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## Contents

<u>News</u> – Updates & General news <u>Spike2</u> – Logging serial line data <u>Signal</u> – Logarithmic display axes <u>Spike2 Script</u> – Average multiple result views <u>Signal Script</u> – Downsample a data file <u>Did you know...?</u> – Copy Spreadsheet <u>Recent questions</u> – Standard channel display in Signal & Spike2

#### News

# Spike2 and Signal Training Courses

Our U.K. training days will take place on the  $20^{th} - 21^{st}$  of March at St. John's Innovation Centre, Cambridge. This year the workshop thread will include sessions on using Signal for clamp-specific sampling applications, such as whole cell and single channel patch and voltage clamping experiments. Further details of the training days and a booking form are available from the training section of our website.

The latest update for Spike2, **5.14**, was released on Friday 27<sup>th</sup> January 2006 and is available from the <u>CED downloads</u> page for registered v5 users. This revision includes some new additions to the file importers.

A full list of new features is available from the updates section of the website.

A demonstration version of the current software is also available here.

Version 4.24 of Spike2 is downloadable for registered v4 users.

Version **3.06** of Signal is now available for registered v3 users. This revision includes display modes for logarithmic axes.

A demonstration version of Signal version 3 is available here.

Version **2.16** of Signal is downloadable for registered v2 users.



- Q. Can Spike2 read data from data loggers such as acceleration sensors? There is no analogue output available but I do have a serial line feed from the sensor giving X, Y and Z co-ordinates.
- A. Spike2 can read data from the computers serial line (COM port) and display the information as a TextMark. This special type of channel is normally used to annotate the data record with text 'notes', which are more convenient and easier to read than entering lines of text using the keyboard channel. When recording these 'notes' from the serial line the incoming data is stored as a time stamp and 4 bytes of marker information, followed by a text string.

Channel p	arameters
Channel	30 Type TextMark Title Sensor
Source	COM port 1 💌 Maximum event rate 100 Hz
Comment	Data from Accelerator Sensor
Terminator	
Baud rate	9600 💌 Data 8 bits, no parity 💌 Flow Hardware 💌
Help	Cancel OK



The Source field in the Channel parameters dialog can be set to Manual or to a serial port. You can set the terminator, baud rate, data bits and handshaking once a serial port has been selected from the Source list.

When reading the serial line, the marker time is set when the first character arrives, and the serial data for the current TextMark is read until a terminator character is received or the serial string reaches 80 characters. TextMark data is displayed as a small rectangle, the colours of which are determined by the first marker code. Double click a TextMark to view and edit the text and codes. A list of all TextMarks in the file and their associated data can be shown by clicking the >> button in the Edit TextMark dialog. The data read from the accelerator sensor gives X, Y and Z values as text as shown in the example below.

nsor	, <mark></mark> _	·	·	·	·	·	·	·	·
	6.40	6.45	6.50	6.55	6.60	6.65	6.70	6.75	6.80
Edi	t ToutM	ark for m	inimod sn	1P					<b>X</b>
Lucco:			0000						
JX033	71054520	ылимоот	0000						
Codes	s 00 00	00 00	- at 6.390	)66 seconds					
	·								
Time	• V	CO	Text						
6.390	066	00	X0337Y	0545Z0610	M00T0000	Ó			
6.438	364	01	X0357Y	0537Z0611	M00T0000	0			
6.486	663	02	X0385Y	0538Z0619	M00T00000	0			
6.534	463	00	X0393Y	0537Z0630	M00T00000	D			
6.590	061	02	X0387Y	0534Z0639	M00T00000	Ď			
6.638	372	02	X0390Y	0537Z0647	M00T00000	0			
6.686	671	01	X0380Y	055020640	M00T0000	0			
6.734	469	00	X0372Y	054220623	моотоооо	0			
6,790	068	00	X0362Y	053820617	ΜΟΟΤΟΟΟΟ	0			
6.838	867	00	X0333Y	0547Z0607	M00T00000	0			<b>+</b>
1	92.02	20202							-
				Show	/ Car	ncel	Apply	OK	<<
					the second se	100 M 10			

Edit TextMark dialog showing a list of available markers

TextMark data can also be viewed by changing the channel draw mode to State. This displays the time between markers as a continuous 'block' with the option of showing the associated text and marker codes as below.

30 Sensor	01 X035	01 X0357Y0537Z0611M		02 X0385Y0538Z	0619M00T0000	0 00 X0393Y	00 X0393Y0537Z0630M00T00000			
	.44	6.46	6.48	6.50	6.52	6.54	6.56	6.58		
								5		

It is quite easy to write a script to extract the X, Y and Z values. The attached script, XYZval.s2s is an example script that you could use as a template for your requirements.





- Q. Is it possible to display logarithmic axes in Signal?
- A. New additions to the X and Y range dialogs in Signal 3.06 allow the display of logarithmic axis for data, memory and XY views. Checking the Logarithmic option in the dialog switches the axis display from linear to logarithmic.

X Axis Range					
Left (Hz)	0.001	Show All			
Right (Hz)	500 💌				
🔲 Width	Draw				
🗖 Large tick sp	Cancel				
🔲 Tick subdivis					
✓ Logarithmic  ✓ Show powers ✓					

X-Axis range dialog with new options for logarithmic axis display

If the logarithmic display mode is selected, this enables a second checkbox option to Show powers. Select this to display the powers of the large tick spacing unit on the axes, as shown on the X-axis below.



Power spectrum displayed with logarithmic axes

The commands XAxisAttrib() and YAxisAttrib() are available to give script writers control over logarithmic axes display in Signal.

# Scripts: Spike2

- Q. Is there any way to create an average of multiple result views, such as PSTH's or waveform averages?
- A. The attached script, Grand Average.s2s, can be used to 'build' an average of multiple result views in Spike2 including waveform averages, PSTH's and interval histograms. You add result views into the Grand Average by opening a saved result view or creating a new result view and making it the current or 'top' window. Then simply click the ADD button in the script toolbar to add it to the Grand Average.





- Q. Is it possible to 'down-sample' a Signal data file to a lower sampling rate?
- A. The attached script, Downsample.sgs, can be used to create a downsampled duplicate view of a Signal data file. This creates a new view displaying one data point in *n* of the original file.

#### Did you know ...?

The Copy Spreadsheet command used in a time view now allows you to set any time interval for the copied data; previously it was constrained to integer multiples of the file time resolution.

#### **Recent questions**

- Q. I'm getting myself very confused because of the channel view differences between Signal and Spike2. Is there anyway to alter the channel display in Spike so that channel 0 is at the top (as in Signal)
- A. You can access the Edit: Preferences dialog in Spike2 and Signal to control the settings for general preferences, display and sampling options among others. These preferences are stored in the Windows registry and are specific to each

user login on the host PC. The display tab contains options for data display, printing and image export. One of the options in the display tab in both Spike2 and Signal is a checkbox to change the standard display to show the lowest numbered channels at the top of a data file. You can also change the order of channels in a view simply by clicking and dragging the channel numbers.

Spike2 pref	ferences							×	
General	Display 🤅	Sampling	Conditio	ner Sched	uler Com	patibility			
- Settings								-1	
Line t	hickness f	or: Axes	Hairlin	•	Data	Hairline	e 💌		
Metaf	ile output r	esolution fo	or picture	export	/idth scale	d to 8000	units 💌		
🗌 🗖 U:	se enhanc	ed metafile:	format (l	EMF) for clip	board and	pictures			
🗌 🗖 U:	Use lines in place of rectangles to draw metafile axes								
Do not compress metafile waveform output when many points per x pixel									
Standard Display shows lowest numbered channel at the top									
		OK		Cancel	A	pply	Help		

Spike2 Edit preferences dialog

### **User Group**

If you have any comments about the newsletter format and content, or wish to unsubscribe from the mailing list for this newsletter, please notify <u>sales@ced.co.uk</u>.

# Back to top

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. Back to top

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