CED eNEWS

The eNewsletter from Cambridge Electronic Design

#55 ~ October 2010

Established 1970

Contents

Back to top

News

Latest Version of Signal - Now With Dynamic Clamp

Our next release of Signal, which includes integrated dynamic clamp will be shown at the booth and the training days at this year's Society for Neuroscience Meeting in San Diego. If you are not attending the training days, please visit booth 2801 for a demonstration.

Forum

The forum section on the CED web site now has over 350 registered members. This has been running since June 2008 and is becoming an increasingly useful resource with posts covering over 570 topics related to software and hardware, responded to by CED engineers and fellow users. If you register on the forum you can then use the search functions to locate useful posts relevant to your application as well as post your own questions which will be replied to promptly. You can also use the forum to put forward suggestions you feel would be useful additions to the Spike2 and Signal software.

Future meetings and events

Society for Neuroscience 2010
San Diego Convention Center,
San Diego, CA, USA
November 13th – 17th 2010

If you are organising or attending a conference at which you feel CED would be interested in exhibiting please let us know about it by notifying sales@ced.co.uk

US Training Days at SfN

There are still a few places available at our US Training Days on the 11th and 12th of November at the Holiday Inn San Diego - On The Bay Hotel, prior to the Society for Neuroscience annual meeting. The training days are offered at $250 per day, including buffet lunch, materials and coffee and tea, and are suitable for both existing and prospective users of Spike2 and Signal. Places are filling up quickly so if you or any of your colleagues would like to attend, please follow the links to view the training day program and complete the registration form. Please give a short description of the type of research that you do and analysis that you are interested in. This will help us to tailor sessions for specific requirements.

Additional training opportunities

For those unable to attend the official US and UK training days it may be possible to arrange a small group or regional training session at your location. To discuss the options available please contact us.
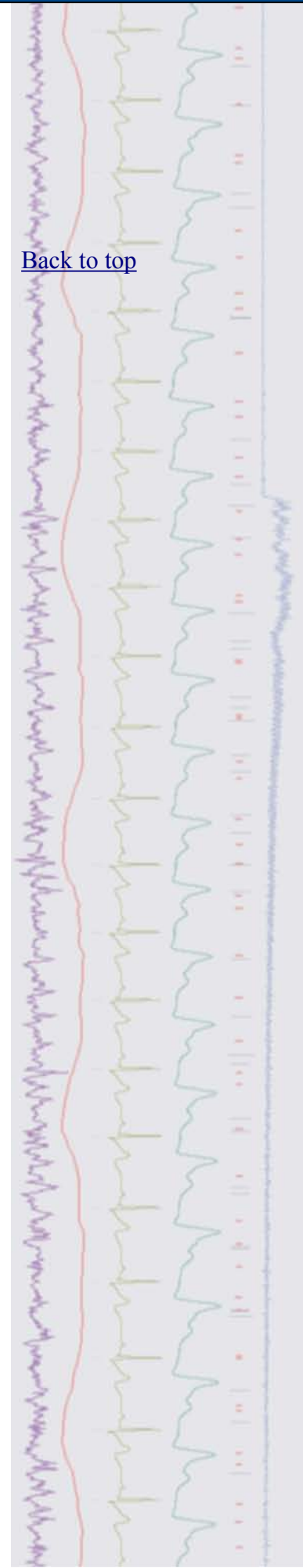
Latest versions of Spike2 and Signal

Updates for Spike2 and Signal are available from the [CED downloads](#) page, or by clicking on the links in the table below. Demonstration versions of the latest software are also available.

Spike2 downloads	Released	Signal downloads	Released
Spike2 version 7.04	07/10	Signal version 4.08	08/10
Spike2 version 6.15	08/10	Signal version 3.13	05/10
Spike2 demo		Signal demo	

Q. I would like to keep a record of the template information associated with my wavemark channels. Is there a way to print or save these details?

A. In both the `New Wavemark` and `Edit Wavemark` dialogs there is a `Print` option in the `File` menu. This enables you to generate a printout of the settings in the template parameters dialog together with images of the individual templates used for the channel.
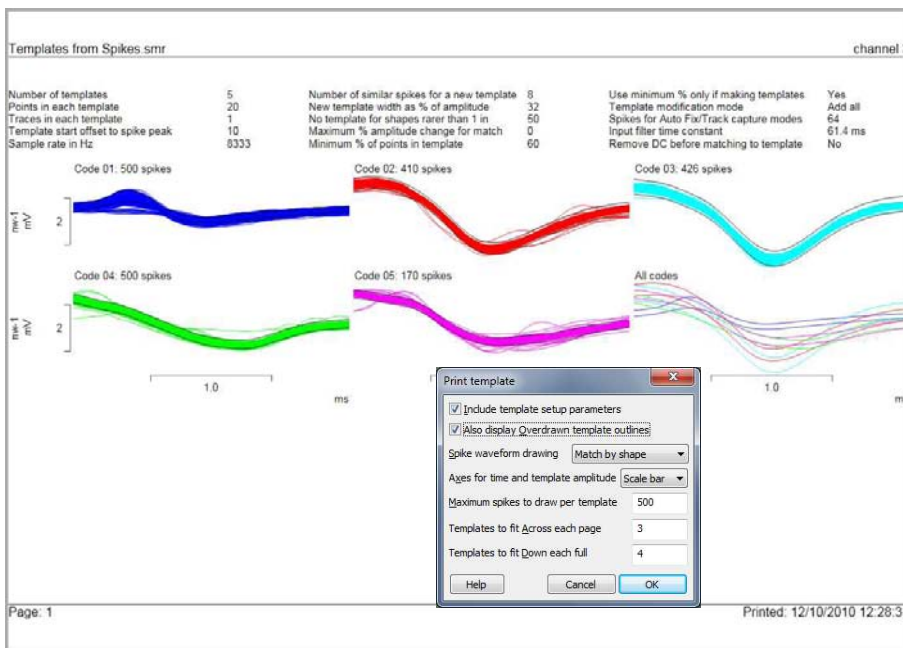
*Typical printout of template information from Edit Wavemark dialog*

Q. I have data recorded at a high sample rate which I would like to downsample before I export as text to put into a spreadsheet program as it will not currently fit into the available spreadsheet space. Is it possible to do this without writing a script?

A. The virtual channel function available from version 4.06 allows you to create a channel with a sample rate either matched to the existing channels or specified independently. This allows you to create a channel at a lower sample rate than the disk based channels in the file and copy data into it from existing channels with the points interpolated by cubic splining. You can then copy or export this channel as normal.

When exporting or copying multiple channels, you must ensure you only copy the channels with matching sample rates as this function in Signal will copy the same number of points per channel.
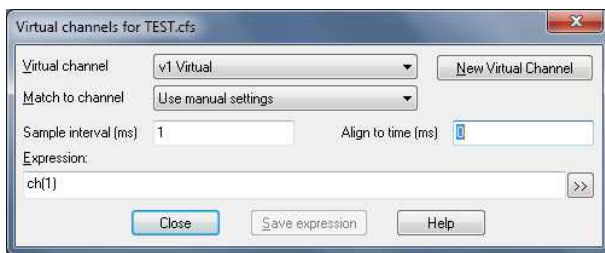
*Virtual channel setup to copy an existing channel at a specified sample interval*

Scripts: Spike2

Q. Is it possible to classify spikes according to their latency from a stimulus event? When generating a PSTH from my wavemark channel with raster plot enabled in the settings, I can clearly see a line of dots in the raster relating to a particular spike which I would like to isolate.

A. The attached script `Latency spike sort.s2s` generates a PSTH showing the timing relationship between a trigger event channel and a spike wavemark channel. The raster data is extracted and displayed in an XY view and the user can then draw around areas in this plot and assign a code to points falling within the specified area. The script then finds the associated wavemarks in the data file and changes the marker codes accordingly.

Once the file has been opened and the raster generated using the `Get Raster` option you can classify points within multiple sections. For each section, press `Set Area` then hold down the shift key and draw around an area with the left mouse button depressed. Once the button is released a dialog will appear prompting you to set the code number. `Apply Changes` then updates the data file with the assigned codes.

N.B. The script requires Spike2 version 7 to run.
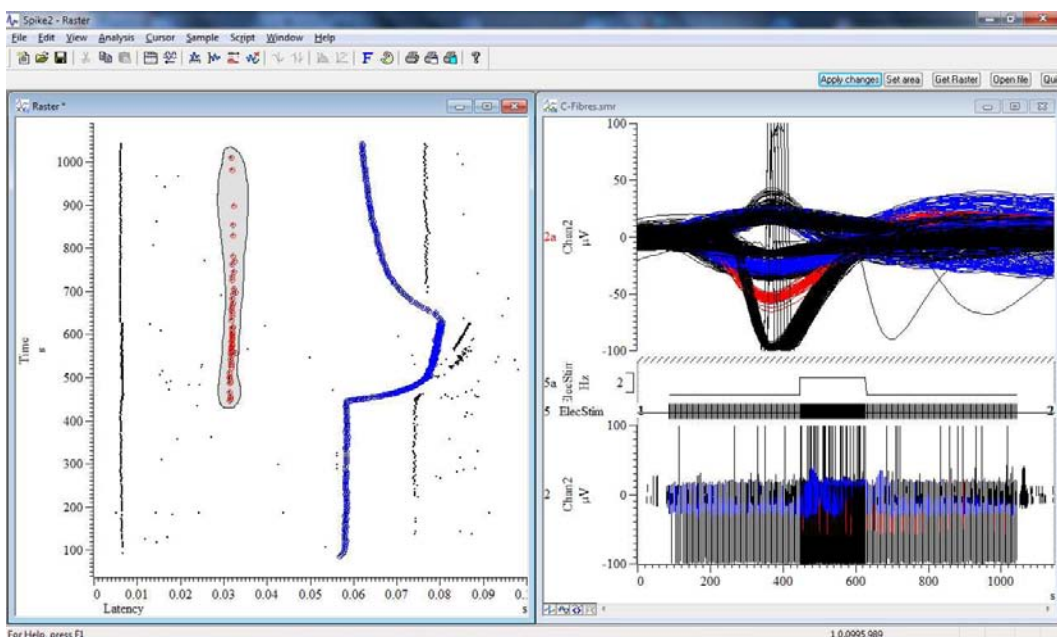
Isolation of two spikes based on latency by drawing around points in a raster plot

Right-click the script icon and save to disk.
If you have any problems opening the embedded scripts in this newsletter please let us know.

Scripts: Signal

Q: I record single channel patch clamp data and would like to generate stability plots of the open/closed times and amplitudes. Is this function available in Signal or can I access the data using the script language to produce my own plots?

A: There are currently no built-in stability plot functions but we do have script access to the open/closed time data to generate stability plots.

The attached script `StabilityPlot.sgs` is currently under development and can generate a number of different stability plots of amplitude and open/closed durations. The script requires that an idealised trace is present in the data file and can work on single or across a range of data frames. multiple frame operation requires that the data is recorded in gap-free mode.

Amplitude plots display the level of each open and closed event against either the number of the event from the start of the specified period or against a pseudo time measurement where short events (<1ms) are spaced apart in X by a unit of 1 or longer events (>1ms) spaced by the square root of the event duration in ms.

Duration plots display the mean open time, mean closed time and pOpen value for a specified number of events against either the running total of events or the time at the end of each group. For example, you can average sets of 50 events stepped by 25 events to smooth the result. The mean values can be plotted against the event count (ie 50, 75, 100 etc) or the time of the last event in each set of 50.

This script is still a work in progress so any feedback or suggestions for improvements are welcome.
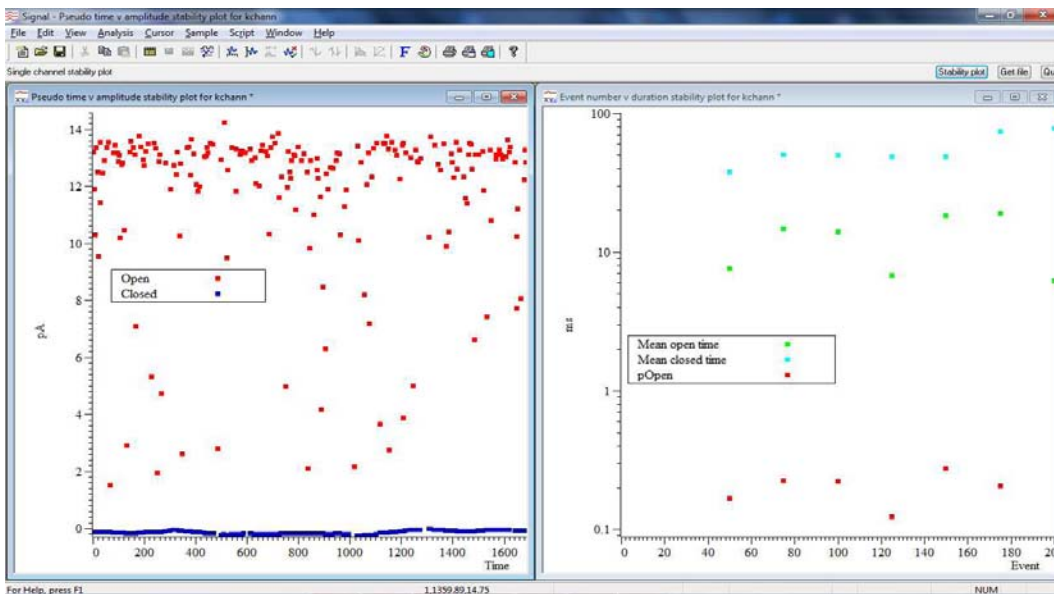
Single channel stability plots

Did you know…?

The data update mode in Signal can be set for the current data file in the `File` menu. This determines what happens to modified data (eg. filtered, smoothed, rectified) when you move away from the current frame. The options available are `Discard changes`, `Query the user` and `Always save`. Remember that saved changes cannot be undone so it is always worth saving a copy of the original data file if you are planning to keep modifications.

The default for this is set in the `Data` tab of the `Preferences` dialog under the `Edit` menu.

Recent questions

Q.   I have a waveform channel indicating times of activity and would like to generate a plot to show the activity duration for each event against the event number.

A.   The way to approach this would be to locate the start of each event first into a memory channel and then set cursor 0 to step through each detected point with another cursor locating the end of each event. You could then generate an XY plot of the event count on X against the time between the two cursors on Y.

The first step is to locate the start positions. From the `Memory Buffer` section of the `analysis` menu create a new event type memory channel. Import rising threshold times at a suitable amplitude. You can set a minimum interval at this point to reject events starting too close together.

The images below illustrate typical settings for the displayed data file with the resultant XY plot of event number against duration.
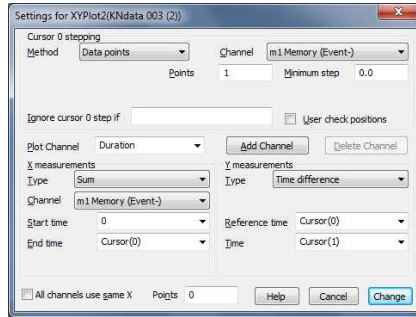
XY plot settings dialog
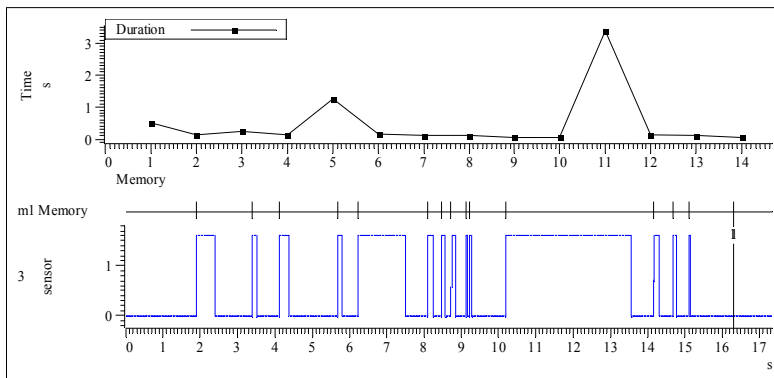
Original activity channel and resultant XY plot

User group

You can now find our [eNewsletters](#) archived on the CED website.

Try the [CED Forums](#) bulletin board for software and hardware support

If you have any comments about the newsletter format and content, or wish to un-subscribe from the mailing list for this newsletter, please notify sales@ced.co.uk.