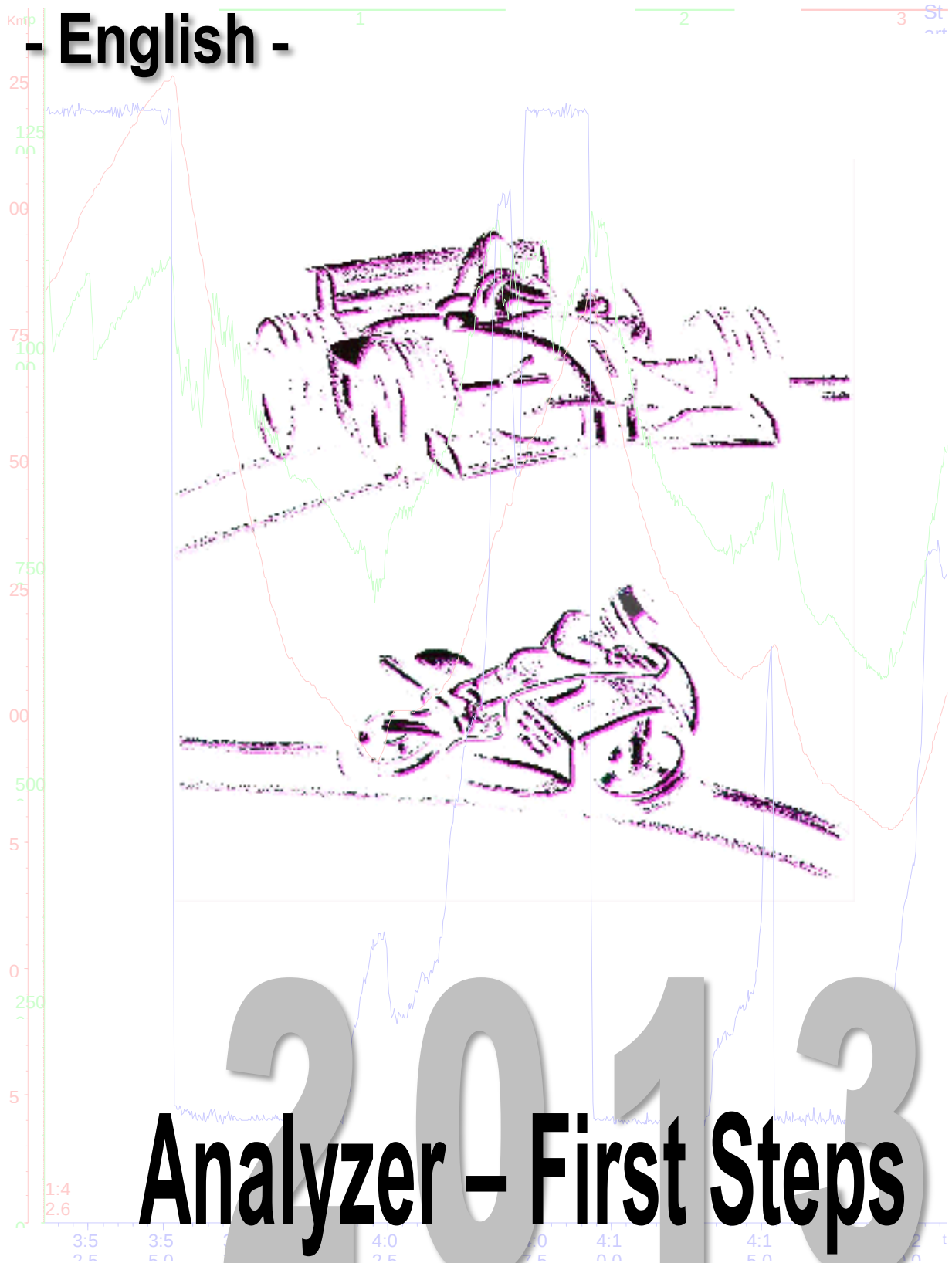




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Symbols used in the text



These paragraphs contain tips and practical advice for working with the 2D software



In the paragraphs highlighted with this symbol, you will find additional information and it is very important that you follow the instructions given.



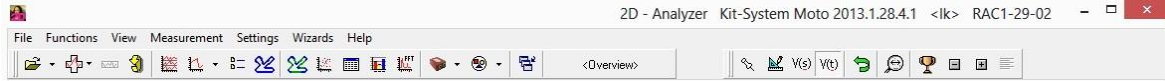
Documentation reference

➤ A user manual reference number is provided so the user can seek further assistance

1 Desktop view

A typical *Analyzer* desktop consists primarily of these 4 windows:

- The main menu and the toolbar are at the top.



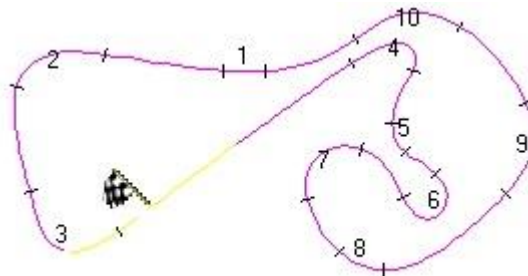
- The Overview window at the bottom is where you can view particular channel curves of the complete measurement.



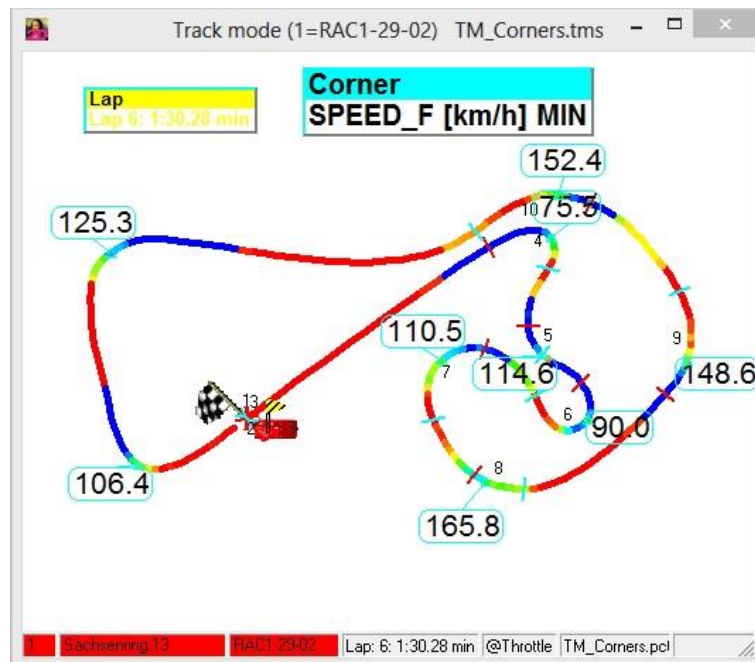
- The biggest window takes up the center of the screen and is called the Moving window. It shows details of all selected channels of the measurement.



- The small Circuit window shows the current racing circuit (created from GPS signal or selected from predefined circuits) and tells you which section is currently selected in the Moving window.



- In addition of the “standard” windows described above, it is possible to define specific views onto measurement data. “Corners”, for example, is a selectable view of the track:



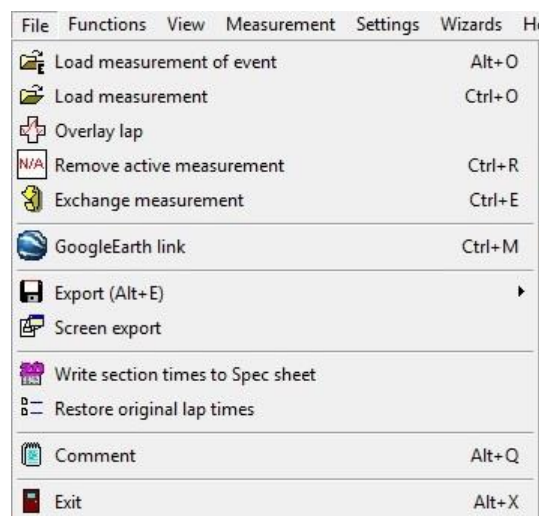
1.1 Main menu items

- The **File** menu contains functions, including those loading and modifying 2D measurement files.
- The **Functions** menu provides access to the basic and advanced analysis functions.
- The **View** menu controls the desktop layout of *Analyzer*.
- The **Measurement** menu enables you to change the way in which measurement data are displayed.
- The **Settings** menu contains functions for program administration and settings for race events.
- The **Wizards** menu launches a program for analyzing cornering sectors.
- The **Help** menu takes you to general help contexts.



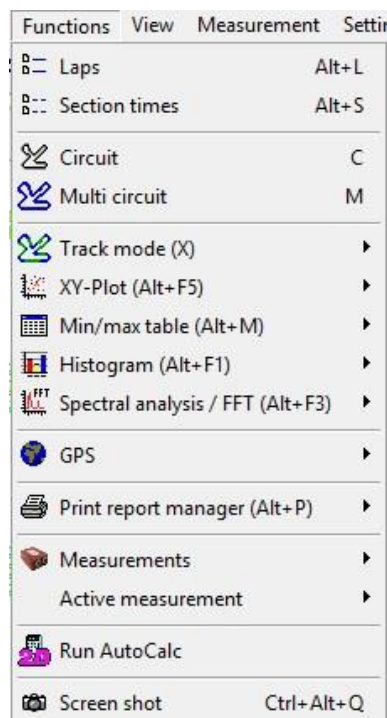
The menu functions may differ depending on your license-level and the used modules to measure data.

1.1.1 The main menu item “File”



- **Load measurement of event:** Open 2D explorer; load measurements of the same event.
- **Load measurement:** Open 2D explorer
- **Overlay lap:** List of lap times in the current measurement. Possibility of loading another lap and comparing it with the current lap (lap overlay)
- **Remove active measurement**
- **Exchange measurement:** Replace the active measurement with another measurement selected with the 2D explorer.
- **GoogleEarth™ link:** View measurement data in GoogleEarth™.
- **Export:** Export of data into different formats, for example *Excel* file.
- **Screen export:** Export all visible channels from the current section and compress them in a ZIP archive file.
- **Write section times to SpecSheet file:** Enter the section times in the *SpecSheet* file that belongs to this measurement.
- **Restore original lap times:** Reset the lap times to “as logged”.
- **Comment:** Add a measurement-specific comment to the *SpecSheet* file belonging to this measurement.
- **0-9: History list:** View and select from a list of the 10 most recently loaded measurements.
- **Exit:** Exit the analysis program.

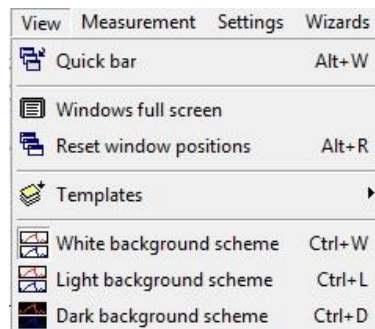
1.1.2 The main menu item “Functions”



- **Laps:** Window with the lap times of the measurements currently loaded.
- **Section times:** Section times of the active measurement.
- **Circuit:** Window showing the circuit and the active section.
- **Multi circuit:** Race lines of all measurements mapped onto GoogleMaps™ images, zoom functions.
- **Track mode:** Detailed view of the circuit showing certain sensor values in corners or on straights.
- **XY-Plot:** Lets you define a 2-dimensional graphic plot of the relationship between two selected channels.
- **Min/max table:** Lap-by-lap list of minimum, maximum and average values.
- **Histogram:** The measured-value statistics for a channel.
- **Spectral analysis/ FFT:** Graphical display of the spectral frequency analysis of a channel.

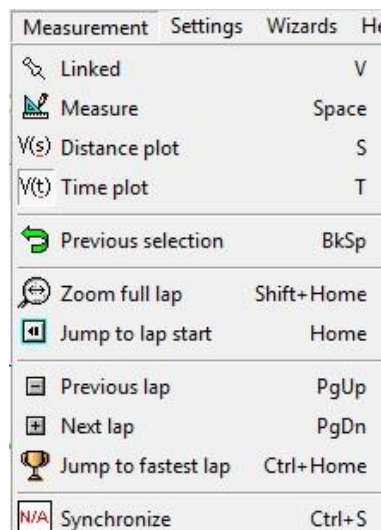
- **GPS:** Definition of a starting line for lap generation.
- **Print report manager:** Function for printing the screen views.
- **Measurements:** Editor for channel settings.
- **Active measurement:** Define one of the measurements currently loaded as the active measurement.
- **Run AutoCalc:** Recalculate the virtual Calc channels.
- **Screenshot:** Paste a screenshot of the current desktop to the clipboard.

1.1.3 The main menu item "View"



- **Quick bar:** Hide/ show the function bar at the right edge of the screen.
- **Windows full screen:** Full-size view of the moving and overview window.
- **Reset window positions:** Reset to the last defined window position.
- **Templates:** select from different stored templates.
- **White background scheme:** Set white as the background color.
- **Light background scheme:** Set grey as the background color.
- **Dark background scheme:** Set black as the background color

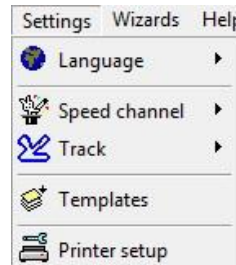
1.1.4 The main menu item "Measurement"



- **Linked:** Two or more loaded measurements are moved in synch in the Moving window.
- **Measure:** Start/ stop measuring mode. In measuring mode the channel values at the mouse-pointer position are shown as readings.
- **Distance plot:** View channel transients plotted over distance (in meters).
- **Time plot:** View channel transients plotted over time.
- **Previous selection:** Show the preceding selection in the Moving window.
- **Zoom full lap:** The current lap is shown in its entirety in the Moving window.
- **Jump to lap start:** Shift the moving section to the start of the current lap.

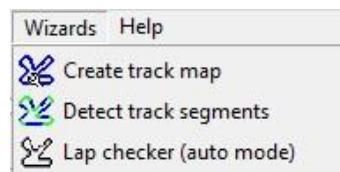
- **Previous lap:** Jump to the preceding lap.
- **Next lap:** Jump to the next lap.
- **Jump to fastest lap:** Move selection to the fastest lap in this measurement.
- **Synchronize:** Synchronize all loaded measurements with the active measurement so that all measurements can be compared at a given lap position.

1.1.5 The main menu item “Settings”



- **Language:** Choice of 6 different languages: German, English, French, Italian, Spanish, Japanese.
- **Speed channel:** Define the channel used to calculate the distance from speed.
- **Track:** Circuit settings, e.g. type and length.
- **Templates:** Open Template management
- **Printer setup:** Options for the printer currently selected.

1.1.6 The main menu item “Wizards”



- **Create track map:** Creates a track map out of GPS or acceleration signals.
- **Detect track segments:** Corners/straights on the circuit are detected on the basis of log data.
- **Lap checker (auto mode):** Lap trigger checking and correction wizard.

1.1.7 The main menu item “Help”



- **First steps:** This Help resource.
- **Help:** Context help.
- **Shortcut keys:** List of all keyboard shortcuts (hotkeys) in the *Analyzer* program.
- **Show hints:** Show comments close to the mouse-pointer position in certain windows.
- **Glossary**
- **FAQ:** Frequently asked questions.

- **2D-Datarecording-Homepage:** Starts your web browser and opens the 2D homepage.
- **Mail to 2D-Datarecording:** Starts your mail program to send an e-mail to *mail@2d-datarecording.com*.
- **About:** Information about your 2D software.

1.2 The toolbar buttons

1.2.1 File functions



Load measurement: Open 2D explorer



Overlay lap: List of lap times in the current measurement. Possibility of loading another lap and comparing it with the current lap (lap overlay)

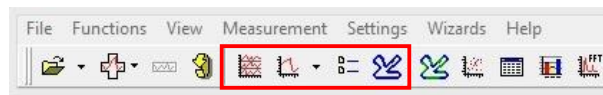


Remove active measurement



Exchange measurement: Replace the active measurement with another measurement selected with the 2D Explorer.

1.2.2 Basic Analyzer functions



Overview: View the Overview window for the active measurement.



Section: View/ activate the Moving window.

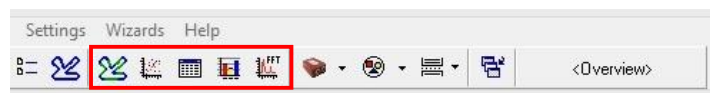


Laps: Window with the lap times of the measurements currently loaded.



Track: Window showing the circuit and the active section.

1.2.3 Advanced Analyzer functions



Track mode: Detailed view of the circuit showing certain sensor values in corners or on straights.



XY plot: 2-dimensional graphic plot of the relationship between two selected channels.



Min/max table: Lap-by-lap list of minimum, maximum and average values.

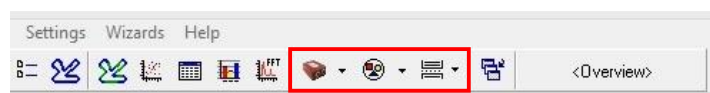


Histogram: The measured-value statistics for a channel.



Spectral analysis/ FFT: Graphical display of the spectral frequency analysis of a channel.

1.2.4 Visibility of channels



Channels: Editor for channel settings.

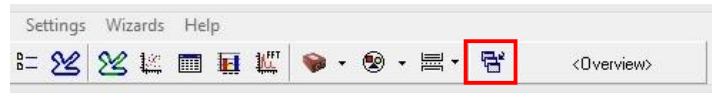


Groups: Particular channels can be grouped.



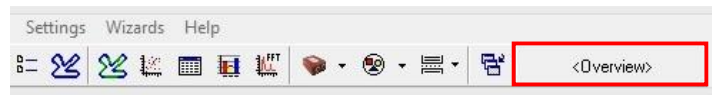
Areas: Add areas to the Moving window to arrange the visible channels.

1.2.5 Additional functions



Quick bar: Hide/ show the function bar at the right edge of the screen.

1.2.6 Templates



<Overview>

Templates: Select a desktop layout.

1.2.7 Measurement functions



Linked: Two or more loaded measurements are moved in synch in the Moving window.



Measure: Start/ stop measuring mode. In measuring mode the channel values at the mouse-pointer position are shown as readings.



Distance plot: View channel transients plotted over distance (in meters).



Time plot: View channel transients plotted over time.



Previous selection: Show the preceding selection in the Moving window.



Zoom full lap: The current lap is shown in its entirety in the Moving window.



Jump to fastest lap: Move selection to the fastest lap in this measurement.



Previous lap: Jump to the preceding lap.



Next lap: Jump to the next lap.



Synchronize: Synchronize all loaded measurements with the active measurement so that all measurements can be compared at a given lap position.

2 Program modules

2.1 Overview window

Quick overview of the entire measurement.

Each measurement opened in the *2D Analyzer* module is shown in a separate Overview window. The measured data of selected channels are graphed in the Overview window. The timing triggers for the lap times are shown accordingly. This provides a speedy overview of possible problems affecting the motorcycle or the logger.

A grey rectangle in the Overview window indicates the position corresponding to the details shown in the Section window.

2.2 Moving window

Enables precise comparison between individual measurements with the added benefit of a survey option.

The measurements opened in the *Analyzer* are all shown together in the Section window. Unlike an overview window, which shows the entire measurement, this window shows only a selected part of the measurement. This permits precision overlay of measurements so that the curves can be compared.



A rectangle in the overview window indicates the position corresponding to the details shown in this window.

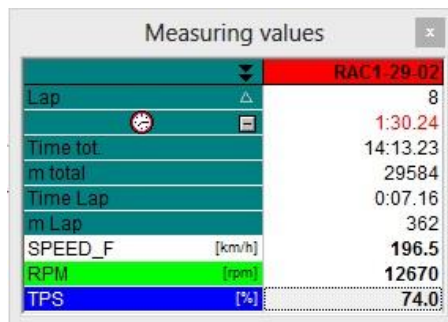
2.2.1 Measurement mode

A special *Analyzer* mode in which the physical values corresponding to the current position of the mouse pointer are shown in a separate small measured-values window.

Press **<space bar>** or double-click to start measurement mode, **<space bar>**, **<ESC>** or double-click to end.

You can use all the *Analyzer* functions in measurement mode. For example you can resize the section, load a different measurement or remove a measurement.

The measured-values window shows the measured physical values for a channel that correspond to the current position of the mouse pointer.



Measuring values	
Lap	RAC 1 29.02 8
Time tot	1:30.24
m total	14:13.23
Time Lap	29584
m Lap	0:07.16
SPEED_F [km/h]	362
RPM [rpm]	196.5
TPS [%]	12670
	74.0

This measured-values window shows either the measured values of all visible (activated) channels or all available channels. You can toggle between the two modes by clicking on the small black double arrow. This double arrow is in the header of the left column of the measured-values window.

Double-click on a channel to hide or show the channel.



If you left-click on a measured value (not on the channel name) in the measured-values window and hold the mouse button down, the corresponding channel starts flashing in the Moving window. This makes it easier to identify the channel, particularly if you have loaded a number of measurements and have numerous channels visible for each.

2.3 Channels

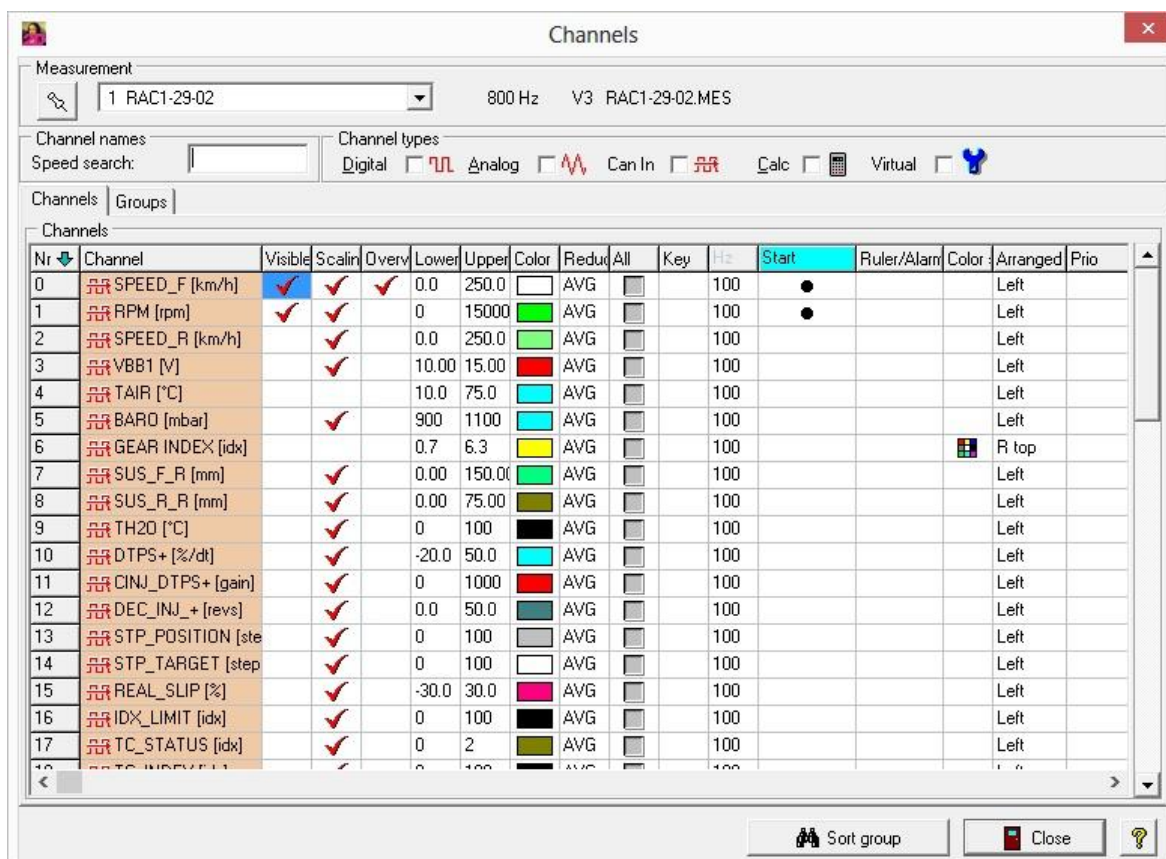
In the *Analyzer* tool, each sensor that transmits measured values to the data logger is represented by a channel. A measurement consists of multiple channels. In addition, virtual channels are computed.



Each channel has its own individual settings and users can change these settings. Numerous functions assist you in administrating channels. You also have the option of grouping certain channels.

You access channel administration through the main menu, the toolbar or the <ALT> + <U> keyboard shortcut.

2.3.1 Channel administration

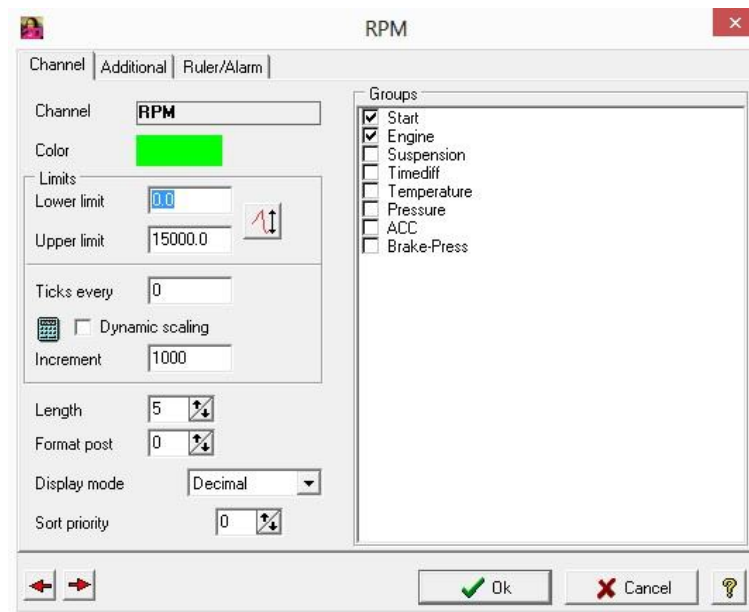


Column	Meaning
Visible	Channel visible in the moving window
Scaling	Scaling visible
Overview	Channel visible in Overview window
Lower limit / Upper limit	Physical lower and upper limits of the display
Color	Individual channel color
Reduce	Type of data reduction in the Overview window
All	All measured values are bands in the Moving window
Key	Shortcut for hiding/ showing channel
Hz	Frequency of channel

Start	Channel membership of the "Start" group
Ruler/ Alarm	Show a horizontal grid line
Color scale	Mapping of physical values to color scale.
Arranged	Visual arrangement inside Moving window
Prio	Sorting priority.

2.3.2 Channel properties

You open the editor for channel properties by clicking on the upper limit or lower limit column in channel administration.



2.4 Lap times

Table of all lap times across all the measurements now loaded.

The first page shows a list of all lap times for all the measurements currently loaded. Each of these measurements has its own page with details of lap length in meters, plus start and end of lap.

All measurements	
Lap	RAC1-29-02
0	2:53.31 min / 3490m
1	2:08.40 min / 3675m
2	1:30.77 min / 3676m
3	1:31.17 min / 3676m
4	1:30.51 min / 3690m
5	1:30.96 min / 3672m
6	1:30.28 min / 3679m
7	1:30.67 min / 3681m
8	1:30.24 min / 3682m
9	1:30.92 min / 3673m
10	1:30.40 min / 3678m
11	1:30.69 min / 3675m
12	1:30.65 min / 3671m
13	1:31.18 min / 3668m
14	1:31.00 min / 3675m
15	1:30.75 min / 3674m
16	1:30.74 min / 3682m
17	1:31.18 min / 3668m
18	1:30.59 min / 3672m
19	1:31.01 min / 3675m
20	3:35.30 min / 3673m

Invalid lap times are highlighted in light grey. This always applies if lap length does not match track length, as is the case with out-laps and in-laps on the circuit.



Manually inserted laps are underscored.

If you click on a value in the table the corresponding lap is shown directly in the Moving window. The section in the Overview window changes accordingly. You can hit <Del> or use the pop-up menu (right-click) to remove a lap you do not want to include. Use this function with discretion, because it can also have an effect on the lap trigger position.

2.5 Section times

Table of all sections times of a particular measurement



Overview of the section times for the track as defined beforehand, lap by lap for all the measurements currently loaded. The sum of the best section times is the ideal lap time.

Lap	Lap time m Lap m Track	1: Section1 -9-991m 1000m	2: Section2 991-1991m 2000m	3: Section3 1991-2991m 3000m	2991-9m 3676m
0	2:53.31 min	1:38.23	0:27.18	0:25.45	0:21.96
1	2:08.40 min	1:05.09	0:25.04	0:20.50	0:18.04
2	1:30.77 min	0:27.49	0:24.95	0:20.42	0:17.91
3	1:31.17 min	0:27.82	0:25.35	0:19.98	0:18.02
4	1:30.51 min	0:27.65	0:24.88	0:20.18	0:17.80
5	1:30.96 min	0:27.61	0:25.09	0:20.32	0:17.95
6	1:30.28 min	0:27.64	0:24.79	0:20.11	0:17.73
7	1:30.67 min	0:27.42	0:25.13	0:20.29	0:17.83
8	1:30.24 min	0:27.52	0:24.84	0:20.06	0:17.83
9	1:30.92 min	0:27.57	0:25.07	0:20.37	0:17.91
10	1:30.40 min	0:27.61	0:24.92	0:19.97	0:17.89
11	1:30.69 min	0:27.87	0:24.99	0:19.97	0:17.87
12	1:30.65 min	0:27.51	0:25.18	0:19.95	0:17.99
13	1:31.18 min	0:28.11	0:25.23	0:19.93	0:17.92
14	1:31.00 min	0:27.97	0:24.87	0:20.10	0:18.06
15	1:30.75 min	0:28.07	0:24.92	0:19.91	0:17.85
16	1:30.74 min	0:27.62	0:24.88	0:20.17	0:18.06
17	1:31.18 min	0:27.41	0:25.28	0:20.35	0:18.15
18	1:30.59 min	0:27.63	0:24.90	0:20.25	0:17.82
19	1:31.01 min	0:27.28	0:25.18	0:20.58	0:17.96
20	3:35.30 min	0:44.64	0:53.61	1:09.55	0:45.51
Ideal time	1:29.71 min	0:27.28	0:24.79	0:19.91	0:17.73

Sachsenring.13 RAC1-29-02