# File Viewer v. 0.0

By: Deuteron Technologies

# Setup

In order to run the FileViewer.exe successfully, ensure that the following DLLs are found in the same folder as the executable:

WeifenLuo.WinFormsUI.Docking.dll

CSIntel.Mkl.dll

CSIntel.Ipp.dll

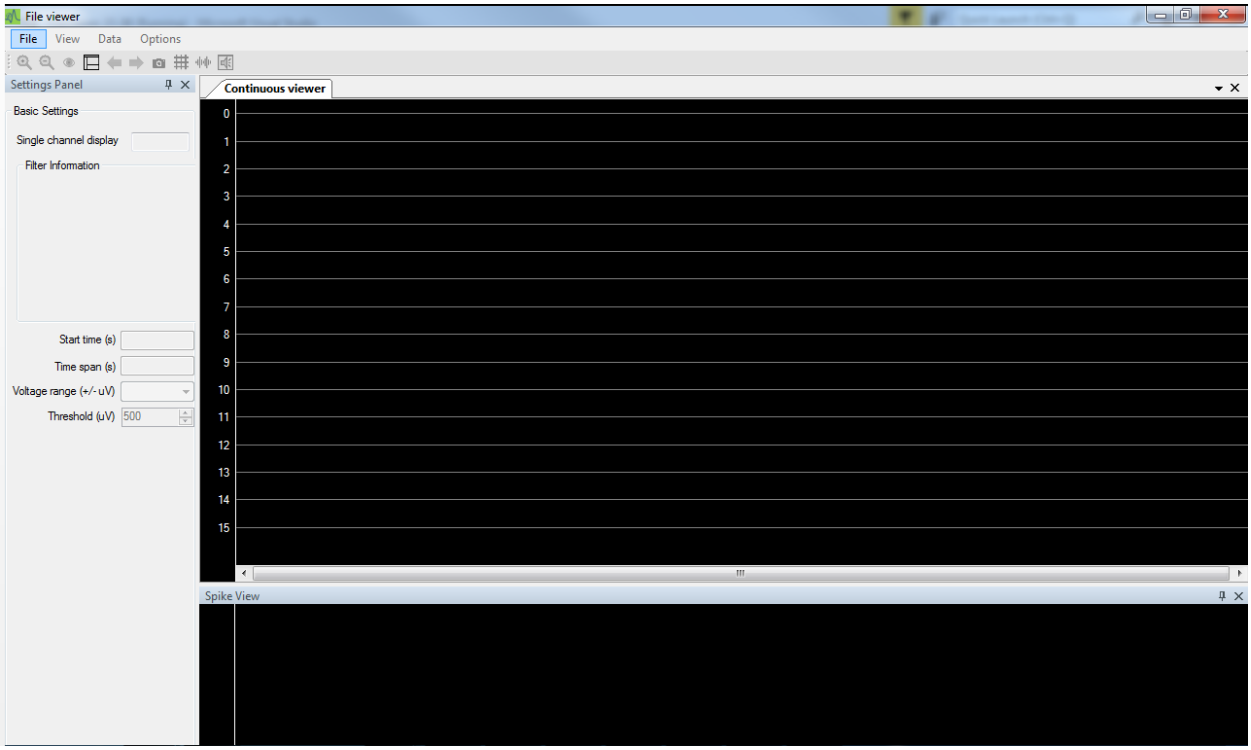
DSPFilters.dll

IntelFilterV2.dll

Try opening the FileViewer.exe to view files.

If it does not run successfully, ensure that you are working on a Windows computer with the .Net version 4.6.2 or later installed. You can determine which version of .Net is installed on your computer in the following link: https://docs.microsoft.com/en-us/dotnet/framework/migration-guide/how-to-determine-which-versions-are-installed under the section titled "To find .NET Framework versions by viewing the registry (.NET Framework 4.5 and later)". If you do not have a sufficiently updated version of .Net, you can download it here: https://www.microsoft.com/net/download/dotnet-framework-runtime/net462.

# Main view




Upon opening the program, the user is presented with the main view.

## Loading in data files

To load in files for viewing, from the tool strip menu select File -> Load neural data. This will open the file explorer and the user may select as many files as desired. The file extensions must match the original

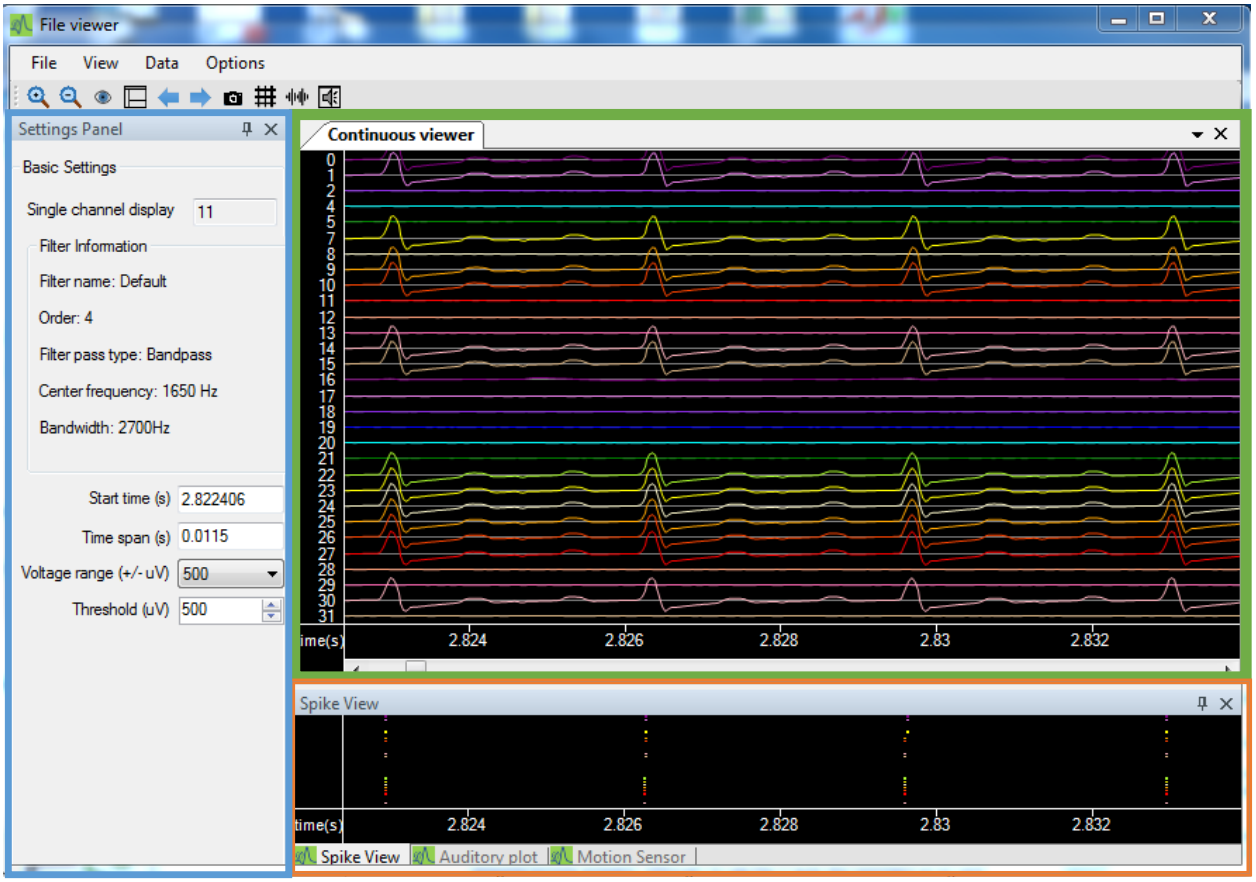
extensions assigned by Deuteron Technologies, and the files must have identical prefixes (e.g. NEUR) and the files must be contiguous.

In order to utilize information from the event log file, the user must first convert the event log file to a CSV file using the Event File Viewer program version 4.10. All desired files (including the CSV version of the event log file) must be located in the same folder. In order to view motion sensor and audio data, the user must load in the corresponding event log file.

Upon loading in files, options from the menu strip, tool strip and settings panel become available.

Note: The viewer is currently limited to a maximum of 64GB of data.

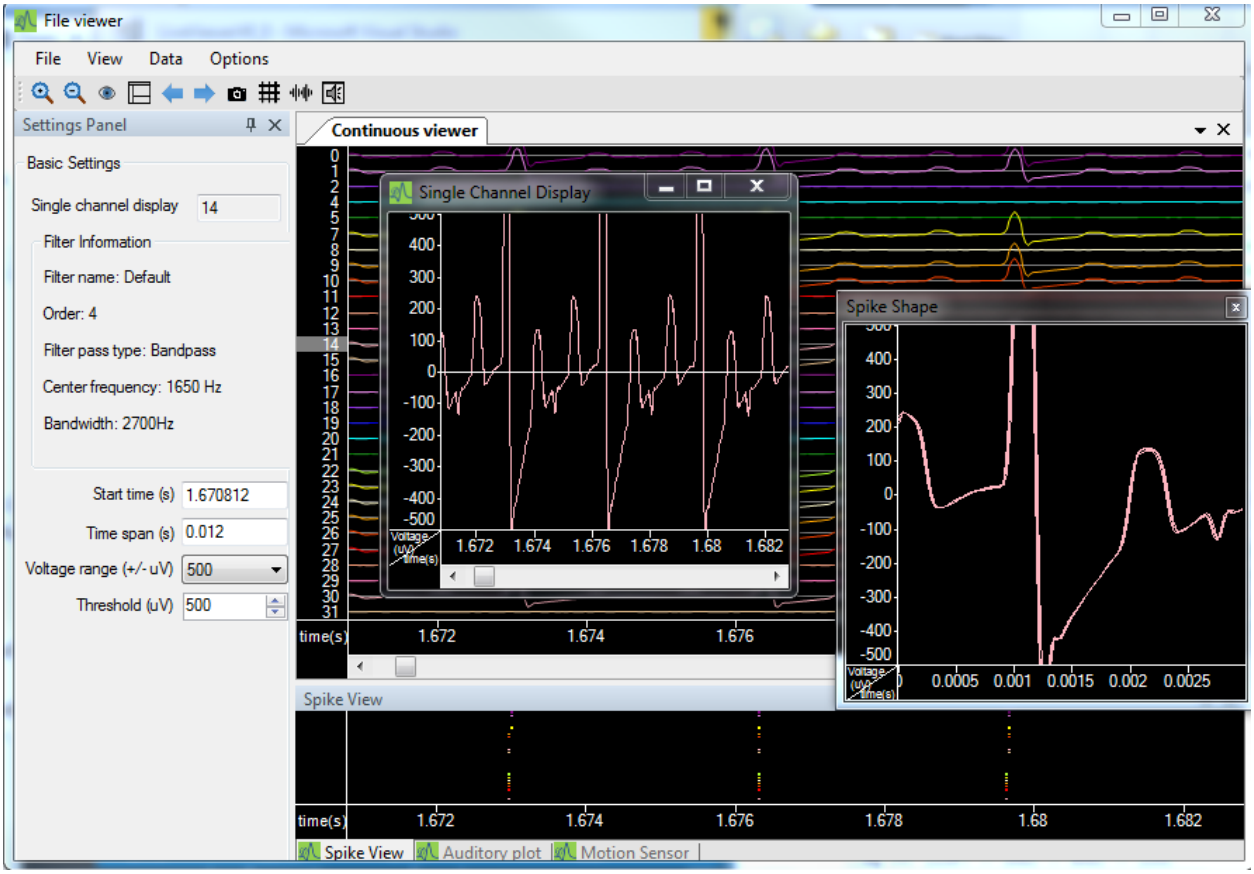
## View




The main view shows the settings panel on the left (blue), the continuous viewer in the central view (green) and the time of the spikes in the bottom view (orange). The audio and motion sensor plots appear as additional tabs in the bottom view. However, the windows can be freely moved and docked for the user's convenience.

To zoom in, the user can click anywhere on the continuous viewer and drag to indicate the data they wish to view. To zoom out, simply hover over the continuous viewer and scroll backwards.

In order to view a single channel and/or the spikes, the user can double click on the channel number in the continuous viewer. The single channel will be highlighted and 2 new views will be opened: the continuous data and spikes for that channel.




# Menu Strip

## View

### Reset data view

Will set the data view to the beginning of all the files at the default zoom.

### Restore all windows

Sets all windows to default view. Will re-open closed windows except for single channel windows (both continuous and spike).

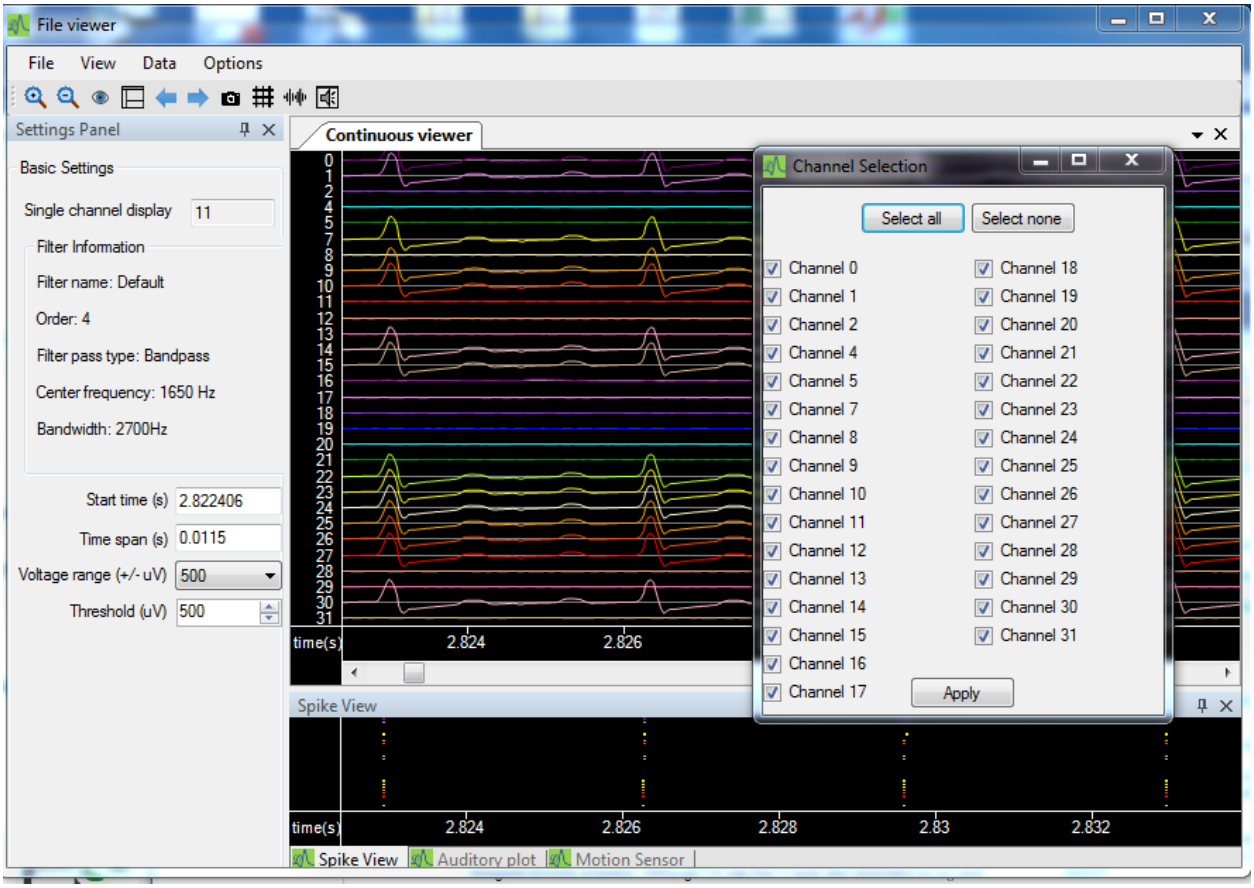
## Data

This contains options to allow the user to interact with the data by choosing channels to display, filtering, and adjusting other settings.

### Channels

Choose Channels

Allows the user to choose which channels to display



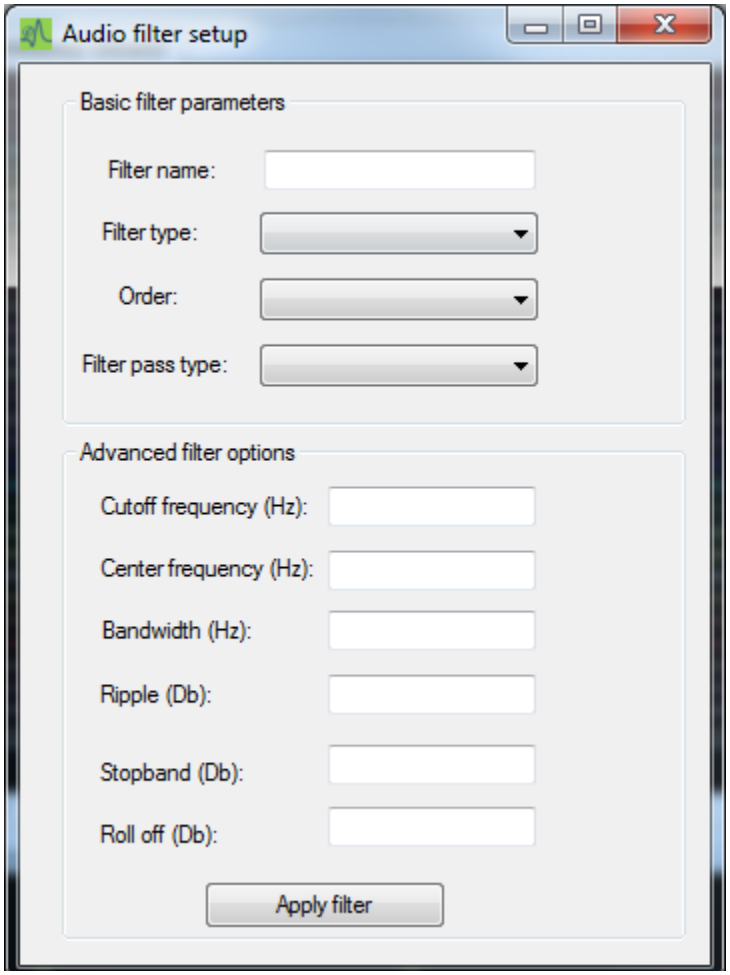

## Audio

### Play speed

Allows the user to choose the speed at which the audio is played.

## Filters

Create new filter: Allows the user to design a filter and apply it to the audio data.

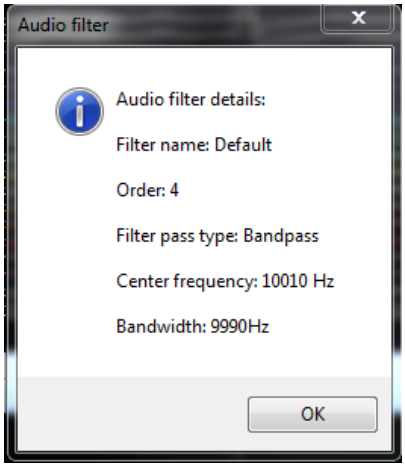



## Remove filter

Removes filter from audio data.

## Display filter specifications

Displays the filter applied to the auditory data.



#### Continuous data

Filter

See audio filters (above). The filter description appears in the settings panel.

#### Spike data

Filter

See audio filters (above)

Spike settings

Allows the user to choose the time frame of the spike (i.e. the amount of time to display before and after the threshold crossing)

#### Motion sensor

Scaling

Allows the user to adjust the maximum display values of accelerometer, gyroscope or magnetometer data.

### Options

#### Advanced settings

The application of a filter results causes a transient artifact. The user can choose how many data points of *pre-display* data to use for filter initialization to allow the transients to settle, thereby minimizing the effect of the transients on the displayed data.

## Toolstrip Menu

Zoom in: Selecting the zoom in icon while clicking and dragging the area the user desires to view in the continuous viewer area will bring up a window showing a zoomed in version of the user's selected area.

Zoom out: Clicking this will cause the data to zoom out and show double the timespan that it showed previously.

Resets the view (identical to the menustrip's View -> Reset data view)

Restores the default setting of the windows (identical to the menustrip's View -> Restore all windows)

Allows the user to flip the selected channel (left flips to the channel above; right to the channel below)

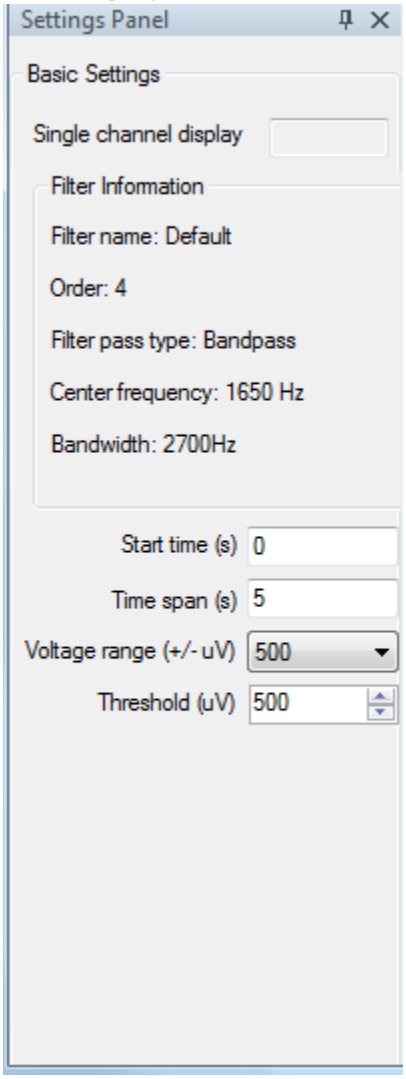
Takes a snapshot of the data in the main view. The user can paste this snapshot using ctrl+v.

Will show gridlines for all displayed data.

Plays the auditory data contained in the display

Plays all the auditory data loaded in to the file viewer.

## Settings panel



**Single channel display:** will display the channel selected (if there is one) by the user to display individually.

**Filter information:** Displays information about the filter applied to the continuous data.

**Start time (s):** The start time of the displayed data in seconds, as compared to the beginning of the user's selected data. The user can change this – type in a value and hit enter to apply it.

**Time span (s):** The amount of time the data in display spans in seconds. The user can can change this by typing in the desired value and pressing enter to apply.

**Voltage range (+/-uV):** The range of data to display in uV. This is the maximum value, so if the selected value is, for example, 500 uV, each channel's segment will display -500uV to +500uV.

**Threshold (uV):** The threshold for registering a spike. This value can be positive or negative. To apply, press enter.