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## News

### Meetings and events

#### 18th Annual Meeting of the Society for the Neural Control of Movement

Naples Beach Hotel  
Naples, Florida  
April 29<sup>th</sup> – May 4<sup>th</sup> 2008

#### Vision Sciences Society Annual Meeting

Naples Grande Hotel  
Naples, Florida  
May 9<sup>th</sup> – 14<sup>th</sup> 2008

#### 2nd Annual Canadian Neuroscience Meeting

Hilton Bonaventure Hotel  
Montreal, Canada  
May 25<sup>th</sup> – 28<sup>th</sup> 2008

#### International Society of Electrophysiology and Kinesiology (ISEK)

Sheraton on the Falls Hotel  
Niagara Falls, Canada  
June 18<sup>th</sup> – 21<sup>st</sup> 2008

### 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.

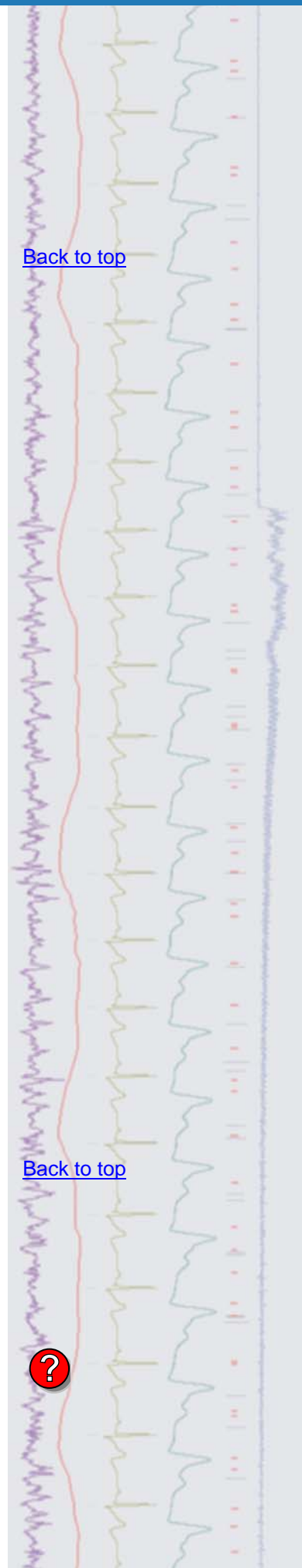
Spike2 downloads	Signal downloads
<a href="#">Spike2 version 6.08</a>	<a href="#">Signal version 4.01</a>
<a href="#">Spike2 version 5.19</a>	<a href="#">Signal version 3.10</a>
<a href="#">Spike2 demo</a>	<a href="#">Signal demo</a>

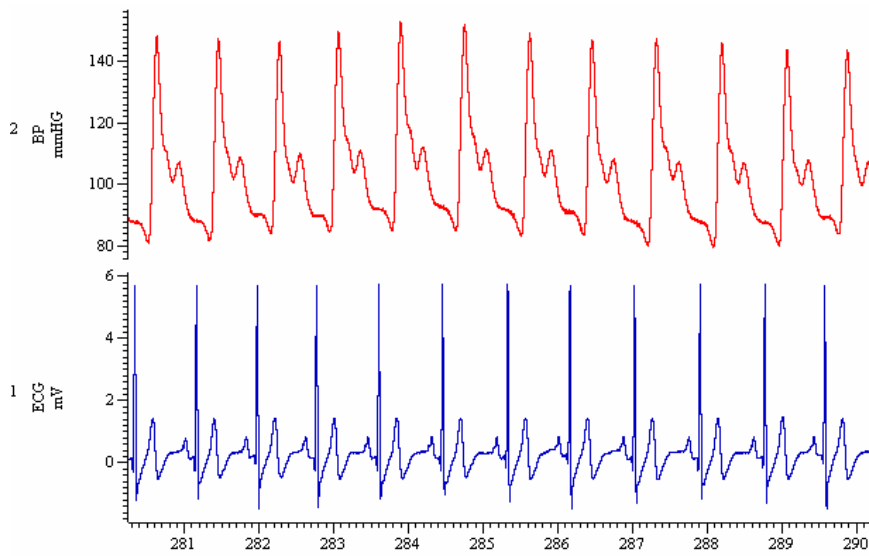


- Q. I am interested in analysing baroreceptor sensitivity, specifically the result of dividing systolic blood pressure by the R-R interval. Is this possible in Spike2?
- A. Using the Active Cursors and Measure to channel functions in Spike2 we can create new data channels in the file holding the measurements of the R-R interval and the systolic blood pressure value. These could then be combined in a virtual channel to display the result of systolic BP divided by R-R interval.

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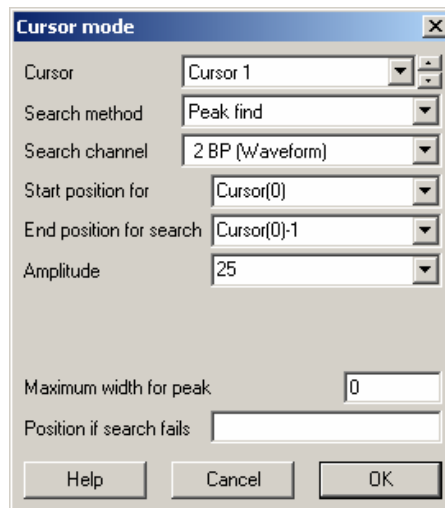
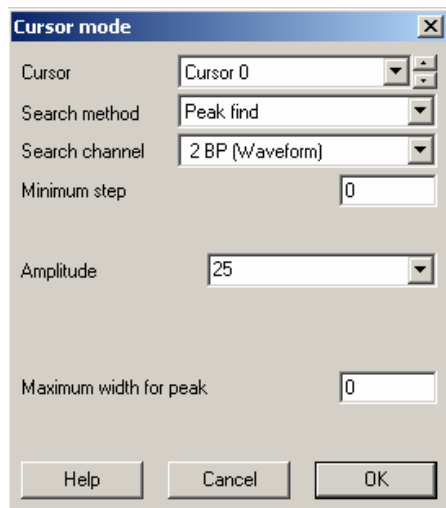


Example ECG and BP data

### R-R Interval channel

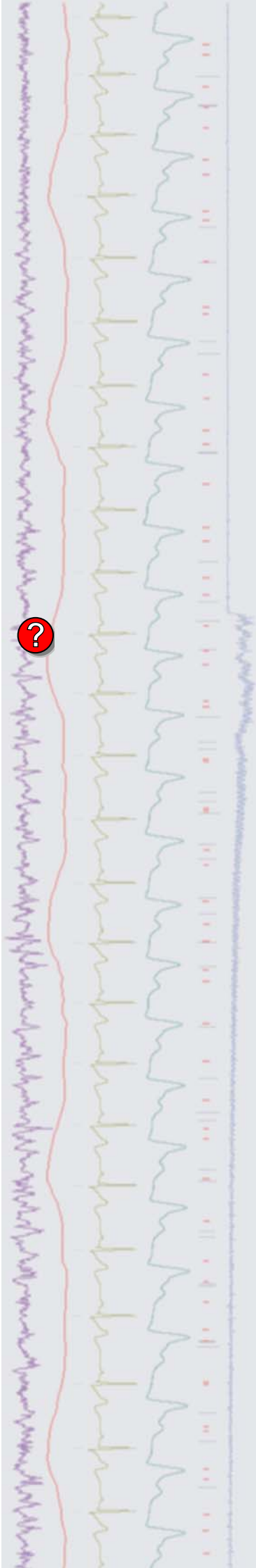
In this example Cursor 0 is set up to find the systolic peak and Cursor 1 is set up to find the *previous* systolic peak in the BP channel. We are going to use the measured interval between systolic peaks as our R-R interval to save time in setting up cursors although, for the purists amongst you, it is of course possible to search for the R wave peaks in the ECG channel to get the true R-R interval.

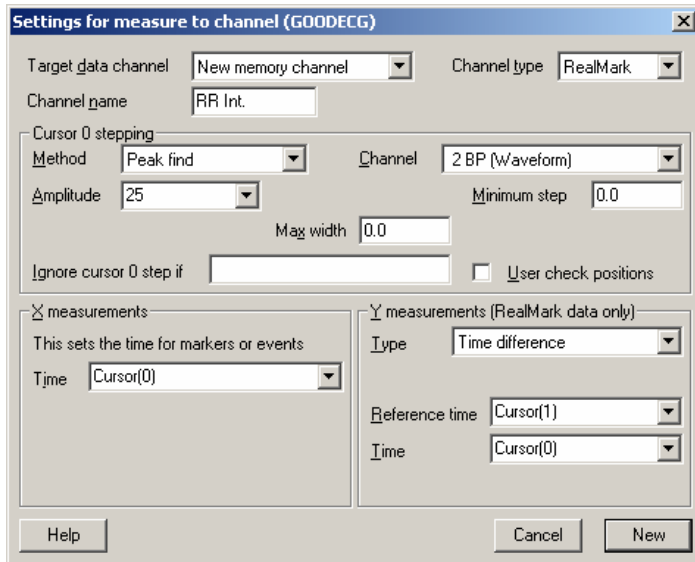
Create a new Cursor 1 from the Cursor menu and then select Active modes. For the example above, we can set Cursor 0 to find Peaks in the BP channel that have an amplitude change of 25 mmHg. This is a large enough amplitude change in the example data to detect the systolic peak, without detecting the diastolic notch area. Cursor 1 is set up to find peaks with the same amplitude value, but is set to search from Cursor 0 to Cursor 0 minus 1 second, thereby finding the previous systolic peak in the trace. You can check that the cursors are finding the correct features by holding down **Ctrl + Shift** and using the left and right arrow keys to step to the previous and next peaks.



Cursor active modes for interval detection

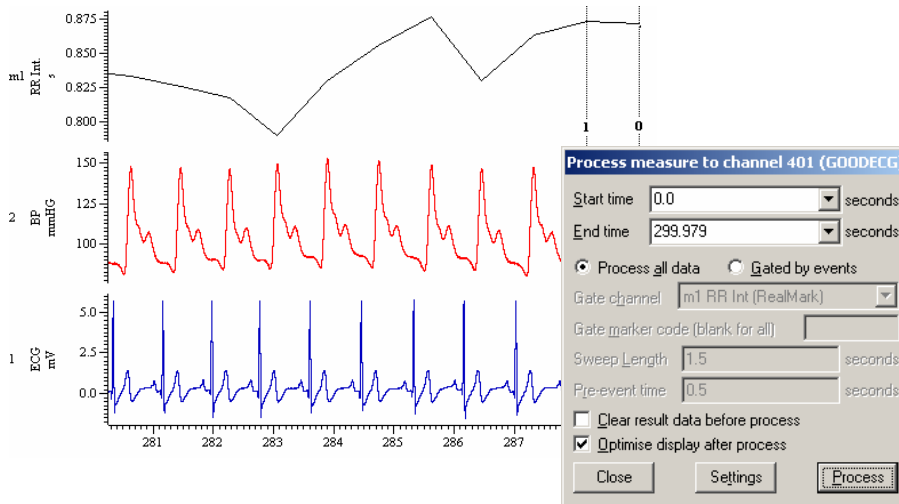
Now you can use the Analysis menu->Measurements->Data channel command to step the cursors through the data and write measurements to a data channel. The example below creates a new RealMark data channel holding the measurements of the Time difference between Cursor 0 and Cursor 1 to give us our R-R interval measurement.





Measure to channel dialog for intervals

Click New to create the measurement channel and then Process in the second dialog to take the measurements to channel m1 (channel 401).



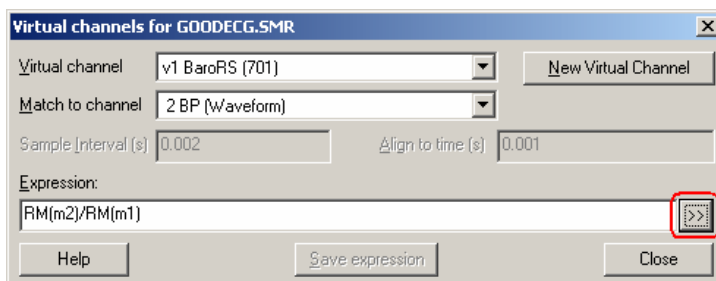
Process dialog and R-R interval channel m1 (channel 401)

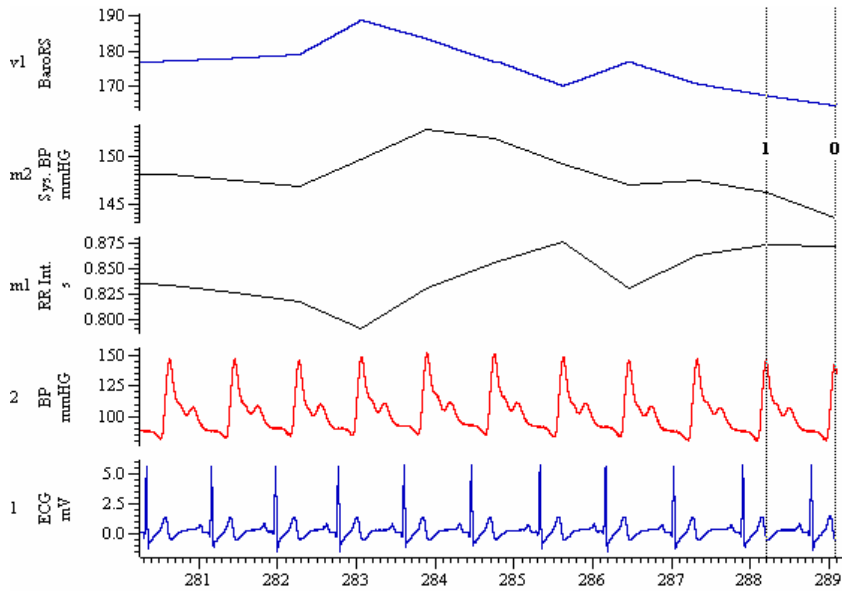
### Systolic BP channel

The next step is to create a second channel holding the value of the systolic blood pressure from the example BP trace. To do this, select Measurements and then Data channel again from the Analysis menu. For the systolic value, change the Y-measurement setting to Value at point of Cursor 0 and create the new channel by clicking on New and then Process, as before. This creates channel m2 (channel 402) holding the systolic values.

### Systolic BP / RR Interval

Now we have our measurements, we can use a Virtual Channel to display the systolic values divided by the R-R interval values. The Analysis menu Virtual Channels->Create New Channel command generates channel v1 into which we can combine the data from both of our RealMark channels. The RM() function accesses RealMark data and converts it to a waveform. The expression below converts both channels to a waveform and divides the systolic channel, m2 by the interval channel m1 to show the results in channel v1.



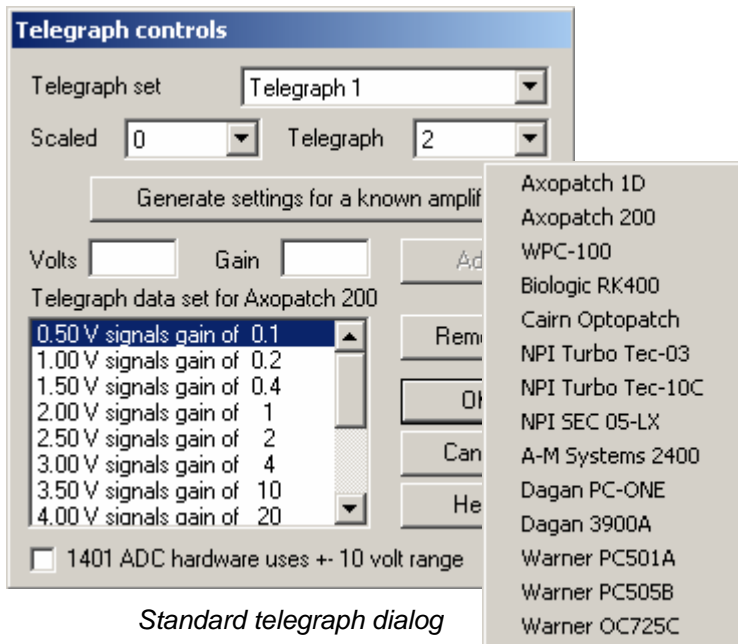


Virtual channel v1 showing the result

The measurement channels in the above example were created as memory channels, so are not saved when the data file closes. You can save memory channels from the Memory Buffer -> Write to Channel command from the Analysis menu, or create the measurement channels as permanent data channels in the Measure to Channel dialog. Further examples of using active cursors, measurement features and virtual channels can be found in the on-line help and in previous eNewsletters.

## Signal

- Q. Does Signal support the A-M Systems 2400 amplifier for telegraph outputs?
- A. Signal can configure up to four ports whose scaling during sampling depends on voltage values received via telegraph outputs. You can generate voltage values and corresponding gain settings for a list of known amplifiers from the appropriate button in the dialog.






Standard telegraph dialog

If your amplifier is not included then please contact us and we will try to add it. You can use the Volts and Gain controls to directly enter a voltage value and corresponding gain and Add it to a manual list of telegraph settings.

Our thanks to John Dempster at the University of Strathclyde for providing much of the initial amplifier information.

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**Scripts: Spike2**   

- Q. I want to control the sequencer output on-line using a script so that I can change pulse amplitude values during an experiment. Do you have any examples of using a script and sequence in this way?
- A. The attached script `CursorPulseAmp.s2s`, along with the associated sequence file, `CursorPulseAmp.pls` is an example of updating a running sequence file during sampling with an interactive script. The attached sampling configuration, `CursorPulseAmp.s2c` can be used to visualize the pulse outputs by connecting DAC 0 to ADC 0 on the 1401. Load the `CursorPulseAmp.pls` text sequence from the sequencer tab of the sampling configuration and click OK before running the script. The script opens a new data file ready to sample and creates a toolbar to start and stop sampling. During sampling the horizontal cursor can be dragged up and down to control the amplitude of the output pulse train.

**Scripts: Signal** 

- Q. I would like to create new data files that contain only frames of a certain state from existing experiment files. Is there any way to do this in Signal?
- A. The attached script, `Export&Merge.sgs`, can be used to create a new data file by merging together frames from existing files based on frame state values. You can open files and select the state number to use from the script toolbar. The frames must all have the same number of data points to be included in the newly created file.

**Did you know...?**

You can now sample for much longer run times with the same sample rates when using burst mode sampling in Spike2. Burst mode is supported by the Micro1401 mkII, Power1401 and Power1401 mkII.

**Recent questions**

- Q. Is there any way to merge files together in Spike2? Ideally I would like to be able to process a folder of files recorded at different times into a single data file.
- A. The script `MergeFiles.s2s`, included in the `Spike6\scripts` folder for all new Spike2 6.08 installations, allows you to combine multiple data files and copy and paste channel data between files. This script is a greatly improved and more comprehensive version than the script included in eNewsletter 32 and has three basic modes of operation controlled via a script toolbar:

**Batch Process**

This mode allows the user to create a new destination file holding the data from a directory of source files linked end to end in order of creation date. Alternatively it can be used to add data from the source files into new channels in the destination file so that all channels share the same time range. This mode of processing would usually be used for merging files that were recorded with the same sampling configuration.

**Copy/Paste**

This mode allows the user to copy and paste data between channels and data files. You can select the destination file for the paste from an existing open file or create a new file to hold the copied data. Like the Batch Process mode, this works best with channels and files that share the same sampling rates and time resolution. If the source data does not match the destination in these respects then the data is represented as best it can using cubic splining.

The Copy/Paste mode offers greater flexibility than Batch Process as the user can copy groups of channels in a time range and paste them to the destination file at a specified time, overwriting pre-existing data if required.

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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.

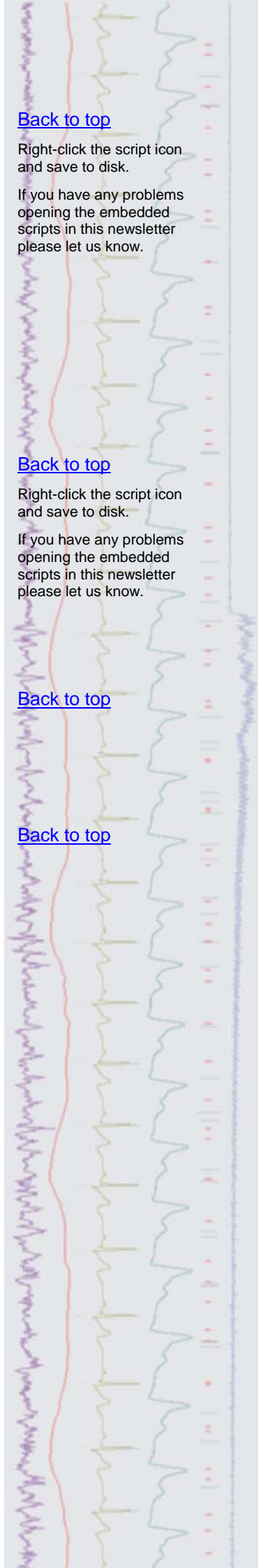
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Right-click the script icon and save to disk.

If you have any problems opening the embedded scripts in this newsletter please let us know.

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## Delete

This mode can be used to delete unwanted sections of data, such as artefacts, from single or multiple channels in a file. Deleted sections of waveform data can be replaced with a baseline at zero or a gap in the data. The user can also select to close gaps to defined time durations or join data end to end with no break in the recording.

If you have any comments or suggestions when using the MergeFiles.s2s script, then please contact us.

## 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 [sales@ced.co.uk](mailto:sales@ced.co.uk).

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