

BioAD2 Manual

This manual describes the BioAD2 software. The program's main function is to capture various types of analog data and convert them into digital format. A secondary function is to export the data for analysis by other software such as BioProc2. Up to 16 channels can be collected. Sampling rate, triggering conditions and automated saving are among the program's capabilities.

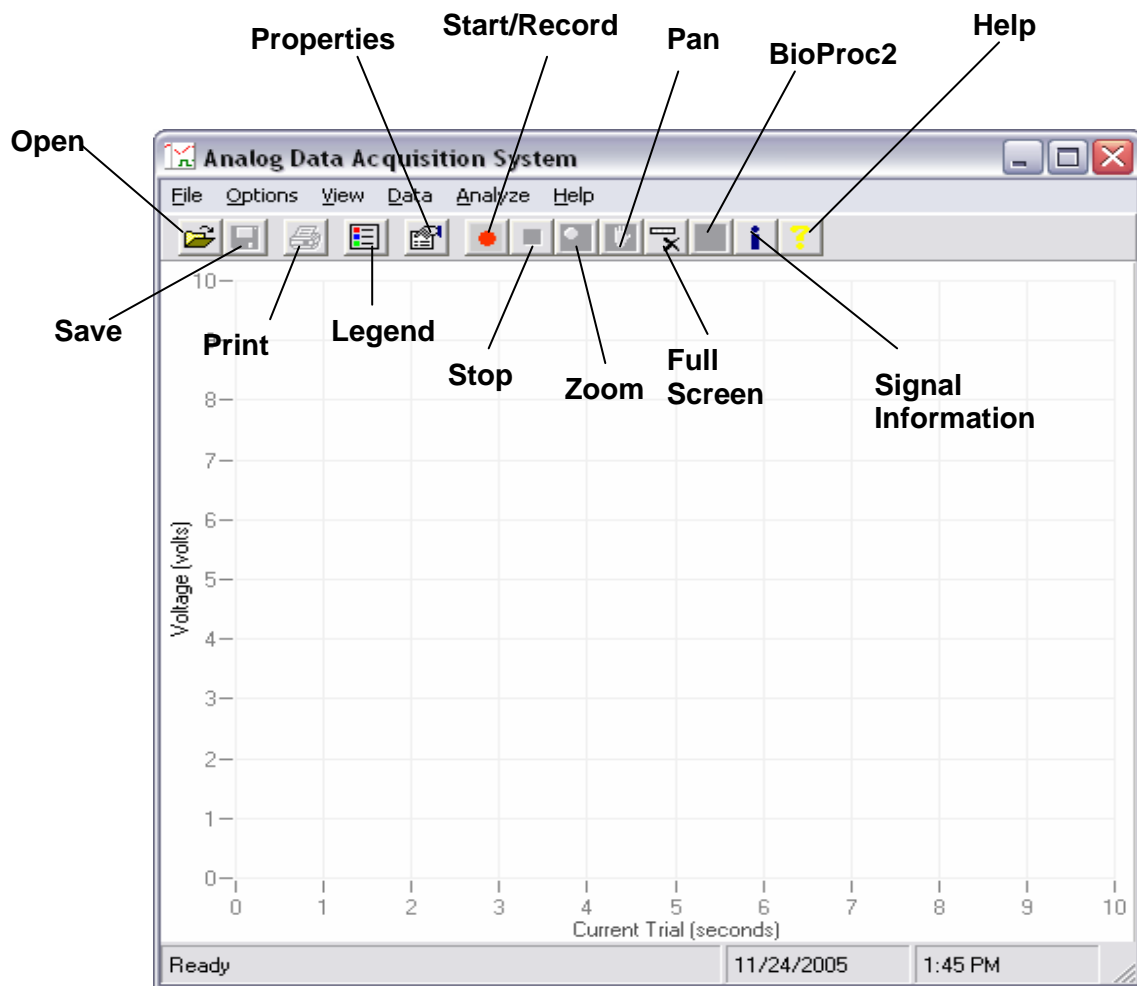
Opening Program

Go to Start...Program Files

...Biomech

... BioAD2

Once the program loads, it should open up like this:



Note a previous user may have selected the full-screen option so the program may occupy the full video screen. Be sure the program is installed on a computer with a compatible National Instruments A/D board such as the AT-MIO-16E otherwise; the program may not function for A/D conversion. The program will be able to open and display previously collected data but will be unable to collect new data.

Quick Start

To begin immediately data collection, press the record button. The program will automatically collect data using default conditions. To customize the data collection press the properties button, enter your preferred settings, exit and then press the record button. The recorded data display only after all data have been collected. You should save the data before collecting a second trial. Pressing the record button again will collect another set of data. If selected in the options menu you can see the first trial displayed below the second trial. Once the data are saved, you can press the BioProc2 button to view and analyze the data with BioProc2.

Main Menu

Open:

Open saved File.

Click on this icon and a window will appear giving the user an option of what file to open. Only files in BioProc2 binary format (.bpb) can be opened. Use the Import function to open files in Stimo format (.stm).

Save:

Save Current Trial.

Current data saved in BioProc2 binary format (.bpb)

Print:

Print the current graph that is opened

Legend:

Display the colour scheme for each channel of collected data

Properties:

Adjust Data Collection Properties (See pg 2)

Start/Record:

Begin Data Collection

Stop:

Abort data collection due to invalid trigger or bad trial. A warning will be issued and the data will be lost.

Zoom:

Zoom into Desired Location on Graph

Pan:

Allows the user to move the screen to view data within the zoomed field. This item is inactive until the zoom button (above) is pressed.

Full Screen:

Return zoomed area to original screen size

BioProc2:

Open data up in BioProc2. The data must be saved before export is allowed.

Signal Information

(see pg 6): View statistical information about any signal

Help:

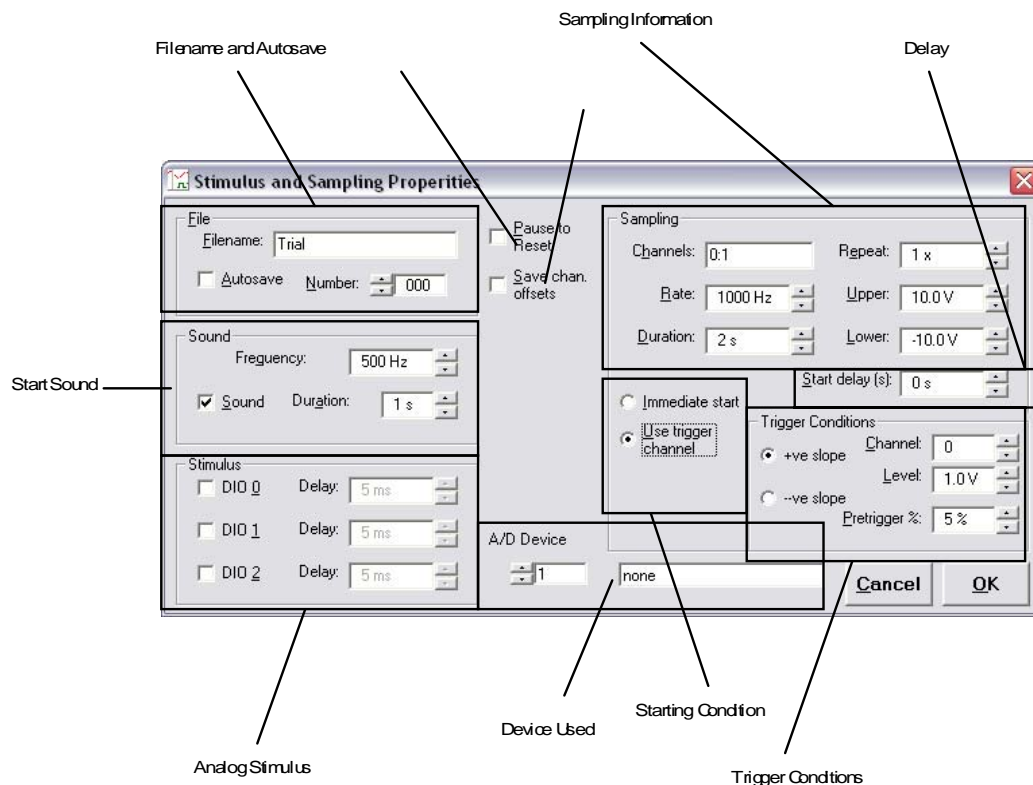
Access help information

Data Collection

Adjust Data Collection Properties

Click on the Properties Icon or go to Data...Properties

When the properties window opens, it should look like this:



There are many different criteria in the properties menu that can be manipulated in order to get the proper data that is needed. These functions will be described below

File and Autosave:

Naming the collected data is performed here (i.e., BallDrop 10m). Having the Autosave check box ticked provides the option of saving or disregarding the data after each collected trial. Subsequent trials will have a new number incrementing by one.

Start Sound:

This option allows the user to have a sound happen once the data collection begins, if the check box is checked. The user can choose the length of time that the sound will go on for as well as the frequency of the sound.

Analog Stimulus

Sampling Information

In here is where the user will set the sampling information to their desired specifications.

Channels:

This where channel selection takes place. The number of channels that can be sampled depends on the DAQ box. When selecting desired channels separate channels that are in a string by a colon (:) and individual channels by a comma (,).

Repeat:

It is here where the user will specify the number of times the trial will be run (normally 1)

Rate:

This is the sampling rate of the data. Note, data should be sampled at least 2.5 times that of the frequency of the motion/action. The upper limit for this software is 100 000 Hz if using one channel only.

Duration:

This is where the user will select the desired time for the motion. Note, it is measured in seconds therefore if the time to be measured is in milliseconds then the number that is entered must be a decimal.

Upper/Lower Limits.

This is the range of voltages of the signal. If the signal is not all recorded then the gain can be adjusted on the data acquisition box so that the data will not saturate. ± 10 V is the usual range.

Start Delay.

The function of this is to give a timed delay before the data collection begins.

Starting Conditions

In this software, there is the option to start as soon as the record button is pressed or after a certain start criteria is met.

To start immediately with no specific conditions, have the button on the immediate start button and press OK.

To start only after a trigger condition is met, click on the trigger button.

The option is given to start on a positive or negative slope. Depending on what type of data collection is used, either or can be used. If collection is from a force plate or EMG then the positive slope is normally used.

The user must choose what channel will be used for the trigger. Once again, depending on device used collect data will depend on the channel used. Note: For most cases the channel 0 will be used.

The level is the amount the signal that needs to be received before the acquisition will begin. The larger the signal is going to be the more the level should be.

A pre-trigger is something that is used when....

NOTE: To see what type of input is on each channel, the use can scroll through the Device Used menu on the bottom of the window

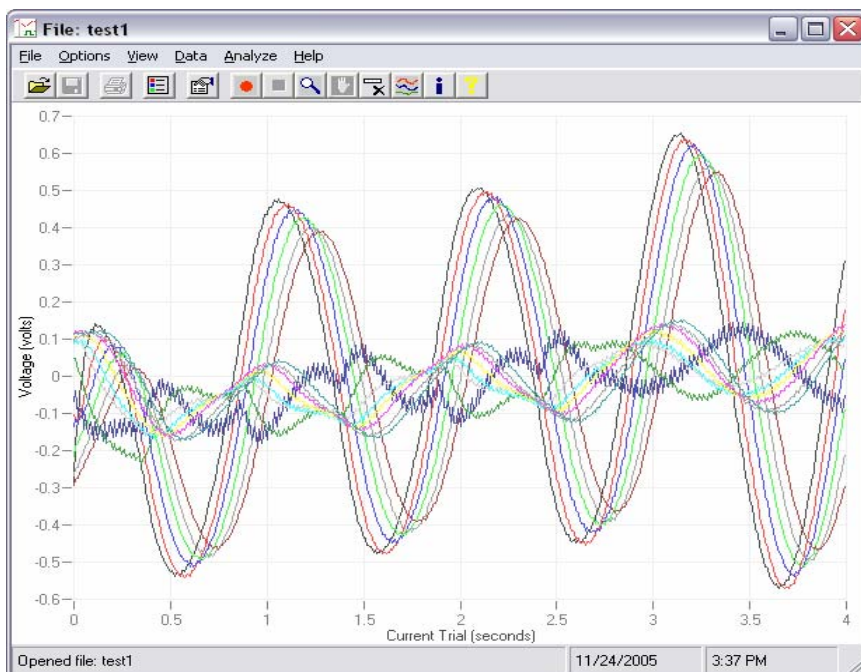
Once data parameters are set, click OK to exit properties menu and then select the record button

Scaling

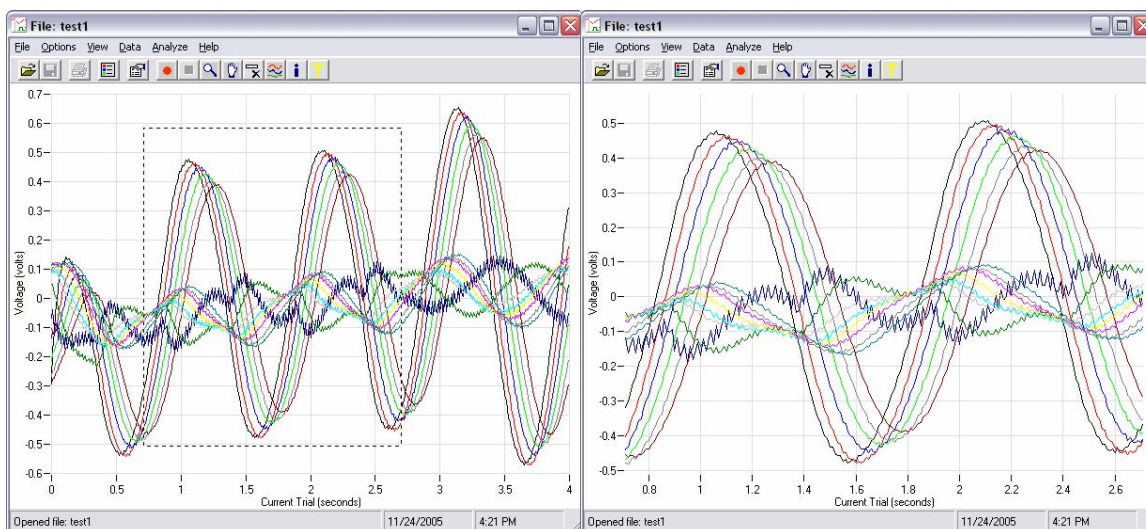
The graph automatically scales the data to the scales that the program finds appropriate. To manually scale the graph there is a function under the View menu. It gives the option to used volts or millivolts and seconds or milliseconds. There is also the option to adjust the scaling factor as well for both x and y axes. To return to the default scales, there is a function under the View menu to reset.

Zooming and Panning

After the data collection, a graph will show up with the results. If the collection needs to be stopped during the collection, click the Stop (●) button and it will terminate the collection



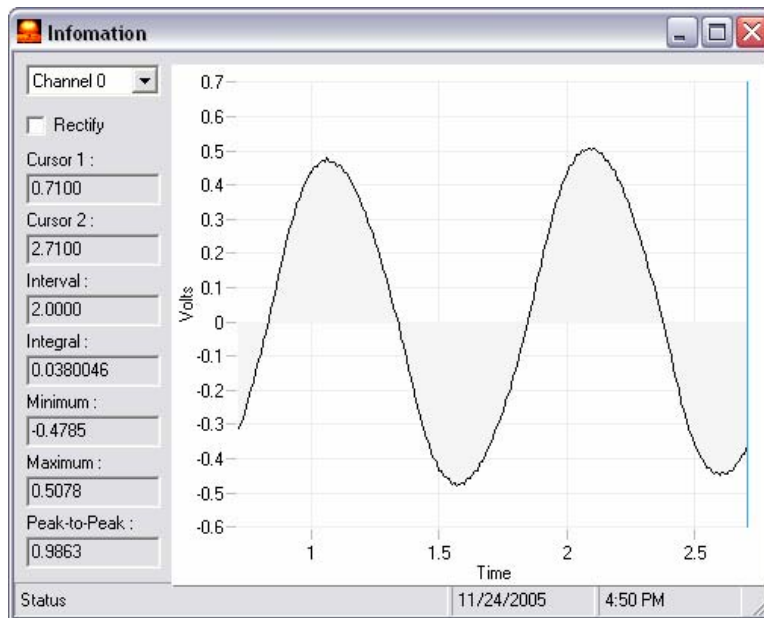
To zoom in on specific location the user must click on the zoom button to activate the zoom function. Notice that when the zoom function activates, the graph becomes bold. To zoom in on an area, click and drag the mouse over the desired location



To move across the zoomed area, click on the pan button. You can then move throughout the data.

To reset back to the original screen mode, simply click the Full Screen button

Data Processing



In this window, there is basic statistical information about the data that have been collected. Each channel can be seen individually simply by clicking the drag down menu on the left of the window. The option rectifies (absolute value) the data. This option is only needed if the data collected are EMGs

As can be seen on the left hand column there is general statistical information. The information included for these numbers are falls between the two blue cursors. To move the cursors simply click and drag them to the desired location. Notice that when the cursors move, the numbers change in the columns.