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News

US Training Days: Thursday 10th and Friday 11th November

These training days will take place at the [Holiday Inn Rosslyn at Key Bridge, 1900 N Fort Myer Drive, ARLINGTON, VA](#). Details for our next UK training days will be available in due course.

We are also able to supply smaller 'tailored' training sessions to Spike2 and Signal users during visits to institutes or departments, or when attending scientific meetings. If you are interested in organizing a local training day for Spike2 or Signal users please contact sales@ced.co.uk.

CED Video Tutorials

Video tutorials are now available to demonstrate some of the features described in the email newsletter articles. Click the **Show me how!** link beside the article to display the related video tutorial. Please notify sales@ced.co.uk if you have any problems accessing the video content.

Future meetings and events

Society for Neuroscience 2011

Booth 2238 - Walter E. Washington Convention Center,
Washington, DC, USA
November 12th – 16th 2011

Australian Neuroscience Society 2012

Jupiters Hotel,
Gold Coast, QLD, Australia
January 29th – February 1st 2012

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 7.08	10/11	Signal version 5.04	10/11
Spike2 version 6.16	03/11	Signal version 4.09	08/11
Spike2 demo		Signal demo	

Scripts Spotlight

Artifact removal

Artifacts, unwanted, usually non-physiological components of the signal, come in all shapes and sizes, depending on the nature of your experiment. Sometimes, they simply offend the eye but on occasion, they seriously impede your analysis of the data and it is necessary to do something to remove or reduce them. There are several options:



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Digital filtering can help if the spectral content of the artifact is very different from that of the signal of interest to you.

If the artifact occurs repeatedly and has a consistent waveform while the physiological data varies, then we can generate a reference artifact signal by averaging and then subtract the reference signal from the original data. The `HumRemove.s2s` script uses this method to delete mains-related artifacts.

Another common type of artifact is a click or glitch caused by an electrical stimulus or by other lab equipment switching on or off. The `ArtRem.s2s` script provides a method of reducing these unsightly glitches. It allows you to bracket an offending time range with cursors and then replace it by joining the start and end of the marked region with a straight line. If you have a trigger signal marking each artifact, you can also use this script to replace multiple artifacts in a single pass. There is an updated version with extra features for Spike2 version7 users, `ArtRem6.s2s`, which can be found in your `Spike7\scripts` folder and a more basic version compatible with older versions of the software which can be downloaded [here](#).

Users of Spike2 v7 can also try an alternative script `FixGlitch.s2s`, also available in the `Spike7\scripts` folder. This script allows you to replace glitches, not with a straight line, but with a trace of similar spectral content to the preceding and following data. In many cases this *patch* will repair the data seamlessly leaving little or no trace of the artifact. The patch is created using *linear prediction*. It is a technique that might be used to smooth over the scratches on an old vinyl record. This is an advanced mathematical method and there is no space here to explain the technicalities (fortunately for me!). If you would like to investigate the method in more detail or you would like to embed the method in a script of your own then check out Spike2 online help for the script function `LinPred()`

If you have any questions please contact geoff@ced.co.uk



- Q. I would like to be able to make notes during the experiment and make these associated with events during the recording.
- A. A TextMark channel is a special type of Marker channel in Spike2 that can be used to enter notes and comments during a recording. The TextMark channel needs to be set-up in the Channels tab of the sampling configuration by adding a new channel and selecting TextMark from the Type drop-down list in the Channel parameters dialog.

TextMark channel parameters

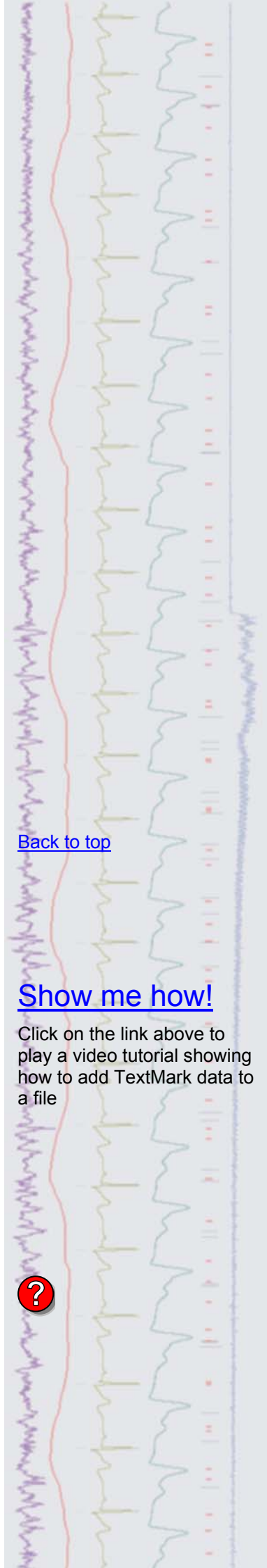
Channel 30 in the data file is always reserved for the TextMark channel during sampling and the Source field should be set to Manual to allow the user to enter notes and comments on-line.

Once a data file is sampling, or open ready to sample, the TextMark dialog can be activated by pressing `Ctrl+T`. When you want to add a note, click the Set Time button in the dialog, which saves the current time of the recording. You can then enter text in the dialog and set a corresponding Code (colour) for the marker.

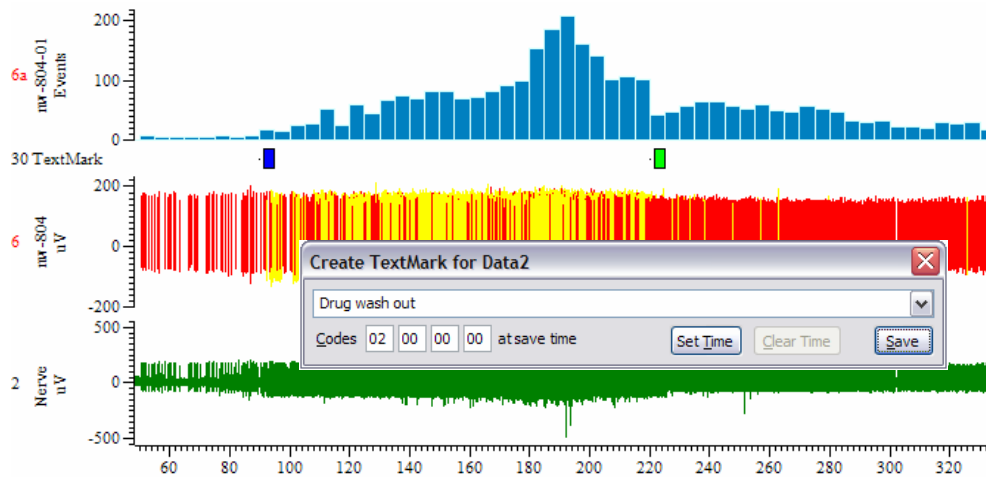
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[Show me how!](#)

Click on the link above to play a video tutorial showing how to add TextMark data to a file

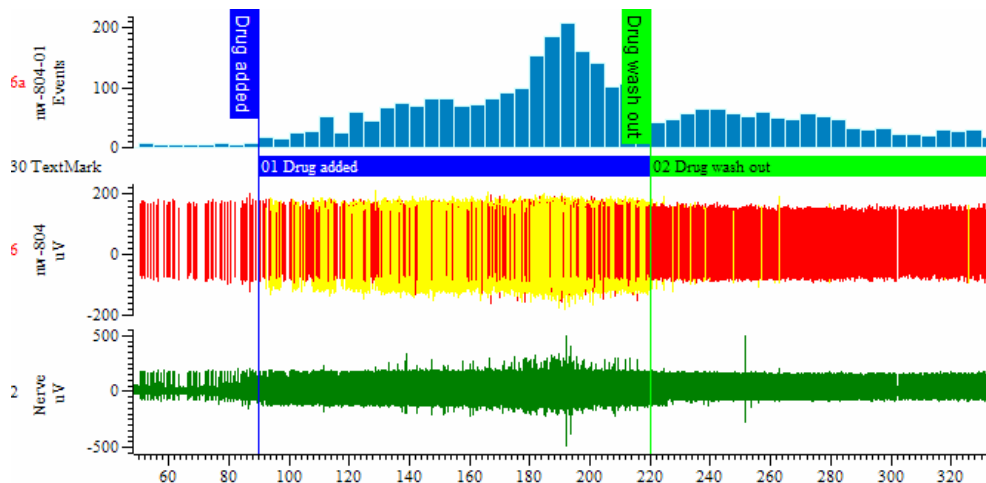


Clicking Save in the dialog will then add the TextMark to the data file at the time saved when you first clicked the Set Time button.

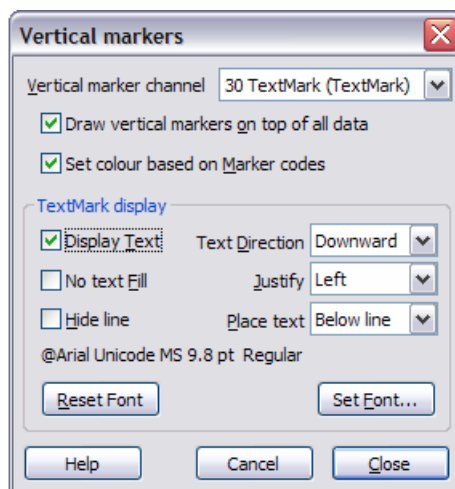


Adding TextMark data on-line

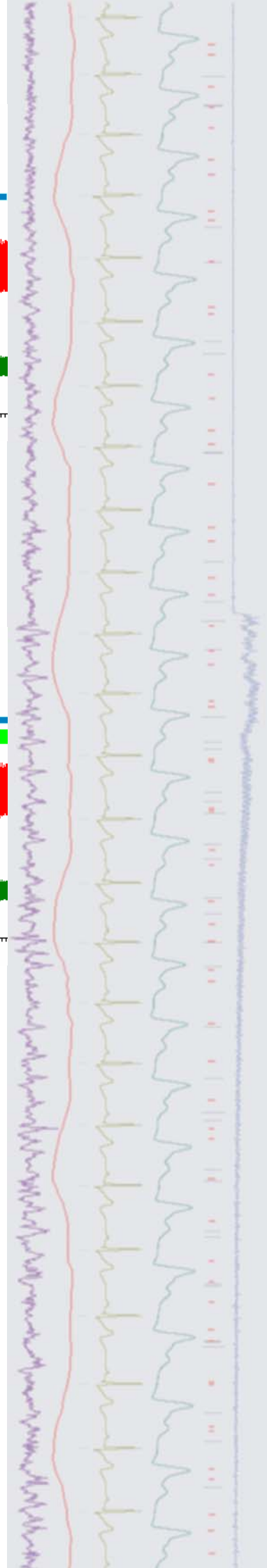
TextMarks are displayed as 'post-it' notes in channel 30. You can edit the marker data by double-clicking on it, view the associated comment by leaving the mouse pointer on the marker or change the Channel draw mode to show the Text or State with options to display the associated code as well. TextMarks can also be used to display Vertical markers, which can be extended over all of the channels in the file.



TextMarks displayed in State mode



Dialog for displaying Vertical markers



Scripts: Spike2 

- Q. I would like to apply an IIR filter to two waveform channels on-line.
- A. The script, `OnlineMultiChanFilter.s2s`, uses updated versions of the `IIRxxxx()` family of commands which allow the same filter to be applied to a sequence of channels in the data file. The script generates a dialog from which you can select the type of filter to apply and a 'source' waveform channel to use as the first filtered channel. Once the filter has been generated you can then select up to three additional waveform channels to filter alongside the source waveform. The additional channels must be sampled at the same rate as the source channel and only channels with matching sample rates are available for selection. The filtered data from the selected channels is then written to new memory channels in the data file during sampling. This script requires Spike2 version 7.08.

Signal

- Q. Is there any way to copy MultiClamp 700 settings directly to the sampling configuration to be used in clamping experiments?
- A. Signal supports the use of the MultiClamp 700 and AxoClamp 900A amplifiers for clamp experiments by communicating directly with the associated amplifier control software, which needs to be installed on the same PC. Settings and scaling information can then be read by Signal and applied to the sampling configuration and directly to the data file during recording.

If support for either the MultiClamp 700 or AxoClamp 900A was selected during the installation of Signal an additional button is enabled within the `Clamp` tab of the sampling configuration. You can use this to read the ADC ports used for telegraph scaling along with the amplifier settings directly from the amplifier control software and use these values to automatically set the clamping sets, channels, clamping modes and ADC and DAC port calibration values. The options available are:

- **Read channel sets for clamping** – This option initializes the clamping sets with stimulus and response channels derived from the amplifier settings
- **Read clamping modes for sets** – Retrieves the clamping mode used for each clamping set as defined by the amplifier command software
- **Read channel names, scaling and units** – Set all waveform channels generated from the relevant ADC ports as defined by the amplifier telegraph settings
- **Read DAC scaling and units** – Sets up the DAC specified for each clamp set using the external command sensitivity read from the amplifier

An extra option, **Read All – chans, mode, ADC & DAC** will apply all of the above at once. As well as allowing quick and reliable setup, these options can also be used to check the current amplifier settings and make it easier to setup output pulses for use during recording.

Full details on using the MultiClamp 700 and AxoClamp 900A are available in the Signal manual.

Scripts: Signal 

- Q. Is there any way to control older Magstim 200 series models that don't have a serial line connection using Signal?
- A. The script, `Ctrl200series.sgs`, can be used to control older Magstim 200 models that have been fitted with a parallel port modification to enable external control of the intensity settings. The script uses multiple states to control the 1401 digital outputs. It creates a suitable sampling configuration and allows the user to specify the Magstim output intensities and interval between outputs for

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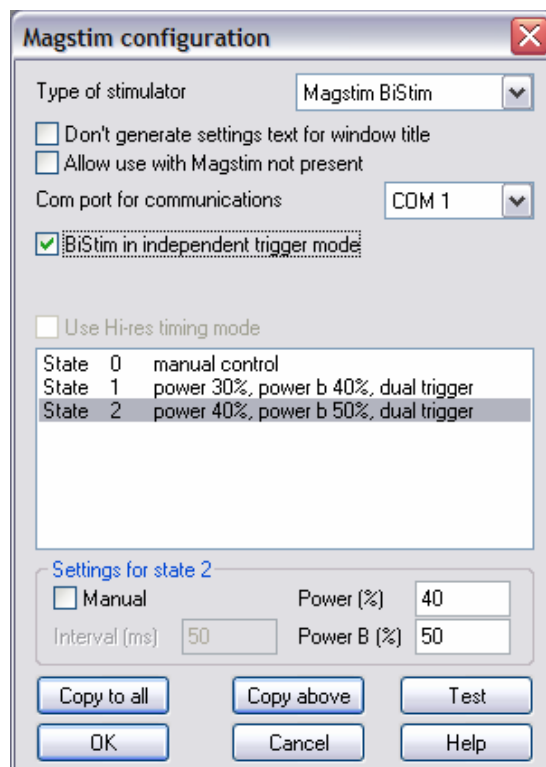
each state used. The connection between the Magstim parallel port interface and the 1401 digital outputs can be achieved with a modified cable, available from CED.

Did you know...?

You can play a waveform channel as audio through a sound card from the offline Output waveform dialog in Spike2, which is available from the Sample menu. If there is a sound card available on the system, you can select Sound instead of a DAC from the Output waveform dialog.

Recent questions

- Q. I would like to be able to use the 1401 to trigger both pulses of a BiStim unit so that I can set the delay in Signal, rather than have the BiStim trigger the second pulse.
- A. By default the first output pulse occurs at the time of the trigger and the second at a preset interval after the trigger, the interval being internally timed by the BiStim unit itself. It is however possible to use the 1401 digital outputs to trigger both the main pulse and the second (Power B) pulse by setting the BiStim to use independent trigger mode on the front panel of the master unit (this is referred to as IBT mode in the BiStim documentation). Once IBT mode has been set on the BiStim unit, select the associated checkbox in the Magstim configuration dialog in Signal.



Magstim configuration options for BiStim units

With these settings enabled both the Power and Power B stimuli are triggered in response to a TTL input to the BiStim master unit.

User group

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

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

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