

BrainTrack™ from BrainMaster



Get your Brain on Track with BrainTrack™

BrainMaster introduces a new dimension in biofeedback, extending the range of experience into the external world. The BrainTrack system is a specially engineered interface designed to control real-world devices such as trains, cars, and other devices, so trainees can truly experience the effects of their feedback training. The BrainTrack can be provided with a fully integrated HO-scale slot car diorama, or can be used as a standalone controller.

As a controller, the BrainTrack can be used with a wide range of toys and devices including available slot-car sets (HO, 1/32, 1/24 scale) or electric trains (HO, N, O, or L gauge). It can also be interfaced to lights, motion toys, balloon inflators, or other electrical devices. Simply put, the BrainTrack puts your biofeedback experience into the real world, and that makes the biofeedback experience real.

Not just another interface

The BrainTrack is not just another biofeedback control interface. Unlike other biofeedback control products that control DVD players and other devices by adding a “in-between” gadget, BrainTrack provides fast, direct control. Existing systems rely on

BrainTrack™

schemes such as connecting to the sound card output of the PC, and/or using extra actuators to control devices. These devices can introduce delays and inaccuracies, compromising the quality and speed of the feedback control. In comparison, BrainTrack is an entirely electronic solution, in which the external device is controlled in real-time, without appreciable delay, so that the external device is a fast and accurate reflection of the trainee's internal state. The BrainTrack electronics are intended to use simple switch-closure inputs (such as the Atlantis Switch controls), and are optically isolated, ensuring safety and reliability.



Front-to-Back Engineering

The BrainTrack system is fully integrated with the Atlantis 4x4 built-in Switch In and Out connections, providing fast and safe interfaces to devices. It consists of a custom-engineered controller that delivers pulse-width modulated power directly to the track of a racing device such as a slot car (HO or other scale), electric train (HO or other gauge), display, lamp, actuator, or other entity that must reflect the trainee's biofeedback state, in order to facilitate learning. The BrainTrack is optimized to control motion such as cars and trains, and can operate 1 or 2 racers, so that one trainee can race alone or against a pace car, or 2 trainees can compete for biofeedback-controlled racing.

Real-World Experience in Real Time

BrainTrack does not rely on sound cards, external actuators, or other intermediate devices that can introduce delay and compromise accuracy. The BrainTrack controller modulates and delivers electrical power directly to the track under electronic control, providing much more than the typical "on-off" control available with existing devices. The full

BrainTrack™

range of control provides rapid, proportional feedback optimized for feedback training. The BrainTrack allows the feedback to incorporate the full range of speeds of the controlled entities, and uses advanced pulse-width modulation to provide accurate speed and timing. The full range of motion, from full stop, to full-speed, is available to the trainee, providing a truly proportional and maximally informative feedback experience.

Fast, Accurate, and Esthetic

BrainTrack is engineered to provide a fast and accurate reflection of the feedback training variables, in the form of the speed of the chosen racer. Research and clinical experience have shown that in order to be effective, feedback must be fast, accurate, and esthetic. If it fails on any of these criteria, then training will not be optimal. With BrainTrack, the motion of the external device can be tuned for optimal response, ensuring that the trainee has the best opportunity to learn self-regulation, relaxation, and mental fitness.



Advanced yet Simple Controls

The BrainTrack is designed to be used in a simple “1-2-3” approach to setting up and administering training. The operator simply turns the system on, positions the racers, sets the desired speed, and then “goes remote”. When running remotely, the racers are under the control of the biofeedback protocol, and the racers will stop, start, and change their speed in an accurate and esthetic reflection of the trainee’s state. Adjustments can be made at any time, to set the desired amount of travel, for a full range of experience from relaxed and slow, through fast and exciting.

BrainTrack™

Systems Engineered for optimal feedback

The BrainTrack system is engineered for optimal response speed, accuracy, and aesthetics. It has been designed and integrated from front to back, taking into consideration everything from the biophysiological input, through data acquisition and signal processing, and ending with the real-world action used for training. Only BrainMaster can provide this total system engineering, providing performance and reliability that cannot be achieved with patched-together “off-the-shelf” devices.

BrainTrack protocols can be designed for a wide range of training needs including EEG spectral parameters, connectivity training, DC and slow cortical potentials, HEG, temperature, and forthcoming peripheral biofeedback modalities. The built-in Event Wizard control software provides simple and rapid control of BrainTrack devices for 1 or 2 trainees.

Engaging, lifelike settings available.

BrainTrack can be used with any electrical toy such as a slot car set, electric trains, and so on. You can use your favorite device, and interface it with a BrainTrack to put it under biofeedback control. However to go far beyond the typical plastic snap-together setting, BrainTrack is available with an optional full-life diorama incorporating track, background terrain, landscape features, and the control system in one easy to move and use assembly, which may include an optional field-ready, professional quality tough-case. Suitable for use in clinics, institutes, schools, museums, or traveling exhibits, the integrated BrainTrack system is a complete solution providing a lifelike, engaging experience for maximum enjoyment and learning.



BrainTrack™

A complete solution

Don't compromise by using a "kludge" of different hardware and software to produce your biofeedback system. You and your trainees will benefit if you use a completely engineered solution, designed to work correctly. If you have been looking for a more engaging, more fun, and more real experience for your trainees, BrainTrack can provide the solution. Extend your clinical and educational work to include real, clinical-quality "brain-controlled" games or other experiences. Let your clients be among the first to "drive a car with their brainwaves" and learn new approaches to relaxation and focus. Get you brain on track with BrainTrack.



Device Specifications:

Channels: 2

Input: optically isolated switch closure, BrainMaster Atlantis or equivalent

Output: Open Collector voltage drive

Output drive capacity: 10 amperes

Controls: System On/Off, set speed, Remote, Channel On/Off, Channel Pulse

Output response delay: less than 1 microsecond

Control Method: Pulse-width modulation (PWM)

PWM Modulation frequency: 16 KHz

Optical Isolation: to 1500 volts

BrainTrack and **Atlantis** are trademarks of BrainMaster Technologies, Inc.