



GUBELLINI DataAnalysis

User Manual

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1 Introduction

GUBELLINI DataAnalysis is the free telemetry data analysis software supplied with **Gubellini Electronics** data loggers. It opens the logger recordings, displays the channels on synchronized graphs, calculates and compares lap times, shows the vehicle position on the circuit map, creates calculated channels, analyzes statistics and frequencies, synchronizes an onboard video and generates reports.

The software is designed to work **even when the GPS signal is missing or intermittent**: distance, laps and map position are reconstructed from alternative channels (fallback speed, lap beacon, logger lap index).

1.1 How this manual is organized

The chapters follow the normal workflow: installation, opening the data, reading the graphs, laps and map, comparison, analysis tools, advanced functions and settings. All the examples and images were made with the **sample dataset** included in the package: a test session at the Medicina (BO) circuit on 14/10/2026.

Sample dataset	Value
File	Data\LOGGER__20261014_1838_Test_GABMW_000011.dat
Duration / samples / rate	234.6 s · 2346 samples · 10 Hz
Laps	Out Lap, 4 complete laps, In Lap – best lap: Lap 4, 00:35.151
Reference lap length	398 m (Medicina track)
Main channels	GPS_Speed (GPS3), RPM_OBDII (CAN2), TPS_OBDII (CAN3), Acc_X/Acc_Y/Acc_Z (IMU1-3), WATER_TEMP_OBDII (CAN5)...

1.2 Conventions

- **Bold**: names of menus, buttons and windows as they appear in the program (e.g. **File** → **Open Dataset**).
- **Ctrl** + **0**: keyboard shortcut. The shortcuts shown are the defaults and can be changed (chapter [19](#)).

Language

The program is available in Italian, English, French, Spanish, German and Portuguese (**Edit** → **Preferences** → **Language**). The images in this manual were captured with the English interface and the dark theme.

2 Installation and startup

2.1 Requirements

- Windows 10 or 11, 64-bit, 8 GB of RAM recommended, screen of at least 1600×900.
- Internet connection only for checking for updates and for the AI assistant with cloud providers (both optional).

2.2 Installing with the installer

- 1 Run `GUBELLINI_DataAnalysis_Setup_Rev018.exe` and follow the wizard.
- 2 The default folder is `C:\Program Files\GUBELLINIDataAnalysis`; you can choose to create a desktop icon.
- 3 When the installation is complete, the program can be started directly from the last page of the installer or from the Start menu.

Besides the program, the installation folder contains:

Folder	Contents
Data	Medicina sample dataset with its companion folder.
TrackMap	Circuit maps in CSV format (Medicina, Mugello...).
Layouts	Channel layouts, preferences (<code>app_state.json</code>), shortcuts, math channels.
LookupTables	2D lookup tables.
Branding	Logo used in the reports.
Reports , ADVCompareLayouts	Generated reports and saved ADV Compare layouts.

Updating without losing your settings

When a newer revision is installed, the installer **does not overwrite** the `Layouts` folder: the user's layouts, preferences, shortcuts and math channels are preserved. In Windows the program always appears as **GUBELLINI DataAnalysis**, without the revision number: every update replaces the previous installation instead of adding a new application. The installed revision is shown in the title of the main window and in **Help → About GUBELLINI DataAnalysis**.

2.3 Portable version

As an alternative to the installer, extract the `.zip` package into a folder and double-click `run.bat`. The script checks that Python and the required libraries are present and starts the program.

2.4 First startup

At first startup the window is empty: the central graph contains no data and the side windows are ready to be filled when a dataset is opened.

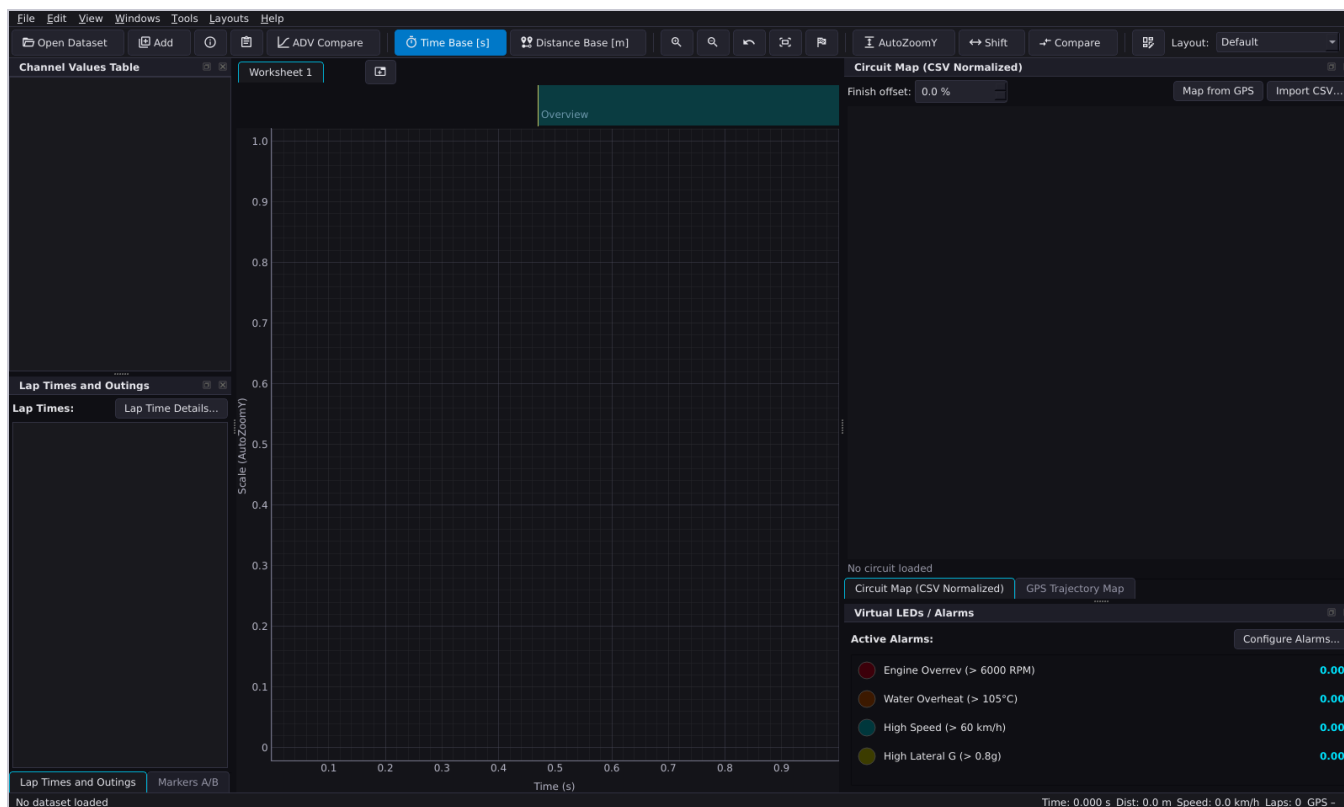


Figure 1 - The main window at first startup, with no data.

3 The interface

The main window consists of a central area with the graphs and of dockable windows (*docks*) that can be moved, placed side by side, grouped into tabs or detached from the window. Their size and arrangement are remembered when the program is closed.



Figure 2 - The areas of the main window with the sample dataset loaded.

- Menu bar:** File, Edit, View, Windows, Tools, Layouts, Help.
- Toolbar:** open dataset, time/distance base, zoom, AutoZoomY, shift, comparison, layout and analysis windows.
- Worksheets:** work tabs, each with its own graphs (chap. 10).
- Overview:** the whole session in miniature, with a frame showing the displayed part.
- Main graph:** the channels of the active layout, stacked in bands (*slots*).
- Channel Values Table:** value of each channel under the cursor, for each dataset.
- Lap Times and Outings:** list of laps; the **Markers A/B** tab is in the same area.
- Circuit Map** and **GPS Trajectory Map**.
- Virtual LEDs / Alarms.**
- Status bar:** buttons of the loaded datasets and time, distance, speed, laps and GPS status at the cursor.

3.1 Status bar

On the left there is a colored button for each dataset: clicking it makes that dataset the **selected** one (used by shift, close, statistics...). On the right, for the cursor position, the bar shows **Time**, **Dist**, **Speed**, the number of laps and **GPS ✓ / GPS X**, which indicates whether the GPS fix is valid at that point.

3.2 Notifications

Non-critical information (map loaded from the dataset folder, lap index updated, dataset added...) appears as notifications at the bottom right, which close by themselves or with ✕, without interrupting your work.

3.3 Dockable windows

- Drag the title bar of a window to move it; dropping it onto another window creates a tabbed group.
- The button to the left of ✕ detaches the window into an independent frame (useful with two monitors).
- Closed windows can be reopened from the **Windows** menu.
- **Layouts** → **Save Windows Layout** stores the arrangement; **Restore Default Windows Layout** returns to the initial one.

3.4 Light and dark theme

The dark theme is the default. **Ctrl** + **Shift** + **L** (or **View** → **Toggle Dark / Light Theme**) switches to the light theme, better suited to printing or to very bright environments.



Figure 3 - The light theme, with two datasets and two worksheets.

4 Opening data

4.1 Opening a dataset

- 1
- File → Open Dataset (.dat)... (`Ctrl` + `0`) or the **Open Dataset** button.
- 2
- Select the `.dat` (or `.csv`) file. The file dialog starts from the last folder used.
- 3
- The program reads the channels, filters the GPS, calculates distance and laps and applies the active layout.

Alternatively, you can **drag** the file onto the window or reopen it from **File → Recent Files**.



Figure 4 - The Medicina dataset just opened: graphs, laps, circuit map aligned to the GPS and alarms.

4.2 The dataset companion folder

Next to the `.dat` file, the logger saves a folder with the same name containing additional information. GUBELLINI DataAnalysis uses it automatically:

File	Use
Channels_details.xml	Name of each channel (e.g. GPS3 → GPS_Speed , CAN2 → RPM_OBDII). These labels are used throughout the program: values table, axes, statistics, export, reports and AI assistant.
Channels_setting.xml	Configuration of the logger channels (rates, factors).
LapTimeIndex.xml	Lap index: sample number of each finish line crossing (chap. 6).
*_track.csv	Circuit map: it is loaded and aligned to the GPS automatically (chap. 7).

Example

When the sample dataset is opened, two notifications appear: «Circuit map loaded from the dataset folder: Medicina_circuit_track.csv» and «LapTimeIndex.xml updated with the GPS laps». The channel names in the table (GPS_Speed, RPM_OBDII, TPS_OBDII, Acc_Y) come from Channels_details.xml.

4.3 Multiple datasets

File → Add Dataset... (**Ctrl** + **Shift** + **0**) loads another file without closing the open ones (up to 5). Each dataset has a color (DS1 red, DS2 green, DS3 blue..., which can be changed in the Preferences) and is drawn overlaid on the others in all the graphs. **File → Close Selected Dataset** (**Ctrl** + **W**) closes the dataset selected in the status bar. Keys **1**...**5** select the corresponding dataset.

4.4 Dataset information

File → Dataset Information... (**Ctrl** + **I**) shows the metadata of each open dataset: logger name, start date and time, number of samples, rate, duration, finish line coordinates and rates of the channel groups. The **Per-Channel Configs** tab lists the rate, multiplier and offset of each channel.

Session Overview		Per-Channel Configs (Freq / Mult / Offset)	
Metadata Attribute	DS1 (LOGGER_20261014_1838_Test_GABMW_000011.dat)	DS2 (LOGGER_20261014_1838_Test_GAE)	
1 File Name	LOGGER_20261014_1838_Test_GABMW_000011.dat	LOGGER_20261014_1838_Test_GAE	
2 Logger Name / Codice	LOGGER_	LOGGER_	
3 Dataset Number	11	11	
4 Session Start	14/10/2026-18:38.07	14/10/2026-18:38.07	
5 Total Sectors	782	782	
6 Total Samples	2,346	2,346	
7 Sampling Rate	10.0 Hz	10.0 Hz	
8 Total Duration	03:54.60 (234.6 s)	03:54.60 (234.6 s)	
9 Lap Trigger Latitude	44.481972°	44.481972°	
10 Lap Trigger Longitude	11.632154°	11.632154°	
11 GPS Channels Frequency	10 Hz	10 Hz	
12 IMU Channels Frequency	10 Hz	10 Hz	
13 Digital Channels Frequency	10 Hz	10 Hz	
14 Analog Channels Frequency	10 Hz	10 Hz	
15 CAN Channels Frequency	5 Hz	5 Hz	

Figure 5 - Dataset information with two datasets open.

4.5 Dataset datasheet

At the end of every download **GUBELLINI DataStudio** saves a Datasheet.xml file in the dataset folder: the entries of the sheet (driver, circuit, setup...) organized in groups, and the **special entries**, i.e. the parts monitored by distance or by hours of use (engine, chain...) with their counters updated by the download.

File → Dataset Datasheet... (**Ctrl** + **Shift** + **D** , or the icon next to Dataset Information on the toolbar) opens a table with one column for each open dataset that has a datasheet:

- **Dataset:** file, dataset number, logger, download date, device / source and template used;
- the **groups of entries** of the template with the values entered at the download;
- **Special entries (parts):** channel the usage is computed from, distance and time of use of the dataset and, for each part, the contribution of this dataset, the total, the threshold and the status - **OK**, **Near the threshold** or **Threshold exceeded** - with the percentage of the threshold reached.

Read only: the Datasheet.xml files are not modified.

Entry	DS1: LOGGER_20261014_1838_Test_GABMW_	DS2: LOGGER_20261014_1838_Test_GABMW_000011
▼ Dataset		
File	LOGGER_20261014_1838_Test_GABMW_000011....	LOGGER_20261014_1838_Test_GABMW_000011.dat
Dataset number	11	11
Logger	LOGGER	LOGGER
Downloaded	14/10/2026 19:05	14/10/2026 19:05
Device / source	GUBELOG / USB	GUBELOG / USB
Template	Datasheet	Datasheet
▼ Sessione		
Pilota	Diego Gubellini	Diego Gubellini
Circuito / luogo	Autodromo di Medicina (BO)	Autodromo di Medicina (BO)
Condizioni pista	Asciutto	Asciutto
Temperatura aria [°C]	17.5	17.5
Note	Prova assetto BMW: gomme nuove, mappa motor...	Prova assetto BMW: gomme nuove, mappa motore standard.
▼ Assetto		
Pressione gomme ant. [bar]	2.10	2.10
Pressione gomme post. [bar]	2.30	2.30
Rapporto finale	15/42	15/42
▼ Special entries (parts)		
Usage computed from	GPS3 (velocità, km/h)	GPS3 (velocità, km/h)
Dataset distance [km]	2.10	2.10
Dataset time of use [h]	0.065	0.065
▼ Motore · MOT-001 Motore		
This dataset [h]	0.065	0.065
Total [h]	18.915	18.915
Threshold [h]	20.00	20.00
Status	Near the threshold (95%)	Near the threshold (95%)
▼ Trasmissione · CAT-001 Catena		
This dataset [km]	2.10	2.10
Total [km]	1228.50	1228.50
Threshold [km]	1500.00	1500.00
Status	OK (82%)	OK (82%)

Export CSV... Export Excel... Export PDF... Print... Reload Close

Figure 6 - Datasheet of two open datasets: the engine has reached 95% of its 20-hour threshold.

Datasheets are **read only**: DataAnalysis never modifies the `Datasheet.xml` files. To correct an entry or reset a counter use GUBELLINI DataStudio; **Reload** reads the files again.

The table can be exported with **Export CSV...** (; separator, opens in Excel), **Export Excel...** (.xlsx file with coloured statuses) and **Export PDF...**, or printed with **Print...**. With more than two datasets the PDF and the printout are in landscape.

Example

The Medicina sample dataset has a datasheet with the Sessione and Assetto groups and two parts: Motore (engine, MOT-001, 18.915 h of 20 h, near the threshold) and Catena (chain, CAT-001, 1228.5 km of 1500 km, OK). The dataset added 2.1 km and 0.065 h of use.

5 The graphs

5.1 Cursor and reading values

When the mouse moves over the graph, the vertical cursor follows the pointer; a click fixes it. The cursor is synchronized with all the graphs, with the map (red dot), with the channel values table and with the video. From the keyboard:

Keys	Action
← →	Cursor by one sample (with Shift by 10 samples)
Home / End	Start / end of the data
PgUp / PgDown	Pans one screen left / right
Ctrl + ← / Ctrl + →	Previous / next lap

"Graph" shortcuts work when the mouse is over a graph: there is no need to click.

5.2 Time base and distance base

The horizontal axis can be **time** in seconds (**T**, **Time Base [s]** button) or the **distance** traveled (**D**, **Distance Base [m]**). In distance base, laps from different datasets overlap corner by corner even if their times differ: this is the recommended base for comparisons.



Figure 7 - Lap 4 in time base.



Figure 8 - The same lap in distance base.

How distance is calculated

Distance is the integral of the strategic speed (normally GPS_Speed). When the GPS is not valid, the **fallback speed channel** (e.g. wheel speed from CAN, set in the Preferences) or an interpolation is used. With **distance correction** enabled, each complete lap is rescaled to the reference lap length and, when the GPS is valid, the position within the lap is projected onto the reference trajectory: this way the odometer does not accumulate drift from one lap to the next.

5.3 Zoom

Command	Action
Mouse wheel	Zoom in/out centered on the pointer
+ / -	Zoom in / out
Backspace	Undoes the last zoom
F	Shows the whole dataset
L	Zooms on the lap where the cursor is
Dragging with the left button	Pans the graph
Dragging with the right button	Selects an interval: on release, Zoom Selected Interval appears
Frame in the overview	Drag it to move the displayed window; its edges change the width



Figure 9 – Selecting an interval with the right button: the highlighted area becomes the new view.

A right-click without dragging opens the standard graph menu (export, axis settings).

5.4 Vertical scale: AutoZoomY

With **AutoZoomY** (

Y

) the vertical scale of each channel adapts to the values visible in the window; in **ManualZoomY** the Min/Max limits set in the layout are used (chap. 8). Clicking a channel in the **Channel Values Table** highlights it (thicker line) and the Y axis on the left shows its scale and label.

5.5 Overview

The strip above the graph shows the whole session of the strategic speed channel (e.g. GPS_Speed) or of the last channel clicked in the table. The light frame indicates the part visible in the main graph and is always synchronized.

5.6 Markers A/B and measurements

Place the cursor and press **A**, then move and press **B**: two draggable dashed lines appear. The **Markers A/B** tab shows Δt , Δd , average speed and, for each channel, the value at A and at B and the minimum, maximum and average between the two markers. **C** clears the markers.



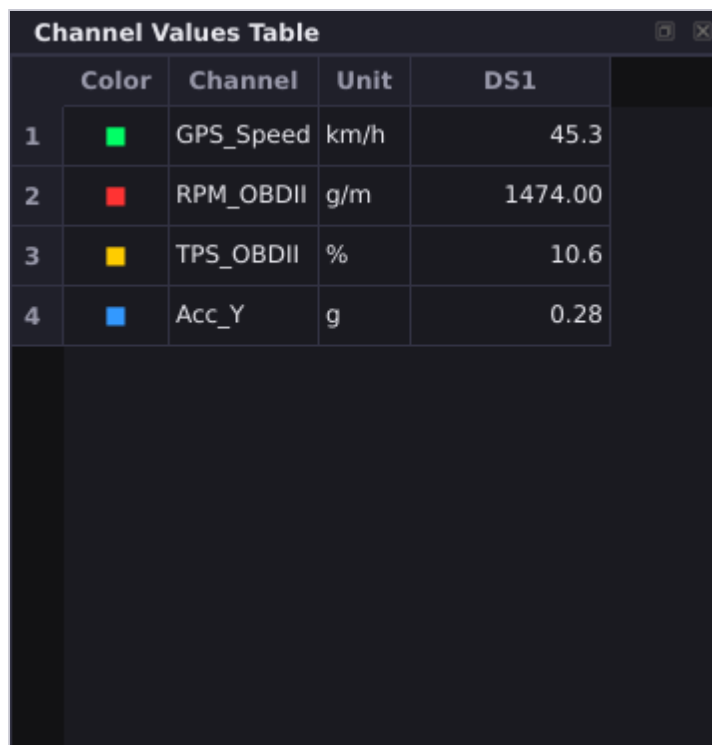
Figure 10 - Markers A and B on a section of the lap and the Markers A/B tab with the measurements.

Example - duration of a braking phase

Place A at the start of the drop in GPS_Speed before a corner and B at the point of minimum speed: the Markers A/B tab shows the braking time (Δt), the braking distance (Δd) and the minimum speed reached.

5.7 Channel Values Table

Lists the channels of the layout with color, name, unit of measurement and the value at the cursor for each dataset (DS1, DS2...). The value takes the dataset shift into account.



	Color	Channel	Unit	DS1
1	■	GPS_Speed	km/h	45.3
2	■	RPM_OBDII	g/m	1474.00
3	■	TPS_OBDII	%	10.6
4	■	Acc_Y	g	0.28

Figure 11 - The Channel Values Table.

5.8 Screenshots and printing

File → Save Graph Screenshot... (**Ctrl** + **Shift** + **S**) saves an image of the graphs; **File → Print Graph...** (**Ctrl** + **P**) sends it to the printer.

6 Laps and lap times

6.1 Lap Times and Outings window

Lists the laps of each dataset: **Out Lap** (leaving the pits), numbered complete laps and **In Lap** (returning to the pits). The best lap of each dataset is highlighted. Only complete laps are used for the best lap, comparisons and the reference lap.

Lap Times and Outings

Lap Times:

Lap Time Details...

	Lap #	Lap Time (DS1)
1	Out Lap	00:34.647
2	Lap 1	00:47.677
3	Lap 2	00:39.144
4	Lap 3	00:37.882
5	Lap 4	00:35.151
6	In Lap	00:39.999

	Dataset	Lap #	Lap Time	Distance (m)	Max Speed (km/h)	Avg Speed (km/h)	
1	DS1: LOGGER_20261014_1838_Test_GABMW_000011.dat	Out Lap	00:34.647	199.5	49.9		2
2	DS1: LOGGER_20261014_1838_Test_GABMW_000011.dat	Lap 1	00:47.677	394.2	57.5		2
3	DS1: LOGGER_20261014_1838_Test_GABMW_000011.dat	Lap 2	00:39.144	402.2	65.6		3
4	DS1: LOGGER_20261014_1838_Test_GABMW_000011.dat	Lap 3	00:37.882	395.8	68.8		3
5	DS1: LOGGER_20261014_1838_Test_GABMW_000011.dat	Lap 4	00:35.151	396.4	65.4		4
6	DS1: LOGGER_20261014_1838_Test_GABMW_000011.dat	In Lap	00:39.999	311.9	69.3		2
</							

Figure 13 - Lap Time Details: distance, maximum and average speed.

Figure 12 - Lap times of the sample dataset.

- **Double-click** on a time: with a single dataset the view moves to the start of the lap; with several datasets only the dataset of that lap is shifted, so that the lap starts at the left edge of the view (useful for overlaying laps from different datasets).
- **Right-click** on a time: **Fit zoom to this lap** (zoom on the lap) and **Move at beginning of this lap** (cursor at the start of the lap).
- **Lap Time Details...**: complete table with distance, maximum and average speed of each lap.

6.2 How laps are detected

The lap source is chosen in **Preferences → Lap Trigger Source**:

Source	How it works
Extract from Dataset Metadata	GPS finish line with the coordinates saved by the logger (default).
Manual Geographic Coordinates	GPS finish line with the latitude and longitude entered in the Preferences and a detection radius.
Lap beacon / digital channel (no GPS)	A rising edge of a channel (e.g. beacon receiver) above the threshold marks the crossing. Works without GPS.
Logger lap index (LapTimeIndex.xml)	Uses the crossings written in the <code>LapTimeIndex.xml</code> file of the dataset folder.

The crossing instant is interpolated between two samples for greater accuracy. The **Minimum lap time** prevents double crossings.

No GPS

If the dataset has no valid GPS fix and the source is GPS, when it is opened you are offered to **import** a `LapTimeIndex.xml` file or to create one with the **wizard** (§6.4). Alternatively, a beacon channel can be used.

6.3 LapTimeIndex.xml

This is the logger file with the lap index: the first value is 0 (start of recording), the following ones are the sample numbers of the finish line crossings; unused slots are set to `-1`.

- When the laps are calculated with the **GPS trigger**, the file is **updated** with the GPS crossings. At the first change, the logger's original is kept as `LapTimeIndex.xml.bak`.
- Tools → Import LapTimeIndex.xml** loads an index from another file.

6.4 Lap index wizard

It is used to create the lap index when the GPS is missing. It is opened from **Tools → Lap index wizard (LapTimeIndex.xml)**, from the command palette or from the prompt offered when the dataset is opened.

- 1. Show the whole dataset:** the graph switches to distance base and shows the whole session.
- 2. Offset:** distance of the first finish line crossing. You can type it, drag the orange *Offset* line on the graph or press **Use cursor**.
- 3. Lap length:** length of the lap. **From circuit map** takes it from the georeferenced circuit map. A dashed line *Lap 1, Lap 2...* appears on the graph at each lap, and the table lists the sample, time and start of each lap.
- 4. Confirm and generate XML:** the `LapTimeIndex.xml` file is written to the dataset folder, in the same format as the logger's, and the laps are recalculated.

Creates the lap index when the GPS is missing: set where the first lap starts and the lap length, check the vertical lines on the graph, then confirm.

Dataset: DS1: LOGGER_20261014_1838_Test_GABMW_000011.dat

1. Show the whole dataset

2. Offset (first finish line crossing): 195.0 m Use cursor

3. Lap length: 397.7 m From circuit map

Lap	Sample	Time	Start [s]
1	343	00:47.800	34.30
2	821	00:39.100	82.10
3	1212	00:37.800	121.20
4	1590	00:35.300	159.00

☒ Use the logger lap index as lap source (needed when the dataset also has GPS laps)
4 complete laps, 5 finish line crossings.

4. Confirm and generate XML Cancel

Figure 14 - The wizard: offset 195 m, lap 397.7 m.

The **Use the logger lap index as lap source** option sets the *Logger lap index* source: enable it if the dataset also has GPS laps that you want to replace.

Example

On the Medicina dataset, with an offset of 195.0 m and a length of 397.7 m, the wizard finds 5 crossings and 4 complete laps (47.8 s, 39.1 s, 37.8 s, 35.3 s), very close to the GPS times.



Figure 15 - The Offset and Lap 1...4 lines on the graph.

7 Circuit map and GPS trajectory

7.1 Circuit Map

The **Circuit Map (CSV Normalized)** window draws the track from a CSV file and shows:

- the **position dot** of each dataset under the cursor (in the dataset color);
- the **part of the track visible** in the graph, highlighted in the color of the selected dataset;
- the **finish line star**.

Clicking on the map moves the graph cursor to the corresponding point.



Figure 16 - Medicina map aligned to the GPS (mean deviation ± 1.9 m), with the visible section highlighted.

The bottom line summarizes the status: map name, quality of the alignment to the GPS, reference lap length and position source (*GPS* or *distance*).

7.2 Loading or creating the map

- **Automatic:** a `*_track.csv` file in the dataset folder is loaded when the dataset is opened.
- **Import CSV...** (or **File → Import Circuit Map (CSV)...**): loads a map from the `TrackMap` folder or another location.
- **Map from GPS:** creates the map from the reference lap of the dataset and saves it as a **georeferenced** CSV (columns `X,Y,LAT,LON`).

Hand-drawn maps (`X,Y` only) are **automatically aligned** to the GPS trajectory (scale, rotation, position and finish line). Without GPS, the position is calculated from the distance within the lap.

Finish offset moves the finish line along the track as a percentage of its length, for non-georeferenced maps.

7.3 GPS Trajectory Map

Draws the actual latitude and longitude of each dataset, with the position dot at the cursor. It is useful for checking the quality of the GPS signal and for seeing the different trajectories, the pit exit and the pit entry.



Figure 17 - GPS trajectory of the sample session.

7.4 GPS coherence

The fix is considered invalid when the GPS status is **V**, the coordinates are zero or out of range, the position stays still while the vehicle is moving, or the jumps are incompatible with the maximum acceleration. The parameters are in the **GPS coherence** tab of the Preferences (chap. [18](#)).

8 Channel layouts

A **layout** defines which channels appear in the graph, in what order, with which color, line width, vertical band and scale. The active layout is chosen from the **Layout** box in the toolbar or with **Ctrl + 1 ... Ctrl + 9**.

8.1 Layout editor

Layouts → Define / Edit Layout... (**Ctrl + L**).



Figure 18 - The editor of the Default layout.

Column	Meaning
Channel (User Name)	Logger channel or math channel.
User Label	Displayed label. If the name comes from Channels_details.xml the field is locked and shows the note «Label from Channels_details.xml of the dataset».
Color, Width	Line color and width.
Slot Min % / Slot Max %	Vertical band of the graph occupied by the channel (0% = bottom, 100% = top). Channels with the same band overlap.
Manual Y Min / Max	Scale limits in ManualZoomY.
AVG Filter	Moving average to reduce noise.

Buttons: **Add Channel**, **Remove Selected**, **Move Up/Down**, **Apply to Plot** (preview), **Save Layout**. **Preset Slots** distributes the bands automatically; **Import Layout...** imports a layout from a file.

Example - Default layout

GPS_Speed at the top (band 70-100%, scale 0-250), RPM_OBDII in the 40-70% band, TPS_OBDII 20-40% and Acc_Y 0-20% with a scale of -2...+2 g: this is the layout in figure 2.

8.2 Saving and importing

Layouts → **Save Channel Layout** (**Ctrl** + **S**) and **Save Channel Layout As...** (**Ctrl** + **Alt** + **S**) save the layout in the **Layouts** folder; **Import Layout...** adds a layout received from a colleague.

9 Comparing datasets and laps

9.1 Shifting a dataset

To overlay two datasets (or two sessions), the selected one is shifted along the horizontal axis:

- 1 Select the dataset in the status bar and press **S** (or **Shift**).
- 2 Drag with the mouse, or use the wheel or the arrow keys; the shift value is shown on the graph.
- 3 **Enter** confirms, **Esc** cancels. **Shift** + **S** resets the shift.

Double-clicking a time in the laps window automatically aligns that lap with the left edge of the view. When switching from time base to distance base (and vice versa), the shifts are converted so that the alignment is kept.

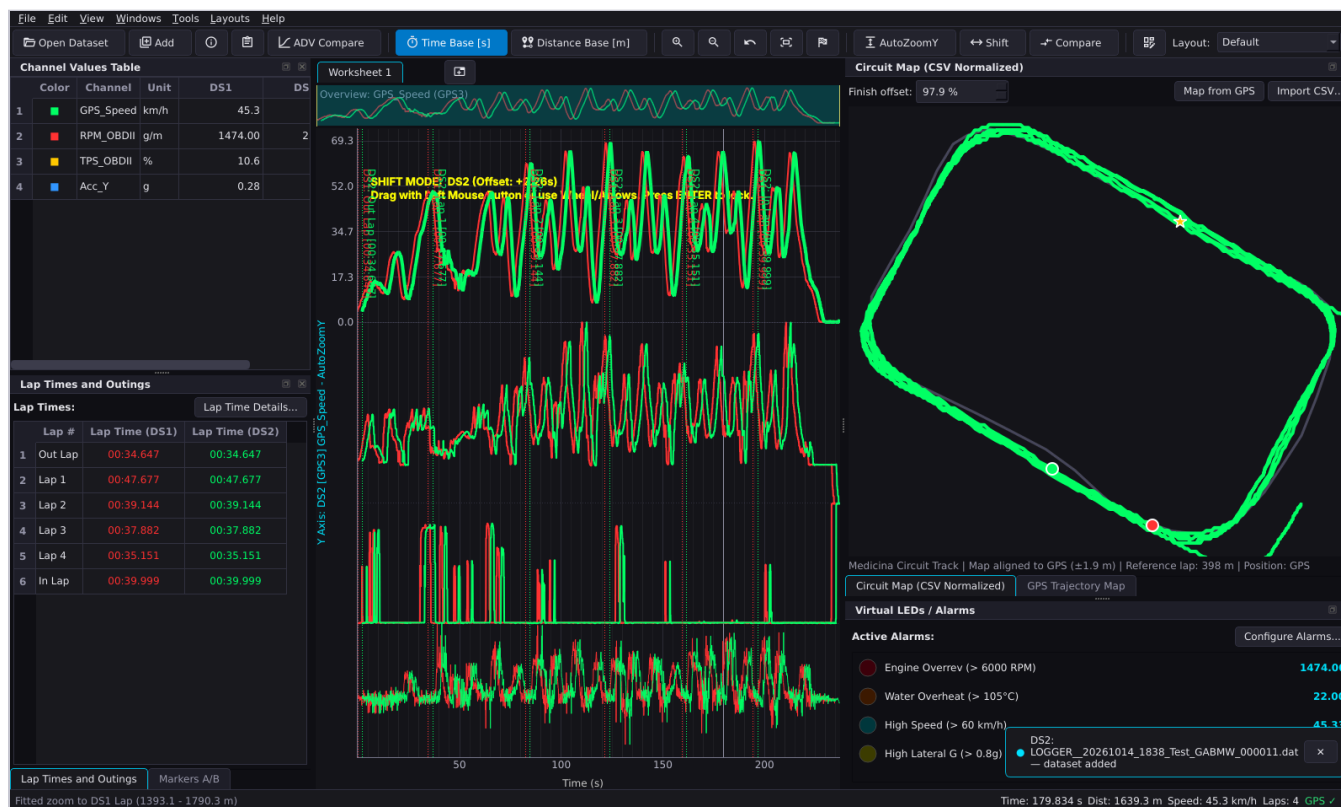


Figure 19 - Two datasets in shift mode (SHIFT MODE): DS2 is being aligned with DS1.

9.2 Lap comparison (ΔT and sectors)

Tools → **Dual Dataset Comparison Mode** (**Ctrl** + **D**) opens the comparison panel below the graph:

- **Reference** and **Compare**: the two laps to compare, which may also belong to the same dataset.
- **Align**: shifts the compare dataset so that the two laps start together.
- **ΔT curve**: time difference accumulated along the lap, calculated on the corrected distance (valid in both time base and distance base). If it rises, the compare lap is losing time.
- **Δ from window start**: resets ΔT to zero at the start of the displayed part, to analyze a single section.
- **Sector table**: automatic sectors on the straights or of equal length (adjustable number), with the reference and compare times and their difference; the best sectors are highlighted and the

theoretical best lap (sum of the best sectors) is calculated.



Figure 20 - Lap 4 (reference, 35.151 s) versus Lap 2 (39.144 s): final ΔT +3.993 s; the largest gap is in sector 2.

With the comparison active, the **circuit map** is **colored** green where the compare lap gains and red where it loses.



Figure 21 - The comparison panel in the main window.

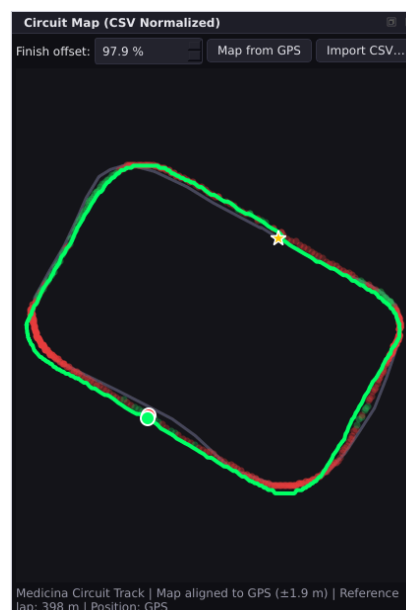


Figure 22 - Map colored by gain/loss.

Example - where time is lost

In the figure, ΔT grows mainly between 1.55 and 1.6 km and between 1.75 and 1.8 km: at those points the GPS_Speed of lap 2 is lower on corner exit. The sector table confirms it: S1 +0.332 s, S2 +2.230 s, S3 +1.431 s.

9.3 ADV Compare

Tools → ADV Compare (**Ctrl** + **Shift** + **A**) overlays many laps, even from different datasets, in a dedicated window:

- on the left you tick the laps to compare (**All** / **None**) and choose up to 8 channels;
- the laps are **normalized** to the best lap (in time or in distance);
- for each dataset a **transparent min/max band** shows the spread between the laps;
- the cursor shows the *Best*, *Max* and *Min* values for each channel;
- the configuration is saved with **Save layout** in the `ADVCompareLayouts` folder.



Figure 23 - ADV Compare with GPS_Speed, RPM_OBDII and Acc_Y for all the laps of two datasets.

10 Additional graphs and worksheets

10.1 Additional graphs

Tools → Add graph (**Ctrl** + **G**) adds up to 4 graphs below the main graph (*Graph 1, Graph 2...*), each with its own layout chosen from the box at the top. Zoom and cursor are synchronized with the main graph. The **x** button closes the graph.

10.2 Worksheets

Worksheets are work tabs: each one remembers the main layout, the additional graphs and the comparison panel. You can prepare, for example, an "Engine" worksheet and a "Chassis" worksheet and switch between them with one click.

- New worksheet: button to the right of the tabs or **Ctrl** + **T**.
- Next / previous: **Ctrl** + **Tab** / **Ctrl** + **Shift** + **Tab**.
- Double-click the tab to rename it; use the context menu to duplicate or delete it.
- The zoom stays unchanged when switching worksheets.

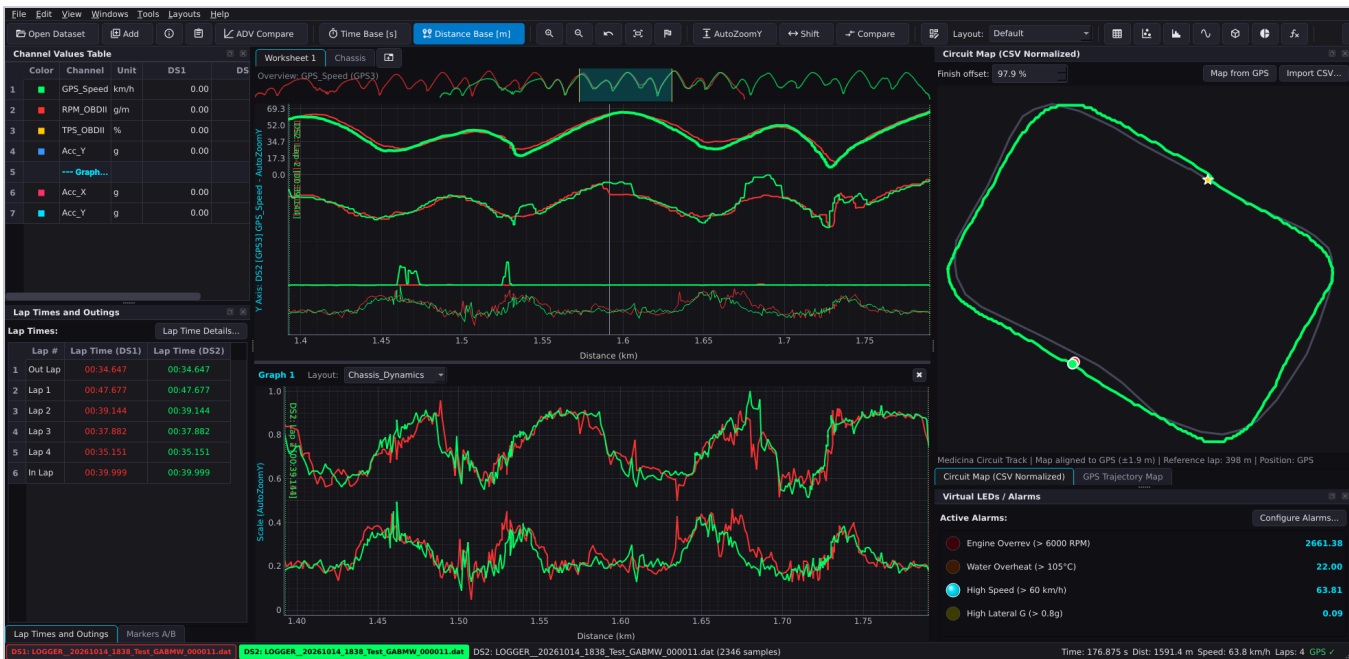


Figure 24 - "Chassis" worksheet with an additional graph using the Chassis_Dynamics layout.

11 Analysis windows

They are opened from the **Windows** menu, from the toolbar or with keys **F5**...**F10**. In all of them you can choose whether to analyze the **whole dataset** or only the **zoomed window**: to analyze a single lap, just zoom on it (**L**) and press **REFRESH**.

11.1 Statistics (F5)

For each channel: minimum, maximum, range, average and standard deviation. **Channels** limits the table to the layout channels or includes all of them; **Export to CSV...** saves the table.

Interval:

Zoomed window

Channels:

Displayed / Layout Only

Export to CSV...

REFRESH

	ID	Channel	U.M.	Min	Max	Range (P-P)	Average	Std. Dev.
1	GPS3	GPS_Speed	km/h	0.01	69.31	69.31	32.23	16.09
2	CAN2	RPM_OBDII	g/m	0.00	3670.50	3670.50	1690.75	636.51
3	CAN3	TPS_OBDII	%	9.80	84.71	74.90	14.72	14.27
4	IMU2	Acc_Y	g	-0.42	0.69	1.12	0.12	0.15

Figure 25 - Statistics of the zoomed window.

11.2 XY scatter plot (F6)

One channel plotted against another, with optional coloring by a third channel (**Gradient Ch**) and a connecting line. Typical examples: Acc_X versus Acc_Y (G-G diagram), RPM versus speed (gear ratios), latitude versus longitude.

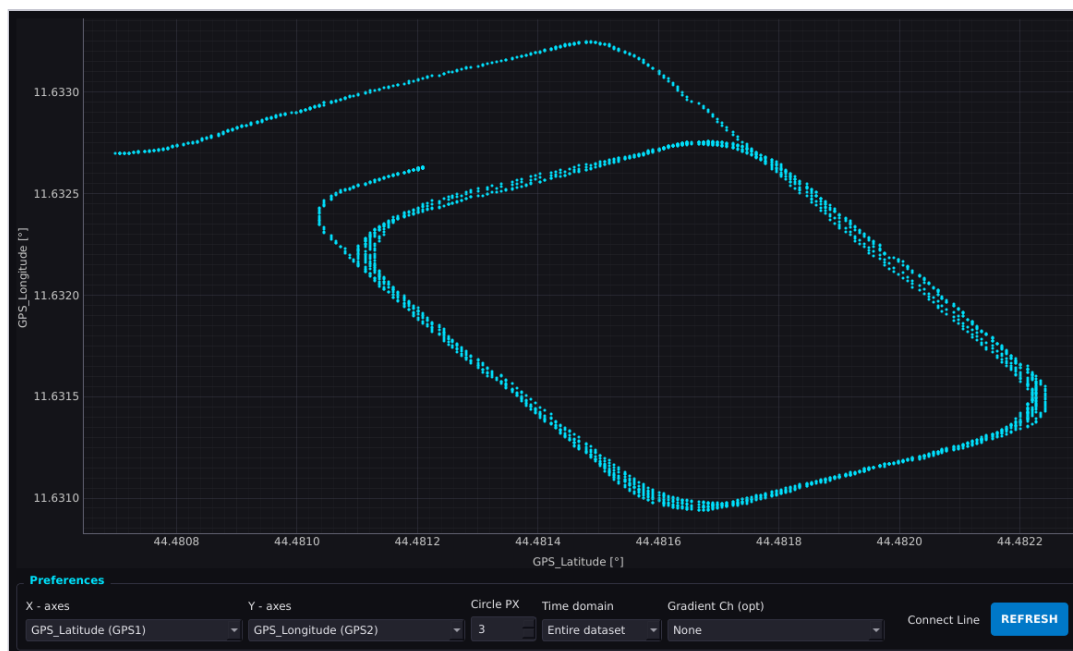


Figure 26 - GPS_Latitude / GPS_Longitude scatter plot.

11.3 Histogram (F7)

Distribution of the values of a channel over the chosen number of classes (**BINS**): for example, how much time is spent at each speed or at each throttle opening.

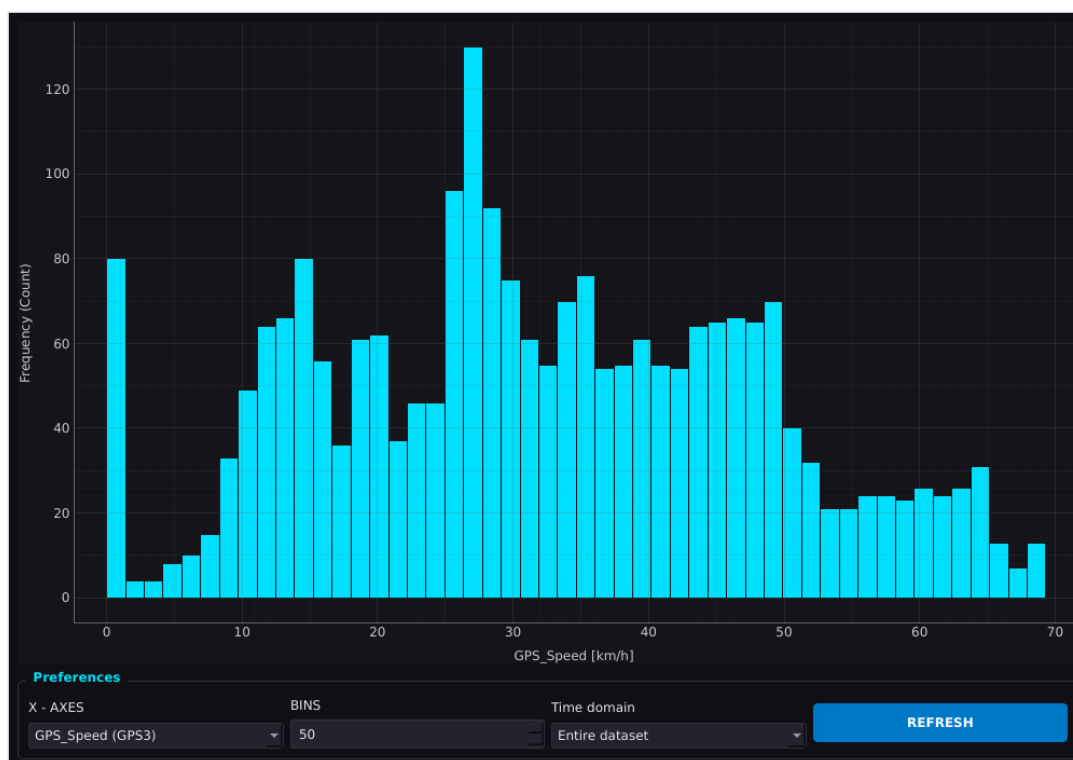


Figure 27 - Histogram of GPS_Speed over 50 classes.

11.4 FFT spectral analysis (F8)

Frequency spectrum of a channel, with a Hanning/Hamming/rectangular window and a linear or dB scale. It is used to identify vibrations and periodic oscillations (suspension, chassis, engine).

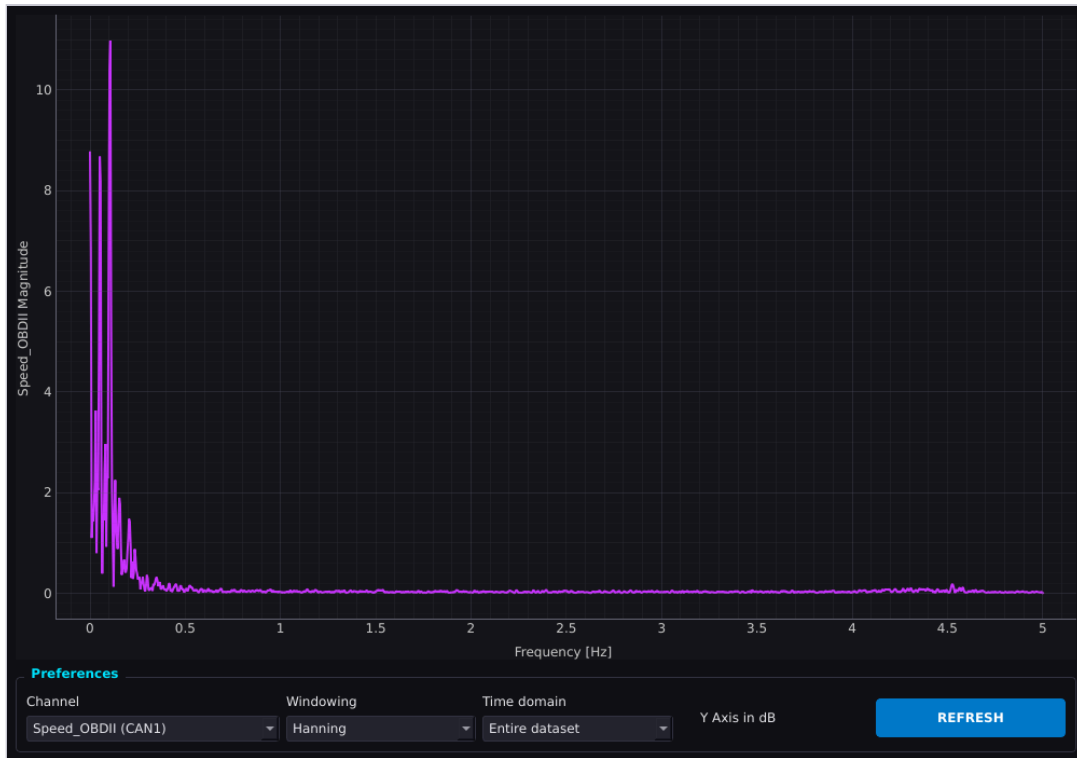


Figure 28 - FFT spectrum of the speed.

11.5 3D XYZ analysis (F9)

Point cloud with three channels on the three axes, which can be rotated with the mouse. Example: Acc_X, Acc_Y and Acc_Z to see the acceleration envelope.

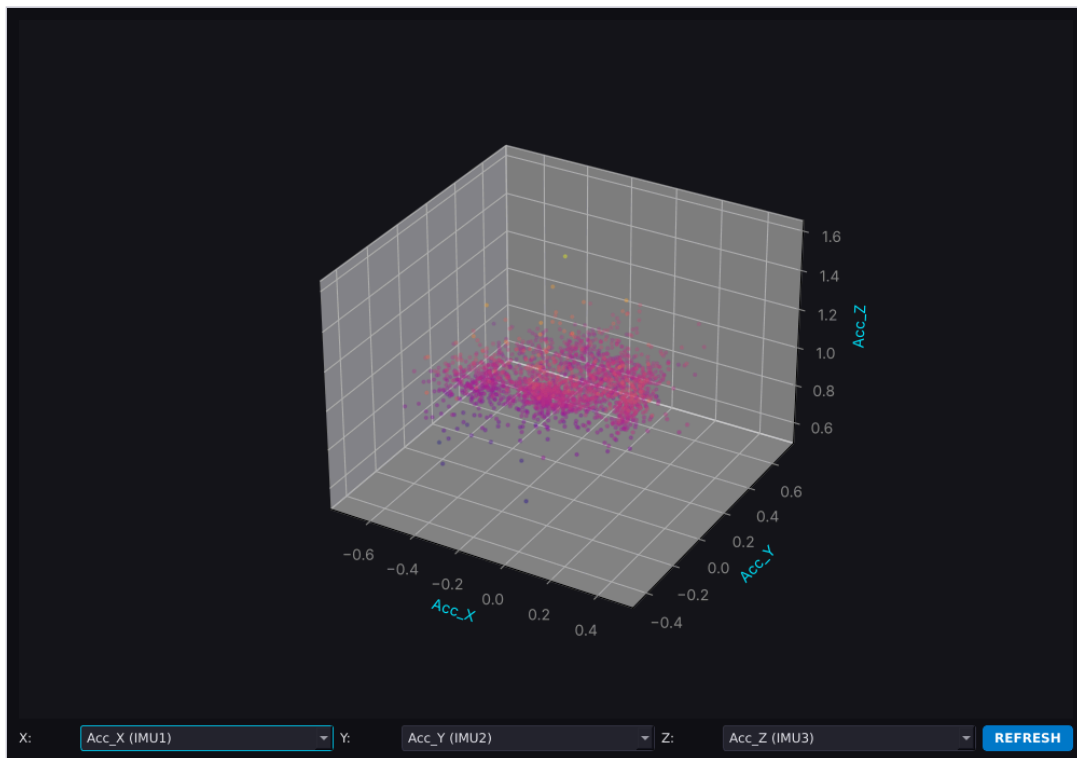


Figure 29 - IMU accelerations in 3D.

11.6 Pie chart (F10)

Percentage of time spent in each value interval of a channel, with the chosen number of sectors.

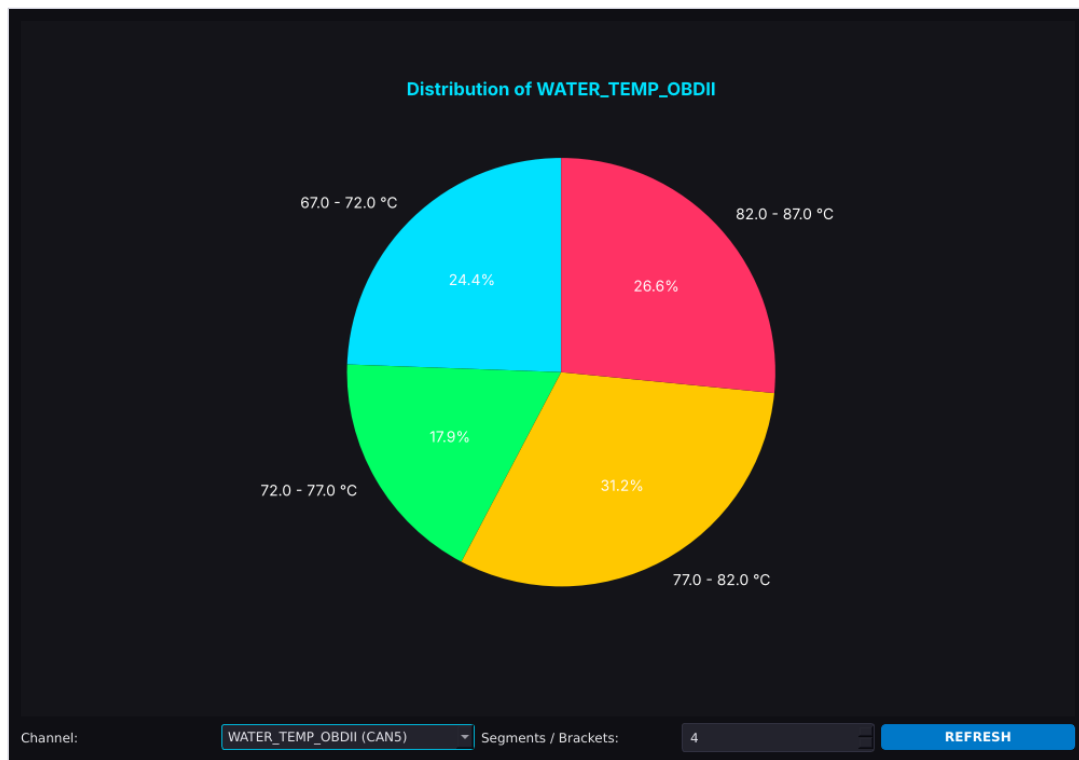


Figure 30 - Distribution of the water temperature (WATER_TEMP_OBDII) in 4 intervals.

12 Math channels and lookup tables

12.1 Math channels manager

Tools → Math Channels Manager... (**Ctrl** + **M**) creates new calculated channels from the recorded ones. A math channel can be used like any other channel: in layouts, statistics, graphs and other math channels. The channels are saved automatically and reloaded in the next session.

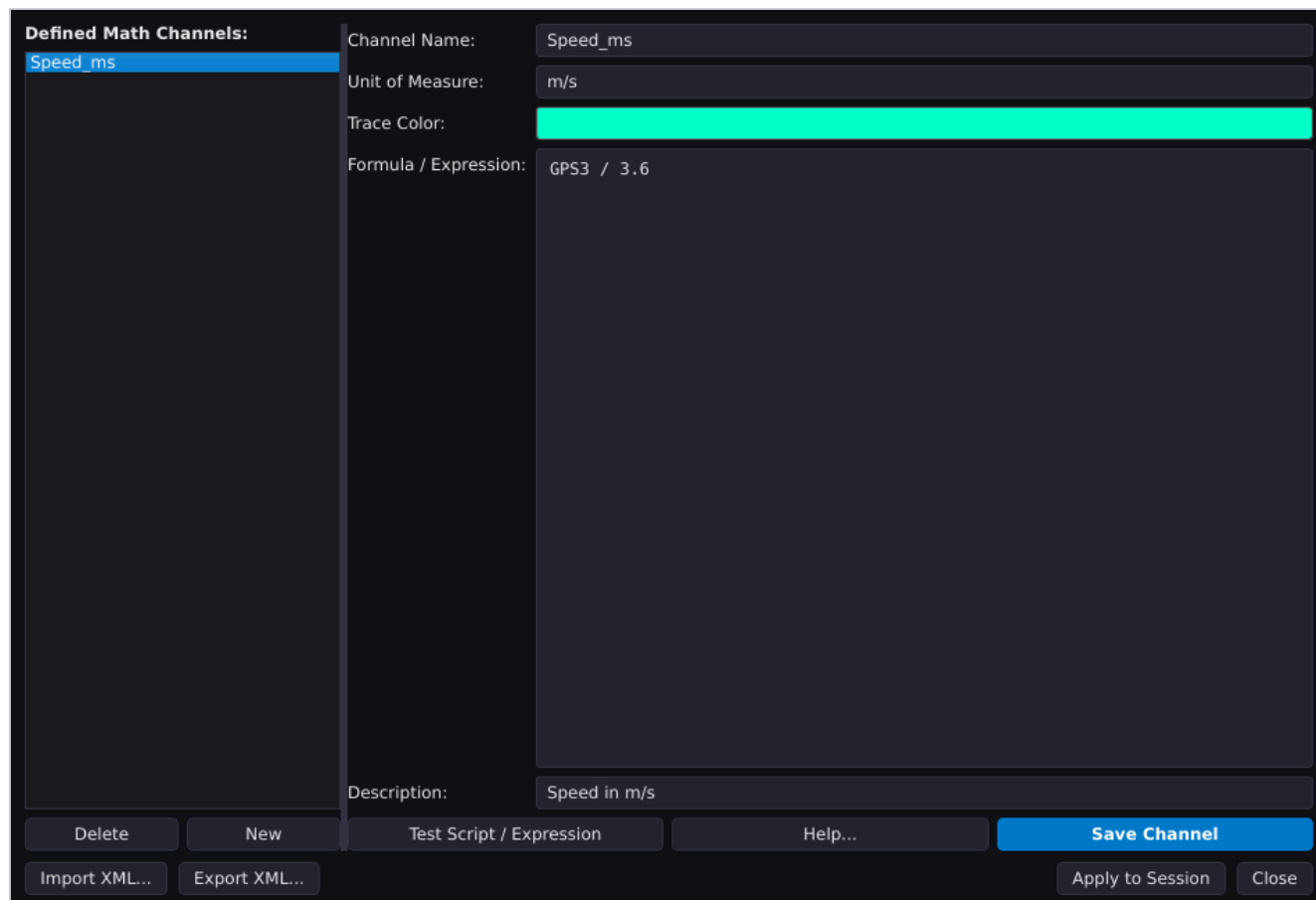


Figure 31 - The Speed_ms channel (speed in m/s) defined as GPS3 / 3.6.

- 1 Press **New** and enter the name, unit of measurement, color and description.
- 2 Write the formula in **Formula / Expression**, using the channel names (e.g. GPS3 or the user label).
- 3 **Test Script / Expression** checks the formula; **Save Channel** saves it; **Apply to Session** calculates the channel on the open datasets.

Formulas can be a simple expression or a multi-line script with `if`, loops and `return`. Mathematical functions are available (`sqrt`, `sin`, `cos`, `exp`, `abs` ...) as well as telemetry functions such as `diff` (derivative), `integ` (integral), `smooth` (filter) and `where` (condition), plus the `time` and `distance` vectors.

Channel	Formula
Speed in m/s	<code>GPS3 / 3.6</code>
Longitudinal acceleration [g]	<code>diff(GPS3 / 3.6) / 9.81</code>
Full throttle (0/1)	<code>where(TPS_OBDII > 90, 1, 0)</code>
Combined acceleration [g]	<code>sqrt(Acc_X**2 + Acc_Y**2)</code>

Help... opens the complete guide to the calculation engine, with an index, search and examples;
Import XML... / **Export XML...** exchange channels with other users.

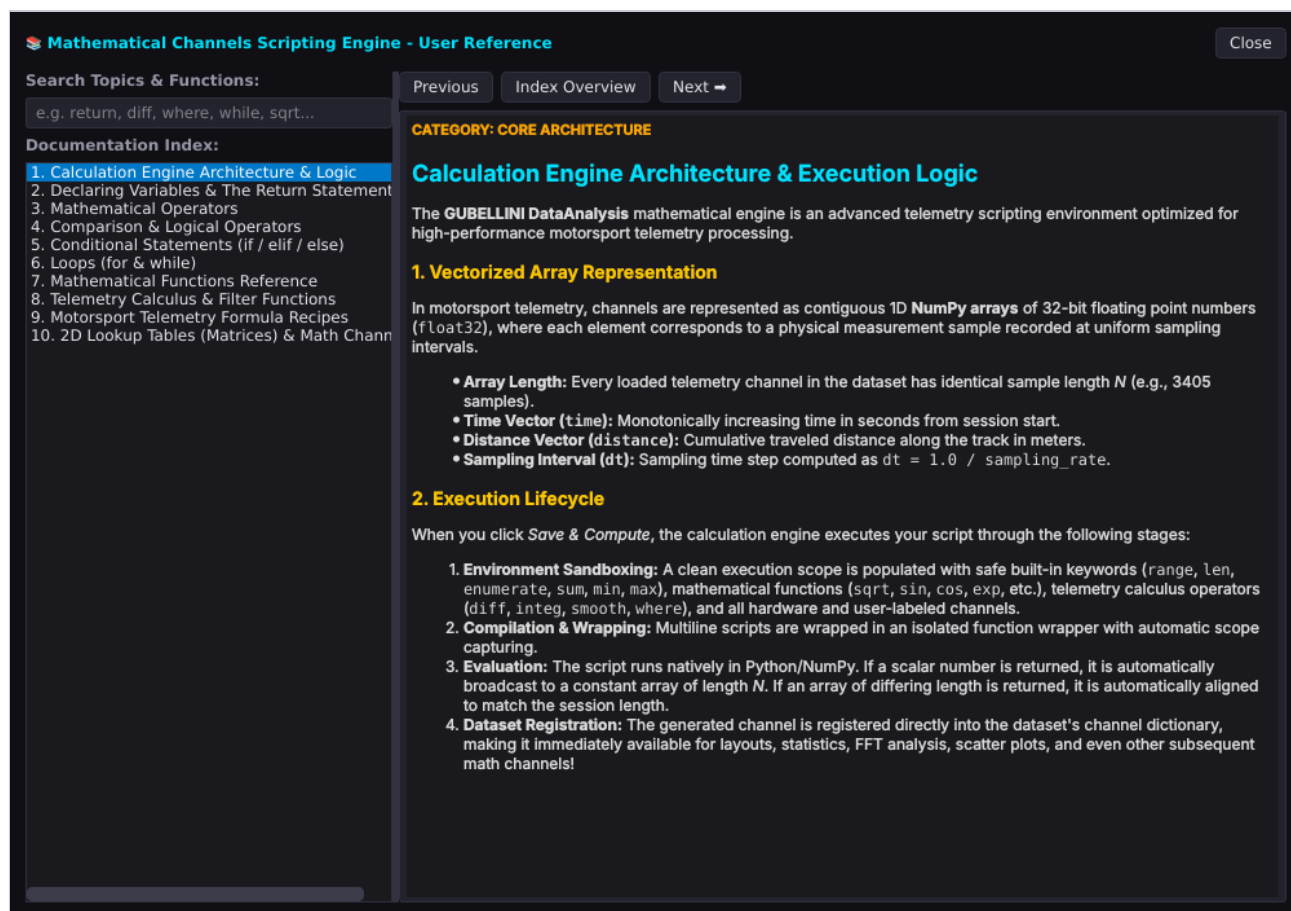


Figure 32 - The math channels reference guide.

12.2 Lookup tables

Tools → Lookup Table manages 2D tables (rows × columns) that can be called from math channels, for example gear ratios or a torque map. Values can be pasted from Excel with `Ctrl + V`.

Saved Lookup Tables:

- Gear_Ratios
- Torque_Map

Name Lookup: Gear_Ratios

Row +Row -Col +Col -Dim: 1 x 6

	Col 0	Col 1	Col 2	Col 3	Col 4	Col 5
Row 0	2.85	2.15	1.70	1.40	1.20	1.05

Add LookupDelete Lookup

Tip: You can copy values from Excel and paste (Ctrl+V) directly into the matrix.

Save LookupClose

Figure 33 - The Gear_Ratios table with the gear ratios.

13 Track editor

Tools → Track editor creates a circuit map by tracing it over an image (aerial photo, screenshot of an online map) when no GPS lap is available.

- 1 **Open image** opens an image, or **Paste image (Ctrl+V)** pastes it from the clipboard.
- 2 **Start drawing**: click along the track starting from the finish line, in the direction of travel.
Undo removes the last point.
- 3 **Stop drawing** closes the track; **Save track** saves it as CSV in the `TrackMap` folder.



Figure 34 - The Track editor while tracing a track over an aerial image.

Automatic alignment

A hand-drawn map loaded with a dataset that has GPS is automatically aligned to the actual trajectory; if the dataset has no GPS, the position is calculated from the distance within the lap.

14 Onboard video

14.1 Synchronizing a video

Tools → Add video (**Ctrl** + **Shift** + **V**) opens the video window.

- 1 **Load Video...** and choose the file (mp4, avi, mov...).
- 2 Press **Synchronize**: the calibration bar appears.
- 3 Using the slider, bring the video to a recognizable instant (e.g. crossing the finish line) and the graph cursor to the same instant, then press **Enter**. The calculated offset (*Offset*) is shown.
- 4 From then on, when you move the cursor on the graphs, the video shows the corresponding frame. With **Real Time** enabled the video follows the cursor instant by instant; when disabled, it updates when the cursor stops (smoother on less powerful PCs).

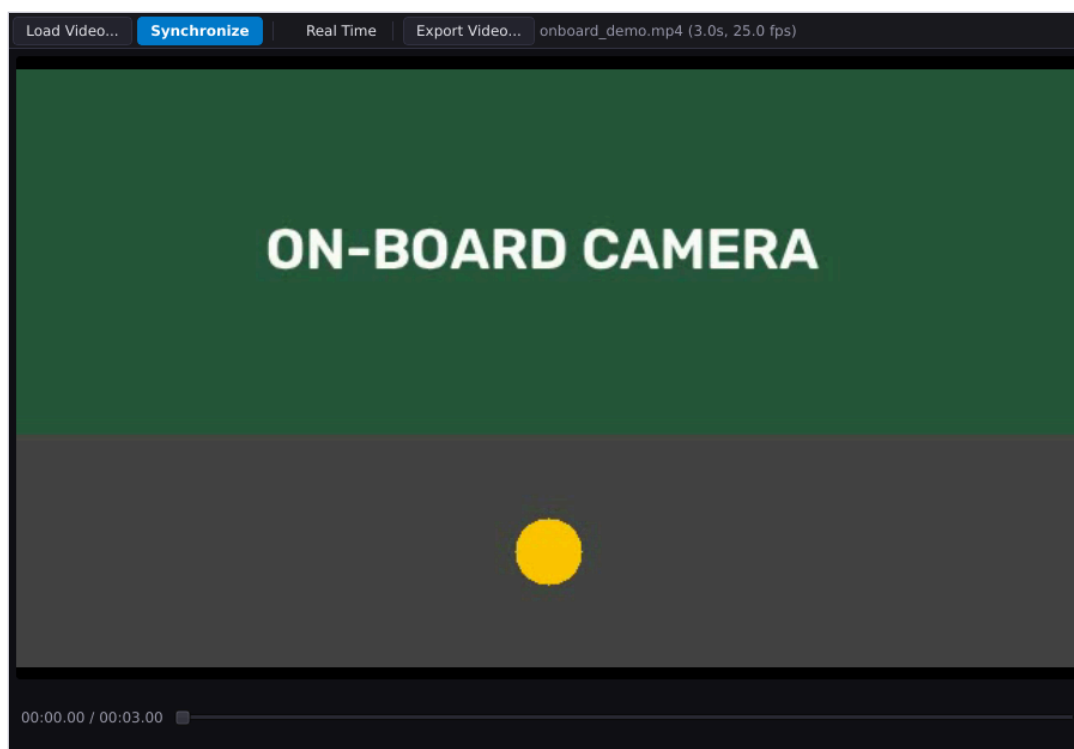


Figure 35 - The video window with a synchronized onboard clip.

14.2 Exporting the video with gauges

Export Video... creates a new clip with up to 6 overlaid gauges: rev counters, vertical bars, digital text. For each one you choose the channel, type, minimum/maximum, color, transparency and size; the position of the gauges is chosen at the top. The configuration can be saved and imported again.

1. Overlay Screen Positioning

Position of all overlay gauges: Horizontal Bottom

2. Channels in Overlay (Maximum 6 Channels)

#1:	GPS_Speed (GPS3)	Indicator:	Tachometer (Gauge)	Size:	Medium
Min:	0.00	Max:	250.00		
Color		Transparency:			20%
#2:	RPM_OBDII (CAN2)	Indicator:	Tachometer (Gauge)	Size:	Medium
Min:	0.00	Max:	9000.00		
Color		Transparency:			20%
#3:	TPS_OBDII (CAN3)	Indicator:	Vertical Bar	Size:	Medium
Min:	0.00	Max:	100.00		
Color		Transparency:			20%
#4:	Acc_Y (IMU2)	Indicator:	Vertical Bar	Size:	Medium
Min:	-2.00	Max:	2.00		
Color		Transparency:			20%
#5:	None	Indicator:	Digital Text	Size:	Medium
Min:	0.00	Max:	100.00		
Color		Transparency:			20%

Save Configuration As... Import Configuration...

Cancel Export Video

Figure 36 - Video export configuration with speed and RPM as dial gauges, TPS and Acc_Y as bars.

15 Virtual LEDs, alarms and export

15.1 Virtual LEDs and alarms

The **Virtual LEDs / Alarms** window shows one LED for each alarm, lit when the condition is true at the cursor, together with the current value of the channel.

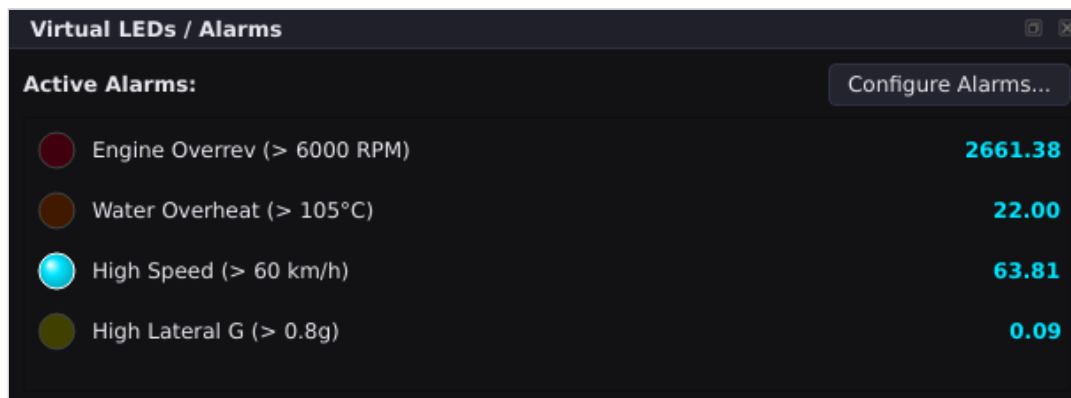


Figure 37 - Alarms at the cursor: High Speed is lit (63.81 km/h > 60).

Configure Alarms... opens the alarm table: for each alarm you set whether it is active, the channel, the condition (>, <, =, between two thresholds), the thresholds, the LED color and the description.

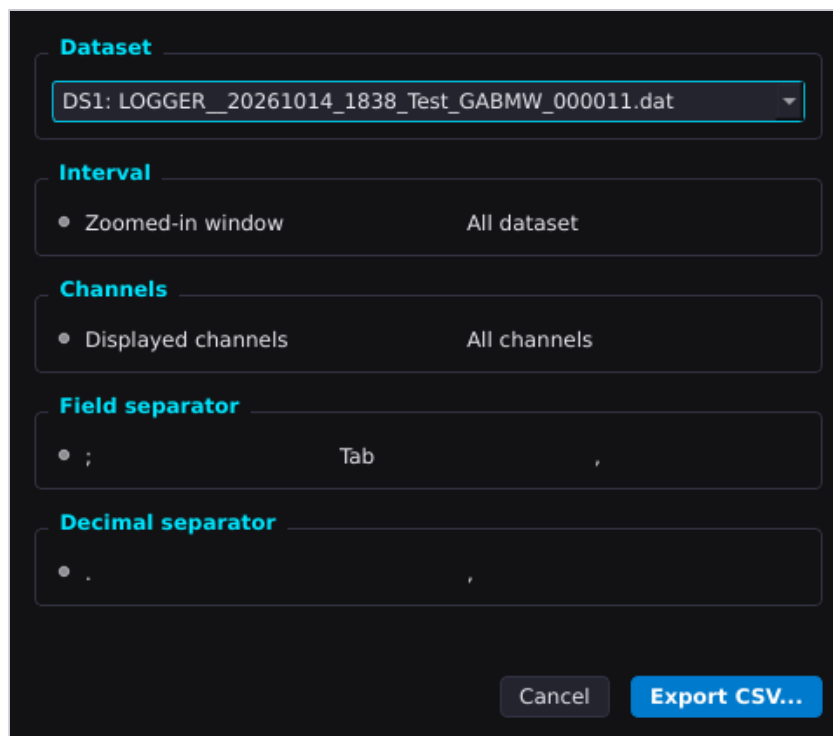
	Active	Channel	Condition	Threshold 1	Threshold 2	LED Color	Alarm Description / Label
1	☒	CAN2	>	6000.00	0.00	■	Engine Overrev (> 6000 RPM)
2	☒	CAN4	>	105.00	0.00	■	Water Overheat (> 105°C)
3	☒	GPS3	>	60.00	0.00	■	High Speed (> 60 km/h)
4	☒	IMU2	>	0.80	0.00	■	High Lateral G (> 0.8g)

Add Alarm
Remove Selected
Save Apply
Close

Figure 38 - Alarm configuration: over-rev, water temperature, speed, lateral acceleration.

15.2 CSV export

File → Export Displayed Data to CSV... (**Ctrl**+**E**) saves the data to a CSV file with units of measurement, which can be opened with Excel. You choose the dataset, the interval (zoomed window or whole dataset), the channels (displayed or all), the field separator and the decimal separator.



The screenshot shows a dark-themed dialog box for CSV export options. It contains five sections, each with a title and a selection area:

- Dataset:** A dropdown menu showing "DS1: LOGGER_20261014_1838_Test_GABMW_000011.dat".
- Interval:** Two radio buttons: "Zoomed-in window" (selected) and "All dataset".
- Channels:** Two radio buttons: "Displayed channels" (selected) and "All channels".
- Field separator:** Three radio buttons: ";" (selected), "Tab", and ",".
- Decimal separator:** Two radio buttons: "." (selected) and ",".

At the bottom right, there are two buttons: "Cancel" and "Export CSV..." (highlighted in blue).

Figure 39 – CSV export options.

Choosing the separators for Excel

With an English-language Excel use the field separator , and the decimal separator . ; with regional settings that use the decimal comma (e.g. Italian, German, French) use the field separator ; and the decimal separator , .

16 AI Assistant

The AI Assistant answers questions about the loaded data, compares laps, looks for anomalies, suggests what to look at and generates reports. The numbers are calculated by the program (statistics, comparisons, braking zones, events, correlations); the model interprets and explains them.

With your own key, at your own expense

The assistant uses **your account** with the artificial intelligence provider you choose. Gubellini Electronics does not act as an intermediary: requests go directly from the PC to the provider, which charges costs based on usage. Alternatively, you can use a free local model (Ollama or LM Studio) that also works without internet.

16.1 Setup

- 1 **Tools → AI Assistant Setup...** (or the ⚙ button in the assistant window).
- 2 Choose the provider on the left: step-by-step instructions with links to the right pages appear on the right.
- 3 **Get a key...** opens the provider's website; paste the key into the **API key** field.
- 4 **Load models** and choose a model that supports *tool calling*.
- 5 **Test connection**; when «Connection OK» appears, press **Save**.

The assistant uses YOUR account with the AI provider you choose: costs are billed by the provider to you. Only statistics and the data the assistant asks for are sent, never the whole file.

OpenAI (ChatGPT)

- Go to platform.openai.com and sign in (or sign up). **Note:** a ChatGPT Plus/Pro subscription does not include API credit: it is a separate service.
- In [billing](#) add a payment method or prepaid credit (you can set a monthly limit).
- In [API keys](#) press **Create new secret key** and copy it right away: it is shown only once.
- Paste the key in the **API key** field below.
- Press **Load models** and choose a model (prefer one that supports *tool/function calling*).
- Press **Test connection**: when «OK» appears you are ready. Then **Save**.

API key: Show Get a key...

Base URL:

Model: Load models

Advanced

Authentication:

API version:

Temperature:

Max output tokens:

Max tool calls per question:

Timeout:

Privacy and control

☒ Allow sending down-sampled channel values (max 400 points per request)

☒ Allow the assistant to move zoom/cursor and open the comparison panel

Store the key in the operating system credential manager

Test connection Save Cancel

Figure 40 – AI assistant setup with the instructions for OpenAI.

Provider	Notes
OpenAI (ChatGPT)	Simplest procedure. A ChatGPT Plus/Pro subscription does not include API credit.
Anthropic (Claude)	Excellent for long analyses and reports. Credit from the Anthropic Console.
Google Gemini	Has a free tier with limits; for confidential data enable billing.
Mistral, DeepSeek, xAI, Groq	Other compatible cloud providers.
OpenRouter	A single key for models from many providers.
Ollama / LM Studio	Free, offline, the data never leaves the PC. They require a powerful PC.
Custom (OpenAI-compatible / Azure)	Corporate contracts or OpenAI-compatible services (base URL, authentication, API version).

16.2 Privacy and control

- The recording file is **never sent in full**: the program only sends the statistics and tables requested by the assistant.
- **Allow sending down-sampled channel values**: when disabled, the assistant never receives series of values (max 400 points per request when enabled).
- **Allow the assistant to move zoom/cursor**: when disabled, the assistant can only answer.
- Math channels proposed by the assistant are created only after confirmation.
- The key is stored in the Windows credential manager, if available.

16.3 Using the assistant

Tools → AI Assistant (**Ctrl**+**J**). Type the question and press **Enter** (**Shift**+**Enter** starts a new line). **New chat** clears the conversation. The token usage of the chat is shown below the text box.

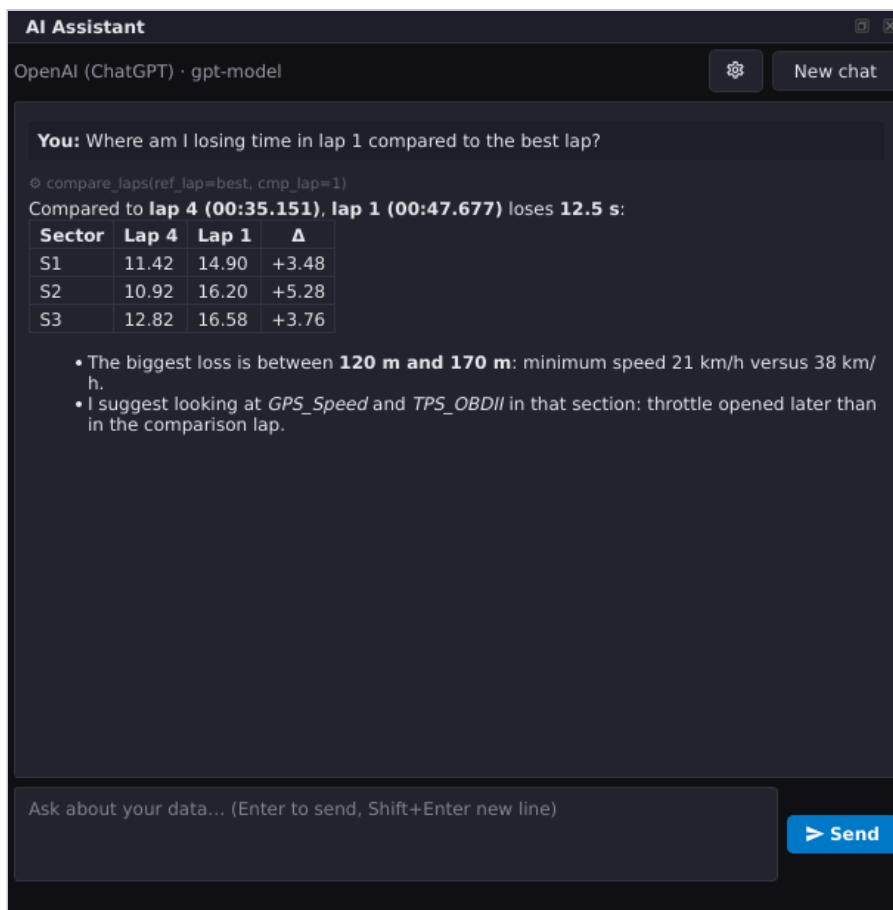


Figure 41 - Example answer: sector-by-sector comparison between lap 4 and lap 1.

Example questions:

- «Summarize the session and tell me which is the best lap»
- «Where am I losing time in lap 2 compared to the best lap?»
- «Compare the best lap of DS1 with the best lap of DS2 and open the comparison»
- «Were there any over-revs above 7000 rpm? In which laps?»
- «Generate a report of the session with suggestions for improvement»

16.4 Error messages

Message	Solution
HTTP 401 / invalid key	Copy the key again without spaces, or create a new one.
HTTP 429 / credit exhausted	Add credit or wait for the free limits to reset.
HTTP 503 / model overloaded	The program retries automatically; then use Retry or Choose another model .
HTTP 404 / model not found	Load models and choose a model from the list.
Connection error	Check the internet connection, proxy or firewall; for Ollama/LM Studio check that the program is running.

17 Analysis report

File → Generate Analysis Report... (**Ctrl** + **R**) creates an HTML report, which can be opened with any browser and printed to PDF, containing:

- the Gubellini Electronics logo and the session data (file, date, duration, laps, best lap, percentage of GPS fix);
- a graph and a table of the lap times;
- a lap comparison with the ΔT curve and the sector table;
- braking zones and channel statistics;
- the AI assistant's summary, if the report was requested from the assistant.

Reports are saved in the **Reports** folder. The logo can be replaced in **Preferences → Report logo**.

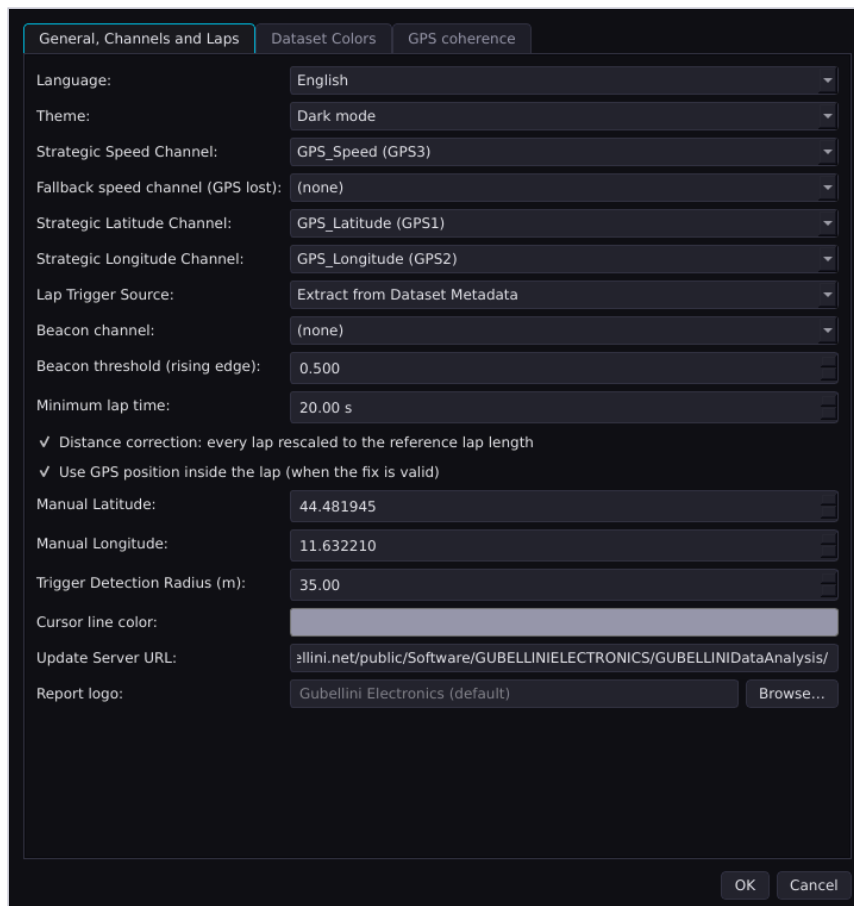


Figure 42 - First page of the report of the sample dataset.

18 Preferences

Edit → Preferences (**Ctrl** + **,**).

18.1 General, channels and laps



The screenshot shows the 'General, Channels and Laps' tab of the Gubellini DataAnalysis preferences window. The window has three tabs: 'General, Channels and Laps' (selected), 'Dataset Colors', and 'GPS coherence'. The settings are as follows:

- Language: English
- Theme: Dark mode
- Strategic Speed Channel: GPS_Speed (GPS3)
- Fallback speed channel (GPS lost): (none)
- Strategic Latitude Channel: GPS_Latitude (GPS1)
- Strategic Longitude Channel: GPS_Longitude (GPS2)
- Lap Trigger Source: Extract from Dataset Metadata
- Beacon channel: (none)
- Beacon threshold (rising edge): 0.500
- Minimum lap time: 20.00 s
- ☒ Distance correction: every lap rescaled to the reference lap length
- ☒ Use GPS position inside the lap (when the fix is valid)
- Manual Latitude: 44.481945
- Manual Longitude: 11.632210
- Trigger Detection Radius (m): 35.00
- Cursor line color: (color selection bar)
- Update Server URL: gubellini.net/public/Software/GUBELLINIELECTRONICS/GUBELLINIDataAnalysis/
- Report logo: Gubellini Electronics (default) [Browse...]

At the bottom right, there are 'OK' and 'Cancel' buttons.

Figure 43 - The General, Channels and Laps tab.

Setting	Meaning
Language, Theme	Interface language and dark/light theme.
Strategic Speed Channel	Speed channel used for distance and overview (e.g. GPS_Speed).
Fallback speed channel (GPS lost)	Alternative speed (e.g. wheel speed from CAN) used when the GPS is not valid.
Strategic Latitude / Longitude Channel	GPS coordinate channels.
Lap Trigger Source	Source of the laps (§6.2).
Beacon channel, Beacon threshold	Channel and rising-edge threshold for beacon detection.
Minimum lap time	Crossings closer together than this are ignored.
Distance correction	Rescales each lap to the reference lap length.
Use GPS position inside the lap	Projects the position onto the reference trajectory when the fix is valid.
Manual Latitude / Longitude, Radius	Finish line for the <i>Manual Geographic Coordinates</i> source.
Cursor line color	Color of the vertical cursor line.
Update Server URL	Address of the update server (chap. 20).
Report logo	Image used in the reports.

18.2 Dataset colors and GPS coherence

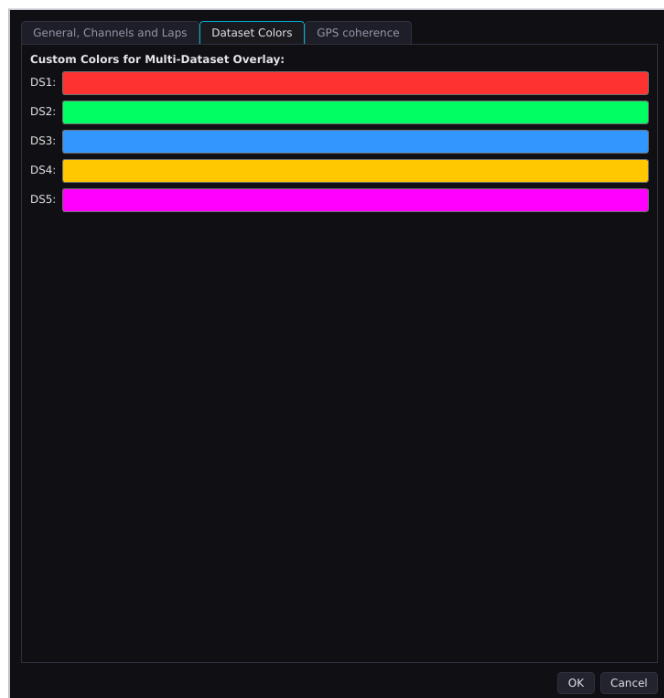


Figure 44 - Colors of datasets DS1-DS5.

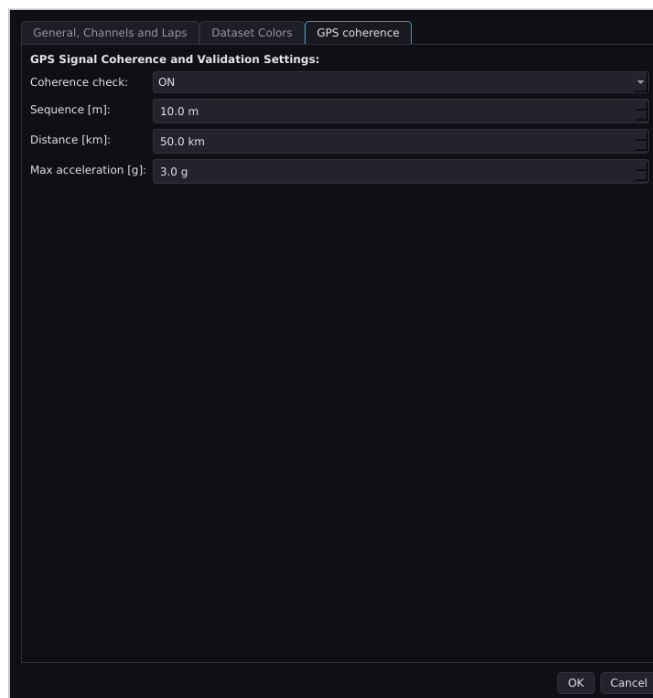


Figure 45 - GPS coherence parameters.

In the **GPS coherence** tab: **Coherence check** enables the check; **Sequence** is the minimum distance of coherent samples before the GPS is considered valid again; **Distance** is the maximum

deviation accepted from the expected position; **Max acceleration** is the acceleration beyond which a speed jump is considered an error.

19 Shortcuts and command palette

19.1 Default shortcuts

Keys	Action	Keys	Action
Ctrl + O / Ctrl + Shift + O	Open / add dataset	T / D	Time / distance base
Ctrl + W	Close selected dataset	+ - / Backspace	Zoom / undo zoom
Ctrl + I	Dataset information	F / L	Whole dataset / current lap
Ctrl + E / Ctrl + R	CSV export / report	← → (Shift ×10)	Cursor by one sample
Ctrl + P / Ctrl + Shift + S	Print / screenshot	Ctrl + ← →	Previous / next lap
Ctrl + L	Layout editor	Home End PgUp PgDown	Start, end, pan
Ctrl + S	Save channel layout	A / B / C	Marker A / B / clear
Ctrl + D	Lap comparison	S / Shift + S	Shift / reset shift
Ctrl + G	Add graph	1 ... 5	Select dataset
Ctrl + M	Math channels	Y	AutoZoomY / ManualZoomY
Ctrl + J	AI Assistant	F5 ... F10	Stats, Scatter, Histogram, FFT, 3D, Pie
Ctrl + K	Command palette	F1	Shortcut list
Ctrl + 1 ... 9	Load layout #	F11	Full screen
Ctrl + T, Ctrl + Tab	New / next worksheet	Ctrl + Shift + L	Dark / light theme
Ctrl + Shift + A	ADV Compare	Ctrl + Shift + V	Add video
Ctrl + Shift + D	Dataset datasheet		

19.2 Customizing the shortcuts

Help → Keyboard Shortcuts (F1) lists all the commands by category with their shortcut and scope (*Whole window* or *Graph*). Double-click a command to change its shortcut; several keys are separated with ; . The program reports conflicts. **Restore defaults** returns to the initial configuration.

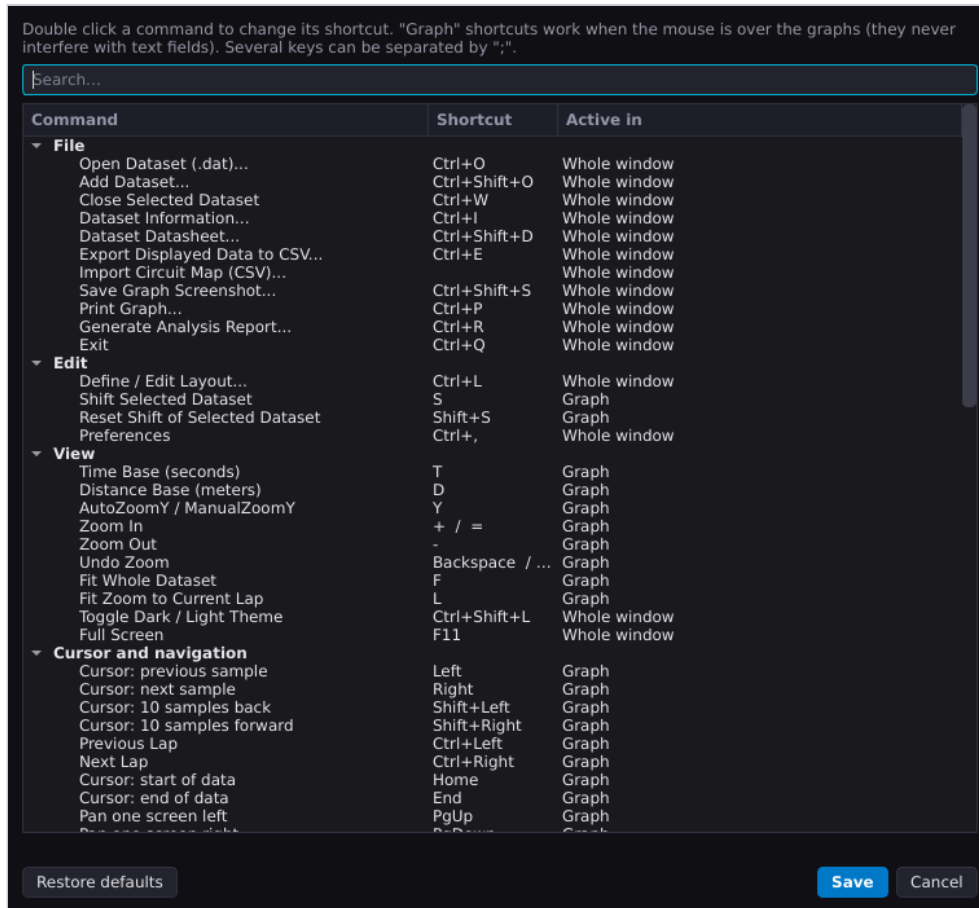


Figure 46 - The keyboard shortcuts window.

19.3 Command palette

Ctrl + **K** opens a search box covering all the program commands and the laps of the open datasets: type a few letters and press **Enter**. It is the fastest way to find a function without looking for it in the menus.

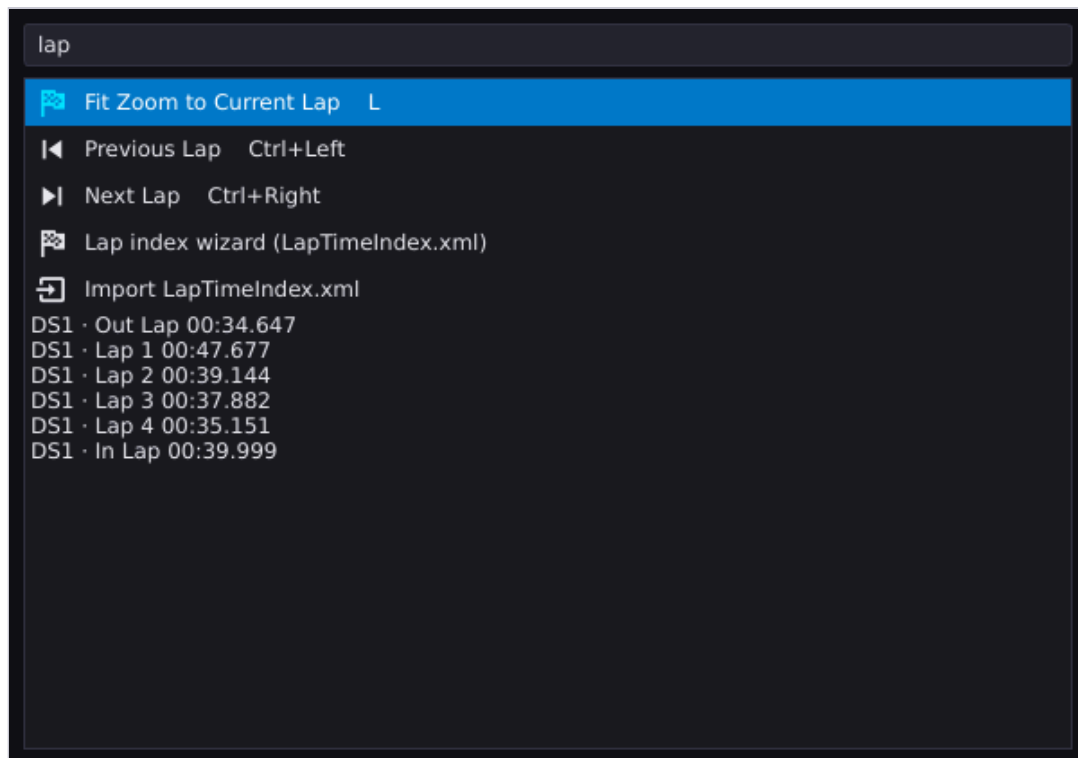


Figure 47 - The command palette: searching for "lap" shows the wizard, the index import and the laps.

20 Updates

Help → Check for Updates... checks whether a new revision is available on the Gubellini Electronics server (address in the Preferences).

- 1 The program reads the `versione_software.txt` file on the server and compares its revision number with the installed one (018).
- 2 If the revision on the server is newer, you are offered the download of `GUBELLINIDataAnalysis.zip`, which takes place in the background into the user's *Downloads* folder.
- 3 If `GUBELLINIDataAnalysis.zip.sha256` is present on the server, the integrity of the downloaded file is verified: a corrupted or tampered file is discarded.
- 4 Finally, install the new revision with the installer contained in the package. Layouts and preferences are preserved.

The installed revision is shown in **Help → About GUBELLINI DataAnalysis**.

21 Troubleshooting

Problem	Cause and solution
No laps detected	The GPS has no valid fix or the finish line coordinates are wrong. Check the status bar (<i>GPS X</i>) and the GPS Trajectory Map; use a beacon channel, import LapTimeIndex.xml or use the wizard (§6.4).
Laps with strange or double times	Increase the Minimum lap time ; for the manual finish line, reduce the detection radius.
The position on the map does not match	Map not aligned: use Map from GPS to create a georeferenced map, or adjust Finish offset .
Distance differs from one lap to another	Enable Distance correction and set the Fallback speed channel for GPS dropouts.
A channel looks flat	In ManualZoomY the layout limits are too wide: press Y for AutoZoomY or correct Min/Max in the layout.
Single-key shortcuts do not work	The text cursor is in an input field: move the mouse over the graph.
Channel names such as GPS3, CAN2	<code>Channels_details.xml</code> is missing from the dataset folder: copy the folder generated by the logger next to the .dat file.
Windows have disappeared or are disordered	Layouts → Restore Default Windows Layout ; closed windows can be reopened from the Windows menu.
The AI assistant does not answer	See §16.4.
Check for updates fails	Check the connection and the server URL in the Preferences.

Technical support

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