SAP Tracker

Version 1.1

Quick-start guide

http://circumnutation.umcs.lublin.pl/sap-tracker

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Installation

1. Download SAP Tracker and electrophysiological samples from:
   http://circumnutation.umcs.lublin.pl/sap-tracker
2. Run: SAP Tracker.exe

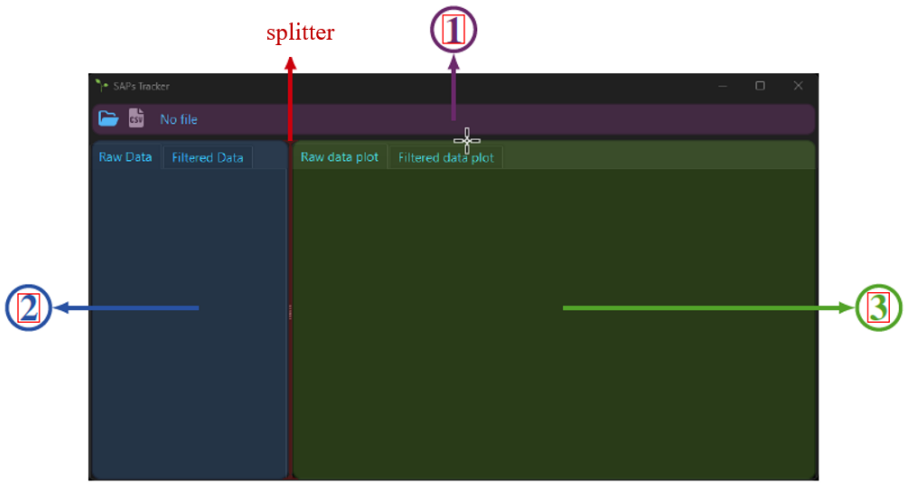
The installation process is not required. The application can be used directly after downloading it from our website. The application was built for the Windows operating system.

The workflow with SAP Tracker (ST)

The crucial steps of working with ST include:

1. Electrophysiological data loading
2. Spontaneous action potentials graph viewing
3. Numerical data and graph exporting

SAP Tracker (ST) - main window



For illustrative purposes, three interacting areas were distinguished:

1 Navigation Bar

2 Numerical data panels

3 Graphic Panels

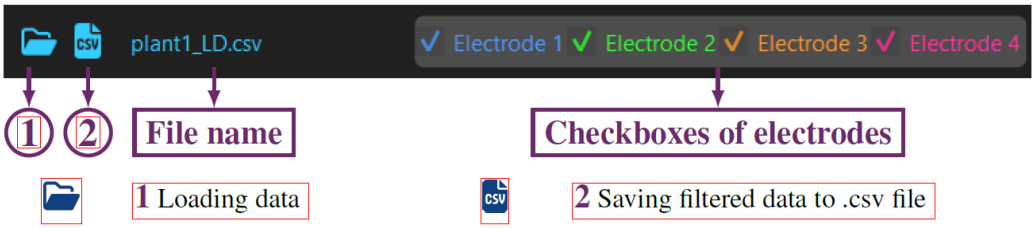
Splitter allows to control the size of panes 2 and 3 by dragging the boundary between them.

Tooltips

When the mouse cursor hovers over button of interest tooltips are displayed as shown below.

Navigation Bar

The navigation bar is composed of buttons allowing loading or saving data, currently loaded file name label and electrodes' checkboxes, which colors are related to plotted series of data.



Electrophysiological data loading

Right after startup, only one functionality is available, and that is loading data file with button (open data file). While there's no data loaded, button (export to .csv file) is greyed out, meaning it is inactive. "No file" label indicates currently loaded file, i.e. none. It looks as shown below:

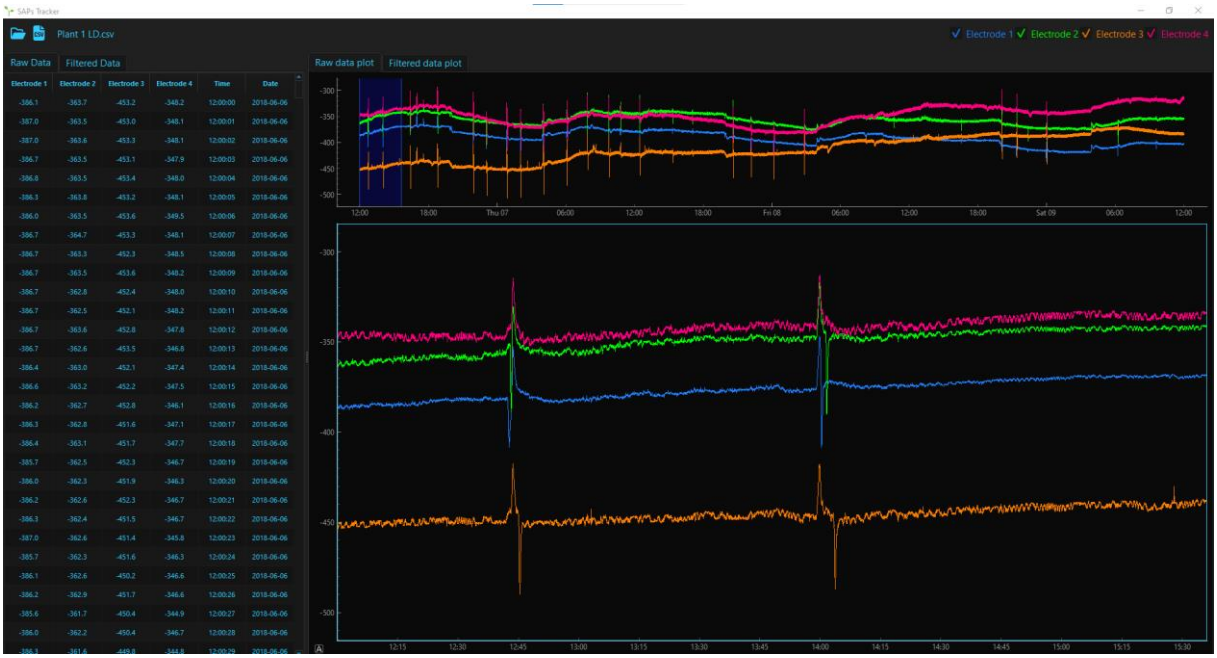
Samples

ST works on .txt and .csv files

First opening of Sample

Open file: "Plant 1 LD" as Sample 1 from downloaded "SAP Tracker software and samples" catalogue from http://circumnutation.umcs.lublin.pl/sap-tracker.

Text files (.txt or .csv) are loaded into the Raw Data table tab and visualised in Raw data plot tab. After loading the data for the sample “Plant 1 LD” file, the application presents itself as shown in the image below.



Numerical data panels

The numerical data panels consists of two tabs containing raw and filtered data in tables. Each table includes information collected from the electrodes attached to the plant, the measurement time accurate to the second, and the date.

1. **Raw data** table contains original numerical data loaded from file (sample)
2. **Filtered data** table contains numerical data filtered by application

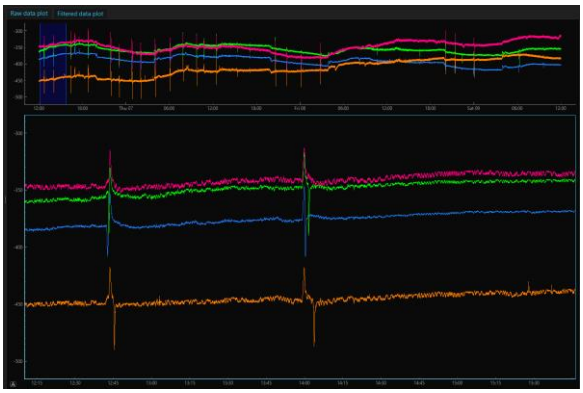
Spontaneous action potentials graph viewing

Graphic panels

Graphic panels consists of two tabs containing raw and filtered signal visualised on plots.

1 **Raw data plot** - plot generated based on original numerical data

2 **Filtered data plot -** plot generated based on numerical data filtered by application and given SAPs on a unified scale



Raw data plot

Filtered data plot

On the horizontal axis, the time and date of the measurement can be read, on the vertical axis the voltage (mV) of the electric potential from the individual electrodes.

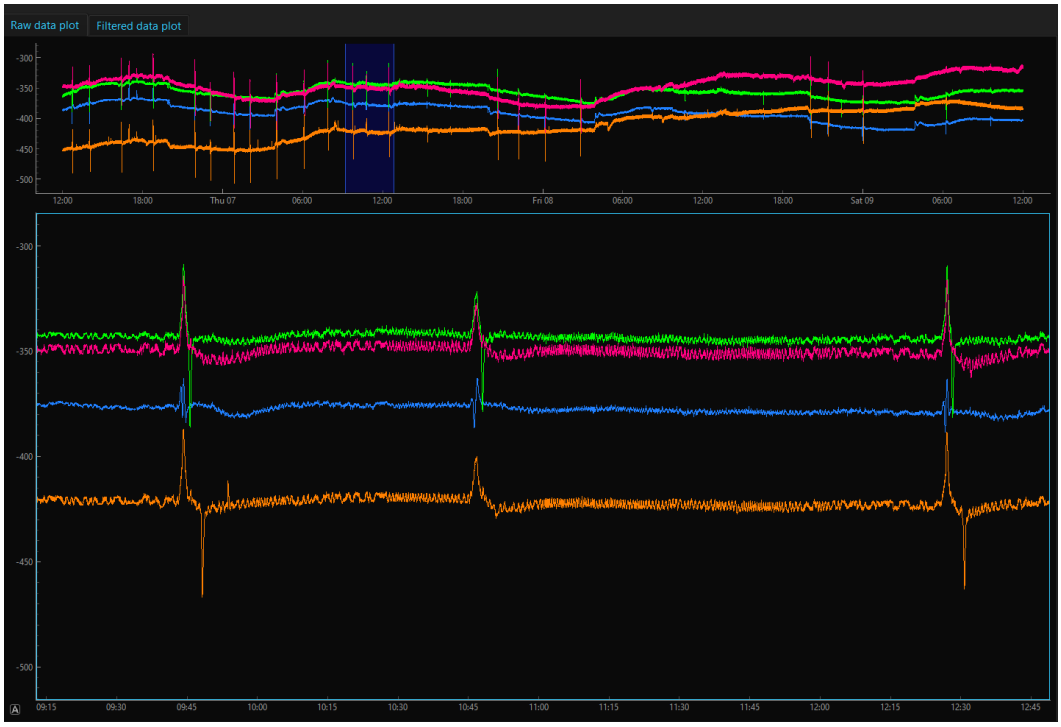
Each tab is divided into two sections: the upper section contains the graph with the full range of data, the lower section is for the ROI (region of interest) graph. This will be described in more detail in the sections: top plot navigation.

Graph navigation

The graphs show lines in different colours. These colours correspond to the colours of the checkboxes, which represent series of data from the loaded file. The visibility of the series depends on which checkboxes are selected.

Top plot navigation

The top plot presents the data over the entire time range. User interaction is enabled by controlling the element referred to as the ROI - the blue rectangle in the image below. Data range covered by the ROI is visible in the bottom plot. Navigation is possible by moving the ROI or its vertical edges with LMB (left mouse button) pressed.



Bottom plot navigation

When the cursor is over the plot area, the crosshair and dynamic label appear, from which the voltage values of the individual electrodes and the date and time for the current position of the mouse cursor can be read off.

There are two mouse button modes: 3 button mode and 1 button mode. In 3 button mode left mouse button is used to drag the view, while in 1 button mode left mouse button selects region and zooms into it. Other buttons functions are as follows:

Zoom in on the horizontal axis	hold RMB (right mouse button) and drag right
Zoom out on the horizontal axis	hold RMB and drag left
Zoom in on the vertical axis	hold RMB and drag up
Zoom out on the vertical axis	hold RMB and drag down
Zoom in the entire plot area	scroll down
Zoom out the entire plot area	scroll up
Panning the plot area	hold LMB and drag to desired direction
Panning the fixed (current) range	Left or Right keyboard keys
Show entire data range	select View all from plots context menu
Show context menu	click RMB

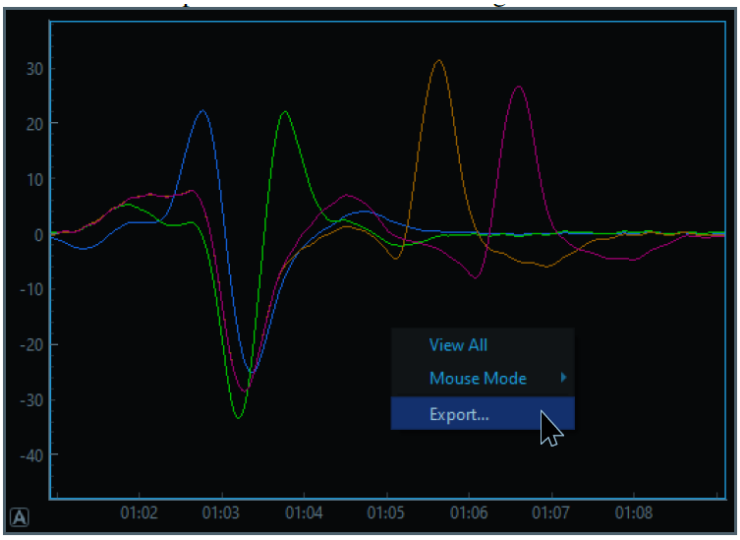
Numerical data and graph exporting

Save filtered numerical data

To save the filtered data to a .csv file, click the  button in the navigation bar.

Save SAPs graph as images

To save the plot as an image, press the right mouse button, a context menu will appear from which select Export, as shown in the image below.


30
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View All
Mouse Mode
Export...