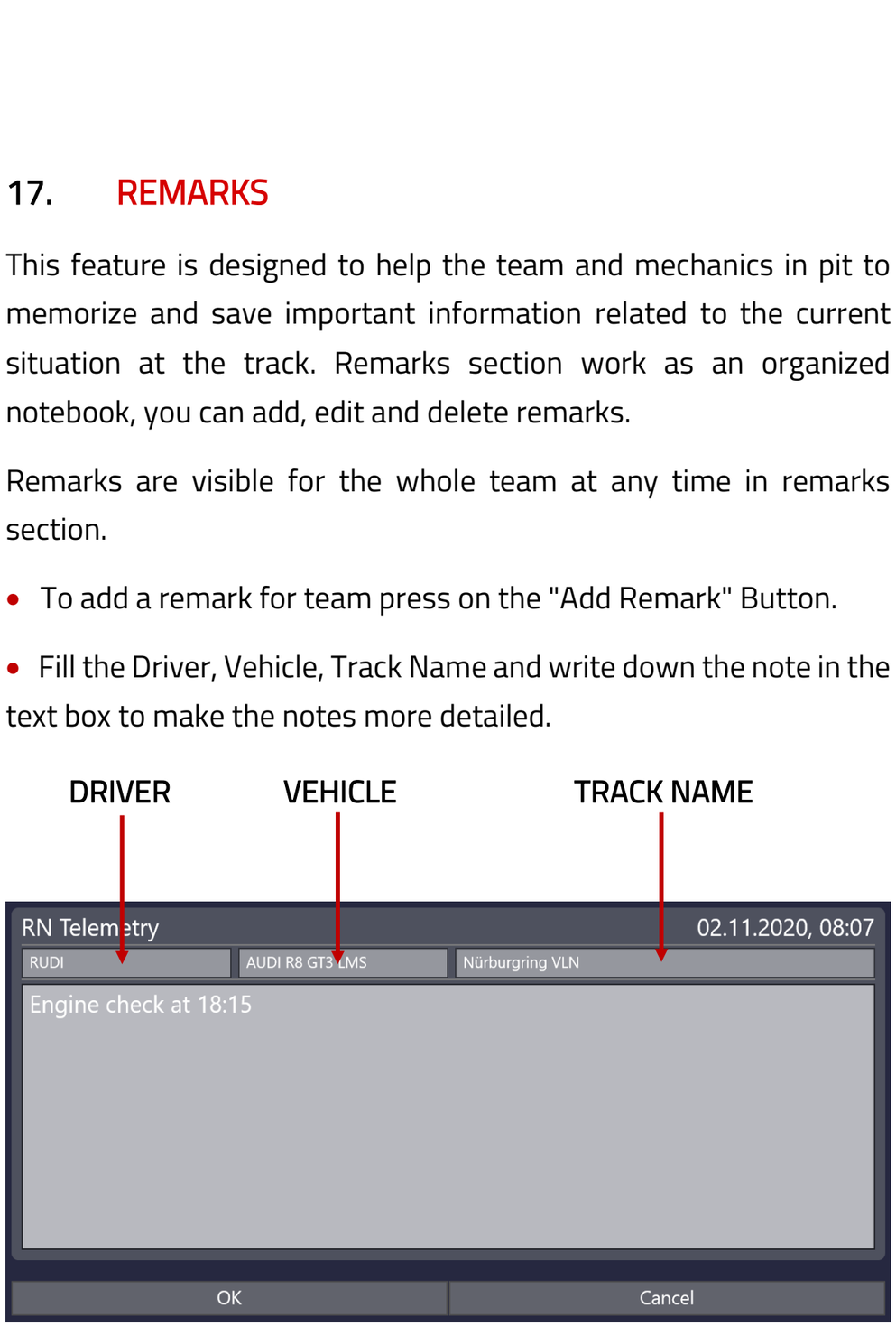


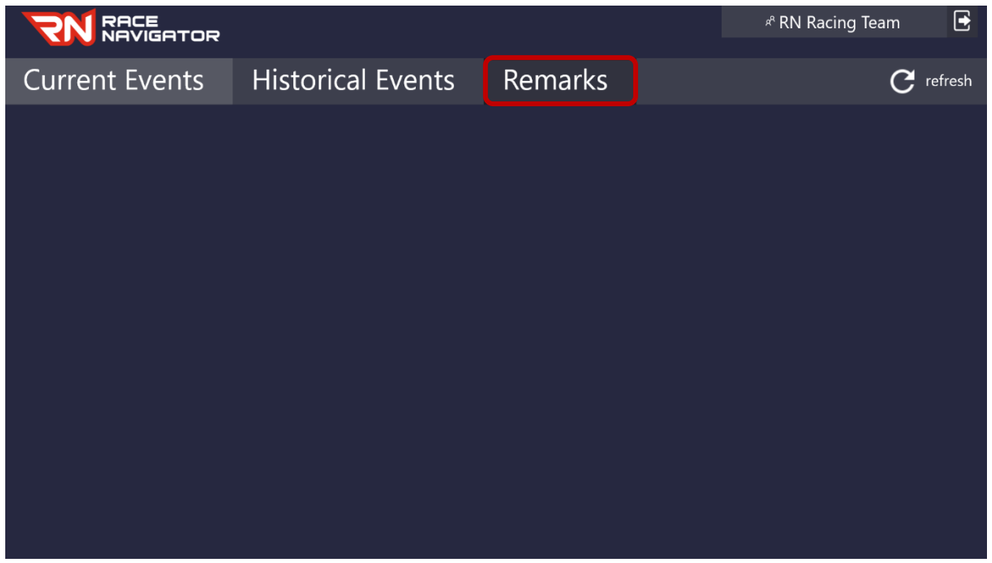
17. REMARKS

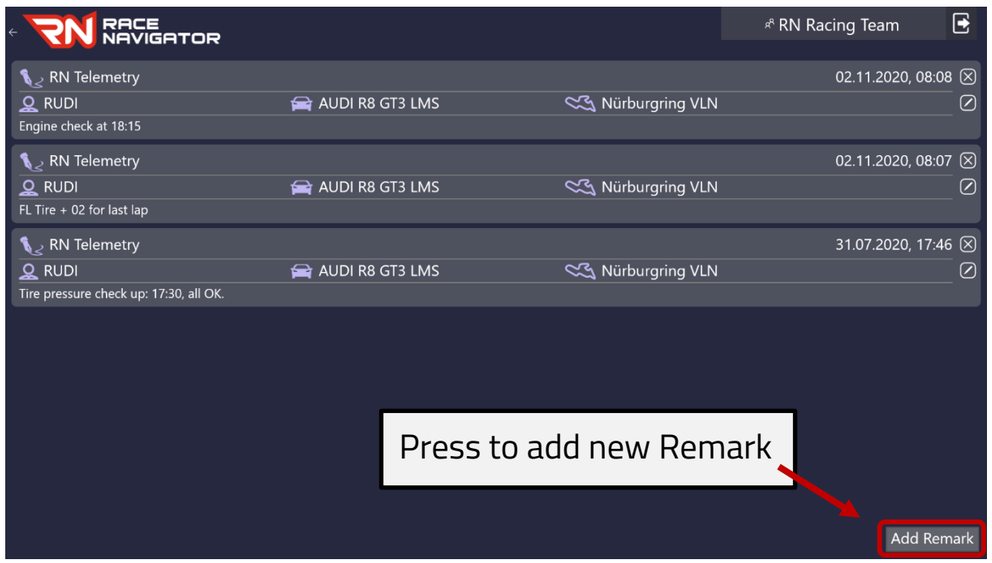
This feature is designed to help the team and mechanics in pit to memorize and save important information related to the current situation at the track. Remarks section work as an organized notebook, you can add, edit and delete remarks.

Remarks are visible for the whole team at any time in remarks section.

- To add a remark for team press on the "Add Remark" Button.
- Fill the Driver, Vehicle, Track Name and write down the note in the text box to make the notes more detailed.



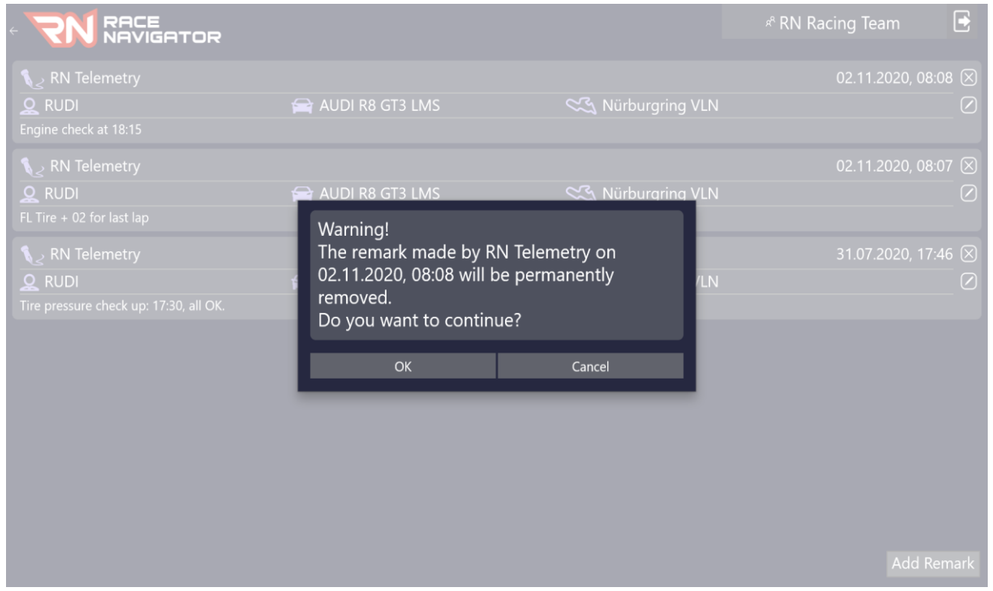




- To edit a remark press on "Edit" button.

While editing there is possibility to change all the components: Driver, Vehicle, Track Name and note message.

- To delete a remark press on "Delete" button. Application will ask you to confirm the remark removal.



- Remarks menu is accessible from main application menu next to Historical Events button and directly from car's details dashboard. When a new remark is added from the car's details dashboard, basic details like driver, car and track variant names are automatically filled.

REMARKS

18. SPECTATOR MODE

This special view is designed for public view. Everybody can access this view – signing in is not required.

In this mode, it is not possible to communicate with the driver or to display detailed data from the car.

The car's visibility can be disabled in the telemetry system on request so that the car is not displayed in the spectator mode.

RACE NAVIGATOR TELEMETRY

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