

The use of BioExplorer 1.5 software with Neurobit Lite EEG device.

Quick start

Setup

1. Please install the driver of infrared (IrDA) adapter, launching setup.exe application from CD attached to the adapter.
2. After installation of the driver connect the infrared adapter to USB port of your computer.
3. Connect hardware key included in BioExplorer package to another USB port.
4. Install BioExplorer application. The installer of older BioExplorer version (for Windows XP) may be delivered on CD included in the software package. For Windows Vista or newer systems please download the installer of the latest full version available on the webpage <http://www.cyberevolution.com/download.htm>. During setup proceed in accordance with messages showing on the screen.

Preparation to session

1. Place the Neurobit Lite unit in the range of the infrared adapter (optimally about 30 cm), turned to it with black cap of the battery compartment. Apply EEG electrodes and turn on the unit (however, do not use Start! command from the device's menu).
2. Launch BioExplorer application.
3. Using the option BioExplorer/Device in menu of the application select Neurobit Lite as an interoperating device.

A word "Connected" should appear on the status bar of BioExplorer (under menu and icon bars). The device will enter in the measurement mode. Transmission progress bar should appear and run on the device's screen.

(If the state is different, please consult "Known issues" section at the end of this document.)

Session with example design

1. Using the option Design/Open load one of ready-to-use designs of data processing and presentation, for example Designs\Examples\AlphaMIDI.bxd. In this example design, the feedback signal is a level of alpha brainwaves, traditionally associated with relax (similarly to Relax protocol built-in into Neurobit Lite device for stand-alone use).
2. To start a session click the icon Play (under the main menu of the application; it is equivalent to menu option Session/Play).

There should appear moving graphs in Instruments1 window. The feedback signal is presented with sounds and bar graph on the screen (more alpha waves the longer the bar). Apart from that, raw EEG signal is showed, as well as the course of alpha waves in time and frequency spectrum of the EEG signal (vertical axis of the spectrum diagram corresponds to amplitude of individual wave components of the EEG, with frequencies given on the horizontal axis; alpha brainwaves have frequencies in the range of 8 to 12 Hz).

3. If there is a need, you can change settings of processing or presentation blocks, e.g.:
 - scale of the raw EEG diagram (select the option Objects/Oscilloscope1 from the application menu, then change Sensitivity value on the card CH1 of appearing window), or

- range of sound pitch corresponding to the level of alpha waves (select the option Objects/MIDI1, then change the parameter Notes/Input range).

Another example of data processing and presentation can be the design Designs\Examples\FlyPacMan.bxd, including a simple Flash game controlled with the EEG signal.

When become skilled a little, you can modify the example designs included in the package (e.g. you can choose another frequency band of the trained brainwaves) or build your own designs. The software also includes an option of EEG signal recording on the disc and many other features.

Using video files for biofeedback

1. In Design menu of the application select Open and choose an example design for video files: MultiThresholdVideo.bxd.
2. Click Instrument2 window (or VideoPlayer1 element in signal diagram window) with right mouse button. Select Properties, on Playlist tab click Add button and select a video file to play. Click OK in Properties window.
3. Click Play button to start a session.

By default the video is played whenever signal amplitudes in three EEG bands meet a criterion. With different connections of VideoPlayer element inputs also brightness and other parameters can be controlled by feedback signal.

If there is a problem with a specific video file format, please test if it can be played in Windows Media Player. If not, additional plug-in for WMP may be required.

DVD biofeedback

DVD preparation

Correct DVD control depends on proper interoperation of a few software components from different manufacturers, especially:

- Microsoft Windows operating system,
- DVD decoder (often not included in the system, but purchased separately),
- BioExplorer application using DVD interface of the operating system.

Compatibility problems are quite often here.

1. First of all, ensure that you can play DVD in Windows Media Player (Microsoft application included in the system). Run the application (e.g. from your system Start menu). In Play menu click "DVD, VCD or CD Audio" option and select DVD drive. DVD should start playing.

However, if you will see the message, that WMP cannot play DVD because no compatible DVD decoder is installed, you should purchase the decoder. Some decoders compatible with WMP are listed on the webpage <http://www.microsoft.com/windows/windowsmedia/player/plugins.aspx#DVDDecoder>. They can be bought via Internet and downloaded. Alternatively, you can purchase a software package for DVD, which includes the decoder for WMP, for example WinDVD or PowerDVD.

2. In main menu of BioExplorer select BioExplorer, than Preferences. On the tab "DVD settings" select navigator, video decoder and audio decoder. (If there are a few video decoders in your system, you can select one by chance. If it will not work, you can later test another one.)
3. At the beginning it may be convenient to test DVD with example session data from disk. In Session menu of the application select Playback option and choose session file Examples\CESample.bxs. Answer "No" to the question "Open Session's Design?".

(After successful initial test of DVD playing you can switch to physical measurements with Session/Capture option and then Session/Play.)

DVD session

1. In Design menu select Open and choose example design DVD.bxd.
2. Place DVD in drive. After a while select Session/Play option in BioExplorer menu (it will start signal processing). Then click start button and Control button in DVD window of BioExplorer (at the bottom).
3. DVD should be played now, with image size and brightness controlled with feedback signal. With other connections of DVD Player element inputs also volume can be controlled or movie can be stopped, when signal is under given threshold.

If there are problems with DVD, further information can be found in BioExplorer help, in chapters "Design Object Reference"/"WM DVD Player" or "DVD Player".

Known issues

1. In some circumstances BioExplorer fails to initiate measurement mode in Neurobit Lite unit. Among other things, this effect occurs when the unit is turned off while BioExplorer is launched or Neurobit device is added in "Device Manager" of the application. If the unit is turned on later, physical measurements don't start (even if you click Play button in BioExplorer window). There is no bar indicator of data transmission on the unit's screen (options of the device's menu are displayed there instead).

If the device is connected with BioExplorer (a word "Connected" displayed on the status bar of the application) and the device isn't in the measurement mode for any reason, please simply turn off the device and turn on it again. (Alternatively, you can disconnect the device logically in "Device Manager" with square left to the device name and logically connect it there again.)

Then the device should enter in the measurement mode. Transmission progress bar should appear and run on the device's screen. Assuming, a valid design is loaded into BioExplorer (e.g from Designs/Examples directory), graphs updated in real time should appear in instrument window of the application. (Maybe you then need to set up sensitivity or other parameters of design objects, e.g. "Spectrum Analyzer", to make these graphs well visible.)

2. Some of antivirus/protection software block transmission between Neurobit Lite unit and BioExplorer. There is the word "Connected" in BioExplorer status bar but the device is not in measurement mode (menu is still displayed on its screen) and no signal is processed in the application. In such a case you can temporarily deactivate the protection software to test, if it resolves the issue. If so, you can activate protection again, but configure so called exception for BioExplorer and/or infrared driver to avoid the blockade. Details of the operation are specific to the protection application and should be available in its help.
3. If you tested BioEra (another biofeedback software) and have installed IrComm2k driver required by that application, to work with BioExplorer uninstall the driver or set it in "Standard" mode. Otherwise BioExplorer will not connect with the device. In order to change the mode click IrComm2k icon (on the right of system task bar) with right mouse button and select the mode in driver's menu.
4. Please remember that computer-based session is initiated from computer side, and not with Start! command from the device's menu. (For stand-alone trainings, initiated with Start! in the device, no data is transmitted to computer.)

Sources of further information about BioExplorer

1. Help menu.
2. Manual of the application use:
http://www.brain-trainer.com/cgi-bin/shop.pl?shop=get_item&item_id=36.
3. „BioExplorer” group in Yahoo: <http://groups.yahoo.com/>.
4. Technical support of the software manufacturer, CyberEvolution, Inc.:
<http://www.cyberevolution.com/support.htm>.