

Laptiming Analyzer

Description:

At 2D modules, laptimes can be created in many ways, e.g. using GPS coordinates or TransponderX2 messages as lap trigger signals to display the lap time live at the track on 2D dashboards.



Documentation reference

Respective manuals can be found at our website:

www.2D-Datarecording.com/manuals/

Beside these two live functionalities it is also possible to create and analyse the laptimes in post-processing in Analyzer.

Even the GAP time function can be readjusted in the Analyzer in post-processing.



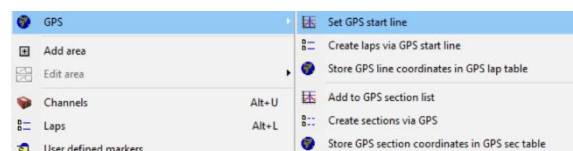
Documentation reference

Respective Dashboard manual with information for GAP time functionality can be found at our website:

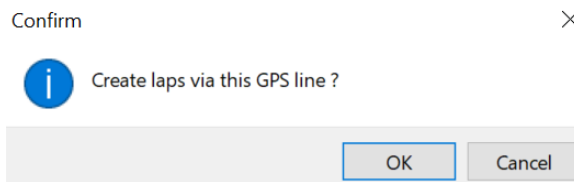
www.2D-Datarecording.com/manuals/

Create laptimes in Analyzer (via GPS coordinates)

1. Make an installation lap to get an accurate GPS measurement of the circuit layout and open respective measurement in Analyzer.
2. Open measurement with GPS channels in Analyzer
3. Set marker by left click on desired finish line position
4. Open submenu by right click.



5. By clicking on **<Set GPS start line>** the position of the marker can be saved as line file and also is set as new finish line when confirming the following message with **<OK>**.



- If no laptriggers are created by clicking on **<OK>** please check the Timeout settings **MinLapLength** and **MinLapTime** in Race.ini in application data directory (WinARace → shortcut **<CTRL> + <ALT> + <D>**)

6. Via Analyzer tab Functions (or shortcut **<ALT> + <L>**) the laptime overview can be opened

Post-processing Time/Distance channels

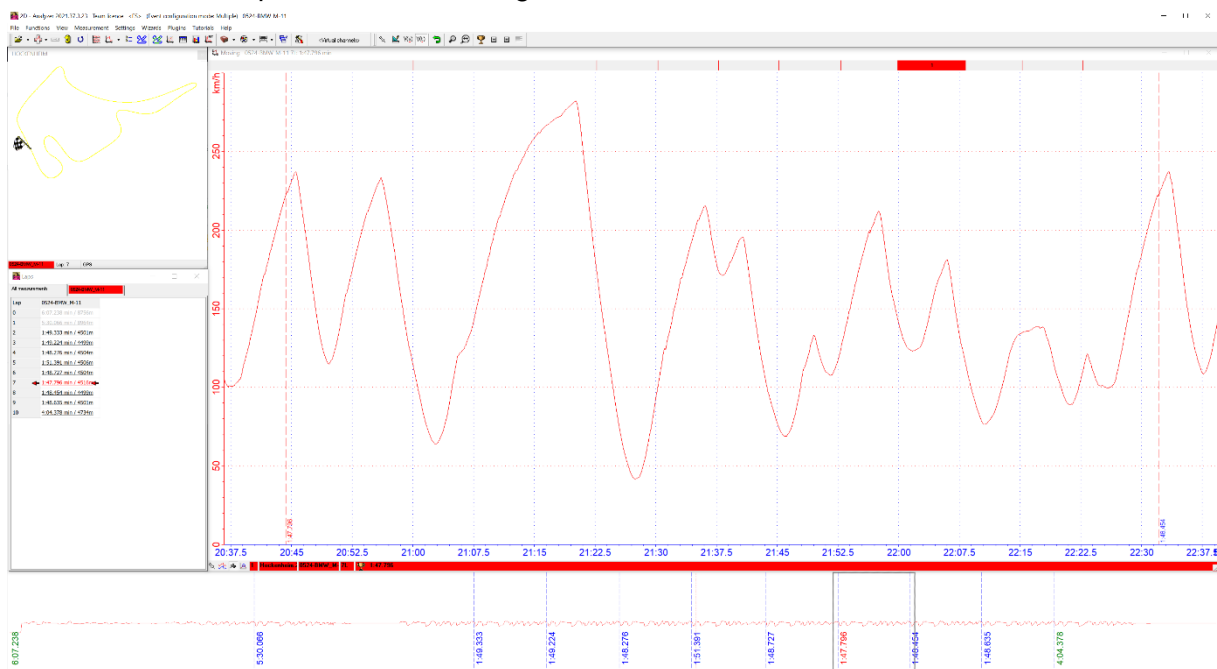


Further Information

A measurement of the BMW M1000RR in Hockenheim was used as an example

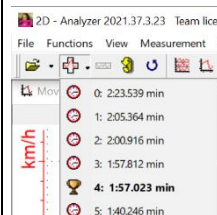
Preparation:

1. Open REFERENCE measurement in *Analyzer*
2. Navigate to reference lap (e.g. fastest lap) and adjust zoom and view that only reference lap is shown in moving window

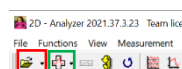


Further Information

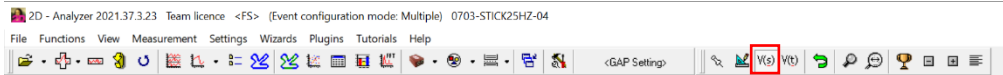
The adjacent dropdown menu can be used to navigate to fastest lap!



3. Load comparison lap of **same** measurement (e.g. via dropdown menu) or lap from **other** measurement



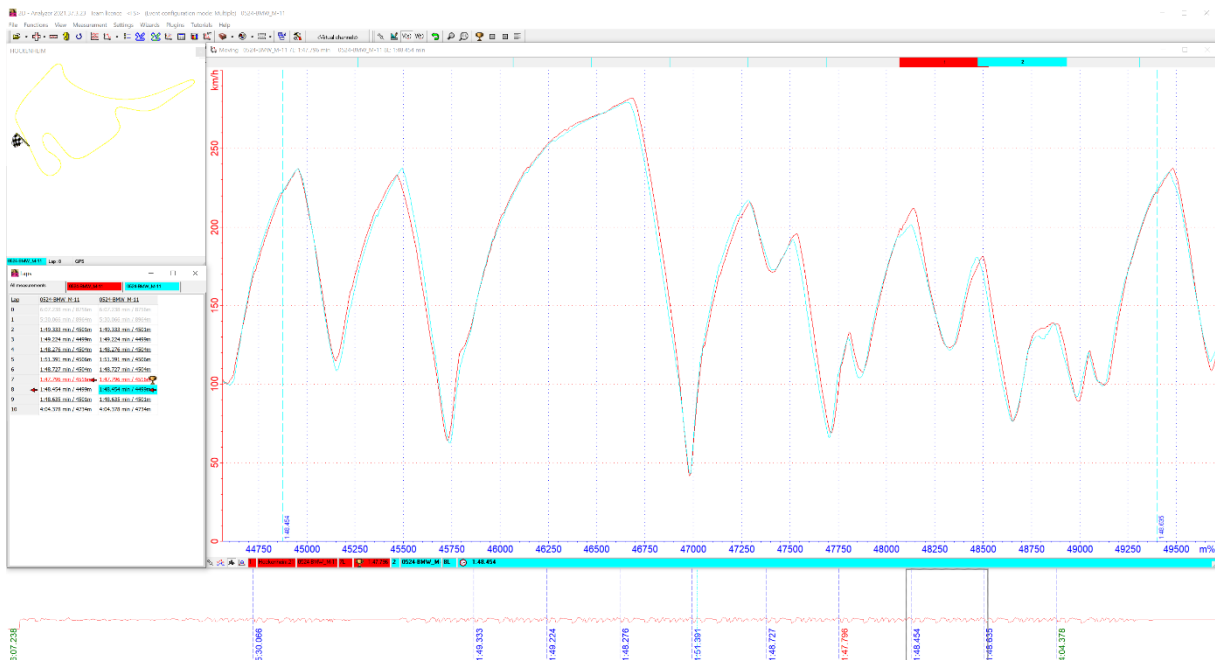
4. Switch x-axis unit from time [V(t)] to distance [V(s)]



Further Information

When comparing laps, it is better to use the distance as x-axis, as the lapmeters do not vary as much even with different lap times.

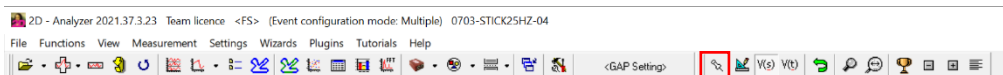
5. Align measurements that both start triggers are overlapping



Further Information

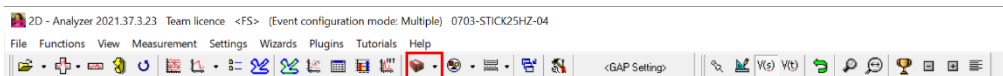
By using **<page-up>** and **<page-down>** keys it can be jumped between the same positions of different laps in measurement!

6. When reference and comparison lap are aligned, link the two measurements by pressing the marked button or key <v>

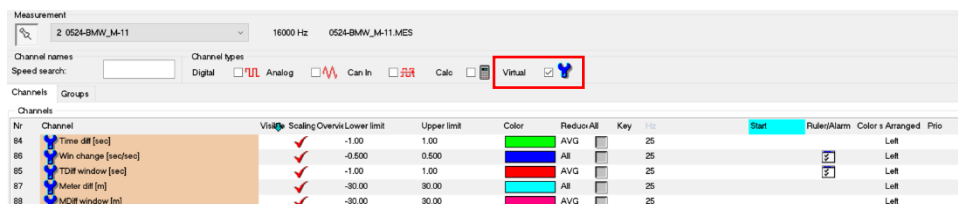


Activating channels:

1. Open the channel list by pressing the marked button or using shortcut **<ALT> + <U>**



2. Select filter for virtual channels



Further Information

For all channels different colors and scalings can be freely chosen!

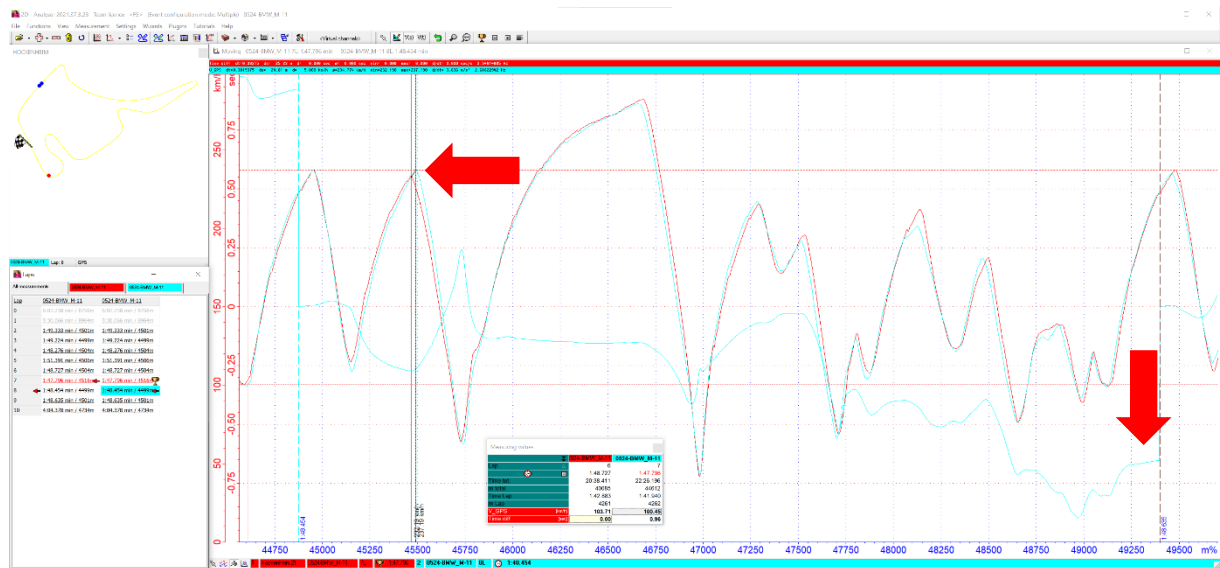
Channels	Unit	Description
<i>Time diff</i>	[sec]	Time difference between reference and comparison lap between laptriggers <ul style="list-style-type: none"> - Negative → comparison lap slower - Positive → comparison lap faster
<i>Tdiff window</i>	[sec]	Time difference between reference and comparison lap only in visible part of moving window <ul style="list-style-type: none"> - Negative → comparison lap slower - Positive → comparison lap faster
<i>Win change</i>	[sec/sec]	Derivation of channel <i>Time diff</i> for better visualization of the places where time is gained and lost.
<i>Meter diff</i>	[m]	Distance difference between reference and comparison lap between laptriggers
<i>MDiff window</i>	[m]	Distance difference between reference and comparison lap only in visible part of moving window



Further Information

If *Win Change* is switched on, always *Time diff* also is activated!

Example Time diff:



As a result of braking 25 m later in **comparison** lap, the rider effectively wins 0.51 sec time in compared to **reference** lap (Time diff from -0.27 → +0.24) at acceleration, but because of the higher velocity at the straight, the rider misses the brake point, and loses time again. The gap of about 0.16 seconds hardly changes during Parabolika.

At the end of the **comparison** lap the rider has lost in total 0.66 sec (Time diff -0.66 sec) seconds compared to **reference** lap.

Example Win change



The time gain because of later braking in **comparison** lap described above can be better read from the channel **Win change**, because if this is in the positive value, there is a time gain because of better acceleration phase. Also missing the brake point at the end of the straight becomes obvious due to the rapid change to a negative value of **Win change**.

This very quickly reveals significant positions where the driver loses or wins time in different sections of the [comparison](#) lap.

FAQ

1. Time diff channel cannot be activated in Analyzer for displaying
➔ In Analyzer open tab *Settings* ➔ *Track* ➔ *Track settings* and check box *Event measured on closed track*