

RACE NAVIGATOR RN ANALYZER FOR WINDOWS

QUICKSTARTER



RACE NAVIGATOR RN ANALYZER FOR WINDOWS

UPGRADE THE RACE DATA ANALYSIS CAPABILITIES OF
YOUR RACE NAVIGATOR WITH THE RN ANALYZER **APP**

The **RN Analyzer app** is now available for **free** download from
the **Race Navigator** website.

Visit the website for more info:

www.race-navigator.com/

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1 GENERAL OVERVIEW

About the RN Analyzer app

The free Windows app **RN Analyzer** is an enhanced analysis tool for the data recording system **Race Navigator**.

Lap comparisons, data analysis and video evaluation made easy – with the RN Analyzer app you can transfer all race data recorded by the Race Navigator to your PC via Wi-Fi.

Manage all recordings of your race events, stints, and laps easily and comfortably on your PC.

RN Analyzer offers a wide range of analysis options:

- Analyze laps according to different criteria (speed, distance, time, lap times, g-forces, OBD-II/CAN-data),
- Get an aerial perspective of the racetrack based on Google Maps. Your driving lines are displayed with maximum precision from an overhead view,
- Compare two laps and see exactly where you are gaining or losing time,
- Play videos in the built-in video player,
- Compare up to 10 laps with four different data channels simultaneously, all synchronized with videos,
- Compare sector timing of selected laps, standard sectors can be used, or new sectors can be created,
- And many more.

RN Analyzer app layout

The application layout consists of two main parts:

- **The Main Menu** on the left,
- **The Main Dialog** in the middle,

The currently installed version of the app can be checked in the settings dialog.

All laps lists have the same color scheme:

- Full laps are colored **white**,
- Incomplete laps are colored **grey**,
- The best lap of each driver is colored **yellow**.

The main application view is **the Analyzer**, which is vertically divided into three parts: Video area and two Chart/map areas. The height of each part can be adjusted.

2 CONNECTING TO DEVICES

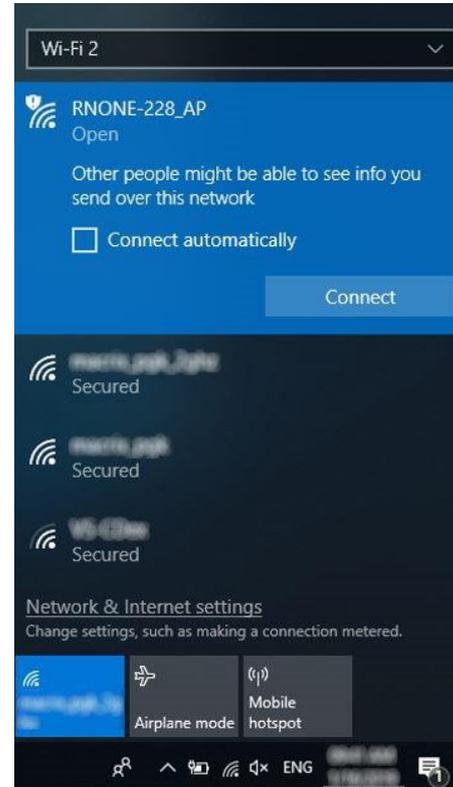
In the first step, the connection between the PC and Race Navigator ONE should be established by following the instructions below:

1. On the Race Navigator device, go to **SETTINGS > NETWORK > INTERNET** and choose **ANALYZER MODE**. An access point for RN Analyzer devices is created. The name of the network is device **name_AP**.



2. On the PC, click on the Wi-Fi icon on the task bar and **connect to the proper network (device name AP)**.

After these steps, the Race Navigator device will be available in the **Download dialog view**.



3 MAIN MENU

This is the main application menu. You can return to this view from any location by clicking the **Menu button** (3 lines icon/hamburger menu icon).

RN Download

This button opens the RN Devices view

Analyzer

This button opens the Analyzer view

Video Player

This button opens the Video Player view

Import

This button opens the Import file view

Export

This button opens the Export file view

Excel Export

This button opens the Excel Export feature

Remote

This button opens the Remote-Control view

Settings

This button opens the Settings view



4 DOWNLOAD

This view contains a list of all events that are stored on the connected device, from which you can transfer the data directly to the PC. Data are downloaded wirelessly, using Wi-Fi Network or RN Access Point.

Device name

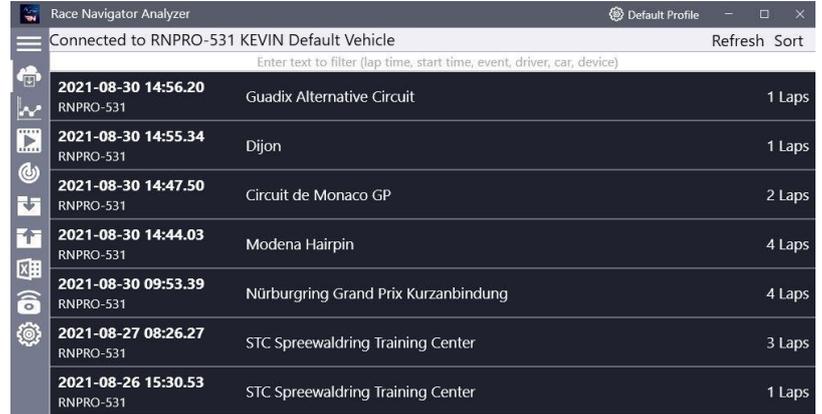
The name of the device, which contains all recorded data.

Car name

The name of the current car.

Driver name

The name of the current driver.



The screenshot shows the 'Race Navigator Analyzer' application window. The title bar includes 'Default Profile' and window control buttons. The main content area displays a list of events connected to 'RNPRO-531 KEVIN Default Vehicle'. A search filter is present at the top of the list. The events are listed with their timestamps, locations, and lap counts.

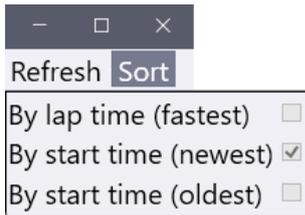
Timestamp	Location	Laps
2021-08-30 14:56.20 RNPRO-531	Guadix Alternative Circuit	1 Laps
2021-08-30 14:55.34 RNPRO-531	Dijon	1 Laps
2021-08-30 14:47.50 RNPRO-531	Circuit de Monaco GP	2 Laps
2021-08-30 14:44.03 RNPRO-531	Modena Hairpin	4 Laps
2021-08-30 09:53.39 RNPRO-531	Nürburgring Grand Prix Kurzanbindung	4 Laps
2021-08-27 08:26.27 RNPRO-531	STC Spreewaldring Training Center	3 Laps
2021-08-26 15:30.53 RNPRO-531	STC Spreewaldring Training Center	1 Laps

This view contains a list of recorded all laps from one event. You can browse the list and select laps to download.

Laps list

The list displays all laps in a selected event. Full laps are colored white while the others are colored grey, except the best laps of each driver, which are colored yellow.

Laps can be sorted by **start time**, **driver** or **lap time**.



You can change the sorting method by clicking the proper checkbox.

Data/Video download button

You can select videos and data to download.

Refresh button

Press the button to refresh the list of events and its laps.



The download progress is displayed at the bottom of the screen. First, the data is downloaded and afterwards, the video file.

NOTE: In order to obtain the highest connection quality and download speed, place the devices close to each other.

Lap details

It contains all details (lap time, driver, car, track, device, start time, lap number) of the downloaded lap.

Status

You can check the status of particular laps (not downloaded, not available, downloading, waiting, or downloaded).

Progress bar

You can observe the download progress for particular laps.

The screenshot shows a mobile application interface for a racing event. At the top, it says "Connected to RNPRO-531 KEVIN Default Vehicle" and "Refresh Sort". Below this is a search bar with the text "Enter text to filter (lap time, start time, event, driver, car, device)". The main content is a list of laps. The first lap is "Circuit de Monaco GP" with a time of "0:12.603" and "2 Laps". The second lap is "Modena Hairpin" with a time of "0:12.597" and "4 Laps". The third lap is "Modena Hairpin" with a time of "0:08.624". The fourth lap is "Modena Hairpin" with a time of "0:09.088". Each lap entry includes a driver profile picture, the driver's name "KEVIN", the vehicle "#0 Default Vehicle", and the lap number and start time. To the right of each lap entry are two icons: a database icon and a video icon, with the status "Downloaded" or "Not downloaded" below them. A progress bar is visible on the right side of the list.

Lap	Time	Driver	Vehicle	Lap	Start Time	Downloaded	Video
Circuit de Monaco GP	0:12.603	KEVIN	#0 Default Vehicle	Lap 3	14:45:09	Downloaded	Downloaded
Modena Hairpin	0:12.597	KEVIN	#0 Default Vehicle	Lap 2	14:44:57	Downloaded	Downloading
Modena Hairpin	0:08.624	KEVIN	#0 Default Vehicle	Lap 4	14:45:22	Not downloaded	Not downloaded
Modena Hairpin	0:09.088	KEVIN	#0 Default Vehicle	Lap 1	14:44:48	Not downloaded	Not downloaded

5 ANALYZER

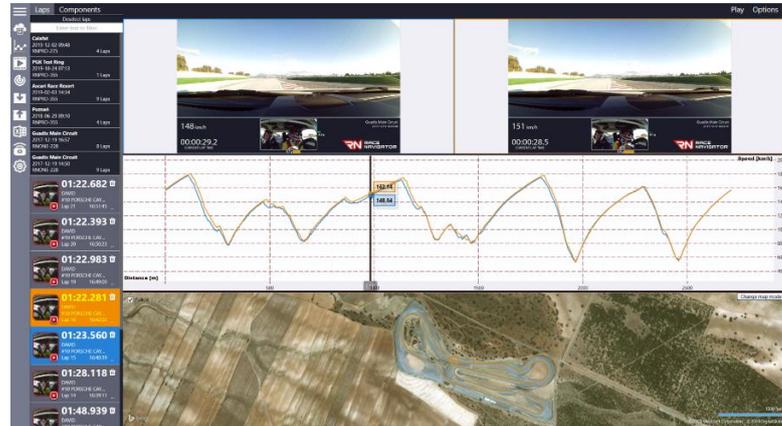
The analyzer view allows for the analysis of laps according to different data types (speed, time slip, g-forces as well as OBD II/CAN Bus data) synchronized with laps videos and positions of cars on the map.

You can compare up to 5 laps with videos and 10 laps without videos at the same time. You can select laps for comparison in the Laps list, on the left side of the screen.

The Analyzer view is vertically divided into parts: Each vertical part represents one data component. It is possible to choose components from: the videos list, charts, map area or table with lap details. The height of each part can be adjusted.

Chart/Map Area

It presents charts or the map from selected laps.



Laps List It displays all laps grouped by events. Click the Event name to open the Laps list. You can select a lap by clicking the lap details area.

Components Press the button to open a list with available components

Lap Details Area It presents details for each lap (lap time, driver, car, start time, lap number). Full laps are colored white while the others are colored grey, except the best laps of each driver which are colored yellow.

Deselect laps Button Click on this button to deselect all laps selected from all events.

Delete Button Click on the bin button to remove the video and the data from the PC.

Note Click on this button to write any note about a selected lap. The note icon is yellow if there is any text written.

Open Video Directory Click on the three dots and choose Open video directory button to open Windows explorer with a selected video file for this lap.

The screenshot shows the 'Race Navigator Analyzer' application interface. The main window displays a list of laps grouped by events. The interface includes a sidebar with navigation icons, a top navigation bar with 'Laps', 'Components', and 'Filter by' buttons, and a search input field. The lap list shows details for two events at 'Guadix Main Circuit' on '2017-12-19'. The first event is at 14:50, and the second is at 08:40. Each event lists two laps. The lap times are 01:22.393, 01:22.281, 01:26.469, and 01:26.143. The driver is 'DAVID' and the car is '#10 PORSCHE CAY...'. The laps are color-coded: white for the first and third, and yellow for the second and fourth. Red boxes and arrows highlight several interactive elements: the 'Components' button, the 'Deselect laps' button, the lap details area for the first lap (01:22.393), the delete button for the second lap (01:22.281), the note icon for the second lap, the 'Open video directory' button, and the 'Open video directory' button in the bottom right corner.

Event	Lap	Time	Driver	Car	Start Time
Guadix Main Circuit 2017-12-19 14:50 RNONE-228	20	01:22.393	DAVID	#10 PORSCHE CAY...	16:50:23
	16	01:22.281	DAVID	#10 PORSCHE CAY...	16:42:02
Guadix Main Circuit 2017-12-19 08:40 RNONE-228	13	01:26.469	DAVID	#10 PORSCHE CAY...	10:48:51
	6	01:26.143	DAVID	#10 PORSCHE CAY...	10:29:03

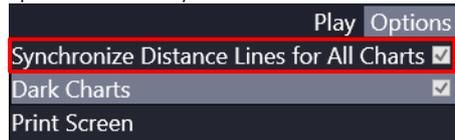
5.1 ANALYZER · Lap Analysis ·

Components

Here you can choose different data types (components) to display. You can choose from:

- Videos
- Maps
- Details
- Lap Sectors table
- Charts (all visible on the list)

Options Button This button shows all available options of the Analyzer view



Synchronize Distance Line for All Charts – when this option is selected, then every chart is using the same zoom on the distance (x axis). When zooming in/out one of the charts, the horizontal axis (distance) of the others will be automatically adjusted. If this option is deselected, then every chart can be adjusted separately.

Follow – the zoomed map will follow the cursor while it is moving.



You can analyze the entire track, comparing selected laps step by step by using **the slider**.

The videos, charts and cursor on the map are immediately **synchronized** according to the slider's position.

You can choose any number of components to display.

Play Button Play

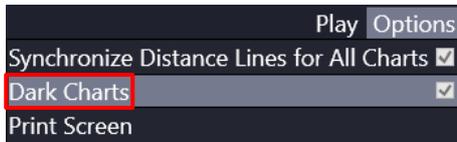
Click to start playing lap.

Slider Position

You can set the slider position by clicking on the chart or by moving the slider right or left.

Charts in Dark Mode

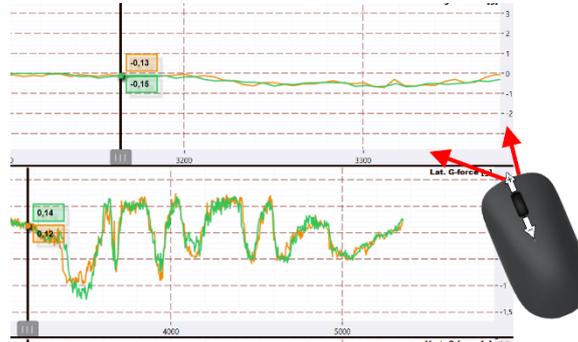
Go to Options and check "Dark Charts" checkbox to switch between normal and dark layout of charts.



Charts Zooming and Panning

It is possible to zoom charts by using the mouse scroll wheel or the laptop's touch pad scrolling feature. If the mouse cursor is located in the chart area, a zoom is performed in both horizontal and vertical directions, if the mouse cursor is located on the horizontal (distance) or vertical axis, a zoom is performed separately in horizontal or vertical direction.

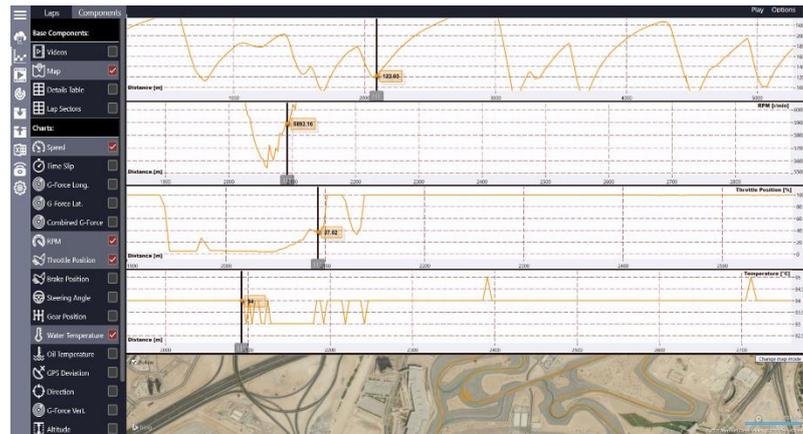
Chart panning is possible by clicking on a chart and moving the chart in any direction.



5.2 ANALYZER · Lap Analysis · CAN Data

If additional CAN bus data are recorded on the Race Navigator device, then it is possible to analyze them in the RN Analyzer app.

Note that the Race Navigator device has to be properly configured and connected to a car's CAN bus. Detailed instructions how to configure CAN bus can be found in the Race Navigator device manual (available on the Race Navigator website).



If additional, custom CAN Data channels are recorded by the system, they are available in the section Custom CAN Data Charts located below rest of components. Please note that only channels that contain data are visible for selection.

5.3 ANALYZER · Lap Analysis · Play

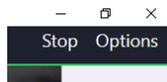
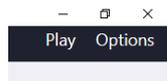
It is possible to play automatically selected laps.

Video frames + sliders on the

graphs with measurements + position marker on the map are changed automatically one by one.

Playing can be stopped and resumed at any moment until

slider reach the last value.



5.4 ANALYZER · Lap Analysis · Lap sectors

Lap sectors component shows sector times of each selected lap and calculates theoretical lap times.

Best Theoretical Lap Time – the sum of the best times of each sector. The order of sectors is not important.

Best Continuous Lap Time – the best possible lap time, composed of the times of consecutive sectors

Best Theoretical Lap Time: 02:36.010		Best Continuous Lap Time: 02:36.033		
Lap No	Lap Time	Sector 1	Sector 2	Sector 3
6	02:36.681	00:43.799	00:54.284	00:58.598
7	02:40.041	00:45.321	00:55.287	00:59.433
8	02:37.894	00:44.207	00:54.406	00:59.281
9	02:36.033	00:43.527	00:54.307	00:58.199

5.5 ANALYZER · User Profiles

User profiles allow to customize analyzer view and save different setups under separate profiles.

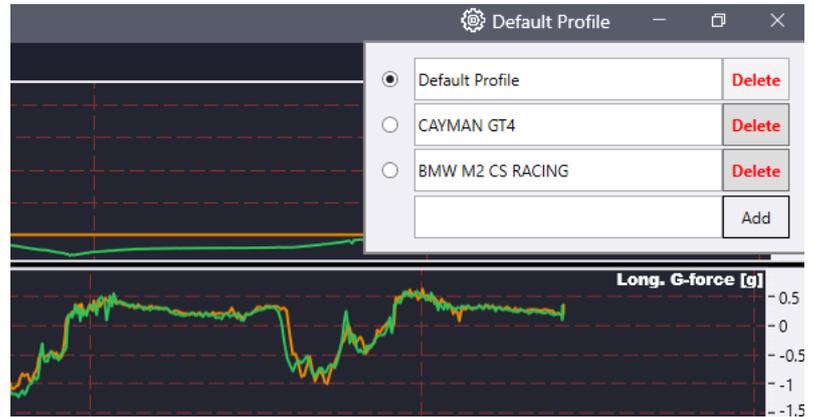
Each profile saves information about:

- Components/charts selected,
- order of components,
- size of components

Every new start of the app, the last selected profile is loaded. When a profile is switched during analysis, currently selected laps stay that helps to change to different charts very fast between selected laps.

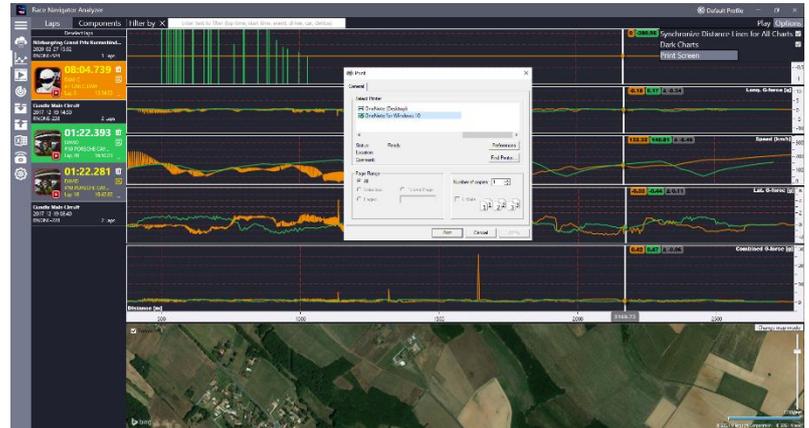
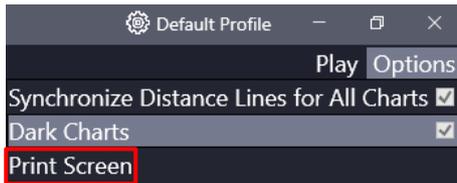
To add a new profile, press on a profile button, type in a new name and press Add button. New profile is created with same settings as a current one.

To change settings of a profile, just modify your current view, each modification is saved automatically to the currently selected profile. Switch between profiles by pressing their corresponding radio buttons. You can delete a profile with a Delete button.



5.6 ANALYZER · Print

If you wish to quickly print the current view of the Analyzer layout, go to options and press on the “Print Screen” button. Print configuration window will popup. The whole application window will be printed horizontally with minimum margins on each side.



6 VIDEO PLAYER

The Video Player view allows for displaying recorded movies. You can select the lap you wish to display in the Laps list, on the left side of the screen. The Laps list is displayed on the left side next to menu column.

Laps List

The list displays all laps grouped by events. Clicking the Event name opens the Laps list. You can select a lap by clicking the lap details area.

Lap Details Area

It presents details for each lap (lap time, driver, car, start time, lap number). Full laps are colored white while the others are grey, except the best laps of each driver which are yellow. Clicking the lap details area displays the movie of the selected lap.

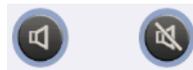
Video playback speed

To increase/decrease speed of playback use buttons next to speed multiply value.



Audio Mute/Unmute

To mute/unmute sound press on this button:



Rewinding Video

You can rewind a selected video by using left and right arrows on your keyboard. At first click inside a video frame to select a video, then you can use arrows to rewind the video quickly.

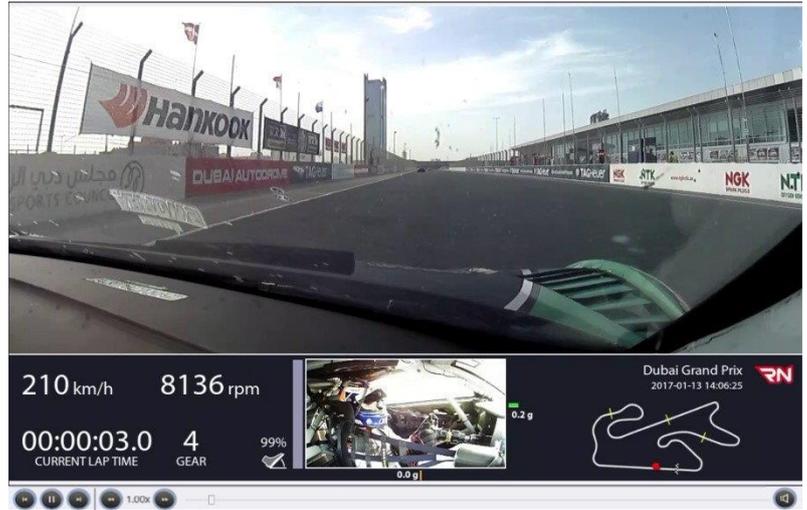


Recorded videos consist of camera views combined with an additional data overlay (up to three cameras in RN ONE and four in RN PRO devices).

The data types presented on the overlay depend on the selected layout.

Note:

Only the RN ONE and RN PRO devices offer recordings of videos in the picture in picture mode with additional data. RN LITE devices record a single camera video without additional data.



7 G-FORCE

The G-Force Feature will display accelerometer values of selected laps in form of a two-dimensional chart.

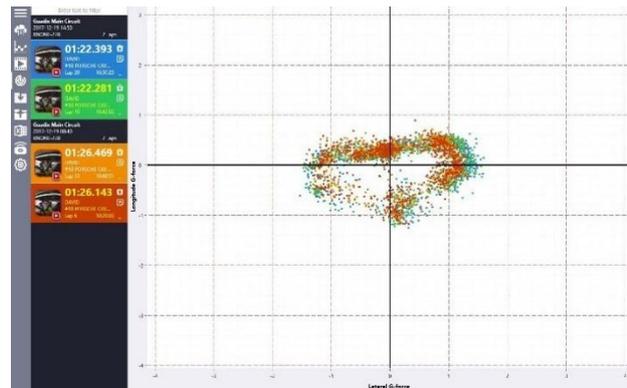
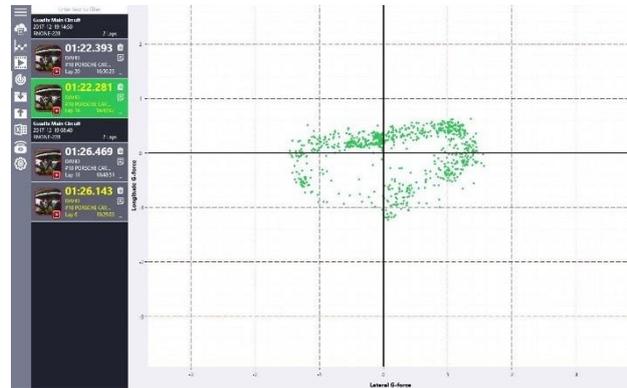
To display the chart, go to G-Force section in menu:



And select which laps you want to analyze.

It is possible to compare up to 10 laps at the same time.

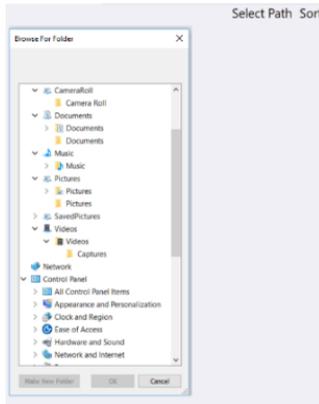
- Lateral value is displayed on: X axis.
- Longitude value is displayed on: Y axis.
- Chart can be zoom in and out with mouse scroll, just like other charts in Analyzer section.



8 IMPORT

Select Path

This button opens the explorer window to choose a directory from where you want to import lap files. After selecting a directory, a list of laps grouped into events appears.



Importing

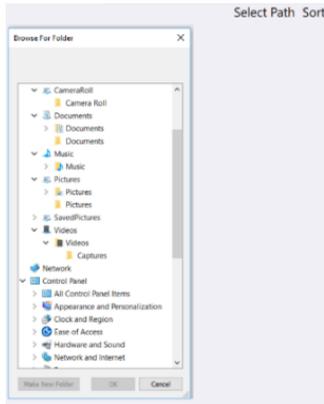
Import laps data and lap videos by pressing on data or video buttons. For more details see 4 DOWNLOAD.

Selected path: D:\Data for Analyzer from Teams\test		Select Path Refresh Sort	
2021-05-27 13:09:20 RNLU1E-82			
Nürburgring Nordschleife		1 Laps	
10:58.140	Default Driver #0 Default Vehicle Lap 2 at 13:25:45	Downloaded	Downloaded
2021-03-12 13:03:46 RNWPC-451			
Poznan		4 Laps	
2017-12-19 14:50:14 RINONE-228			
Guadix Main Circuit		3 Laps	
01:22.682	DAVID #10 PORSCHE CAYMAN Lap 21 at 16:51:45	Downloaded	Downloaded
01:22.393	DAVID #10 PORSCHE CAYMAN Lap 20 at 16:50:23	Downloaded	Downloaded
01:22.281	DAVID #10 PORSCHE CAYMAN Lap 16 at 16:42:02	Downloading	Waiting
2017-12-19 08:40:07 RINONE-228			
Guadix Main Circuit		2 Laps	
01:26.469	DAVID #10 PORSCHE CAYMAN Lap 13 at 10:48:51	Not downloaded	Not downloaded
01:26.143	DAVID #10 PORSCHE CAYMAN Lap 6 at 10:29:03	Not downloaded	Not downloaded

9 EXPORT

Select Path

This button opens the explorer window to choose a directory where laps will be exported to. After selecting a directory, a list of laps grouped into events appears.



Exporting

Export laps data and lap videos by pressing on data or video buttons. For more details see 4 DOWNLOAD.

Selected path: C:\Users\MX-JS\Desktop\vedewerwerwe		Select Path Refresh Sort	
2021-05-27 13:09.20 RNLITE-92			
Nürburgring Nordschleife			
1 Laps			
10:58.140	Default Driver #0 Default Vehicle Lap 2 at 13:25:45	Exported	Exporting
2017-12-19 14:50.14 RNONE-228			
Guadix Main Circuit			
3 Laps			
01:22.682	DAVID #10 PORSCHE CAYMAN Lap 21 at 16:51:45	Exported	Exported
01:22.393	DAVID #10 PORSCHE CAYMAN Lap 20 at 16:50:23	Exported	Exported
01:22.281	DAVID #10 PORSCHE CAYMAN Lap 16 at 16:42:02	Not exported	Not exported
2017-12-19 08:40.07 RNONE-228			
Guadix Main Circuit			
2 Laps			
01:26.469	DAVID #10 PORSCHE CAYMAN Lap 13 at 10:48:51	Not exported	Not exported
01:26.143	DAVID #10 PORSCHE CAYMAN Lap 6 at 10:29:03	Not exported	Not exported

10 EXCEL EXPORT

This feature allows user to export selected laps data to Excel Sheet in form of a table. Generated file has .xlsx extension and can be opened by any spreadsheet application.

To export laps to Excel first go to Excel Export tab by clicking on this icon: 

Then proceed with 4 steps:

- Select laps you wish to export
- Select which data you wish to export
- Define distance step in meters (distance between points)
- Select export location

After completing above steps simply click on the Generate button. Generated document will consist of 2 pages:

- Lap List – Contains general information about laps that were exported including driver name, vehicle name, lap time and lap number.
- Data – Contains data of selected laps, in columns represents different data types of selected laps, in rows data values are presented. Data are ordered from the lowest distance to highest.

The screenshot displays the 'Excel Export' workflow in three main sections:

- Select Laps to Export:** Shows a list of laps for driver DAVID #10 PORSCHE CAYMAN on the Guadix Main Circuit. Two laps are selected, indicated by checkmarks. The first lap is at 14:50:14 with a time of 01:22.393. The second lap is at 08:40:07 with a time of 01:22.281. A 'Sort' button is visible in the top right.
- Select Channels to Export:** A list of data channels is shown with checkboxes. The selected channels are: Time Slip, G-Force Long, G-Force Lat, Combined G-Force, RPM, Throttle Position, Brake Position, and Steering Angle.
- Set Export Parameters:** Shows the 'Export Parameters' section. The 'Export Folder' is set to C:\Users\MX-JS\Documents. The 'Distance Step [meters]' is set to 5. A 'Generate' button is located in the top right of this section.

Excel file overview

	A	B	C	D	E	F	G
1	Distance	Lap 1, Speed [km/h]	Lap 2, Speed [km/h]	Lap 1, Time slip [s]	Lap 2, Time slip [s]	Lap 1, Combined G-force [g]	Lap 2, Combined G-force [g]
2	0	166,39	169,92	0,00	0,17	0,09	0,06
3	5	166,73	170,99	0,00	-0,04	0,09	0,06
4	10	166,77	170,83	0,00	-0,01	0,05	0,06
5	15	167,33	171,28	0,00	0,00	0,05	0,04
6	20	167,82	171,85	0,00	-0,01	0,06	0,05
7	25	168,14	171,99	0,00	-0,01	0,05	0,03
8	30	168,44	172,26	0,00	-0,02	0,06	0,03
9	35	168,85	172,64	0,00	-0,01	0,06	0,04
10	40	169,41	172,99	0,00	-0,02	0,05	0,05
11	45	169,52	173,25	0,00	-0,02	0,07	0,06
12	50	170,13	173,72	0,00	-0,03	0,06	0,05
13	55	170,69	174,18	0,00	-0,03	0,06	0,03
14	60	170,85	174,46	0,00	-0,03	0,05	0,05
15	65	171,12	174,75	0,00	-0,03	0,05	0,07
16	70	171,42	174,89	0,00	-0,03	0,05	0,06
17	75	171,85	175,24	0,00	-0,03	0,05	0,05
18	80	172,20	175,63	0,00	-0,04	0,04	0,08
19	85	172,46	175,84	0,00	-0,04	0,07	0,05
20	90	173,05	176,33	0,00	-0,04	0,06	0,03
21	95	173,12	176,48	0,00	-0,04	0,08	0,07
22	100	173,37	176,67	0,00	-0,04	0,10	0,08
23	105	174,14	177,33	0,00	-0,05	0,04	0,03
24	110	174,14	177,33	0,00	-0,05	0,04	0,03

11 RN REMOTE CONTROL

The RN Remote Control feature allows to control your Race Navigator device remotely using your PC with RN Analyzer for Windows application. Please note, that this feature is only available when the device is not recording. Make sure that you use auto-start recording mode and connect only when the car is not driving or turn off the recording manually before connecting.

Connecting to RN

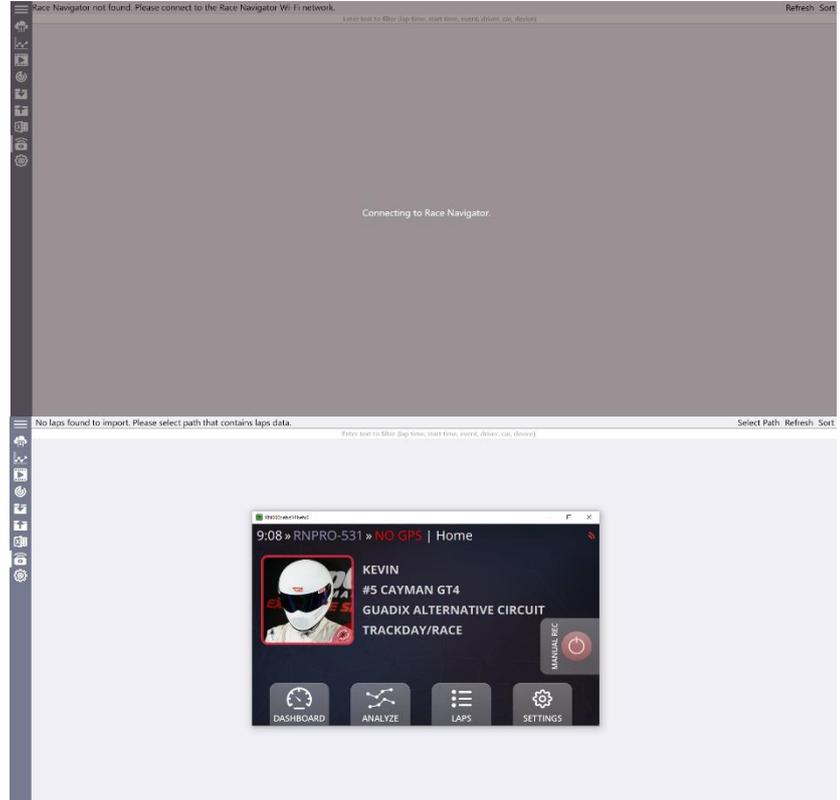
First connect to your RN Device by Wi-Fi. Afterwards press Remote Control button: 

Using Remote Control

You can now navigate through your device by pressing on icons using your mouse. 

Closing Connection

When you are ready with your setup, just close the window with the RN Display. A connection will be closed automatically when recording turns on.



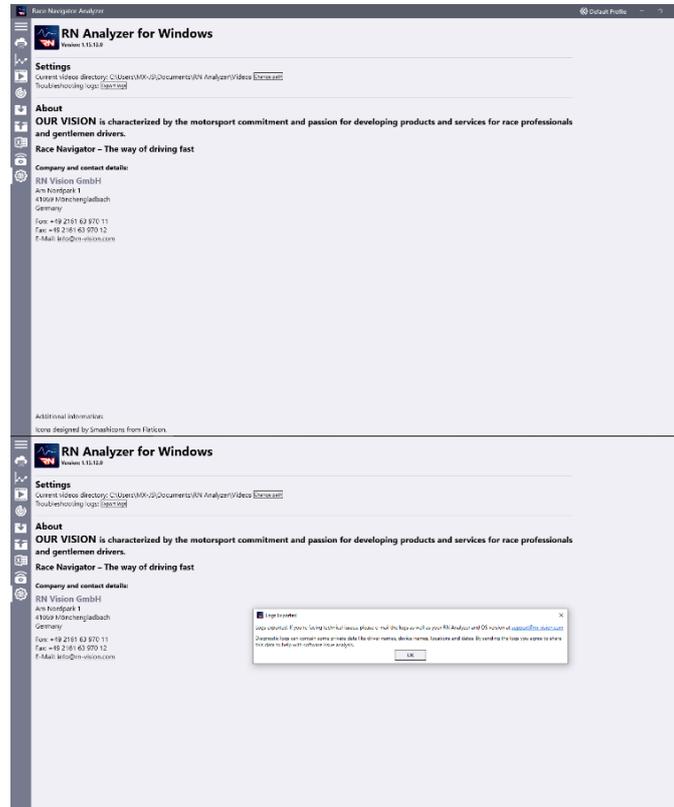
12 SETTINGS

The Settings view contains our address for correspondence, contact phone and fax numbers, official website address, e-mail address as well as information about the software version and software release date.

When you want to change video directory just click on the [Change path](#) button and select new path. All video files will be moved into new directory.

If you encounter any issue with the application, please export its logs and send to the RN Vision support. To export logs please click the [Export logs](#) button and choose a directory where the logs will be exported. The logs are exported to the file with a name like:

DiagAndUsageData_RNAnalyzerForWindows_X_X_XXXXX.zip Please send logs by email to support@rn-vision.com with a short description of encountered issues.



13 TOUCH CONTROL

RN Analyzer for Windows supports touch screen.

Charts/Maps:

- Pinching to zoom in/out
- Slide to move charts

Videos

- Click inside the video frame to start playing video from the stopped moment

Lap list

- Hold and move slider to scroll up/down
- Slide up/down to scroll up/down



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Icons made by Pixel perfect from www.flaticon.com

