

User Interface

This chapter lists all menu options along with a short description, which can also be seen in the bottom line of the window, when we hover the mouse cursor over an individual menu option. The program offers the following menu options:

File

File → Open

Open existing measurement File.

File → Open folder view

Opens and displays a view of nek/nekge Files in the chosen folder.

File → Save

Saves the measurement File.

File → Save as...

Save the measurement into a new File.

File → Export into text format

Exports channel/s into a text File.

File → Export into text format → All signal channels...

File → Export into text format → Only selected channel...

File → Import from text format

Import event channel from a text File that was made with e.g. DEKG or MEKG.

File → Exit

Close all open measurements and the program itself.

Edit measurement

Edit measurement → Delete up to blue cursor

Delete content of all channels from the beginning of measurement to the blue cursor.

Edit measurement → Delete from blue cursor to the end

Delete contents of all channels from the blue cursor to the end of the measurement.

Edit measurement → Delete between blue and green cursor

Delete content of all channels between the blue cursor and the green cursor.

Edit measurement → Maintain contents between green and blue cursor

Delete content of all channels from the beginning of measurement to the blue cursor and from the green cursor to the end.

Edit measurement → Delete channel

Delete selected channel.

Edit measurement → Copy channel

Copy selected channel.

Edit measurement → Invert channel

Invert selected channel (+/-).

Edit measurement → Shift channel for a constant value

Shifts selected channel for chosen value – add a constant value to all samples.

Edit measurement → Multiply channel with a constant value

Multiplies channel with a constant value (changes signal amplitude). If the given constant value is negative, signal will be inverted at the same time.

Edit measurement → Add channel

Adds a channel to the selected signal channel (interface requests the number of channel to be added).

Edit measurement → Absolute channel value

Change the values of selected channel to their absolute values

Edit measurement → Time shift of event channel

Shifts selected event channel in time (+ to the right, - to the left) [s].

Edit measurement → Set mean value of event channel

Subtract the (current mean value - desired mean value) from the channel value, thus setting the desired mean value.

Edit measurement → Linear detrend of event channel

Subtract regression line from event channel.

Edit measurement → Subtract average of a part of the beat

Interface expects two placed cursors (blue + any other), which designate the section of the beat that we wish to filter out of the signal. The interface also asks for the number of event channel, where the beats are marked, and then:

calculates an average section (of all the beats) for the marked beat section

detrends the average section (subtracts linear component so that the beginning and the end of the section are fixed to 0 - this prevents the next step from creating a saw shape in the signal)

subtracts the average section from all beats.

Edit measurement → Linearise a part of the beat

The interface expects two cursors to be placed (blue + any other), designating the section of the beat that we wish to replace with a straight line. The interface also asks for the number of the event channel, in which the beats are marked. Then it finds the same section within every beat and replaces it with a straight line, which directly connects the first and the last sample of the section.

Edit measurement → Derivative

Creates a new channel, which contains the derivative of the selected channel.

Edit measurement → Absolute derivative

Creates a new channel, which contains the absolute values of the derivative of the selected channel.

Edit measurement → Resampling

Resamples the selected event channel with selected frequency.

Edit measurement → Filtering

Uses a low pass filter on the selected signal channel.

Edit measurement → Base line

Adjust the baseline of the selected signal channel to the value set by the blue cursor.

Edit measurement → Window filtering of signal

Create a new channel with values of moving average of the selected channel. Expected parameters are the duration of the window and the step of calculation. The event will be created in the middle between two end events (step parameter varies somewhat).

Edit measurement → Window filtering of signal - temporally strict.

Create a new channel with values of sliding average. Event will be created precisely for every »step« seconds.

Edit measurement → Measurement data

Edit measurement, patient, and channel data.

Event setting

Event setting → AM

Set beat times from selected signal channel with AM (amplitude) algorithm.

Edit events

Edit events → Undo

Undo editing of individual events.

Edit events → Insert event

Insert new event in location of the next click.

Edit events → Move event

Moves event under blue cursor to the location of the next click.

Edit events → Remove event

Removes event under blue cursor. When removing RR (and similar channels where the y axis is equal to the derivative of the x axis) of events, value is automatically adjusted in next event.

Edit events → Replace with equidistant events

Events between blue and green cursor are replaced with the desired number of equivalent events.

Edit events → Replace with equidistant events → 0 events

Edit events → Replace with equidistant events → 1 events

Edit events → Replace with equidistant events → 2 events

Edit events → Replace with equidistant events → 3 events

Edit events → Replace with equidistant events → 4 events

Edit events → Replace with equidistant events → 5 events

Edit events → Replace with equidistant events → 6 events

Edit events → Replace with equidistant events → 7 events

Edit events → Replace with equidistant events → 8 events

Edit events → Replace with equidistant events → 9 events

Edit events → Beat time detection (ver 1)

Derivative the selected channel, AM event detection and addition of an event channel. (Detailed description in the sub-chapter "Beat time detection (ver 1)").

Edit events → Beat time detection (ver 2)

Derivative of selected channel, AM event detection and addition of an event channel. (Detailed description in the sub-chapter "Beat time detection (ver 2)").

Edit events → Remove extreme events

Removes all events that have values outside the given interval.

Edit events → Remove events

Removes all events between (including) the cursors set furthest to the left and right, without adjusting the surrounding events.

Edit events → Add event (t, v)

Adds individual event by manually entering event time and value.

Event processing

Event Processing → Quadratic interpolation

Adjusts RR times with quadratic interpolation.

Event Processing → Events: value = time between events

Assigns the time between this and previous event to event value.

Event Processing → Events: value = event frequency

Assigns value to events: number of events per minute (60/time since previous event).

Event Processing → Discrete Fourier transformation

Calculate DFT of event channel and display it in a separate window.

Event Processing → Coherence

Calculate and display coherence between two frequency spectrums. An event channel must be selected.

Analyses

Max/Min

Calculates max/min values and their fraction in selected event channel between blue and green cursor.

Channel statistics

Calculates basic statistics of selected channel.

Statistics of channel between cursors

Calculates basic statistics of selected channel between the first and the last cursor on the measurement.

Window

Window → Arrange all

Window → Cascade

Window → Sort

Window → Folder view settings

Setup parameters of the folder view. A default folder for the folder view can also be set.

Help

Help → User manual

Displays this file.

Help → About

Shows software version and license owner information.

Report generation

This chapter is designated to creation and adjustments of reports that can be generated.

Report whole folder

Open folder overview and select button “Generate report”. You will be shown windows similar to Figure 1 Report information window.

Report information

Author: author name

User: user name

Age: 50

Weight: 85

Sex: Male

Birth date: 6 sep 2018

Additional comments about report:

additional comment

Show first measurements: 4

Show first events: 2

☐ Report all measurements and events including activities (ignore set limits)

BPM overview length[h]: 1

ECG length per line [s]: 15

ECG time scale [cm/s]: 1,25

mV around baseline: 3

ECG mV height [mm]: 10

Cancel OK

Figure 1 Report information window

Yellow square shows input field for additional comments about the measurements.

Green square affects number of measurements and events shown on report.

No matter selected numbers here, table generated in report will always contain all measurements in folder. “Show first measurements” number denotes how many measurements will be shown on report as a BPM graph. “Show first events” marks number of events written to report as 4 minute ECG segments. Only events with value higher than zero will be reported. **This excludes activities events (e.g. RESTING, ACTIVE, SPORTS that have value 0) or manually inserted events with value lower than 1.** To print ALL events user can mark “Report all measurements and events”, where application will print all measurements as BPM graph, and all events, regardless of their value.

Brown area sets BPM graph length, where a graph of BPM overview shows chosen length in hours. Red area sets ECG graph parameters. This makes it possible to tailor ECG graphs look.

Report one event

To create report of a single event open folder overview and select button “Generate report (1 event)”. You will be shown windows similar to Figure 2 Single event report info .

