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BrainMaster™ System
Type 2E Module & BMT Software for Windows™

Helpful Hints

This manual provides helpful hints for performing basic and advanced operations, and for troubleshooting.

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Simple Method to run a series of subjects

Start system:
1. Shortcut: BrainMaster Setup (bsetup.exe)
2. Check entry in "Current Trainee/Study Folder". If OK, proceed to step 15
3. If you want a different folder, click on "Folder Selections"

If Existing Subject:
4. Select Subject from list
5. Click on "OK"

If New Subject:
6. Click on "Create New Folder"
7. Enter first & last name into "Name" area. ID will be filled in automatically
8. Click on "OK"
9. Inspect new name and ID. Make changes if desired
10. Click on "OK"
11. Select desired starting settings from list
12. Click on "OK"
13. Inspect settings, make changes if desired
14. Click on "Use These Settings"

Run Training Screen
15. Click on "Run the Next Session"
16. Training Screen appears; Click on "GO"
17. Watch progress, ensure module is authorized.
18. View "Ready to Start" dialog; place electrodes; turn on module; click on "OK"
19. System will start running per protocol and settings
20. Follow instructions as training begins
21. Use "Window" control to create new display windows if desired
22. To pause, press <Space> bar. Press <Space> bar again to resume

End Training Screen:
23. After session is complete, press "Close" button

Review Result:
Raise Setup/Home Screen by clicking on title bar, task bar, etc.
24. Button: Review Session Results – will view current session data
25. Button: Select (selection box appears)
26. Select Session by number from selection box.
27. Button: OK
28. Button: Settings (adjust settings as desired)
29. Button: Print (prints detailed summary)

Remove electrodes, turn off module

Simple Alpha Training

Some users simply want to use the system as a relaxation trainer, and are not concerned with protocols or settings. In order to do basic alpha/theta (relaxation) training, a simple method is as follows:

Start the BrainMaster Software
In Folder Selections: Select the "alpha1" folder
Click on "OK"
Click on "Run the Next Session"

Connect 3 sensors as follows:

Active: back of head (Oz)
Reference: right ear (A2)
Ground: left ear (A1)

Click on GO

The system should start, and you will be hearing the MIDI "Echo drops" sound with amplitude modulated sound.

Alpha training works best with sounds that are sustained, and that are soft and pleasing. There are many such sounds to choose from.

If you wish to change the sounds, select:

> Sound/MIDI Voice

Voices you may wish to try include:

16 Organ 1
42 Cello
43 Contrabass
74 Recorder
76 Bottle Blow
77 Shakuhachi
92 Bowed Glass

Try others if you wish. Avoid "percussive" voices such as piano, guitar, etc.

Making Changes "on-the-fly"

It is simple to make "on the fly" changes in the settings. This makes it possible to change filter bandwidths, protocols, etc. without interrupting the training session. Note that thresholds and filter bands can be changed from the training screen directly, using the keyboard keys "a" for alpha, "t" for theta, etc., and the <Tab> key to switch between threshold adjustments and frequency adjustments. Both channels are changed together when this method is used.

You can restrict threshold or percent time over threshold targets separately per channel by prssing the "1" key to select channel 1, or the "2" key to select channel 2. Then the keyboard controls will change just that channel. Press "3" to change back to "both channels" mode.

To use the control panels to change settings while running, use the following procedure:

Click on the title bar of the Setup/Home Screen, or click on the taskbar item on the Windows Taskbar. This will raise the Setup/Home Screen so you can access the control buttons.

Click on "View or Change Settings"

Use the Training Protocol, Frequency Bands, or Display Options controls, to change the settings any way you want.

To use these settings, click on USE THESE SETTINGS

Your new settings will now be sent to the BrainMaster Training Screen, and you will see the changes immediately

2 Channel training session set up

It is easy to set up 2-channel training. Just select "Channels/2" in the "Data Channels" popup.

Then use the "Training Protocol" dialog to select the training protocol separately for each channel.

If "coherence" training is desired, use the "Feedback Control" popup to select coherence sounds for the feedback. The "Training Protocol" dialog is not used for coherence training.

When you run in 2 channel mode, be sure to connect all 5 electrodes as required.

The following protocols are 2-channel protocols built in to the program:

Deep2 – 2-channel alpha/theta training
Peak – 2-channel alpha coherence training
Peak2 – 2-channel training with left beta and right SMR enhancement
Asym – 2-channel alpha asymmetry training

These are good starting points for 2-channel work

Using Multiple Monitors with Windows 98/ME/XP/2K

It is easy to use more than one monitor, when your computer runs Windows 98, ME, or 2000. Buy and install an extra video card. It must be a "PCI" or AGP video card, but can be any type. Cards between $60 and $100 work fine.

Purchase another display monitor. A small color monitor is about $125.

When you turn on the computer, Windows98 will automatically recognize the new monitor. Answer the questions and put in a disk, if necessary, for the new display card.

The following screens show the Display/Properties control panel. You can get this control panel by moving your mouse cursor to an "empty" part of the display screen, and then pressing the right mouse button. Select the "Properties" item on the popup menu that appears. Before the second monitor is enabled, your control panel may look like the following. Note that monitor 2 is "greyed" out.
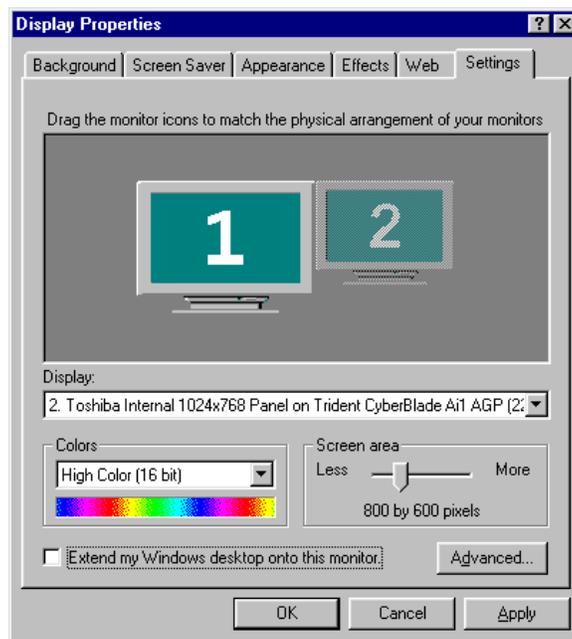
Click on the second monitor to enable it. After second monitor is enabled, the control will show it in full color. Be sure to click on "Extend my Windows desktop onto this monitor".
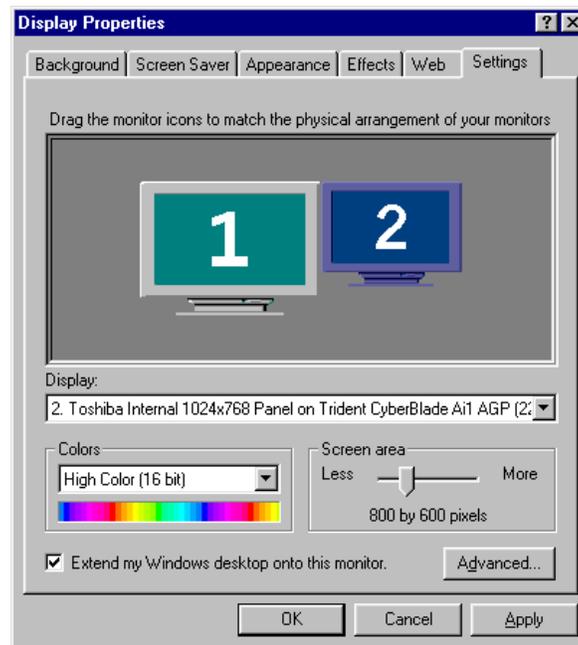
The second monitor will appear as an extension to the "desktop". You can "drag" any BrainMaster program into the second (or third, etc) display monitors. The one mouse can reach all monitors, by moving from one to the other. As the mouse is dragged off the side of one of the displays, it will appear on another display. To turn the dual monitor capability on and off, use the "Display Properties" control. You can reach this by putting the mouse on a blank part of the computer screen ("desktop") and pressing the right mouse button, then selecting "properties". Choose the "settings" tab on the resulting control panel. You will see a display with two monitors on it, and you can select either monitor by clicking on it, and you can also select and deselect the item "Extend my Windows Desktop onto this monitor".

Many laptop PC's will also support a second external monitor as an "extension" to the Windows Desktop. Use the "Display/Properties" popup control, and view the "settings" tab to see what your PC is able to do.

Some common ways to use the system are as follows:

Display 1: BrainMaster Training Screen (master.exe)
Display 2: Wing Command (or Pacman) game
This allows a trainee to watch a game, while the operator controls the system. This is similar to the arrangement in the Neurocybernetics (EEG Spectrum) system.

Display 1: BrainMaster Training Screen (master.exe)
Display 2: BrainMaster Review Screen (breview.exe)
This allows a trainee to work on the the Training Screen, while being able to see the minute-by-minute progress on the second screen. To update the Review Screen each minute, simply click on the title bar, to refresh it.

Display 1: BrainMaster Setup Screen (bsetup.exe)
Display 2: BrainMaster Training Screen (master.exe)
Display 3: BrainMaster Review Screen (breview.exe)

This allows the operator to manipulate the settings, while the trainee works on the Training screen, without distractions. On-the-fly changes can be made. Statistical summaries are also visible at all times.

Noisy or Laptop Computers

Some users experience *noise interference* that appears as "fish" on the display, or "fuzziness" of the waveform, even with good electrode contact. A small amount of noise can be tolerated, but if too much noise is present, it will interfere with results. Some computers are noisier than others. In particular, laptop computer power supplies are not well insulated, and may emit large 60 Hz signals that can cause interference with EEG recording.

There are other possible sources of interference. Electrical appliances and fluorescent lights can interfere with recordings. All such *interference is radiated through space*, and is picked up by the extremely sensitive amplifiers of the BrainMaster. Some devices will cause interference even if they are turned off, because their power circuits still generate the interference. ***Although the BrainMaster amplifiers are designed to reject interference, if it is too large, it will show up in the signal, causing problems.***

Generally, desktop personal computers are much less troublesome than laptop computers.

If you experience persistent noise in the EEG, consider the following:

o   When plugged into an electrical outlet using the power cord supplied by the computer manufacturer, make sure the *power cord to the computer is straight* and extends straight off the back of the computer—no tangles or knots.

o   *Disconnect the power supply*, and let the laptop computer run on its batteries. Disconnect the power cable from the laptop, and also unplug the power supply from the wall, so that it will stop emitting noise.

o   Make sure that the *cable (serial cable) that connects the BrainMaster to the computer is straight*- no knots or tangles.

o   Place the BrainMaster *module as far away from the laptop computer* as possible.

o   Place the laptop computer *as far away from people's bodies* as is practical.

o   Make sure there are no electrical cords running under the trainee's chair.

o   Disconnect the charging cord from the back of the BrainMaster. Remember to reconnect it when you turn the device off, to ensure that the batteries are continually charged.

o   Place the BrainMaster module *on a different plane* than the laptop. Try to place it above or below the level of the laptop and its power supply. For example, place it on a chair or table to the lower right or left of the laptop, as far away as possible from the computer.

o   *Lightly braid* the electrode lead wires, leaving enough unbraided at the top and bottom to plug in or attach to your head easily. Do not simply twist the electrode wires together; they must be braided. Use a standard 3-wire braid method, for 1-channel recording.

o   *C*onsider acquiring a shielded adapter cable, and using shorter sensor leads. Contact BrainMaster Technologies if you are interested in this option.