

Data Analysis,
Computation &
Documentation

E.d.a.s. Win

Software Operator`s Manual



MH-GmbH



www.mh-gmbh.de

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Technical features

Main Features of Software Package E.d.a.s.Win

General:

- Menu controlled, no programming is necessary
- Automatic generation of repeatable analysis and documentation
- Softwareinterface (COM)

Analysis:

- Unlimited number of signals can be displayed in each plot
- Unlimited number of plots can be created
- Up to 10 000 000 values can be displayed in a sec (Standard PC)
- Signal can be computed with each other and/or with constants
- Cursor Function with Peak Detection.
- X-Y zoom with selectable boundaries.
- Cascade display, Campbell display, Spectrogram

Optional:

- Play-back sound files
- Time-synchronously presentation of up to four video streams
- Course representation on the basis of measured GPS data

Algebraic functions:

- + - / *
- Logarithms – (base 10 log & natural base e log)
- Exponent, Power, Square root
- 1/x, Change sign (+ / -).

Trigonometric functions:

- Sine, Cosine, Tangent
- Arcsine, Arccosine, and Arctangent.

Calculation functions:

- Differential & Integral, Sign Calculus.
- Absolute value.
- Positive and negative signal isolation.
- IIR High and Low pass digital filters with selectable order and cutoff frequency.
- FIR Filter with programmable filter function, no phase shift
- Cycle duration.
- Counter.
- Conversion between Cartesian and Polar Coordinates.
- Boolean Algebra.
- Floating average: mean, max, min
- A, B, C weighting filter
- Polynomial calculation
- Linearization

Signal processing:

- Graphical drift correction, Line and Offset correction
- Automatic spike detection and suppression.
- Signal resampling with selectable clockrate
- Signal shift along time axis

Signal analysis:

- FFT analysis with selectable resolutions (8 to 1,048,567 points) and selectable range, different window functions
- Order analysis
- Octave analysis (1/6, 1/3; 1/1)
- Transfer function
- Y Sampling across any selectable signal
- X-Y Plot
- Regression
- Cross correlation
- Dynamic signal movement from cross correlation

Statistical analysis:

- Distribution (Time at Level)
- Levelcrossing.
- Rain Flow, Range Pair
- Rotational analysis
- Damage calculation

Other functions:

- Plausibility check for measurement data records
- Batch Analysis
- GPS interpolation
- Macro function for recurrent calculation specification

Layout Editor for Report Generation:

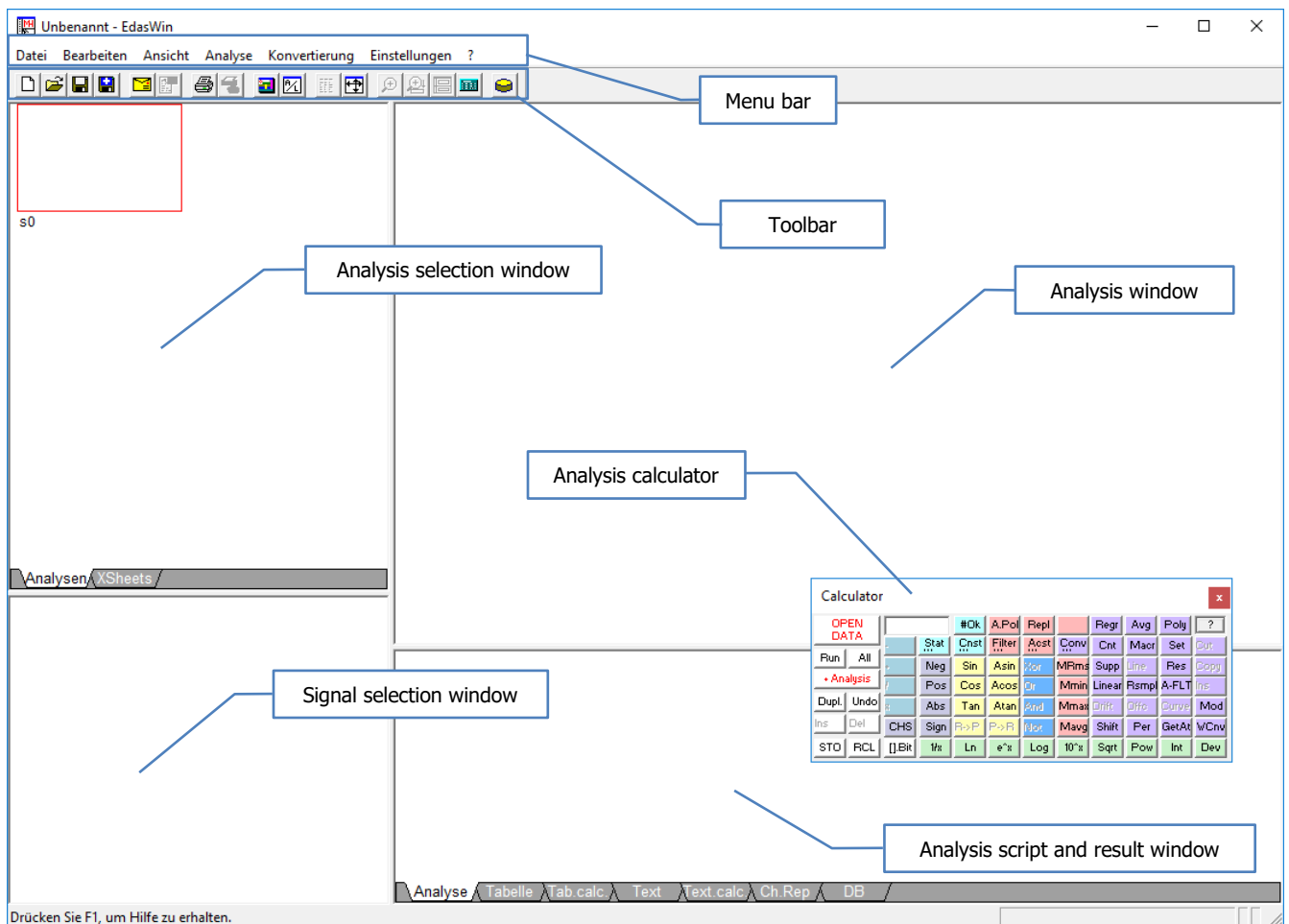
- Create standard templates for printing plots
- Label editor with includable Functions
- Commentary editor for annotations
- Sophisticated layout creation with unlimited amount of pages

Data Import and Export:

- Import from different data formats, with direct reader functionality
- Export to multiple data formats

First Start / Window arrangement

E.d.a.s.Win starts with the following display.
Analysis and measurement are performed on this display.



The Analysis View consists of 4 windows:

Analysis Selection Window: (top left)

Contains all analyses and the dependencies between the analyses. Select, create or delete analyses here.

Signal Selection Window: (bottom left)

Lists all channels contained in the opened measurement data files. These may be analogue, CAN, FleyRay and video channels as well as map data. All listed channels may be used for analysis.

Analysis Window: (top right)

Analysis is done here. All channels selected for analysis are plotted here. Calculations may be done on single, on multiple or even between several channels. Moreover channels can be calculated with standard signals (Sine, Noise, Tri- & Rectangle) or constants (pi, e, etc).

Script / Result Window: (bottom right)

All channels selected for analysis are listed here including their calculation instructions in the Analysis tab. Calculation instructions (analysis instructions) can be edited, copied or deleted manually here.

Some calculations like FFT, PSD and Distribution display their results in this window. In this case, a dependent subsidiary analysis will be created and added to the analysis selection window.

Calculator:

The majority of calculations are done using the calculator. Besides calculations the calculator is used to open measurement data files and manipulate the analysis in several ways (duplicate channels, copy instructions, insert constants, undo actions etc)

Context menus:

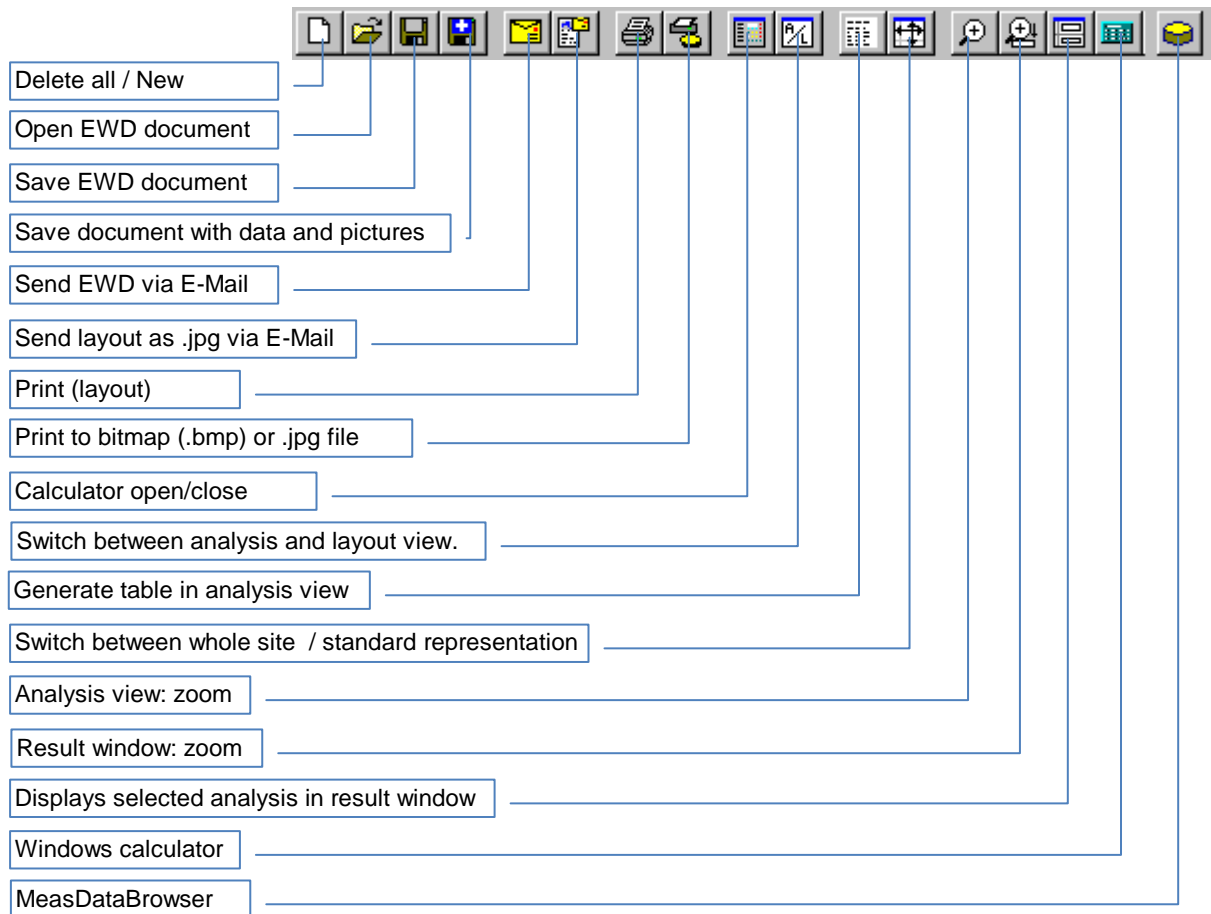
Each window offers an individual context menu. It is always reachable by right clicking and offers further functionality.

Analysis view without Dongle

If there is no Dongle installed, (external, internal or network dongle), E.d.a.s.Win starts up with reduced functionality.

It still is possible to load and view data but without the capability of calculations.

Analysis Toolbar



The analysis toolbar offers shortcuts for some frequently used analysis view functions. All functions are also available in the menus.

It may be placed anywhere on the screen and can be changed in size and orientation ()

Channel selection window

This window may be used to open the channels for the analysis. It displays all datasets contained by the loaded measurement data files.

Standard view:

Manual.EWD - EdasWin

Datei Bearbeiten Ansicht Analyse Konvertierung Eins

s0 TAB TEXT

s1 TEXT

Analysen XSheets

R57_107658_anf-bue_DSC-off_Kam_1_403_L.edt (C:\Messe\

- [000] Video
- [000] 529 Antriebseinh.-Lagerkraft rx kN
- [001] 530 Antriebseinh.-Lagerkraft ry kN
- [002] 531 Antriebseinh.-Lagerkraft rz kN
- [003] 532 Antriebseinh.-Lagerkraft tx kN
- [004] 533 Antriebseinh.-Lagerkraft ty kN
- [005] 534 Antriebseinh.-Lagerkraft tz kN
- [006] 501 Momentenstütze Motor - untere Längskraft kN
- [007] 99999 Motormoment_soll Nm
- [008] 99999.00 Motormoment Fahrerwunsch Nm
- [009] 358 Fahrpedalwinkel %
- [010] 43 Motordrehzahl 1/min
- [011] 28 Lenkwinkel oR °
- [012] 670 Radgeschwindigkeit vl km/h
- [013] 669 Radgeschwindigkeit vr km/h
- [014] 672 Radgeschwindigkeit hl km/h
- [015] 671 Radgeschwindigkeit hr km/h
- [016] 99999.01 clctr
- [017] 713 Bremsdruck vor ABS bar
- [018] 60 Fahrgeschwindigkeit km/h
- [019] 666 Rad-Bremsdruck nach ABS vl bar
- [020] 665 Rad-Bremsdruck nach ABS vr bar
- [021] 668 Rad-Bremsdruck nach ABS hl bar
- [022] 667 Rad-Bremsdruck nach ABS hr bar

VR24DAT_0007.dat (C:\Messe\TEAC\mit CAN)

- [000] Video
- [000] Map
- Analog
- GPS GPS
- CAN CAN

Drücken Sie F1, um Hilfe zu erhalten.

File / Dataset name and path

Channel name

Channel selection window

Video Channel

Map channel

GPS Channels

CAN channels

Channel Report view

To display all datasets with further information (coupling, range, unit etc.) the view can be switched to report view by right clicking the channel selection window and selecting "Report View"

Report view / Ch. Rep.:

R57_107658_anf-bue_DSC-off_Kam_1_403_L.edt (C:\Messe\Motor\Original)																							
LChar	Mnr	Name	Einhei	Pol.	Box	Label	Soll	Ist	Verst.	Verstf	Sensc	Snr	Kal.	Empf.	Nennv	Einhei	Verso	A/P.	SenTy	Koppl.	Brück	G	
0	529	Antriebseinh.	kN	-Motor	147	mola_x	35	58.300	Lad.	20029	MTB_x	11808		8480.5	1	kN		a	OhmSc	DC	full	1	
1	530	Antriebseinh.	kN	-Motor	147	mola_y	12	23.643	Lad.	20029	MTB_y	11808		8528	1	kN		a	OhmSc	DC	full	1	
2	531	Antriebseinh.	kN	-Motor	147	mola_z	18	52.652	Lad.	20019	MTB_z	11808		3734.5	1	kN		a	OhmSc	DC	full	1	
3	532	Antriebseinh.	kN	+Motor	147	gela_x	20	24.170	Lad.	20019	GTB_x	11807		8241.9	1	kN		a	OhmSc	DC	full	1	
4	533	Antriebseinh.	kN	+Motor	147	gela_y	20	22.614	Lad.	20011	GTB_y	11807		8676.8	1	kN		a	OhmSc	DC	full	1	
5	534	Antriebseinh.	kN	+Motor	147	gela_z	20	53.160	Lad.	20011	GTB_z	11807		3740	1	kN		a	OhmSc	DC	full	1	
6	501	Momentenstül	kN	+Zug	147	momst	45	45.410	DC/TF	127	R56_0	4773-C		1	31.17	kN	5	p	OhmSc	DC	full	69	
7	99999	Motormoment	Nm		828				CAN		TORQ_												
8	999.00	Motormoment	Nm		828				CAN		TORQ_												
9	358	Fahrpedalwin	%	steiger	828	358			CAN		ANG_												
10	43	Motordrehzah	1/min	keine	828	043			CAN		RPM_E												
11	28	Lenkwinkel of	°	Linkski	828	028			CAN		STWA												
12	670	Radgeschwin	km/h	keine	828	670			CAN		V_WH												
13	669	Radgeschwin	km/h	keine	828	669			CAN		V_WH												
14	672	Radgeschwin	km/h	keine	828	672			CAN		V_WH												
15	671	Radgeschwin	km/h	keine	828	671			CAN		V_WH												
16	999.01	clctr			828	255			CAN		ST_CL												
17	712	Brandschutz	ber		828	712			CAN		RDP												
Analyse Tabelle Tab.calc Text Text.calc Ch.Rep DB																							
<																							

Arranging columns:

Columns can be arranged by clicking the column header.

Undo column arrangement:

Right click in channel selection window and choose "unsorted"

Display channel/channels in analysis view

By double clicking on a channel name in the channel selection window or the report view, the selected channel will be loaded to the analysis window. Repeating this procedure with other channels plots them underneath the previous channel in the analysis window. It is possible to select multiple channels, using the well-known windows shortcuts. Hit enter to load the selected channels to the analysis view.

Multiple selection in channel selection window:

<Shift> + <Multi selection> + <Enter>: Select multiple channels and display them in analysis view

<Strg> + <Mouse selection> + <Enter>: Select multiple channels with the mouse and display them

<Strg> + <A> + <Enter>: Select all channels and display them in analysis view

Display channels consecutively in analysis view: (concatenate channels)

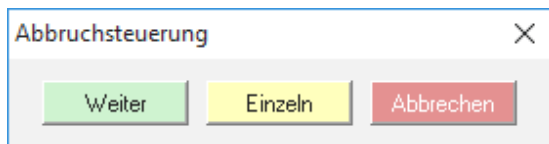
Select multiple channels and hold <cmd> key while pressing <Enter> key. The selected signals will be displayed concatenated in a single plot.

Number of simultaneously displayed channels in analysis window:

To configure the number of simultaneous displayed channels in the analysis window, click right beside a diagram and choose "". Alternatively the number of displayed channels can be altered by clicking beside a diagram and hitting one of the 0 to 9 keys. By hitting the <A> key all loaded channels will be displayed.

Loading all channels at once:

If all channels are selected, loading may take a while. Left clicking in the analysis window during the loading process will pause the process and open this dialogue:



<Continue> Continue loading

<Single> Load the next channel

<Cancel> Cancels the loading process

Multiple analysis windows:

Adding new analysis to a EWD document is done by right clicking in the analysis selection window and selecting "New Analysis". Alternatively clicking on the <+ Analysis> on the calculator will also create a new analysis.

Any analysis created within a EWD document will be kept and numbered (s0, s1, s2....) in the analysis selection window. There is no limitation to the number of analyses.

To select an analysis click on it in the analysis selection window.

Calculator:

By default the calculator functions apply to the last channel listed in the analysis window. To apply a calculator function to a different channel than the last, channel marks have to be used.

To do a calculation with the calculator e.g. summing up the two last channels in the analysis window, simply click on the <+> button on the calculator. To calculate the sum of two particular channels, the channels have to be marked before.

All other calculator functions may be used in a similar manner.

Conduct Analysis with other data sets

In order to conduct an analysis with other test data sets, right click on the data set name in the Channel Selection Window. A pop-up menu appears. Left click on "Change data file". The Open File dialogue box will be shown. Select a different file and close the dialogue box by clicking on Open. The new file name now replaces the old one, and analyses will be performed using the new name.

Channel selection window context menu

Right click in the channel selection window opens the following menu:

The screenshot shows the EdasWin software interface with the channel selection window context menu open. The menu items and their corresponding descriptions are as follows:

- New Analysis**: Appends a new, empty analysis to the existing analyses
- Group tags...**: Switch between group representation (32 channels each) and linear representation of the channels
- Log. channel no.**: Use the logical channel number for the analysis
- Channel name**: Use the channel names for the analysis
- Sensor location no.**: Use the sensor location number for the analysis
- Change data file**: Swaps the actual data set against a chosen data set
- Change data file (Multiselection)**: By choosing multiple data sets the actual data set will be swapped against all selected datasets. You can choose between: Table, EdasWin, ASCII, RPC3 Diadago and print
- Take away file**: Deletes file from list (not from hard disk / mass storage)
- Show data header**: Shows data set header and miscellaneous information
- Calculate sample rate**: Clock rate conversion to any clock rate or unit
- Reportview**: Switch to Reportview
- Unsorted**: Unsort Reportview
- Save report**: Save Reportview to "txt" file
- Print**: Print the Reportview
- Speed channel (for maps)**: Defines the speed channel for course calculation / presentation
- GPS Definitions**: GPS Definitions, Map path, Longitude, Latitude, ...
- MDF Auto. Synchronisation**: Signal resampling with respect to the corresponding time channel
- Label for dataset**: Define dataset label
- Assign FIBEX/dbc/txt to efs file**: Assign FIBEX / dbc / txt bus definition files to efs file
- Reset assignment to efs file**: Revert FIBEX / dbc / txt bus definition assignment
- Extract Message aus FlexRay Datenstrom**: Extract single message from FlexRay datastream
- Generate map from OSM**: Create map using Open Street Maps
- Assign DBC file**: Assign DBC bus definition file to efs file (TEAC hardware only)

Log.channelnr:

With the creation of the analysis script, a reference to the logical channel numbers or the channel can be generated. In a measurement data set with e.g. 10 channels, all channels will be logically numbered from 0 to 9.

Changing the measurement data file to an EWD document with inherent logical channel numbers, will automatically swap all loaded channels according to the logic channel numbers.

e.g.: In data set 1 the signal "engine speed" is the third channel, in data set 2 the third channel is the signal "engine temperature". After swapping the measurement data file an EWD document with a reference to logical channel number may treat these two signals in an unwanted way.

Channel name:

An EWD document which uses the channel name reference will always reference the channel names.

e.g.: Data set 1 the signal "engine speed" is the channel three; in data set 2 is it channel seven. A document provided with reference to channel name looks for the defined channel names and implements the analysis by these names.

Sensor location number:

An EWD document which uses the sensor location number reference will always use the reference sensor location number (similar to logical channel number and channel name reference).

Change file:

With selection of multiple data sets the existing data set is swapped against the selected data sets and printed by the default printer. Right click in the signal selection window opens a context menu. Choose "Change data file (multiselection)", the open dialogue appears. Mark the desired data sets. Click Open. The data sets are replaced, calculated and printed on the default printer.

Change file (Multiselection):

With selection of multiple data sets the existing data set is swapped against the selected data sets and dumped to the selected file/printer. Right click in the signal selection window opens a context menu. Choose "Change data file (multiselection) / Print/Table/Export ...", the open dialogue appears. Mark the desired data sets. Click Open. The data sets are replaced, calculated and dumped to the selected file/printer.

With selection of several data sets the existing is exchanged by the selected. The following possibilities can be selected:

Print	
Table:	tab.rtf
Export to E.d.a.s.Win.	ex_data setname.edt
Export to Ascii.	ex_data setname.asc
Export to RPC3.	ex_data setname.rpc
Export to DiaDago.	ex_data setname.

Important:

Check the export parameter in the menu Export, before choose export to E.d.a.s.Win, to ASCII to RPC3 and to DiaDago

Important:

The calculation on the new data set does only affect the main analysis S0. Subsidiary analysis won't be updated!

Clock rate conversion:**GPS definition:**

Defines path for GPS maps.

Label for dataset:

Enter a label for a dataset. This label may be displayed in a table by the „\$FileLabel“ keyword.

Label für Datei

C:\Messe\Motor\Original\R57_107658_anf-bue_DSC-off_Kam_1_403_L.edt Original

C:\Messe\Motor\Short\MotorShort.edt Kurz

OK Cancel

Analysis Selection Window

In this window you can select an analysis for processing.

Manual.EWD - EdasWin

Datei Bearbeiten Ansicht Analyse Konvertierung Eins

Root analysis s0:
Click on it to select it for view / treat

A corresponding table exists

A corresponding text exists

Dependent analysis s1 (Derived from s0)

Dependent analysis s2 (Derived from s1)

Root analysis s3

Analysen / XSheets

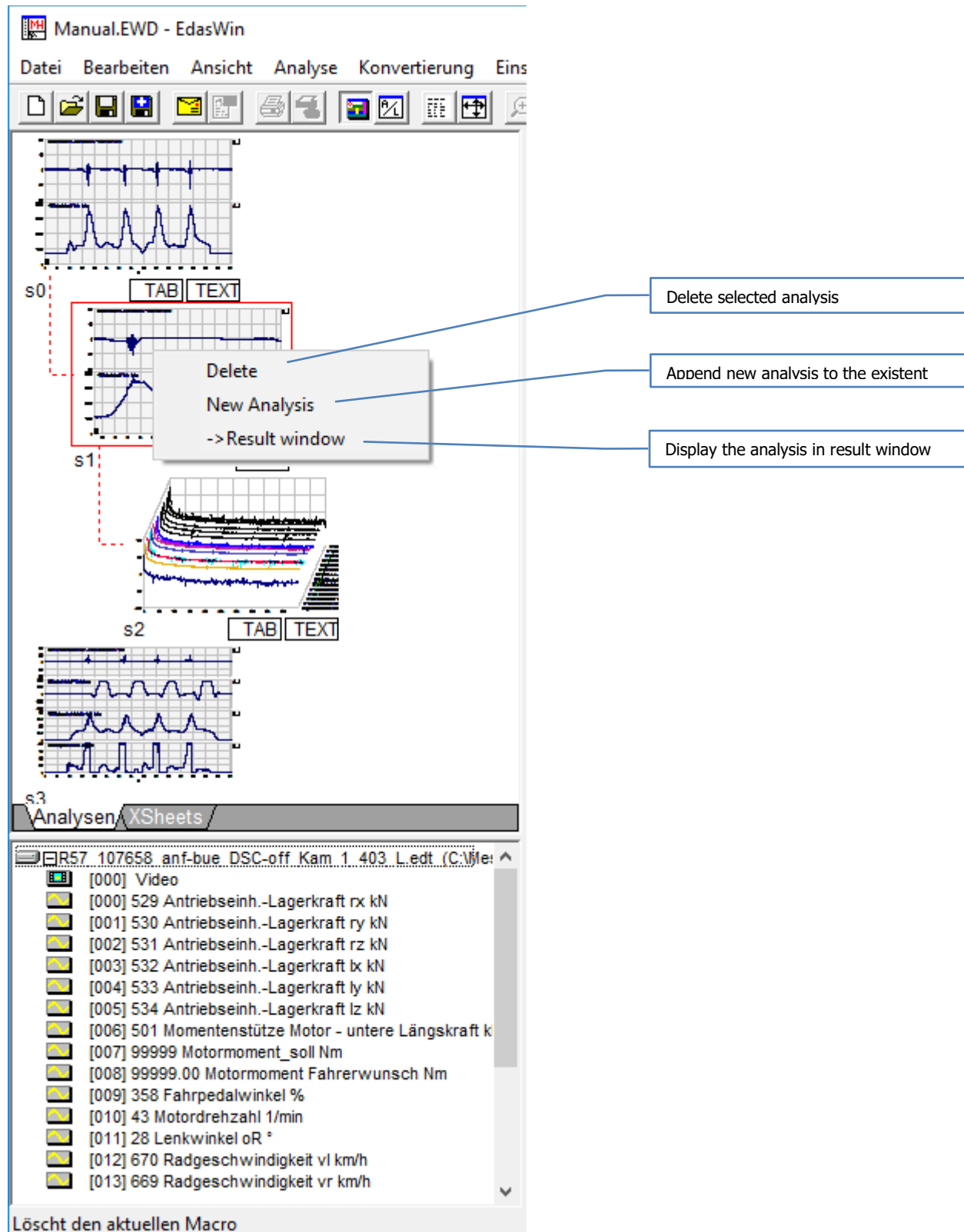
R57 107658 anf-bue DSC-off Kam 1 403 Ledt (C:\Me:

- [000] Video
- [000] 529 Antriebseinh.-Lagerkraft rx kN
- [001] 530 Antriebseinh.-Lagerkraft ry kN
- [002] 531 Antriebseinh.-Lagerkraft rz kN
- [003] 532 Antriebseinh.-Lagerkraft tx kN
- [004] 533 Antriebseinh.-Lagerkraft ty kN
- [005] 534 Antriebseinh.-Lagerkraft tz kN
- [006] 501 Momentenstütze Motor - untere Längskraft k
- [007] 99999 Motormoment_soll Nm
- [008] 99999.00 Motormoment Fahrerwunsch Nm
- [009] 358 Fahrpedalwinkel %
- [010] 43 Motordrehzahl 1/min
- [011] 28 Lenkwinkel oR °
- [012] 670 Radgeschwindigkeit vl km/h
- [013] 669 Radgeschwindigkeit vr km/h
- [014] 672 Radgeschwindigkeit hl km/h
- [015] 671 Radgeschwindigkeit hr km/h
- f0161 99999.01 clctr

Drücken Sie F1, um Hilfe zu erhalten.

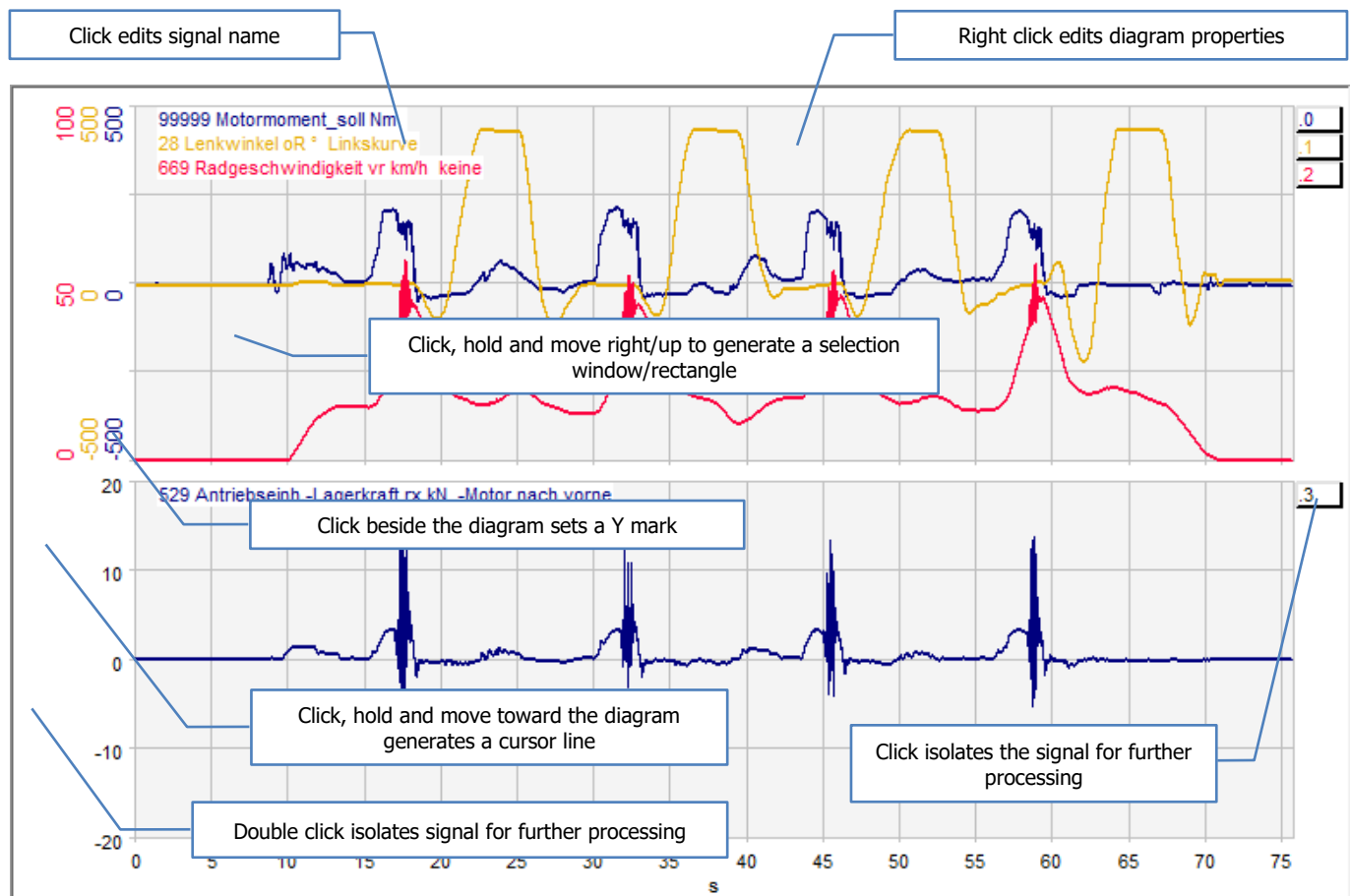
Analysis selection windows context menu

Right click on an analysis in the analysis selection window gets the following context menu:



Analysis window

The Analysis Window is the main window in E.d.a.s.Win. It contains the loaded and calculated channels.

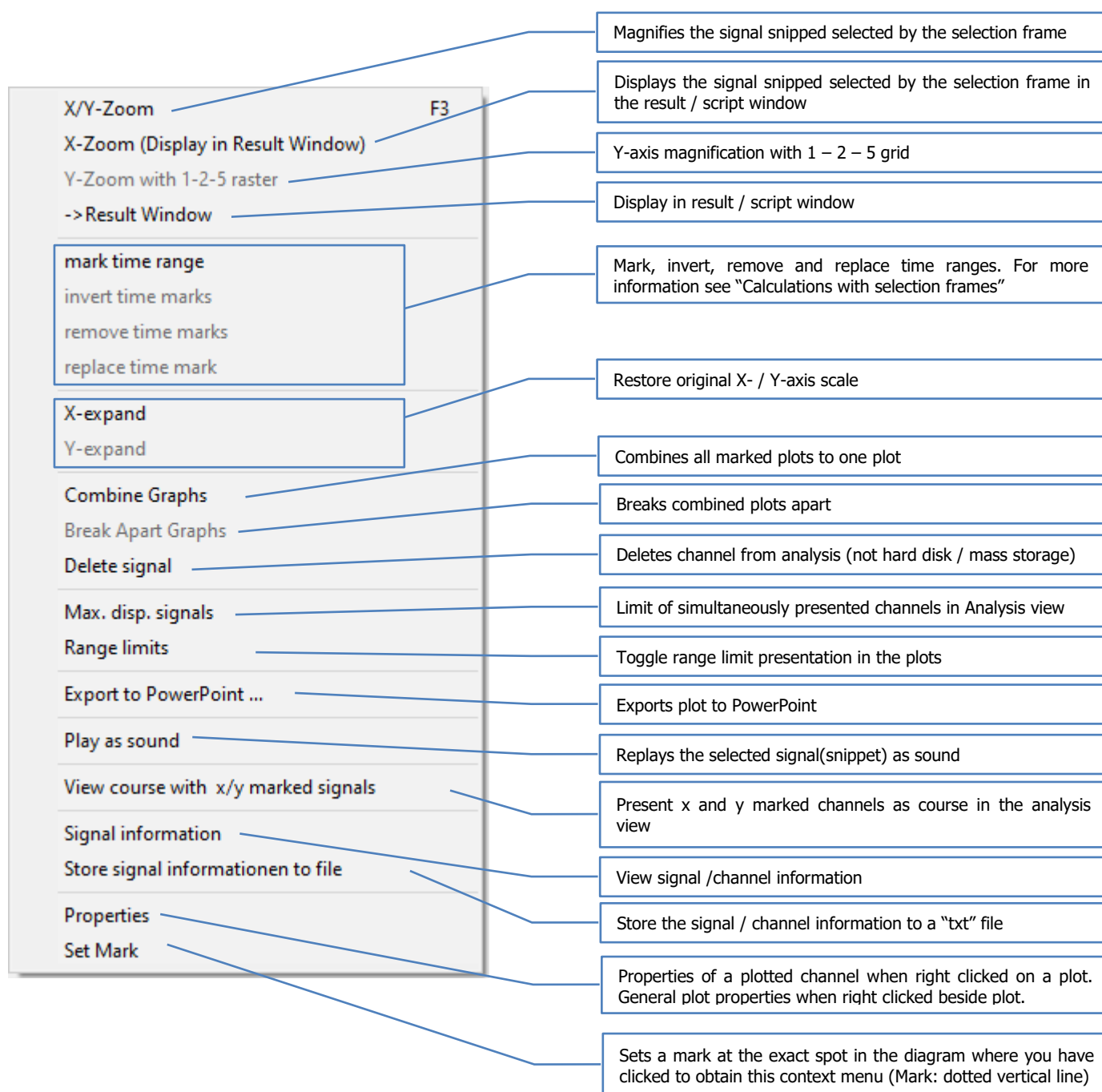


There are two zones left beside each plot where the mouse cursor indicates special functionality. Right beside each plot the cursor transforms to a mark symbol **M**. By clicking while the cursor represents the mark symbol the corresponding channel will be Y marked.

To do calculations on particular channels or to use the extended calculations from the menu marks are required.

Analysis window context menu

Right click in the Analysis Window opens the following context menu:



Marking Channels in the Analysis Window

For some operations individual signals have to be selected and marked in the Analysis Window. To mark a channel, move the cursor left beside the channel display and click when the cursor turns to a selection mark (M, Y, X, N).

In general a Y-mark will be created by clicking. To create X- or N-marks hold the respective key while clicking. Set marks are sequentially numbered and displayed in the down left corner of the related diagram. The number defines the order of the input parameters (channels) for the calculations.

To remove a mark, click left beside the related diagram and choose delete.

The Y-mark is used for general calculations, the X-mark defines the x reference channel in characteristic calculations and the N-mark defines the rate of rotation channel for order analysis.

<Shift> + <Enter>: Mark channels in a group.

<Ctrl> + <Enter>: Mark single channels.

<Ctrl> + <A> + <Enter>: Mark all channels

Mark channels to display them behind one another:

Mark the channels with pressed <Ctrl> key and press <Enter>.

The marked channels will be displayed one behind another.

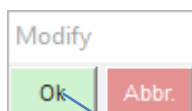
Modify mode

Any signal/channel loaded to the analysis view, can be modified at any time. To do so, there is a modify mode which can be entered by clicking on the channel identifier beside each diagram on the top right side. The cursor will turn to a calculator while hovering above the channel identifier.

Alternatively the modify mode can be entered by double clicking left beside the marking area (cursor turns into an A-mark then double click) of the channel that should be modified.

The analysis view will switch, the background becomes yellow and the selected channel will appear in a single diagram. Now the channel can be modified by using the calculator and some analysis functions.

After it has been modified, the signal can be placed in the original analysis window by click on the <Ok> button of the Modify dialogue box.



Leave the modify mode. The modified signal replaces the original signal in the analysis

Selection frame

The selection frame is used to pick certain parts of a channel for process. E.g. if you want to edit the last 1000 samples of a channel you have to use the selection frame.

Generate X-Y selection frame:

- **Generate X-selection frame:**
Click into a diagram to define the left border of the selection frame. To define the right border of the frame, pull the border to the desired place.
- **Generate Y-selection frame:**
Click into a diagram to define the lower border of the selection frame. To define the upper border of the frame, pull the border to the desired place.

Resize, move and zoom selection frames:

- **Resize X-selection frame using the mouse:**
Click on the designated borderline and hold while moving the border to the desired position.
- **Resize X-selection frame using the mouse wheel:**
Hold the <CTRL> + <ALT> keys while spinning the mouse wheel.
- **Resize Y-selection frame:**
Click on the designated borderline and hold while moving the border to the desired position.
- **Move X-selection frame:**
Precisely: Click on the sample that represents the desired middle of the frame.
Freehand: Click into the selection frame and hold while moving the frame.
Mouse wheel: Hold the <SHIFT> key while spinning the mouse wheel
- **Move Y-selection frame:**
Click into the selection frame and hold while moving the frame.

Zoom and scroll

Zoom and scroll by mouse wheel:

- **Zoom:** Hold the <CTRL> key while spinning the mouse wheel
- **Scroll:** Place the mouse cursor into the designated diagram and spin the wheel

Zoom with selection frames:

When a X- or Y-selection frame is set, the content may be zoomed by:

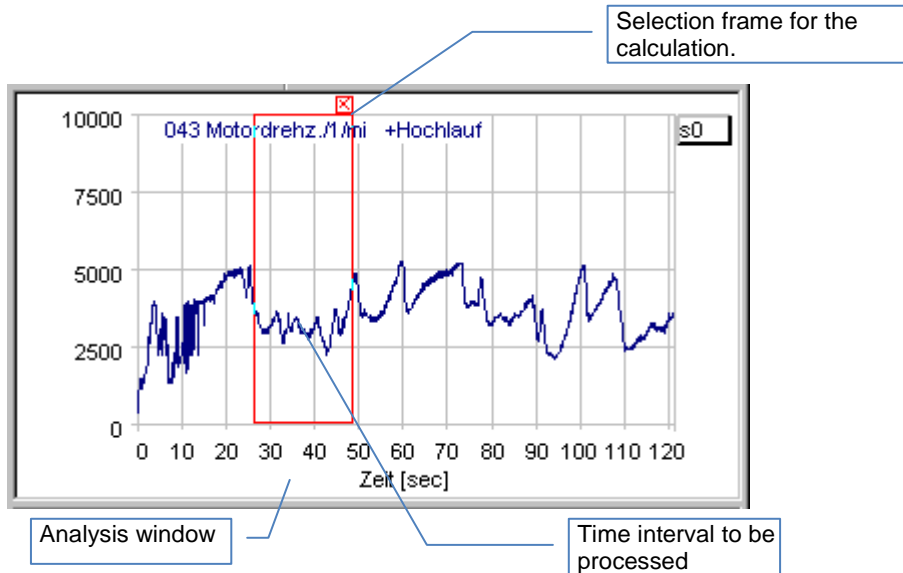
- Clicking right into the selection frame, choosing "X/Y-Zoom" from the appearing context menu. The content of the selection frame will be enlarged to fill the whole diagram.
- Clicking right into the selection frame and choosing "X-Zoom (Display in Result Window)" from the appearing context menu will display the content of the selection frame in the result window. If the selection frame is moved or resized the content of the result window is adjusted to always match the content of the selection frame. To abandon this mapping, create a selection frame in the result window and do a "X-zoom (Display in Result Window)". To retrieve the original mapping between the selection frame in the analysis window and the magnification in the result window choose "X-Zoom (Display in Result Window)" in the context menu of the selection frame in the analysis window.
- <F3> key

Calculations with selection frames

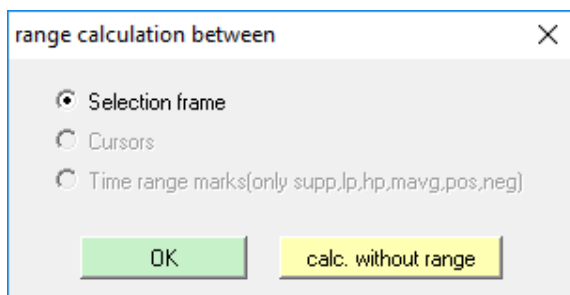
By defining a selection frame, selected parts of a signal can be processed using the calculator or further menu functions.

Calculations with single signals/channels:

To do calculations with a selection frame on single channels, a selection frame has to be created with a single channel loaded to the analysis view or the designated channel has to be marked with a Y-mark.



When the selection frame is created, the calculator may be used to apply a calculation on the selected part of the signal. If the chosen calculation can handle selection frames the following dialogue will be prompted. If not, the whole signal will be calculated.



Choose "Selection frame", to perform the calculation on the signal part selected by the selection frame.

Choose "Cursors", to perform the calculation on the signal part selected by two cursors.

Choose "Time range marks", to perform the calculation on the signal parts selected by the time range marks

Setting time range marks:

To set time range marks, create a selection frame and right click in it. Choose "mark time range". It is possible to create multiple time range marks.

To delete a certain time range mark right click on it and choose "remove time marks". To delete all time marks, right click on a non marked spot in the diagram and choose "remove time marks".

Calculations with multiple signals/channels:

If there are multiple channels loaded to the analysis window and no marks were set the chosen calculation will be done on the selected part of each signal. To choose certain channels to be calculated, Y-marks have to be set.

Functions that support selection frames:

Filters and Smoothing Functions

Lowpass	Opens the Low-pass Filter dialogue window with programmable order and cutoff frequency (IIR Butterworth functions)
Highpass	Opens the High-pass Filter dialogue window with programmable order and cutoff frequency (IIR Butterworth functions)
Pos	Cuts off all negative signal elements – sets all negative values to zero (0).
Neg	Cuts off all positive signal elements – sets all positive values to zero (0)
Supp	Opens the Spike Suppression dialogue window.
Mavg	Opens Moving Average dialogue window with programmable time constant

Trigonometric Functions

Sin	Calculates Sin(x) for all marked signals – degrees in radians.
Cos	Calculates Cos(x) for all marked signals – degrees in radians.
Tan	Calculates Tan(x) for all marked signals – degrees in radians
ASin	Calculates Asin(x) for all marked signals – degrees in radians.
ACos	Calculates Acos(x) for all marked signals – degrees in radians.
ATan	Calculates Atan(x) for all marked signals – degrees in radians.

Mathematical Functions

Chs	Inverts all marked signals.
sqrt	Calculates the square root of all marked signals.
1/x	Calculates the inverse value of selected signals.
Abs	Calculates & displays the absolute value for all marked signals.
Log	Calculates the logarithm to the base 10 of a signal.
Ln	Calculates the natural logarithm of a signal
10^x	Reciprocal of the logarithm to the base 10.
e^x	Reciprocal of the natural logarithm
Int	Integrates marked signals.
Dev	Differentiates marked signals.
Sign	Performs „sign“ function on selected data.

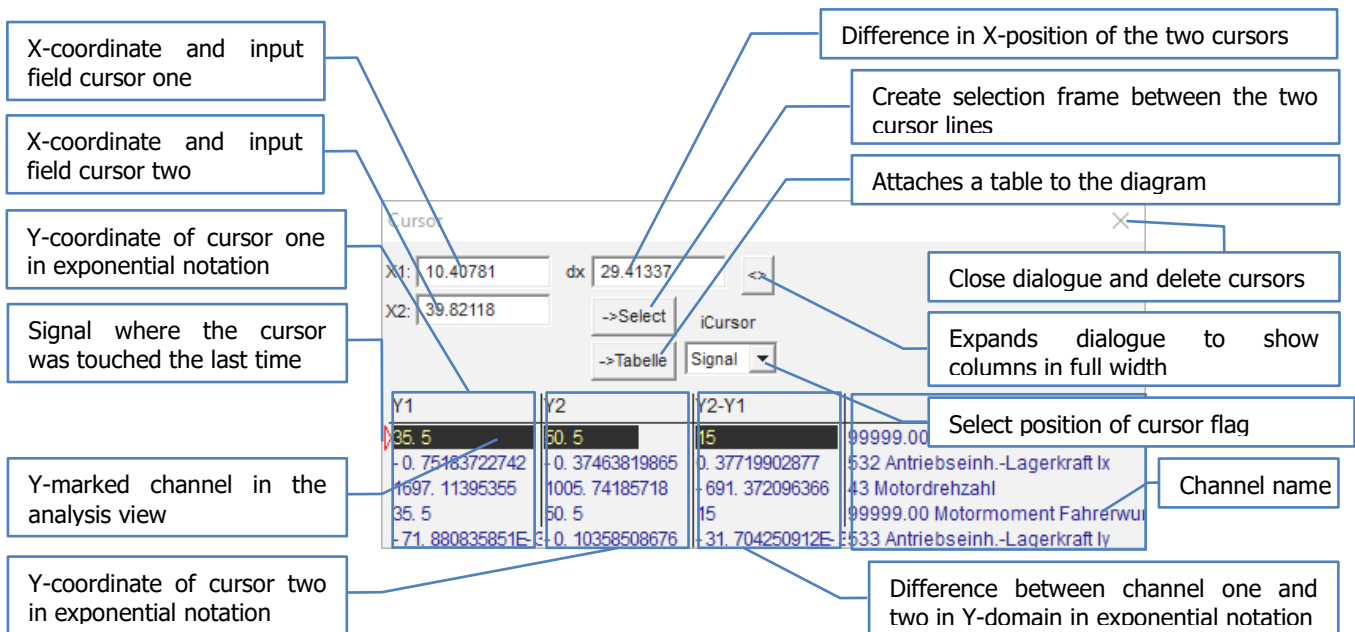
Boolean Functions

Not	Logical „Not“ function for digital data.
-----	--

Basic arithmetic operations

+	add
-	subtract
/	divide
*	multiply

Cursor



Create cursor lines

To create a cursor line, click left beside a channel and hold while moving the cursor to the designated place. The cursor line and a cursor dialogue box appear. You may create multiple cursor lines using the same method. The numerical values displayed in the cursor dialogue box correspond to the channel values at this spot.

Deleting the Cursor Lines

Close the Cursor Dialogue Box to delete the cursor lines.

Two cursor functions:

If two Cursors are set, the measured values between the two cursors were displayed in the result window after clicking the generate table button in the analysis tool bar. The output of the time information depends on the time format indicated in the analysis window (relative, relative HMS and abs. HMS).

Extended view in the cursor dialogue:

Each marked channel in the analysis window is indicated and highlighted in black in the dialogue. After enlargement of the dialogue the channel names are completely displayed.

iCursor:

To display channel values directly at the cursor positions, the iCursor can be used. It creates a flag that sticks to a cursor containing information like X-position and Y-value. The iCursor can be altered between:

None: No flag

Top: The flag sticks to the top of the diagram

Signal: The flag sticks to the corresponding Y-coordinate of the signal

Cursor context menu:

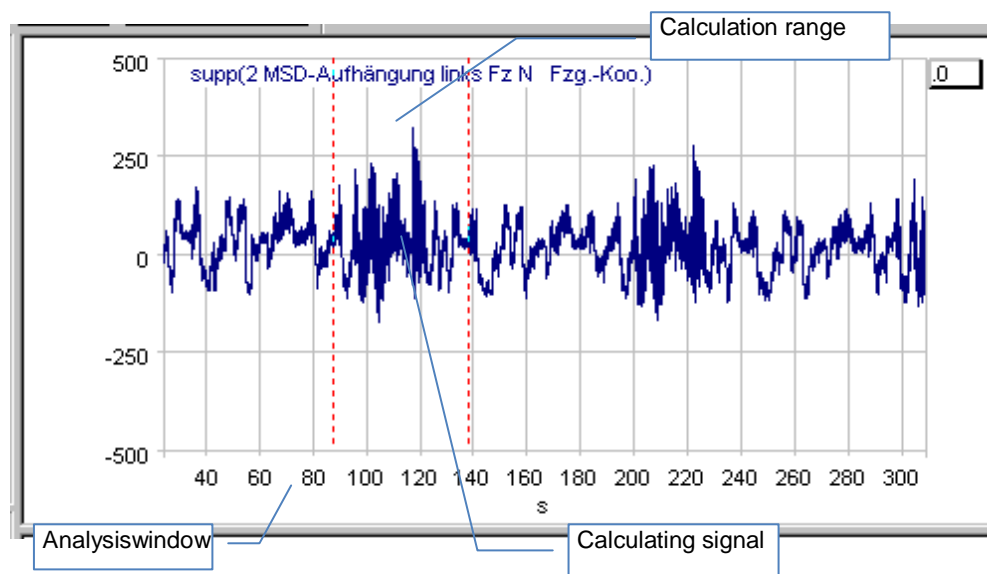
Right clicking on a cursor opens a context menu with further functionality. For more information go to "Set mark and position with cursor"

Calculations between two cursors

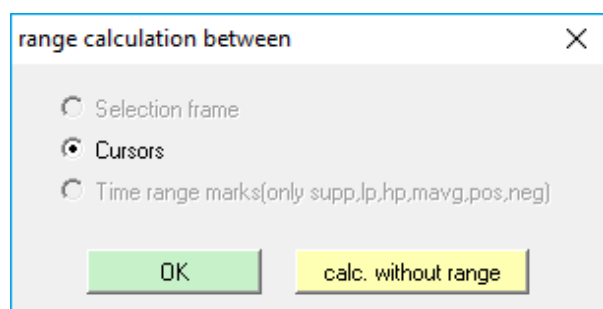
You can select signal ranges for calculations by setting two cursors

Calculation with a signal: (Applies to one or more signals)

To define a range, create two cursors in analysis view and place them as borders of the desired range.



The calculation range is indicated by the two cursors. To apply a calculation, choose a function on the calculator.



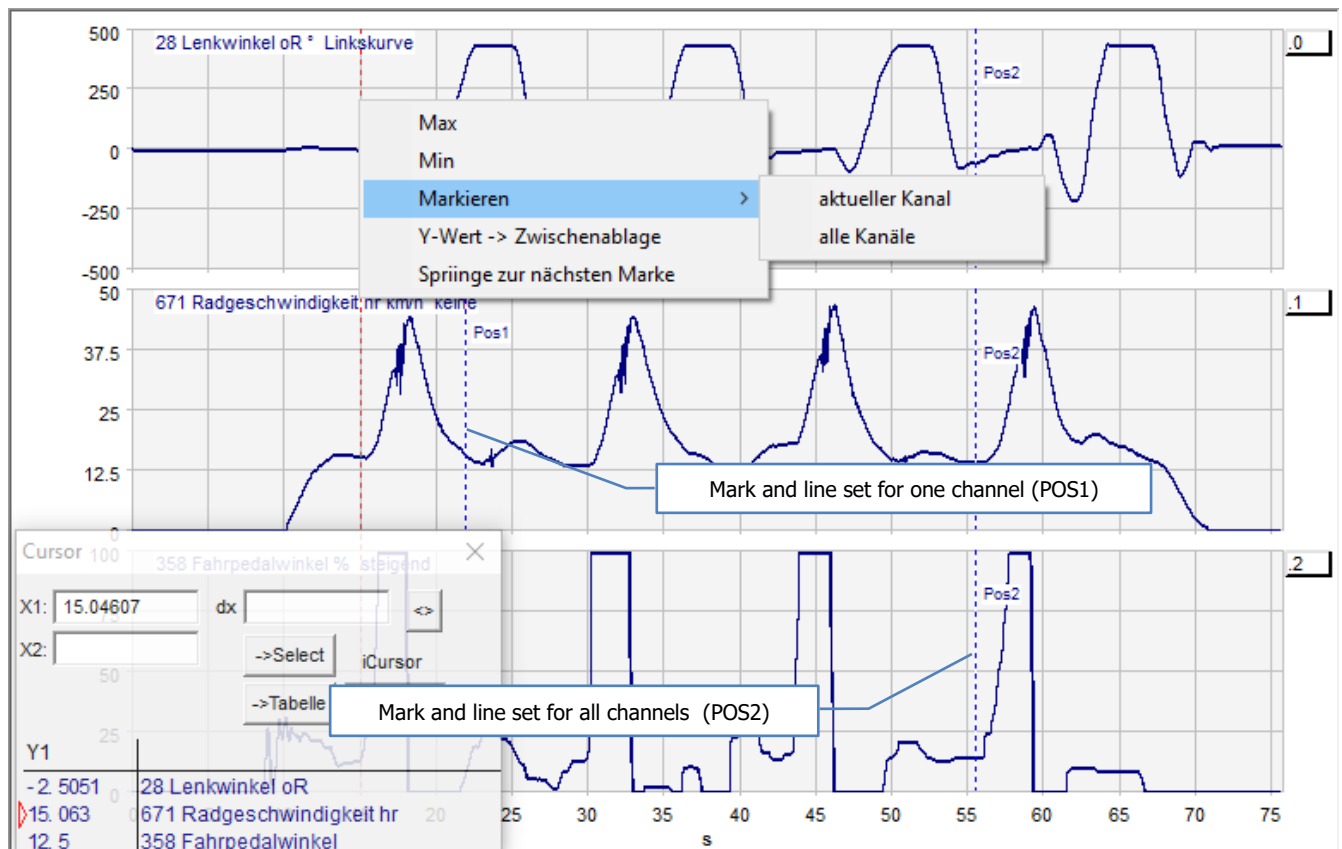
Click <OK>

To calculate the whole signal choose "Calc. without range".

Note: If the dialogue does not appear, the selected function is not able to handle range limited inputs. The whole signal will be calculated. The functions that are capable of calculating with range limited inputs are listed in the chapter "calculations with selection frames".

Set marks and position with cursor

To set a mark or position, place a cursor on the spot you want to mark. Right click on the red cursor line. A context menu appears with several options:



Max / Min:

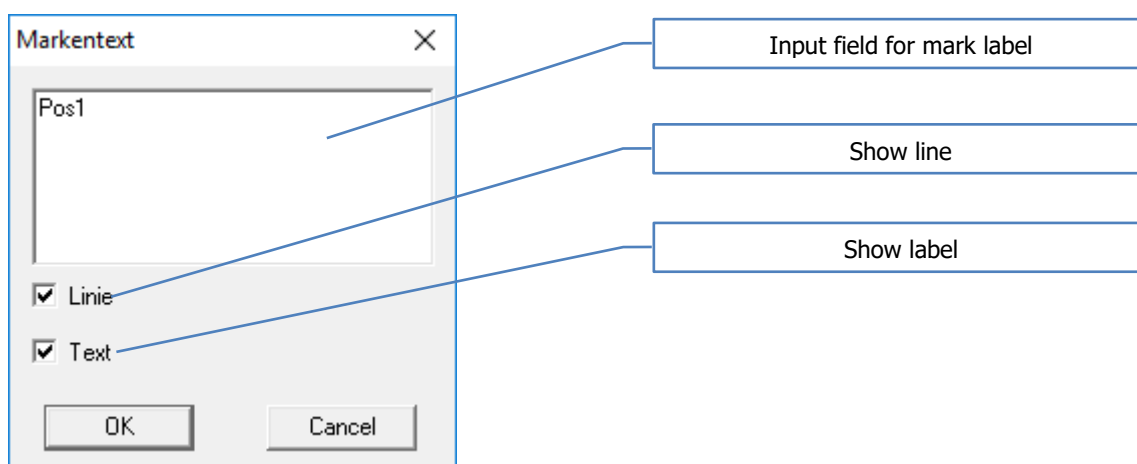
Places the cursor at the minimum /maximum of the signal.

Mark:

Creates a mark at the cursor position.

Choose between "current channel" to create the mark in a single channel and "all channels" to create a mark in all channels.

When the mark is set this dialogue appears:



Enter all values (or none). Close the dialogue box with <OK>.

Note:

All marks are stored in the EWD document. In the case of an "Export to E.d.a.s.Win", all marks will be present in the exported dataset.

Y-Value -> clipboard:

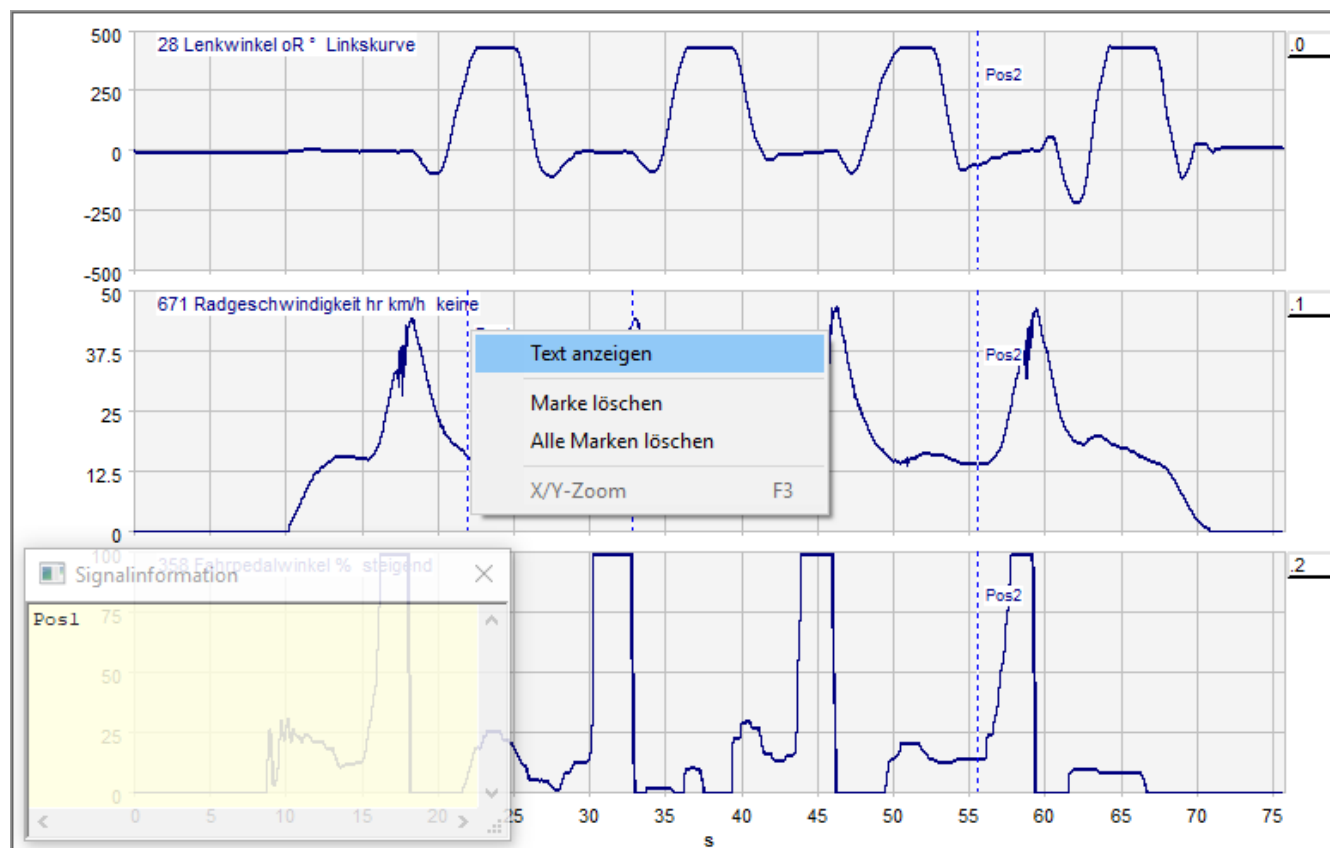
Copies the actual **Y- Value** to the clipboard.

Move to next mark

The cursor jumps to the next mark.

Show text to mark:

If the text checkbox in the mark dialogue is not active but a text has been entered, the text can be viewed by right clicking on the mark and choosing "Show text". The text will be displayed in a separate frame.

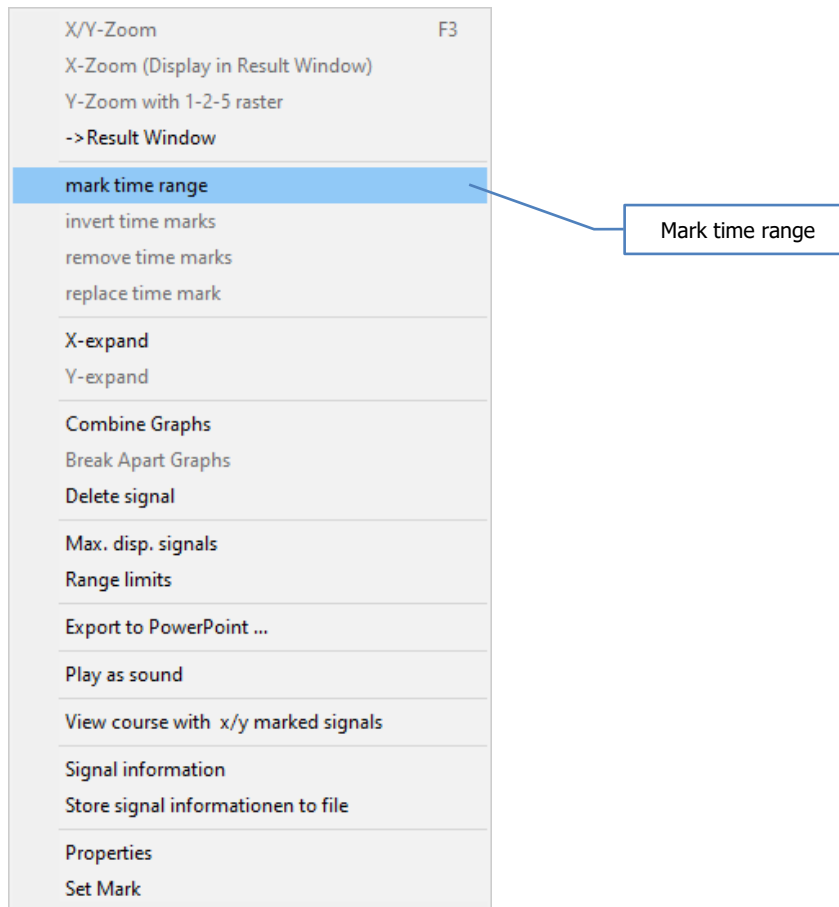


Calculate with time range marker

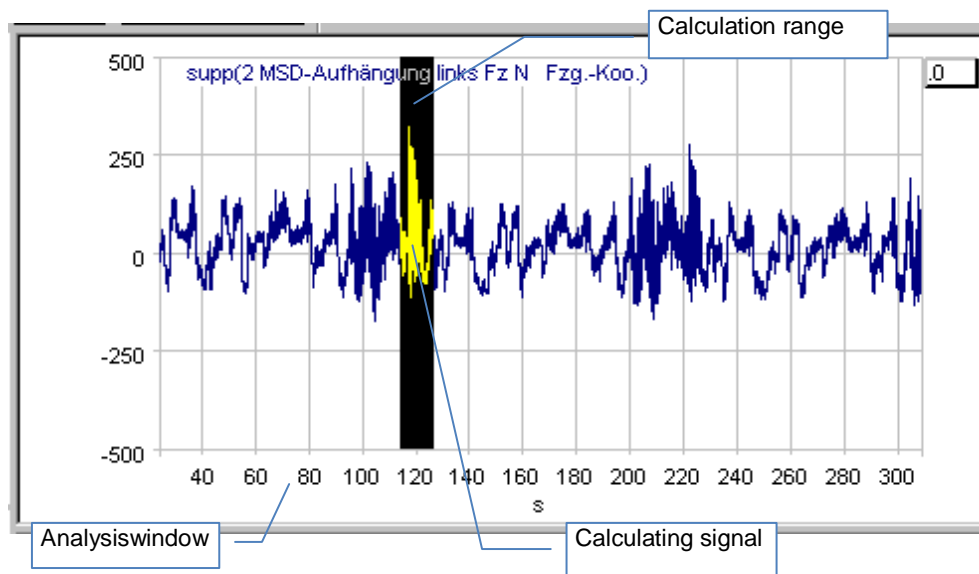
By setting range marks in the analysis view, certain parts of one or more signals can be processed using the calculator or further functions.

Calculations with time range marks: (single and multiple signals)

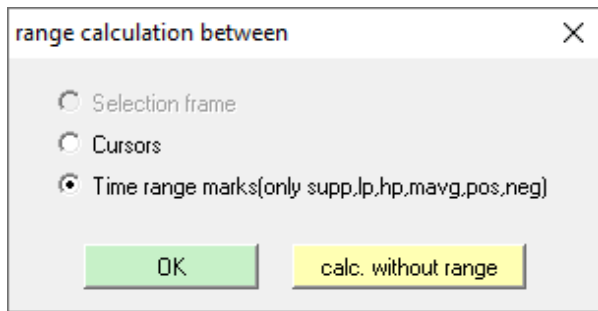
Create a selection frame and right click in it. The following context menu appears



Choose mark time range



The range to be calculated is dyed black. Enter the desired arithmetic function on the analysis calculator. Currently only <SUPP>, <LP>, <HP>, <MAVG>, <POS> and <NEG> functions support time range marks.



Note: If the dialogue does not appear, the selected function is not able to handle time range limited inputs. The whole signal will be calculated. The functions that are capable of calculating with range limited inputs are listed in the chapter "calculations with selection frames".

Invert time marks:

Right click into the analysis window, and choose invert time marks. The remaining signal is dyed black and can be calculated.

Copy and cut from signal ranges

Copy:

In the analysis window, select the signal range which should be copied, with a selection frame. Place a cursor at the spot you want to insert the copied part of the signal

Click <Copy> on the Analysis calculator. The copied signal part will be inserted right beside the cursor just after clicking <Copy>. It will replace as many samples of the original signal as it has.

Important: The inserted signal part replaces as many samples as it has just right beside the cursor.

Cut:

Select the signal range that should be cut by placing a selection frame or setting two cursors in the analysis view.

Click <Cut> on the Analysis calculator. The signal range will be cut of the signal. A cut signal snipped cannot be inserted.

Insert: (Ins)

The insert function copies a signal part defined by a selection frame and inserts it at the cursor position. Unlike the copy function, insert does not overwrite existing values. The inserted samples are placed in between the first two samples existing right beside the cursor position.

To insert a signal define a signal part and click <Ins> on the calculator.

Edit channel names

To edit the signal name, left click on the signal name when the mouse pointer changed into the ABC symbol.

Enter new name and confirm with **<OK>** .

For further information check "Changing signal properties"

Changing signal properties

To access the signal properties dialogue click on the channel name when the cursor turns to an "ABC" symbol, or click right inside the channel diagram and select "Properties"

The **Signal Properties** dialog box is used to configure the Y-axis scale and legend information for a signal. It contains the following sections and fields:

- Y-Axis scale:**
 - Max:** 1.0 (Top and bottom limit for Y-axis scale)
 - Min:** -1.0 (Top and bottom limit for Y-axis scale)
 - Divisions:** 4 (Number of Y-axis divisions)
 - Bar graph zero:** 0 (Ground level for bar graphs)
 - Scale Mode:** Radio buttons for Entered, Auto.Min / Max, Auto. 1-2-5 (selected), and Dataset.
 - Entered:** Use manually set limits
 - Auto.Min / Max:** Y-axis adapts to minimum and maximum values
 - Auto. 1-2-5:** Y-axis adjusts to a 1-2-5-sceme
 - Dataset:** Y-axis scale is read from the dataset (acquisition range).
 - Auto zoom:** Checked checkbox (Y-axis adapts to actual signal values if the channel is magnified. Only available when Y-axis scale is "Auto Min/Max" or "Auto 1-2-3" mode)
- Legend control:**
 - Show:** Checked checkbox
 - Copy from dataset:** Button
 - Mar:** 1 (Gets headline information from the data set)
 - Name:** F_ax_QJ211_BU1 (Input field for headline: Sensor location number)
 - Unit:** V (Input field for headline: Name, Unit, Polarity)
 - Polarity:** (Input field for headline: Name, Unit, Polarity)
 - Legend Type:** Radio buttons for Calculations, Signal name, and User (selected).
 - Invert Pol.:** Unchecked checkbox (Displays - Calculation steps, - Data set information, - Manual information In the headline)
- Buttons:** Ok, Cancel

After editing the channel properties leave the dialogue by clicking <Ok>. The changes will immediately become effective.

Manually set top and bottom limit for Y-axis scale

If the Y-axis scale is set to "Entered" the number of fraction digits can be entered manually.

Example:

Enter Value: Max: 10; Min: -10 → **No** fraction digits

Enter Value: Max: 10.00; Min: -10.00 → **Two** fraction digits

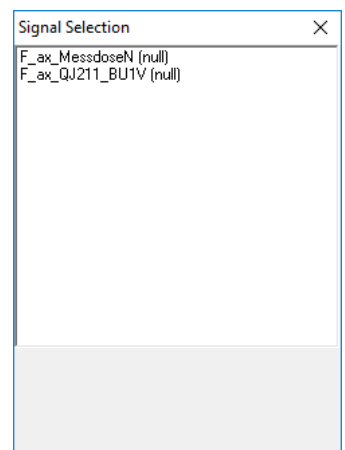
Note: If marks are set in the analysis window, the settings will apply to all marked channels.

Change properties of overlaid signals:

If two or more channels are overlaid (combined), a channel selection dialogue will show up prior to the "Signal Properties" dialogue.

Select the signal you want to change the properties of in the signal selection window.

When a signal is selected the "Signal Properties" dialogue appears.



X- / Y-Axis adjust

See "Changing signal properties"

Changing analysis window properties

To change the general properties of the analysis view, right click beside any diagram in the analysis window and choose "Properties".

The screenshot shows the 'Analysis Window Properties' dialog box with the following settings and callouts:

- Channel representation:** Overlaid, Cascade, Campbell. Callout: "Channel representation: Overlaid Cascade Campbell".
- Display mode:** Line Diagram. Callout: "Representation as line or bar diagram".
- Single color for all Signals:** ☐. Callout: "Draw all channels with the same color".
- Single Y-Axis scale:** ☐. Callout: "Use the same Y-axis scaling for all channels".
- Mark each data point:** ☒. Callout: "Mark each sample at extreme magnification".
- Y-log:** ☐. Callout: "Logarithmic Y-axis scale".
- Offset of overlaid digital channels:** 2. Callout: "X-axis scale when 'User' is selected".
- Fill area under digital high:** ☒. Callout: "Time resolution of the X-axis".
- Gitter:** ☒. Callout: "X-axis label if 'User' is active".
- X-Axis:** from: 0, to: 1.0. Callout: "Logarithmic X-axis scale".
- Grid spacing:** 1. Callout: "Time axis representation: Sec relative: Zero to end of signal in seconds HMS relative: Zero to end of signal in hour, minute and second (HMS) HMS absolute: Time of day from start to end in hour, minute and second (HMS)".
- 3D Parameters:** X-Angle: 10, Y-Angle: 45. Callout: "Angle between axis in Cascade diagram".
- X-Log:** ☐. Callout: "X-axis label if 'User' is active".

After editing the analysis window properties, leave the dialogue by clicking <Ok>. All changes will immediately take effect.

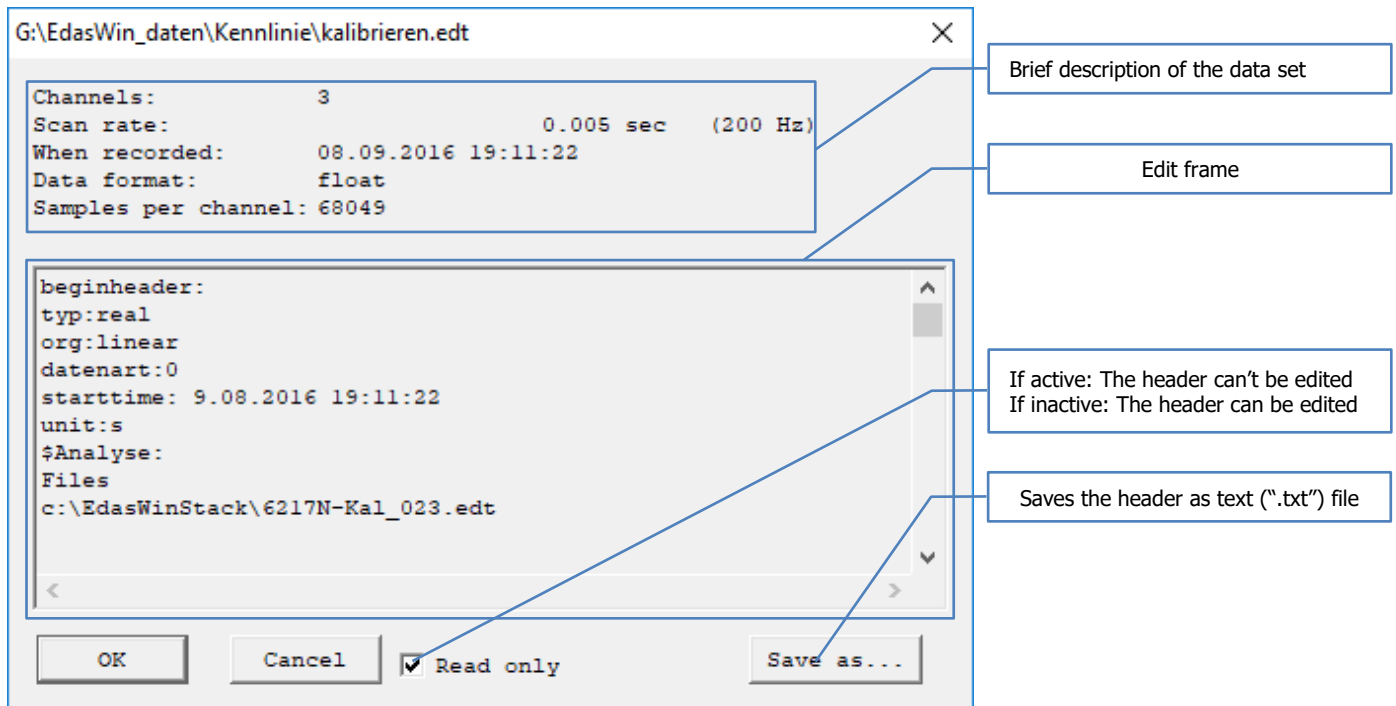
Measurement boundaries

To ease the optimal Y-axis adjustment, it is possible to show the physical measurement boundaries in the channel diagram. To do so, right click anywhere on the analysis window and choose "Range limits".

The measurement boundaries will be drawn as dotted line in each diagram. Displaying measurement boundaries is only supported for uncalculated channels. If you do calculations on a channel, the measurement boundaries will disappear in the representation of the result.

File header editor

To check the file header of a dataset, right click on the name of the data set you want to check the header of in the signal selection window. Choose "Show data header".

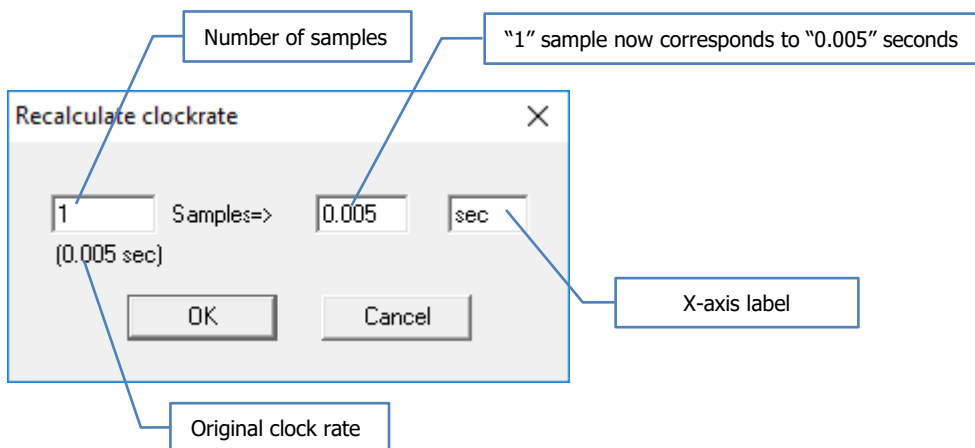


To edit the file header uncheck the "Read only" checkbox. To save the changes click <Ok>. To export the file header to a text (".txt") file click "Save as..."

Clock rate conversion

Changing/converting/recalculating the clock rate of a data set:

Right click on the name of the data set you want to recalculate the clock rate of in the signal selection window. Choose "Calculate sample rate".

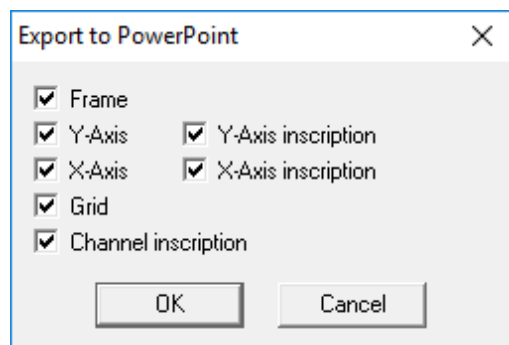


Note:

After converting the clock rate, a new keyword "NewClkrate" will be added to the file header, registering the new clock rate. The original "Clk" keyword and the corresponding clock rate are kept in the file header.

Export to PowerPoint

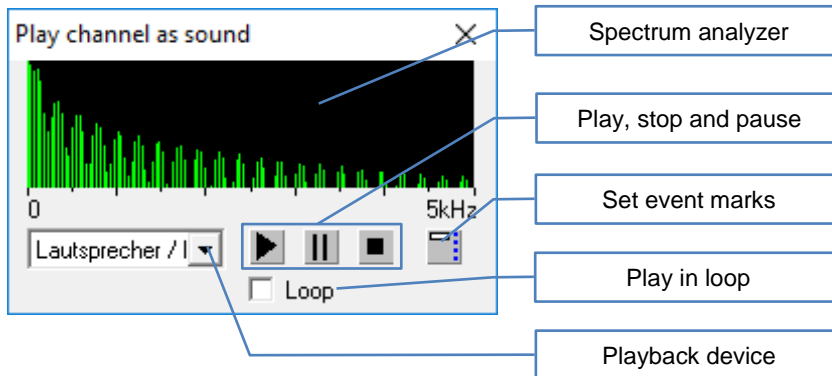
The analysis view can be exported for further use in PowerPoint or any other bitmap capable software. To do so, right click anywhere on the analysis view and choose "Export to PowerPoint".



Select the export properties on the appearing dialogue and click <Ok>. The created bitmap will be stored on the clipboard and can be inserted in any software that is able to handle bitmaps. To insert the bitmap, use the <Ctrl> + <V> shortcut.

Play as sound

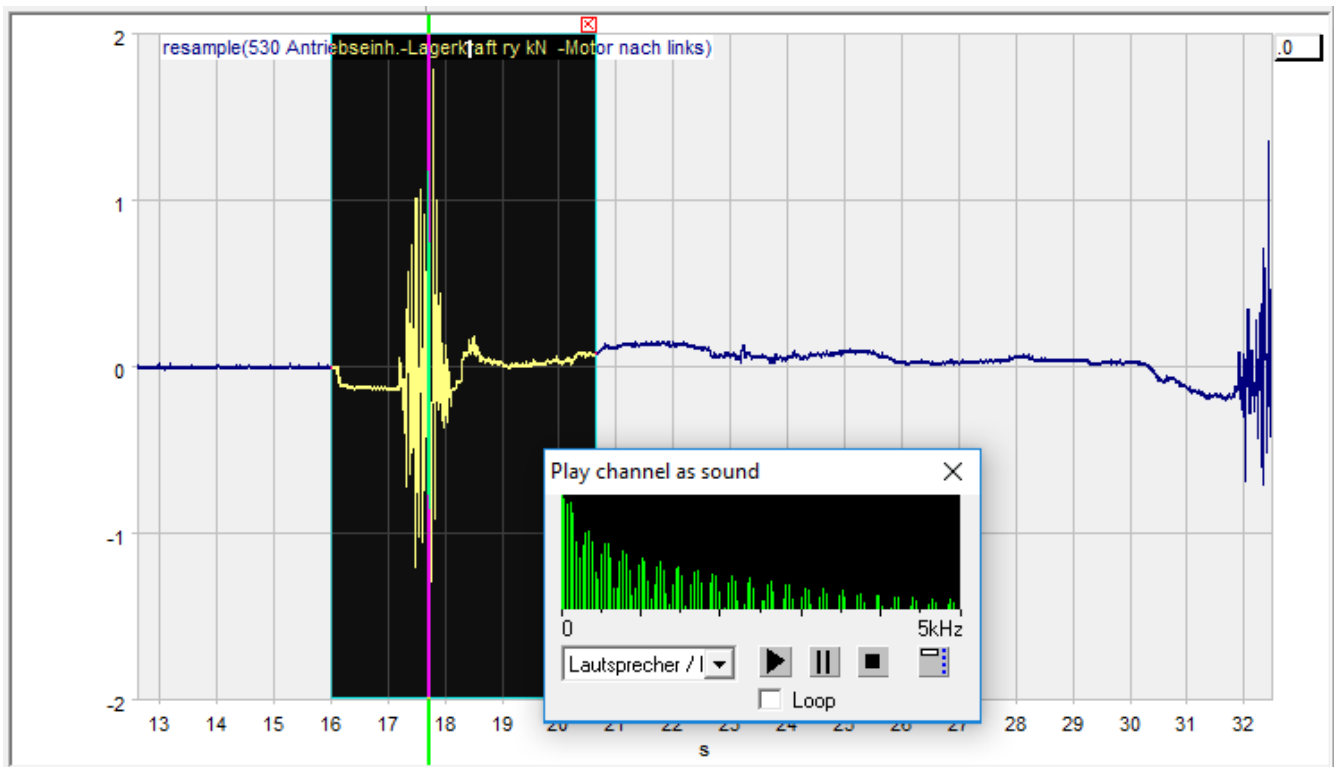
To playback a channel as sound, the channel has to be loaded to the analysis view. Right click on the channel and choose "Play as sound"



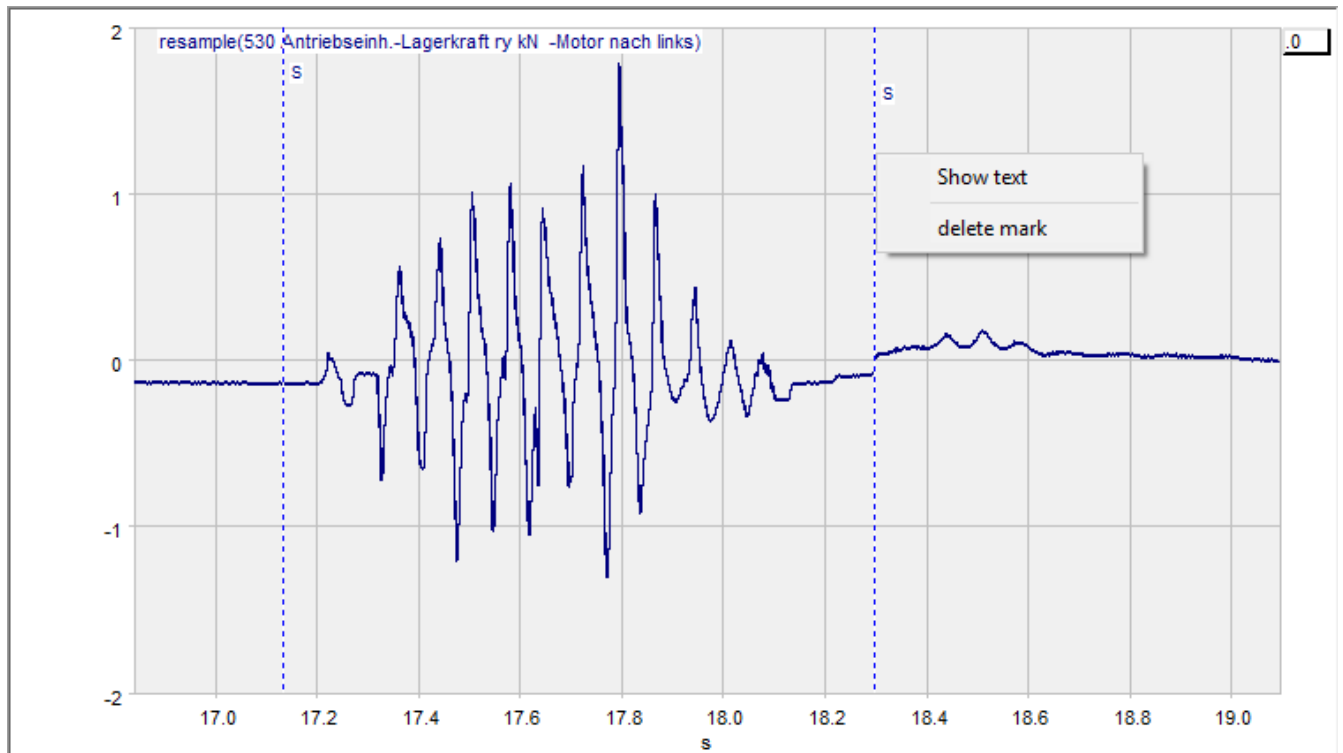
Start the playback by clicking on the play button. A cursor appears in the channel diagram to mark the actually played back samples.

The spectrum of the played back signal is represented online in the dialogue.

By marking a time range in the playback channel diagram, signal parts can be selected for playback



The marks that were set during the playback will appear as blue dotted lines with an "S" label.



To view the text corresponding to a mark or delete a mark, right click on it and choose between "Show text" and "delete mark".

Key Assignment Analysis Window

Cursor ->	Move selection frame 1/10 to the right or, if zoom is in effect, move visible screen to the right by 1/10
Cursor <-	Move selection frame 1/10 to the left or, if zoom is in effect, move visible screen to the left by 1/10
Shift+Cursor ->	Move selection frame to the right or, if zoom is in effect, move visible screen one page to the right
Shift+Cursor <-	Move selection frame to the left or, if zoom is in effect, move visible screen one page to the left
F3	Enlarge selection frame in the Analysis Window
F6	Toggle between analysis screen and layout screen
F7	Create table for Analysis Window
F8	Toggle Analysis Window size
<PageDn>	Scroll down page wise if fewer lines are displayed than actually existing
<PageUp>	Scroll up page wise if fewer lines are displayed than actually existing
<CursorDn>	Scroll down line wise if fewer lines are displayed than actually existing
<CursorUp>	Scroll up line wise if fewer lines are displayed than actually existing

Analysis Script / Result window

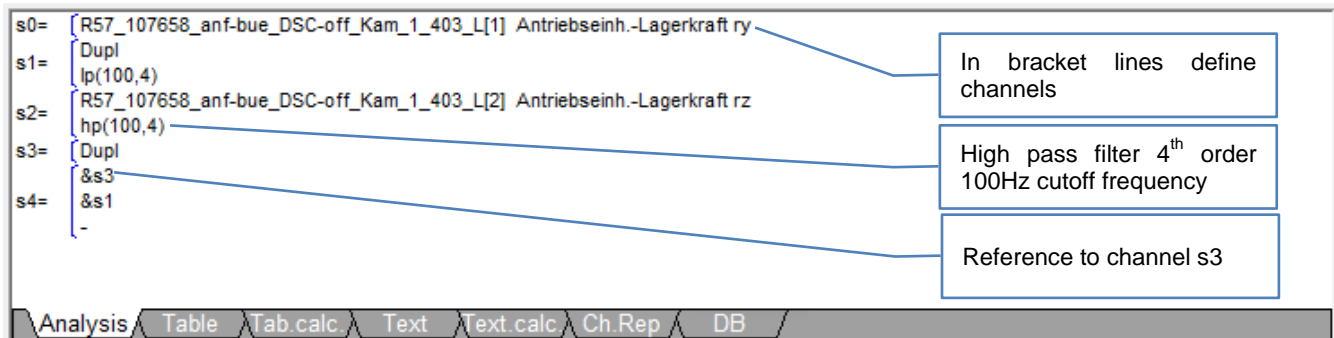
Result window

The result window is similar to the Analysis Window. It is automatically generated by zooming into the result window or by analysis such as FFT, PSD and octave analysis.

Analysis script window

The analysis script window holds all the calculations done on all channels of a single analysis. So it describes the origin of the displayed signals and is useful to analyze and tune the steps done in a calculation.

If you switch to another analysis via the analysis selection window, the analysis script window will adapt to the other analysis.



To select a line for editing click on it. When the line is highlighted, you can edit its content.

To delete the highlighted line use the button on the calculator or the key on your keyboard.

To insert an empty line above the highlighted line use the <Ins> button on the calculator or the <ins> key on your keyboard.

To substitute a channel click on the identifier of the channel you want to substitute, then double click on the channel you want to use instead

To change a calculation instruction, click on the instruction you want to change, then choose the replacing calculation instruction from the calculator or the analysis menu.

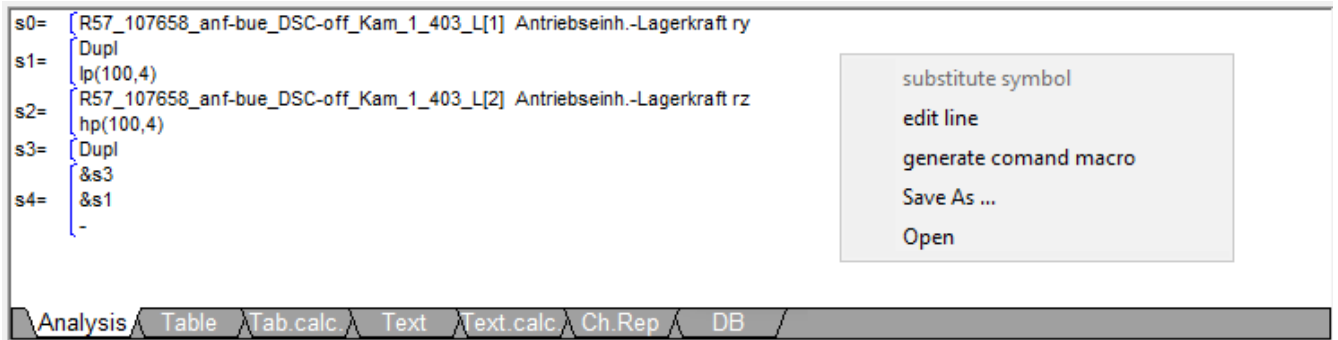
Copying instructions is possible by the well known windows short cuts. Select the lines to copy by clicking on it (hold shift to select multiple lines). Put the lines to the clipboard with the <Ctrl> + <C> shortcut.

To insert the content of the clipboard use the <Ctrl> + <V> shortcut.

By double clicking on any line in the analysis script window you can manually edit its content. This is useful if you want to quickly change the cutoff frequency of a filter for example.

Analysis Script / Result window

Right click into result window:



Substitute symbols:	Substitute the measuring location, name and number
Edit line:	Opens the edit dialog
Generate command macro:	Opens the macro dialog
Save as:	Saves the analysis script as a .txt file
Open:	Opens an analysis script file

Analysis script highlight and copy:

To highlight a single line, click on it. To highlight multiple lines, click on one line first, then hold the <shift> key on your keyboard while clicking on the other lines

The highlighted lines may be copied to the clipboard by the <Ctrl>+<C> shortcut. The clipboards content can be pasted by the <Shift>+<V> shortcut. If no lines are highlighted while pasting, the content will be appended to the list of existing commands. If there are highlighted lines while pasting, they will be replaced by the content of the clipboard.

Key Assignment Analysis Script Window

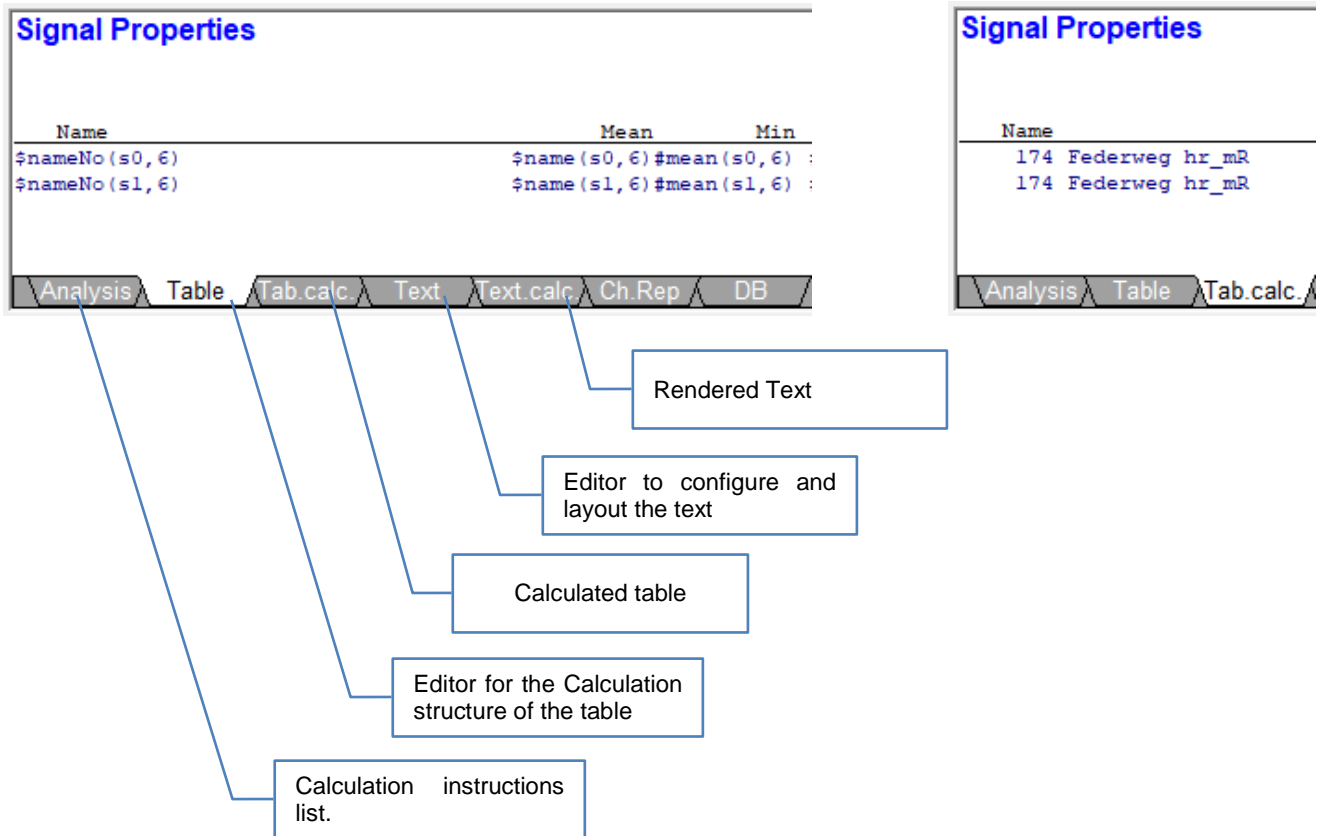
<Ctrl>+<C>	Copy highlighted lines to the clipboard
<Ctrl>+<V>	Add lines from the clipboard to analysis script or replace highlighted lines.
<Ins>	Insert blank line above highlighted line
	Delete highlighted lines
<PageDn>	Scroll down page wise if fewer lines are displayed than actually existing
<PageUp>	Scroll up page wise if fewer lines are displayed than actually existing
<CursorDn>	Scroll down line wise if fewer lines are displayed than actually existing
<CursorUp>	Scroll up line wise if fewer lines are displayed than actually existing

Create analysis text: See Create analysis text

Create analysis table: See Create analysis table

Create analysis descriptions

In EdasWin an analysis description is a set of user definable tables and texts with plenty of evaluation features.



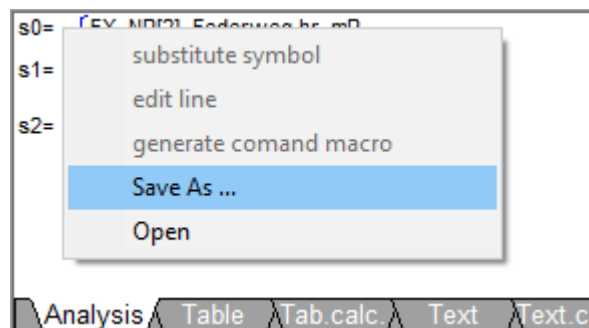
The table can be created automatically by using the table button on the menu bar, the <F7> key and the table button on the cursor dialogue. The descriptive files for the standard table layouts are located in the EdasWin installation folder and may be adapted by the user. The general table description file is named "E_Zltab.rtf" and the cursor table description file is named "E_Cursor.rtf".

Store and restore analysis scripts

This function serves for documentation purposes. It stores the entire analysis script as text (.txt) file. Stored files can be edited with any txt supporting editor

Store Analysis Scripts:

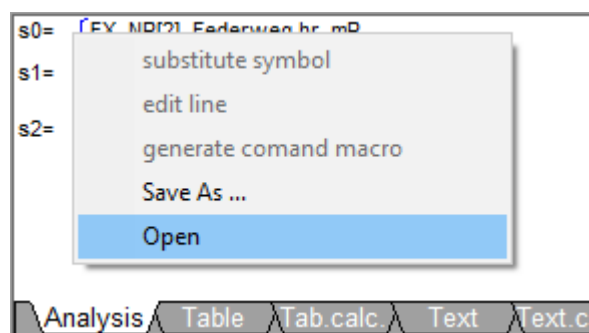
Right click into the analysis script window.



Choose "Save As ..." from the popup menu. Enter file name and path and confirm with <OK>.

Restore Analysis Scripts:

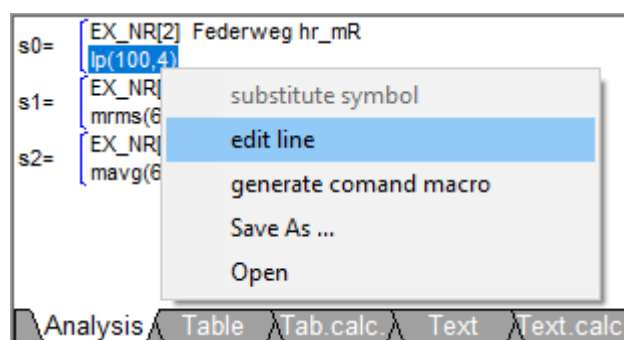
Right click into the analysis script window.



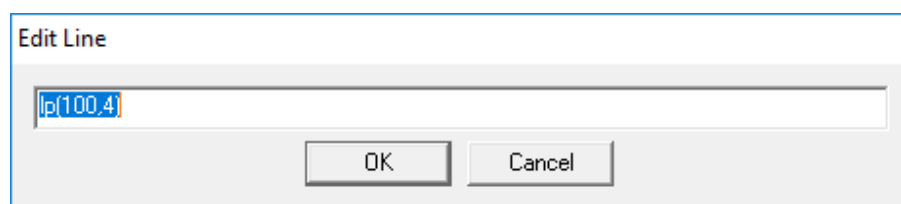
Choose "Open" from the popup menu. Select file and confirm with <OK>.

Edit line

Click on the line you want to edit, then right click within the analysis script window and choose "edit line" from the appearing context menu. Alternatively double click on the line you want to edit.



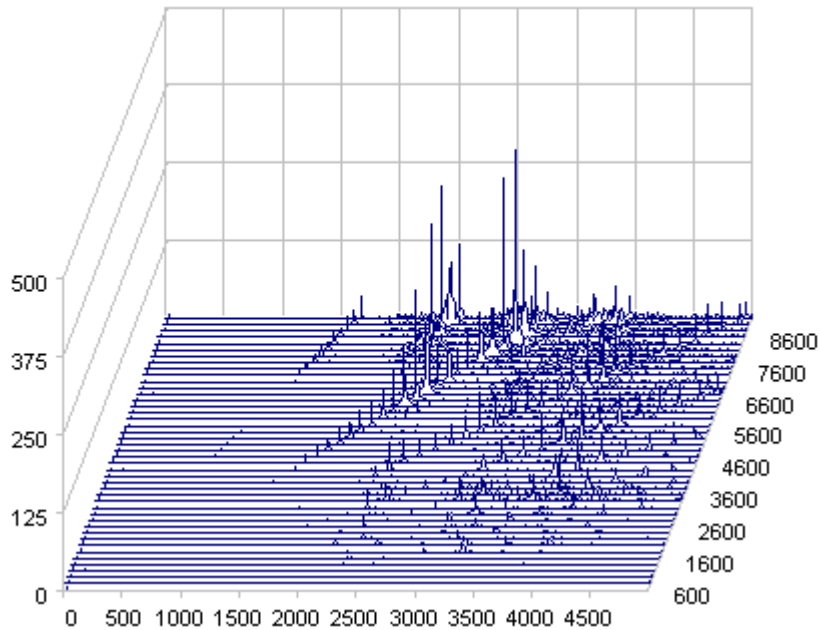
The line can be edited using the appearing editor



Confirm with **<OK>**.

Cascade diagram

The cascade diagram serves to represent multiple signals (i.e. from order analysis, FFT, or other) in a clear three-dimensional way.



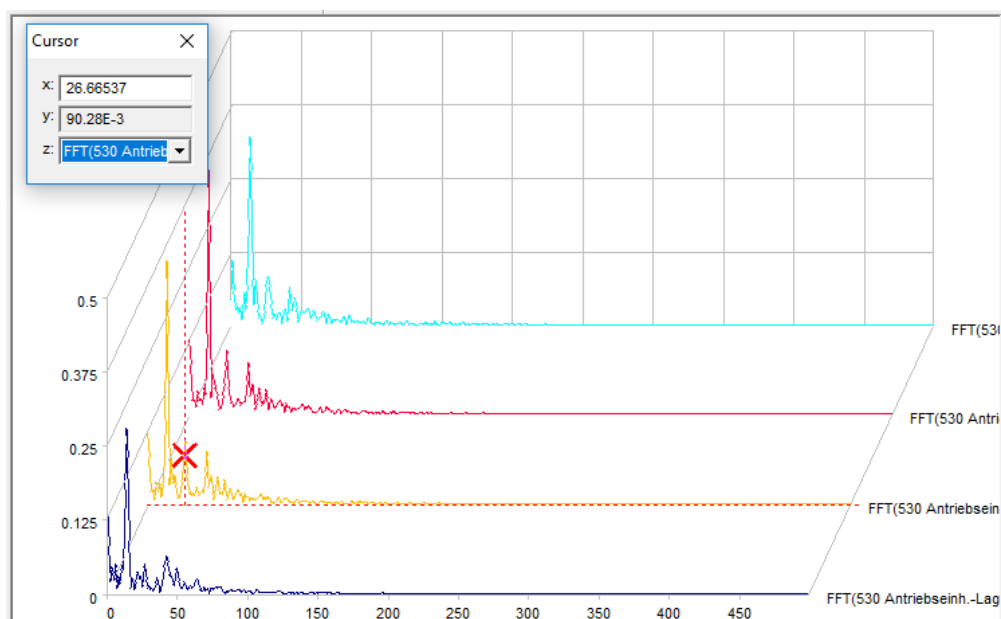
Generating a cascade diagram:

The cascade diagram representation can be activated by right clicking beside any diagram but within the analysis or result window, choosing "Properties" from the appearing context menu and selecting the "Cascade" display mode.

Beside the general representation style, you can adjust the cascade diagram to fit your needs in the properties dialogue (more on this in chapter "Changing analysis window properties").

Cursor in the cascade diagram

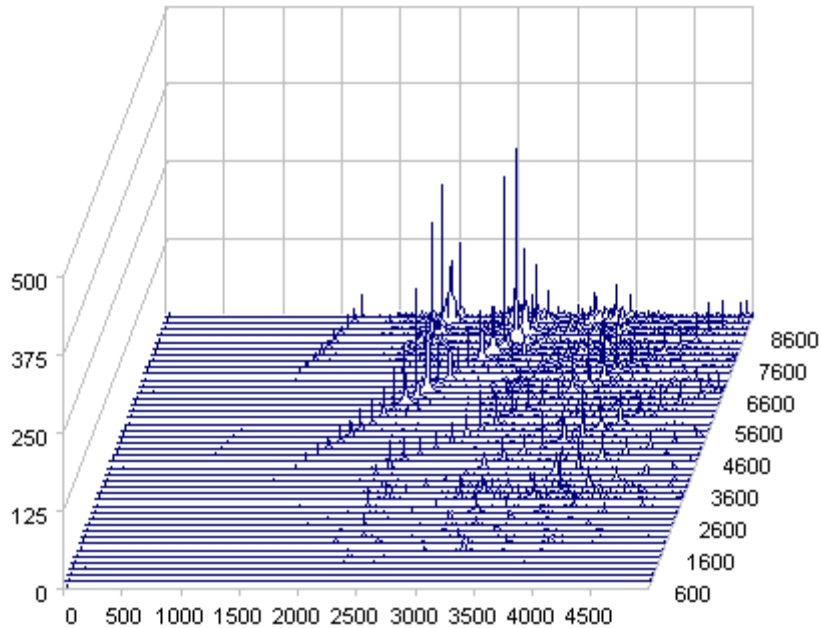
Cursors are created, just like in any other representation, by pulling it in from the left side of the diagram. The only difference here is that you can select the "cursored" signal using the dropdown field in the "Z" row of the cursor dialogue.



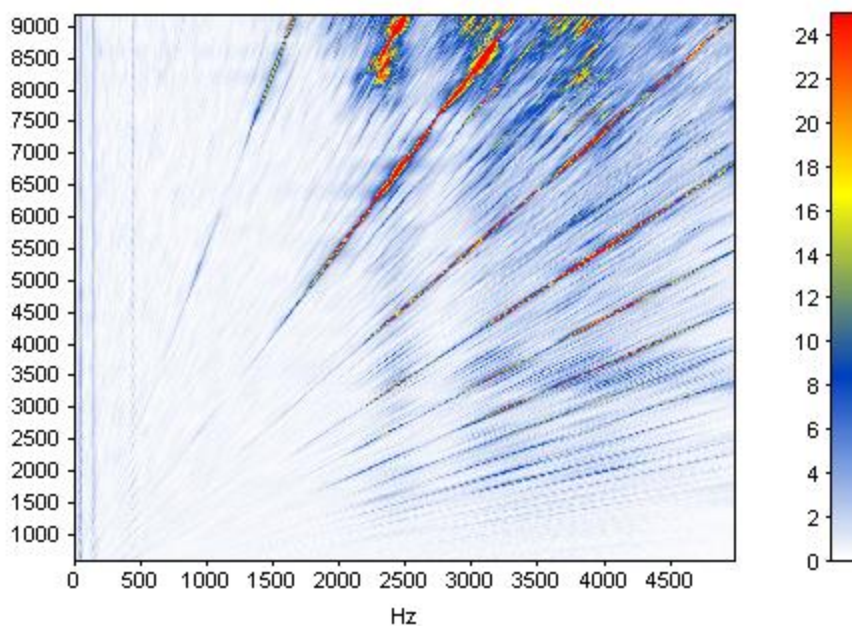
Campbell diagram

The Campbell diagram is a two dimensional mapping, of a three dimensional diagram, where the X-coordinate is represented by a range of colors. It is derived from a Cascade diagram generated before.

Cascade diagram (source):



Generated Campbell diagram:

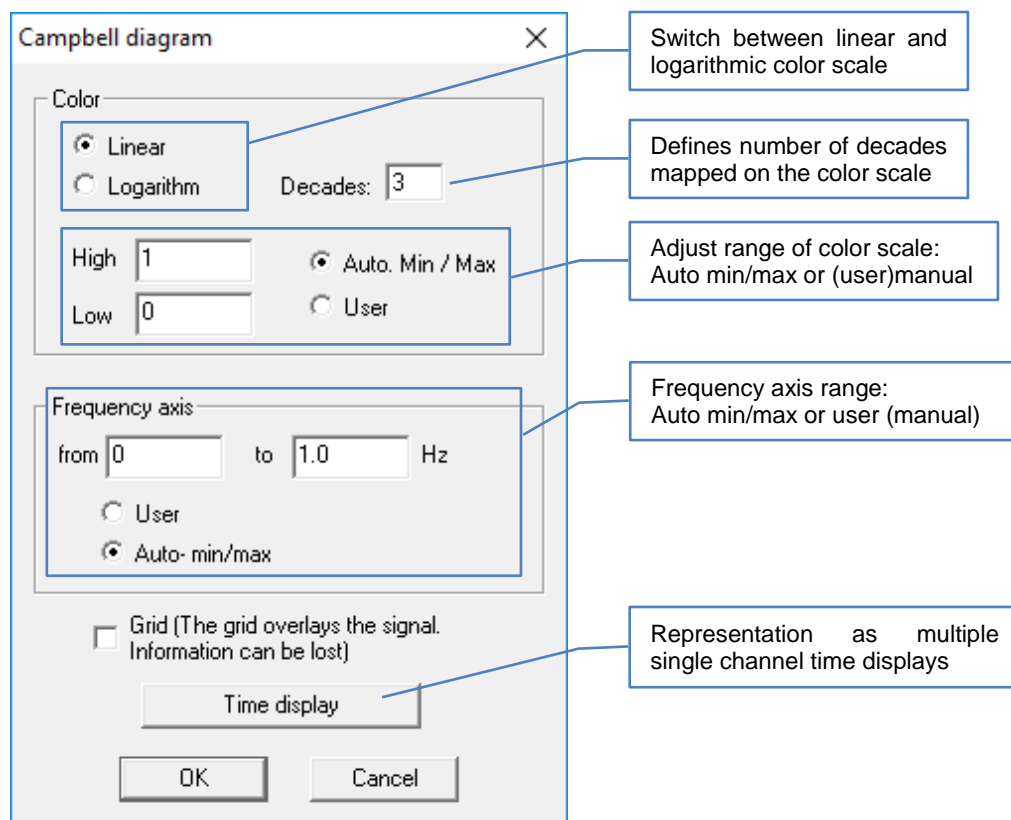


As the Campbell diagram is based on a cascade diagram there has to be whether an order analysis or a row FFT prior to create a Campbell diagram.

As soon as a cascade diagram has been created, right click left beside the cascade diagram within the analysis window. Then choose "Properties" from the appearing context menu. Activate the "Campbell" representation in the "Display mode" section of the appearing dialogue. Confirm with <Ok>

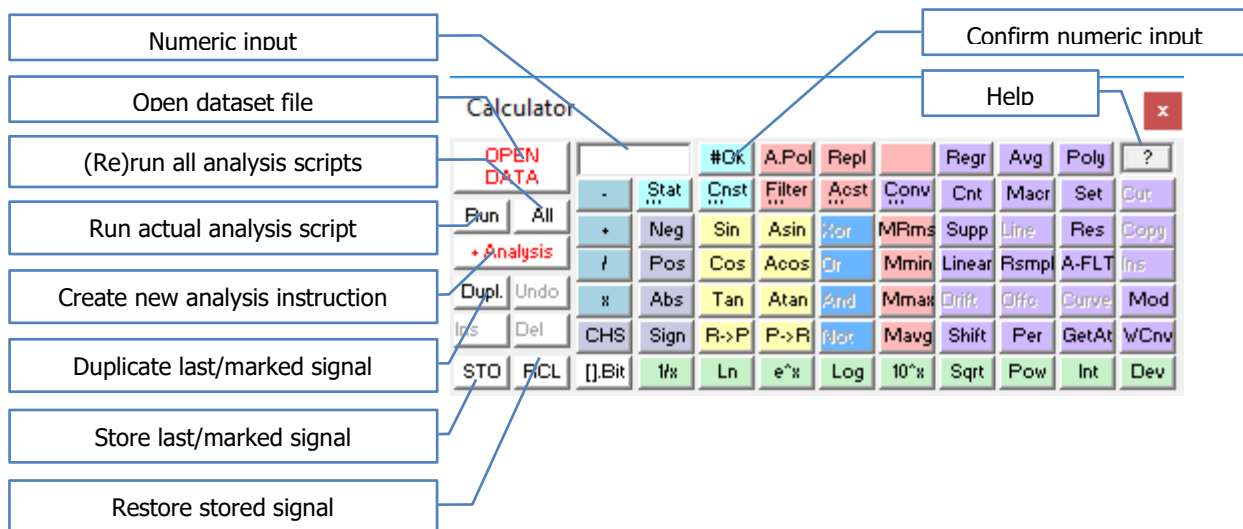
Note: It is possible to create a Campbell diagram even if there are only two time displays in the active analysis but most commonly the result will be nonsense.

To change the properties from the Campbell diagram, right click left beside the diagram and choose "Properties" from the appearing context menu.



Enter the required parameters and confirm with <OK>.

Analysis Calculator



Control functions

OPEN DATA Opens dialogue window to open a data set.

Run	Process (or re-process) currently active analysis. Graphical or Tabular.
-----	--

All Process (or re-process) all analyses. Graphical or Tabular.

- + Analysis Creates a new analysis plot.

Dupl. Creates a duplicate of the last/marked signal in the analysis window.

Ins	Inserts a blank line before the line marked by clicking with the left mouse button in the analysis script window.
-----	---

Del	Deletes highlighted lines from the analysis script (highlight lines by clicking on them).
-----	---

Undo	Reverses up to 10 previous input operations.
------	--

STO Stores a result.

RCL	Recalls a stored result.
-----	--------------------------

[]Bit	Displays a selectable bit of the last channel loaded to the analysis.
--------	---

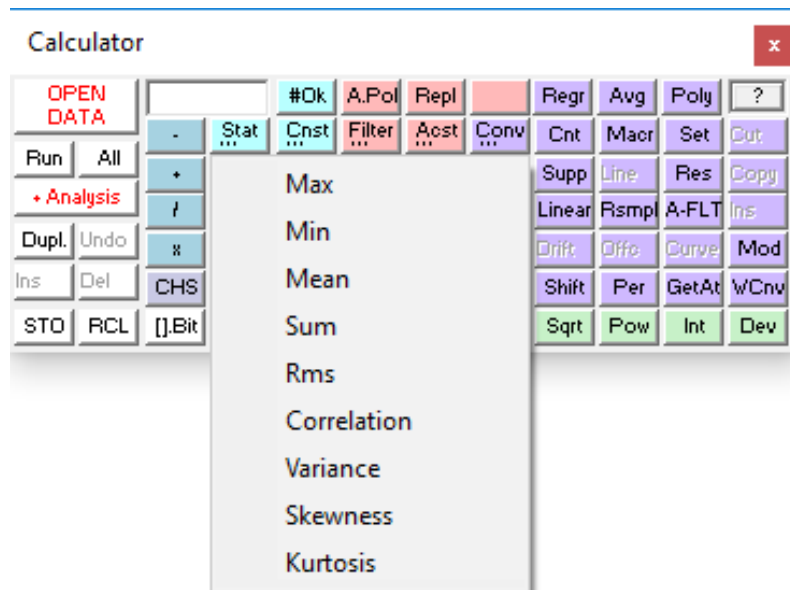
Hints:

Placing the mouse on a calculator key, gives a short description of the key function in the status bar and as yellow flag at the mouse position.

Additional dialogue boxes are displayed for many of the Analysis Calculator functions.

Statistical functions

Button Stat...

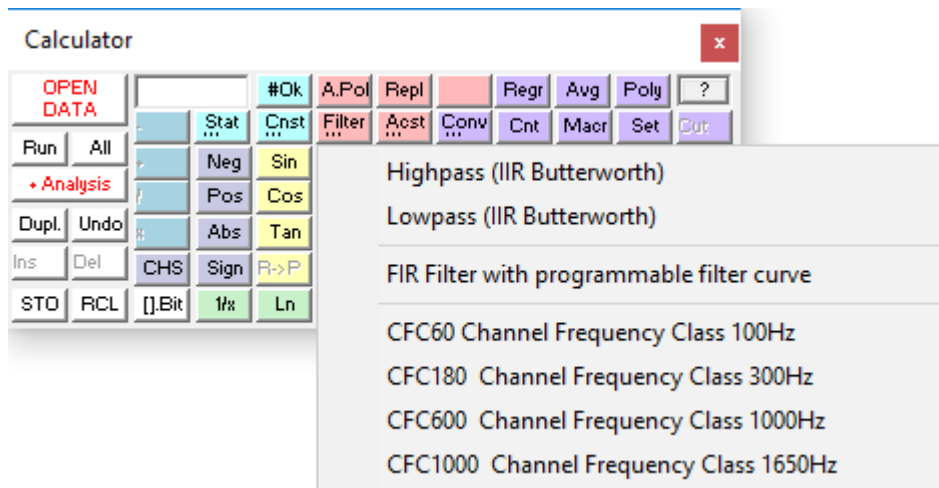


Max	Determines the highest value within each marked signal and replaces the signal with this value.
Min	Determines the lowest value within each marked signal and replaces the signal with this value.
Mean	Calculates the mean of all marked signals and replaces the signal with this value.
Sum	Calculates the summery value of all marked signals and replaces the signal with this value.
Rms	Calculates the rms value of all marked signals and replaces the signal with this value.
Correlation	Correlation
Variance:	Describes how far values lie from the mean
Skewness:	Measure of the asymmetry of the probability distribution of a real-valued random variable.
Kurtosis:	Measure of the peakedness of the probability distribution of a real-valued random variable

#Ok Accepts the number entered in the Numeric Entry Field and transfers it to the Analysis Window.

Filters and smoothing functions

Button Filter...



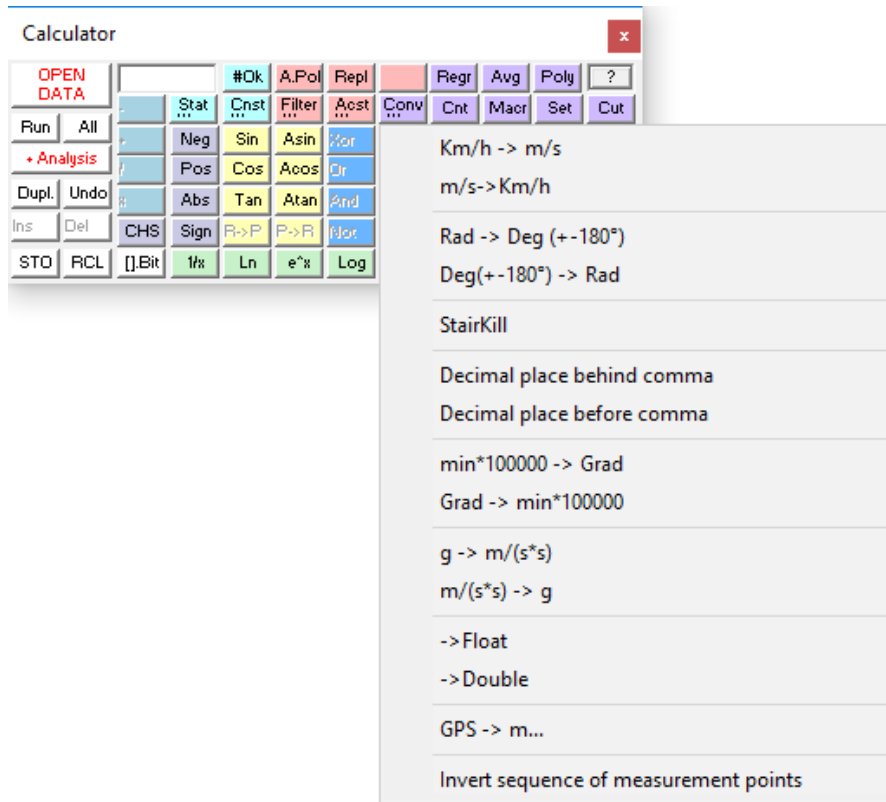
Highpass	Opens the Highpass Filter dialogue window with programmable order and cutoff frequency (IIR Butterworth functions)
Lowpass	Opens the Low-pass Filter dialogue window with programmable order and cutoff frequency (IIR Butterworth functions)
FIR Filter	FIR Filter with programmable filter curve
CFC60	Channel Frequency Class 100Hz
CFC180	Channel Frequency Class 300Hz
CFC600	Channel Frequency Class 1000Hz
CFC1000	Channel Frequency Class 1650Hz

Mavg	Opens Moving Average dialogue window with programmable time constant
Mmax	Opens signal upper envelope function dialogue window with programmable time constant.
Mmin	Opens signal lower envelope function dialogue window with programmable time constant.
MRms	Moving RMS with programmable time constant
A.Pol	Auto polarity function. If sign at first position of field polarity is negative, the signal will be multiplied with -1
Repl	Replaces the attributes channel name, sensor location number, physical unit, logical and physical channel number, measurement boundaries and sample rate of the last channel presented in the analysis view by the corresponding attributes of the second to last visible channel in the analysis view

Pos	Cuts off all negative signal elements – sets all negative values to zero (0).
Neg	Cuts off all positive signal elements – sets all positive values to zero (0)

Offc	Performs offset correction on the selected data set.
Line	Replaces data within a selection frame with a straight line.
Rsmpl	Opens dialogue window for re sampling signals.
Drift	Opens the Drift correction dialogue window. See Drift function
Supp	Opens the Spike Suppression dialogue window-. See Supp function
Linear	Opens a linearization file (.lin) See Linear - funktion
Avg	the mean is the sum of the observations divided by the number of observations

Convert functions



km/h to m/s conversion

m/s to km/h conversion

Rad to Deg (+- 180°) conversion

Deg (+- 180°) to Rad conversion

Stairkill

Eliminates stairs of a signal, See GPS Interpolation (canintpol())

Decimal place behind comma

Decimal place before comma

Conversion Min*100000 to Grad

Conversion Grad to Min*100000

Conversion g to m/(s*s)

Conversion m/(s*s) to g

-> Float (Datasheet with short precision)

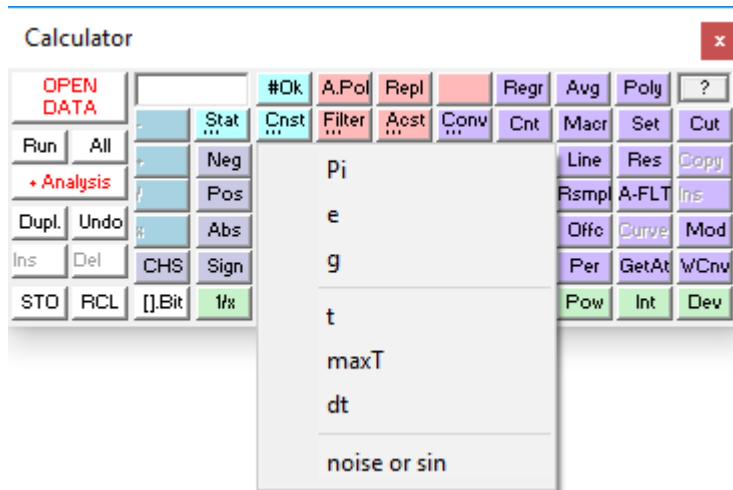
-> Double (Datasheet with double precision)

GPS -> m

Inverts sequence of measurement points

Poly	Polynominal function, See Polynomial function
Regr	Regression over time axis, See Regression
A-FLT	A-B-C weighting filter, See A,B,C weighting filter
Curve	Curve displacement, See curve displacement

Constant for signal calculation



Pi:	Circular constant
E:	Euler constant
g:	Gravitational acceleration constant
t:	Sampling times of a signal as curve
maxT:	Signal "end time"
dt:	Signal sampling rate
noise or sin	generates a channel containing a sine function or noise

Trigonometric functions

Sin	Calculates Sin(x) for all marked signals – angle in radians.
Cos	Calculates Cos(x) for all marked signals – angle in radians.
Tan	Calculates Tan(x) for all marked signals – angle in radians
ASin	Calculates Asin(x) for all marked signals – angle in radians.
ACos	Calculates Acos(x) for all marked signals – angle in radians.
ATan	Calculates Atan(x) for all marked signals – angle in radians.

Mathematical functions

R->P Converts Cartesian to Polar coordinates.

P->R Converts Polar to Cartesian coordinates.

CHS Inverts all marked signals.

Abs Calculates & displays the absolute value for all marked signals.

Sign Performs "sign" function on selected data.

Sqrt Calculates the square root of all marked signals.

1/x Calculates the inverse value of selected signals.

Log Calculates the logarithm to the base 10 of a signal.

Ln Calculates the natural logarithm of a signal

10^x Reciprocal of the logarithm to the base 10.

e^x Reciprocal of the natural logarithm

Int Integrates marked signals.

Dev Differentiates marked signals.

pow Exponential function.

Counter and timing functions

per Opens Period Function dialogue window with programmable level and hysteresis.

cnt Opens Counter Function dialogue window with programmable level and hysteresis.

Boolean functions

And Logical "And" function for digital data.

Or Logical "Or" function for digital data.

Xor Logical "exclusive Or" function for digital data.

Not Logical "Not" function for digital data.

Other functions

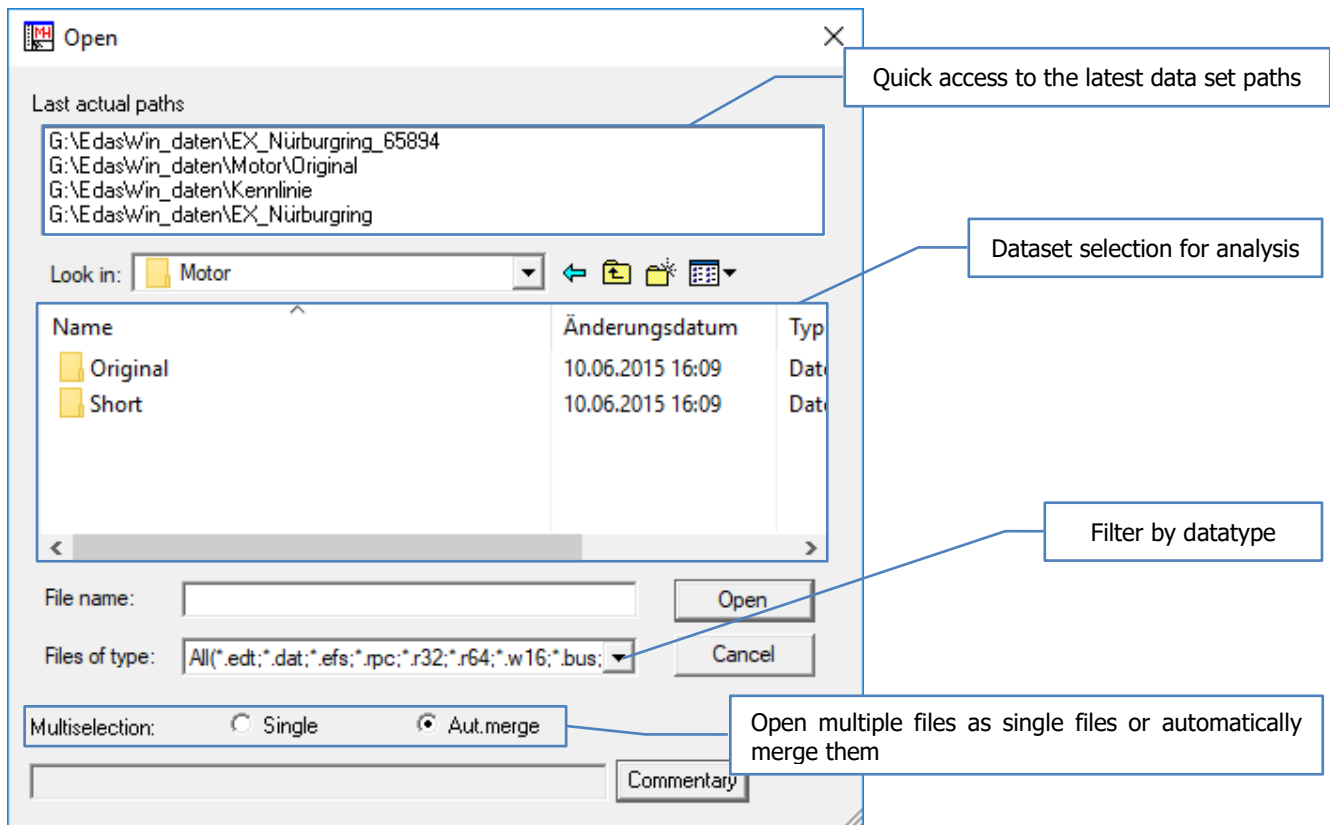
Shift	Opens the "Shift Signal Left" dialogue window to shift marked channels by a defined time. See Shift Function
Macr	Opens a macro file (.ewm) See macros
Set	Sets an amplitude range of the signal to a fixed value
Res	Changes the signal resolution
Copy	Copies a signal range (selection frame) and replace the signal range right beside a pre-defined cursor. See Copy, Cut and Insert
Cut	Cuts a signal range in selection frame or between two cursors
Ins	Insert a selected signal range (selection frame) right beside a pre-defined cursor. See Copy, Cut and Insert
GetAt	Get Y at X See Get Y at X
Mod	Modulo is a mathematical function, to separate the rest from two integers after division.
WCnv	See Wave form converter

Basic arithmetic operations

+	add
-	subtract
/	divide
*	multiply

OPEN DATA data set selection

Open the "Open" file dialogue by clicking the **<OPEN DATA>** button on the analysis calculator.



Select a file by double clicking on it. The dataset name and all contained signals will appear in the channel selection window.

To load multiple files at once, select all files to be loaded and then click <Open>. If the Multiselection is set to "Single" each dataset will be loaded separately, if the Multiselection is set to "Aut. merge" all datasets will be presented as one big dataset in EdasWin.

Data type:

E.d.a.s.Win can read different data formats directly.

EDAS / E.d.a.s.Win	(* .edt, * .dat)
RPC3	(* .rpc)
DIADAGO	(* .r32)
B&S	(* .bus)
Megsens / Megeng	(* .rsp, * .rsp1)
uMusyys	(* .raw)
DCF	(* .dcf)
ASCII	(* .txt)
mdf	(* .mdf)
IST RigSys	(* .dmd, * .tgt, * .acq)
UFF58	(* .unv)
Sound	(* .wav)
Chapter10	(* .ch10)

Choose type of data file format and click <open>.

Commentary:

The Button **<Commentary>** opens the data comment editor.

The data comment editor enables additional functionality to work on existing **.edt** data sets.

Direct reader for ASCII files:

Click on the **<OPEN DATA>** button on the analysis calculator. Choose file type "*.txt" and select the data set. The name of the **<Commentary>** button changes to **<ASCII Format>**. Click on the **<ASCII Format>** button to configure the ASCII format.

Data header editor

The data header editor enables additional functionality to work on existing **.edt** data sets. To open the data header editor, click **<OPEN DATA>** on the calculator, select the file you want to edit the header of and then click **<Commentary>**.

Note: The file to be edited must not be occupied by any software!!!

General key

Schlüssel	Wert
\$Analyse	FilesC:\Datensätze\BMW\EX\EX_plus200msec.edtAnalyseEX_plus200msec...
\$Project	EX_E60
\$Versuch	MGI_mR
\$Beschr...	
\$Beschr...	
\$Distance	20.832km

Channel key

mnr	name	unit	\$Pol.	\$V16Am...	\$V16Ra...	\$V16Ra...
172	Federw...	mm	Rad na...	DC/TF	185	193.646
173	Federw...	mm	Rad na...	DC/TF	185	194.178
174	Federw...	mm	Rad na...	DC/TF	185	194.936
175	Federw...	mm	Einfedern	DC/TF	185	194.862
047	Beschl...	g	Beschl...	DC/TF	6.2	6.22109
048	Beschl...	g	Beschl...	DC/TF	6.2	6.24063
049	Beschl...	g	Beschl...	DC/TF	6.2	6.22369
060	Fahrge...	km/h	----	10V	250	1000
043	Motord...	l/min	----	10V	9882	10240
282	Lenkwi...	Grad	Linksk...	10V	1110	-1440

Keyword

Apply

OK Cancel

The dialogue headline indicates the path of the opened data set. The first table shows the general keys referring to the data set. They are specified in the column "key" while the column "value" contains the information corresponding to the keys of the selected data set. The second table holds the channel keys. To edit any key on both tables, double click on it. The selected keys value will appear in the edit frame, where you can edit it. The changes of the key value will take effect after clicking the **<Apply>** button beside the edit field.

Important: Without <Apply> the changes will not be written to the data set!

Add keywords:

Click **<Add>** in data comment Editor, to obtain the dialogue beside:

Enter the new keyword without dollar sign. Confirm your input with **<OK>**.
Confirm the keyword with **<Apply>**.

Enter keyword

OK Cancel

Important: Without <Apply> the changes will probably not be written to the data set!

Signal Processing

Signals are only processed in the **Analysis Window**, with the aid of the **Analysis Calculator**. The **Analysis Calculator** works stack orientated. This way, it is compatible with mouse-based entries under Windows.

Example 1: You wish to subtract Signal 1 from Signal 0 of a data set.

Double click on Signal 0 in the **Channel Selection Window**

Signal 0 appears in the **Analysis Window**

Double click on Signal 1 in the **Channel Selection Window**

Signal 1 appears underneath Signal 0 in the **Analysis Window**

Click on <-> in the **Analysis Calculator**

Signal 1 is subtracted from Signal 0 and the result is displayed in place of Signal 0 in the **Analysis Window**

Signal 1 disappears. The **Analysis Window** thus shows only the result.

Example 2: You want to filter Signal 0 of a data set while maintaining the unfiltered signal 0

Double click on Signal 0 in the **Channel Selection Window**.

Signal 0 appears in the **Analysis Window**.

Click <Dupl.> on the **Analysis Calculator**.

Signal 0 appears again as Signal 1 in the **Analysis Window**.

Click <Filter> on the **Analysis Calculator** and choose a filter style.

The respective filter configuration dialogue box appears.

Select the cutoff frequency and order and click <OK> in the dialogue box. The last Signal in the **Analysis Window** will now be filtered.

The filter result replaces Signal 1 in the **Analysis Window**.

Processing marked signals with binary functions:

If exactly two channels are marked in the Analysis Window and a binary function (+-*/) is chosen from the Analysis Calculator, the marked channels will be processed accordingly and the result will be appended as new signal to the Analysis Window.

Simultaneous processing of multiple signals using unary functions:

If multiple channels are Y-marked, any unary calculation will be performed on all channels. Unary functions need only one channel as input like band filters and most frequency analysis functions.

Example: The Analysis Window holds 3 signals, all of them should be low-pass filtered equally.

Y-mark all channels in the **Analysis Window**. Click <Filter> on the **Analysis Calculator** and choose "Lowpass", complete the filter dialogue and confirm. The defined low-pass filter will be applied on all marked signals.

Subsequent Signal Processing:

Check chapter "Modify mode"

Wave form converter

Using a trigger, the base frequency of a signal is derived and used to build a synthetic signal. The synthetic signal may be used to create a correction signal or for signal conditioning.

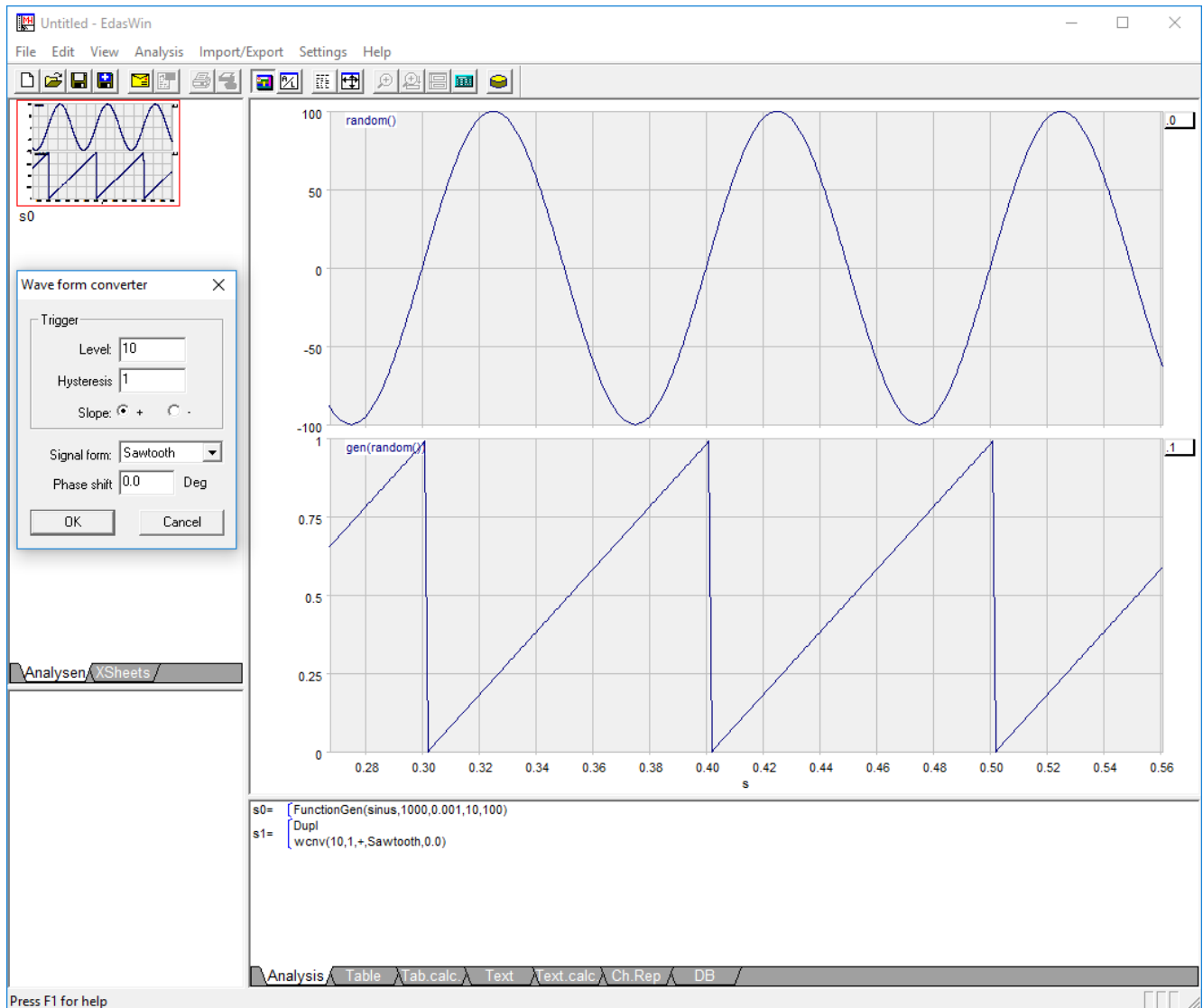
The signal can be converted to a sine, cosine, rectangle, triangle or sawtooth shaped signal.

Procedure:

To convert a signal to another wave form, load the signal to the analysis window, if necessary Y-mark it, and click **<WCnv>** on the calculator.

Complete the "Wave form converter" dialogue and confirm with **<OK>**.

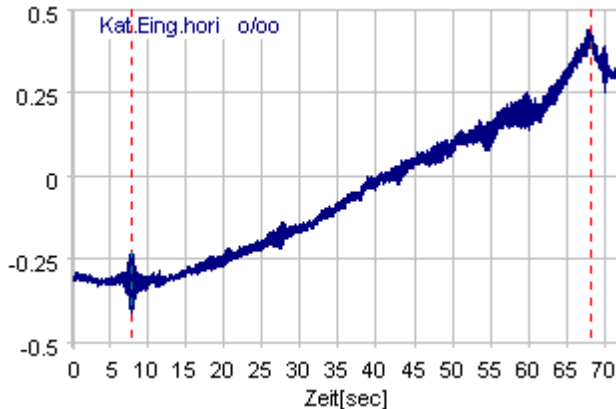
Note: The steepest edge is qualified for trigger settings.



Drift Function

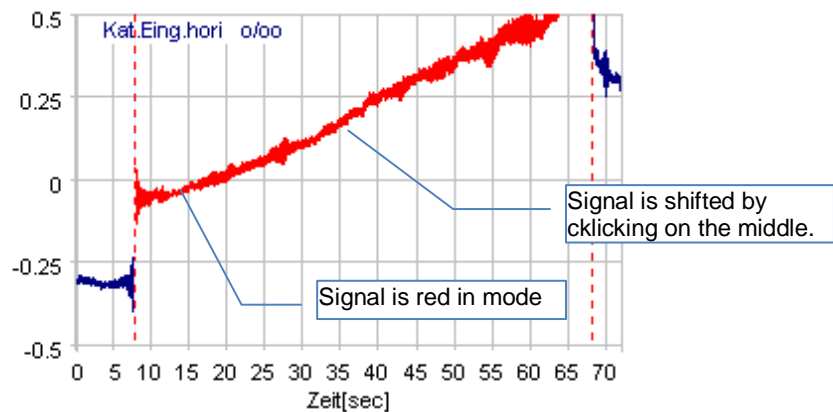
It frequently happens that sensors, measurement amplifiers, or the sensor location itself may drift during live measurement. Unfortunately, it is not always possible to foresee or prevent the causes of drift. With the help of the E.d.a.s.Win Drift Function, whole signals or parts thereof can be shifted to correct drifting as far as possible during measurement.

The signal below is heavily affected by a drift effect. It needs to be corrected.

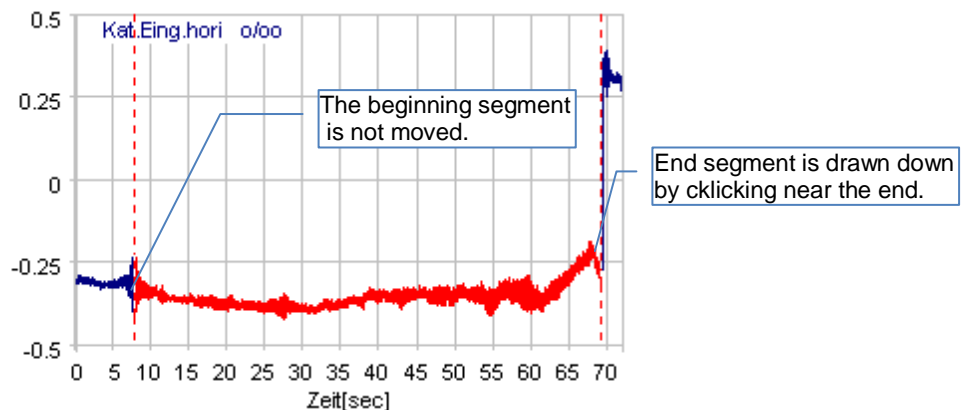


To correct the signal, place two cursor lines in the Analysis Window, defining the part of the signal that you want to modify. Enter the modify mode and click **<Drift>** on the Analysis Calculator. The portion of the signal between the markers will turn red and is ready to be modified. Keeping the left mouse button pressed, drag the cursor up or down to shift the signal as described below:

Click on the middle of the signal to shift the entire signal portion.



Click on the beginning or end of the selected signal portion to move only a segment adjacent to the beginning or the end.



Click **<Ok>** in the drift correction dialogue to lock the drift correction.

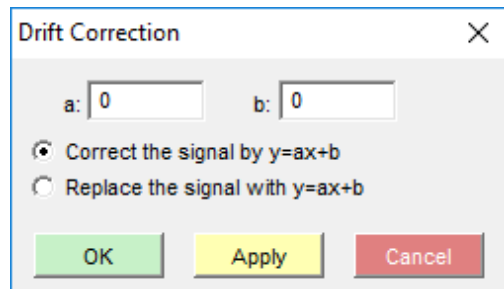
Click on **Ready** in the Modify-Ready dialogue box to terminate the drift correction procedure.

Drift correction in the dialogue enter:

Beside the graphical drift correction EdasWin offers a mathematical drift correction, using a linear correction term.

The correction term is defined as: $y = a * x + b$.

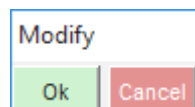
To use it, load the signal to be corrected to the modify mode, place the cursors and click **<Drift>** on the calculator, as for graphical drift correction.

A dialog box titled "Drift Correction" with a close button (X) in the top right corner. It contains two input fields: "a:" with the value "0" and "b:" with the value "0". Below these fields are two radio buttons: the first is selected and labeled "Correct the signal by y=ax+b", and the second is labeled "Replace the signal with y=ax+b". At the bottom are three buttons: "OK" (green), "Apply" (yellow), and "Cancel" (red).

Now instead of touching the signal with the mouse cursor, enter the coefficients "**a**" and "**b**" for the linear correction term in the "Drift Correction" dialogue.

Click **<Ok>** in the drift correction dialogue to lock the drift correction.

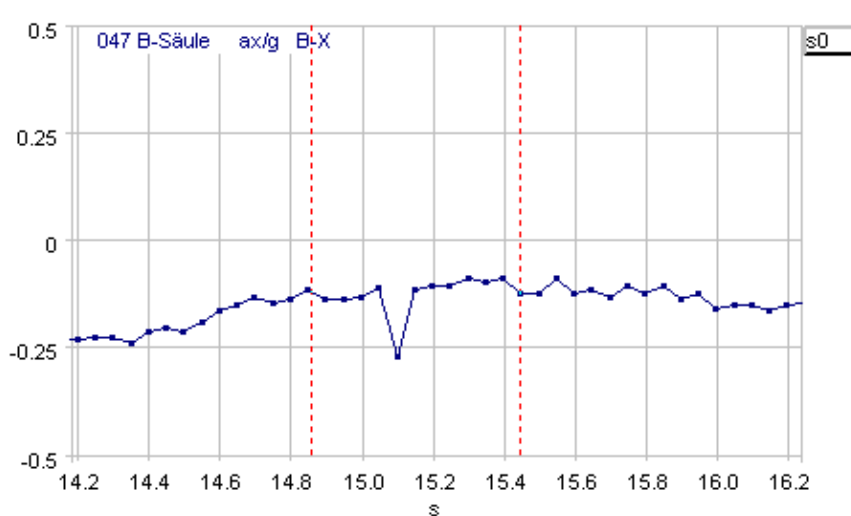
Click on Ready in the Modify-Ready dialogue box to terminate the drift correction procedure.

A small dialog box titled "Modify" with two buttons: "Ok" (green) and "Cancel" (red).

Curve – function

In practical measurement setups it happens, that sensors, amplifiers or even sensor locations have short losses during a measurement due to environmental influences or technical malfunctions. With the "Curve" function entire signals or signal parts can be corrected by reshaping them graphically.

The signal below contains a notch that has to be corrected:

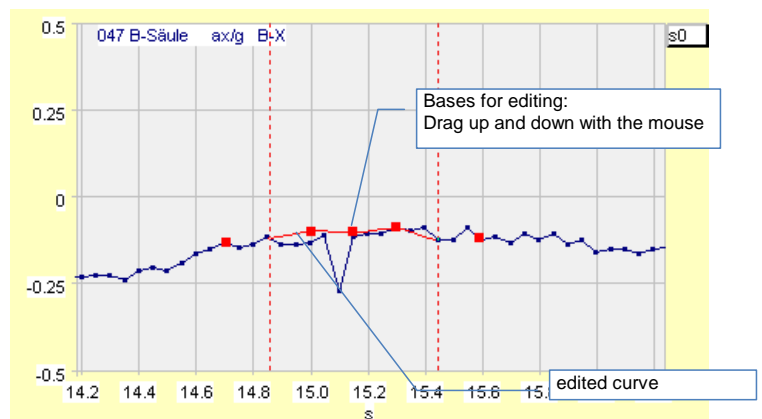


To correct the signal, load it to the modify mode, place two cursors to define the signal range you want to work on and then click **<Curve>** on the calculator.

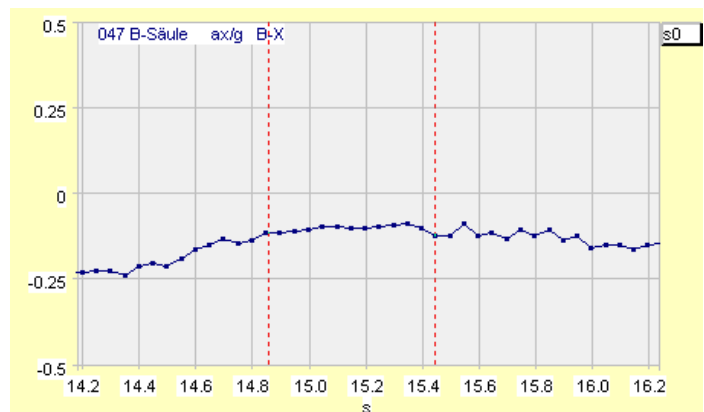
A red curve with variable base points appears between the two cursors. This curve can be shaped by moving the base points using the mouse. The number of base points can be entered in the dialogue.

Shift base points with the mouse:

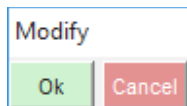
Move the curves base points by dragging up and/or down.



If the correction satisfies the needs of the further analysis, click on the <Ok> button on the "Curve drawing" dialogue to apply the correction to the signal.

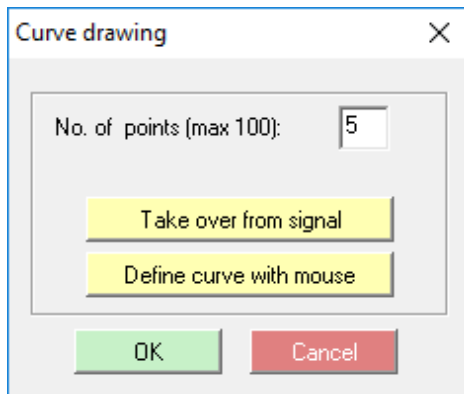


To finally apply the correction leave the modify mode by clicking <Ok> on the "Modify" dialogue.



Curve drawing dialogue:

Enter the number of curve base points in the "Curve drawing" dialogue. The base points appear as red dots. To use actual signal sample points as base points, click on **<apply measured values>** in the "Curve drawing" dialogue.

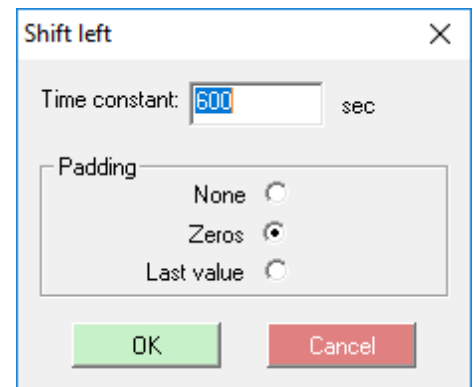


After defining the number of base points, whether using signal sample points as base points or not, click on **<Define curve with mouse>** to modify the signal using the mouse, like mentioned above.

By clicking <OK> on the "Curve drawing" dialogue, the actual curve replaces the original signal part. To finally apply the changes, leave the modify mode by clicking <OK> on the "modify" dialogue.

Shift function

Shifts a selected signal left by a desired time interval. Mark the signal you want to edit before starting the shifting process. If no signal is marked, the last signal displayed in the Analysis Window will be selected by the system.



Entering a time constant using the dialogue:

Click on the <Shift> button on the Analysis calculator. Enter the desired time constant and click <OK> to confirm. The signal to edit will be shifted to the left by the number of samples corresponding to the entered time constant.

Entering a time constant using a cursor line:

Drag one of the cursor lines to the desired start point of the selected signal. Press the Shift button on the Analysis Calculator. The cursor lines position is applied as time constant to the dialogue. Click <OK> to confirm. The signal will be shifted to the left by the defined time constant.

Superimposing Time Offset from Two Signals:

Drag the first cursor line to a distinctive point of one of the signals. Drag the second cursor line to a distinctive point of the second signal which is corresponding to the distinctive point of the first signal.

Click <Shift> on the Analysis Calculator. The time difference between the two cursors is applied to the dialogue. Click <OK> to confirm. The marked signal will be shifted to the left by the defined time constant.

Padding:

While shifting a signal to the left, meaning towards the diagrams origin, the signal shortens by as many sample points as corresponding to the shifting time constant. To keep the signal length equal to the signal lengths of the other signals contained in the data set, padding may be used.

Padding means to elongate the shortened signal to fit its original length by adding samples.

None: No padding will be done, the signal shortens after shifting.

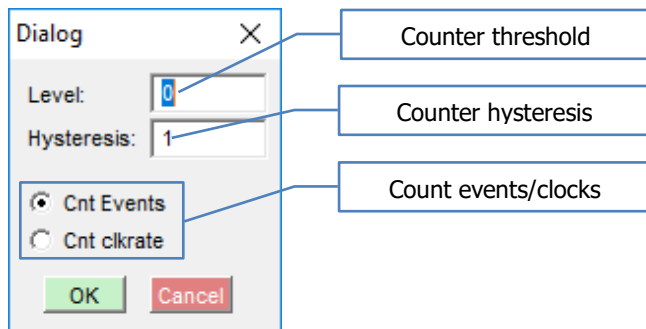
Zeros: Zeros will be appended until the signal reaches its original length

Last value: The last sample will be copied and appended until the signal reaches its original length.

Counter function

Select a signal to process by marking it with a Y-mark, if no signal is marked, the last signal listed in the analysis window will be selected for process.

Click on the **<Cnt>** key on the Analysis Calculator to open the counter function dialogue.



After the dialogue box is opened, enter the desired counter threshold, the counter hysteresis and choose the counting mode. Click on **<OK>** to confirm.

Counting modes:

Cnt Events: Counts how often the signal matches the given criteria

Cnt clkrate: Counts the clock ticks between two events that match the given criteria

Spike suppression function

Spike Suppression

Spike detection

Trigger level:

☐ Absolute
☒ % of input range
☐ n-time StdDev
☐ % Suppress

Suppression settings

Edit before: ☒ Sec
Edit after: ☐ Points
Time constant

OK Cancel

Dupl & Combine graphs & Same y-Axis & Ok

Click on the **Supp** key of the Analysis Calculator with the left mouse button to open the Spike Suppression dialogue box.

Interference Recognition:

The suppression algorithm detects pulse-shaped distortions in the signal channel. If the difference between two consecutive measurement points is greater than the trigger level, it will be interpreted as distortion.

There are 3 different methods for defining the trigger level:

- Enter an absolute level
- Enter a proportional level (%) of input range
- Calculate on the basis of rms with factor (n-time StdDev)
- % Suppress This value must be determined empirically

Example:

Distortion has to be suppressed in a velocity signal. The trigger level has to be calculated in km/h. If distortion should be registered at a difference of at least 10 kilometers per hour between two subsequent samples, enter 10 as trigger level value.

Suppression Settings:

Example:

Click on **Points** in the Spike Suppression dialogue box.

The sample points around the distortion will be replaced.

In the Spike Suppression dialogue box, at Suppression settings, enter:

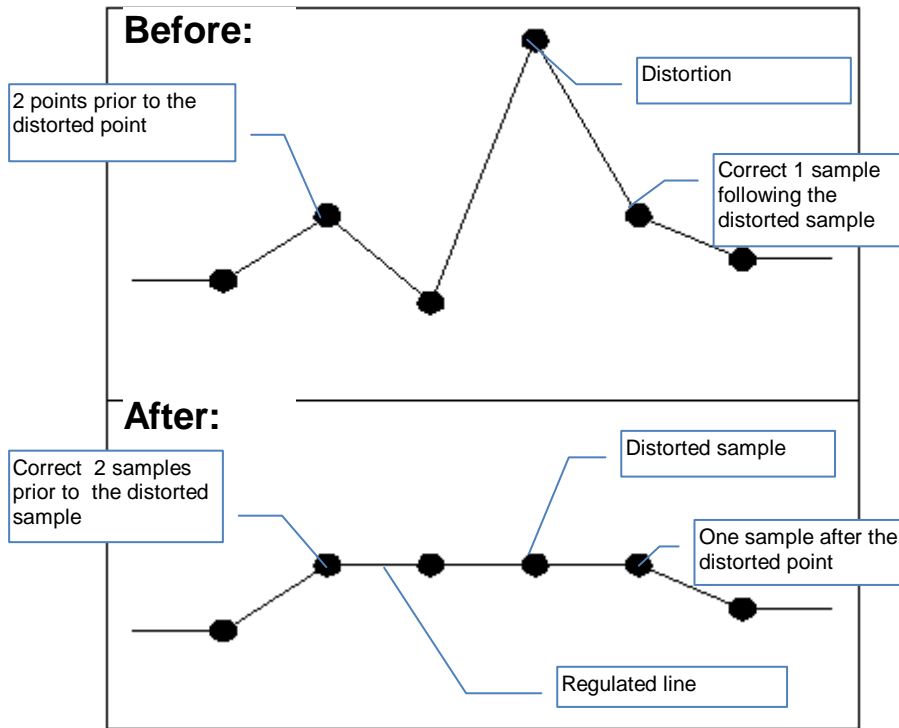
Edit before: 2 → Two samples prior to the distorted sample/s will be replaced

Edit after: 1 → One sample following the distorted sample/s will be replaced

To display both, the edited as well as the original signal in one plot using the same y-axis scale for both channels enter the modify mode, click <dupl> on the calculator, right click on the plot and choose "Combine graphs" from the appearing context menu,

From the appearing context menu To display the same signal with the worked on signal at the same y-axis, do the following thing:

Change into the modify mode (yellow background) and click the button <Dupl & Combine graphs & same y-Axis & Ok>.



Further the spike suppression function can be set to replace a number of samples around distorted samples corresponding to a specified time.

To set the suppression function in this mode, choose "Sec" on the dialogue and enter the desired value in the "Edit before" and "Edit after" fields:

Edit before: 2 sec., before the interference point

Edit after: 1 sec., after the interference point.

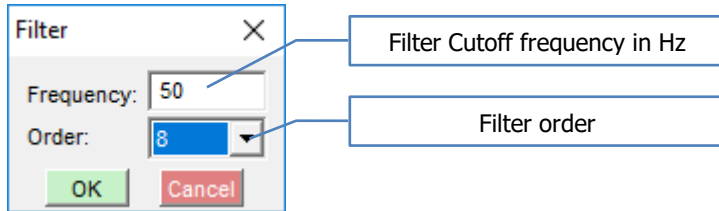
Assuming a sampling rate of 1kHz, 2000 samples prior to the distorted ones and 1000 samples following the distorted samples will be replaced.

Filter High Pass / Low Passfunction

High- and Lowpass Filter (IIR Butterworth)

Mark the signal you want to filter before opening the Filter dialogue box. If the signal is not selected by a y-mark, the last signal displayed in the analysis window will be selected by the system.

Click on Filter... at the Analysis Calculator and choose "Highpass" or "Lowpass"

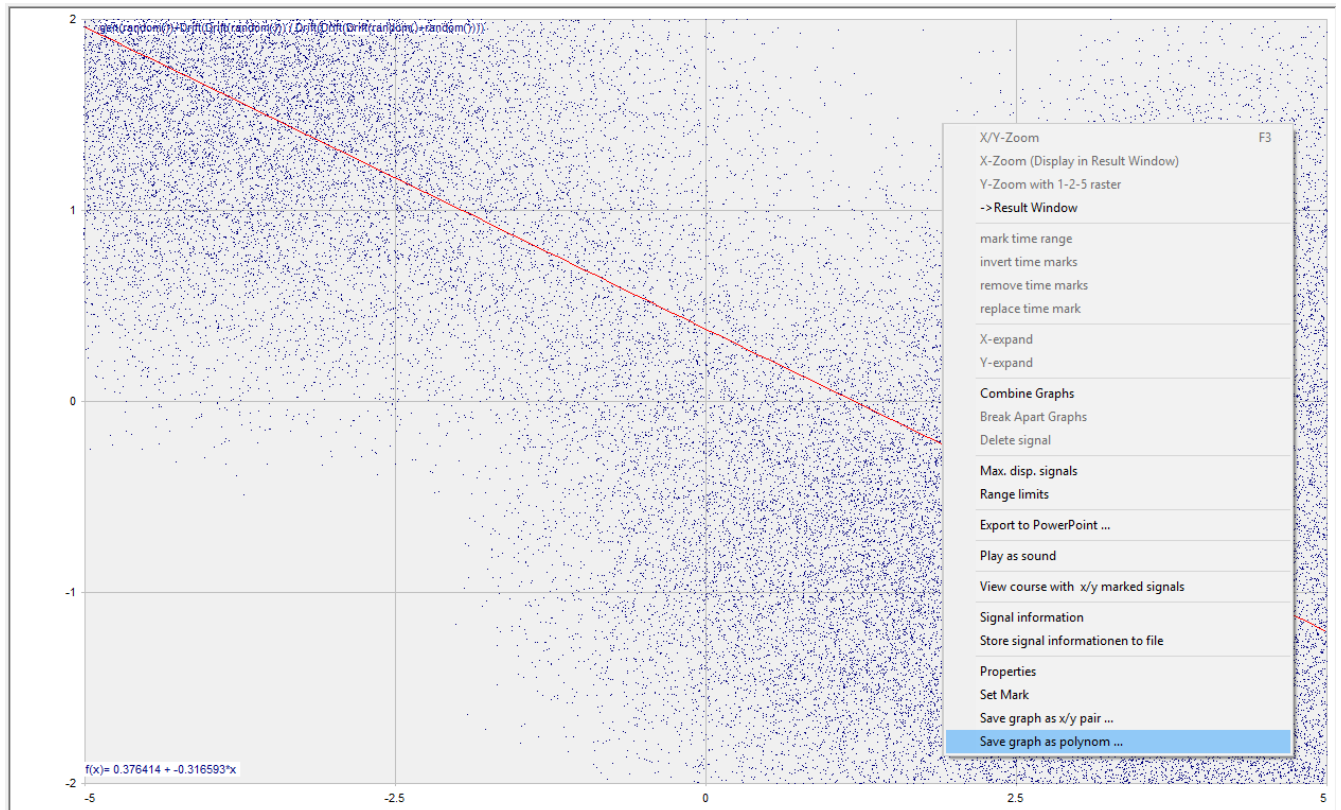


When the dialogue box appears, enter the desired filter cutoff frequency in Hz (-3dB cutoff) and the order of the filter. Click on **<OK>**. A confirmation dialogue box opens asking „Calculate all marked channels?“. Click on **<Yes>** to confirm.

Polynomial calculation

Save graph as polynomial (.ply):

After a successful regression, it is possible to save the regression polynomial to a file. Clicking right in the result window on the diagram opens a context menu:

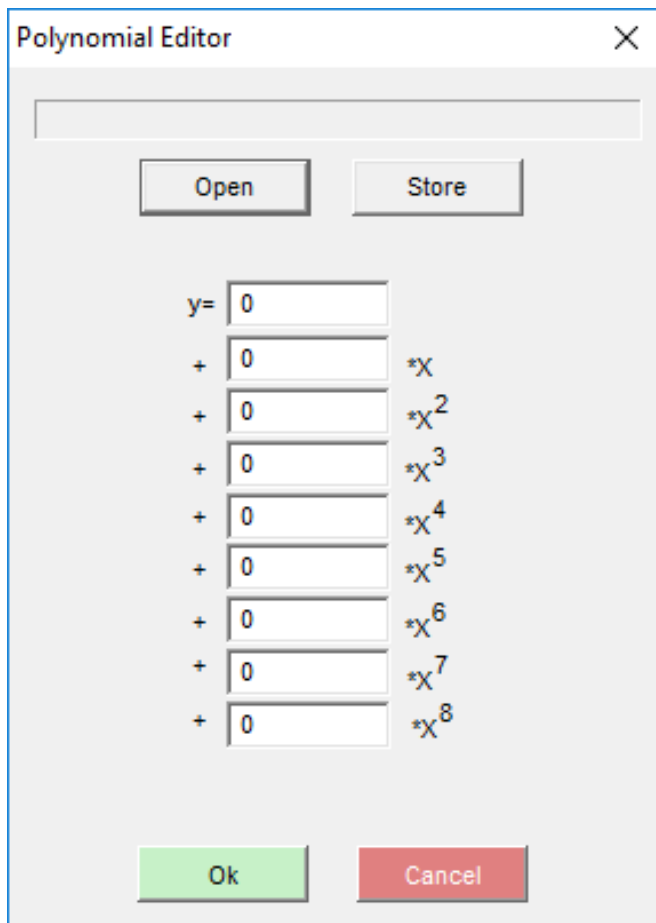


Choose "Save graph as polynomial..."

Enter file name and storage path and click **<Save>**. The extension of the created file is ".ply".

Restore and use polynomial files:

Mark the signal to be processed using a polynomial file. Click <Poly> on the analysis calculator .The dialogue underneath appears:



The image shows a 'Polynomial Editor' dialog box. At the top is a title bar with the text 'Polynomial Editor' and a close button (X). Below the title bar is a text input field. Underneath the input field are two buttons: 'Open' and 'Store'. Below these buttons is a vertical stack of input fields for polynomial coefficients. The first field is labeled 'y=' and contains the value '0'. Below it are eight more fields, each preceded by a '+' sign. These fields are labeled on the right as $*X$, $*X^2$, $*X^3$, $*X^4$, $*X^5$, $*X^6$, $*X^7$, and $*X^8$. Each of these eight fields contains the value '0'. At the bottom of the dialog box are two buttons: 'Ok' (green) and 'Cancel' (red).

Fill the input fields manually to create a certain polynomial or load an existing polynomial file by clicking <Open>. When using an existing file, choose the polynomial file you want to use from the dialog that appears after clicking on the open button. Confirm your choice with <Open>.

The values stored in the selected polynomial file will automatically be inserted in the corresponding field.

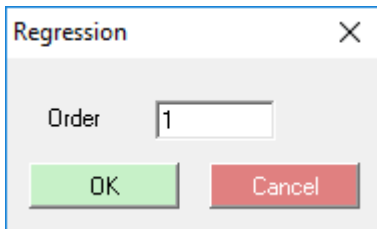
Click <**OK**> to process the selected signal with the defined polynomial.

Regression representation about time function process

In statistical modeling, regression analysis is a set of statistical processes for estimating the relationships among variables. It includes many techniques for modeling and analyzing several variables, when the focus is on the relationship between a dependent variable and one or more independent variables (or 'predictors'). More specifically, regression analysis helps one understand how the typical value of the dependent variable (or 'criterion variable') changes when any one of the independent variables is varied, while the other independent variables are held fixed.

Procedure:

Load the channel to be processed to the analysis view and duplicate it (<dupl> on the calculator). Then click <Regr> on the calculator to get the dialogue underneath:



Enter the regression order and click <OK>. A curve appears in the duplicate plot. The curve represents a polynomial of the order set in the dialogue before. For further usage overlay the channel containing the signal and the channel containing the curve.

Cycle duration:

Click <Per> on the analysis calculator, the following dialogue appears:

Cycle duration/Frequency/RPM

Trigger

Level: 1

Hysteresis: 0

one channel ☒

two channel ☐

Calculation

Cycle time ☒ + > + ☐ - > -

Impuls time ☐ + > -

Pause time ☐ - > +

Frequency ☐ Hz

RPM ☐ 1/min

No of gear teeth 1

OK Cancel

Calculation modes:

Cycle time:	+ Edge	to	+ Edge	- Edge	to	- Edge
Impulse time:	+ Edge	to	- Edge			
Pause time:	+ Edge	to	- Edge			
Frequency	Hz					
RPM	1/min					

No of gear teeth: Enter value

Select mode and confirm with <OK>.

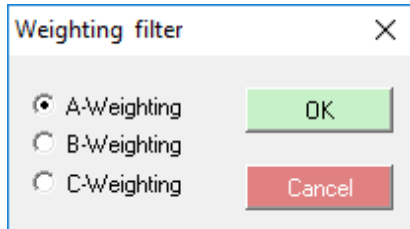
A, B, C weighting filter

A,B,C weighting filters are widely used in acoustic measurements to match acquired data to the audio perception of human beings.

Procedure:

Mark the signal, the weighting filter should be applied to.

Click <A-FLT> on the analysis calculator. The weighting filter dialogue appears.



Choose the weighting filter to apply to the selected signal and confirm with <OK>.

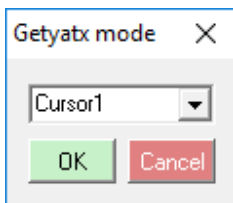
Get Y at X function

The "Get Y at X function" picks a Y-value in a channel marked by the X0 mark and uses this value to get the Y-value of a second channel, marked with the Y0 mark. Using the Y value of the X0 marked channel as X-value in the Y0 marked channel.

1. Define the Y-value from the **X0** marked signal.
The Y-value can be selected by: **Min**, **Max**, **Cursor 1** and **Cursor 2**
2. The selected Y-value will be used as X-value in the Y0 marked channel to get the Y-value of the Y0 marked channel.
3. The Y-value of the Y0 marked channel will be presented as new channel in its own plot.

Procedure:

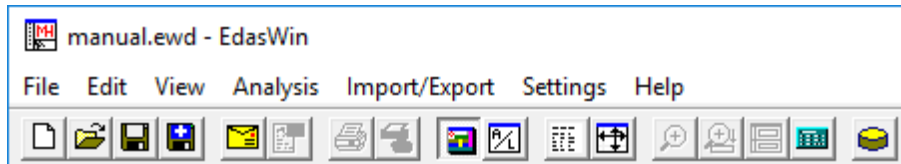
1. Mark the two channels. One with the X0 mark and the other with the Y0 mark.
2. Set a cursor to the X-value of the X0 marked channel you want to use
3. Click <GetAt> on the calculator



4. Choose the X-value definition mode (Cursor1, Cursor2, Min, Max)
5. Click <OK> to run the process

The result shows up as a new channel (single value) with the calculated Y-value of the Y0 marked channel.

E.d.a.s.Win Menu



File Menu

Edit Menu

View Menu

Analysis Menu

Import/Export Menu

Settings Menu

? / Help Menu

File menu

New

Deletes all previous entries

Open...

Opens an existing analysis / documentation (document)

Open Backup

Opens the last interrupted analysis / documentation (document)

Save

Saves the current state at the current path/file

Save As...

Saves the current state at a user defined path/file

Save with data and pictures

Saves the current state including data and image files

Send to Email recipient...

The current document with analysis script, data and layout is send via E-mail to a receiver.

If no E-Mail software is registered as default in the Windows properties, nothing will happen.

Send layout (JPEG) to Email recipient

Sends the actual project as JPEG to an E-Mail recipient.

If no E-Mail software is registered as default in the Windows properties, nothing will happen.

Open data file

Opens a data set for editing (similar to the <OpenData> button on the calculator)

File time = Starting time

The file time attribute is set to time and date when the data was acquired

Print

Opens the Printer dialogue window

Preview

Displays pages in print preview

Printer Setup

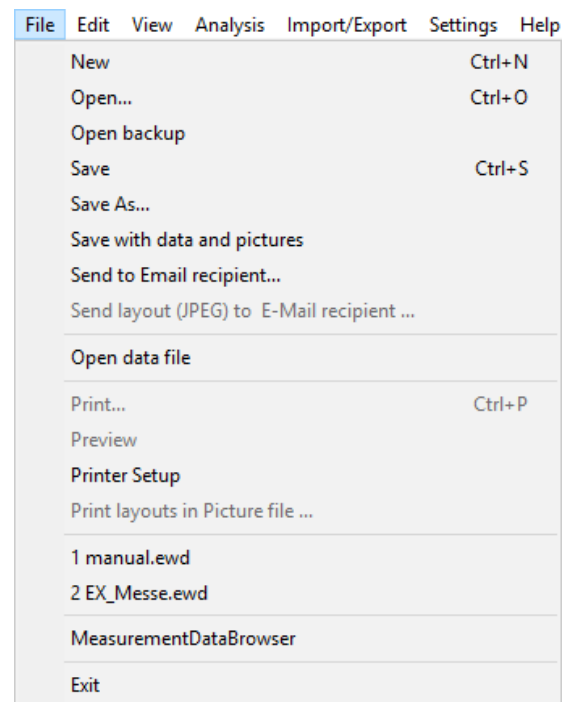
Opens the Printer Settings dialogue

Print layouts in picture file

Print (store) layout in a *.jpg / *.bmp file

Exit

Exits E.d.a.s.Win



Edit menu

Undo

Reverses up to ten entries in the Analysis Calculator

Copy

If no marks were set prior to the call of the copy function, the whole content of the current analysis view will be printed to a Bitmap stored on the clipboard. You can use this Bitmap by pasting it to Bitmap capable software.

Copy from analysis scripts or text:

Mark analysis script or text and choose copy.

Copy a signal to another or a new analysis:

Mark the signal you want to copy to another analysis with an Y mark and call the copy function.

Alternative shortcut for copy: <Ctrl> + <C>

Paste

Adds the references stored by the „Copy“ function described above to the current Analysis Window.

Insert signals to another or a new analysis:

Click in the analysis you want to paste the signal stored on the clipboard and choose „Paste“ from the „Edit“ menu.

If marks are set in the Analysis Window the references of the marked channels (e.g. &s2.3) will be saved. These may be added to the current, to an existing or to a new analysis using „Paste.“

Alternative shortcut: for insert: <Ctrl> + <V>

Mark All

Marks all channels in the active Analysis Window.

Edit	View	Analysis	Import
Undo		Ctrl+Z	
Copy		Ctrl+C	
Paste		Ctrl+V	
Mark all		Ctrl+A	

View menu

Symbol Bar

Switches the Toolbar on / off

Status Bar

Switches the Status Bar on / off

Calculator window

Switches the analysis calculator on / off

Layout

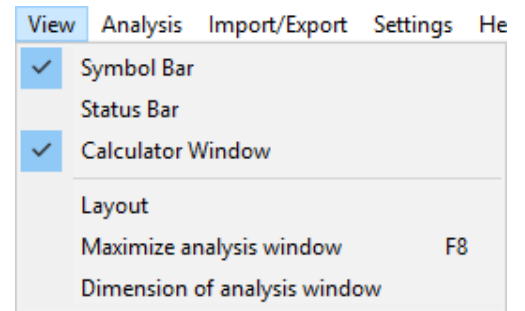
Switches between analysis and layout view

Maximize Analysis Window

Displays the analysis window as large as possible. If this function call is repeated, the display will revert to its former size.

Dimension of analysis window

Resizes the analysis window to a user definable size.



Analysis Menu

Frequency Analysis (submenu)

Multiple frequency analysis functions

Stats (submenu)

Multiple statistical functions

XY Plot

Create a XY-Plot of X and Y marked signals

Generate table (submenu)

Table generation related features

Batch Analysis

Define a batch analysis

Regression

Calculate regression curve

Y Sampling

Conduct Y-Sampling

FIR Filter

Define FIR-Filters

Cross correlation

Calculate cross correlation between marked signals

Optional software module, please contact MH

DataCheck

Conduct data integrity check

Auto. Calculation

Create automated analysis for one channel in several datasets

GPS Interpolation

Interpolate GPS signal using telemetric data

Lane analysis (submenu)

Perform lane analyses

Store cursor values

Analysis	Import/Export	Settings
Frequency Analysis		>
Stats		>
XY Plot		
generate table		>
Batch Analysis		
Regression		
Y Sampling		
FIR Filter		
Cross correlation		
Data check		
Auto. calculation		
GPS Interpolation		
Lane analysis		>
Store cursor values		

Frequency analysis submenu

FFT

Order analysis

1/N Octave analysis

Transfer function

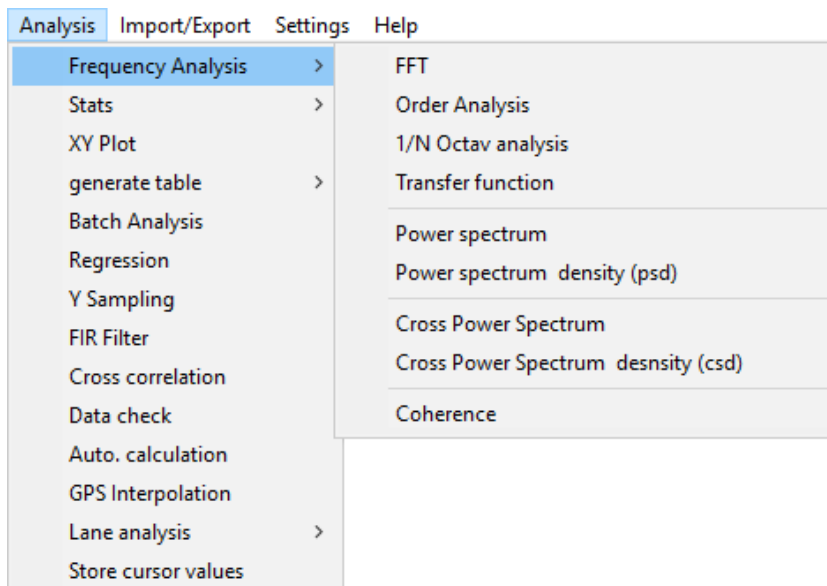
Power spectrum

Power spectrum density (psd)

Cross Power Spectrum

Cross Power Spectrum density (csd)

Coherence



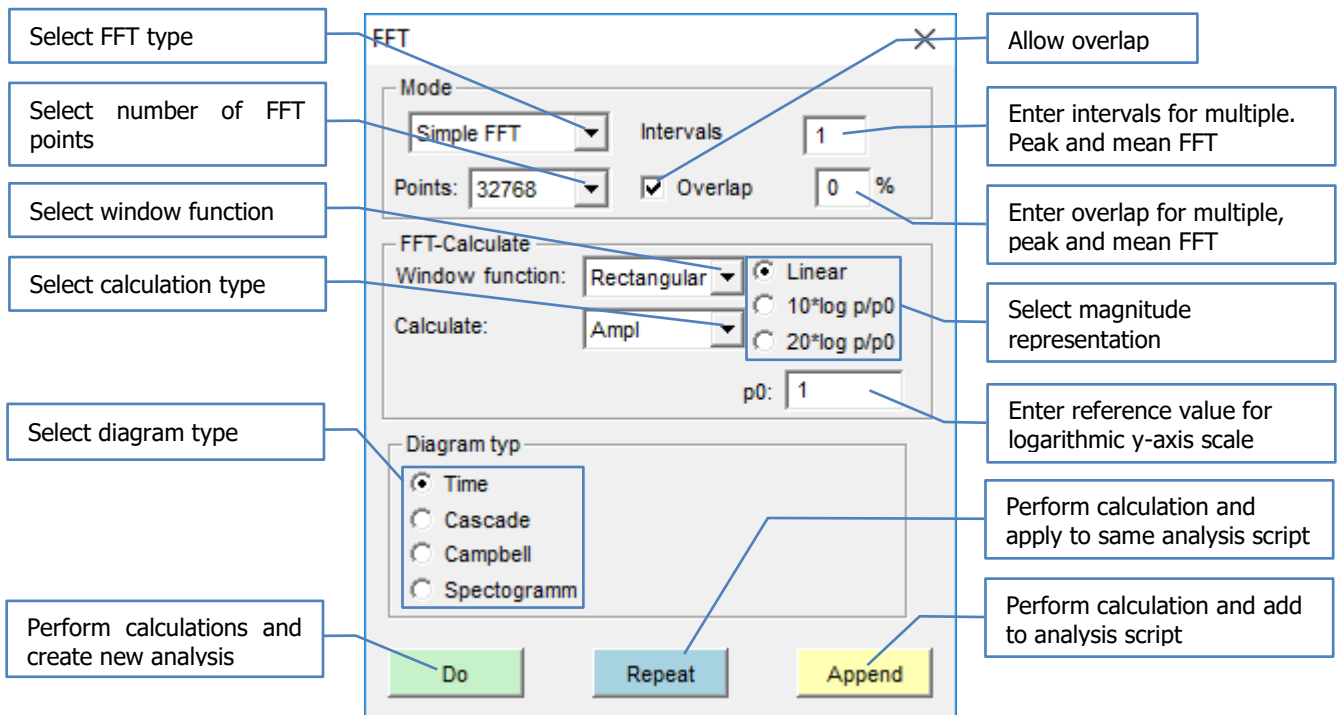
Fast Fourier Transform (FFT)

The **Fast Fourier Transform (FFT)** is an efficient algorithm to compute the discrete Fourier transform (DFT) and its inverse. FFTs are of great importance to a wide variety of applications, from digital signal processing to solving partial differential equations to algorithms for quickly multiplying large integers. This article describes the algorithms, of which there are many for properties and applications of the transform. If multiple, mean, or peak FFT has been selected, the number of intervals may be typed in the input field of the dialogue box. The selection frame in the Analysis Window will then display the range. Otherwise, you can drag the right side of the selection frame to the right. The frame will enlarge by the increments specified for the FFT points in the dialogue box and the number of intervals will be displayed in the interval dialogue input field.

Procedure

To perform an FFT mark the signal to be analyzed with an **X**-mark and choose the FFT entry from the main menu:

- **Analysis / Frequency Analysis / FFT**



Enter parameters and click **<Do>**. The result of the FFT calculation will appear in the result window. The frequency spectrum is drawn as a bar plot according to the parameters that you set in the dialogue box and the marks you placed in the analysis window. The sequence of the marks is taken into account during the calculation.

Example:

There are 4 signals in the analysis window. An FFT is to be run for all of them. Place marks on all 4 channels in the analysis window and click FFT in the analysis menu. The FFT dialogue box will appear. Leave all settings as they are and click „Do“. All four spectrum plots will appear in the result window, arranged one below the other. As you see, the FFT dialogue box stays on top. Now you can change the window function, intervals, overlap etc. and click on „Repeat“ to optimize the FFT settings. The new result will replace the previous result presented in the result window. You can repeat the FFT analysis as often as needed to achieve valid results.

Example:

There are 4 signals in the Analysis Window. In order to show the effect of the different window functions, the spectrum plots have to be arranged one below the other using a Rectangular, a Hanning and a Flattop window. Place a mark on the first channel in the analysis window. Click "FFT" in the analysis menu. The FFT dialogue

appears. Keep the presets and click „Do“. The spectrum created using a Rectangular window function will appear in the result window. Now select the Hanning window function from the FFT dialogue and click „Append.“ A second spectrum, calculated using the Hanning window, will appear below the first spectrum in the result window. Now, select the Flattop window function from the FFT dialogue and click „Append“ again. A third spectrum, created using the Flattop window function, will appear below the two spectrum plots in the result window.

Example:

A peak FFT with multiple intervals has to be performed on the second channel listed in the analysis window. Place a mark on the channel and click “FFT” in the analysis menu. The FFT dialogue will appear. Change the setting to „Peak FFT“, place the mouse cursor on the right border of the selection frame in the analysis window and drag it to the right, until enough intervals are selected to achieve sufficient accuracy. Click “Do” in the FFT dialogue. The result will appear as spectrum plot in the result window.

Order Analysis

Order analysis calculates the amplitudes of harmonic waves based on RPM. Two signals are needed for the analysis: the signal whose harmonic waves are to be analyzed and an RPM-signal, which contains the RPM in 1/min. Usually, this method is used to analyze start-up phases of rotating parts.

The screenshot shows the 'Order Analysis' dialog box with the following settings and callouts:

- RPM settings:**
 - Start RPM: 0 (1/min) - Callout: Analysis start RPM
 - Stop RPM: 100 (1/min) - Callout: Analysis stop RPM
 - Measurement steps: 10 (1/min) - Callout: RPM increments for amplitude analysis
- Frequency settings:**
 - FFT-Points: 1024 - Callout: Number of FFT points (responsible for the frequency analysis accuracy)
 - Window function: Rectangul - Callout: Window function for the FFT (affects frequency and amplitude fidelity)
 - Magnitude representation mode: ☒ Lin., ☐ 10*log p/p0, ☐ 20*log p/p0 - Callout: Magnitude representation mode
 - Reference level for logarithmic magnitude representation: p0: 1 - Callout: Reference level for logarithmic magnitude representation
 - Calculate RMS or absolute FFT: ☒ absolute, ☐ rms - Callout: Calculate RMS or absolute FFT
- Order settings:**
 - Orders: 1,2,3 - Callout: Order of the analysis
 - Search range: 10, +/- %, +/- Lines - Callout: Seek area around the theoretical frequency
 - Summary level: ☐ - Callout: Summary level
- Buttons:**
 - Toggle result window - Callout: Toggles between cascade and order representation mode
 - Do - Callout: (unlabeled)
 - Repeat - Callout: (unlabeled)

Procedure

To perform an order analysis, the signal must be marked with a Y-mark and the RPM signal must be marked with an N-mark in the analysis window (for hints see "Marking Channels in the Analysis Window").

To initiate an order analysis choose **Analysis / Frequency Analysis / Order Analysis** from the main menu. Enter the information requested in the appearing dialogue and click <Do>. The analysis will generate one cascade graph with the frequency lines and one "order graph" showing the amplitudes of the orders over the RPM.

By default the result presented in the result window will be the amplitude graph. To switch to the cascade graph click <Toggle Result Window> on the order analysis dialogue.

Now you can change parameters in the Order Analysis dialogue and repeat the analysis by clicking <Repeat> to optimize the configuration.

To maintain the previous results, you can click <Do> instead of repeat to create new analyses

Alternative input format of the order:

For example: 1-20/0.1 means the description of the order from 1 to 20 in a distance 0.1

Error sources in order analysis!!!

The start-up phase must be slow enough to keep the RPM signal constant over the FFT points. This means that a small number of FFT points will yield low frequency resolution, but the RPM signal may change more rapidly. A large number of FFT points yields high frequency accuracy, but the RPM signal may only change very slowly.

The rectangular window function provides the highest frequency accuracy but may deliver false amplitudes. The "Flattop" window function achieves slightly inferior frequency accuracy but more accurate amplitudes.

The RPM signal accuracy is very important because the frequency whose amplitude is used in the amplitude graph is derived from it. Due to that, a search range should be entered into the search range input field of the dialogue. If, for example, you choose 10% and wish to analyze a frequency of 500 Hz, the range from 450–550 Hz will be searched for the amplitude peak. The search range may also be designated using \pm measured values.

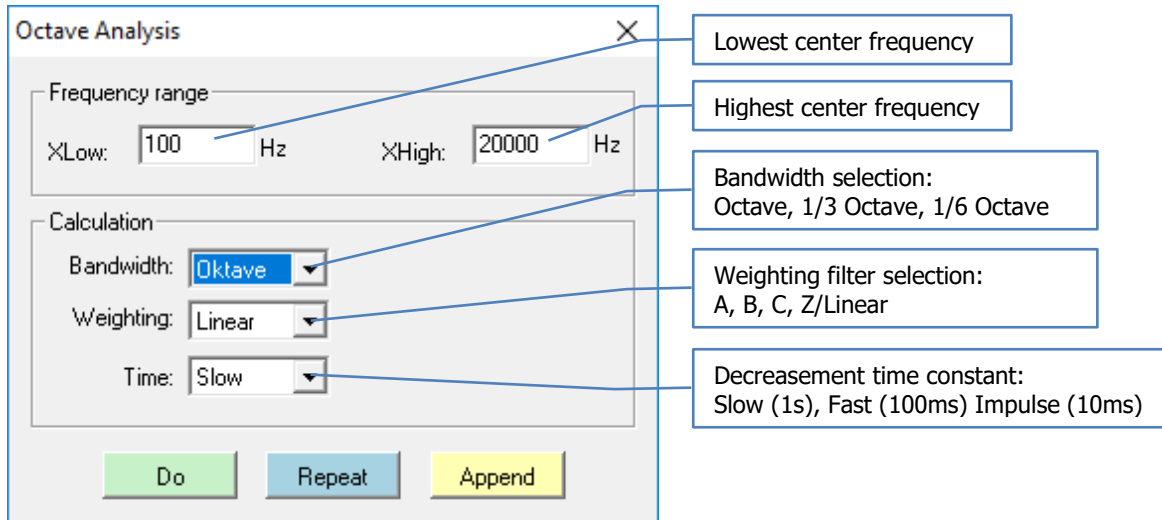
1/n Oktav analysis

Mark a signal from the analysis window.

Choose **Analysis / Frequency Analysis / 1/n Octave Analysis** from the main menu.

The "Ocatve Analysis" dialogue appears and a selection frame is placed. Select the time range of the signal to be analyzed by resizing and moving the selection frame to fit the desired time range.

Now configure the octave analysis using the dialogue and click <Do> to calculate the results.



To recalculate the results using the same dependent analysis for the results click <Repeat>. To recalculate creating a new dependent analysis for the results click <Do>.

Transfer function

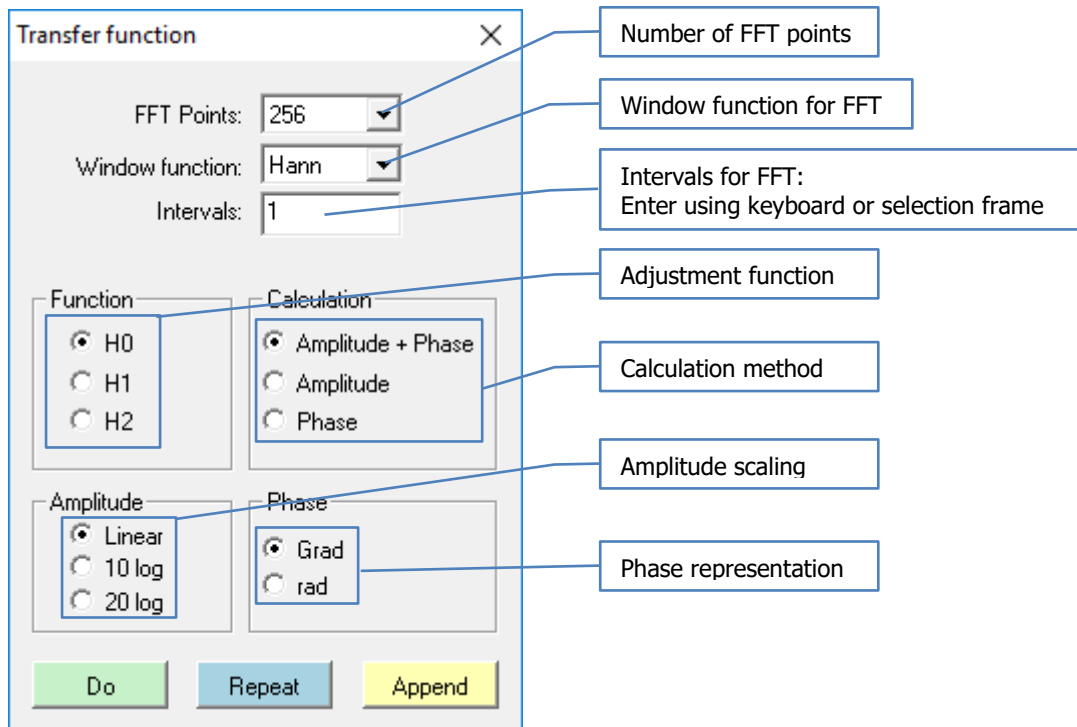
The transfer function is commonly used in the analysis of single-input single-output analogue electronic circuits, for instance. It is mainly used in signal processing, communication theory, and control theory. The term is often used exclusively to refer to linear, time-invariant systems (LTI). Most real systems have non-linear input/output characteristics, but many systems, when operated within nominal parameters (not "over-driven") have behavior that is close enough to linear that LTI system theory is an acceptable representation of the input/output behavior.

Procedure:

Mark the input signal with an **X** mark and the output signal with an **Y** mark.

Create a selection frame across the signals in the analysis window.

Choose **Analysis > frequency analysis > transfer function** from the main menu.



Set the parameters and click <Do>, to start the transfer function calculation. The result will show up as a dependent analysis in the analysis selection window.

Power spectrum

Procedure:

Mark the signals which be calculated. Click in the main menu **Analysis / Frequency Analysis / Power spectrum**.

The screenshot shows the 'Power Spectrum' dialog box with the following settings and annotations:

- FFT Points:** 256 (Annotation: Number of FFT points)
- Window function:** Hann (Annotation: Window function for FFT)
- Intervals:** 1 (Annotation: Intervals for FFT: Enter using keyboard or selection frame)
- Y-Scale:**
 - ☐ Linear rms
 - ☒ 10 log p/p0 (Annotation: Reference level for logarithmic Y-axis scale)
 - ☐ 10 log p/max
 - ☐ dbV
 - ☐ dbuV
- p0:** 1 rms (Annotation: Y-axis representation)
- Buttons:** Do, Repeat, Append

Power spectrum density (psd)

In statistical signal processing and physics, the spectral density, power spectral density (PSD), or energy spectral density (ESD), is a positive real function of a frequency variable associated with a stationary stochastic process, or a deterministic function of time, which has dimensions of power per Hz, or energy per Hz. It is often called simply the spectrum of the signal. Intuitively, the spectral density captures the frequency content of a stochastic process and helps identify periodicities.

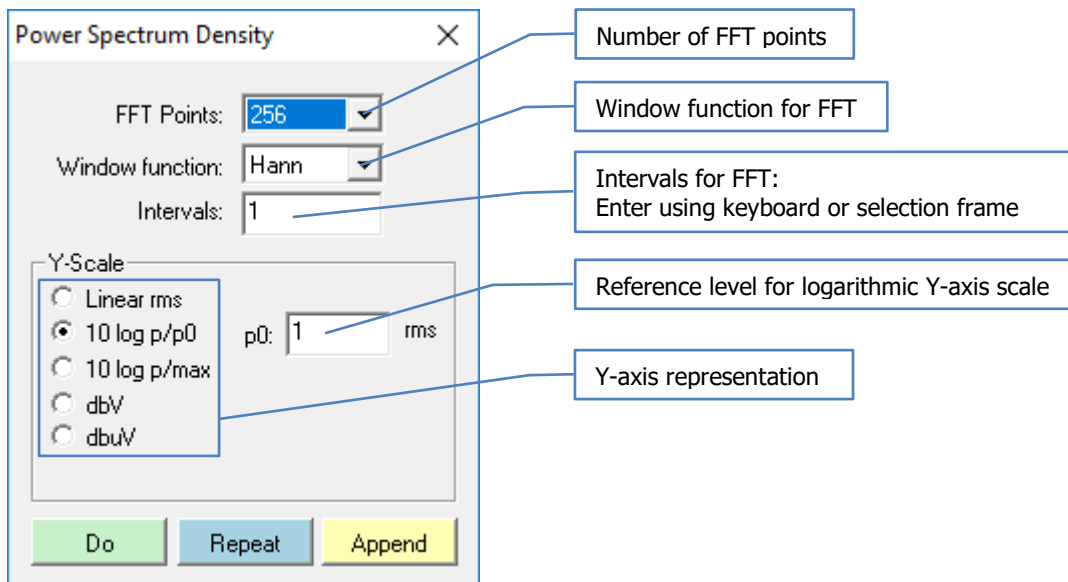
The goal of spectral density estimation is to estimate the spectral density of a random signal from a sequence of time samples. Depending on what is known about the signal, estimation techniques can involve parametric or non-parametric approaches, and may be based on time-domain or frequency-domain analysis. For example, a common parametric technique involves fitting the observations to an autoregressive model. A common non-parametric technique is the periodogram.

The spectral density is usually estimated using Fourier transform methods, but other techniques such as Welch's method and the maximum entropy method can also be used.

Procedure:

Mark the signals to be calculated. Click in the main menu **Analysis / Frequency Analysis / Power spectral density**.

The auto spectrum dialog opens. Enter all values for proceed auto spectrum.



Cross power spectrum

Procedure:

Mark the **input signal** with a **X**-mark and the **output signal** with a **Y**-mark. Click in the main menu **Analysis / Frequency Analysis / Cross Power Spectrum**.

Configure the CS calculation to your needs and click <Do> in the appearing dialogue.

The screenshot shows the 'Cross Spectrum' dialog box with the following fields and callouts:

- FFT Points:** 256 (Callout: Number of FFT points)
- Window function:** Hann (Callout: Window function for FFT)
- Intervals:** 1 (Callout: Intervals for FFT: Enter using keyboard or selection frame)
- Calculation:** Amplitude + Phase (selected), Amplitude, Phase (Callout: Calculation method)
- Y-Scale:** Linear (selected), 10 log p/p0, dBV, dbuV (Callout: Y-axis scaling)
- p0:** 1 rms (Callout: Reference level for logarithmic Y-axis scale)
- Phase in:** Grad (selected), rad (Callout: Phase representation in degrees or radians)
- Buttons:** Do, Repeat, Append

Cross power spectrum density (CSD)

The cross power spectrum density (CSD) is based on two signals chosen from the analysis view. The result is retrieved using the same formula used for auto power spectrum but using the second channel to correlate instead of correlating with the same channel.

$$\text{Auto power spectrum density: } S_{XX}(f) = X^*(f) \cdot X(f) = \int_{-\infty}^{\infty} R_{XX}(\tau) e^{-i2\pi f\tau} d\tau \quad R_{XX}(\tau) = \int_{-\infty}^{\infty} x^*(t) \cdot x(t + \tau) dt$$

$$\text{Cross power spectrum density: } S_{XY}(f) = X^*(f) \cdot Y(f) = \int_{-\infty}^{\infty} R_{XY}(\tau) e^{-i2\pi f\tau} d\tau \quad R_{XY}(\tau) = \int_{-\infty}^{\infty} x^*(t) \cdot y(t + \tau) dt$$

Beside being useful as input parameter for further signal analysis functions, the calculated result, especially the retrieved phase function can be interpreted directly like interpreting the phase function retrieved from an frequency response function. Both phase functions should be identical.

Procedure:

Mark the **input signal** with a **X**-mark and the **output signal** with a **Y**-mark. Click in the main menu **Analysis / Frequency Analysis / Cross Power Spectrum density**.

Configure the CSD calculation to your needs and click <Do> in the appearing dialogue.

The screenshot shows the 'Cross Spectrum Density' dialog box with the following fields and callouts:

- FFT Points:** 256 (callout: Number of FFT points)
- Window function:** Hann (callout: Window function for FFT)
- Intervals:** 1 (callout: Intervals for FFT: Enter using keyboard or selection frame)
- Calculation:** Amplitude + Phase (selected), Amplitude, Phase (callout: Calculation method)
- Y-Scale:** Linear (selected), 10 log p/p0, dBV, dbuV (callout: Y-axis scaling)
- p0:** 1 rms (callout: Reference level for logarithmic Y-axis scale)
- Phase in:** Grad (selected), rad (callout: Phase representation in degrees or radians)
- Buttons:** Do, Repeat, Append

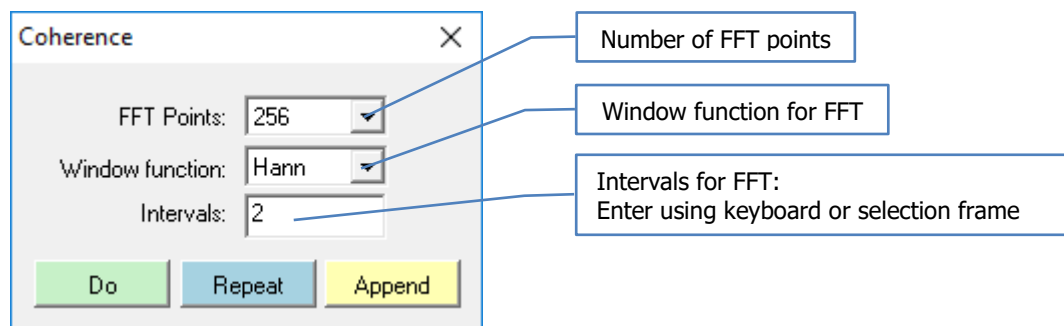
Coherence

The spectral coherence is a statistical function that can be used to examine the relation between two signals or data sets. It is commonly used to estimate the power transfer between input and output of a linear system. If the signals are ergodic, and the system transfer function is linear, it can be used to estimate the causality between the input and output.

Procedure:

Mark the **input signal** with a **X**-mark and the **output signal** with a **Y**-mark. Click in the main menu **Analysis / Frequency Analysis / Coherence**.

Configure the Coherence calculation to your needs and click <Do> in the appearing dialogue.



Statistical functions submenu

Distribution

Levelcrossing

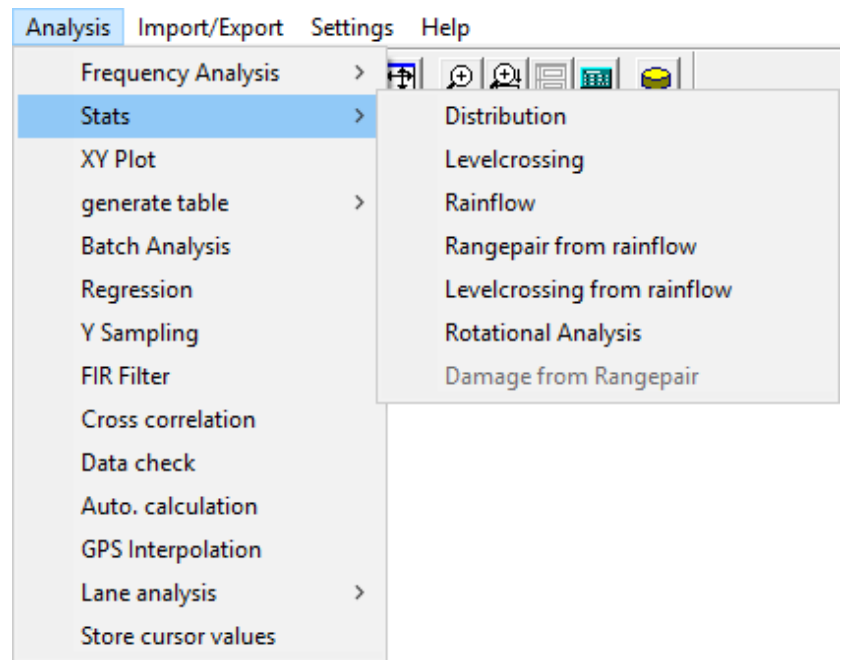
Rainflow

Rangepair from rainflow

Levelcrossing from rainflow

Rotational Analysis

Damage from Rangepair



Distribution (frequency distribution / times at level)

In statistics, a **frequency distribution** is a list, table or graph that displays the frequency of various outcomes in a sample. Each entry in the table contains the frequency or count of the occurrences of values within a particular group or interval, and in this way, the table summarizes the distribution of values in the sample.

Procedure

For a times at level classification (frequency distribution) you have to mark the signals to be calculated in the analysis window if there is more than one signal. Then click in the main menu **Analysis / Stats / Distribution:**

The 'Time at Level' dialog box contains the following fields and options:

- Classes:** A text box with the value '100'. Callout: 'Number of classes'.
- Length:** A text box with the value '1'. Callout: 'Enter the length of the measurement using the x-axis physical unit of the analyzed signal'.
- Extrapolate to:** A text box with the value '1'. Callout: 'Extrapolate calculation to fit the length given here'.
- Time at level:** A radio button that is selected. Callout: 'Timespan a signal fits a corresponding class'.
- Events:** A radio button. Callout: 'Count how many signal samples fit to each class'.
- Events in %:** A radio button. Callout: 'Like "Events" but in percent of all samples'.
- Create individual analysis windows:** A checkbox that is unchecked. Callout: 'Create a new dependent analysis for each result'.
- Buttons:** 'Do' (green), 'Repeat' (blue), and 'Apply' (yellow). Callouts: 'Perform calculations and create new analysis' (for 'Do'), 'Perform calculation and add to analysis script' (for 'Apply'), and 'Perform calculation and apply to same analysis script' (for 'Repeat').

Enter the parameter and click **<Do>**. The result window will show the results of the Time at Level calculations.

The Time at Level signal properties dialogue box is accessible by right clicking in the result window and choosing properties from the appearing context menu. The signal properties dialogue box will appear

The 'Signal properties' dialog box is divided into three main sections:

- X-Axis scale:** Includes 'X-Max' (1.0), 'X-Min' (-1.0), 'X-GitterDiv' (1), and 'X-Log.' (unchecked). Callout: 'X-axis scaling'.
- Y-Axis:** Includes 'Classes' (unchecked), 'Engineering units' (checked), 'Divisions' (4), and 'Same Y-Axis' (unchecked). Callouts: 'Use classes for Y-axis labeling' (for 'Classes'), 'Use units for Y-axis labeling' (for 'Engineering units'), and 'Y-axis formatting' (for 'Divisions').
- View:** Includes 'Line graph' (selected) and 'Bar graph' (unchecked). Callout: 'Alter between line graph and bar graph plot style'.

Buttons at the bottom: 'OK' and 'Cancel'.

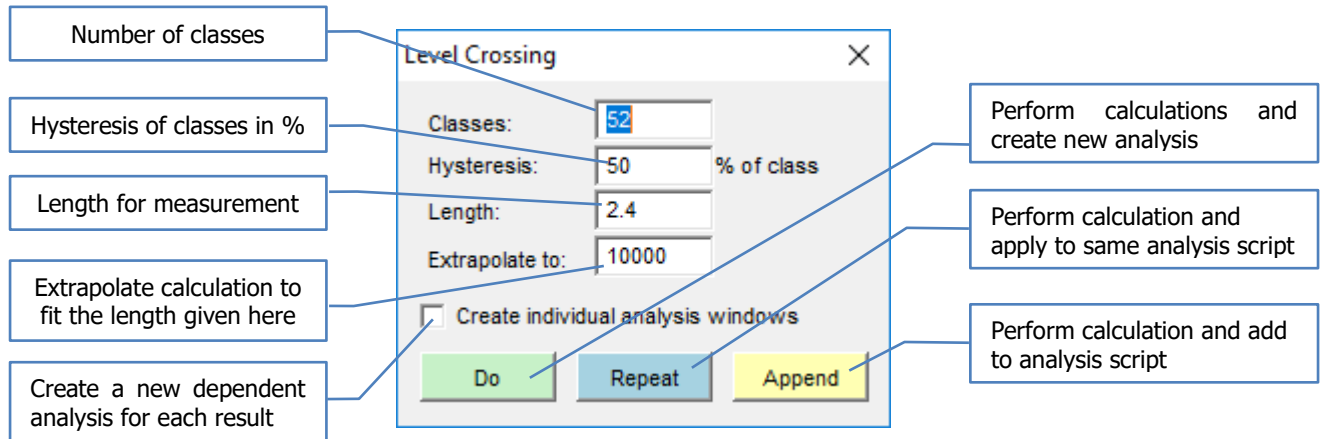
Enter parameter for the channel characteristics and confirm with **<OK>**.

Level Crossing

The Level Crossing function calculates the class passage frequency of the signal. The classification result will be shown in the Result Window.

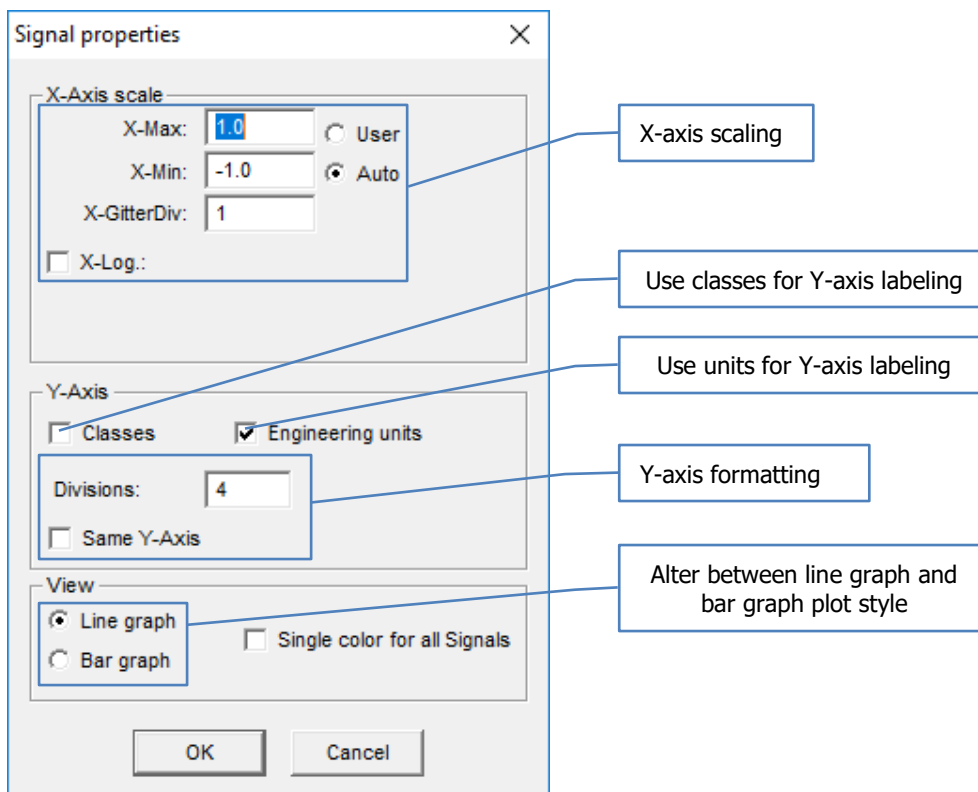
Procedure

For a level crossing calculation you have to mark the signals to be calculated in the analysis window if there is more than one signal. Then click in the main menu **Analysis / Stats / Level Crossing**:



Enter the number of classes (from 256 to 8192), the hysteresis in percent, the length of the chosen signal and the extrapolation factor. Click <Do> to start the calculation. The result window will show the results of the level crossing calculations.

The Level Crossing Signal Properties dialogue box is accessed by clicking in the Result Window with the right mouse button to open a pop-up menu. Click on 'Properties' with the left mouse button and the Signal Properties dialogue box will open.



Enter parameter for the channel characteristics and confirm with <OK>.

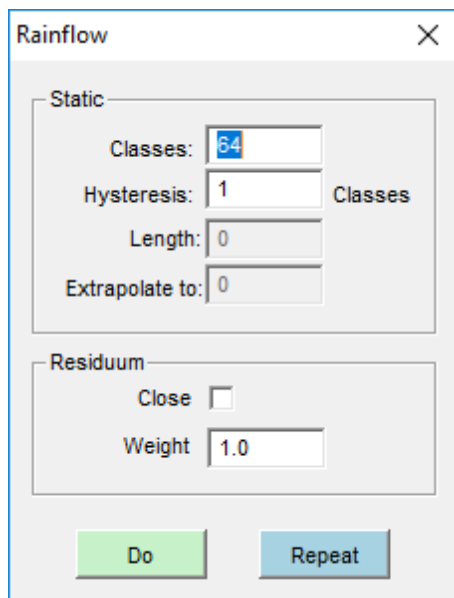
Rainflow

The **rainflow-counting algorithm** is used in the analysis of fatigue data in order to reduce a spectrum of varying stress into a set of simple stress reversals. Its importance is that it allows the application of Miner's rule in order to assess the fatigue life of a structure subject to complex loading.

Procedure

Mark one signal and click in the main menu **analysis / stats / Rainflow**:

The Rainflow dialogue box indicates the required number of classes, the length of the selected signal, and the desired extrapolation factor. Set the parameters and click **<Do>**.



The Rainflow dialog box is titled "Rainflow" and has a close button (X) in the top right corner. It contains two main sections: "Static" and "Residuuum".

Static section:

- Classes:** A text box containing the value "64".
- Hysteresis:** A text box containing the value "1".
- Length:** A text box containing the value "0".
- Extrapolate to:** A text box containing the value "0".

Residuuum section:

- Close:** A checkbox that is currently unchecked.
- Weight:** A text box containing the value "1.0".

At the bottom of the dialog box are two buttons: "Do" (green) and "Repeat" (blue).

Residuuum:

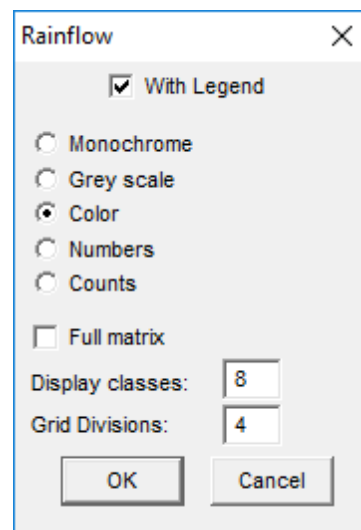
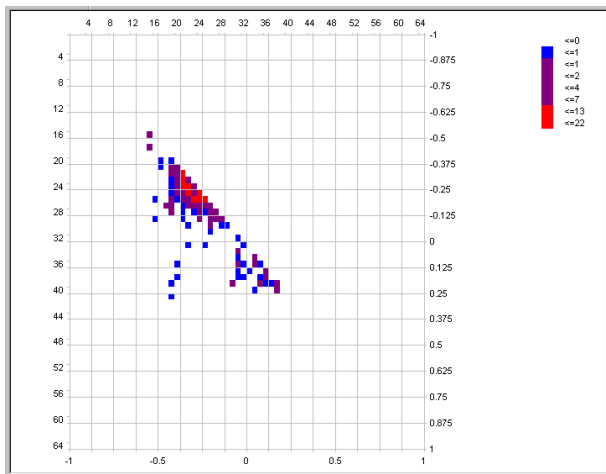
Close: Close the residuum.

Weight:

A **weight function** is a mathematical device used when performing a sum, integral, or average in order to give some elements more of a "weight" than others. They occur frequently in statistics and analysis, and are closely related to the concept of a measure. Weight functions can be constructed in both discrete and continuous settings.

Enter value from 0,1 to 1,0.

The graph will be displayed in the Result Window. To change graph properties (such as color, gray scale, numbers, etc.) use the Rainflow Properties dialogue box.



The Rainflow Properties dialog box is titled "Rainflow" and has a close button (X) in the top right corner. It contains several options and settings:

- With Legend:** A checked checkbox.
- Monochrome:** A radio button.
- Grey scale:** A radio button.
- Color:** A selected radio button.
- Numbers:** A radio button.
- Counts:** A radio button.
- Full matrix:** An unchecked checkbox.
- Display classes:** A text box containing the value "8".
- Grid Divisions:** A text box containing the value "4".

At the bottom of the dialog box are two buttons: "OK" and "Cancel".

The residue append as additional window to the Rainflow analysis. The Rainflow properties dialogue box is accessed by clicking on the Rainflow graph in the Result Window with the right mouse button to open a context menu. Click on "Properties" and the Rainflow properties dialogue box will open. The legend can be switched on or off with a checkmark.

Rangepair from Rainflowmatrix

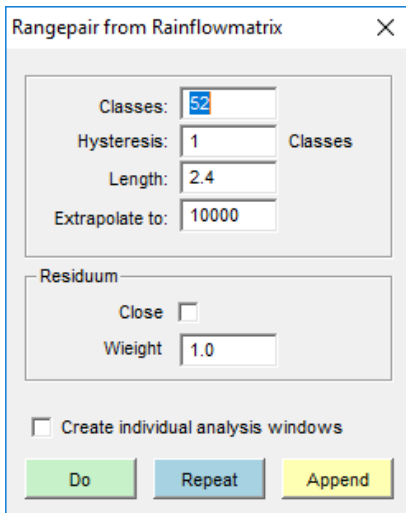
Rangepair from Rainflowmatrix calculates the class passage frequency of an individual signal by the defined classes. The Rangepair from Rainflowmatrix result is calculated by the Rainflowmatrix and appears in the result window, without representing the Rainflowmatrix as analysis.

Procedure:

Mark one signal and click in the main menu **analysis / stats / Rangepair from Rainflowmatrix**:

The Rangepair dialogue box indicates the required number of classes, the length of the selected signal, and the desired extrapolation factor.

Enter the required parameters for Classes, Hysteresis, Length and Extrapolate.



Residuum:

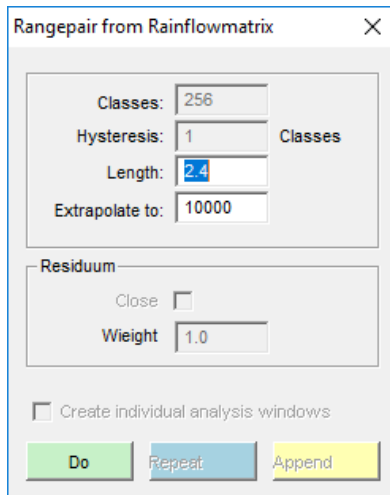
Choose **Close**, the Residuum will be closed.

Weight:

A **weight function** is a mathematical device used when performing a sum, integral, or average in order to give some elements more of a "weight" than others. They occur frequently in statistics and analysis, and are closely related to the concept of a measure. Weight functions can be constructed in both discrete and continuous settings.

Enter value from 0,1 to 1,0. Click **<Do>**. The diagram displays in the result window.

If the Rainflowmatrix exist and displayed in the current analysis window, the following dialogue appears:



Length and extrapolation factor can be only entered. Class number and resetting width had been indicated in the Rainflow dialogue.

Levelcrossing from Rainflowmatrix

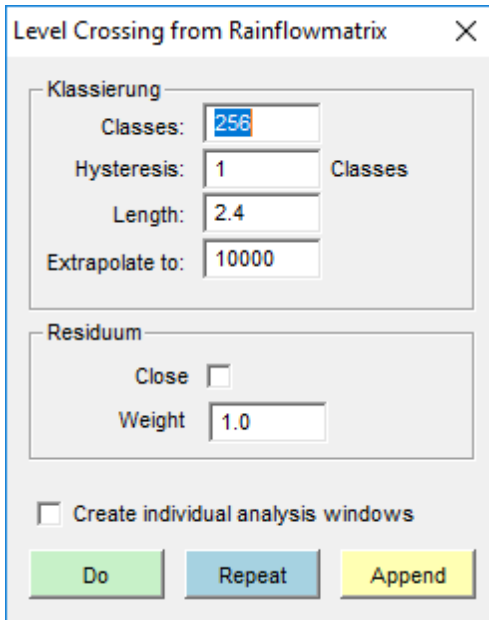
Levelcrossing from Rainflowmatrix calculated the class passage frequency of an individual signal by the defined classes. The Levelcrossing from Rainflowmatrix result is calculated by the Rainflowmatrix and appears in the result window, without representing the Rainflowmatrix as analysis.

Procedure

Mark one signal and click in the main menu **analysis / stats / Levelcrossing from Rainflowmatrix**:

The Levelcrossing dialogue box indicates the required number of classes, the length of the selected signal, and the desired extrapolation factor.

Enter the required parameters for Classes, Hysteresis, Length and Extrapolate.



Residuum:

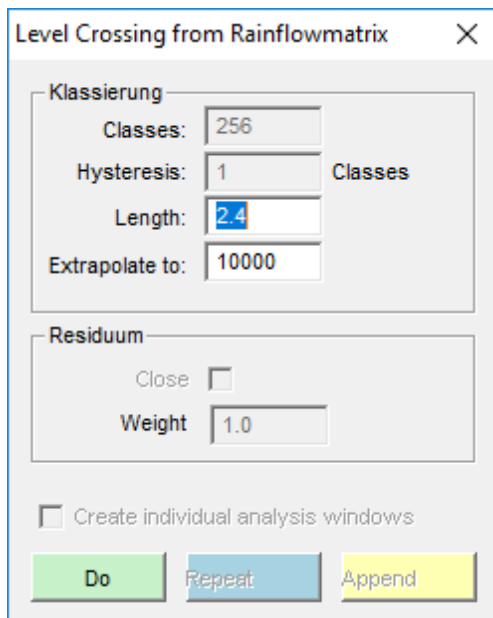
Choose **Close**, the Residuum will be closed.

Weight:

A **weight function** is a mathematical device used when performing a sum, integral, or average in order to give some elements more of a "weight" than others. They occur frequently in statistics and analysis, and are closely related to the concept of a measure. Weight functions can be constructed in both discrete and continuous settings.

Enter value from 0,1 to 1,0. Click **<Do>**. The diagram displays in the result window.

If the Rainflowmatrix exist and displayed in the current analysis window, the following dialogue appears:

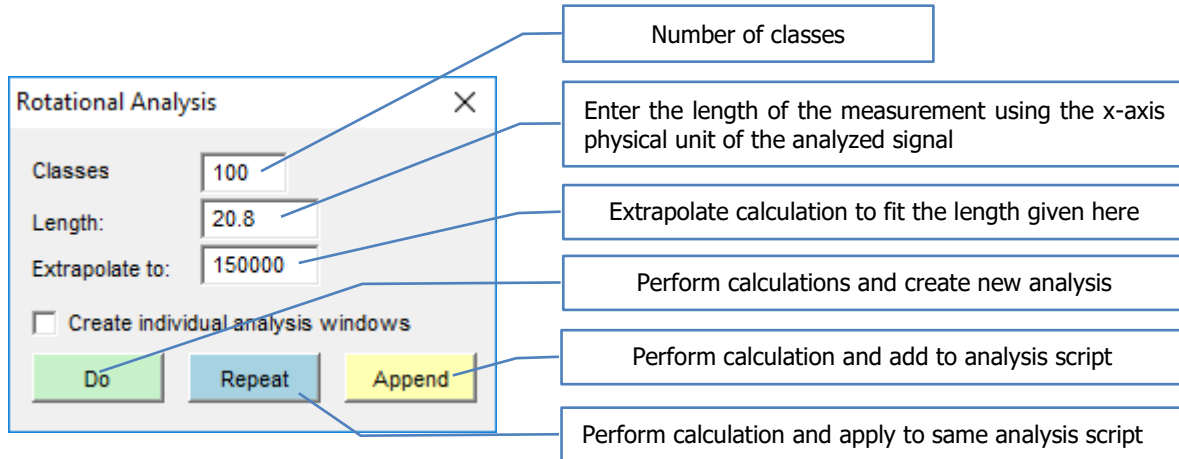


Length and extrapolation factor can be only entered. Class number and resetting width had been indicated in the Rainflow dialogue.

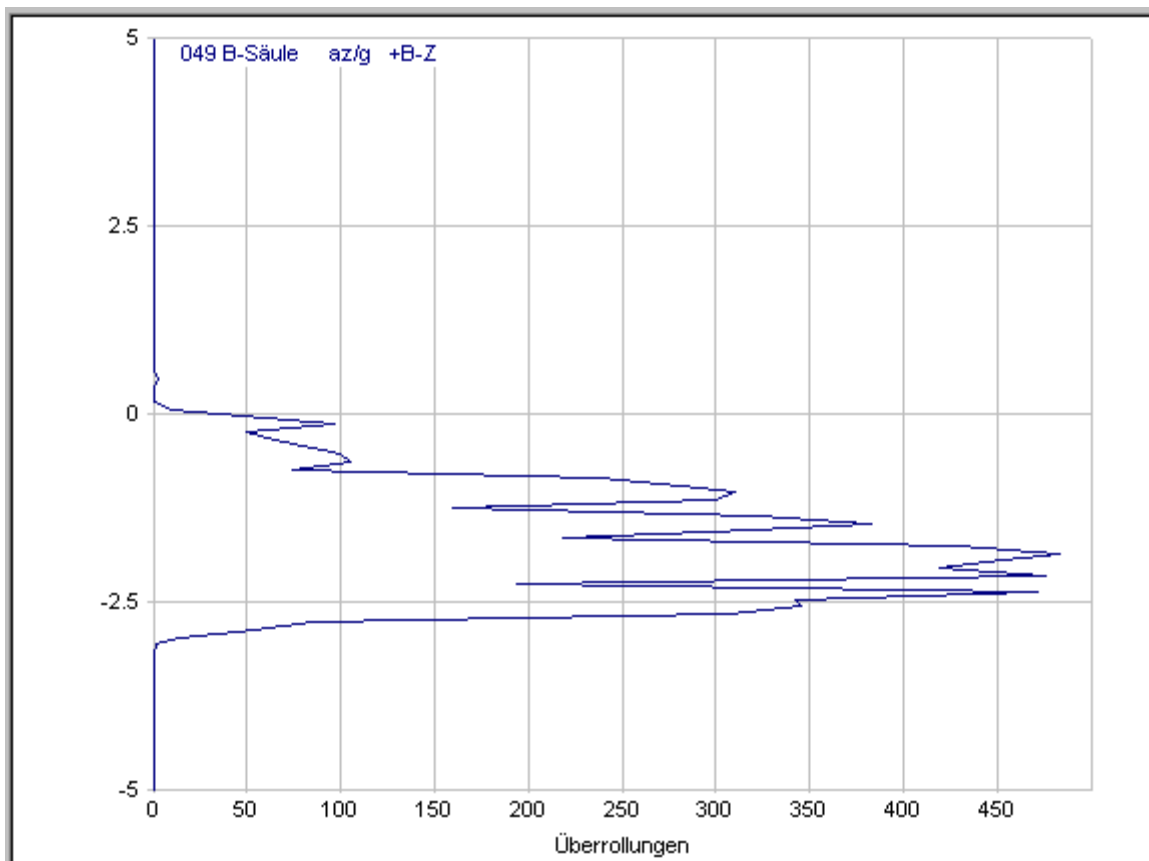
Rotational analysis

The Rotational analysis calculates the cycles of a rotary axle in defined classes. The result of classifying appears in the result window. For rotational analysis classifying a signal (for example Force in **Nm**) and number of revolutions a signal (in **min⁻¹**) must be present. Mark the signal which can be computed with a **Y**-mark, and the revolutions signal with **N**-mark.

Click in the Main Menu / **Analysis / Stats / Rotational Analysis**:



Click **<Do>** the classifying appears in the result window.



Damage from Rangepair

To calculate the damage from rangepair, a rangepair from rainflow diagram has to be created prior. If you are not familiar with handling the residuum, begin using the following values:

- Close Residuum
- Weight 1

Run damage from rangepair:

Choose **analysis / stats / Damage from Rangepair** from the main menu.

If you are not experienced using the damage calculation, you can begin using the following values:

- $K1 = K2 = 5$
- Live cycles $ND = 10e7$
- Fatigue limit $SD = 2000$

Damage

Stress S_a (log)

Life Cycles N (log)

Parameters:

Fatigue limit SD : 300 N/mm²

Live cycles ND : 1000000

Order $K1$: 5

Order $K2$: 5

Load Store

☐ Create individual analysis win

Do Repeat Append

Parameter input fields

Load Parameter from file

Store Parameter to file

Perform calculations and create new analysis

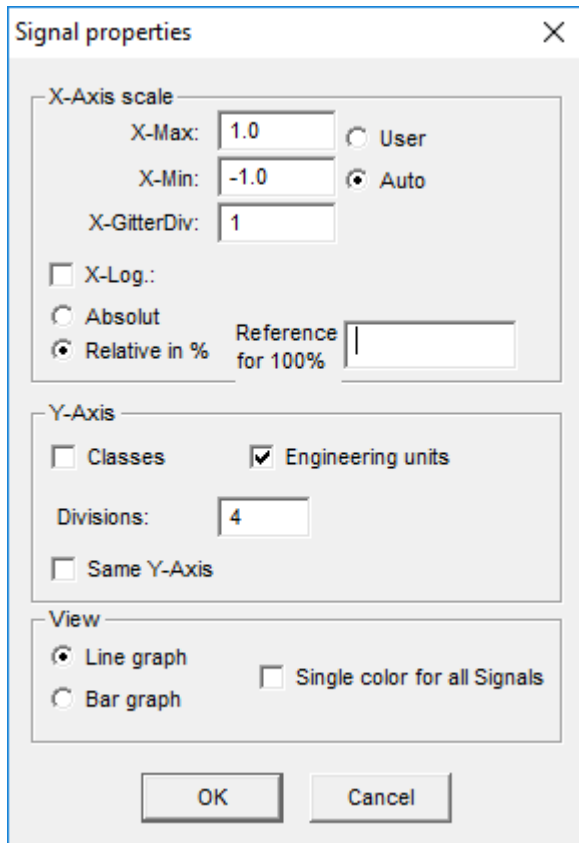
Perform calculation and add to analysis script

Perform calculations and create new analysis

Enter the required parameters and click **<Do>**. The diagram displays in the result window.

Change the x-axis representation from absolute to relative:

Right click into the damage diagram to open the corresponding context menu. Choose properties from this menu.



The image shows a 'Signal properties' dialog box with three main sections: 'X-Axis scale', 'Y-Axis', and 'View'. In the 'X-Axis scale' section, 'X-Max' is 1.0, 'X-Min' is -1.0, and 'X-GitterDiv' is 1. The 'Relative in %' radio button is selected, and the 'Reference for 100%' field is empty. In the 'Y-Axis' section, 'Engineering units' is checked, and 'Divisions' is 4. In the 'View' section, 'Line graph' is selected. At the bottom are 'OK' and 'Cancel' buttons.

Section	Property	Value
X-Axis scale	X-Max	1.0
	X-Min	-1.0
	X-GitterDiv	1
	X-Log.	<input type="checkbox"/>
	Relative in %	<input checked="" type="radio"/>
Y-Axis	Classes	<input type="checkbox"/>
	Engineering units	<input checked="" type="checkbox"/>
	Divisions	4
	Same Y-Axis	<input type="checkbox"/>
View	Line graph	<input checked="" type="radio"/>
	Bar graph	<input type="radio"/>
	Single color for all Signals	<input type="checkbox"/>

Activate "Relative in %" and enter the 100% reference value in the edit field.

If the "Relative in %" option is active, but no reference is given, the system will use the terminal value as 100% reference.

Ex.:

1.8e-24 should be 100%; Enter in reference for 100% = **1.8e-24**. The axle description displays sum damage % [100%=1.8e-024]

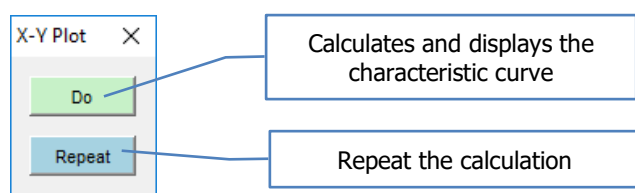
X-Y Plot Display (Characteristic curve)

The display of signals plotted against one or more signals is initiated from the Analysis Menu. Click in the menu **analysis / XY Plot**. In order to define which signal is to be superimposed on another signal you must define X and Y marks.

Example: Three signals are displayed in the Analysis Window. The first two signals are to be plotted against on the third.

Choose option **XY Plot** from the analysis menu. The **XY Plot** dialogue box will appear. Move the cursor next to the first display channel until the cursor turns into an **M**, then click left. The mark context menu appears. Choose **Y** from the menu. The display channel will be marked **Y0**. Repeat for the second channel to mark it with a **Y1**-mark. Proceed in the same way for the third channel, but choose **X** instead of Y in the context menu. This will mark the third channel with **X0**.

Click **<Do>** in the **X-Y Plot** dialogue box.

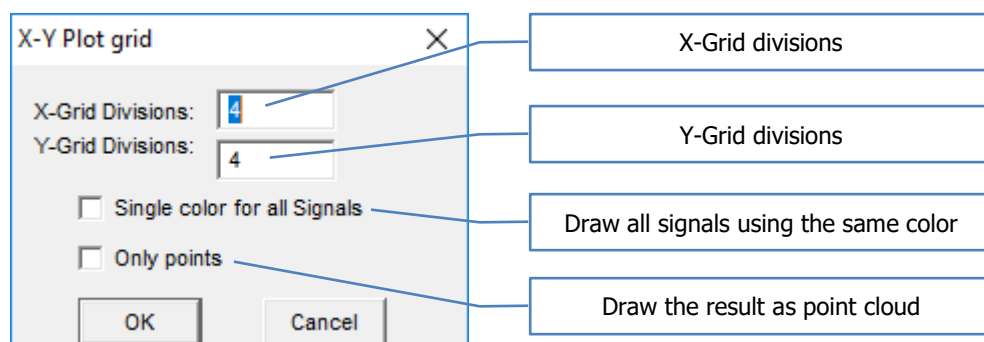


The Result Window will display the characteristic curves.

You can display n signals on top of n signals in the same way. The order in which they are assigned corresponds with the mark count, i.e. , Y0 will be plotted against X0, Y1 against X1, etc.

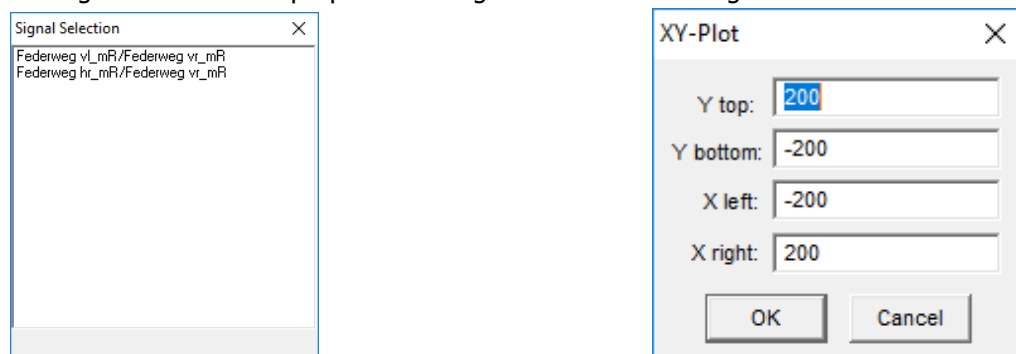
X-Y Plot Grid Dialogue Box

To open the X-Y Plot grid dialogue, right click beside the plot in the result window and choose "Properties from the appearing context menu.



X-Y Plot Properties Dialogue Box

Settings in the X-Y-Plot properties dialogue box refer to a single channel.



To access the X-Y Plot properties dialogue box, right click inside of the plot area in the result window and choose "Properties" from the appearing context menu. If three or more signals were marked, a Signal Selection dialogue box appears. Select the desired signal by double-clicking on it. The X-Y-Plot properties dialogue box for the desired channel appears. If only two signals were marked, the X-Y-Plot properties dialogue box is accessed directly without opening the Signal Selection dialogue box.

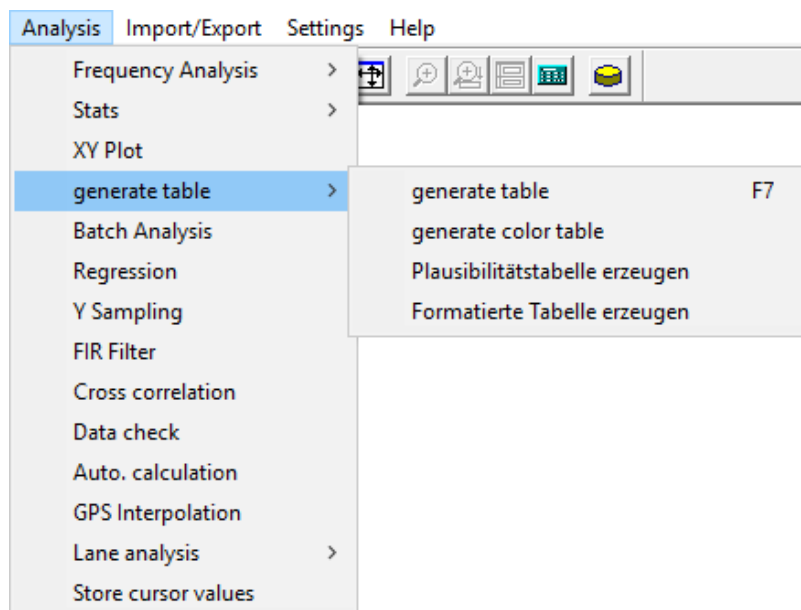
Generate Table

Generate table (F7)

Generate color table

Generate plausibility table

Generate formatted table



Create a table

To generate a table, use the F7 key, the button in the analysis Toolbar, or click on **Analysis / generate table /generate table** in the menu.

The table definitions dialog pops up.

Table definition

Table
Header: Newline with Ctrl +Enter

Signal Properties

Column Headline:
Any inputs are permitted

Headline:
Headline input field. Create new line with <Strg>+<Enter>

Number of digits:
Each digit / decimal point counts as digit (0.37 → 4 digits)

Function	Column header	Digits	Tabstop align	Tabstop pos (cm)
\$nameNo	df	6	Right	1.3
\$name	asdfsd	6	Left	0.2
#mean	Mean	6	Right	7.5
#min	Min	6	Right	2
#max	Max	6	Right	2
#eff	RMS	6.2	Right	2

Tabulator position:
Input in cm

Tabulator alignment:
Left, Right, Center, Decimal

Function:
Select the row function using the dropdown menu

Font column header
Font table

Line color
☐ Monochrom
☒ Signal color

Table generation
☐ Dynamic
☒ Fixed

Table type:
Dynamic: The table automatically adds new / additional channels
Fixed: The table only considers the channels which were already loaded to the analysis before creating the table

Last used tables

Last templates

Load table
Store table

Load template
Store template

Generate table

Line color:
Alters row color between monochromatic and signal colored

Fond:
Define fond for column headers and table entries

OK

Inputfield Headline

Enter a headline for the table. To insert a **newline**, use the <Ctrl> + <Enter>keys.

Change font: Mark the text, do click right and choose font from the context menu. Edit the font and/or format. Functions can also be inserted here.

Inputfield Function

Clicking into a cell opens a dropdown menu. All keywords included in E.d.a.s.Win are listed here. Click on the keyword you want to display in the table.

Inputfield Column header

The header is free of choice, and can be entered by the user.

Inputfield: Digits

One digit per number or comma / dot. Example: 0,5123 = 6 digits

Manually define number format (fraction digits):

Example: 8.2 = 8 digits and 2 fraction digits (e.g. 12345.78). All fraction digits aligned at the right side in the table.

Inputfield: Tabstop align

Clicking into a cell opens a dropdown menu. Choose between Right, Left, Center and Decimal (Comma digit)

Inputfield: Tabstop position (cm)

The input unit is cm.

Button: Font Column header and Font table

Opens the dialog to edit the text font.

Selection monochrom or signalcolor:

Monochrom = The table lines are uncolored.

If "Signal color" is selected, the table rows are drawn in the color of the respective signal.

Example:

Combine all channels displayed in the analysis window. When overlaid, the signals are displayed in different colors (for further information on that see Settings Menu / Colors). Open the table format dialogue with F7, load a table with the color selector set to "Signal color" and confirm with <OK>.

A table with an appropriate row coloring will appear in the result window.

If no channels are combined, the rows are colored with the signal color from the analysis window.

Selection table generation dynamic or fixed:

With the table generation selector set to "dynamic", all rows are created using the exact same generic definition, only altering the channel in each row. So it is easily possible to add new channels.

Further it is possible to change the typeface of entire columns at once. To do so, change to the tab "Table" and highlight the column you want to change the appearance of and then right click on it. Choose "Font" from the appearing context menu. Set the font to fit your needs and choose <Ok>. The formatted table will appear in the "Tab. Calc." tab.

Signal Properties

No	Signal Name	Mean	Min	Max	RMS	
\$tbl1<1;\$nameNo(4,6)		\$name(4,6)	\$mean(4,6)	\$min(4,6)	\$max(4,6)	\$eff(4,6)>

Analyse / Tabelle / Tab.calc. / Text / Text.calc. / Rep.View

With the table generation selector set to "fixed", each row is created using its own specific definition. Each channel contained in the table has to be loaded to the analysis view prior to the table creation because there is no generic rule to create table rows.

Lacking a generic creation rule, each entry of the table can use a different typeface than all other entries. So you can choose e.g. the font of each entry independently. To change the font act like described above.

You can choose sign the text of each entry independently. To change the text see the discussion above.

Signal Properties

No	Signal Name	Mean	Min	Max	RMS	
\$nameNo(s0,6)		\$name(s0,6)	\$mean(s0,6)	\$min(s0,6)	\$max(s0,6)	\$eff(s0,6)
\$nameNo(s1,6)		\$name(s1,6)	\$mean(s1,6)	\$min(s1,6)	\$max(s1,6)	\$eff(s1,6)
\$nameNo(s2,6)		\$name(s2,6)	\$mean(s2,6)	\$min(s2,6)	\$max(s2,6)	\$eff(s2,6)
\$nameNo(s3,6)		\$name(s3,6)	\$mean(s3,6)	\$min(s3,6)	\$max(s3,6)	\$eff(s3,6)

Analyse

Tabelle

Tab.calc.

Text

Text.calc.

Rep.View

Field: Last used tables

The last four tables used are listed here to offer quick access.

Button: Load table and Store table

Load table:

Load an existing table file (*.tbl).

Store table:

Stores the actual table with an user selectable name.

If no file name is assigned all changes are stored in "default.tbl". Default.tbl is the standard table used by E.d.a.s.Win.

Create Plausibiläts table:

Choose **Analysis / generate table / Plausibiläts tabelle erzeugen** to create a table with the following characteristic values in the result window.

Kennwerte

name	mean	max	t(max)sec	min	t(min)sec	delta	sdev	eff
558 Sitzschiene Beschlg. x-Richtung / g	0.0001144	0.007381	8.855	-0.007104	9.314	0.01448	0.00255	0.002553

Analyse \ Tabelle \ Tab.calc. \ Text \ Text.calc. \ Rep.View

Tables provided in the E.d.a.s.Win directory:

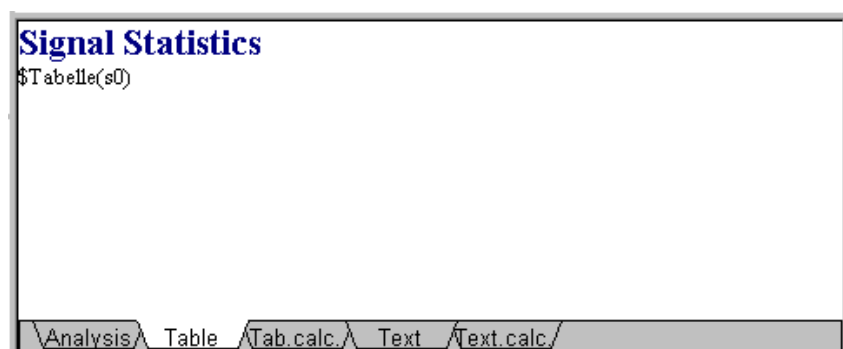
Type of Analysis:

Time-function process
Time at level
Range Pair
Rainflow
Level crossing

File Name:

Zltab.rtf
Vwtab.rtf
Rptab.rtf
Rftab.rtf
Lctab.rtf

These tables can be modified in the Result Window to suit your needs. Click on the „**Table**“ tab and enter your text. By using the context menu (right mouse button in the Result Window) you can load an existing RTF table, save a table that has been created, or you can determine font attributes and paragraph formats. Using „**Insert Function**“, you can embed calculation functions via a dialogue window. You can insert key words (e.g. names, mean value, maximum value or other) here. Functions can be transferred in sequence, or they may be added one underneath the other by using the **<CRLF>** switch. Tables and functions may only be edited in „**Table**“ mode. After you have created the table, click on „**Tab.calc.**“ to view the calculated table in the Result Window. A „**Tab**“ mark appears as bookmark underneath the associated analysis display in the Analysis Selection Window. This bookmark may be dragged onto the page in the Layout View in order to display the table you have created on the desired page. You can switch at any time between the data entry and the calculation modes of the table.



Creating Tables with/without functions

Signal Statistics			
name	mean	max	min
060 Driving speed/km/h	94.91	156.49	0.0006176
043 Engine revolutions/1/min	3574.4	5268.9	383.8
443 Sliding roof ay/g	-0.2686	0.3227	-0.8603

Table above calculated with Tab calc.

Depending upon kind of the analysis in the analysis window an associated table (e.g. time function process, period spent o.ä.) is generated automatically.

Batch Analysis

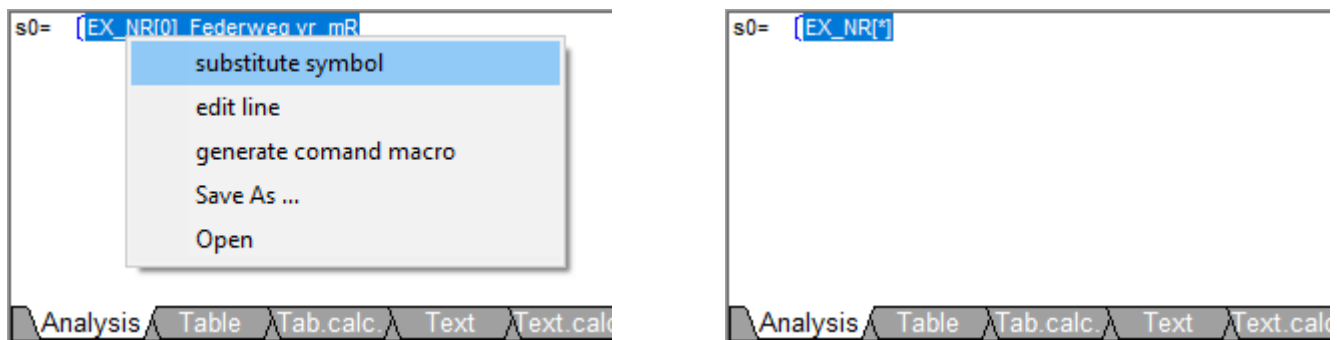
The batch analysis function enables the user to automatically perform multiple analyses on different measurement files using a single E.d.a.s.Win – document created before.

E.d.a.s.Win document preparation:

The channel names may vary in each measurement file and so in each cycle of the batch analysis. To treat this you have to mark the signals to be calculated in each cycle as substitute symbol in the analysis script of the E.d.a.s.Win document that is going to be used for the batch analysis.

To mark a channel as substitute symbol, enter the analysis script window (Result Window tab "Analysis") mark the channel you want to substitute each cycle, right click on it and choose "substitute symbol" from the appearing context menu.

Repeat this procedure for all channels that will be substituted by the batch analysis.



After marking a channel as substitute symbol, the channel number in the brackets will change to a star (EX_NR[12] → EX_NR[*]).

When all substitute symbols are set and the analysis script holds all the calculation instructions needed for the analysis, save the E.d.a.s.Win document.

„Save with data and pictures “may not be used!”

Important!

A batch analysis can only calculate exactly what the E.d.a.s.Win - document contains.

Running the analysis.

Click in the main menu analysis/batch analysis. A dialogue appears.

Important!

With selection of several measuring data sets the channels must be the same in number and kind.

The 'Batch processing' dialog box contains the following elements:

- Document:** G:\EdasWin_daten\EX_Nürburgring\EX_Messe.ew
- Dataset:** G:\EdasWin_daten\Motor\Original\R57_107658.ai
- Channel list table:**

Channel name	from	until
<input checked="" type="checkbox"/> Antriebseinh.-Lagerkraft rx	-58.3008	58.3008
<input checked="" type="checkbox"/> Antriebseinh.-Lagerkraft ry	-23.6433	23.6433
<input checked="" type="checkbox"/> Antriebseinh.-Lagerkraft rz	-52.6523	52.6523
<input checked="" type="checkbox"/> Antriebseinh.-Lagerkraft lx	-24.1704	24.1704
<input checked="" type="checkbox"/> Antriebseinh.-Lagerkraft ly	-22.6143	22.6143
<input checked="" type="checkbox"/> Antriebseinh.-Lagerkraft lz	-53.1604	53.1604
<input checked="" type="checkbox"/> Momentenstütze Motor - unt...	-45.4105	45.4105
<input checked="" type="checkbox"/> Motormoment_soll	-1023.5	1023.5
<input checked="" type="checkbox"/> Motormoment Fahrerwunsch	-1023.5	1023.5
<input checked="" type="checkbox"/> Fahrpedalwinkel	-99.6107	99.6107
- Replaced Functions:**
 - Levelcr.Parameter ☐
 - Rainflow Parameter ☐
 - FFT ☐
- Result Options:**
 - ASCII Export ☒
- Print:**
 - Printer Properties ☐
 - Print ☐
- Buttons:** OK, Cancel

Callouts from the left explain the functions of these elements:

- E.d.a.s.Win base document for the batch analysis
- Selection of the datasets to be used for the analysis
- Activate channel to be processed in batch analysis
- Double clicking on a channel opens dialog to set the desired analysis range
- Checkmark: replaces the appropriate analysis in the selected E.d.a.s.Win document
- Input for Levelcrossing, Rainflow and FFT Related parameters
- Activate ASCII export for the batch analysis results
- Input for ASCII export related parameters
- Activate printer export for the batch analysis results
- Gets the printer settings dialogue
- Run the batch analysis

Input of the desired analysis range:

Mark the channel from the analysis range which be edited. Double click gets the following dialogue:

The 'Dialog' box has two input fields: 'from' and 'to'. The 'from' field contains the value -45.4105 and is highlighted with a blue selection box. The 'to' field contains the value 45.4105. Below the fields are 'OK' and 'Cancel' buttons.

Enter analysis range values and confirm with <OK>.

With the checkmark at ASCII – export; an ASCII file for each worked on channel will be stored. The file name forms from the input of the user (prefix) and an appendix (_nn; with nn = current number), for which automatically one produces. Prefix of the file name and data path are entered in a file dialogue. The file dialogue appears with the selection of the checkmark to activate the ASCII - export.

The batch analysis starts with <OK>

Regression representation over value pair

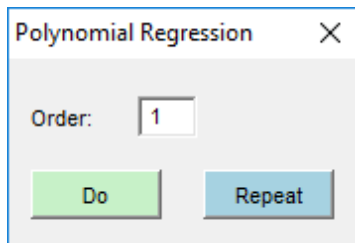
In statistics, **regression analysis** examines the relation of a dependent variable (response variable) to specified independent variables (predictors).

Procedure:

Load the two signals you want to process with the regression curve to the analysis.

Go to the main menu and choose **analysis / regression**.

Enter the order in the following dialogue (maximum order is 8).

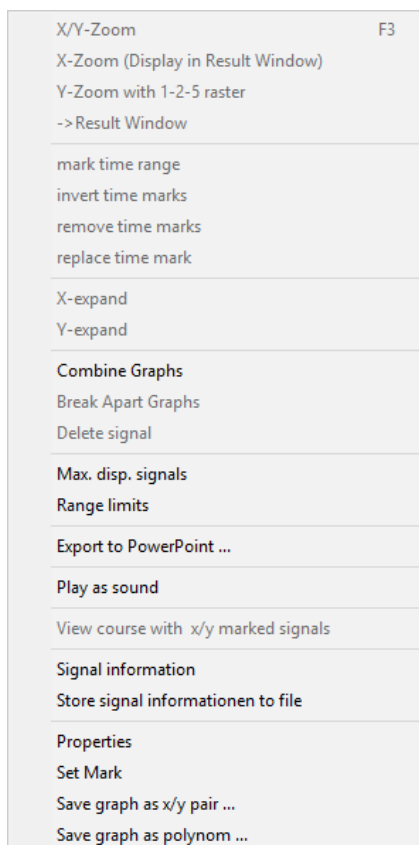


Set the **X** and **Y** marks.

Click <Do> to start the calculation.

The result can be stored as pair (.lin) or as polynomial (.ply) file.

Right click into result window or the appropriate daughter analysis to open the following menu:



Choose "Save graph as x/y pair" (.lin) or "Save as polynom" (.ply).

For further information see chapter Linearisation - function and Polynom calculation.

The **regression formula** can be inserted by the table or text tab with the "Insert text function" option from the appropriate context menu.

The keyword to search for in the "Insert text function" dialogue is: \$RegressionCurve

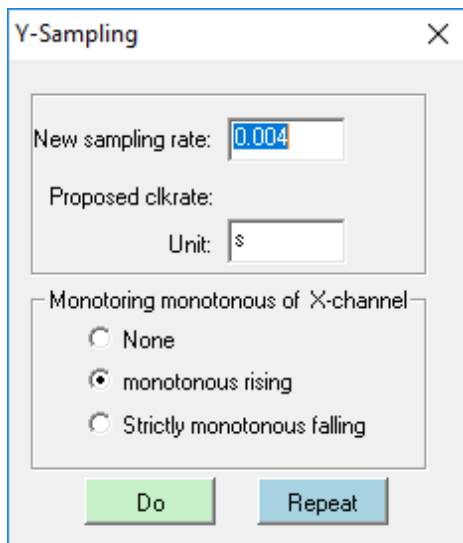
Y sampling

Signal rescanning across a selectable channel.

Procedure:

Mark the signal to be rescanned with an **Y**-, and the base channel with an **X**-mark.

Click in the main menu **analysis / Y sampling**

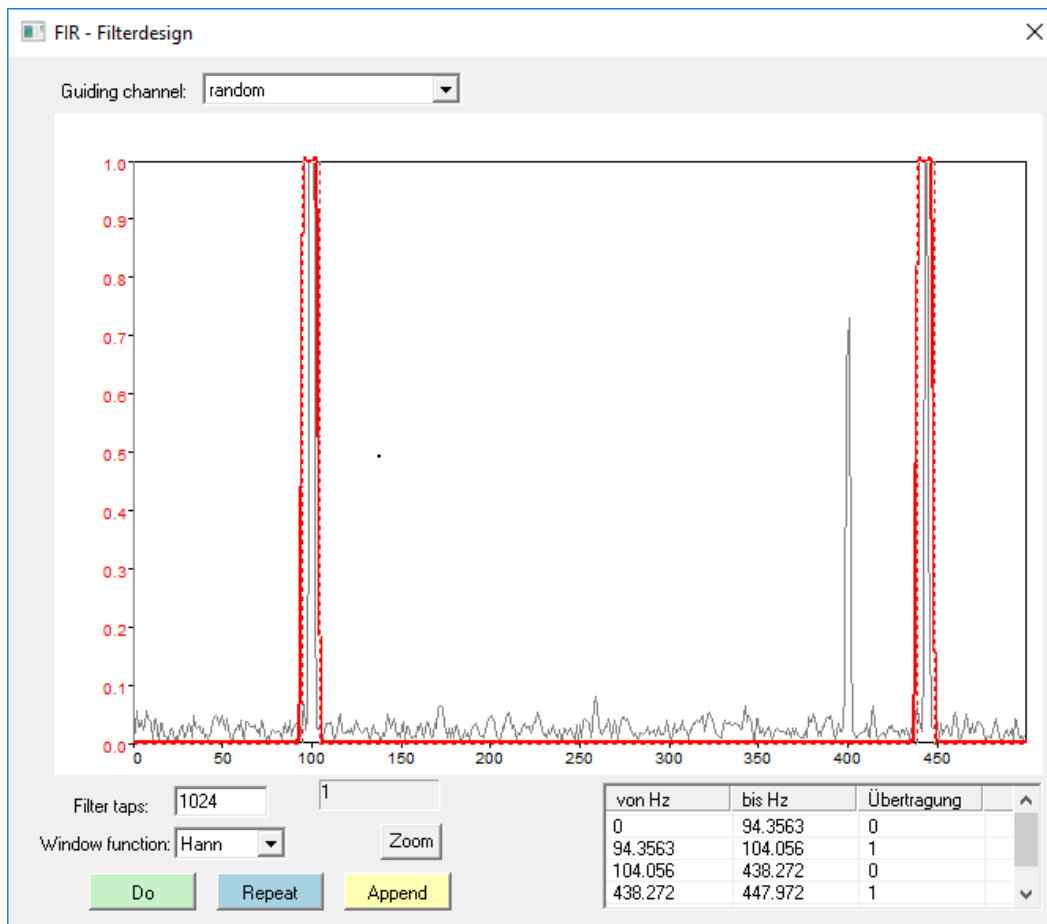


The image shows a software dialog box titled "Y-Sampling" with a close button (X) in the top right corner. Inside the dialog, there are three input fields: "New sampling rate:" with the value "0.004", "Proposed clkrate:" which is empty, and "Unit:" with the value "\$". Below these fields is a section titled "Monitoring monotonous of X-channel" containing three radio button options: "None", "monotonous rising" (which is selected), and "Strictly monotonous falling". At the bottom of the dialog are two buttons: "Do" (green) and "Repeat" (blue).

Enter the required parameters and click <**Do**>

FIR Filter

Choose a signal and mark it with a **Y**-mark. Click in the main menu **analysis / FIR filter**. The FIR filter dialogue appears:



Select guiding channel:

The spectrum of the guidance channel is plotted in grey. The guidance channel can be selected using the dropdown menu "Guiding channel".

To select only a part of the guidance channel to be filtered, create a selection frame in the guidance channel prior to calling the FIR filter function. The filter will only affect the selected signal part.

Graphically define the transfer function:

The filter transfer function is defined by multiple lines in the spectrum plot of the FIR filter dialogue. Begin by dragging the first frequency line from the left of the Y-axis into the plot and place it where you need a cutoff. If necessary repeat this step for further frequency lines. Each frequency line defines one cutoff frequency of the filter.

If frequency lines are drawn, there will automatically appear attenuation lines that connect the frequency lines. Modify the filters attenuation by dragging them up or down as you need it.

Tabular definition of the transfer function:

As more accurate alternative to the purely graphical filter design, you can drag frequency lines into the spectrum plot, but instead of placing them graphically you can place them using the table in the down left corner of the dialogue. This table holds one row for each spectrum snippet and its appropriate attenuation line(s) defined by the frequency lines dragged in before.

To modify the tables content, click on the row you want to change and then enter the desired values to the appearing dialogue.

Real vs Ideal transfer function:

1. The dotted lines define the ideal transfer function.
2. The red line shows the real transfer function.

Filter tabs:

The number of filter tabs affects the deviation between the real filter transfer function and the ideal transfer function defined by the red line. To decrease the deviation, increase the number of filter tabs. Increasing the filter tabs also leads to a more complex filter, demanding more time to calculate.

Window function:

The window function heavily affects the pass- and stopband ripple of the filter.

Zoom:

Zooming in the spectrum plot can be done by creating a zoom frame and clicking on the "Zoom" button.

To create a zoom frame click in the plot and drag the mouse until the frame has its desired size. To resize the frame click on the frames edges or corners and drag them to the desired size.

To expand the plot to its original range, click "Expand".

Delete frequency lines or zoom frame:

Right click on the frequency line or zoom frame you want to remove and choose:

3. "Delete freq. line" to remove a frequency line
4. "Delete Zoom frame" to remove the zoom frame

Do:

Complete calculation and create new analysis script.

Repeat:

Complete calculation and create the same analysis script.

Append:

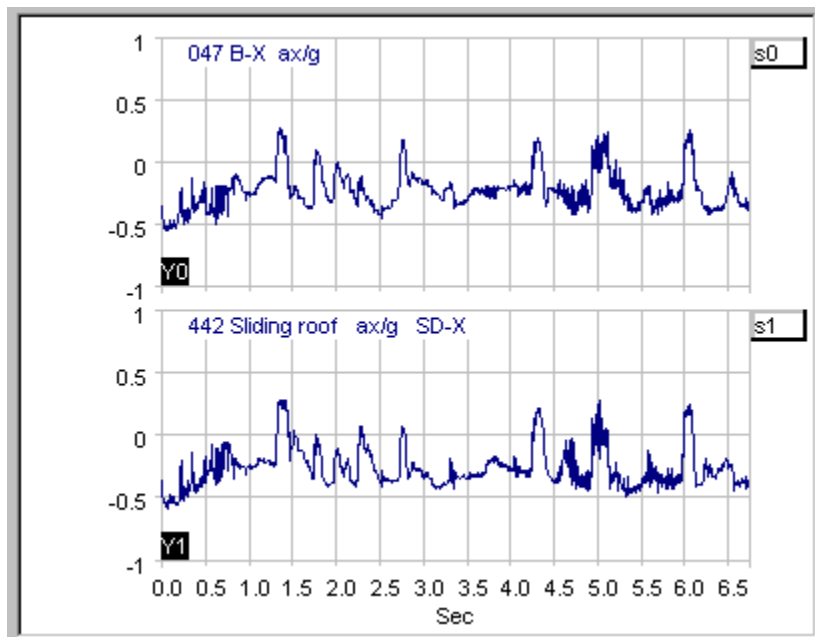
Complete calculation and append on analysis script.

Cross correlation:

The cross correlation function can determine whether a certain signal is contained in another signal or not.

Procedure:

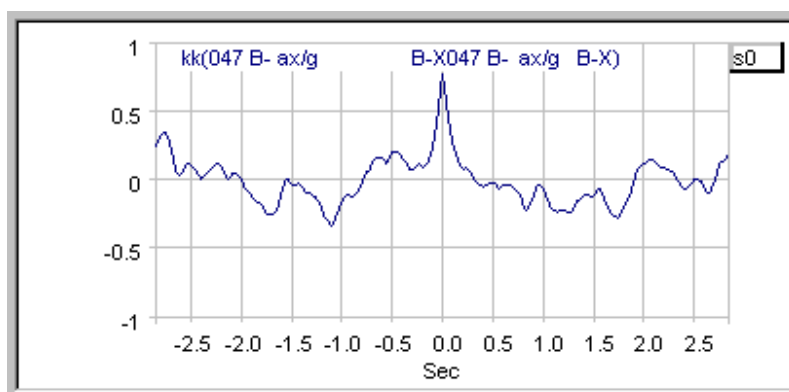
Mark the signals you want to calculate the CCR of with **Y**-marks:



Click in the main menu **analysis / Cross correlation**.

Simple:

Enter samples, choose simple and click <**Do**>. The cross correlation appears in the result window.



The peak at 0,0 seconds indicates the correlation factor (conformity of the signals).

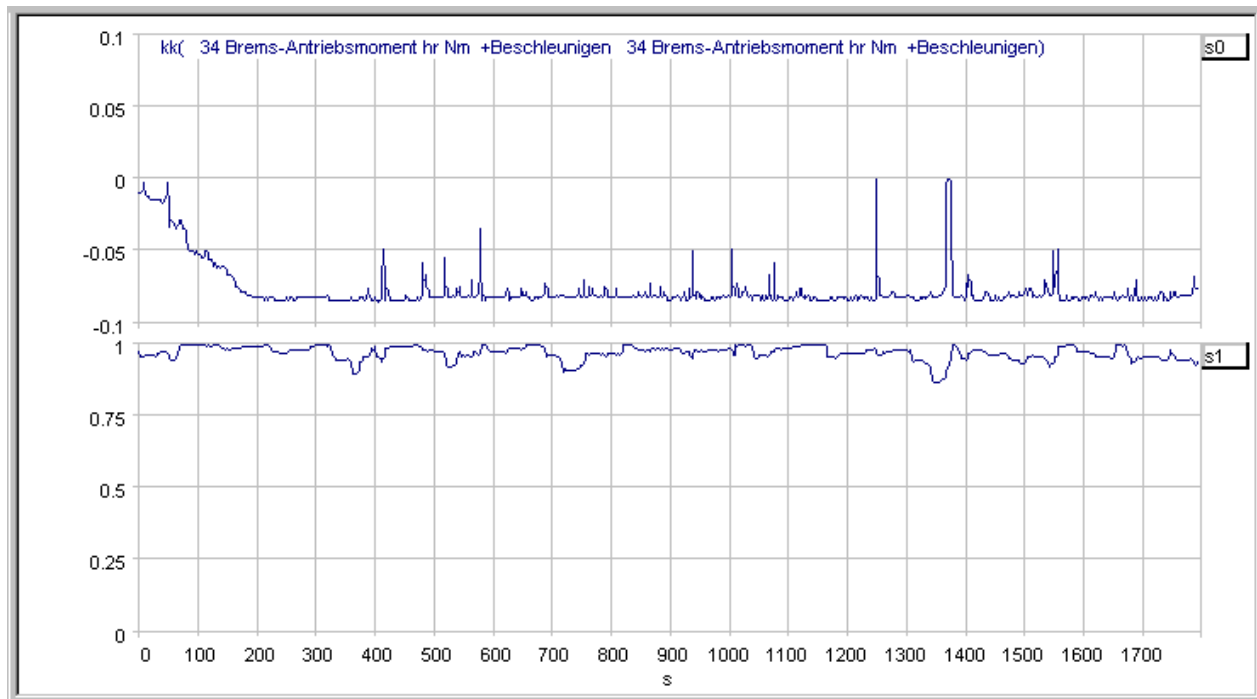
Multiple (calculating time shift):

Enter samples, choose multiple (calculation time shift).

Enter the number of samples, which the selection frame is shifted after each step of the calculation. As smaller the number of samples to shift, as smaller the error in the calculation of the signals.

Click <Do>.

Two diagrams appear in the result window:



The upper diagram shows the time offset of the signals.

The lower diagram shows the conformity of both signals, to read from the factor 0 - 1 of the y axis.

DataCheck

MH's DataCheck is an optional software module for E.d.a.s.Win, please contact MH GmbH

DC Table generation

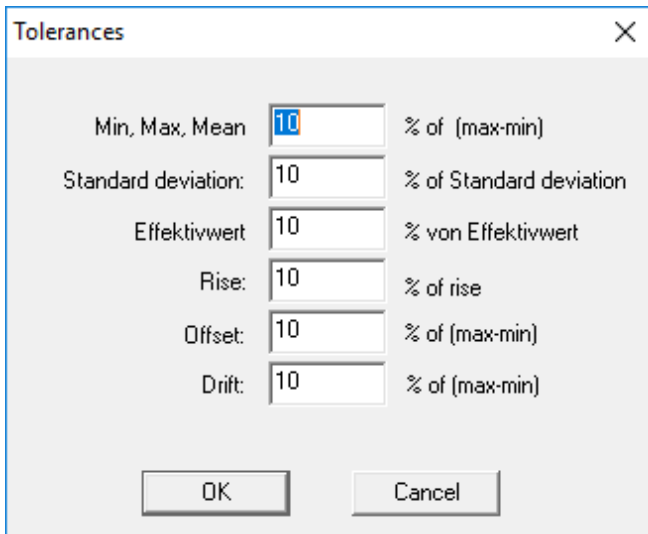
The "Data check" function examines the plausibility of measured data sets. The measurement data is compared against statistic values within definable borders.

The Values to check against are indicated in a DataCheck table.

Generate DataCheck Table (DCT):

The DataCheck table is created based on statistical values of the appropriate signals in the analysis view. You can enter a deviation threshold for each of the statistical values in the text field beside it. The deviation threshold is entered in percent.

To create a DCT Choose **Import/Export \ Export \ DC table** from the main menu.



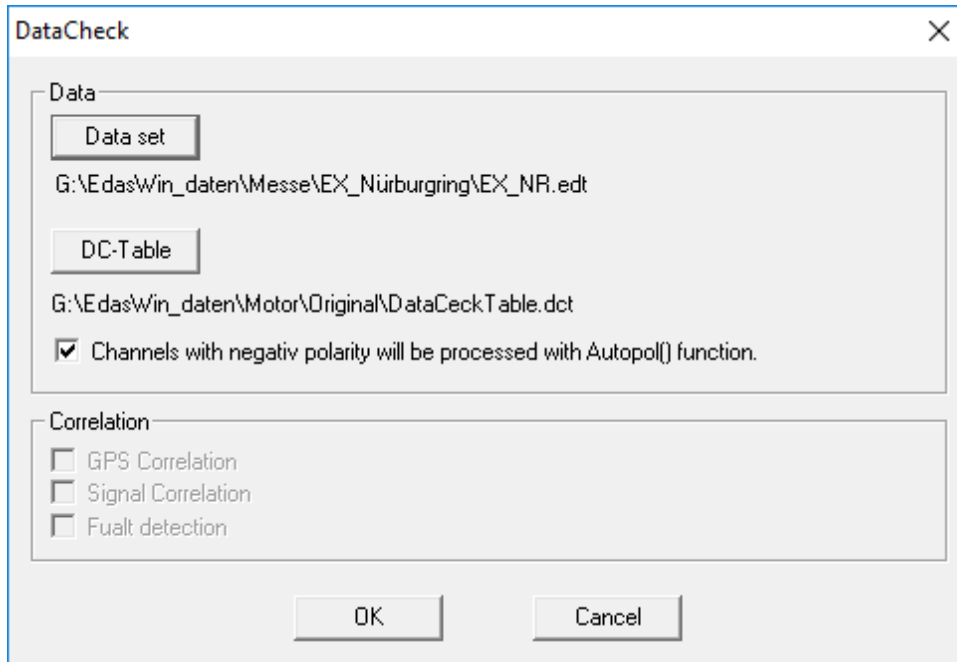
Label	Value	Unit
Min, Max, Mean	10	% of (max-min)
Standard deviation:	10	% of Standard deviation
Effektivwert	10	% von Effektivwert
Rise:	10	% of rise
Offset:	10	% of (max-min)
Drift:	10	% of (max-min)

Enter the desired deviation threshold for each statistical value beside it and confirm with **<OK>**

Enter filename and storing path in the appearing dialogue and click **<Save as>** to finish the DC - table generation / export. The file extension of the created DCT file is ".dct".

Using DataCeck.

Click in the main menu **analysis / DataCheck**.



Select a DC table and the data set to be examined. If the checkmark below the DC-Table path is set, channels with negative polarity are processed by the `autopol[]` function (**multiplication with - 1**).

If there are sensor locations present in the data set that have no corresponding entries in the DCT, only a statistic computation of these sensor locations is accomplished but no DataCheck.

Hitting the button **<OK>** starts the DataCheck routine. During the execution of the DataCheck routine and the presentation in the analysis script window, the background of the analysis view is dyed green.

Color indication of the first column Lchan:

Green: DataCheck accomplished, measured values are within the tolerances.

Red: DataCheck accomplished, measured values are not within the tolerances.

Not colored: The sensor location was not available in the DC table; the statistic computation is accomplished instead of a real DataCheck.

Recommendation:

To increase the evaluation speed with large data sets, do an E.d.a.s.Win export of the appropriate dataset with linear parameter prior to the execution of the DC routine.

For information about E.d.a.s.Win Export see chapter "E.d.a.s.Win Export"

Auto. calculation

MH's Auto Calculation is an optional software module for E.d.a.s.Win, please contact MH GmbH

The Auto calculation feature, serves to automatically analyze and present Signals. More precisely, this function automatizes the calculation and presentation of up to ten channels that are of a kind but stored in different measurement datasets.

This function is built around the Auto calculation dialogue which controls an E.d.a.s.Win document (*.ewd) created by the user prior to calling the Auto calculation function.

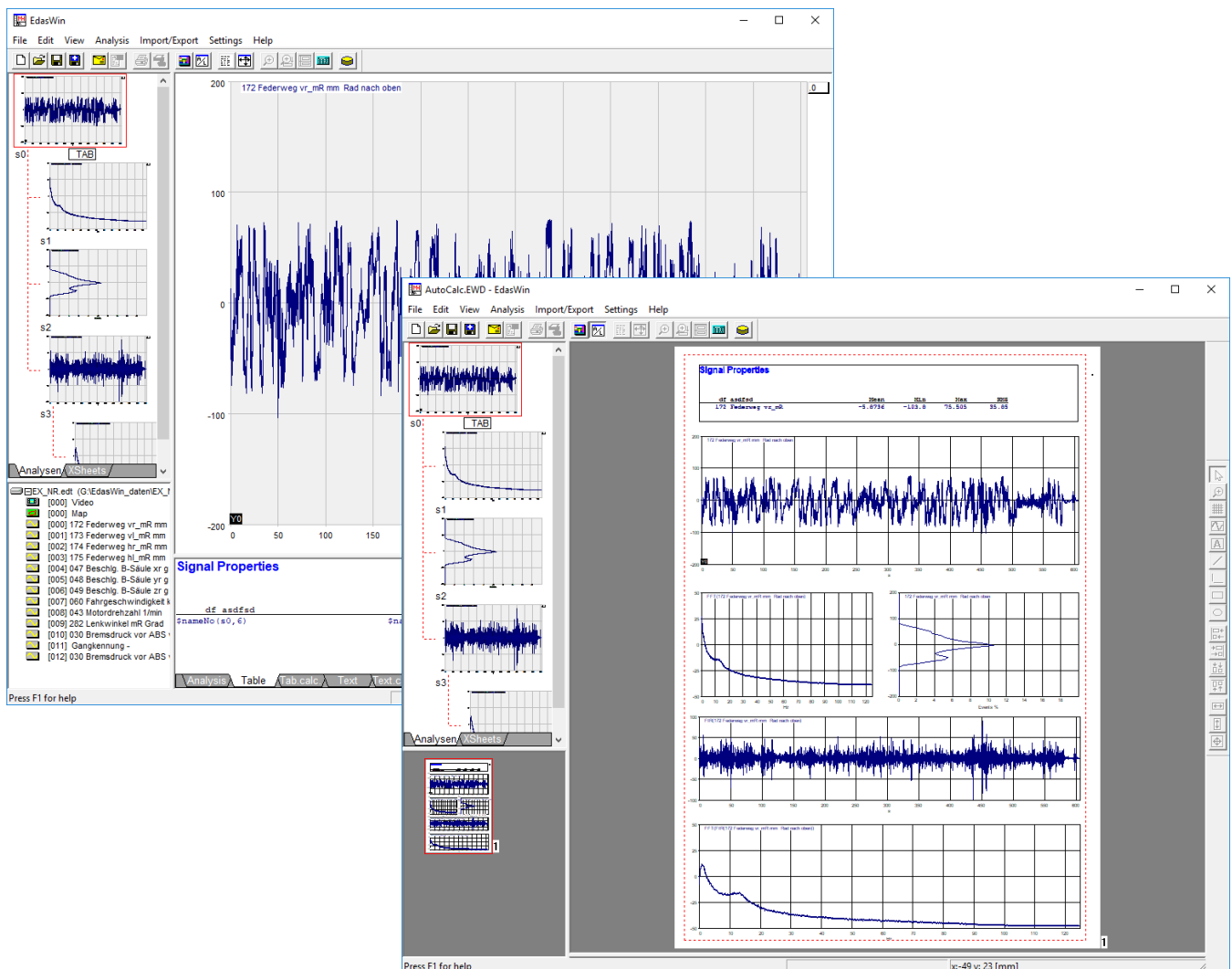
The E.d.a.s.Win document mentioned above has to contain all signal analyses and the desired output layout. The E.d.a.s.Win document has to be created for only one channel.

In fact the Auto calculation dialogue is necessary to select the signals used in the analysis and controls the scaling properties of each channel in the result presentation.

Procedure:

Create an E.d.a.s.Win document which contains all analysis and layout instructions for one channel.

Example: Prepared E.d.a.s.Win document with all desired analyses and layout definitions



After creating an E.d.a.s.Win document with all assumed properties, call the Auto. calculation function from the main menu (**Analysis / Auto. calculation**)

The Auto. calculation dialogue appears:

No.	Measure.File	Length	Extrapol.
0	G:\EdasWin_datent\...MotorShort.edt	7.2	10000
1	...R57_107658_anf-bue_DSC-off_K	7.2	10000
2			
3			
4			
5			
6			
7			
8			
9			

Idx.	Sin	Name	Unit	Pol.	Page	File no.	Scaling	Scl. group	Scal. dar
0	28	Lenkwinkel oR	°	Linkskurve					
1	43	Motordrehzahl	1/min	keine					
2	60	Fahrgeschwindigkeit	km/h	keine					
3	358	Fahrpedalwinkel	°	steigend					
4	501	Momentenstütze MotokN		+Zug					
5	529	Antriebsseinh.-LagerkrkN		+Motor nach vorne	1	0	Auto1-2-5	1	#1<529>
6	530	Antriebsseinh.-LagerkrkN		+Motor nach links					
7	531	Antriebsseinh.-LagerkrkN		+Motor nach oben					
8	532	Antriebsseinh.-LagerkrkN		+Motor nach vorne	2	1	Auto1-2-5	1	#1<529>
9	533	Antriebsseinh.-LagerkrkN		+Motor nach links					
10	534	Antriebsseinh.-LagerkrkN		+Motor nach oben					
11	665	Rad-Bremsdruck nachbar		Bremsen					
12	666	Rad-Bremsdruck nachbar		Bremsen					
13	667	Rad-Bremsdruck nachbar		Bremsen					
14	668	Rad-Bremsdruck nachbar		Bremsen					
15	669	Radgeschwindigkeit	km/h	keine					
16	670	Radgeschwindigkeit	km/h	keine					
17	671	Radgeschwindigkeit	km/h	keine					
18	672	Radgeschwindigkeit	km/h	keine					
19	713	Bremsdruck vor ABS	bar	Bremsen					
20	999.01	dictr							
21	999.00	Motormoment Fahren	Nm						
22	99999	Motormoment_soll	Nm						
23									
24									
25									
26									

This dialogue holds the measurement file table on the left side, as well as a list of channels that will be processed within this analysis on the right side.

Adding measurement files to the file list:

To add an existing measurement file to the file list, click in an empty row of the file list and add the desired measurement file using the appearing dialogue.

Button Import Sensor location list:

To import the sensor location lists of all measurement files in the file list, click on this button. After clicking the list on the left side should be updated to hold all sensor locations of all measurement files.

Button E.d.a.s.Win – Document:

This button is used to select the E.d.a.s.Win document that is used for the analysis and layout definition.

Columns of the file list:

No.:	Number of the measurement file. Used in the channel list column "File no."
Measure.File:	Name of the measurement file
Length:	Length of the measurement section (e.g. 7.2km)
Extrapol.:	Extrapolated measurement section (e.g. 10000km). This value is used in several statistical calculations such as rainflow and levelcrossing to obtain more comparable results because the original length of the measurement section may differ widely between different measurement files. The measurement section is not necessarily a length in km but may also be time section, angles or else. The type of the measurement section depends on the origin of the measurement files.

Channel list									
Idx.	Sln	Name	Unit	Pol.	Page	File no.	Scaling	Sci. group	Scal. dar
0	28	Lenkwinkel oR	°	Linkskurve					
1	43	Motordrehzahl	1/min	keine					
2	60	Fahrgeschwindigkeit	km/h	keine					
3	358	Fahrpedalwinkel	%	steigend					
4	501	Momentenstütze Moto	kN	+Zug					
5	529	Antriebseinh.-Lagerkr	kN	-Motor nach vorne	1	0	Auto1-2-5	1	#1<529>
6	530	Antriebseinh.-Lagerkr	kN	-Motor nach links					
7	531	Antriebseinh.-Lagerkr	kN	-Motor nach oben					
8	532	Antriebseinh.-Lagerkr	kN	+Motor nach vorne	2	1	Auto1-2-5	1	#1<529>
9	533	Antriebseinh.-Lagerkr	kN	+Motor nach links					
10	534	Antriebseinh.-Lagerkr	kN	+Motor nach oben					
11	665	Rad-Bremsdruck nach	bar	Bremsen					
12	666	Rad-Bremsdruck nach	bar	Bremsen					

Fixed columns of the channel list:

Idx.:	Row count of the channel list
Sln.:	Sensor location number
Name:	Sensor location name
Unit:	Physical unit of the sensor location
Pol.:	Polarity of the channel

Editable columns of the channel list:

Page:	Length of the measurement section (e.g. 7.2km)
Extrapol.:	<p>Extrapolated measurement section (e.g. 10000km). This value is used in several statistical calculations such as rainflow and levelcrossing to obtain more comparable results because the original length of the measurement section may differ widely between different measurement files.</p> <p>The measurement section is not necessarily a length in km but may also be time section, angles or else. The type of the measurement section depends on the origin of the measurement files.</p>

GPS Interpolation

MH's GPS Interpolation is an optional software module for E.d.a.s.Win, please contact MH GmbH

GPS data usually is measured with a lower clock rate than the clock rate of the other signals.
To compensate this temporal difference, the GPS Interpolation produces additional GPS points between two GPS points over the speed and transverse acceleration in the signal clock rate.

It is also possible, to compensate failed GPS signals by same method. A failed GPS signal will be identified, if the current GPS positioning deviates from the previous more than 1000m.

Click in the main menu analysis / GPS interpolation.

The screenshot shows the 'GPS-Interpolation' dialog box with the following fields and callouts:

- Interpolation:** Two radio buttons: 'With GPS Signals' and 'Without GPS Signals'. Callouts point to these buttons with labels: 'Interpolation with GPS data' and 'Interpolation without GPS data'.
- Sensor location number:** A section containing four input fields: 'Longitude (x): 373', 'Latitude (y): 372', 'Speed: 60', and 'Lateral acceleration: 139'. Each field has a unit multiplier to its right: 'x 100 000' for longitude and latitude, 'km/h' for speed, and 'm/s²' or 'g' for lateral acceleration. A callout points to these fields with the label: 'Sensor location numbers of the signals used for the interpolation'.
- Correction:** A section containing two input fields: 'Lateral acceleration: 1.6' and 'Start angle: 20'. Callouts point to these fields with labels: 'Correction factor lateral acceleration' and 'Angle correction factor (start angle)'.
- Physical unit of the actual lateral acceleration signal to be used for the correction(m/s² or "g"):** Two radio buttons: 'm/s²' (selected) and 'g'.
- Buttons:** 'OK' and 'Cancel' buttons at the bottom.

Since the interpolation "with GPS signals" does only need the lateral acceleration correction factor, the input field for the angle correction factor is not editable in this mode.

In difference to the interpolation "with GPS signals" the interpolation "without GPS signals" requires to define both, the lateral correction factor and the angle correction factor.

To approximate the lateral acceleration correction factor run an x/y representation of the course prior to run the GPS interpolation.

The start angle depends on the driving direction of the vehicle at the very beginning of the dataset.

To create the x/y representation, mark the longitude- and latitude-signals in the analysis window with x/y marks. Then right click in the analysis window and choose course representation with x/y marked signals.

Preparation for speed and lateral acceleration of the interpolation

In some circumstances the speed and the lateral acceleration have to be adjusted prior to the interpolation. Adjust them by dragging a selection frame across the "vehicle stands" range.

canintpol()

Smooths the stairs of the speed and lateral acceleration signals if they are present as low clocked CAN signals. Click <Conv...> on the analysis calculator. Choose the function **StairKill**. This inserts **canintpol()** automatically in the analysis script. The **canintpol()** instruction can also manually added to the analysis script using the <Ins> button on the analysis calculator.

offc(x1,x2)

Offset correction. Set selection frame. Use the **<Offc>** key on the analysis calculator.

set(t1, t2, y)

For proper operation, it is required to set the values of speed and lateral acceleration that correspond to the vehicle standing still to zero.

The function meant for this is the **<Set>** function from the analysis calculator. Enter the values for the upper and lower limits as well as a replacement value in the corresponding dialogue.

After confirming, all values between the upper and lower limit will be set to the defined replacement value.

After the successful execution of the GPS interpolation, the channels holding the longitude and latitude data are replaced by the result of the GPS interpolation

To ensure the integrity of the acquired and calculated data it is forbidden, to change or manipulate the channels for:

5. Driving speed
6. Lateral acceleration
7. Longitude
8. Latitude

after executing the GPS interpolation routine. Doing so may cause the whole analysis to become inconsistent.

Example for an GPS-Interpolation:

Longitude(x)<373>

Latitude(y)<372>

Driving speed<60>

canintpol()

offc(1.88036,5.64107)

set(-1,1,0)

FahrzeugquerBeschlg.<139>

canintpol()

offc(1.88036,5.64107)

set(-0.3,0.3,0)

gpsintpol(0,373,372,60,139,1.6,20)

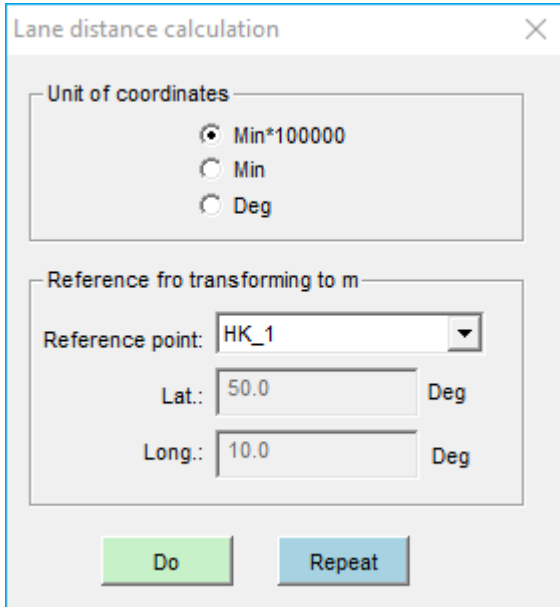
Lane analysis

The lane analysis calculates the deviation between a given driving lane and a predefined reference driving lane using the GPS data corresponding to the given driving lane.

The sequence described beneath is mandatory.

1. Lane distance calculation:

- Load the dataset containing the reference driving lane. Load the longitude and latitude channels to the analysis view
 - The reference data set must contain a single lap of a single course
 - The reference latitude must be **Y0** marked
 - The reference longitude must be **X1** marked
- Load the datasets containing the driving lanes to calculate the deviation of and load the longitude and latitude channels to the analysis view.
- Mark all latitude signals with an **Y** mark
- Mark all longitude signals with an **X** mark
- Choose Analysis / Lane analysis / **Lane difference calculation** from the menu bar



Select the unit of the coordinates (default: Min*1000000)

Choose the reference for the conversion to meters (Manuell, HK_1 or HK_Einfahrt)

Important:

HK_1 and HK_Einfahrt are hard coded to EdasWin and cannot be altered.

If you need different references please contact MH-GmbH that we can add those to EdasWin.

Clicking <Do> starts the lane difference calculation

A dependent analysis is created:

The dependent analysis only contains the deviation in meters between the reference and the input signal.

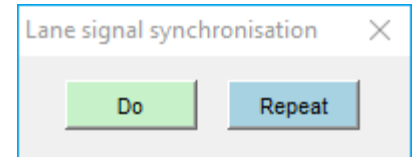
The reference is always Zero (0) and is therefore not shown. The reference is only specifies the GPS position for calculation.

2. Norm signals to reference lane:

- Select the channels to be compared in the report view (script window → report)

Important: The channels to be compared have to be present in all datasets to be compared.

- Select Analysis / Lane analysis / Norm signals to reference lane, from the menu bar
- Click <Do> on the Lane signal synchronisation dialogue to start the calculation



The results of the calculation will be presented in a dependent analysis. The temporal assignment is standardized via the position of the reference lane and your own position.

3. Fix lane plot:

If the course is to be displayed in the course window with the left and right edge of the lane, you must first select the the reference signal course.

Creation of a reference course with left and right lane edge:
See COURSEEDIT.HLP

- Click on the course symbol next to the dataset name and select a course from the list. (e.g. reference.krs)
- Use a selection frame to limit the area to be examined. If no selection frame is set, the actual time range from the analysis window is taken for the calculation.
- Select: Analysis / Lane analysis / Fix lane plot (Fahrspurdiagramm fixieren) from the menu bar

Two more dependent analyses will be created:

- One dependent analysis displays the signal section to be examined
- Dependent analysis with excerpt of the course as an X / Y diagram
- If a course window is active and the left and right lane edges are defined in the selected course, they are shown in the X / Y diagram.
- This point may be repeated multiple times

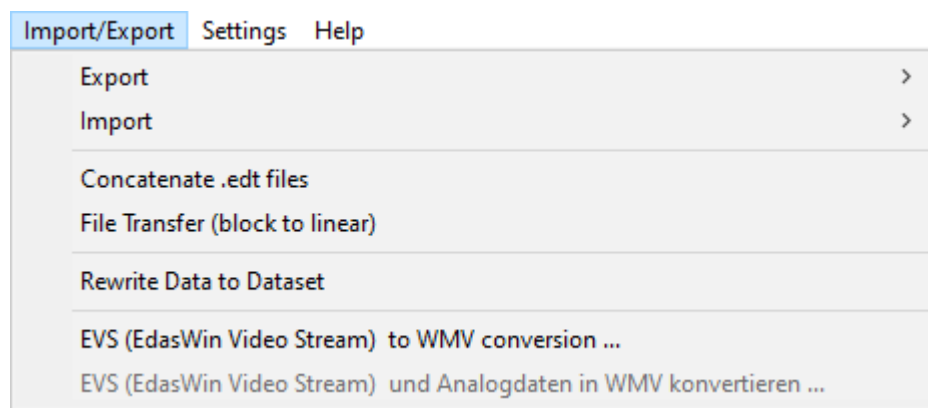
Display driving lanes in Course window:

See: Take course from analysis

Create key for table:

See: Channel selection context menu / Label for dataset

Import/Export Menu



Export (submenu)

Export datasets using different file formats

Import (submenu)

Import foreign non MH datasets

Concatenate .edt files

Concatenate multiple .edt files to one big .edt file

File Transfer (Block to linear)

Change the data organization style (only MH datasets)

Rewrite Data to Dataset

Save the changes applied to channels during analysis in the original data set.

For example if you have a heavily distorted channel, you can correct this channel using EdasWin and then overwrite the original channel in the dataset with the corrected one.

After Rewriting the dataset reopen it using the analysis calculator

Note: Always create a backup of the file you want to manipulate before manipulation.

EVS (EdasWin Video Stream) to WMV conversion ...

Convert .EVS files to .wmv files

EVS (EdasWin Video Stream) and analogue data to WMV conversion

Merge .EVS video stream and .edt analogue data and convert the merged file to WMV

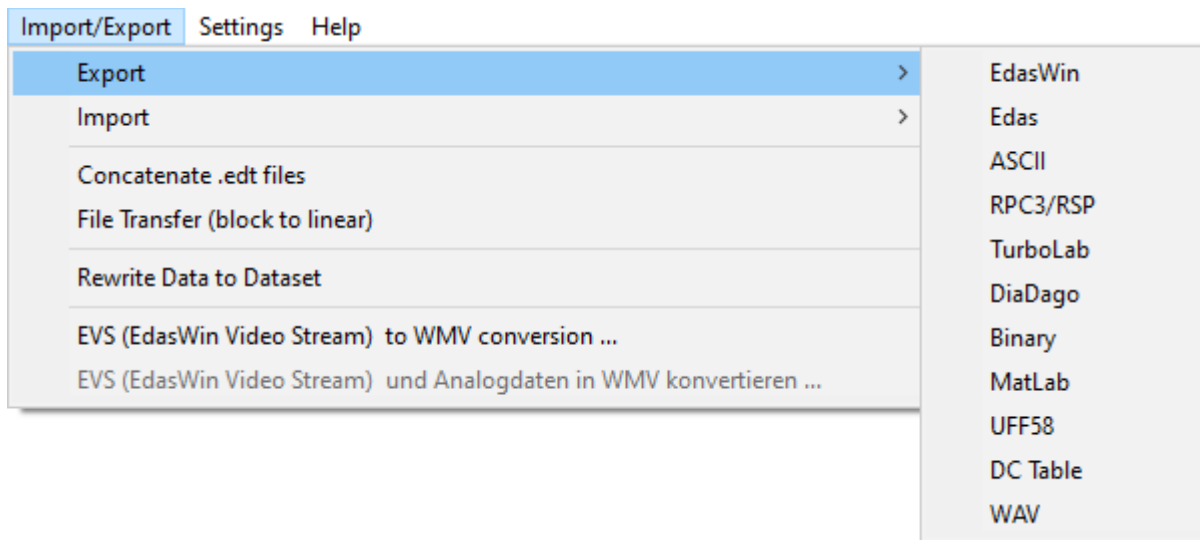
Export submenu

Exports the signals present in the Analysis Window as one of the selectable file formats in the export submenu.

In some cases additional information is required to properly export the dataset. If additional information is needed a separate file export dialogue appears where you can enter the missing information.

When all mandatory information is gathered, a file selection dialogue appears where you can enter the storage path of the exported/converted dataset.

When the converted dataset is stored, you can load it to EdasWin using the <Open> button on the analysis calculator.



E.d.a.s.Win export dialogue

Edas export dialogue

ASCII export dialogue

RPC3 / RSP export dialogue

TurboLab export dialogue

DiaDago export dialogue

Binary export dialogue

MatLab export

UFF58 export

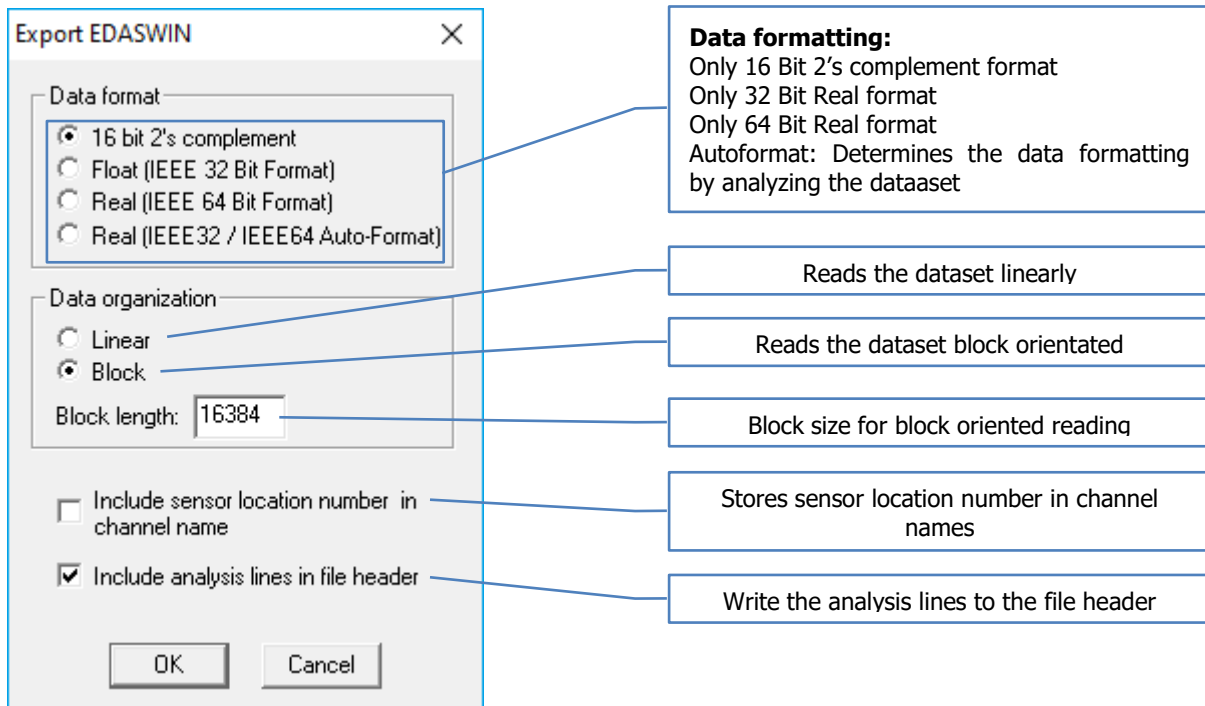
DC Table dialogue

WAV export

E.d.a.s.Win Export

The channels to be exported, must be displayed in the analysis window.

To open the export dialogue, select **Import/Export / Export / E.d.a.s.Win** from the menu bar:



Enter all required parameters and confirm with <OK>

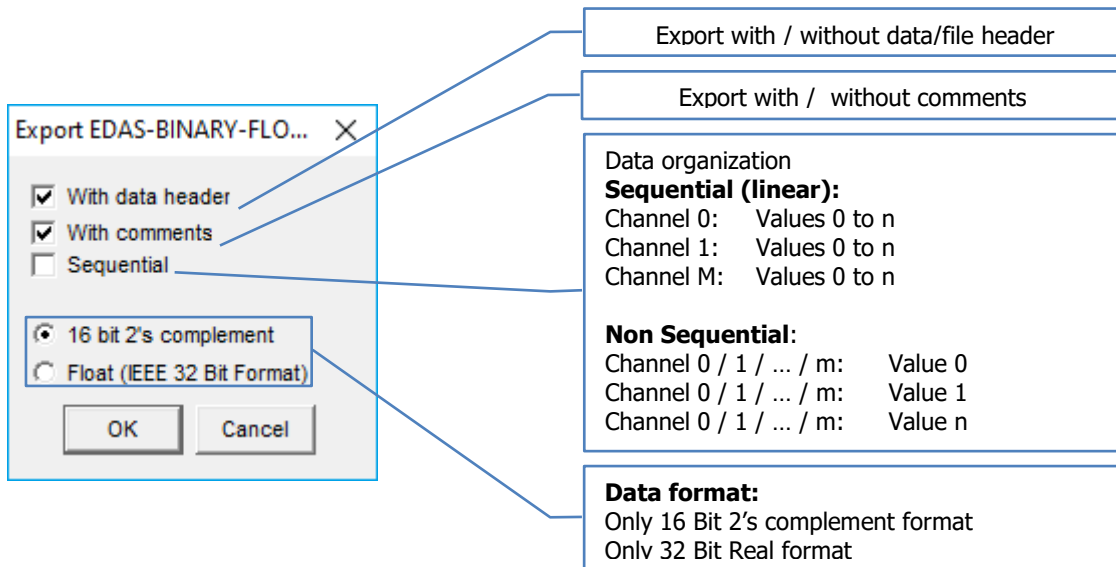
Enter the file name and storage path in the appearing dialogue.
Click <Save> to complete the E.d.a.s.Win. export.

The exported data set uses the .edt file extension.

E.d.a.s. Export

The channels to be exported, must be displayed in the analysis window.

To open the export dialogue, select **Import/Export / Export / E.d.a.s.** from the menu bar:



Enter all required parameters and confirm with <OK>

Enter the file name and storage path in the appearing dialogue.

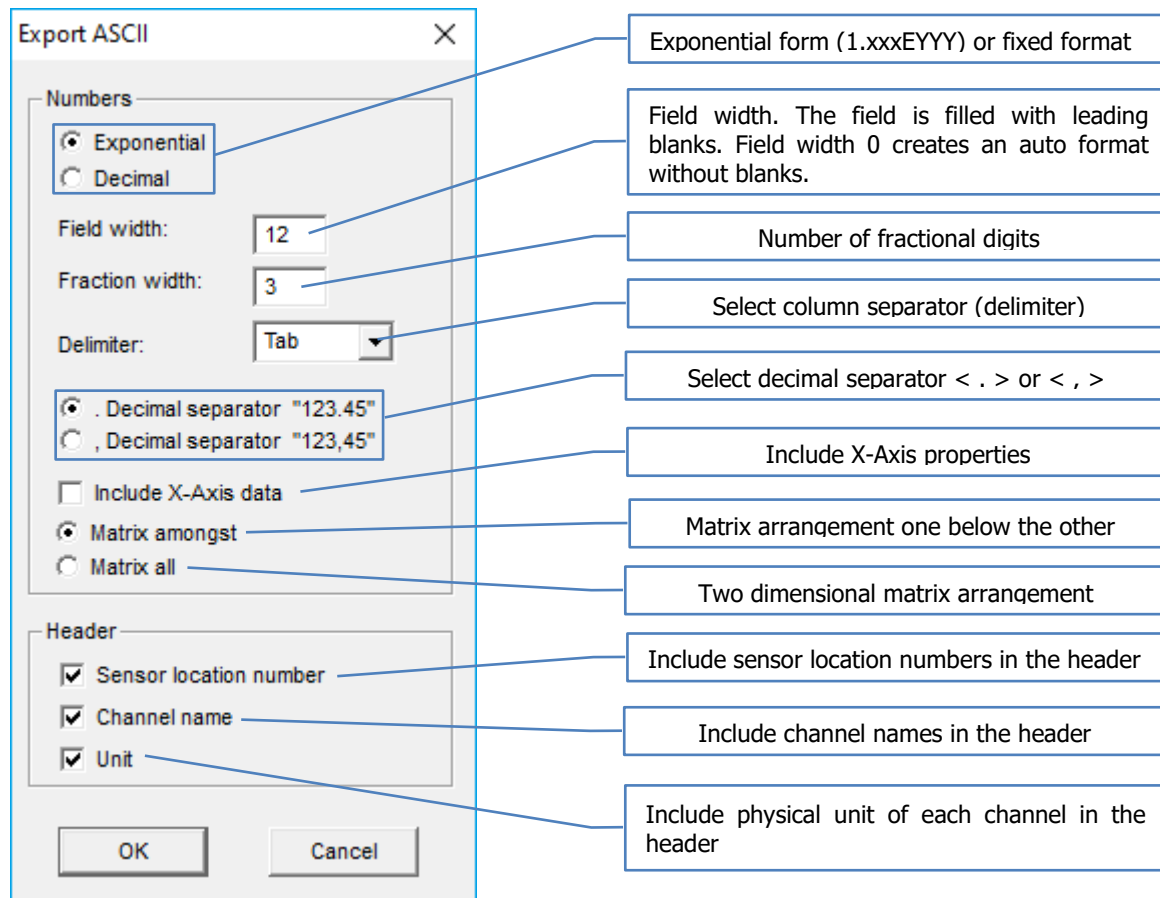
Click <Save> to complete the E.d.a.s. export.

The exported data set uses the .dat file extension.

ASCII Export

The channels to be exported, must be displayed in the analysis window.

To open the export dialogue, select **Import/Export / Export / ASCII** from the menu bar:



Enter all required parameters and confirm with <OK>

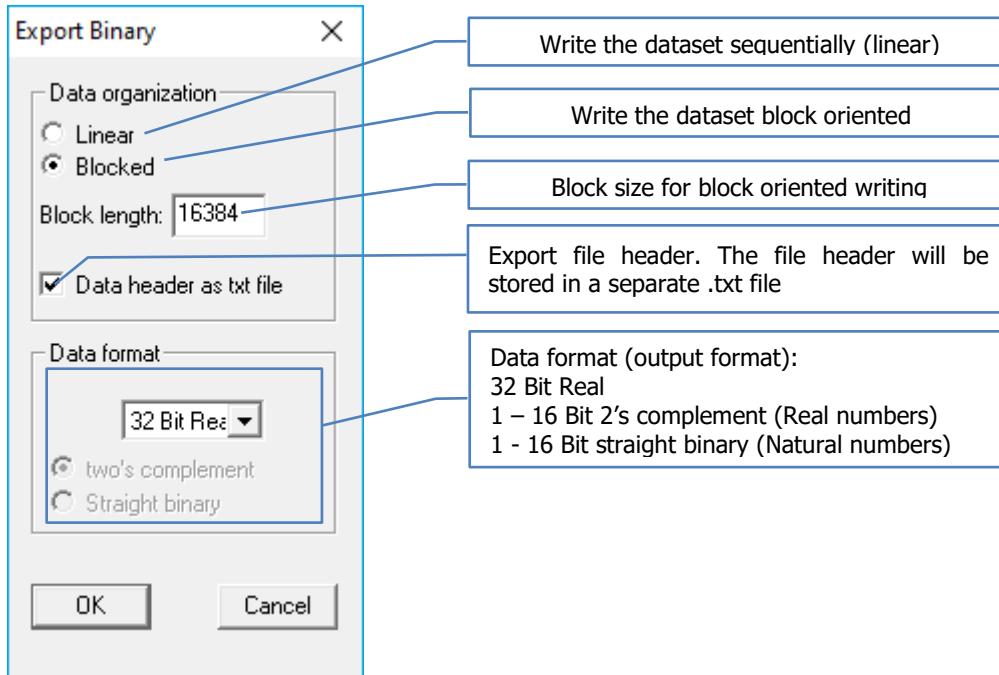
Enter the file name and storage path in the appearing dialogue.
Click <Save> to complete the ASCII export.

The exported data set uses the .asc file extension.

Binary Export

Open the channels to be exported in an analysis

Select: **Import/Export / Export / Binary** from the menu bar to open the export dialogue



Enter all required parameters and confirm with <OK>

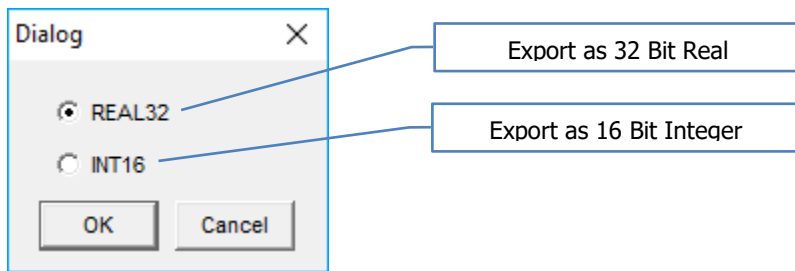
Enter the file name and storage path in the appearing dialogue.
Click <Save> to complete the binary export.

The exported data set uses the .bin file extension.

DIA/DAGO Export

Open the channels to be exported in an analysis

Select: **Import/Export / Export / DIA/DAGO** from the menu bar to open the export dialogue



Enter all required parameters and confirm with <OK>

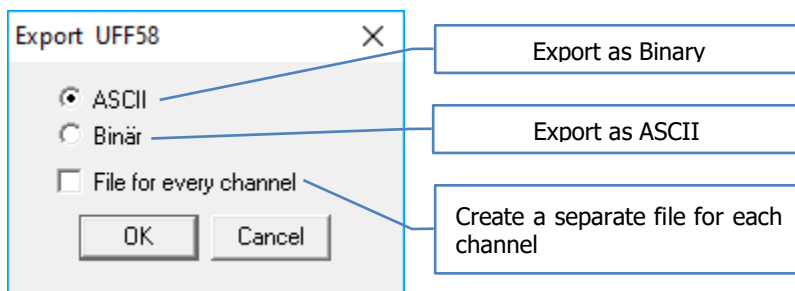
Enter the file name and storage path in the appearing dialogue.
Click <Save> to complete the DIA/DAGO export.

The exported data set uses the .r32 file extension for the header file and the .dat file extension for the data file.

UFF58 Export

Open the channels to be exported in an analysis

Select: **Import/Export / Export / UFF58** from the menu bar to open the export dialogue



Enter all required parameters and confirm with <OK>

Enter the file name and storage path in the appearing dialogue.
Click <Save> to complete the UFF58 export.

The exported data set uses the .uff file extension.

RPC3 / RSP Export

Open the channels to be exported in an analysis

Select: **Import/Export / Export / RPC3/RSP** from the menu bar to open the export dialogue

Enter the file name and storage path in the appearing dialogue.

Click <Save> to complete the RPC3/RSP export.

The exported data set uses the .rpc file extension.

Turbolab Export

Open the channels to be exported in an analysis

Select: **Import/Export / Export / TurboLab** from the menu bar to open the export dialogue

Enter the file name and storage path in the appearing dialogue.

Click <Save> to complete the Turbolab export.

The exported data set uses the .tlb file extension.

MatLab Export

Select: **Import/Export / Export / Matlab** from the menu bar to open the export dialogue

Enter the file name and storage path in the appearing dialogue.

Click <Save> to complete the Matlab export.

The exported data set uses the .mat file extension.

WAV Export

Open the channels to be exported in an analysis

Select: **Import/Export / Export / WAV** from the menu bar to open the export dialogue

Enter the file name and storage path in the appearing dialogue.

Click <Save> to complete the WAV export.

The exported data set uses the .wav file extension.

Data Check Table (DC Table) Creation/Export

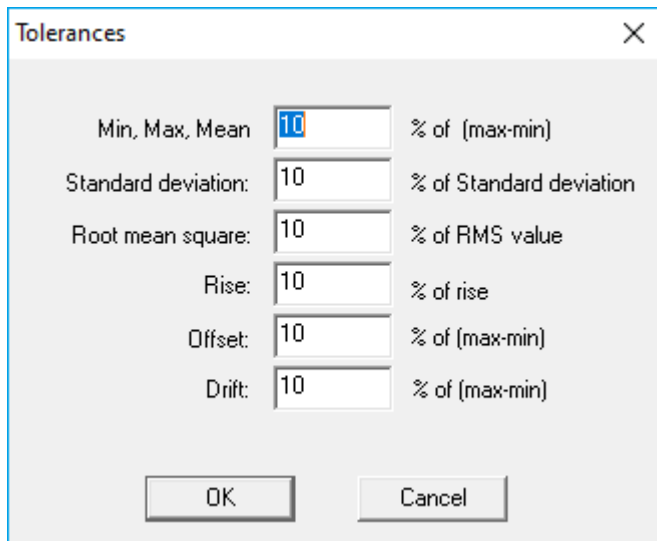
The DataCheck function examines measured data sets for plausibility. The measurement data are compared with statistical values within definable limits. The values to be used for comparison are specified in a DataCheck table. The table can be created via this export.

This function is optionally. If you have any questions, please contact MH GmbH directly

Create Data check table

Exports the signal parameters, given in the dialogue beneath, of each channel involved in the active analysis along with the limits defined in the dialogue beneath.

Select: **Import/Export / Export / DC Table** from the menu bar to open the export dialogue



Parameter	Value	Unit / Description
Min, Max, Mean	10	% of (max-min)
Standard deviation	10	% of Standard deviation
Root mean square	10	% of RMS value
Rise	10	% of rise
Offset	10	% of (max-min)
Drift	10	% of (max-min)

Enter all required parameters and confirm with <OK>

Enter the file name and storage path in the appearing dialogue.
Click <Save> to complete the DC Table creation/export.

The exported data check table uses the .dct file extension.

For more information see Data check chapter.

Import Menu (submenu)

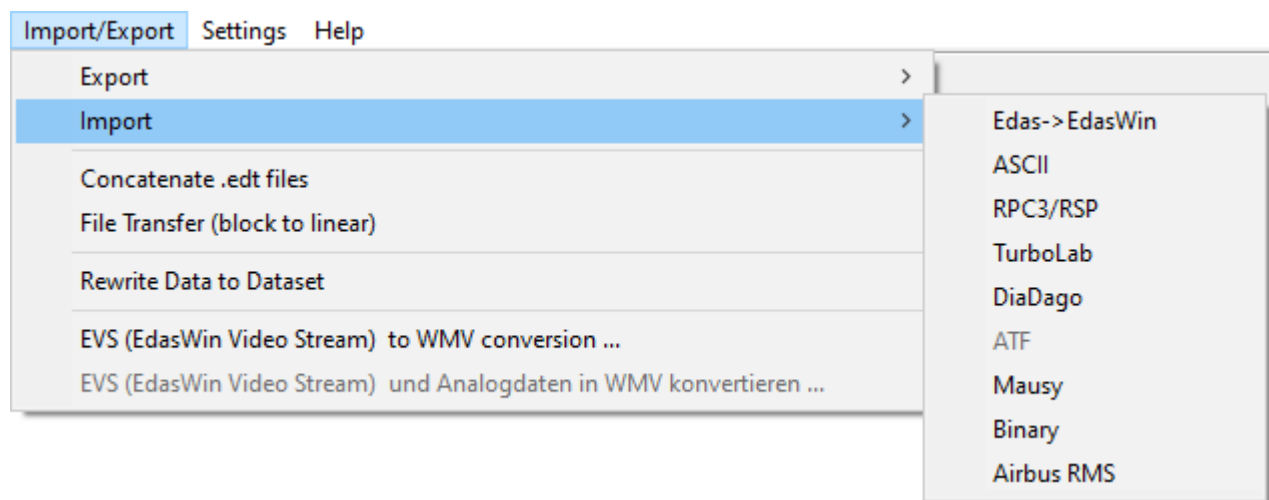
Imports a data set available in the format selected in the import menu and converts it into an E.d.a.s. - dataset.

Use the file selection dialogue that appears after selecting the import file format, to select the file you want to import.

In some cases additional information is required to properly import/convert the dataset. If additional information is needed a separate file import dialogue appears where you can enter the missing information.

When all mandatory information is gathered, a second file selection dialogue appears where you can enter the storage path of the converted dataset.

When the converted dataset is stored, you can load it to EdasWin using the <Open> button on the analysis calculator.



Edas -> EdasWin conversion dialogue

ASCII import dialogue

RPC3 import dialogue

TurboLab import dialogue

DiaDago import dialogue

Mausy import dialogue

Binary import dialogue

Airbus RMS import

For information about Airbus RMS, please contact MH-GmbH

E.d.a.s. Import

Begin the import sequence by selecting **Import/Export / import / E.da.s. → E.d.a.s.Win**, from the menu bar.

A file selection dialogue will appear where you can select the file you want to import.

After confirming the import file selection, another file selection dialogue appears where you have to define the storage path for the converted/imported file.

Click on <Save> after defining the storage path of the converted/imported dataset to complete the import procedure.

The dataset to be imported has to use the .dat file extension.

ASCII Import

Begin the import sequence by selecting **Import/Export / import / ASCII**, from the menu bar.

A file selection dialogue will appear where you can select the file you want to import.

After confirming the import file selection, another file selection dialogue appears where you have to define the storage path for the converted/imported file.

Click on <Save> after defining the storage path of the converted/imported dataset to reach the ASCII import dialogue below.

The screenshot shows the 'Import ASCII' dialog box with the following settings and callouts:

- Import ASCII** (Title bar)
- The first 40 lines of data set** (Text above the data preview)
- Data preview:**

Line	Column 1	Column 2	Column 3
1:	"534 Antriebsein.-Lagerkraft Iz/kN"	"358 Fahrpedalwinkel/%"	
2:	-1.039E-001	0.000E+000	0.000E+000
3:	-1.039E-001	0.000E+000	-4.483E+000
4:	-1.006E-001	0.000E+000	-4.483E+000
5:	-1.039E-001	0.000E+000	-4.483E+000
6:	-1.071E-001	0.000E+000	-4.483E+000
7:	-1.071E-001	0.000E+000	-4.483E+000
8:	-1.136E-001	0.000E+000	-4.483E+000
9:	-9.739E-002	0.000E+000	-4.483E+000
10:	-1.039E-001	0.000E+000	-4.483E+000
11:	-1.071E-001	0.000E+000	-4.483E+000
- Ckrate:** 0.001 sec (Callout: Clock rate in seconds)
- Data format:**
 - ☒ Real (IEEE 32 Bit Format)
 - ☐ Real (IEEE 64 Bit Format)
- Decimal separator:**
 - ☒ . Decimal separator
 - ☐ , Decimal separator
- Data format:**
 - ☐ Auto
 - ☒ User
- Error handling:**
 - ☒ skip
 - ☐ fill wit 0
 - ☐ abort
- Input fields for user definition:**
 - Name at: 1 .line
 - Unit at: 1 .line
 - Data at: 1 .line
 - 0 skip columns
- Input fields for manual definition:**
 - time column: 1 .col
 - tt.mm.yyyy hh.mm.ss.m
- Row separator:** <, > / <.> / TAB / BLANK
- Buttons:** OK, Cancel, Save, Load

Enter all required parameters and confirm with <OK>

The dataset to be imported has to use the .txt, .asc or .csv file extension.

<Save> and <Load>:

You can save the Import configuration by clicking save. To restore an already existent import configuration click load.

The ASCII import configuration file uses the .aip file extension.

RPC3 / RSP Import

Begin the import sequence by selecting **Import/Export / import / RPC3/RSP**, from the menu bar.

A file selection dialogue will appear where you can select the file you want to import.

After confirming the import file selection, another file selection dialogue appears where you have to define the storage path for the converted/imported file.

Click on <Save> after defining the storage path of the converted/imported dataset to complete the import sequence.

The dataset to be imported has to use the .rpc, .rsp or .rsp3 file extension.

TurboLab Import

Begin the import sequence by selecting **Import/Export / import / TurboLab**, from the menu bar.

A file selection dialogue will appear where you can select the file you want to import.

After confirming the import file selection, another file selection dialogue appears where you have to define the storage path for the converted/imported file.

Click on <Save> after defining the storage path of the converted/imported dataset to complete the import sequence.

The dataset to be imported has to use the .tlb file extension.

DiaDago Import

Begin the import sequence by selecting **Import/Export / import / DiaDago**, from the menu bar.

A file selection dialogue will appear where you can select the file you want to import.

After confirming the import file selection, another file selection dialogue appears where you have to define the storage path for the converted/imported file.

Click on <Save> after defining the storage path of the converted/imported dataset to complete the import sequence.

The dataset to be imported has to use the .r64, .r32 or .w16 file extension.

Note: The DiaDago file format stores data and header in different files. The .r64, .r32 and .w16 files contain the header information and the data is stored in .dat files with names that correspond to their respective header file.

Binary Import

Begin the import sequence by selecting **Import/Export / import / Binary**, from the menu bar.

A file selection dialogue will appear where you can select the file you want to import.

After confirming the import file selection, another file selection dialogue appears where you have to define the storage path for the converted/imported file.

Click on <Save> after defining the storage path of the converted/imported dataset to reach the ASCII import dialogue below

The 'Import Binary' dialog box is shown with the following parameters and callouts:

- No of channels:** 1 (Callout: Number of channels contained in the binary file)
- Scan rate (period):** 1 sec (Callout: Clock rate of the channels contained in the binary file)
- Data organization:**
 - ☐ Linear (Callout: Read data sequentially from binary file)
 - ☒ Blocked (Callout: Read data block wise from binary file)
- Block length:** 16384 (Callout: Block size for block oriented reading)
- Offset in bytes:** 0 (Callout: Defines offset with respect to the beginning of the binary file that is not taken into account while import)
- Data format:**
 - Typ:** 16 Bit (Callout: Word size)
 - ☒ two's complement (Callout: Data format)
 - ☐ Straight binary
- Quantization:** -32768 to -1 and 32767 to 1 (Callout: Quantization)

Buttons: OK, Cancel

Enter all required parameters and confirm with <OK>

The dataset to be imported has to use the .bin file extension.

Mausy Import

Begin the import sequence by selecting **Import/Export / import / Mausy**, from the menu bar.

A file selection dialogue will appear where you can select the file you want to import.

After confirming the import file selection, another file selection dialogue appears where you have to define the storage path for the converted/imported file.

Click on <Save> after defining the storage path of the converted/imported dataset to complete the import sequence.

The dataset to be imported has to use the .dat file extension.

Mausy Import

Begin the import sequence by selecting **Import/Export / import / Airbus RMS**, from the menu bar.

A file selection dialogue will appear where you can select the file you want to import.

After confirming the import file selection, another file selection dialogue appears where you have to define the storage path for the converted/imported file.

Click on <Save> after defining the storage path of the converted/imported dataset to complete the import sequence.

The dataset to be imported has to use the .bin file extension.

Concatenate

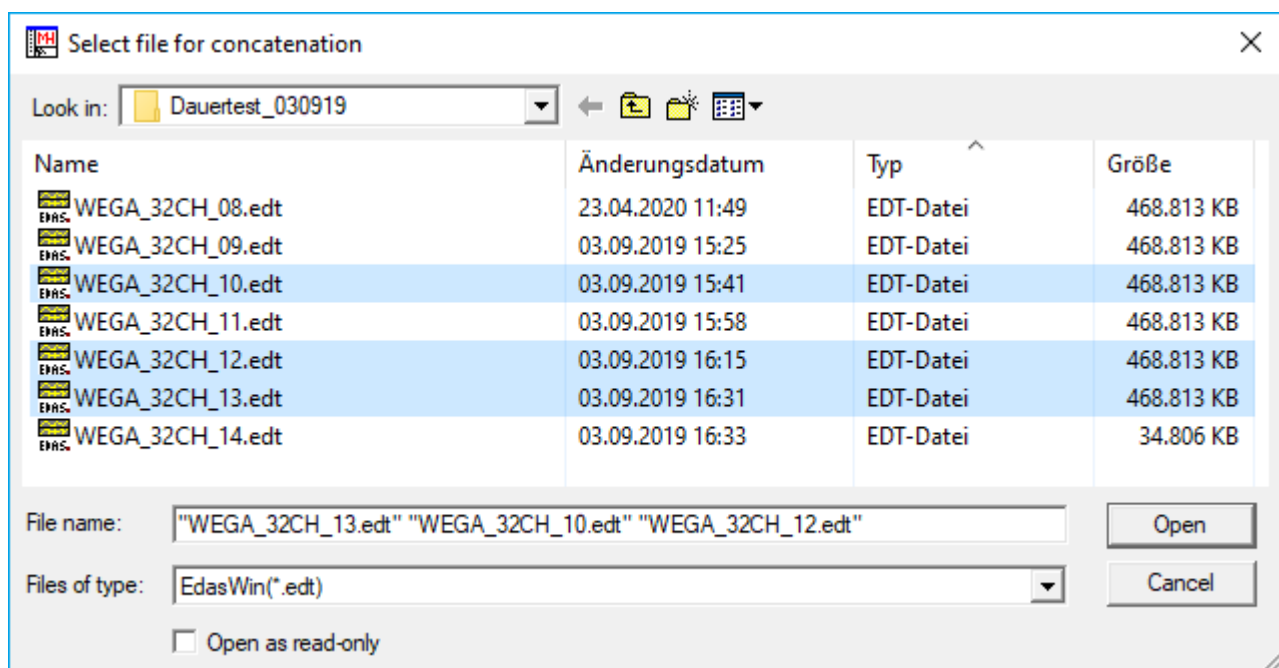
To concatenate 32 bits float/16 bits binary files, they have to meet several conditions:

- All files must have the same clock rate; number of channels; channel names and be stored in the same directory.
- In 16 bits binary formatted files, all measurement ranges must be identical (Row measurement without changes of measurement range and programming).
- The keywords of the last data set selected, are copied (e.g. WEGA_32CH_13.edt for the example below).
- If the arrangement of the separate datasets within the concatenated dataset matters, it is recommended to arrange the files in the dialogue before concatenation (for example: sorting to type, name etc.).

In Windows attitudes “File endings with well-known files fade out” the checkmark must be taken away.

Begin the import sequence by selecting **Import/Export / Concatenate**, from the menu bar.

A file selection dialogue will appear where you can select the file you want to concatenate. Confirm your choice by clicking <Open>.



After confirming the file selection, another file selection dialogue appears where you have to define the storage path for the concatenated file.

Click on <Save> after defining the storage path of the concatenated dataset to complete the concatenation sequence.

Note: To concatenate consecutive files, e.g. from row measurements, use the Multiselection feature of the OPEN DATA dialogue from the analysis calculator. See Analysis Calculator / OPEN DATA data set selection

Note: To minimize the risk of confusion over file names it is recommended to disable the windows option “File endings with well-known files fade out”.

File Transfer (block to linear)

Reorganizes the internal structure of the selected dataset. Datasets using block wise data organization are reorganized to linear data organization.

This may result in a performance boost when using the DataCheck function.

Block wise organization: One sample of each channel is written to file, followed by the next sample of each channel and so on.

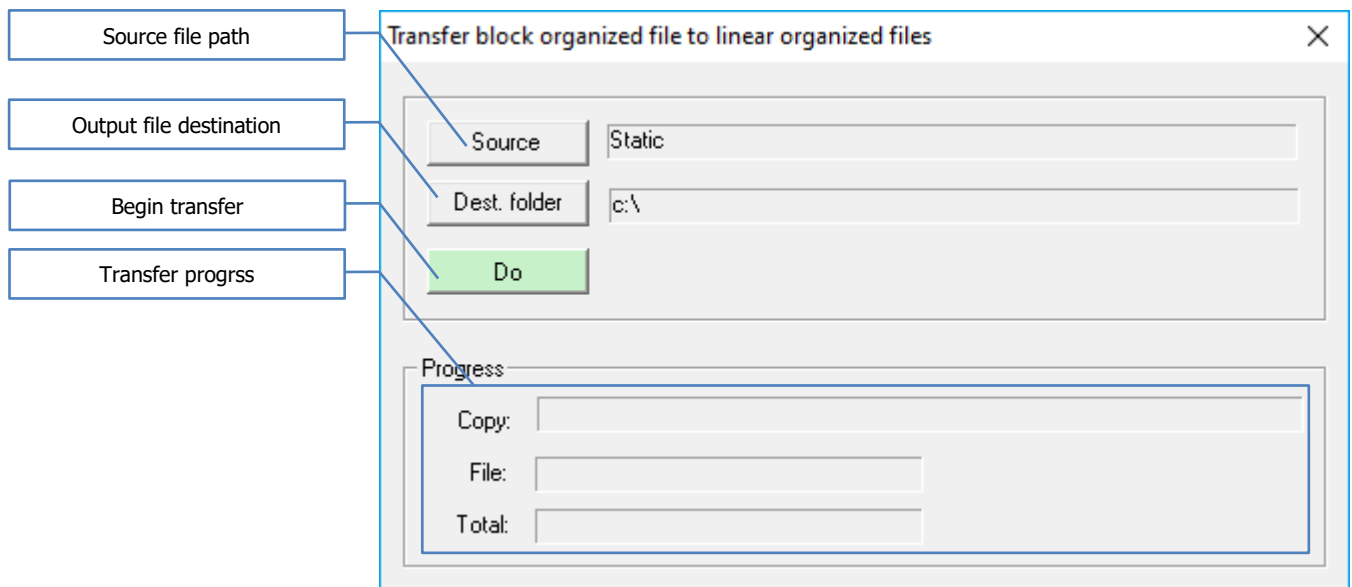
```
CH0(0), CH1(0), CH3(0), CHN(0);  
CH0(1), CH1(1), CH3(1), CHN(1);  
..... ;  
CH0(M), CH1(M), CH3(M), CHN(M).
```

Linear organization: All samples of one channel are written to file, followed by all samples of the consecutive channel.

```
CH0(0),CH0(1),CH0(2),...,CH0(M);  
CH1(0),CH1(1),CH1(2),...,CH1(M);  
.....;  
CHN(0),CHN(1),CHN(2),...,CHN(M);
```

Begin the file transfer by selecting **Import/Export / import / File Transfer (block to linear)**, from the menu bar.

A file transfer dialogue will appear



Enter the source file path and the output file destination and click <Do> to complete the transfer sequence

The progress will be shown in the progress frame.

Rewrite data to Dataset

Overwrites the channels originally stored in a dataset with the modified ones opened for analysis.

To rewrite data to dataset select **Import/Export / Rewrite data to Dataset** from the menu bar.

Example:

We have a data set containing three channels: ch0, ch1 and ch2

We load this data set to our analysis where we:

- | | | |
|--------------------|---|------|
| 1. Filter ch0 | → | ch0' |
| 2. Leave ch1 alone | → | ch1 |
| 3. Shorten ch2 | → | ch2' |

When we now use the rewrite to dataset function

- ch0 will be overwritten with ch0' (filtered version of ch0)
- ch1 will be left alone (since we did not change it)
- ch2 will be overwritten with ch2' (shortened version of ch2)

So the original data set now contains:

- ch0'
- ch1
- ch2'

EVS (EdasWin Video Stream) to WMV conversion

Converts an EdasWin Video Stream file to an Windows Media Video (WMV) file.

Begin the conversion sequence by selecting **Import/Export / import / EVS (EdasWin Video Stream) to WMV conversion**, from the menu bar.

A file selection dialogue will appear where you can select the file you want to convert.

After confirming the import file selection, another file selection dialogue appears where you have to define the storage path for the converted file.

Click on <Save> after defining the storage path of the converted dataset to complete the conversion sequence.

The resulting file uses the .wmv file extension.

Settings Menu

Colors

Default color definitions.

Set default colors

Reset default color definitions.

Large calculator

Enlarge the analysis calculator.

Large icons

Enlarge toolbar icons.

Font Size

Define the general font size.

Layout settings

Configuration of font size, grid and signal line width for printing.

Path for temporary data

Define the path for temporary data.

Query network dongle

Activate/Deactivate scanning the local network for valid network dongles.

, insted . in table

Choose decimal delimiter.

load Doc, without calc.

Toggle automatic calculation of EWD documents when they are loaded to EdasWin.

Linearisation

Define new characteristic for linearization.

User macros

Manage user defined analysis macros.

GPS definition

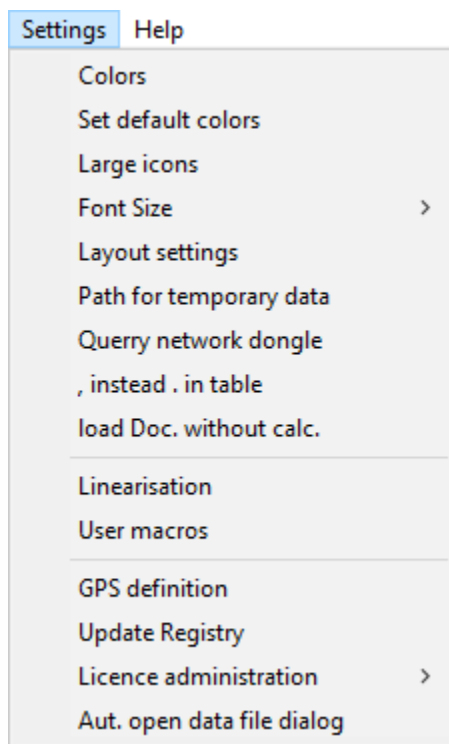
Channel definition for datasets without internal GPS assignment.

Update Registry

Updates the EdasWin registry key or ini file.

License administration (submenu)

License administration tools



Colors

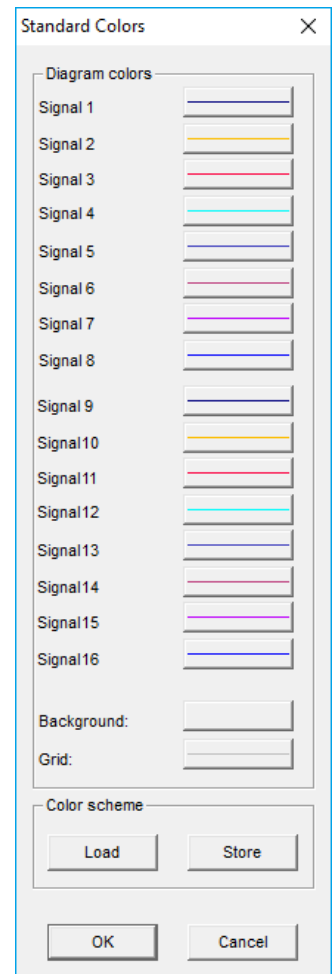
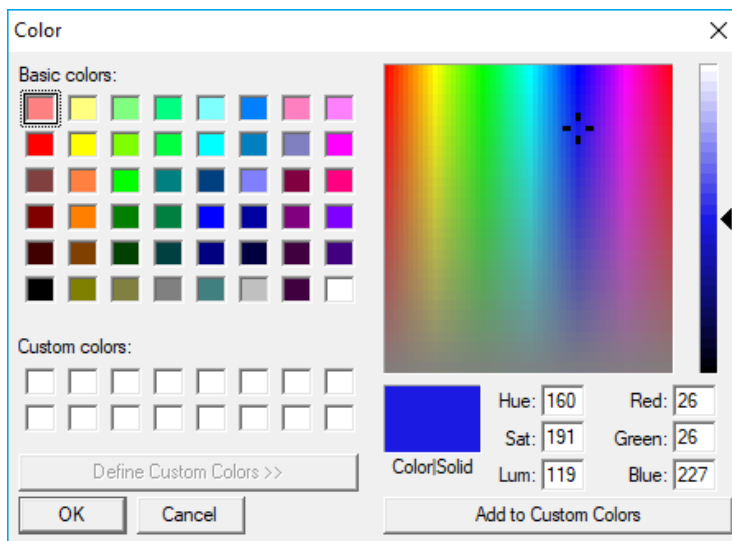
The default color palette is used to color the signals displayed in the analysis view. The first signal in a plot is plotted in the Signal 1 color, the second signal in a plot is plotted in the Signal 2 color and so on.

To adjust the default colors, select **Settings / Colors** from the menu bar.

The appearing dialogue lists all signal coloration priorities in the first column and the corresponding colors in the second column.

To change the color corresponding to a signal coloration priority click on the color bar beside the signal coloration priority

The color selection dialogue below appears, where you can define a certain color.



Beside redefining the default colors you can also save the default color palate by clicking <Store> or load an already existing default color definition file by clicking <Load>

Set default colors

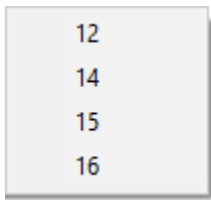
To reset any changes made to the default colors, select Settings / Set default colors

Note: There will be no warning. The default colors will be reset immediately.

Font Size

To change the default font size select **Settings / Font size** from the menu bar

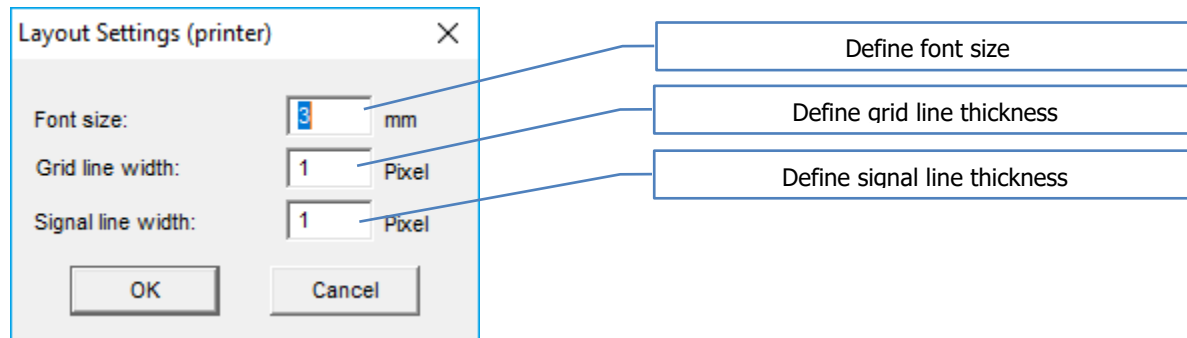
Then choose the font size from the submenu.



Layout settings

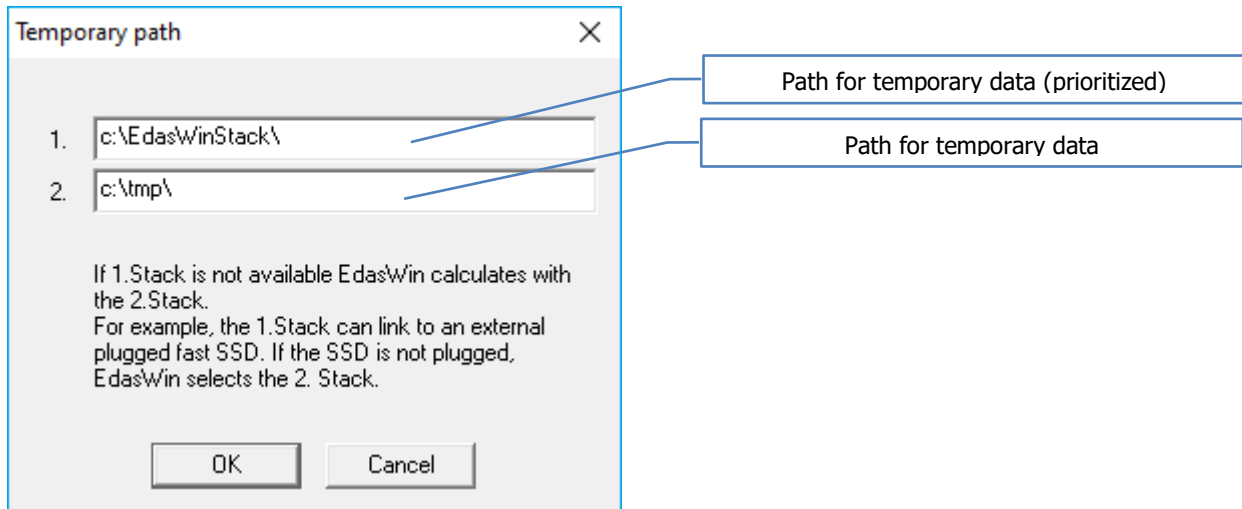
To change the default printing specifications select **Settings / Layout Settings** from the menu bar

Enter the desired specifications to the dialogue and confirm with <OK>



Path for temporary data

To define the path for temporary data storage select **Settings / Path for temporary data**. The dialogue below appears:



Enter the path EdasWin should use for temporary data. The path defined in the field "1" will be prioritized over the path defined in the "2" field (If path "1" is available don't use path "2").

Finish the path definition by clicking <OK>

Query network dongle

EdasWin checks the system for external and internal dongles (parallel and USB) at startup. If no dongle is detected, EdasWin will go on and check the local network for network dongles / multiplace licenses(if activated).

Because of the impact this feature may have on the local network it is not enabled by default.

To enable this feature tick **Settings / Query network dongle**

To disable this feature untick **Settings / Query network dongle**

Startup E.d.a.s.Win without Dongle:

See reduced functionality without dongle

See network dongle multi place license

Decimal separator , instead . in table

The decimal separator is a symbol used to mark the separation between the integral and the fractional parts of a decimal number. By convention the symbol used for this is either ',' or '.'

Tick **Settings / Decimal separator , instead . in table** to use ',' as decimal separator.

Untick **Settings / Decimal separator , instead . in table** to use '.' as decimal separator.

Document load without calculation

By default EdasWin performs the entire analysis script(s) stored in a EdasWin document (EWD) while loading the document. This may lead to massive loading times when complex analysis scripts are contained within EWD files.

To change that behavior and speed up the initial loading time for EWD documents you can disable the automatic calculation on document load.

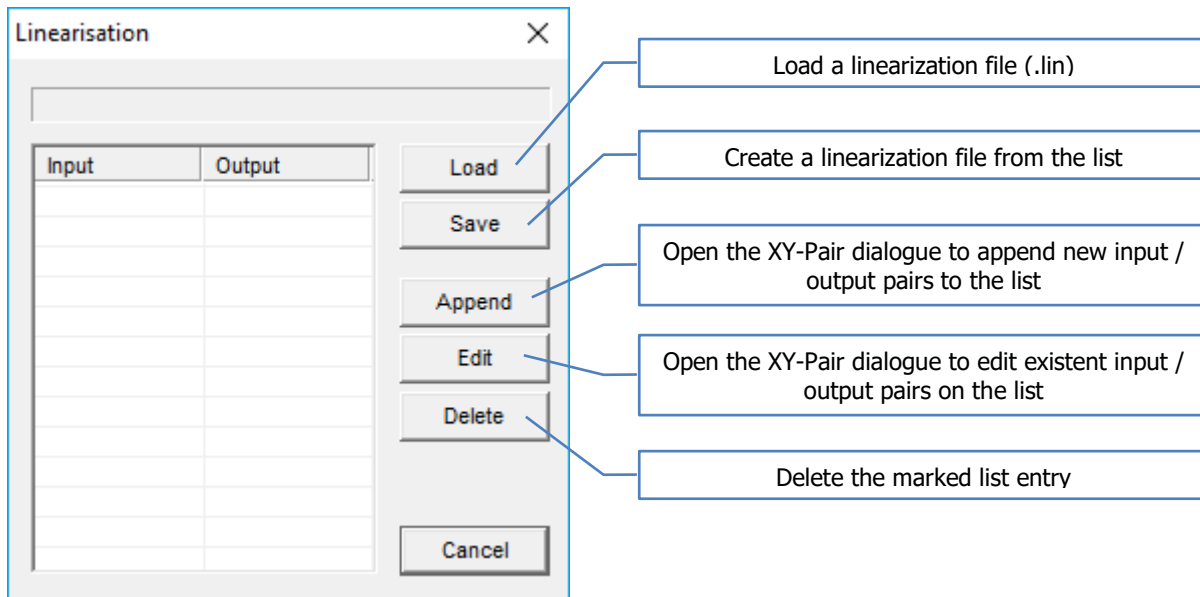
Do so by ticking **Settings / Document load without calculation**.

To revert this setting untick **Settings / Document load without calculation**.

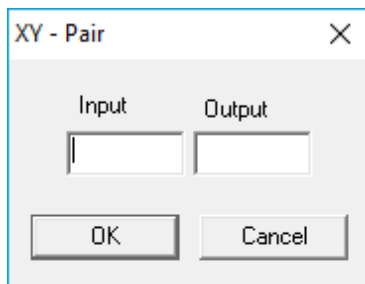
Linearization

EdasWin can linearize signals using predefined characteristic curves by using the linearization function of the analysis calculator.

To generate a new linearization curve select **Settings / Linearization**. The linearization editor - dialogue appears:



Click **<Append>** to enter In- and Output tuples in the XY pair dialogue:



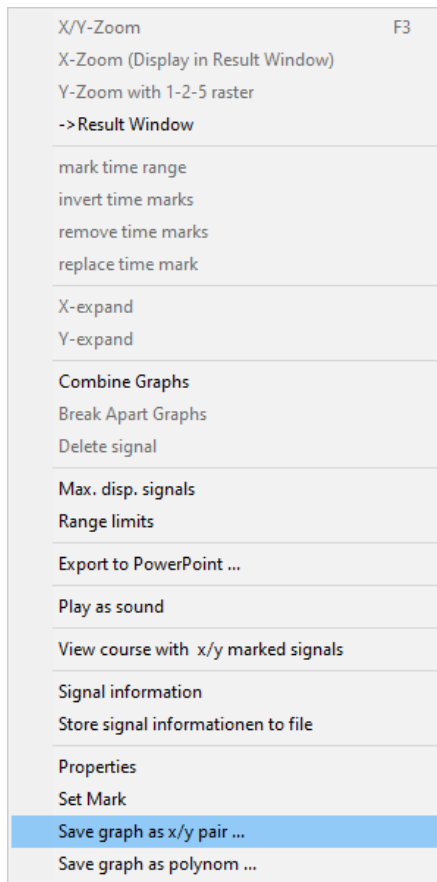
Click **<OK>** to add the tuple to the list.

Click **<Save>** on the linearization dialogue to store the list to a linearization file (.lin).

Note: A linearization curve may contain up to 8192 tuples.

Store a curve as pair/linearization file (.lin):

After performing a regression (see Analysis / Regression), it is possible to store the regression curve as linearization curve. Do so by right clicking on the regression result and choose "Save graph as x/y pair" from the appearing context menu.



Load an XY plot / linearization file:

To linearize signals, mark the signal to be linearized, then click <Linear> on the analysis calculator and choose the linearization curve from the appearing file selection dialogue. Confirm this dialogue with <Ok> to perform the linearization.

Command macro

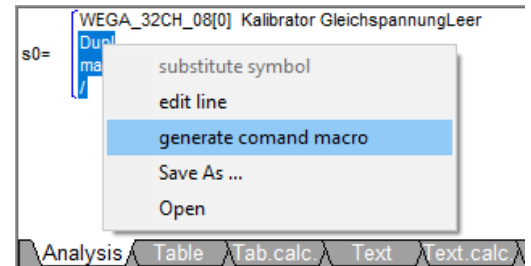
With E.d.a.s.Win you can create command macros to ease repetitive analysis tasks. Any number of Command macros may be created at any time. Each command macro consists of an unlimited list of analysis commands and can be created using the macro editor.

Create command macros:

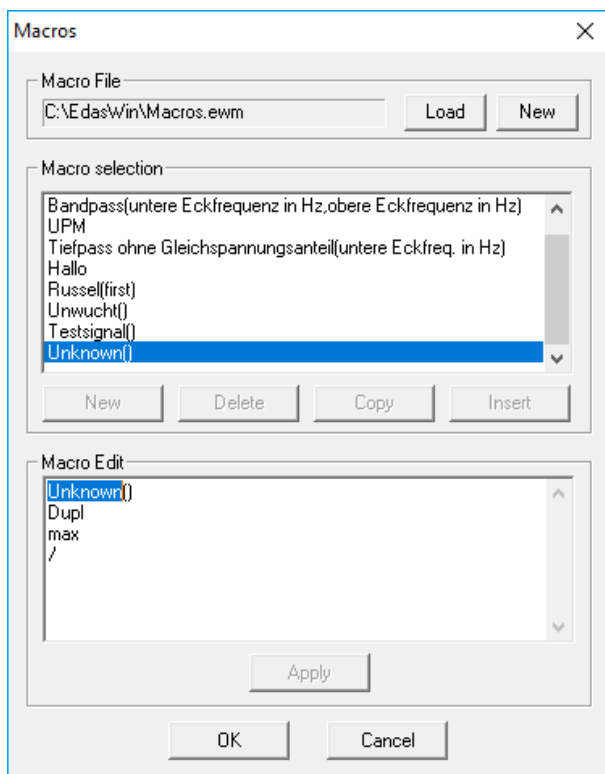
E.d.a.sWin offers two modes of creation for macros. You can define an analysis script in the analysis window and store parts of it or the whole script as command macro. Or you can manually define the macro using the macro dialogue.

To create a macro from existent analysis scripts, highlight all instructions you want the macro to perform.

Then right click in the analysis script window and choose "generate command macro" from the context menu.



The macro dialogue appears:



You can adapt and name the macro to be created, now.

If the macro contains analysis functions that need parameters, you can either leave the parameters untouched to use fixed parameters or you can define transfer parameters:



Click <Apply> to save the macro.

If you know what you are doing, you can enter the commands to be executed by the macro manually in the macro dialogue. In this case you do not need to define an analysis script using the calculator.

To open the macro dialogue directly select **settings / macro** from the menu bar

Example: Create a new command macro for channel calculation (Directly)

Call the macro dialogue (settings / macro)

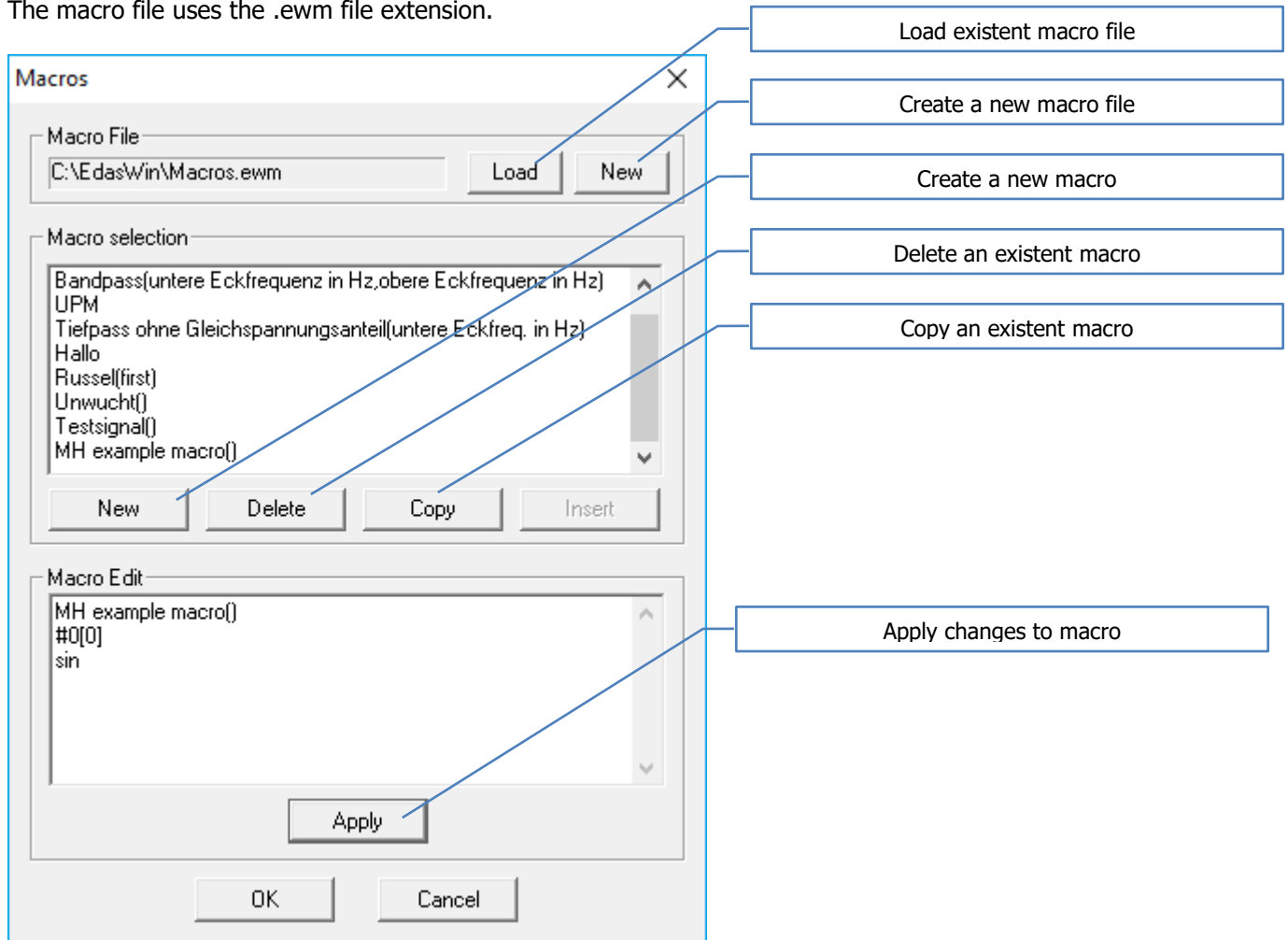
Click **<New>** in the macro dialogue. "Unknown[]" appears in the macro edit field as generic macro name. You may alter the generic name to distinguish different macros.

Our example macro should perform a sine calculation on channel zero, each time the macro is called. To achieve this, we have to add the channel number and calculation to the Macro Edit field.

Macro name: **MH example macro [ChannelNr]**
Channel number: **#0:[ChannelNr]**
Type of Calculation: **sin**

When all entries are made click **<Apply>** to save the macro.

The macro file uses the .ewm file extension.



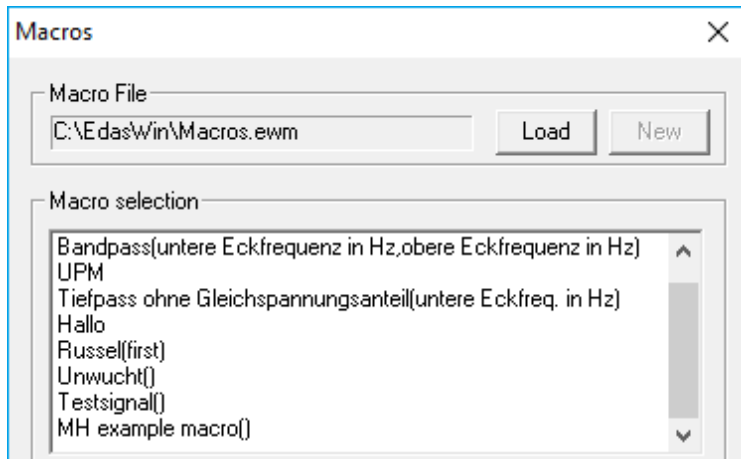
Create new macros from existent macros:

Open the macro dialogue.

Select the macro you want to base the new macro on. Click **<Copy>** and then **<Insert>**. Change the name of the copied macro and alter the script to fit your needs. When you are done, click **<Apply>** to save the new macro.


Call existing macros:

To call a macro, click on macro on the analysis calculator. The macro selection dialogue appears:



Double click on the desired macro to use it.

The analysis steps defined by the macro are appended to the analysis script.

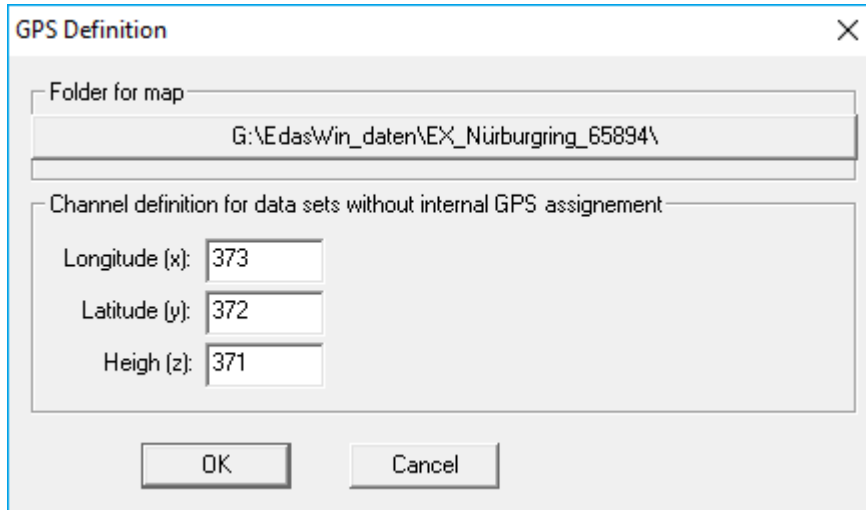
By default macros always affect the last channel open in the analysis. To apply macros to other channels than the last, mark the channel to apply the macro to with a -mark

GPS definition

When a dataset was acquired using EdasV16/V16ETH/V32 hardware in combination with a VX-GPS module you can assign a map to this dataset. EdasWin will then show you the position corresponding to the cursor on the map. The positioning on the map gets updated each time you move the cursor across channels in the analysis.

To enable EdasWin to show GPS data on a map, you have to define the GPS channels in the dataset.

To define the GPS channels, select **Settings /GPS definition** from the menu bar and enter the GPS sensor location numbers in the respective fields of the appearing dialogue.



GPS Definition

Folder for map

G:\EdasWin_daten\EX_Nürburgring_65894\

Channel definition for data sets without internal GPS assignement

Longitude (x): 373

Latitude (y): 372

Heigh (z): 371

OK Cancel

Finally you have to define the map folder by clicking on the "Folder for map" button.

For information on how to display the map, see chapter Course

Update Registry

Updates the EdasWin associated file extensions in the Windows registry.

Note: Even when EdasWin uses an .ini file for initialization, the associated file extensions are stored in the Windows registry due to windows system design.

Contents

Open E.d.a.s.Win. Manual file using the default pdf reader

Shortcut keys

Open E.d.a.s.Win. Shortcut overview file using the default pdf reader

Version tracking

Release information, including version number, new and enhanced functionalities and bug fixes

The version tracking dialogue is automatically shown after the installation of EdasWin or after each update.

View error log

All errors occurring during the operation of EdasWin are written to an error log file. This error log file may be analyzed by MH to improve the software's stability

About E.d.a.s.Win

Company info, version number, serial number, copyright, distribution

Generate Error

Generate an error, to demonstrate the E.d.a.s.Win backup function.

Help

Contents

Shortcut keys

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View error log

About

Generate Error

Special keys and shortcuts

For key assignments, please refer to the description of the relevant window.

Keyboard

ESC	Cancels the last zoom procedure.
→ (Right arrow)	Move the selection frame one tenth (1/10) of the visible range toward right
← (Left arrow)	Move the selection frame one tenth (1/10) of the visible range toward left
Shift + →	Zoom in at mouse cursor position
Shift + ←	Zoom out at mouse cursor position
F3	Magnify the content of the selection frame to fill the whole plot
F6	Toggle between analysis view and layout view
F7	Create table for analysis window
F8	Maximize analysis window
PageDn / Up	Scroll page wise
CursorDn / Up (Up / Down arrow)	Scroll channel wise
Alt+Left Mousekey	Operation only in report view! Displays the channel, which selected with the mouse, at the first position in the analysis window.

Number of simultaneously displayed channels

The number of simultaneously displayed channels in the analysis view can be set by the keys 1-9 and <A> for all channels (1 = one channel, 9 = nine channels).

Add multiple channels to the analysis at once

If multiple consecutive channels should be added at once:

1. Click on the first channel to add
2. Press and hold <SHIFT>
3. Click on the last channel to be added while holding shift pressed
4. Release the <SHIFT> key and hit <ENTER>

If multiple nonconsecutive channels should be added at once:

1. Click on the first channel to add
2. Press and hold <CTRL> key while selecting the next channel to be added
3. Repeat step 2 for all channels you want to add
4. Release the <CTRL> key and hit <ENTER>

If all channels of a dataset should be added at once:

1. Select any channel of the dataset
2. Press <CTRL> and <A>
3. Release <CTRL> and <A> and hit <ENTER>

Load add channels concatenated (one behind the other)

Mark the channels you want to add like mentioned above. When all relevant channels are selected, press and hold <CTRL> while hitting <ENTER>

The channels will be added as one concatenated channel.

X Zoom

When a x-selection frame is set, there are several methods to magnify its content along the x-axis:

Method 1

Shortcut: <F3>Key

Method 2

Right click within the selection frame and select X/Y Zoom from the context menu. The content of the selection frame will be magnified to fill the entire plot.

Method 3

Right click within the selection frame and select X-Zoom (Display in Result Window) from the context menu. The content of the selection frame will be magnified along the x-axis and shown in the result window underneath the analysis window. If you resize the selection frame in the Analysis, the Result Window will be updated with the new range as soon as you release the left mouse button.

This connection between the selection frame and the Result Window is canceled if you define a selection frame and conduct an X-Zoom in the Result Window as well. This enables you to compare different time ranges for the same signals, or to measure them with the cursor function. The connection can be re-established by clicking on the X-Zoom (Display in Result Window) context menu in the Analysis Window again.

Y Zoom

When a y-selection frame is set, you can magnify its content along the y-axis:

Right click inside the Analysis Window and select X/Y Zoom from the context menu. The content of the selection frame will be magnified to fill the entire plot.

Zoom and scroll with mouse wheel

To scroll along a signal plot using the mouse wheel simply spin the wheel. Spinning the wheel down will scroll toward the beginning and spinning the wheel up will scroll toward the end.

To zoom using the mouse wheel, place the mouse cursor on the spot you want to zoom in to. Then press and hold <CTRL> while spinning the wheel. Spinning the wheel down will zoom out while spinning the wheel up will zoom in.

Shift x-selection frame with mouse wheel

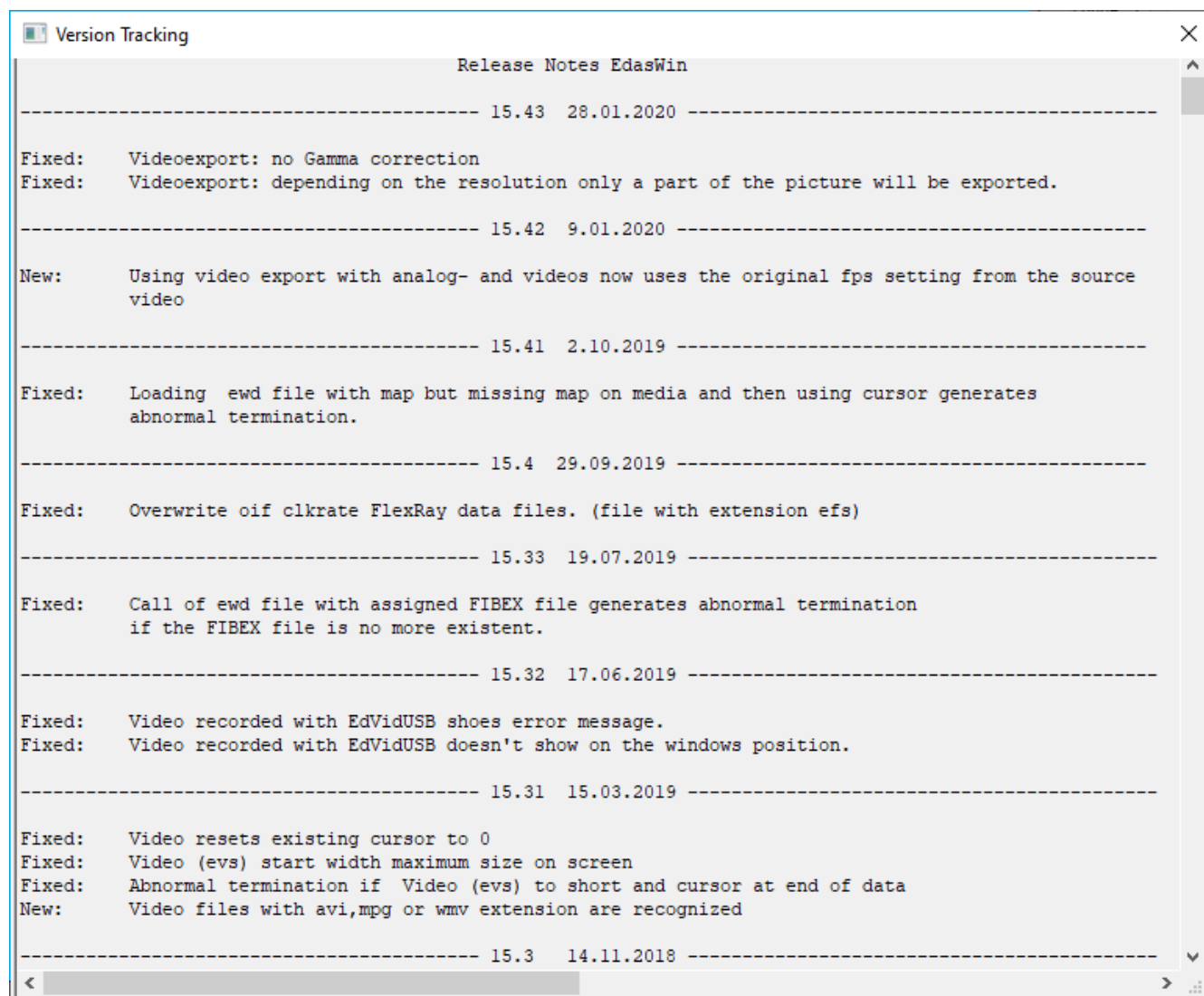
Press and hold the <SHIFT> key while spinning the wheel to move the frame along the x-axis

Note: To learn more about the selection frame see chapter First start / Analysis window / Selection frame

Version tracking

Release information, including version number, new and enhanced functionalities and bug fixes

Select **Help / Version tracking** from the menu bar to call the following prompt



About E.d.a.s.Win

Company info, version number, serial number, copyright, distribution

Select **Help / About E.d.a.s.Win** from the menu bar to call the following prompt



Leave dialogue with **<OK>** .

Contact



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e-mail: info@mh-gmbh.de

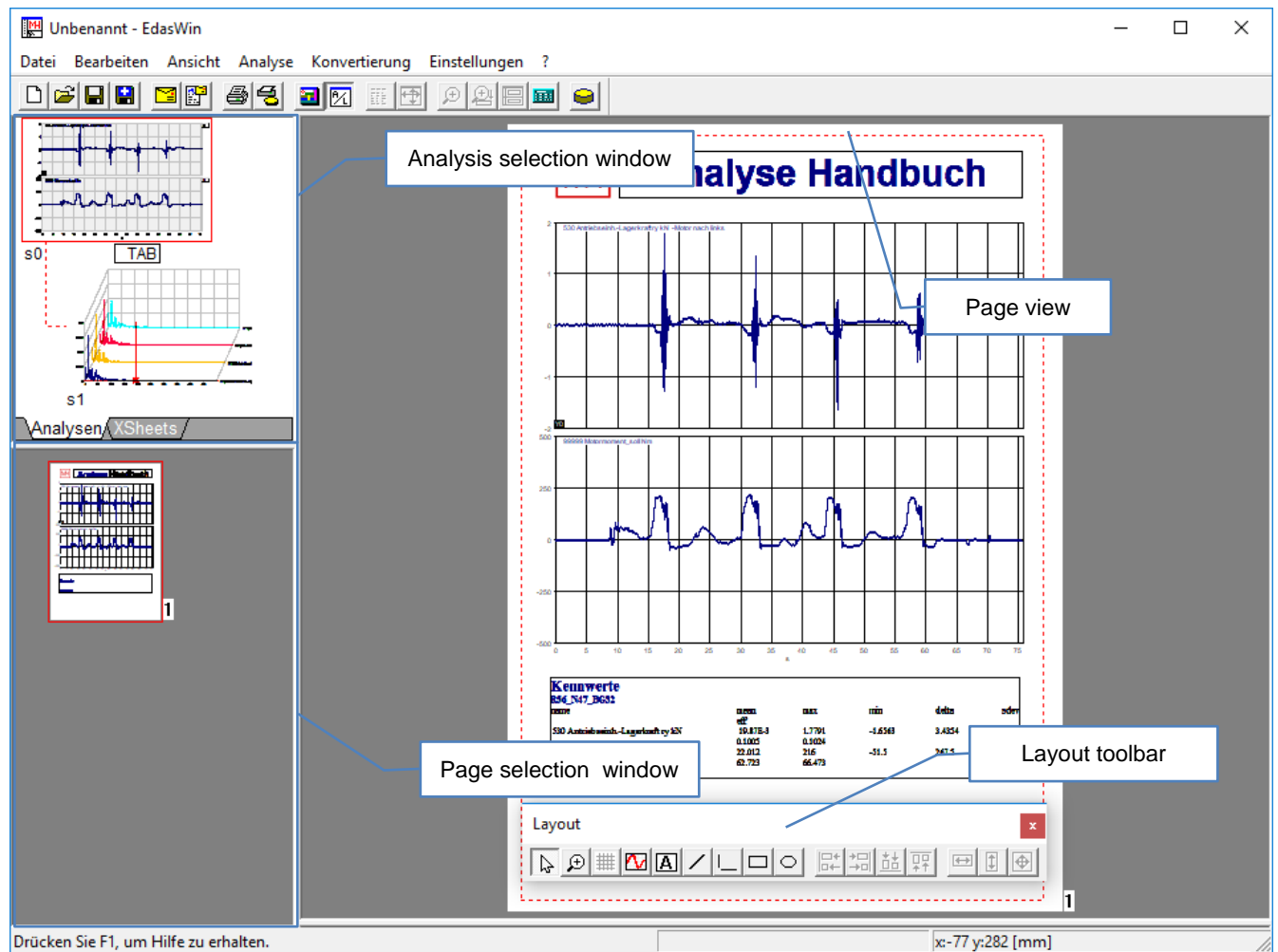
Reduced functionality without dongle

If there is no Dongle installed, (external, internal or network dongle), E.d.a.s.Win start up with reduced functionality.

It is possible to load and view data using the <OpenData> button, but without any analysis capabilities.

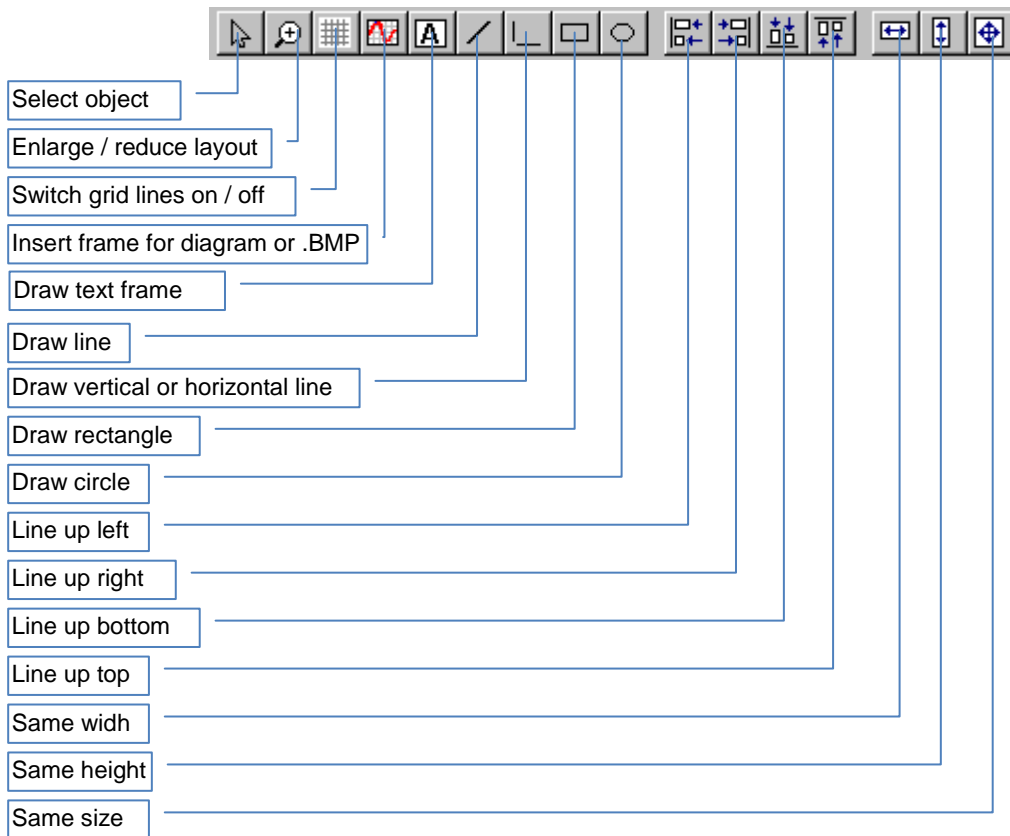
Layout view

Page wise documentation is generated in this view.



- Analysis selection window (top left)
- Page selection window (bottom left)
- Page view (right)

Layout Toolbar



The Layout Toolbar only appears in Layout view. Its functions are not displayed in any menu. The toolbar may be positioned anywhere on the screen and its size and orientation can be adjusted.

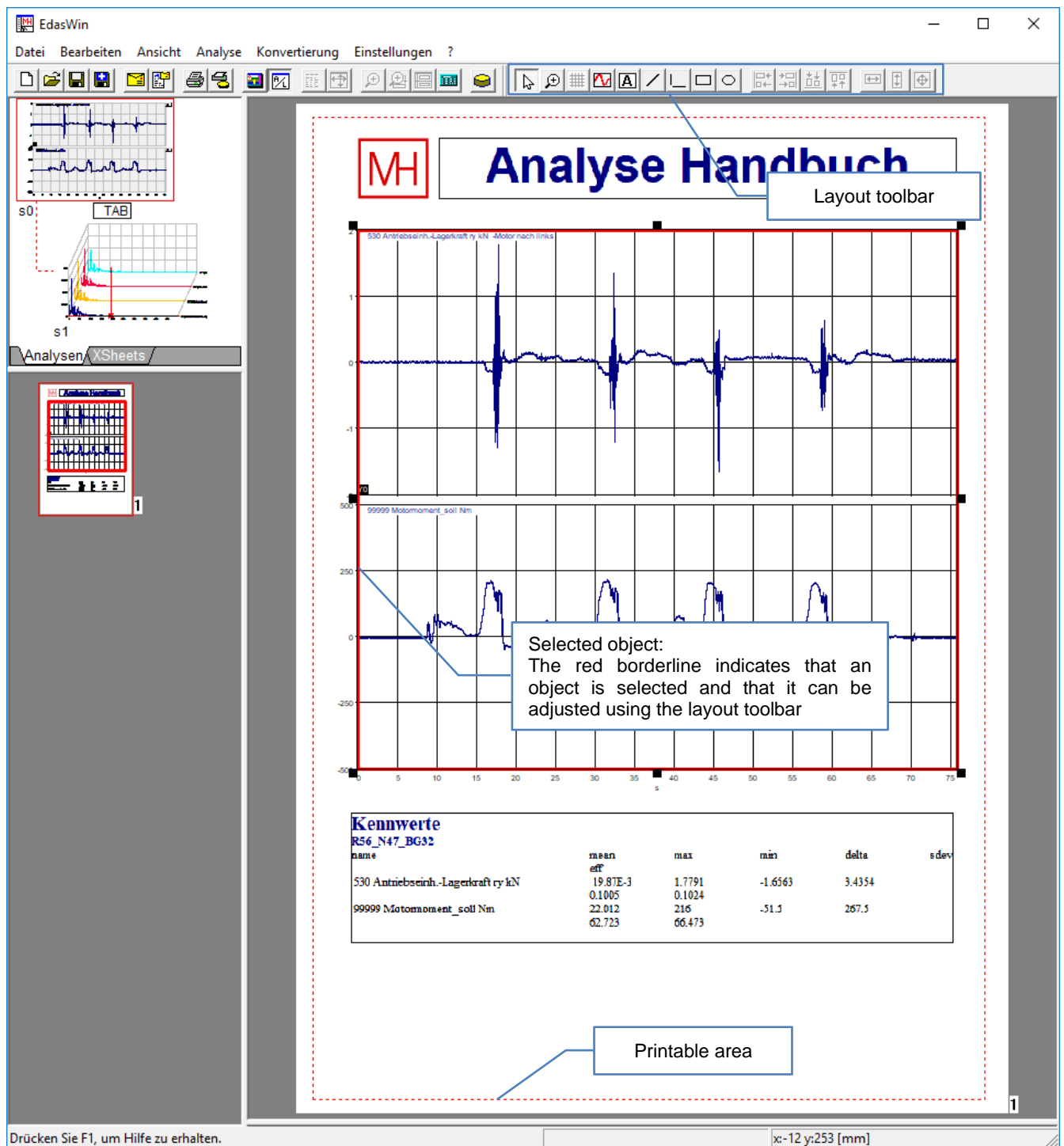
By setting a checkmark at **Settings / Large icons** you can set E.d.a.s.Win to use large Icons
The change will be effective after the next start of E.d.a.s.Win.

Aligning text, images, tables and diagrams:

Select the objects to be aligned by clicking on them while holding the <CTRL> Button pressed.

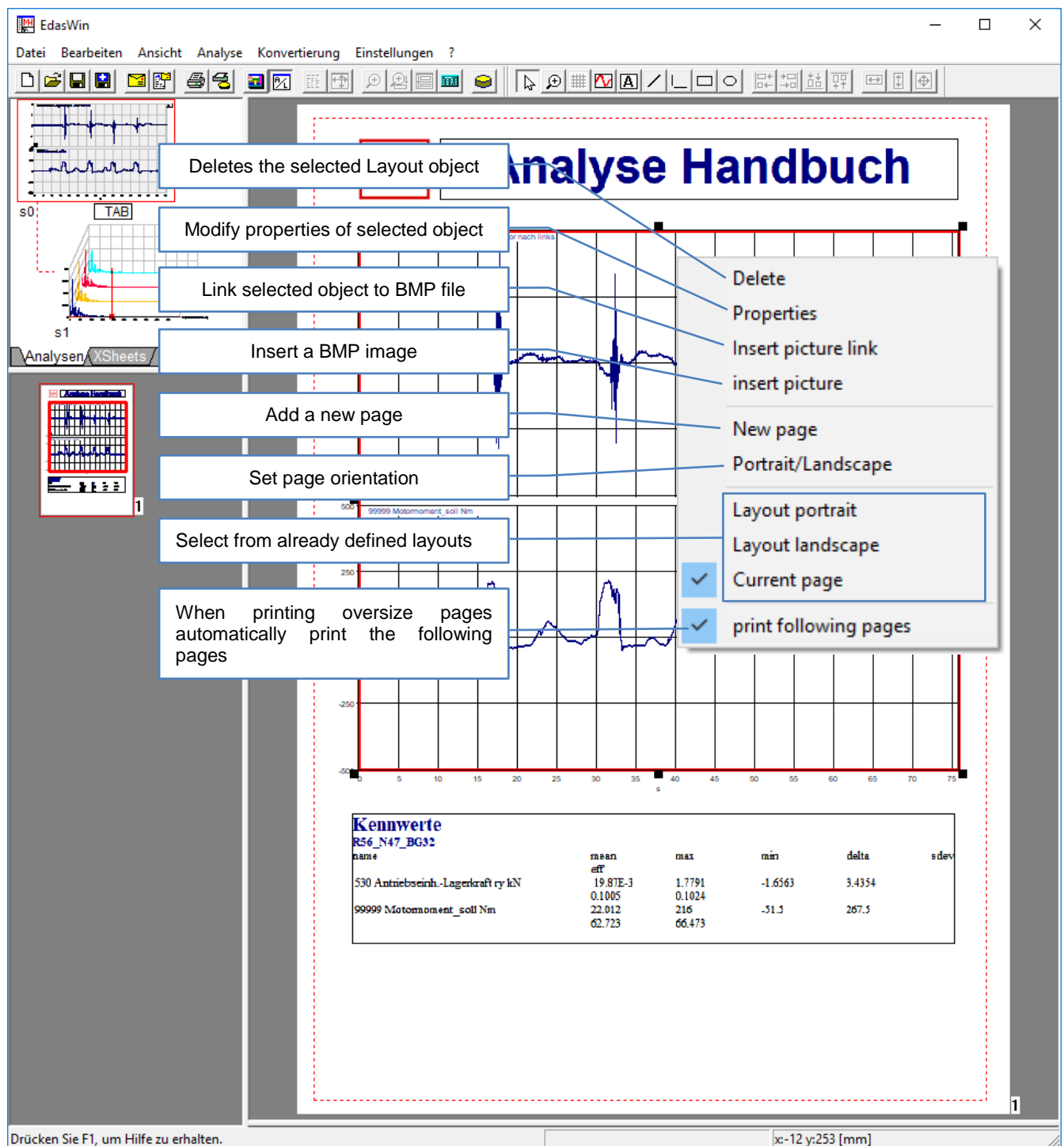
The absolute positioning of all selected objects is derived from the position of the last object selected.

Layout Window



Layout Context Menu

Right click within the layout window to raise this menu:

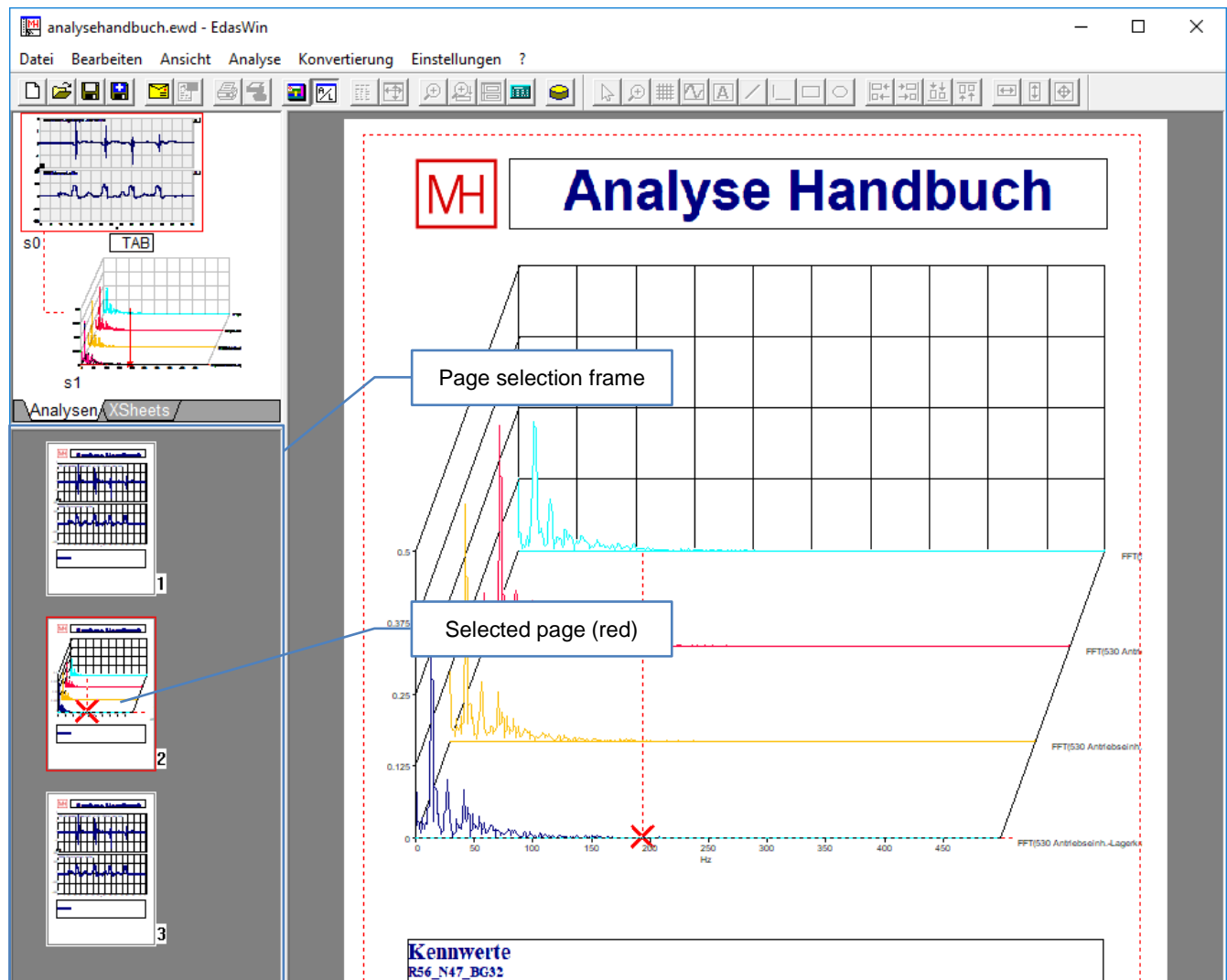


Key Assignment Layout Window

<PageUp> Next Page
<PageDn> Previous Page

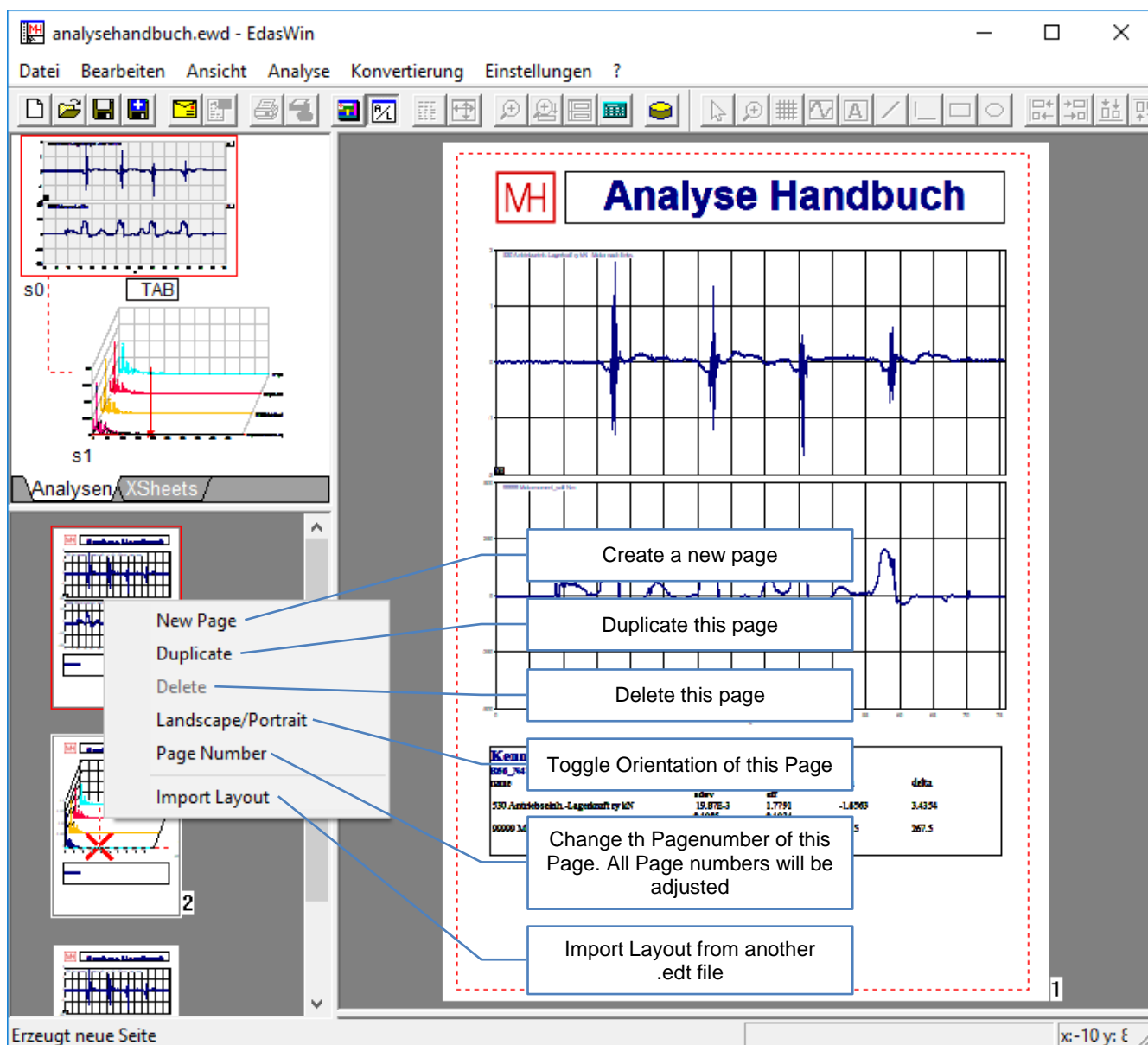
Page Selection Frame

The Page Selection Window appears in the Layout mode, only. Select the page you want to edit from this frame.



Use the Page Selection Window to select the page you want to edit in the Layout Window. The Selected Page will be highlighted red.

Page Selection Frame Context Menu



Key Assignment Page Selection Window

<PageUp> Next Page
<PageDn> Previous Page

Configure Layout View

You can switch between the Analysis View and the Layout View by using either the Analysis Toolbar



the View Menu or pushing the F6 Key.

Adding analyses to the layout

To add an analysis to the layout, the analysis has to be done prior. If the analysis is done, drag the analysis you want to place on the layout from the analysis selection window and drop it on the spot on the layout you want it to be.

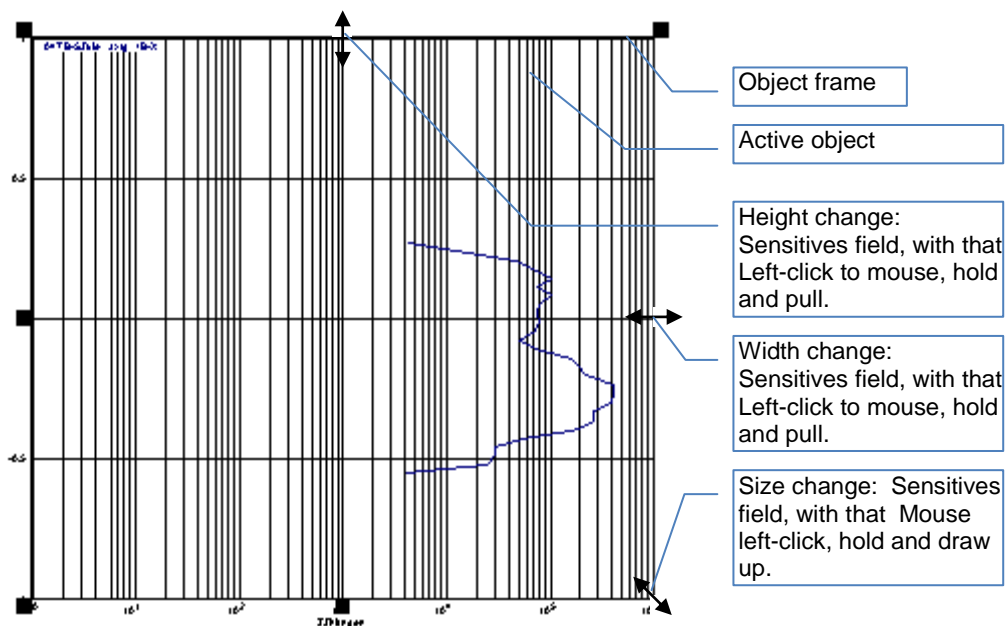
The analysis may also be dragged onto an existing graph or onto an empty graph frame.

Resize Layout Objects

Select the selection tool from the Layout Toolbar.



Click inside the layout object you want to change. The active object will be highlighted. Eight sensitive fields will appear on the edges of the highlighted object. Change the size of the object by pulling on the sensitive fields on the edges of the object.

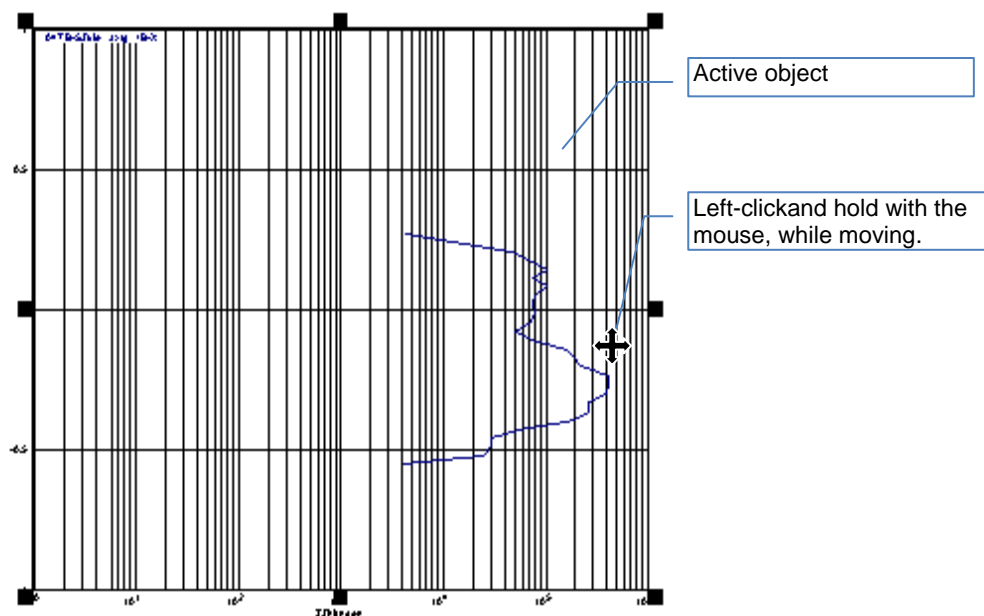


Move a layout object

Select the selection tool from the Layout Toolbar.



Click inside the layout object you want to move. The active object will be highlighted. Eight sensitive fields will appear on the edges of the highlighted object. You can freely drag the selected object around by clicking in the center while moving the mouse.

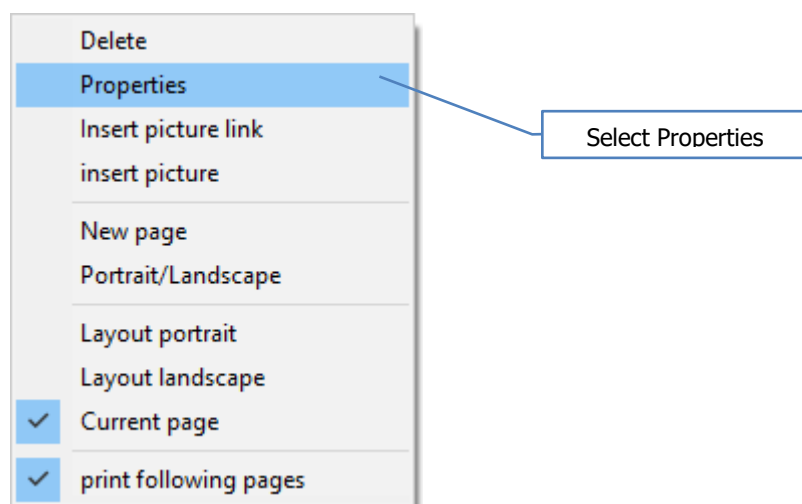


Fix a layout object

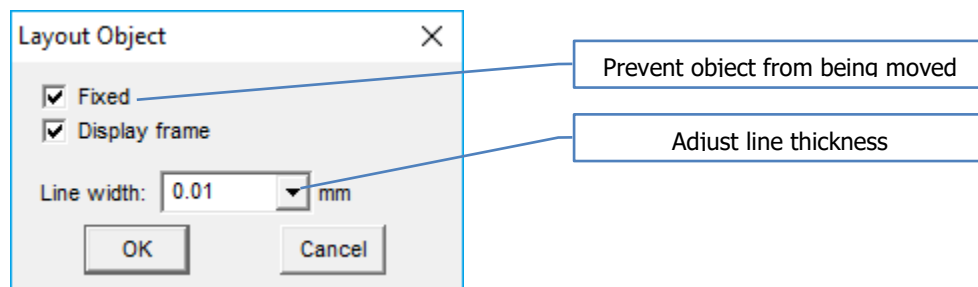
Select the selection tool from the Layout Toolbar.



Click inside the layout object you want to fix. The active object will be highlighted. Eight sensitive fields will appear on the edges of the highlighted object. Right click on the highlighted object to get the context menu:



Click <Properties> to open the Layout Object Dialogue.



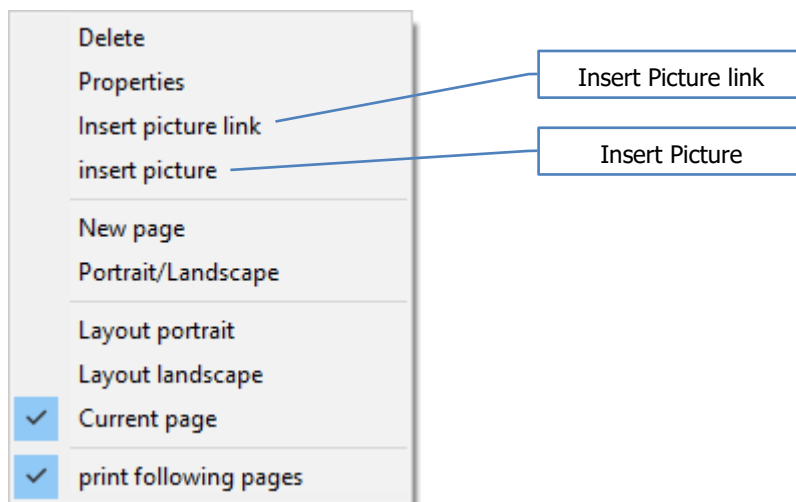
Insert BMP picture

Inserting pictures involves two steps. First you have to pick an arbitrary analysis and place it on the layout. Then you have to transform the analysis to a picture on the layout.

Select the selection tool from the Layout Toolbar.



Place an object or click inside an existing object. The selected object will be highlighted. Eight sensitive fields will appear on the edges of the highlighted object. Right click on the highlighted object to get the context menu:



Now transform the object to an picture by selecting "Insert picture link" or "insert picture".

"Insert picture" will insert the picture and store it within the .edt file. ""

"Insert picture link" will create a link between the picture and the .edt file. The picture is not stored within the .edt file but has to be loaded from the externally linked source.

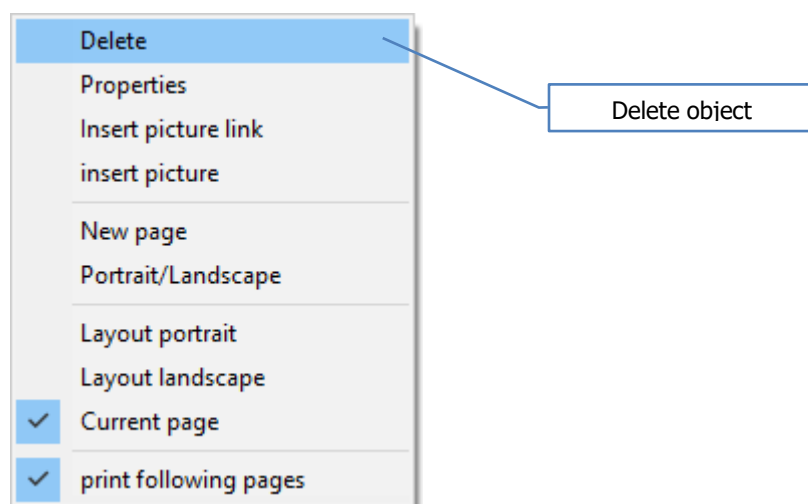
In both cases a file selection dialogue appears where you have to select the picture to be inserted / linked.

Delete a layout object

Select the selection tool from the Layout Toolbar.



Click inside the layout object you want to delete. The active object will be highlighted. Eight sensitive fields will appear on the edges of the highlighted object. Right click on the highlighted object to get the context menu:



Click on <Delete> to delete the layout object.

Placing analysis text / table in layout

Texts and tables can be added to the layout using drag and drop, just like any other layout object.

To add a table to the layout select the analysis the table is based on from the analysis selection window. Then click on the <TAB> mark on the bottom edge of the analysis and drag the table onto the layout.

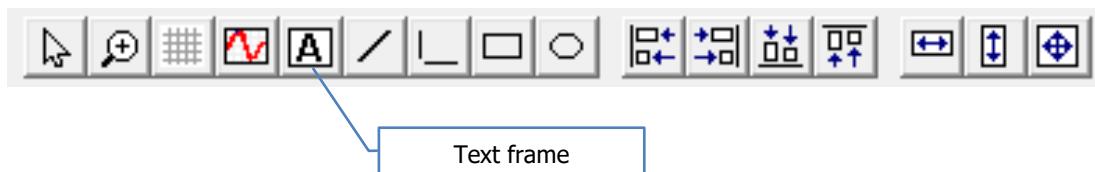
To add a text to the layout select the analysis, the text is related to, from the analysis selection window. Then click on the <TEXT> mark on the bottom edge of the analysis and drag the text onto the layout.

Texts and tables may be formatted like any other layout object:

Changing the size of a text or table, see:	Change the size of a Layout Object
Moving a text or table, see:	Move a Layout Object
Fix a text or table, see:	Fix a Layout Object
Deleting a text or table, see:	Delete a Layout Object

Create text frame

Select the text frame tool from the Layout Toolbar.



Move the cursor to the position that is desired to become the bottom left corner. Click and hold while sizing the frame.

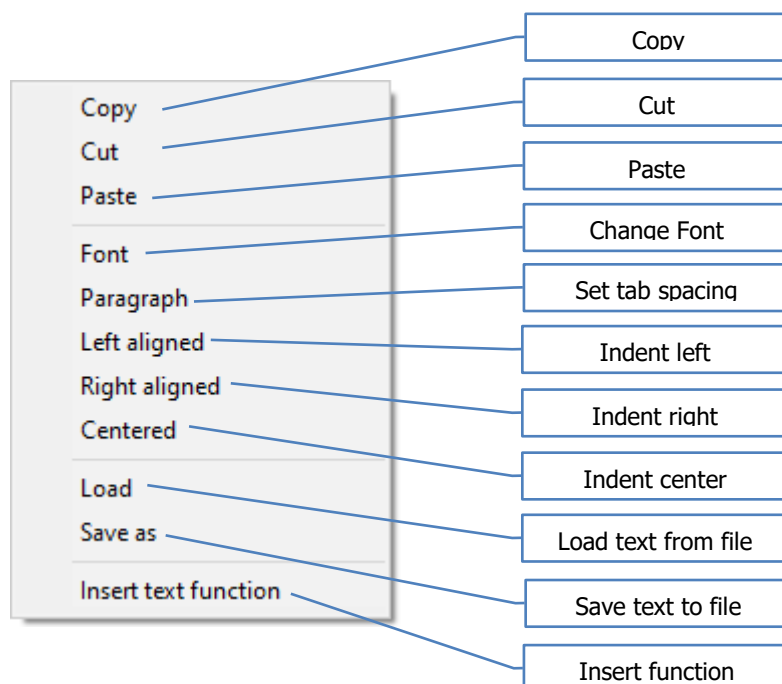
To reposition or resize the text frame, select the selection tool from the toolbar and select the text frame you want to adjust. Then behave like adjusting any other layout object.

Enter Text

Select the selection tool from the Layout Toolbar



Double-click on the text frame you want to alter the text. The layout view will enlarge and a text cursor will appear.



Create analysis text

Text that is part of an analysis can be edited in the Result Window. Click on the "Text" tab and type in your text. To load text from .rtf files, save text or change the text paragraph and formatting style right click to call the context menu.

To embed calculation functions, call the context menu and select "Insert text function". A dialogue appears where you can select the function to be inserted by keywords (keyword description see Configure Layout View / Keywords).

The functions can be added in sequence (side by side) or one underneath the other by ticking the **<CRLF>** check box in the "Text Function Editor" dialogue.

Both text and functions can only be edited in "Text" tab. After creating the text, switch to the "Text calc." tab. The "Text calc." tab contains the rendered text.

A „Text“ mark appears underneath the associated analysis in the Analysis Selection Window. This text mark may be dragged onto the page on the Layout View in order to associate the text with the desired page. You can switch at any time between text entry and analysis.

Analysis V72 Test

Channel: \$name(s0) \$unit(s0)\$PhysChan(s0)

Timerange

From: #CalcFrom(s0)

To: #CalcTo(s0)

#\$max(s0)

#\$mean(s0)

#\$min(s0)

Sequentially added functions

Functions added using
<CRLF> and user defined text

Functions added using
<CRLF> and Keywords

\Analysis\ Table \Tab.calc\ Text \Text.calc\

Creating lines of text with/without functions

Analysis V72 Test

Channel: 060 Driving speed/km/h PhysChan:6

Timerange

From: 0

To: 121.45

max:156.49

mean:94.91

min:0.0006176

\Analysis\ Table \Tab.calc\ Text \Text.calc\

Above text has been analyzed using „Text calc.“

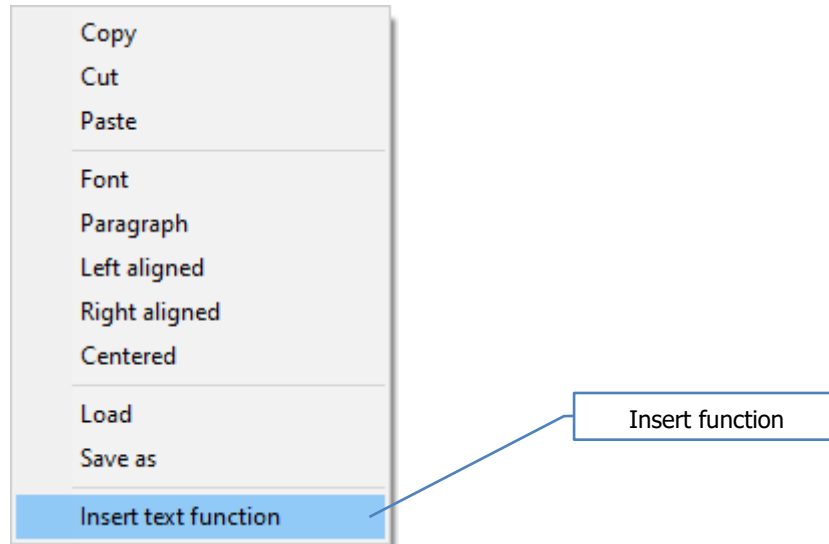
Text and layout function editor

Analysis text:

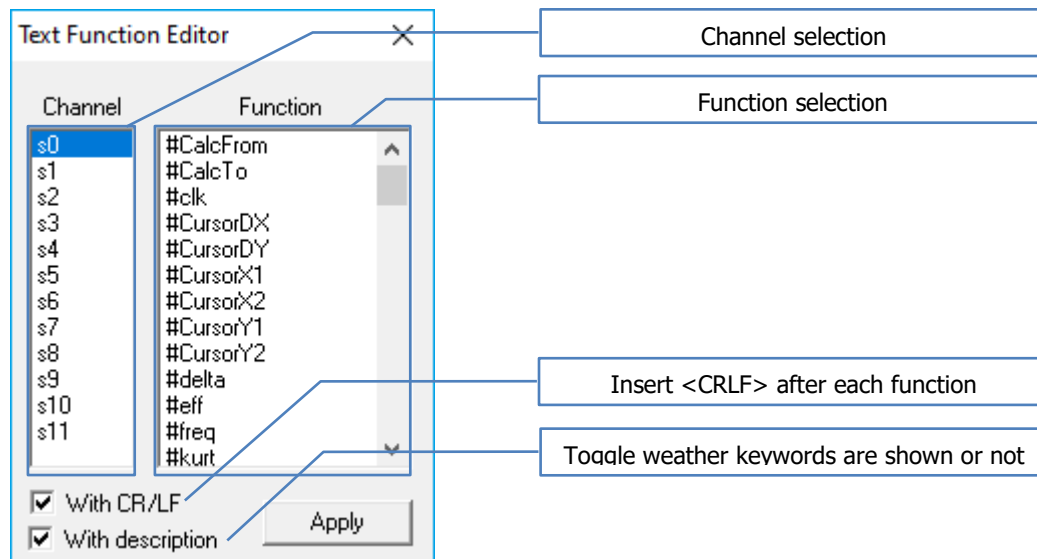
Select the "Text" or "Table" tab of the result window, while in analysis view. Right click within the result window to call the context menu.

Layout text:

Create a text field or double click on the one you want to alter, while in Layout view. Then right click into the highlighted text field and select "Insert text function" from the appearing context menu:



The "Text Function Editor" appears:



Select the text function(s) you want to insert and click <Apply>.

Note that the function will be related to the analysis active (selected in analysis selection frame) during this procedure.

Keywords

Schlüsselwort:	Description:
#CalcFrom	Calculate from (Range)
#CalcTo	Calculate To (Range)
#clk	clock rate in sec.
#CursorDX	Cursor DX Value
#CursorDY	Cursor DY Value
#CursorX1	Cursor X1 Value
#CursorX2	Cursor X2 Value
#CursorY1	Cursor Y1 Value
#CursorY2	Cursor Y2 Value
#eff	Effective Value
#freq	clock rate in Hertz
#max	Maximum Value
#mean	Mean value
#min	Minimum value
#sdev	Standard deviation
#SourceClk	clock rate from original data set in sec.
#SourceFreq	Frequency des original data set in Hertz
\$Beschreibung0	Description to the project (must create them selves)
\$Beschreibung1	Description to the project (must create them selves)
\$calc	Short calculation script
\$Cursor	creates a table referred to the Analysis
\$DateCurrent	Actually date
\$DateFile	creation date from file
\$Document	Documentation from measurement
\$FileName	data set name
\$FileNameEWD	E.d.a.s.Win document name
\$Frames	number values pro channel
\$Grenzvaluee	Limit value Min and Max value from each channel
\$Hysteresis	Hysteresis for Levelcrossing
\$Length	Length from distance or course
\$Messstrecke	Name from distance or course
\$name	Channel name
\$Offset Adjust	Zero adjustment value
\$PDate	Project Date
\$PhysChan	Physical channel number
\$PName	Project name
\$Pol.	Polarity
\$Project	Project description
\$Tabelle	creates a table referred to the Analysis
\$TimeCurrent	Actually Time
\$TimeFile	Start time from measurement
\$Timerange	Length time from measurement
\$unit	Unit from channel
\$Xtra	Extrapolation factor
\$AnalyseFile	Append analysis script at the E.d.a.s.Win export
\$nameNo	Sensor location number

Apply analysis description

The result window in analysis view offers five tabs related to layout at the bottom:

The screenshot shows the 'Signal Statistics' window. At the top, there are two callout boxes: 'Fixed text' pointing to the title and 'Keyword' pointing to the 'name' column header. Below the title is a table with four columns: 'name', 'mean', 'max', and 'min'. The table contains three rows of data. At the bottom, there is a tab bar with five tabs: 'Analysis', 'Table', 'Tab.calc.', 'Text', and 'Text.calc.'. Callout boxes point to these tabs: 'Switch to analysis script' points to 'Analysis', 'Switch to draft view of the table' points to 'Table', 'Switch to calculated view of the text' points to 'Text.calc.', 'Switch to draft view of the text' points to 'Text', and 'Switch to calculated view of the table' points to 'Tab.calc.'.

name	mean	max	min
060 Driving speed/km/h	94.91	156.49	0.0006176
043 Engine revolutions/1/min	3574.4	5268.9	383.8
443 Sliding roof ay/g	-0.2686	0.3227	-0.8603

Data may be entered to the table automatically using the <Table> function. Alternatively you can enter information manually using the <Marker> function.

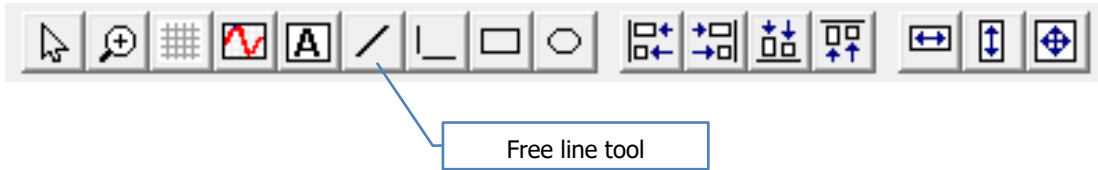
There are two user editable files in the E.d.a.s.Win directory to support this feature:

- Table.rtf → Format definitions for automated table generation.
- Marker.rtf → Marker information.

You can alter these files to fit your requirements.

Drawing lines

Select the <Line> tool from the layout toolbar.



Move the cursor to the starting point of the Line. Draw the line by moving the mouse while keeping the mouse button pressed. Release the mouse button to end the line.

Drawing horizontal or vertical lines

Use this tool to draw vertical or horizontal lines without having to position the mouse exactly. Select the <Draw Horizontal or Vertical Lines> tool from the layout toolbar.



Move the cursor to the starting point of the Line. Draw the line by moving the mouse while keeping the mouse button pressed. Release the mouse button to end the line.

Drawing rectangles

Select the <Rectangle> tool from the layout toolbar.



Move the cursor to where the bottom left corner of the rectangle should be. Create the rectangle by moving the mouse while keeping the left mouse button pressed. Release the mouse button when the rectangle has the desired size.

Drawing circles

Select the <Circle> tool from the layout toolbar.



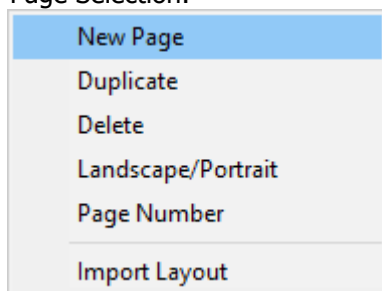
Circles are drawn within a surrounding rectangle. When the rectangle is defined, the circle will appear within the rectangle touching all four edges or the rectangle in the middle.

Move the cursor to where the bottom left corner of the surrounding rectangle should be. Define the rectangle by moving the mouse while keeping the left mouse button pressed. Release the mouse button to finish the drawing. As soon as you leave the highlighted rectangle or click in it, the circle will appear.

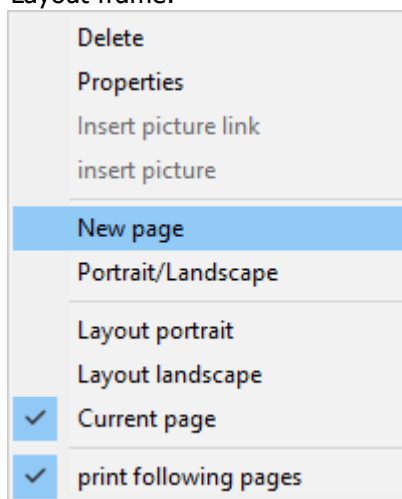
Create a new page

Right click within the page selection or layout frame to call a popup menu. Select "New Page" to add a new blank page:

Page Selection:

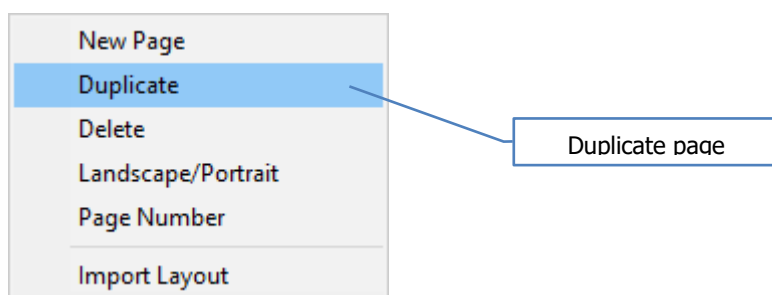


Layout frame:



Duplicate a page

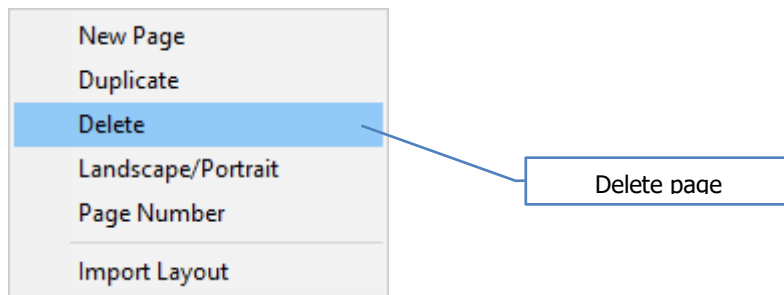
On the Page Selection Window, select the page you would like to duplicate with the left mouse button. Press the right mouse button:



Click on <Duplicate> to place a copy immediately after the selected page.

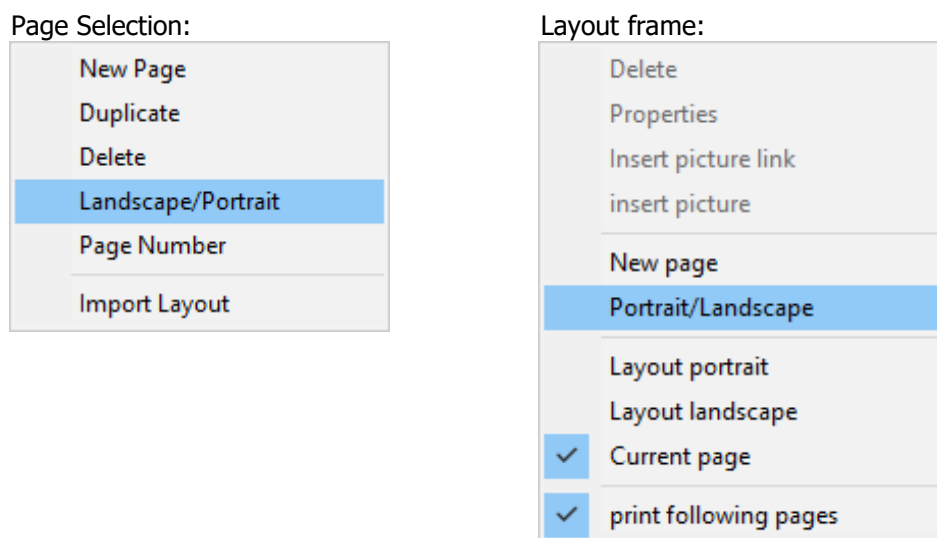
Delete a page

Select the page you want to delete from the page selection frame. Right click on that page and select <Delete> from the appearing context menu to delete that page:



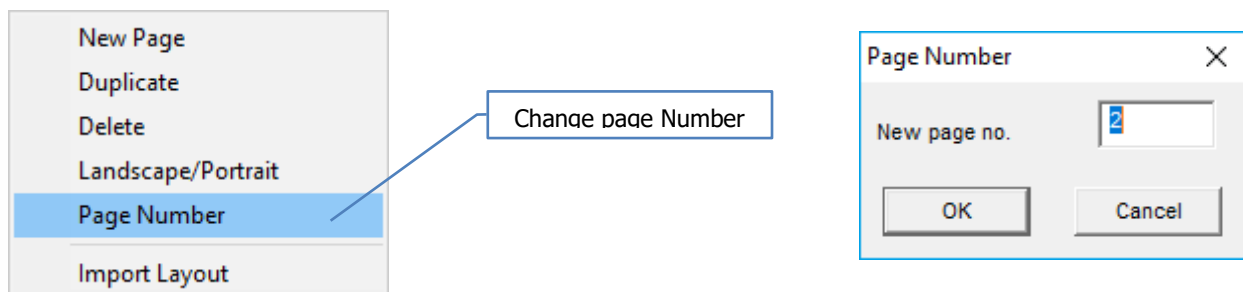
Setting landscape or portrait orientation

To toggle the page orientation, right click on the page you want to alter the orientation of, whether in the page selection window, or directly in the layout window. Select <Landscape / Portrait> from the appearing context menu:



Change page number

To change the page number of a specific page, right click on this page in the page selection frame and choose <Page Number> from the appearing context menu (left):



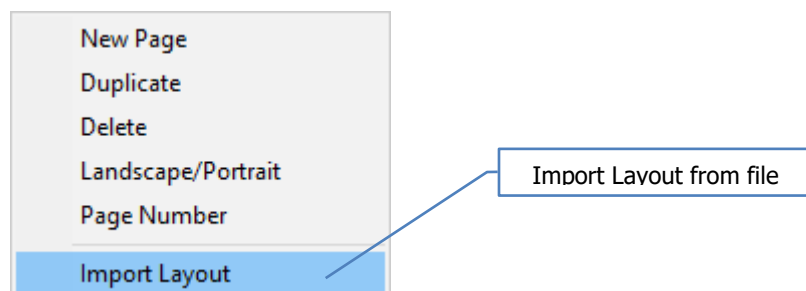
The "Page Number" dialogue rises (right). Enter the desired page number to the edit field of this dialogue. Example: Changing the page number of the fourth page to six (color represents page content):

1 | 2 | 3 | 4 | 5 | 6 | 7 1 | 2 | 3 | 4 | 5 | 6 | 7

Import layout

The import layout feature gives the opportunity to import pre-defined Layouts. By importing predefined layouts, all pages defined in the predefined layout will be appended to the selected page.

To import predefined layouts, select the page you want to append the pages defined in the predefined layout, from the page selection frame. Right click on that page to raise the context menu:



Select <Import Layout>. A file selection dialogue will appear to question you what layout file should be used. Select the layout file you want to use and click <Open>.

Create a "predefined" layout

Sometimes multiple channels have to be analyzed and presented the same way. To ease that process you can use predefined layouts, to not have to layout each page exactly the same, manually.

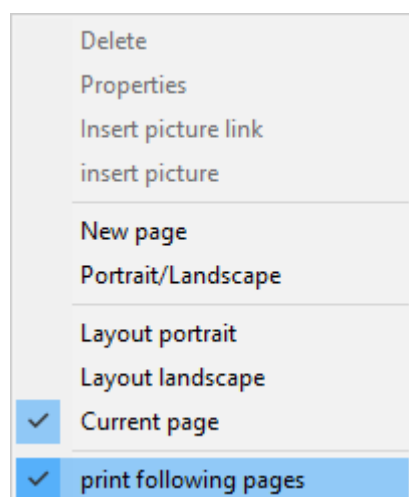
To prepare a predefined layout, perform the analysis you want to display on that page, create all texts and tables and then switch to the Layout view. Create the layout you need and save the ".EWD" document.

To use the just defined layout, see Import Layout

Print following pages

If the content of a formatted page is exceeding the available space on that page, E.d.a.s.Win will automatically create another page using the same layout to print the content that exceeds the previous page(s), if the "print following pages" option is active.

Typical examples for data that may exceed single pages are sophisticated tables.



To activate the "print following pages" option, right click within the layout frame and select <print following pages> from the appearing context menu.


Send layout as .jpg picture to an e-mail receiver

Layouts created using E.d.a.s.Win can be E-mailed directly from E.d.a.s.Win. E.d.a.s.Win will create ".jpg" images of all pages in the layout view, call the default E-mail software that runs on the system and append the images to an empty E-mail.

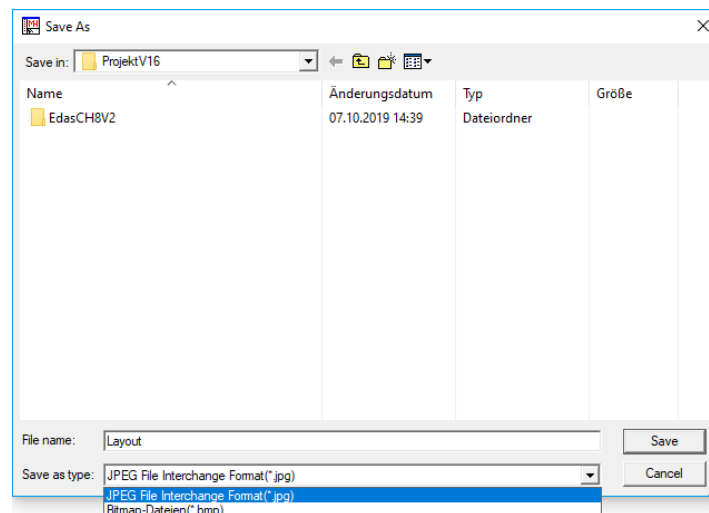
You will only have to enter the receiver and write the E-mail text.

To use this function, switch to the layout view, and click the  button on the toolbar.

Store layout as BMP or JPG file

Layouts created using E.d.a.s.Win may be stored as ".jpg" or ".bmp". To store layouts created by E.d.a.s.Win as ".jpg" or ".bmp", switch to the layout view and click the  button on the toolbar.

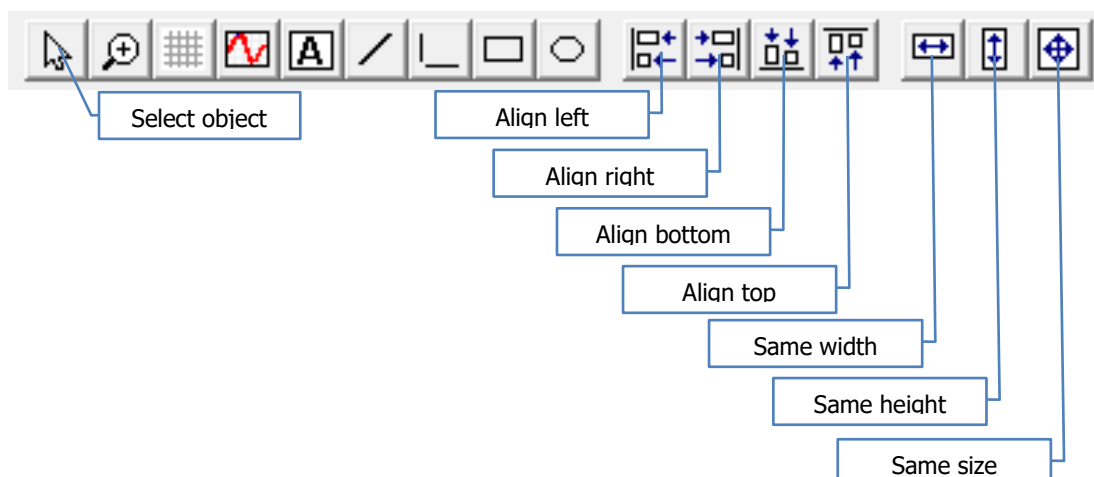
A file selection dialogue will appear where you can select the storage path, file name and format:



The benefit of storing pages as ".jpg" or ".bmp" is, that it is compatible with most operating systems board features such that you can view them with almost any operating system without having to install any extra software.

Align layout objects

E.d.a.s.Win offers some alignment tools. To use them, select all objects to align in the layout view and then select the layout function you want to apply. To select multiple objects, press and hold <Ctrl> on the keyboard during selection. The last selected object will be used as reference.



Course

Course plots the estimated vehicle position on a track based on GPS data acquired during the trip. The estimated position is overlaid to a map of the track.


The position estimate is updated each time a cursor is touched in the analysis view. This way the estimated vehicle position always correlates to the measurement data in focus.

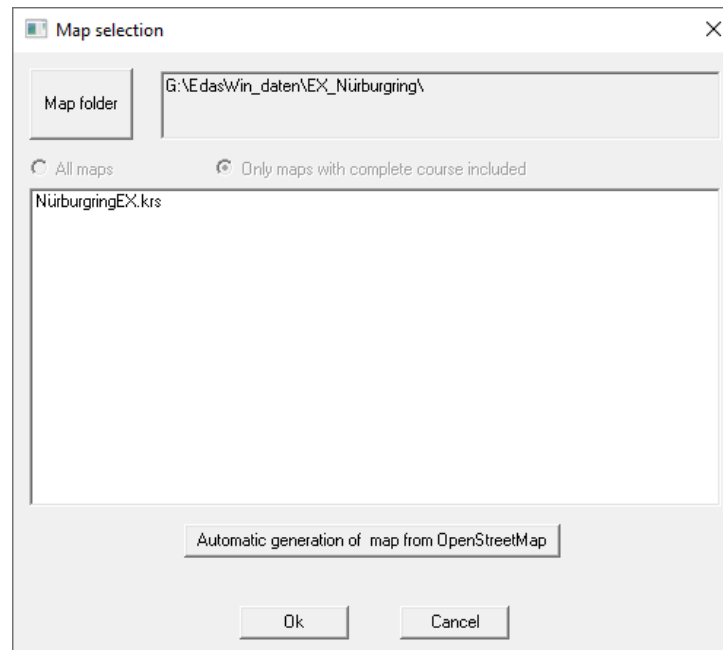
How to use:

1. Create a map using the MH course editor.
2. Define the GPS channels at **menu/Settings/ GPS definitions**.

Proceeding:

Define the map path and the GPS channels at **menu/attitudes/ GPS definitions**.

Double-click on  [000] Map in the channel selection window. A dialogue appears where you can select a map from all maps available in the previously defined directory:



You can choose between two filtering modes:

All maps:

Lists all maps that were found → All files in the directory with ".krs" suffix.

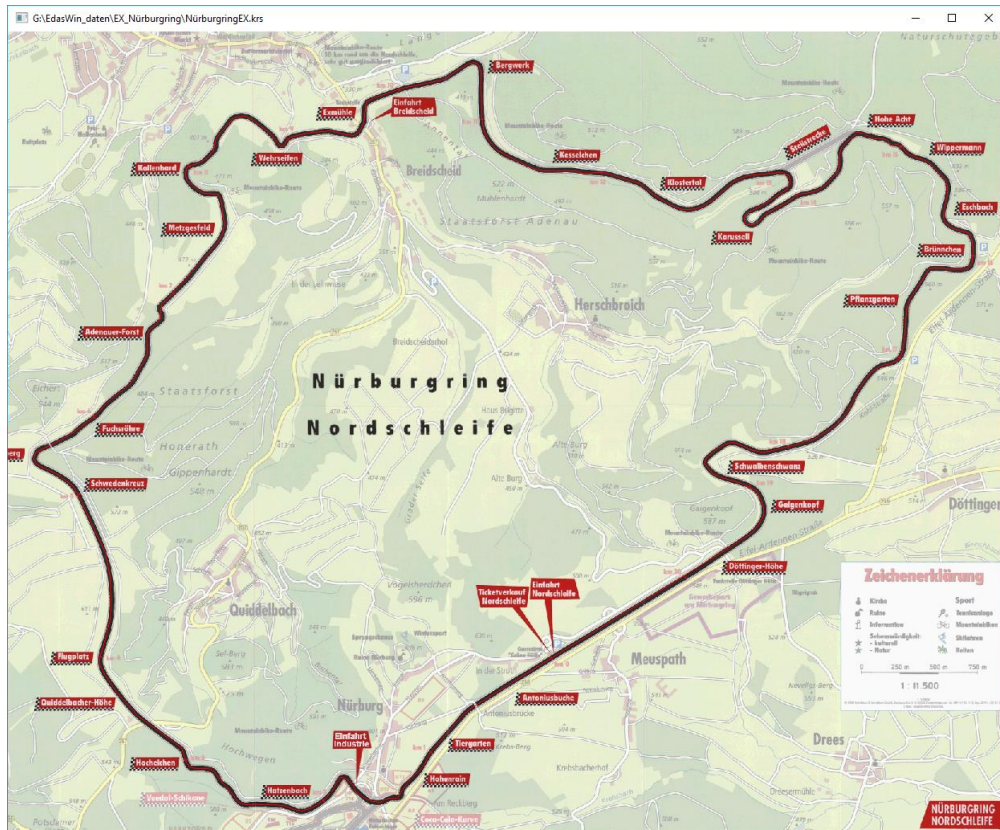
Only maps with complete course included:

Only maps that fit the coordinates of the defined GPS channels will be shown.

Select map:

Select the map either by double clicking on it or marking it and clicking <OK>.

The map and the course will be indicated in the course window. If there is no map available or marked, the course will be displayed without underlying map.



Right click in course window opens the following menu

<div style="border: 1px solid gray; padding: 5px; background-color: #f0f0f0;"> <ul style="list-style-type: none"> Center cursor Fit to window Zoom + Zoom - <input checked="" type="checkbox"/> Show measured lane Lane color/Reference lane color Transparent Take lane from analysis Calibrate map Transfer calibration to map Transfer calibration to analysis Store map as Picture ... Fix in analysis </div>	<ul style="list-style-type: none"> Center the cursor in the middle of the map Fits the map into the window Zoom in to the map Zoom out of the map Overlays the actual driven course Select the coloring Make the map window translucent Use the lane derived from the analysis Manually match the course with the map Assign the calibrated course to the map Create a .ipq or .bmp of the map and lane Fix in analysis
--	---

Take course from analysis :

Click on the course symbol in the report view, and choose the course from the list.

Mark the GPS signals with an X and Y mark. Right click into the course window to open a context menu. Choose "Take lane from analysis". The different lanes are displayed in the course window.

Recalibrate map:

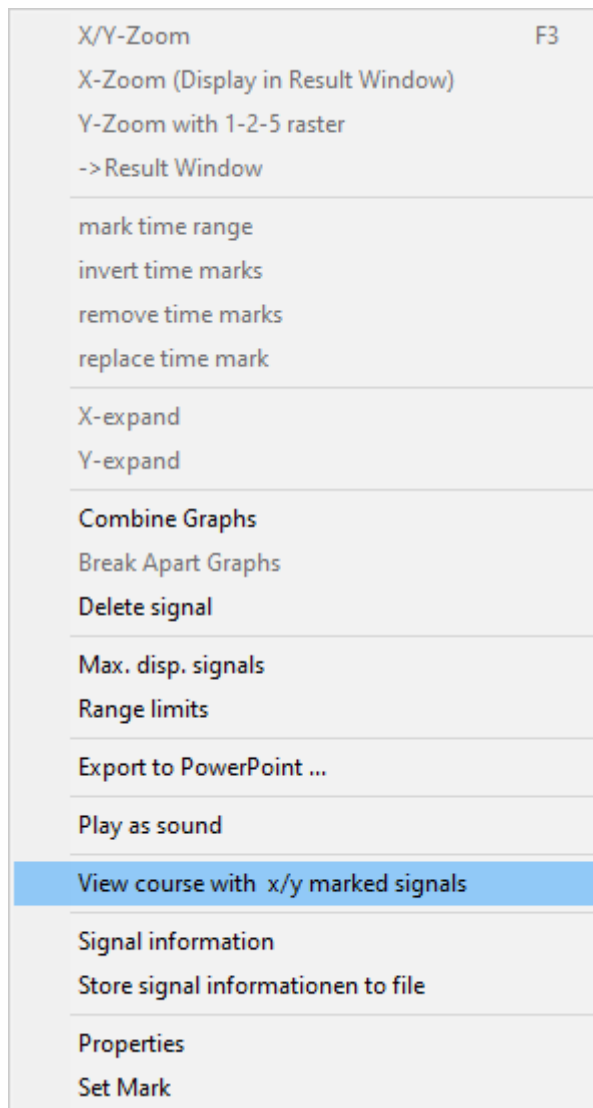
If the measured course does not fit into the map, the course can be shifted manually across the map. Right click on the course line in the course window to open a contextmenu. Select **map recalibrate**. A line with reticle appears. The course can be positioned on the map by drag the line. Subsequently, the repositioning can be transferred with the function **transfer the calibration into map**,

Display vehicle position in course window:

Load s signal into the analysis window. Generate a new cursor and move them across the signal. The position of the vehicle is represented as black reticle. The blue square marks the starting point of the measurement.



Course representation with marked X/Y signals

GPS signals that have been acquired during a measurement trip, can be presented in a X/Y-plot to show the course of the trip. To visualize the GPS signals as X/Y-plot, load the longitude and latitude channels to the analysis and mark the longitude channel with an X- and the latitude channel with an Y-mark. Then right click within the analysis frame and select <View course with x/y marked signals> from the appearing context menu:



The calculated course will appear in a separate window.

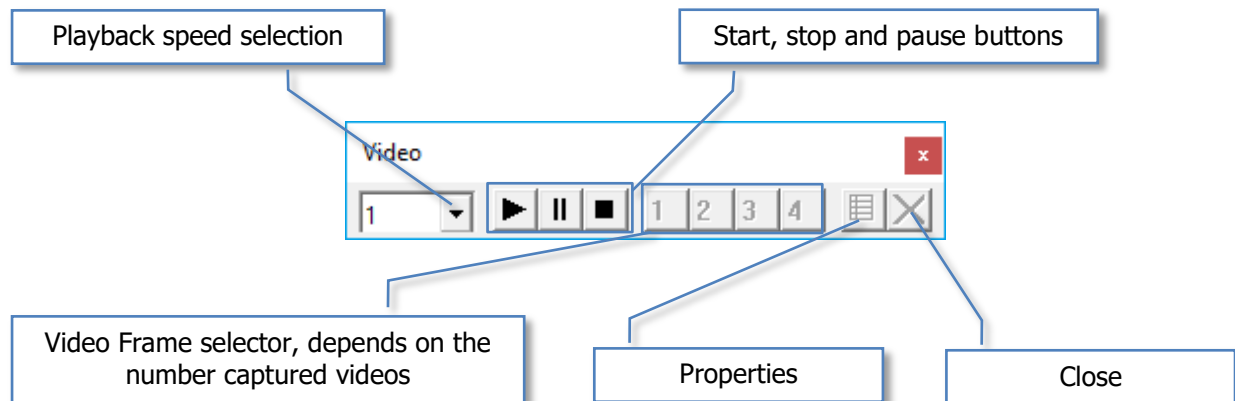
Play Video Data

To view video data acquired using the MH EdVid software, load the .edt file that corresponds to the video file to the analysis (Open Data button on the analysis calculator). When the .edt dataset is loaded, load a channel contained in the dataset to the analysis. Now double click on the  [000] Video icon in the channel selection frame or if the channel representation is set to report view, double click on the  icon on top of the channel report list.

The cursor dialog, video player and the video frame will appear in E.d.a.s.Win. The number of appearing video frames depends on how many cameras were active during the measurement.

Play video data:

Click the play button on the video player, the cursor runs synchronous with the video data over the channel.



Change playback speed:

Choose between the different modes.

2, 1, 1/2, 1/4, 1/8, 1/16.

Window size and save picture:

Right click into the video window opens the following menu:

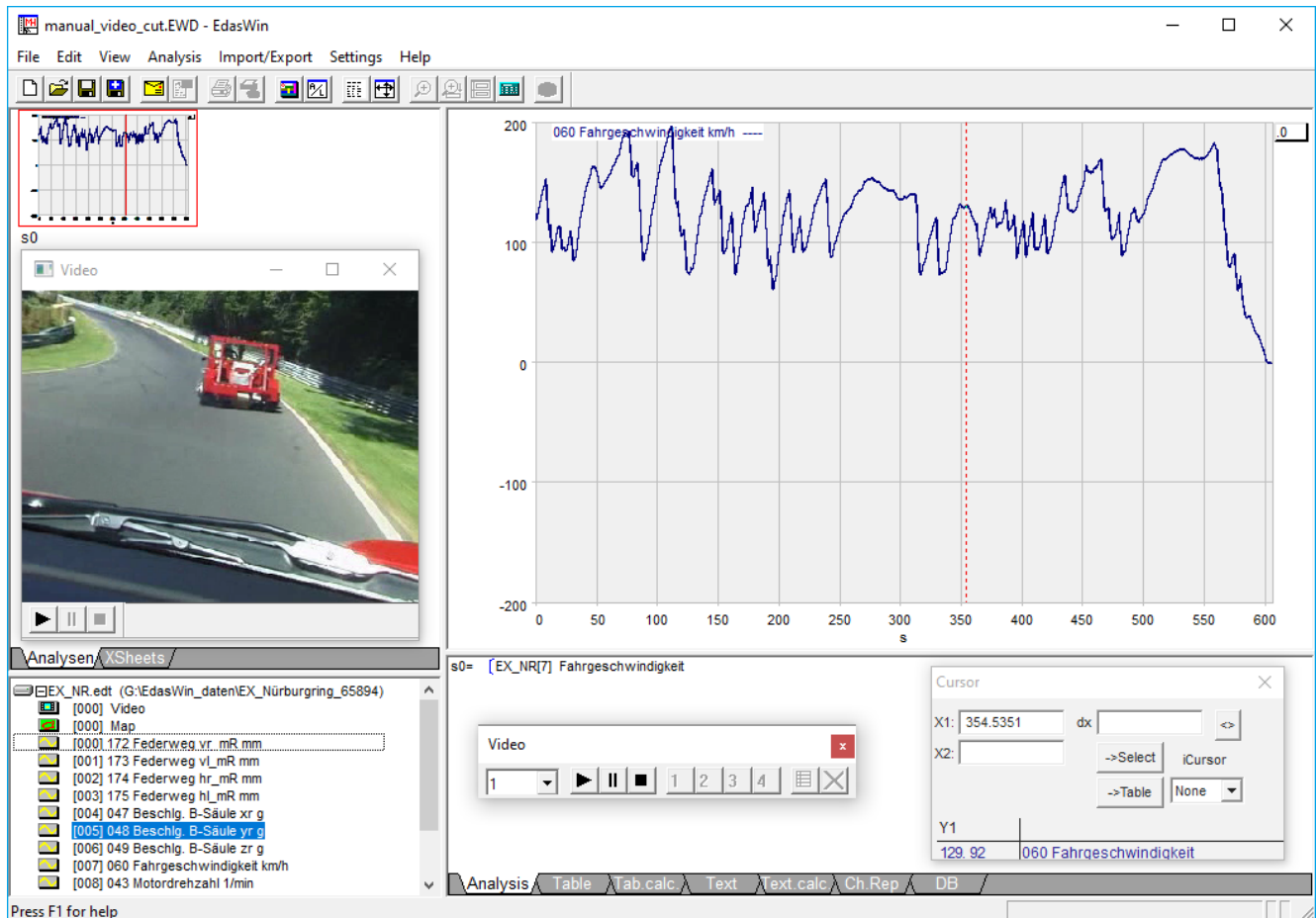


Choose the new window size **1:1**, **1:2**, **1:4** from the video window, or save picture... to store a single picture in *.jpg or *.bmp format from the actually video data

Cut video signals

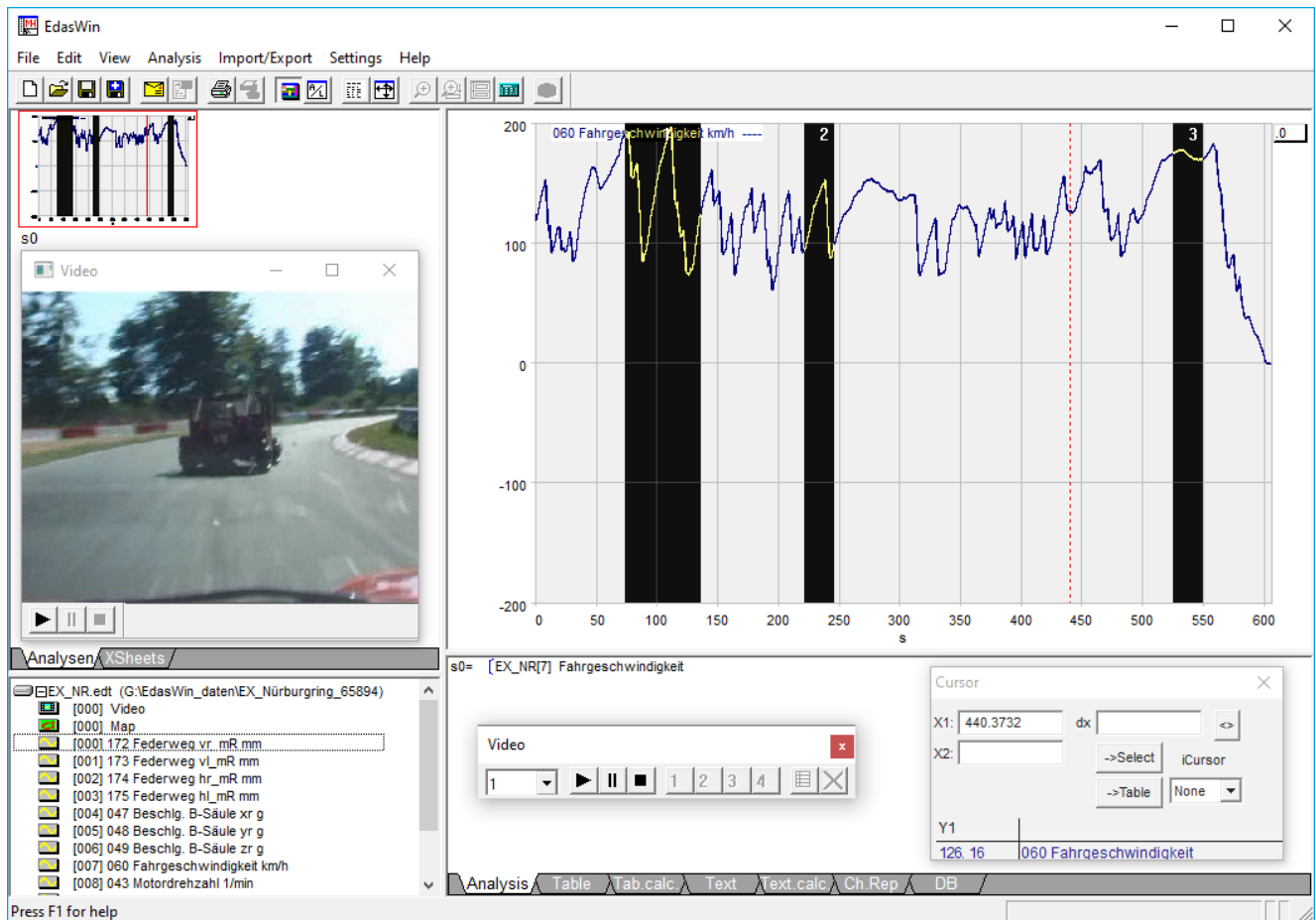
Datasets with analog (.edt) and video (.evs) signals can be cut with E.d.a.s.Win. Note that the edited dataset will always be stored in a new .edt file. Now to edit datasets, open the dataset to work on using the <OpenData> button on the analysis calculator. Double click on any analog signal and double click on [000] video. The analogue signal will be displayed in the analysis frame and the video signal will appear in its own frame together with its control dialogue.

Important! If the video signal is not selected, only the analogue data will be cut. Moreover, only channels loaded to the analysis view will be exported.



To select what to cut and what to keep use selection frames and markings. First create a selection frame on a signal part you want to carry over to the edited file, then press **<alt> + <M>** to mark the signal part within the selection frame. If you want to carry over multiple parts of the signal(s) repeat the last steps (creating selection frame + mark time range).

To invert the selection press **<alt> + <I>**



To create the edited version of the dataset, choose **Import/Export / Export / EdasWin** from the menu bar.

The 'Export EDASWIN' dialog box is shown. It has two main sections: 'Data format' and 'Data organization'. In the 'Data format' section, '16 bit 2's complement' is selected. In the 'Data organization' section, 'Block' is selected, and 'Block length' is set to 16384. There are checkboxes for 'Include sensor location number in channel name' (unchecked) and 'Include analysis lines in file header' (checked). 'OK' and 'Cancel' buttons are at the bottom.

Click on **<OK>**. Enter the desired storage location in the appearing files election dialogue and click save. The edited dataset will be available at the location just defined.