

BioSig32 New Features and Functions

Overview

The BioSig program has been updated to work with TDT's new S232 32-bit driver system. The new program is called BioSig32. The program supports fully S232's multi-tasking capabilities running as a primary application alongside any of the runtime secondary applications (e.g. SigGen32). In addition to being 32-bit compliant and multi-tasking, BioSig32 can now run under Windows 95, Windows 98 and Windows NT.

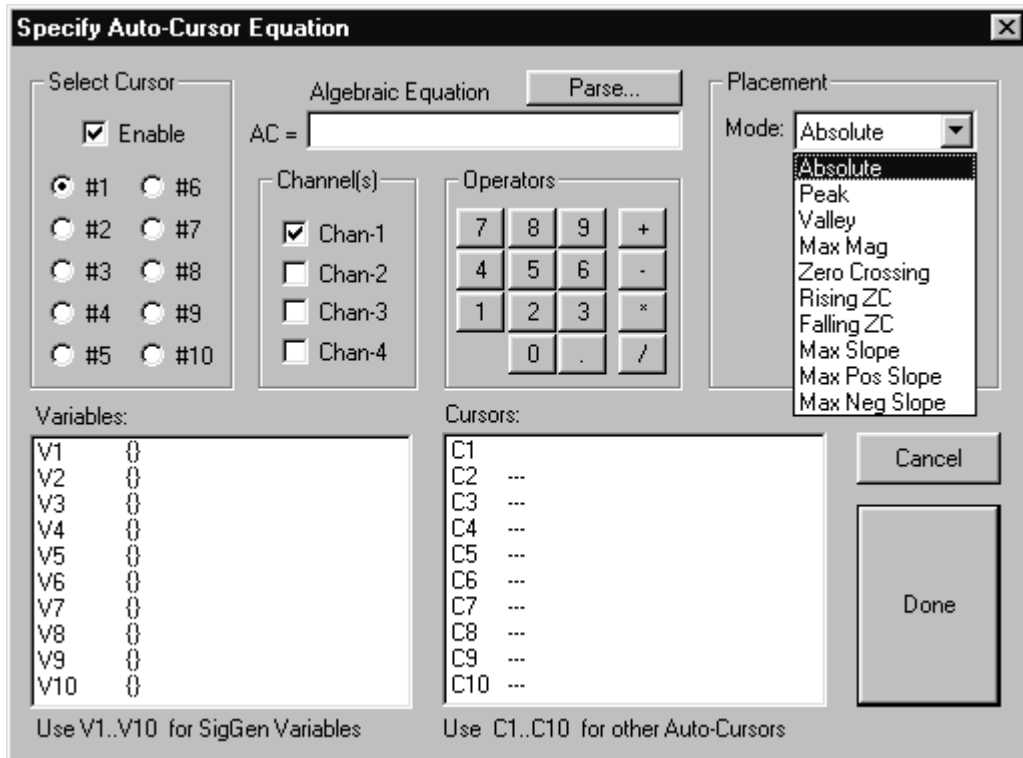
New Features

BioSig32 also includes new features and capabilities based on the most frequent user requests. These new features include:

- Automatic Peak Finding
- Support for TDT's Biological Amplifier
- More powerful export features that allow exporting all cursors, variables, and trace data into a standard spreadsheet file
- Clip Detection
- External Triggering with microsecond TG6 timing.

Auto-Cursor Peak Finding

The auto-cursor feature will place up to 10 cursors on each acquired trace as a mathematical function of a variable or at a specific time or frequency. BioSig32 now supports automatic peak finding to minimize the amount of manual cursor manipulation that has to be performed after data acquisition.



The Placement function allows you to specify placement of the cursor on the feature selected from the drop-down menu. The Placement will search over the specified range around the position determined by the algebraic equation.

Absolute

This corresponds to auto-cursoring by earlier versions of BioSig. The cursor will be placed at the precise position specified by the algebraic equation.

Peak

Will place the cursor at the highest peak in the specified range.

Valley

Will place the cursor at the lowest valley in the specified.

Max Mag

Will place the cursor at the maximum + or – value in the specified range..

Zero Crossing

Will place the cursor at the nearest zero crossing in the specified range.

Rising ZC

Will place the cursor at the nearest rising (i.e. positive going) zero crossing in the specified range.

Falling ZC

Will place the cursor at the nearest falling (i.e. negative going) zero crossing in the specified range.

Max Slope

Will place the cursor on the maximum slope (either positive or negative) in the specified range.

Max Pos Slope

Will place the cursor on the maximum positive slope in the specified range.

Max Neg Slope

Will place the cursor on the maximum negative slope in the specified range.

Search From: To:

This specifies the search range for the feature (e.g. peak, valley etc.) around the result of the algebraic equation.

Multiplicative

By default, the range specified in the search box will be added to the result of the algebraic equation. If the multiplicative box is checked, the range will be multiplied by the result of the algebraic equation.

Flag Edge Placements

If the placement of the cursor occurs at the beginning or end of the search range, clicking Flag Edge Placements, will cause the cursor to be flagged as such. For example, if the cursor placement was set for a peak at 5 ms (as in the example below), but the peak actually occurred before the search window, the cursor would be placed at the Start of the search window and would be flagged. This will let you know that you might want to manually move the cursor to the true peak, which was outside the search window.

Auto-Cursor Peak Finding Example

Specify Auto-Cursor Equation

Select Cursor

Enable

#1 #6
 #2 #7
 #3 #8
 #4 #9
 #5 #10

Algebraic Equation

AC = 5

Channel(s)

Chan-1
 Chan-2
 Chan-3
 Chan-4

Operators

7	8	9	+
4	5	6	-
1	2	3	*
0	.	/	

Placement

Mode: **Peak**

Search...

From: AC - 0.5
To: AC + 0.5

Multiplicative

Flag Edge Placements

Variables:

V1	0
V2	0
V3	0
V4	0
V5	0
V6	0
V7	0
V8	0
V9	0
V10	0

Cursors:

C1	5
C2	---
C3	---
C4	---
C5	---
C6	---
C7	---
C8	---
C9	---
C10	---

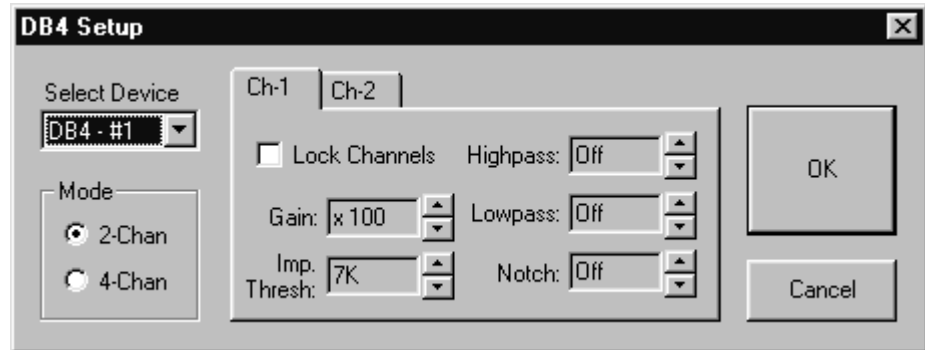
Use V1..V10 for SigGen Variables Use C1..C10 for other Auto-Cursors

To place a cursor at the maximum peak within a 1 ms area around 5 ms in each trace:

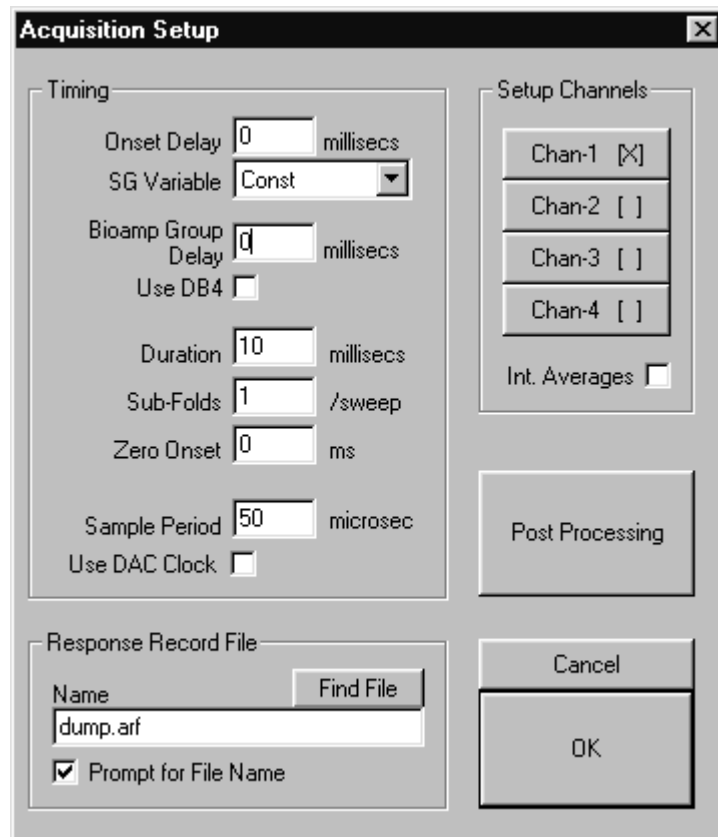
1. Under Select Cursor: Select Enable, and click on #1.
2. Enter the number 5 into the algebraic equation window.
3. Under Placement: Select Peak from the drop-down menu.
4. Enter 0.5 in the From and the To boxes.

TDT Digital Biological Amplifier

To access the DB4 Setup dialog, choose DB4 BioAmp from the Setup Menu. Refer to the DB4 manual for explanation of the DB4 settings. Note that settings made in this dialog box will not appear in the display on the DB4. The Lock Channels box will set the same values for all channels.

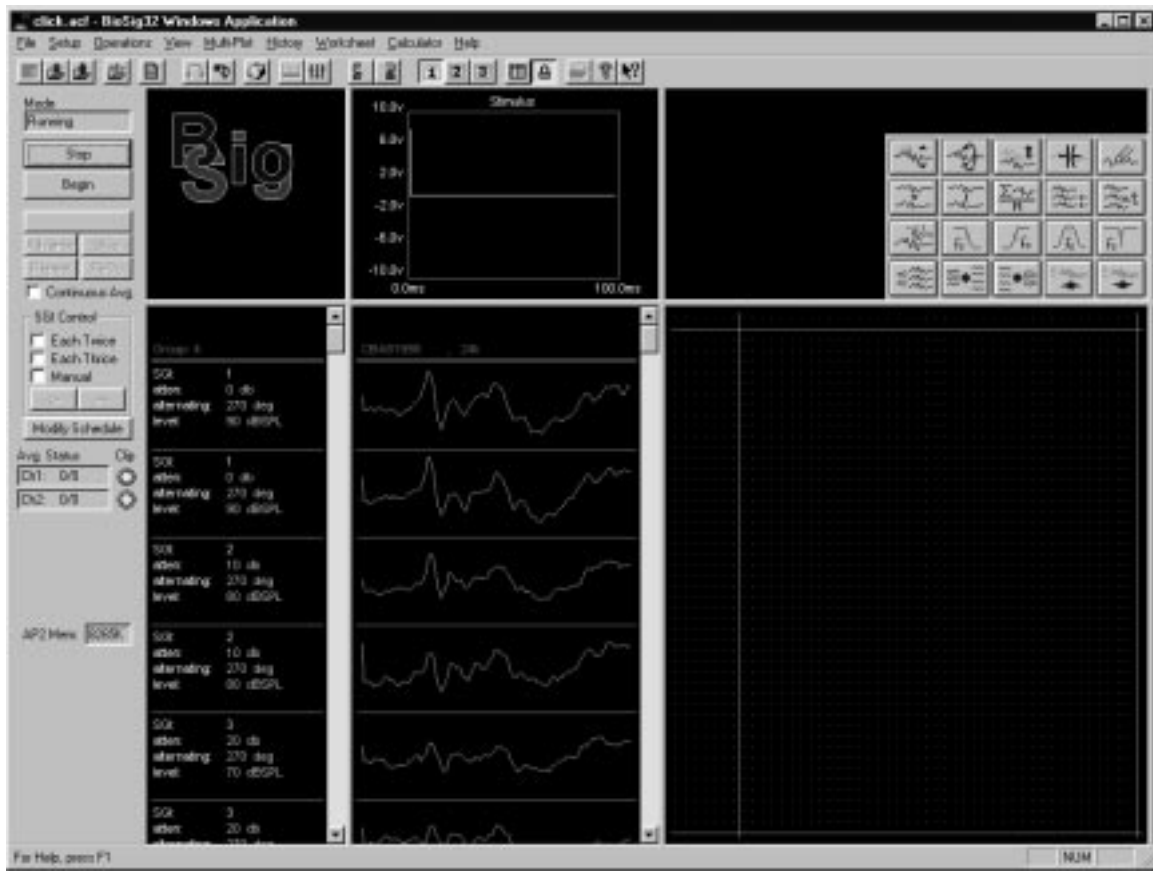


The DB4 has a 1.0 ms group delay when it is operated in 2-channel mode, and a 2.0 ms group delay when it is operated in 4-channel mode. To account for the group delay, BioSig will delay acquisition by the appropriate duration when Use DB4 is checked in the Acquisition Setup.



Impedance Scan/Impedance Check

Impedance scanning and checking can be performed from the Operations menu. The results of the impedance check are displayed in the main window where average status is normally displayed. To turn off impedance checking, select Impedance Check from the Operations menu. The results of the impedance check will be displayed as colored lights next to the average status.



Clip lights

The clip lights on the bar on the left hand side of the screen help you optimize the gain on the electrode amplifier.

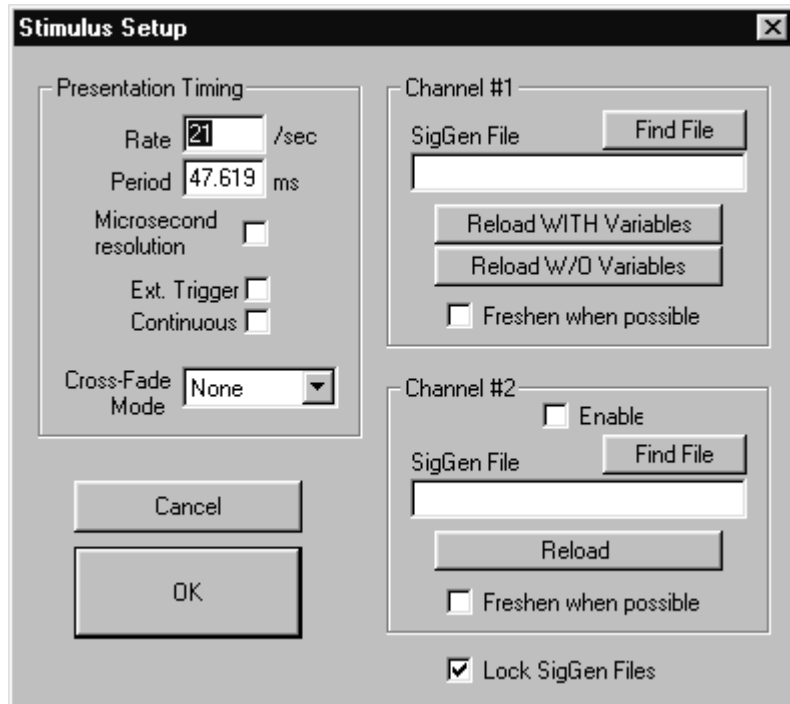
Green: The signal is a good amplitude.

Yellow: The signal is too small for the A/D converter. The gain on the amplifier needs to be increased.

Red: The signal is over 10 V, and will be clipped by the A/D converter. Turn down the gain on the amplifier.

External Triggering Support

External triggering support is configured from the Stimulus Setup dialog box.



Microsecond resolution

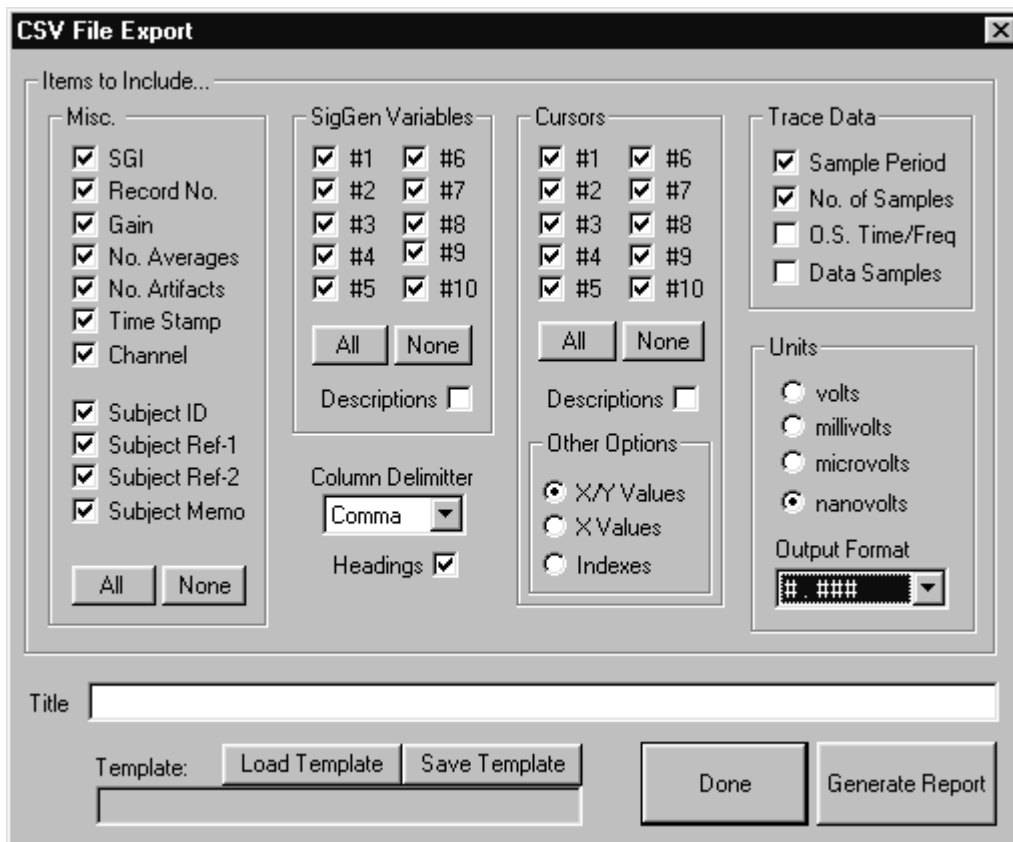
When checked, the TG6 will use a 10 μ s baserate (instead of 1 ms), and increase the accuracy of timing from when the TG6 receives an external trigger to when it triggers the D/A and A/D.

Ext. Trigger

Will set the TG6 to use external triggers for triggering stimulus presentation and data acquisition. Connect the trigger from an external source to the TRIG input on the TG6.

Worksheet Enhanced File Export

The Export to CSV option allows you to export raw trace data along with descriptors into a standard spreadsheet file.



Misc./SigGen Variables/Cursors

Same as previous versions of BioSgi

Trace Data

Sample Period

Sampling period in microseconds of the acquired data.

No. Samples

Number of samples in the trace

O.S. Time/Freq

Offset of the first point in waveform in ms for Time or Hz for Frequency.

Data Samples

Saves the data for the waveform

Units

Scales the output to the units that are selected.

Output Format

Sets the output format of the data. For example `#.###` will give data to three significant digits.

Template

Saves the export settings from the CSV File Export dialog box to a file that can be reloaded later.