

Proteus Session Editor, revision 2.5.1

Session Programming Guide

Introduction

Welcome to the Proteus Session Editor software, version 2.5.1. We've added quite a few features since our original (version 1.2) release, in keeping with our goal of making the Proteus the most flexible and sophisticated light and sound system on the market. We've kept this guide as short and to the point as possible-please read at least the first few sections to give yourself an overview of how this program works, and what it can do to assist you in creating and modifying some extraordinarily powerful Proteus sessions.

Key features

We've made dozens of changes and additions to Proteus Editor-just about every request we received since the first release, plus a few we've come up with on our own. Briefly, the key new features include:

- Independent frequency control of the two color channels, in addition to real-time Color Crossfades™ between red and green
- Real-time session editing and previewing using a personal computer (Windows 98 or later)
- Biofeedback control of session parameters
- Second memory storage area added for additional flexibility
- Total possible internal sessions increased to 199 with nearly 20k bytes memory set aside for program storage.
- Dual binaural beats option
- "Randomizer" tool allows creation of sessions which vary randomly within programmable constraints
- Session tables can be printed out for easy reference
- Supplemental commands added-enables super precise control of pulse rate (0.20 to 51.1 Hz, with 0.01 Hz resolution), audio pitch (40.0 to 999.9 Hz with 0.1 Hz resolution) and brightness (0 to 255, resolution of 1).
- Reorganized segment buffer editing screen
- Enhanced cut-and-paste editing capabilities
- Ability to make "global" changes to key session parameters

Updates by Editor Version

Rev 2.5.1:

Menu <Help> <Start Log File> records data to COM port, with time stamps.

Rev 2.5.0:

Allow reload of 'default' Factory Sessions and Sound Tables.

(0.1 Hz)... New lowest allowable flash rate for the lights.

Pressing the 'select' switch in AS mode toggles diaplay on and off.

Pressing the 'start/stop' switch in AS mode toggles the 'always on' mode. 'AS_' indicates always on... 'AS ' indicates 80 minute timeout.

Rev 2.4.5:

Allow 16 COM Ports

Redefine control keys while adjusting Aux. & BioFd. Segments

Rev 2.4.4:

Set COM Port shows pale red if unavailable; pale yellow if in use.

Rev 2.4.3:

Work on 'decimal separator' for non-English systems.

Rev 2.4.2:

Fix 'incorrect session time' displayed with Aux. segments in session.

Rev 2.4.0:

Back to using dL mode to download Pxx and Uxx Sessions .

Rev 2.3.2:

Increase max. number of segments per session to 1600.

Rev 2.3.1:

Slow down data on some routines so faster PC won't overrun messages.

Rev 2.2.0:

Allow random editing of segments.

Bug fix... Open file with SS or Bf as #1 seg. could cause jumbled data.

Rev 2.2.0: Right click on sliders moves slider bar to clicked location.

Provides option to reinstate Mono-color mode in the Proteus.

Rev 2.0.0:

Allows printing of session tables.

Rev 1.8.1:

Dual Binaural Beat Frequencies added.

Installing the software

If you have not already installed the Proteus Editor software, you can download it from the MindPlace support site: <http://www.mindplacesupport.com>.

Click on "Software" then "Proteus Software" and select the "Proteus Session Editor".

To install the program, unzip the file to a location where you can find it easily. Inside the folder you will find a program called "Setup.exe". Double-click on that file to install the program. Once installed, you should have a new link in your Start Menu called "Proteusx_xx" where x_xx is the version number of the Editor.

Once installed, you have the option of also installing the included, updated version of the 50 factory programs. This does not occur automatically as some users may have modified their programs and would not want them automatically replaced. To install these, run the *Unzip factory sessions* command from the File menu.

A brief note about session structure

Every Proteus session consists of one or more **segments**, which run one after another. A segment is defined by its length together with the pulse rate, light brightness and audio pitch at the beginning and at the end of the segment. These parameters can either remain the same or change during the course of the segment: for example, the audio pitch might start at 200 Hz and end at 400 Hz. You would hear a smooth, linear upwards glide in the pitch during that segment. An especially interesting feature is the ability to start at one set of red and green brightnesses and end at another—for example, starting with all red and ending with all green. You would experience a smooth transition between all of the 256 possible color combinations (16 shades for each color) during the course of the segment.

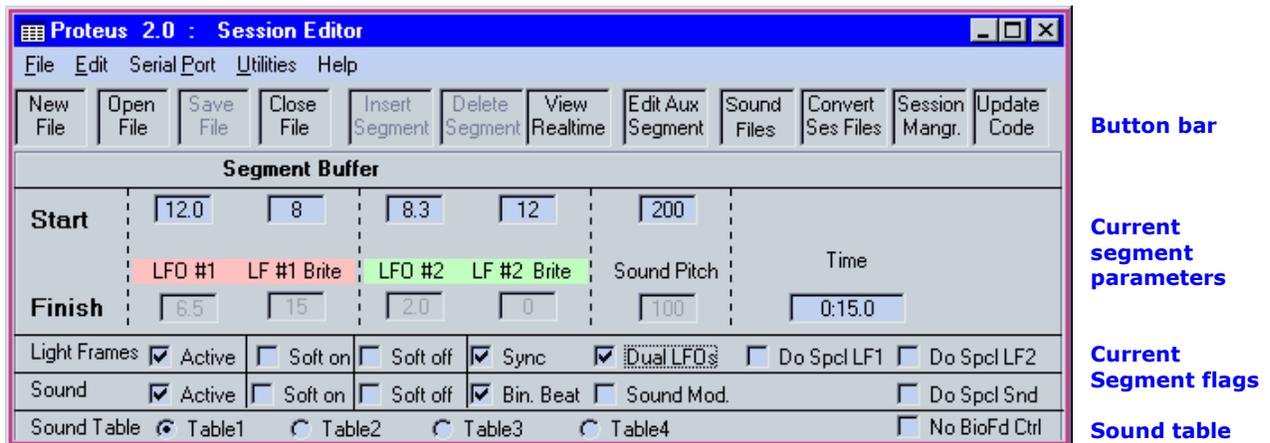
Another powerful new feature is the ability to control various parameters of Proteus via a biofeedback device, such as **ThoughtStream**[™]. For example, as you become more relaxed (as measured by ThoughtStream) the color might change from red to green—adding another dimension to the feedback process. Sessions can alternate between biofeedback control segments and normal light and sound stimulation segments, as we did with our two-University study, which resulted in statistically significant improvements in College grade point average!

Note: we use "program" and "session" interchangeably in this text and elsewhere.

A short tour of the interface

When you start up the Session Editor for the first time you will be asked to select a Comm port number. The available options are 1 - 4. Click on the appropriate option button. You will need to connect the included (black) data cable to an available connector on your computer, then plug the other end firmly into the AUX connector on the side of Proteus.

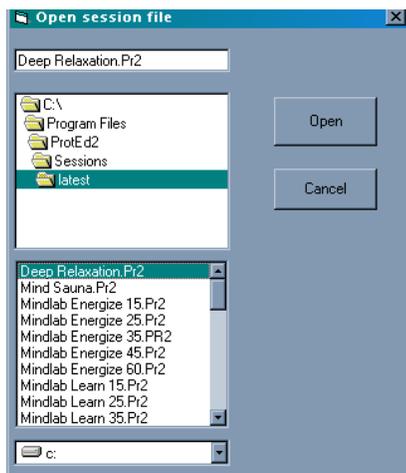
When the Session Editor starts the following screen should appear:



- The **button bar** includes a series of shortcuts to often-used functions.
- **Current segment parameters** include the starting and ending frequencies for the segment (in Hz, or pulses per second), LED brightness, audio pitch (in Hz) and the length of time that the segment will run for.
- **Current segment flags** are used to turn various aspects of the segment on and off.

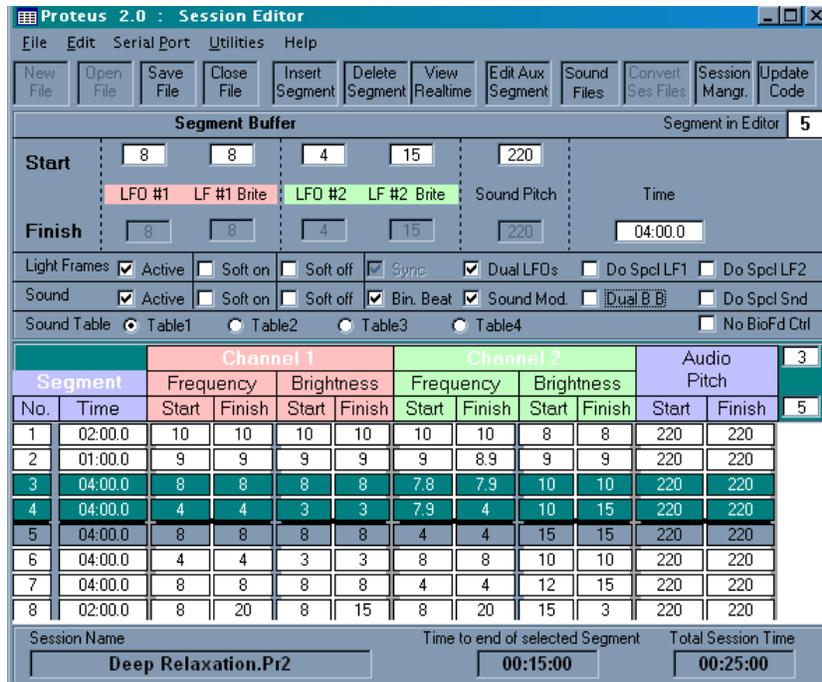
You can also use the pop-down menus above the button bar to access all of the features included in the button bar, plus a few others.

Opening a program for editing



- Select the Open File button
- Choose a program from the list (see illustration, left)
- Click "open" (or double-click the session name).

If you opened the "Deep Relaxation.Pr2" file shown in this example, you would see this screen:



<Segment number currently being edited

<Parameters for currently selected segment. Colors correspond to LightFrame LED colors

<Current segment flags

<Numbers "3" and "5" indicate that segments 3 to 5 are currently selected

<Currently selected segments are also highlighted; these may be copied or cut. The paler color (segment 5 in this case) indicates the segment for which parameters may be edited. The dark line always indicates the insertion point for new/pasted segments<Current session name, time from start of session to end of selected segment, (in this case segment 5), total session time.

There's a *lot* of information being displayed here, as you can see. Starting with the **parameters** portion of the segment buffer, let's review them one by one in the next section.

Segment parameters and flags

Segment buffer Start, Finish. These include the light and sound pulse rates (LFO, or Low Frequency Oscillator) and light brightness for the two color channels; audio pitch as well as the length of time the segment will run. Notice that the Start portion of segment 5 is currently selected for editing and the Finish portion is greyed out. To edit one of these you click in the box (such as the "8" in LFO #1) and either type in a number or use the slider which pops up to select a starting frequency.

- Start and Finish frequencies may range from 0.5 to 50.0 Hz;
- Brightness can range from 0 (off) to 15 (maximum);
- Audio pitch ranges from 40 Hz to 600 Hz (cycles per second).

Segment flags. These are "switches," meaning they are either on (with a checkmark in the box) or off. The "soft on" flags are automatically set for the first segment in your program, and "soft off" for the last. You can uncheck these boxes if you wish. Here's what these flags mean:

LightFrames, Sound: Active (the default setting) means they are turned on; uncheck the box(e)s if you want either the light or sound to be off during the segment.

Sync: If you have **not** selected the [Dual LFOs](#) flag then the red and green LEDs will be flashing together in lockstep. You can select whether the lights flash at the same time (on/off) or alternate (red/green). If you are using old-style single color LightFrames, selecting Sync will cause the lights to alternate left/right.

Note: this option is not available when Dual LFO's has been selected.

Dual LFO's: Check this box if you want the red and green channels to run at different frequencies. If you uncheck it, LFO #1 (the red channel) will determine the flash frequency for both channels and the LFO #2 channel will be ghosted.

Bin. Beat: When selected the audio pitch in the right headphone will be shifted upwards from the left channel by an amount equal to the LFO #1 value. Example: audio pitch is set to 200 Hz and LFO #1 is set to 12.0 Hz. The left ear will hear 200 Hz and the right ear 212 Hz, for a **binaural beat** frequency of 12.0 Hz.

Note: This should be used with a sine wave (sound table #1) for best results.

Sound Mod: This flag toggles **sound modulation** on and off. In this case, the audio is switched on and off in synchrony with the lights. If Dual LFO's has been selected, then the left ear audio will be modulated by LFO #1 and the right ear by LFO #2.

Dual B B: When selected two set of binaural tones will be generated. Two tones will be generated in the left ear. The first is the value of the segment PITCH frequency as set in the Segment Buffer. This is the base frequency for the first binaural beat. The second tone is the base frequency for the second binaural beat and is a multiple of the first frequency (1/2 ; 2/3 ; 3/4 ; 4/3 ; 3/2 and 2/1).

The two audio tones in the right headphone will be shifted upwards from the left channel by an amount equal to the LFO #1 value and LFO #2 value.

Example: audio pitch is set to 200 Hz , LFO #1 is set to 12.0 Hz , LFO #2 is set to 8.0 Hz , BB2/BB1 = 1.5. The left ear will hear **200 Hz** and $200 * 1.5 = \mathbf{300\ Hz}$ while the right ear will hear $200+12 = \mathbf{212\ Hz}$ and $300 + 8 = \mathbf{308\ Hz}$.

The base frequency ratio can be set using the menu bar ... Utilities, Edit Supplemental Commands. This value can be dynamically set during a session by inserting a [Supplemental Command](#) segment into a session with the box labeled "BB2 / BB1" checked. If no Supplemental Command is added to the session the default Supplemental Command will be used. This value also can be adjusted using the menu bar ... Utilities, Edit Supplemental Commands... Adjust the BB2 to BB1 ratio, check the "BB2 / BB1" box and check the "Update defaults setting" box. With the Proteus in "PC" mode click on the "Send to Proteus" box and the default settings will be updated. Whenever the Proteus is asked to process dual binaural beats without a Supplemental Command segment it will look to this default segment for a value. This also applies if the "Do Spcl LF1" , "Do Spcl LF2" and "Do Spcl Snd" boxes are checked in a session segment.

Do spcl LF1: If you select this option the Proteus will not process any LFO information for channel #1 in the usual manner. Use this option in conjunction with the Supplemental Commands to set the Proteus to very precise flash rates.

Do spcl LF2: Same as above, except this affects LFO #2.

Do Spcl Sound: When checked Proteus will not process the segment's pitc information. Use this to set the Proteus unit to very precise pitch frequencies using the Supplemental Commands.

No BioFd Ctrl: Use this when driving Proteus with a biofeedback system, such as ThoughtStream. When this is the case, any segments for which this flag has been set will run normally-without being controlled by biofeedback.

Sound Tables 1, 2, 3, 4: Selects the sound table you wish to hear during the selected segment. You can use the preloaded default sound tables (sine, triangle, sawtooth and square) or create your own with the Edit Sound Tables tool.

Note: If you do create your own sound tables they will replace the default ones in Proteus and your sessions will all sound different! Therefore, it's a good idea to create names for your sounds other than the default names.

Creating a Program

The process of creating and editing a new program involves the following steps:

1. Create a New File
2. Insert segment(s) into that file
3. Edit each segment as needed
4. Test segments in realtime using PC mode (optional)
5. Name and save the finished program
6. Transfer it to Proteus, alone or as part of an Album (collection of programs).

1. Create and name a new file. Open Proteus Session Editor, and click on the New File button. A window will pop up requesting the number of segments to include. The default value is 2, as the first segment typically includes a "soft on" period at the start and the last segment includes "soft off" at the end.

2. Insert segment(s) into the session. When you select a segment you will notice a heavy black line at its top; this indicates the *insertion point*. Segments are inserted here-that is, between the currently selected (highlighted) segment and the one above it. The inserted segment is now highlighted, and instead of a number on the far left end it is indicated by an "x" until you select another.

3. Edit each segment. This is where things can get more complicated, because there are a number of options available to you. These are described above in "segment parameters and flags"

4. Test segments in real time. One of the most powerful features of the Proteus Editor program is its real time preview capability. With the "View Realtime" command you can preview a single segment, a selected group of segments, or the entire program. You can also quickly toggle between the Start and Finish parameters. Here's how to do this:

a. Connect Proteus to your PC and select the serial port you're using if you haven't already done so (using the Serial Port popdown menu) during program installation.

b. Turn Proteus on and press the Mode (middle) button until the display reads PC

c. Select a segment to preview by clicking on it once (or select several segments by clicking on the first and while holding the button down, dragging the mouse pointer over all of the segments you wish to select).

d. Click on the "View Realtime" button; this will cause several new buttons to appear on the upper right side of the Session Editor window (Run Segment, Run Segments, Run Session, and Cancel). Select an appropriate one. A bar appears at the top left, showing you which segment in the selected segment group (if this is what you've chosen to do) is being run. You can cancel the preview at any time.

Tip: Once you've run a segment you can click on the Start or Finish portion of any segment and Proteus will immediately "play" the beginning and ending parameters without running the entire segment.

5. Save the finished session. Once you're through experimenting, simply select File/Save As and type in a filename. Take note of what directory you will be storing the program in. Now you're ready to transfer it into Proteus.

6. Transfer it to Proteus. The example I'm going to give here is how to transfer a single session into the User memory bank; we'll get into albums and how they work in a later section. Here are the steps:

a. Be sure Proteus is in DL (download) mode.

b. Open the Session Manager (by clicking the *Session Mangr.* button on the button bar)

c. Choose *Open New Album*, then locate and select the session you've just created

d. Click *Add To List*; the session name should now appear in the right window (the large one underneath Album Name)

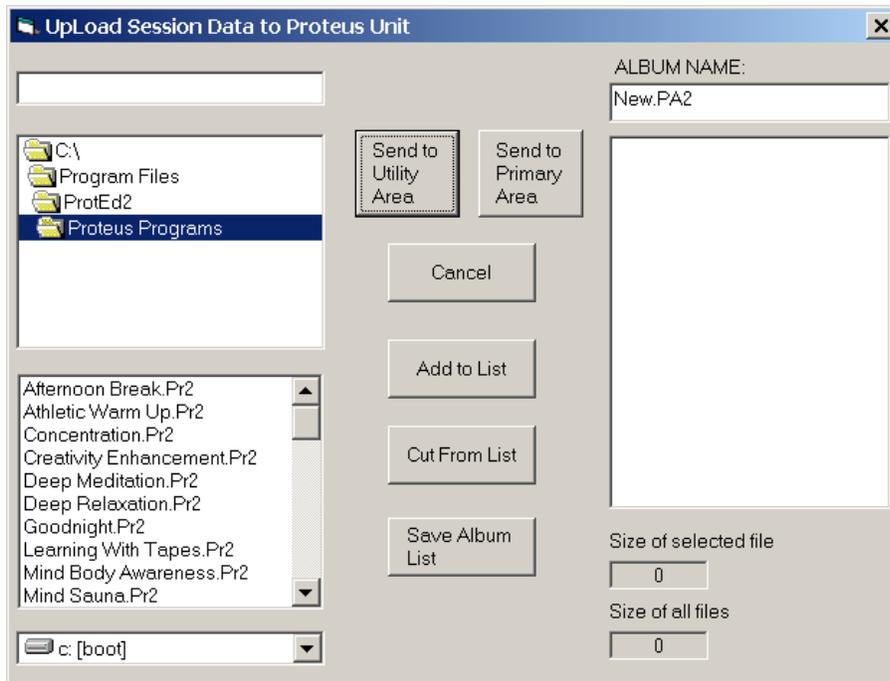
e. Now select the *Send To User Area* button. The session data will now transfer to the User Area as U01.

That's all there is to it! You're ready to run the session you've just downloaded.

Note: remember that whenever you download any number of programs into either the Program or User memory bank, it will erase any programs currently residing in that bank. We suggest leaving the default session bank in the Pxx

(Program) bank, and to transfer those you are experimenting with into the Uxx (User) bank.

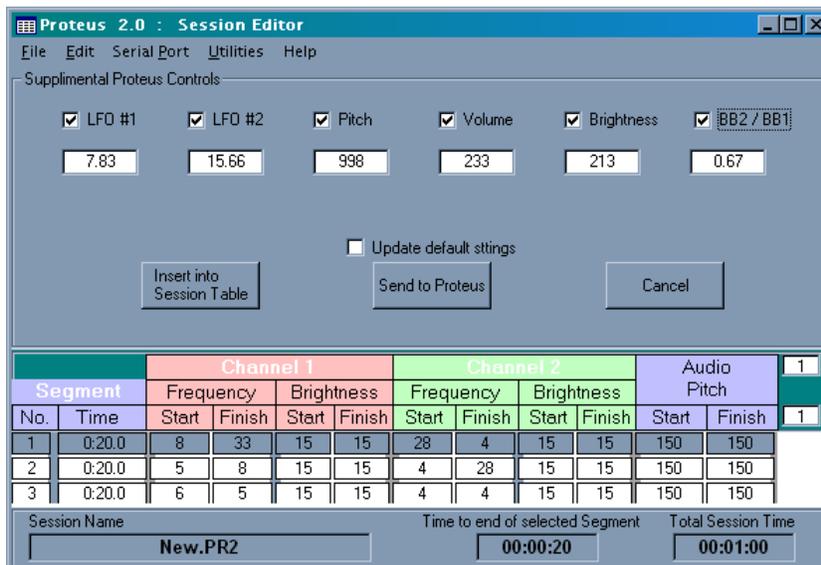
Creating your own libraries of programs ('albums')



Individual sessions are usually arranged into groups called albums, which are transferred into the two Proteus memory banks. To create an album, do this:

- Click the **Session Mangr.** Button on the button bar, or select Utilities/Session manager.
- Select **Open (new) Album** button on the window that appears. The following control panel (top of next page) appears. The list on the lower left displays all of the sessions you have stored in the selected folder, in alphabetical order.
- From that list, choose the session you want to appear first in your Proteus memory bank, and click the **Add to List** button (or just double-click it). You will now see it as the first item in the list at the right.
- Continue this process until your album is done. Rename the album by deleting the "New" portion of the album name and typing in your own.
- Now select the **Save Album List** button to save your new session, then send it either to the Utility or Primary memory areas in Proteus. Be sure that Proteus is in DL mode.

Adding Supplemental Commands to a program



You can set a variety of Proteus parameters even more precisely than normal by using *supplemental commands* in your programs. This is done by increasing the precision of the data stored in the Proteus' internal memory, and requires additional session segments to store this information, called a *supplemental control segment*.

You can either use this as a real time feature (i.e., while connected to your Proteus in PC mode) or to embed the command into a session.

Here's how it works:

- Open the session into which you want to insert a supplemental control segment.
- Right-click on the "edit aux segment" command on the button bar. This brings up the window on the left.
- You can select any or all of the listed functions via the check boxes.
 - Clicking in one of the numeric areas under a checkbox causes a slider to appear which can be scrolled to the desired value. Or click on the slider then type in the box that appears.

Supplemental commands can have the following ranges:

LFOs: 0.20 to 51.1 Hz (resolution 0.01 Hz)

Pitch: 40.0 to 999.9 Hz (resolution 0.1 Hz)

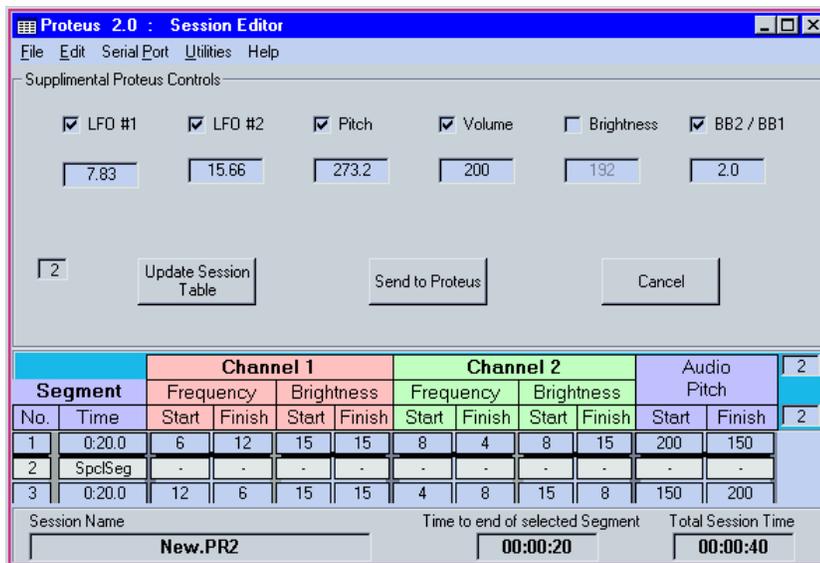
Volume, Brightness: 0 to 255 (resolution 1)

BB2/BB1 ratio: 0.5 to 2.0 (this is the ratio of binaural beat base frequencies. That is, if you've set the segment pitch to 150 Hz in your session and set BB2/BB1 to 2.0, then the second BB base frequency will be set to 300 Hz)

You can change the rate at which the slider value changes by holding down the Shift and/or Ctrl keys while clicking or sliding the scroll bar or when using the right and left arrow keys.

Key held down	LFOs	Pitch	Volume	Brightness
	Rate of change		Range 0 - 255	
<none>	1 Hz	10 Hz	10	10
Shift	0.1 Hz	1 Hz	5	5
Ctrl	0.01 Hz	0.1 Hz	1	1
Shift + Ctrl	10 Hz	100 Hz	50	50

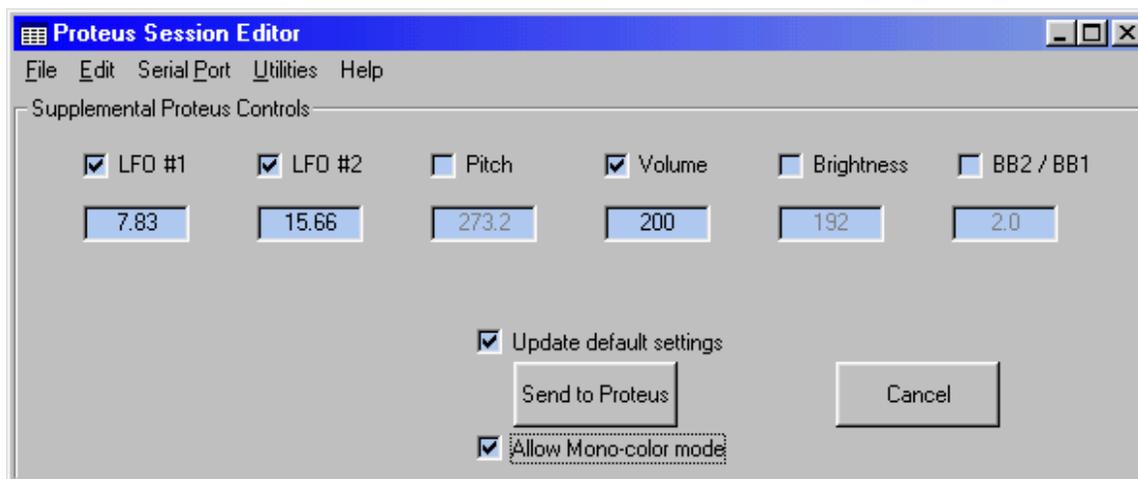
Different rates of change will cause the value will be rounded off to reflect the incremental value. That is, if you started with an LFO value of 13.76 Hz and pressed the right arrow key (rate of change = 1 Hz), the value would truncate to 13 then increment to 14 Hz.



If you have selected *View Realtime* you can send these commands to the Proteus unit (which should be set to **PC** mode) and the Proteus will immediately run the supplemental values. Just click the **send to proteus** button. Or you can embed the supplemental segment is a session for download into Proteus via the Update Session Table button.

The inserted row will only show the Segment number and "SpclSeg". Clicking on a box with a "-" in it will bring up the editing windows with the values that were stored in that segment.

Note: Version 2.2+ allows the user to reinstate the mono-chromatic mode which was not available in version 2.0. It is not immediately available when 2.2 is downloaded. To activate it connect the PC to the Proteus and set the mode to "PC". Set any other values for LFO#1 , etc. that you want as a default then check both "Update default settings" and "Allow Mono-color mode" then click on "Send to Proteus".



Adding biofeedback control to a program

One of the most powerful and flexible features we've added to this revision of the Proteus operating code is the ability to control many parameters of a session via biosignals, thereby incorporating Proteus into a biofeedback loop. For example, you might want the flashing of the lights to slow down and become all green while the biomonitoring data suggests that you are feeling "hyper", but to speed up and become red if you are starting to become too deeply relaxed (i.e., falling asleep when you don't want to). In this manner the Proteus/biomonitoring system can be programmed to keep you in a certain state of consciousness in an active, dynamic manner.

You can also create sessions which alternate between biofeedback and "pure" light sound stimulation, such as the protocol we used in the two-University study which showed a significant increase in College grade point average. Once again our goal here is to create the most flexible tool possible for serious experimenters and explorers of "higher" states of consciousness.

The biofeedback control segment allows you to set ranges within which the parameters remain (ex: 3 to 12 Hz); this range will always map onto the full scale of the sensitivity range the biofeedback system has been set for. For example, if the frequency range starts at 3 Hz and tops out at 12 Hz, and if the sensitivity is set to 100%, then the lights will be flashing at 12 Hz when the ThoughtStream data indicates that your galvanic skin response (GSR) has increased by 100%.

At present, the system supports automatic control only via the ThoughtStream™ GSR (galvanic skin response) biofeedback system.

In order to incorporate biofeedback control into a session, you can embed one or more biofeedback control segments into it; these segments can affect any and all segments following it. You can also send Proteus a *Global segment*—this affects individual sessions if no biofeedback control segment is embedded into it and also controls “standalone” biofeedback programs which you can run regardless of what sessions are currently loaded into Proteus.

There are a two ways to use the biofeedback feature of the Proteus.

1. Press the Mode and the Start/Stop buttons at the same time to start a **standalone biofeedback session**. All controlled parameters start at the ‘[Start](#)’ values specified in the *Biofeedback control segment* (accessed via the [Utilities/Edit](#) biofeedback segment command). If a session parameter has no sensor associated with it or if the controlling sensor is inactive then it will remain at the start value. Parameters with active sensors will remain within the preset start/finish values.

This approach allows only one set of parameter changes, defined as the *global segment* or *default setting*, and the normal session segments are ignored. Because of this you can run such a session from the Pxx, Uxx, Usr and PC modes.

In order to create and run a standalone biofeedback session, You first need to load the global control segment into Proteus: first check the *Update default settings* box in the biofeedback control segment, then select *Send to Proteus* (be sure that Proteus is in PC mode).

Notes:

- a. *You can control other aspects of your standalone biofeedback control session by clicking on the **click here to adjust additional controls** box.*
- b. *Proteus automatically checks to see if it is receiving biofeedback data and will terminate the session if it is not.*

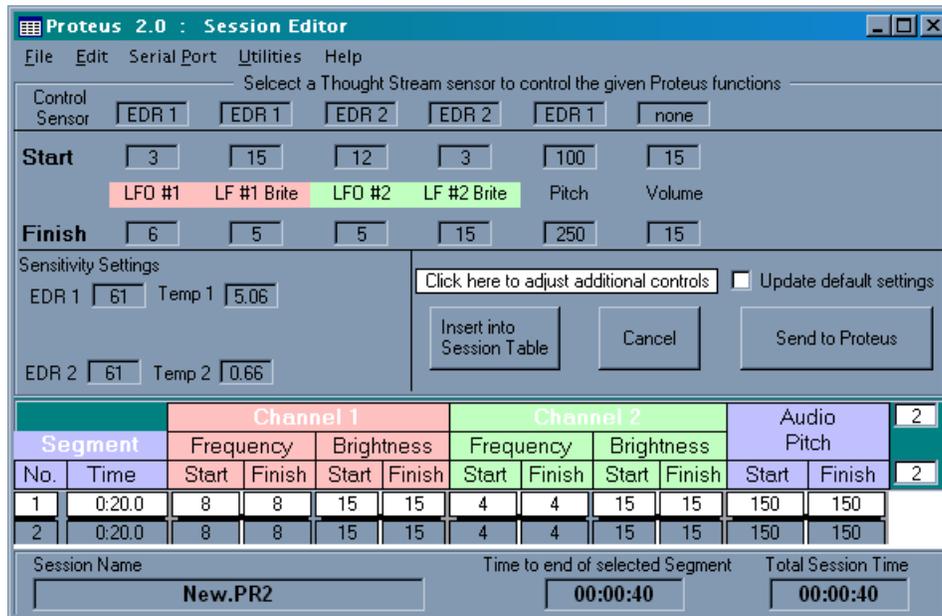
2. If you push the Start/Stop button while in ‘Pxx’, ‘Uxx’, or ‘Usr’ modes you will start a **biofeedback controlled session** if Proteus is connected to an active biofeedback system. If no biofeedback control segment has been embedded into the session (as is the case for the 50 factory programs preprogrammed into Proteus) the biofeedback input will use the *Global segment* that is stored in the Proteus.

Notes:

- a. *In both cases above make sure the **middle decimal point is flashing**, which indicates that the Aux. Input is accepting digital data. To do this, press the top and bottom buttons simultaneously.*

- b. Press the 'Mode/Pause' button **twice** if you want to re-calibrate the sensors. This only works in the 'Pxx' and 'Uxx' modes. In 'Usr' and 'PC' modes pressing the switch once recalibrates the sensors.

The following is a description of the commands used to create a biofeedback controlled session.



Left-click on the **Edit Aux Segment** button to bring up the biofeedback control panel, as shown below:

All aspects of the biofeedback-controlled segment are set up and controlled from this panel. The usual sequence of events is:

- Decide where you want to insert the biofeedback segment and select the appropriate session segment. In the example above, the insertion point is between segments 1 and 2.
- Left-click on the Edit Aux Segment button on the button bar to open the biofeedback edit control panel.
- Once you've completed your edits, select Insert into Session Table. The control panel will close and the segment will be inserted into your session.

That's all there is to it! The BF segment will affect only those segments which follow it. You can also insert multiple segments with different settings into the session; each one will affect the segments between it and the next BF segment.

The BF segment will normally affect all segments that follow it. You can exclude segments from such control by checking the **No BioFd Ctrl** box for each segment you wish to exclude.

Available biofeedback control parameters and their ranges are:

LFO #1 - this controls the flash rate of *LiteFrame channel 1* (red), the *primary sound modulation rate*, and the *primary binaural beat frequency*. 0.5 to 50 Hz.

LF #1 Brite - controls the brightness of *LFO channel 1* (red). 0 to 15, 0=off.

LFO #2 - controls the flash rate of *LiteFrame channel 2* (green) and the *secondary sound modulation rate*. 0.5 to 50 Hz.

LF #2 Brite - the brightness of LFO channel 2 (green). 0 to 15.

Pitch - from 40 to 600 Hz

Volume - 0 to 15.

As with other Proteus Editor functions, when you click the mouse pointer in one of the start or finish boxes, a slider appears, which you can use to set the target value. For more precise control of the LFO values simply type the number (such as 33.3) and a box will popup and show what you have typed. Other parameters will round to integer values.

Assigning biofeedback sensors to parameters

The top row allows you to select which sensor will control a given parameter. Available control sensors are:

None - This parameter will not be effected by sensor data, but will be controlled from the session segment as usual.

EDR1 - The default sensor when using ThoughtStream as the controller.

EDR2 - Not used

Temp1 - Not used

Temp2 - Not used

Note: Only the EDR1 parameter (or None) should be used.

Each sensor has a *sensitivity* associated with it. Click on one of the 'Sensitivity Settings' boxes in the lower left corner of the window to adjust this value. There are sixteen levels for each sensor:

EDR can range from 15% to 1000%. This corresponds to the full scale range of the session, relative to the initial measurement. In this way the session is always responding to where you are right now rather than some idealized (and therefore less accurate) setting. See the ThoughtStream manual for a more detailed explanation.

Each controlled parameter has an associated **Start** and **Finish** value. When biofeedback data is detected Proteus automatically calculates the actual range of the controlled parameter by taking the current sensor reading as the starting value and multiplying it by the corresponding sensitivity setting to determine the finish value. If you are at the start of a sensitivity range the controlled parameter will be running at the "Start" value and will linearly ramp to the "Finish" value of the controlled parameter as the TS sensor moves toward the finish value of the sensor.

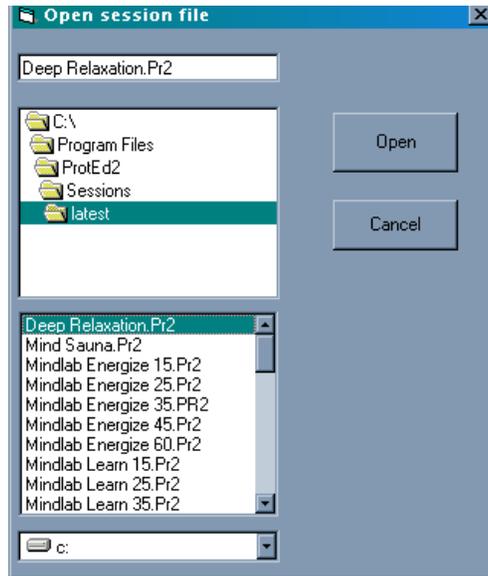
When you click on the "Edit Bio Segment" box the data brought up in the edit windows is the data that you last sent to the Proteus as the default "global" **controller**. While the values of each control segment are remembered when you edit them they do not change the 'default' values brought up when you left click on the "Edit Aux Segment" box. These settings are changed when you **Send to the Proteus as the default "global" controller**.

Notice there is a "**No BioFd Ctrl**" check box in the Segment Buffer window. These are normally unchecked which will allow biofeedback data to override regular session parameters. Checking this box will allow the checked segment to run as per 'regular segment data'. This allows the user to run 'pre (post) - conditioning' segments before engaging (or after disengaging) biofeedback control. You have to check this box for every segment you don't want BF control (it isn't remembered from segment to segment).

Appendix One: Command details

This section describes all of the Proteus Editor popdown commands.

FILE menu:



New ... Selecting this function will load a new session into the Session table with the default name "New.PR2". You will be prompted for the number of segments in the session (this is especially useful when using the "randomize" function)

Open ... brings up the file manager window shown on the left.

Double clicking on the listed directories will open them as needed. All files with a PR2 extension are displayed (meaning that files created under version 1.2 of the software will first need to be converted to the current file format via the Convert Ses Files button).

Click on the desired session filename then on the **Open** button (or double click on the desired session file) to open the file for editing.

- Files for the preprogrammed sessions in the Proteus are by default installed in the "**C:\Program Files\ProtEdx_xx\Sessions**" directory if you have installed them via the menu command "File/Unzip Factory Sessions"

Save... Once session editing is complete the session file can be saved using this command. If the session was edited under the "New.PR2" name you will be prompted with the **Save As** window since "New.PR2" is a reserved file name.

Note: "PR2" is the extension name we've chosen for Proteus sessions, and "PA2" for albums. These replace our earlier (OS version 1.2) extension names.

Save As... If you wish to save an existing session under a different name use the this option. If the file name already exists you will be asked if you want to overwrite the existing file.

Printer Setup... Allows you select the printer font type and select whether to use a **Bold** or *Italic* font.

Note: The font size is automatically adjusted so the width of the printed table fills the page.

Print... Prints the currently opened session to the default printer.

Close... Closes the session currently in the session table. If any changes have been made since it was last saved you will be asked if you want to save the changes.

Unzip Factory Sessions... This will create a directory with all the preprogrammed factory sessions stored in it. These are the "complex" versions, released with 2.0; to create more space for Uxx programs, you will need to either re-install Proteus 2_2 (which initially installs the earlier, "simple" versions), or download them from www.proteus-support.net.

Rename File... Allows you to rename existing Proteus files.

Delete File... Remove files from your session library.

Exit... Quit the Proteus Session Editor.

EDIT menu:

Cut Segment(s)... Removes (cuts) the currently selected segment(s) and saves them in a buffer for possible pasting. For example in the Proteus Editor screenshot on page 3, segments 3 to 5 are selected as indicated both by highlighting and by the segment boxes on the far right side of the window. You select the start and finish segments by clicking on a segment line in the session table and dragging to another segment. The selected segments are highlighted and the "Selected Segm.s" boxes will show the new values.

Copy... Copies selected segments without removing them from the session table.

Paste... Pastes any segments being held in the buffer (from a Cut or Copy command) into the session table.

Select/ All... Automatically selects all the segments in a session table

Select/ Segment Boundaries... Allows you to select the start and finish segments using the keyboard. This brings command opens a popup window that allows you to type in the start and finish segment numbers.

Note... If the session in the session table has too many segments to display on the screen a vertical slider appears on the right side of the session table. You can use it to scroll through the table. If you click on the slider and type the number of a segment that segment will appear in the session table and be loaded into the segment buffer. This is a convenient way to navigate through long programs (such as Pure Entertainment 1).

*You can also use the up and down arrow keys to scroll through the session table. Normally, pressing these keys causes the view to scroll up or down by one segment. If you hold down the **Shift** key while pressing the up and down arrow keys the slider will jump **1/5th** of the way through the session file for each keypress. If you hold down the **Ctrl** key while pressing the up and down arrow keys the slider will jump **1/3rd** of the way through the session file for each keypress.*

Insert Segment... Will insert a segment into the session table at the location indicated by the place marker (heavy black line at the top of the currently selected segment).

When inserting segments with this command between two other segments the editor will use the Finish values from the *previous* segment as the Start values for the inserted segment. The start values of the *following* segment are used as the finish value of the inserted one. In other words, this powerful feature seamlessly welds your sessions together.

Delete Segment... Will delete the segment currently selected. The highlighting of this segment is also different (i.e., lighter) than the highlighting used to show a group of segments.

Serial Port menu:

Set COMM Port... Allows you to select the communication port that the Session Editor will use when sending information to the Proteus unit or receiving data from a Thought Stream unit.

Change data transfer rate... This function is used to slow down or speed up the pause that is needed between blocks when sending data to the Proteus. If you experience problems while uploading sessions or upgrading the code try slowing down the transfer rate.

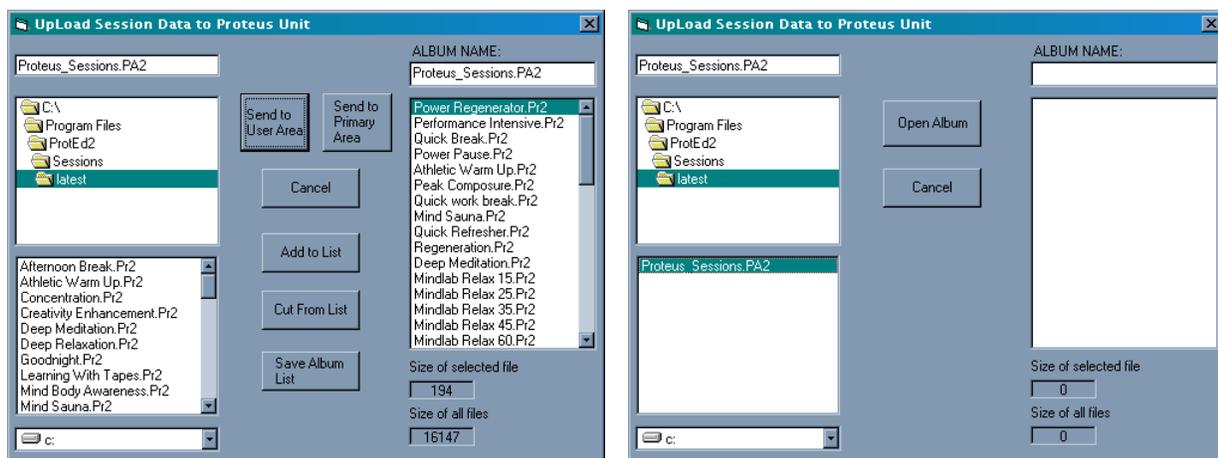
Utilities menu:

Session Manager... Use this to create groups of sessions (albums) and send them to the Proteus unit. You have the option of storing them in either the *Utility* (Uxx) or the *Primary* (Pxx) memory banks.

Use the Session Manager to navigate to the folders where your sessions and albums are located or to save an album of sessions. If you just want to send some sessions to the Proteus without saving them in an album click on the **Open (New) Album** command button and select the sessions you want to send to the Proteus. Sessions will always appear in Proteus in the order shown in the right-hand window; in the example above/right, P01 or U01 would be the "Power Regeneration" session, P02 would be Performance Intensive, etc.

If a PA2 (album file) is present you can select (highlight) it then click on **Open Album** to open the album (see left image, above). The list box on the right will fill with the sessions associated with the album file. The list box on the left will fill with session (Pr2) files that reside in the current directory (right image, above).

Note: the list on the left side organizes all sessions in that directory in alphabetical order, while the window on the right side lists the sessions in the order that they appear in the Proteus memory bank.



You can delete or add sessions to the album and save the changes. Select an item in the left box then click on the **Add to List** command button to add it to the right hand list box.

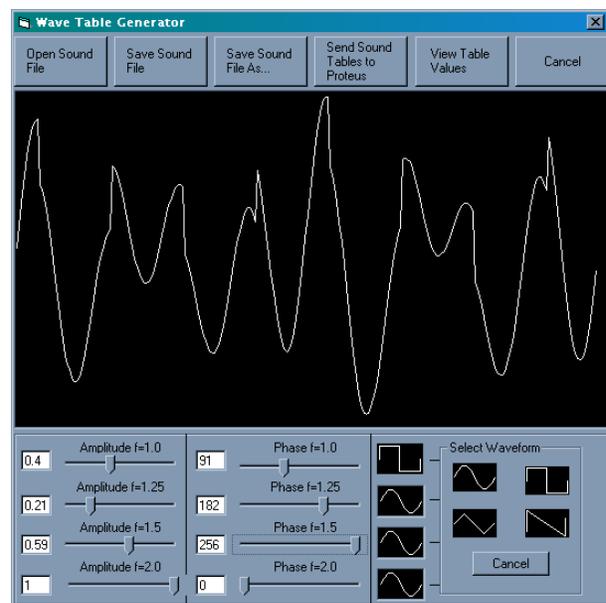
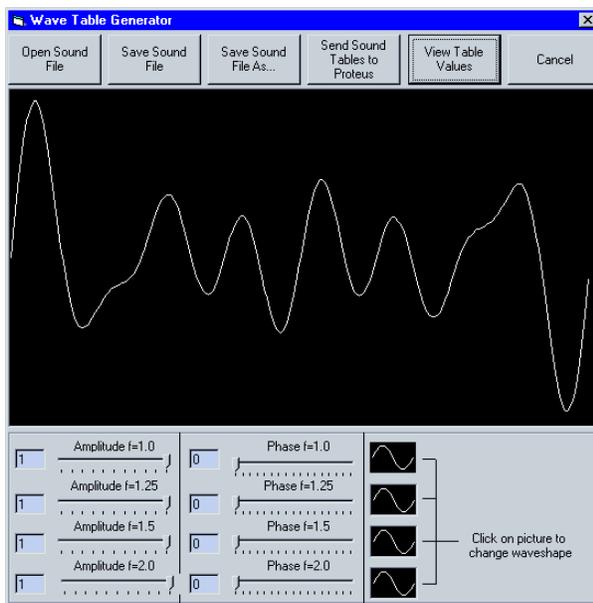
Click on a session name in the right hand box, then the Cut From List command button to remove the session from the list (double clicking does the same). Once the right hand list is complete you can name and save it as a new album.

You can change the directory where the album file is saved by navigating through the directory list before using **the Save Album List** command. The sessions themselves will not change directories; the album list is merely a collection of 'full file names' that points to various session files throughout your computer. However, if you happen to move any of the file folders in which you have stored your sessions this information will become invalid and you will need to recreate your album.

As mentioned previously, you have the option of sending the sessions in the album list to either the **Utility** or the **Primary** memory bank. **Transferring sessions or albums to a memory bank will erase its original contents, replacing it with the new contents.**

Restore Factory Sessions (Simple)... Allows you to re-load the factory sessions into the Proteus.

Edit Sound Tables... Allows you to create unique sound tables that can be transferred into the Proteus (up to four at a time).



There are four harmonically related (relative frequencies= 1.0 : 1.25 : 1.5 : 2.0) audio components, or *waveforms* that are added together to create unique sound tables.

The relative *amplitude* (loudness) and *phase* of each of these waveforms can be changed by dragging the associated sliders; the graph is updated in real time to show the resulting new waveform (above, left).

In addition, any of four waveforms (sine, triangular, sawtooth and square) can be assigned to each harmonic. Click on the wave shape box to the right and an option box appears with the four choices (above, right).

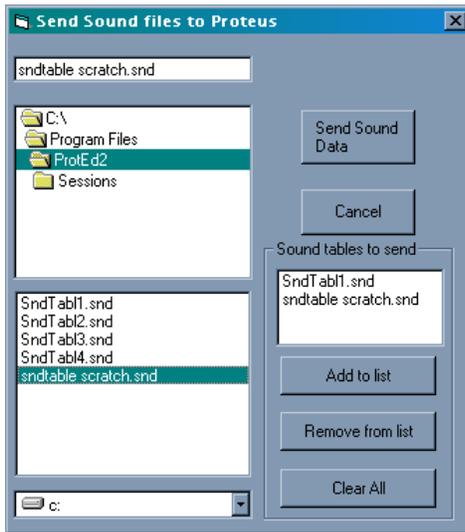
There are six command buttons above the graph area:

Open Sound File... Use this to edit an existing sound file. These are located by default in the Proteus folder. Sounds always have a .snd suffix.

Save Sound File... Save a sound file that you have opened and edited, replacing the original.

Save Sound File As... Allows you to save a sound file under a different name.

Send Sound Table to Proteus... Use this to send up to four sound files to the Proteus. This command brings up the following window:

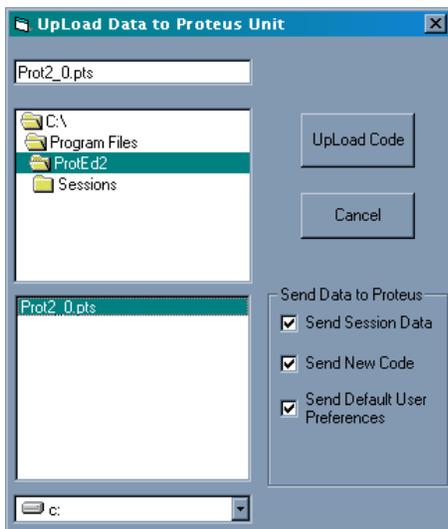


Notice that you can arrange the wavetable ordering in a more or less arbitrary manner using this command.

Note: Your Proteus must be set to DL mode in order to transfer wavetables into it.

Upload code to Proteus... Allows you to update the internal operating system of the Proteus unit.

The following screen appears:



Select the '*.pts' file (it will appear in the upper left box) and uncheck options as desired before you click on the **UpLoad Code** command button.

Note: If you have altered the Primary session files and don't want the Pxx programs stored in your system changed **and** if you are currently using version 1.3 or later of the Proteus OS you can uncheck the **send session data** box.

If you wish to restore the Primary sessions to the current factory settings then leave the **Send Session Data** box selected. While the download is in progress a progress bar helps pass the time. The only indication you will have that data is actually transferred into Proteus is that the display will flicker quickly.

View Real Time Updates... One of the most powerful commands, this allows you to test the session being edited in realtime. You will need to have your Proteus connected to the computer and set to PC mode in order to use this feature. See Page 5, "test segments in real time", for more details.

Edit Supplemental Commands... Use this for creating super-precise parameters as described in detail on page 7.

Convert sessions to new format... If you are upgrading from version 1.2 of the code you will have to convert any sessions you created using this command. Once you select a directory all sessions in that directory with 'Pro' extensions are converted to 'Pr2' sessions and any album list with a 'Pal' extension is converted to a 'Pa2' album listing. The existing 'Pro' and 'Pal' files remain intact.

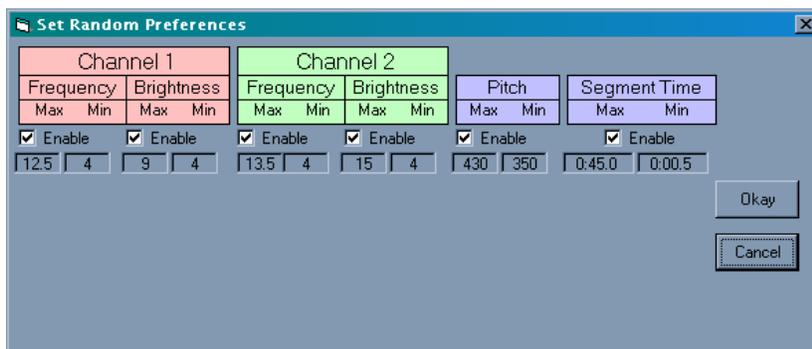
Adjust segment repeat time... When sending segment information to Proteus for real time viewing you have the option of repeating (looping) the sequence. The time between each repetition can be set from 0 to 10 seconds or you can select not to repeat the sequence.

Edit Biofeedback Segment... Use this to create your global (standalone) biofeedback segment.

Random Options... This is a great option for rapid experimentation with session values. You can select portions of a session or the entire thing for randomization. The steps involved are:

- Create a new program with the desired number of segments, or open an existing one and select the segments to be randomized.
- Under Random Options, select Edit Random Preferences and set the parameter ranges to your preference.
- Now select Random Options/Randomize Selected Segments. Voila! Your randomized session is ready to save, run in realtime, or transfer to Proteus.

In the following screen all segments have been selected and randomized within the constraints shown in the Set Random Preferences popup window:



Help menu:

Currently Proteus Editor does not include online help. However, you can check the software version with Help/About Proteus editor/uploader, or view a list of recent bug fixes and software changes for both the Proteus Editor application and the Proteus OS with Help/Revision Documentation.

Appendix Two: Keyboard Shortcuts

Function	Menu select	Quick Select Box	function key	keyboard select
Open new file	File : New	New File	F1	<Alt> F N
Open existing file	File : Open	Open File	F2	<Alt> F O
Save File	File : Save	Left Click Save File	F3	<Alt> F S
Save File As	File : Save As	Right Click Save File	<Shift> F3	<Alt> F A
Printer Setup	File : Printer Setup	-	-	-
Print	File : Print	-	-	<Ctrl> P
Close File	File : Close	Close File	F4	<Alt> F C
Unzip Factory Sessions	File: Unzip Factory Sessions	-	-	<Ctrl> Z
Rename File	File :Rename File	-	-	
Delete File	File : Delete File	-	-	-
Exit Program	File : Exit	-	<Ctrl> F4	<Alt> F X
Cut Segment(s)	Edit : Cut	-	-	<Ctrl> X
Copy Segment(s)	Edit : Copy	-	-	<Ctrl> C
Paste Segment(s)	Edit : Paste	-	-	<Ctrl> V
Select Segments All	Edit : Select :All	-	-	<Ctrl> A
Select Segments Boundaries	Edit : Select :Segment Boundaries	-	-	-
Insert Segment	Edit : Insert Segment	Insert Segment	F5	<Alt> E I
Delete Segment	Edit : Delete Segment	Delete Segment	F6	<Alt> E D
Set COMM Port number	Serial Port : Set Comm Port	-	F8	-
Change data transfer rate	Serial Port : Change data transfer rate	-	-	-
Session Manager	Utilities : Session Manager	Session Manager	F11	-
Upload code to Proteus	Utilities : Upload code to Proteus	Update Code	F12	-
Edit Sound Tables	Utilities : Edit Sound Tables	Sound Files	-	-
View Real Time Updates	Utilities : View Real Time Updates	View Realtime	-	-
Edit Supplemental Commands	Utilities : Edit Supplemental Commands	R-Click Edit Aux Segment	-	-
Convert old Proteus sessions to new format	Utilities : Convert sessions to new format	Convert Ses Files	-	-
Adjust segment repeat time	Utilities : Adjust segment repeat time	-	-	-
Edit Biofeedback Segment	Utilities : Edit Biofeedback Segment	L-Click Edit Aux Segment	-	-
About Proteus Session Editor / Uploader	Help : About Proteus Session Editor / Uploader	-	-	-

