



The New BrainMaster Discovery 24E Accurate, Flexible 24-channel EEG Monitoring and Training

A NEW STANDARD

The BrainMaster Discovery 24E introduces the next generation of EEG biofeedback in a high-quality, low-cost system answering the advanced needs of the clinical and research communities. It incorporates 24 channels of EEG using technology based upon the continued evolution of the BrainMaster series of biofeedback monitors and trainers. Incorporating low-noise DC-sensitive amplifiers, 24-bit analog-to-digital converters, an optically and magnetically isolated USB interface, and compatibility with a range of software, it is the natural choice for multichannel EEG.

24 HIGH-QUALITY CHANNELS

This system features 24 channels of EEG recording including: 22 channels connected to a standard electrode cap, plus 2 channels of differential inputs with separate references, useful for monitoring any of a wide range of EEG or related potentials. It offers 256 samples per second on all channels, with 24-bit resolution, and an amplifier bandwidth from DC (0.000 Hz) to 80 Hz. A lightweight, portable device, it is ideal for use with laptop computers for remote or home recording, as well as clinical or

laboratory use. The unit is entirely powered by the USB interface, eliminating the need for batteries, while maintaining client safety.

ACCURATE RECORDINGS

EEG channels 1-22 are recorded monopolar with a reference of A1 (left ear). The A2 (right ear) EEG signal is recorded as a separate channel, referenced to A1. This is superior to the conventional "linked ears" reference, in that it does not distort the signal by forcing the references to be at the same potential. At the same time, it provides the ability to produce accurate readings using a computed *virtual linked ears* reference, while retaining the A1 reference for

superior localization using inverse solution techniques. This is the method preferred and recommended by researchers as well as developers in the fields of EEG processing, localization, and mapping.

WIDEBAND DC AMPLIFIERS

Because the amplifiers are DC-coupled, the system can record up to 24 channels of DC or SCP (slow cortical potentials) concurrently with the standard EEG recording. The EEG data channels are set for a nominal bandwidth of 0.4 to 80 Hz, while the DC channel provides independent data to the PC with a bandwidth of 0.000 to 2 Hz. The system has a dynamic range of over +/- 100,000 microvolts for the EEG signal, over 100 microvolts for EEG, and 1700 microvolts for auxiliary channels. As a result, the auxiliary channels can be used for a wide range of signals, providing accurate and stable recordings. Many biopotential signals are not well recorded by conventional 12, 14, or even 16-bit systems, and may flatline or saturate the amplifiers.

The Discovery's extended 24-bit accuracy can resolve signals as small as 0.01 microvolts, even in the presence of large offsets.



COMPLEMENTARY WITH EXISTING PRODUCTS

The Discovery is complementary with the BrainMaster Atlantis and MINI-Q device series, providing a continuous bridge from EEG training to small EEG assessment and onward to full QEEG capability. BrainMaster Atlantis and Discovery systems provide consistent readings across the entire product line. Discovery devices are fully compatible with existing and emerging software including BrainMaster, NeuroGuide, SKIL, WinEEG, and other industry-standard packages. Because the Discovery records all standard 10-20 sites simultaneously, it is possible to produce full EEG head maps, LORETA (low resolution electromagnetic tomographic analysis) images, and other whole-head analyses. For neurofeedback training purposes – Discovery training software; BrainMaster original Live 4 channel Z-Score; MultiMedia Player Package; BrainMaster (original) Live 19 channel Z-Score; NeuroGuide and all applied neuroscience products available. Third-party games are optionally available.



CONTINUITY

The Discovery system also provides continuity with the BrainMaster Atlantis series of training software (3.0 and 4.0 Avatar EEG). The nominal training capability integrates the Discovery EEG data with the Atlantis 4-channel training software, including advanced 4-channel protocols, connectivity training, the Event Wizard, data export, and Live Z-Scores or enhanced with BrainAvatar™ 4.0 Discovery Training. In addition, software providers including Applied Neuroscience (NeuroGuide) and SKIL are developing live EEG monitoring and training software which will operate seamlessly with the Discovery hardware. With the data export capability, the system can produce files readable by Excel.

CONTINUOUS OFFSET MONITORING

Before and during sessions, the sensors can be checked for connection quality, using the DC offset which is reported continually on-screen or used for SCP training. This does not interfere with the signals, and can be done without interruption. *NOTE: the usefulness of this method will depend on your choice of sensor materials and method of placement.*

DATA FOR INTERPRETATION

The BrainMaster Discovery software provides monitoring of live EEG, and writes EDF (European Data Format, Lexicor, and ascii) files that can be read into NeuroGuide, SKIL, and other standard EEG software. Files can be easily sent to consulting practitioners, for interpretation and recommendations. Firms such as CNS Response, Q-METRX, and Q-Pro, are able to process and interpret Discovery records and provide clinical recommendations.

All BrainMaster products are designed and produced in the USA and comply with applicable US and international regulations, providing products that can be used with confidence.

Discovery 24 and BrainAvatar™ 4.0 are currently in the field testing stage.

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INTERFACING CAPABILITY

Researchers and advanced clinicians can interface with the Discovery system in a variety of ways. EDF files can be read directly into programs such as MATLAB or Persyst, providing custom post-processing of raw EEG signals. In addition, by signing a 1-page nondisclosure agreement, developers can interface with Discovery data in real-time using a *shared memory* DLL, or using the USB interface (line-level protocol). This makes it possible to develop entirely new software that uses the full capabilities of the Discovery system, using real-time data in custom-designed software.

EXTENSIBLE TO EPS

By recording an EP-related trigger on one of the auxiliary channels, the Discovery data can be used to compute Evoked Potentials, using user-provided software such as EEG Lab.

DISCOVERY WITH BRAINAVATAR™ 4.0

With the new BrainAvatar™ 4.0 software, Discovery becomes a complete whole-head QEEG and brain imaging system. The BrainAvatar provides a new suite of screens and training options for up to 24 channels of EEG or peripheral training, including whole-head maps (requires Discovery Avatar Training option). With the optional Live sLORETA Projector (LLP), Discovery can provide real-time 3D brain projections, showing brain activity at the cortical level in real time. Accurately image activity arising from the cortex, insula, cingulate gyrus, or limbic system, using proven sLORETA technology, developed at the Key Institute, and implemented in BrainMaster software. With BrainAvatar and LLP, you can watch, monitor, and train brain structures directly, taking neurofeedback to the next level for the 21st century.



RETAIL \$6695.00
FIELD TESTING PRICE: \$5800.00

Database add-on considerations

NeuroGuide Collection Module (533-405)	\$500
NeuroGuide Deluxe Normative Database (533-404)	\$2995
BrainAvatar™ 4.0 Discovery Acquisition (533-145)	\$895 (\$695)
BrainAvatar™ 4.0 Live sLORETA Projector for Discovery (533-614)	\$2050 (\$1500)
New Mind Clinical Database Report System (533-606)	\$1200

Neurofeedback Training add-on considerations

Discovery 1.0 4-channel Training Software (533-412)	\$895 (\$695)
BrainAvatar™ 4.0 Discovery Training Software for up to 19 channels* (533-612)	\$1295 (\$995)
BrainAvatar™ 4.0 Discovery Training Upgrade from Discovery 1.0* (533-613)	\$600 (\$300)
MultiMedia Player Package (533-608)	\$450 (\$250)
Complete Multimedia Package for BrainMaster and NeuroGuide (533-610)	\$900 (\$650)
BrainMaster Original LZT Live Z-Score for 4 channels (533-609)	\$995
BrainMaster Original LZT Live Z-Score (19 channel) (533-418)	\$1895
NF1 NeuroGuide 19 Channel Real-Time Z-Score Training** (533-415)	\$2000
NF2 NeuroGuide 19 Channel LORETA Z-Score Training** (533-417)	\$2500

All Applied Neuroscience and SKIL products are compatible with Discovery 24

WinEEG and others to be announced.

BrainMaster Discovery 24E is a Class II Device. Applicable conformances include US FDA, CE, and IEC 60601

NeuroGuide is a trademark of Applied Neuroscience, Inc. SKIL is a trademark of Serman Kaiser Imaging Laboratory

*Must own BrainAvatar™ Discovery Acquisition

**Must own NeuroGuide Deluxe Database and Collection Module



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