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o Fall | o 2008

Visit us in Booth 823
Nov 15-19, 2008
Neuroscience '08 - Washington, DC

TDT news

Shown larger than actual size!



Auto-aligning

Self-locking

Low insertion force

Made by TDT



You Asked - We Answered: ZIF-Clip® Technology is Redefining the Connector

As high channel count recordings have come to play an increasingly key role in a wide variety of neurophysiology studies, headstage to electrode connections have become a weak link for data acquisition systems. The connectors used for electrodes and headstages throughout the industry are fragile, difficult to align, and difficult to keep connected.

Tight fitting connections have also been known to cause physical and physiologic damage. Excessive force applied while trying to connect or disconnect traditional friction based connections may result in structural failure at the point of cranial attachment, or worse; force translated from the connector to the electrode array may disturb neural tissue homeostasis. Because of the potential

for damage and for related animal discomfort, the use of anesthesia is often required. Yet, even a brief duration of nominal anesthetic concentration may alter the very physiology you are seeking to measure.

TDT's newest leap forward in technology comes in the form of a miniature, low insertion-force set of connectors for multi-channel neurophysiology headstages and electrodes that can support arrays of up to 128 channels. Our innovative ZIF-Clip® technology (patent-pending) solves many of the problems encountered with typical high channel count headstages.

TDT ZIF-Clip® headstages feature a hinged design that ensures a quick, easy connection with almost no insertion force applied to the subject. The headstage

automatically aligns to the electrode or adapter and firmly locks in place! This connection won't loosen over time and can be connected and disconnected without anesthetizing the subject, making it ideal for awake behaving protocols. ZIF-Clip® technology means zero force, zero anesthesia, zero damage, zero discomfort, zero confounding physiology, zero unknowns.

Tucker-Davis Technologies has been an innovator in the field of neuroscience research equipment for two decades. Through our close ties to our customers, we identify needs in the market and fill those needs with groundbreaking solutions that allow you to setup and perform your experiments with ease and reliability. •

New Products

PZ3 128 Channel Low Impedance PreAmp

The PZ3 is a high channel count, low impedance amplifier well suited for ECOG, Evoked Potentials, EEGs, LFP's, EMGs, and other similar recording applications. Available in 32, 64, and 128 channel models, the PZ3 amplifier offers shared or true differential operation, low input referred noise, impedance checking, and an optional high input range mode. •

SpikePac for OpenEx

SpikePac is a powerful extension package for TDT's OpenEx Software Suite designed specifically for researchers doing multi-channel neural recordings.

The software package includes a group of easy-to-use RPvdsEx macros and paired OpenController interfaces that provide the foundation needed to build powerful recording paradigms. These building blocks handle all OpenEx integration details automatically. Most

importantly, SpikePac offers this new level of integration without compromising the flexibility essential to TDT customers.

SpikePac includes:

- Principal Component Feature Space Spike Sorting
- Real-Time, Time-Voltage Spike Sorting
- Filtering
- Signal Monitoring with Noise Gating
- Signal Denoising
- Electrode Site Remapping

Building on existing OpenEx functionality, SpikePac simplifies experiment configuration and incorporates a broader range of spike sorting techniques and performance enhancing tools. •

Wireless Headstage and Receiver Interfaces

TDT now provides the TB32 preamplifier which interfaces extremely well with the Triangle

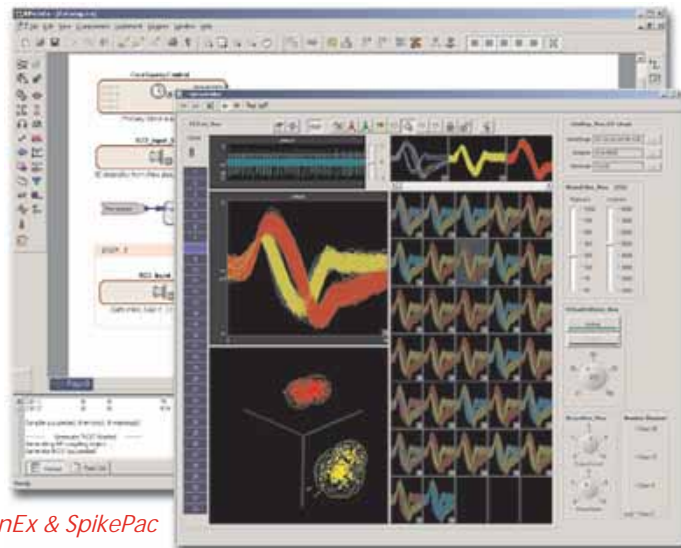
BioSystems, Inc. (TBSI) wireless headstage and receiver. Record up to 31 channels wirelessly from your subject and have the TB32 digitize the data for input into a base station. •

RZ5 Processor

The RZ5 features ultra fast digital signal processors, two Medusa fiber optic input ports, and one output port; allowing it to function as either a biological amplifier system or a microstimulator system. •

Boxed Document Sets

Printed documents are now available in high quality, full color boxed sets that include a System 3 hardware reference, RPvdsEx circuit design reference, and software user guides. Contact sales for pricing information. •



OpenEx & SpikePac

OTHER NEWS

Search the Website

We've recently added a "Search This Site" page to our website. This search is intended primarily for those wishing to learn more about products for purchase. Current users looking for tech notes should go directly to the Tech Notes database available on the home page under "Quick User Links." •

Japanese anyone?

The TDT website is now available in Japanese courtesy of Bio Research Center, our Japanese representatives. Find it at www.brck.co.jp/TDTJ/ or available from a link on our "Contact Us" page. •

Join our Team

We're currently hiring for several career positions including: Applications Specialist/Technical Support, Software Engineer, and Staff Scientist. We offer competitive salary and benefits along with a challenging and rewarding work experience. See our website for more information. •

www.tdt.com

New Faces in R&D

New faces mean new ideas and we're always looking to the future and innovation at TDT. In the last year we've added two new engineers to our R&D team...

Software Engineer

Joe Dunn began his collegiate education at the University of Arizona where he double majored in Computer Science and in Mathematics before obtaining a PhD in Computer Science from the University of Colorado. He is proficient with numerous programming languages, computer interfaces, and the intricacies of networking.

Joe specializes in embedded software design and has already developed several new products for TDT, such as the UDP Ethernet port for the RZ2. He is currently working on several projects, including an underwater recording system and

a system for EEG-based seizure studies. In his off-time Joe loves to cook and brew his own beer. We are fortunate to have such a talented individual in R&D and look forward to many new innovations in the future.

Mechanical Engineer

Joe Gleason joined TDT last year as a Mechanical Engineer. He has a strong background in Physics, specializing in Optics and Lasers. He is currently refining future versions of our microwire arrays and using 3D modeling and prototyping technologies to develop other hardware and manufacturing devices.

On a more personal note, Joe enjoys restoring classic planes and cars and is an avid aviator. Joe provides a new versatile approach to conceptual design and process engineering. •

TECH TIPS

Have the plots in your favorite OpenEx project stopped working?

As you work with a project over time, you might add new device configurations. OpenWorkbench does support multiple device configurations, allowing you to run the same project on a variety of devices or to run several versions of a paradigm. But old, inactive configurations that linger in the project can be an overlooked source of conflicts.

If your plots stop working after you've added a new device configuration you might have a duplicate StoreID in an inactive configuration causing problems.

When device configurations are created in OpenWorkbench, the StoreIDs contained in the assigned RCO are added to a master list that is used by other OpenEx applications (such as OpenController) to retrieve data.

This list of StoreIDs does not include information about which device configuration contained the StoreID, so they will remain in the list even when a device configuration is inactive (or not



assigned to any hardware device).

Workbench will warn when two **active** devices include the same StoreIDs, but no error is reported when the duplicate StoreID is contained in an RCO assigned to an **inactive** device configuration.

In the image to the left, device Acq3 is currently enabled and loaded with an RCO file that contains a store with the tag name 'eNeu'. Device configurations ~Acq1 and ~Acq2 are currently disabled and are loaded with RCO files that also contain the StoreID name 'eNeu'.

Once OpenWorkbench is running, duplicate instances of the eNeu StoreID will occur and client applications like OpenController may point to an inactive StoreID rather than the active one. To avoid this problem, delete inactive device configurations or ensure all Stores use a unique StoreID. •

Searching for that special something?

You asked for it, you got it. After repeated request for printable user guides, we converted many of our documents to a printable PDF format and made them available on the TDT website. PDF documents are easy to print, can include linked cross references, and are still very searchable.

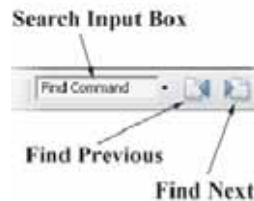
I know what you're thinking. How am I ever going to search for what I need without the convenient html based documents offered in the past? As it turns out Adobe Reader supports a similar search functionality that is easy to use and is just as helpful as its html based counterpart.

Adobe Reader supports two search methods:

- » The find command
- » The search command

Both methods are found within the Edit menu of Adobe Reader but can also be implemented via shortcut keys which run each method from the keyboard.

Using the find command will be familiar to most users. Its shortcut key is Ctrl+F and allows a word or phrase input. The first match is highlighted and the option to move to the next match is enabled by clicking the Find Next button. Previous matches can also be revisited by clicking the Find Previous button.

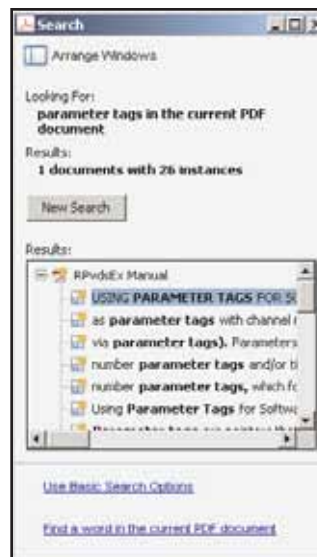


This method is useful when you are searching for a particular word or phrase which is relatively unique.

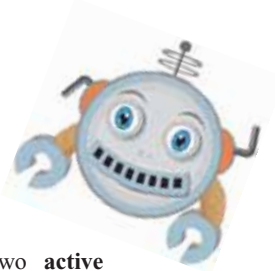
The search command works similarly to the find command and has the shortcut key Ctrl+Shift+F. The input box accepts a search word or phrase, looks up all instances of the query, and populates a table of links containing the word or phrase.

This method is extremely useful when searching for a word or phrase that may be prevalent in the document.

The table of links provided is similar to the html based search function in the previous TDT help documentation. •



For more tech tips see the SUPPORT page on the TDT Website... www.tdt.com



Support@tdt.com

TDT knows how important it is to provide qualified, experienced support staff. Here is a quick look at one of the Applications Engineers on our Tech Support team.

Mark Hanus is a sixteen month veteran in the department. He graduated with a Masters degree in Biomedical Engineering from the University of Michigan.

Before making the transition to the southeast, Mark worked in two Northwestern University labs where he designed and maintained systems for primate behavioral studies using TDT equipment. Mark quickly assimilated himself into the TDT environment and now assists customers in experimental design development, troubleshooting, and training.

Mark's lab experience and familiarity with TDT equipment have made him a valuable asset to our customers and to the support team. •



Spotlight on Manufacturing

High precision Pick and Place machine increases manufacturing efficiency.

At TDT, delivering a product means taking it from concept to production. We take pride in using the most modern production methods and putting our products through a series of rigorous tests before shipping them to your lab.

Our 15,000 square foot commercial facility includes a fully equipped manufacturing space. Each phase of production, including development, testing, board layout, component assembly and systems integration, is performed in-house by highly trained and dedicated TDT team members. This eliminates the unreliability and increased turn-around time introduced by outsourcing parts of the process to con-

tract engineering or manufacturing firms.

One of the center pieces of our manufacturing floor is our high precision Pick and Place machine, capable of placing up to 11,600 circuit components per hour with 40-micron accuracy. It is able to handle a large variety of component sizes and types making it extremely versatile. Once components have been placed, an in-house reflow oven is used to finalize circuit construction. Reflow soldering is a highly efficient method of attaching surface mount components to a circuit board. The manufacturing process continues with TDT production specialists assembling each

product with a focus on quality.

From basic circuit assembly to a completely assembled product, TDT remains in control over all aspects of production. With our manufacturing department just steps away from the offices of our design engineers, we're able to streamline the entire product development process, from concept to delivery. With immediate feedback from production staff, the reaction time for product improvements and upgrades is very fast. When the design cycle is minimized, the cost of each new product roll-out is vastly reduced. And that means you get quality products that are affordably priced. •

Upcoming Meetings:

See us on the road...



Neuroscience 2008
Nov 15-19, 2008
Washington, DC

American Epilepsy Society
December 6-8, 2008
Seattle, WA

ARO
Feb 14-19, 2009
Baltimore, MD



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