

User Manual
Race Studio 3 Analysis

Release 1.01

Updated to release 3.64.09





INDEX

1 – Race Studio 3 Analysis in a few words	3
2 – RS3Analysis log in and database	4
2.1 – RS3Analysis Log in feature and cloud services	4
2.2 – The software database	9
2.3 – Sessions database	11
2.4 – Selected session	12
2.4.1 – Laps summary preview	18
2.4.2 – Laps report preview	21
2.4.3 – Video preview	22
2.4.4 – Map preview	23
2.4.5 – Weather preview	24
2.4.6 – Advanced Info preview	27
3 – Analysis views	28
3.1 – Add/removing a panel to/from the software view	30
3.2 – The software top keyboards	33
3.2.1 – Math Channels Settings	35
3.2.2 – Split division selector	36
3.2.3 – Create a new track map	37
3.2.4 – Plot settings	38
3.3 – View Options and Profiles	39
4 – Data-Movies layout	42
4.1 – Showing/Hiding a panel from the software view	43
4.2 – Table of Channels and table of laps	45
4.2.1 – Generating a predictive reference lap from a recorded lap	49
4.3 – The track view	51
4.4 – Time/distance view: settings and keyboard working modes	52
4.5 – Graph settings	54
4.5.1 – Time compare settings	56
4.5.2 – Cursor settings	57
4.5.3 – Tags settings	57
4.5.4 – Setting graphs in delta mode and managing it	58
4.5.5 – Highlighting Max/Min values placements for a channel	59
4.5.6 – Managing labels on plot “X” and “Y” axis	60
4.5.7 – Choose which channels to display	61
4.6 – The time/distance keyboard working mode	62
4.6.1 – Plotting the graph by Time/Distance	62
4.6.2 – Graph zooming	65
4.6.3 – Graph Snap ON/OFF mode	66
4.6.4 – Local Time ON/OFF (local time versus normal time)	67
4.6.5 – Graph in delta Mode	69
4.6.6 – Graphs plotting overlapped	70
4.6.7 – Graphs plotting mixed	71
4.6.8 – Graph plotting tiled	72
4.6.9 – Graph plotting smart	73
4.6.10 – Graph plotting smart tiled	74
4.7 – Managing track splits	75
4.8 – The movie(s) panel	77
4.9 – The storyboard	79
5 – Time-Distance layout	80
6 – Track split report layout	81
6.1 – Adding/Removing/Sorting items	84
6.2 – Managing side items	85
6.3 – Showing/Hiding statistics	86
6.4 – Choosing the report type	87
7 – Scatter Layout	88
8 – Histogram Layout	91



9 – Split Times report layout	94
9.1 – The top keyboards	95
9.2 – The split report table and its available layouts	97
9.2.1 – Statistics: average value	99
9.2.2 – Statistics: median value	100
9.2.3 – Statistics: best theoretical time	100
9.2.4 – Statistics: best rolling time	101
9.3 – Absolute fractional mode	102
9.4 – Absolute cumulative mode	102
9.5 – Split time difference vs best split overall fractional mode	103
9.6 – Refer to best split cumulative mode	104
9.7 – Refer to best lap fractional mode	104
9.8 – Refer to best lap cumulative mode	105
9.9 – Classic/Colorize layout	106
9.10 – Settings dialog window	107
9.11 – Split graphs	108
9.11.1 – Channel graph	110
9.11.2 – Time/Lap (number) graph	111
9.11.3 – Distance/Lap number graph	112
9.11.4 – Time/Distance graph	113
10 – Channels Report layout	114
10.1 – Add/remove items in the left part of “Channels Report view”	116
10.2 – Sort items	117
10.3 – Managing Side Items	118
10.4 – Show/Hide statistics	119
10.5 – Show/Hide splits in report	119
10.6 – Managing report type	120
10.7 – The custom graph	121
11 – Log sheet layout	122
11.1 – Log sheet general information	122
11.2 – Log sheet weather	123
11.3 – Log Sheet Engine Information	124
11.4 – Log Sheet Dims (dimensions) and Weights information	125
11.5 – Log Sheet fuel Information	126
11.6 – Log Sheet gearings information	127
12 – Track Map layout	128
13 – Custom Layout	128
14 – Math channels	128
14.1 – How to add/edit a math channel	131
14.2 – LookUp tables	132
15 – Reports layout	133
15.1 – Managing, creating and editing a data report	136
15.2 – Filtering data for laps and splits report	139
15.3 – Management of scales for statistics with same units	140
15.4 – Choosing the statistics to be used	141
15.5 – Exporting data reports to printable files	142



1 – Race Studio 3 Analysis in a few words

With the new Race Studio 3 Analysis (from here onward RS3Analysis) automatic and perfect time data-video integration is available. In addition to this more data are available in a quicker way; this because the new ".xrk" format contains more information than the old ".drk" one and the new software can better exploit ".xrk" format potentials. The new RS3Analysis is quicker in finding the information and each view has been properly designed and developed to be more intuitive and user friendly.

Why does RS3Analysis ask to log in?

RS3Analysis has a new "log in" feature that provides new services and cloud sharing. New available services are, for example, weather conditions (for the last year only) and forecast while cloud sharing include data, profiles, configurations, math channels, track segments and they can be shared among your PCs or among your friends, coach etc.

What about my previous data?

RS2Analysis is still available. With the new RS3Analysis software previous data can be imported and analysed. You can import entire folders as well as single files browsing your PC.

What do I see first?

The first page that you see when running RS3Analysis is Database page, with data and videos of the sessions central, grouping criteria and collections on the left and the session preview on the right.

What are RS3Analysis session collections?

With the new RS3Analysis you can group your sessions in different ways as shown in the software home page.

Recent session collection, collects the most recent sessions you interacted with. This means that if you recently worked on an old session that was particularly important you do not need to look for it again but you find it in the recent sessions folder.

Smart collections group sessions following a rule you can decide, like all sessions performed by a racer or on a track or belonging to a championship.

With Manual collections sessions are grouped as you wish, without the need to fix any specific criteria. Just drag and drop the session in.

What is the new preview feature?

The new RS3Analysis software features a new preview window that shows, according to the session mode it is showing and without needing to open the session, a lot of different windows.

What about the new Analysis window?

The new analysis window shows: channels tables, web-based map of the circuit, channels graphs of RPM and Speed (you can change this view through the profiles) and video of the race if available. All views can be changed and its setting saved as a "Profile" that you can apply to any session you open. Pressing the space bar you can hide/unhide different panels of the view.

Can I see the graphs of my movies?

Yes. You can also place the movie in the centre of the page with the desired graphs synchronized bottom of the movie.

Please note: being Data-Movies Layout (chapter 4) the most complete layout we suggest to read it as reference for any explanation of the layout you need.

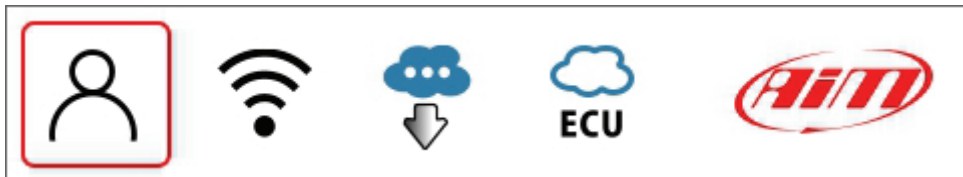
2 – RS3Analysis log in and database

RS3Analysis is the analysis software included in Race Studio 3 software. To reach it run Race Studio 3 and press RS3Analysis icon on the top left keyboard, highlighted here below.



2.1 – RS3Analysis Log in feature and cloud services

The new RS3Analysis comes with the new “Log in” feature that can be activated on the software top right keyboard.

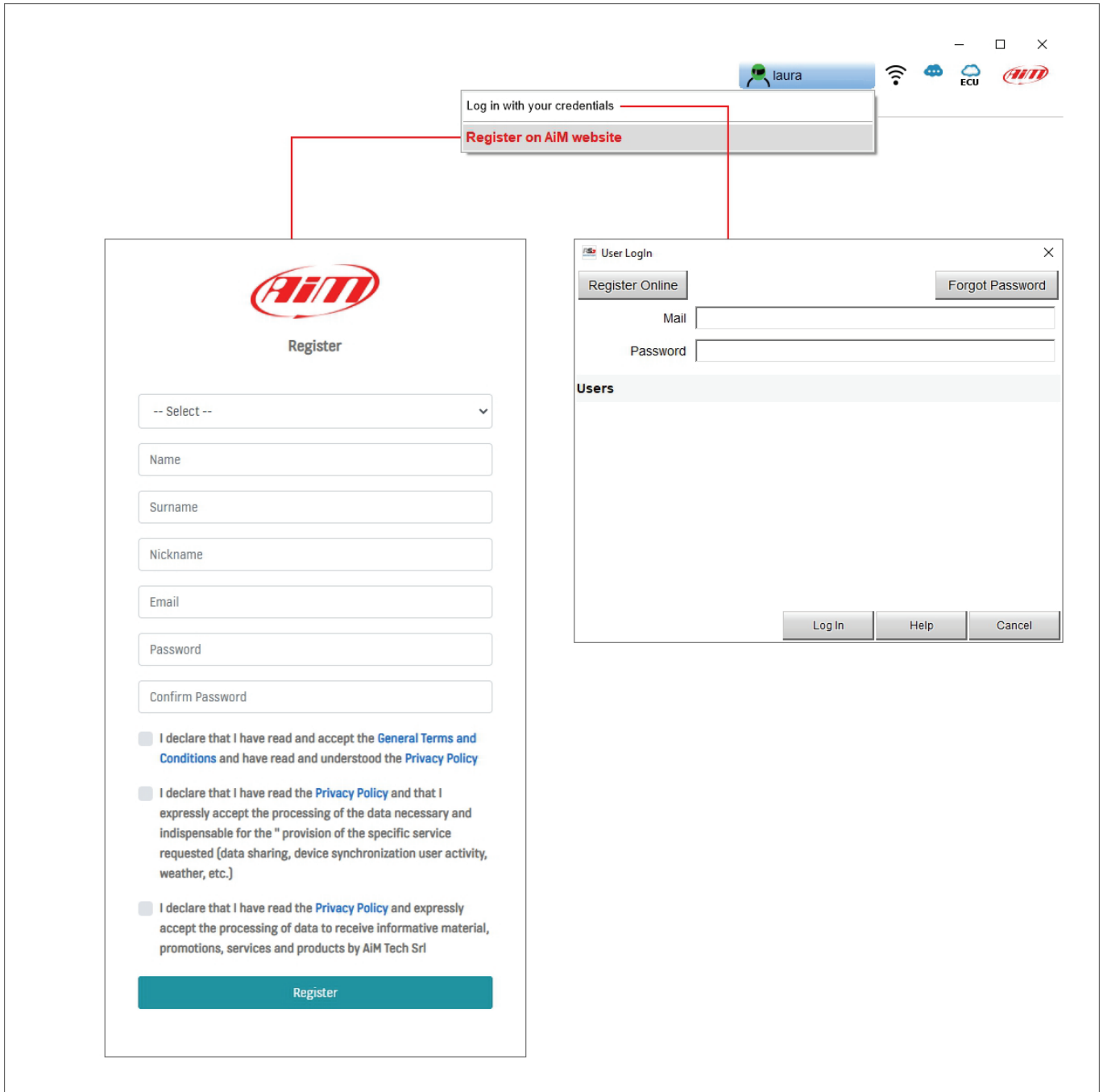


With this new feature the user connects to AiM server where a free cloud space of 20 megabytes is available. They are to allow the user to test this feature. Additional space is available for purchase.

This feature provides the user with a free cloud space where to save his personal profiles (paragraph 3.1), tracks, math channels (see chapter 14) and sessions (see paragraph 2.3).

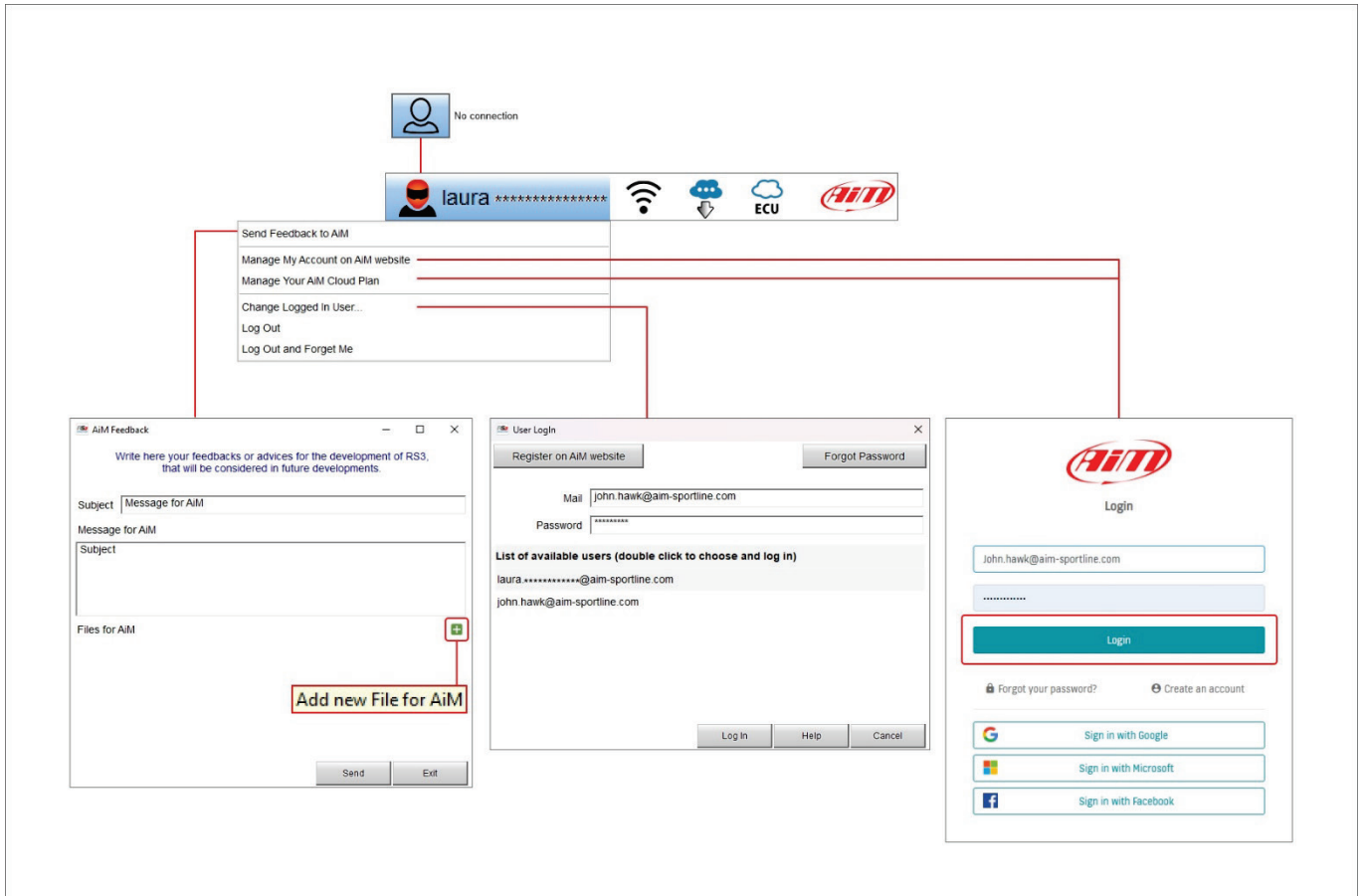
At the very first use “Log In” icon is as shown above and it opens a menu.

If you do not have the credentials select **“Register on AiM website”** and fill in the dialog window that is prompted (on the left in the image below); a registered user has to select **“Log in with your credentials”** and fill in the **“User Login”** dialog window (on the right in the image below).



Once logged in you have an account on AiM server and the login menu changes. Also the icons can be different in different situations like bad user name or password or no connection available.

Once the registration procedure correctly performed you have different options.



- **Send a feedback to AiM:** a dedicated dialog window is prompted; you can:
 - define a subject
 - write a message that goes directly to AiM technicians
 - add a file pressing "+" button and loading it
- **Manage your account on AiM website:** it opens a login page on the Internet; logging in you enter a personal dashboard, explained in the following page.
- **Manage Your AiM cloud plan:** all available plans are prompted and you can change your current one to another that better fits your needs
- **Change logged user:** assuming you have more accounts you can switch from one user to the other without having to shut down the software
- **Log out:** logs out but keeps user data on your PC
- **Log out and forget me:** exit the software and removes user data from the PC but not from AiM server; the next time AiM server will propose you to use your old account or to register for a new one



The software re-directs you to your dashboard on the web.

Here it is possible to:

- see all information you uploaded
- copy the instances or download them in different formats: CSV, PDF
- update user information selecting "Account" option on the top right button of the page; the related page opens and data can be updated and saved at the end
- logout

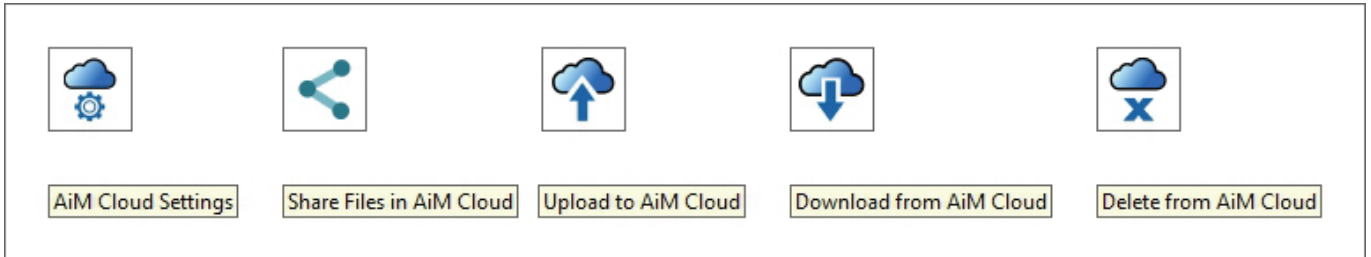
The screenshot displays the AiM Dashboard interface. At the top, there is a navigation bar with the AiM logo and the user's name 'Laura'. Below this, the dashboard is divided into several sections:

- User Profile:** A circular profile picture placeholder, the name 'Laura', and the email address 'laura.*****@aim-sportline.com'.
- Subscription Status:** A card indicating a 'Free Plan' with a 'Go to Subscriptions' button.
- Data Usage:** A card showing '19.65 %' usage with 'Data (3.93 MB/20.00 MB)'.
- Instances Table:** A table listing software instances with columns for Id, Software Version, OS, Last Activity Time, and Status. The table contains 6 entries, with the first 5 being beta versions and the last one being a release version.

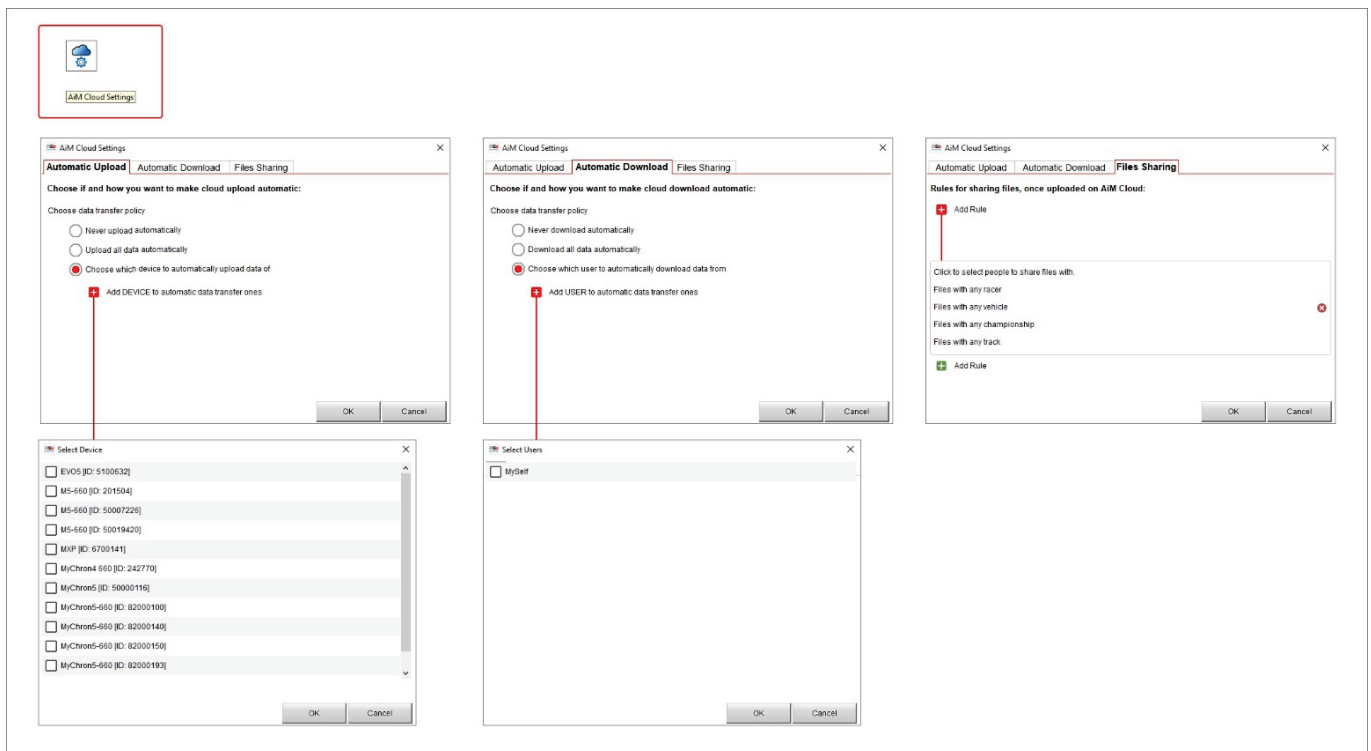
Id	Software Version	OS	Last Activity Time	Status
B239D02C-E76D-4D4B-81ED-9BA89193A1B0	beta [20210201_183228] [3.50.36]	Win 10.0.b19041	2021-02-02 08:12:45	Active
0C77D5A0-050A-4FF6-B344-9BD94DA4A8CC	beta [20220210_084832] [3.51.27]	Win 10.0.b19042	2022-02-10 17:35:08	Active
E9050620-0D5E-4D6C-BC8B-47297417DD6E	beta [20221104_153612] [3.53.07]	Win 10.0.b19044	2022-12-19 09:23:49	Active
FDB3CA19-F70A-4B70-94C7-CCC27EF6FA59	dev [20210202_064522] [0.00.00]	Win 10.0.b19041	2021-02-02 10:29:02	Active
B2C16191-458D-4C20-A7C8-339975E6DD18	dev [20220208_110705] [3.00.51]	Win 10.0.b19044	2022-09-29 10:10:37	Active
EAE88E4E-9E28-478E-B703-B8C787B69706	release [20230206_153525] [3.55.20]	Win 10.0.b19044	2023-02-08 08:40:00	Active

Showing 1 to 6 of 6 entries

Cloud options are indicated by icons, shown below, that appears on the software central keyboard only when you need them.



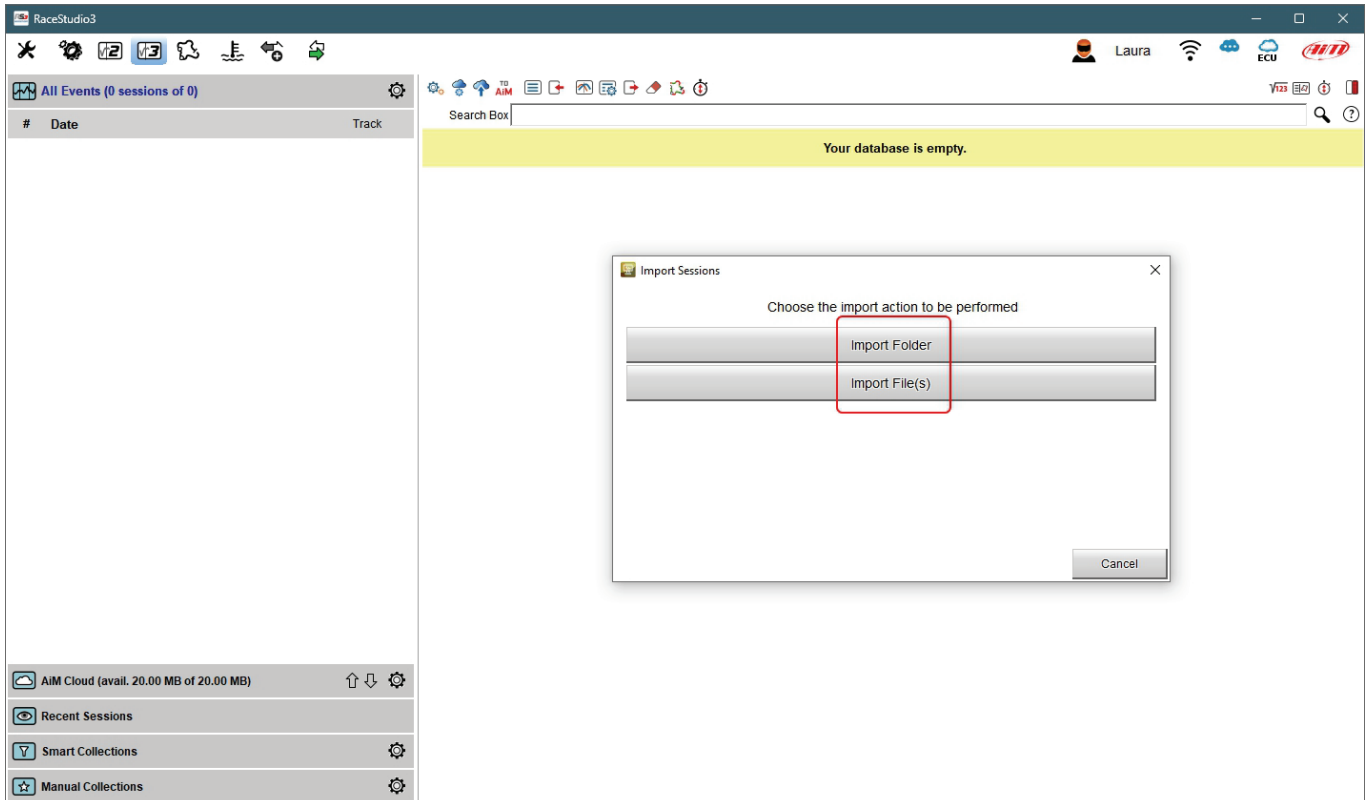
AiM Cloud settings icon allows the user to set some parameters as shown here below.



- Automatic Upload:** you can manage automatic upload of your files (never/all) as well as decide (pressing "+") that one or more devices among these you already have data downloaded from will have their files automatically uploaded on your cloud; this is very useful if you want to be sure not to lose particular data or if you are a coach and you need to always have under control some particular data.
- Automatic Download:** you can manage automatic data transfer policy (never/all) as well as decide (pressing "+") that one or more users among these already downloaded data will have their files automatically uploaded on your cloud; this is very useful if you want to be sure not to lose data of one or more racers.
- Files Sharing:** pressing "+" you can decide to share your file with any racer, vehicle, championship, track your downloaded data belong to or, clicking on any of these parameters, select a particular racer, vehicle, championship, track to share your data with.

2.2 – The software database

RS3Analysis is typically run after data download and this means that the software database populates automatically but previous data can also be imported from an external drive. In this case at the very first time the software database is empty and this dialog window is prompted.



It is possible to import single files or entire folders of data. Pressing one of the buttons highlighted browse windows is prompted: select the file/folder to import and press OK. A panel with a progress bar appears. In case the files are already in the database or if there is any issue the software warns you.



RS3Analysis home page is divided in three parts:

- on the left all available sessions with grouping criteria and collections where the desired one can be selected (1)
- central data and video of the selected session (2)
- right the selected session data preview (3)

The screenshot displays the RaceStudio3 interface. On the left, a list of sessions is shown, with the session '2021, June 11/13' at Watkins Glen selected. The central panel shows a detailed view of this session, including a table of laps with columns for Lap, Time, Pct, Min, and Avg. The right panel shows a graph of GPS Speed (km/h) versus Distance (m).

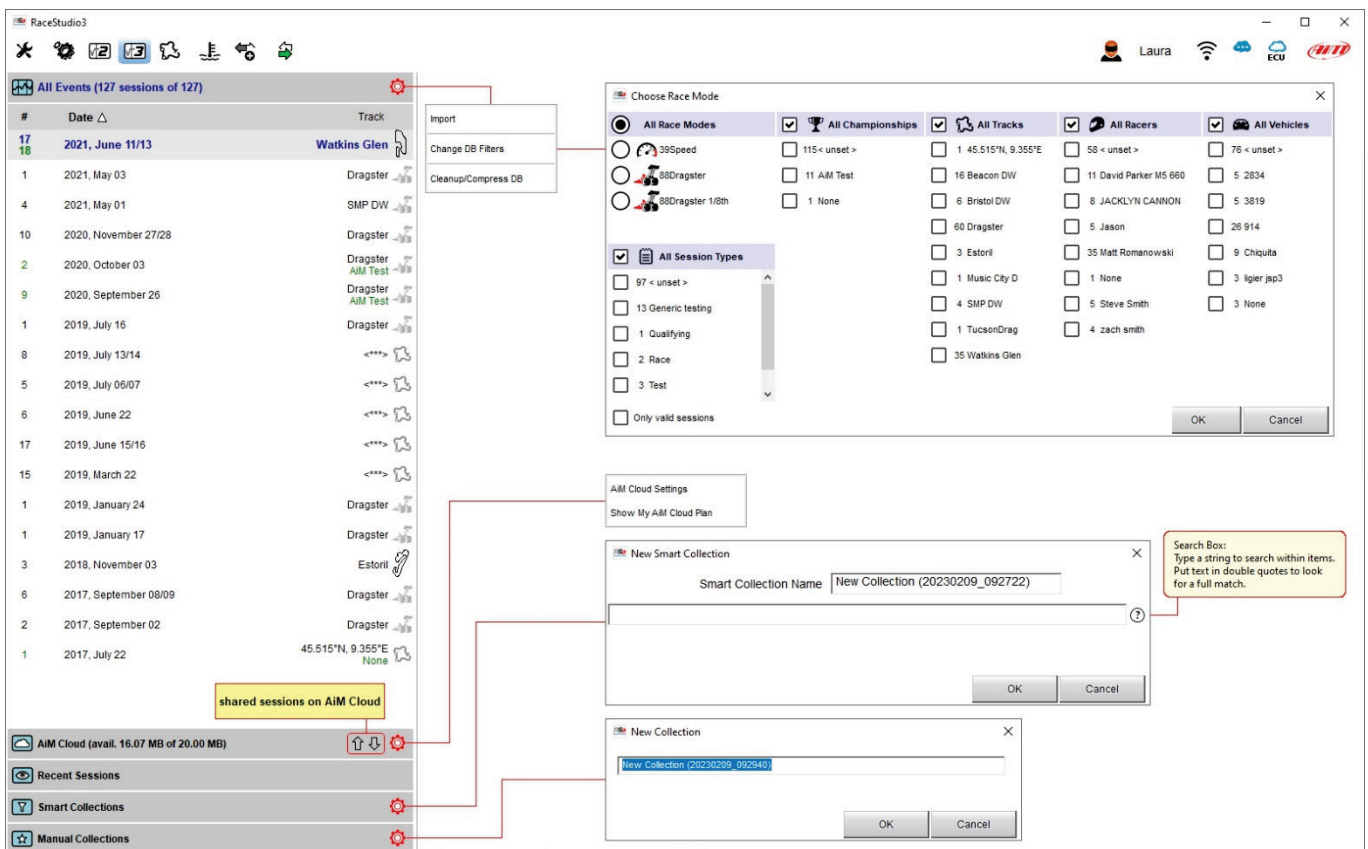
Lap	Time	Pct	Min	Avg
8	8:01.115	347.99	0.0	43.7
out	4:23.580	190.65	0.0	81.0
in	3:37.338	157.20	0.0	89.5
15	2:35.159	112.23	0.0	125.3
9	2:32.459	110.27	66.5	126.5
1	2:23.704	103.94	78.4	135.5
3	2:23.317	103.66	78.6	135.8
2	2:22.609	103.15	83.8	136.7
7	2:20.765	101.81	92.0	138.4
14	2:20.515	101.63	87.5	138.7
11	2:20.226	101.42	93.2	139.0

2.3 – Sessions database

When the database has been populated **all sessions** are shown by default (top bar); they are grouped into events (by week) on the same track/race. Clicking the setting icon a menu is prompted. Here it is possible to select which Session to show according to the selected race mode.

Bottom of this part of the page are other session types:

- **AiM Cloud:**
 - shows all sessions uploaded on AiM cloud
 - allows to enter cloud settings (see paragraph 2.1) and shows the related icons
 - shows your current AiM Cloud Plan and allows you to enter AiM Cloud plan settings
- **Recent sessions:** this database remembers the last 30 sessions you have interacted with; the very first time it is empty
- **Smart Collection:** this database can be build clicking the setting icon and selecting the sessions according to a custom criteria; as shown by the tooltip that appears clicking on the question mark you can fill in a text to be used as search string and the sessions corresponding to that string are automatically included in the new smart collection; default collection name is day and time but it can be named as wished
- **Manual Collection:** this database is manually build:
 - click the setting icon on the right
 - a dialog window is prompted: name it and the collection appears below the Manual Collection label
 - click “All sessions” to show all available session and drag and drop the sessions you want to include in it.



2.4 – Selected session

When the session to view is selected it appears in the **central** part of the page. The session view can be list, agenda and the different preview window can be shown right, bottom or hidden. By default all sessions are grouped by date; click on any column header to change the order criteria.

The following image show: list/right view.

The screenshot displays the RaceStudio3 interface. On the left, a sidebar lists 'All Events (127 sessions of 127)' with columns for '#', 'Date', and 'Track'. The selected session is '2021, June 11/13' at 'Watkins Glen'. The central panel shows a detailed view of this session, including a table of laps with columns for 'Lap', 'Time', 'Pct', 'Min', and 'Avg'. The right panel features a performance graph titled 'Matt Romanowski - 2021, Jun 13 11:07 AM (13 laps enabled)', showing 'GPS Speed (km/h)' on the y-axis (ranging from 60.0 to 200.0) and 'Distance [m]' on the x-axis (ranging from 0.00 to 5000.00). The graph shows a blue line representing speed over distance, with a shaded area indicating a range or uncertainty. A red box in the top toolbar highlights the list view icon.

Lap	Time	Pct	Min	Avg
8	8:01.115	347.99	0.0	43.7
out	4:23.580	190.65	0.0	81.0
in	3:37.338	157.20	0.0	89.5
15	2:35.159	112.23	0.0	125.3
9	2:32.459	110.27	66.5	126.5
1	2:23.704	103.94	78.4	135.5
3	2:23.317	103.66	78.6	135.8
2	2:22.609	103.15	83.8	136.7
7	2:20.765	101.81	92.0	138.4
14	2:20.515	101.63	87.5	138.7
11	2:20.226	101.42	93.2	139.0



The following image show: agenda/bottom view.

The screenshot displays the RaceStudio3 interface. At the top, a toolbar contains various icons, with a red box highlighting the 'Agenda' icon (a calendar) and the 'Bottom View' icon (a red square). The main area is divided into three sections:

- Left Panel:** A list of 'All Events (127 sessions of 127)' with columns for '#', 'Date', and 'Track'. The current session is highlighted as '2021, June 11/13' at 'Watkins Glen'.
- Top Center Panel:** An agenda view showing a grid of sessions for 'Matt Romanowski, 914, Chiquit' across dates '2021, Jun 11', '2021, Jun 12', and '2021, Jun 13'. Each session is represented by a pink bar indicating the time range.
- Bottom Panel:** A detailed view for 'Matt Romanowski - 2021, Jun 11 10:29 AM (6 laps enabled)'. It features a table of lap data and a corresponding line graph of GPS Speed (m/min) vs. Distance (m).

Lap	Time	Pct	Min	Avg
out	4:07.750	176.63	0.1	86.2
1	2:23.140	102.05	89.3	135.9
2	2:23.129	102.04	86.6	136.0
5	2:21.987	101.23	89.0	137.0
6	2:21.709	101.03	87.9	137.3
3	2:20.890	100.45	93.3	138.1
4	2:20.263	100.00	91.2	138.6

The graph shows GPS Speed (m/min) on the y-axis (ranging from 80.0 to 200.0) and Distance (m) on the x-axis (ranging from 0.00 to 5000.00). The speed fluctuates significantly, with peaks around 180-200 m/min and troughs around 80-100 m/min.

Top of “Selected session” column is a keyboard, shown here below and deeply explained in the following page.



From left to right the buttons indicate:

- **Choose what to see:** allows you to choose what sessions to show; available options are:
 - Show movies only when linked to data; appears only if the selected session contains video
 - Show all sessions
 - Export Profile to folder (All or Analysis*)
 - Import profile(s)
 - Share Profile with my other PC

***Please note:** “Analysis” is the default name of any profile; this means that as you save the profiles with names, “Analysis” option is replaced by a list and you can select the one to clear, export, import or share. Any operation can be performed on one profile at a time only.

- **AiM Cloud settings:** see paragraph 2.1
- **Upload Files to your AiM cloud drive**
- **Send a request to AiM support:** it activates a dialog window where to insert an object and a message addressed to AiM support team that makes easier and quicker for AiM service to investigate the problem; **Please note:** selected session(s) will be attached to the message; if no session is selected the panel is not prompted
- **Change DB line up:** switch the view from list to agenda and vice-versa; by default “group by day” checkbox is enabled.
- **Import new session(s) into database:** windows explorer window is prompted: browse it to find the session(s) to import
- **Open selected session(s) for analysis**
- **Open selected session(s) for report** (see chapter 15)
- **Change properties for the selected session(s):** in the panel prompted you can fill the desired information and a comment too
- **Export selected session(s):** windows explorer window is prompted: browse it to choose where to export the selected session(s)
- **Erase** the selected session
- **Math channels:** opens math channels dialog window (see chapter 14 for further information).
- **Open Track Map and Sector Selector:** the track map with sectors is prompted; you can manage them
- **Open Predictive Reference Laps Manager:** reference laps of all tracks stored in the PC are prompted and you can manage them (see paragraph 4.2.1)
- **Preview Windows placement:** preview windows can be placed bottom of the sessions list, on the right of it or hidden.



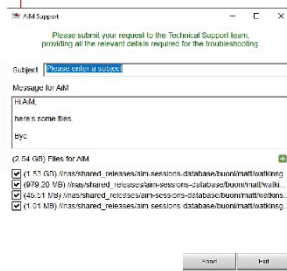
Choose what to see: data or mov files

AiM Cloud Settings

Upload Files to AiM Cloud

Click to send a request to AiM support, selected session(s) will be attached...

Click to Change DB Line Up



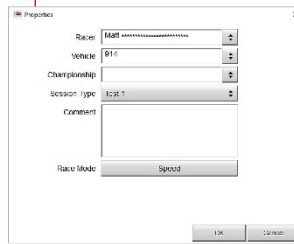
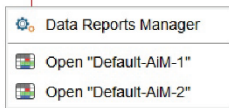
Import new session(s) into database

Open selected session(s) for analysis

Open selected session(s) for report

Change properties for selected session(s)...

Export selected session(s)



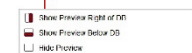
Erase selected session(s)

Math Channels

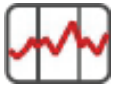
Open Track Map and Sectors Selector

Open Predictive Reference Laps Manager

Click to Choose Preview Window Placement



The selected session is shown in the central column and RS3Analysis automatically recognizes which data it includes matching each session to the dedicated icon. Here below all icons are explained.



Session including only data



Session including only video



Session including data and video



Session coming from a Sim racing

As shown here below, mousing over a session a setting icon is prompted that allows to:

- Open a session
- Open a session **NOT** considering Track (this can be very useful to compare similar sections of different tracks)
- Manage data reports (see chapter 15)
- Open items in reports (see chapter 15)
- Export the session
- Attach the session to a support request to AiM team
- Erase the session from the PC database
- Modify session properties

The screenshot shows the RS3Analysis interface with a table of sessions. A context menu is open over a selected session, and two dialog boxes are displayed.

RA GP - 2023, March 25					
<input checked="" type="checkbox"/>	2023, Mar 25	Lap(s)	Best	Ses... Vehi... Racer Cha...	Tr...
<input checked="" type="checkbox"/>	5:46 PM	5	1:25.679		

The context menu includes the following options:

- Open Item(s)
- Open Item(s) NOT Considering Track
- Data Reports Manager
- Open Item(s) in Report
- Export Item(s)
- Attach Item(s) to a Support Request to AiM
- Erase Item(s) from Database
- Properties...

The "Data Reports" dialog box shows:

- Default-AiM-1
- Default-AiM-2
- Add new data report
- Exit

The "Properties" dialog box shows:

- Racer: [dropdown]
- Vehicle: [dropdown]
- Championship: [dropdown]
- Session type: [dropdown]
- Comment: [text area]
- Race Mode: Speed
- OK, Cancel



Data preview of the selected session is shown right of the page. It changes according to the key pressed on the keyboard placed top right of the view straight above the data highlighted in red here below.

The screenshot shows the RaceStudio3 interface. On the left, a list of sessions is displayed, with the selected session 'Imola Auto - 2022, September 03' highlighted in red. The main area shows a table of lap data for this session, with the first lap (9:30 AM, 9 laps, 1:57.712) highlighted in red. Below the table is a line graph showing lap times for laps 1 through 7. The y-axis is labeled 'Lap Time (s)' and ranges from 1:55.000 to 2:25.000. The x-axis is labeled 'Lap Number' and ranges from 1 to 7. The graph shows a sharp drop in lap time from lap 1 to lap 2, followed by a relatively flat line.

Lap	Time	[m]	Add/Remove
out	9:23.164	385.29	
1	2:22.431	4929.04	
2	1:58.397	4934.05	
3	1:58.036	4884.66	
4	1:57.878	4801.72	
5	1:59.324	4798.29	
6	1:58.222	4903.85	
7	1:57.713	4906.06	
in	5:54.039	4509.51	

The keyboard buttons show different preview and if the session has no video in it the corresponding button is hidden.

The image shows a set of six keyboard navigation buttons arranged horizontally. Each button consists of an icon above a text label. From left to right, the buttons are: 'Laps Summary' (bar chart icon), 'Laps Report' (line graph icon), 'Video' (play button icon), 'Map' (map icon), 'Weather Info' (sun and cloud icon), and 'Advanced Info' (information 'i' icon).



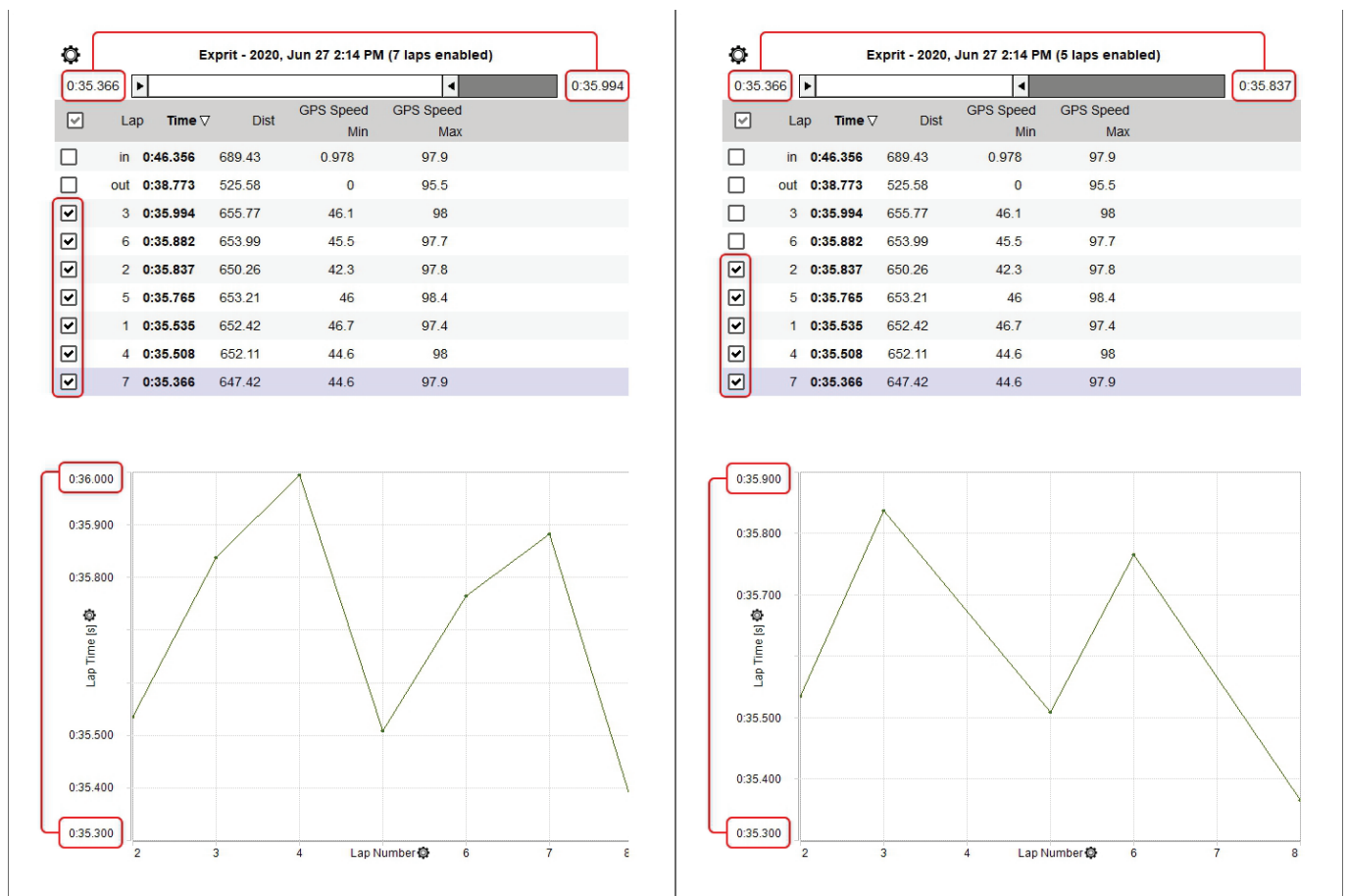
2.4.1 – Laps summary preview

Laps summary preview shows by default all the laps except for the first and the last one (left image below) and the related max/min lap time values are indicated side of the top sliding bar and in the bottom graph.

Sliding the top bar only laps in a fixed lap time range are shown (right image below). This range is shown in the bottom graph too. It is possible to add/remove channels to the central table using the setting icon top left of the sliding bar.

The bottom graph shows, by default, Lap time on the ordinate axis and lap number on the abscissa axis.

The graph can be zoomed in/out through the mouse wheel.





As shown here below on the left, to add a channel:

- Click the setting icon and select "Add"
- Select the desired channel in the list or search for it filling in "Search Box"
- Click "OK"

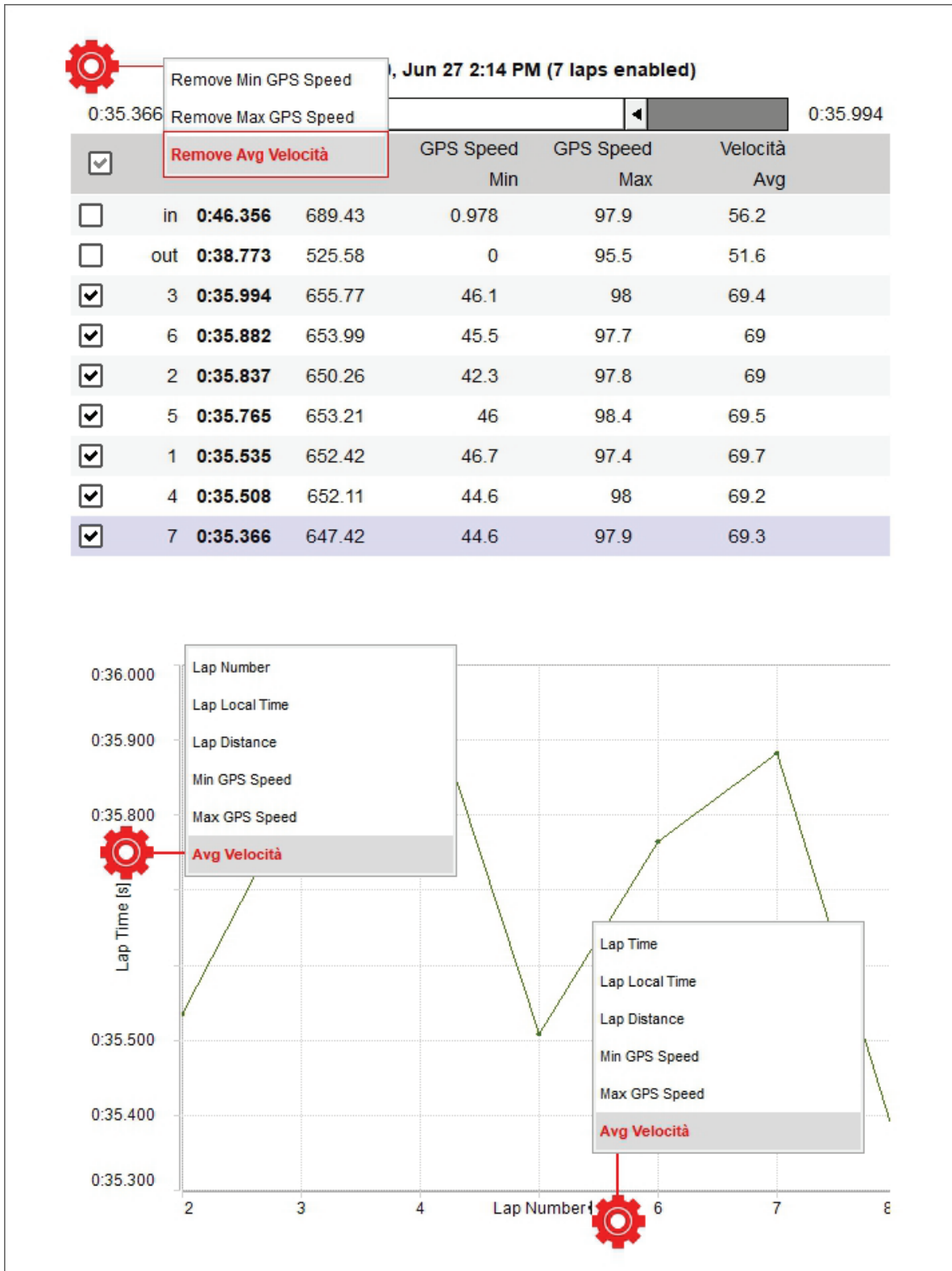
The channel appears in a new column as shown here below on the right.

The screenshot shows the software interface for configuring and viewing data. On the left, the 'New Item' dialog box is open, showing a list of channels with 'Velocità' selected. The 'Operator' section has 'Average' checked. On the right, the main data table is displayed for 'Exprit - 2020, Jun 27 2:14 PM (7 laps enabled)'. The table has columns for Lap, Time, Dist, GPS Speed Min, GPS Speed Max, and Velocità Avg. A line graph below the table plots Lap Time (s) against Lap Number, showing a peak at lap 4 and another peak at lap 7.

Lap	Time	Dist	GPS Speed Min	GPS Speed Max	Velocità Avg
in	0:46.356	689.43	0.978	97.9	56.2
out	0:38.773	525.58	0	95.5	51.6
3	0:35.994	655.77	46.1	98	69.4
6	0:35.882	653.99	45.5	97.7	69
2	0:35.837	650.26	42.3	97.8	69
5	0:35.765	653.21	46	98.4	69.5
1	0:35.535	652.42	46.7	97.4	69.7
4	0:35.508	652.11	44.6	98	69.2
7	0:35.366	647.42	44.6	97.9	69.3

When the desired channel has been added the software allows you to perform the following actions:

- remove the added channel clicking the top left setting icon and selecting the channel to remove
- change the channels plotted on the graph clicking the setting icon on the axis and selecting the channel to plot





2.4.2 – Laps report preview

Laps report is the view shown by default when you enable a session in the central column. By default it shows the laps ordered by lap time and sliding the top bar you can select only laps in a fixed lap time range as well as show them in the graph. Mousing over the laps list the line of the lap you are mousing over becomes red in the graph.

The graph shows, by default, GPS Speed on the ordinate axis and Distance on the abscissa axis. To change the channel plotted on the ordinate axis click the related setting icon (red below) and select the channel to plot in the dialog window that is prompted (on the left in the image below).

The graph has a sort of grey/light blue shadow that highlights the range set with the top sliding bar. To hide this background click the setting icon on the abscissa axis (green below) and then click "Hide Area".

The graph can be zoomed in/out using ctrl+the mouse wheel.

SmartyCam 3 Sport [ID: 1400284] - 2022, Sep 03 9:30 AM (7 laps enabled)

1:57.713 2:22.431

<input checked="" type="checkbox"/> Lap Δ	Time	Pct	Min	Avg	Max
<input type="checkbox"/> out	9:23.164	478.42	0.0	5.0	54.8
<input checked="" type="checkbox"/> 1	2:22.431	121.00	17.9	127.4	223.1
<input checked="" type="checkbox"/> 2	1:58.397	100.58	85.7	156.4	233.8
<input checked="" type="checkbox"/> 3	1:58.036	100.27	75.2	154.6	236.3
<input checked="" type="checkbox"/> 4	1:57.878	100.14	76.3	146.7	236.2
<input checked="" type="checkbox"/> 5	1:59.324	101.37	77.0	143.4	226.5
<input checked="" type="checkbox"/> 6	1:58.222	100.43	77.3	151.1	228.0
<input checked="" type="checkbox"/> 7	1:57.713	100.00	87.3	155.3	234.8
<input type="checkbox"/> in	5:54.039	300.76	0.0	45.6	237.7

⚙️ Select Channel
✕

- +- Test Best Time [] (function: Diff vs Best of Run) ^
- Battery [V] (function: Battery Voltage)
- Battery Voltage [V] (function: Battery Voltage)
- Brake Pos [%] (function: Percent Brake Load)
- Brake Press [bar] (function: Brake Circuit Pressure)
- Clutch Pos [%] (function: Percent)
- Distance on GPS Speed [m] (function: Distance)
- Engine RPM [rpm] (function: Engine RPM)
- Exhaust Temp [C] (function: Exhaust Temperature)
- Fuel Level [%] (function: Percent Fuel Level) v

OK
Cancel

2.4.3 – Video preview



Video preview works mostly like the previous two. Pressing “Play” button bottom left of the preview, the video plays and the cursor on the central graph moves simultaneously. Clicking on a point in the graph the video goes to that point .

Rozzano - 27 giugno 2020 - 14:14 (7 laps enabled)

0:35.365 0:35.994

<input type="checkbox"/>	9	0:46.402	0.6	53.6	97.9
<input type="checkbox"/>	1	0:38.770	0.0	52.7	95.5
<input checked="" type="checkbox"/>	4	0:35.994	46.1	65.8	98.0
<input checked="" type="checkbox"/>	7	0:35.882	45.5	65.8	97.7

12:18:52.240 [Time] 0:26.593 [s] 472,4 [m]

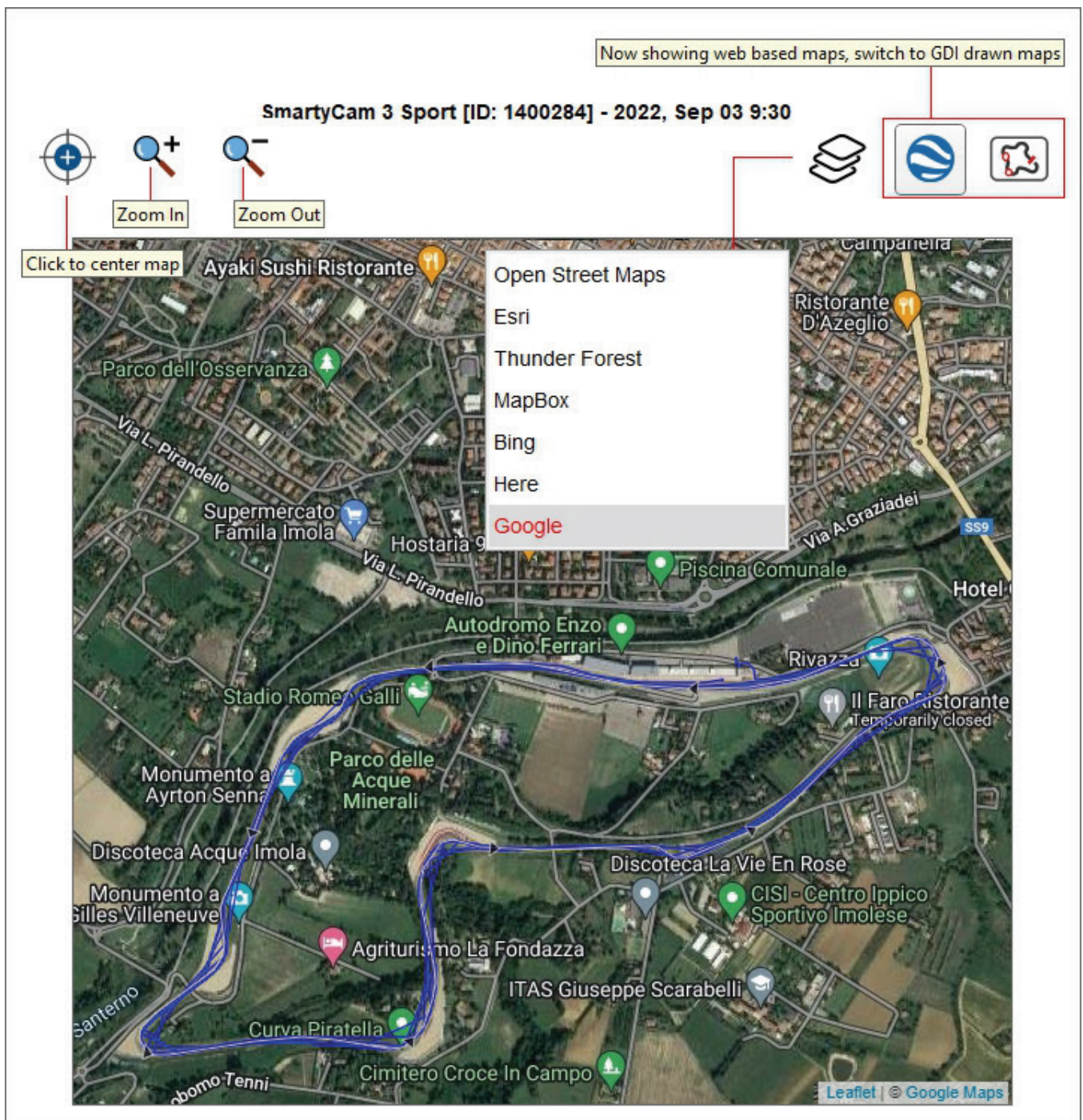
8



2.4.4 – Map preview

Map preview shows the track map and you can:

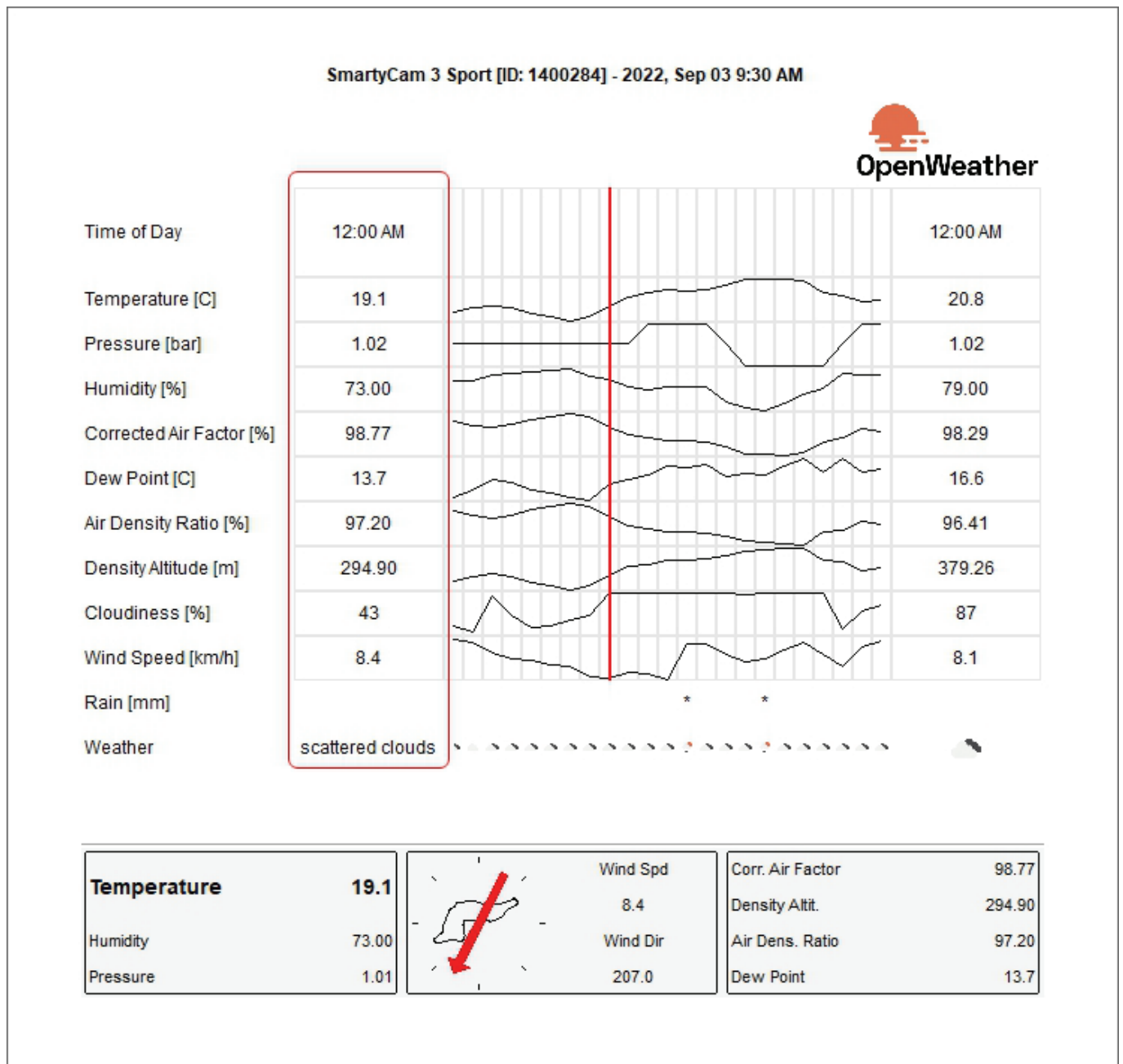
- center the map in the window
- zoom in/out the map using the related buttons or with the mouse wheel
- change the map tile provider choosing among the options shown here below (in the example Google Maps is being used)
- switch among web based maps and GDI drawn map; the top right button in the image below changes according to the view



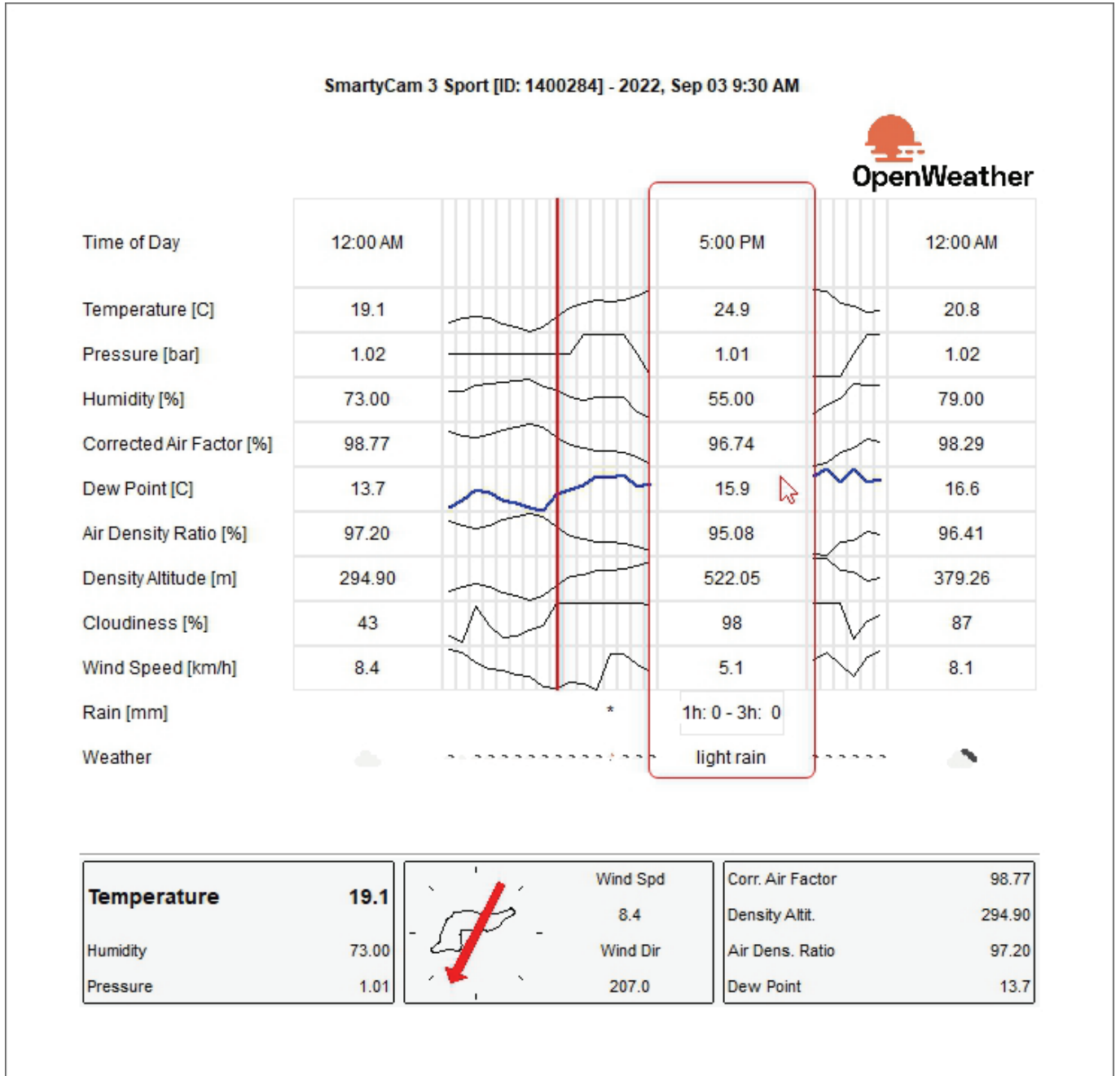


2.4.5 – Weather preview

The weather preview shows all information about the weather conditions in the date of the race, from midnight to midnight.
Please note: these information are available for 12 months from the day they are recorded only.



Mousing over the graph the weather conditions during the day are shown.



Weather information come from AiM server that connects to the nearest OpenWeather station according to your GPS coordinates. Double clicking on the panels bottom of the preview a weather conditions panel is prompted. If you have more accurate information here you can fill them in. In a second moment you can replace them (one or all) with the information coming from AiM server: use "<=" to replace the single information and "<=" to replace all information.

The screenshot illustrates the process of updating weather data. At the top, a preview panel displays weather information in a grid:

Temperature	19.1		Wind Spd	8.4	Corr. Air Factor	98.77
Humidity	73.00		Wind Dir	207.0	Density Altit.	294.90
Pressure	1.01				Air Dens. Ratio	97.20
					Dew Point	13.7

Below the preview panel, a 'Weather Conditions' dialog box is shown. It contains a 'Get From Server' button and a list of weather parameters, each with a '<=' button and a text input field. The 'Temperature [C]' field is highlighted with a blue selection box. At the bottom of the dialog are 'OK' and 'Cancel' buttons.

Parameter	Value	Action	Source
Weather (in short)	Clouds	<=	Clouds
Temperature [C]	19.1	<=	19.1
Humidity [%]	73.00	<=	73.00
Barometer [bar]	1.01	<=	1.02
Wind speed [km/h]	8.4	<=	8.4
Wind direction [deg]	207.0	<=	207.0
Corrected Air Factor [%]	98.77	<=	98.77
Density Altitude [m]	294.90	<=	294.90
Air Density Ratio [%]	97.20	<=	97.20
Dew Point [C]	13.7	<=	13.7

2.4.6 – Advanced Info preview



Advanced info preview shows all the information about the session according to the logger in use. You can also see the files containing the data in their folder clicking "Show file in Windows Explorer". If a SmartyCam HD is connected to the logger two explorer windows will open: one for the racing data, the other for the video .MOV file except files are saved in the same folder and in this case they appear both selected.

SmartyCam 3 Sport [ID: 1400284] - 2022, Sep 03 9:30 AM

Session Information

Track Imola Auto

Championship

Racer

Vehicle

Files

//NAS/Shared_Smartycam/SC3_SPORT/***** Q2 Imola SCHD0042.MP4


System Information


Total Distance in Session 39052.47 [m]


Session Duration 29:29.204

Comment:

Logger SmartyCam 3 Sport [ID: 1400284] - Firmware Version: 01.01.12


Copy Item(s) to Folder for Export

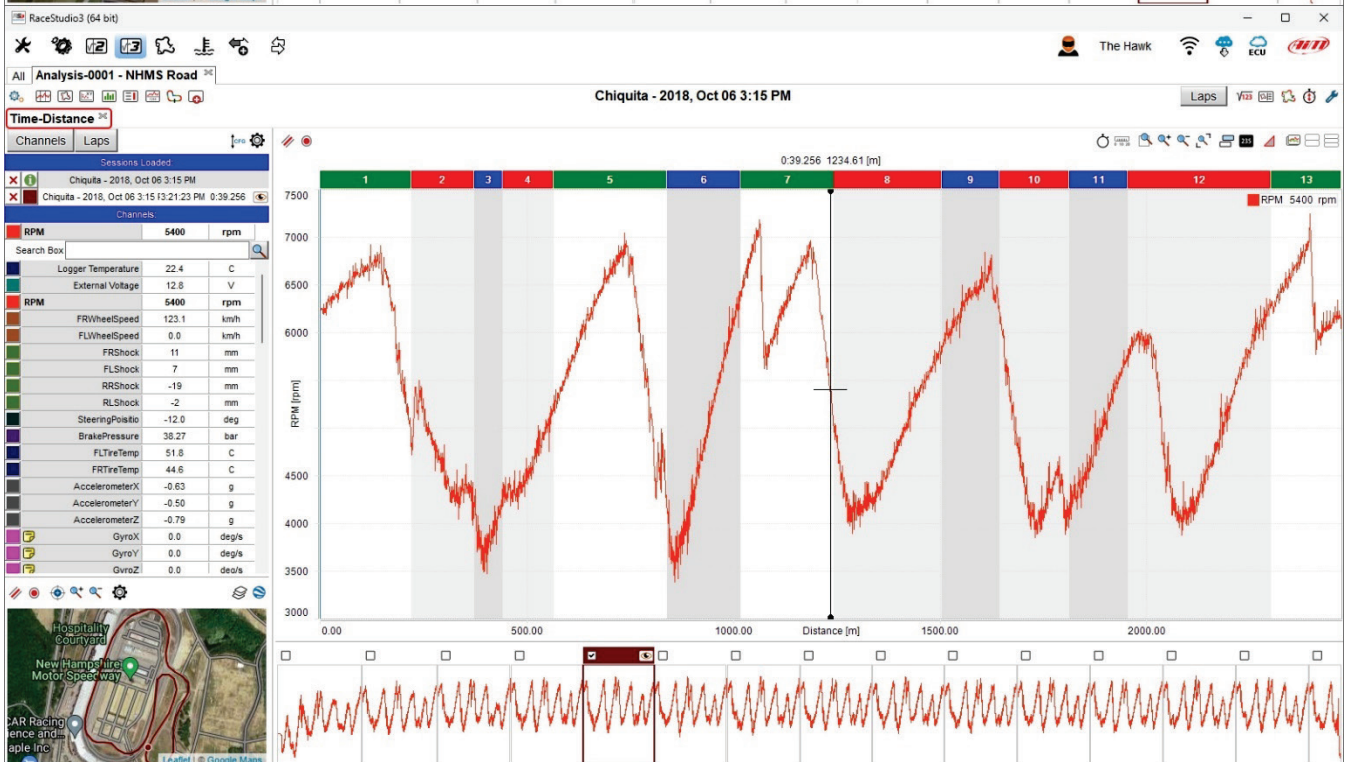
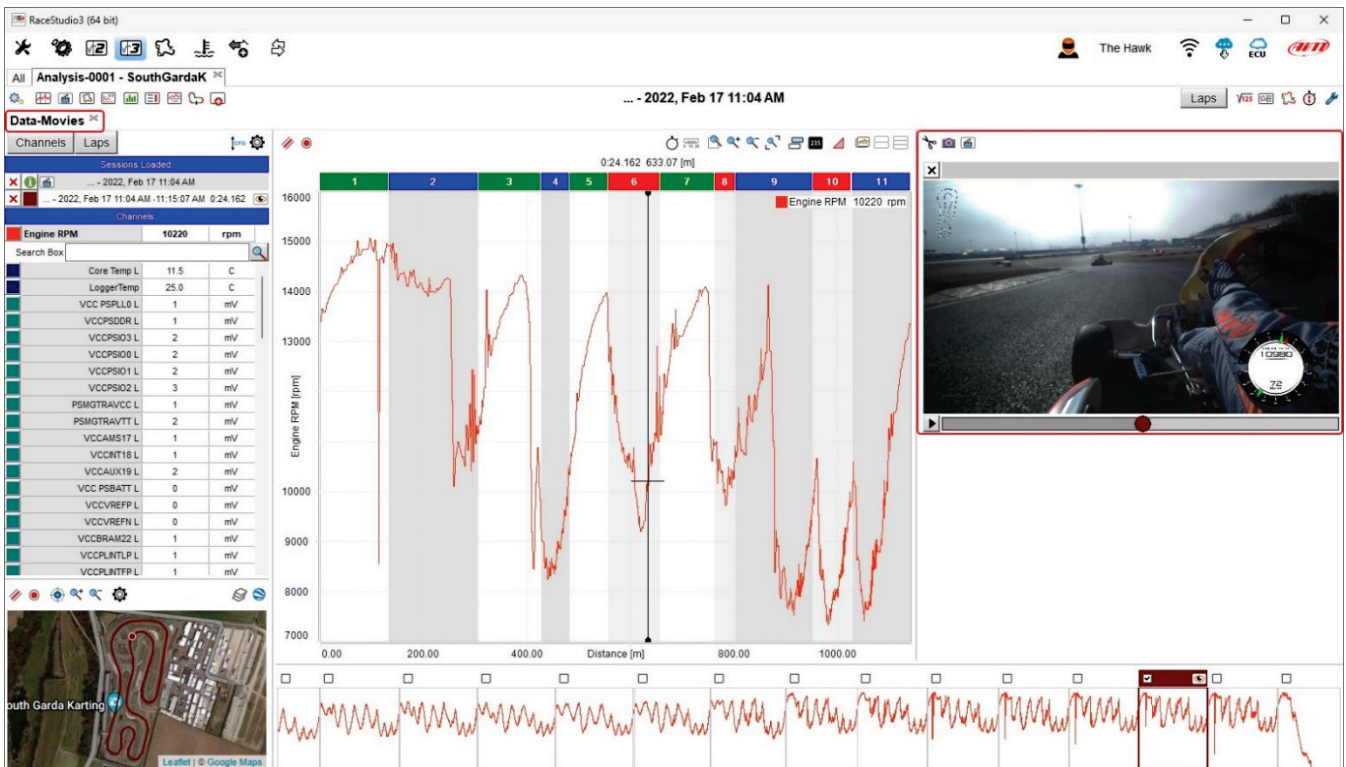

Open File with Operating System Default Application


Show File in Windows Explorer



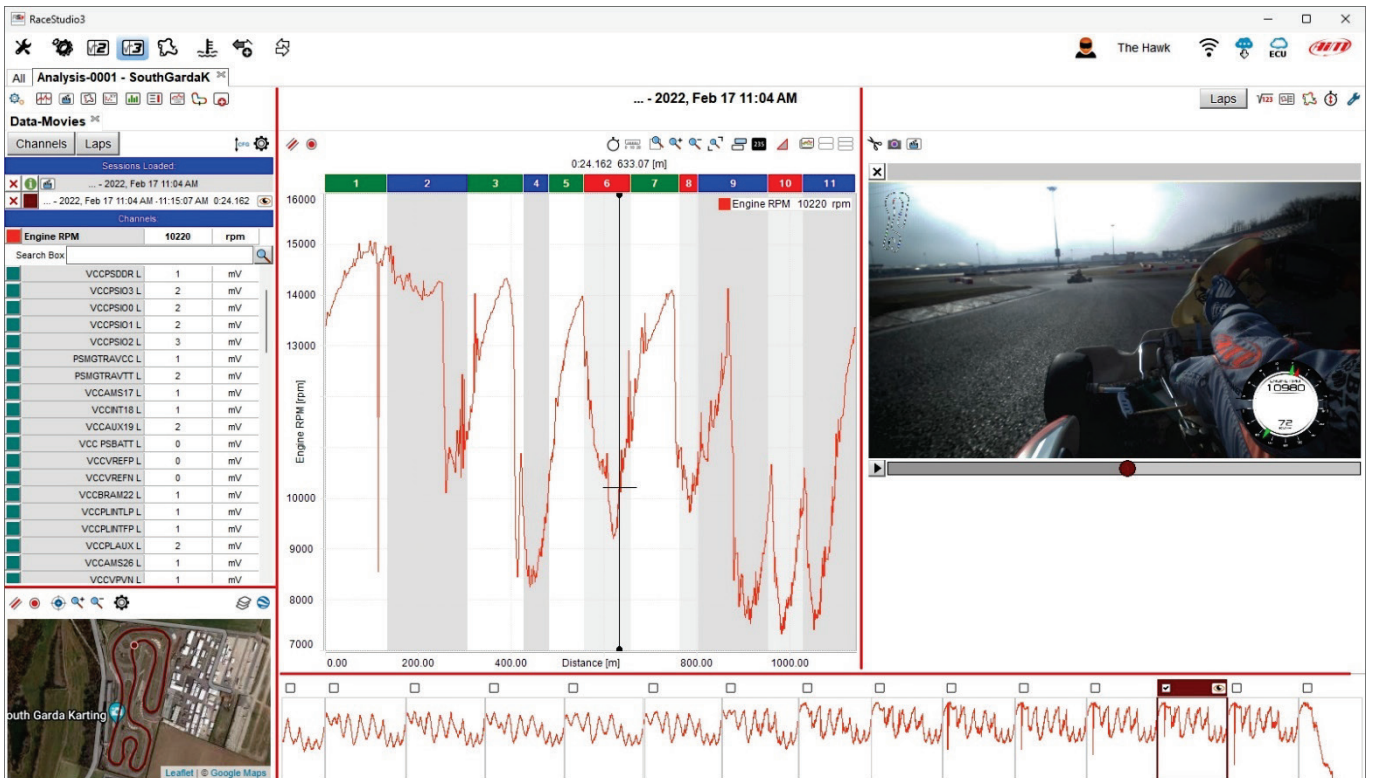
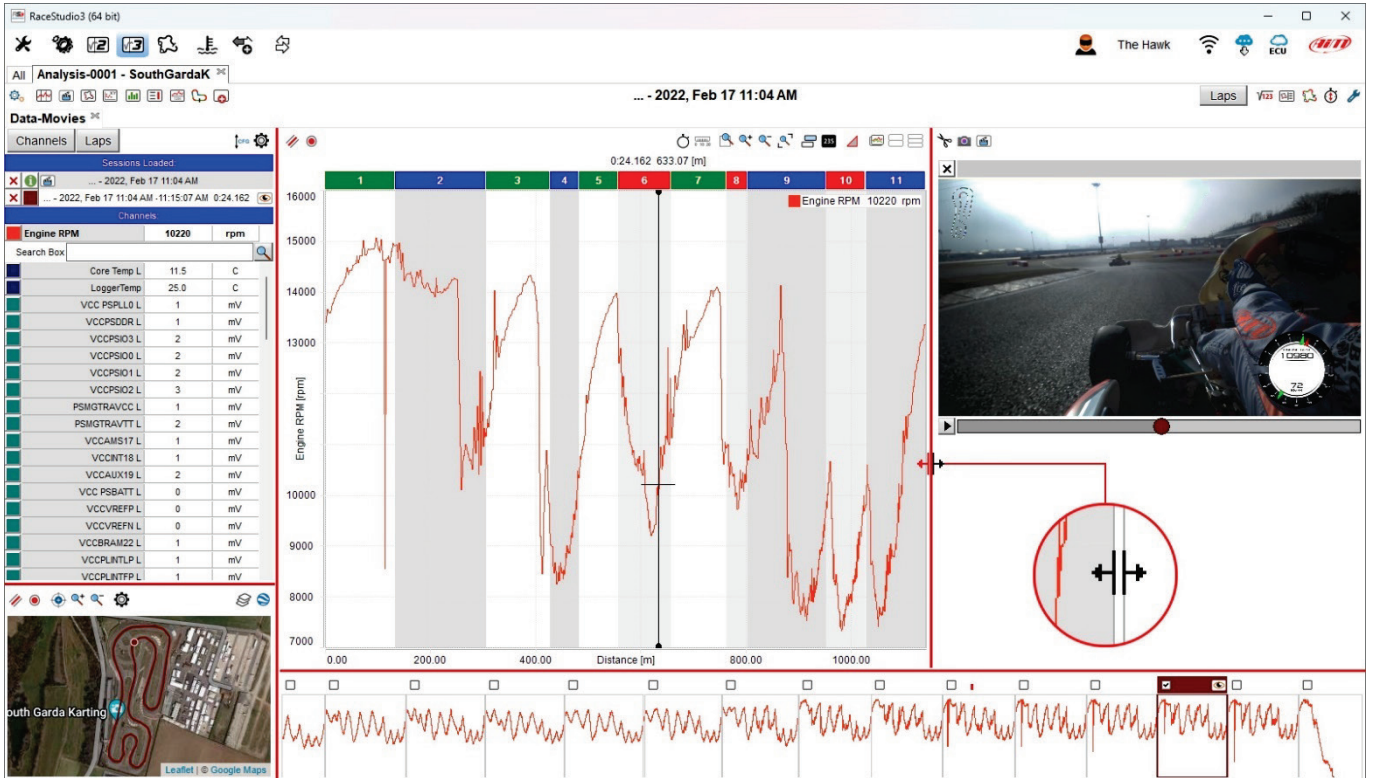
3 – Analysis views

Double click on a file to open and start analysing it. “Analysis” view opens. The default view changes depending on the presence (top image) or not (bottom image) of a video in the file. In the second case “Time-distance” layout opens.





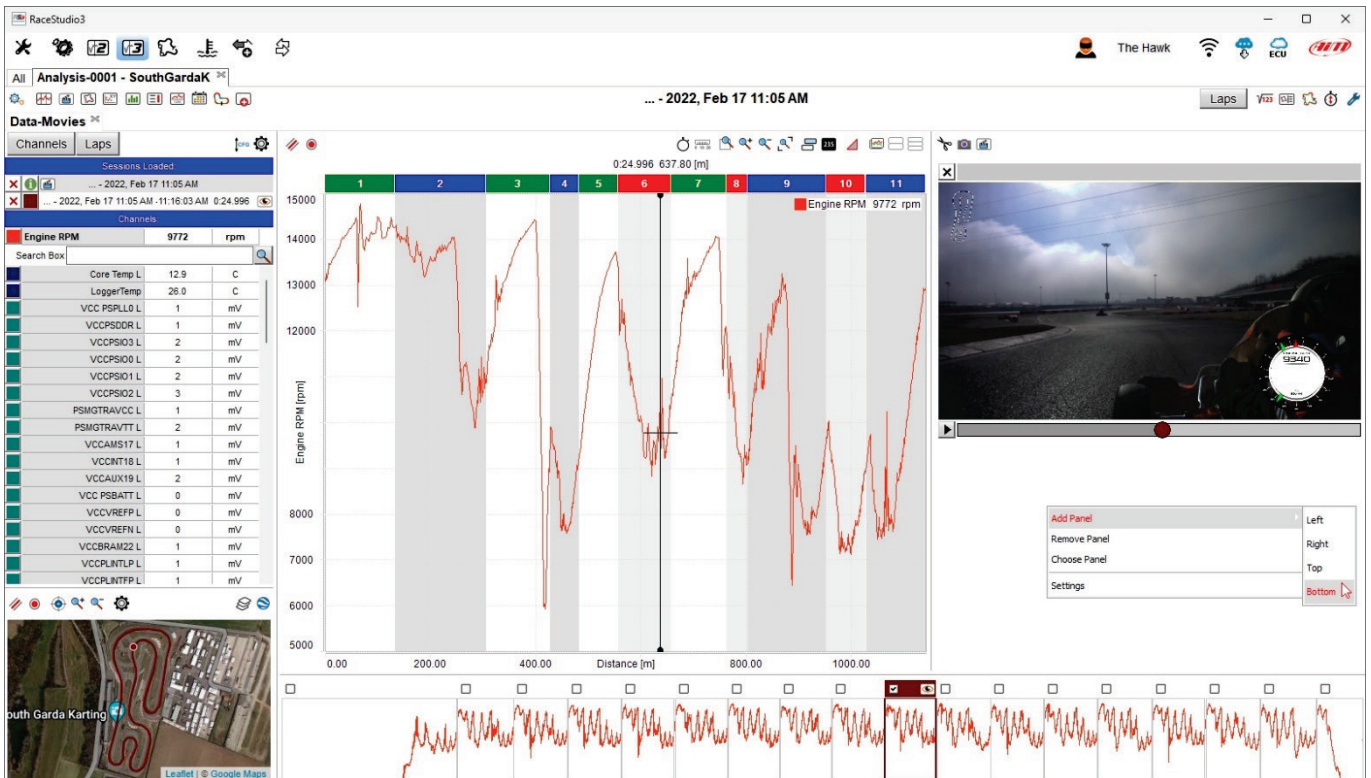
The different parts of the view can be resized in width and height using the split lines highlighted in red in the images below.



3.1 – Add/removing a panel to/from the software view

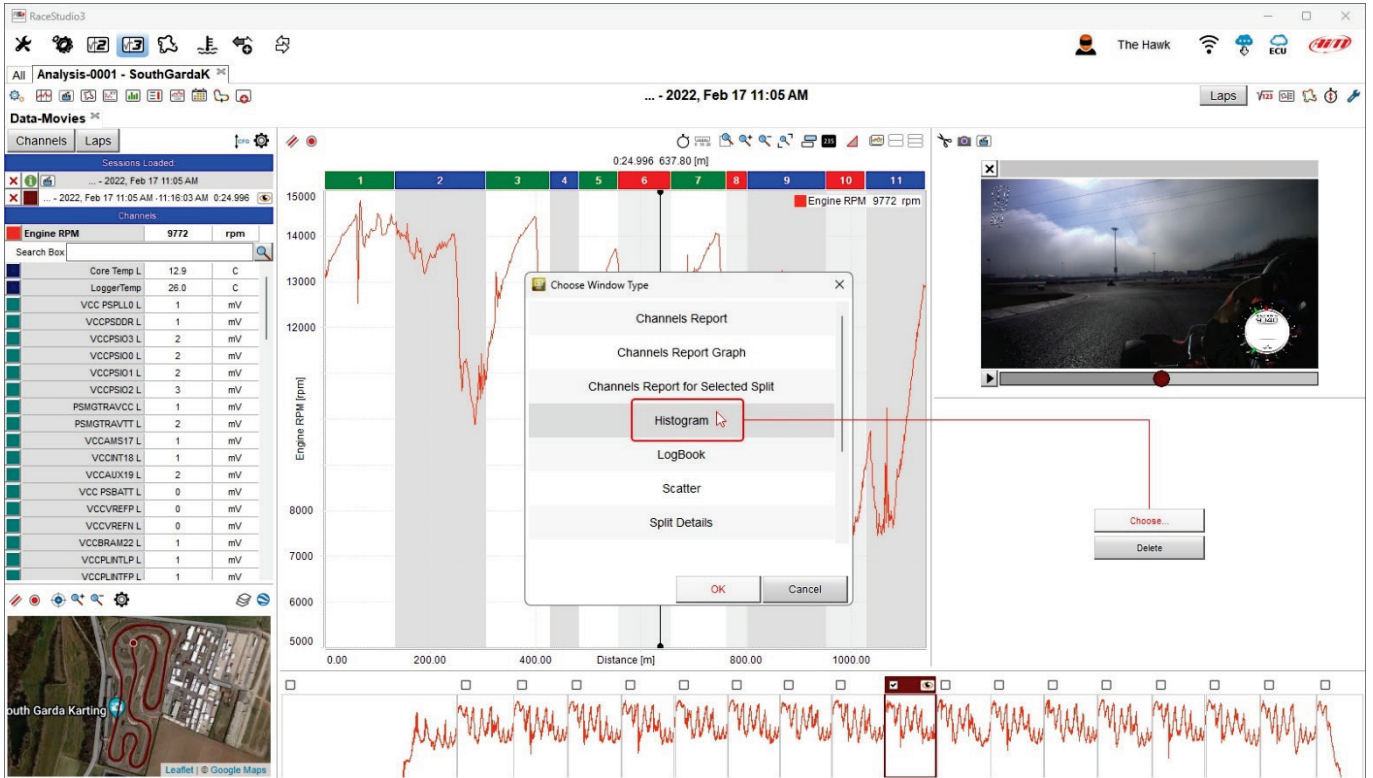
To **add** a panel:

- right click on the view
- select “Add Panel” option
- select the desired position (bottom in the example)

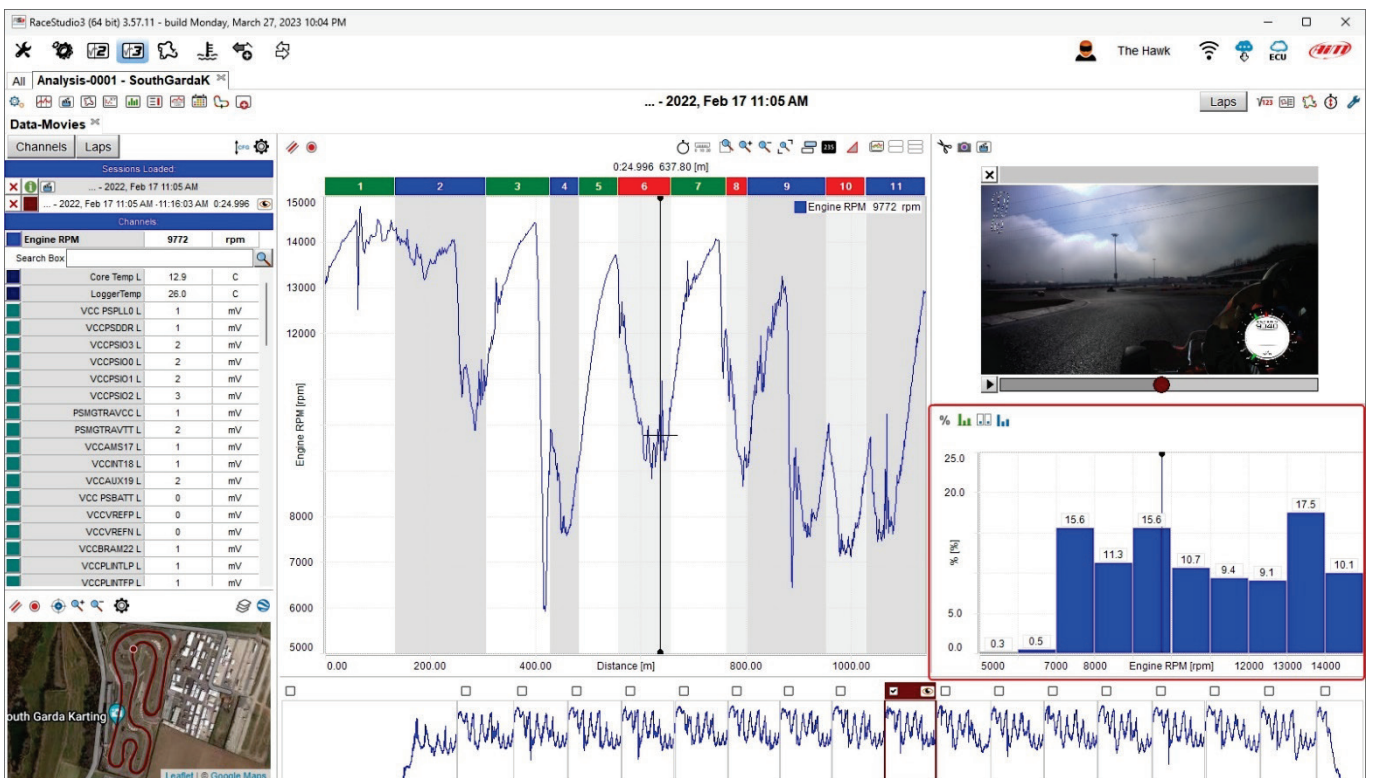




Choose the window to add in "Chose window type" dialog window (histogram in the example below).

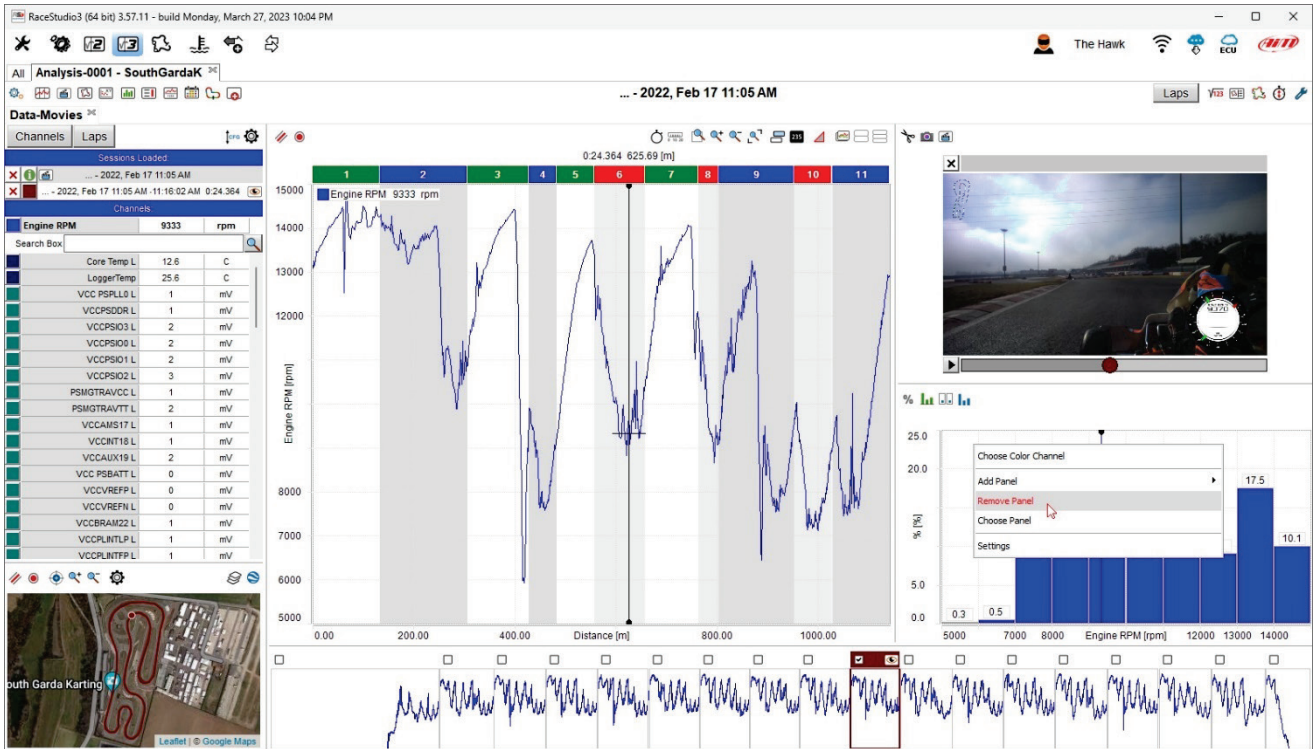


Press "OK" (image above) and the window is added (image below).

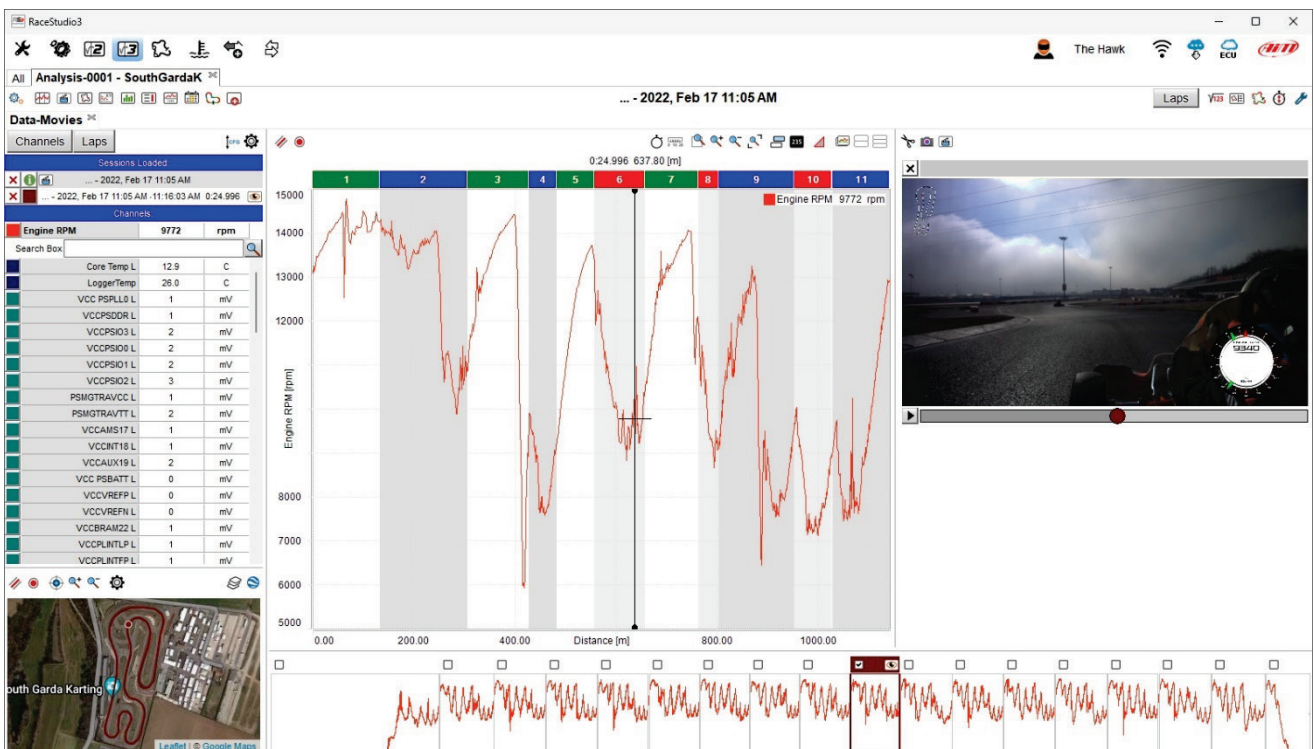




To **remove** a window place the mouse on the window to remove right click on it and select "Remove Window" option.

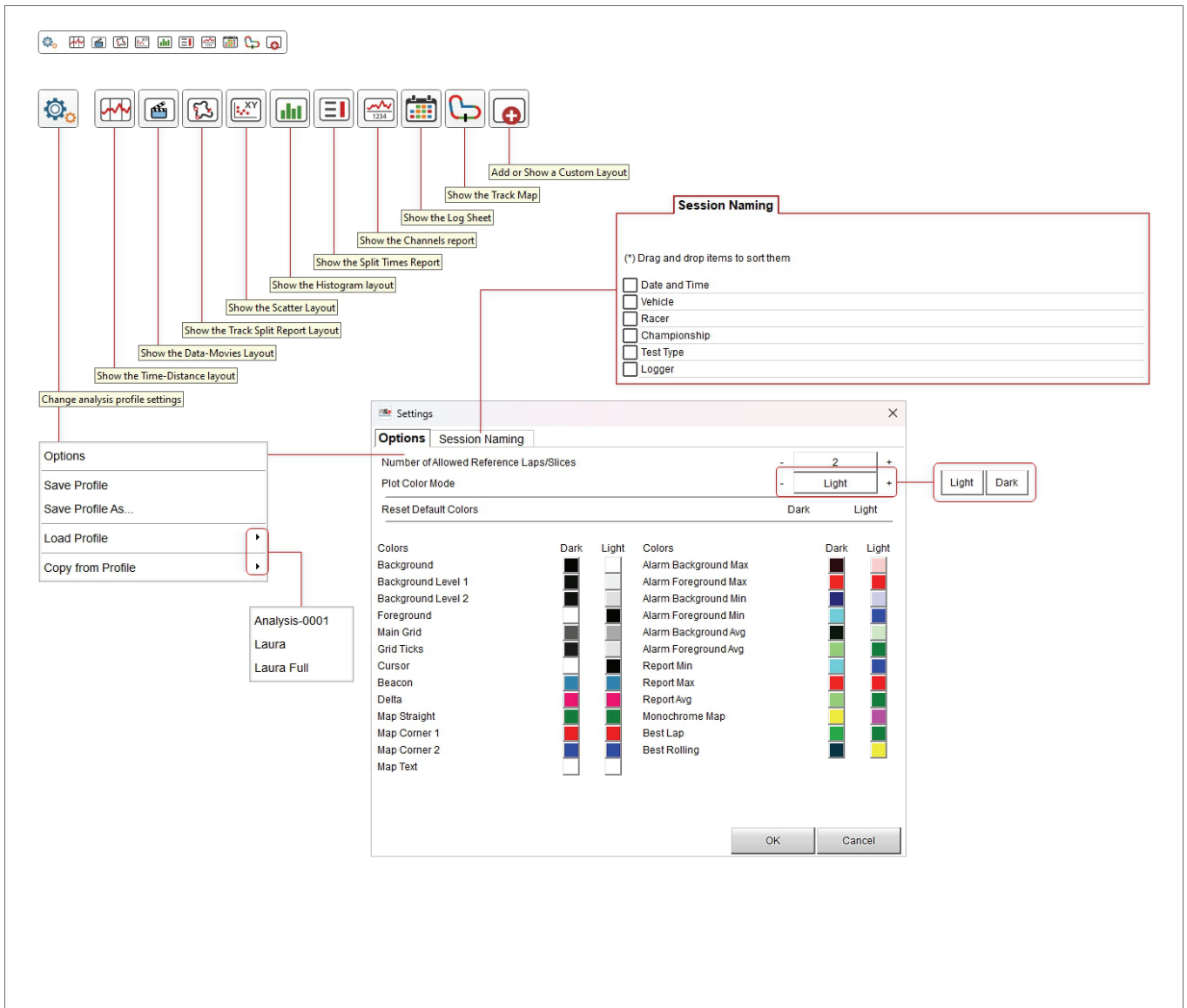


- the window is removed



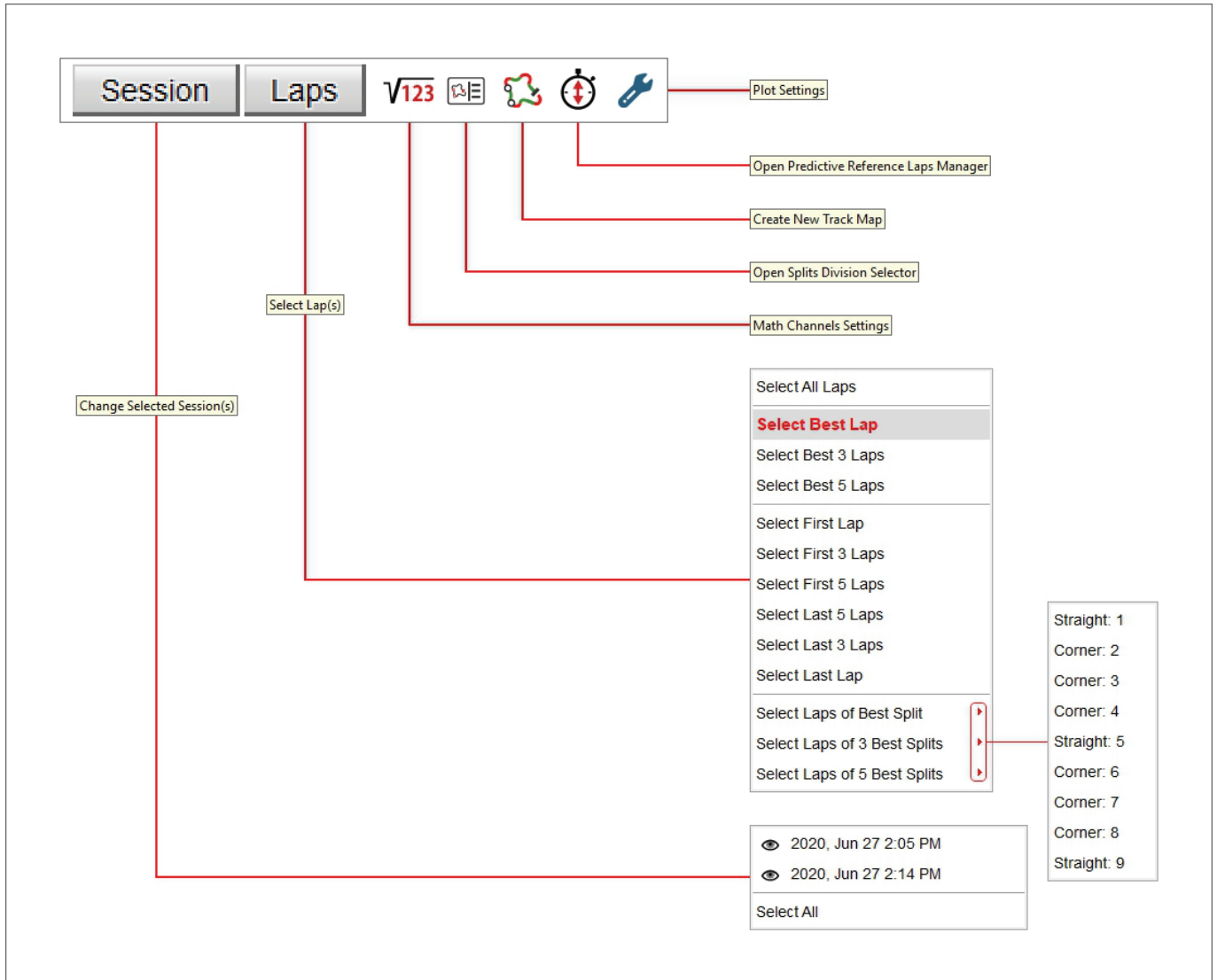
3.2 – The software top keyboards

The analysis view features two top keyboards (left and right) that changes its layout. Here below is **top left keyboard**. All functions are explained in chapter 4.



Session naming panel allows the user to name a session sorting its characteristics in a preferred order.

Top right keyboard is shown here below.



The right keyboard buttons are for:

- **Session:** selecting one or all open sessions
- **Laps:** selecting the laps to show in the selected layout:
- **Math channels settings:** recalling Math Channels panel (see paragraph 3.2.1)
- **Open Splits Division Selector:** recalling track map split panel (see paragraph 3.2.2)
- **Create new track map:** recalling a panel that allows to create a new version of an existing track map (paragraph 3.2.3)
- **Open predictive reference lap manager:** managing predictive reference laps (paragraph 4.2.1)
- **Plot settings:** recalling the corresponding dialog window (paragraph 3.2.4)

3.2.1 – Math Channels Settings

Pressing the icon above Math channels panel setting is prompted. Here below all buttons are explained.

The screenshot shows the 'Math Channels' window with the following callouts:

- Help icon (question mark):** Get help about how to use math channels
- Plus icon (+):** Adds a new channel
- Minus icon (-):** Deletes selected existing channel
- Eraser icon:** Edits selected existing channel
- Phone icon:** Clones selected existing channel
- Left arrow icon:** Imports other math channel(s) from drive
- Right arrow icon:** Exports current math channel(s)
- LookUp Tables icon:** LookUp Tables
- Enable All Channels of 'GPS' for All Sessions**
- Enable All Channels of 'GPS' for SmartyCam 3 Sport [ID: 1400225]**
- Open Help Page for Math Channels**
- Comment:** Outputs the percent of time that the driver was on the brakes. Starts each lap from zero and displays the percentage for each lap.
- Formula:** ("GPS BRK On"[s] * 100) / LAPTIME()
- Verify Formulas:** Verifies usability of enabled channels for loaded sessions.
- Recompute:** Forces a new computation of all enabled math channels in loaded sessions.
- Exit:** Exit

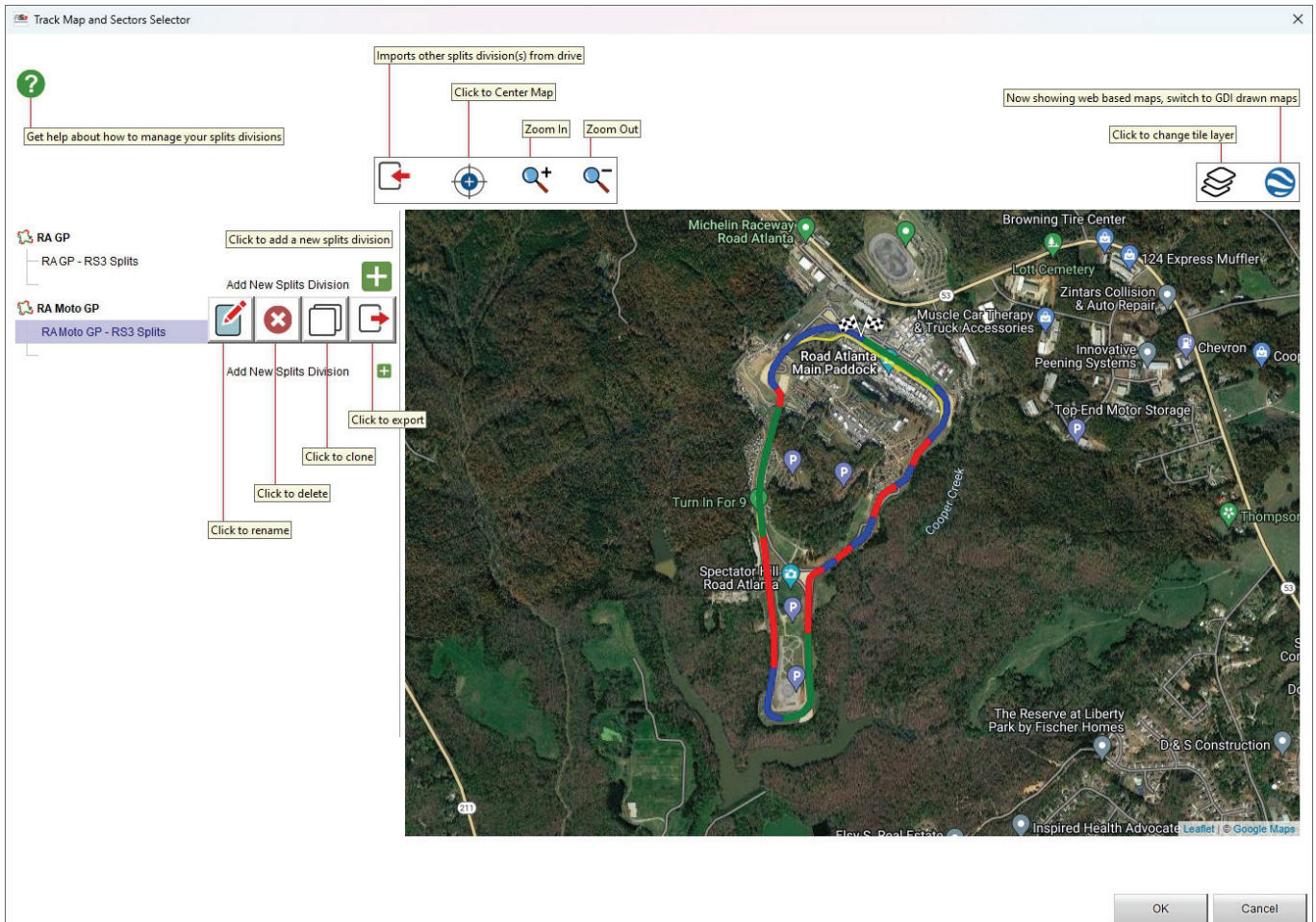
The 'Channels Library' on the left lists various channels such as AIM G Sum, AIM GPS BRK LapD, AIM GPS BRK LapP, AIM GPS BRK LapT, AIM GPS BRK On, AIM GPS BRK SessD, AIM GPS BRK SessT, AIM GPS CRN LapD, AIM GPS CRN LapP, AIM GPS CRN LapT, AIM GPS CRN On, AIM GPS CST LapD, AIM GPS CST LapP, AIM GPS CST LapT, AIM GPS CST On, AIM GPS G Sum, and AIM GPS TPS On.

Selecting "Open help page for math channels" the software re-directs you to an online help page that is being completed. This function is better explained in chapter 14.

3.2.2 – Split division selector



Pressing this icon above Track map and sector selector panel is prompted. Here you can manage this division as shown below.



As for any track map you can import the split division from the device, centre and zoom it in/out using the top left keyboard as well as decide the map tile provider and switch among web mapping and GDI drawn map using the top right keyboard.

Split division can be renamed, deleted, cloned and exported using the icons that appears mousing over the splits.

Please note: clicking the question mark top left of the software panel you are re-directed to an online software help page.

3.2.3 – Create a new track map



Clicking the above showed icon it is possible to create a new track map from available data. Bottom right of the panel all available track laps are shown: scrolling them it is possible to select the one to use to create a track map.

Pressing the bottom left “+” button you can add new splits.

New Track Map

Track Name: new track 01

Track Name for Device: new track 01

Country: Italy

City: Lonato del Garda (Brescia)

Address: Via Corte Ferrarini

Telephone:

Postal Code: 25017

URL:

Track Length: 15.87 km

Circuit Type: Race Track

Road Surface: Paved

Comment:

Track Logo: Click here to change logo...

Latitude Longitude

	Latitude	Longitude
Start/Finish	45.4246167° N	10.5053356° E

Cursor Pos

Click to get coordinate of cursor position

Lat: 45.4246167° N
Lon: 10.5053356° E

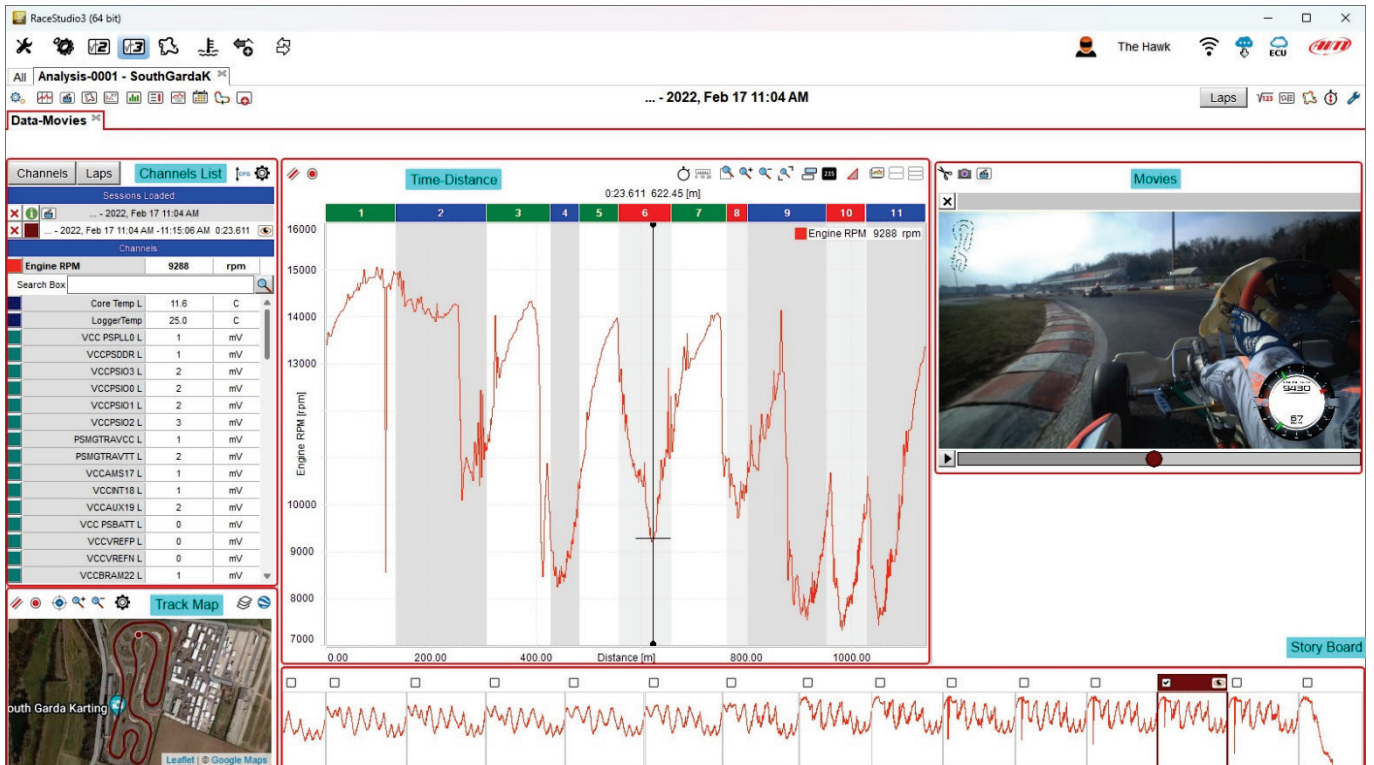
2 / 15

OK Cancel

3.2.4 – Plot settings



Using the icon shown here above you can decide plot settings of all the panels included in a view. Each panel has its setting tab.



The Settings dialog box for the Channels List panel contains the following options:

- Channels List** (selected tab)
- Track Map**
- Time-Distance**
- Movies**
- Story Board**

Choose if to increment available space

- Keep this window unaffected by space bar being pressed
- Hide/show this window when space bar gets pressed

Buttons: OK, Cancel

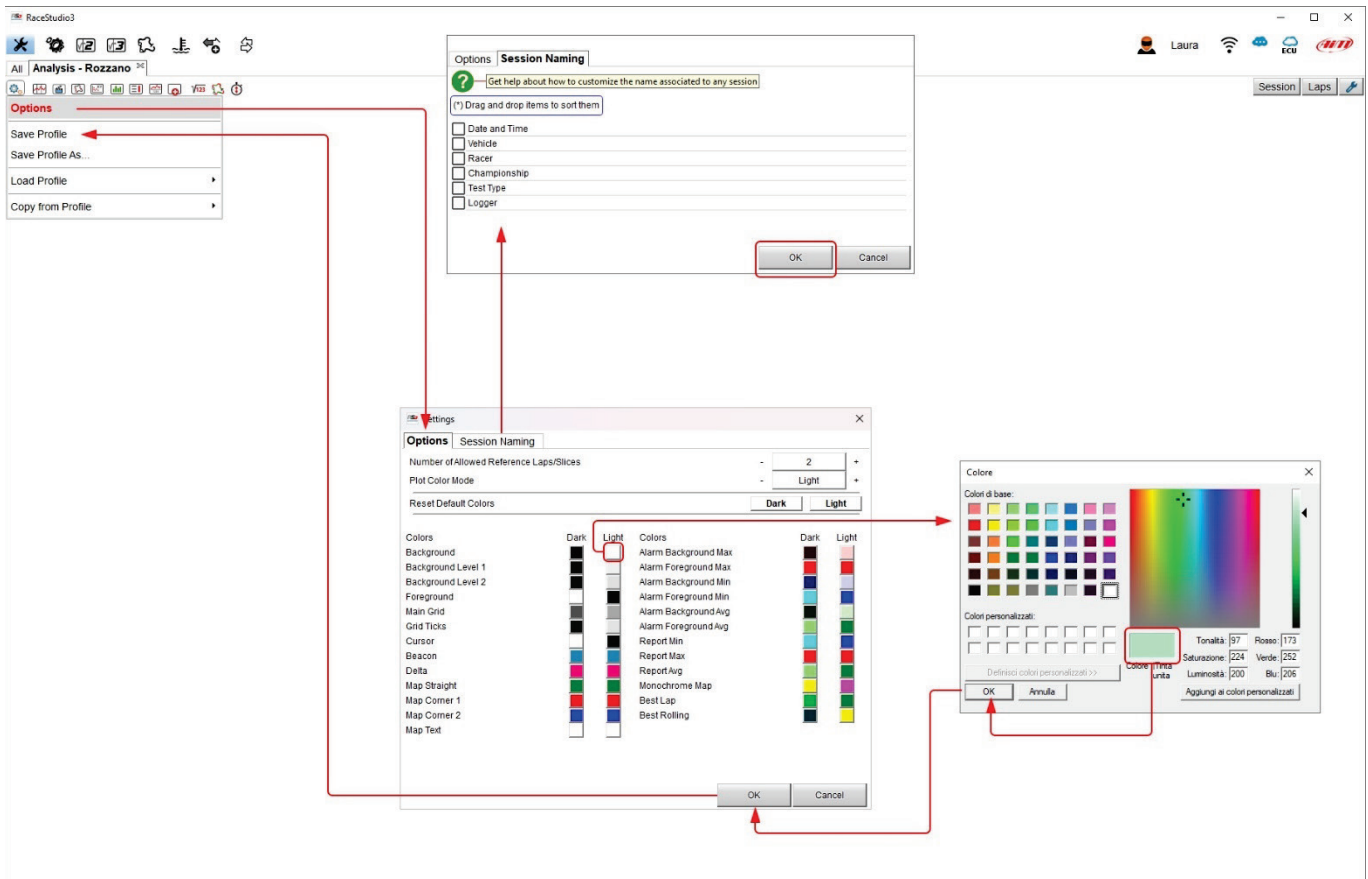


3.3 – View Options and Profiles

All Analysis views can have customized colours and these customizations can be saved in settings called “Profile”.

The easiest customization you can perform to the view is changing the used colours:

- click the setting icon shown above and select “Options”: a “Settings” dialog window is prompted
- to switch from Light to Dark plot mode press the related buttons;
- to change the colour of a single item in a colour plot mode, for example the background of “Light” plotting colour mode click on the related box
- a colour palette appears
- select the desired colour or move the pointer in the nuanced palette
- the result appears bottom of the nuanced palette
- with “Session Naming” panel it is also possible to name a session sorting its characteristics in a preferred order dragging and dropping them; clicking the question mark you reach an online help page.
- press “OK” on both “colours” and “Settings” dialog window
- click again the setting icon top left of the view, select “Save Profile” and name the new profile
- from this moment the selected test will be shown with the new settings and it can be recalled selecting it in the list of “Load profile” menu



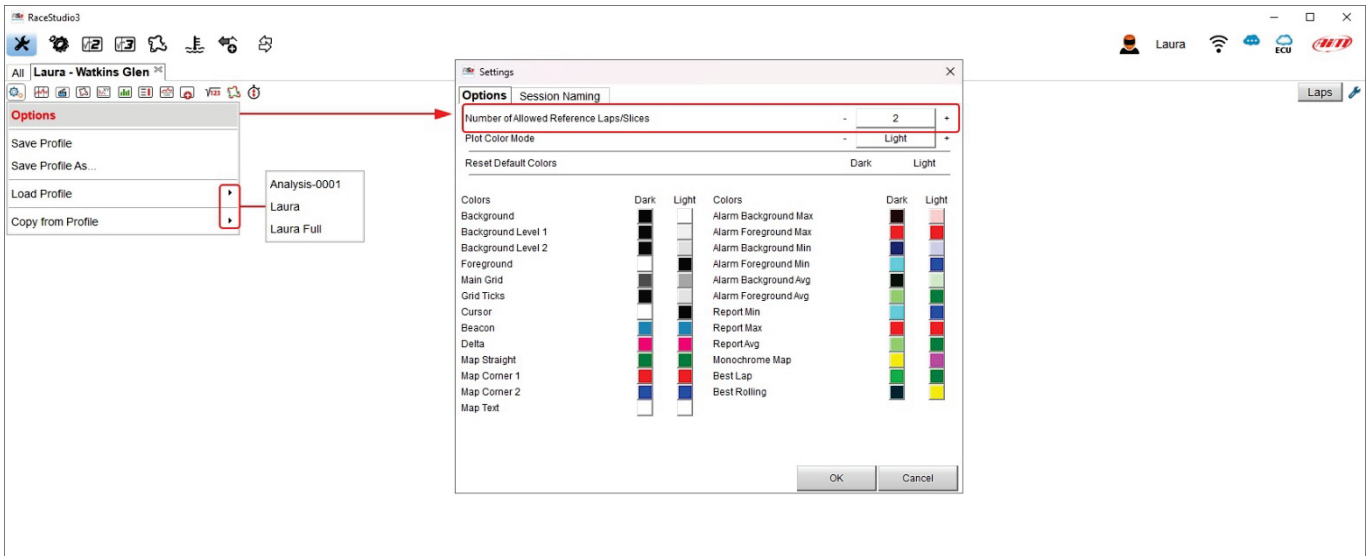


The images here below show a default view on top custom profile bottom.



Profiles can be loaded, cleared, exported and shared one by one. "Analysis" is the default name of any profile; this means that as you save the profiles with names, "Analysis" option is replaced by a list and you can select the one to load, clear, export or share. Any operation can be performed on one only profile at a time.

Top of setting dialog window is a button that allows to decide how many reference laps can be shown for analysis in a view: available options are from 2 to 8; this means that opening more than the fixed number of reference laps, channel tags (see paragraph 4.3.1) on the central graph and movies are shown only for the number of reference laps/slices here fixed.



4 – Data-Movies layout

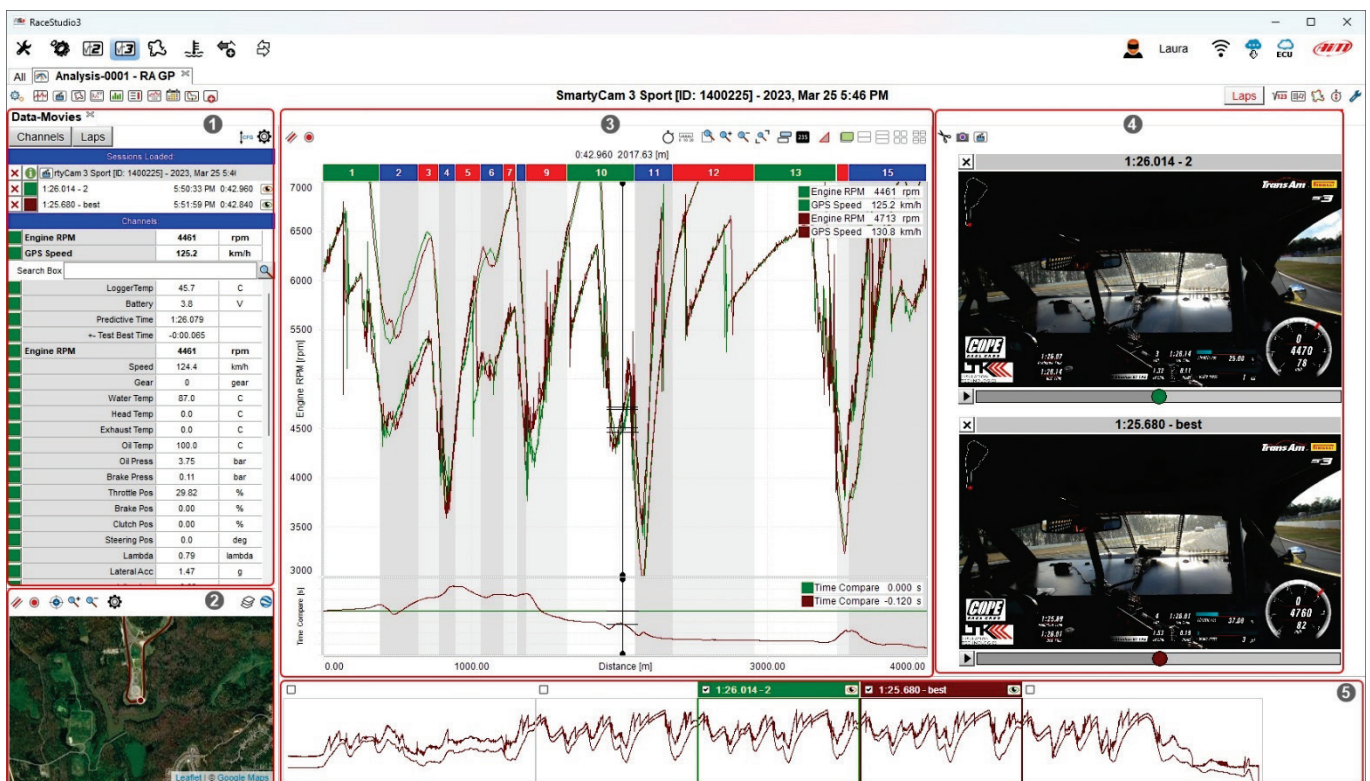


This layout is the one opened by default if your data contain video and can be recalled pressing the button shown here above. Being the most complete layout we will use it as reference, exception done for the graph dialog window (3) that changes according to the layout you select.

Data-Movies layout shows:

- Channels table (1)
- Track Map (2)
- Graph (3)
- Video (4)
- Storyboard (5)

Each panel of the layout is explained in the following paragraphs.



4.1 – Showing/Hiding a panel from the software view

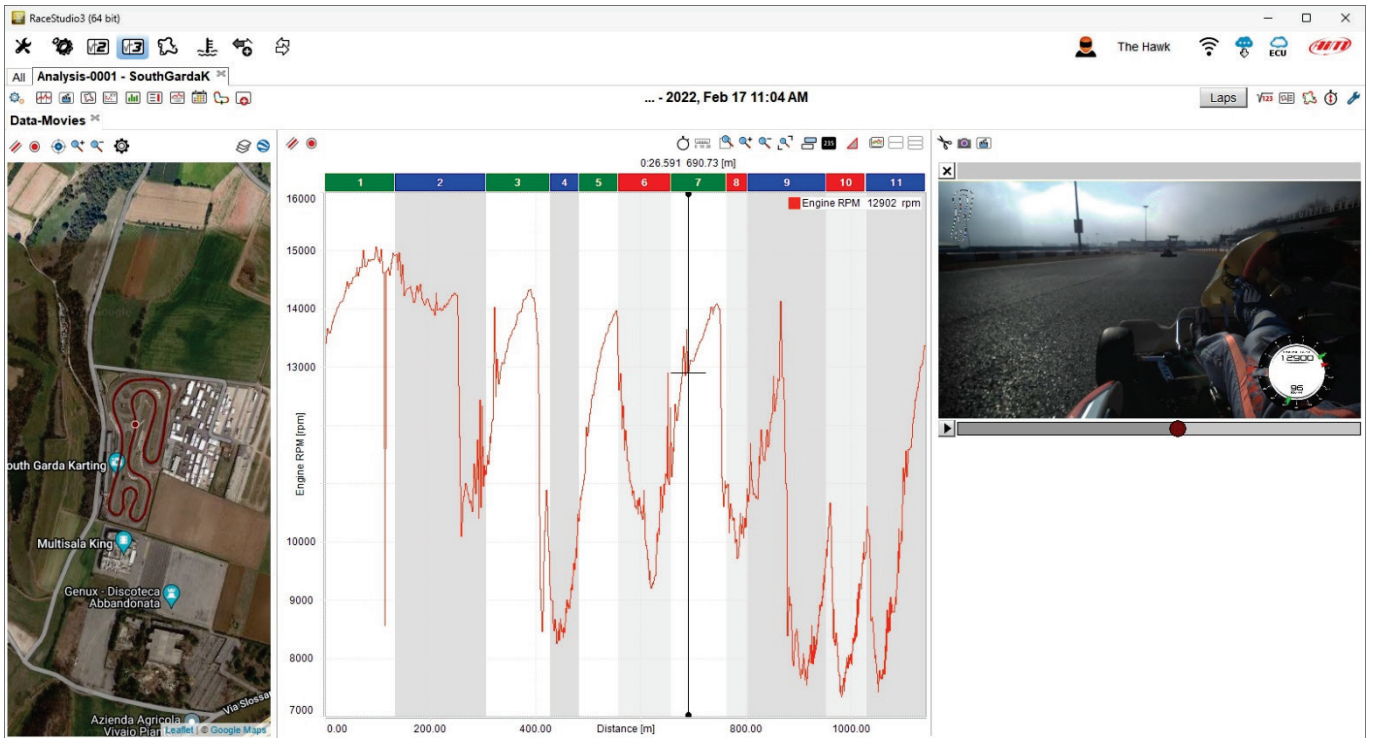
Any panel can be shown/hidden pressing the space bar. To enable this function:

- right click on the panel
- select “Settings” option
- enable the checkbox “Hide/show when Space Bar gets pressed” on the dialog window that appears
- press “OK”





Once the setting fixed, the panel is shown/hidden when the space bar is pressed; in the image below we fixed this setting on “Channel table” panel that is in effect hidden.





4.2 – Table of Channels and table of laps

Channels/laps table (1 in the image at the beginning of this chapter) shows channels and laps data according to the button pressed on the top left keyboard as shown here below.

Channels		Laps	
Sessions Loaded:			
		Matt ***** - 2021, Jun 13 9:17 AM	
		2:19.104 - best	9:39:51 AM 1:09.552
Channels:			
	RPM	5038	rpm
	GPS Speed	127.0	km/h
Search Box <input type="text"/>			
	LoggerTemp	37.0	C
	External Voltage	13.4	V
	RPM	5038	rpm
	FLWHEELSPEED	130.0	km/h
	FRWHEELSPEED	0.0	km/h
	FLSHOCK	2	mm
	FRSHOCK	-3	mm
	RRSHOCK	2	mm
	RLSHOCK	-3	mm
	STEERINGPOSITION	-4.7	deg
	BRAKEPRESSURE	0.98	bar
	FLTIRETEMP	66.2	C
	FRTIRETEMP	69.9	C
	InlineAcc	0.14	g
	LateralAcc	-0.89	g
	VerticalAcc	-1.11	g
	RollRate	-6.7	deg/s
	PitchRate	-1.6	deg/s
	YawRate	-9.1	deg/s
	Luminosity	41.61	%

Channels		Laps	
Search Box <input type="text"/>			
		Matt ***** - 2021, Jun 13 9:17 AM	
<input type="checkbox"/>	4:23.188 - out		
<input type="checkbox"/>	2:36.789 - 1		0:08.194
<input type="checkbox"/>	2:24.109 - 2		0:08.919
<input type="checkbox"/>	2:20.994 - 3		0:07.787
<input type="checkbox"/>	2:19.929 - 4		0:07.816
<input type="checkbox"/>	2:21.082 - 5		0:07.690
<input type="checkbox"/>	2:20.397 - 6		0:07.719
<input type="checkbox"/>	2:19.814 - 7		0:07.587
<input checked="" type="checkbox"/>	2:19.104 - best		0:07.575
<input type="checkbox"/>	2:20.716 - 9		0:07.521
<input type="checkbox"/>	9:23.198 - 10		0:07.685
<input type="checkbox"/>	2:20.078 - 11		0:07.743
<input type="checkbox"/>	2:20.154 - 12		0:07.853
<input type="checkbox"/>	2:19.831 - 13		0:07.642
<input type="checkbox"/>	2:19.288 - 14		0:07.701
<input type="checkbox"/>	3:45.048 - in		

Channels view

With reference to the image below, top right of the view are **two buttons** that allow to:

- change the order of the channels shown; they can be listed as managed by the firmware (sort by configuration), alphabetically, by channel type or custom;
- set the channels recalling the related dialog window (explained in the following page).

On top, under the label **"Sessions Loaded"** you see the sessions currently open.

Under the label **"Channels"** are the channels plotted in the central graph (by default RPM if available and speed), a search box (indicated by the magnifying lens) and bottom of it all the available channels.

Mousing over any of the channel plotted in the graph a setting icon and a red cross appear in the corresponding box. The red cross is to delete the channel from the central graph while the setting icon allows to set it and recalls the related dialog window with the channel you are setting already selected.

Mousing over any of the channels not plotted in the central graph the setting icon only appears.

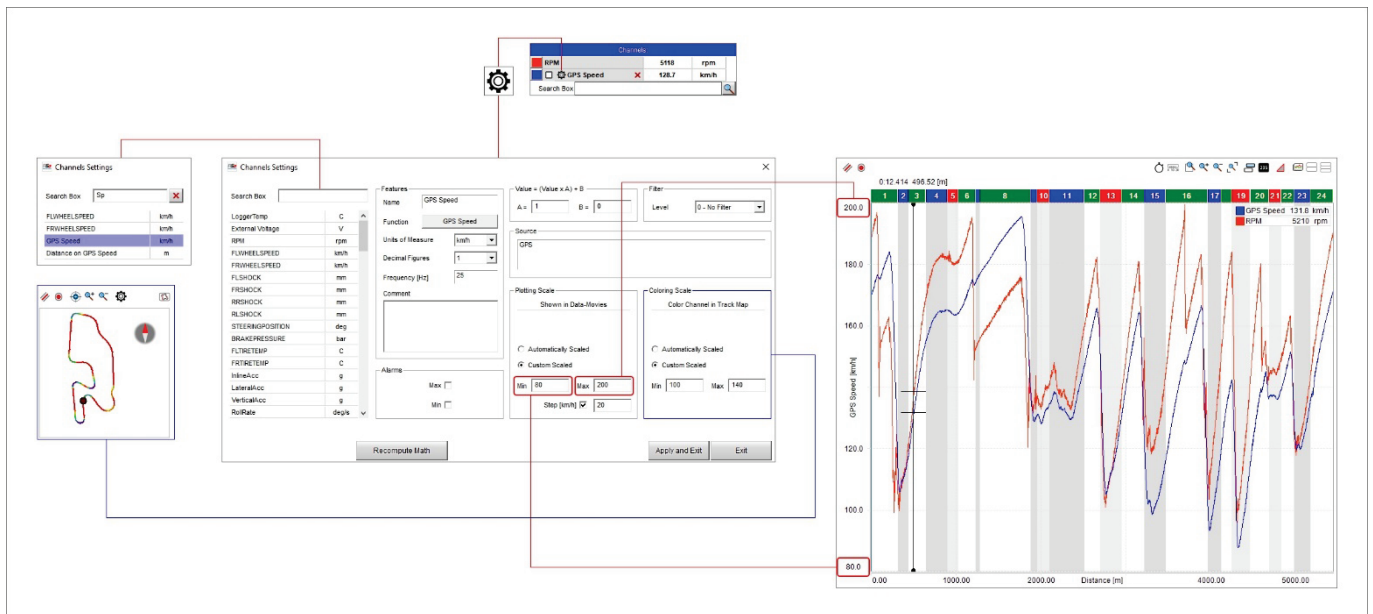
The screenshot shows the 'Channels' view in the software. At the top left, there is a 'Sessions Loaded' section with a list of sessions. Below it is the 'Channels' section, which contains a table of available channels and a search box. A callout box labeled 'Sort by Configuration', 'Sort Alphabetically', 'Sort by Channel Type', 'Custom Sort', 'Choose Channels Order', and 'Reset Channels Order' points to a set of icons (CFG, A-Z, CH, TV, and a red cross) located to the right of the channel list. Another callout box labeled 'Advanced Info' points to an information icon (i) on the left. A third callout box labeled 'Reference Lap/Slice' points to a gear icon (settings) and a magnifying glass icon (search) located below the channel list. A fourth callout box labeled 'Click to Set as Reference' points to a red cross icon (delete) located below the channel list. On the right side of the screenshot, there is a 'Channels Settings' dialog box for 'GPS Speed'. This dialog has several sections: 'Features' (Name: GPS Speed, Function: GPS Speed), 'Units of Measure' (km/h), 'Decimal Figures' (1), and 'Frequency [Hz]' (25). It also has a 'Filter' section with 'Level' set to '0 - No Filter'. Below these are 'Alarms' (Max and Min checkboxes) and 'Plotting Scale' (Automatically Scaled and Custom Scaled options). The 'Custom Scaled' section has 'Min' set to 80 and 'Max' set to 200, with a 'Step [km/h]' of 20. There is also a 'Coloring Scale' section with 'Color Channel in Track Map' and 'Automatically Scaled' options. At the bottom of the dialog are 'Recompute Math', 'Apply and Exit', and 'Exit' buttons.

Session	Time	Start	End
2:16.257 - best	11:19:51 AM	1:09.129	
2:22.609 - 2	11:15:09 AM	1:12.968	

Channel	Value	Unit
GPS Speed	124.8	km/h
RPM	4944	rpm
BH Breathing RT	0	#
BH Core Temp	0.0	C
BRAKEPRESSURE	0.97	bar
BioHarness HR	0.0	Hz
BioHarness HRV	0	#
BioHarness RR	0	#
BrakePercent	1	rpm
CASEPRESSURE	-0.42	bar
CH	1	#
CORE Skin Temp	3530.0	C
CORE temp	3712.0	C
Calculated Gear	4	#
Distance on GPS Speed	14175.00	m
External Voltage	13.3	V
FLROTOR	372.6	C
FLSHOCK	-0	mm
FLTIRETEMP	64.6	C
FLWHEELSPEED	128.3	km/h
FRSHOCK	-2	mm

The setting dialog window allows to perform a lot of operations:

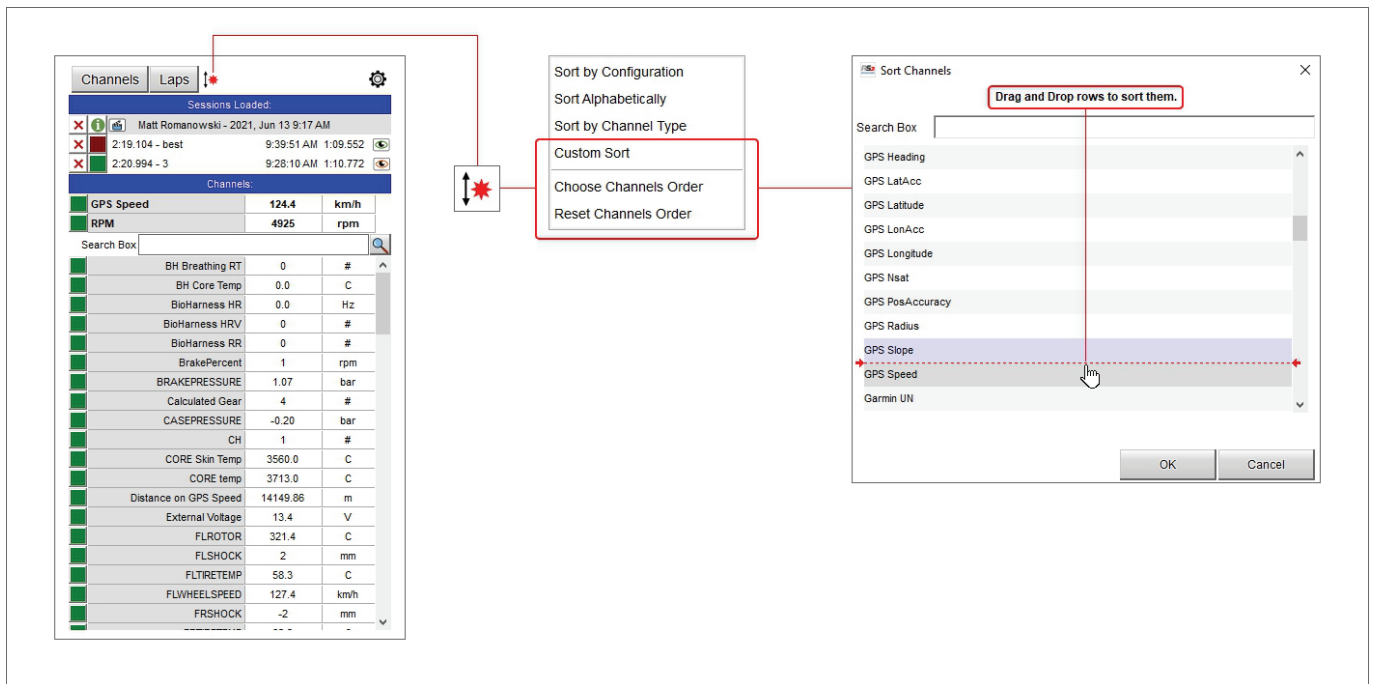
- look for a channel typing it in "Search" box: the system makes an automatic selection
- change the unit of measure, the number of decimal figures and the sampling frequency
- insert a comment about the data
- to set an alarm for max and min values of the channel
- correct a channel that has been wrongly set and cannot be reset in "Value" box
- can filter the noises using different levels of filter
- specify the source of your (GPS in the image below)
- use an automatic or custom plotting scale; in the second case a range of values is needed
- colour the channel in the track map using max and min values as reference with "Colour per lap/slice" setting.



To custom set the channels, select the option “Custom Sort” and the two additional related voices are prompted:

- Choose Channels Order and
- Reset Channels Order

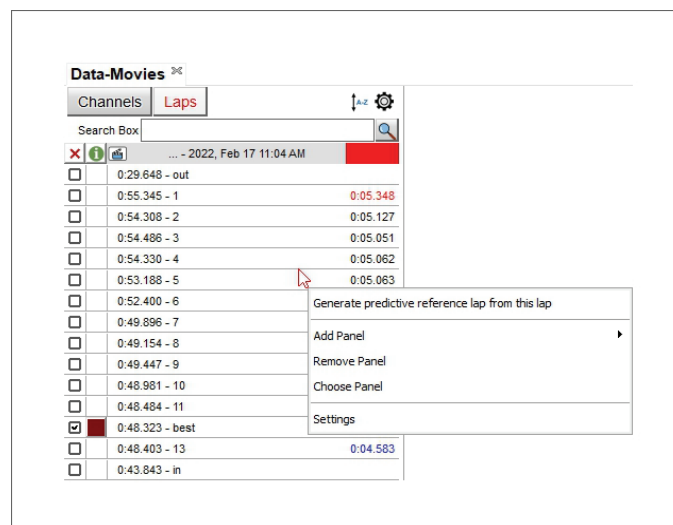
You can drag and drop the voices to custom sort them in the channel table or reset channels order selecting the related option.



Laps table

Laps table shows all laps of the session with the best one indicated by default. Right clicking on a lap time a menu is prompted you can:

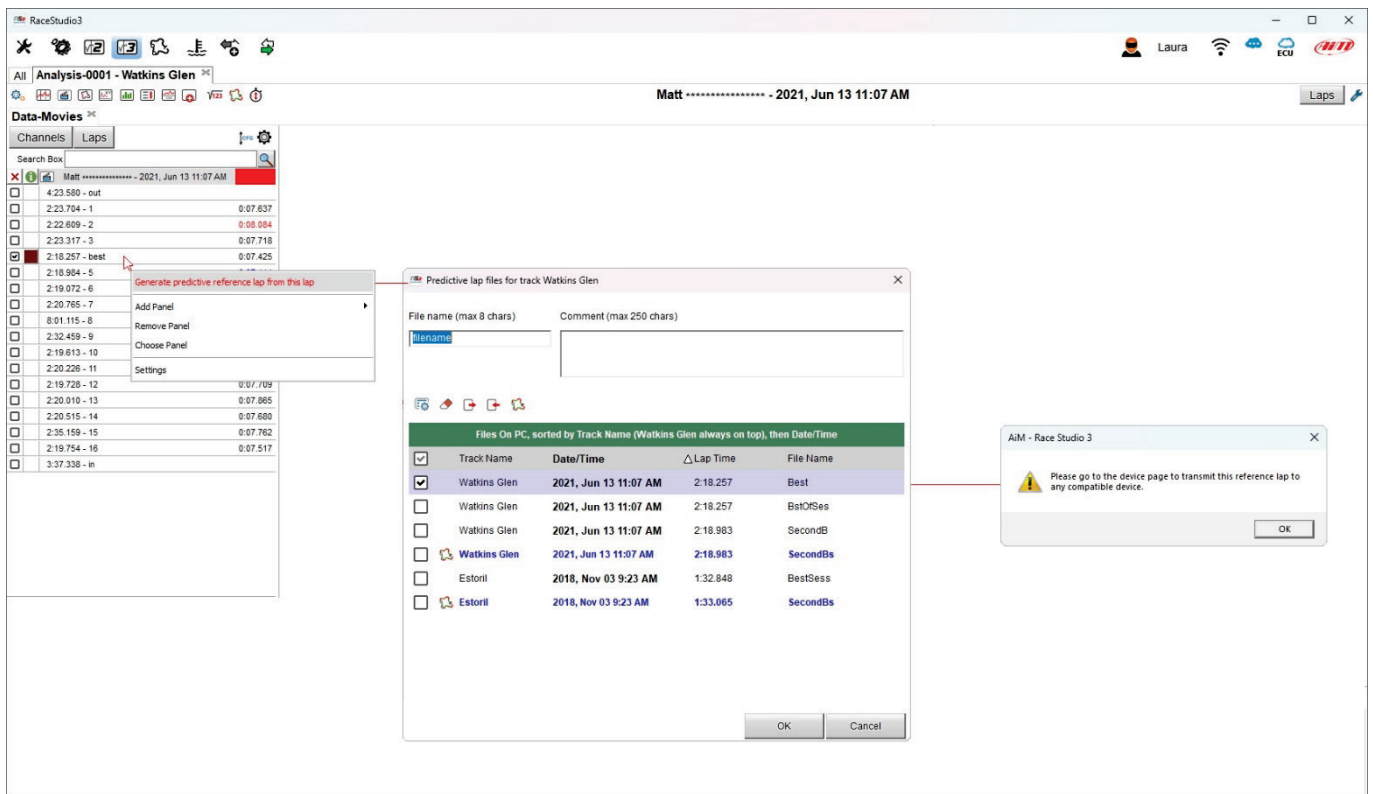
- generate predictive reference lap from it
- add/remove panels
- choose the current panel content
- enter Setting options of this panel



4.2.1 – Generating a predictive reference lap from a recorded lap

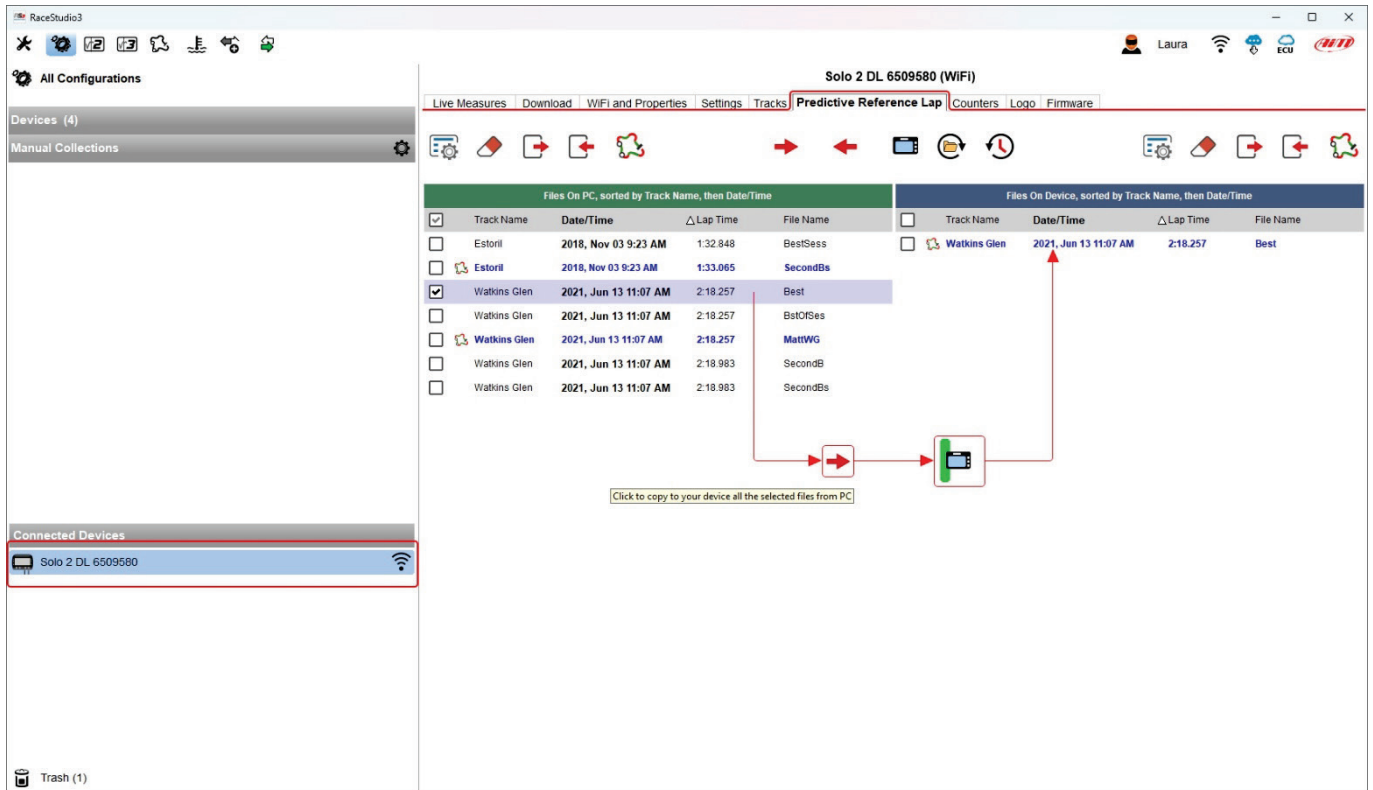
To create a predictive reference lap from a recorded lap follow these steps:

- right click on the lap and select “Generate predictive reference lap from this lap”
- a dedicated panel is prompted where all available reference laps are shown
- to add your lap enable it (is the first of the list)
- fill in “file name” and a comment if needed and press “OK”
- a new panel is prompted saying “Please go to the device page to transmit this reference lap to any compatible device”: press OK



Connect your AiM device to Race Studio 3 if it is not and:

- click on it bottom left on the software configuration page
- enter "Predictive Reference Lap" tab
- top of the tab are three keyboards: one on the left another central and the last one on the right
- select the lap to be used as reference
- press the first left icon on the central keyboard
- the software copies the lap to your device and you can fix it as reference for those devices that support this functionality

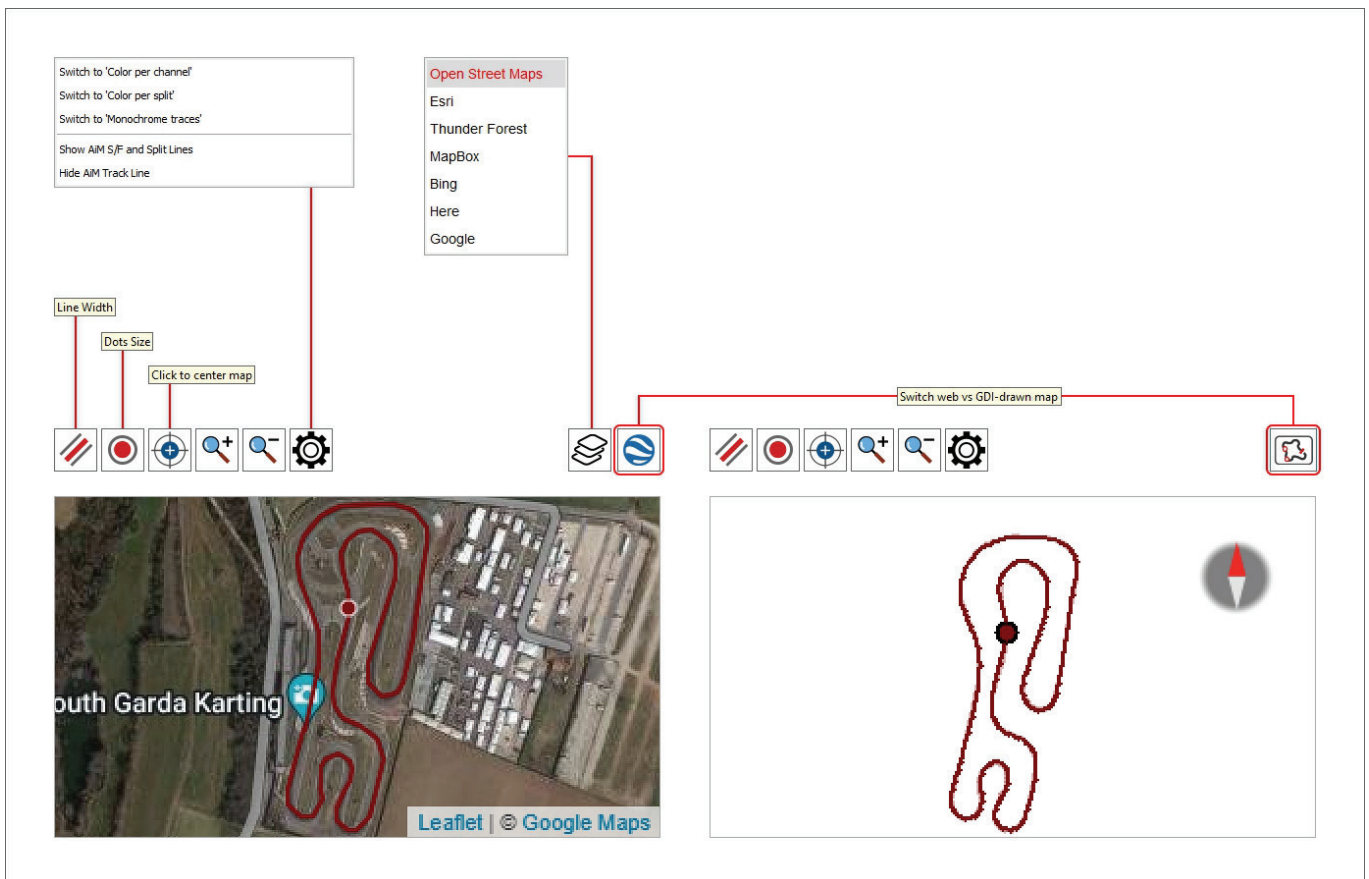


4.3 – The track view

Immediately below the channels table is the track Map view. You can:

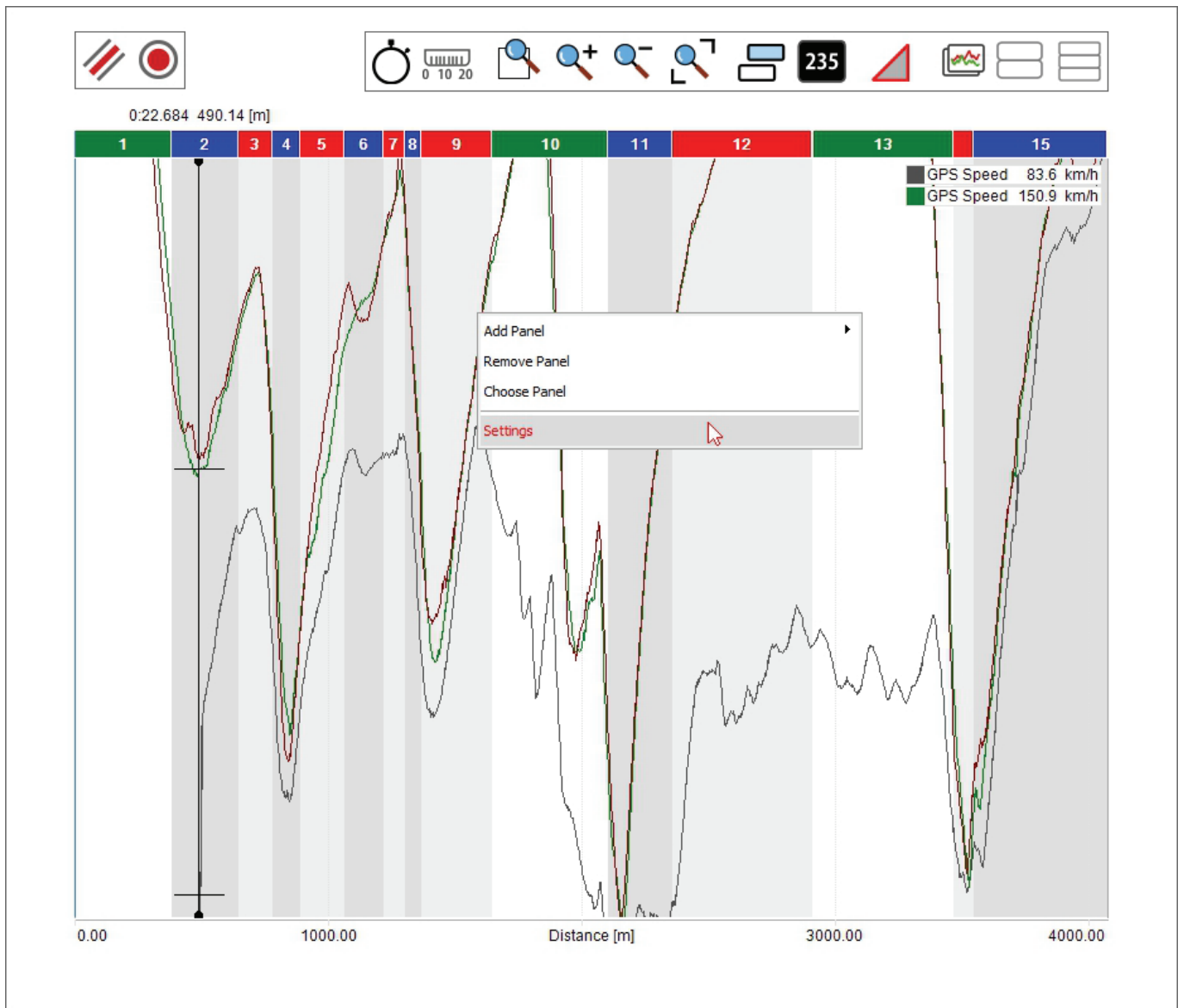
- decide line width and dots size (default value for both is 2)
- zoom in/out the map as well as centre it and
- through the setting icon
 - switch to different available track view: “Color per channel”, “Color per split” or “Monochrome traces”
 - Show AiM S/F (start/finish) and Split lines
 - Hide AiM track line
- choose the desired tile provider using the tile icon.

The map can be shown as web drawn or as GDI-drawn using the icon top right of the dialog window. Switching from one view to the other the icon changes too.

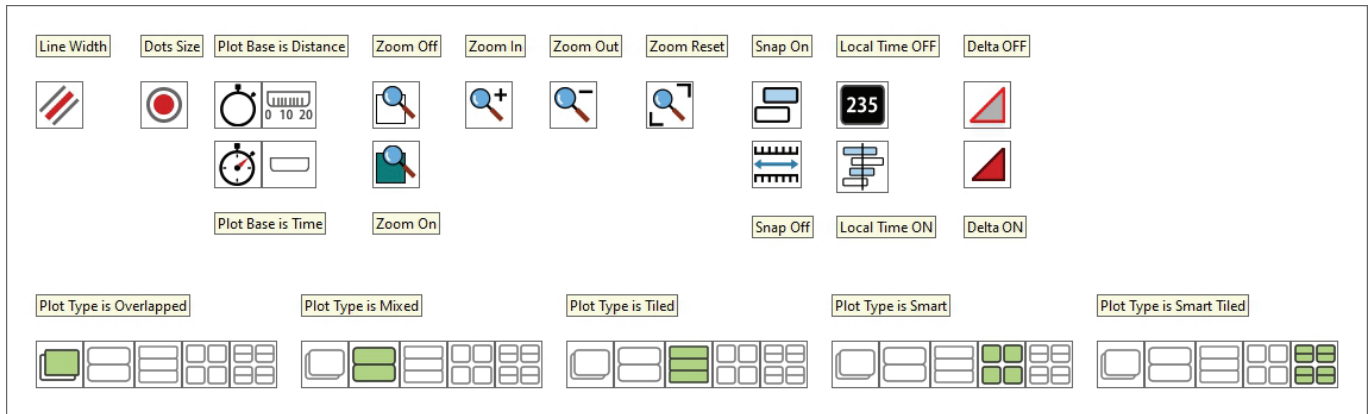


4.4 – Time/distance view: settings and keyboard working modes

Central in the page of the software is a graph whose appearance changes according to the icon you select in the keyboard above it as well as to the setting fixed in “setting panel”.



The image here below shows the keyboard above the graph; buttons placed one above the other are switching buttons. Different icons working mode are explained in paragraph 4.5.



Here follows a short explanation of the different options activated by the buttons.

Line Width: available line widths are: 1 (default), 2, 3, 5, 7, 9

Dots Size: available dot sizes are: 1 (default), 2, 3, 5, 7, 9

Plot:

- by distance: you have run distance on the abscissa axis and RPM value on the ordinate axis
- by time: you have run time on the abscissa axis and RPM on the ordinate axis

Zoom:

- Custom zoom ON: dragging and dropping the graph cursor you define the time period/run distance to zoom
- The other icons allows to zoom in/out the graph and reset the zoom

Snap:

- ON: the graph can show only part of the graph included in a complete laps
- OFF: the graph can show also part of the graph belonging to different but following laps

Local Time On/Off (useful to show different pilots in the same race):

- ON: shows "Time" on the abscissa axis, the selected time period in the storyboard and can be modified using the mouse wheel
- OFF: shows distance on the abscissa axis, the selected time period in the storyboard and can be modified using the mouse wheel

Delta ON: dragging and dropping the graph cursor the calculated time period/run distance is shown top left of the graph

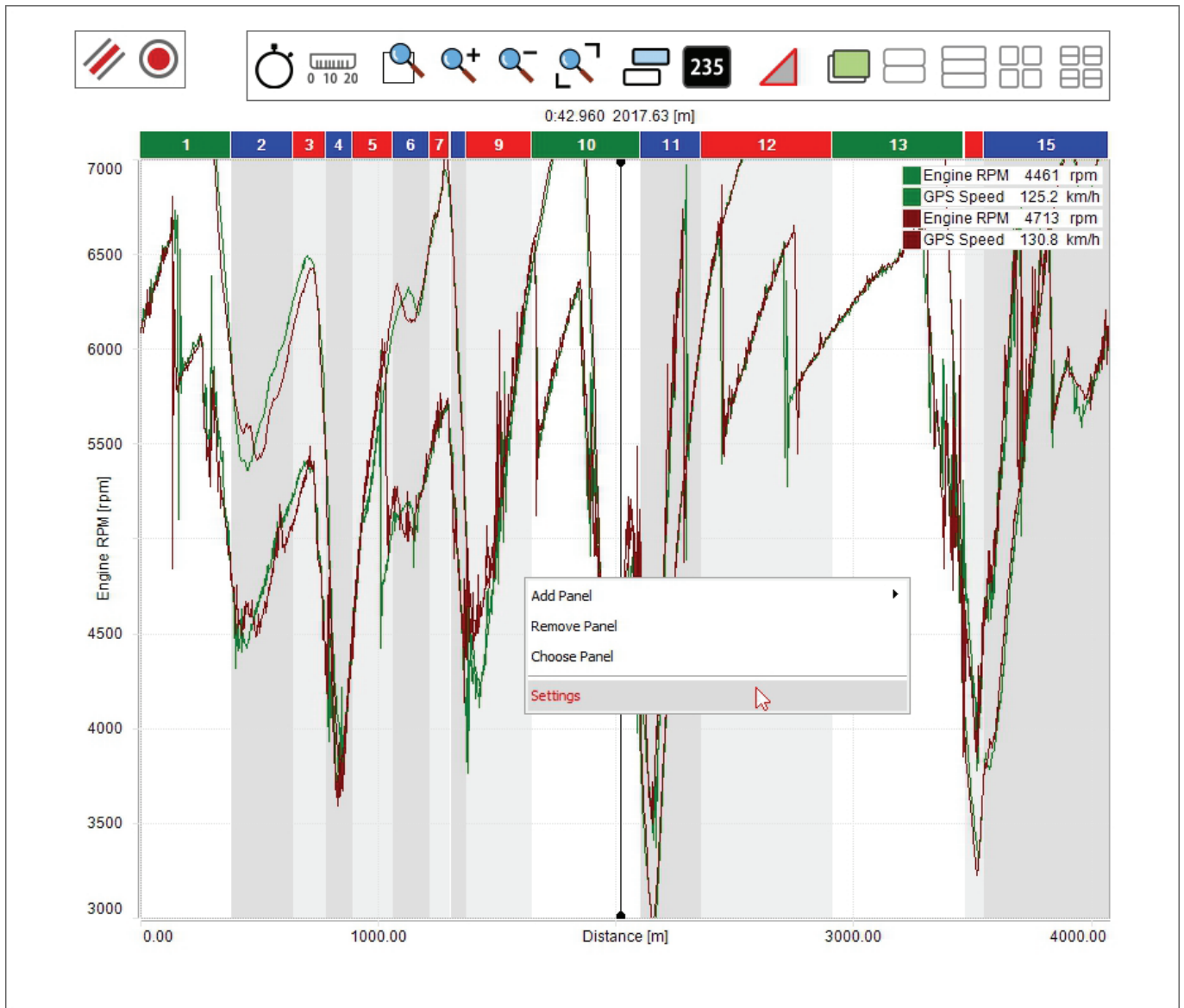
Plot type can be:

- **Overlapped:** all shown channels are shown in the same graph
- **Mixed:** you can decide which channel to show in which graph; a numbered box appears left of each shown channel in the channels table: clicking it you can decide in which graph to show that channel; max allowed number of graphs is 6
- **Tiled:** each channel has its own graph
- **Smart:** this plotting fits particularly channels bound to vehicle corners like dumpers, brakes, wheel speed and so on; each channel is in a separate graph. First of all you need to ensure that the channels are configured as bound to the vehicle corner
- **Smart Tiled:** analysing two groups of channels bound to vehicle corners it is possible to show them in the graph not only smart but also tiled.

4.5 – Graph settings

The graph layout can be customized using the proper setting dialog window. To do so:

- place the mouse on the graph
- right click on it
- select "Settings"





As for all graphs you can decide line width and dots size. The other features are explained in the paragraph here below indicated

Settings

Name: Time-Distance

Choose if you want the Time Compare to be displayed

Hide Time Compare

Show Time Compare Paragraph 4.5.1

Choose the Time Compare computation mode

Gap: displays the difference in time since the beginning of the lap/slice

Differential: displays how much you're gaining or loosing

Choose line thickness

Set to 0

Set to 1 (default)

Set to 2

Set to 3

Set to 5

Set to 7

Set to 9

Choose dots size

Set to 0

Set to 1 (default)

Set to 2

Set to 3

Set to 5

Set to 7

Set to 9

Choose how you want your channels to be stacked in plot

Overlapped

Mixed Paragraphs 4.6.6 - 4.6.10

Tiled

By Vehicle Corner

By Vehicle Corner and Tiled

Choose how you want to see cursors on plot

None

Small

Large Paragraph 4.5.2

Full

Choose if you want to see tags with channels values

Hide tags

Show tags Paragraph 4.5.3

Choose what to show with delta values

Nothing

Rate: channel delta values vs delta time Paragraph 4.5.4

Average: channel average in time interval

Average Not Zero: channel average, computed only if when channel is not zero

Choose if you want to highlight min and max values placements for a channel

Disabled: no min/max highlight for any channel

On highlighted: min/max only for selected channels Paragraph 4.5.5

Always: all channels feature min/max highlighted

Choose if you want labels on plot X axis

Hide labels

Show labels Paragraph 4.5.6

Choose if you want labels on plot Y axis

Hide labels

Show labels

Choose which channels to display

Use channels in common with other panels Paragraph 4.5.7

Allow different channels in panel

Choose if to increment available space

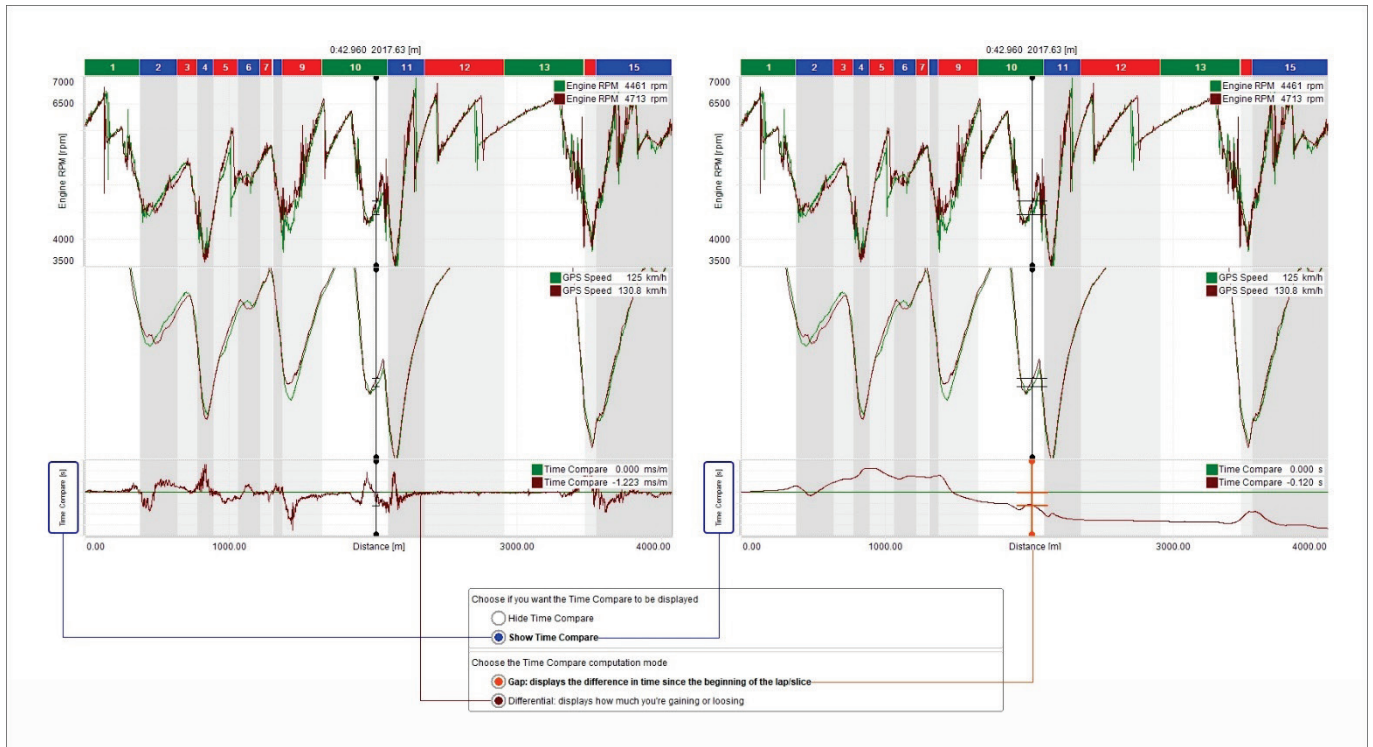
Keep this window unaffected by space bar being pressed Paragraph 4.1

Hide/show this window when space bar gets pressed

OK Cancel

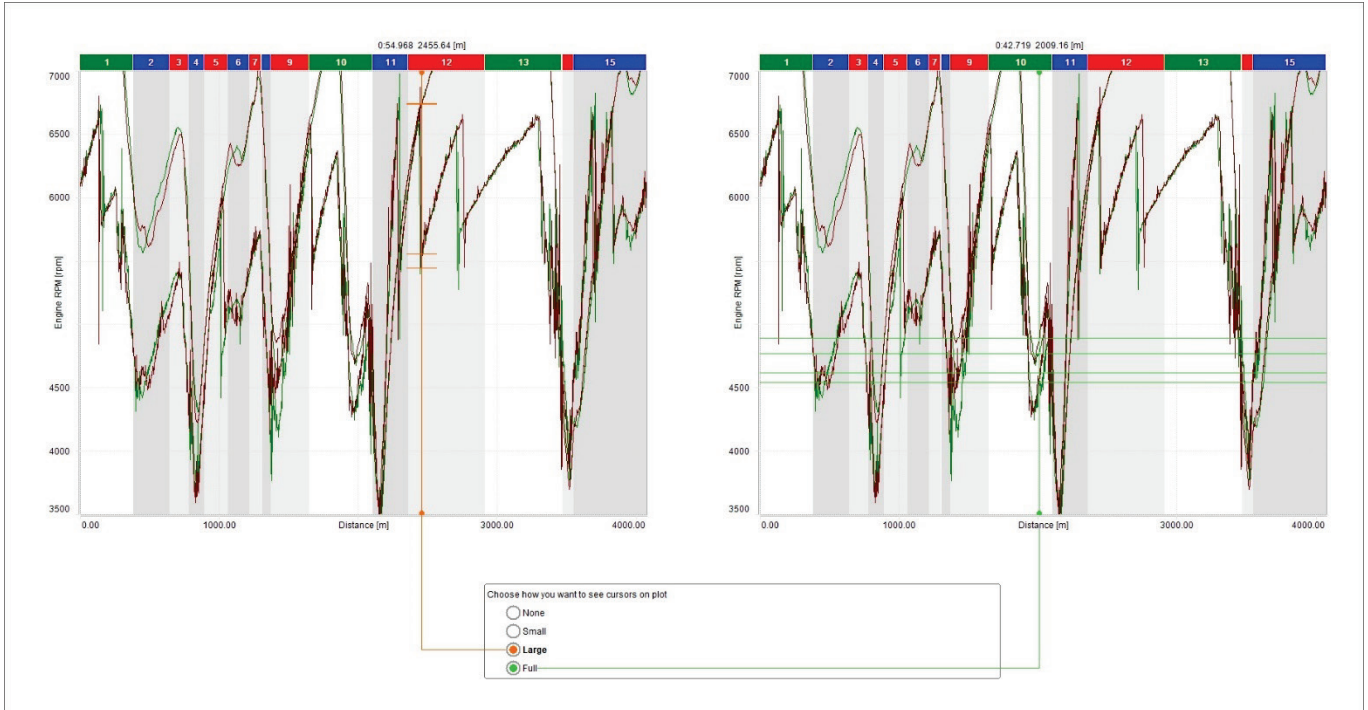
4.5.1 – Time compare setting

As shown here below Time compare can be hidden or shown and shown as “Differential” or as “Gap”.



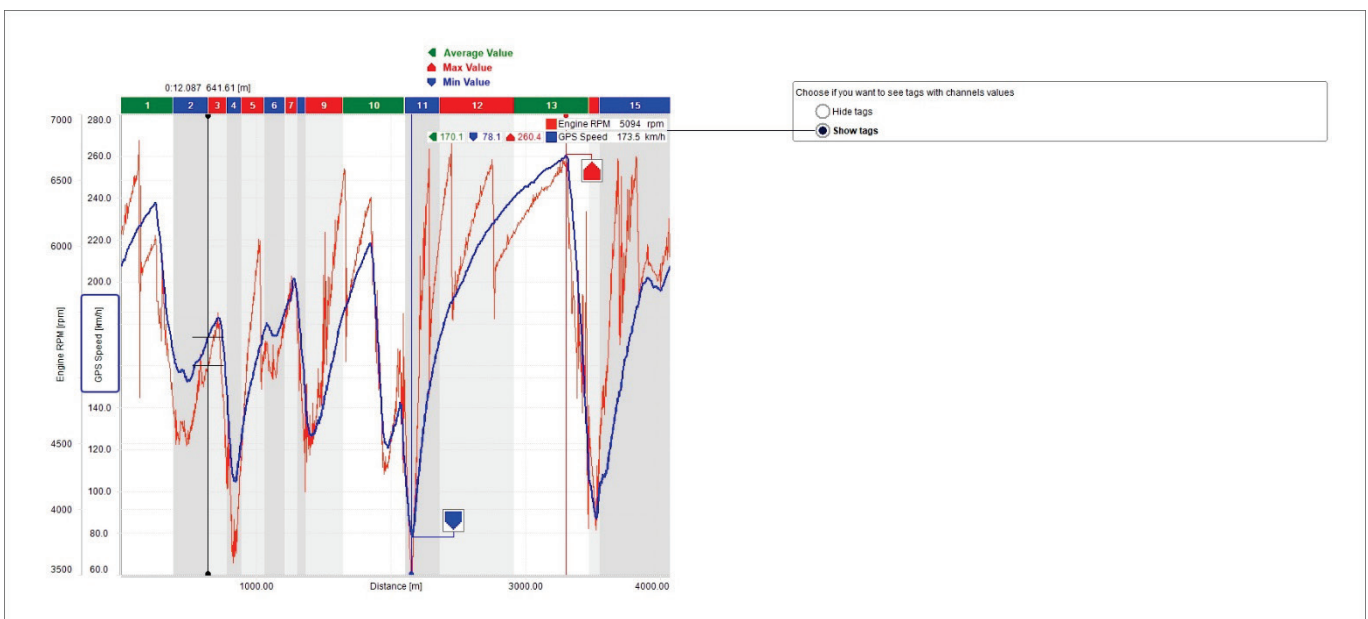
4.5.2 – Cursor settings

As shown here below the cursor can be hidden (none) or shown as small or as large and be “full” to say crossing the graph.



4.5.3 – Tags settings

As shown here below the values of the channels plotted in the graph can be shown in dedicated boxes called “Channels tags” enabling the corresponding checkbox; clicking the channel tag the line of the channel whose tags has been pressed becomes thicker and max, min and average values of the channels are shown.





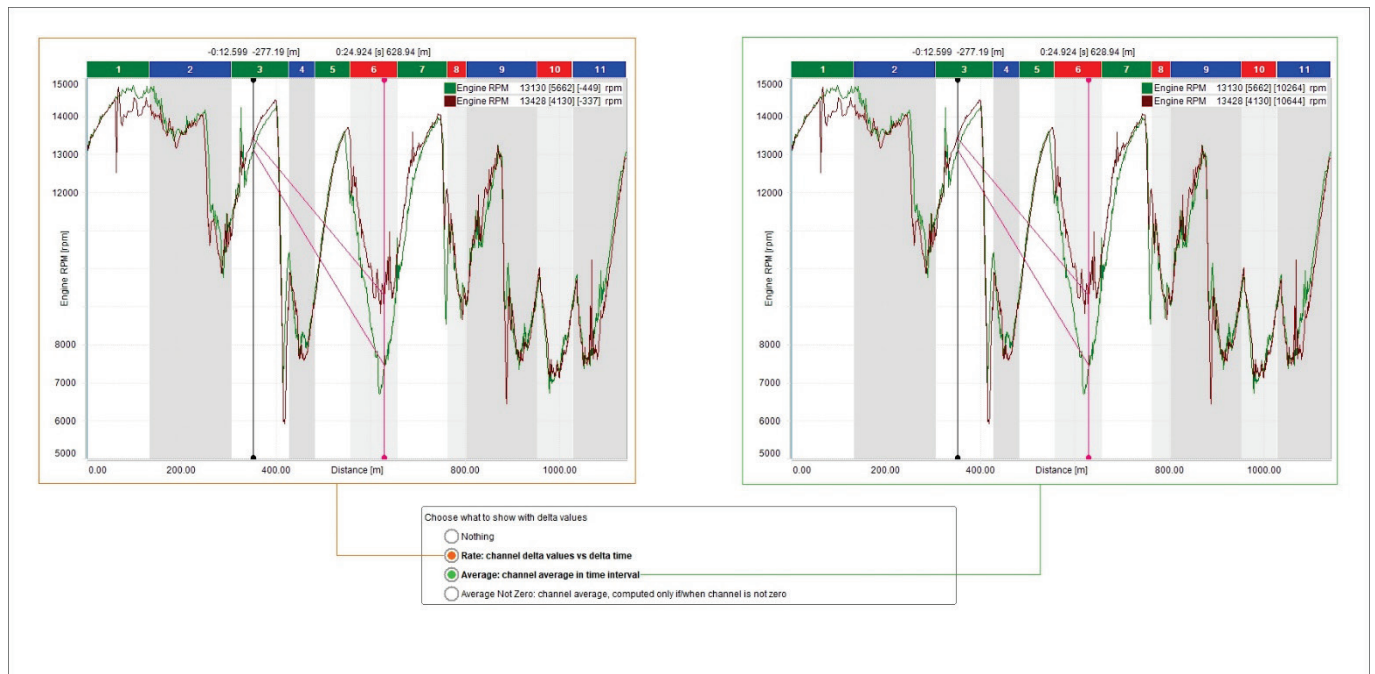
4.5.4 – Setting graphs in delta mode and managing it

Enabling “Delta” mode you can analyse the delta of a channel in two points. Available options are:

- Nothing
- Rate: channel delta values vs delta time
- Average: channel average in time interval
- Average not zero: channel average, computed only if/when channel is not zero

To show the delta:

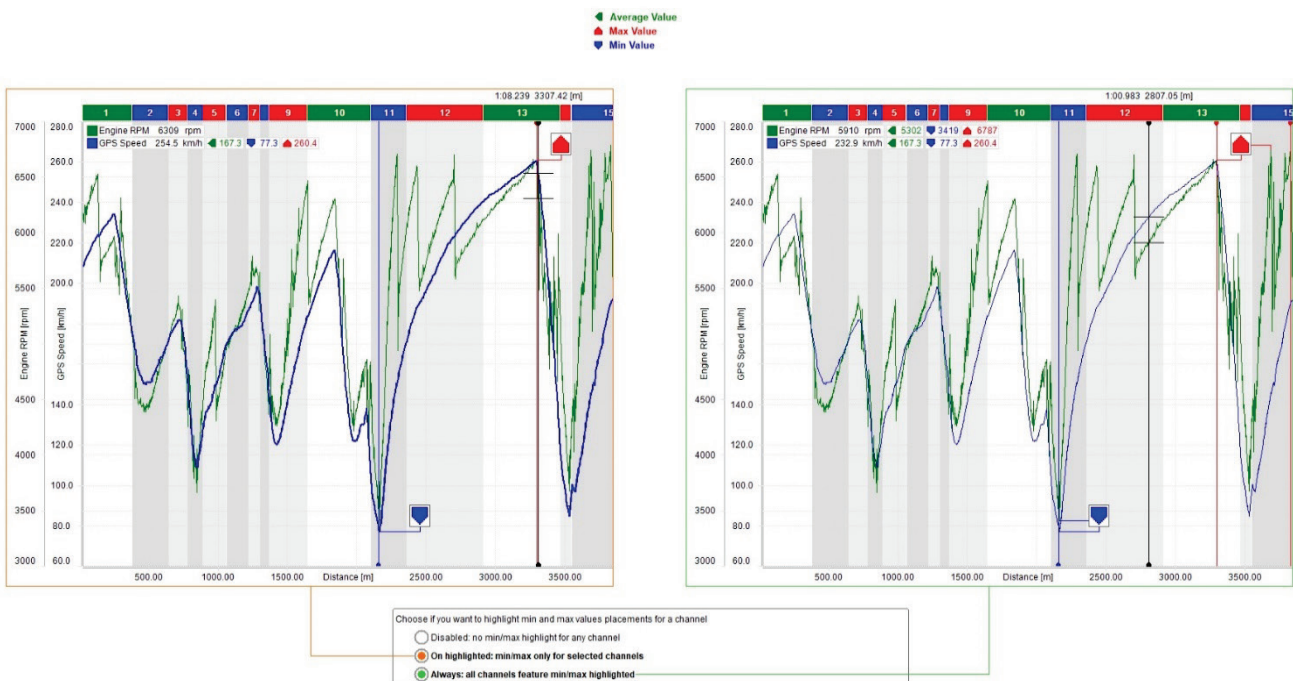
- click “Delta” icon: shown here above
- hook the graph cursor and drag it as you wish
- release the cursor: the delta is shown.



4.5.5 – Highlighting Max/Min values placements for a channel

It is possible to show max min values of the shown channels on the graph. Available options are:

- Disabled (no max/min values are highlighted on the graph)
- On highlighted: clicking on the tags (paragraph 4.3.4) the channel graph become thicker and max/min and average values are shown (left image below)
- Always: max/min and average values of all channels shown in the graph are shown (right image below)

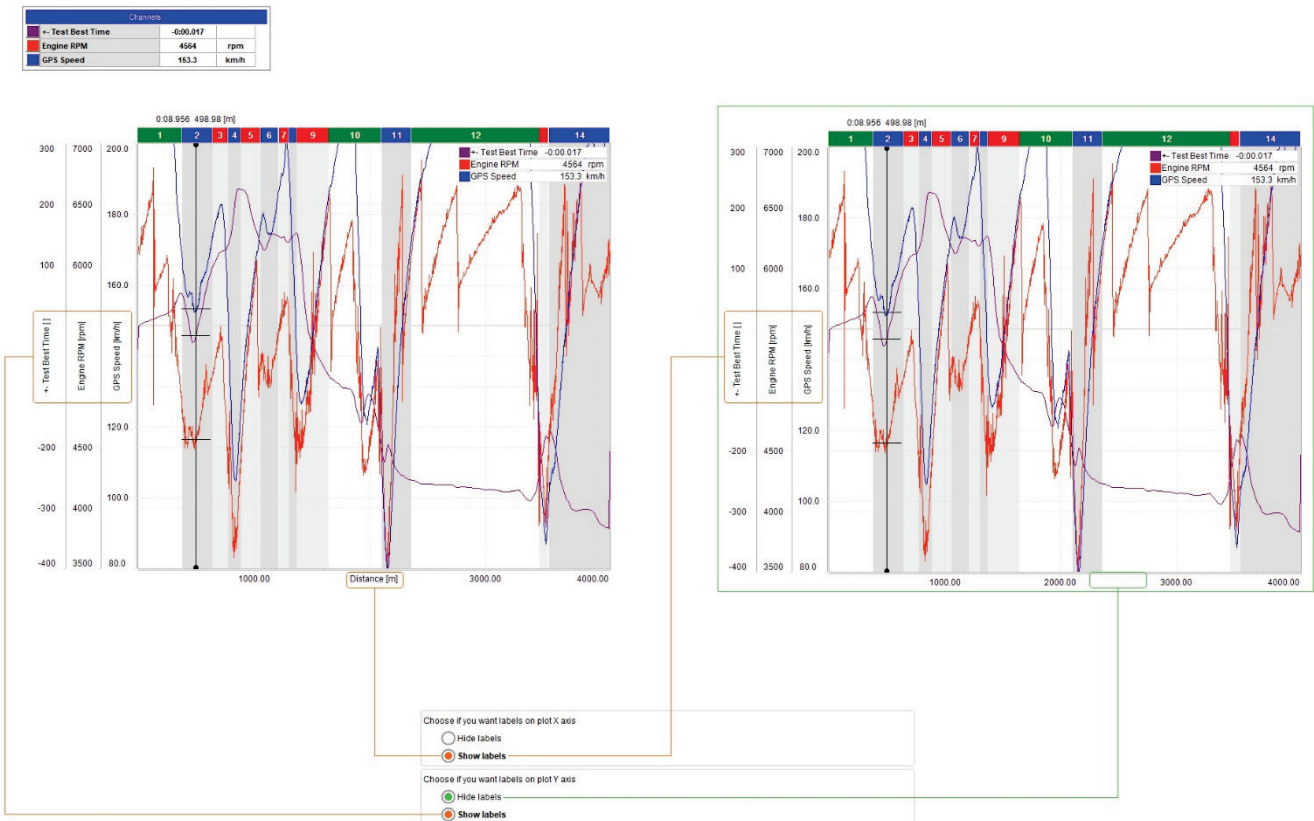


Min/Max values tags are three boxes that shows min/max and average value of the channel; the point where the min/max value has been sampled can be indicated; available options are:

- always: they are always shown
- on highlighted: they appear only selecting the channel tag
- disabled: they are never shown

4.5.6 – Managing labels on plot “X” and “Y” axis

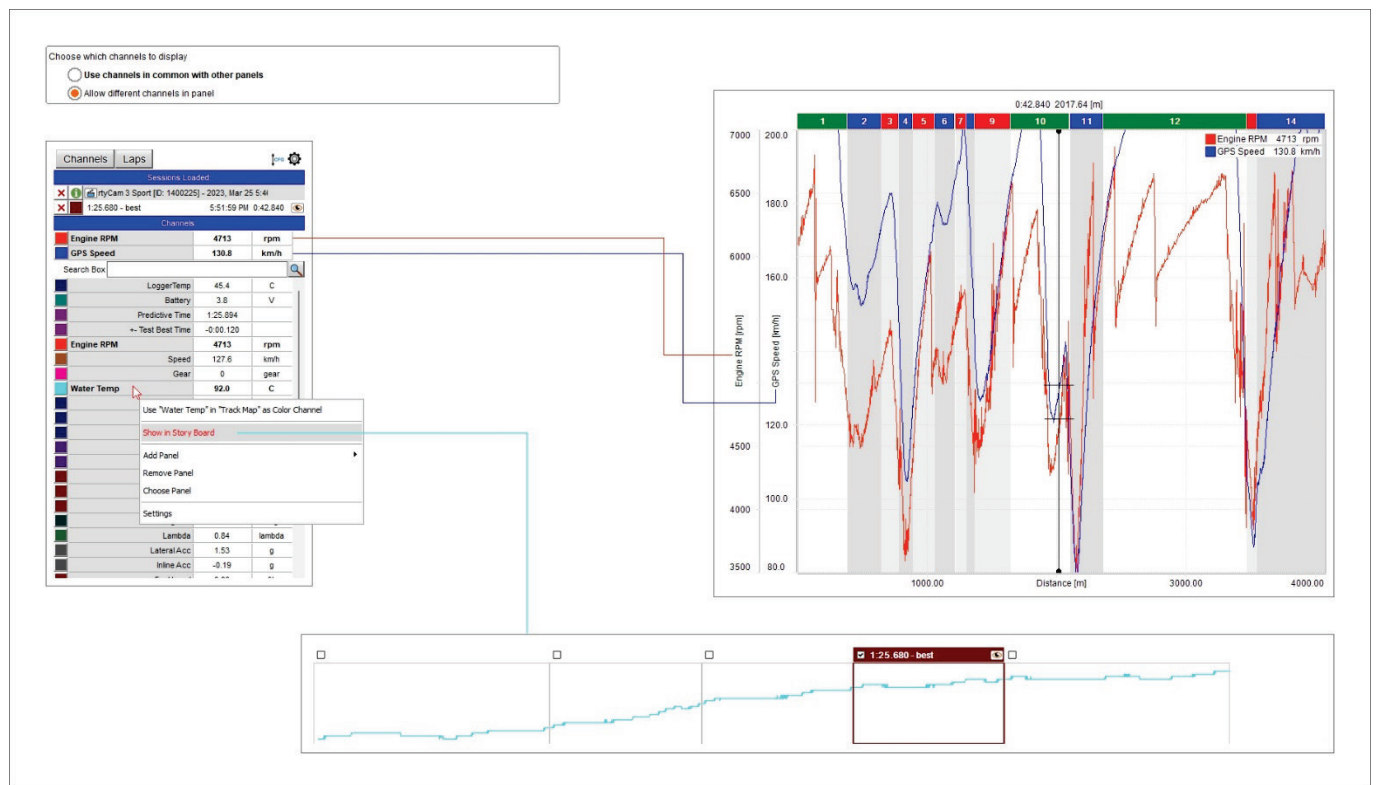
The central graph can show or hide labels on the axes. You can also decide to show them on one axis only as shown here below.



4.5.7 – Choose which channels to display

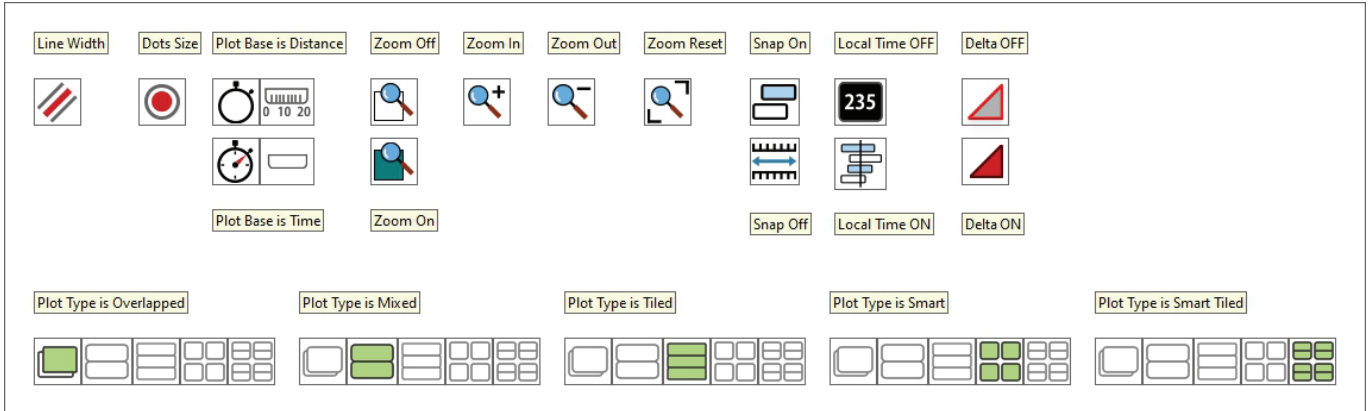
The channels shown in the central graph and in the storyboard can be changed enabling the related checkbox in “Setting” dialog window. To show, for example, Engine RPM and GPS speed in the central graph and water temperature in the storyboard follow these instructions:

- place the mouse on the storyboard
- right click and select “Settings” options
- enable “Allow different channels in panel” checkbox
- press “OK”
- go in channels table and right click on “Water temperature” channel
- select the option “Show in storyboard”
- As shown here below central graph shows RPM and GPS Speed while the storyboard bottom shows Water temperature graph



4.6 – The time/distance keyboard working mode

As said before the central graph can be managed also using the keyboard placed above it and shown here below.

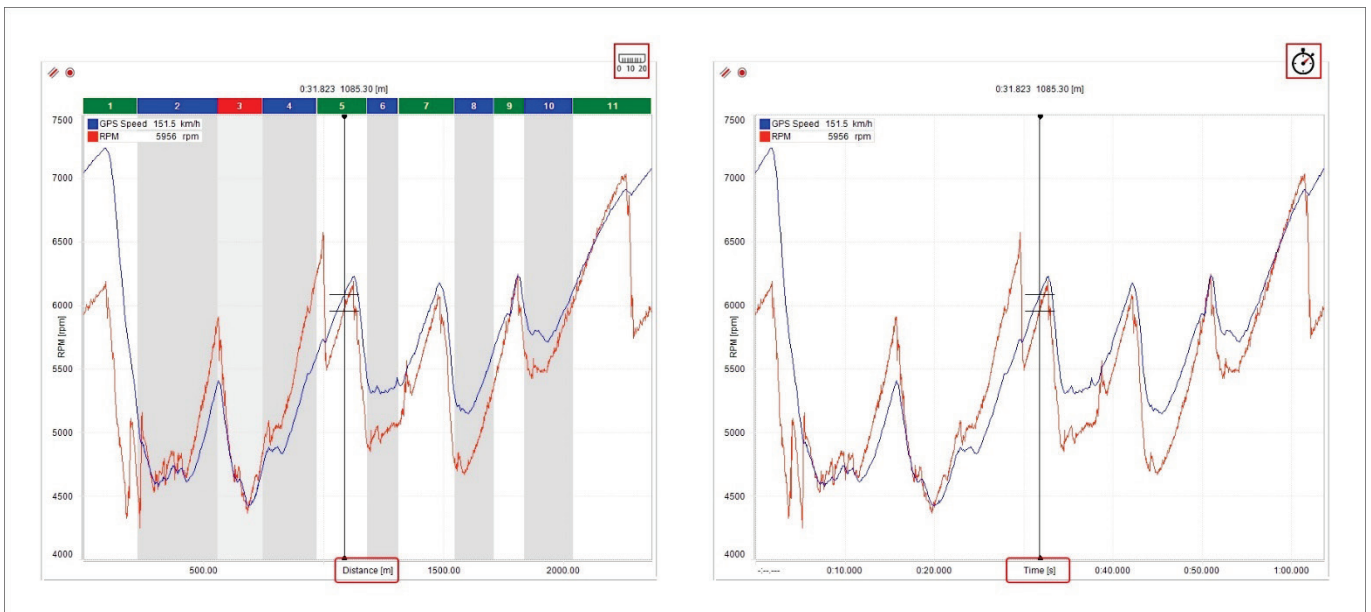


4.6.1 – Plotting the graph by Time/Distance

As shown here below, the main difference among the graphs is the channel plotted on the abscissa axis:

- Distance plotting is shown here below on the left
- Time plotting is shown here below on the right.

In distance plotting the splits are shown on the graph and it can be zoomed at a split level double clicking on the desired split. To come back to standard zoom double click on the split band or press the proper button. The graph can also be zoomed in/out with the mouse wheel (paragraph 4.6.2).



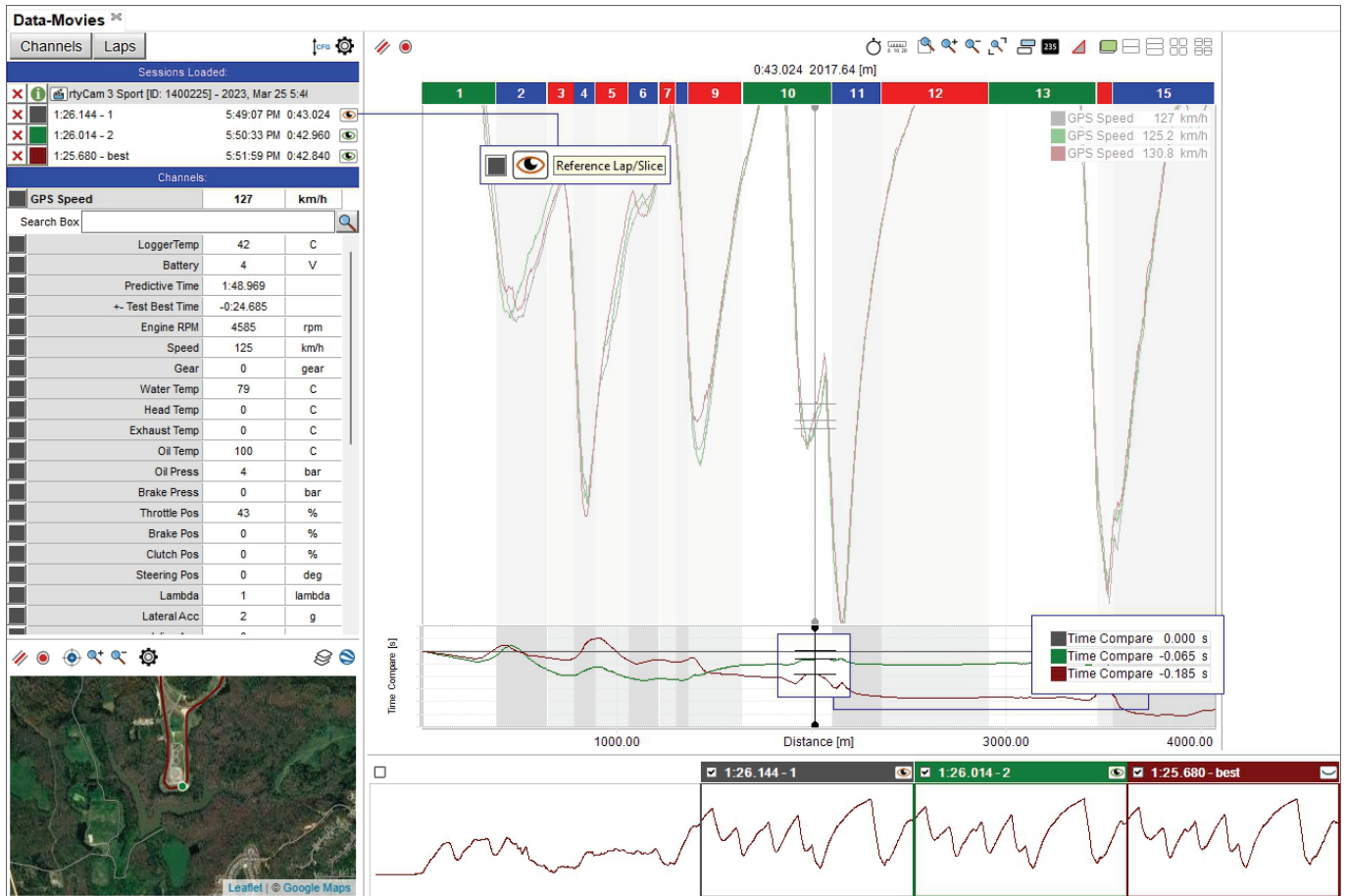
If more laps are open for analysis each one is indicated by an icon according to its status. In the image below the icons are shown centrally:

- Reference lap (top icon): is the one used in time compare graph (see image in the following page)
- Lap loaded with video and map (central icon)
- Lap loaded but without video nor track map (bottom icon); this happens if more laps (reference slices) than these set in custom settings are open (paragraph 3.3)



“Time Compare” graph appears bottom of the graph view if enabled in the setting dialog window (see paragraph 4.5.1)

- Using a lap as reference lap (👁️) it shows in a graph the time differences among the reference lap and the other loaded laps.





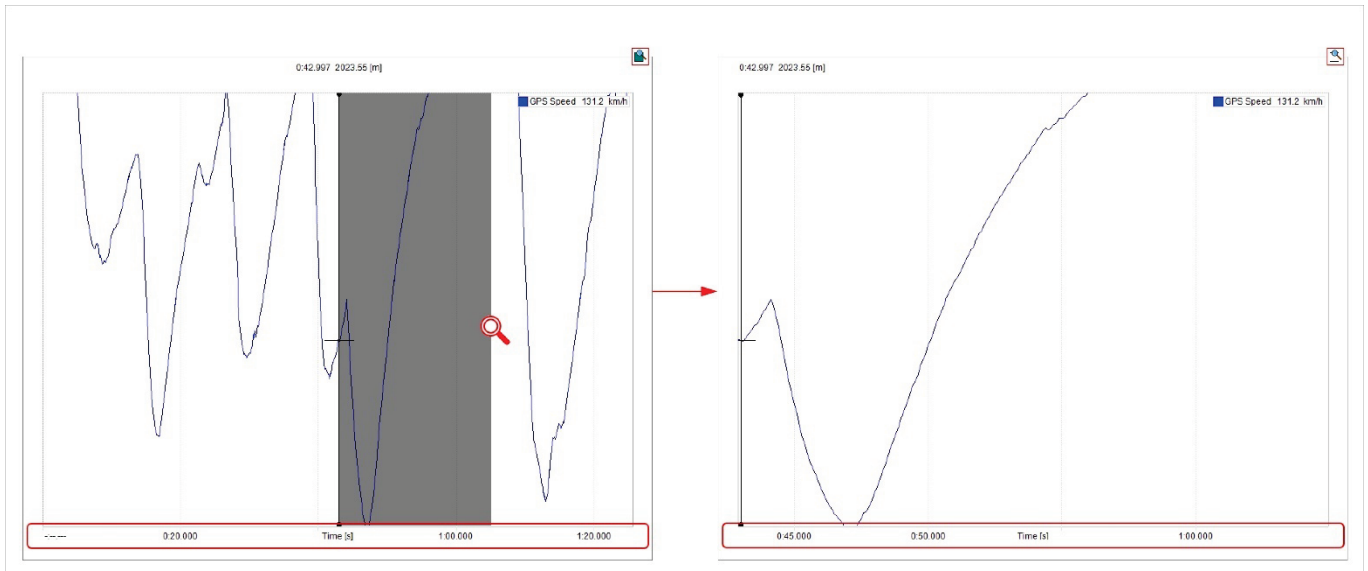
4.6.2 – Graph zooming

With the zoom buttons you can:

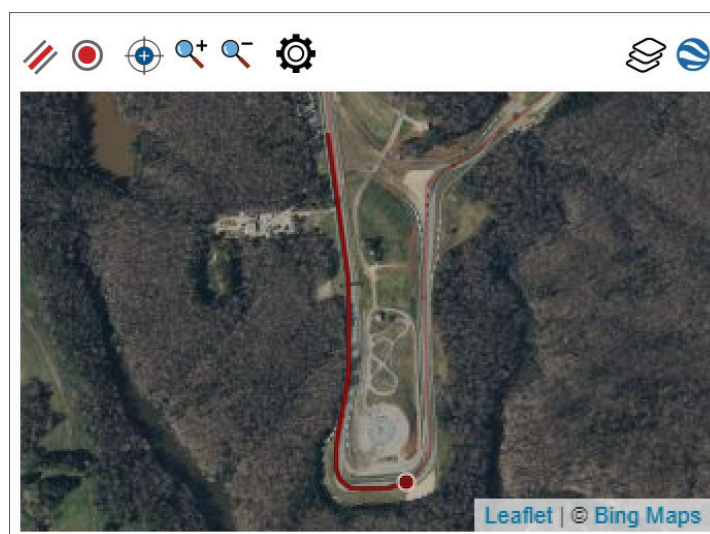
- Activate/deactivate the custom zoom
- zoom in/out and reset the graph zoom

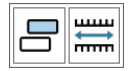
If you want to **zoom in a specific part of the graph**:

- click on the first left zoom icon and it activates (left image below)
- hook the cursor
- a magnifying lens appears: drag the cursor as desired and the selected part is highlighted in dark grey (left image below)
- release the cursor and the graph is zoomed in (image here below on the right)



Once the graph is zoomed in the part of the track you have zoomed in is shown in the related box bottom left of the software page.

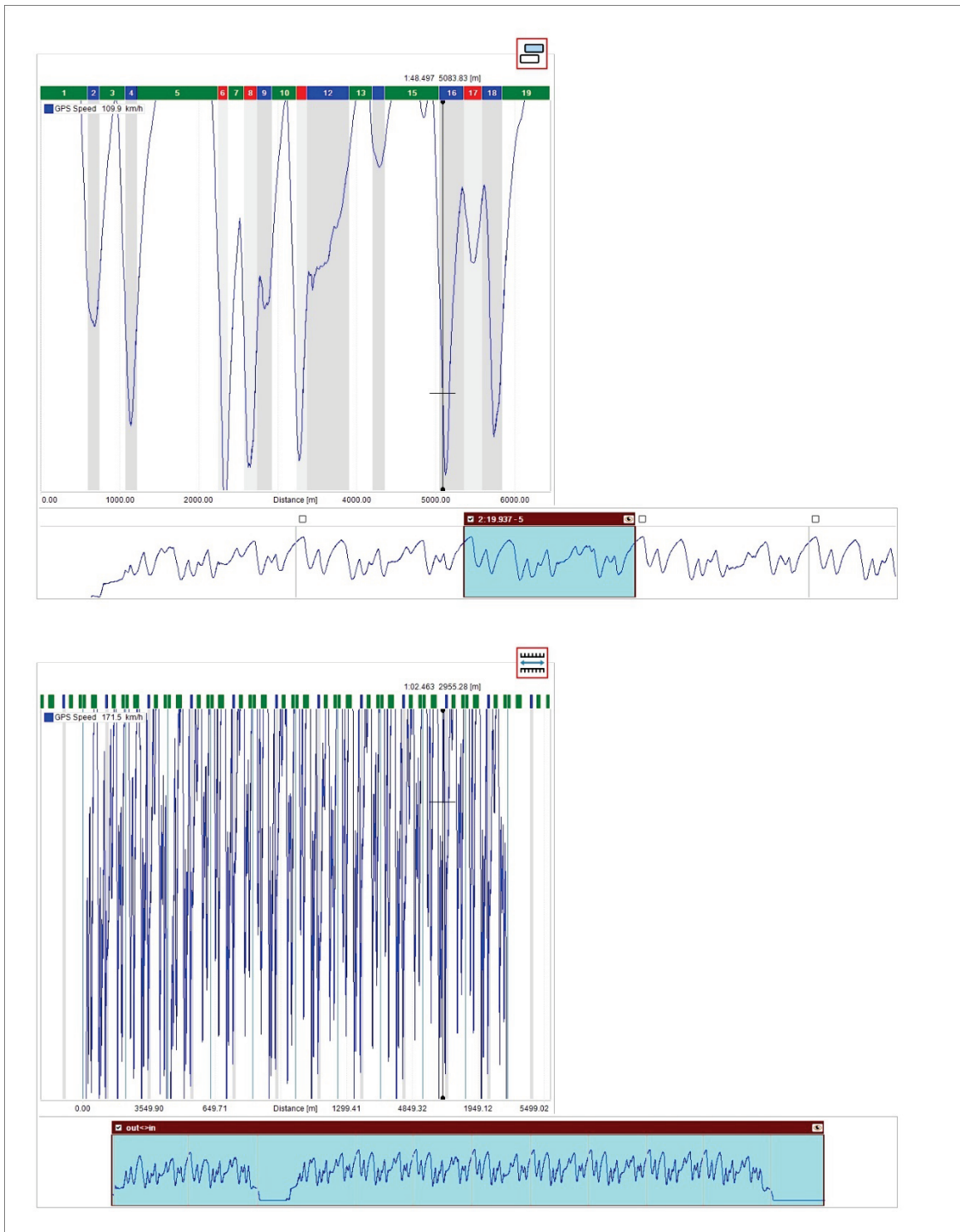




4.6.3 – Graph Snap ON/OFF mode

Assuming you are plotting the graph by distance, as shown here below:

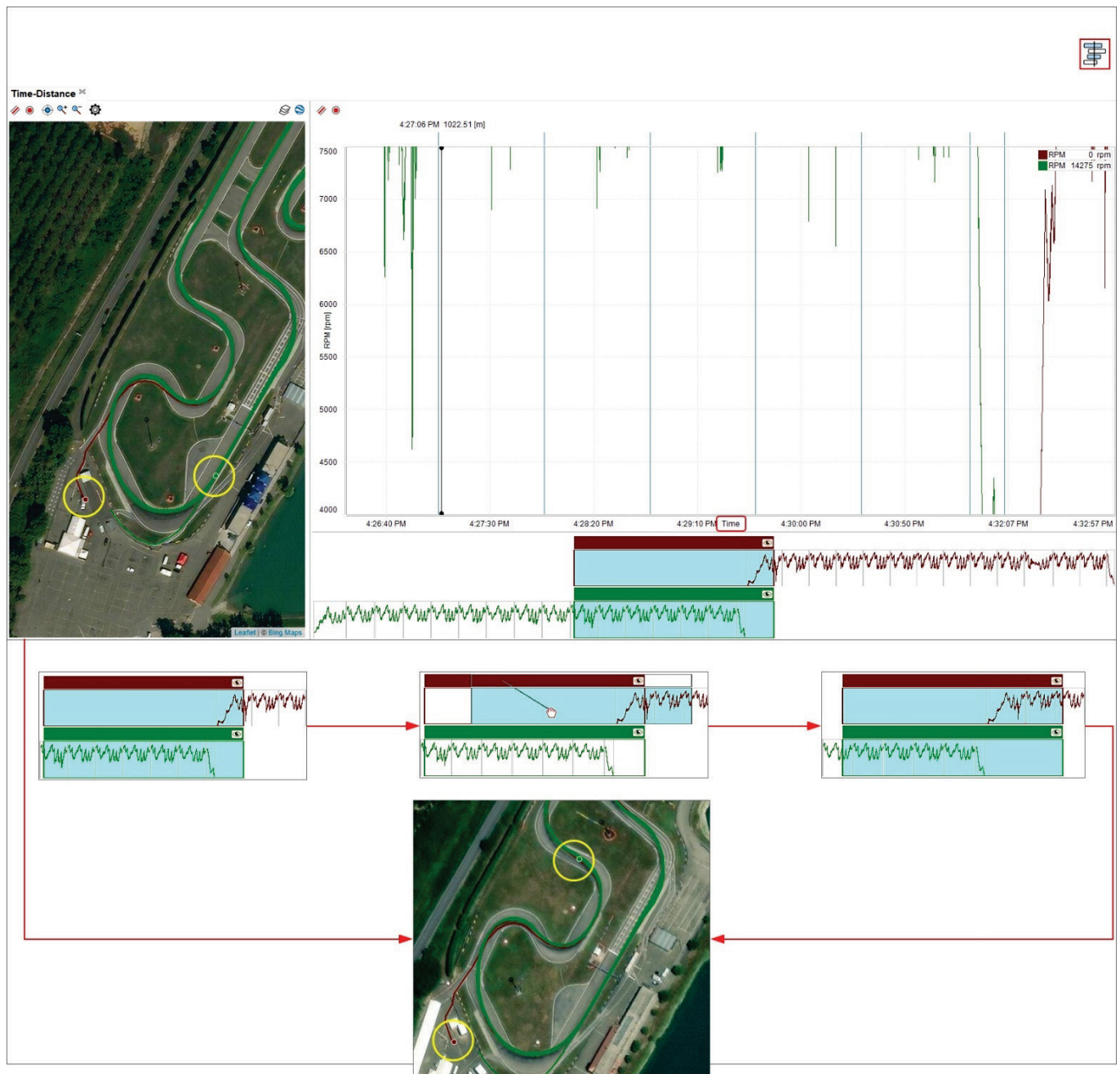
- with **Snap on** (top image) zooming out the graph it shows a lap in the central graph and in the storyboard
- with **snap OFF** (bottom image) zooming out the graph you see in the central graph and in the storyboard the entire session.



4.6.4 – Local Time ON/OFF (local time versus normal time)

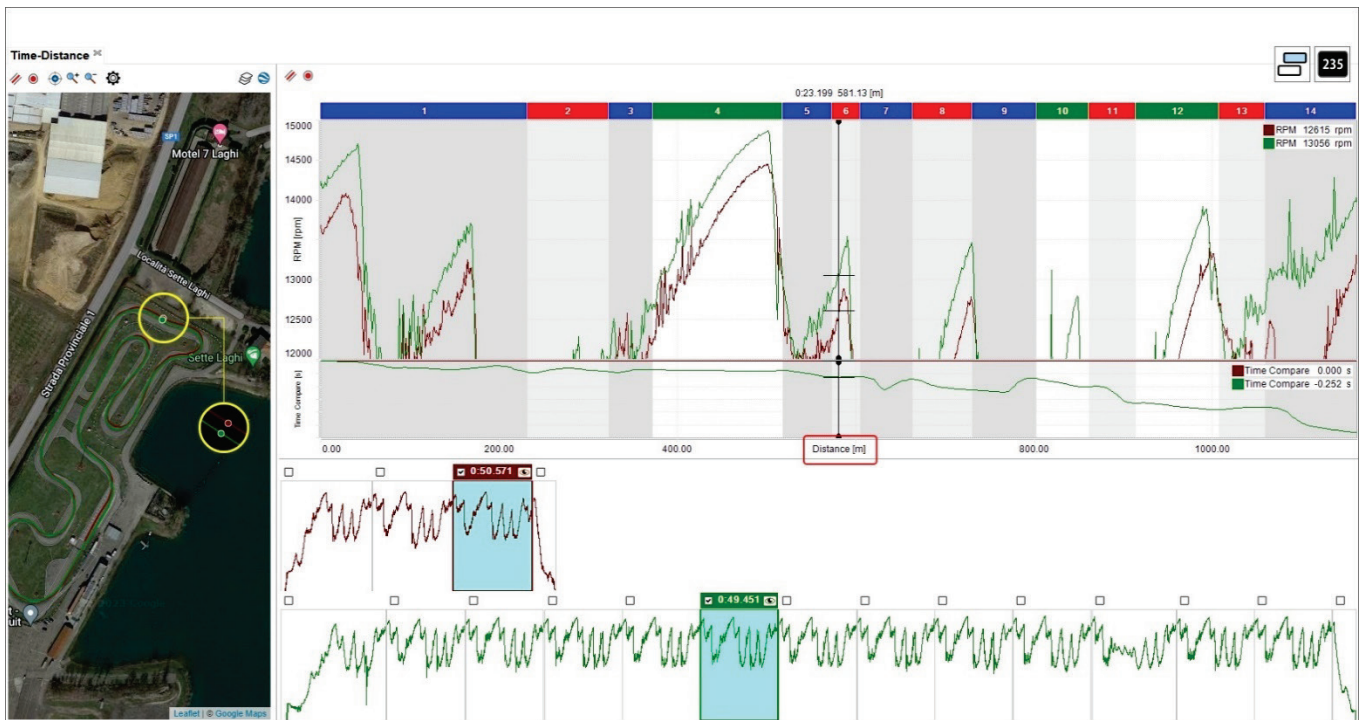
“Local time on” mode is very useful to compare different drivers on the same track:

- you can only have Time on the abscissa axis
- the track box shows the position of the drivers on the track
- the boxes in the storyboard and the central graph show the part of the track that is being analysed
- the graph can be zoomed in/out with the mouse wheel and
- dragging and dropping the selection in the storyboard you can see the same slice of a lap in the following lap and the related position of the drivers on the track too as shown bottom of the image below. The storyboard can always be dragged and dropped.

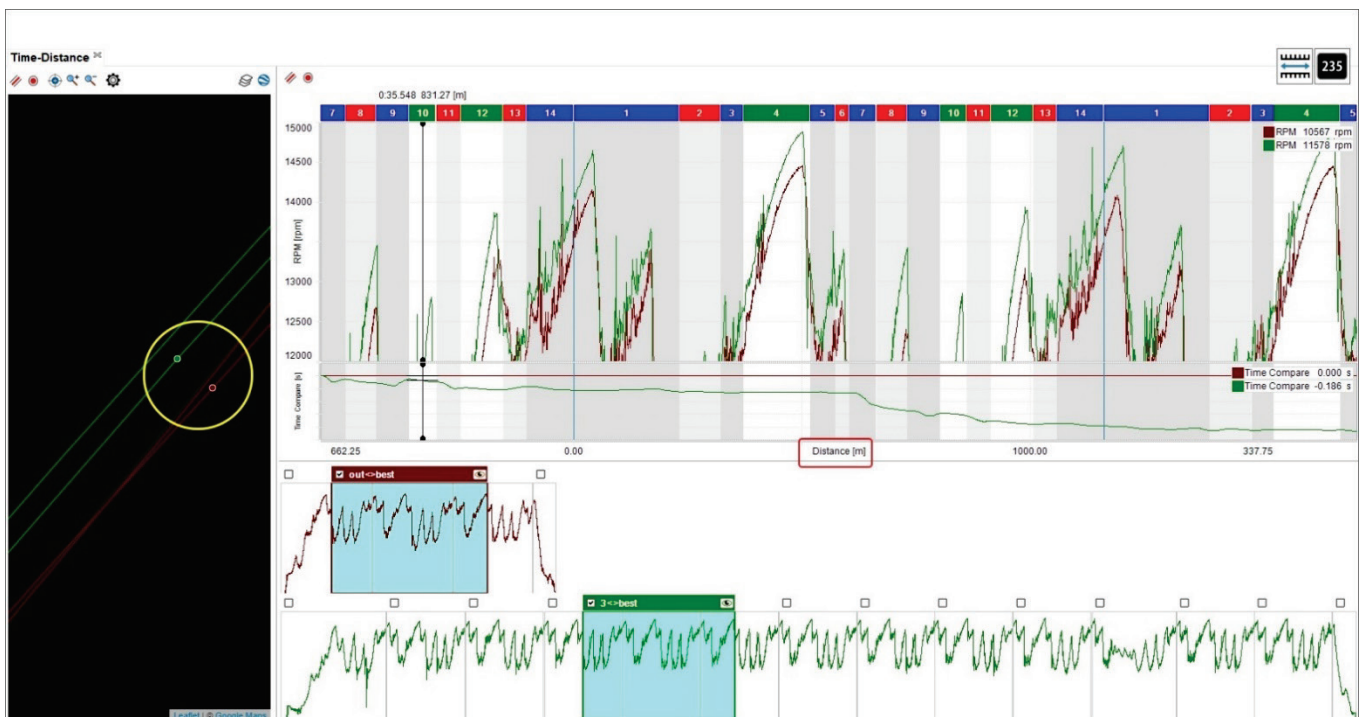


In “Local timing off” mode the abscissa axis can show “Time” or “distance”, the graph can be in snap on/off mode and the storyboard selects a fixed range of time; the graph can be zoomed in/out with the mouse wheel. dragging and dropping the selection in the storyboard the slice of race shown in the graph is moved as explained before.

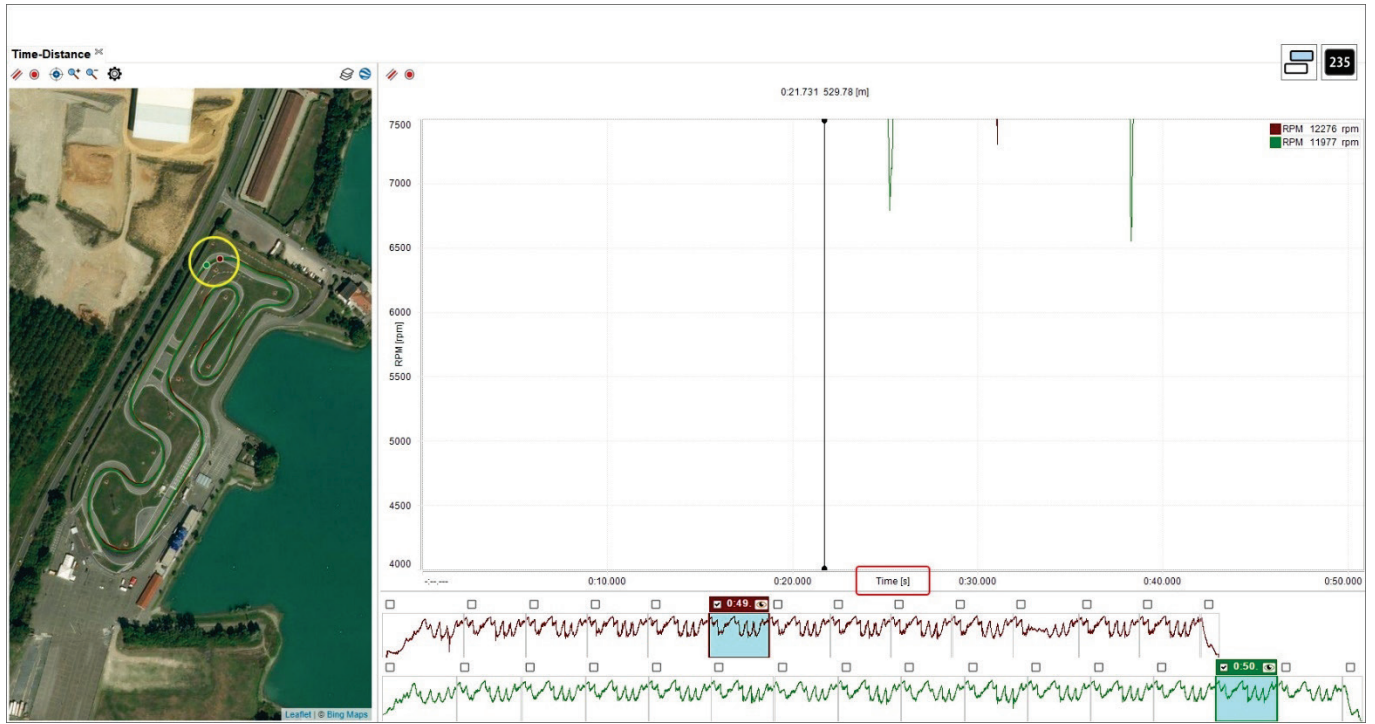
Local timing off and plot mode Snap on



Local timing off and plot mode Snap off



Local timing off and time on the abscissa axis



4.6.5 – Graph in delta Mode

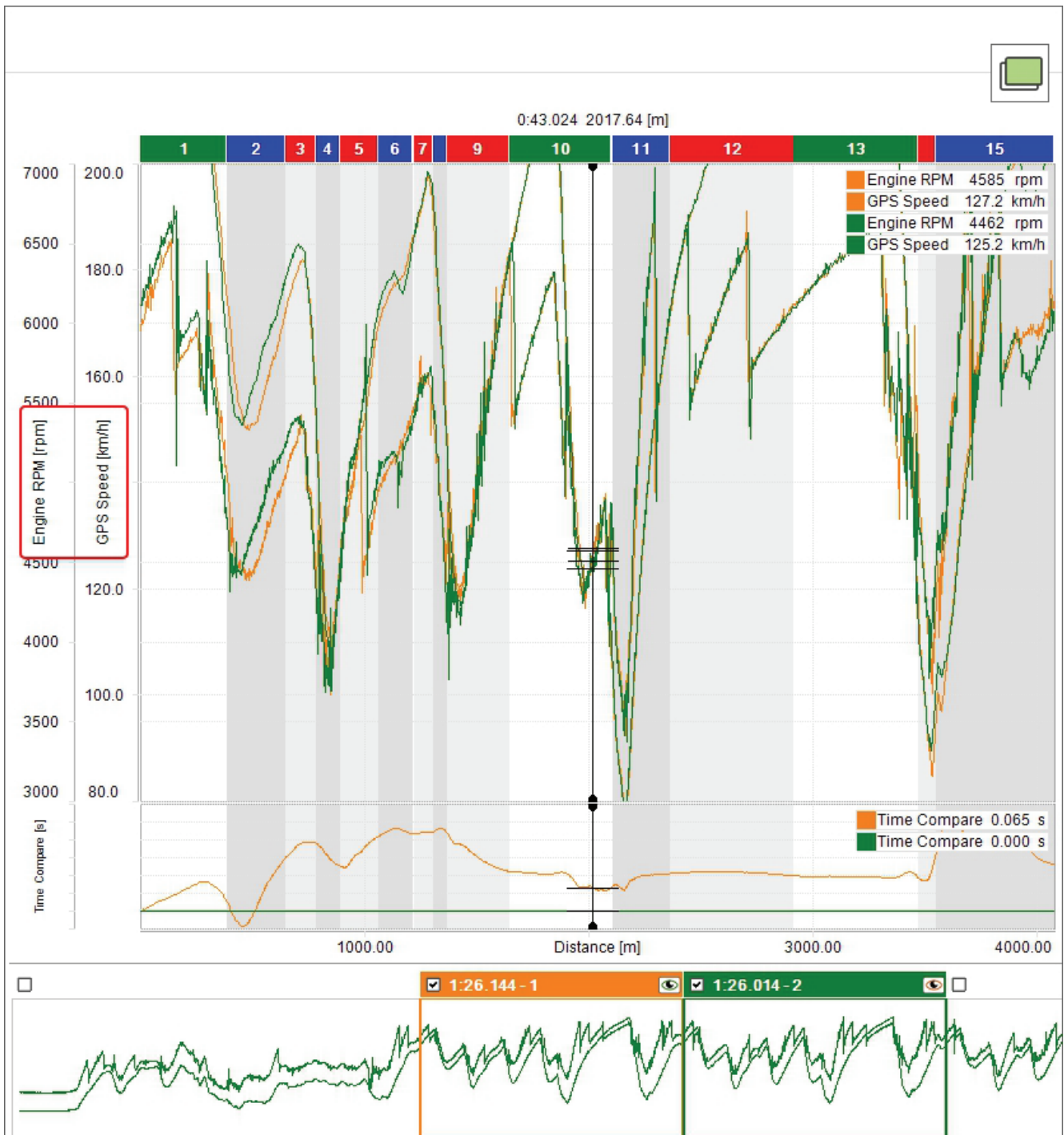
See paragraph 4.5.4.



4.6.6 – Graphs plotting overlapped

When the graph plotting is overlapped all channels are shown in the same graph and values of different channels belonging to the same lap are identified by the same colour-as shown below:

- a lap is plotted green and the other orange
- the channels you are analysing are both indicated on the ordinate axis
- the graph plot base is distance and “Time Compare” graph is enabled (paragraph 4.5.1) and shown bottom of the main graph.





4.6.7 – Graphs plotting mixed

When the graph plotting is mixed you can decide where to plot each channel and the values of different channels belonging to the same session are identified by the same colour. In the example below:

- a session is plotted green and the other orange
- Engine RPM channel is plotted in graph "1" (Top)
- Water Temperature and GPS Speed are plotted in graph "2" (central)
- You can change the graph where a channel is plotted clicking on the box left of the channel in channels table
- max allowed number of graphs is six
- the channels you are analysing are both indicated on the ordinate axis
- the graph plot base is distance and "Time Compare" graph is enabled (paragraph 4.5.1) and shown bottom of the other graphs.

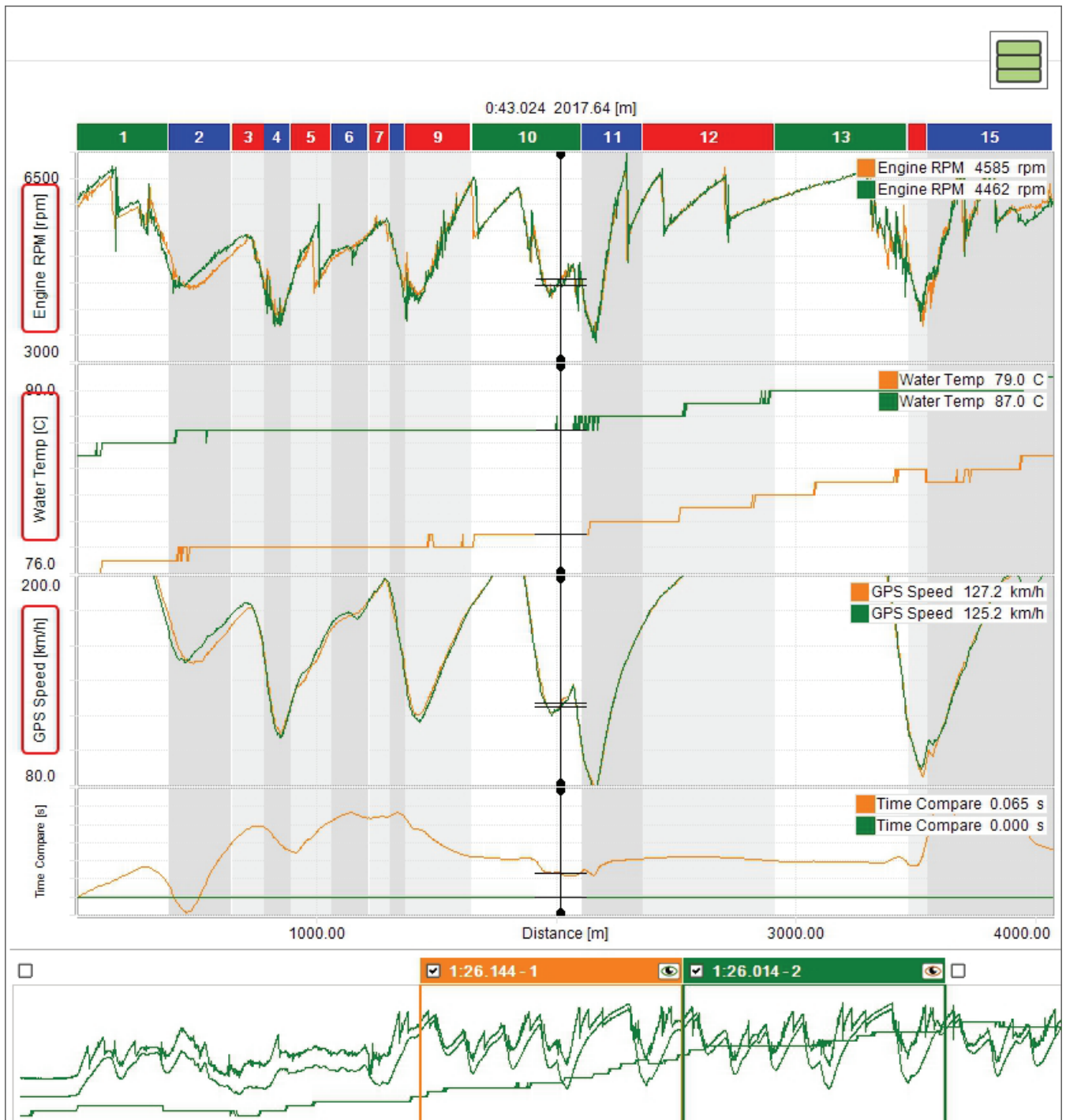




4.6.8 – Graph plotting tiled

When the graph plotting is tiled each channel is plotted in a graph and the channels belonging to the same session are identified by the same colour. In the example below:

- a session is plotted green and the other orange
- plotted channels are Engine RPM, Water temperature and GPS Speed
- the channels are indicated on the ordinate axis



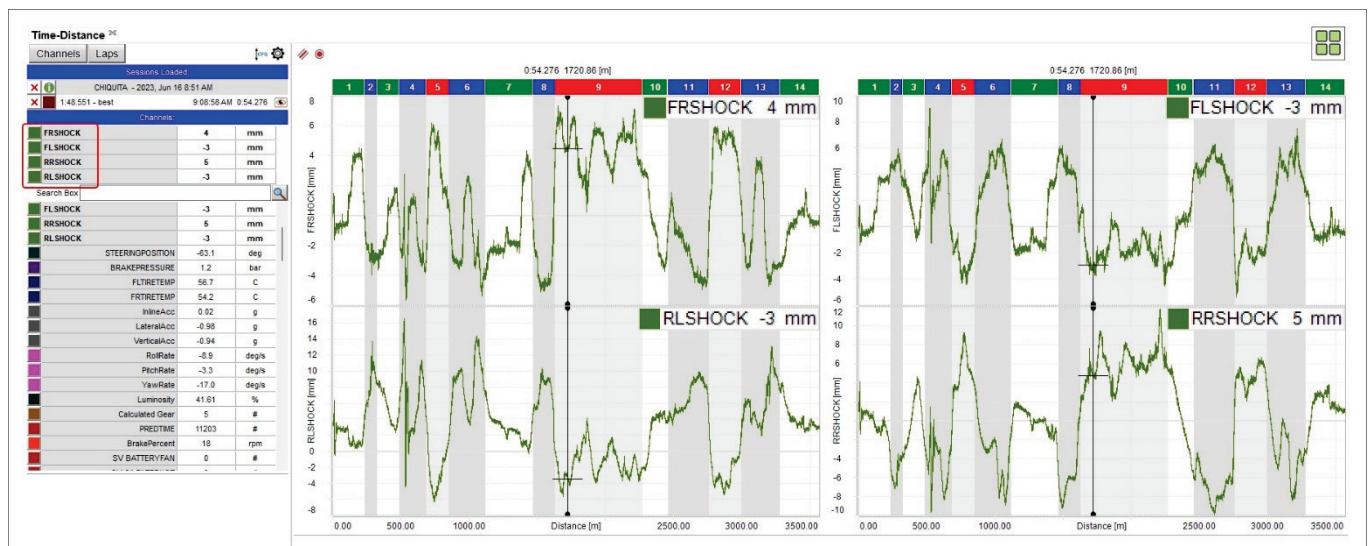


4.6.9 – Graph plotting smart

This plotting fits particularly channels bound to vehicle corners like dumpers, brakes, wheel speed and so on. First of all you need to ensure that the channels are configured as bound to the vehicle corner like shown here below.

The screenshot shows the 'Channels Settings' dialog box for the 'FRSHOCK' channel. The 'Function' is set to 'Shock Position RF'. The 'Units of Measure' is 'mm'. The 'Value = (Value x A) + B' is set to A=1, B=0. The 'Filter' is set to '0 - No Filter'. The 'Plotting' section is expanded to show 'Shock Position' with 'Shock Position RF' selected. The 'Alarms' section has 'Max' and 'Min' checkboxes. The 'Recompute Math' button is visible at the bottom.

Once the procedure performed for all channels bound to vehicle corners you can show them smart, to say showing a graph for each channel as shown here below.





4.6.10 – Graph plotting smart tiled

If analysing two groups of channels bound to vehicle corners it is possible to show them in the graph not only smart but also tiled as shown here below.



4.7 – Managing track splits

In time/distance view all splits are identified by a coloured bar top of the graph. By default splits are locked; right clicking on the bar you can unlock them; in a few seconds they will be re-locked.

Please note that all changes made in this panel are saved and shown anywhere the track is recalled. To see the changes in the track map, bottom left of the view you need to set it as “Switch to colour per split” (see paragraph 4.3).

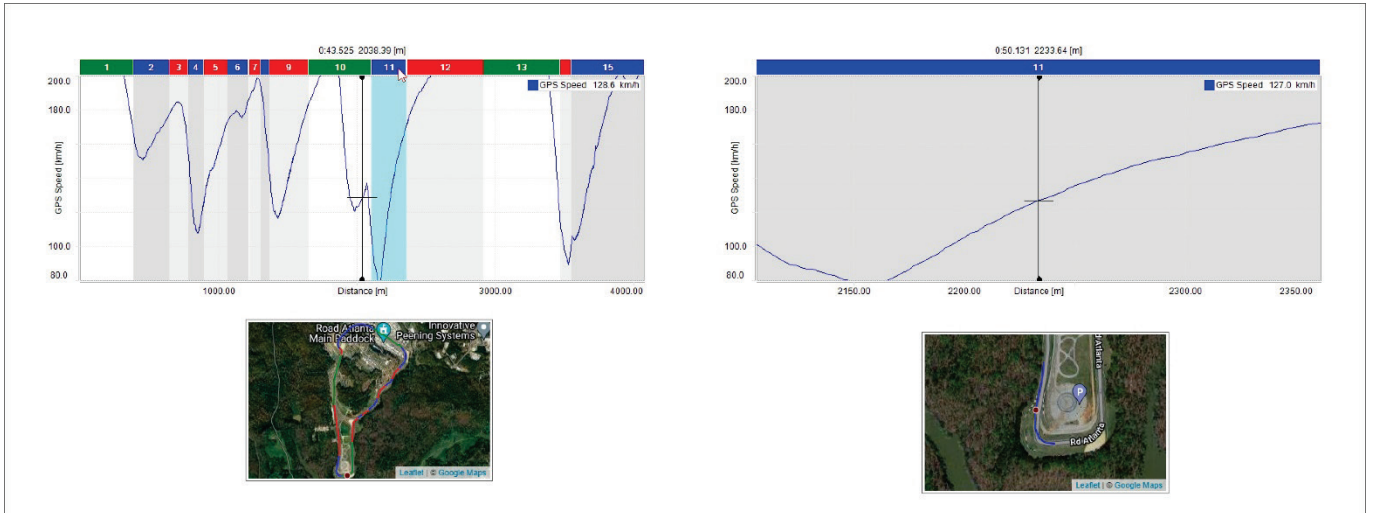
Right clicking on the split bar it is possible to:

- **Merge more splits.** Each split can be merged with previous split, with next split, with both sides split
- **Divide splits**
- **Rename Split**
- **Set split type as:** corner 1, corner 2, straight
- **Duplicate split sequence**
- **Add/Remove/Choose** a panel





Double clicking on a split of the split bar the graph resizes at that split level and so does the track map bottom left of the software view; clicking again on the split bar the graph and the track map are resized back.



4.8 – The movie(s) panel

Right of the software view are the videos included in the sessions. Enabling the corresponding checkbox in “Settings” dialog window videos can be hidden/unhidden when the space bar get pressed (paragraph 4.1).

The session each video refers to is identified by the colour of play button in the video; it recalls the colour of the sessions in channels table top left of the software view. The position of the driver on the track is shown in the map and in the central graph.



Pressing “play” button on one video:

- all video starts
- the cursor in the central graph moves following the movie
- the track map shows the driver moving on the track

Through the keyboard top of the videos, it is possible to:

- cut and export the video chunk from the starting point to the current moment
- take a snapshot and export the picture of the current videos in a default folder (browse the PC to change the destination folder)
- view the video in the system default application for video files.

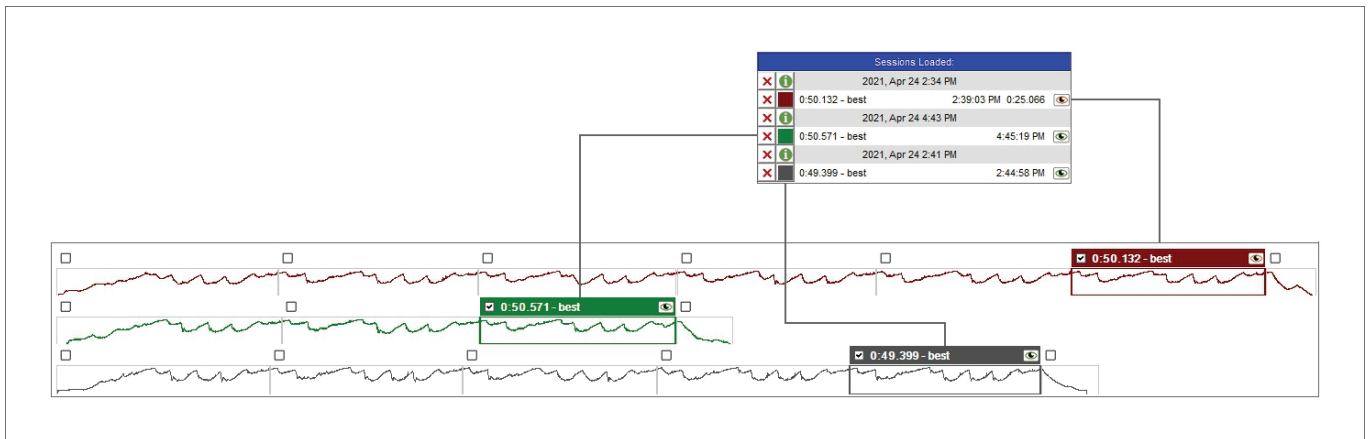
The screenshot displays the software interface for video playback and management. It features two main video windows showing a first-person view from a driver's perspective on a track. The top window is at timestamp 1:26.014 - 2, and the bottom window is at 1:25.680 - best. Below the video windows are two track maps showing the driver's position on the track. To the right of the video windows is a control panel with three buttons: "Cut and Export Shown Video Chunk", "Take Snapshot and Export Picture from Shown Video", and "View in System Default Application for Video Files". The "Cut and Export Shown Video Chunk" button has a red box around it, and its tooltip shows the selected video ranges: "1:26.014 - 2" of file "20230325_174552_RA GP_SCHD0177.MP4" and "1:25.680 - best" of file "20230325_174552_RA GP_SCHD0177.MP4".

4.9 – The storyboard

Bottom of the software view is the storyboard. By default it shows the graphs of all laps with best lap of the session indicated and – if more sessions are open – it shows so many rows as many sessions are open. Selecting a lap its lap time appears on the lap bar.

Using the setting dialog window (right click on the storyboard or press the setting icon on the top right keyboard) you can:

- show different channels in the storyboard (paragraph 4.5.7).
- hide/unhide the storyboard pressing and re-pressing the space bar (paragraph 4.1).



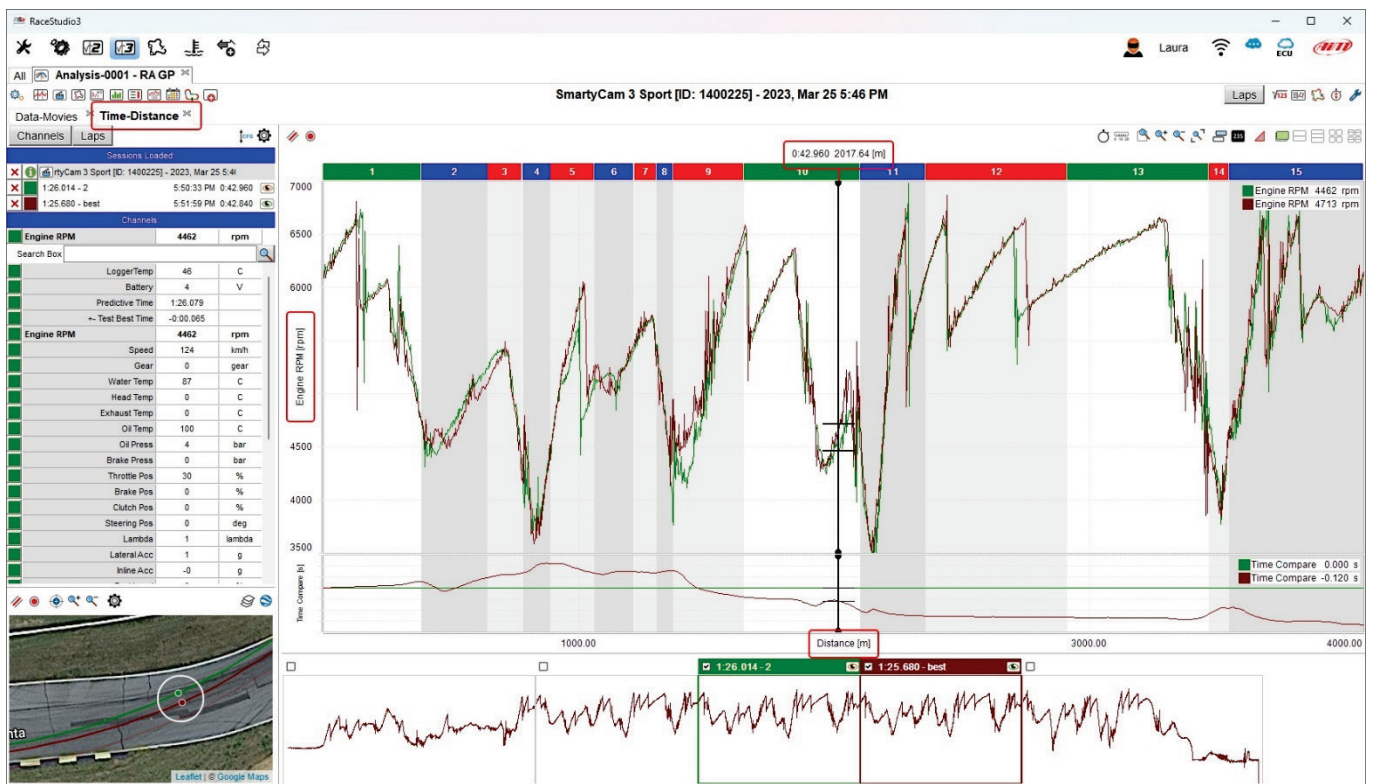
5 – Time-Distance layout



Pressing the icon shown here above on the top left keyboard of the view you enter “Time Distance” layout. It shows

- channels table left of the view
- track map bottom left of the view
- in the central graph: the desired channels (RPM by default) on the ordinary axle, and the distance on the abscissa axle; the graph cursor indicates the time and below the graph, if more laps are open and time compare is enabled (paragraph 4.5.1), time compare graph is shown
- the storyboard bottom of the graph(s)

As highlighted in the image below, zooming in the track map you can see the position of the vehicle in the open laps.

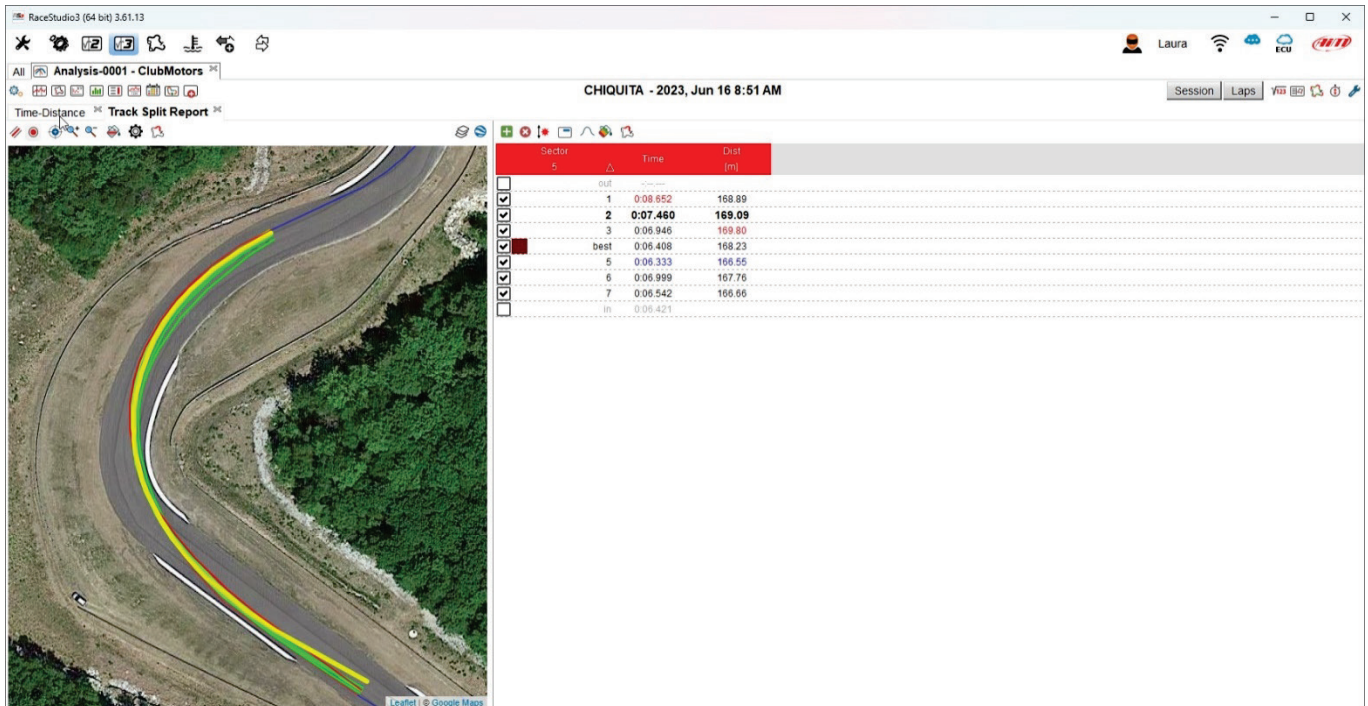


6 – Track split report layout



Pressing the icon shown here above on the top left keyboard of the view you enter “Track Split Report” layout. It shows:

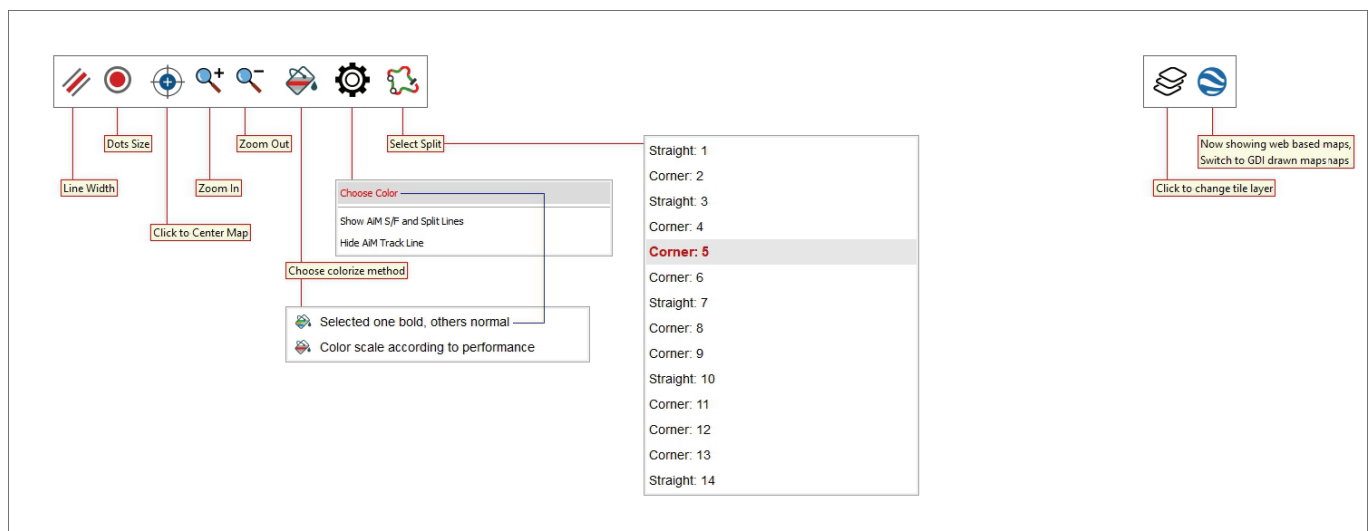
- the selected split track map on the left (by default it selects the split where the cursor is in Time-Distance layout)
- channels report for the selected split on the right



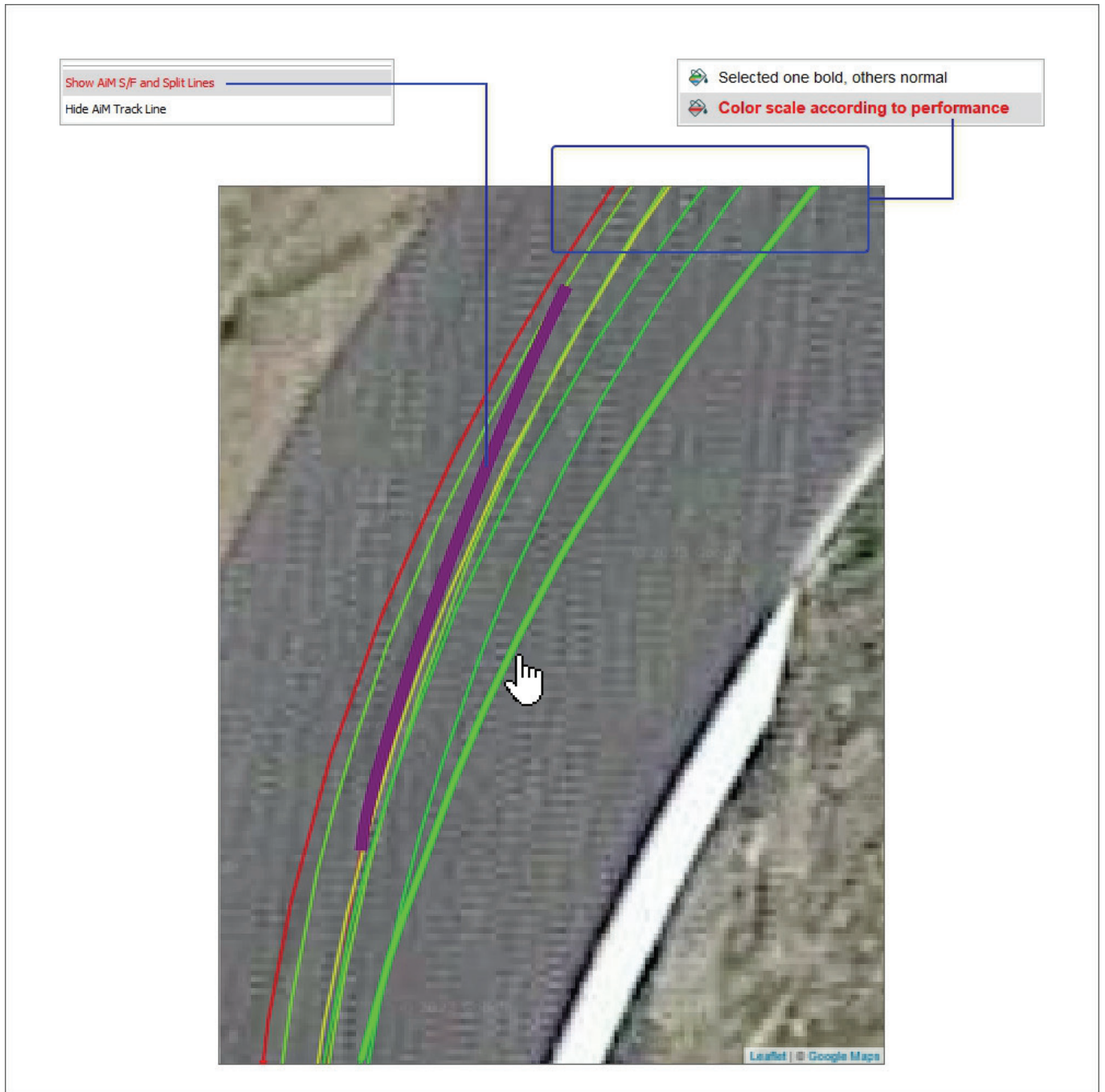
Both panels can be managed using the keyboard placed above them and explained in the following images.

Through the **map keyboard**, in addition to the usual functions (line width, dots size, centre map, zooming in/out) it is possible to:

- choose colorize method: splits are coloured according to their performance: from green for good performance to red for bad one
- show/hide AiM S/F and split line; moreover, setting colorize method “selected one bold, others normal” it is possible to change the bold one colour.
- Select a split to analyse (the one current split is highlighted in bold red in the menu)



In the image below AiM Start/Finish and split lines are shown and the laps are colorized according to the performance, from green for good performance to red for bad performance.



Using the **channels report for selected split keyboard** placed right above it you can:

- Add/remove/sort/manage side items
- Show/Hide statistics
- Choose reports type
- Select splits to analyse (the one currently analysed is highlighted in bold in the list).

In the following paragraphs all buttons are explained.

Toolbar: +, -, ↑↓, 📄, 📊, 📉, 🔄

Add a New Item...

New Item

Channel: Type:

Search Box:

Distance on GPS Speed

GPS Slope

GPS Speed

Minimum

Maximum

Average

Variance

Average when Not Zei

Average of Abs Values

Remove Item...

Remove Item...

All

Max of EngineSpeed

Max of GPS Speed

Sort Items...

Sort Items...

(*) Drag and drop items to sort them

Max - GPS Speed

Max - EngineSpeed

Manage Side Item(s)...

Manage Side Item(s)...

Choose if to show statistics

Hide statistics in list

Show statistics in list

Choose report type

Classic, RS2 style, report

Report cells colored according to cell values

Cells drawn with histogram, based on their values

Select Split

Straight: 1

Corner: 2

Straight: 3

Corner: 4

Corner: 5

Corner: 6

Straight: 7

Corner: 8

Corner: 9

Straight: 10

Corner: 11

Corner: 12

Corner: 13

Straight: 14



6.1 – Adding/Removing/Sorting items

The top keyboard allows you to add/remove columns/channels to channel report right of the software view. For each channel it is possible to decide the type of value (Max, min, average, variance etc...) to show.

Once the channel(s) added, the software allows you to remove one or all of them and to sort the channels dragging and dropping them in the "sort Items" panel. In the example below Max GPS Speed and Max RPM value have been added and displaced.

The screenshot displays the software interface with a data table and three configuration panels. The data table has the following content:

Sector	Time	Dist [m]	Max [km/h] GPS Speed	Max [rpm] Engine RPM
5	0:04.715			
out	0:04.205	173.35	170.1	5400
1	0:04.119	173.11	173.7	5998
2	0:04.029	172.98	177.4	6053
best	0:04.183			
in				

The 'Add a New Item...' panel shows a search box with 'GPS S' and a list of types where 'Maximum' is selected. The 'Remove Item...' panel shows a list with 'Max of Engine Speed' selected. The 'Sort Items...' panel shows a list with 'Max - EngineSpeed' selected and a hand icon indicating a drag-and-drop action.



6.2 – Managing side items

Once one or more channels have been added (Max GPS speed in the top table below), it is possible to show the values of this channel together with another one in the same point. Here below GPS Speed and RPM value are shown at the same time.

To remove this view simply click the icon again and de-select the channel.

The screenshot shows the 'Select Channel' dialog box with the following options:

- Test Best Time [] (function: Diff vs Best of Run)
- Battery [V] (function: Battery Voltage)
- Battery Voltage [V] (function: Battery Voltage)
- Brake Pos [%] (function: Percent Brake Load)
- Brake Press [bar] (function: Brake Circuit Pressure)
- Clutch Pos [%] (function: Percent)
- Distance on GPS Speed [m] (function: Distance)
- Engine RPM [rpm] (function: Engine RPM)
- Exhaust Temp [C] (function: Exhaust Temperature)
- Fuel Level [%] (function: Percent Fuel Level)

The table on the right shows the following data:

Sector	Δ	Time	Dist [m]	Max [km/h]
5				GPS Speed
	out	0:04.715		
<input type="checkbox"/>	1	0:04.205	173.35	170.1
<input checked="" type="checkbox"/>	2	0:04.119	173.11	173.7
<input checked="" type="checkbox"/>	best	0:04.029	172.98	177.4
<input type="checkbox"/>	in	0:04.183		

The table on the right also shows the following data:

Sector	Δ	Time	Dist [m]	Max [km/h]	Engine RPM
5				GPS Speed	Engine RPM
	out	0:04.715			
<input type="checkbox"/>	1	0:04.205	173.35	170.1	4963
<input checked="" type="checkbox"/>	2	0:04.119	173.11	173.7	5047
<input checked="" type="checkbox"/>	best	0:04.029	172.98	177.4	5246
<input type="checkbox"/>	in	0:04.183			



6.3 – Showing/Hiding statistics

Bottom of channels split table it is possible to show/hide the related statistics; they show:

- max, min and average values of the channels reported
- standard deviation; this is a measure of the amount of variation or dispersion of a set of values; a low standard deviation indicates that the values tend to be close to the mean (also called the expected value) of the set while a high standard deviation indicates that the values are spread out over a wider range.

Sector		Time	Dist
10	△		[m]
<input type="checkbox"/>	out	0:15.105	
<input checked="" type="checkbox"/>	1	0:10.162	452.82
<input checked="" type="checkbox"/>	2	0:10.202	452.91
<input checked="" type="checkbox"/>	best	0:10.077	455.56
<input type="checkbox"/>	in	0:10.212	

Sector		Time	Dist
10	△		[m]
<input type="checkbox"/>	out	0:15.105	
<input checked="" type="checkbox"/>	1	0:10.162	452.82
<input checked="" type="checkbox"/>	2	0:10.202	452.91
<input checked="" type="checkbox"/>	best	0:10.077	455.56
<input type="checkbox"/>	in	0:10.212	
	average value	0:10.147	453.76
	maximum value	0:10.202	455.56
	minimum value	0:10.077	452.82
	std deviation	0:00.064	1.56

Hide statistics in list

Show statistics in list



6.4 – Choosing the report type

Selecting the icon here above reported it is possible to decide how to visualize split channels report table. Available options are:

- classic: it simply shows the split channel values
- report cells coloured according to cell values: each cell is coloured according to its value from green to red where green stays for good performance and red for bad performance
- cells drawn with histogram, based on their values: each cells have as background that plots as histogram the values it contains.

The diagram illustrates three different report table visualizations for Sector 10, comparing Time and Dist values. Each table has a toolbar with three icons: a classic table icon, a color-coded cell icon, and a histogram icon.

Sector	Time	Dist
10	△	[m]
out	0:15.105	
1	0:10.162	452.82
2	0:10.202	452.91
best	0:10.077	455.56
in	0:10.212	
average value	0:10.147	453.76
maximum value	0:10.202	455.56
minimum value	0:10.077	452.82
std deviation	0:00.064	1.56

Legend:

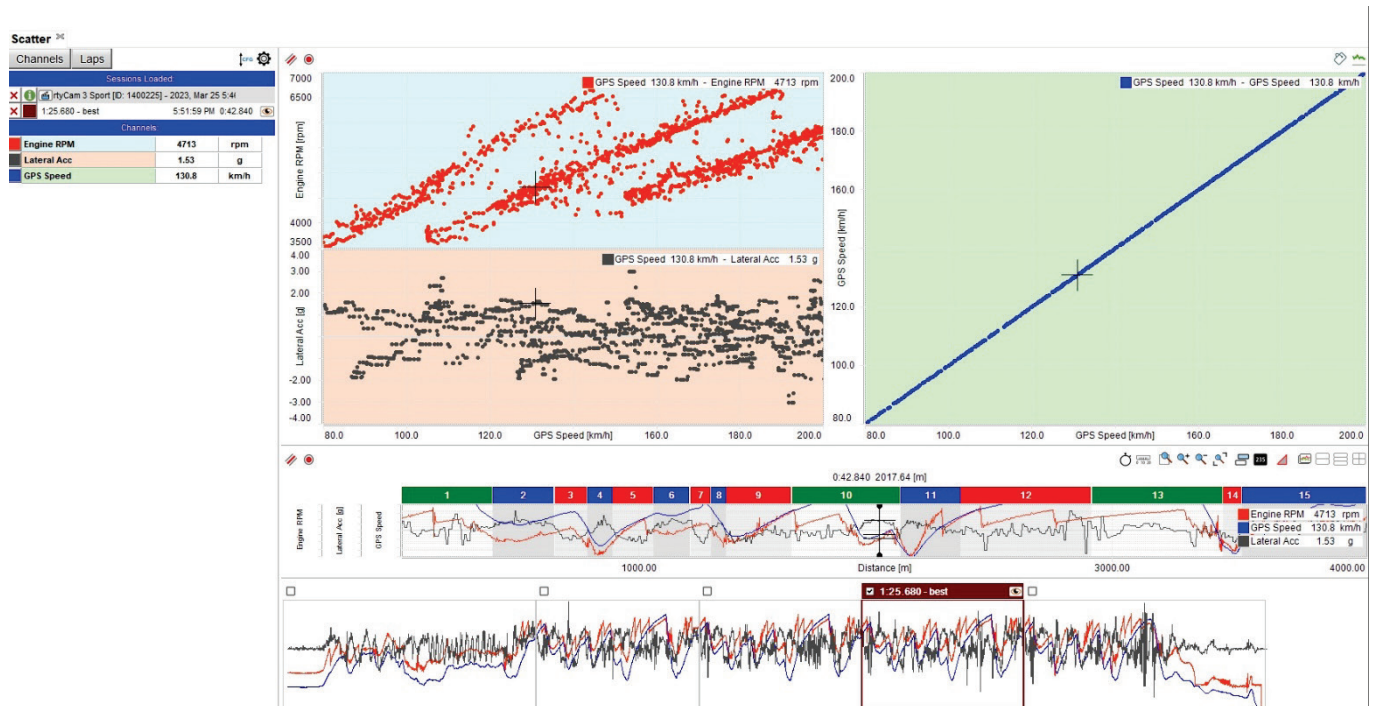
- Classic, RS2 style, report
- Report cells colored according to cell values
- Cells drawn with histogram, based on their values

7 – Scatter Layout

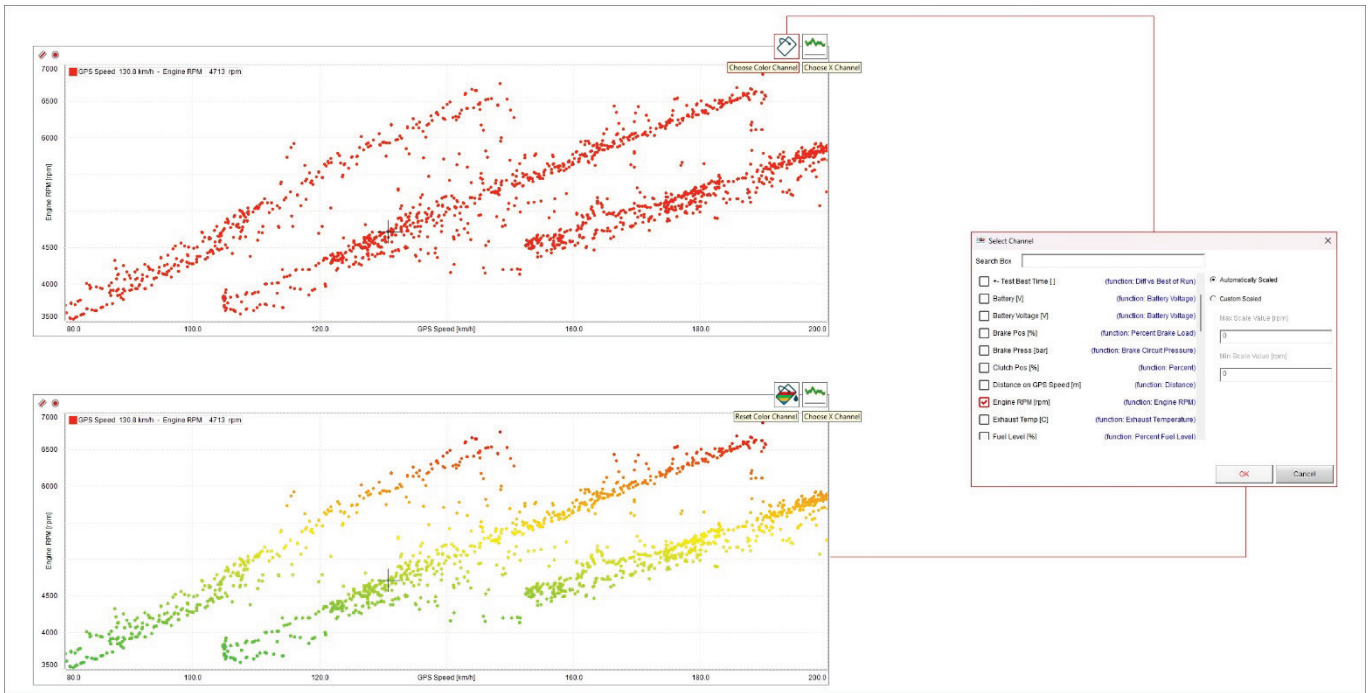



Pressing the icon shown here above on the right you enter “Scatter” layout. Each channel has its own scatter graph identified by the colour of the line/dot graph that is the same of the channel in channels table. In the image below the graph background have been coloured to make channels more identifiable.

Below the graph(s) is distance or time graph of each channel or time compare graph if enabled in setting dialog window (paragraph 4.5.1). Clicking on the scatter graph the cursor in time/distance or time compare graph goes to the corresponding point.



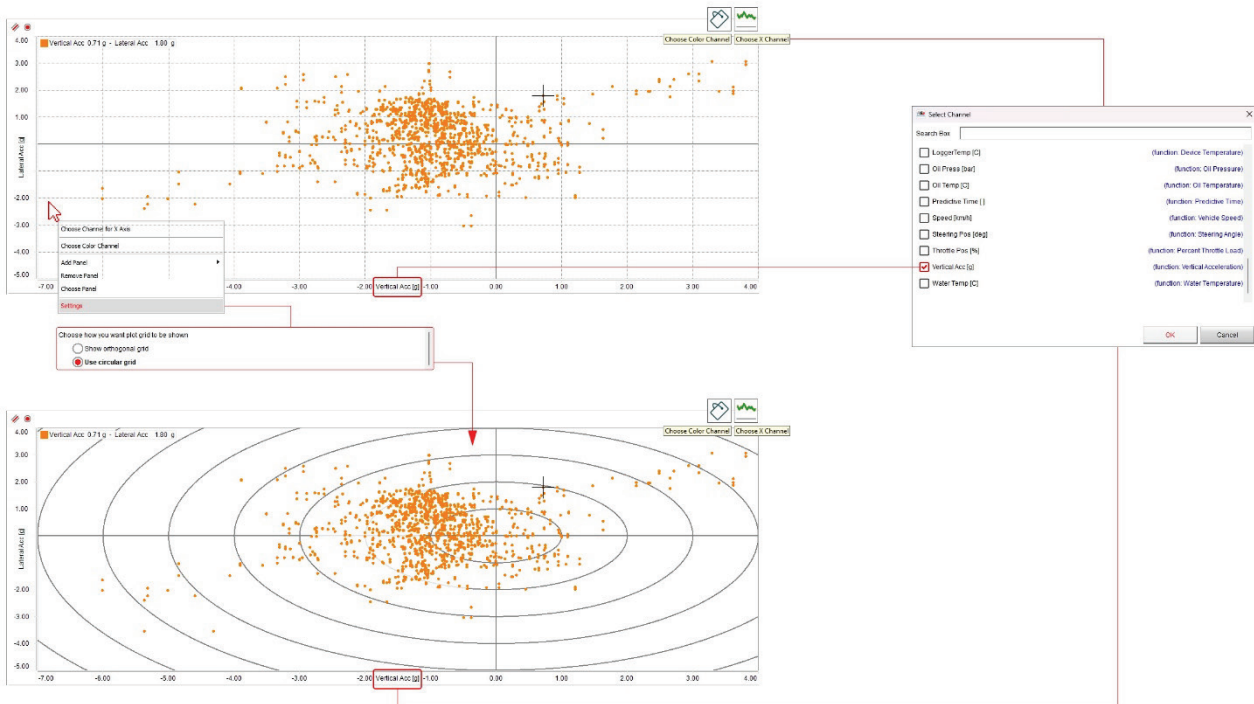
Through the top right keyboard it is possible to view a channel graph in function of another channel colourizing the graph; in the example below the graph has been colourized using Engine RPM channel. When RPM value is higher the graph is red; on the contrary where RPM value is lower the graph is green.



Using the icon right of the top keyboard () it is possible to choose the abscissa channel.

When analysing an acceleration scatter graph circular plotting grid can be useful. To show it:

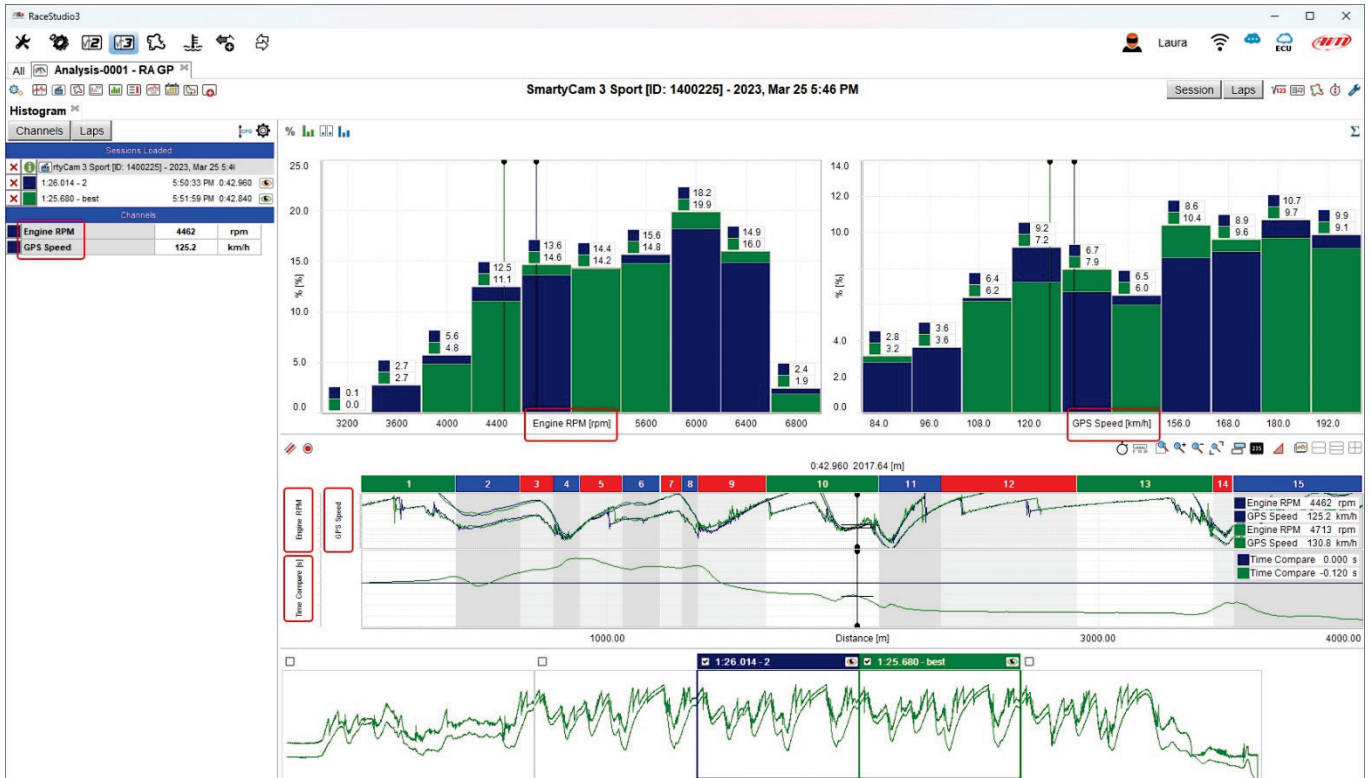
- show Lateral Acceleration on the Y axle
- click “Choose X Channel” icon top right of the scatter graph
- scroll up to “Vertical Acc” channel on the panel that is prompted, select it and press “OK”
- right click on the graph and select “Setting” option
- scroll the panel up to “Choose how you want plot grid to be shown” option, select “Show circular grid” and press “OK”
- the circular grid is shown as in the bottom graph of the image below



8 – Histogram Layout



Pressing the icon shown here above you enter “Histogram” layout. Each channel has its own histogram and each lap is identified by a different colour; below the histograms is a graph of the channel on a distance base and time compare if enabled. Bottom of the graphs is the storyboard.

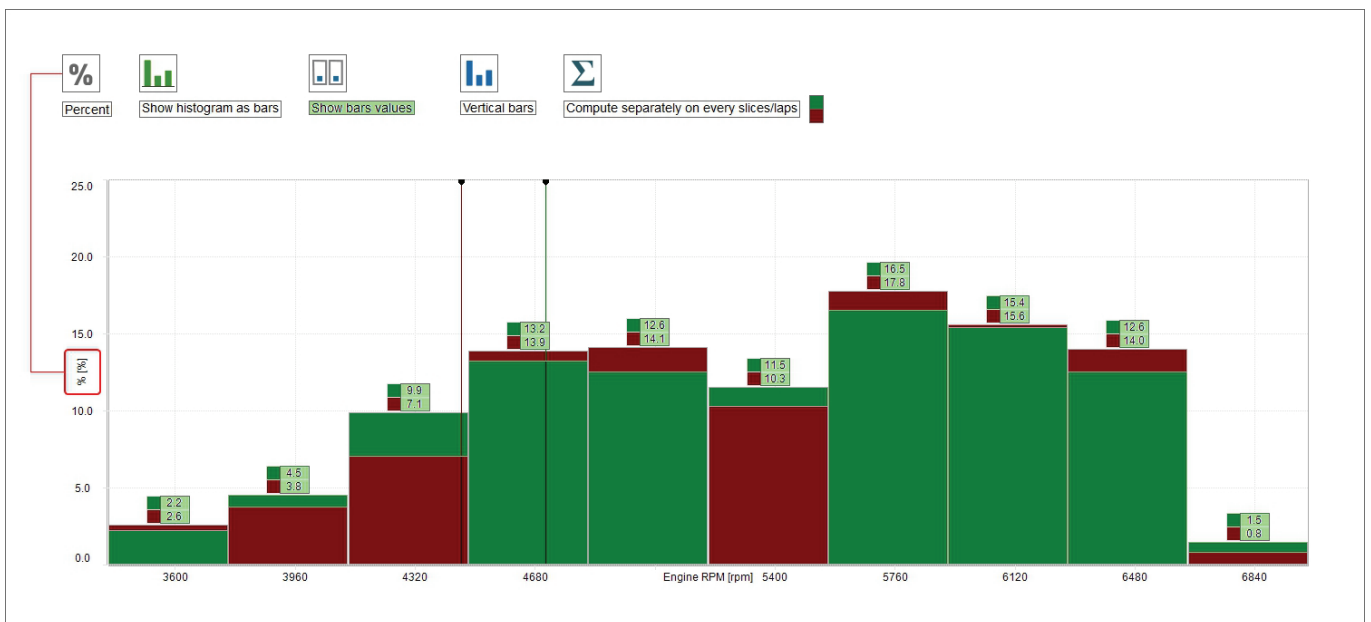


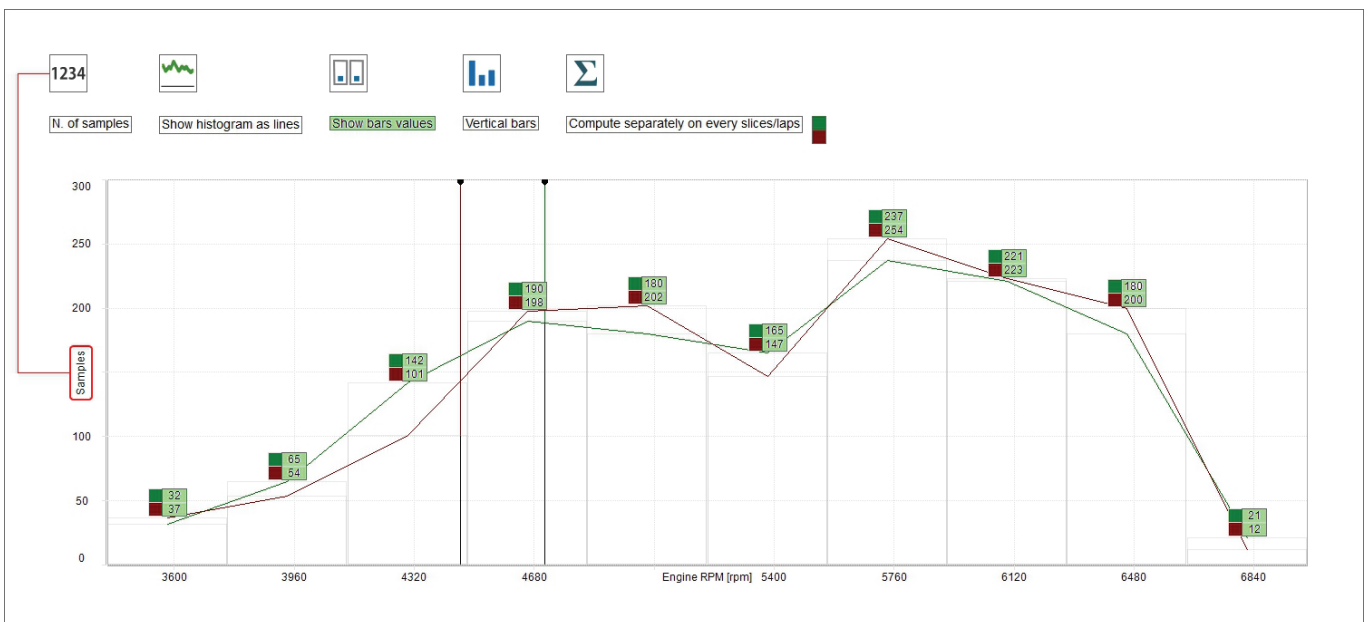
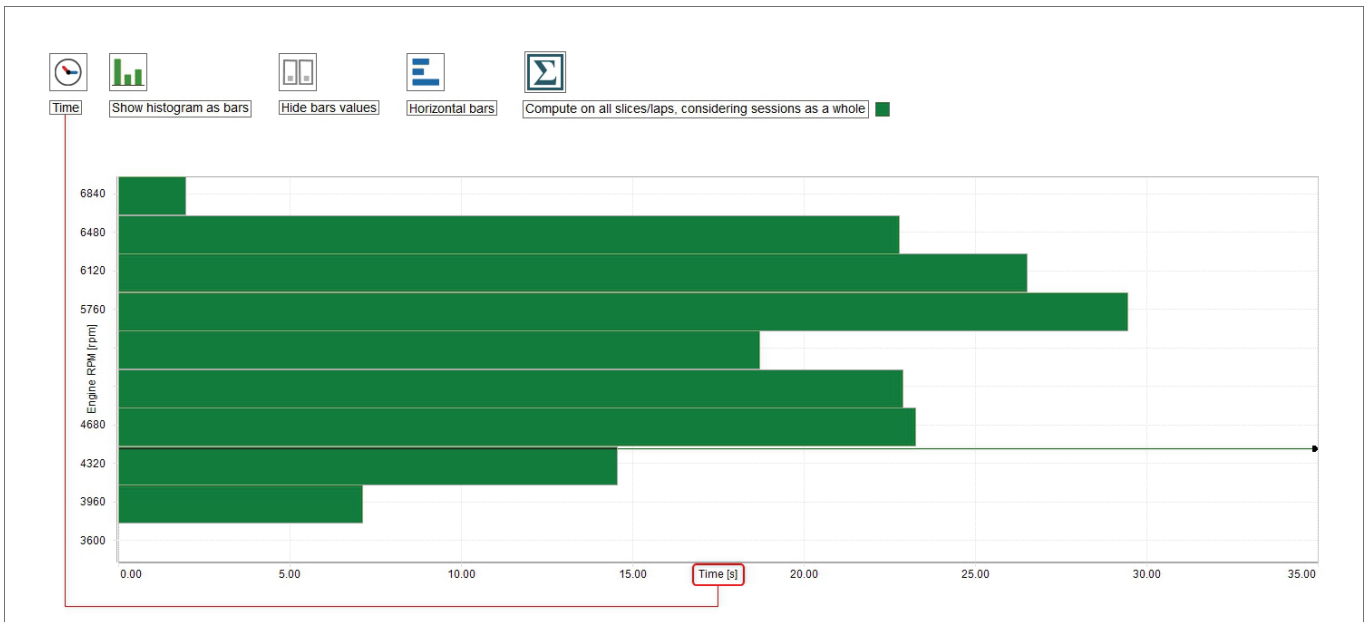
Using the icons on the toolbar top of the graph you can modify the graph layout and its computation. The graph can be shown in percentage, in time or as number of samples. Its layout can be in bars (horizontal or vertical) or lines, showing or hiding the values. If more laps/slices are shown they can be computed separately or as a whole.

The toolbar contains the following icons and their corresponding options:

- %**: Choose a computation method for histograms. Options: Percent (1234 N. of samples), Time.
- Bar icon**: Choose the way you want the histogram to be displayed. Options: Show histogram as bars, Show histogram as lines.
- Value icon**: Choose if you want to display histogram values. Options: Hide bars values, Show bars values.
- Bar orientation icon**: Choose how to orient histogram bars. Options: Horizontal bars, Vertical bars.
- Sum icon**: Choose how to compute the histograms. Options: Compute separately on every slices/laps, Compute on all slices/laps, considering sessions as a whole.

The following images show the main options.





9 – Split Times report layout



Pressing the icon shown here above on the right you enter “Split Times Report” layout. It shows:

- two keyboards left and right of the view; each button can show different data and the second and the third button from the left can also be variously combined as explained in the following paragraphs while the printer icons highlighted below allows the user to export data in a file
- session data in the central table, with or without “Statistics” (see paragraph 6.3); each lap can be enabled/disabled checking and unchecking the corresponding checkbox on the left; the selected split is indicated by its number on a blue background top of the column in the table.
- graphs of the selected split on the right.
- track map showing the selected split bottom of the graphs

Export Split Report to File

Split Times Report ^{PC}
12:34 PM

12345678910111

SmartyCam 3 Sport [ID: 1400225] - 2023, Mar 25 5:46 PM

2:13.659 - out		0:29.711	0:03.551	0:03.681	0:04.715	0:03.655	0:02.028	0:01.732	0:07.396	0:15.105	0:11.828	0
1:26.144 - 1	0:06.439	0:05.778	0:02.833	0:03.184	0:04.205	0:03.112	0:01.618	0:01.434	0:06.774	0:10.162	0:07.687	0:1
1:26.014 - 2	0:06.412	0:05.656	0:02.792	0:03.249	0:04.119	0:03.106	0:01.613	0:01.442	0:06.877	0:10.202	0:07.654	0:1
1:25.680 - best	0:06.468	0:05.697	0:02.832	0:03.336	0:04.029	0:03.119	0:01.604	0:01.461	0:06.636	0:10.077	0:07.607	0:0
2:07.496 - in	0:06.447	0:05.639	0:02.783	0:03.432	0:04.193	0:03.078	0:01.585	0:01.435	0:06.823	0:10.212	0:07.919	0:1
average value - 1:25.946	0:06.440	0:05.710	0:02.819	0:03.256	0:04.118	0:03.112	0:01.612	0:01.446	0:06.762	0:10.147	0:07.649	0:1
median value - 1:25.990	0:06.439	0:05.697	0:02.832	0:03.249	0:04.119	0:03.112	0:01.613	0:01.442	0:06.774	0:10.162	0:07.654	0:1
best theoretical - 1:25.257	0:06.412	0:05.656	0:02.792	0:03.184	0:04.029	0:03.106	0:01.604	0:01.434	0:06.636	0:10.077	0:07.607	0:1
maximum value - 1:26.591	0:06.468	0:05.778	0:02.833	0:03.336	0:04.205	0:03.119	0:01.618	0:01.461	0:06.877	0:10.202	0:07.687	0:1
std deviation	0:00.023	0:00.051	0:00.019	0:00.062	0:00.072	0:00.005	0:00.006	0:00.011	0:00.099	0:00.052	0:00.033	0:1
best rolling - 1:25.680	0:06.468	0:05.697	0:02.832	0:03.336	0:04.029	0:03.119	0:01.604	0:01.461	0:06.636	0:10.077	0:07.607	0:1

GPS Speed

170

1080.00 1100.00 1120.00 1140.00 1160.00 1180.00 1200.00

Time [s]

0:03.118

0:03.106

1 3

Lap

Distance [m]

154.50

153.70

1 3

Lap

Time [s]

0:03.118

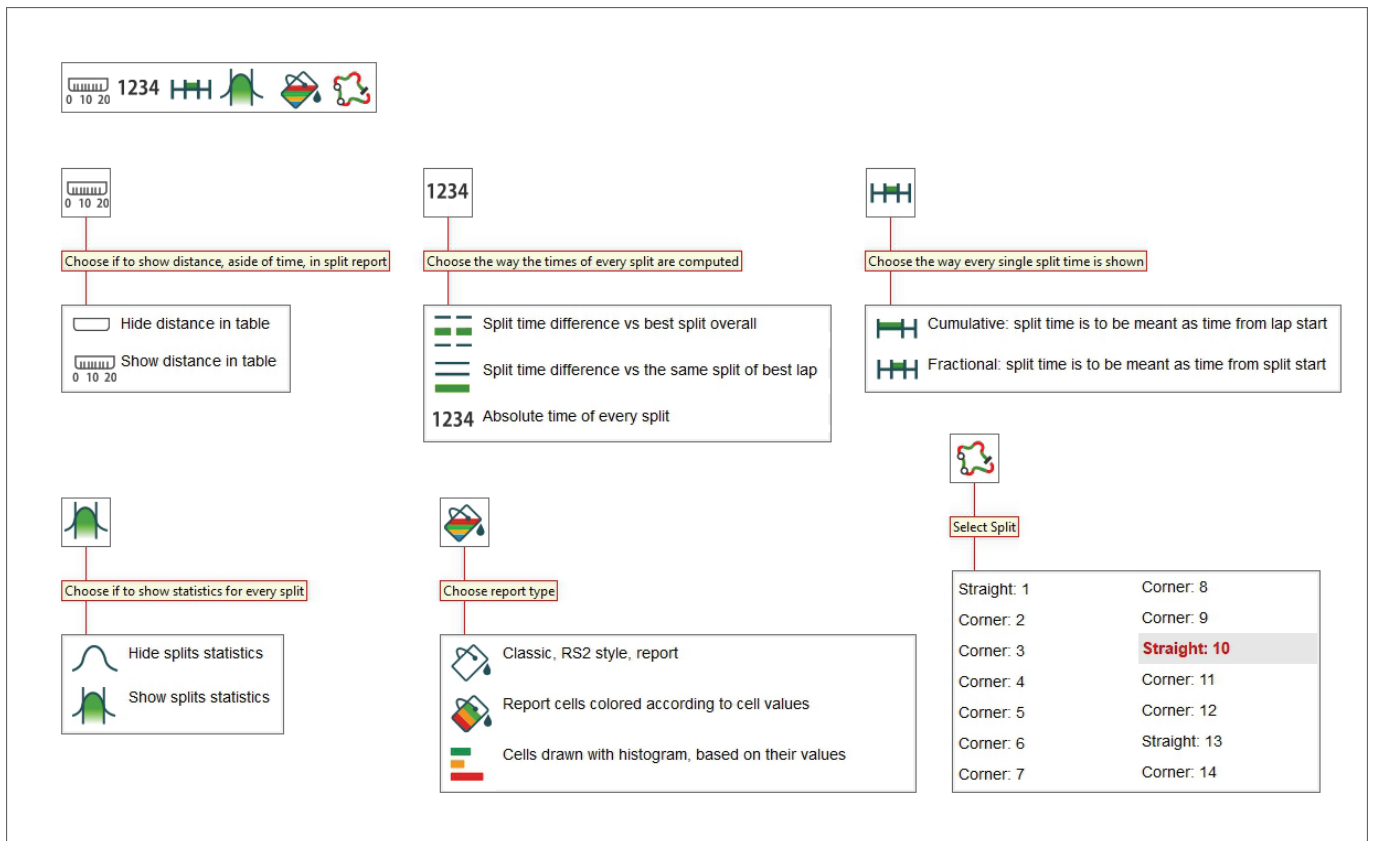
0:03.106

153.70 153.80 153.90 154.00 154.10 154.20 154.30 154.40 154.50

Leaflet | © Google Maps

9.1 – The top keyboards

The top keyboards change and switch among different functions that show the data in various ways allowing different data analysis that will be explained in the following paragraphs. The image below shows left keyboard legenda. It manages the table left of the software view.



The image below shows right keyboard legenda that manages the available graphs shown below it.

The diagram illustrates the keyboard legends for managing graph displays. It is organized into six columns, each corresponding to a specific graph type or function. Each column starts with a set of icons, followed by a legend box with a title and options.

- Channel Plot Legend:**
 - Choose if you want to display the plot with channel values
 - Hide channel plot (checkbox)
 - Show channel plot (checkbox with channel icon)
- Time vs Laps Legend:**
 - Choose if you want to display the times vs laps
 - Hide graph time vs lap (checkbox)
 - Show graph time vs lap (checkbox with stopwatch icon)
- Distance vs Laps Legend:**
 - Choose if you want to display the distance vs laps
 - Hide graph distance vs lap (checkbox)
 - Show graph distance vs lap (checkbox with distance icon)
- Time vs Distance Legend:**
 - Choose if you want to display the time vs distance
 - Hide graph time vs distance (checkbox)
 - Show graph time vs distance (checkbox with stopwatch icon)
- Colorize Method Legend:**
 - Choose colorize method
 - Selected one bold, others normal (checkbox with color icon)
 - Color scale according to performance (checkbox with color icon)
- Select Split Legend:**
 - Select Split
 - | | |
|-------------|---------------------|
| Straight: 1 | Corner: 8 |
| Corner: 2 | Corner: 9 |
| Corner: 3 | Straight: 10 |
| Corner: 4 | Corner: 11 |
| Corner: 5 | Corner: 12 |
| Corner: 6 | Straight: 13 |
| Corner: 7 | Corner: 14 |



9.2 – The split report table and its available layouts

Considering the table left of the software view here follow different possible layouts.

Show distance in table, absolute time of every split, fractional split time, classic RS2 style report.

Settings:

- Show distance in table
- 1234 Absolute time of every split
- Hide splits statistics
- Fractional: split time is to be meant as time from split start
- Classic, RS2 style, report
- Corner: 5

Split Times Report ³⁶

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
SmartyCam 3 Sport [ID: 1400225] - 2023, Mar 25 5:46 PM															
2:13.659 - out	0:29.711	0:03.551	0:03.681	0:04.715	0:03.655	0:02.028	0:01.732	0:07.396	0:15.105	0:11.828	0:17.382	0:17.005	0:03.316	0:12.554	
1:26.144 - 1	0:06.439	0:05.778	0:02.833	0:03.184	0:04.205	0:03.112	0:01.618	0:01.434	0:06.774	0:10.162	0:07.687	0:09.394	0:08.891	0:02.991	0:11.642
1:26.014 - 2	0:06.412	0:05.656	0:02.792	0:03.249	0:04.119	0:03.106	0:01.613	0:01.442	0:06.877	0:10.202	0:07.654	0:09.400	0:08.901	0:02.908	0:11.683
1:25.680 - best	0:06.468	0:05.697	0:02.832	0:03.336	0:04.029	0:03.119	0:01.604	0:01.461	0:06.636	0:10.077	0:07.607	0:09.388	0:08.933	0:02.960	0:11.533
2:07.496 - in	0:06.447	0:05.639	0:02.783	0:03.432	0:04.183	0:03.078	0:01.585	0:01.435	0:06.823	0:10.212	0:07.919	0:09.455	0:09.730		

Hide distance in table, absolute time of every split, cumulative split time, reports cells coloured according to cell values (from green for better values to red for worst values).

Settings:

- Hide distance in table
- 1234 Absolute time of every split
- Hide splits statistics
- Cumulative: split time is to be meant as time from lap start
- Report cells colored according to cell values
- Corner: 5

Split Times Report ³⁶

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
SmartyCam 3 Sport [ID: 1400225] - 2023, Mar 25 5:46 PM															
2:13.659 - out	0:29.711	0:33.262	0:36.943	0:41.658	0:45.313	0:47.341	0:49.073	0:56.469	1:11.574	1:23.402	1:40.784	1:57.789	2:01.105	2:13.659	
1:26.144 - 1	0:06.439	0:12.217	0:15.050	0:18.234	0:22.439	0:25.551	0:27.169	0:28.603	0:35.377	0:45.539	0:53.226	1:02.620	1:11.511	1:14.502	1:26.144
1:26.014 - 2	0:06.412	0:12.068	0:14.860	0:18.109	0:22.228	0:25.334	0:26.947	0:28.389	0:35.266	0:45.468	0:53.122	1:02.522	1:11.423	1:14.331	1:26.014
1:25.680 - best	0:06.468	0:12.165	0:14.997	0:18.333	0:22.362	0:25.481	0:27.085	0:28.546	0:35.182	0:45.259	0:52.866	1:02.254	1:11.187	1:14.147	1:25.680
2:07.496 - in	0:06.447	0:12.086	0:14.869	0:18.301	0:22.484	0:25.562	0:27.147	0:28.592	0:35.405	0:45.617	0:53.536	1:02.991	2:07.496		



Hide distance in table, split time difference vs the same split of best lap, show split statistics, fractional split time, cells draws with histogram based on their values.

Hide distance in table
 Split time difference vs the same split of best lap
 Show splits statistics
 Fractional: split time is to be meant as time from split start
 Cells drawn with histogram based on their values
 Corner: 5

Split Times Report ²⁶

1234 5 6 7 8 9 10 11 12 13 14 15

SmartyCam 3 Sport [ID: 1400225] - 2023, Mar 25 5:46 PM

2:13.659 - out		0:29.711	0:03.551	0:03.681	0:04.715	0:03.655	0:02.028	0:01.732	0:07.396	0:15.105	0:11.828	0:17.382	0:17.005	0:03.316	0:12.554
1:26.144 - 1	-0:00.029	0:00.081	0:00.001	-0:00.152	0:00.176	-0:00.007	0:00.014	-0:00.027	0:00.138	0:00.085	0:00.080	0:00.006	-0:00.042	0:00.031	0:00.109
1:26.014 - 2	-0:00.056	-0:00.041	-0:00.040	-0:00.087	0:00.090	-0:00.013	0:00.009	-0:00.019	0:00.241	0:00.125	0:00.047	0:00.012	-0:00.032	-0:00.052	0:00.150
1:25.680 - best	0:06.468	0:05.697	0:02.832	0:03.336	0:04.029	0:03.119	0:01.604	0:01.461	0:06.636	0:10.077	0:07.607	0:09.388	0:08.933	0:02.960	0:11.533
average value - 1:25.946	0:06.440	0:05.710	0:02.819	0:03.256	0:04.118	0:03.112	0:01.612	0:01.446	0:06.762	0:10.147	0:07.649	0:09.394	0:08.908	0:02.953	0:11.619
median value - 1:25.990	0:06.439	0:05.697	0:02.832	0:03.249	0:04.119	0:03.112	0:01.613	0:01.442	0:06.774	0:10.162	0:07.654	0:09.394	0:08.901	0:02.960	0:11.642
best theoretical - 1:25.257	0:06.412	0:05.656	0:02.792	0:03.184	0:04.029	0:03.106	0:01.604	0:01.434	0:06.636	0:10.077	0:07.607	0:09.388	0:08.891	0:02.908	0:11.533
maximum value - 1:26.591	0:06.468	0:05.778	0:02.833	0:03.336	0:04.205	0:03.119	0:01.618	0:01.461	0:06.877	0:10.202	0:07.687	0:09.400	0:08.933	0:02.991	0:11.683
std deviation	0:00.023	0:00.051	0:00.019	0:00.062	0:00.072	0:00.005	0:00.006	0:00.011	0:00.099	0:00.052	0:00.033	0:00.005	0:00.018	0:00.034	0:00.063
best rolling - 1:25.680	0:06.468	0:05.697	0:02.832	0:03.336	0:04.029	0:03.119	0:01.604	0:01.461	0:06.636	0:10.077	0:07.607	0:09.388	0:08.933	0:02.960	0:11.533

Pressing Statistics button a lot of information can be shown/hidden bottom of the laps figures, to say:

- Average value: it shows the average¹ time value of each split (see paragraph 9.2.1)
- Median value: it shows the median² time value of each split (see paragraph 9.2.2)
- Best theoretical: this lap time is the addition of all best split times no matter what lap they belong to (see paragraph 9.2.3)
- Maximum value: it's the higher time obtained for each split; these values are written in red in the dedicated statistics row
- Standard deviation (in the split): this value allows to understand how constant the racer is; a low standard deviation value means the driving style follows a rule and there are no strange behaviours in the vehicle
- Best rolling: is the best lap time really made also if the splits belong to different laps assumed that they are successive (see paragraph 9.2.4).

¹ Average value is obtained summing up all items and dividing the result by the number of items

² Median value is the value that, ordered the items of a list, is central in the list. if the number of items is odd the median value is one while if the number of items is even the median value is obtained summing up the two central items of the list and dividing the result by two.



9.2.1 – Statistics: average value

As shown below average value is obtained summing up all split times and dividing the result by the number of items. In this case 7 laps are considered except for split 2 where the time of lap 1 is missing and so that sum is to be divided by 6.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
CHIQUITA - 2023, Jun 16 8:51 AM														
8:23.503 - out														8:23.503
4:08.699 - 1	1:33.490		0:17.400	0:09.840	0:08.652	0:13.958	0:15.786	0:08.474	0:30.036	0:06.736	0:13.613	0:09.747	0:11.784	0:09.183
2:17.536 - 2	0:08.134	0:03.464	0:05.571	0:07.620	0:07.460	0:12.751	0:12.535	0:07.966	0:23.984	0:05.726	0:13.479	0:09.551	0:11.947	0:07.348
1:54.287 - 3	0:05.620	0:02.799	0:04.341	0:06.372	0:06.946	0:09.939	0:11.137	0:06.129	0:18.080	0:04.563	0:11.116	0:10.222	0:10.019	0:07.004
7 laps 1:48.551 - best	0:05.325	0:02.767	0:04.229	0:06.189	0:06.408	0:09.872	0:10.434	0:06.153	0:17.517	0:04.547	0:10.741	0:07.593	0:09.733	0:07.043
1:49.468 - 5	0:05.231	0:02.661	0:04.088	0:05.851	0:06.333	0:09.798	0:10.432	0:06.411	0:17.744	0:04.533	0:10.939	0:07.105	0:11.126	0:07.216
1:56.332 - 6	0:05.777	0:02.945	0:04.514	0:07.236	0:06.999	0:10.263	0:11.577	0:06.963	0:19.801	0:05.051	0:11.298	0:07.105	0:09.719	0:07.084
1:48.657 - 7	0:05.218	0:02.664	0:04.091	0:05.810	0:06.542	0:10.006	0:10.495	0:06.136	0:17.632	0:05.069	0:11.125	0:07.236	0:09.509	0:07.124
3:04.770 - in	0:05.247	0:02.658	0:04.148	0:06.256	0:06.421	0:10.121	0:10.563	0:06.335	0:18.843	0:05.070	0:11.179			
Total	1:68.795	0:17.300	0:44.234	0:48.918	0:49.340	0:76.587	0:82.396	0:48.232	2:24.794	0:36.225	1:22.311	0:58.559	0:73.837	0:52.002
Divided by 7	0:18.3992	0:02.8833*	0:06.3191	0:06.9882	0:07.0485	0:10.9410	0:11.7708	0:06.8902	0:20.6848	0:05.175	0:11.7587	0:08.3655	0:10.5481	0:07.4288
Round up	0:18.399	0:02.883	0:06.319	0:06.988	0:07.049	0:10.941	0:11.771	0:06.890	0:20.685	0:05.175	0:11.759	0:08.366	0:10.548	0:07.429
			* 6 Splits divided by 6											
average value - 2:15.202	0:18.399	0:02.883	0:06.319	0:06.988	0:07.049	0:10.941	0:11.771	0:06.890	0:20.685	0:05.175	0:11.759	0:08.366	0:10.548	0:07.429
median value - 1:52.592	0:05.620	0:02.767	0:04.341	0:06.372	0:06.946	0:10.006	0:11.137	0:06.411	0:18.080	0:05.051	0:11.125	0:07.593	0:10.019	0:07.124
best theoretical - 1:46.878	0:05.218	0:02.661	0:04.088	0:05.810	0:06.333	0:09.798	0:10.432	0:06.129	0:17.517	0:04.533	0:10.741	0:07.105	0:09.509	0:07.004
maximum value - 4:12.801	1:33.490	0:03.464	0:17.400	0:09.840	0:08.652	0:13.958	0:15.786	0:08.474	0:30.036	0:06.736	0:13.613	0:10.222	0:11.947	0:09.183
std deviation	0:30.670	0:00.277	0:04.549	0:01.325	0:00.749	0:01.566	0:01.787	0:00.894	0:04.374	0:00.751	0:01.142	0:01.299	0:00.966	0:00.724
bestrolling - 1:47.721	0:05.231	0:02.661	0:04.088	0:05.851	0:06.333	0:09.798	0:10.432	0:06.153	0:17.517	0:04.547	0:10.741	0:07.593	0:09.733	0:07.043

9.2.2 – Statistics: median value

Once the items listed in an increasing order the median value is the one central in the list. If the number of items is odd the median value is one (left image) while if the number of items is even the median value is the average value of the two central items of the list (right image).

Split times	Split times default order	Split times in ascending order
8:23.503 - out		
4:08.699 - 1	1:33.490	1:33.490
2:17.536 - 2	0:08.134	0:08.134
1:54.287 - 3	0:05.620	0:05.620
1:48.551 - best	0:05.325	0:05.325
1:49.468 - 5	0:05.231	0:05.231
1:56.332 - 6	0:05.777	0:05.777
1:48.657 - 7	0:05.218	0:05.218
3:04.770 - in	0:05.247	
average value - 2:15.202	0:18.399	
median value - 1:52.592	0:05.620	
best theoretical - 1:46.878	0:05.218	
maximum value - 4:12.801	1:33.490	
std deviation	0:30.670	
best rolling - 1:47.721	0:05.231	

Split times	Split times default order	Split times in ascending order
8:23.503 - out		
4:08.699 - 1		
2:17.536 - 2	0:03.464	0:03.464
1:54.287 - 3	0:02.799	0:02.799
1:48.551 - best	0:02.767	0:02.767
1:49.468 - 5	0:02.661	0:02.661
1:56.332 - 6	0:02.945	0:02.945
1:48.657 - 7	0:02.664	0:02.664
3:04.770 - in	0:02.658	
average value - 2:15.202	0:02.883	
median value - 1:52.592	0:02.783	
best theoretical - 1:46.878	0:02.661	
maximum value - 4:12.801	0:03.464	
std deviation	0:00.277	
best rolling - 1:47.721	0:02.661	

9.2.3 – Statistics: best theoretical time

Best theoretical lap time is obtained summing all best split times of all considered laps. This is why is called theoretical. In the image below all best split times are highlighted and they are summed in the bottom best theoretical row in the statistics.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
8:23.503 - out														8:23.503
4:08.699 - 1	1:33.490		0:17.400	0:09.840	0:08.652	0:13.958	0:15.786	0:08.474	0:30.036	0:06.736	0:13.613	0:09.747	0:11.784	0:09.183
2:17.536 - 2	0:08.134	0:03.464	0:05.571	0:07.620	0:07.460	0:12.751	0:12.535	0:07.966	0:23.984	0:05.726	0:13.479	0:09.551	0:11.947	0:07.348
1:54.287 - 3	0:05.620	0:02.799	0:04.341	0:06.372	0:06.946	0:09.939	0:11.137	0:06.129	0:18.080	0:04.563	0:11.116	0:10.222	0:10.019	0:07.004
1:48.551 - best	0:05.325	0:02.767	0:04.229	0:06.189	0:06.408	0:09.872	0:10.434	0:06.153	0:17.517	0:04.547	0:10.741	0:07.593	0:09.733	0:07.043
1:49.468 - 5	0:05.231	0:02.661	0:04.088	0:05.851	0:06.333	0:09.798	0:10.432	0:06.411	0:17.744	0:04.533	0:10.939	0:07.105	0:11.126	0:07.216
1:56.332 - 6	0:05.777	0:02.945	0:04.514	0:07.236	0:06.999	0:10.263	0:11.577	0:06.963	0:19.801	0:05.051	0:11.298	0:07.105	0:09.719	0:07.084
1:48.657 - 7	0:05.218	0:02.664	0:04.091	0:05.810	0:06.542	0:10.006	0:10.495	0:06.136	0:17.632	0:05.069	0:11.125	0:07.236	0:09.509	0:07.124
3:04.770 - in	0:05.247	0:02.658	0:04.148	0:06.256	0:06.421	0:10.121	0:10.583	0:06.335	0:18.843	0:05.070	0:11.179			
average value - 2:15.202	0:18.399	0:02.883	0:06.319	0:06.988	0:07.049	0:10.941	0:11.771	0:06.890	0:20.685	0:05.175	0:11.759	0:08.366	0:10.548	0:07.429
median value - 1:52.592	0:05.620	0:02.767	0:04.341	0:06.372	0:06.946	0:10.006	0:11.137	0:06.411	0:18.080	0:05.051	0:11.125	0:07.593	0:10.019	0:07.124
best theoretical - 1:46.878	0:05.218	0:02.661	0:04.088	0:05.810	0:06.333	0:09.798	0:10.432	0:06.129	0:17.517	0:04.533	0:10.741	0:07.105	0:09.509	0:07.004
maximum value - 4:12.801	1:33.490	0:03.464	0:17.400	0:09.840	0:08.652	0:13.958	0:15.786	0:08.474	0:30.036	0:06.736	0:13.613	0:10.222	0:11.947	0:09.183
std deviation	0:30.670	0:00.277	0:04.549	0:01.325	0:00.749	0:01.566	0:01.787	0:00.894	0:04.374	0:00.751	0:01.142	0:01.299	0:00.966	0:00.724
best rolling - 1:47.721	0:05.231	0:02.661	0:04.088	0:05.851	0:06.333	0:09.798	0:10.432	0:06.153	0:17.517	0:04.547	0:10.741	0:07.593	0:09.733	0:07.043



9.2.4 – Statistics: best rolling time

Best rolling: is the best lap time really made also if the splits belong to different laps assumed that they are successive.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
CHIQUITA - 2023, Jun 16 8:51 AM														
8:23.503 - out														8:23.503
4:08.699 - 1	1:33.490		0:17.400	0:09.840	0:08.652	0:13.958	0:15.786	0:08.474	0:30.036	0:06.736	0:13.613	0:09.747	0:11.784	0:09.183
2:17.536 - 2	0:08.134	0:03.464	0:05.571	0:07.620	0:07.460	0:12.751	0:12.535	0:07.966	0:23.984	0:05.726	0:13.479	0:09.551	0:11.947	0:07.348
1:54.287 - 3	0:05.620	0:02.799	0:04.341	0:06.372	0:06.946	0:09.939	0:11.137	0:06.129	0:18.080	0:04.563	0:11.116	0:10.222	0:10.019	0:07.004
1:48.551 - best	0:05.325	0:02.767	0:04.229	0:06.189	0:06.408	0:09.872	0:10.434	0:06.153	0:17.517	0:04.547	0:10.741	0:07.593	0:09.733	0:07.043
1:49.468 - 5	0:05.231	0:02.661	0:04.088	0:05.851	0:06.333	0:09.798	0:10.432	0:06.411	0:17.744	0:04.533	0:10.939	0:07.105	0:11.126	0:07.216
1:56.332 - 6	0:05.777	0:02.945	0:04.514	0:07.236	0:06.999	0:10.263	0:11.577	0:06.963	0:19.801	0:05.051	0:11.298	0:07.105	0:09.719	0:07.084
1:48.657 - 7	0:05.218	0:02.664	0:04.091	0:05.810	0:06.542	0:10.006	0:10.495	0:06.136	0:17.632	0:05.069	0:11.125	0:07.236	0:09.509	0:07.124
3:04.770 - in	0:05.247	0:02.658	0:04.148	0:06.256	0:06.421	0:10.121	0:10.583	0:06.335	0:18.843	0:05.070	0:11.179			
average value - 2:15.202	0:18.399	0:02.883	0:06.319	0:06.988	0:07.049	0:10.941	0:11.771	0:06.890	0:20.685	0:05.175	0:11.759	0:08.366	0:10.548	0:07.429
median value - 1:52.592	0:05.620	0:02.767	0:04.341	0:06.372	0:06.946	0:10.006	0:11.137	0:06.411	0:18.080	0:05.051	0:11.125	0:07.593	0:10.019	0:07.124
best theoretical - 1:46.878	0:05.218	0:02.661	0:04.088	0:05.810	0:06.333	0:09.798	0:10.432	0:06.129	0:17.517	0:04.533	0:10.741	0:07.105	0:09.509	0:07.004
maximum value - 4:12.801	1:33.490	0:03.464	0:17.400	0:09.840	0:08.652	0:13.958	0:15.786	0:08.474	0:30.036	0:06.736	0:13.613	0:10.222	0:11.947	0:09.183
std deviation	0:30.670	0:00.277	0:04.549	0:01.325	0:00.749	0:01.566	0:01.787	0:00.894	0:04.374	0:00.751	0:01.142	0:01.299	0:00.966	0:00.724
best rolling - 1:47.721	0:05.231	0:02.661	0:04.088	0:05.851	0:06.333	0:09.798	0:10.432	0:06.153	0:17.517	0:04.547	0:10.741	0:07.593	0:09.733	0:07.043



9.3 – Absolute fractional mode

It shows all split times with lap time on the left of the row.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
8:23.503 - out														8:23.503
4:08.699 - 1	1:33.490		0:17.400	0:09.840	0:08.652	0:13.958	0:15.786	0:08.474	0:30.036	0:06.736	0:13.613	0:09.747	0:11.784	0:09.183
2:17.536 - 2	0:08.134	0:03.464	0:05.571	0:07.620	0:07.460	0:12.751	0:12.535	0:07.966	0:23.984	0:05.726	0:13.479	0:09.551	0:11.947	0:07.348
1:54.287 - 3	0:05.620	0:02.799	0:04.341	0:06.372	0:06.946	0:09.939	0:11.137	0:06.129	0:18.080	0:04.563	0:11.116	0:10.222	0:10.019	0:07.004
1:48.551 - best	0:05.325	0:02.767	0:04.229	0:06.189	0:06.408	0:09.872	0:10.434	0:06.153	0:17.517	0:04.547	0:10.741	0:07.593	0:09.733	0:07.043
1:49.468 - 5	0:05.231	0:02.661	0:04.088	0:05.851	0:06.333	0:09.798	0:10.432	0:06.411	0:17.744	0:04.533	0:10.939	0:07.105	0:11.126	0:07.216
1:56.332 - 6	0:05.777	0:02.945	0:04.514	0:07.236	0:06.999	0:10.263	0:11.577	0:06.963	0:19.801	0:05.051	0:11.298	0:07.105	0:09.719	0:07.084
1:48.657 - 7	0:05.218	0:02.664	0:04.091	0:05.810	0:06.542	0:10.006	0:10.495	0:06.136	0:17.632	0:05.069	0:11.125	0:07.236	0:09.509	0:07.124
3:04.770 - in	0:05.247	0:02.658	0:04.148	0:06.256	0:06.421	0:10.121	0:10.583	0:06.335	0:18.843	0:05.070	0:11.179			
average value - 2:15.202	0:18.399	0:02.883	0:06.319	0:06.988	0:07.049	0:10.941	0:11.771	0:06.890	0:20.685	0:05.175	0:11.759	0:08.366	0:10.548	0:07.429
median value - 1:52.592	0:05.620	0:02.767	0:04.341	0:06.372	0:06.946	0:10.006	0:11.137	0:06.411	0:18.080	0:05.051	0:11.125	0:07.593	0:10.019	0:07.124
best theoretical - 1:46.878	0:05.218	0:02.661	0:04.088	0:05.810	0:06.333	0:09.798	0:10.432	0:06.129	0:17.517	0:04.533	0:10.741	0:07.105	0:09.509	0:07.004
maximum value - 4:12.801	1:33.490	0:03.464	0:17.400	0:09.840	0:08.652	0:13.958	0:15.786	0:08.474	0:30.036	0:06.736	0:13.613	0:10.222	0:11.947	0:09.183
std deviation	0:30.670	0:00.277	0:04.549	0:01.325	0:00.749	0:01.566	0:01.787	0:00.894	0:04.374	0:00.751	0:01.142	0:01.299	0:00.966	0:00.724
best rolling - 1:47.721	0:05.231	0:02.661	0:04.088	0:05.851	0:06.333	0:09.798	0:10.432	0:06.153	0:17.517	0:04.547	0:10.741	0:07.593	0:09.733	0:07.043

9.4 – Absolute cumulative mode

Each split time is added to the previous split time; the last split time is the lap time.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
8:23.503 - out														8:23.503
4:08.699 - 1	1:33.490		1:50.890	2:00.730	2:09.382	2:23.340	2:39.126	2:47.600	3:17.636	3:24.372	3:37.985	3:47.732	3:59.516	4:08.699
2:17.536 - 2	0:08.134	0:11.598	0:17.169	0:24.789	0:32.249	0:45.000	0:57.535	1:05.501	1:29.485	1:35.211	1:48.690	1:58.241	2:10.188	2:17.536
1:54.287 - 3	0:05.620	0:08.419	0:12.760	0:19.132	0:26.078	0:36.017	0:47.154	0:53.283	1:11.363	1:15.926	1:27.042	1:37.264	1:47.283	1:54.287
1:48.551 - best	0:05.325	0:08.092	0:12.321	0:18.510	0:24.918	0:34.790	0:45.224	0:51.377	1:08.894	1:13.441	1:24.182	1:31.775	1:41.508	1:48.551
1:49.468 - 5	0:05.231	0:07.892	0:11.980	0:17.831	0:24.164	0:33.962	0:44.394	0:50.805	1:08.549	1:13.082	1:24.021	1:31.126	1:42.252	1:49.468
1:56.332 - 6	0:05.777	0:08.722	0:13.236	0:20.472	0:27.471	0:37.734	0:49.311	0:56.274	1:16.075	1:21.126	1:32.424	1:39.529	1:49.248	1:56.332
1:48.657 - 7	0:05.218	0:07.882	0:11.973	0:17.783	0:24.325	0:34.331	0:44.826	0:50.962	1:08.594	1:13.663	1:24.788	1:32.024	1:41.533	1:48.657
3:04.770 - in	0:05.247	0:07.905	0:12.053	0:18.309	0:24.730	0:34.851	0:45.434	0:51.769	1:10.612	1:15.682	3:04.770			
average value - 2:14.790	0:18.399	0:08.768	0:27.190	0:34.178	0:41.227	0:52.168	1:03.939	1:10.829	1:31.514	1:36.689	1:48.447	1:56.813	2:07.361	2:14.790
median value - 1:54.287	0:05.620	0:08.092	0:12.760	0:19.132	0:26.078	0:36.017	0:47.154	0:53.283	1:11.363	1:15.926	1:27.042	1:37.264	1:47.283	1:54.287
maximum value - 4:08.699	1:33.490	0:11.598	1:50.890	2:00.730	2:09.382	2:23.340	2:39.126	2:47.600	3:17.636	3:24.372	3:37.985	3:47.732	3:59.516	4:08.699
std deviation	0:30.670	0:01.300	0:34.212	0:35.406	0:36.082	0:37.387	0:39.088	0:39.797	0:43.875	0:44.560	0:45.448	0:46.117	0:46.727	0:47.444

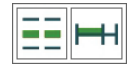


9.5 – Split time difference vs best split overall fractional mode

Shows for each split the difference between the current split time and the best time recorded for this split in the session. As shown here below the split time of the current split is in red; adding it to the best time of this split you recorded in the session you have the split time of the current split.

Split	Current Split Time (Red)	Best Time (Green)	Time Difference (Red)
8:23.503 - out			
4:08.699 - 1	1:28.272	0:02.916	0:03.716
2:17.536 - 2		0:00.402	0:00.537
1:54.287 - 3		0:00.107	0:00.210
1:48.551 - best		0:00.013	0:00.010
1:49.468 - 5		0:00.559	0:00.840
1:56.332 - 6		0:05.218	0:07.882
1:48.657 - 7	0:05.218	0:05.218	0:00.000
3:04.770 - in			

Split	Current Split Time (Red)	Best Time (Yellow)	Time Difference (Red)
8:23.503 - out			
4:08.699 - 1	1:33.490	0:08.134	0:03.464
2:17.536 - 2		0:05.620	0:02.799
1:54.287 - 3		0:05.325	0:02.767
1:48.551 - best		0:05.231	0:02.661
1:49.468 - 5		0:05.777	0:02.945
1:56.332 - 6		0:05.218	0:02.664
1:48.657 - 7	0:05.218	0:05.218	0:00.000
3:04.770 - in		0:05.247	0:02.658



9.6 – Refer to best split cumulative mode

The difference between the current split time and the time reached at the current split in the best lap. Split times are added and the last split of the current lap shows the difference between the current lap time and the best lap time.

Split	Time	Difference
1	1:28.272	
2	0:02.916	0:03.716
3	0:00.537	0:00.787
4	0:00.210	0:00.348
5	0:00.017	0:00.007
6	0:00.010	0:00.007
7	0:00.007	0:00.048
8	0:01.263	0:02.689
9	0:01.263	0:03.307
10	0:00.161	0:00.369
11	0:00.045	0:00.157
12	0:00.045	0:00.581
13	0:00.025	0:00.898
14	0:00.106	0:00.025



9.7 – Refer to best lap fractional mode

It shows the difference between the current split time and the time of the same split in best lap. Best lap time splits are shown in a square parenthesis on the related row (highlighted in the image below).

Split	Time	Difference
1	1:28.165	
2	0:02.809	0:00.697
3	0:00.295	0:00.032
4	0:00.112	0:00.112
5	0:00.183	0:00.538
6	0:00.067	0:00.703
7	-0:00.024	0:00.024
8	0:00.563	0:00.016
9	0:00.016	0:00.375
10	0:02.629	0:00.286
11	0:00.038	0:00.038
12	0:00.038	0:00.038
13	0:00.038	0:00.038
14	0:00.038	0:00.038



9.8 – Refer to best lap cumulative mode

The difference between the current split time and the split time of the same split in best lap time is added to the difference between the following split time and the split time of that split in best lap time. The last split time is the difference between the current lap time and best lap time.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
8:23.503 - out														8:23.503
4:08.699 - 1	1:28.165		1:38.569	1:42.220	1:44.464	1:48.550	1:53.902	1:56.223	2:08.742	2:10.931	2:13.803	2:15.957	2:18.008	2:20.148
2:17.536 - 2	0:02.809	0:03.506	0:04.848	0:06.279	0:07.331	0:10.210	0:12.311	0:14.124	0:20.591	0:21.770	0:24.508	0:26.466	0:28.680	0:28.985
1:54.287 - 3	0:00.295	0:00.327	0:00.439	0:00.622	0:01.160	0:01.227	0:01.930	0:01.906	0:02.469	0:02.485	0:02.860	0:05.489	0:05.775	0:05.736
1:48.551 - best	0:05.325	0:08.092	0:12.321	0:18.510	0:24.918	0:34.790	0:45.224	0:51.377	1:08.894	1:13.441	1:24.182	1:31.775	1:41.508	1:48.551
1:49.468 - 5	-0:00.094	-0:00.200	-0:00.341	-0:00.679	-0:00.754	-0:00.828	-0:00.830	-0:00.572	-0:00.345	-0:00.359	-0:00.161	-0:00.649	0:00.744	0:00.916
1:56.332 - 6	0:00.452	0:00.630	0:00.915	0:01.962	0:02.553	0:02.944	0:04.087	0:04.897	0:07.181	0:07.685	0:08.242	0:07.754	0:07.740	0:07.781
1:48.657 - 7	-0:00.107	-0:00.210	-0:00.348	-0:00.727	-0:00.593	-0:00.459	-0:00.398	-0:00.415	-0:00.300	0:00.222	0:00.606	0:00.249	0:00.025	0:00.106
3:04.770 - in	0:05.247	0:07.905	0:12.053	0:18.309	0:24.730	0:34.851	0:45.434	0:51.769	1:10.612	1:15.682	3:04.770			



9.9 – Classic/Colorize layout

Default layout is **Classic**: white background with best rolling lap highlighted in yellow (top image below).

If you **Colorize** it the cells will have coloured background that go from green for good values to red for bad values and best rolling lap is highlighted with red squares (bottom image below).

1 2 3 4 5 6 7 8 9 10 11 12 13 14

CHIQUITA - 2023, Jun 16 8:51 AM

	8:23.503 - out													8:23.503	
<input type="checkbox"/>	4:08.699 - 1	1:28.272		0:13.312	0:04.030	0:02.319	0:04.160	0:05.354	0:02.345	0:12.519	0:02.203	0:02.872	0:02.642	0:02.275	0:02.179
<input type="checkbox"/>	2:17.536 - 2	0:02.916	0:00.803	0:01.483	0:01.810	0:01.127	0:02.953	0:02.103	0:01.837	0:06.467	0:01.193	0:02.738	0:02.446	0:02.438	0:00.344
<input type="checkbox"/>	1:54.287 - 3	0:00.402	0:00.138	0:00.253	0:00.562	0:00.613	0:00.141	0:00.705	0:06.129	0:00.563	0:00.030	0:00.375	0:03.117	0:00.510	0:07.004
<input type="checkbox"/>	1:48.551 - best	0:00.107	0:00.106	0:00.141	0:00.379	0:00.075	0:00.074	0:00.002	0:00.024	0:17.517	0:00.014	0:10.741	0:00.488	0:00.224	0:00.039
<input type="checkbox"/>	1:49.468 - 5	0:00.013	0:02.661	0:04.088	0:00.041	0:06.333	0:09.798	0:10.432	0:00.282	0:00.227	0:04.533	0:00.198	0:07.105	0:01.617	0:00.212
<input type="checkbox"/>	1:56.332 - 6	0:00.559	0:00.284	0:00.426	0:01.426	0:00.666	0:00.465	0:01.145	0:00.834	0:02.284	0:00.518	0:00.557	0:07.105	0:00.210	0:00.080
<input type="checkbox"/>	1:48.657 - 7	0:05.218	0:00.003	0:00.003	0:05.810	0:00.209	0:00.208	0:00.063	0:00.007	0:00.115	0:00.536	0:00.384	0:00.131	0:09.509	0:00.120
<input type="checkbox"/>	3:04.770 - in	0:05.247	0:02.658	0:04.148	0:06.256	0:06.421	0:10.121	0:10.583	0:06.335	0:18.843	0:05.070	0:11.179			
	average value - 2:15.202	0:18.399	0:02.883	0:06.319	0:06.988	0:07.049	0:10.941	0:11.771	0:06.890	0:20.685	0:05.175	0:11.759	0:08.366	0:10.548	0:07.429
	median value - 1:52.592	0:05.620	0:02.767	0:04.341	0:06.372	0:06.946	0:10.006	0:11.137	0:06.411	0:18.080	0:05.051	0:11.125	0:07.593	0:10.019	0:07.124
	best theoretical - 1:46.878	0:05.218	0:02.661	0:04.088	0:05.810	0:06.333	0:09.798	0:10.432	0:06.129	0:17.517	0:04.533	0:10.741	0:07.105	0:09.509	0:07.004
	maximum value - 4:12.801	1:33.490	0:03.464	0:17.400	0:09.840	0:08.652	0:13.958	0:15.786	0:08.474	0:30.036	0:06.736	0:13.613	0:10.222	0:11.947	0:09.183
	std deviation	0:30.670	0:00.277	0:04.549	0:01.325	0:00.749	0:01.566	0:01.787	0:00.894	0:04.374	0:00.751	0:01.142	0:01.299	0:00.966	0:00.724
	best rolling - 1:47.721	0:05.231	0:02.661	0:04.088	0:05.851	0:06.333	0:09.798	0:10.432	0:06.153	0:17.517	0:04.547	0:10.741	0:07.593	0:09.733	0:07.043

CHIQUITA - 2023, Jun 16 8:51 AM

	8:23.503 - out													8:23.503	
<input type="checkbox"/>	4:08.699 - 1	1:28.272		0:13.312	0:04.030	0:02.319	0:04.160	0:05.354	0:02.345	0:12.519	0:02.203	0:02.872	0:02.642	0:02.275	0:02.179
<input type="checkbox"/>	2:17.536 - 2	0:02.916	0:00.803	0:01.483	0:01.810	0:01.127	0:02.953	0:02.103	0:01.837	0:06.467	0:01.193	0:02.738	0:02.446	0:02.438	0:00.344
<input type="checkbox"/>	1:54.287 - 3	0:00.402	0:00.138	0:00.253	0:00.562	0:00.613	0:00.141	0:00.705	0:06.129	0:00.563	0:00.030	0:00.375	0:03.117	0:00.510	0:07.004
<input type="checkbox"/>	1:48.551 - best	0:00.107	0:00.106	0:00.141	0:00.379	0:00.075	0:00.074	0:00.002	0:00.024	0:17.517	0:00.014	0:10.741	0:00.488	0:00.224	0:00.039
<input type="checkbox"/>	1:49.468 - 5	0:00.013	0:02.661	0:04.088	0:00.041	0:06.333	0:09.798	0:10.432	0:00.282	0:00.227	0:04.533	0:00.198	0:07.105	0:01.617	0:00.212
<input type="checkbox"/>	1:56.332 - 6	0:00.559	0:00.284	0:00.426	0:01.426	0:00.666	0:00.465	0:01.145	0:00.834	0:02.284	0:00.518	0:00.557	0:07.105	0:00.210	0:00.080
<input type="checkbox"/>	1:48.657 - 7	0:05.218	0:00.003	0:00.003	0:05.810	0:00.209	0:00.208	0:00.063	0:00.007	0:00.115	0:00.536	0:00.384	0:00.131	0:09.509	0:00.120
<input type="checkbox"/>	3:04.770 - in	0:05.247	0:02.658	0:04.148	0:06.256	0:06.421	0:10.121	0:10.583	0:06.335	0:18.843	0:05.070	0:11.179			
	average value - 2:15.202	0:18.399	0:02.883	0:06.319	0:06.988	0:07.049	0:10.941	0:11.771	0:06.890	0:20.685	0:05.175	0:11.759	0:08.366	0:10.548	0:07.429
	median value - 1:52.592	0:05.620	0:02.767	0:04.341	0:06.372	0:06.946	0:10.006	0:11.137	0:06.411	0:18.080	0:05.051	0:11.125	0:07.593	0:10.019	0:07.124
	best theoretical - 1:46.878	0:05.218	0:02.661	0:04.088	0:05.810	0:06.333	0:09.798	0:10.432	0:06.129	0:17.517	0:04.533	0:10.741	0:07.105	0:09.509	0:07.004
	maximum value - 4:12.801	1:33.490	0:03.464	0:17.400	0:09.840	0:08.652	0:13.958	0:15.786	0:08.474	0:30.036	0:06.736	0:13.613	0:10.222	0:11.947	0:09.183
	std deviation	0:30.670	0:00.277	0:04.549	0:01.325	0:00.749	0:01.566	0:01.787	0:00.894	0:04.374	0:00.751	0:01.142	0:01.299	0:00.966	0:00.724
	best rolling - 1:47.721	0:05.231	0:02.661	0:04.088	0:05.851	0:06.333	0:09.798	0:10.432	0:06.153	0:17.517	0:04.547	0:10.741	0:07.593	0:09.733	0:07.043

9.10 – Settings dialog window

Right clicking on the central table “Setting” dialog window is prompted. It allows to perform the same operations performed through the top left keyboard as well as to hide the table when the Space Bar is pressed enabling the related checkbox.

Enabling the devoted checkbox in the first box (highlighted with green background in the image below) the length of each split is shown below each split time (cells highlighted with green background)

CHIQUITA - 2023, Jun 16 8:51 AM														8:23 503
8:23.503 - out														464.88 [m]
<input checked="" type="checkbox"/>	4:08.699 - 1	1:33.490	0:17.400	0:09.840	0:08.652	0:13.958	0:15.786	0:08.474	0:30.036	0:06.736	0:13.613	0:09.747	0:11.784	0:09.183
		237.33 [m]	292.32 [m]	188.50 [m]	168.89 [m]	264.07 [m]	347.73 [m]	166.91 [m]	636.46 [m]	183.89 [m]	290.68 [m]	229.39 [m]	289.53 [m]	287.82 [m]
<input checked="" type="checkbox"/>	2:17.536 - 2	0:08.134	0:03.464	0:05.571	0:07.620	0:07.460	0:12.751	0:12.535	0:23.984	0:05.726	0:13.479	0:09.551	0:11.947	0:07.348
		237.33 [m]	92.27 [m]	160.16 [m]	196.86 [m]	169.09 [m]	269.48 [m]	347.73 [m]	163.17 [m]	632.56 [m]	183.30 [m]	294.17 [m]	230.27 [m]	290.47 [m]
<input checked="" type="checkbox"/>	1:54.287 - 3	0:05.620	0:02.799	0:04.341	0:06.372	0:06.946	0:09.939	0:11.137	0:18.080	0:04.563	0:11.116	0:10.222	0:10.019	0:07.004
		238.21 [m]	92.72 [m]	159.54 [m]	195.63 [m]	169.80 [m]	264.85 [m]	347.58 [m]	163.67 [m]	633.03 [m]	183.88 [m]	291.54 [m]	235.05 [m]	289.90 [m]
<input checked="" type="checkbox"/>	1:48.551 - best	0:05.325	0:02.767	0:04.229	0:06.189	0:06.408	0:09.872	0:10.434	0:17.517	0:04.547	0:10.741	0:07.593	0:09.733	0:07.043
		238.27 [m]	92.89 [m]	159.69 [m]	195.90 [m]	168.23 [m]	264.40 [m]	347.75 [m]	164.99 [m]	634.09 [m]	183.97 [m]	290.96 [m]	231.86 [m]	290.60 [m]
<input checked="" type="checkbox"/>	1:49.468 - 5	0:05.231	0:02.661	0:04.088	0:05.851	0:06.333	0:09.798	0:10.432	0:17.744	0:04.533	0:10.839	0:07.105	0:11.126	0:07.216
		238.21 [m]	93.06 [m]	159.34 [m]	196.17 [m]	166.55 [m]	263.66 [m]	346.62 [m]	167.44 [m]	635.12 [m]	183.92 [m]	289.82 [m]	230.66 [m]	293.19 [m]
<input checked="" type="checkbox"/>	1:56.332 - 6	0:05.777	0:02.945	0:04.514	0:07.236	0:06.999	0:10.263	0:11.577	0:19.801	0:05.051	0:11.298	0:07.105	0:09.719	0:07.084
		238.40 [m]	93.92 [m]	159.67 [m]	195.48 [m]	167.76 [m]	265.64 [m]	347.70 [m]	167.93 [m]	635.90 [m]	183.05 [m]	282.26 [m]	229.67 [m]	291.79 [m]
<input checked="" type="checkbox"/>	1:48.657 - 7	0:05.218	0:02.664	0:04.091	0:05.810	0:06.542	0:10.006	0:10.495	0:17.632	0:05.069	0:11.125	0:07.236	0:09.509	0:07.124
		238.06 [m]	93.16 [m]	159.67 [m]	195.19 [m]	166.66 [m]	263.66 [m]	347.70 [m]	164.90 [m]	633.52 [m]	184.96 [m]	289.13 [m]	228.99 [m]	289.12 [m]
<input type="checkbox"/>	3:04.770 - in	0:05.247	0:02.658	0:04.148	0:06.256	0:06.421	0:10.121	0:10.583	0:06.335	0:18.843	0:05.070	0:11.179		
	average value - 2:15.202	0:18.399	0:02.883	0:06.319	0:06.988	0:07.049	0:10.941	0:11.771	0:06.890	0:20.685	0:05.175	0:11.759	0:08.366	0:10.548
	median value - 1:52.592	0:05.620	0:02.767	0:04.341	0:06.372	0:06.946	0:10.006	0:11.137	0:06.411	0:18.080	0:05.051	0:11.125	0:07.593	0:10.019
	best theoretical - 1:46.878	0:05.218	0:02.661	0:04.088	0:05.810	0:06.333	0:09.798	0:10.432	0:06.129	0:17.517	0:04.533	0:10.741	0:07.105	0:09.509
	maximum value - 4:12.801	1:33.490	0:03.464	0:17.400	0:09.840	0:08.652	0:13.958	0:15.786	0:08.474	0:30.036	0:06.736	0:13.613	0:10.222	0:11.947
	std deviation	0:30.670	0:00.277	0:04.549	0:01.325	0:00.749	0:01.566	0:01.787	0:00.894	0:04.374	0:00.751	0:01.142	0:01.299	0:00.966
	best rolling - 1:47.721	0:05.231	0:02.661	0:04.088	0:05.851	0:06.333	0:09.798	0:10.432	0:06.153	0:17.517	0:04.547	0:10.741	0:07.593	0:09.733



9.11 – Split graphs

Selecting any split column the split graphs appear right of the central table. They are:

- Custom channel (GPS Speed in the example below)/distance (1)
- Time/Lap (2)
- Distance/Lap (3)
- Time/Distance (4)

Driver	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
8:23.503 - out														8:23.503	
4:08.699 - 1	1:33.490	0:17.400	0:09.840	0:08.652	0:13.958	0:15.786	0:08.474	0:30.036	0:05.735	0:13.613	0:09.747	0:11.784	0:09.183	454.88 [m]	
2:17.536 - 2	2:37.33 [m]	2:52.32 [m]	1:58.50 [m]	1:58.99 [m]	2:54.07 [m]	3:47.72 [m]	1:55.91 [m]	3:36.46 [m]	1:53.89 [m]	2:49.68 [m]	2:29.39 [m]	2:59.53 [m]	2:57.82 [m]		
1:54.287 - 3	2:37.41 [m]	92.27 [m]	1:50.16 [m]	1:56.66 [m]	1:59.09 [m]	2:59.48 [m]	3:47.33 [m]	1:53.17 [m]	3:32.56 [m]	1:53.30 [m]	2:34.17 [m]	2:30.47 [m]	2:57.41 [m]		
1:48.551 - best	2:38.21 [m]	92.72 [m]	1:59.54 [m]	1:55.63 [m]	1:59.80 [m]	2:54.85 [m]	3:47.58 [m]	1:53.67 [m]	3:33.03 [m]	1:53.88 [m]	2:31.54 [m]	2:34.05 [m]	2:59.90 [m]	2:57.16 [m]	
1:49.468 - 5	0:05.620	0:02.799	0:04.341	0:06.372	0:06.946	0:09.939	0:11.137	0:06.129	0:18.080	0:04.563	0:11.116	0:10.222	0:10.019	0:07.004	
	0:05.325	0:02.767	0:04.229	0:06.189	0:06.408	0:09.872	0:10.434	0:06.153	0:17.517	0:04.547	0:10.741	0:07.593	0:09.733	0:07.043	
	2:38.27 [m]	92.89 [m]	1:59.69 [m]	1:55.90 [m]	1:58.23 [m]	2:54.40 [m]	3:47.70 [m]	1:54.99 [m]	3:34.09 [m]	1:53.97 [m]	2:30.96 [m]	2:31.86 [m]	2:59.60 [m]	2:57.42 [m]	
	0:05.231	0:02.651	0:04.088	0:05.851	0:06.333	0:09.798	0:10.432	0:06.411	0:17.744	0:04.533	0:10.939	0:07.105	0:11.126	0:07.216	
	2:38.21 [m]	93.06 [m]	1:59.34 [m]	1:56.17 [m]	1:55.55 [m]	2:53.66 [m]	3:46.62 [m]	1:57.44 [m]	3:35.12 [m]	1:53.92 [m]	2:29.82 [m]	2:30.66 [m]	2:53.19 [m]	2:56.96 [m]	
	1:56.332 - 6	0:05.777	0:02.945	0:04.514	0:07.236	0:06.999	0:10.263	0:11.577	0:06.963	0:19.801	0:05.051	0:11.298	0:07.105	0:09.719	0:07.084
	2:38.40 [m]	93.92 [m]	1:59.67 [m]	1:55.48 [m]	1:57.76 [m]	2:55.64 [m]	3:47.70 [m]	1:57.93 [m]	3:35.90 [m]	1:53.05 [m]	2:29.67 [m]	2:30.67 [m]	2:51.79 [m]	2:57.39 [m]	
1:48.657 - 7	0:05.218	0:02.654	0:04.091	0:05.810	0:06.542	0:10.006	0:10.495	0:06.136	0:17.632	0:05.069	0:11.125	0:07.236	0:09.509	0:07.124	
	2:38.06 [m]	93.16 [m]	1:59.60 [m]	1:55.19 [m]	1:56.99 [m]	2:53.60 [m]	3:47.10 [m]	1:54.90 [m]	3:33.52 [m]	1:54.96 [m]	2:29.13 [m]	2:29.99 [m]	2:59.12 [m]	2:57.57 [m]	
3:04.770 - in	0:02.247	0:02.656	0:04.143	0:05.255	0:06.421	0:10.121	0:10.583	0:06.335	0:15.843	0:05.070	0:11.179				
	2:38.08 [m]	93.55 [m]	1:59.54 [m]	1:56.83 [m]	1:57.11 [m]	2:55.61 [m]	3:47.31 [m]	1:54.09 [m]	3:36.80 [m]	1:54.43 [m]	2:31.14 [m]				
average value - 2:15.202	0:18.399	0:02.983	0:06.319	0:06.988	0:07.049	0:10.941	0:11.771	0:06.890	0:20.885	0:05.175	0:11.759	0:08.366	0:10.548	0:07.429	
median value - 1:52.592	0:05.620	0:02.767	0:04.341	0:06.372	0:06.946	0:10.006	0:11.137	0:06.411	0:18.080	0:05.051	0:11.125	0:07.593	0:10.019	0:07.124	
best theoretical - 1:46.878	0:05.218	0:02.651	0:04.088	0:05.810	0:06.333	0:09.798	0:10.432	0:06.129	0:17.517	0:04.533	0:10.741	0:07.105	0:09.509	0:07.004	
maximum value - 4:12.801	1:33.490	0:03.464	0:17.400	0:09.840	0:08.652	0:13.958	0:15.786	0:08.474	0:30.036	0:05.735	0:13.613	0:10.222	0:11.947	0:09.183	
std deviation	0:30.670	0:00.277	0:04.549	0:01.325	0:00.749	0:01.566	0:01.787	0:00.894	0:04.374	0:00.751	0:01.142	0:01.299	0:00.966	0:00.724	
best rolling - 1:47.721	0:05.231	0:02.651	0:04.088	0:05.851	0:06.333	0:09.798	0:10.432	0:06.153	0:17.517	0:04.547	0:10.741	0:07.593	0:09.733	0:07.043	

Each graph can be shown/hidden using the keyboard top left of the graphs.

The screenshot displays a control interface for a racing simulation. At the top left, there is a row of five icons: a channel plot, a stopwatch, a distance vs lap graph, a time vs distance graph, and a track selection icon. Below these are several panels:

- Channel Plot:** A panel with a checkbox labeled "Hide channel plot" (unchecked) and a checked icon labeled "Show channel plot".
- Time vs Lap:** A panel with a stopwatch icon and a checkbox labeled "Hide graph time vs lap" (unchecked), and a checked stopwatch icon labeled "Show graph time vs lap".
- Distance vs Lap:** A panel with a distance vs lap graph icon and a checkbox labeled "Hide graph distance vs lap" (unchecked), and a checked distance vs lap graph icon labeled "Show graph distance vs lap".
- Time vs Distance:** A panel with a time vs distance graph icon and a checkbox labeled "Hide graph time vs distance" (unchecked), and a checked time vs distance graph icon labeled "Show graph time vs distance".
- Performance:** A panel with a color scale icon and text "Selected one bold, others normal" and "Color scale according to performance".
- Track Selection:** A panel with a track icon and a "Select Split" button. Below it is a list of track sections: "Straight: 1", "Corner: 2", "Straight: 3", "Corner: 4", "Corner: 5", "Corner: 6", "Straight: 7", "Corner: 8", "**Corner: 9**", "Straight: 10", "Corner: 11", "Corner: 12", "Corner: 13", and "Straight: 14". The "Corner: 9" item is highlighted in grey.



9.11.1 – Channel graph

The first graph on top is a custom graph because you can choose the channel you want on “Y” axis. To do so:

- click the setting icon
- “Select Channel” dialog window is prompted: scroll it or search for the channel you want to set on the ordinate axis and press “OK”; default channel is GPS Speed
- mousing over the graph the split you are mousing over becomes bold in the central table and vice-versa.

The screenshot displays a software interface with a graph and a dialog box. The graph at the top shows multiple data series plotted against 'Distance [m]' on the x-axis (ranging from 1700.00 to 2200.00) and 'GPS Speed' on the y-axis (with a marker at 60). A red line highlights one of the data series. A gear icon in the top-left corner of the graph area is connected by a red line to the 'Select Channel' dialog box below. The dialog box contains a search box and a list of channels with checkboxes and function descriptions:

Channel Name	Function Description
<input type="checkbox"/> GPS Nsat [#]	(function: AiM GPS Satellite Number)
<input type="checkbox"/> GPS PosAccuracy [cm]	(function: AiM GPS Position Accuracy)
<input type="checkbox"/> GPS Radius [m]	(function: GPS Radius)
<input type="checkbox"/> GPS Slope [deg]	(function: GPS Slope Angle)
<input checked="" type="checkbox"/> GPS Speed [m/s]	(function: GPS Speed)
<input type="checkbox"/> Heart Rate [#]	(function: Number)
<input type="checkbox"/> Ignition Timing [deg]	(function: Ignition AdvAngle)
<input type="checkbox"/> Ignition Trim to [#]	(function: Number)
<input type="checkbox"/> IgnitionCut [%]	(function: Percent)
<input type="checkbox"/> InlineAcc [q]	(function: Inline Acceleration)

At the bottom of the dialog box are 'OK' and 'Cancel' buttons.

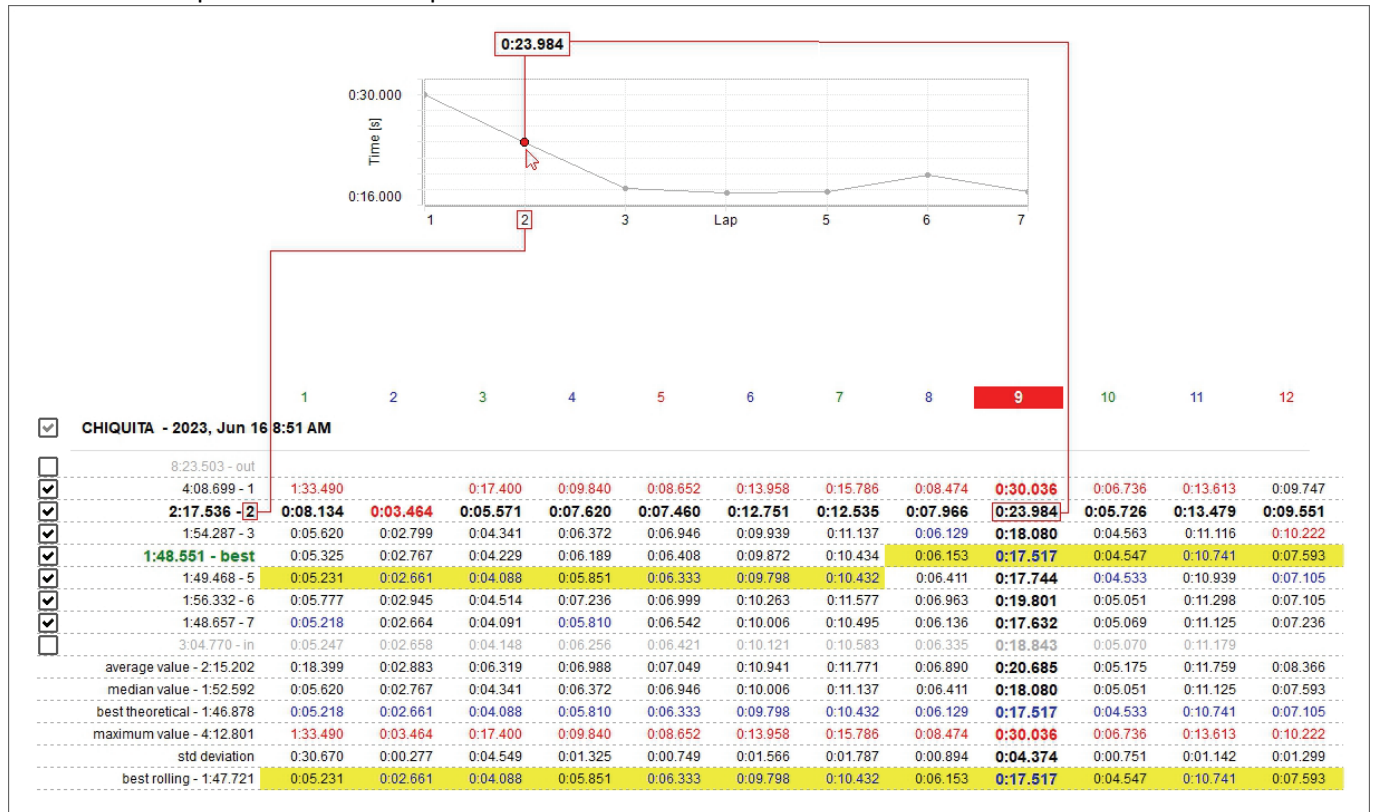


9.11.2 – Time/Lap (number) graph

The second graph from top is Time/Lap number. It shows:

- Lap number on abscissa axis
- split time of the split in each lap on ordinate axis

mousing over the selected split it becomes bold in the central table and vice versa; in the example below split time of the 9th split in the second lap is shown.

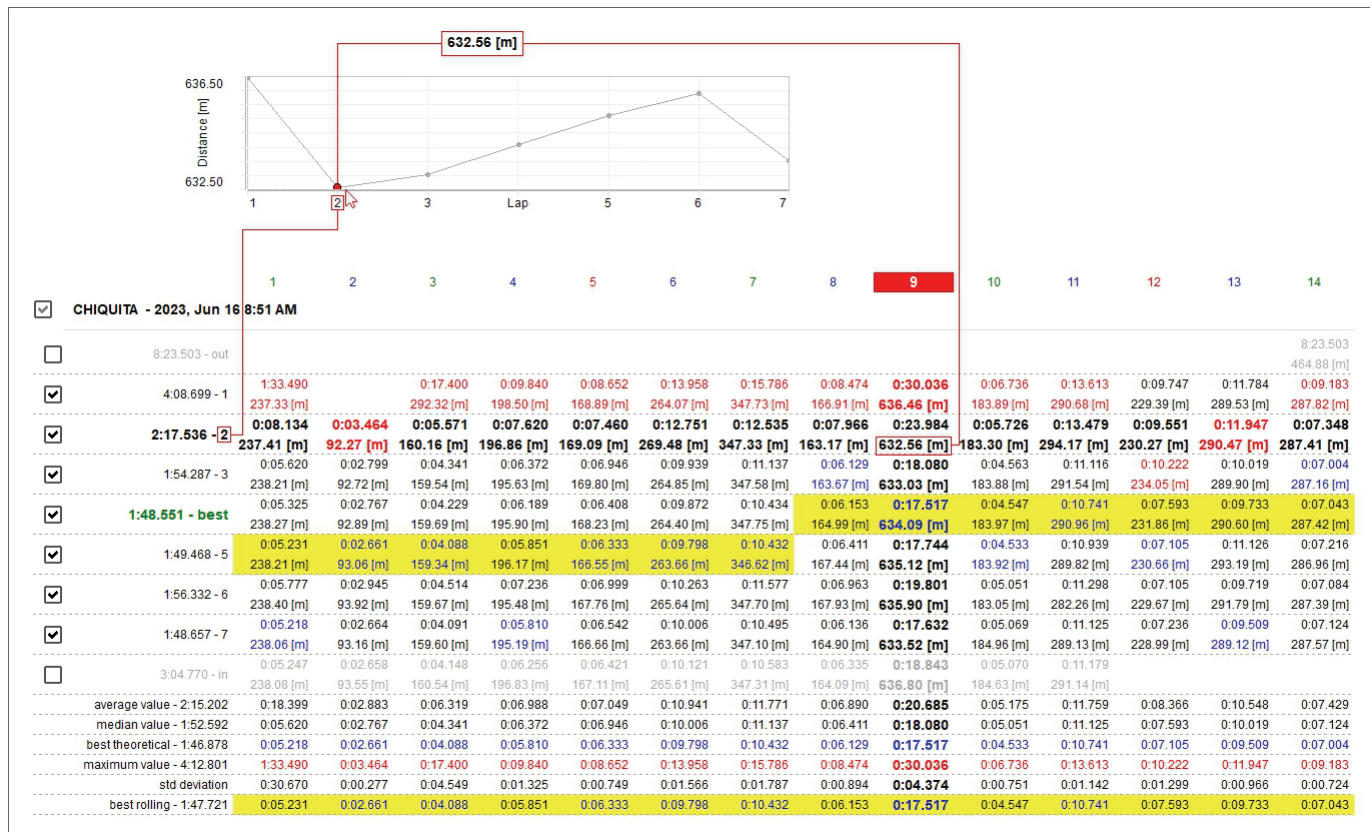




9.11.3 – Distance/Lap number graph

The third graph from top is Distance/Lap number. It shows:

- Lap number on abscissa axis
- Run distance of the split in each lap on ordinate axis
- As shown here below, mousing over the graph the selected split it becomes bold in the central table and vice versa; it is suggested to keep "Distance" row activated (paragraph 9.2)



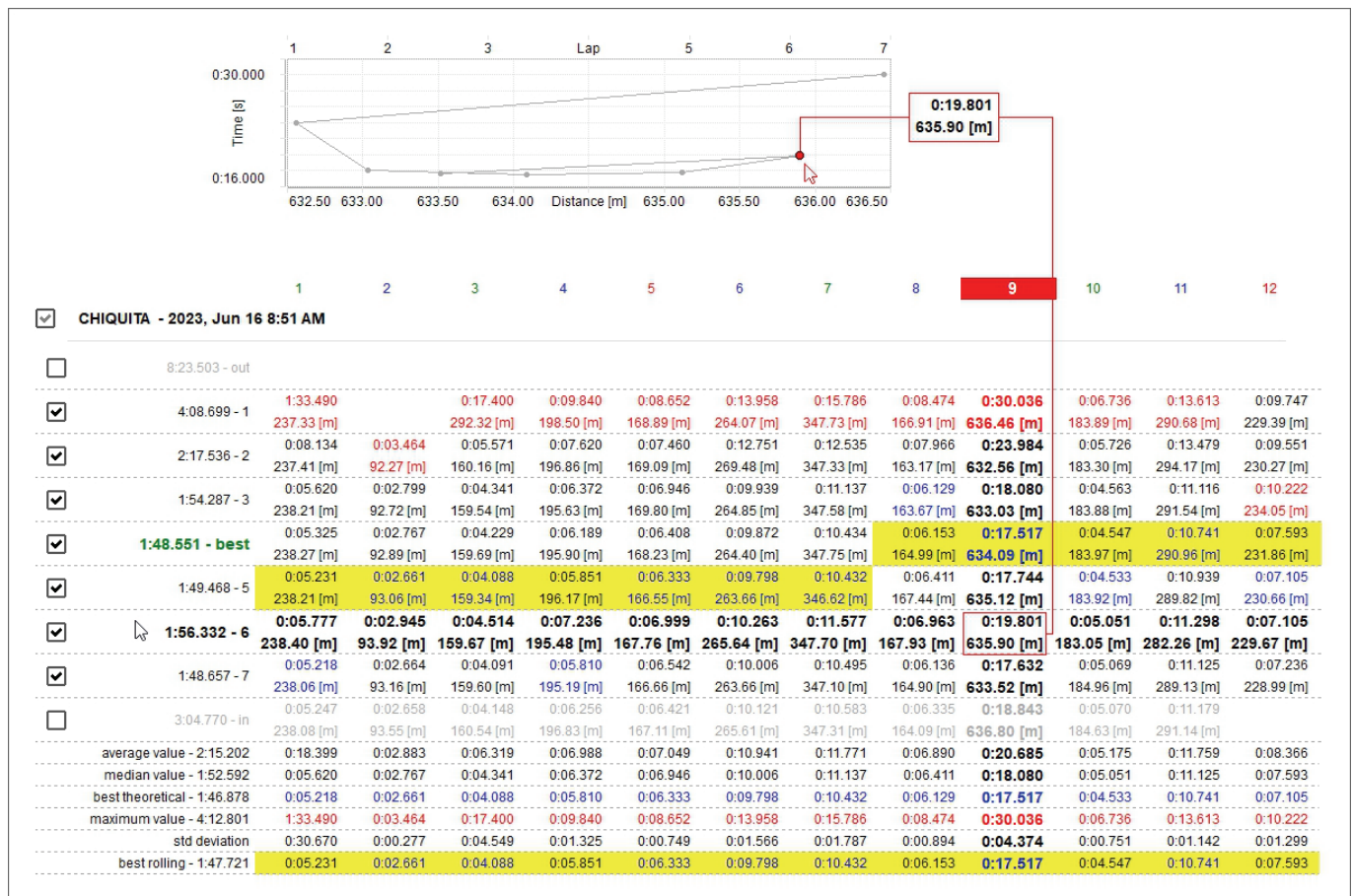


9.11.4 – Time/Distance graph

The bottom graph is Time/Distance and is a scatter graph. It shows:

- Run distance on abscissa axis
- Split time in each lap on ordinate axis
- As shown here below, mousing over the graph the selected split becomes bold in the central table and vice versa

This graph, linking the run distance with the split time is particularly useful to analyse the racer guide in cornering.





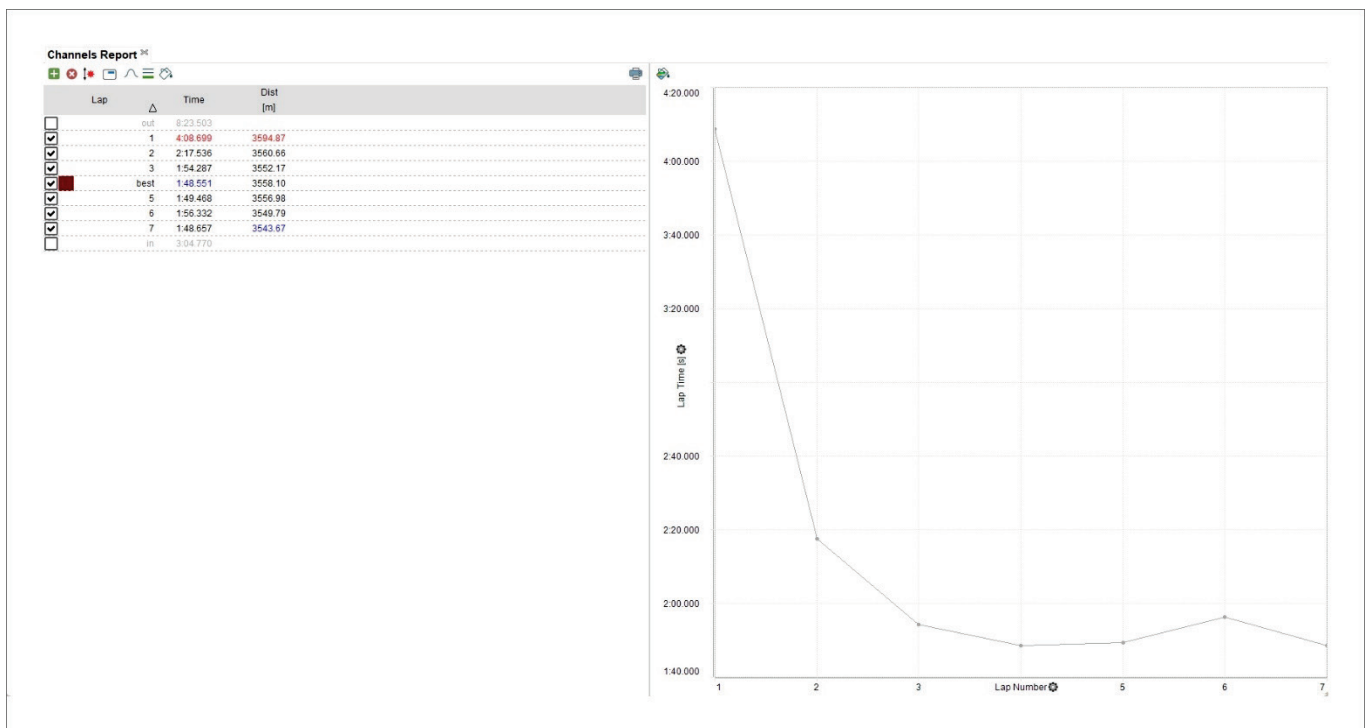
10 – Channels Report layout

This layout gives a macro-representation of calculation made on the channels so to have a quick view on each channel. The layout is made up of two parts: the values table on the left (clicking on the header of each column data can be sorted increasingly/decreasingly) and the custom graph on the right.

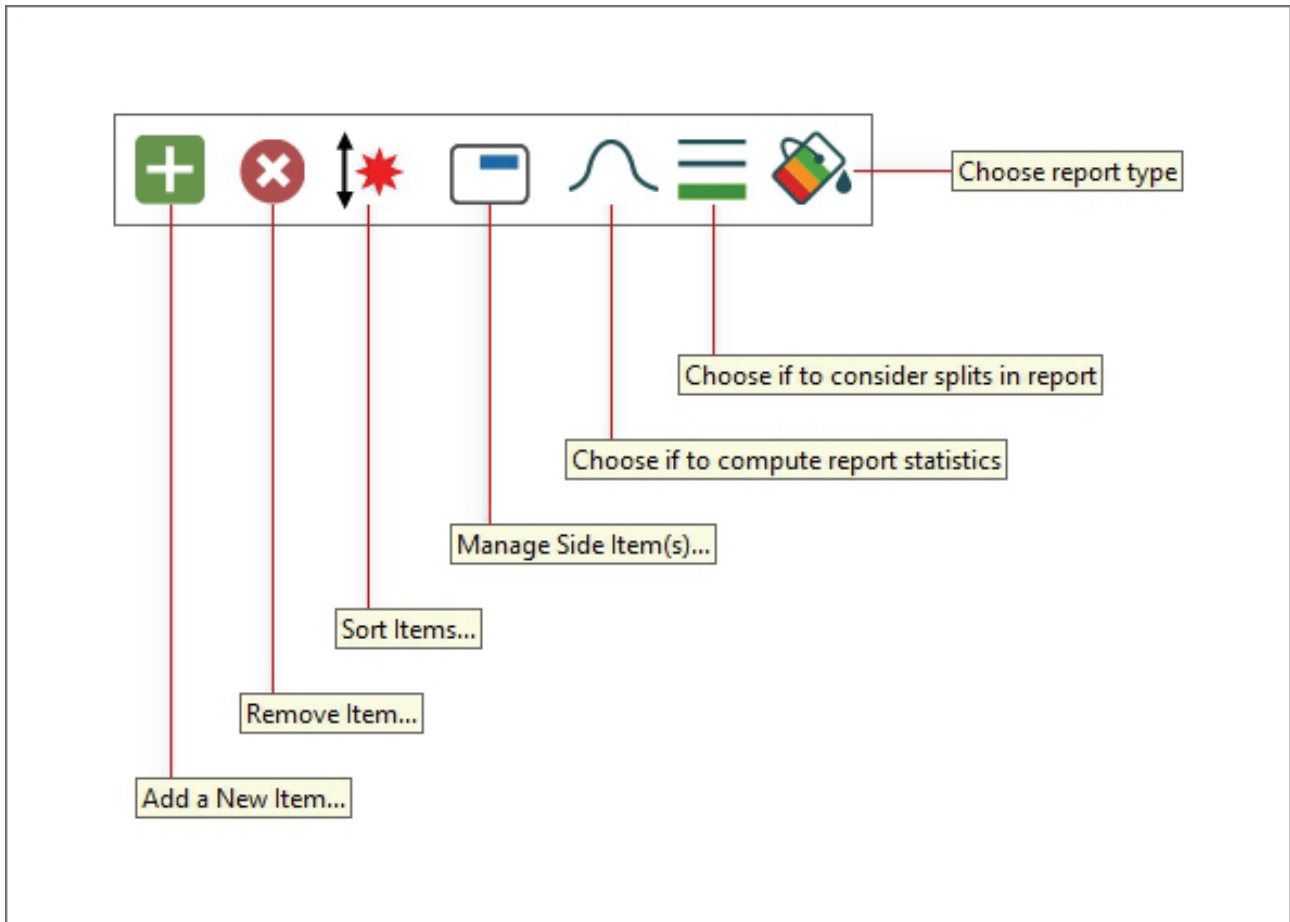
This view is used to see these three main aspects:

- Vehicle health: mainly through temperatures, pressures and battery level;
- Racer performances: mainly through average throttle opening, average steering angle value, average brake pressure (the racer inputs)
- Vehicle performance: mainly through longitudinal and lateral acceleration variations and max speed

Please note: to use such channels as temperature, pressure and so on you need to previously add them to the table on the left of the view (see paragraph 10.1 for further information)



Using the top left keyboard of "Channels report" view it is possible to perform different actions, as shown here below and explained in the following paragraphs.





10.1 – Add/remove items in the left part of “Channels Report” view

Through these buttons it is possible to add/remove items (column) to/from the table placed left of “Channels report” view except for the first three columns from the left.

To **“Add”** an item:

- press the related icon (+)
- scroll the panel that is prompted or search for the channel
- select the item to add and its type (Max/Min/Average value, Variance, Average when not zero etc..)
- press “OK and the item is added. Repeat this operation for all the items to add

To **“Remove”** an item:

- press the related icon (x)
- a menu showing the items previously added is prompted
- select the one to remove
- it will be removed.

The screenshot shows the RaceStudio3 interface with the 'Channels Report' view. Two overlays are present: 'Add Item' and 'Remove Item'.

Add Item Overlay: A dialog box titled 'New Item' with a search box and a list of channels. The 'GPS Speed' channel is selected with a checkmark. The 'Type' section has 'Variance' selected.

Remove Item Overlay: A menu showing the items previously added: 'Var of GPS LatAcc' and 'Var of GPS Speed'. 'Var of GPS Speed' is highlighted.

Main Channels Report Table:

Lap	Δ	Time	Dist [m]	Var [km/h] GPS Speed	Var [g] GPS LatAcc
out		8:23.503			
1		4:08.699	3594.87	1325.9	0.10
2		2:17.536	3560.66	341.9	0.25
3		1:54.287	3552.17	666.6	0.48
best		1:48.551	3558.10	617.4	0.57
5		1:49.468	3556.98	681.1	0.55
6		1:56.332	3549.79	547.0	0.44
7		1:48.657	3543.67	606.0	0.56
in		3:04.770			



10.2 – Sort items

Once added all the desired item it is possible to displace the related columns as preferred.

- press the related icon
- drag and drop the items as you wish
- press "OK"
- the columns are displaced

The screenshot illustrates the process of sorting items in the 'Channels Report' application. It shows two states of the report: the initial state and the state after sorting.

Initial State (Left): The report displays columns for Lap, Time, Dist [m], Var [km/h], and Var [g]. The 'Var [km/h]' and 'Var [g]' columns are highlighted with a red box, indicating they are the items to be sorted.

Sort Items Dialog (Center): A dialog box titled 'Sort Items' is open, showing a list of items to be sorted: 'Var - GPS Speed' and 'Var - GPS LatAcc'. The 'Var - GPS Speed' item is highlighted with a blue bar, and a mouse cursor is positioned over it, indicating it is being dragged.

Sorted State (Right): The report displays columns for Lap, Time, Dist [m], Var [g], and Var [m/min]. The 'Var [g]' and 'Var [m/min]' columns are highlighted with a red box, indicating they are the items that have been sorted.



10.3 – Managing Side Items

Race Studio 3 Analysis allows the user to see the values of different channels in the same point assuming that both channels are shown as Max/Min Values. In the example below Max GPS Speed and RPM are shown. To do so:

- add the first channel as explained in paragraph 10.1
- click “Side Items Icon” shown above
- select the second channel
- both channels are shown one below the other

The screenshot illustrates the process of adding a second channel to the Channels Report. It is divided into two parts: the initial state (left) and the state after adding a second channel (right).

Initial State (Left): The 'Channels Report' window shows a table with columns: Lap, Δ, Time, Dist [m], and Max (km/h) GPS Speed. The data includes lap times and distances, with a 'Max (km/h) GPS Speed' column showing values like 120.1, 168.9, 178.0, 183.9, 184.1, 177.1, and 182.1.

Final State (Right): The 'Channels Report' window shows the same table, but with an additional column: 'Max (km/h) GPS Speed EngineSpeed'. The 'EngineSpeed' values are shown in red, ranging from 4712 to 7108. The 'Max (km/h)' values are also shown in red.

Select Channel Dialog: A dialog box titled 'Select Channel' is open, showing a list of channels. The 'EngineSpeed (rpm)' channel is selected, indicated by a checkmark. Other channels include Calculated Gear, CoolantTemp, Distance on GPS Speed, ECU BatteryVolts, ECU Firmwares, ECU Temp, ECU is logging, External Voltage, and FLROTOR.



10.4 – Show/Hide statistics

As for Time/Distance and Track split report Channels report too allow to show the statistics using the related buttons shown here above.

Lap	Δ	Time	Dist [m]
out		8:23.503	
1		4:08.699	3594.87
2		2:17.536	3560.66
3		1:54.287	3552.17
best		1:48.551	3558.10
5		1:49.468	3556.98
6		1:56.332	3549.79
7		1:48.657	3543.67
in		3:04.770	

average value	2:14.790	3559.46
maximum value	4:08.699	3594.87
minimum value	1:48.551	3543.67
std deviation	0:51.245	16.63



10.5 – Show/Hide splits in report

With reference to the image below, data can be shown with (left table) or without (right) splits. When showing the laps with splits data concerning the whole laps are on the coloured bar and all splits follows.

Lap	Δ	Time	Dist [m]
out		8:23.503	
1		4:08.699	3594.87
2		2:17.536	3560.66
3		1:54.287	3552.17
best		1:48.551	3558.10
5		1:49.468	3556.98
6		1:56.332	3549.79
7		1:48.657	3543.67
in		3:04.770	

Lap	Δ	Time	Dist [m]
out		8:23.503	
1		4:08.699	3594.87
2		2:17.536	3560.66
3		1:54.287	3552.17
best		1:48.551	3558.10
5		1:49.468	3556.98
6		1:56.332	3549.79
7		1:48.657	3543.67
in		3:04.770	



10.6 – Managing report type

Channels report table can be shown in different ways as shown here below. The visualization can be:

- Classic
- Coloured according to cell values: each cell is coloured according to its value from green to red where green stays for good performance and red for bad performance
- Histogram: allows to see at a glance the difference between the laps/splits

Channels Report [⌵]				Classic
Lap	Δ	Time	Dist [m]	
	out	8:23.503		
1		4:08.699	3594.87	
2		2:17.536	3560.66	
3		1:54.287	3552.17	
	best	1:48.551	3558.10	
5		1:49.468	3556.98	
6		1:56.332	3549.79	
7		1:48.657	3543.67	
	in	3:04.770		

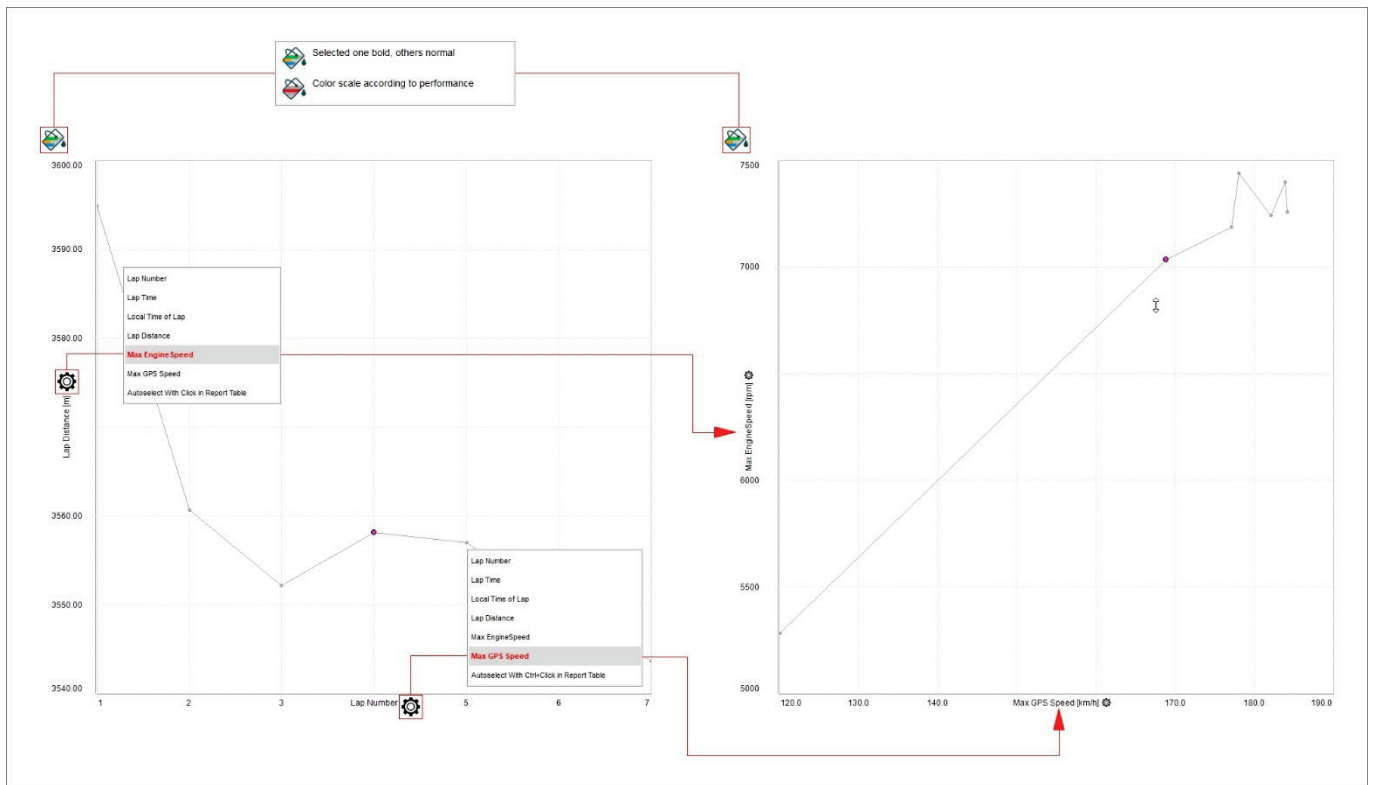
Channels Report [⌵]				Colored
Lap	Δ	Time	Dist [m]	
	out	8:23.503		
1		4:08.699	3594.87	
2		2:17.536	3560.66	
3		1:54.287	3552.17	
	best	1:48.551	3558.10	
5		1:49.468	3556.98	
6		1:56.332	3549.79	
7		1:48.657	3543.67	
	in	3:04.770		

Channels Report [⌵]				Histogram
Lap	Δ	Time	Dist [m]	
	out	8:23.503		
1		4:08.699	3594.87	
2		2:17.536	3560.66	
3		1:54.287	3552.17	
	best	1:48.551	3558.10	
5		1:49.468	3556.98	
6		1:56.332	3549.79	
7		1:48.657	3543.67	
	in	3:04.770		

10.7 – The custom graph

Right of “Channels Report” layout is a “Custom” graph whose channels on the abscissa axis and on the ordinate axis can be changed according to the user preferences. To change the channel on the axes:

- click the setting icon of the axis to change
- a selection menu is prompted
- select the channel to be shown
- click out the panel





11 – Log sheet layout

Log sheet view allows to fill in and set different information concerning the run/session, the weather and the vehicle as shown below.

11.1 – Log sheet general information

By default the view opens on “**General Information**” where it is possible to fill in information concerning the run and the vehicle through the related panels.

- mousing over the view a grey box appears in correspondence of each row
- click on it and the related panel appears
- fill it in
- press “OK”

The screenshot displays the 'Log Sheet' application window. At the top, a toolbar contains several icons: a speedometer, a sun, a gear, a scale, a mail, and a grid. Lines connect these icons to labels: 'General information upon run/session' (speedometer), 'Weather information' (sun), 'Engine information' (gear), 'Dims And Weights information' (scale), 'Fueling information' (mail), and 'Gearings information' (grid). Below the toolbar, the 'General Information' section is highlighted with a grey background. It contains four rows: 'Run Name', 'General Comments', 'Vehicle Model', and 'Vehicle Year'. Each row has a grey rectangular box next to it. Three dialog boxes are open below the main window: 'Vehicle Year' (with a text input field), 'Vehicle Model' (with a text input field), and 'Run Info' (with a text input field for 'Run name' and a larger text area for 'Comment'). Red lines connect the grey boxes in the 'General Information' section to the corresponding dialog boxes.



11.2 – Log sheet weather

Weather information come from AiM server that connects to the nearest weather station according to your GPS coordinates. Mousing over the view a grey box and a setting icon appear in correspondence of each row.

Clicking on the **setting icon** you can set specific condition of each parameter.

Double clicking on the **grey boxes** a weather conditions panel is prompted. If you have more accurate information here you can fill them in. In a second moment you can replace them (one or all) with the information coming from AiM server. Use "<-" to replace the single information and "<=" to replace all information.

The screenshot shows the 'Log Sheet' application interface. On the left, a list of weather parameters is shown. A gear icon is visible next to the 'Air Temperature' row. A 'Set to F' dialog box is open, showing a list of values: 1, 0.01, 0.001, 0.0001, and 0.00001. On the right, a 'Weather Conditions' dialog box is open, displaying various weather parameters with input fields and buttons for '<-' and '<='.

Parameter	Unit	Value
Air Temperature	[C]	0.0
Track Surface Temperature	[C]	0.0
Humidity	[%]	0.00
Barometer	[bar]	0.00
Wind Speed	[km/h]	0.0
Wind Direction	[deg]	0.0
Corrected Air Factor	[%]	0.00
Density Altitude	[m]	0.00
Air Density Ratio	[%]	0.00
Standard Air Density	[kg/m3]	0.00
Dew Point	[C]	0.0
Weather Comments		

Weather Conditions Dialog Box:

- Buttons: <=>, Get From Server
- Weather (in short): [] <-
- Temperature [C]: [0.0] <-
- Humidity [%]: [0.00] <-
- Barometer [bar]: [0.00] <-
- Wind speed [km/h]: [0.0] <-
- Wind direction [deg]: [0.0] <-
- Corrected Air Factor [%]: [0.00] <-
- Density Altitude [m]: [0.00] <-
- Air Density Ratio [%]: [0.00] <-
- Dew Point [C]: [0.0] <-
- Comment: []
- Buttons: OK, Cancel



11.3 – Log Sheet Engine Information

In this view it is possible to fill in all information concerning the engine installed on the vehicle. Mousing over the lines where a Measure is to be filled in a setting icon is shown and clicking it a menu is prompted: here you can choose the number of decimal places.

The screenshot shows the 'Log Sheet' interface with a list of engine parameters on the left and a table of values in the center. A settings icon (gear) is highlighted over the table, and a dropdown menu is open showing decimal place options.

Parameter	Value
Engine Model	
Restrictor Type	
Restrictor Size	0
Spark Plug Type	
Spark Plug Gap	0
Jettings Type	
Jettings Position	0
Jettings Number	0
Used ECU Map	

Settings menu options:

- 0.1
- 0.01
- 0.001
- 0.0001
- 0.00001



11.4 – Log Sheet Dims (dimensions) and Weights information

Here you can fill in information concerning the vehicle dimensions and weights; mousing over the lines where a measure is to be filled in a setting icon is shown and clicking it a menu is prompted. Once set the parameter and the number of decimal places, clicking on the grey boxes right of the measure unit a panel is prompted where the measures can be filled in.

Log Sheet

Dimensions and Weights Log Sheet

Vehicle Length	[mm]	0
Vehicle Width	[mm]	0
Vehicle Height	[mm]	0
Vehicle CG Pos Lon	[mm]	0
Vehicle CG Pos Lat	[mm]	0
Vehicle CG Height	[mm]	0
Ballast Weight	[kgf]	0.00
Vehicle Weight	[N]	0
Vehicle Minimum Weight	[kgf]	0.00
Vehicle Cx	[#]	0
Vehicle Front Surface	[m2]	0.0
Splitter Position	[#]	0
Front Wing Position	[#]	0
Rear Wing Position	[#]	0
Racer CG Pos Lon	[mm]	0
Racer CG Pos Lat	[mm]	0
Racer CG Height	[mm]	0
Racer Weight	[kgf]	0.00

Set to in

0.1
0.01
0.001
0.0001
0.00001

Set to lbf
Set to N

1
0.1
0.001
0.0001
0.00001

Set to kgf
Set to lbf

0.1
0.01
0.001
0.0001
0.00001

0.1
0.01
0.001
0.0001
0.00001

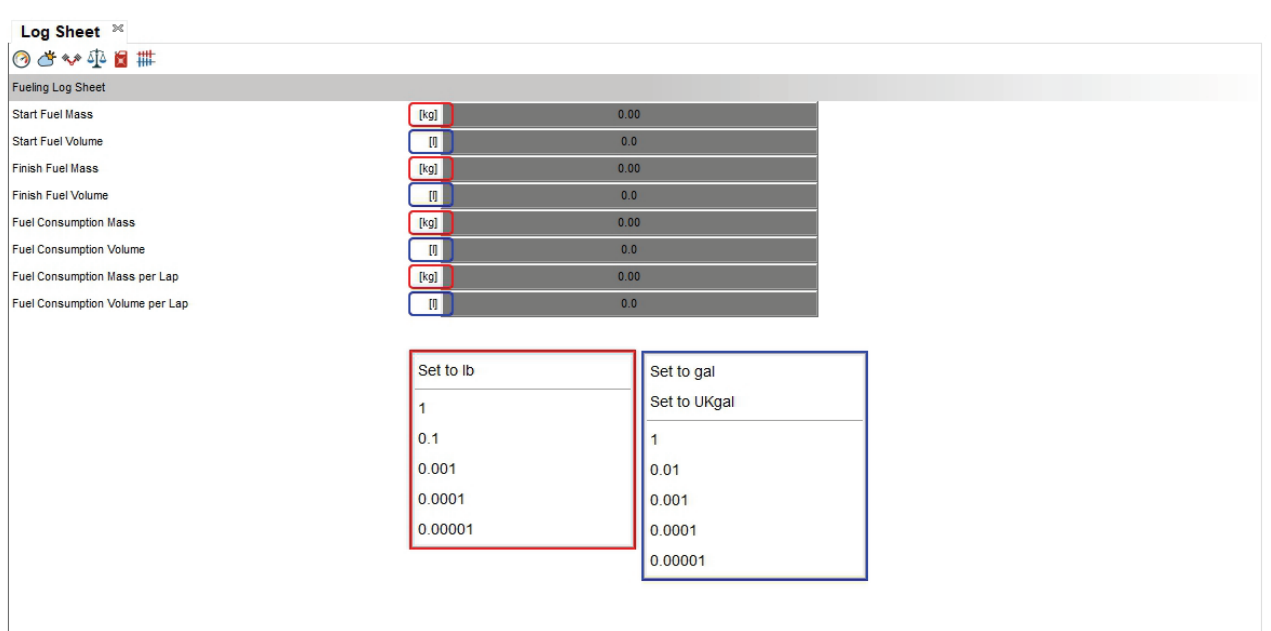
Set to mm2
Set to ft2
Set to in2

1
0.01
0.001
0.0001
0.00001



11.5 – Log Sheet fuel Information

Here you can fill in information concerning the vehicle fuel information; mousing over the lines where a measure is to be filled in a setting icon is shown and clicking it a menu is prompted. Clicking on the grey boxes right of the measure unit a panel is prompted where the measures can be filled in and/or converted.



The screenshot shows a software window titled "Log Sheet" with a toolbar and a table of fueling data. The table has two columns: a unit selection box (containing "[kg]" or "[l]") and a numerical value field (containing "0.00" or "0.0"). Below the table are two conversion panels. The left panel, titled "Set to lb", lists values: 1, 0.1, 0.001, 0.0001, and 0.00001. The right panel, titled "Set to gal" and "Set to UKgal", lists values: 1, 0.01, 0.001, 0.0001, and 0.00001.

Metric	Unit	Value
Start Fuel Mass	[kg]	0.00
Start Fuel Volume	[l]	0.0
Finish Fuel Mass	[kg]	0.00
Finish Fuel Volume	[l]	0.0
Fuel Consumption Mass	[kg]	0.00
Fuel Consumption Volume	[l]	0.0
Fuel Consumption Mass per Lap	[kg]	0.00
Fuel Consumption Volume per Lap	[l]	0.0

Set to lb

1

0.1

0.001

0.0001

0.00001

Set to gal

Set to UKgal

1

0.01

0.001

0.0001

0.00001



11.6 – Log Sheet gearings information

Here you can fill in all the information concerning the gear management. Mousing over the rows in the left the image on the right highlights the item you are mousing over making the all view very user friendly.

Log Sheet ✕

Gearings Log Sheet

In Gear	ratio = (driven/drive)	0 = (0/0)
1st Gear	ratio = (driven/drive)	0 = (0/0)
2nd Gear	ratio = (driven/drive)	0 = (0/0)
3rd Gear	ratio = (driven/drive)	0 = (0/0)
4th Gear	ratio = (driven/drive)	0 = (0/0)
5th Gear	ratio = (driven/drive)	0 = (0/0)
6th Gear	ratio = (driven/drive)	0 = (0/0)
Out Gear	ratio = (driven/drive)	0 = (0/0)
Reverse Gear	ratio = (driven/drive)	0 = (0/0)
Final Gear	ratio = (driven/drive)	0 = (0/0)

0.1
0.01
0.001
0.0001
0.00001

3rd Gear ✕

Choose what to define Teeth Number Ratio

Drive gear teeth

Driven gear teeth

Ratio

OK Cancel

In Gear

Reverse Gear

1st to 6th Gear

Out Gear

Final Gear

12 – Track Map layout



This layout works as explained in paragraph 4.3.

13 – Custom Layout



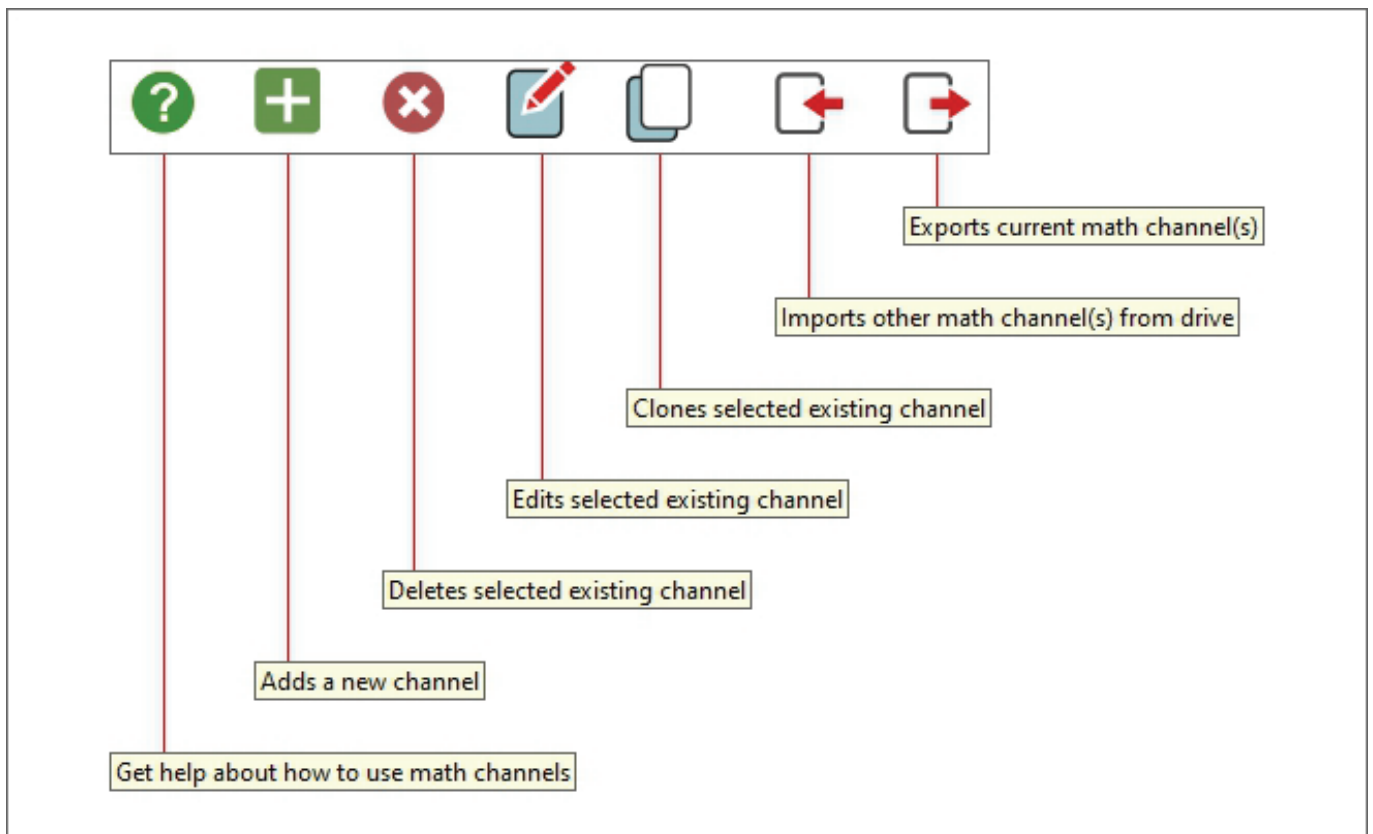
Here it is possible to Add/show/hide and delete custom layout. They work exactly like the profiles explained in paragraph 3.3

14 – Math channels



RS3Analysis software provides a default number of Math channels but allows the user to create custom ones too. This tool applies to all layouts. Math channels can also be imported/exported, added, modified, cloned and deleted using the top keyboard as shown below. Clicking the icon shown here above “Math channels” dialog window is prompted no matter which layout you are working on.

Top left of the view is a management keyboard whose buttons are shown here below.



Clicking on the question mark left of the keyboard you are re-directed to an online help page dedicated to math channels and explaining their significance and working mode. This page is constantly updated and improved.

Left of the view channels are grouped by type in the channels library; using the search box it is possible to search for a channel in the library. The search box filters by channel name, measure unit, comment and description. **Please note:** switching from one measurement system to another or importing a channel created with different measure units RSA3 computes and shows the channel using the measure units You decided.

Clicking on the **setting icon** right of each channel it is possible to enable that channel for all sessions or for a single device as well as to be re-directed to the paragraph dedicated to that precise channel in the online help page.

In the central part of the dialog window are shown the channels applied to the current session.

For every channel you select in the channels library, the boxes right of the view show a comment (on top), the computation formula (central) and two lists(bottom right): the first showing used parameters and the second with notes or warnings while applying the channel to loaded sessions. All needed channels are listed using an unit of measure.

The bottom buttons are used for:

- **Verifying Formulas:** verifies if the channels used in the formula can't be applied
- **Recompute:** completely recomputes all the enabled channels for every session that was selected before opening the math channels usage window

Search

Channels Library

GPS

- AIM G Sum (Acceleration)
- AIM GPS BRK LapD (Distance)
- AIM GPS BRK LapP (Percent)
- AIM GPS BRK LapT (Time)
- AIM GPS BRK On (Boolean)
- AIM GPS BRK SessD (Distance)
- AIM GPS BRK SessP (Percent)
- AIM GPS BRK SessT (Time)
- AIM GPS CRN LapD (Distance)
- AIM GPS CRN LapP (Percent)
- AIM GPS CRN LapT (Time)
- AIM GPS CRN On (Boolean)
- AIM GPS CRN SessD (Distance)
- AIM GPS CRN SessP (Percent)
- AIM GPS CRN SessT (Time)
- AIM GPS CST LapD (Distance)
- AIM GPS CST LapP (Percent)
- AIM GPS CST LapT (Time)
- AIM GPS CST On (Boolean)
- AIM GPS CST SessD (Distance)
- AIM GPS CST SessP (Percent)
- AIM GPS CST SessT (Time)
- AIM GPS G Sum (Acceleration)
- AIM GPS TPS On (Boolean)
- AIM LapT (Time)
- AIM SessT (Time)

Vehicle

- AIM Aero Power (Power)
- AIM BRK LapD (Distance)
- AIM BRK LapP (Percent)
- AIM BRK LapT (Time)

Comment

Outputs the abs value of the sum of the LatAcc and LonAcc values.

LookUp Tables

Formula

$$\text{sqrt}(\text{Inline Accel} * \text{Inline Accel} + \text{Lateral Accel} * \text{Lateral Accel})$$

Channels Used and Parameters

Notes, Warnings and Errors while Applying Channel to Session(s)

Channel with function: Inline Accel

Channel with function: LateralAccel

SmartyCam 3 Sport [ID: 1400225] - 2023, Mar 25 5:46 PM

Enable 'G Sum' for All Sessions

Enable 'G Sum' for SmartyCam 3 Sport [ID: 1400225]

Open Help Page for 'G Sum'

Enable All Channels of 'Vehicle' for All Sessions

Enable All Channels of 'Vehicle' for SmartyCam 3 Sport [ID: 1400225]

Open Help Page for Math Channels

Verifies usability of enabled channels for loaded sessions.

Forces a new computation of all enabled math channels in loaded sessions.

Verify Formulas

Recompute

Exit



If any channel is for any reason not correct a warning is shown in the channels library as shown here below.

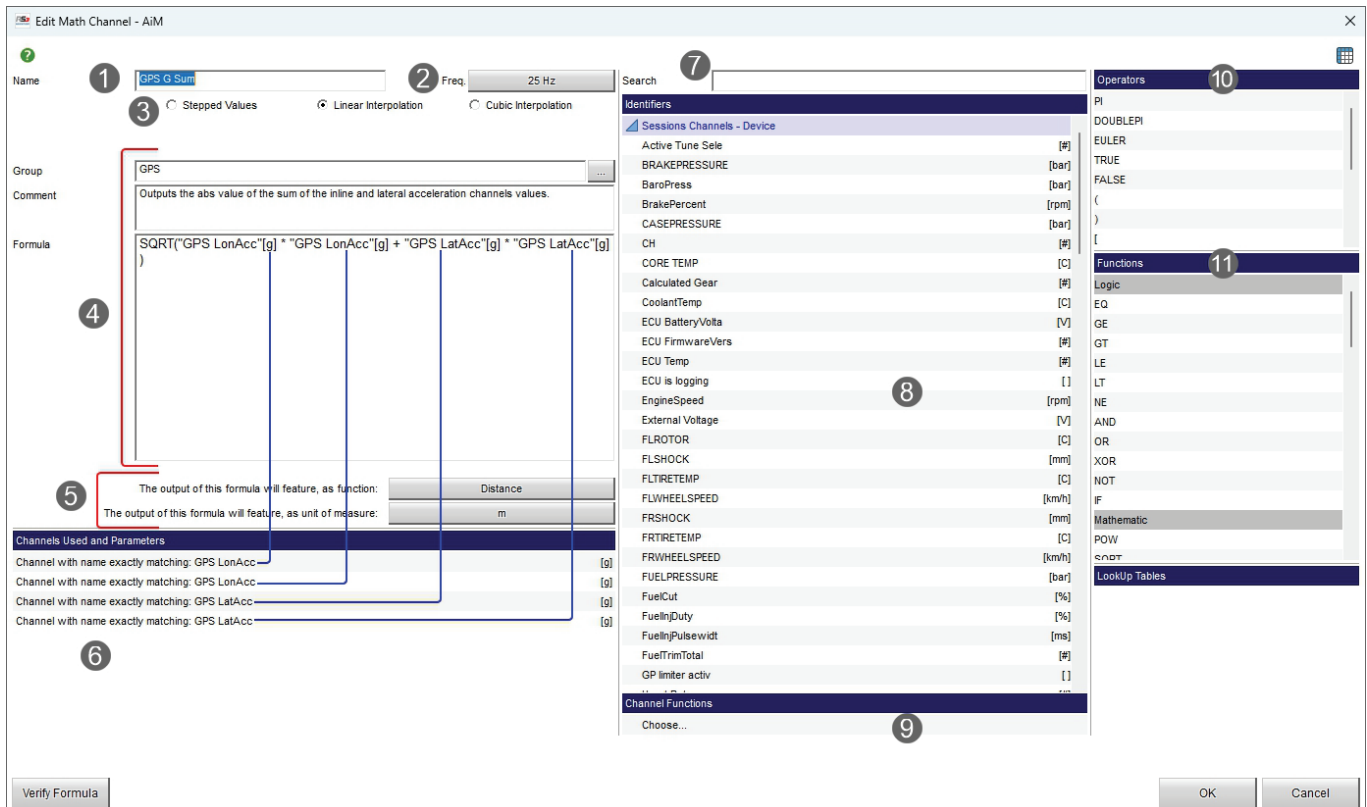
The screenshot shows the 'Math Channels' application window. On the left, a 'Channels Library' lists various channels under 'GPS' and 'Vehicle' categories. The channel 'AIM GPS CRN LapD' is highlighted with a yellow warning icon. A red box highlights this icon and a red line points to a warning message in the 'Channels Used and Parameters' table on the right. The warning message reads: 'Math formula can't be translated for this session' and 'Can't find a channel with this exact name'. The formula for this channel is 'LAP_INTEG("GPS CRN On" * "GPS Speed"[m/s])'. The 'Channels Used and Parameters' table shows the session 'CHIQUITA - 2023, Jun 16 8:51 AM' and the channel 'GPS CRN On'.

Channels Used and Parameters	Notes, Warnings and Errors while Applying Channel to Session(s)
Channel with name exactly matching: GPS CRN On	CHIQUITA - 2023, Jun 16 8:51 AM
Channel with name exactly matching: GPS Speed	Math formula can't be translated for this session GPS CRN On Can't find a channel with this exact name



14.1 – How to add/edit a math channel

To add/edit a new math channel press the buttons here above on the top left keyboard and the related dialog window is prompted. Adding a channel the panel is prompted empty while editing one it is prompted as set and can be modified. Here below is shown a panel to be edited.



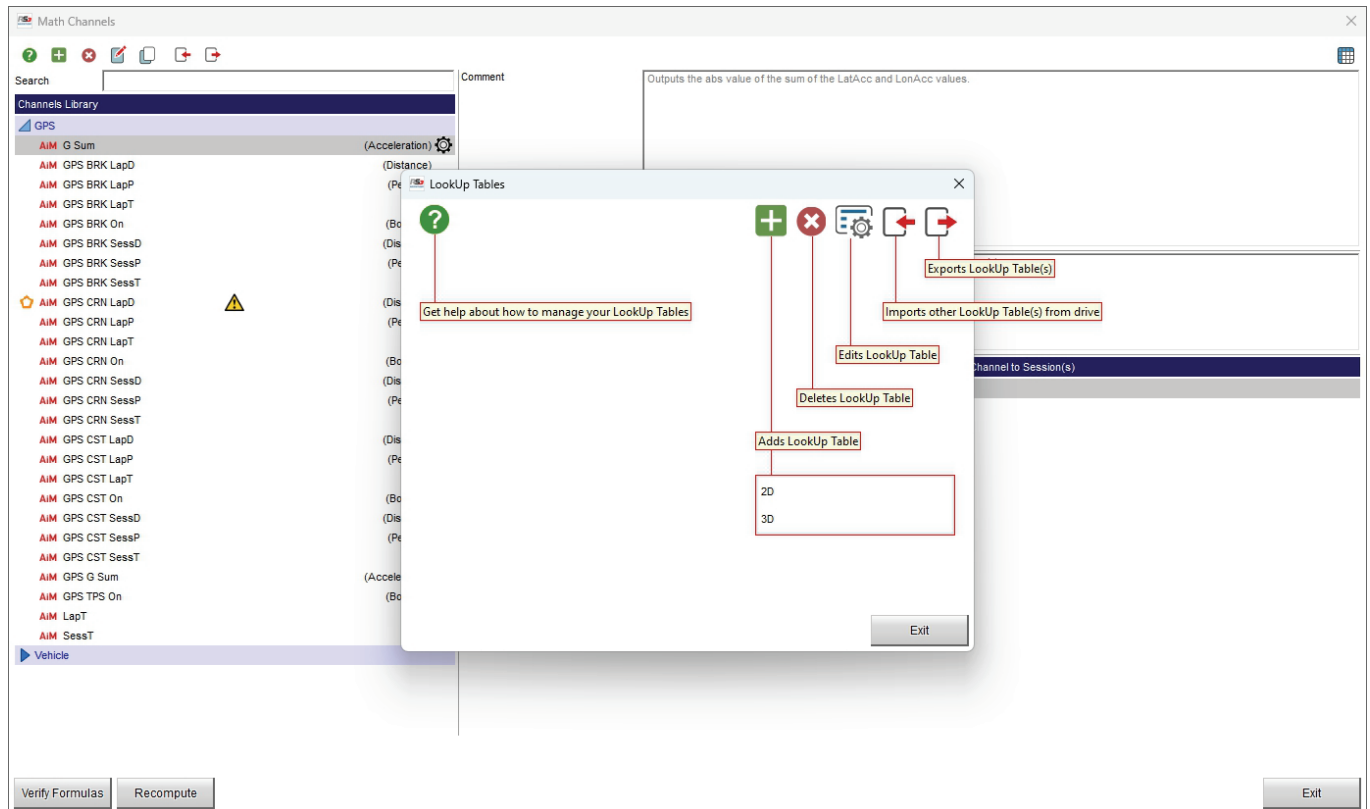
With reference to the image above:

- You need to choose/modify math channel name (1)
- Set/Modify the sampling Frequency (2)
- Choose/modify the computation mode (3)
- Select/modify the group the channels belong to, fill in a comment to explain it and the formula (4)
- According to the function of the channel select/modify the measure unit (5)
- The bottom left part of the view shows which channel and parameters are used for this computation (6). Please note: if any channel is not matching completely the channel name a warning icon ⚠ is shown in this field in correspondence to the channel that is not matching the channel name.
- Using the search box you can quickly find a channel (7)
- All identifiers are shown in the corresponding box (8)
- Channel function can be selected/modified in the corresponding box (9)
- Operators (10) and functions (11) are listed in the right boxes of the view
- Look up tables (12) are explained in paragraph 14.2



14.2 – LookUp tables

Using the above shown icon in Math Channels setting panel it is possible to add/remove/Edit/Import/Export lookup table.



LookUp table is a special function of Race Studio 3 Analysis whose working mode is very close to what custom sensors do for the configuration. You can define a “curve” according to which, given the value of one or two channels, you define the output value. Look up table can be:

- **2D:** the curve appears like a line on a plot, with “X” value as input and “Y” value as output
- **3D:** the curve appears as a surface in space, with “X” and “Y” values as inputs and “Z” as output.



15 – Reports layout

In Race Studio 3 Analysis home view is “Reports” function; it allows to make a quantitative analysis of different performances (vehicle or pilot) and can be applied to different vehicles of a team or to the same vehicle for an entire week end. Using this report you can compare selected channels values for the entire laps or for different track part (corners and straights). Most useful reports are these referred to GPS Speed and GPS Acceleration.

Available statistics are: min/max/average values, range, delta, absolute value of average, average when not zero, integral and integral of absolute value. You can also decide to see the values for entire laps only as well as for desired track sectors.

The comparison can be made for all laps or for a selected number of best laps, for laps with best splits or considering a fixed percentage around best lap.

By default Race Studio 3 Analysis software provides two samples of reports named “Default AiM-1” and “default AiM-2”.

To enter Reports Manager:

- Select the sessions you want to see the report of
- Click the above reported icon in the software main page
- Select the report you prefer or choose “Data Reports Manager” to add a new one.

The screenshot shows the Race Studio 3 Analysis software interface. The top toolbar contains various icons, with the Reports icon (a grid of colored squares) highlighted by a red box. A dropdown menu is open, showing options: "Data Reports Manager", "Open 'Default-AiM-1'", and "Open 'Default-AiM-2'".

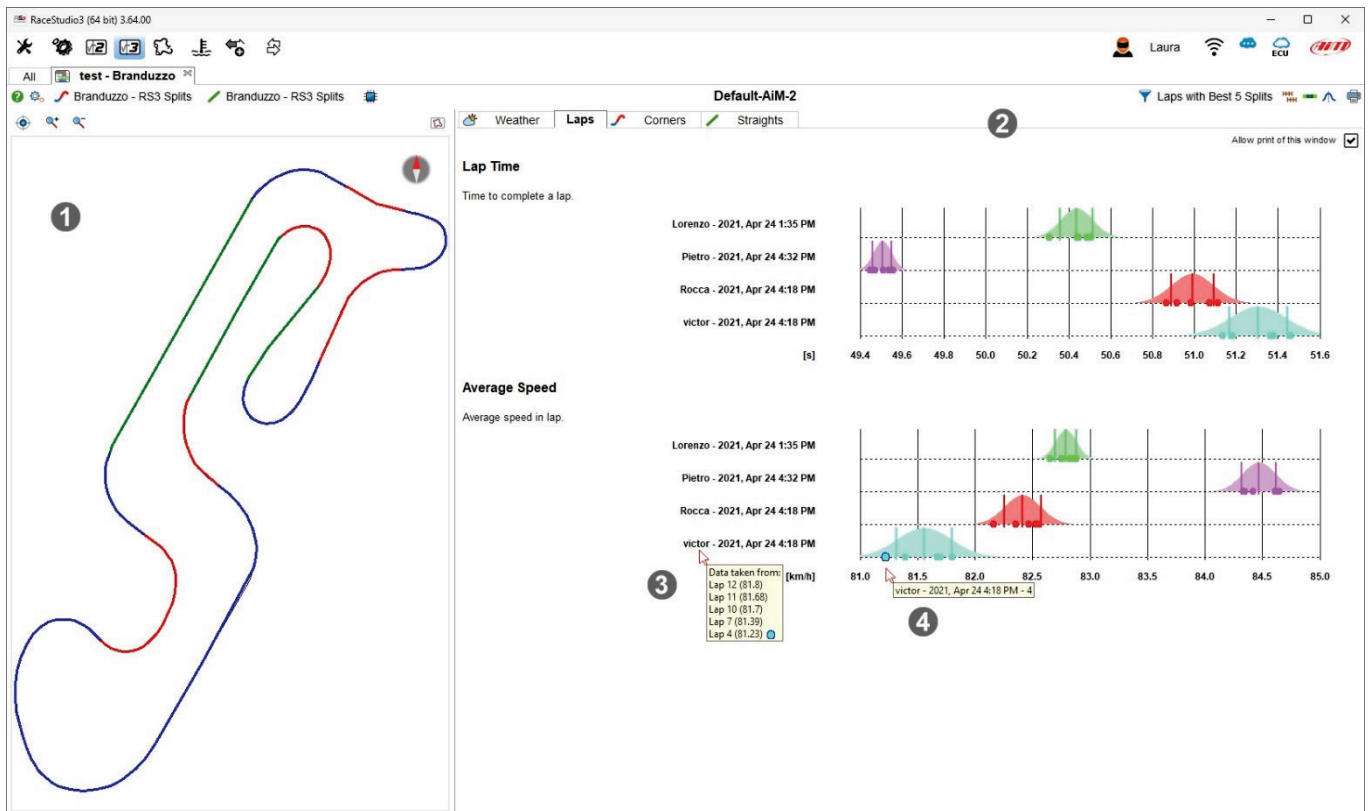
The main interface is divided into several sections:

- Left Panel:** "All Events (18 sessions of 18)" list with columns for #, Date, and Track. The selected session is "2021, April 24" at "Branduzzo test".
- Center Panel:** "Branduzzo - 2021, April 24 - test" table showing session details. The table has columns for Session, Lap, Time, Pct, and Min. Several sessions are checked.
- Right Panel:** "3 sessions selected (39 laps enabled)" table showing detailed lap data. The table has columns for Session, Lap, Time, Pct, and Min. The selected sessions are 4:32 PM, 4:18 PM, and 4:18 PM.
- Bottom Right:** A line graph showing "GPS Speed (km/h)" vs "Distance (m)". The y-axis ranges from 30.0 to 120.0, and the x-axis ranges from 0.00 to 1000.00. The graph shows a fluctuating speed profile with a shaded area representing a range.

The software enters Reports page view. In the example below we selected “Default-AiM-2” example. The view below shows:

- track map CDI mode on the left (1)
- report on the right (2)
- mousing over the report view a tooltip showing which data are taken is prompted (3)
- mousing over the graph right of the report a tooltip for each point of the graph is prompted (4).

Each part of the view can be customized as we will explain in the following pages.



Top left and top right of Report view are two toolbars.

We start from **the left toolbar (top one in the image)**.

- through the **question mark** you are redirected to an online help page
- the **setting icon** allows you to manage the reports, creating a new one included, edit the current report or switch among different reports
- **corners** and **straight** split division used for the report are these you previously created or default ones
- through the **scratch** icon you can reset the report computation.

Right toolbar (bottom one in the image):

- through the **funnel icon** you can select the laps or the range of laps to be used for the report
- right of it is the icons that allows you to decide whether keeping the same **scales** for similar statistics and decide if using normal or rainbow colour for acceleration report
- graph can use normal **distribution**, box plot or both and data can be exported in different format through the **printer icon**.

The image shows two screenshots of the software interface with callouts explaining the functions of various icons in the toolbars.

Top Screenshot: Branduzzo - RS3 Splits

- Question Mark Icon:** Get help about how to use data reports
- Settings Icon:** Click to change data report settings
- Left Toolbar (Top):**
 - Question Mark:** Get help about how to use data reports
 - Settings:** Click to change data report settings
 - Left Toolbar (Bottom):** Click to select the split division to be used for corners
 - Right Toolbar (Bottom):** Click to select the split division to be used for straights
 - Scratch Icon:** Click to compute report from scratch
- Right Toolbar (Bottom):**
 - Data Reports Manager**
 - Edit Data Report**
 - Switch to "Default-AiM-1" Report**

Bottom Screenshot: 5 Best Laps

- Funnel Icon:** Click to select the how to filter out laps or splits
- Statistics Icons:** Choose statistics to be used
 - Use Box Plots
 - Use Normal Distribution
 - Use Both
- Colorize Method Icon:** Choose colorize method for acceleration report
 - Use Rainbow Colors for Acceleration Report
 - Use Normal Color Scheme in Acceleration Report
- Scales Icon:** Choose if to separate statistics with same units of measure
 - Separate Scales for Statistics with Same Units
 - Use Same Scales for Statistics with Same Units
- Printer Icon:** Export this Layout to a Printable File
 - Export Report Data to MS Excel (TM)
 - Export Report Data to CSV
 - Export Report to MS Word (TM)
 - Export Report to HTML File
 - Export Report to Acrobat PDF (TM)



15.1 – Managing, creating and editing a data report

Race Studio 3 software provides two Reports sample named “Default-AiM-1” and “Default-AiM-2” and allows you to import others from a drive as well as create new ones.

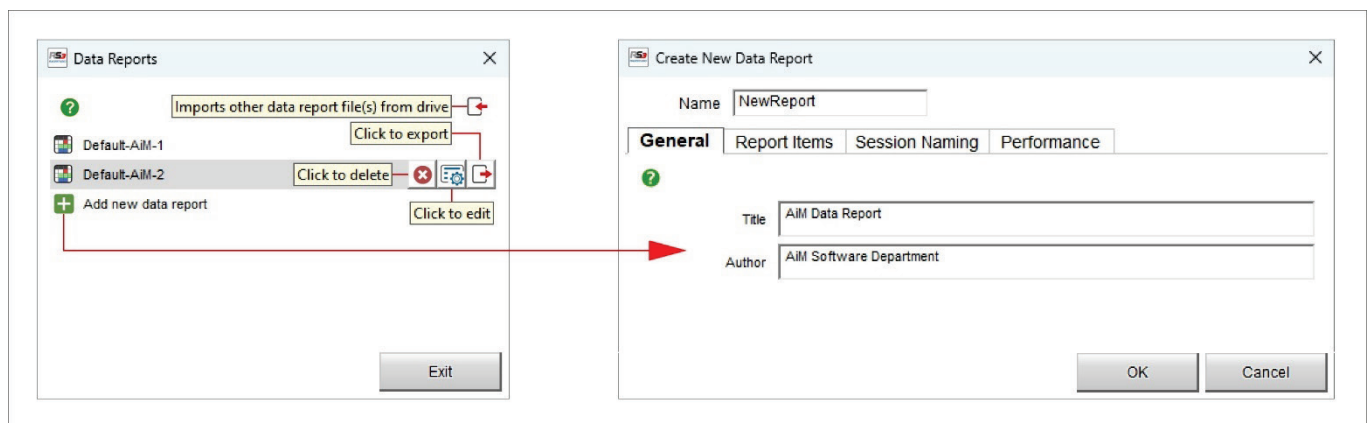
To choose a default report model:

- press the above reported icon
- select “Data Report Manager” item
- select the desired model in the panel that is prompted

Please note: mousing over the available reports some icons allowing you to edit, export and delete them are prompted; moreover using the top right icon on “Data Reports” panel you can import data reports from a drive

To add a new report:

- press the above reported icon
- select “Data Report Manager” item
- select “+” icon in the panel that is prompted and a new panel is shown: fill in “Title” and “Author” and then set up the other tabs explained in the following pages.



“Report Items” tab includes Sessions, Laps, Corners and Straight Items. They can be enabled with the related checkboxes or added pressing “+” icon.

Adding a new channel the corresponding setting panel is prompted:

- fill in Item name and comment
- select the channel on the left and the operator on the right of the panel as highlighted below
- press “OK”

The image shows a sequence of three screenshots illustrating the process of adding a new data report item.

1. Create New Data Report Dialog: The 'Report Items' tab is selected. Under the 'Corners Items' section, 'GPS - Deceleration Times for Speed' is highlighted. A 'Click to edit' button is visible next to it. A red arrow points from this button to the 'Data Reports' dialog.

2. Data Reports Dialog (Top): The 'Item' field contains 'GPS - Deceleration Times for Speed' and the 'Comment' field contains 'Time spent in every speed step, during deceleration, from max to min common :'. The 'OK' and 'Cancel' buttons are at the bottom.

3. Data Reports Dialog (Bottom): This dialog shows the configuration options. The 'Channel' list on the left includes 'GPS - Deceleration Times for Speed' (highlighted with a red box). The 'Operator' list on the right includes 'Minimum', 'Maximum', 'Average', 'Variance', 'Average when Not Zero', 'Signal Range of Values', 'Time of Min', 'Time of Max', 'Distance of Min', 'Distance of Max', 'Integral', and 'Integral of Abs Values'. The 'OK' and 'Cancel' buttons are at the bottom.

“Session naming” tab

Each session can be named using pre-defined fields you can enable/disable and displace in the dedicated tab. After having enabled the voice you want to use drag and drop it in the desired position and the session name will be changed as shown here below.

Session Time
Time to complete a session.

2021, Apr 24 4:32 PM - Pietro - MyChron5 [ID: 50047511]
2021, Apr 24 4:18 PM - rok - Rocca - MyChron5S [ID: 83001615]
2021, Apr 24 4:18 PM - victor - MyChron5S [ID: 83002009]

[s]

Session Time
Time to complete a session.

Pietro - 2021, Apr 24 4:32 PM - MyChron5 [ID: 50047511]
Rocca - 2021, Apr 24 4:18 PM - rok - MyChron5S [ID: 83001615]
victor - 2021, Apr 24 4:18 PM - MyChron5S [ID: 83002009]

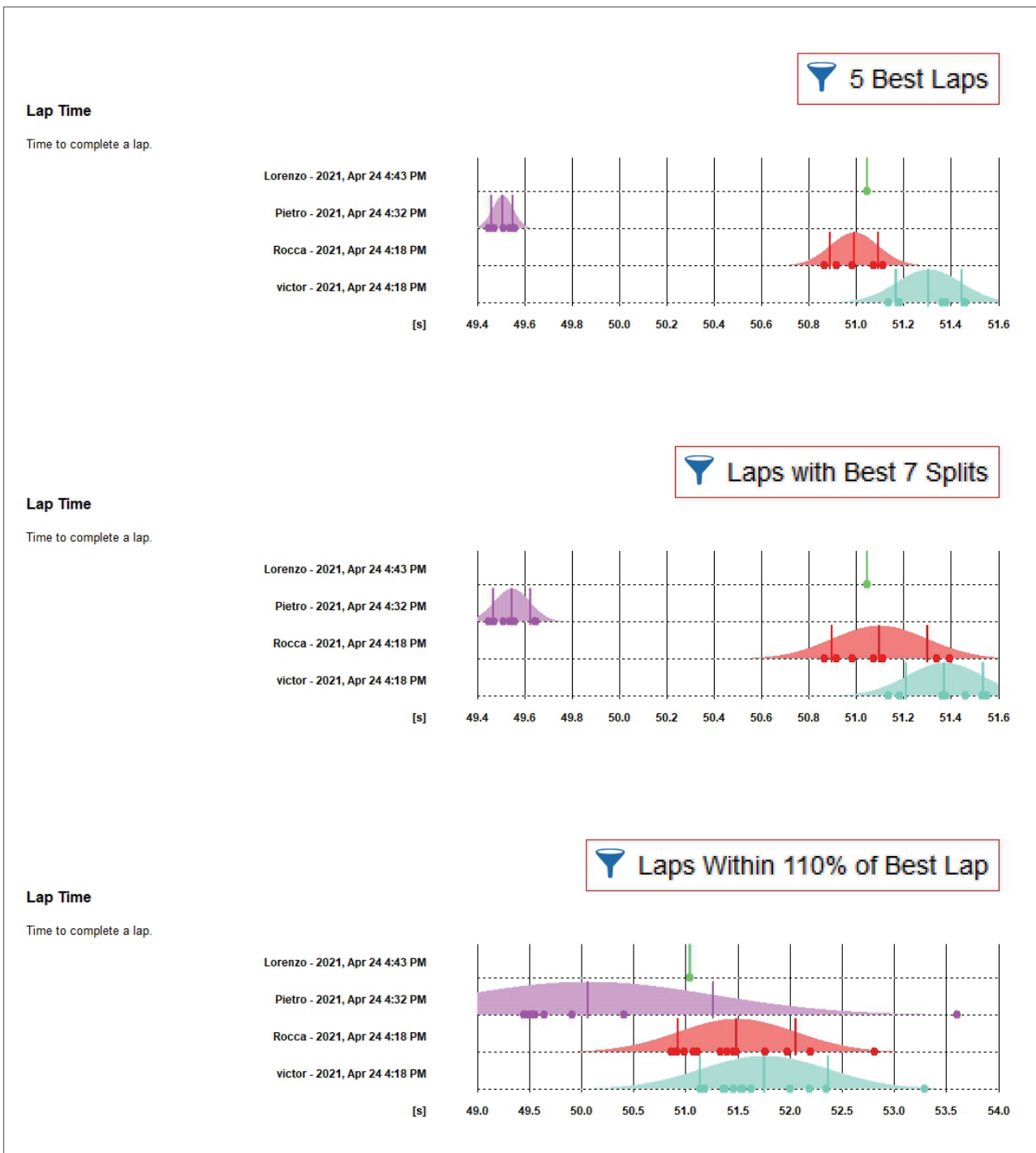
[s]

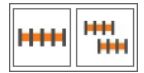


15.2 – Filtering data for laps and splits report

As shown here below, using the above reported icon it is possible filter data to be used for the report. Available options are:

- 5, 7 and 11 best laps
- Laps with best 5, 7 and 11 splits
- Laps within 110% or 130% of best laps
- All laps

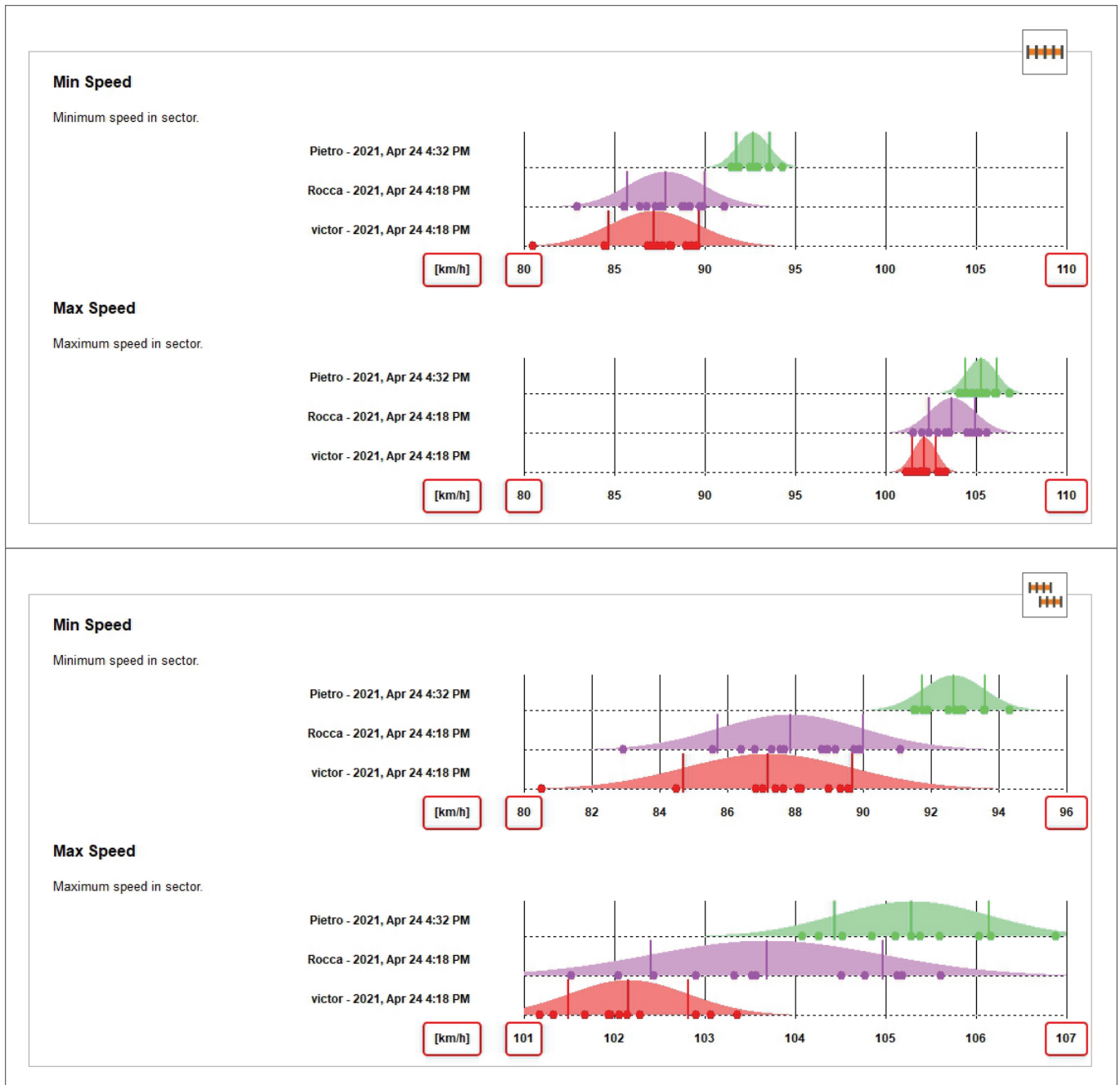


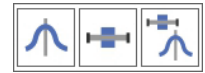


15.3 – Management of scales for statistics with same units

Using the above reported icons the graphs can have on the abscissa axis:

- the same scales for statistics with the same units (top in the image below) or
- different scales for statistics with the same units (bottom in the image below)

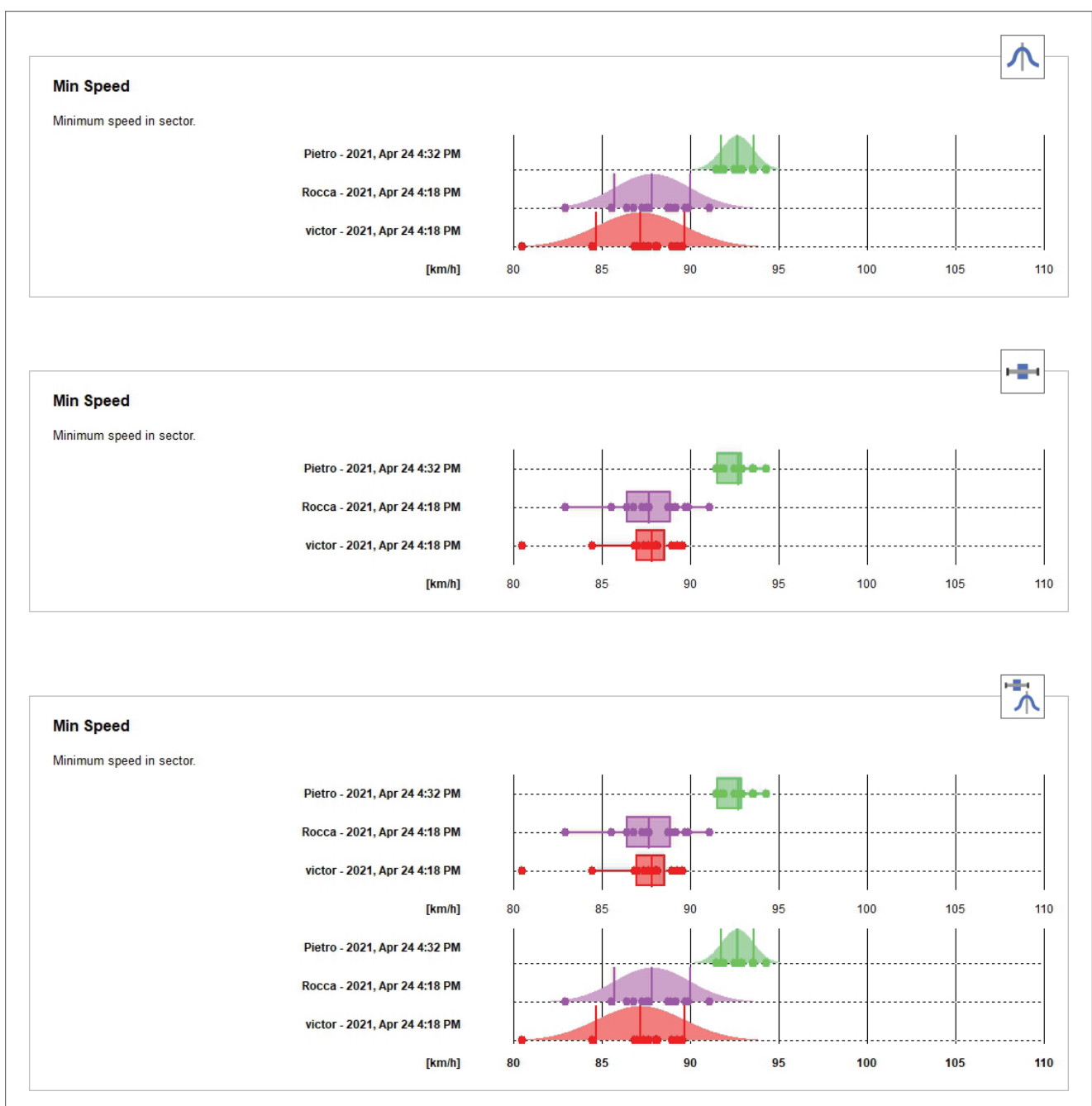




15.4 – Choosing the statistics to be used

Using the above reported icons (from left to right normal graph, box plot, both) it is possible to represent data with different graphs:

- **normal graph (top):** using sampled data a gaussian bell of the probability density function is built; the three vertical lines are: average value, plus/minus the standard deviation
- **box plot (central):** are a visual picture that compares sets of data for central tendency (location) and variation (process spread); the line segmenting the box represents the median data value; left and right of the box are first and third quartile, respectively; quartiles represent 25th and 75th percentile of the data spread while whiskers extend to highest and lowest samples, given that those samples do not exceed the median value plus/minus 1.5 times the interquartile range; samples exceeding the whiskers are plotted as outliers
- **both (bottom)**







15.5 – Exporting data reports to printable files


All reports can be exported in different formats, to say:


- Microsoft Excel™ (exports report data)
- CSV (exports report data)
- Microsoft Word™ (exports a printable file)
- HTML (exports a printable file)
- Adobe Acrobat™ PDF (exports a printable file)




 Export Report Data to MS Excel (TM)

 Export Report Data to CSV

 Export Report to MS Word (TM)

 Export Report to HTML File

 Export Report to Acrobat PDF (TM)