

➤ HOW TO USE THIS QUICK GUIDE

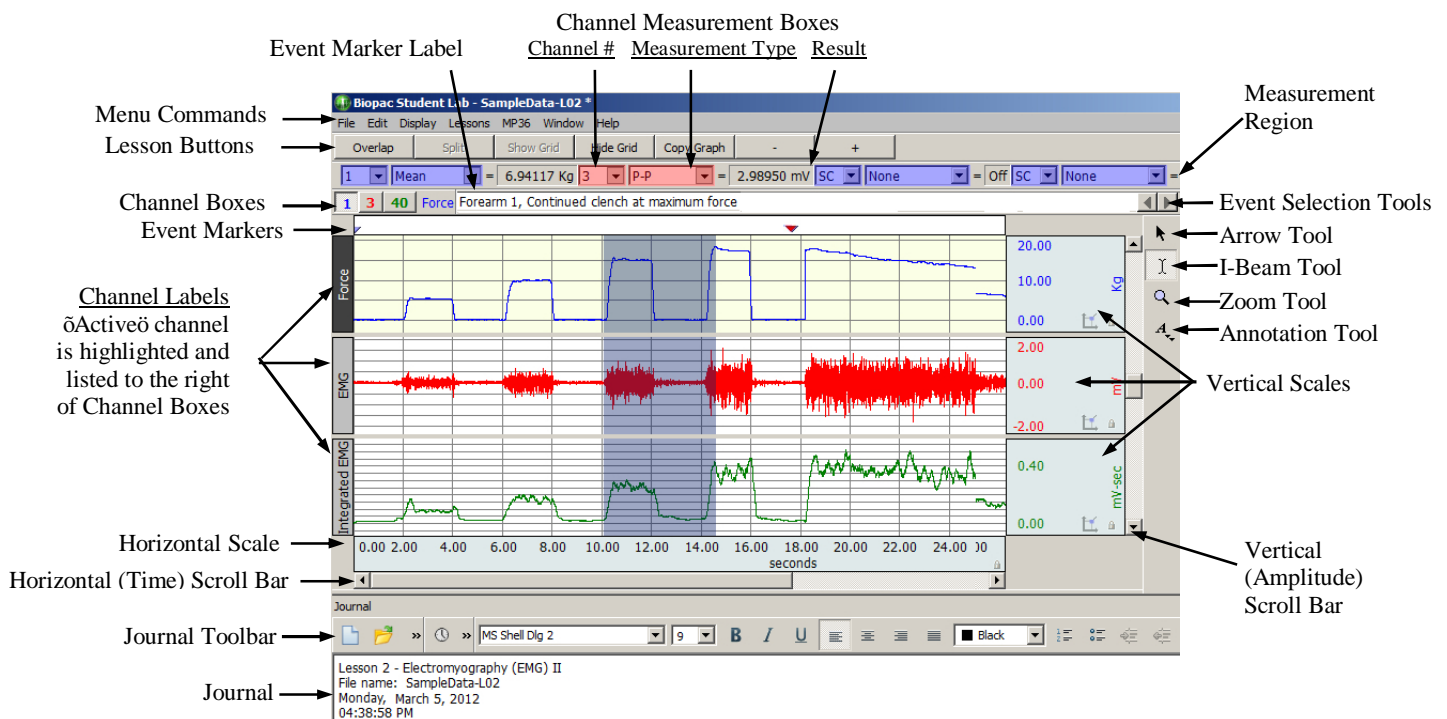
- Choose a topic from the bookmarks at left, click an item in the display below, or use the scrollbar.
- For detailed help and instructions, see the **BSL Tutorial** (under the Help menu) or the **BSL Lab Manual**.

➤ OVERVIEW OF THE BSL DISPLAY

All Biopac Student Lab lessons have a Data window and a Journal.

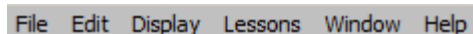
- The **Data window** displays the recorded data and is where you perform measurements and analysis.
- The **Journal** is below the Data window and it works like a text editor. The Journal provides instructions to assist with setup, calibration and recording, and is also used for making notes and storing measurements.

Refer to the **Biopac Student Lab Display** below to identify tools and options that you can use as you complete the Setup, Calibration, Recording, and Data Analysis of each BSL Lesson. The sample display shows three channels of data and two channel measurement boxes, but the lesson display will vary for each lesson and at different points within each lesson.



Biopac Student Lab Lessons Display in analysis mode

➤ MENU COMMANDS



Menu options change during stages of a lesson and analysis.

- File** Copy files, print graphs, set graph display preferences (Show/Hide grids), set Journal preferences.
- Edit** Copy measurements and wave data from the Data window and paste to the Journal or to other programs for further analysis. Copy graphs (snapshot of waveform display) to other programs.
- Display** Use **Autoscale** and **Zoom** functions to control how data looks on the screen. See Viewing Data.
- Lessons** Open Biopac Student Lab lessons or Review Saved Data from a previously saved recording.
- MP menu** Displays options for setting input channels, hardware, recording parameters and other hardware-related functions (Options are hidden unless in *PRO* mode).
- Window** Options for tiling and displaying multiple graph windows.
- Help** View the Quick Guide, Lesson Procedures, **BSL Tutorial**, or link to web Support Materials.

➤ RUNNING A LESSON

- Choose a Lesson file from the **Lessons menu**.
 - You will be prompted to choose, or name, a folder into which BSL will save your lesson data.
 - You may also set custom recording preferences prior to the lesson.
 - You must be connected to an MP36, MP35 or MP45 to record lesson data. If the BSL software cannot communicate with the MP hardware, you will be prompted to check the connections and retry.
 - Each BSL Lesson is divided into sections for Experimental Methods (Setup, Calibration, and Recording), Data Analysis, and Data Report. Follow the step-by-step procedures in the **BSL Lab Manual** or **Lesson Procedures** (available under the lesson Help menu) to complete the lesson, noting the symbols in the procedure that instruct when to insert event markers or enter measurements in your Data Report. Data Reports may also be filled out in the Journal after the lesson is completed. All Data Reports are editable and printable.
 - To further guide you, each lesson has on-screen prompts and a lesson-specific HTML **Journal** with detailed instructions for Setup, Calibration, and Recording, including embedded instructional photos and videos.

➤ LESSON BUTTONS



Lesson buttons are located under the menu commands at the top of the graph to guide you through the recording procedure. Appropriate options are generated after each selection. The buttons are lesson-specific and may include buttons such as Overlap and Split to assist in comparing the relationship between signals.

➤ DATA ANALYSIS

- To conduct Data Analysis on a previously recorded file, choose **Review Saved Data** from the Lessons menu and browse to select a data file to analyze. You don't need to be connected to MP hardware to analyze data.
- During **Data Analysis**, you can manipulate the recorded waveforms, observe the data, and take measurements.
- Use **Edit menu** commands to copy measurements and wave data (numeric values) from the Data window to the Journal or to other programs (Word or Excel) for analysis and reporting, or to copy graphs (snapshot of waveform display) to other programs.
- Use the Journal toolbar to quickly paste measurements into the Journal, create tables, or format text as desired.

➤ VIEWING DATA

Cursor Tools Icons for Cursor Tools appear vertically along the right side Data window.



Arrow tool, a general-purpose cursor used for selecting waveforms and scrolling through data. All other cursors default to this mode when the cursor is moved outside the graph area.



I-beam tool, used to select a single point or an area of a waveform(s) for measurement or editing. To select an area of data, hold down the mouse button and drag the mouse left or right.



Zoom tool, used to select and magnify any portion of a wave to see detail. To draw a zoom box, hold down the (left) mouse button and drag to form a box encompassing the area you wish to magnify. To undo the Zoom command, choose **Zoom Back** from the **Display** menu, or use the **Zoom Back** toolbar button.



Annotation Tool, used to insert and add text into a graph channel at any desired location.

Select a Channel

To select a channel, click its waveform, its label, or its channel box with the Arrow tool. When selected, a channel's label is highlighted and its channel box appears depressed.

Show/Hide a Channel



To hide a channel, hold down the **ALT** key and click the channel box. The box displays a slash when that channel is turned off; data is not lost but simply hidden so you can focus on the visible channel(s). Hidden channels can be toggled back into view at any time.

Position a Waveform

Use the Horizontal Scroll Bar or the event marker tools to move to another time in the recording. Use the Vertical Scroll Bar to adjust vertical position, independent for each waveform.

Scale Range

To adjust the display range during analysis, click in the Horizontal (Time) or Vertical (Amplitude) Scales and set the Upper and Lower values. Horizontal Scale applies to all channels; Vertical Scale is unique to each channel.

Grids

Toggle the Show Grid/Hide Grid buttons to control the grid view. Grid line settings are controlled using the Grid Settings dialog. Grid lines can be unique to each channel.

Autoscale The Display menu has three Autoscale options:

- **Autoscale Horizontal** fits the entire recording into the Data window.
- **Autoscale Waveforms** sizes all data to fit the channel display region.
- **Autoscale Single Waveform** sizes data in the selected channel only.

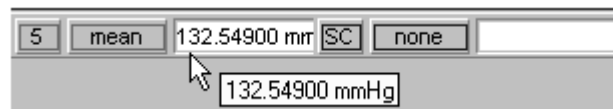
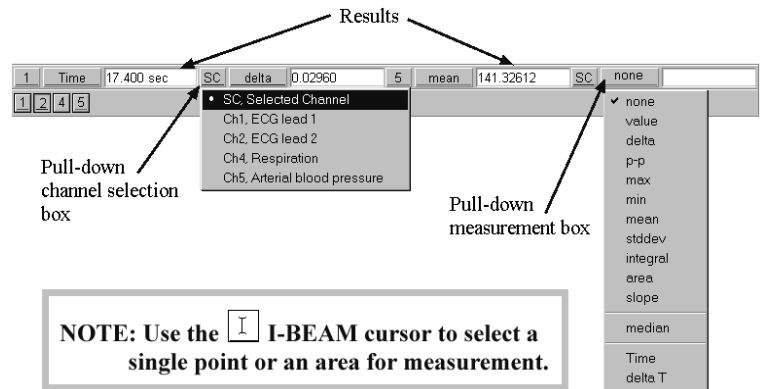
TIP To quickly view the entire recording, select **Autoscale Horizontal** and then select **Autoscale Waveforms**.

MEASUREMENTS AND RESULTS

Channel Selection: Use the pull-down channel selection box to indicate the channel you want to take a measurement from. The **SC** option will automatically take measurements from the selected channel. The **selected** or **active** channel has its channel label highlighted on the left edge of the display, its channel box is depressed, and its label name is displayed next to the channel boxes.

Measurement: The pull-down menu gives you access to an array of measurements.

Result: The result of the selected measurement appears to the right of the measurement title (i.e., mean = 132.54900 mmHg). A result of ******** means the measurement is invalid because not enough data was selected. If the result is cut off, point the cursor over the result box to generate a tag that displays the full result precision and units.



EVENT MARKERS

Event markers and labels appear at the top of the data window. To move from marker to marker, use the left and right arrows.

◆ **Append markers** appear below the marker label bar as black diamonds, and colored red when selected. Append markers are automatically generated by the software to mark the start of each recording segment.

▼ **Event markers** appear below the marker label bar as inverted triangles. Event markers are used to describe data being recorded and may be generated by the software or manually inserted. Automatic event markers are red when selected and blue when not selected. Press **F9** to insert an event marker during acquisition. To edit or remove an existing event, right-click on the event icon and choose **Edit Event** or **Clear Event**. To add a new event after recording is completed, right-click in the event marker text region and choose **Insert New Event**.

TROUBLESHOOTING – FREQUENTLY ASKED QUESTIONS

- **May I copy and install BSL software onto computers that are not connected to MP recording hardware?**
Yes! BIOPAC recommends that you install BSL Analysis software onto several computers. Use the computer(s) connected to the MP hardware to record lesson data, and then save (or copy) the data to a common drive. You can then perform Data Analysis outside of the lab, on other computers in the lab, or at home without the MP hardware.
- **I'm trying to run a lesson, but I get a message that BSL cannot communicate with the MP recording hardware.**

Check the power to the MP unit and the connections from the MP unit to the computer. Power on the MP unit before launching the BSL application. To power cycle or reset the MP45, unplug the USB cable from the computer and plug it back in. (To analyze saved data, you don't need to be connected to the MP unit.)

- **I'm trying to "Review Saved Data," but I cannot locate my previously recorded file.**

Your file is saved in the folder that you designated upon starting the lesson. By default, BSL saves lesson data files to a **Data Files** folder created upon installation, usually **C:\Program Files\BIOPAC Systems, Inc\Biopac Student Lab 4.1\Data Files**. Consult with your Professor, who may have assigned a different Save location on the computer or network. When opening data files, remember to check that the **File Open** dialog is set to open the type of file that you are looking for, i.e. BSL **Lesson** files or **PRO** files.

- **I can't see the Journal, or I can see only the first lines of the Journal.**

To adjust the display to see more of the Journal, place the cursor on the bar that separates the graph display from the Journal (above the Journal and below the horizontal scroll), hold down the mouse button and drag the bar.

- **I can't find the Print command.**

The Print command is not available during recording. After a recording is saved, and the saved file is opened for analysis in Review Saved Data mode, the print commands will be available under the File menu.

- **I tried to watch an example video in a Lesson Setup Journal and was prompted to install Adobe Flash Player. After installing it, the video still won't play. What's wrong?**

This can occur when Internet Explorer is set as the default browser. If Internet Explorer is used to download and install Flash Player, it's installed for the IE browser only and not for other browsers and applications. To resolve this issue, use Mozilla Firefox or Google Chrome to install Flash Player at <https://get.adobe.com/flashplayer/>

- **Example videos in the Lesson Setup Journals are not visible or display a black screen. What's wrong?**

In BSL versions 4.1.1 and earlier, the example videos embedded in Lesson Setup Journals are not compatible with Adobe Flash Player versions higher than 18. Video player controls may also stop responding after attempting to enlarge to full screen. This issue was resolved in BSL version 4.1.2. In earlier BSL versions, the recommended workaround is to reinstall Flash Player 18 or earlier.