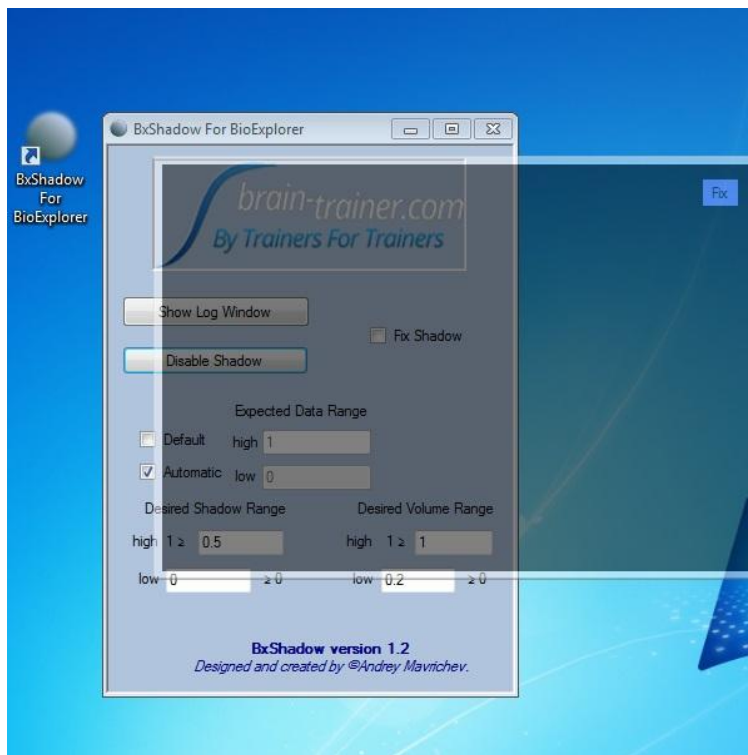




# BxShadow

## Use and Features

by Brain-Trainer International



*BxShadow designed and created by Andrey Mavrichev*

## Introduction

BxShadow For BioExplorer is a small stand alone application that communicates with BioExplorer through the server element. It creates a shadow box that you can control and that is linked to BioExplorer's feedback. You can adjust the brightness settings and choose to have high/low brightness levels that switch back and forth, or variable brightness with gradation. You can size and place this box over a whole screen or anything on it—not just a BioExplorer window.

For example,

- Instead of using the DVD player in BE, use your standard DVD player and place the shadow window over it. The DVD will play in Windows...but the shadow will adjust the brightness based on what the client is doing in their training design. Sound is also adjusted based on the feedback.
- Stream a video of interest to the client on your computer, and have the brightness and volume controls adjust its brightness and volume.
- [Download a game](#) like Tetris or another that the client enjoys and place the shadow window over that on the client screen (no need for the BioExplorer window even to be there!), and the game brightens and darkens and volume of game sounds changes based on brain performance.
- Open a Kindle book or a digital graphic novel on the screen and place the shadow window over that so reading becomes easier or harder to follow based on what the brain is doing.
- Surf the net on your favorite browser with the shadow window over it.

Use your imagination! The program makes whatever is on the screen under the shadow window a part of the training.

The install package comes with two sample designs that show how the server element should be set up. One design does discrete bright/dark feedback, the other has a gradual dimming of the display. The Brain-Trainer design package has been updated to include BxShadow as a feedback option.

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## BxShadow User Interface

The BxShadow control panel contains setting controls to adjust the feedback.

### Enable Shadow

Click "Enable Shadow" button to enable the shadow. You will see the darkened rectangle appear on the screen.

### Move or Resize Shadow

Once enabled, the shadow can be moved and resized like other windows.

- Click and drag the shadow to place over an area of your screen.
- Click the corner or edge of the shadow and drag to resize .

### Full-screen mode

- Double-click to make shadow full screen.
- Double-click again to return to original size.

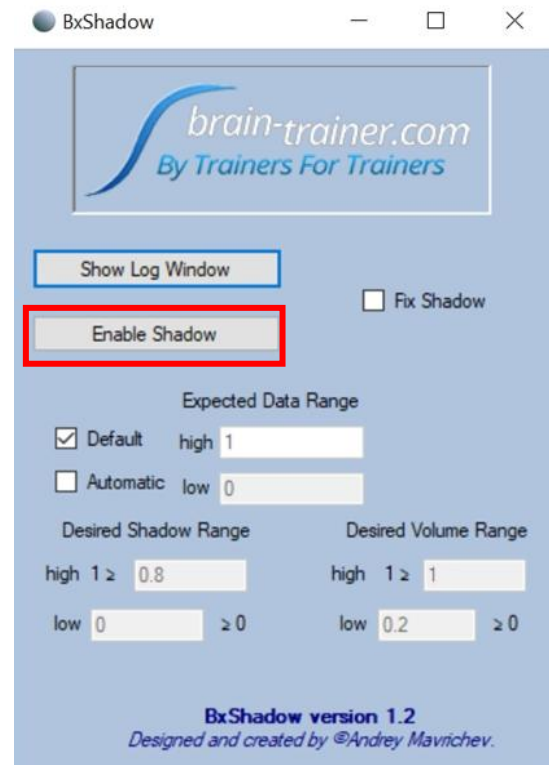
### Fix Shadow

The "Fix" button in the top right corner of the shadow will lock the shadow's size and position. Anything under the shadow will now be accessible by the mouse, and the shadow can no longer be moved or resized. The checkbox "Fix Shadow" on the control panel will also lock the shadow.

Once the shadow is fixed, the Fix button in the top corner is not longer visible. To unlock the shadow, uncheck the "Fix Shadow" checkbox on the control panel.

### Disable Shadow

Once the shadow is enabled, the button is labeled "Disable Shadow." Click "Disable Shadow" to turn it off.



## Expected Data Range

Expected Data Range determines the high and low limits of the input signal to control the shadow's brightness.

### Default

The default setting has a signal input range of 0 to 1. A signal value of 0 will trigger the lowest brightness and a value of 1 will trigger the highest brightness level.

### Automatic

Checking "Automatic" will set the input range according to the design's programming. (Preferred in Brain-Trainer designs). This setting will also allow you to set your desired shadow and volume ranges.

## Desired Shadow Range

"Default" must be unchecked to set custom limits for the desired shadow range.

"**High**" is the highest level of darkness of the shadow. The default level is .8 (80%) which is almost completely dark. If you want less darkness, change the value to .7 or less. If you want complete blackness, set the high value to 1 (100%).

"**Low**" is the lowest level of darkness. The default level is 0 which is no shadow at all--100% bright.

## Desired Volume Range

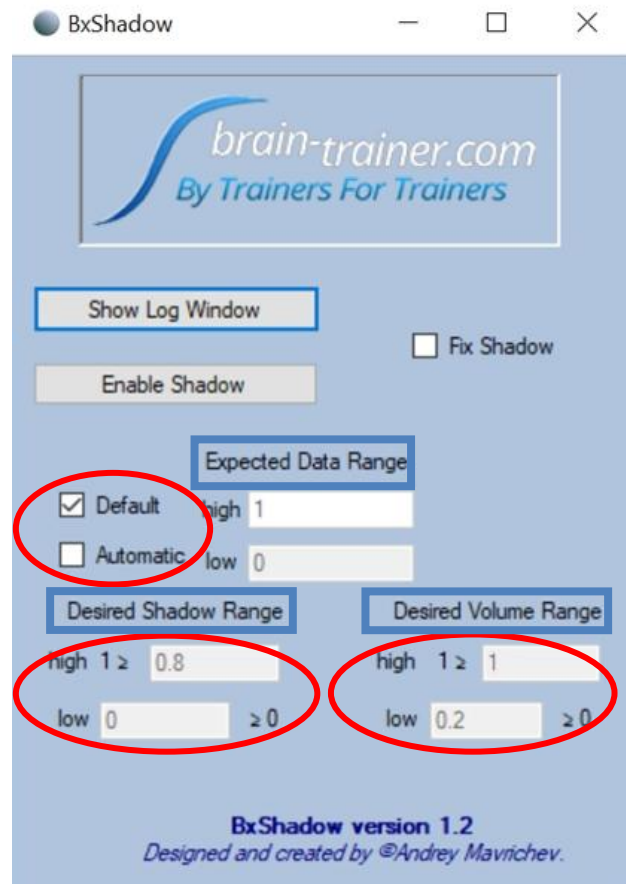
"Default" must be unchecked to set custom limits for the desired volume range.

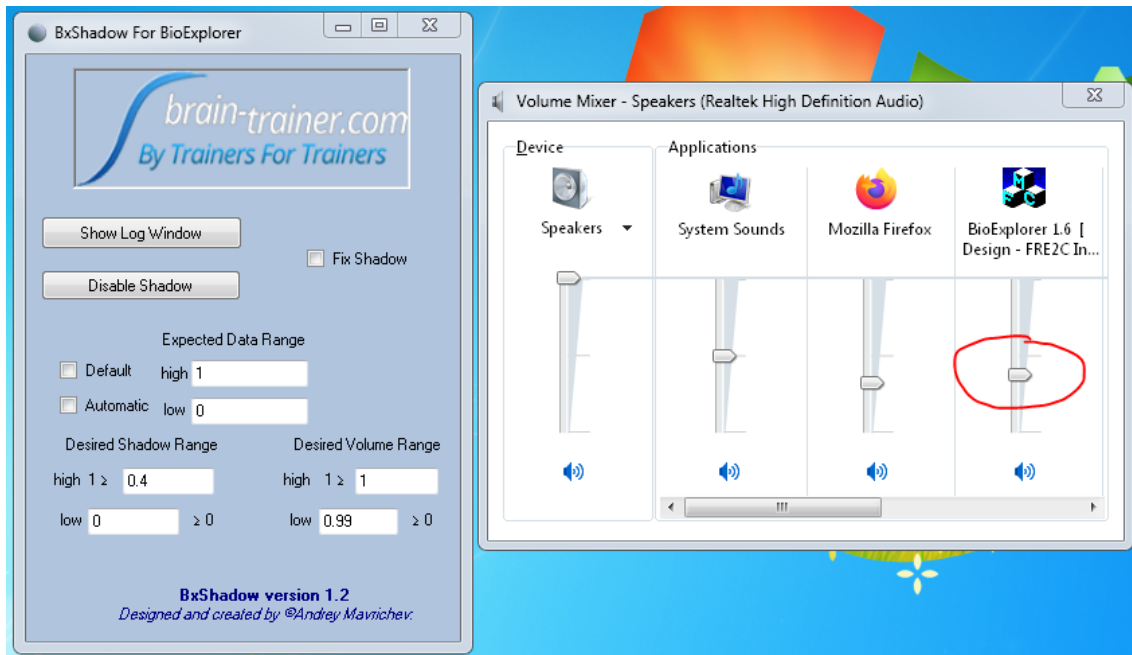
The "**high**" limit is 1 by default, meaning 100% volume.

The "**low**" limit default is .2, almost completely quiet. Set to .3 or greater if you want the quietest volume to be louder.

### Turn Off Volume Control

Set "low" to .99 if you want no volume change. There is no "off" button for volume. If you find the computer's volume to be too high, open the computer's Volume Mixer and set the BioExplorer volume lower.





## Saving Settings

Any custom changes you have made to BxShadow settings will be saved the next time BxShadow is launched.

## Using with Brain-Trainer Designs

There is no required order of steps to operate BxShadow. The following instructions are the simplest we have devised for new users.

### Open your design

Open BioExplorer and select a design with *BxShadow* in the name. These are pre-programmed to work with BxShadow.

### Select design settings (buttons)

Set thresholds, frequency bands, if any.

### Prepare your feedback screen (e.g. DVD, Netflix)

### Open BxShadow

### Enable the Shadow

Click the **Enable Shadow** button.

### Place the Shadow

Double-click the shadow to make it full screen.

Click **Fix** at the top right of the shadow. When "Fix Shadow" is checked you can click anything behind the shadow on your screen.

Uncheck Fix Shadow in the control panel if you want to move and resize the shadow by clicking and dragging. Drag the shadow over the area you want.

### Start your session

Click the green Capture button in BioExplorer.

### Select Automatic Data Range in BxShadow

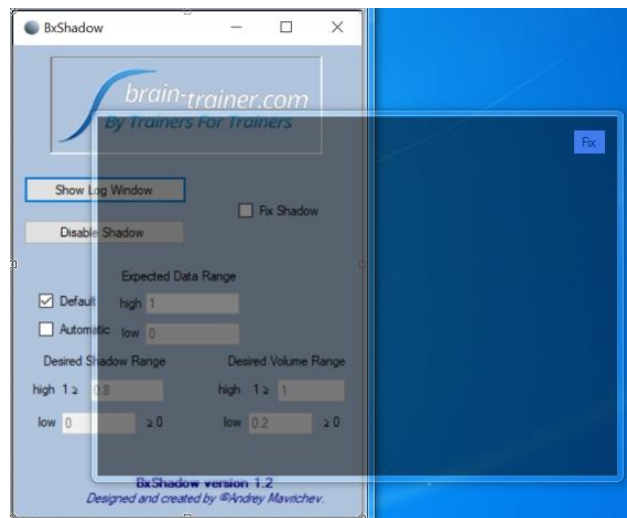
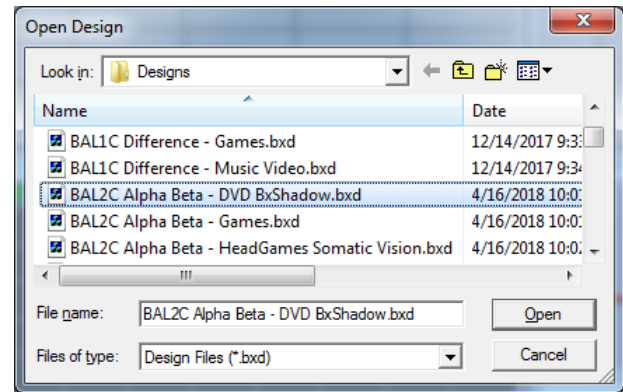
In "Expected Data Range," check "Automatic." This will set the data range for the feedback input.

*The initial data flow creates a surge that is not brain activity that can set a false high level. For this reason we begin in Default and switch to Automatic after data flow is begun.*

### Lock Data Range

After an initial baseline period of 30-60 seconds, uncheck Automatic. The shadow will vary within this range and not respond to artifact.

*Each design is individually programmed for BxShadow. Some use a range of 0-1 and others rely on minimum and maximum range. In automatic mode, the signal can vary due to movement artifact. Selecting Automatic for the baseline period and then unchecking it after 30-60 seconds of artifact-free training will set the range for feedback.*

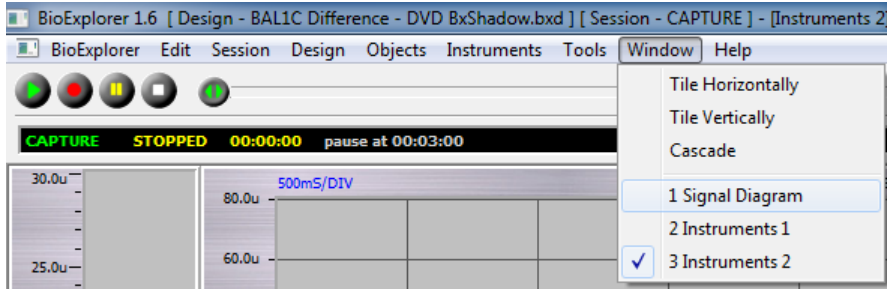


## Adapting Your Own Designs

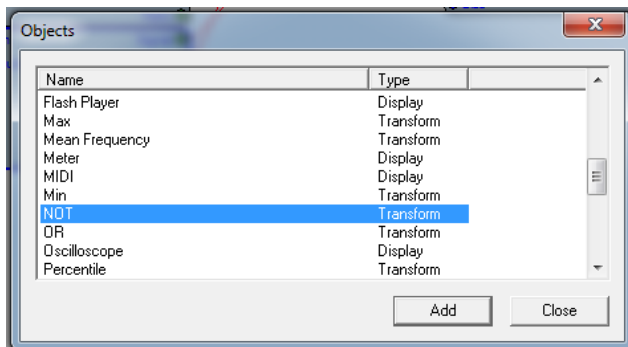
BxShadow comes with two sample designs demonstrating how to adapt your own designs. By editing your signal diagram, you can make your own designs work with BxShadow. The simplest way to do this is to use on/off feedback. When passing, the screen will be brightest; when not passing, the screen will be dimmest.

### On/Off feedback

In the BioExplorer menu bar, select Window | Signal Diagram

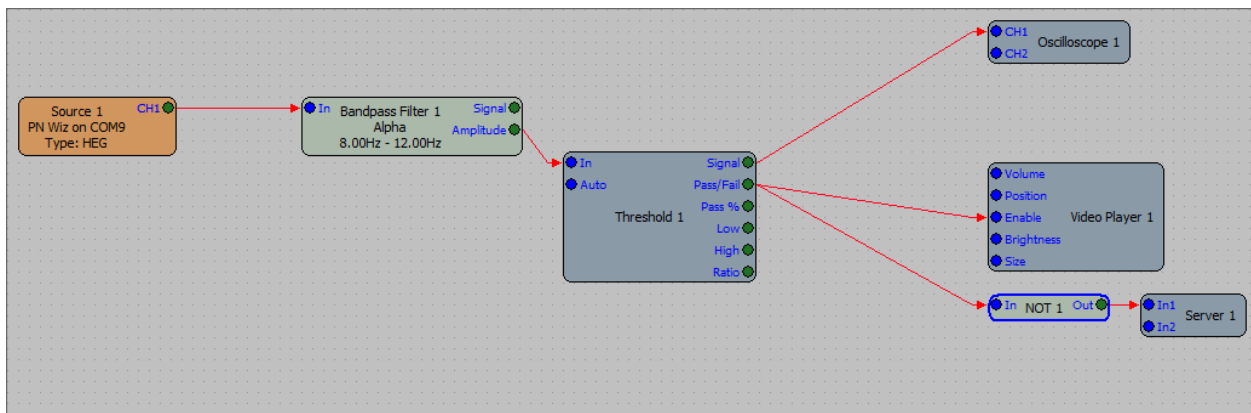


Select Design | Add Object and select NOT and click Add, then select Server and click Add. Then close.



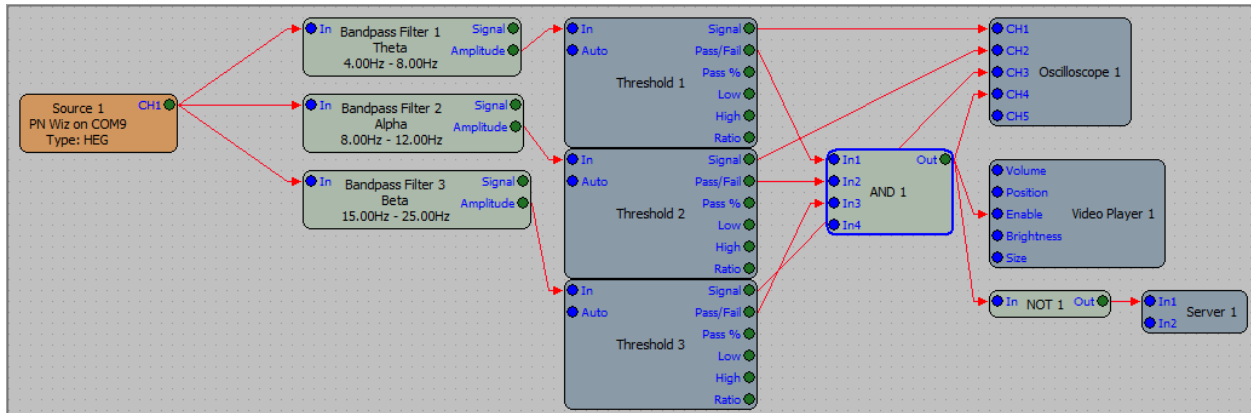
**For Single threshold designs-** Connect the threshold Pass/Fail output to the NOT.

Connect the NOT to the Server. For a smoother transition between bright and dark, you may add an Average object between the NOT and Server. Use BxShadow Default Data Range.



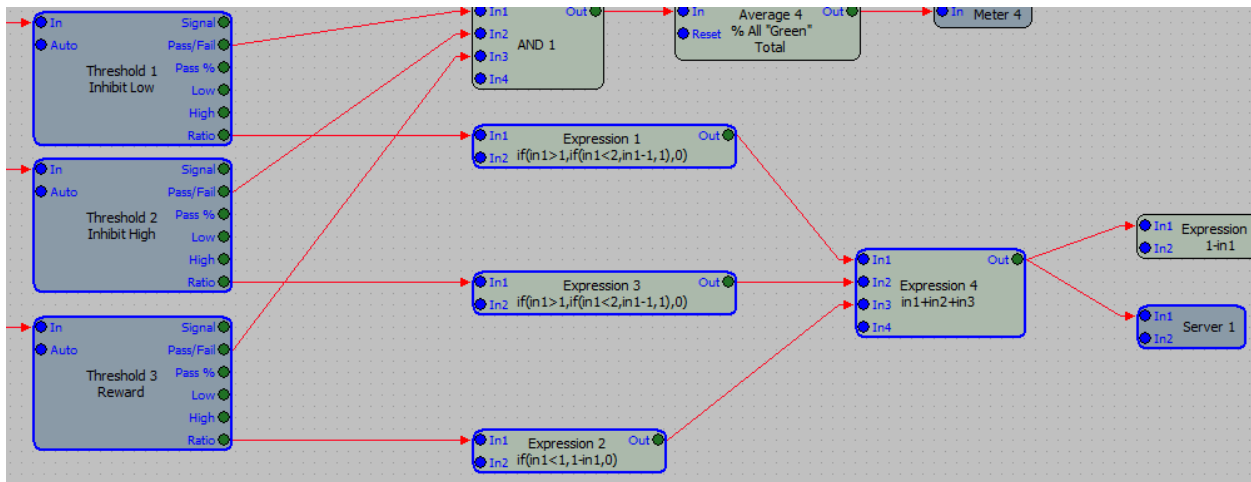


**For Multi-threshold designs-** You may use an AND object connecting all threshold Pass/Fail outputs to one AND object so all must be passing for screen to be its brightest. A NOT object is required.



## Variable Feedback

Refer to the BxShadow - Continuous design as an example of how to create variable feedback in your design.



## IO ONLINE GROUP

For continued support with your training please join our Brain-Trainer IO group:

<https://groups.io/g/brain-trainer/>

*Your Brain-Trainer purchase comes with free installation support. Please let us know if you need help with set up or getting started with BxShadow.*