BIOPAC Systems, Inc.

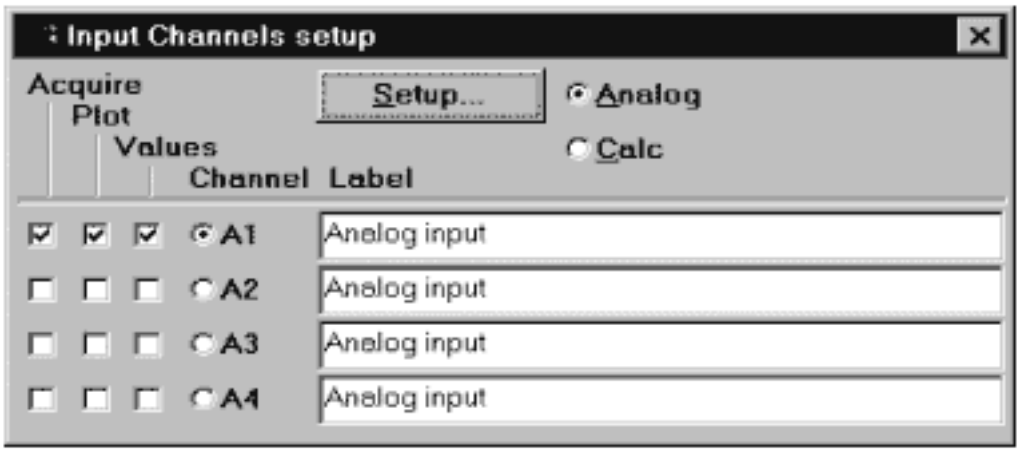
42 Aero Camino
Goleta, Ca 93117
Ph (805)685-0066
Fax (805)685-0067
www.biopac.com
info@biopac.com

#PS165 - Integrated EMG

This document will explain how to obtain an integrated EMG from raw EMG data, using the Biopac Student Lab *Pro* software. Integrated EMG can either be derived online in "real-time" or it can be obtained post acquisition.

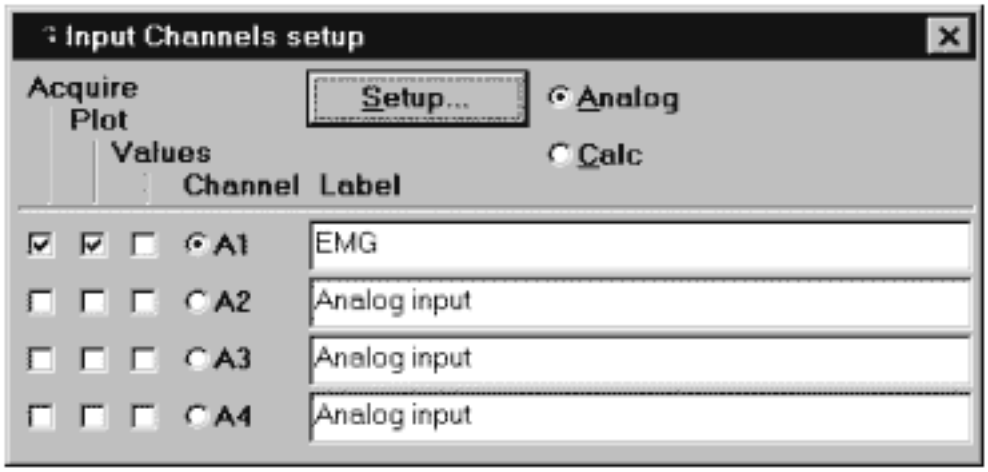
Online

To obtain online "real-time" EMG , you must first launch the software and select **New** from the **File** menu. Then select **Setup Channels** from the **MP30** menu. Click on the Acquire, Plot and Values boxes for Channel A1, as shown below.

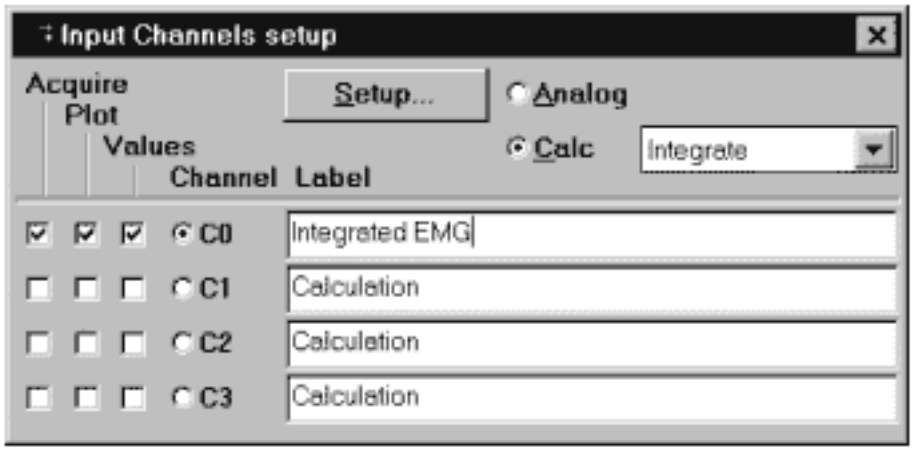


Select the **Setup** button, click on the **Presets** and highlight **EMG**. This will transform the universal amplifier into an EMG amplifier to give you the raw

EMG data.

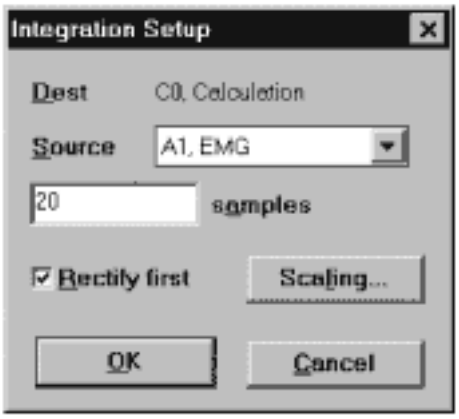


In order to obtain the integrated EMG, you must enable a Calculation channel and set it to Integrate. To do this you must click on the **Calc** button in the Input Channels setup box. Change the label from Calculation to Integrated EMG. Then check the Acquire, Plot and Values boxes and set the right-hand box to **Integrate**, as shown below.

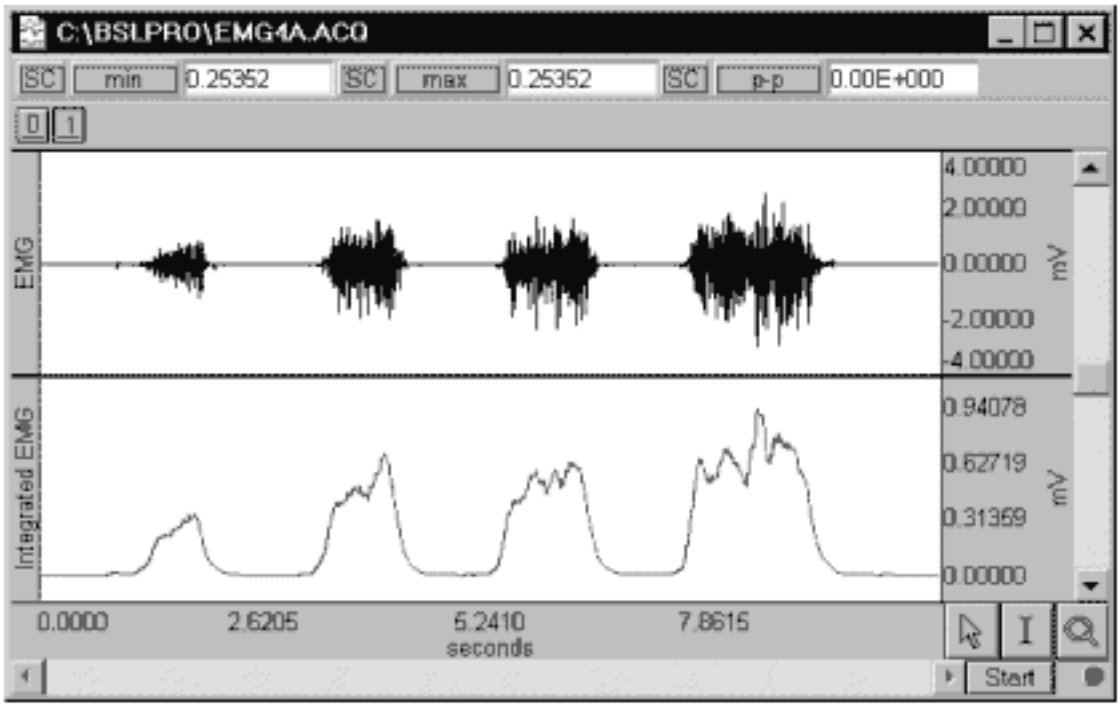


Finally, click on the **Setup** button, set the source to A1, samples to 20 and click on **Rectify first**. The samples value will vary, depending on the sample rate and time constant (use 20 for 200 samples/sec and use 100 for 1000 samples/

sec).

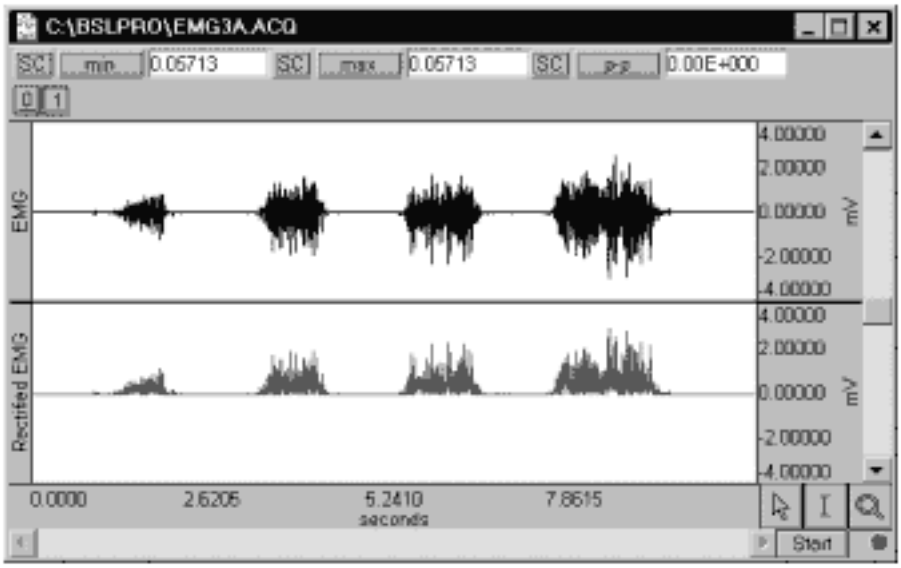


Now you will be able to collect data in the acquisition window, by clicking on the **Start** button. This will simultaneously plot the raw and integrated EMG, as shown below.

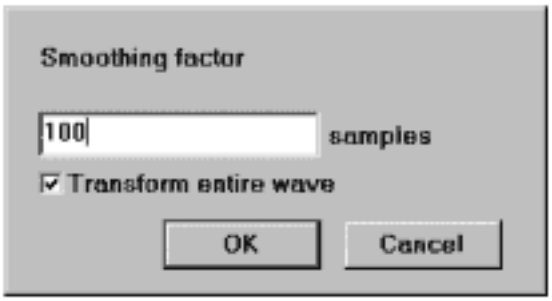


Post-acquisition

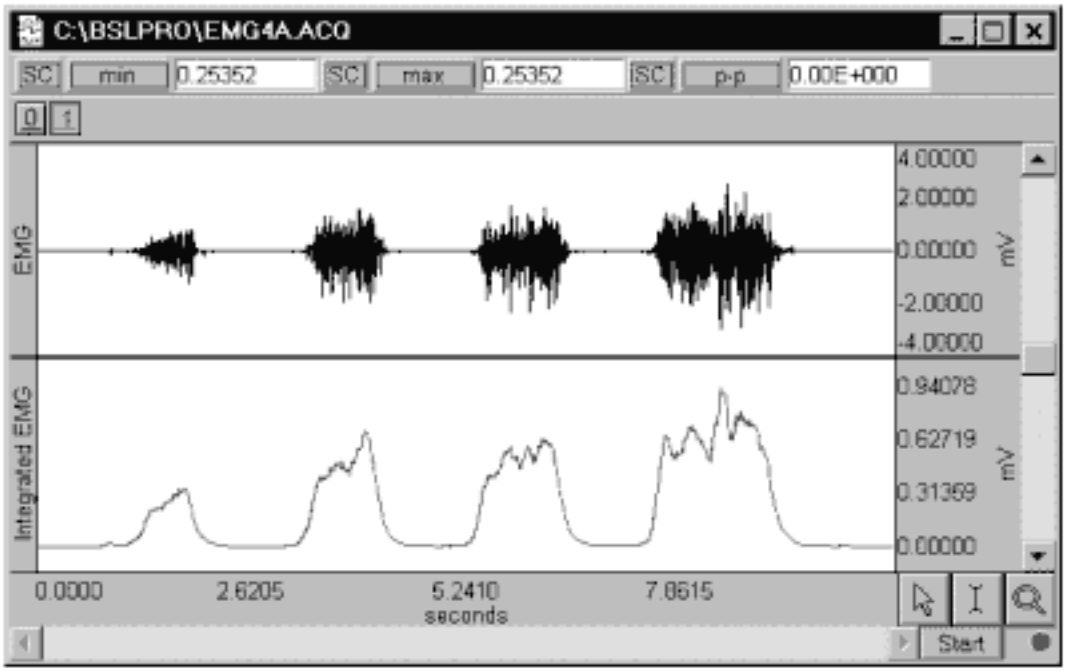
To obtain integrated EMG post-acquisition, you must select **Duplicate** from the **Edit** menu. Click on the duplicated waveform and highlight **Select All** from the **Edit** menu. Then from the **Transform** menu, select **Math Functions** and **Abs**. This will give you the absolute value or rectified EMG, as shown below.



Finally, select **Smoothing** from the **Transform** menu and set the samples to 100, as shown below.



Select **Autoscale Waveforms** from the **Display** menu and you will have a graph that resembles the one depicted below.



Return To Application Note Menu