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News

US Training Days: Thursday 11th and Friday 12th October

Our US training days will take place at the [DoubleTree by Hilton, 300 Canal Street, New Orleans](#) just prior to the Society for Neuroscience meeting. These days are designed for both existing and prospective users and are made up of multiple threads to cover all aspects of sampling and analysis with Spike2 and Signal.

Attendance is limited so please [register](#) early to reserve your place on the appropriate course.

Reduce mains noise contamination with the CED 4001-16 Line frequency pulse unit



The CED 4001-16 Line frequency pulse unit generates mains-frequency-locked pulses and can be used to reduce the magnitude of mains noise ('hum') that can sometimes be seen in recorded waveforms. This unit allows you to record the mains pulses as an event channel, alongside the waveform signal. Hum removal can then be performed off-line using the Spike2 scripts [HumRemove.s2s](#) or [HumRemoveExpress.s2s](#) which generate an average of the mains noise using the recorded mains pulse as a trigger. This average is then subtracted from the raw waveform to reduce the mains noise.

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CED 2502 Skin conductance unit



Taking advantage of the latest components, the redesigned CED 2502 uses the constant-voltage principle and has manually switched conductance ranges of 10, 25 and 100 micromhos. Suitable electrodes for GSR studies are supplied with the unit.

Future meetings and events

[International Motoneuron Meeting 2012](#)

Crowne Plaza Hotel Coogee,
Sydney, Australia
July 23rd – 26th 2012

[CED US Training Days 2012](#)

Doubletree by Hilton,
New Orleans, LA, USA
October 11th - 12th 2012

[Society for Neuroscience 2012](#)

Ernest N Morial Convention Center,
New Orleans, LA, USA
October 13th - 17th 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 7.10b	07/12	Signal version 5.07	06/12
Spike2 version 6.16	03/11	Signal version 4.09	08/11
Spike2 demo	05/12	Signal demo	06/12

Scripts Spotlight

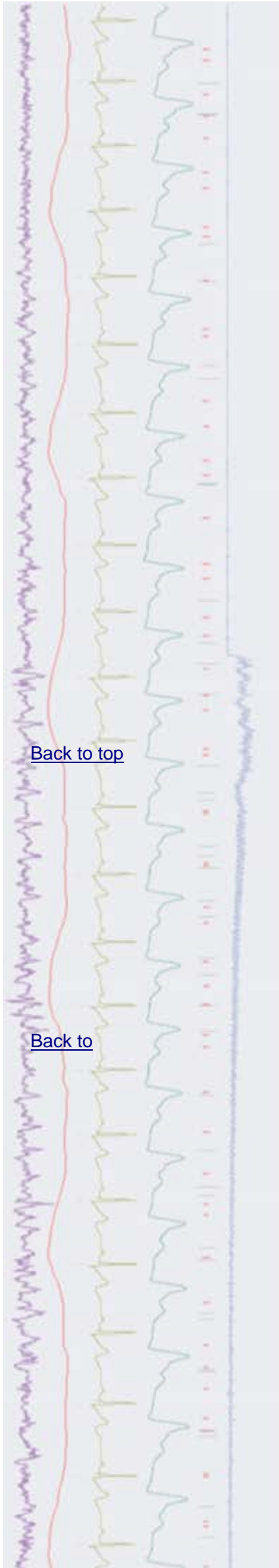
I often find that when writing scripts for analysis a common requirement is to locate the maximum and minimum values in a channel. It is of course possible to do this using active cursor searches, but setting up active cursors can take many lines of code within a script. Luckily for the script writer, there is a single function, `MinMax()`, that can be used to return these simple values

The `MinMax()` script function returns the minimum and maximum values from a channel in a data file or result view, or the minimum and maximum interval from an event or marker channel drawn as dots or lines. `MinMax()` can also make use of additional arguments to return the X-axis position of the minimum and maximum values and set the channel draw mode to use for the measurements.

```
Func MinMax(chan%, start, finish, &min, &max, {,&minP{,&maxP{,  
mode% {,binsz {,trig%|edge%{, as%}}}}});
```

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allows the sequence to progress to the next instruction, in this case, to JUMP to the initial HALT instruction and end that sequence section.

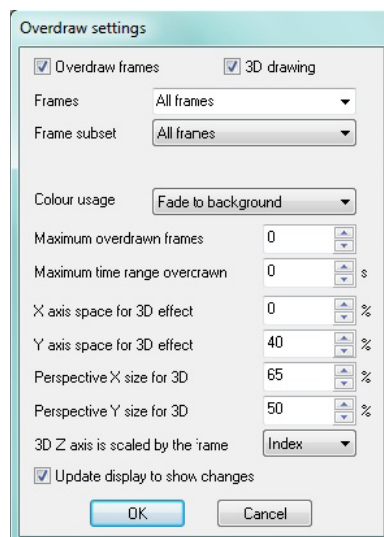
The DELAY instruction can take a value in `s()`, `ms()` and `us()` and convert these into the correct number of sequencer steps for the required delay. You can also subtract additional sequencer steps to take into account the time required to execute the DELAY instruction itself, as each sequencer instruction takes one (or more) steps. In the example above, the second DELAY instruction subtracts 2 additional sequencer steps from the delay time to account for the time required to execute the following JUMP instruction as well.

Scripts: Spike2

- Q. Are I am attempting to write a script that finds the first intersection between a waveform channel and a horizontal threshold cursor, but have to re-run the script each time I re-position the horizontal cursor. Is there a way to get this to update whenever I move the threshold?
- A. The script, [FindIntersect.s2s](#), uses an Idle routine to automatically update a cursor position when any movement of the horizontal 'threshold' cursor is detected. This example will interactively update Cursor(0) to always show the first intersection point in the viewed time range.

Signal

- Q. I'm putting together a poster presentation and would like to generate a 'waterfall' image of multiple data traces. Can I do this in Signal?
- A. Signal can overdraw frames and subsets of frames from a data file in the current view to allow visual comparison of recorded data. The `Overdraw settings` option available from the `View` menu (or using the `Ctrl+Shift+D` keyboard shortcut) opens a dialog that sets the frames to include in the list and the manner in which overdrawn frames are displayed.



Overdraw settings dialog

Overdrawn data can be displayed on the same time axis as the current frame or using a 3D 'waterfall' display mode. When the 3D drawing checkbox is selected the user can adjust the X and Y settings used to display the overdrawn data.

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[Show me how!](#)

Click on the link above to play a video tutorial describing the 3D Overdraw settings in Signal

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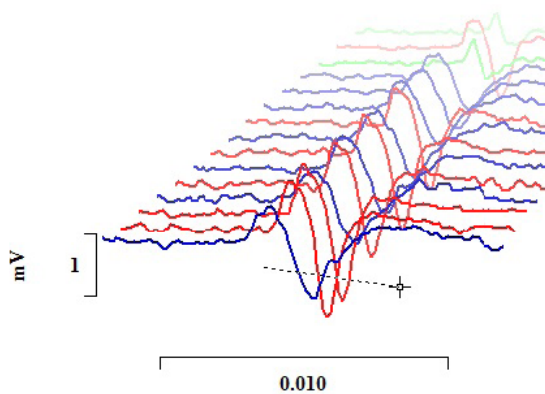


Scripts: Signal

- Q. I am planning an experiment and would really like to be able to apply a pulse train where the pulses have a random interval. Is this possible in Signal?
- A. The script, [SetRandPulses.sgs](#), is an example script that adds trains of output pulses with exponentially distributed intervals to the pulse editor. It generates a toolbar to open a new data file, using the current sampling configuration, and to start and stop sampling. At the end of each sweep of data the script generates a new set of pulses which are then output from digital output 0 when sampling continues. These pulse output times are also marked in the digital marker channel for reference.

Did you know...?

You can change codes for spikes drawn in triggered display mode by using the **Ctrl+Alt** keyboard shortcut and clicking and dragging a line across the data. Any spike that crosses the line can then be set to any code.

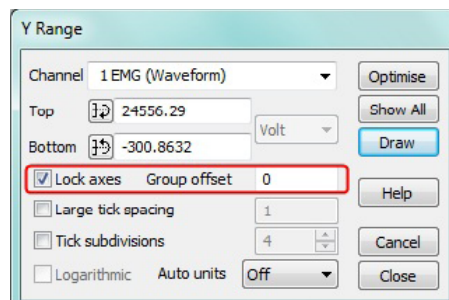


Selecting spikes with Ctrl+Alt and drag in triggered display mode

Recent Questions

- Q. I often drag and drop my channels on top of each other for visual comparison of amplitudes and latencies, but when I re-scale the data in this display, only the first channel updates. Is there any way to force the other overdrawn channels to the same scale?
- A. When channels are 'stacked' by clicking and dragging the channel number to the left of the Y-axis and dropping it on another channel in the same view, the y-axis display relates to the first channel in the group. This is always the 'top-most' channel number displayed on the left of the shared Y-axis. Double-clicking on a channel number promotes it to the top of the group.

You can set all of the 'grouped' channels to share the same y-axis by opening the Y-range dialog and selecting the **Lock axes** checkbox. The **Group offset** field can be used to set a vertical display offset to apply to each locked channel, giving an evenly spaced display of each channel in the group.



Y range dialog showing Lock axes and Group offset options

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User group

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

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