

A nanoparticle dosimeter for easy workplace exposure monitoring



# Partector

## Data analysis tool

### Quick start guide

English

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## Introduction

The java data analysis tool for the partector lets you check your partector data files quickly and easily. Partector data files are plain text, tab-delimited files, which can also be imported into any program of your choice (e.g. Excel, Origin, Igor etc), however, the java tool simplifies many common tasks that you typically would want to perform with your partector data, such as averaging and graphing; furthermore, the java tool also allows you to easily combine partector data with GPS data to generate a Google Earth file plotting air quality as function of location.

## File operations

The most important file operations are accessed by the first four buttons in the toolbar:



The buttons are, from left to right: **open file**, **save file**, **open previous file**, **open next file**.

To open a file, click on the **open** button, and select the file you wish to view. If you have organized your files in a single folder (recommended), then you can use the “**previous**” and “**next**” buttons to quickly load the other files in that folder.

When you are done checking your data, you can export it with the **save** button; for example you can export averaged data using this option.

## Viewing options

The next group of buttons contains the viewing options.



These buttons are, from left to right: **Averaging button**, **Show all button**, **Zoom out button**.

The **averaging** button allows you to quickly average over different pre-defined time intervals: 1s (no averaging), 10s, 1 minute, 10 minutes or 1 hour. The averaging is done either over the data file as it is, i.e. if the

data file starts at 13:15, then the first 1-hour average is taken from 13:15—14:15, or, the data can be aligned over the averaging period by selecting “align averaged values” from the options menu. With this option enabled, the tool will use the time from 14:00-15:00 as first averaged data point.

The **show all** button enables you to display all data points in a partector data file for large files. To speed up the program, the java tool displays a maximum of 100'000 data points by default (i.e. just over 1 day of data). In larger files, it will skip data points, e.g. if a file contains 1 million data points, only every 10<sup>th</sup> data point will be shown in the graph. This is useful because the program will become rather slow when displaying large files, but sometimes, you might want to see something in detail, and for this purpose you can use the **show all** button.

The **Zoom out** button allows you to zoom out to view the entire data set, if you have zoomed in previously. You can zoom in by simply dragging a rectangle on the graph with your mouse to the extents to which you wish to zoom to.

Sometimes, the zoom out option will not zoom out properly. In this case, just switch to a different graph and back, and the zoom should be ok.

## Graph options

The next section contains buttons for the different graphs that can be displayed in the java tool:



These are, from left to right: **LDSA graph**, **electrometer graph**, **corona graph**, **temperature graph**, **humidity graph** and **battery graph**.

The LDSA graph is the main graph, which displays the lung-deposited surface area.

The electrometer graph shows the raw data of the electrometer.

The corona graph displays either the voltage in the corona charger, or the charging current. You can switch between the two views by pressing on the corona button again. Since the corona charger is constantly switching on and off, the values for the on and for the off state of the charger are plotted separately.

The temperature graph shows the internally measured temperature of the instrument.

The humidity graph shows the internally measured relative humidity of the instrument.

The battery graph shows the battery voltage.

The flow graph shows a calculated flow in the instrument. There is no physical flow sensor in the partector; and so this value is neither very accurate or calibrated, but can be useful to detect deteriorating pump performance as the pump ages, or a blocked inlet.

## Combining partector data with GPS tracks

To combine partector data with a GPS track, first open the partector data file as usual. Then, export the GPS track from your GPS device as a .gpx (GPS exchange format) file. Import the .gpx file with the “file – import gpx file...” menu option. The .gpx file will normally use UTC time, and therefore not match the partector time; also, the partector’s real time clock is not very accurate. To avoid problems with different time, you can stop the partector measurement and the GPS tracking at the same time, and, when prompted by the java tool, choose to “align ends of file”. Once the .gpx file is imported, choose “File – Export KMZ file...” and select a file to save to. The KMZ file (Google Earth file) is opened automatically.

## The options menu

In the options menu, there are three further settings that you can select besides the alignment of averages:

**Use time since midnight:** When this option is selected, the time column of the exported data file will use seconds since midnight instead of seconds since measurement start time.

**Export timestamp:** When this option is selected, the first column of the data file will contain a time stamp in addition to the time in seconds.

**Export auxiliary data:** When this option is selected, auxiliary data will be exported into the data file (temperature, humidity, corona charger data).